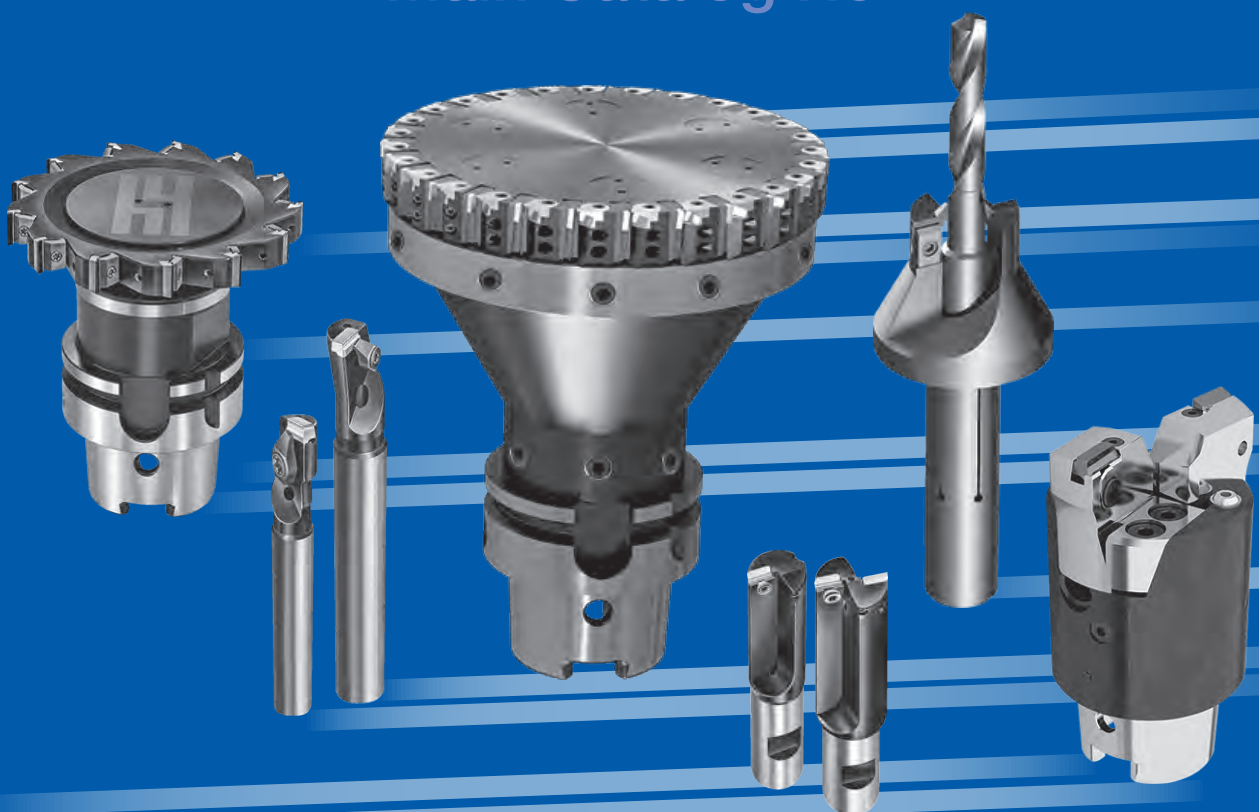




HOLLFELDER
GÜHRING
CUTTING TOOLS

Main Catalog H6



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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Milling tools

Fineboring tools Ø 6-44 mm

Fineboring tools GA 200-Vario Ø 44-130 mm

Drill and chamfering tools

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HOLLFELDER
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CUTTING TOOLS

HPC milling cutters





Features and advantages

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Standard range with maximum number of teeth

page 8

for maximum feed rates

HPC milling cutters

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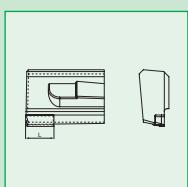
for rough machining



Standard range with a reduced number of teeth

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for lower spindle power



Inserts and spare parts

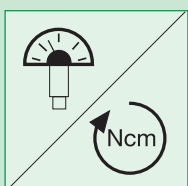
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suitable for a fine and a defined surface finish

Inserts and spare parts

page 14

for rough milling cutters

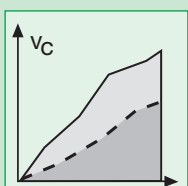


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H HPC milling cutters

for rough and finish machining
features and advantages

THE ULTIMATE EVOLUTION!

Features:

- Extremely high number of cutting edges for finish machining at milling cutters (i.e. dia. 63, Z=12, dia. 125, 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 for finish milling are regrindable up to 10 times
- Enclosed chip flute design
- Regeneration service for PCD cutting inserts for rough machining
- Suitable for MQL machining

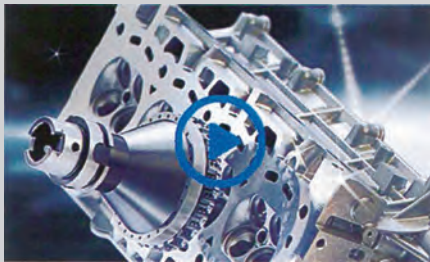
Advantages:

- 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

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HPC-Fräser - Die Spitze der Evolution!

Fast, clean, efficient - HPC milling cutter
from Hollfelder-Gühring!

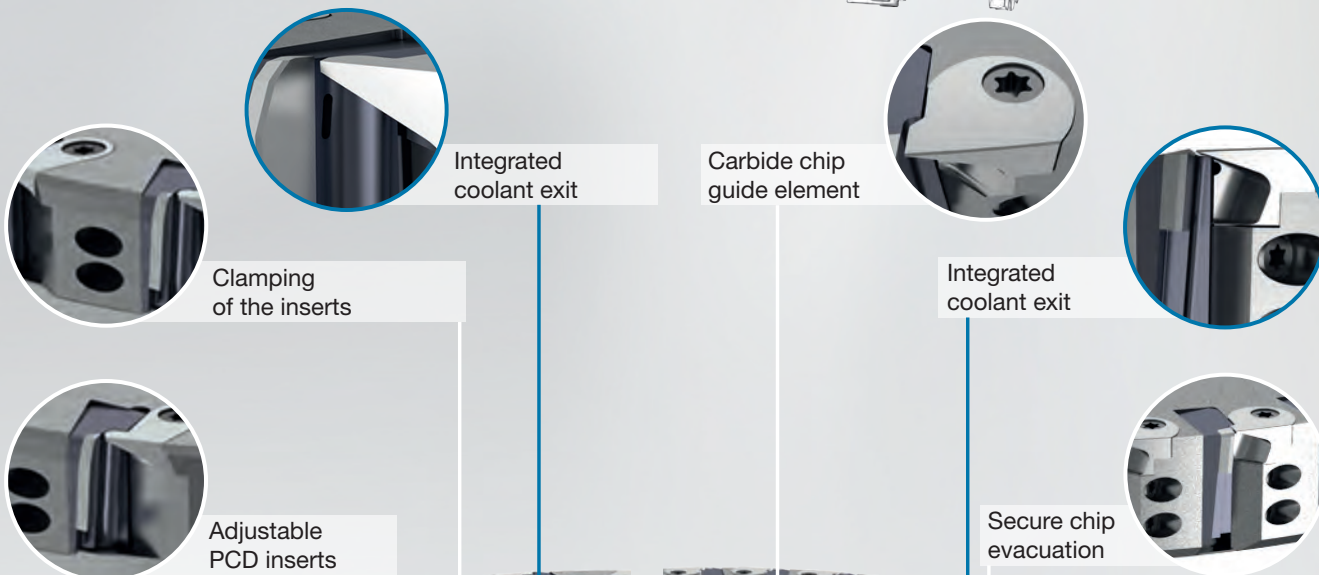
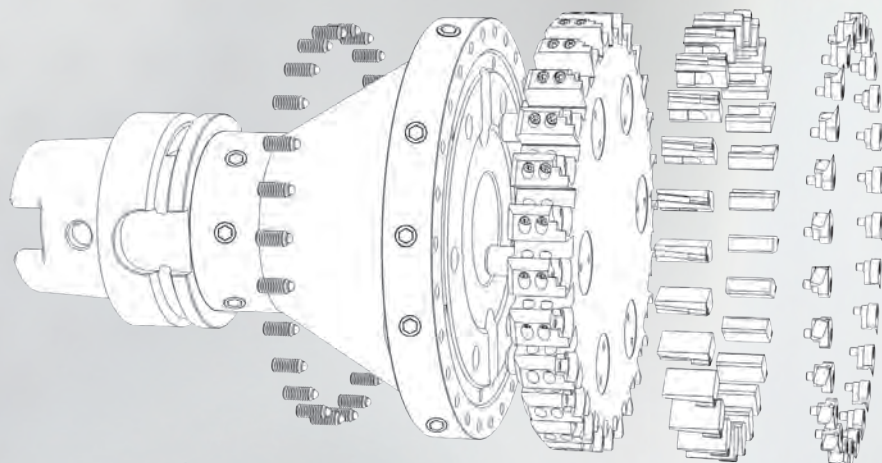


The super-fast end mills, an evolutionary leap in PCD milling technology



HPC milling cutters

for rough and finish machining
features and advantages



HPC Face mill Q9934

HPC Face mill Q9936

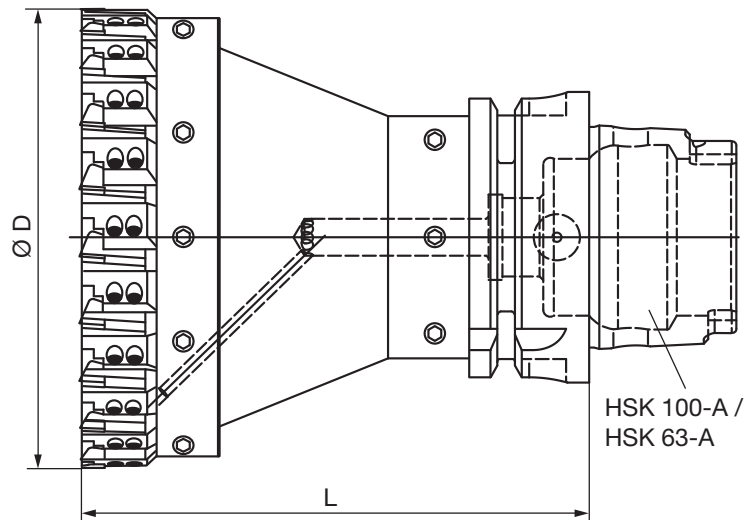
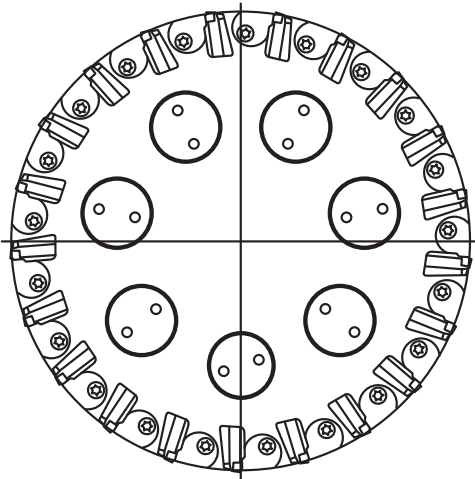
MILLING CUTTERS FOR
ROUGH MACHINING
UP TO 8 MM CUTTING DEPTH

MILLING CUTTERS FOR
FINISH MACHINING
UP TO 2 MM CUTTING DEPTH



HPC milling cutters

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

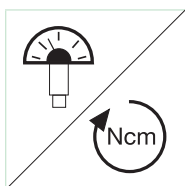


on request

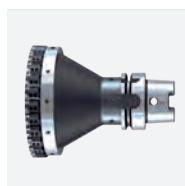
Part nr. 20004							
Code	Drawing nr.	Diameter/mm	teeth	L/mm	max. rev./min	Shank	Weight (kg)
for maximum feed rates							
50,101	Q 9936-5000 1063 R	50	9	100	32,000	HSK 63-A	1.5
63,101	Q 9936-6300 1063 R	63	12	100	31,000	HSK 63-A	1.9
80,101	Q 9936-8000 1163 R	80	15	110	28,000	HSK 63-A	2.7
100,101	Q 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	teeth	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

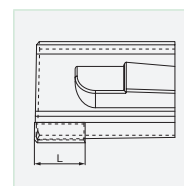
Ordering example: 1 piece Q 9936-6300 1010 R = Ordering number: 20004 63,103



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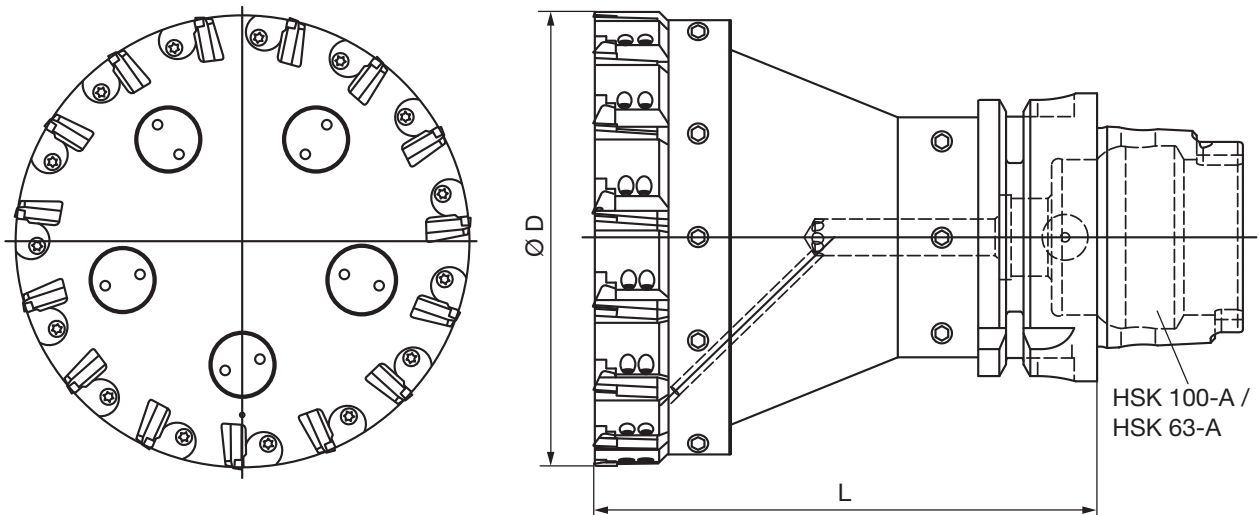
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PCD inserts page 10

HPC milling cutters

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

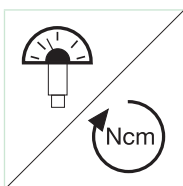


on request

Part nr. 20004							
Code	Drawing nr.	Diameter/mm	teeth	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	teeth	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

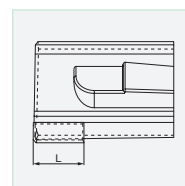
Ordering example: 1 piece Q 9933-6300 1010 R = Ordering number: 20004 63,108



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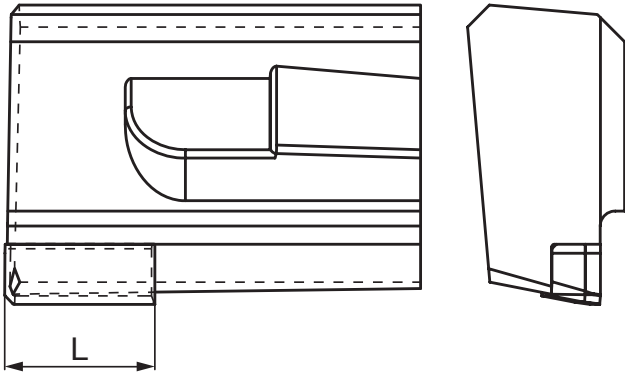


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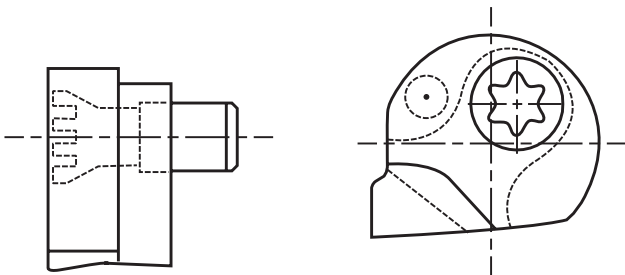
PCD Inserts and spare parts

for finish milling cutters



PCD inserts for HPC finishing cutters

Code	Drawing nr.	Rz	Cutting edge length, mm	Part nr.	Part nr.
				20371	20374
				Tool material	Tool material
suitable for a fine surface finish					
99,300	W 9930-0320 0445 R	2-10	5	PCD 10	PCD 30
suitable for burr free milling					
99,340	W 9931-0120 0445 R	2-10	5	PCD 10	PCD 30
suitable for a defined surface finish					
99,320	W 9931-0320 0445 R	10-25	5	PCD 10	PCD 30
wiper insert (to be used in combination with code no. 99,200 or 99,320)					
99,330	W 9930-1000 0445 R		5	PCD 10	PCD 30



Chip guiding elements (including clamp screw), CGE set

Part nr.	Drawing nr.	Milling cutter diameter/mm
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		Adjustment screw	
Part nr.	Code	Part nr.	Code
20080	3,000	20081	4,000

Adjustment instructions

HPC milling cutters

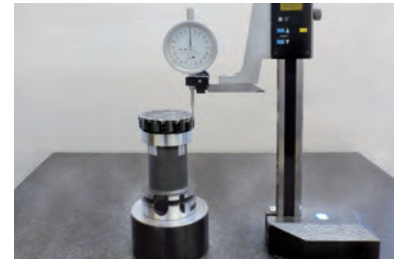


The chip guiding elements are mounted ex works!

1. Determine the highest chip guiding element.

Recommendation:

Place milling cutter in a setting fixture and rotate under the dial test indicator and measure the individual guiding elements.



2. Assemble the milling cutter and tighten the clamping screws (CS 1) to 15 Ncm.

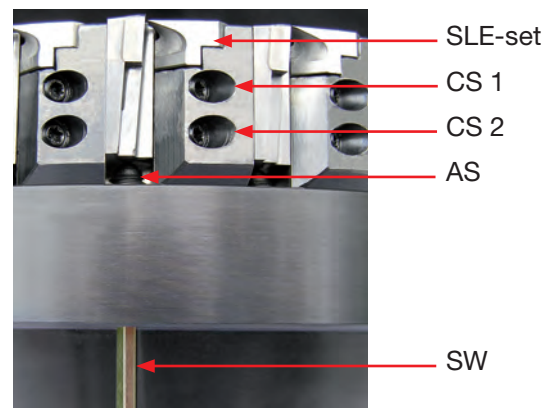
Do not tighten the clamping screws **(CS 2)!**

3. Adjust the inserts in longitudinal direction with the adjustment screws (AS) to 10 µm before the setting dimension.

Setting dimension =

chip guiding element height +30 µm

The maximum axial run-out error should be 2 µm.



4. Tighten the clamping screws (CS 2) to 80 Ncm, loosen again and tighten to 15 Ncm.
5. Tighten the clamping screws (CS 1) to 80 Ncm.
6. Adjust all the inserts to the setting dimension. The maximum axial run-out error should be 2 µm. Tighten the clamping screws (CS 2) to 80 Ncm.
7. A check measurement is to be carried out after 10 minutes. If the axial run-out error is in excess of 2 µm, the inserts must be re-adjusted without loosening the clamping screws.

	Torque (Ncm)	Torx size	Part nr.	Code
Torque wrench fixed	15	Tx 6	20063	0,150
Torque wrench fixed	80	Tx 6	20063	0,800
Bit 6 for clamping screws CS1 / CS2	80	Tx 6	4917	6,000
Bit 8 for clamping element	80	Tx 8	4917	8,000
Bit 6 interchangeable blade	15	Tx 6	20078	6,000
Torque wrench adjustable	10 - 80	Tx 6	20063	0,810

Spare parts

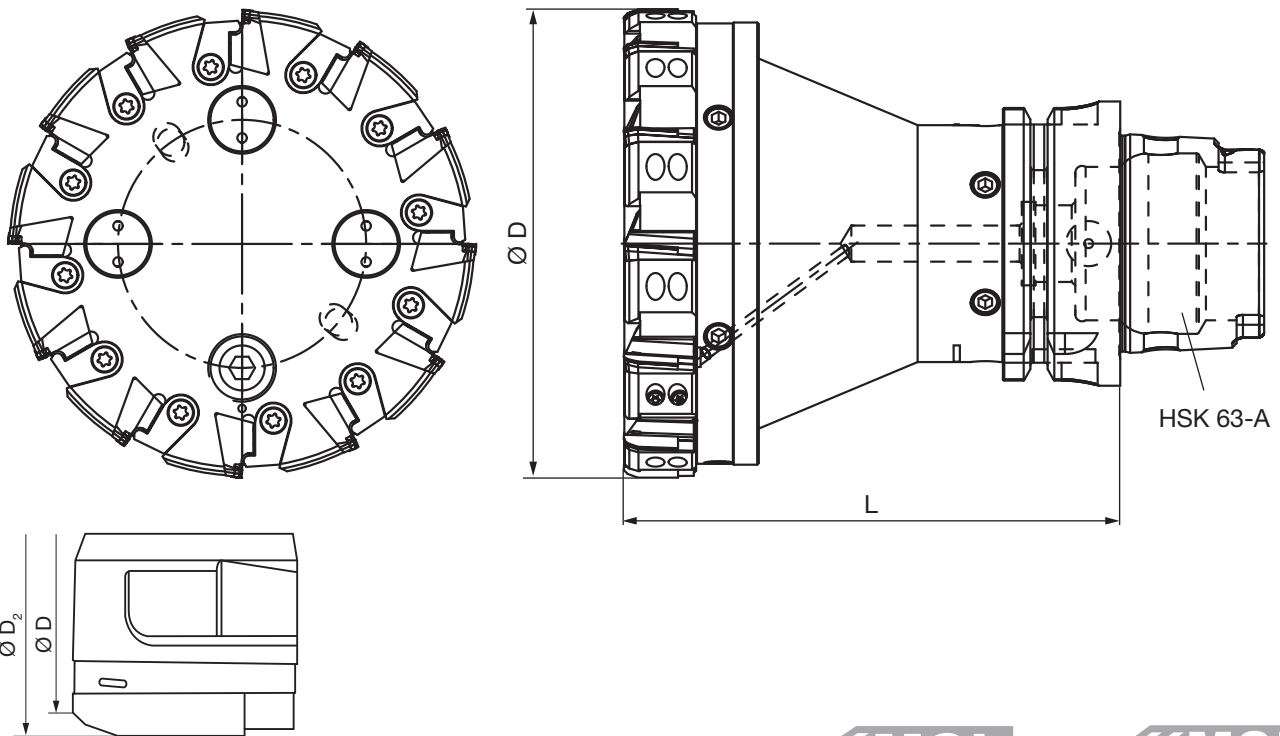
Tool type			Part nr.	Code
Q99...	Clamping screw	CS1 & CS2	20080	3,000
	Adjusting screw	AS	20081	4,000

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!

HPC milling cutters

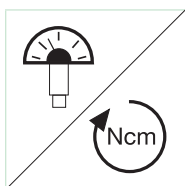
for rough machining



on request

Part nr. 20005								
Code	Drawing nr.	Ø D/mm	Ø D ₂ /mm	teeth	L/mm	max. rev./min	Shank	
63,000	Q 9934-6300 1063 R	63	66.74	6	100	29,000	HSK 63-A	
80,000	Q 9934-8000 1163 R	80	83.74	9	110	23,000	HSK 63-A	
100,000	Q 9934-1000 1163 R	100	103.74	12	110	18,000	HSK 63-A	
125,000	Q 9934-1250 1263 R	125	128.74	15	123	15,000	HSK 63-A	
160,000	Q 9934-1600 1263 R	160	163.74	18	123	12,000	HSK 63-A	

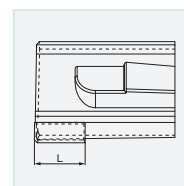
Ordering example: 1 piece Q 9934-6300 1063 R = Ordering number: 20005 63,000



Adjustment
instruction
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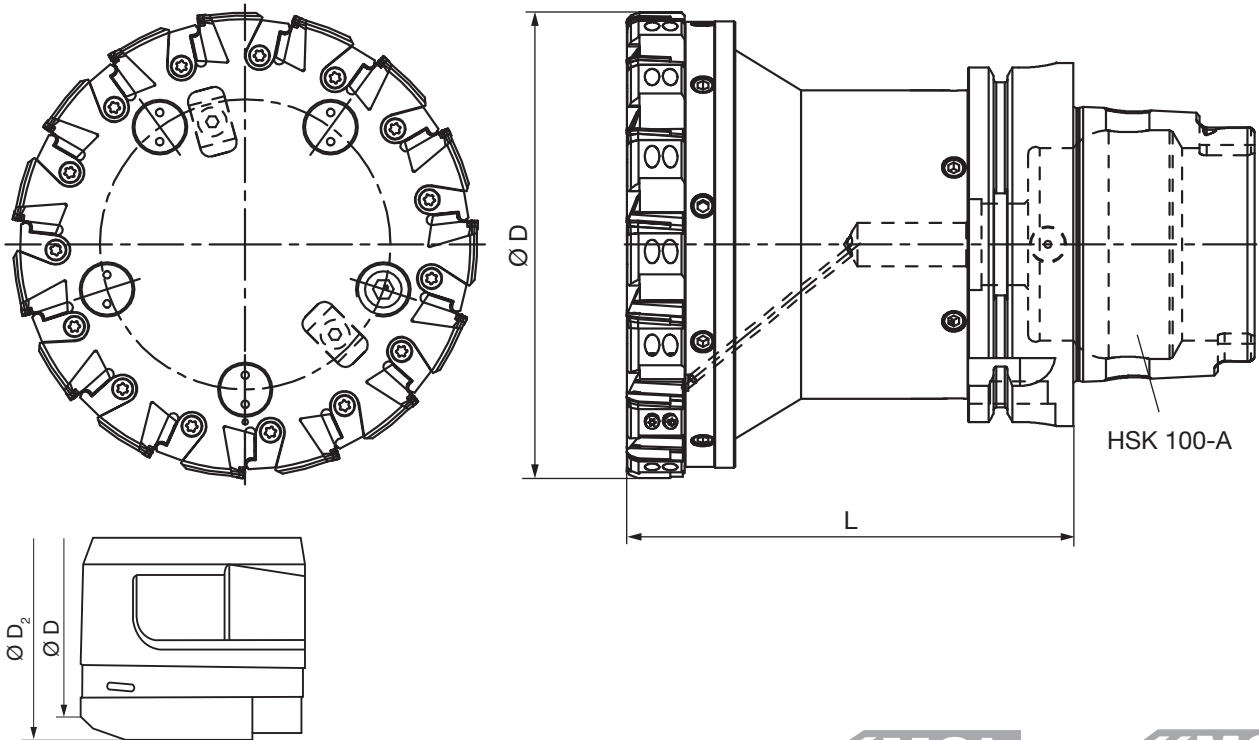
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HPC milling cutters

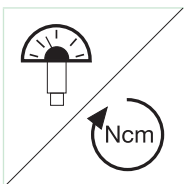
for rough machining



on request

Part nr. 20005	Code	Drawing nr.	Ø D/mm	Ø D ₂ /mm	teeth	L/mm	max. rev./min	Shank
	63,001	Q 9934-6300 1010 R	63	66.74	6	100	29,000	HSK 100-A
	80,001	Q 9934-8000 1110 R	80	83.74	9	110	23,000	HSK 100-A
	100,001	Q 9934-1000 1110 R	100	103.74	12	110	18,000	HSK 100-A
	125,001	Q 9934-1250 1210 R	125	128.74	15	123	15,000	HSK 100-A
	160,001	Q 9934-1600 1210 R	160	163.74	18	123	12,000	HSK 100-A

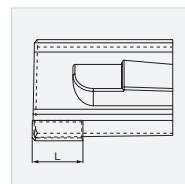
Ordering example: 1 piece Q 9934-6300 1010 R = Ordering number: 20005 63,001



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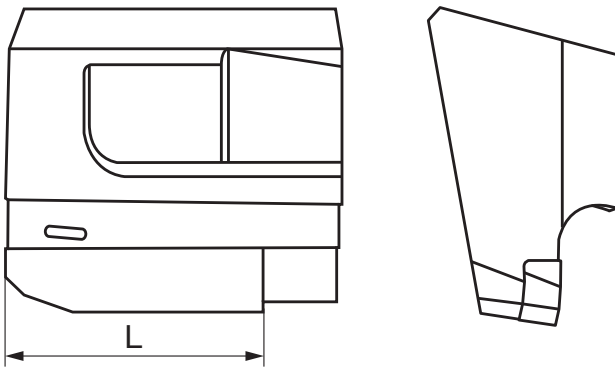


PCD inserts
page 14



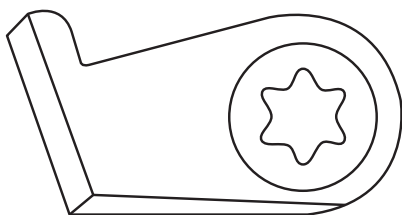
PCD Inserts and spare parts

for rough milling cutters



PCD inserts for HPC rough milling cutters

Part nr.					
20375					
Code	Drawing nr.	R	F	Cutting length L	Tool material
99,340	W 9934-0330 0410 R	--	20°/45°	12	PCD 30
99,341	W 9934-0830 0470 R	0,8	20°	12	PCD 30



Chip guiding element (including clamp screw), CGE set

20075		
Code		Milling cutter diameter/mm
63,000	E63009934	63–160

Spare parts

Clamping screw		Adjustment screw	
Part nr.	Code	Part nr.	Code
20080	3,500	20081	4,000

Adjustment instructions

HPC rough milling cutters

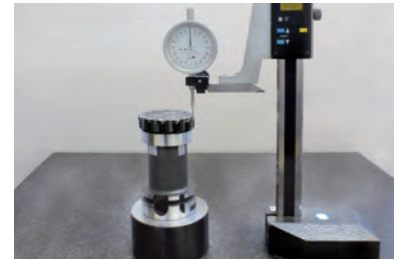


The chip guiding elements are mounted ex works!

1. Determine the highest chip guiding element.

Recommendation:

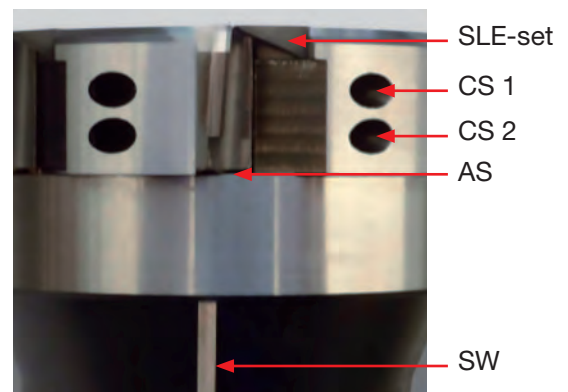
Place milling cutter in a setting fixture and rotate under the dial test indicator and measure the individual guiding elements.



2. Assemble the milling cutter and tighten the clamping screws (CS 1) to 15 Ncm.

Do not tighten the clamping screws (**CS 2**)!

3. Adjust the inserts in longitudinal direction with the adjustment screws (AS) to 10 µm before the setting dimension.



Setting dimension =

chip guiding element height +0.1 mm

The maximum axial run-out error should be 2 µm.

4. Tighten the clamping screws (CS 2) to 120 Ncm, loosen again and tighten to 15 Ncm.
5. Tighten the clamping screws (CS 1) to 120 Ncm.
6. Adjust all the inserts to the setting dimension. The maximum axial run-out error should be 2 µm. Tighten the clamping screws (CS 2) to 120 Ncm.

	Torque (Ncm)	Torx size	Part nr.	Code
Torque wrench fixed	15	Tx 7	20063	0,151
Torque wrench fixed	120	Tx 7/15	20063	0,120
Bit 7 for clamping screws CS1 / CS2	120	Tx 7	4917	7,001
Bit 15 for chip guiding element	120	Tx 15	4917	15,000
Bit 7 interchangeable blade	15	Tx 7	20078	7,000

Spare parts

Tool type			Part nr.	Code
Q99...	Clamping screw	CS1 & CS2	20080	3,500
	Adjusting screw	AS	20081	4,000

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!



HPC milling cutters

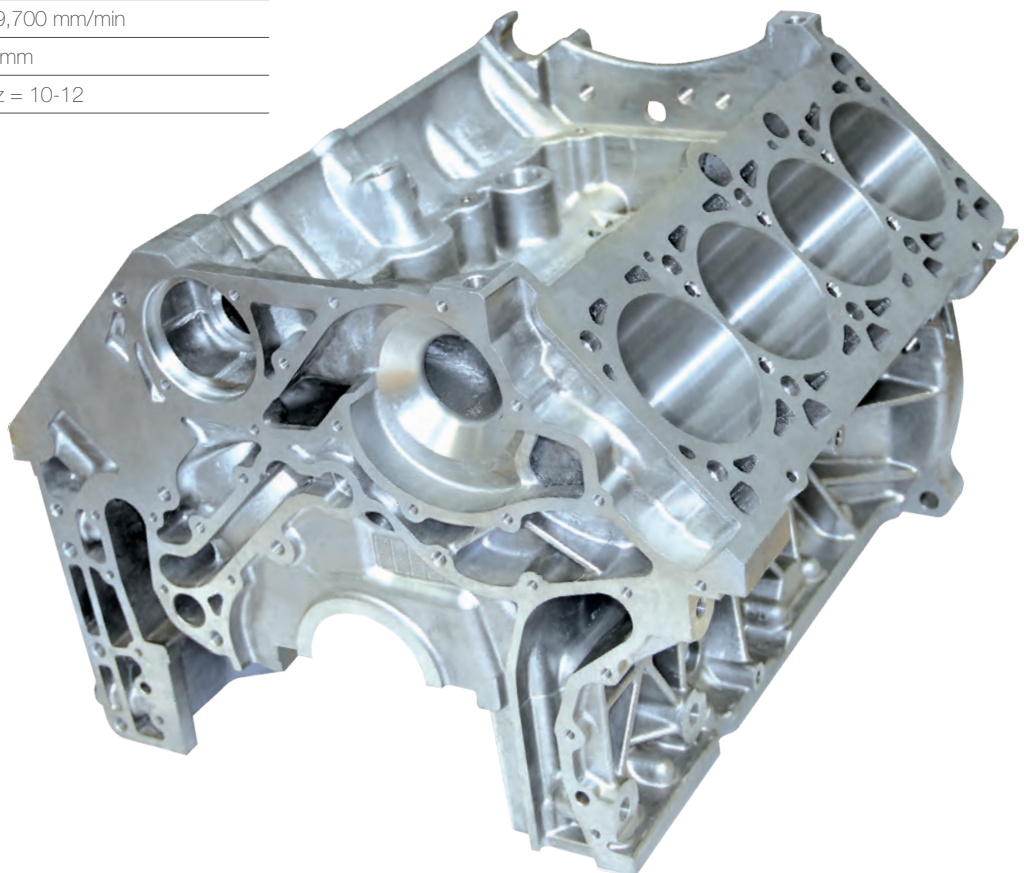
Cutting data recommendations, Application examples

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 10 / PCD 30		W 9930-....	W 9931-....	W 9934-....
21	Aluminium forging alloys	not heat treatable		60	-6000	PCD 10	↓	↓	↓
22		heat treatable/heat treated		100	-6000	PCD 10			
23	Aluminium casting alloys	<12% Si not heat treatable		75	-6000	PCD 10			
24		<12% Si heat treatable/heat treated		90	-6000	PCD 10			
25		>12% Si not heat treatable		130	-2000	PCD 30			

HPC milling cutters for rough machining

Workpiece	Engine block – end face
Material	G-AlSi11...
Tools	HPC milling cutter, D = 80 mm, Z = 9, HSK 100-A
Cutting speed	$v_c = 3,770$ m/min
Revolution	$n = 15,000$ rev./min
Feed per tooth	0.22 mm
Feed rate	29,700 mm/min
Cutting depth	6 mm
Achieved surface finish quality	$R_z = 10-12$



HPC milling cutters

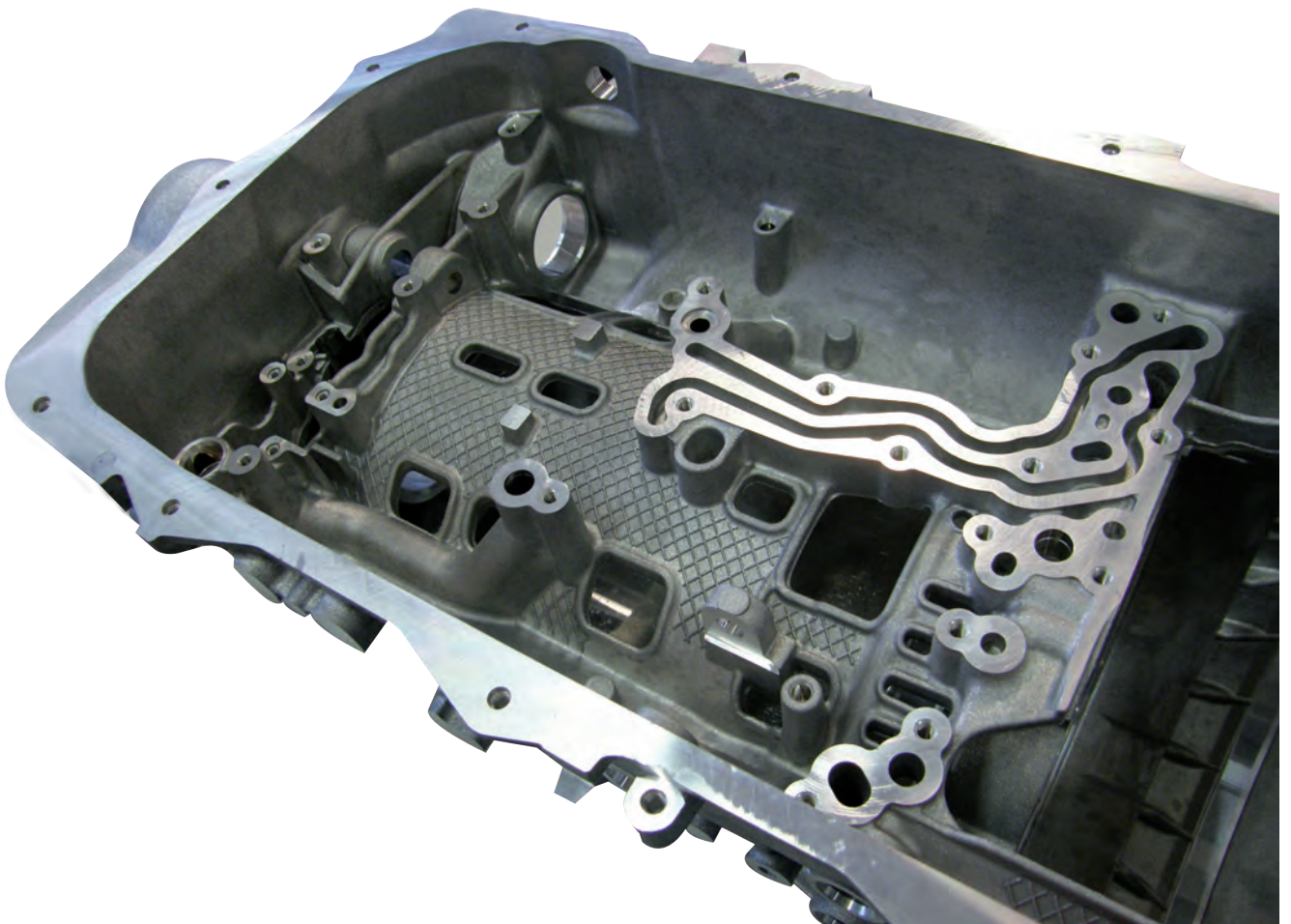
Application examples



HPC milling cutters for finish machining

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	$vc = 2,970$ m/min
Revolution	$n = 15,000$ 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



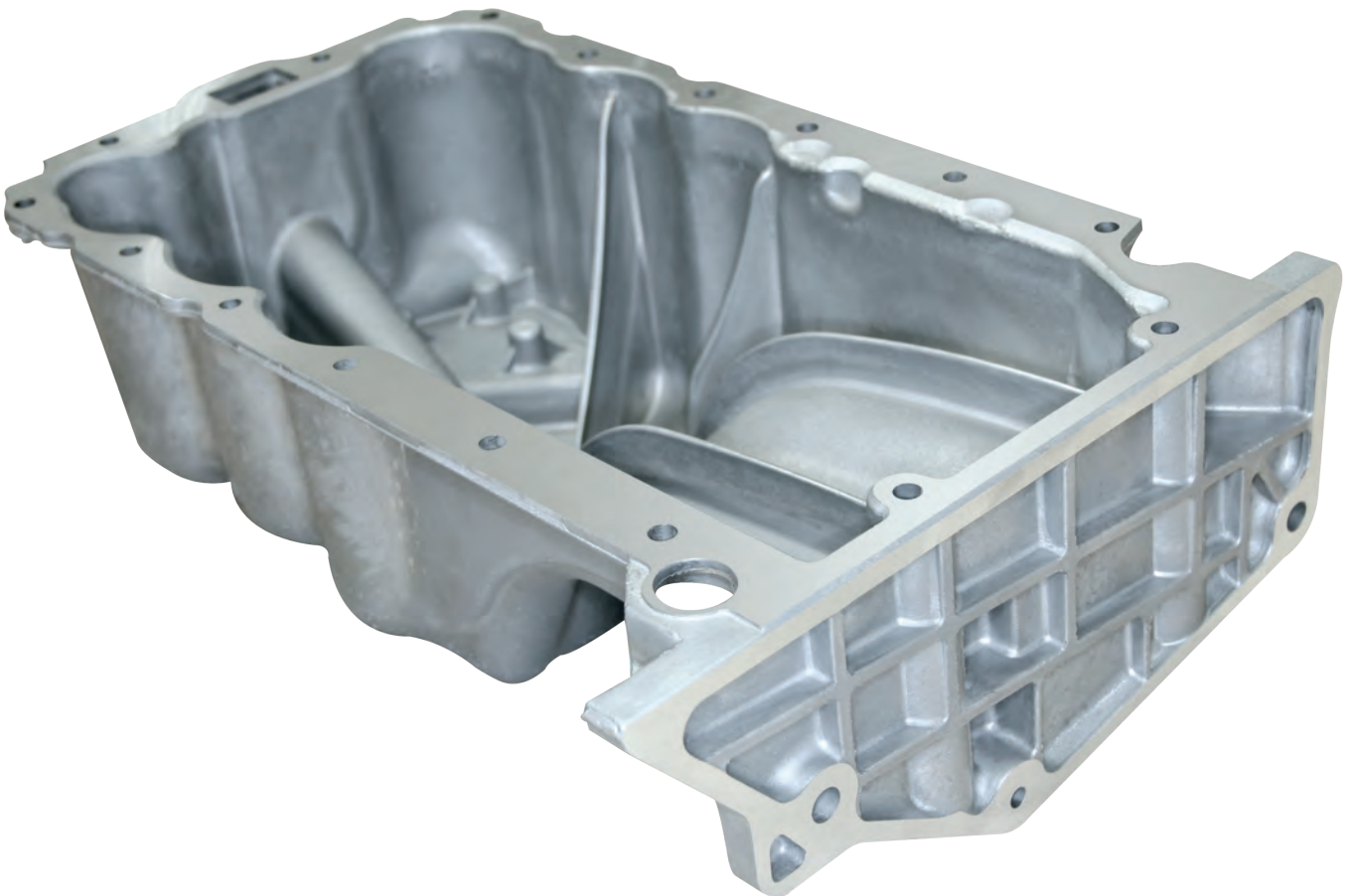
HPC milling cutters

Application examples

HPC milling cutters for finish machining

Sealing surface milling with defined roughness

Workpiece	Oil sump
Material	GD-AISI8...
Tools	HPC milling cutter, dia. = 63 mm, no. of cutting edges = 12, HSK 63-A
Cutting speed	$vc = 1,819 \text{ m/min}$
Revolution	$n = 9,500 \text{ rev/min}$
Feed per tooth	0.16 mm
Feed rate	18,240 mm/min
Achieved surface finish quality	$Rz = 15$



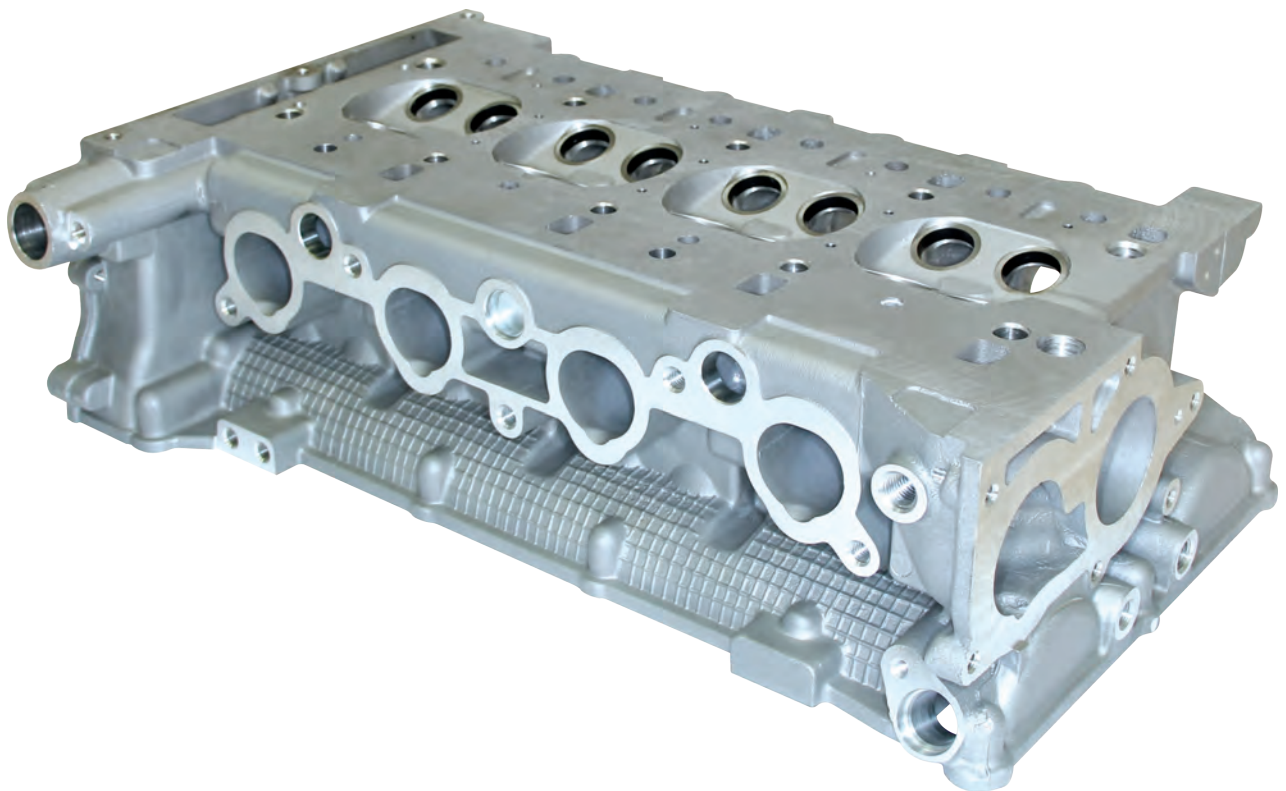
HPC milling cutters

Application examples



HPC milling cutters for finish machining

Workpiece	Cylinder head – fire face
Material	G-AISI9...
Tools	HPC milling cutter, D = 125 mm, Z = 27, HSK 63-A
Cutting speed	$v_c = 5,890$ m/min
Revolution	$n = 15,000$ U/min
Feed per tooth	0.15 mm
Feed rate	60,000 mm/min
Achieved surface finish quality	$R_z = 2-4$



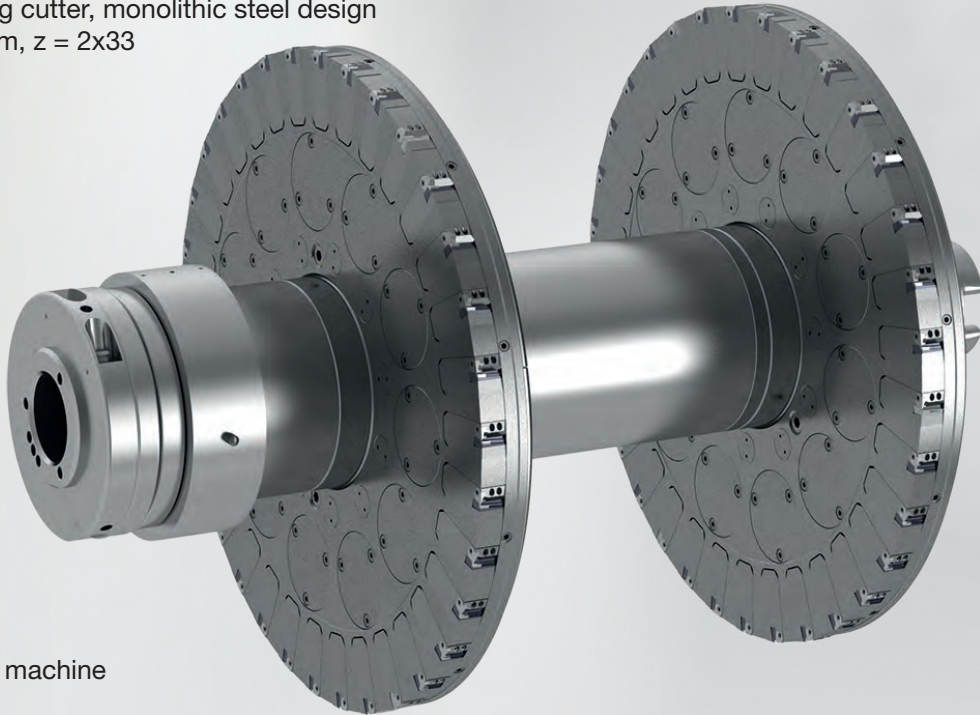


HPC milling cutter

Special tooling for customer applications

Example 1:

HPC gang milling cutter, monolithic steel design
Diameter 380 mm, $z = 2 \times 33$



Application:
Valve plate
mill on a special machine

Example 2:

„Bar cutter“ for limited space in the tool magazine
Diameter 226 mm, no. of cutting edges = 2×2 , HSK 63-A



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

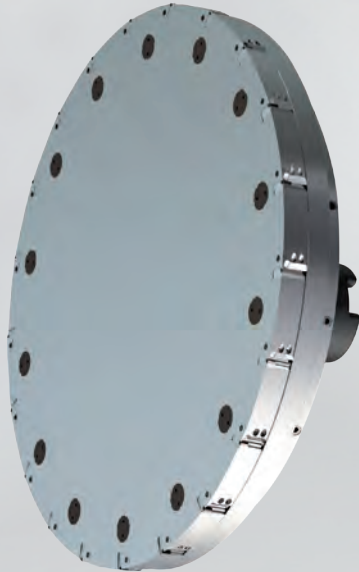
HPC milling cutters



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

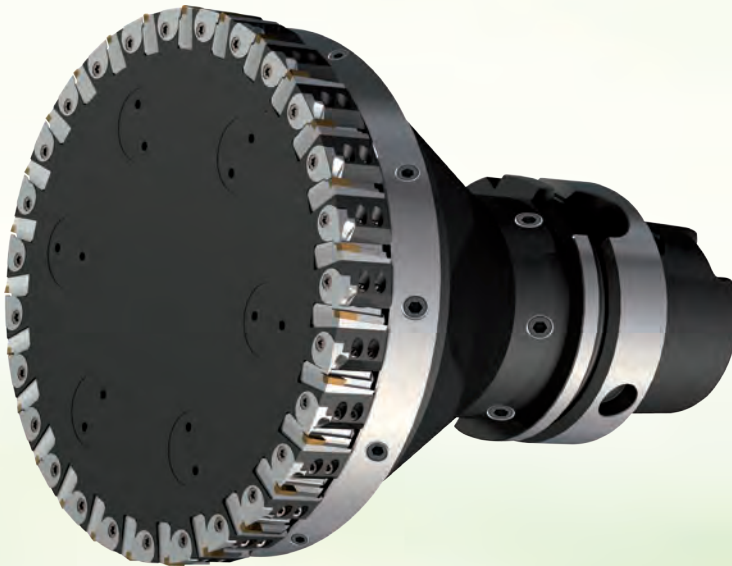


Application:
Housing machining on a special purpose machine

H HPC milling cutter for MQL machining

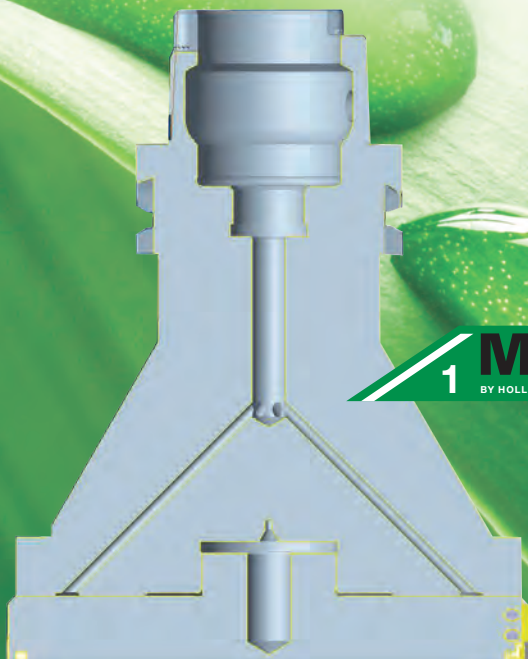
MQL machining - Technique and advantages

- 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

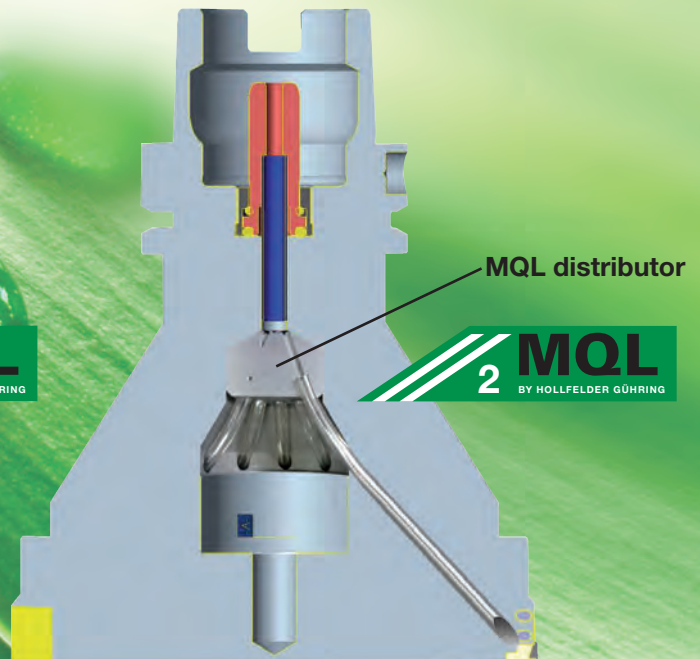


Hollfelder-Gühring HPC milling cutters are in principle suitable for MQL machining

Catalog standard



Customized solutions



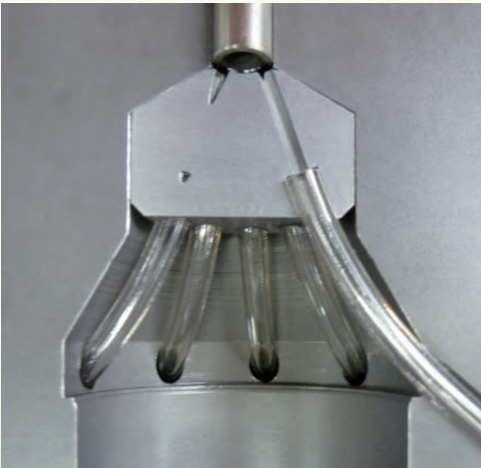
HPC milling cutter

for MQL machining

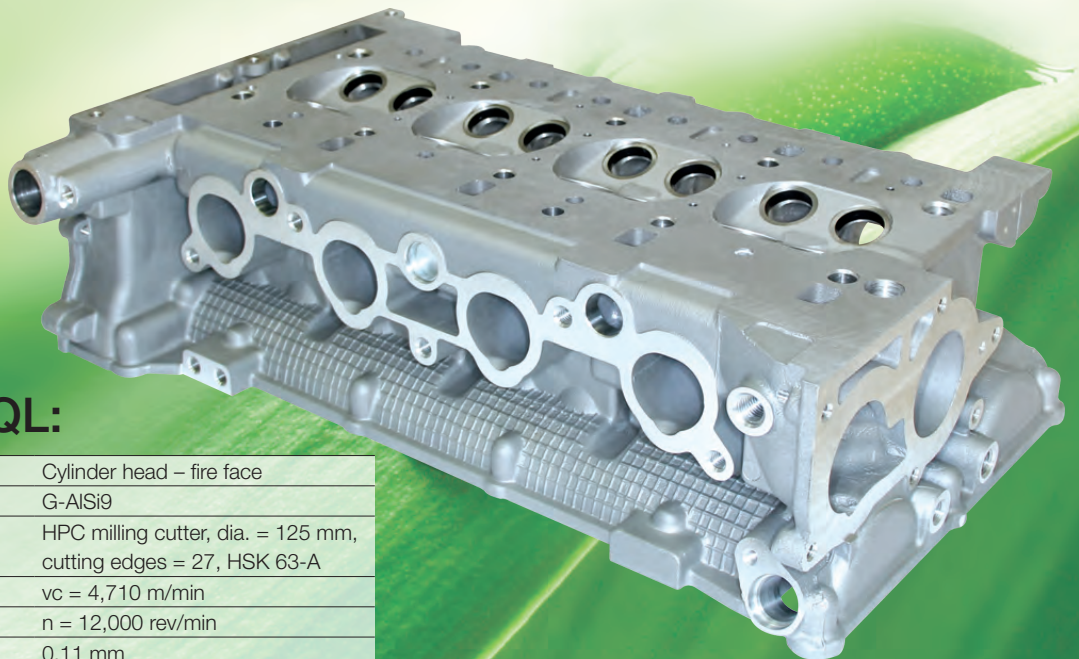
MQL distributor

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-AISI9
Tools	HPC milling cutter, dia. = 125 mm, cutting edges = 27, HSK 63-A
Cutting speed	$v_c = 4,710$ m/min
Revolution	$n = 12,000$ 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

page 26-27



End milling cutters

page 28

Face milling cutters

as shell milling cutter

page 29



Milling arbors

page 30-33



Face milling cutters

as monoblock milling cutter

page 34-35



Disc milling cutters

page 36-39



Inserts

Features

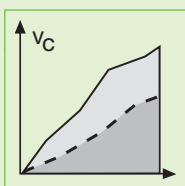
page 40-41

Insert program

from page 42

Regeneration service

page 46



Application recommendations

page 47-53

Adjustment instructions and security advice

page 54



Spare parts

page 55

Profitability calculation

page 56

Application examples

page 57



Form „Request for special tooling“

page 148



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.

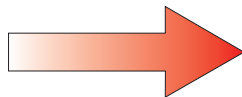
This system can be applied on the most different materials and impresses with good handling and reliable tension of the cutting edges.

The features:

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

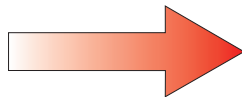
Advantages in the use of these tools:

High feed rates due to a high number of inserts



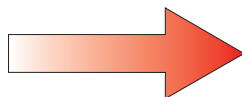
...lead to an essential increase in productivity

Very good face and radial run out accuracies



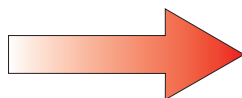
...lead to extremely high tool life and excellent surface qualities

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



...which reduce non-productive times

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



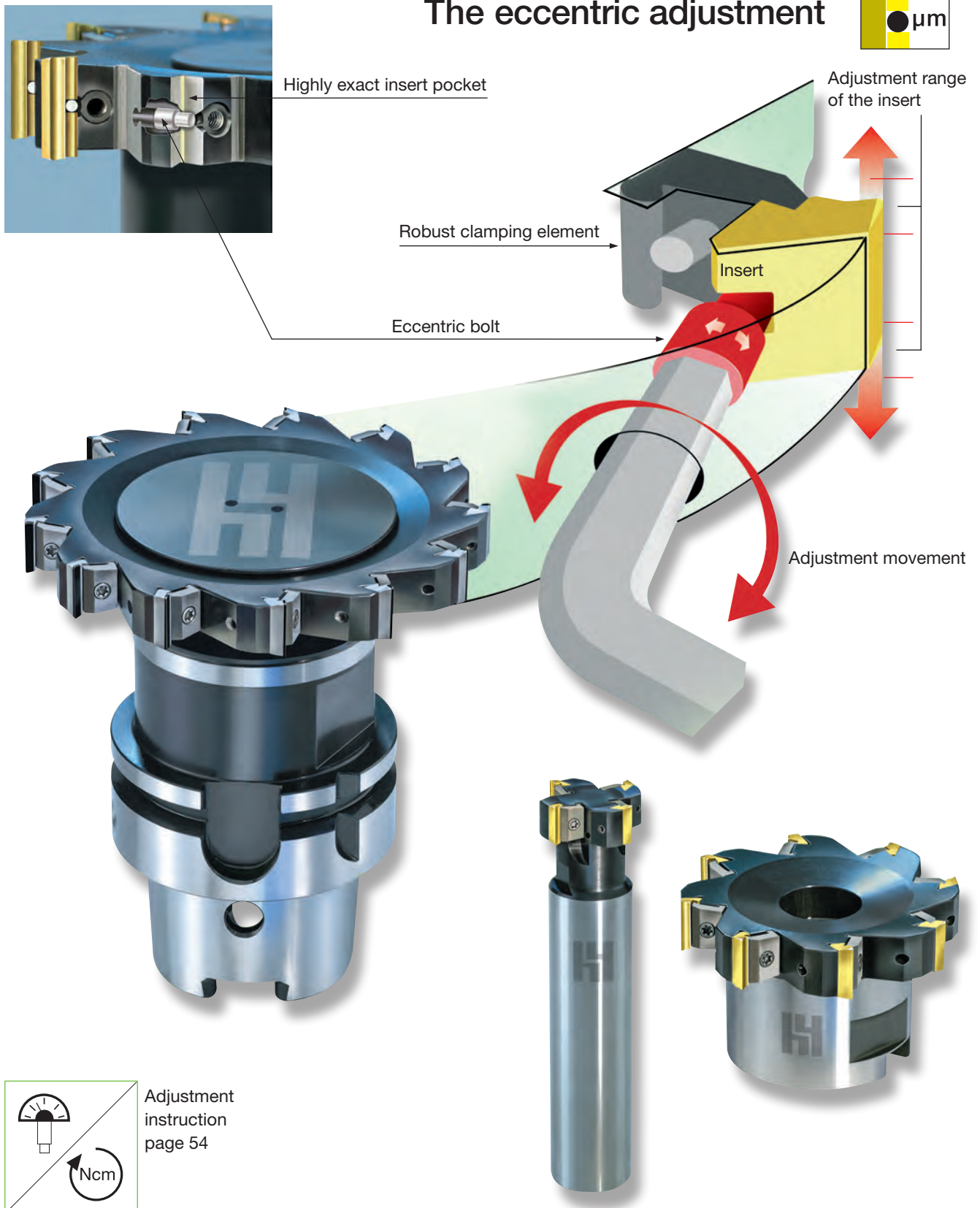
...thus a trilateral machining is possible



Milling cutters

axial μm -accurate adjustable with eccentric adjustment

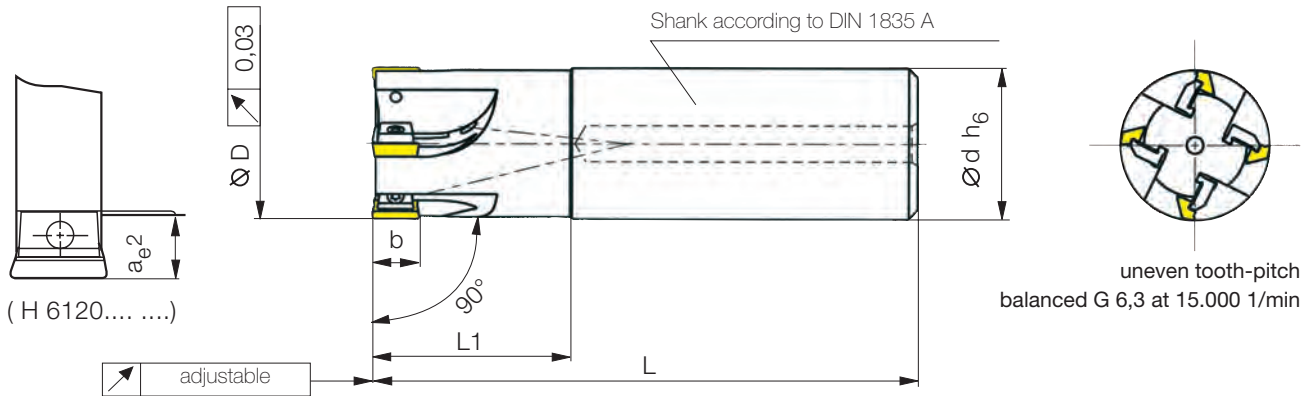
The eccentric adjustment



H End milling cutters

axial μm -accurate adjustable

Central coolant supply directly to all inserts



Part nr. 20000		Code	Drawing nr.	Ø D	teeth	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 7 mm see page 44

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

● ex stock

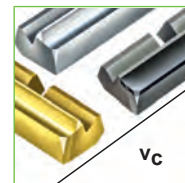
Ordering example: 1 piece H 6120-3200 7025 R = Ordering number: 20000 32,000



Spare parts
page 55



Form „Request
for customer
specific tools“
page 148



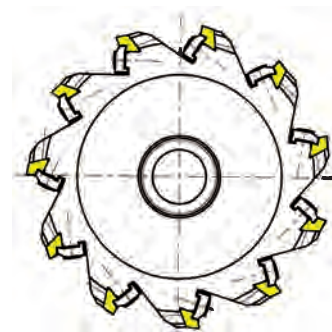
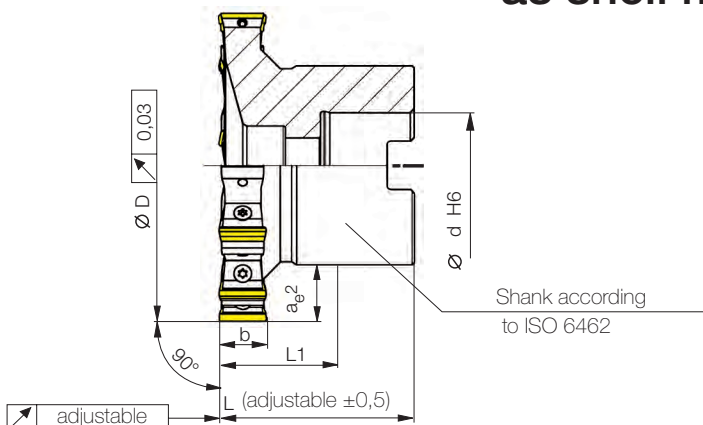
Geometry and
grade selection
pages 47-48

Face milling cutters

axial μm -accurate adjustable



as shell milling cutter



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

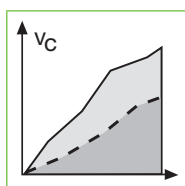
Part nr. 20001	Code	Drawing nr.	Ø D	teeth	b	Ø d	L ₁	L	a ₂	max. RPM	Weight (kg)	Inserts
Light and medium machining												
	40,000	H 6120-4000 4016 R	● 40	5	12 / 7*	16	24	40	4.5	48.000	0.20	W 612...N/R/L
	50,000	H 6120-5000 4022 R	● 50	7	12 / 7*	22	40	40	3.5	45.000	0.30	
	63,000	H 6120-6300 4022 R	● 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	

* PCD-inserts with cutting length of 7mm see page 44

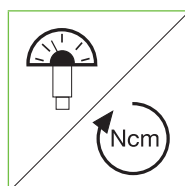
* Central clamping screw for shell milling cutter has to be ordered separately if needed! (see page 55)

● ex stock

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



Application recommendations pages 49-53



Adjustment instruction page 54



Central clamping screw*

for clamping and coolant distribution
FKS
see page 55

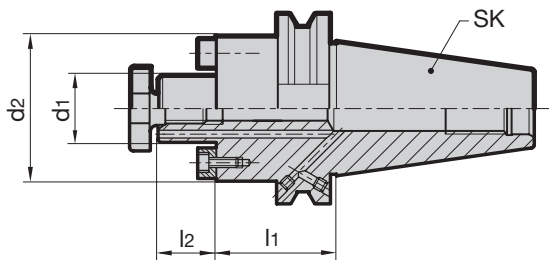
H ISO taper milling arbors

Product information

- to hold face milling cutters
- balancing quality: G6.3 / 15,000 rev./min
- ISO taper to DIN ISO 7388-1 form AD/AF
- internal cooling centrally through the mandrel and over the collar; therefore process and tool life improvement
- coolant supply form AD/AF
- bore-Ø 40 mm has four additional holes with internal thread for milling heads with tool attachment DIN 2079 and increased tight fitting diameter d2

Scope of delivery

- incl. milling retainer screw
part no. 4908 and driving keys



Part nr. 4231	Code	SK	arbor-Ø d1 mm	d2 mm	l1 mm	l2 mm	kg	Availability
16,040	40	40	16	38	35	17	1.03	●
22,040	40	40	22	48	35	19	1.13	●
27,040	40	40	27	58	40	21	1.43	●
32,040	40	40	32	78	50	24	1.73	●
40,040	40	40	40	88	50	27	2.23	●
22,050	50	50	22	48	35	19	2.89	●
27,050	50	50	27	58	40	21	3.19	●
32,050	50	50	32	78	50	24	3.81	●
40,050	50	50	40	88	50	27	4.15	●

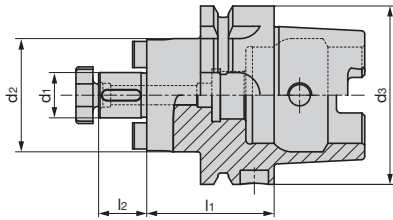
Note:

To mount the Hollfelder milling cutters, the corresponding central coolant supply **FKS** to be used! (see page 55)
The balancing accuracy has to be tested in the assembled state!

HSK-A shell milling arbors

Product information

- to hold shell mills DIN 841, arbor-type single angle cutters DIN 842 with keyway, shell mills DIN 1880 with keyway an milling cutters with inserts DIN 1830
- bore-Ø 40 and 50 mm has four additional holes with internal thread for milling heads with tool attachment DIN 2079
- HSK-A to ISO 12164-1/DIN 69893-1
- internal cooling centrally through the mandrel



Scope of delivery

- completely assembled with milling cutter retaining screw, Part no. 4908, drive dogs, Part no. 4922 and feather key Part no. 4923

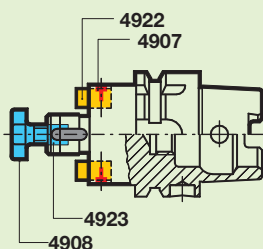


Part nr. 4361							
Code	HSK-A d3	arbor-Ø d1	d2	l1	l2	kg	Availability
		mm	mm	mm	mm		
16,032	32	16	40	45	17	0.27	●
22,032	32	22	50	50	19	0.40	●
16,040	40	16	40	45	17	0.40	●
22,040	40	22	50	50	19	0.50	●
16,050	50	16	40	45	17	0.60	●
22,050	50	22	50	50	19	0.80	●
27,050	50	27	60	55	21	1.00	●
16,063	63	16	40	45	17	0.90	●
22,063	63	22	50	50	19	1.00	●
27,063	63	27	60	55	21	1.30	●
32,063	63	32	78	55	24	1.60	●
40,063	63	40	89	60	27	2.10	●
16,080	80	16	40	45	17	2.10	●
22,080	80	22	50	50	19	2.30	●
27,080	80	27	60	55	21	2.50	●
32,080	80	32	78	55	24	2.60	●
40,080	80	40	89	60	27	3.40	●
22,100	100	22	50	50	19	2.50	●
27,100	100	27	60	55	21	2.80	●
32,100	100	32	78	55	24	3.10	●
40,100	100	40	89	60	27	3.70	●
50,100	100	50	120	70	30	5.60	●

Note:

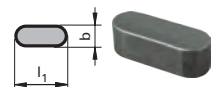
To mount the Hollfelder milling cutters, the corresponding central coolant supply **FKS** to be used! (see page 55)
The balancing accuracy has to be tested in the assembled state!

Positioning of accessories



Feather keys DIN 6885 A Scope of delivery

- minimum order quantity 10



Part nr. 4923				
Code	for arbor-Ø	l1	b	Availability
	mm	mm	mm	
4,016	16	14	4	●
6,022	22	16	6	●
7,027	27	19	7	●
8,032	32	22	8	●
10,040	40	25	10	●
12,050	50	28	12	●



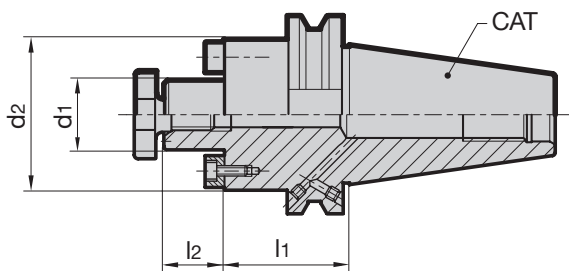
Milling arbors CAT

Product information

- to hold face milling cutters
- balancing quality: G6.3 / 15,000 rev./min
- CAT to ASME B5.50
- internal cooling centrally through the mandrel and over the collar
- coolant supply form AD/AF
- bore-Ø 40 mm has four additional holes with internal thread for milling heads with tool attachment DIN 2079 and increased tight fitting diameter D2

Scope of delivery

- incl. cylindrical screw DIN EN ISO 4762 part no. 4907
- incl. milling retainer screw part no. 4908 and driving keys



Part nr. 4222	Code	CAT	arbor-Ø d ₁ h6	d ₂	l ₁	l ₂	kg	Availability
			mm	mm	mm	mm		
16,040		40	16	38	35	17	1.03	●
22,040		40	22	44	35	19	1.13	●
27,040		40	27	50	40	21	1.43	●
32,040		40	32	78	50	24	1.73	●
40,040		40	40	89	50	27	2.23	●
16,050		50	16	38	35	17	2.79	●
22,050		50	22	48	35	19	2.89	●
27,050		50	27	60	40	21	3.19	●
32,050		50	32	78	50	24	3.81	●
40,050		50	40	89	50	27	4.15	●

Note:

To mount the Hollfelder milling cutters, the corresponding central coolant supply **FKS** to be used! (see page 55)
The balancing accuracy has to be tested in the assembled state!

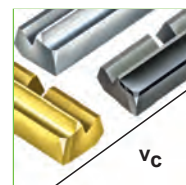
● ex stock



Spare parts
page 55



Form „Request
for customer
specific tools“
page 148



Geometry and
grade selection
pages 47-48

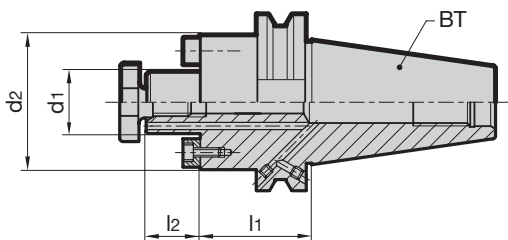
MAS/BT milling arbors

Product information

- to hold face milling cutters
- balancing quality: G6.3 / 15,000 rev./min
- MAS/BT to DIN ISO 7388-2 form JD/JF
- internal cooling centrally through the mandrel and over the collar; therefore process and tool life improvement
- coolant supply form JD/JF (* BT30 version JD without coolant supply over collar)
- clamping-Ø 40 with 4 additional tapped holes to hold milling heads with tool attachment DIN 2079 and larger contact-Ø d2

Scope of delivery

- incl. milling retainer screw part no. 4908 and driving keys
- BT-50 on request

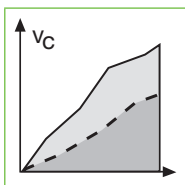


Part nr. 4230	Code	BT	arbor-Ø d1	d2	l1	l2	kg	Availability
			mm	mm	mm	mm		
16,030		30*	16	38	40	17	0.64	●
22,030		30*	22	48	40	19	0.74	●
27,030		30*	27	58	40	21	1.04	●
32,030		30*	32	78	50	24	1.34	●
16,040		40	16	38	40	17	1.03	●
22,040		40	22	48	40	19	1.13	●
27,040		40	27	58	40	21	1.43	●
32,040		40	32	78	50	24	1.73	●
40,040		40	40	88	50	27	2.23	●

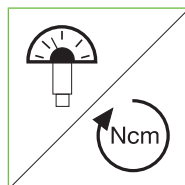
Note:

To mount the Hollfelder milling cutters, the corresponding central coolant supply **FKS** to be used! (see page 55)
The balancing accuracy has to be tested in the assembled state!

● ex stock



Application recommendations pages 49-53



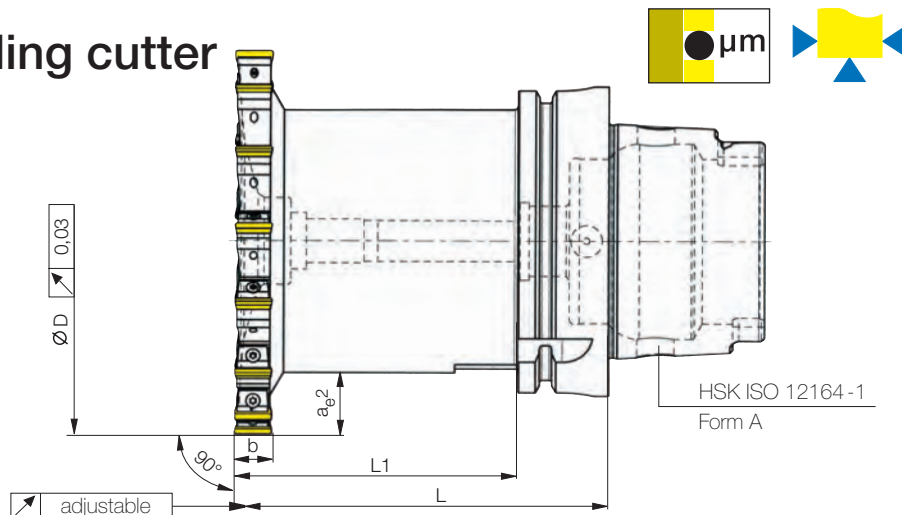
Adjustment instruction page 54



H Face milling cutters

axial μm -accurate adjustable

as monoblock milling cutter



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

* PCD-inserts with cutting length of 7 mm see page 44

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

● ex stock

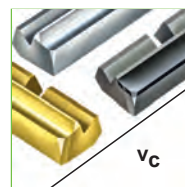
Ordering example: 1 piece H 6120-3200 6032 R = Ordering number: 20002 32,000



Spare parts
page 55



Form „Request
for customer
specific tools“
page 148



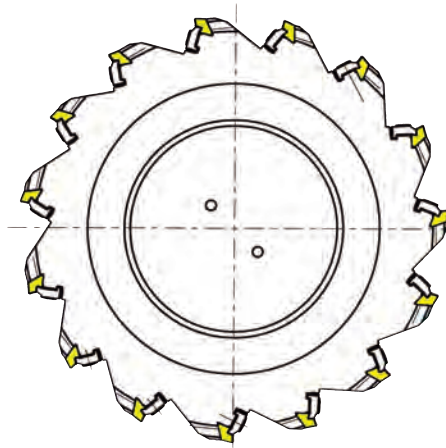
Geometry and
grade selection
pages 47-48

Face milling cutters

axial μm -accurate adjustable



as monoblock milling cutter



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

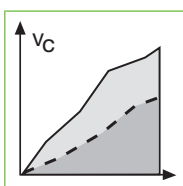
Part nr. 20002	Code	Drawing nr.	HSK	Ø D	teeth	b	L ₁	L	a _{e2}	max. RPM	Weight (kg)	Inserts
Light and medium machining												
	40,004	H 6120-4000 1210 R	● 100	40	5	12 / 7*	57	120	5.4	48.000	2.90	W 612... N/R/L
	50,004	H 6120-5000 1210 R	● 100	50	7	12 / 7*	49	120	9	45.000	3.20	
	63,002	H 6120-6300 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 44

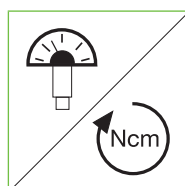
On request all tools are also available as left-hand cutting version!

● ex stock

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



Application recommendations
pages 49-53



Adjustment instruction
page 54



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 54.

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.

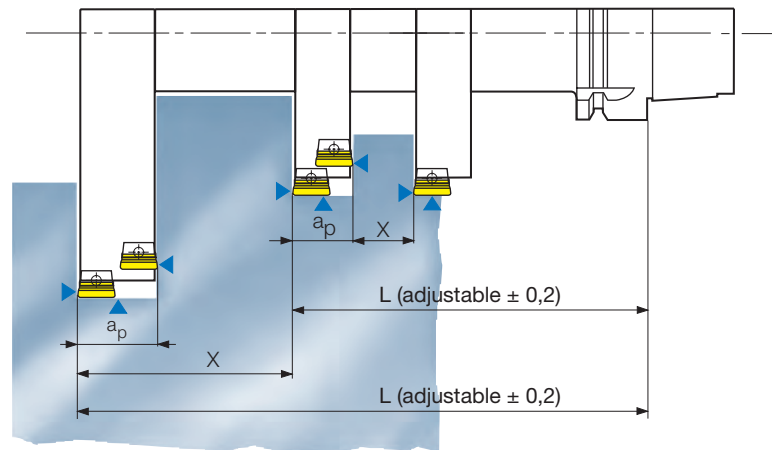
The features:

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

In gang milling cutters

standard-inserts are applicable
trilateral

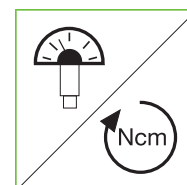
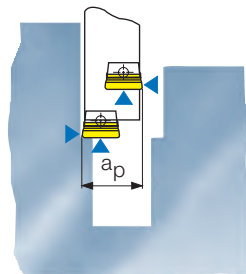
Total length adjustable (L)
Width adjustable (a_p)
Position of the inserts
adjustable (X)



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 $\pm 0,2$



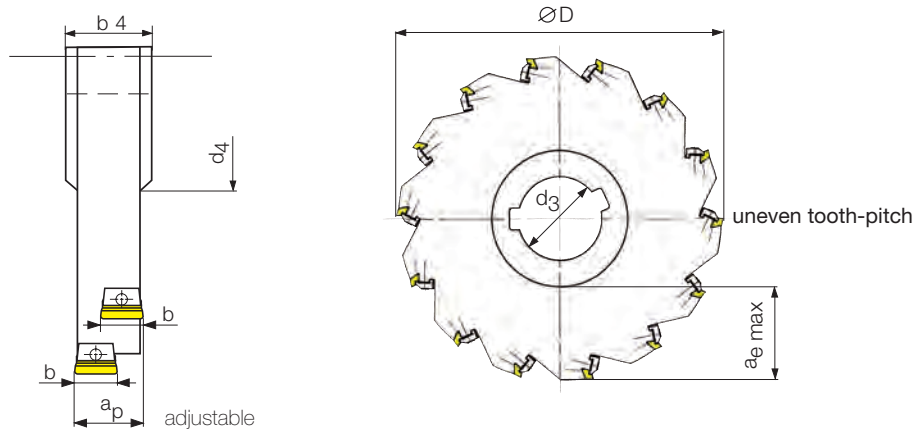
Adjustment
instruction
page 54

Side milling cutters

axial μm -accurate adjustable



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



Part nr. 20003	Code	Drawing nr.	$\varnothing D$	teeth	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 44

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

○ in short time available

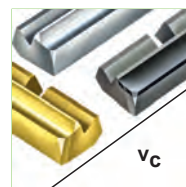
Ordering example: 1 piece H 3108-8000 0827 N = Ordering number: 20003 80,000



Spare parts
page 55



Form „Request
for customer
specific tools“
page 148

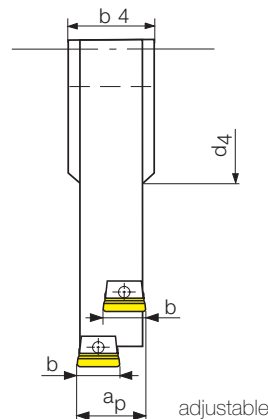


Geometry and
grade selection
pages 47-48

H Side milling cutters

axial μm -accurate adjustable

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



Part nr. 20003	Code	Drawing nr.	$\varnothing D$	teeth	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 44

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

○ in short time available

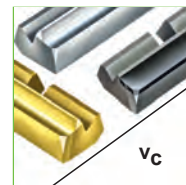
Ordering example: 1 piece H 3108-1250 0840 N = Ordering number: 20003 125,000



Spare parts
page 55



Form „Request
for customer
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page 148



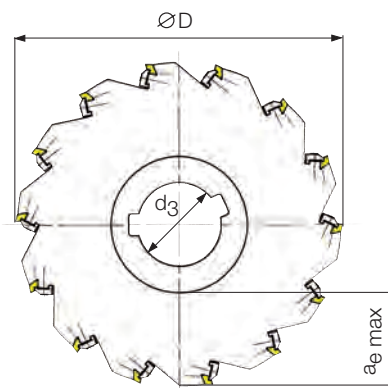
Geometry and
grade selection
pages 47-48

Side milling cutters

axial μm -accurate adjustable



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



uneven tooth-pitch

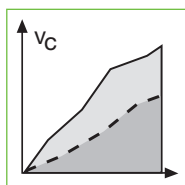
Part nr. 20003	Code	Drawing nr.		$\varnothing D$	teeth	Z_{eff}	a_p	b	$a_{e\text{max}}$	d_3	d_4	b_4	Inserts
	160,004	H 6120-1600 1240 N	○	160	18	9	12.2	12 / 7*	44	40	58	14	W 612...N/R/L
	160,005	H 6120-1600 1440 N	○	160	18	9	14	12 / 7*	44	40	58	16	↓
	160,006	H 6120-1600 1640 N	○	160	18	9	16	12 / 7*	44	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	
	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 44

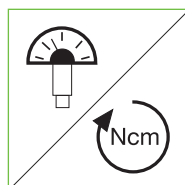
Special measurements e.g. from 5 mm onward can be delivered on request

○ in short time available

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



Application recommendations pages 49-53



Adjustment instruction page 54

...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 47. Further you can find cutting data recommendations in the table on page 49.

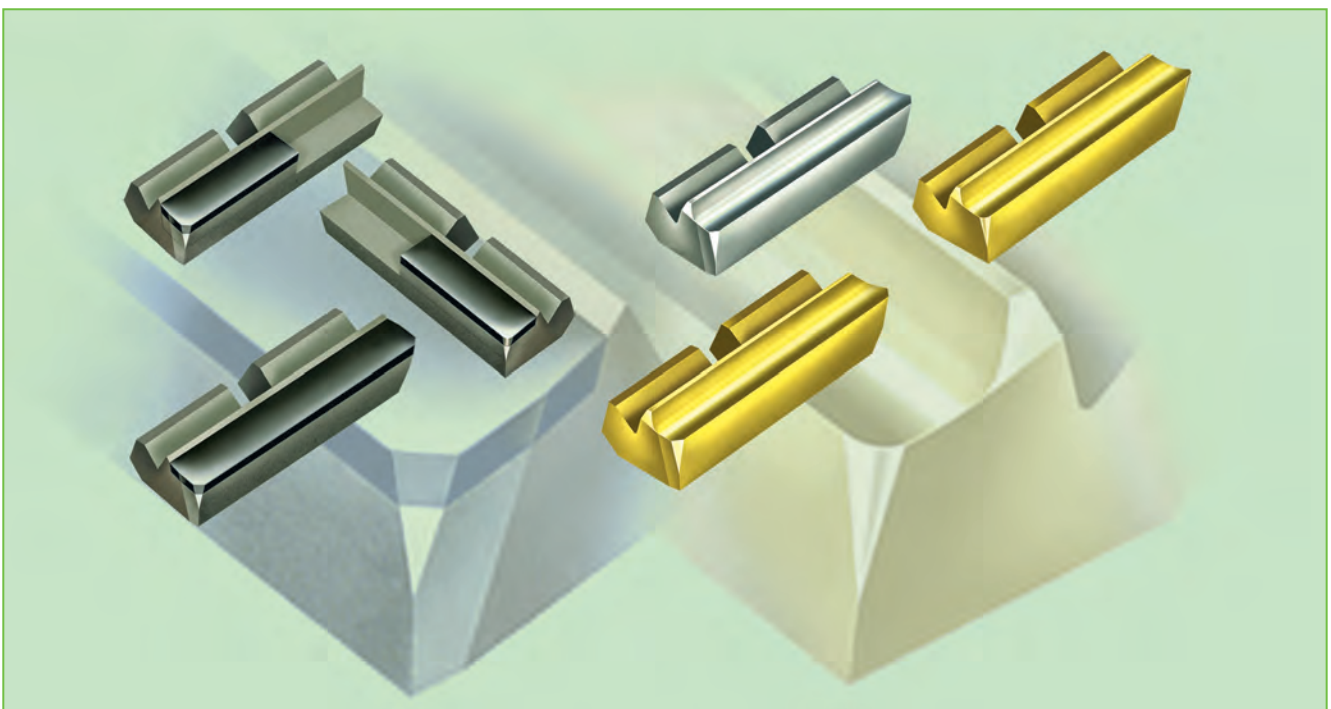
Our application recommendations

from page 47 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.

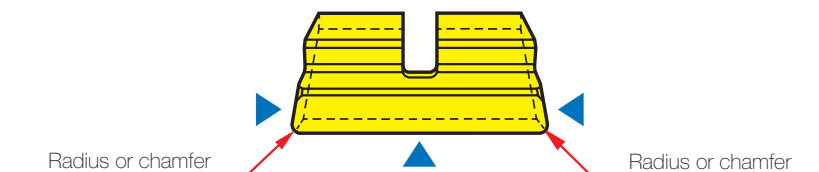
Especially wiper geometries lead to a better surface finish, higher feed rates along with constant high precision and reduced machining times.

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



Specific features:

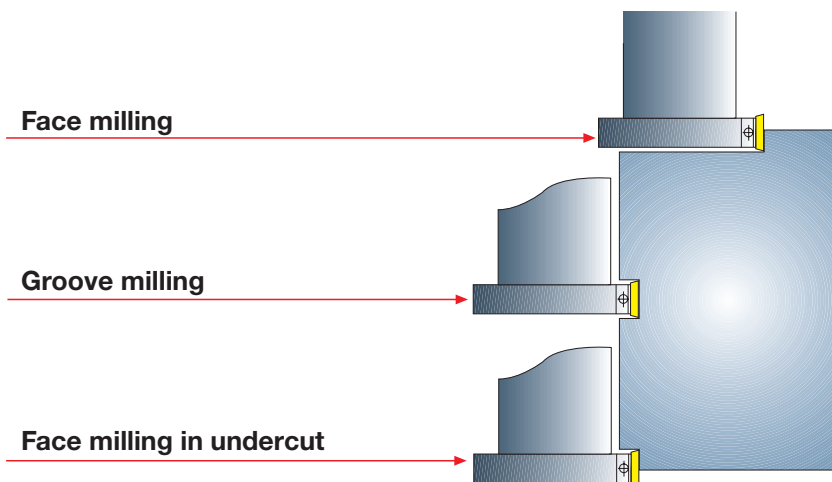
An essential advantage of the milling cutters inserts is the peripherie-ground geometry for the types W 3108-... / W 6120-N (N = neutral type, trilateral cutting)



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.

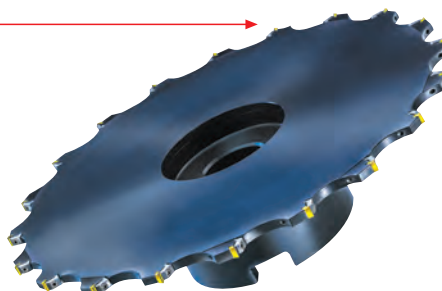
Inserts (W 3108- / W 6120-... ..N) in neutral type enable



or the application of the same inserts in side milling cutters

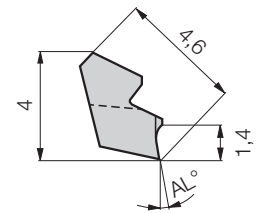
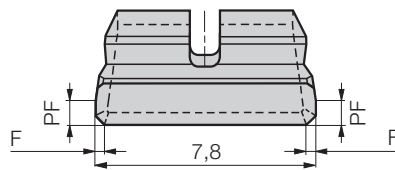
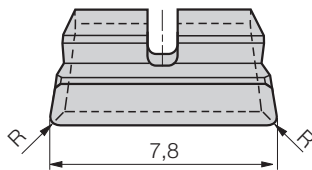
Our standard inserts are available ex stock with:

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



Insert W 3108-..... .. N

Carbide / carbide coated / PCD

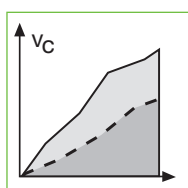


with radius (R) or with chamfer (F) and wiper geometry (PF)

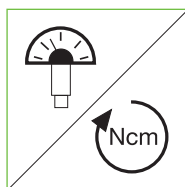
Carbide						Part nr. 20295	Part nr. 20494	Part nr. 20496	Part nr. 20498
						uncoated	coated	coated	coated
Code	Drawing nr.	R	AL°	F	PF	K10	G12	G16	G26
31,080	W 3108-0314 1645 N		16	0.3x45°	0,9	●	○	○	○
31,081	W 3108-0414 1620 N	0.4	16			●	○	○	○
31,082	W 3108-0314 1045 N		10	0.3x45°	0,9	○	●	●	●
31,083	W 3108-0414 1000 N	0.4	10			○	●	●	●
PCD						Part nr. 20299	Part nr. 20300		
Code	Drawing nr.	R	AL°	F	PF	PCD 10	PCD 30		
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

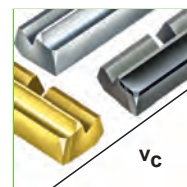
Ordering example: 1 piece W 3108-0314 1645 N K10 = Ordering number: 20295 31,080



Application recommendations
pages 49-53

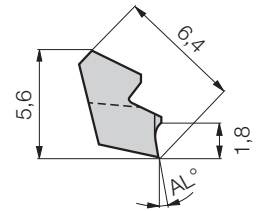
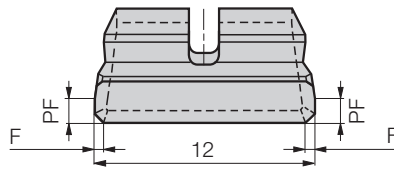
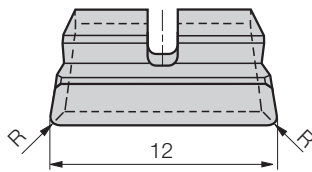


Adjustment instruction
page 54



Geometry and grade selection
pages 47-48

Insert W 6120-..... N Carbide / carbide coated / PCD



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

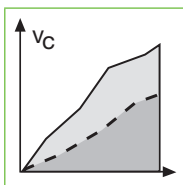
Carbide						Part nr. 20305	Part nr. 20499	Part nr. 20501	Part nr. 20503
						uncoated	coated	coated	coated
Code	Drawing nr.	R	AL°	F	PF	K10	G12	G16	G26
61,200	W 6120-0318 1645 N		16	0,3x45°	1	●	○	○	○
61,201	W 6120-0418 1620 N	0,4	16			●	○	○	○
61,202	W 6120-0318 1045 N		10	0,3x45°	1	○	●	●	●
61,203	W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

PCD						Part nr. 20309	Part nr. 20310
						PCD 10	PCD 30
Code	Drawing nr.	R	AL°	F	PF		
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			●	○

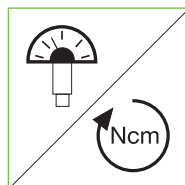
						Part nr. 20390
						PCD 10
Code	Drawing nr.	R	AL°	F	PF	
61,201	W 6120-0118 6245 R		6	0,1x45°	1,8	●

● ex stock ○ in short time available

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



Application recommendations
pages 49-53

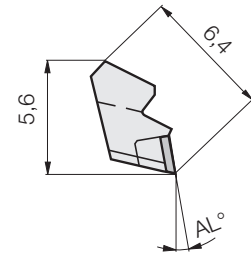
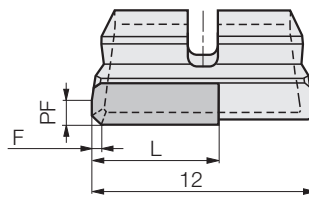
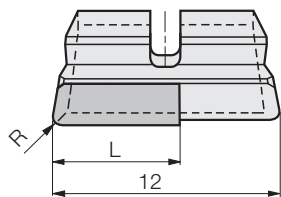


Adjustment instruction
page 54



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

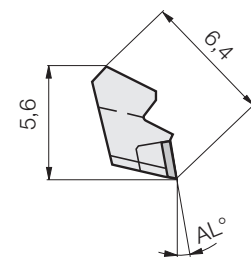
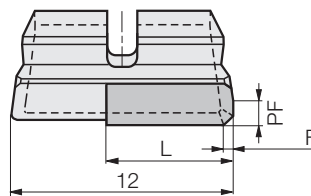
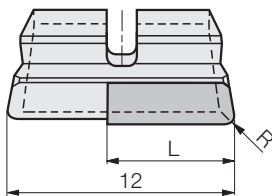
Insert W 612.-..... R PCD / CBN



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

PCD / CBN							Part nr. 20313	Part nr. 20314	Part nr. 20317	Part nr. 20318
Code	Drawing nr.	L	R	AL°	F	PF	PCD 10	PCD 30	CBN 40	CBN 80
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

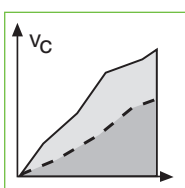


with radius (R) or with chamfer (F) and wiper geometry (PF)

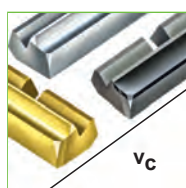
PCD / CBN							Part nr. 20319	Part nr. 20320	Part nr. 20323	Part nr. 20324
Code	Drawing nr.	L	R	AL°	F	PF	PCD 10	PCD 30	CBN 40	CBN 80
61,270	W 6127-0318 0045 L	7		0	0,3x45°	1	●	●	○	○
61,271	W 6127-0418 0000 L	7	0,4	0			●	○		
61,250	W 6125-0118 6645 L	5		6	0,1x45°	1	●			

● ex stock ○ in short time available

Ordering example: 1 piece W 6127-0318 0045 R PCD 10 = Ordering number: 20313 61,270



Application recommendations pages 49-53



Geometry and grade selection pages 47-48



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

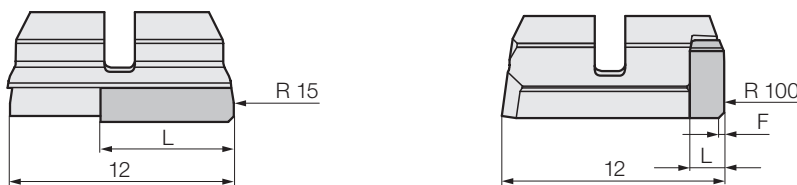
Wiper-insert W 612.-..... R PCD



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

PCD						Part nr. 20313	Part nr. 20314
Code	Drawing nr.	L	R	AL°	F	PCD 10	PCD 30
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

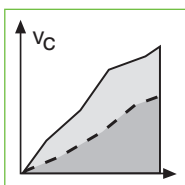


with radius (R) or with chamfer (F) and wiper geometry (PF)

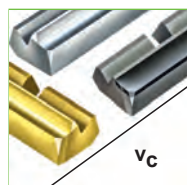
PCD						Part nr. 20319	Part nr. 20320
Code	Drawing nr.	L	R	AL°	F	PCD 10	PCD 30
61,277	W 6127-0315 0045 L	7	15	0	0,3x45°	●	
61,200*	W 6120-1000 0445 L	1,8	100	0	0,3x45°	●	
*only with clamping set E 5482							

● ex stock ○ in short time available

Ordering example: 1 piece W 6127-0315 0045 R PCD 10 = Ordering number: 20313 61,277



Application recommendations
pages 49-53



Geometry and grade selection
pages 47-48



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

Hollfelder-Gühring services

for PCD- and PCBN-inserts

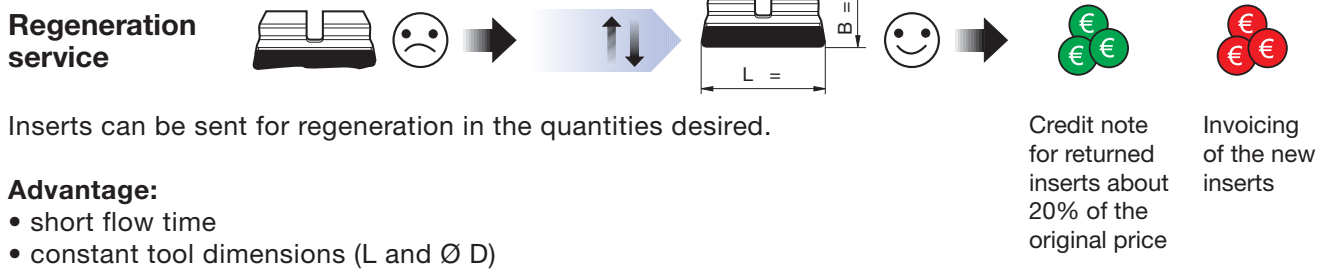
Thanks to our regeneration and regrinding service we can guarantee a long-term and constant application of your tools on the highest level.

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

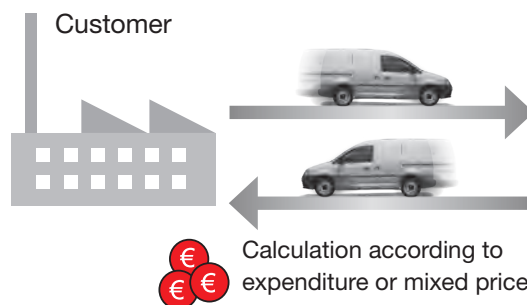


We recommend to send us the complete set of inserts of one cutter for regrinding. Experience has shown that inserts can be reground three times at a maximum. However the wear pattern should not exceed 0,1 mm per regrinding! Minimum 30 pieces!

Invoicing of the regrinding costs



Complete service for example HPC milling cutters



Hollfelder-Gühring	
	Measuring / Ceck Adjusting, Balancing
	Regrinding
	Regeneration

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 / CBN

● ▲ ▬
 Chipbreaker →

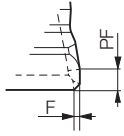
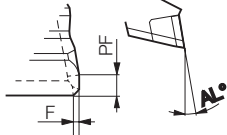
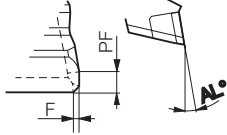
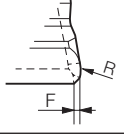
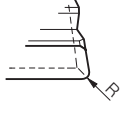
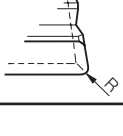
Cutting material	Grade composition		Workpiece material						
			Steel	Stainless steel	Cast iron	Nonferrous materials	Heavy machinable materials	Hardened steel	
Grade code	Substrat	Coating							
K10	K10	uncoated	▬	▬	● n	▲ n	● n	▬	▬
Chipbreaker				→	-1000 -1045	-1620 -1645	-1620* -1645		
G12	K10	TiAlN 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 10	Grain size 10 µm		▬	▬	▬	t ▲ n	▬	▬	
Chipbreaker					→	-0045 -1045			
PCD 30	Mixed grain		● n	▬	▬	t ▲ n	▬	▬	
Spanleitstufe			→	-0045		-0045 -1045			
CBN 40			▬	▬	t ●	▬	▬	t ▲	
Chipbreaker				→	-0000			-0000	
CBN 80	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.


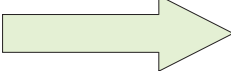

H Application recommendations

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 10
<ul style="list-style-type: none"> - Aluminium with high Si-content - abrasive nonferrous-materials - very high cutting speed 		PCD 30
<ul style="list-style-type: none"> - Sintersteel - CGI-machining 		PCD 30

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	
					RM (MPa)	HB HRC	K10	G12	G16	G26	PCD 10 PCD 30	CBN
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	tempered	1020	300			130-170	100-140				
9	Machining steel	tempered	1190	350			130-170	100-140				
10	High-alloy steel	annealed	680	200			100-140	90-130				
11	Cast steel	annealed	680	200			100-140	90-130				
	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	perlitic/ferritic		180	90-130	170-250				600-800		
16	Grey cast iron	perlitic (martensitic)		260	80-120	140-180	90-130			400-600		
17	Cast iron with nodular cast iron	ferritic		160	70-110	130-170				400-600		
18	Cast iron with nodular cast iron	perlitic		250	60-90	100-140	90-130					
19	Malleable	ferritic		130	80-120	140-180				500-800		
20	Malleable	perlitic		230	60-90	120-160						
21	Aluminium forging alloys	not heat treatable		60	-1000	-1500			-5000			
22	Aluminium forging alloys	heat treatable/heat treated		100	-800	-1200			-5000			
23	Aluminium casting alloys	<12% Si not heat treatable		75	-800	-1200			-5000			
24	Aluminium casting alloys	<12% Si heat treatable/heat treated		90	-600	-1000			-5000			
25	Aluminium casting alloys	>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/elektrolyte copper		100	200-300	350-550			-2000			
29	Non metallic materials	Duroplastic	90		240-280	400-500			-3000			
30	Non metallic materials	Reinforced materials	100		240-280	400-500			-3000			
31	Heat resistant alloys	Fe-based annealed		200				40-60				
32		Fe-based heat treated		230				40-60				
33		Ni- or Co-based annealed		250				40-60				
34		Ni- or Co-based 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				50-62					150-300			

H 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 =>

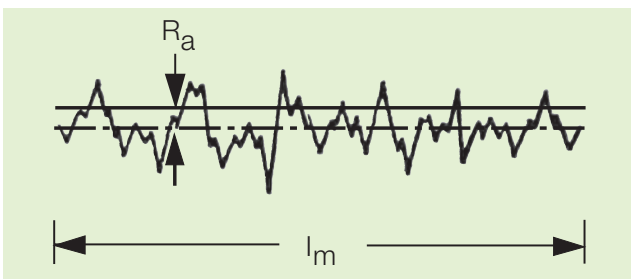
$R_a = 1.4 \text{ }\mu\text{m}$
 $R_z = 10.0 \text{ }\mu\text{m}$

Inserts with chamfer and wiper geometry =>

$R_a = 0.7 \text{ }\mu\text{m}$
 $R_z = 5.5 \text{ }\mu\text{m}$

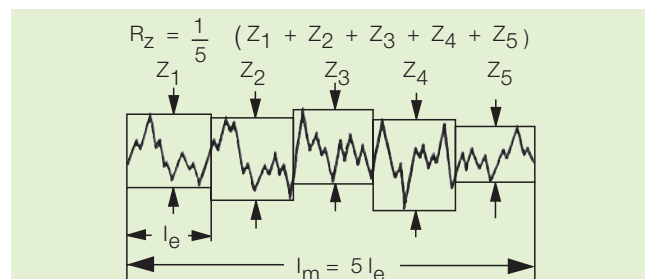
Mean value of roughness R_a

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

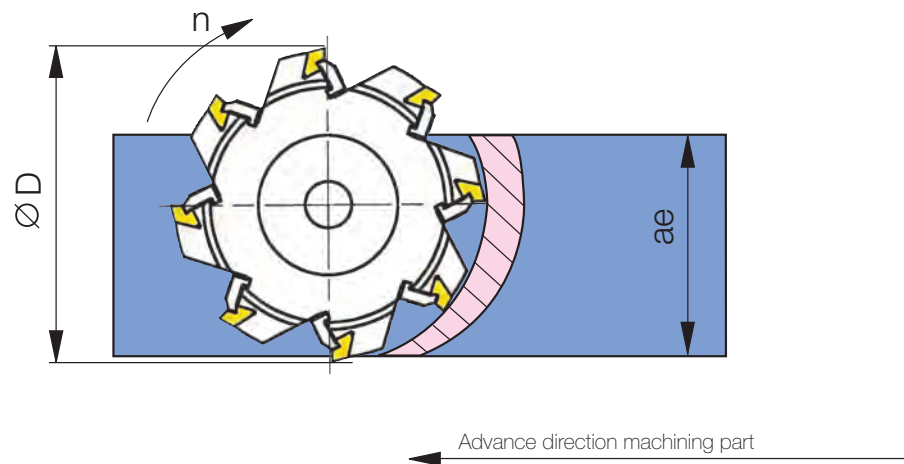
Milling cutters



Advice and practical tips

for the application of Hollfelder-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.

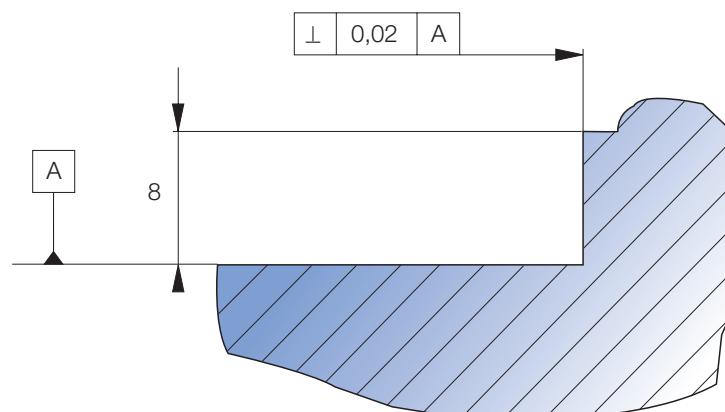


Insufficient clamping of the workpiece, an extreme tool overhang as well as the wrong choice of cutting parameter directly influence the milling results as well as the surface quality, tool life and processing time is concerned.

Should you need any technical support please contact us.

Perpendicularity of the shoulder on the machined part

valid for the complete milling cutter program





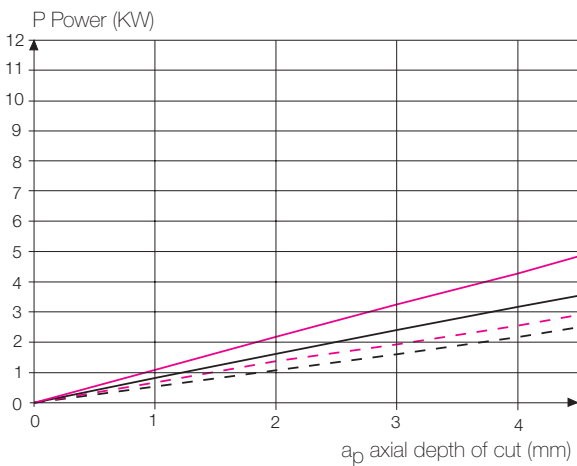
Application recommendations

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
 $\varnothing D = 63$ $z = 8$ $v_C = 120$

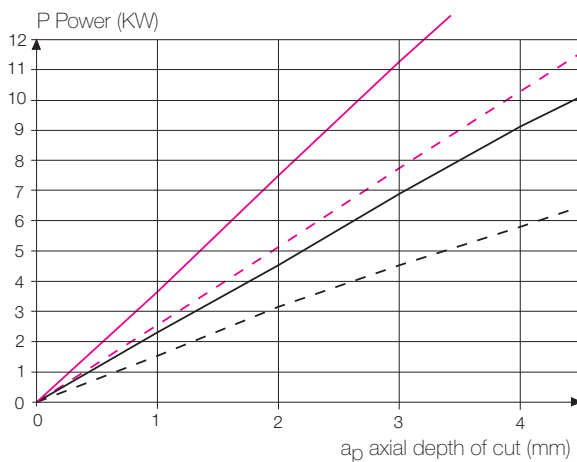


$f_z = 0,08$ ■
 $f_z = 0,12$ ■

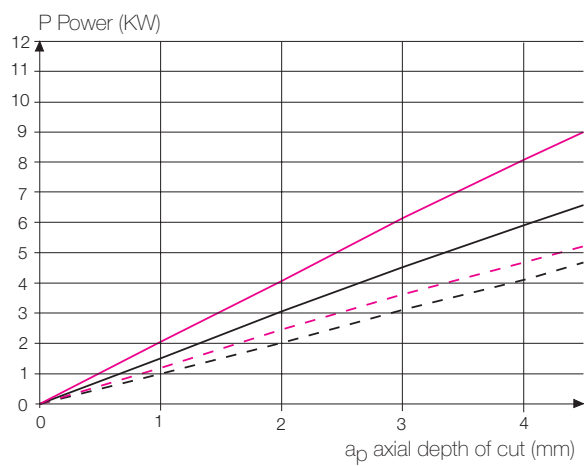
$a_e / \varnothing D = 0,8$

$a_e / \varnothing D = 0,5$

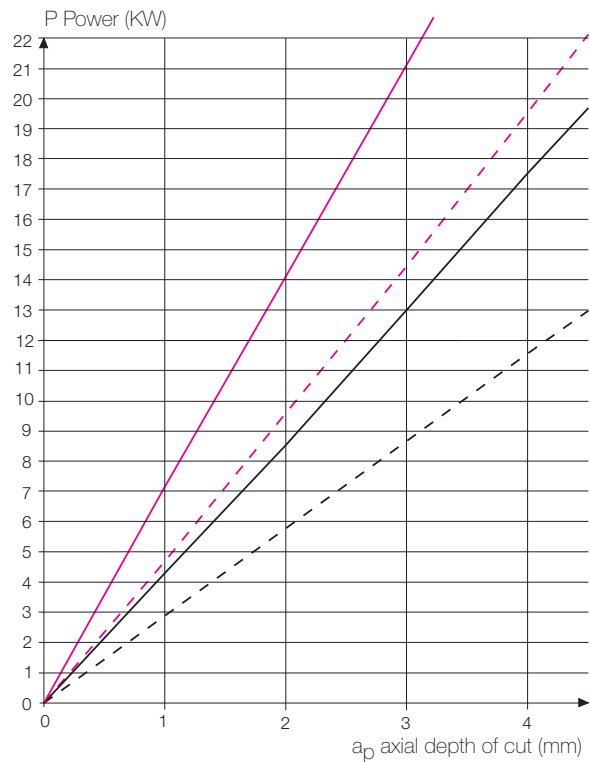
AISI 10%
 $\varnothing D = 63$ $z = 8$ $v_C = 500$



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



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



Application recommendations

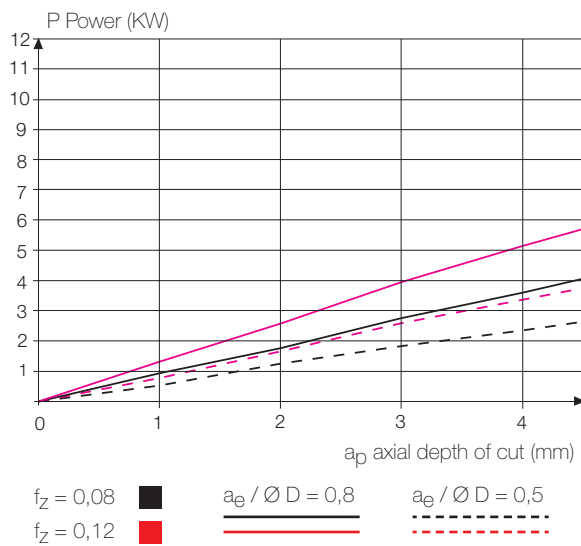
Milling cutters



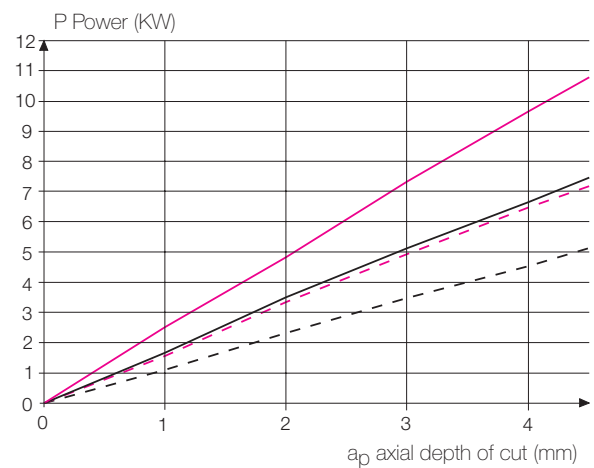
Power consumption for face milling cutters

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	

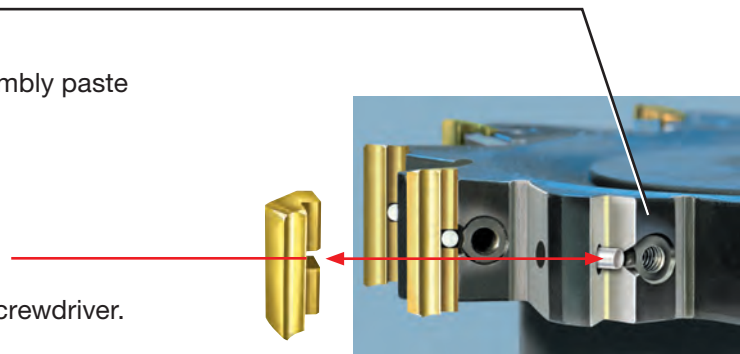


Adjustment instruction

Eccentric adjustment

1. Insert replacement

- **Loosen the clamping set and remove the insert.**
- **Thoroughly clean the insert seat.**
The bore for the eccentric pin must have assembly paste (E 5162) applied evenly following cleaning.
- **Position the new insert in the insert seat.**
The groove in the insert body must “engage” in the eccentric pin“.
- Lightly tighten the **clamping set** with a Torx screwdriver.
- **All inserts** must initially be brought to the largest possible dimension. Then tighten to the required torque.



Tightening torque for clamping sets

Tool type	Torque (Ncm)	Torx size	Torque wrench fixed DSF	
			Part nr.	Code
H 2080	45	Tx 5	20063	0,450
H 3108 / H 3120 / H 2006	70	Tx 6	20063	0,700
H 6120 / H 6121 / H 3006	140	Tx 8	20063	1,400
H 4006	345	Tx 15	20063	3,450
Torque wrench adjustable DS	20 - 120		20063	1,200
	100 - 600		20063	6,000

2. Adjusting the inserts

- **Adjust the inserts either towards each other and / or to a precise dimension using the adjustment key (hexagon key). The adjustment system allows an infinite adjustment. It is recommended to adjust the inserts “TO TENSION”.** This means that all inserts must be brought from this point adjusted to each other and / or to the desired dimension.
- **Always make the adjustment only in one direction!** If the required dimension is exceeded or falls short the eccentric pin must be rotated by one full turn again.
- **A re-tightening of the clamping set is not necessary!**
The tool is now ready for application.

Attention:

Different coating processes can change the friction coefficient between insert and insert seat. Should this be the case the clamping set should be tightened to a reduced value (approx. 80%), in order to enable the adjustment of the insert. Then the clamping set can be tightened to the recommended torque.

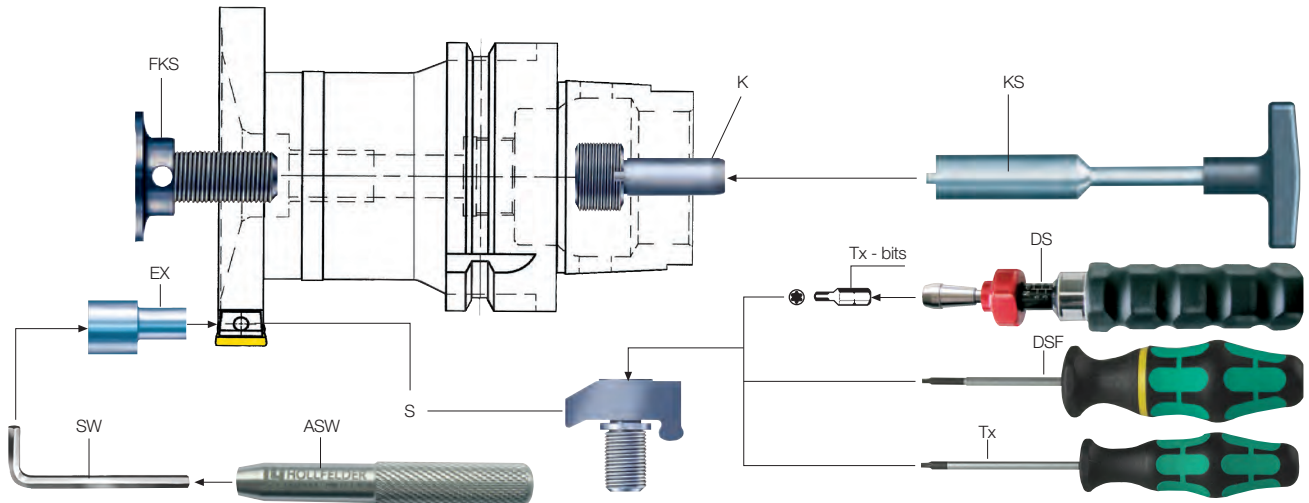
Safety note:

In the event of damage the tool must be returned to the manufacturer to be checked for technical safety reasons! The clamping sets must be checked for damage at regular intervals or replaced in the event of wear. Only original replacement parts must be used!

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	see adjustment instruction page 54	Tx 6-bit	E 4349	SW 1,3	E 5005			
								for monobloc	DIN 69893	
									Viton-seals included	
H 6120-..... R	E 4119	Tx 8	see adjustment instruction page 54	Tx 8-bit	E 4120	SW 1,5	E 5005	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	Nm	
								Ø 40 E 3805	40	
								Ø 50 E 3806	60	
								Ø 63 E 3806	60	
								Ø 80 E 4079	80	
								Ø 100 E 4247-2	95	
								Ø 125 E 4275-2	100	
								Ø 160 E 4275-2	100	

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

DSF Torque wrench fixed

Tx-bits Torx-bits

EX Eccentric bolt

SW Adjusting key

ASW Adaptor

FKS Coolant distribution screw

K Coolant pipe

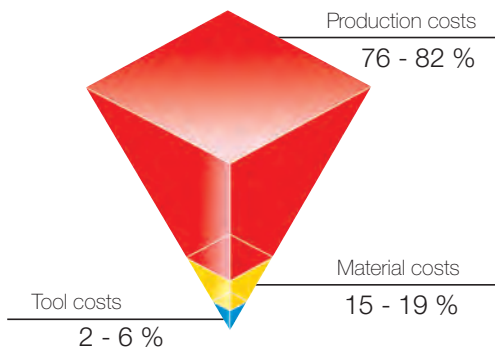
KS Key for coolant pipe

Nm Tightening torque ±10%

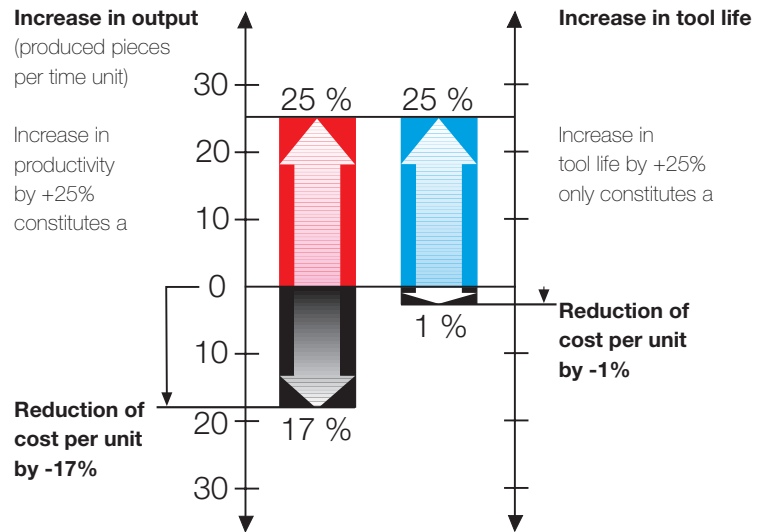
Ordering numbers for spare parts see pages 145-147

H Profitability calculation

Composition of cost per part



Comparison



Example: Milling of cylinder head faces with PCD

Conventional face milling cutter

Tool = \varnothing 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

Hollfelder-Gühring face milling cutter

Tool = \varnothing 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

Increase in productivity
 from to

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



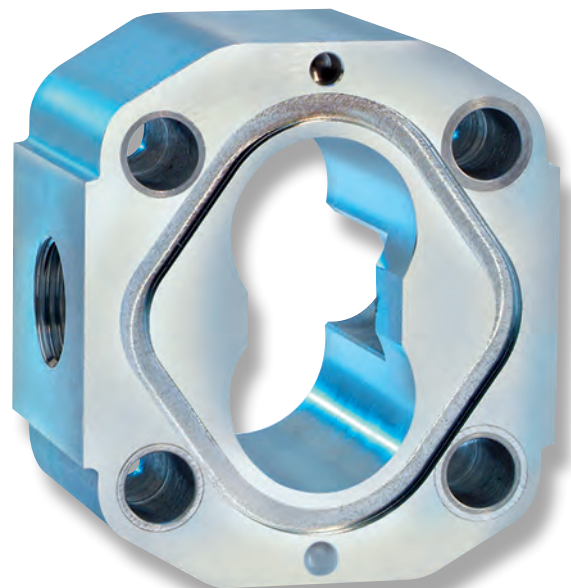
Milling of sealing surface

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





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 60-61

page 62

page 63

page 64

page 65

page 66

page 67



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 - 44 mm short version

Spare parts

Adjustment instructions

Application example



page 68-69

page 70

page 71

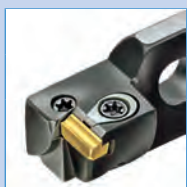
page 72

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page 74-75

page 76

page 77



Cartridges μm -accurate adjustable

Features

Tool bodies approach angle 90°

Setting dimensions

Spare parts

Application examples



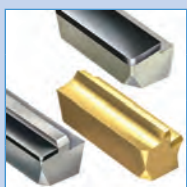
page 78-79

page 80

page 81

page 82

page 83



Inserts

Features

Geometry and grade selection

Cutting data recommendations

Insert program

Special shapes

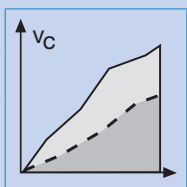
page 84

page 85

page 86

from page 88

page 102



Application recommendations

page 87

Application examples

page 83



Form „Request for special tooling“

page 148

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.



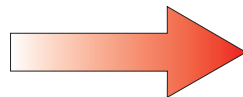
This high-performance tooling system is both suitable for various machining tasks and a wide variety of materials as well as for HSC machining.

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

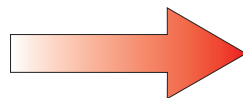
Advantages in the use of these tools:

Cutting forces are absorbed in the pocket seat



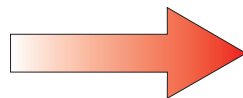
Extremely smooth cut, long-lasting pocket seat

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...



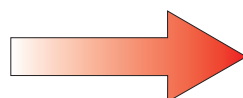
...reduce unproductive handling operations

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

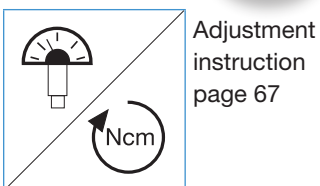
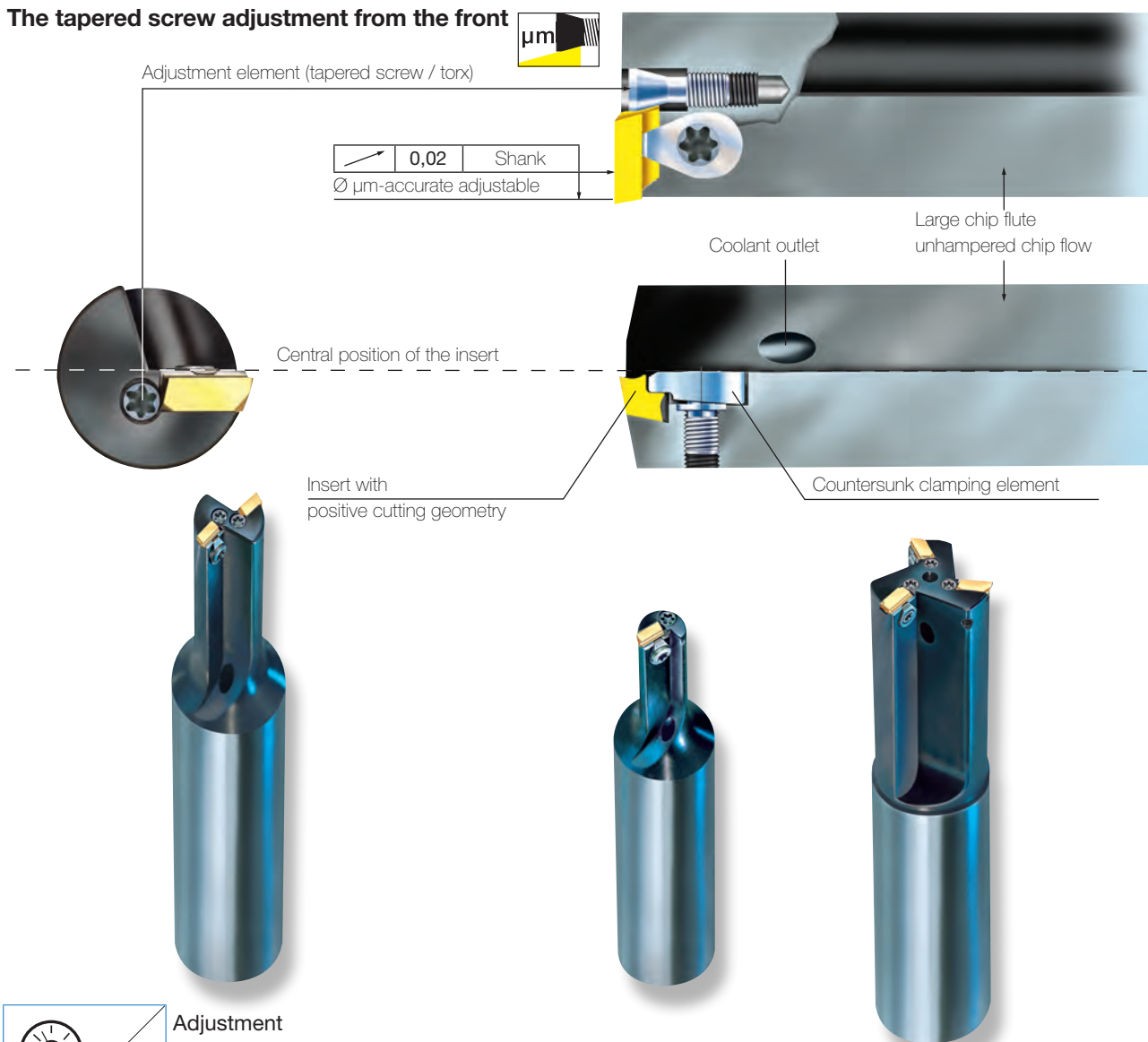
Additional advantages:

The large chip flutes in combination with embedded clamping elements guarantee an excellent chip evacuation. The clamping element has to be slightly released only in order to change the insert. However, 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 148 for your convenience.

The tapered screw adjustment from the front

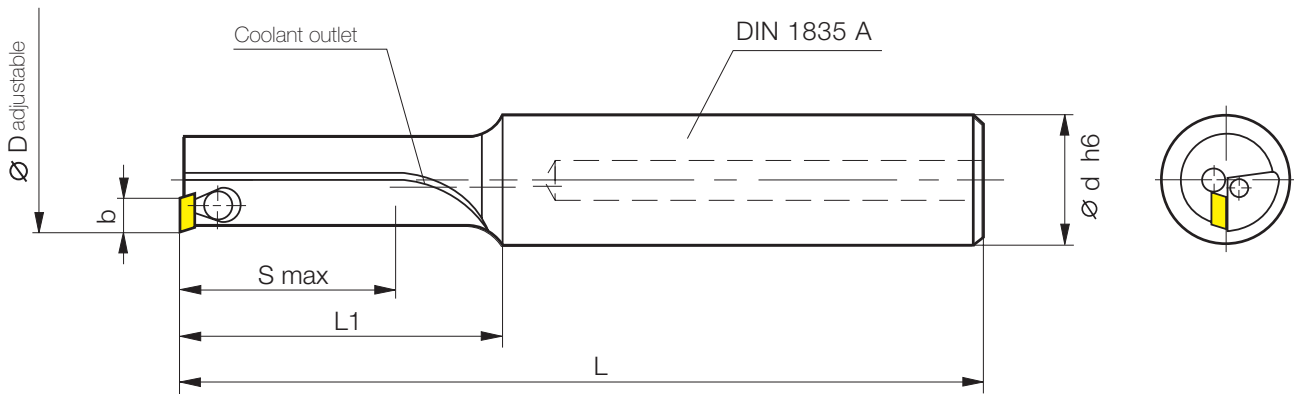




Fineboring tools

Tapered screw adjustment μm -accurate adjustable

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



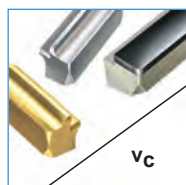
Part nr. 20011									
Code	Drawing nr.		b	Ø D	Ø d	S	L ₁	L	Inserts
6,200	H 1730-0620 1512 R	●	3	5.9 - 6.1	12	15	25	70	W 1730-... L
			3.25	6.4 - 6.6	→				W 1733-... L
7,200	H 1730-0720 1512 R	●	3	6.9 - 7.1	12	15	25	70	W 1730-... L
			3.25	7.4 - 7.6	→				W 1733-... L
8,200	H 1730-0820 2012 R	●	3	7.9 - 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 66



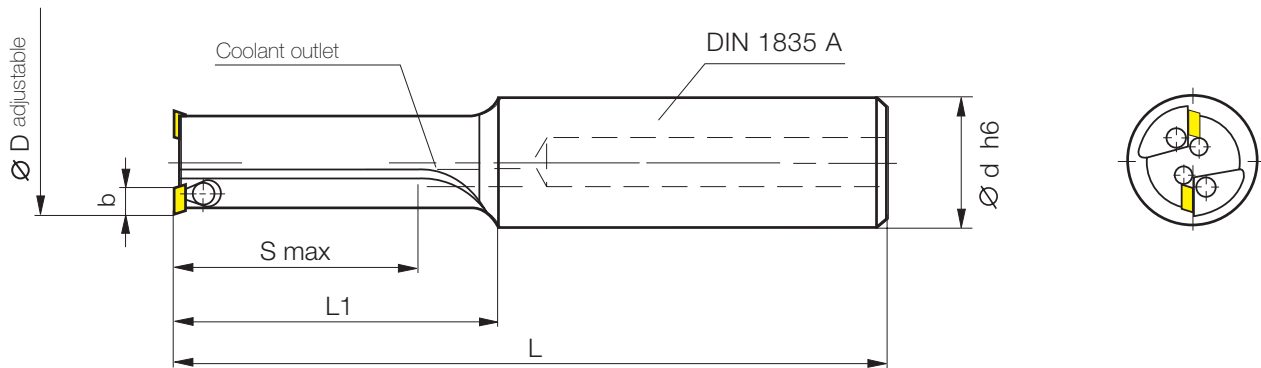
Geometry and
grade selection
pages 85

Fineboring tools



Tapered screw adjustment μm -accurate adjustable

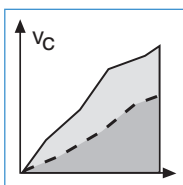
2 cutting edges $\varnothing 10 - 19 \text{ mm}$
internal coolant



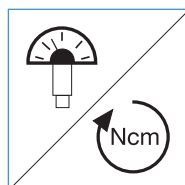
Part nr. 20012	Code	Drawing nr.		b	$\varnothing D$	$\varnothing d$	S	L ₁	L	Inserts
	10,200	H 1730-1020 2516 R	●	3	9.9 - 10.1	16	25	35	83	W 1730-... L
				3.25	10.4 - 10.6	→				W 1733-... L
	11,200	H 1730-1120 2516 R	●	3	10.9 - 11.1	16	25	35	83	W 1730-... L
				3.25	11.4 - 11.6	→				W 1733-... L
	12,200	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
page 86-87



Adjustment
instruction
page 67



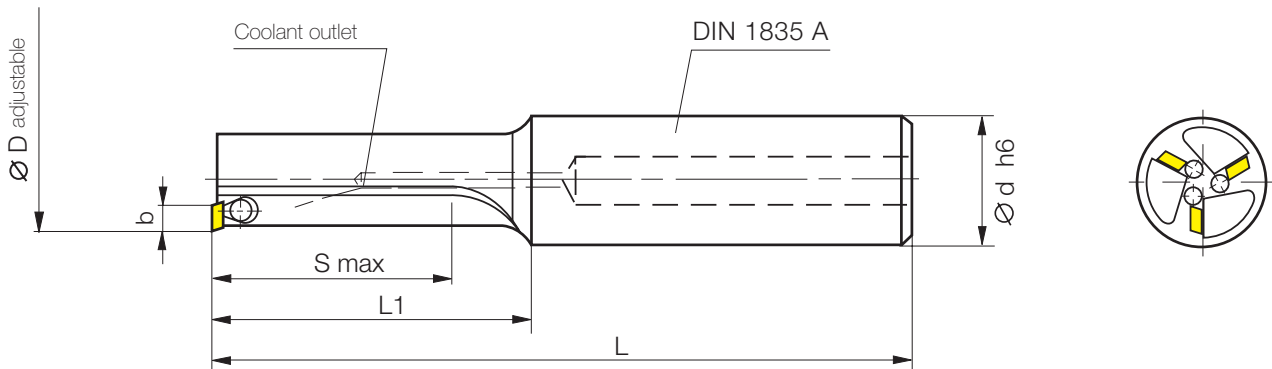
Form „Request for
customer specific
tools“
page 148



Fineboring tools

Tapered screw adjustment μm -accurate adjustable

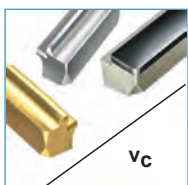
3 cutting edges $\varnothing 15 - 25 \text{ mm}$
internal coolant



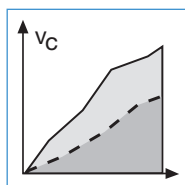
Part nr. 20013	Code	Drawing nr.		b	$\varnothing D$	$\varnothing d$	S	L ₁	L	Inserts
	15,200	H 1730-1520 3520 R	●	3	14.9 - 15.1	20	35	45	95	W 1730-... L
				3.25	15.4 - 15.6	→				W 1733-... L
	16,200	H 1730-1620 4020 R	●	3	15.9 - 16.1	20	40	50	100	W 1730-... L
				3.25	16.4 - 16.6	→				W 1733-... L
	17,200	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

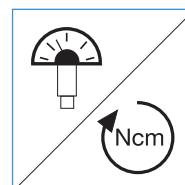
Ordering example: 1 piece H 1730-1520 3520 R = Ordering number: 20013 15,200



Geometry and grade selection pages 85



Application recommendations page 86-87



Adjustment instruction page 67

Adjustment system



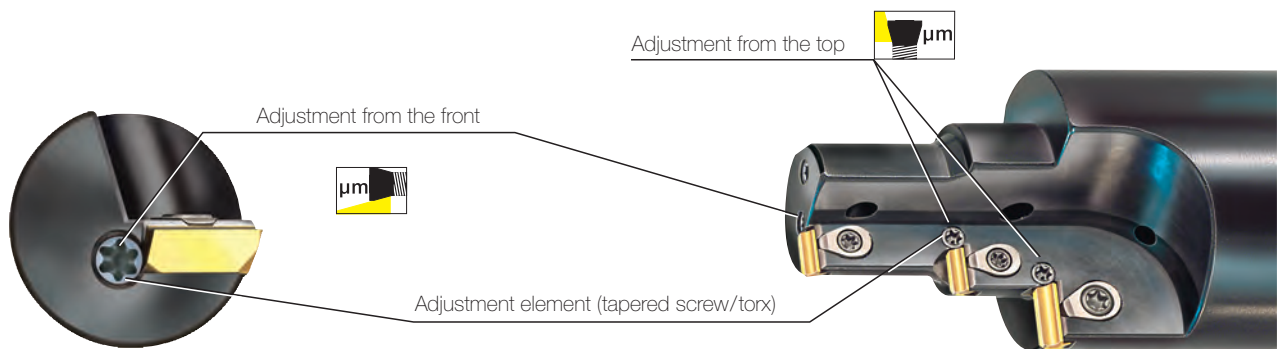
Tapered screw adjustment μm -accurate adjustable

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.



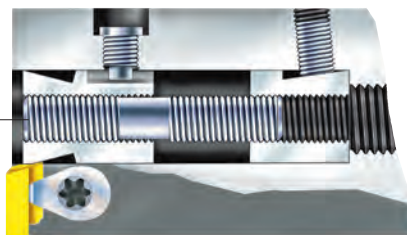
Micro-Adjustment



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.

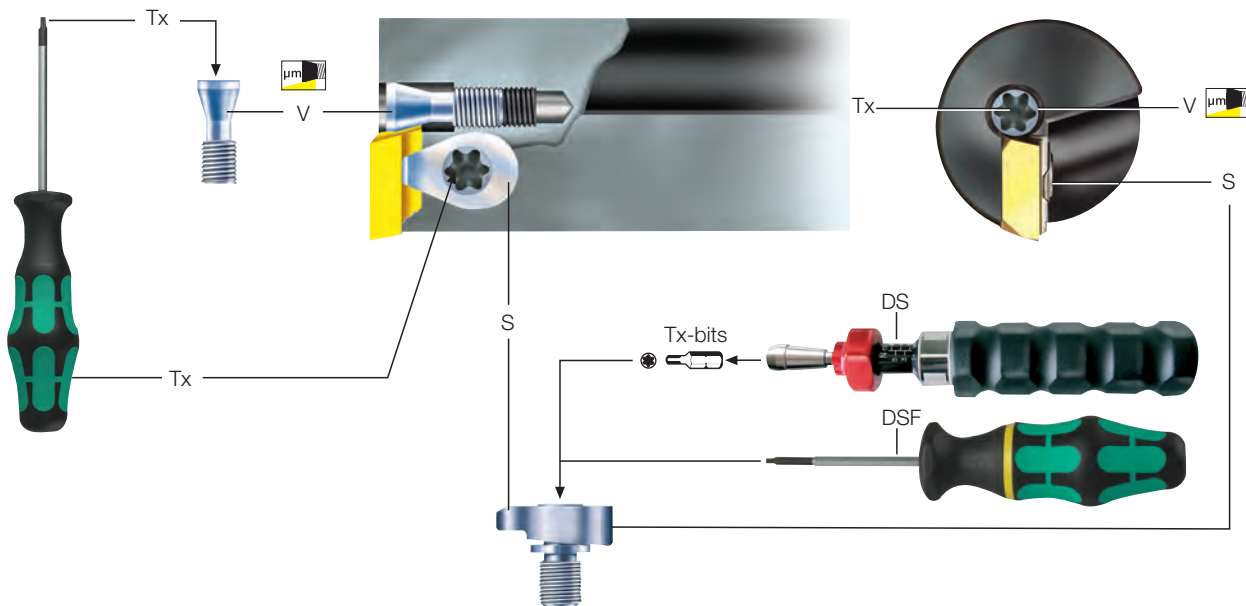
Adjustment element 1 revolution $\hat{=} 0,02$ mm im \varnothing



H 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	see adjustment instruction page 67	Tx 5-bit	E 3383
H 2850-..... R	E 1112	Tx 6	see adjustment instruction page 67	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
DSF	Torque wrench non-adjustable
Tx-bits	Torx-bits
V	Adjustment screw (tapered screw)

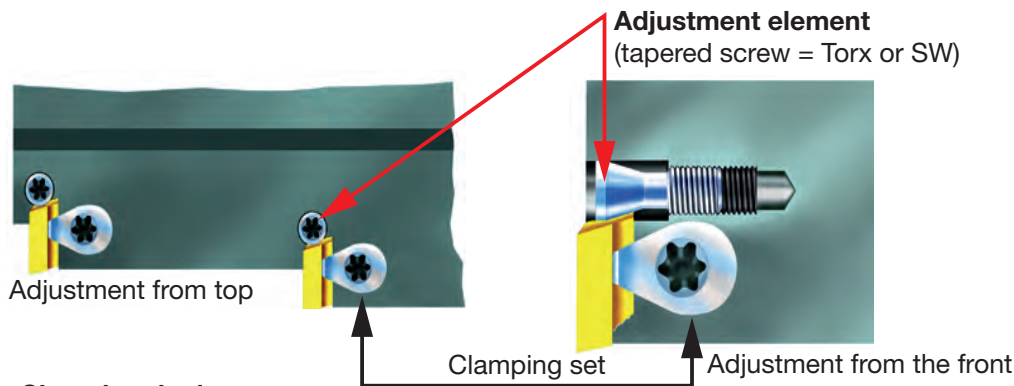
Ordering numbers for spare parts: see pages 145-147



Form „Request for customer specific tools“
page 148

Adjustment instruction

Tapered screw adjustment



1. Changing the insert

Disassembly

- Loosen clamp 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
- **Adjust insert to the required machining diameter**
It is NOT necessary to retighten the clamping set!

Torque for clamping sets

Tool type	Clamp set	Torque (Ncm)	Torx size	Torque wrench fixed DSF	
				Part nr.	Code
H 1035 / H 1730	E 1100 / E 3441	45	Tx 5	20063	0,450
H 2850	E 1085 / E 1112	70	Tx 6	20063	0,700
H 3570	E 1060	140	Tx 8	20063	1,400
H 4090	E 1040	345	Tx 15	20063	3,450
Torque wrench adjustable DS		20 - 120		20063	1,200
		100 - 600		20063	6,000

Security Advice:

For security reasons the tool must be returned to the manufacturer for inspection if the holder is damaged! The clamp sets must be replaced on a regular basis or in case that they show any sign of damage. Only original spare parts may be used!



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.

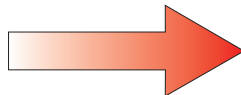


The features:

- 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



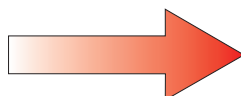
Extremely smooth cut, long-lasting pocket seat

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



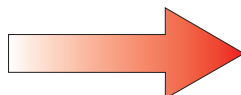
...result in extremely high tool life and superior surface finish

Easy adjustment while inserts are clamped...



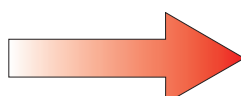
...reduce unproductive handling operations

Avoids change of measurements caused by reclamping of the insert



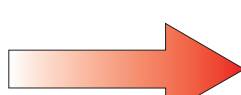
Constant and reliable measurements of the workpiece during machining

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

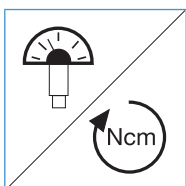
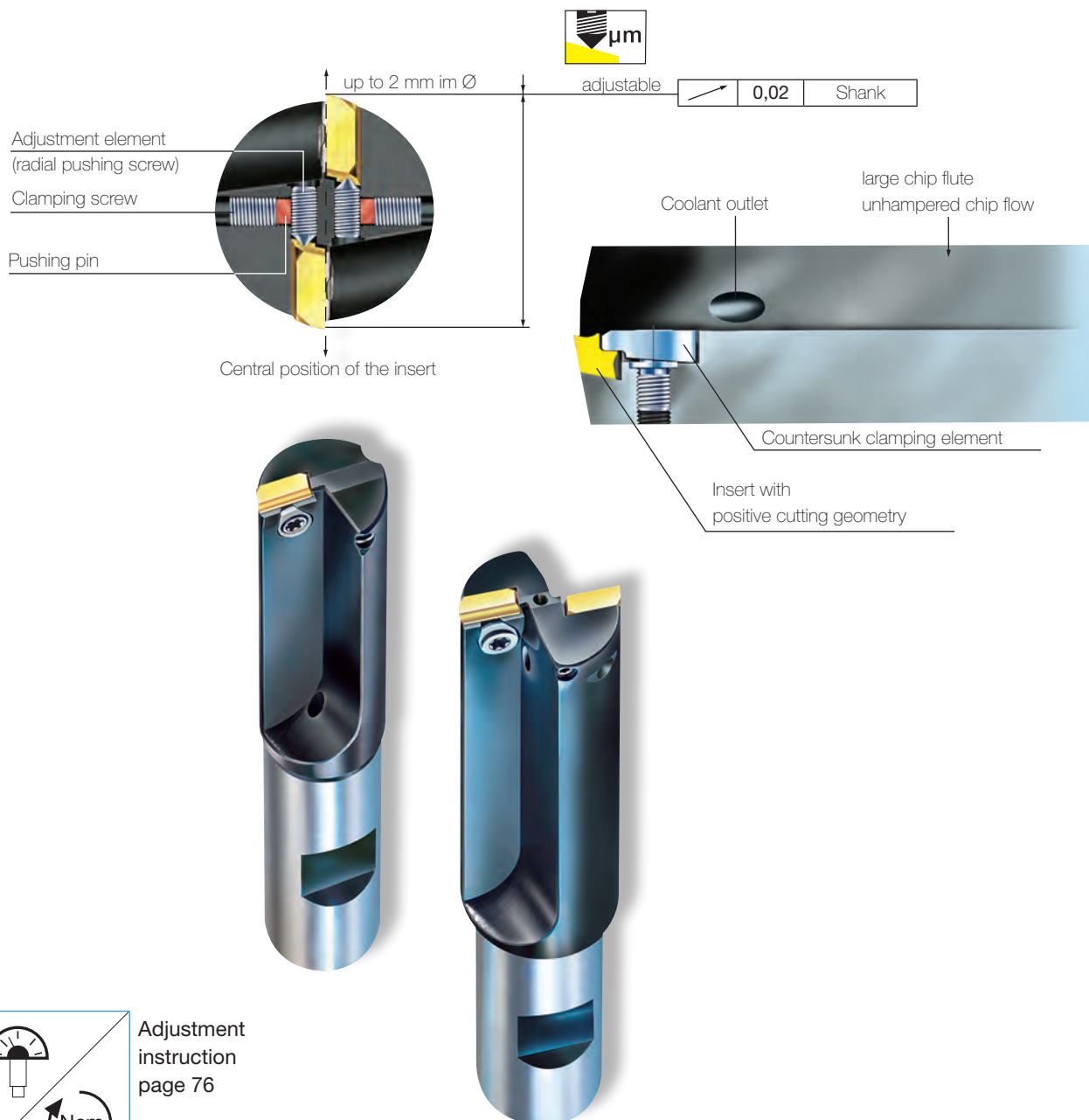
Additional design features:

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 148 for your convenience.

The radial fine adjustment with radial screw



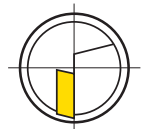
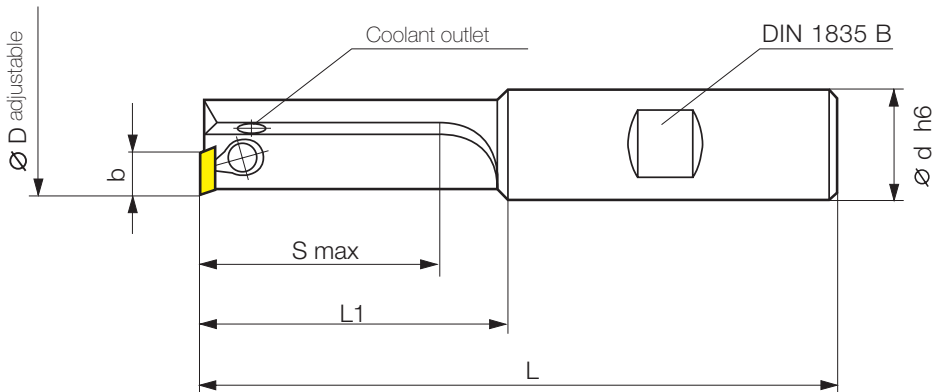
Adjustment instruction page 76



Fineboring tools

Radial adjustment, μm -accurate adjustable

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



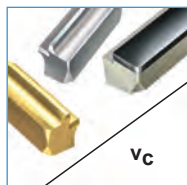
Part nr. 20021									
Code	Drawing nr.		b	$\varnothing D$	$\varnothing d$	S	L ₁	L	Inserts
7,000	H 1035-0700 2016 R	●	3.9	7 - 8	16	20	28	76	W 1035-... L
8,000	H 1035-0800 2016 R	●	3.9	8 - 9	16	20	28	76	↓
9,000	H 1035-0900 2016 R	●	3.9	9 - 10	16	20	28	76	↓
10,000	H 2850-1000 2516 R	●	5	10 - 11	16	25	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 74-75



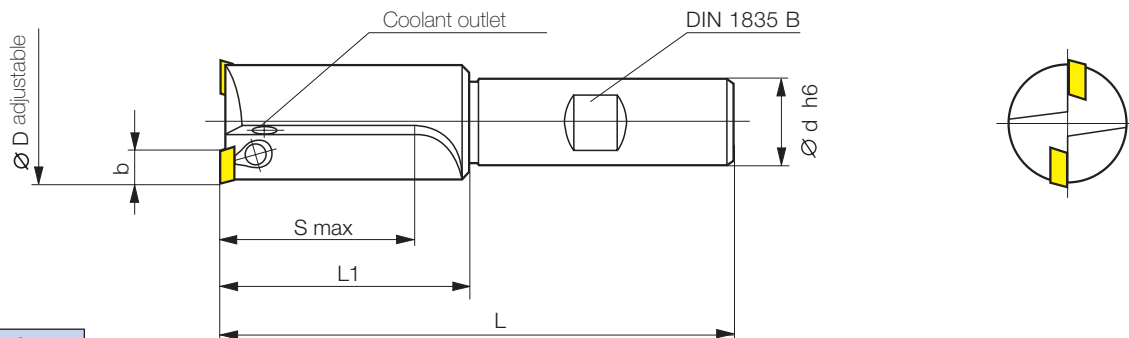
Geometry and
grade selection
pages 85

Fineboring tools



Radial adjustment, μm -accurate adjustable

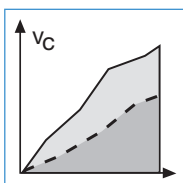
2 cutting edges $\varnothing 10 - 40 \text{ mm}$
internal coolant



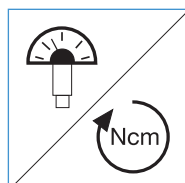
Part nr. 20022	Code	Drawing nr.		b	$\varnothing D$	$\varnothing d$	S	L ₁	L	Inserts
	10,000	H 1035-1000 2516 R	•	3.9	10 - 11	16	25	35	83	W 1035-... L
	11,000	H 1035-1100 2516 R	•	3.9	11 - 12	16	25	35	83	↓
	12,000	H 1035-1200 3016 R	•	3.9	12 - 13	16	30	40	88	↓
	13,000	H 1035-1300 3016 R	•	3.9	13 - 14	16	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
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page 86-87



Adjustment
instruction
page 76



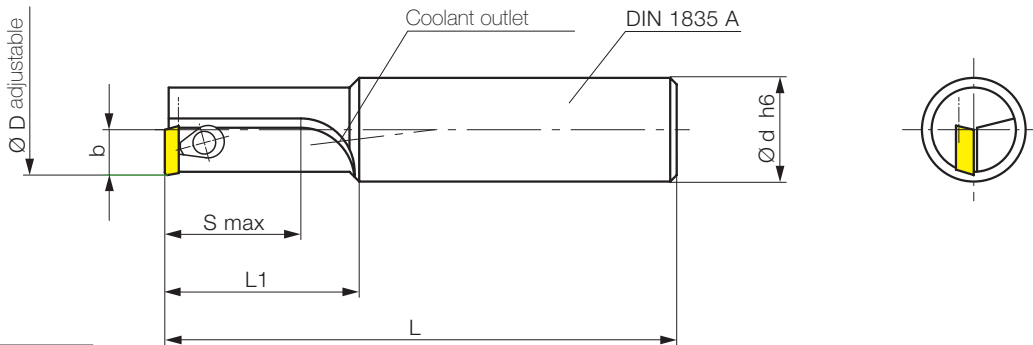
Form „Request for
customer specific
tools“
page 148



Fineboring tools

Radial adjustment short version (1,5xD)

1 cutting edge 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	↓

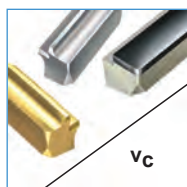
Tools in this series (1,5 x D) are optimal for the production of index bores and as pilot tools for multi-flute reamers → see Guhring catalog "HR reamers".

● ex stock

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

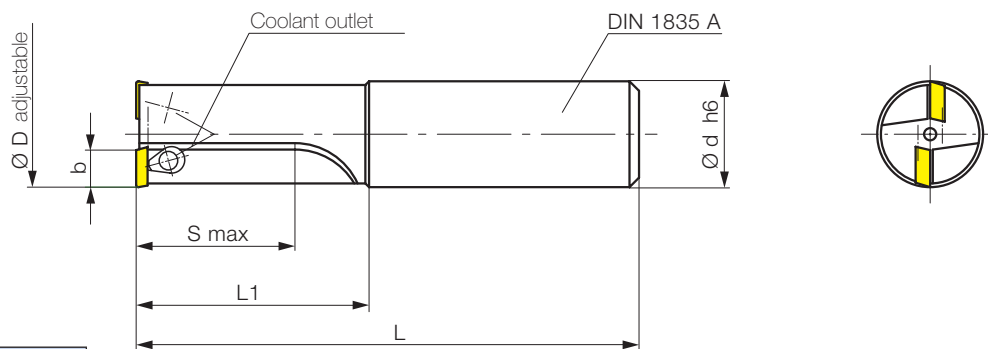


Spare parts
pages 74-75



Geometry and
grade selection
pages 85

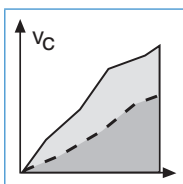
2 cutting edges $\varnothing 10 - 44$ mm internal coolant, Shank DIN 1835 A



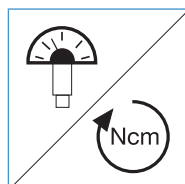
Part nr. 20024	Code	Drawing nr.		b	$\varnothing D$	$\varnothing d$	S	L ₁	L	Inserts
	10,000	H 1035-1000 1516 R	●	3,9	10 - 11	16	15	25	73	W 1035-... L
	11,000	H 1035-1100 1716 R	●	3,9	11 - 12	16	17	27	75	↓
	12,000	H 1035-1200 1816 R	●	3,9	12 - 13	16	18	28	76	↓
	13,000	H 1035-1300 2016 R	●	3,9	13 - 14	16	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	↓
	40,000	H 4090-4000 5732 R	●	9	40 - 42	32	60	77	138	↓
	42,000	H 4090-4200 5732 R	●	9	42 - 44	32	63	80	141	↓

● ex stock

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



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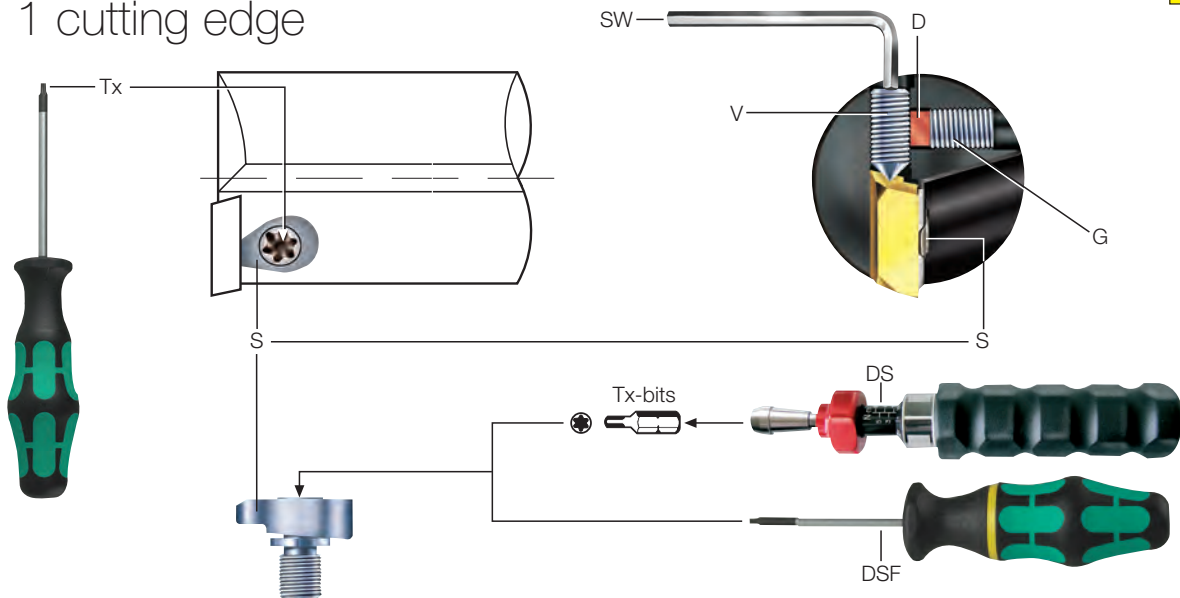
Form „Request for
customer specific
tools“
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H Fineboring tools

Radial adjustment, μm -accurate adjustable

Spare parts

1 cutting edge



Tool	S	Tx	DSF / DS	Tx-bits	V	SW	G	D
H 1035-0700 R	E 1100	Tx 5	see	Tx 5-bit	E 2450-1	0,7	E 2608-1	E 2649-1
H 1035-0800 R	E 1100	Tx 5	adjustment instruction	Tx 5-bit	E 2450-2	0,7	E 2608-2	E 2649-1
H 1035-0900 R	E 1100	Tx 5	page 76	Tx 5-bit	E 2450-3	0,7	E 2608-3	E 2649-1
H 2850-1000 R	E 1085	Tx 6	see	Tx 6-bit	E 2323-1	0,9	E 2610-2	E 2649-2
H 2850-1100 R	E 1085	Tx 6	adjustment instruction	Tx 6-bit	E 2323-2	0,9	E 2610-2	E 2649-2
H 2850-1200 R	E 1085	Tx 6	page 76	Tx 6-bit	E 2323-2	0,9	E 2610-3	E 2649-2
H 2850-1300 R	E 1085	Tx 6		Tx 6-bit	E 2323-3	0,9	E 2610-4	E 2649-2
H 3570-1400 R	E 1060	Tx 8	see	Tx 8-bit	E 2108-1	1,3	E 2612-1	E 2649-3
H 3570-1600 R	E 1060	Tx 8	adjustment instruction	Tx 8-bit	E 2108-2	1,3	E 2612-1	E 2649-3
H 3570-1800 R	E 1060	Tx 8	page 76	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
- DSF Torque wrench non-adjustable
- 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 145-147

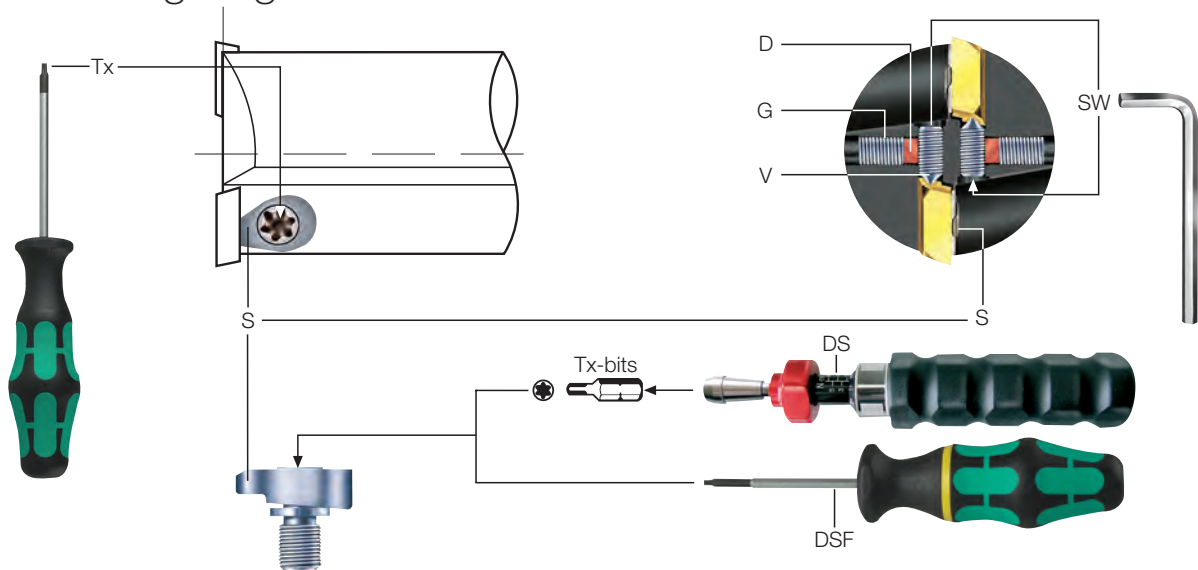
Fineboring tools



Radial adjustment, μm -accurate adjustable

Spare parts

2 cutting edges



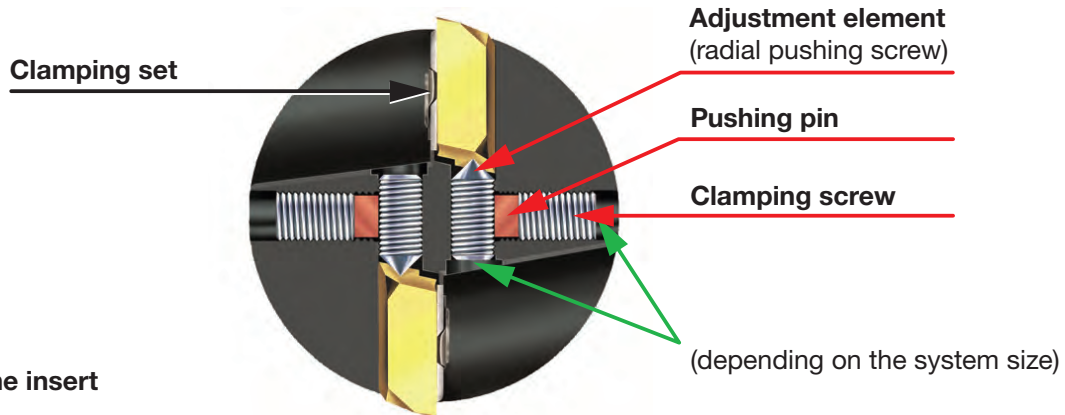
Tool	S	Tx	DSF / DS	Tx-bits	V	SW	G	D
H 1035-1000 R	E 1100	Tx 5	see	Tx 5-bit	E 2450-2	0,7	E 2608-1	E 2649-1
H 1035-1100 R	E 1100	Tx 5	adjustment instruction	Tx 5-bit	E 2450-2	0,7	E 2608-2	E 2649-1
H 1035-1200 R	E 1100	Tx 5	page 76	Tx 5-bit	E 2450-3	0,7	E 2608-3	E 2649-1
H 1035-1300 R	E 1100	Tx 5		Tx 5-bit	E 2450-3	0,7	E 2608-3	E 2649-1
H 2850-1400 R	E 1085	Tx 6	see	Tx 6-bit	E 2323-1	0,9	E 2610-1	E 2649-2
H 2850-1500 R	E 1085	Tx 6	adjustment instruction	Tx 6-bit	E 2323-1	0,9	E 2610-2	E 2649-2
H 2850-1600 R	E 1085	Tx 6	page 76	Tx 6-bit	E 2323-2	0,9	E 2610-2	E 2649-2
H 2850-1700 R	E 1085	Tx 6		Tx 6-bit	E 2323-2	0,9	E 2610-3	E 2649-2
H 2850-1800 R	E 1085	Tx 6		Tx 6-bit	E 2323-3	0,9	E 2610-3	E 2649-2
H 2850-1900 R	E 1085	Tx 6		Tx 6-bit	E 2323-4	0,9	E 2610-3	E 2649-2
H 3570-2000 R	E 1060	Tx 8	see	Tx 8-bit	E 2108-1	1,3	E 2612-1	E 2649-3
H 3570-2200 R	E 1060	Tx 8	adjustment instruction	Tx 8-bit	E 2108-2	1,3	E 2612-1	E 2649-3
H 3570-2400 R	E 1060	Tx 8	page 76	Tx 8-bit	E 2108-2	1,3	E 2612-2	E 2649-3
H 4090-2600 R	E 1040	Tx 15	see	Tx 15-bit	E 2109-1	1,5	E 2614-1	E 2649-4
H 4090-2800 R	E 1040	Tx 15	adjustment instruction	Tx 15-bit	E 2109-1	1,5	E 2614-1	E 2649-4
H 4090-3000 R	E 1040	Tx 15	page 76	Tx 15-bit	E 2109-2	1,5	E 2614-1	E 2649-4
H 4090-3200 R	E 1040	Tx 15		Tx 15-bit	E 2109-3	1,5	E 2614-2	E 2649-4
H 4090-3400 R	E 1040	Tx 15		Tx 15-bit	E 2109-3	1,5	E 2614-2	E 2649-4
H 4090-3600 R	E 1040	Tx 15		Tx 15-bit	E 2109-5	1,5	E 2614-2	E 2649-4
H 4090-3800 R	E 1040	Tx 15		Tx 15-bit	E 2109-5	1,5	E 2614-2	E 2649-4

Ordering numbers for spare parts see pages 145-147



Adjustment instruction

Radial adjustment



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 turn

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
- **Adjust insert at the required setting dimension**
It is not necessary to retighten the clamp set!

Torque for clamp sets

Tool type	Clamp set	Torque (Ncm)	Torx size	Torque wrench fixed DSF	
				Part nr.	Code
H 1035 / H 1730	E 1100 / E 3441	45	Tx 5	20063	0,450
H 2850	E 1085 / E 1112	70	Tx 6	20063	0,700
H 3570	E 1060	140	Tx 8	20063	1,400
H 4090	E 1040	345	Tx 15	20063	3,450
Torque wrench adjustable DS		20 - 120		20063	1,200
		100 - 600		20063	6,000

Security Advice:

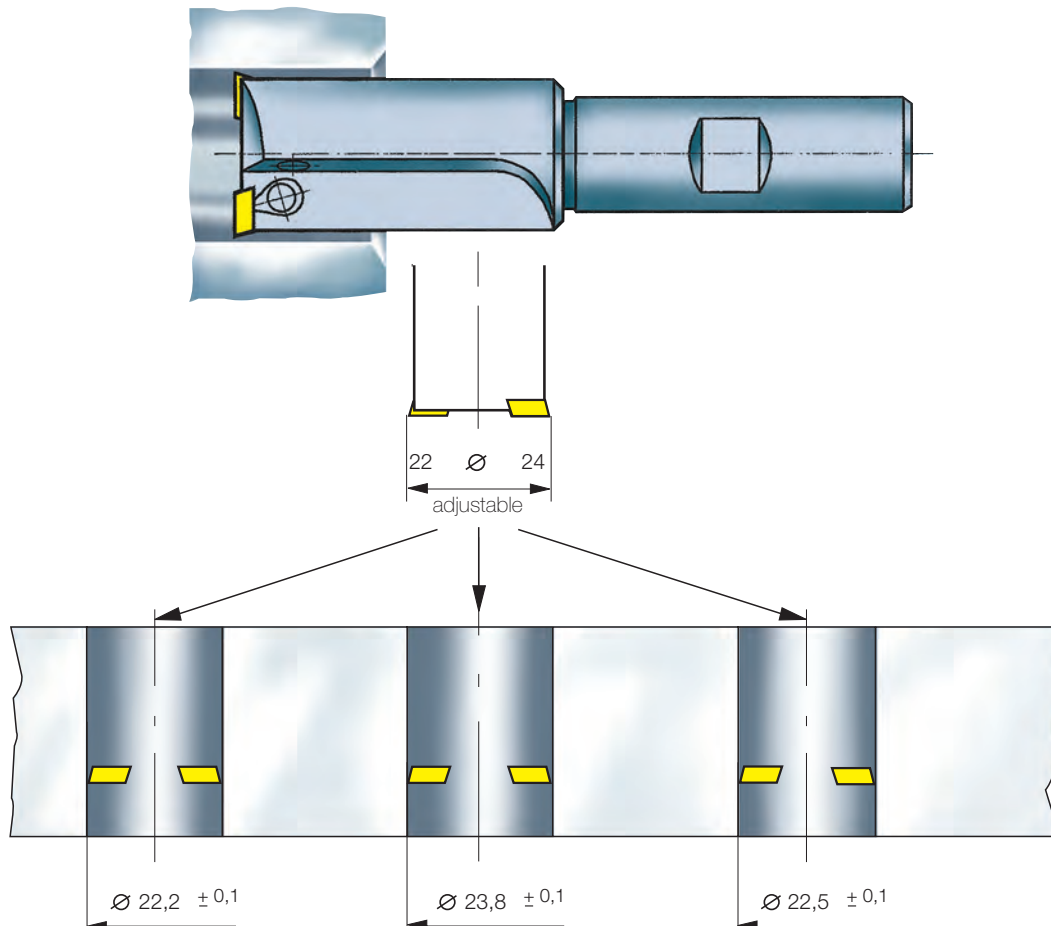
For security reasons the tool must be returned to the manufacturer for inspection if the holder is damaged! The clamp sets must be replaced on a regular basis or in case that they show any sign of damage. Only original spare parts may be used!

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

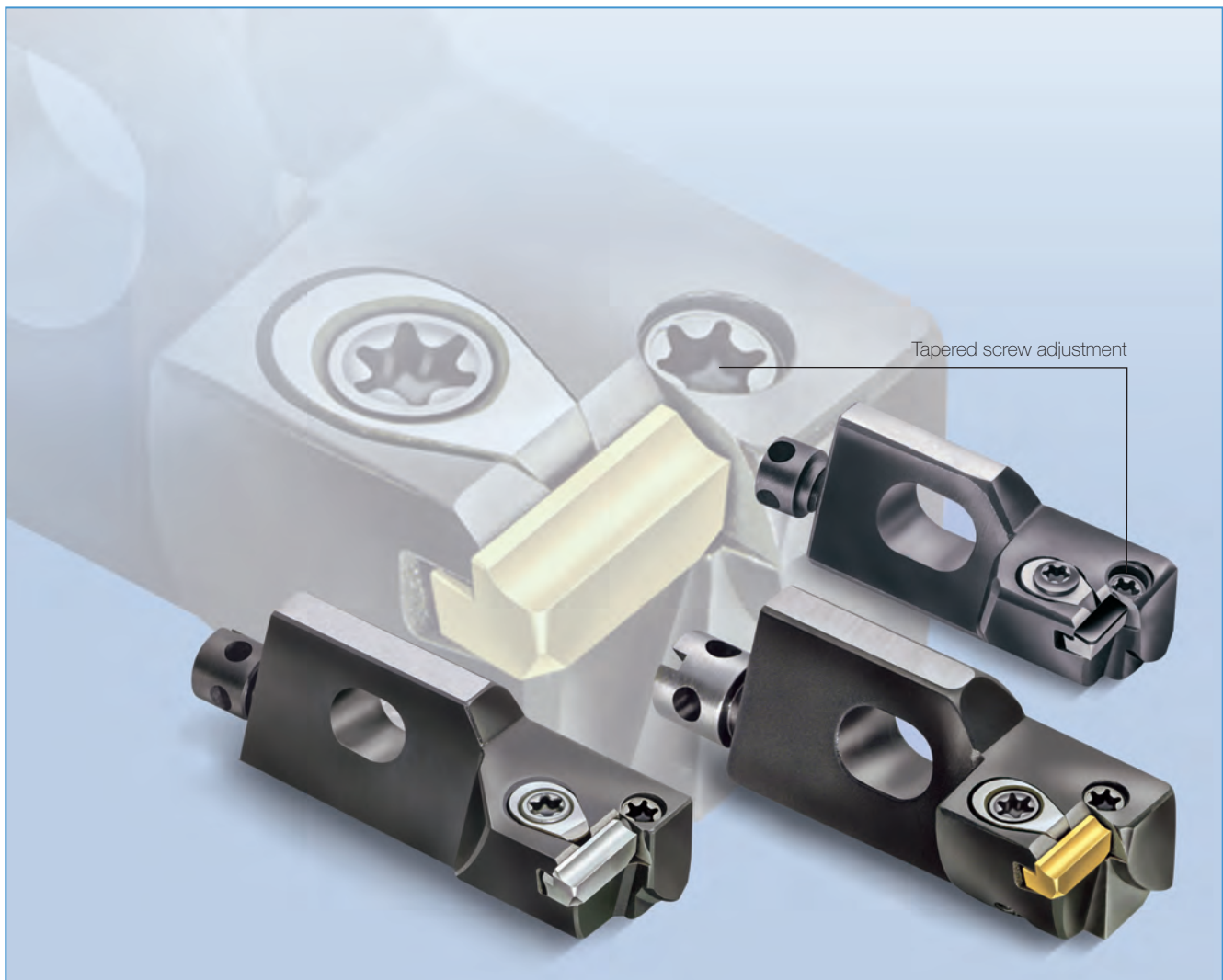
ISO-cartridges offer an utmost degree of flexibility in the design of customer specific tool solutions.

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 underlying procedure, the machining diameter of Hollfelder-Gühring cartridges is adjusted in a convenient and highly precise way by means of a tapered screw.



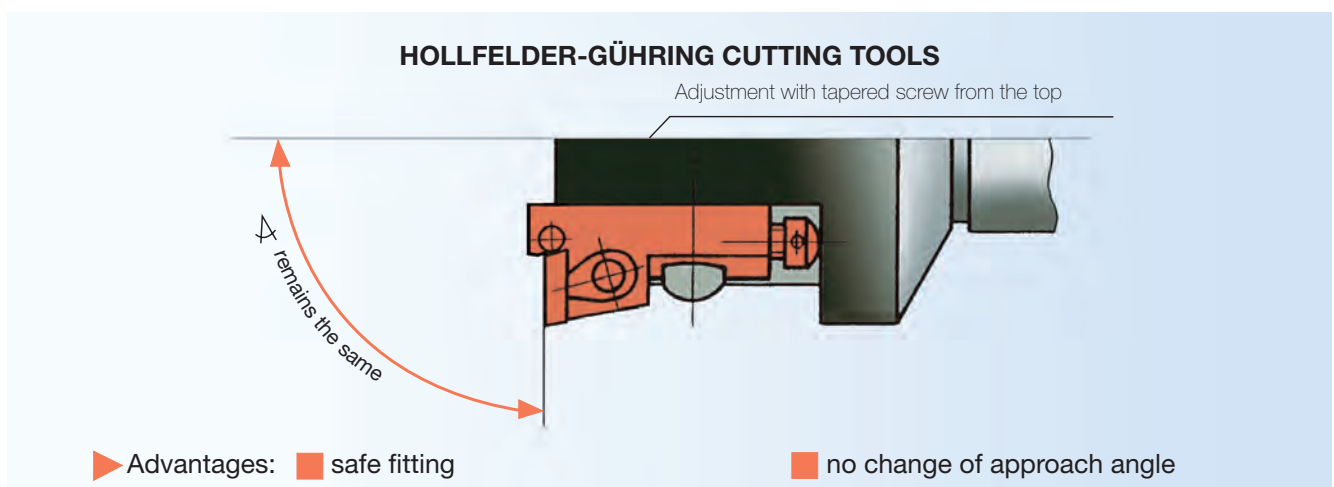
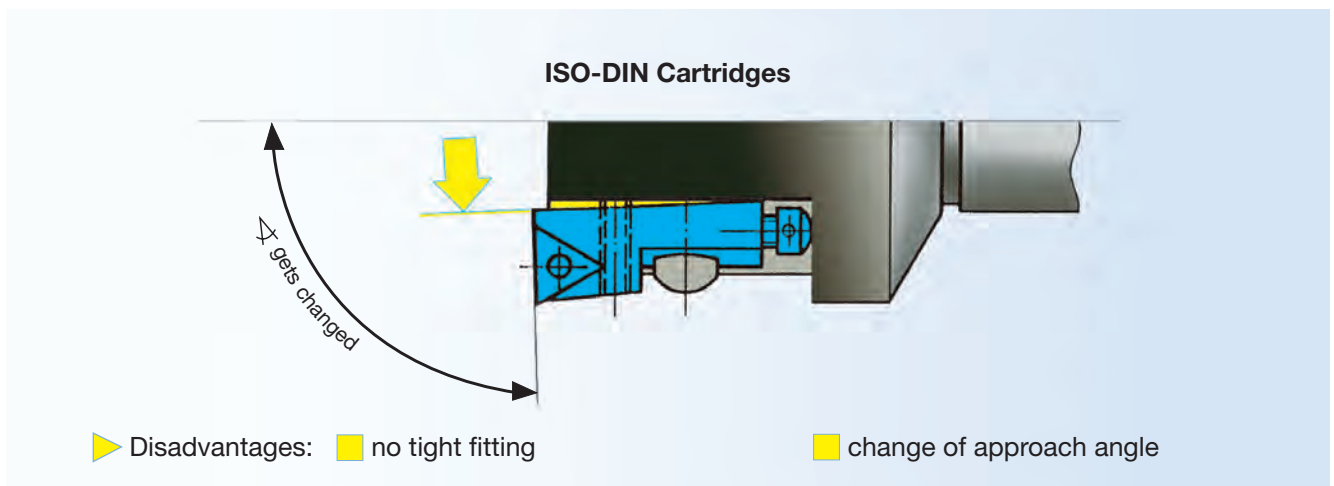
Cartridges

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 angular position of the insert remains unchanged. 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 81.

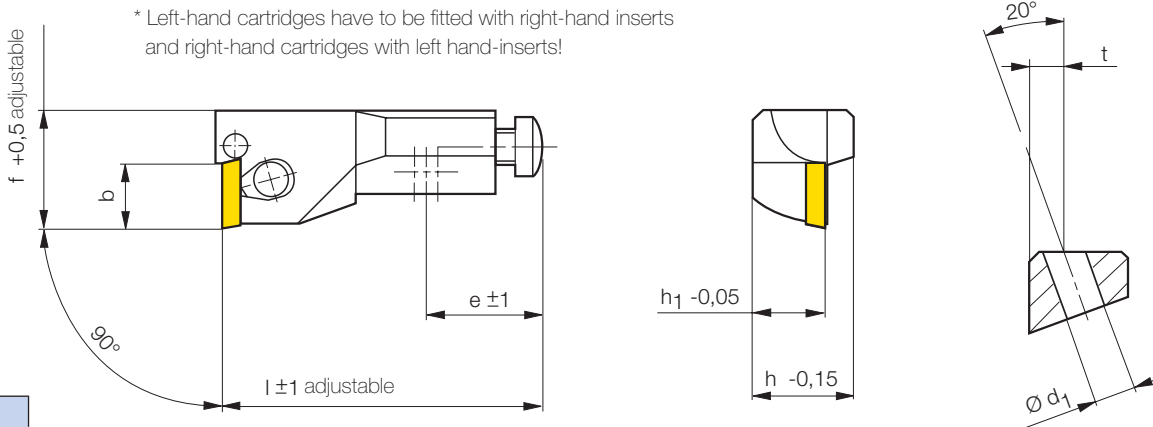




Cartridges

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



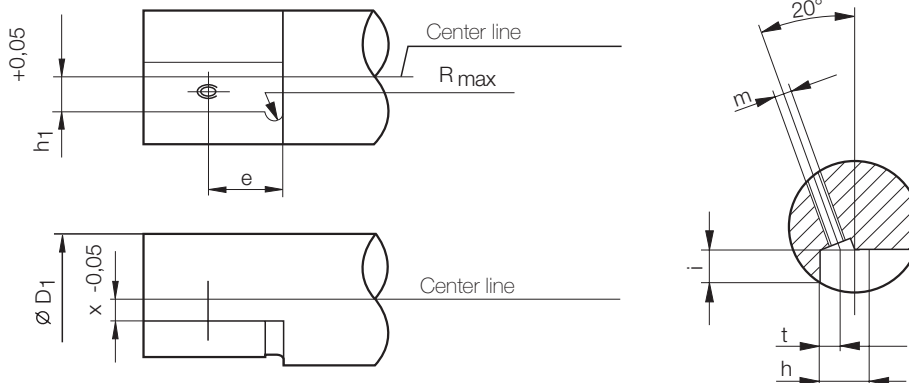
Spare parts
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Cartridges



with tapered screw adjustment, μm -accurate adjustable

Assembly measures

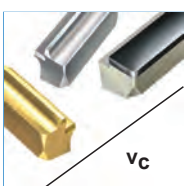


Assembly measures for:								
Part number	f	h_1	h	t	e	Rmax	m	l_{max}
H 1035-2088 0890 R/L CBFP R/L 06 CA-04	8	6	8,5	3,5	12	1,5	M 3,5	5
H 2850-2588 1090 R/L CBFP R/L 08 CA-05	10	8	11	4,5	17	2,5	M 4	6
H 3570-3088 1290 R/L CBFP R/L 08 CA-07	12	8	11	4,5	17	4	M 4	8
H 4090-3588 1490 R/L CBFP R/L 10 CA-09	14	10	14	5	20	4	M 6	9

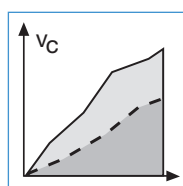
$$X = D / 2 - f$$

$$D_1 = \sqrt{h_1^2 + (x + i)^2} \cdot 2$$

Minimum machining diameters for:			
Part number	1 cutting edges possible at \emptyset	2 cutting edges possible at \emptyset	3 cutting edges possible at \emptyset
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 85



Applications recommendations page 86-87

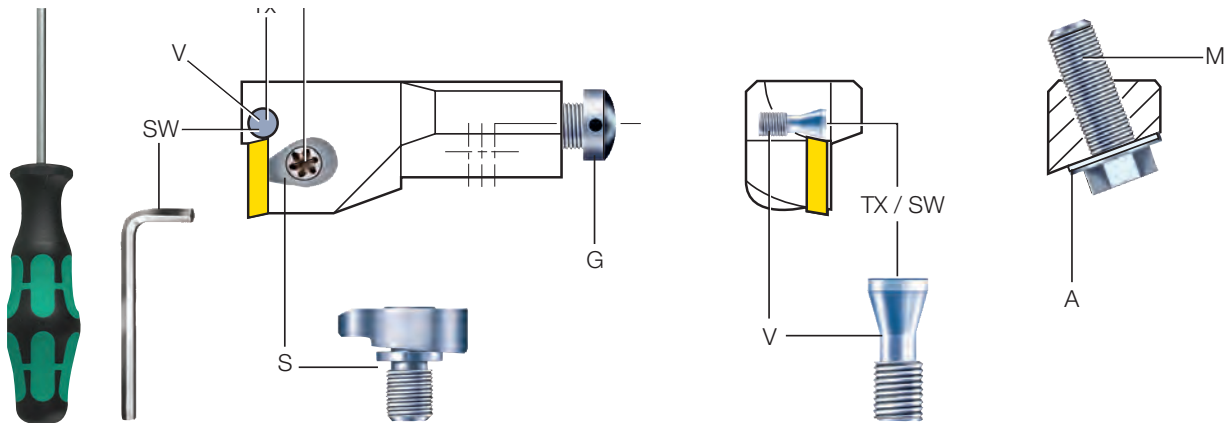


Form „Request for customer specific tools“ page 148

H Cartridges

with tapered screw adjustment, μm -accurate adjustable

Spare parts



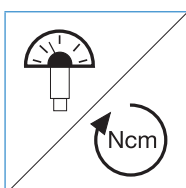
Tool	S	Tx	V	Tx / SW	G	M	A
H 1035-2088 0890 R H 1035-2088 0890 L CBFP R/L 06 CA-04	E 1100 E 1120	Tx 5 Tx 5	E 3007	Tx 5	E 2611-1	E 2613-1	E 2619-2
H 2850-2588 1090 R/L CBFP R/L 08 CA-05	E 1112	Tx 6	E 2986	Tx 6	E 2611-2	E 2613-2	E 2619-2
H 3570-3088 1290 R/L CBFP R/L 08 CA-07	E 1060	Tx 8	E 3093	SW 1,3	E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

Please note: Clamping set S contains:

1 clamping element, 1 retainer ring, 1 clamp screw

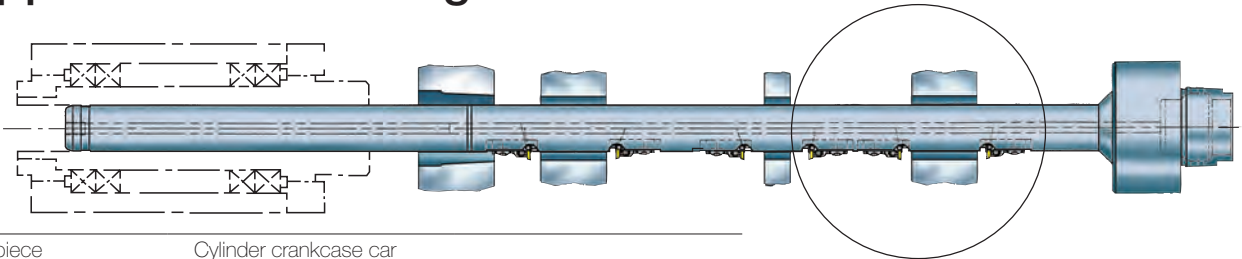
S	Clamping set
Tx	Torx-screw driver (for operating clamping and adjustment screw)
V	Adjustment screw (tapered screw)
SW	Hexagon socket screw key
M	Fastening screw
G	Axial adjustment screw
A	Disk

Ordering numbers for spare parts see page 145-147

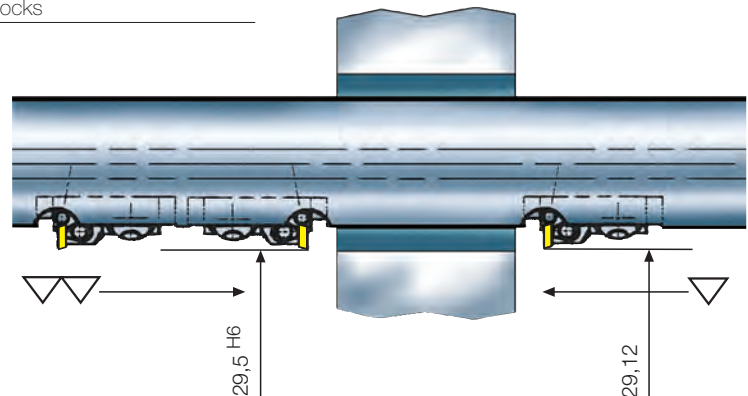


see adjustment
instruction
page 67

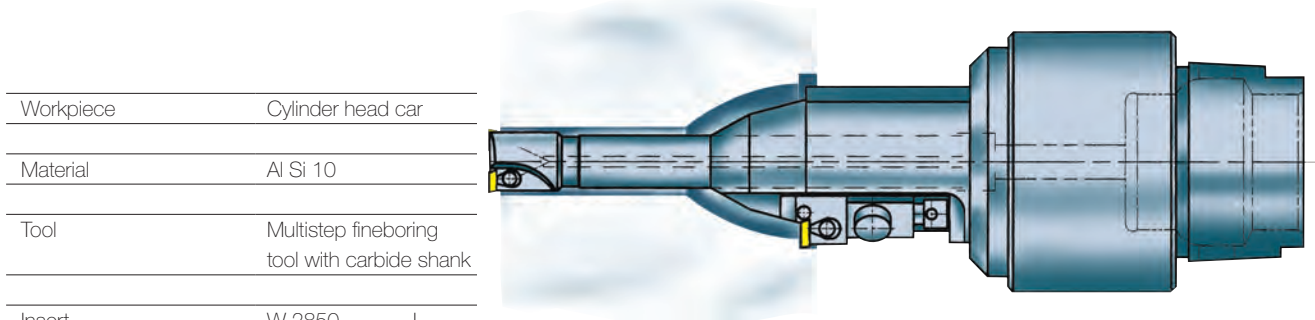
Application: Machining of balancer shaft bores



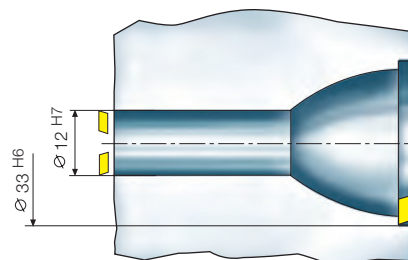
Workpiece	Cylinder crankcase car
Material	Al Si 9 Cu 3
Tool	Line boring bar with cartridges roughing and finishing, 3 pillow blocks
Insert	W 1035-0400 0000 R und L
Cutting grade	PCD
Cutting speed	$V_C = 280$ m/min
Feed rate per tooth	$f = 0.08$ mm/rev. ($\nabla\nabla$) $f = 0.12$ mm/rev. (∇)
Internal 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	$V_C = 300$ m/min
Feed rate	$f = 0.1$ mm/U
Internal cooling	yes



H 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 86 to 87 give additional information for the efficient use of the tooling.

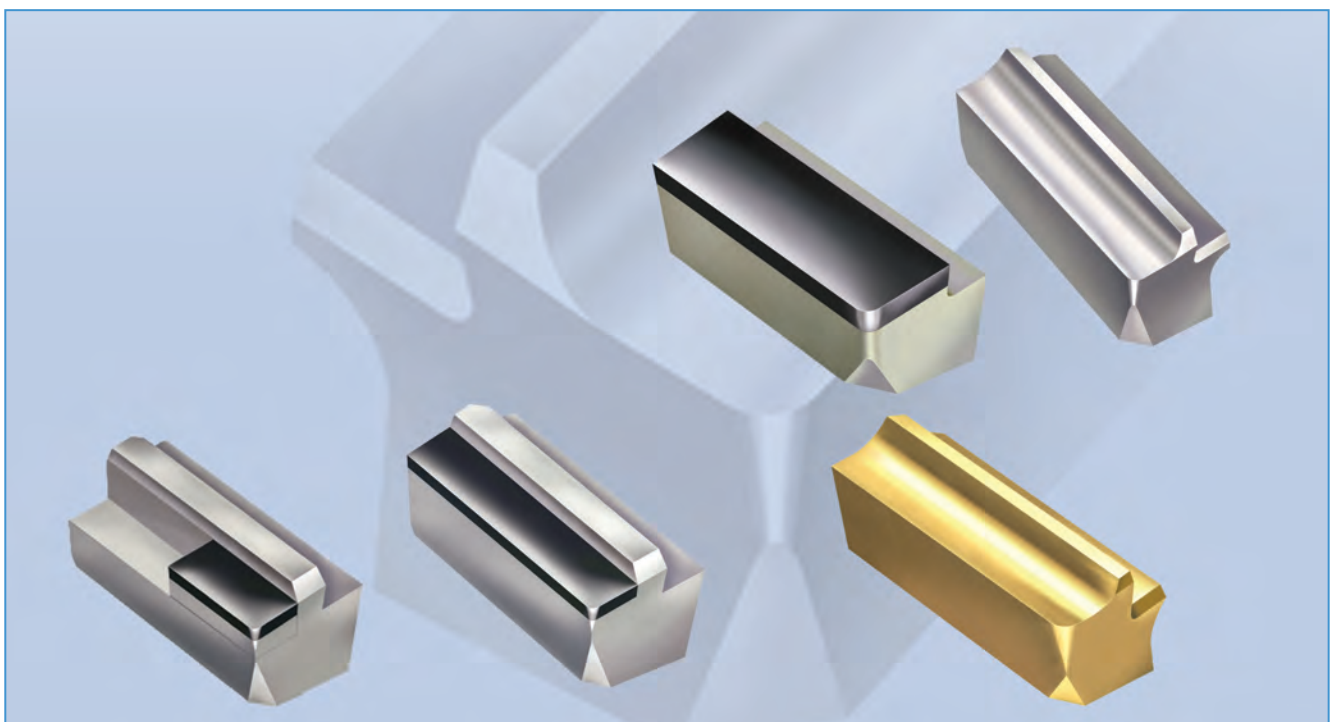
The good availability from stock of our standard inserts supports you in saving costs and reduces your capital investment.

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 103.



Inserts precision ground for fineboring tools and cartridges



Grade matrix
Grade selection
Chipbreaker recommendation

Carbide / carbide coated / PCD / CBN



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 10	Grain size 10 µm			—	—	—	▲	—	—
Spanleitstufe							-0000 -1011 -0011		
CBN				—	—	t ● n	—	—	t ▲ n
Chipbreaker						-0000 -1011 -0011			-0000 -1011 -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											
							RM (MPa)	HB HRC	V _C m/min	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	tempered	1020	300	60-110													
9	Machining steel	tempered	1190	350	60-100													
10	High-alloy steel	annealed	680	200	60-110													
11	Cast 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	Aluminium	<12% Si heat treatable/heat treated		90	-800	↓												
25	casting alloys	>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	Heat resistant alloys	Fe-based annealed		200	30-50	G26/G16												
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	CBN												
39																		

Application recommendations

for fineboring tools and cartridges

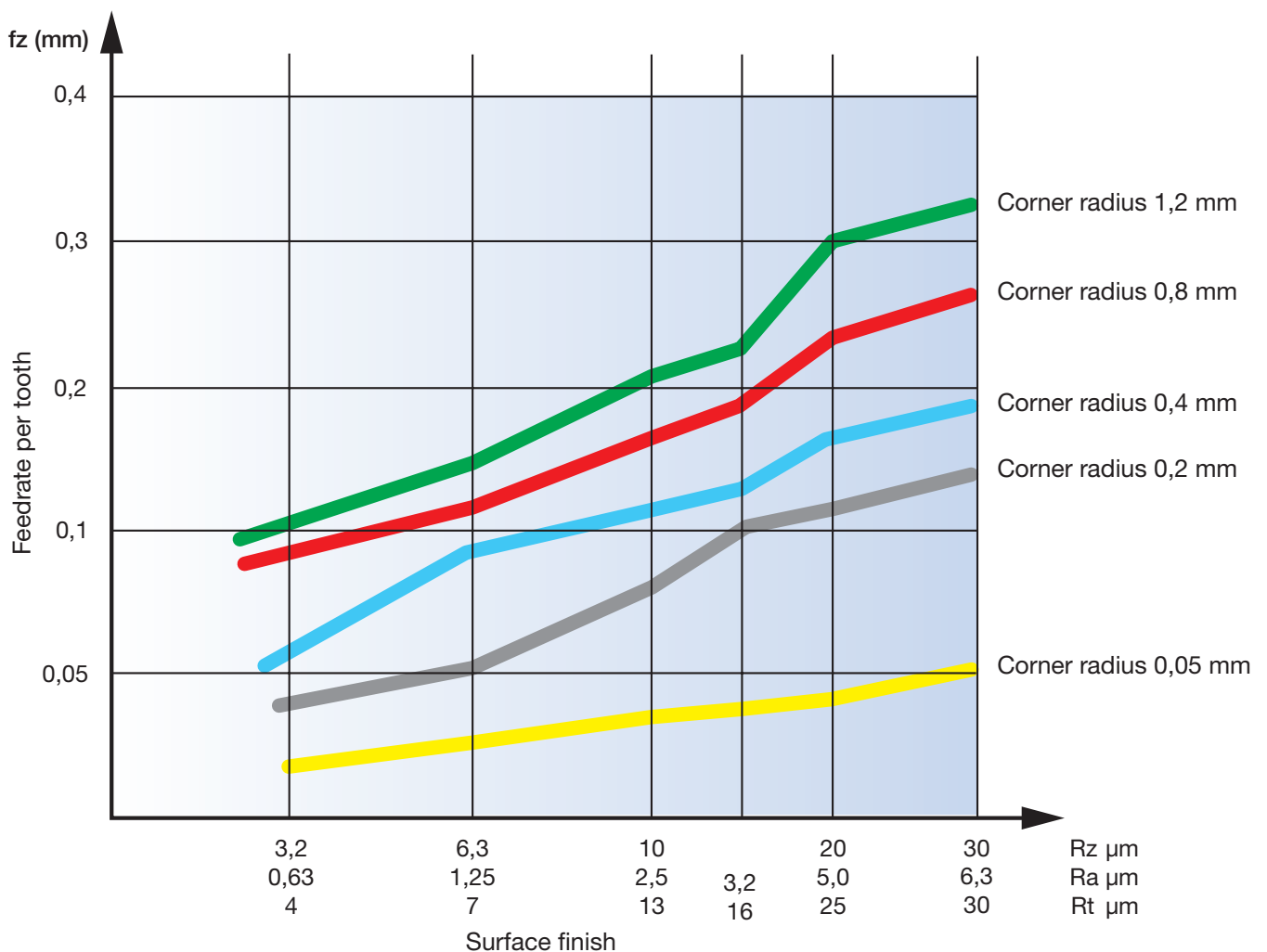


Guide values for surface finish

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

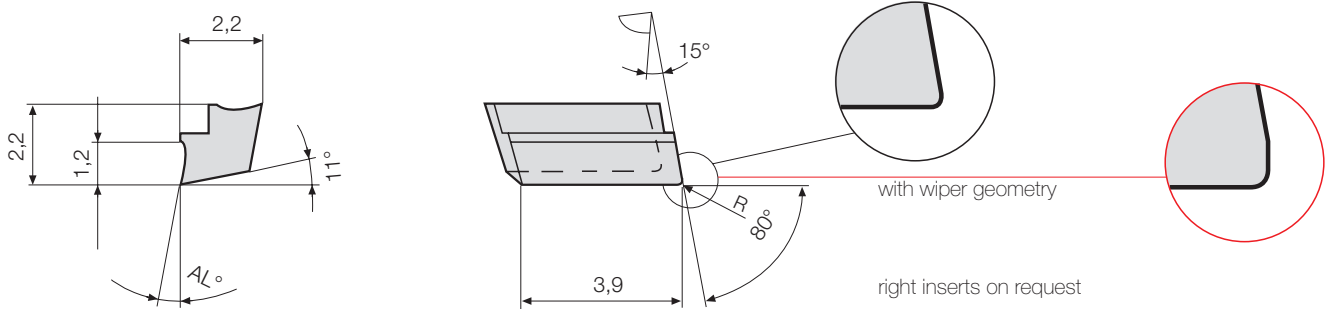
Wiper geometries lead in many cases to a better surface and higher feed rates along with constant high precision.

Guide values for surface finish relative to feedrate and corner radius



H 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	○	●	●	●	○	●

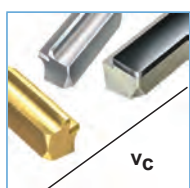
				Part nr. 20106	Part nr. 20107 uncoated	Part nr. 20108	Part nr. 20405	Part nr. 20407 coated	Part nr. 20409
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
with wiper geometry									
10,350	W 1035-0012 1011 L	0.05	10	●	●	●	●	●	●
10,351	W 1035-0212 1011 L	0.2	10	●	●	●	●	●	●
10,352	W 1035-0012 1611 L	0.05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

				Part nr. 20112
Code	Drawing nr.	R	AL°	PCD 10
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	●

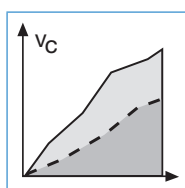
				Part nr. 20113
Code	Drawing nr.	R	AL°	PCD 10
10,350	W 1035-0000 0011 L	0.05	0	●
10,351	W 1035-0200 0011 L	0.2	0	●
10,352	W 1035-0400 0011 L	0.4	0	●

● ex stock ○ on request

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



Grade selections
and insert
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Application
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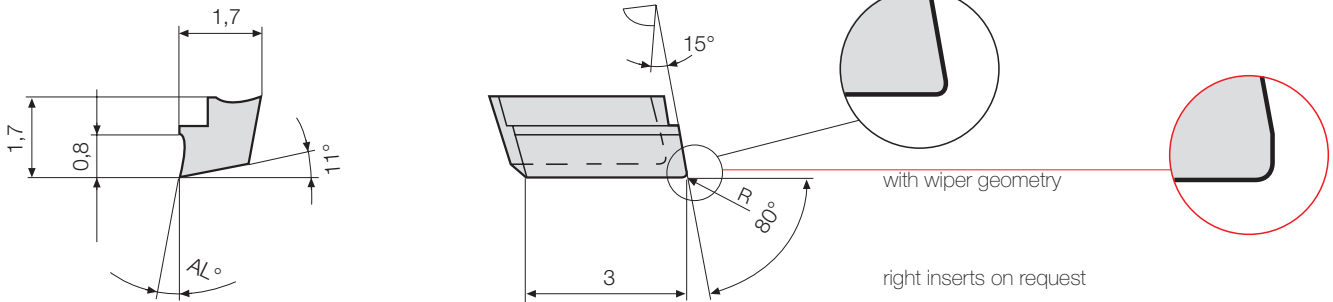


Insert
carbide coated
W 1035-..... L
Insert
PCD-fullface
W 1035-..... L

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
with wiper geometry				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 10
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
with wiper geometry				PCD 10
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

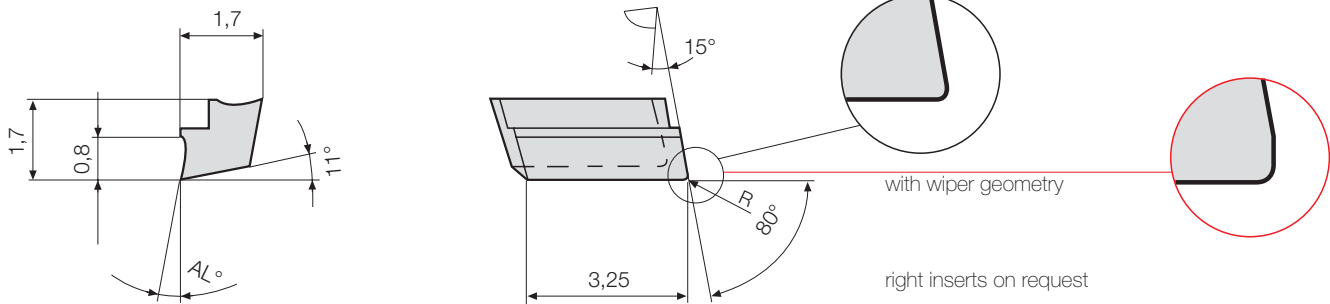
Ordering example: 1 piece W 1730-0008 1000 L G12 = Ordering number: 20410 17,300



Insert
carbide coated
W 1730-..... L

H 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	○	○	●	●	○	●

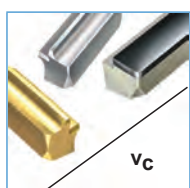
				Part nr. 20134	Part nr. 20135 uncoated	Part nr. 20136	Part nr. 20425	Part nr. 20427 coated	Part nr. 20429
with wiper geometry				P10	P40	K10	G12	G16	G26
17,330	W 1733-0008 1011 L	0.05	10	●	●	●	●	●	●
17,331	W 1733-0208 1011 L	0.2	10	●	●	●	●	●	●
17,332	W 1733-0008 1611 L	0.05	16	○	●	●	●	○	●
17,333	W 1733-0208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

				Part nr. 20140
Code	Drawing nr.	R	AL°	PCD 10
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	●

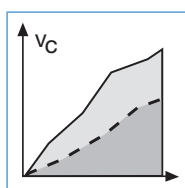
				Part nr. 20141
with wiper geometry				PCD 10
17,330	W 1733-0000 0011 L	0.05	0	●
17,331	W 1733-0200 0011 L	0.2	0	●
17,332	W 1733-0400 0011 L	0.4	0	●

● ex stock ○ on request

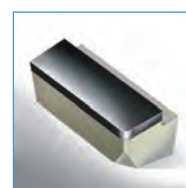
Ordering example: 1 piece W 1733-0008 1000 L G12 = Ordering number: 20420 17,330



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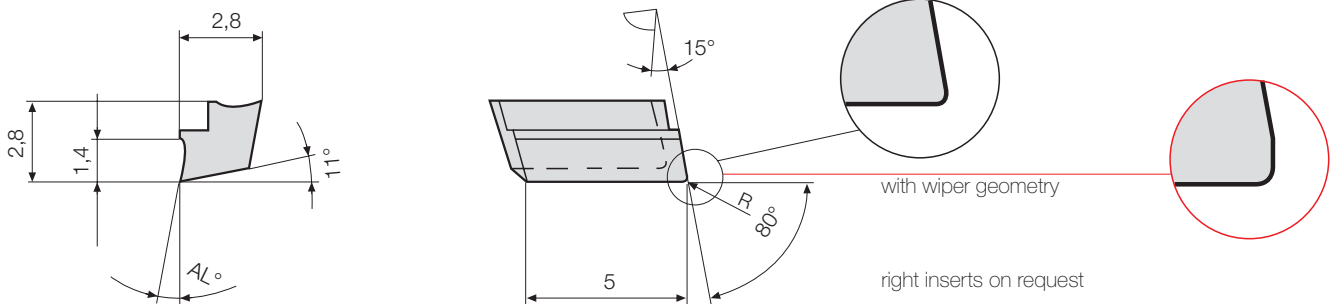


Insert
PCD-fullface
W 1733-..... L

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
with wiper geometry				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 10	CBN 40
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
with wiper geometry				PCD 10
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

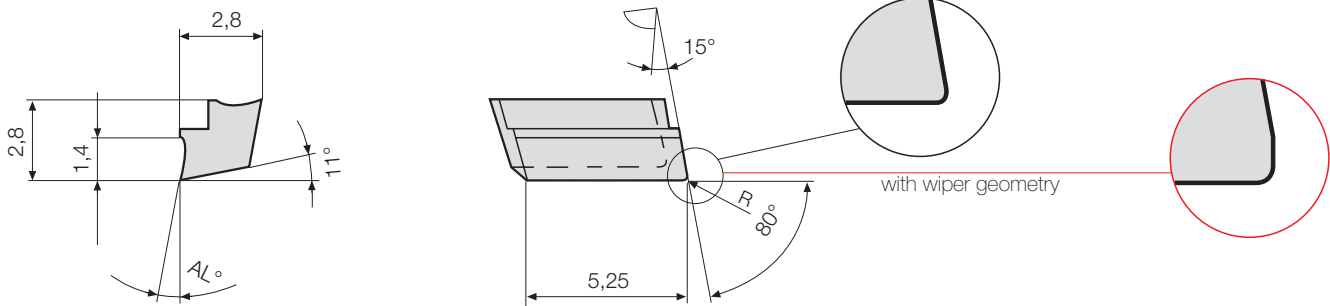
Ordering example: 1 piece W 2850-0214 1000 L G12 = Ordering number: 20430 28,500



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	○	●	●	●	○	●

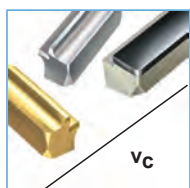
				Part nr. 20166	Part nr. 20167 uncoated	Part nr. 20168	Part nr. 20445	Part nr. 20447 coated	Part nr. 20449
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
with wiper geometry									
28,530	W 2853-0214 1011 L	0,2	10	●	●	●	●	●	●
28,531	W 2853-0414 1011 L	0,4	10	●	●	●	●	●	●
28,532	W 2853-0214 1611 L	0,2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

				Part nr. 20172	Part nr. 20173
Code	Drawing nr.	R	AL°	PKD 10	CBN 40
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	●	●

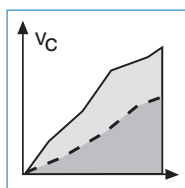
				Part nr. 20174
Code	Drawing nr.	R	AL°	PKD 10
with wiper geometry				
28,530	W 2853-0000 0011 L	0,05	0	●
28,531	W 2853-0200 0011 L	0,2	0	●
28,532	W 2853-0400 0011 L	0,4	0	●

● ex stock ○ on request

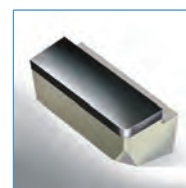
Ordering example: 1 piece W 2853-0214 1000 L G12 = Ordering number: 20440 28,530



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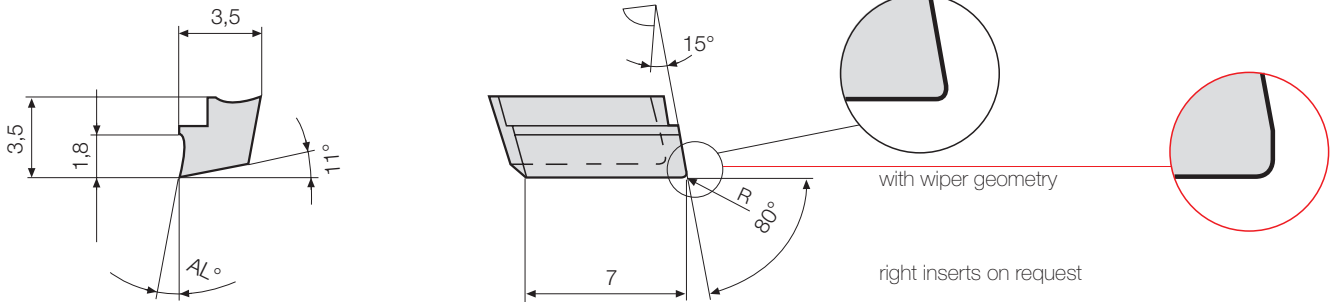


Insert
PCD-fullface
W 2853-..... L

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
with wiper geometry				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 10
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	●

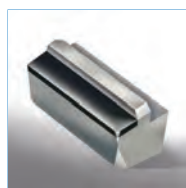
				Part nr. 20190
with wiper geometry				PCD 10
35,700	W 3570-0013 0011 L	0.05	0	●
35,701	W 3570-0213 0011 L	0.2	0	●
35,702	W 3570-0413 0011 L	0.4	0	●

● ex stock ○ on request

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



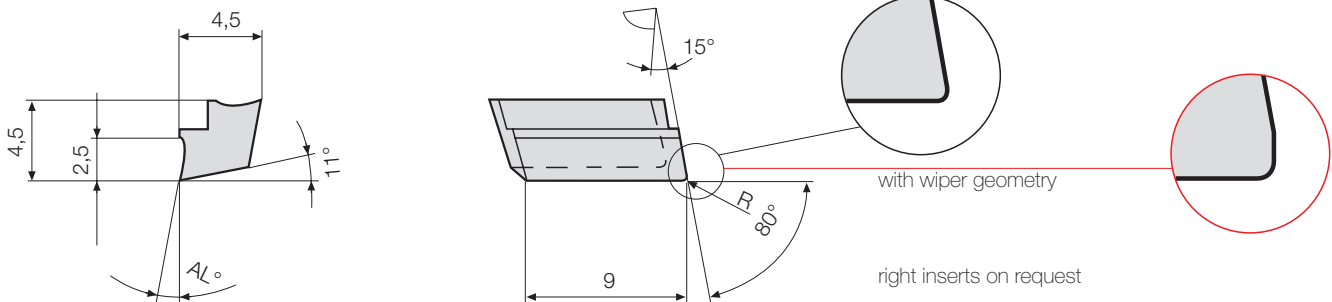
Insert
carbide coated
W 3570-..... L



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

H 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	○	●	●	●	○	●

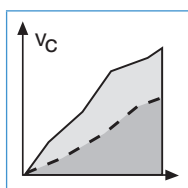
				Part nr. 20198	Part nr. 20199 uncoated	Part nr. 20200	Part nr. 20465	Part nr. 20467 coated	Part nr. 20469
Code	Drawing nr.	R	AL°	P10	P40	K10	G12	G16	G26
with wiper geometry									
40,900	W 4090-0225 1011 L	0,2	10	●	●	●	●	●	●
40,901	W 4090-0425 1011 L	0,4	10	●	●	●	●	●	●
40,902	W 4090-0225 1611 L	0,2	16	○	●	●	●	○	●
40,903	W 4090-0425 1611 L	0,4	16	○	●	●	●	○	●

				Part nr. 20204
Code	Drawing nr.	R	AL°	PCD 10
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 10
with wiper geometry				
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

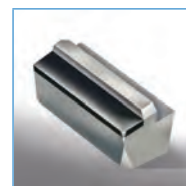
Ordering example: 1 piece W 4090-0225 1000 L G12 = Ordering number: 20460 40,900



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Insert
carbide coated
W 4090-..... L



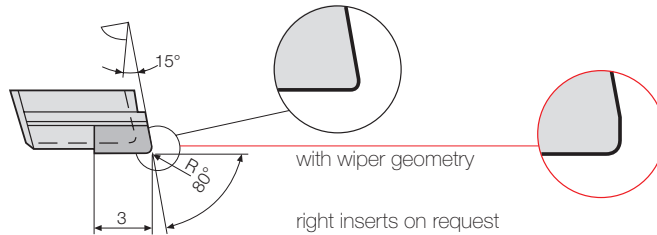
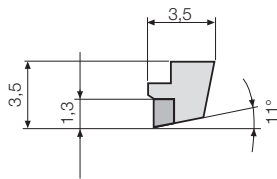
Insert
PCD-tipped
W 4090-..... L

Inserts precision ground for fineboring tools and cartridges



Insert W 3573-..... L

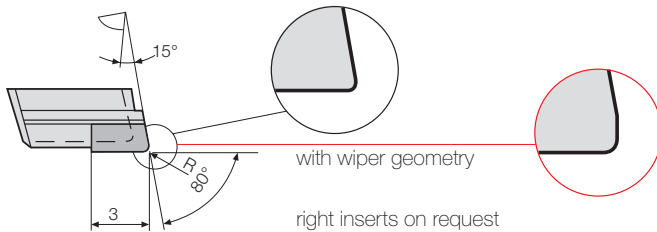
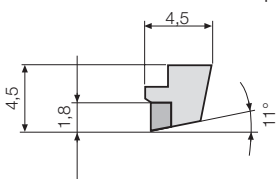
PCD- / CBN-tipped



				Part nr. 20208	Part nr. 20209
Code	Drawing nr.	R	AL°	PCD 10	CBN 40
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 10	
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

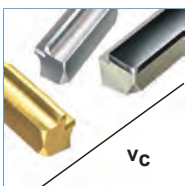
PCD- / CBN-tipped



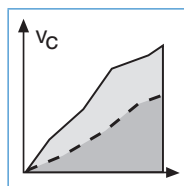
				Part nr. 20212	Part nr. 20213
Code	Drawing nr.	R	AL°	PCD 10	CBN 40
40,930	W 4093-0018 0000 L	0.05	0	●	
40,931	W 4093-0218 0000 L	0.2	0	●	●
40,932	W 4093-0418 0000 L	0.4	0	●	●
40,933	W 4093-0818 0000 L	0.8	0	●	●
with wiper geometry				Part nr. 20214	
Code	Drawing nr.	R	AL°	PCD 10	
40,930	W 4093-0018 0011 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

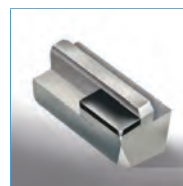
Ordering example: 1 piece W 3573-0013 0000 L PCD = Ordering number: 20208 35,730



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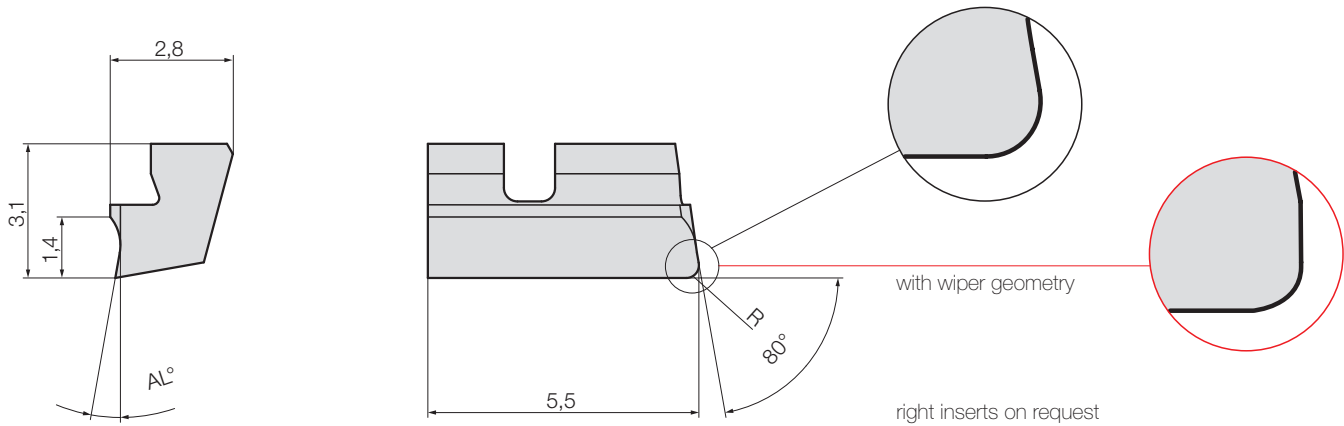
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Insert
PCD-tipped
W 3573-..... L
W 4093-..... L

H Inserts precision ground for customer specific fine boring tools

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

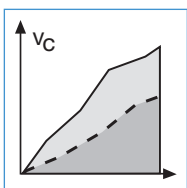


				Part nr. 20335 uncoated	Part nr. 20477 coated	Part nr. 20479
Code	Drawing nr.	R	AL°	K10	G12	G16
20,060	W 2006-0214 1000 L	0,2	10	●	●	●
20,062	W 2006-0414 1000 L	0,4	10	●	●	●
20,061	W 2006-0214 1620 L	0,2	16	●	●	●
20,063	W 2006-0414 1620 L	0,4	16	●	●	●

				Part nr. 20339 uncoated	Part nr. 20481 coated	Part nr. 20483
with wiper geometry				K10	G12	G16
Code	Drawing nr.	R	AL°	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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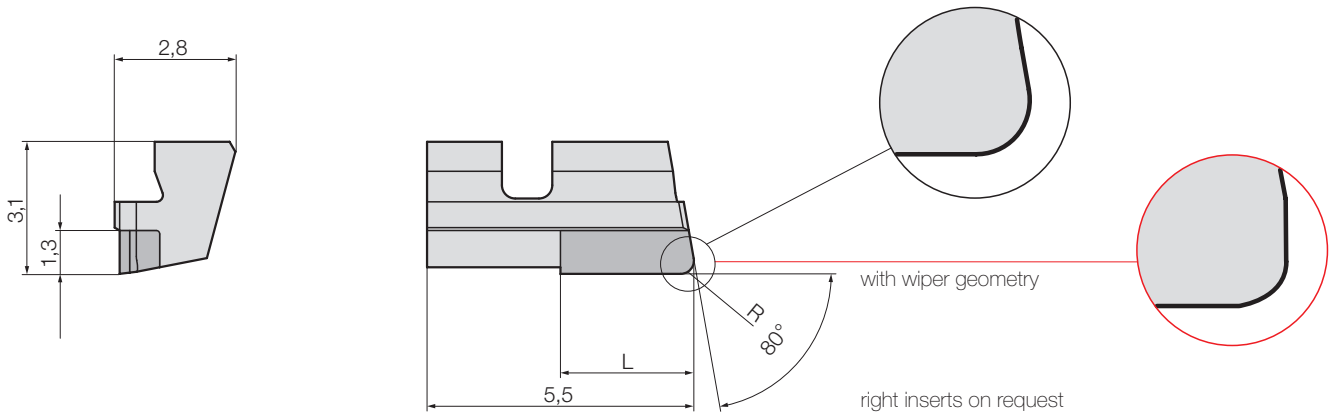


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tools“
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Inserts precision ground for customer specific fine boring tools



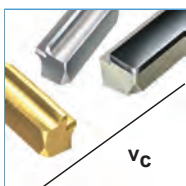
Type W 2006-..... L / W 2063-..... L PCD-tipped



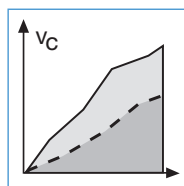
				Part nr. 20342
Code	Drawing nr.	R	L	PCD 10
20,060	W 2006-0013 0000 L	0,05	5,5	●
20,061	W 2006-0213 0000 L	0,2	5,5	●
20,062	W 2006-0413 0000 L	0,4	5,5	●
with wiper geometry				Part nr. 20343
Code	Drawing nr.	R	L	PCD 10
20,060	W 2006-0013 0011 L	0,05	5,5	●
20,061	W 2006-0213 0011 L	0,2	5,5	●
20,062	W 2006-0413 0011 L	0,4	5,5	●
				Part nr. 20357
Code	Drawing nr.	R	L	PCD 10
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 10
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



Grade selections
and insert
geometries
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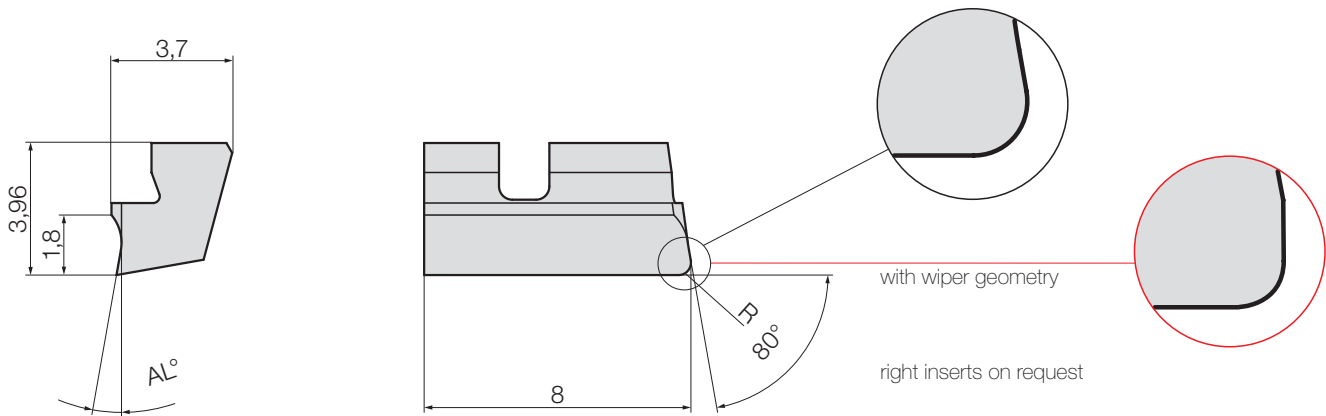
Application
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customer specific
tools“
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H Inserts precision ground for customer specific fine boring tools

Typ W 3006-..... L HM / HM-coated

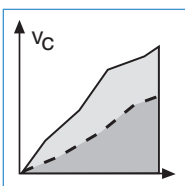


				Part nr. 20359 uncoated	Part nr. 20485 coated	Part nr. 20487
Code	Drawing nr.	R	AL°	K10	G12	G16
30,060	W 3006-0218 1000 L	0,2	10	●	●	●
30,062	W 3006-0418 1000 L	0,4	10	●	●	●
30,061	W 3006-0218 1620 L	0,2	16	●	●	●
30,063	W 3006-0418 1620 L	0,4	16	●	●	●

with wiper geometry				Part nr. 20347 uncoated	Part nr. 20511 coated	Part nr. 20512
Code	Drawing nr.	R	AL°	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

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



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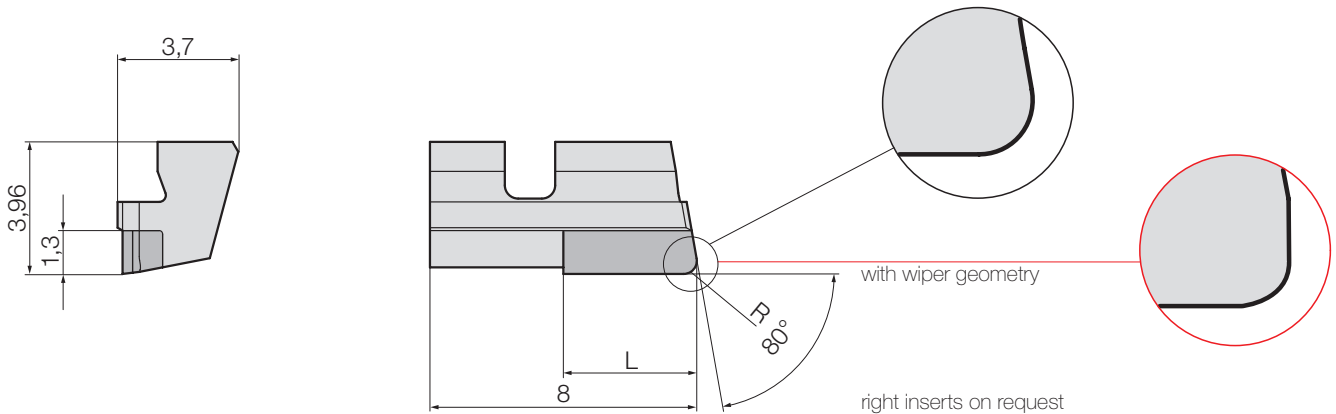


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Inserts precision ground for customer specific fine boring tools



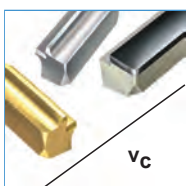
Type W 3006-..... L / W 3064-..... L PKD- / CBN-tipped



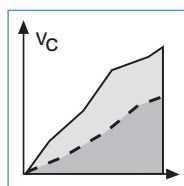
				Part nr. 20348	
Code	Drawing nr.	R	L	PCD 10	
30,060	W 3006-0013 0000 L	0,05	8	●	
30,061	W 3006-0213 0000 L	0,2	8	●	
30,062	W 3006-0413 0000 L	0,4	8	●	
with wiper geometry				Part nr. 20349	
Code	Drawing nr.	R	L	PCD 10	
30,060	W 3006-0013 0011 L	0,05	8	●	
30,061	W 3006-0213 0011 L	0,2	8	●	
30,062	W 3006-0413 0011 L	0,4	8	●	
				Part nr. 20350	Part nr. 20370
Code	Drawing nr.	R	L	PCD 10	CBN 40
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 10	CBN 40
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 ○ on request

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



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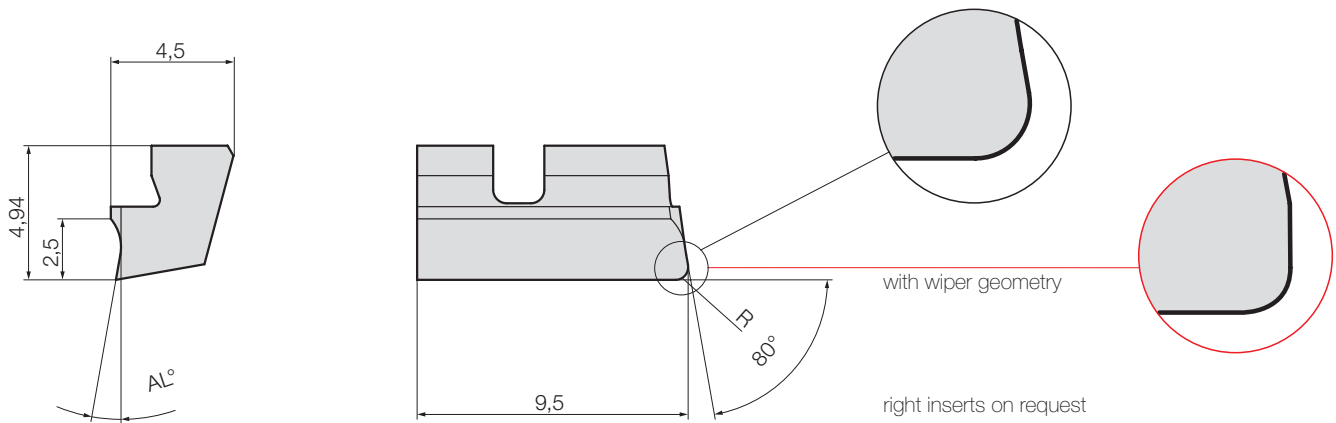
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H Inserts precision ground for customer specific fine boring tools

Type W 4006-..... L HM / HM-coated

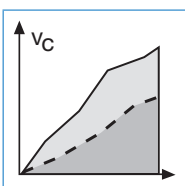


				Part nr. 20353 uncoated	Part nr. 20504 coated	Part nr. 20507
Code	Drawing nr.	R	AL°	K10	G12	G16
40,061	W 4006-0225 1000 L	0,2	10	●	●	●
40,062	W 4006-0425 1000 L	0,4	10	●	●	●
40,063	W 4006-0225 1620 L	0,2	16	●	●	●
40,064	W 4006-0425 1620 L	0,4	16	●	●	●

with wiper geometry				Part nr. 20354 uncoated	Part nr. 20505 coated	Part nr. 20508
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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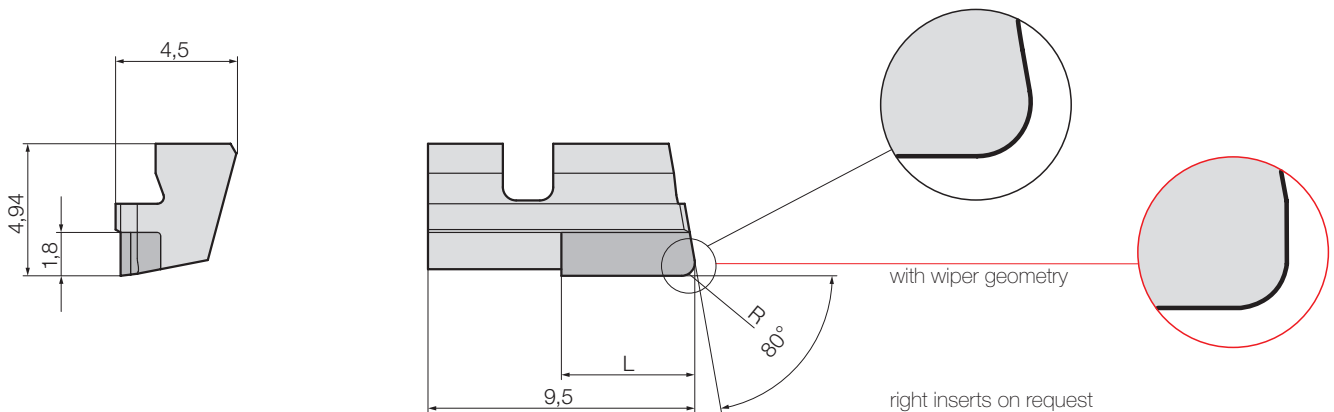


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Inserts precision ground for customer specific fine boring tools



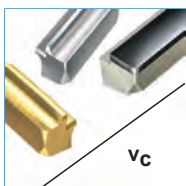
Type W 4006-..... L / W 4065-..... L PKD-tipped



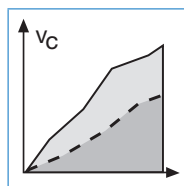
				Part nr. 20355
Code	Drawing nr.	R	L	PCD 10
40,060	W 4006-0018 0000 L	0,05	9,5	●
40,061	W 4006-0218 0000 L	0,2	9,5	●
40,062	W 4006-0418 0000 L	0,4	9,5	●
with wiper geometry				Part nr. 20356
Code	Drawing nr.	R	L	PCD 10
40,060	W 4006-0018 0011 L	0,05	9,5	●
40,061	W 4006-0218 0011 L	0,2	9,5	●
40,062	W 4006-0418 0011 L	0,4	9,5	●
				Part nr. 20368
Code	Drawing nr.	R	L	PCD 10
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 10
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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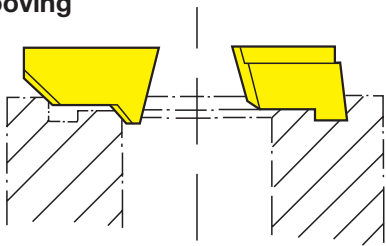
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H Form inserts

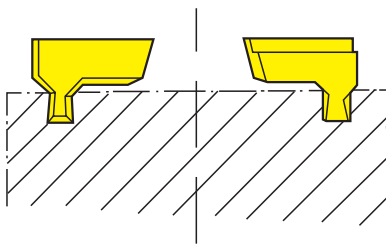
for fineboring tools

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

Facegrooving

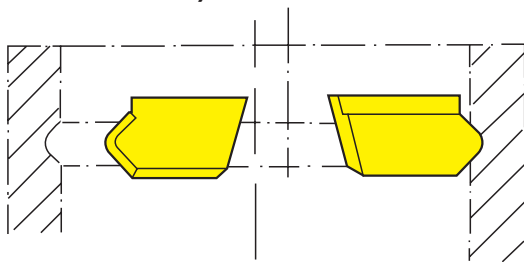


with distribution of cuts

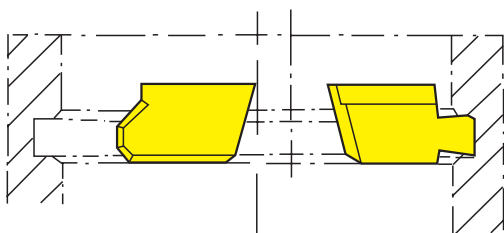


with several inserts

Groove milling by circular interpolation (inside and outside)

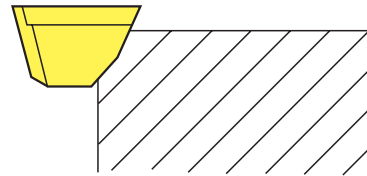


with several inserts

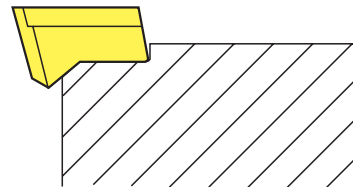


with distribution of cuts

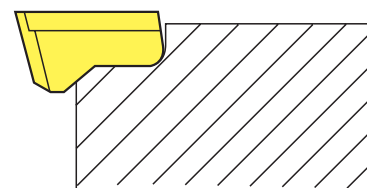
Double chamfer



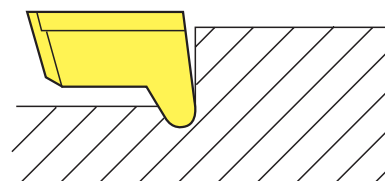
Chamfer / endfacing



Chamfer / corner radius



Axial undercut

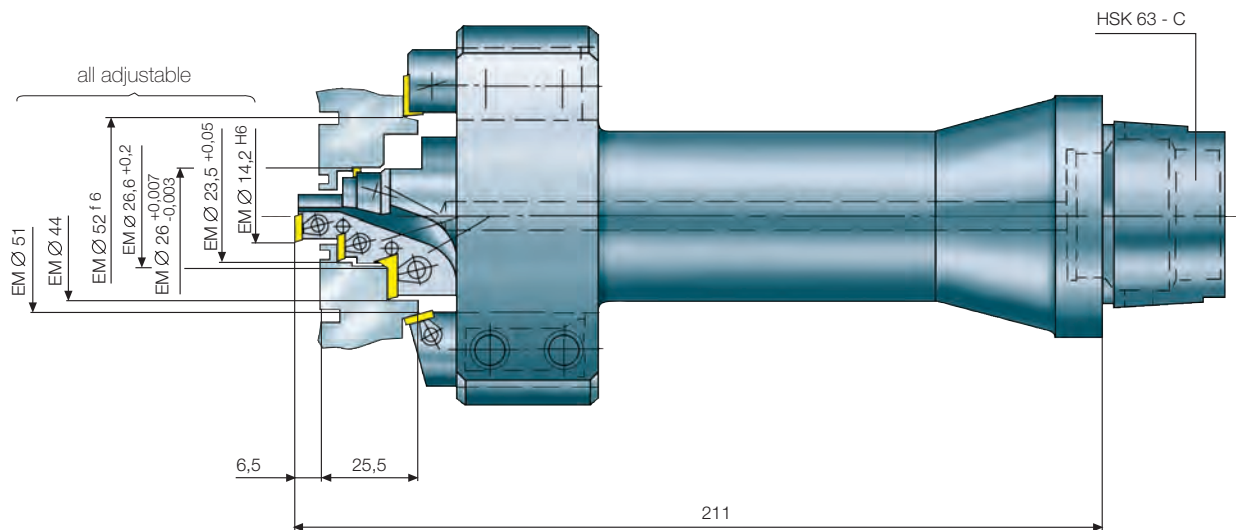


Application example

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.

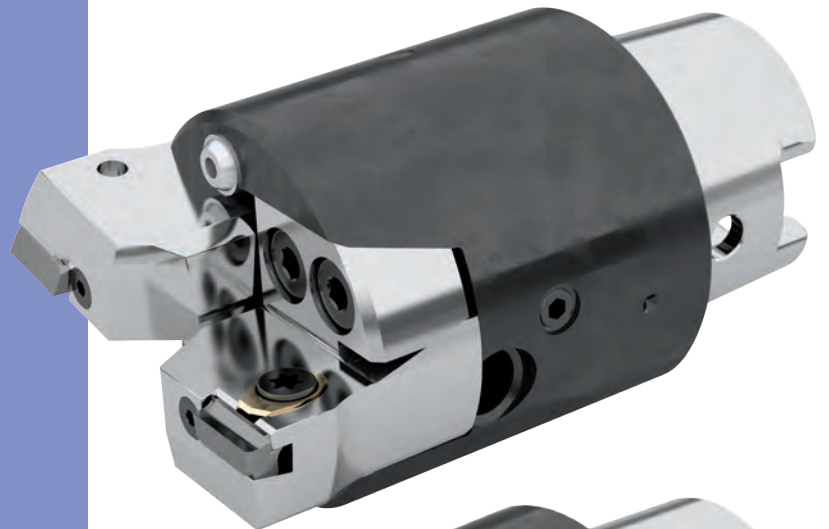


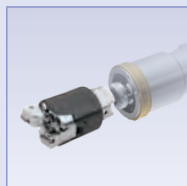
Workpiece	Gearbox case for hand drilling machine
Material	GD - Al Si 9 Cu 3 (DIN)
Tool	Fineboring-, chamfering- and face tool
Number of teeth	6 - effective 1 je Ø
Insert	Standard / acc. to customer specification
Cutting grade	PCD / K10
Cutting speed	$V_C = 800 \text{ m/min}$
Number of revolutions	4.900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



GA200-VARIO

Boring system for diameters
44 mm - 130 mm





Boring system GA200-Vario

Features

page 106-107



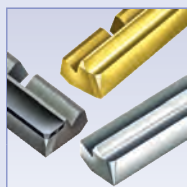
Boring system for diameters 44-130 mm

page 108



Reductions, basic adapters, extensions

page 109

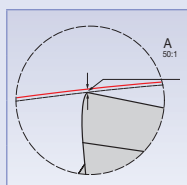


Indexable inserts

page 110

Solid carbide ISO indexable inserts

page 111



Concept

pre- and finish machining in one step

page 112

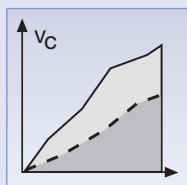
unequal cutting edge spacing 170°

page 113



Presetting device for GA200-Vario and accessories

page 114-115



Adjustment instruction

page 116

Application example

page 117



The new boring system GA200-VARIO for diameters from 44 to 130 mm

Features:

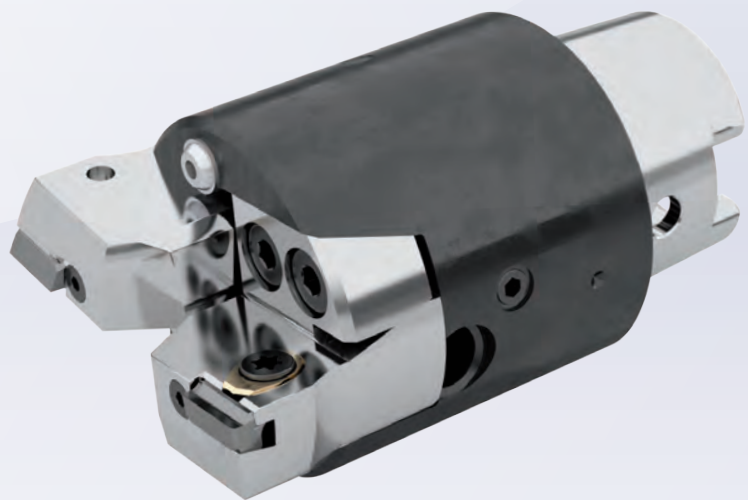
- μm -precise diameter adjustment for fineboring thanks to insert holder with Hollfelder-Guhring tapered screw adjustment
- large adjustment range
- internal coolant supply is directed straight to the cutting edge
- different insert holders for fine- and rough boring
- unequal cutting edge spacing $\rightarrow 170^\circ$
- adaptable to fit all kind of spindles and lengths
- rigid connection between basic adapter and interchangeable insert holder

Advantages of the overall concept:

- roughing and finish machining with only one tool head due to progressive cutting process
- close tolerances can be maintained
- one basic adapter for different diameters
- no retraction marks because of unequal cutting edge spacing
- wide range of insert geometries and coatings available according to customer specifications



μm flexibility meets precision



The boring system from Hollfelder-Gühring impresses with high flexibility and enormous accuracy

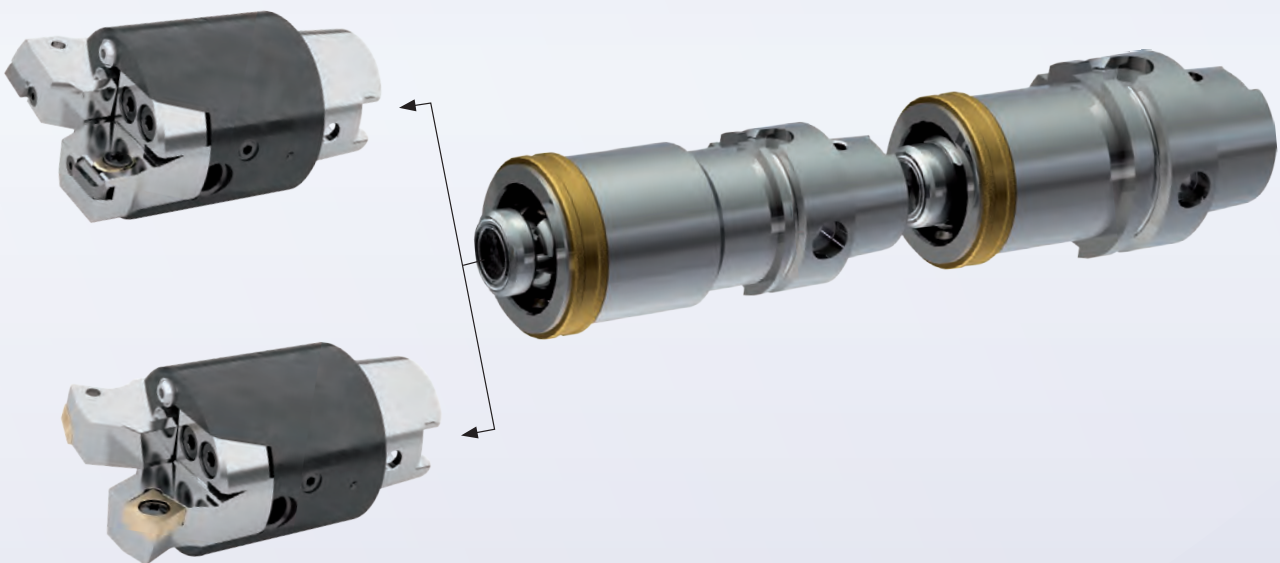


Suitable insert holders and inserts are available for roughing as well as for fine machining. Depending upon the basic adapter the adjustment range is 11-24 mm in \varnothing

i.e. basic adapter 1 => D = 44 - 55 mm

basic adapter 5 => D = 106 -130 mm

The basic adapters are adaptable/extendable thanks to the HSK-connections.



HOLLFELDER-GÜHRING CUTTING TOOLS

The tapered screw adjustment of the fine boring cartridges provide the possibility to μm -accurately adjust all insert diameters. The capability of this high-performance tooling system can be applied for a variety of machining tasks and is optimally suited for all different kinds of materials as well as for HSC machining.

Features of the fine boring holder:

- highly accurate, guide-like insert pocket
- precision ground cutting insert
- tapered screw for μm -accurate diameter adjustment
- simple handling \rightarrow only two parts \rightarrow clamping set and adjustment element

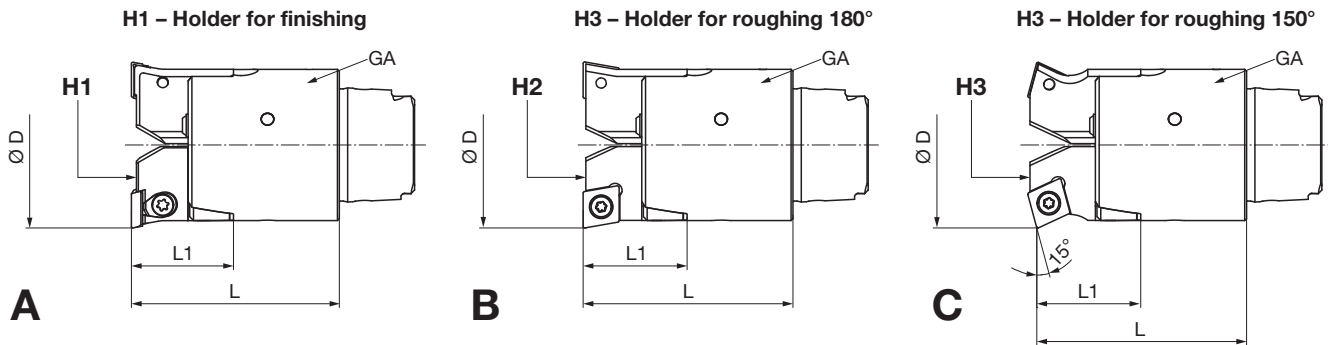
The advantages:

- extreme operational smoothness and durable insert pockets
- superior axial run-out and concentricity accuracy
- extremely long tool life
- excellent surface quality
- simple adjustment in μm -range



Further information regarding this adjustment system as well as instructions can be found on page 116.

H Boring system for diameters from 44-130 mm



Basic adapter

Diameter D	Shank	Total length L			GA basic adapter	Part no.	max. RPM*
		A	B	C			
44-55 mm	HSK 40-C	55 mm	55,5 mm	55,5 mm	GK 040 02 007 804	302824373	5.800
55-69 mm	HSK 50-C	60 mm	60,5 mm	60,5 mm	GK 050 12 025 805	302824377	4.600
69-86 mm	HSK 63-C	60 mm	60,5 mm	60,5 mm	GK 063 12 207 806	302824383	3.700
86-106 mm	HSK 63-C	60 mm	60,5 mm	60,5 mm	GK 080 12 102 806	302824385	3.000
106-130 mm	HSK 63-C	73 mm	73,5 mm	73,5 mm	GK 102 22 144 806	302824389	2.450

Fine boring holder

Diameter D	Length L1	H1 – Holder for finishing	Part no.
44-55 mm	27 mm	GD 4090 0002R	302824375
55-69 mm	27 mm	GD 4090 1001R	302824379
69-86 mm	27 mm	GD 4090 1002R	302824382
86-106 mm	27 mm	GD 4090 1003R	302824387
106-130 mm	35 mm	GD 4090 2001R	302824391

Holder for roughing

Diameter D	Length L1	H3 – Holder for roughing 180°	Part no.
44-55 mm	27,5 mm	GD 09T3 0029R	302824702
55-69 mm	27,5 mm	GD 09T3 1184R	302824703
69-86 mm	27,5 mm	GD 09T3 1185R	302824704
86-106 mm	27,5 mm	GD 09T3 1186R	302824705
106-130 mm	35,5 mm	GD 09T3 2251R	302824706

alternative

Diameter D	Length L1	H3 – Holder for roughing 150°	Part no.
44-55 mm	27,5 mm	GD 09T3 0028R	302824374
55-69 mm	27,5 mm	GD 09T3 1181R	302824378
69-86 mm	27,5 mm	GD 09T3 1182R	302824381
86-106 mm	27,5 mm	GD 09T3 1183R	302824386
106-130 mm	35,5 mm	GD 09T3 2250R	302824390

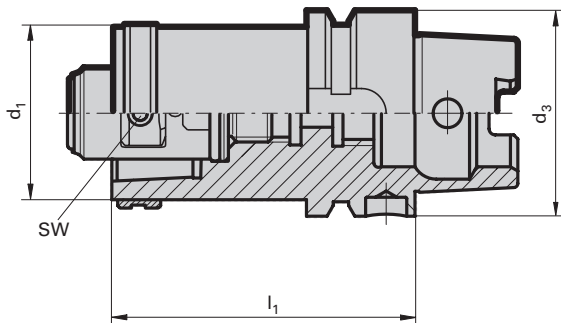
* balancing quality must be checked

Ordering example:

Quantity	Description	Number	Part no.
1 piece	Basic adapter	GK 063 12 207 806	302824383
2 pieces	Holder for roughing 150°	GD 09T3 1182R	302824381
1 piece	Basic adapter	GK 063 12 207 806	302824383
2 pieces	Holder for finishing	GD 4090 1002R	302824382

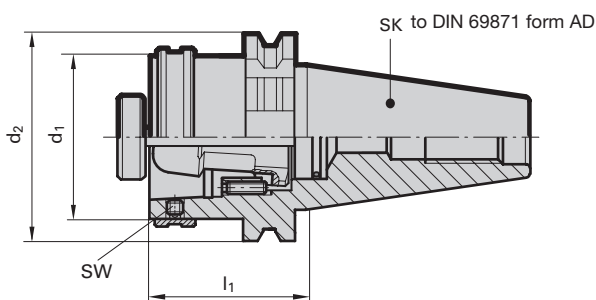
Reductions, basic adapters and extensions

Reductions HSK-A / HSK-C



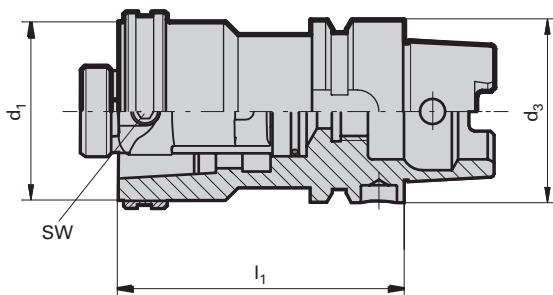
Part no. 4355			
Code		HSK-A	HSK-C
	l_1	d_3	d_1
40,063	70	63	40
50,063	80	63	50
50,100	90	100	50
63,100	100	100	63

Basic adapters SK / HSK-C



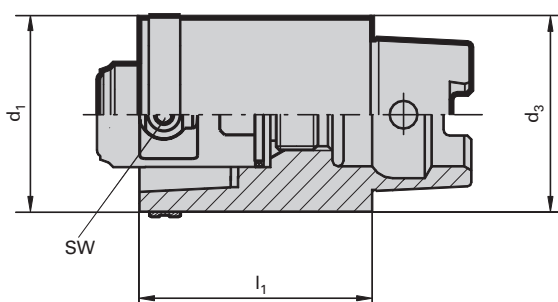
Part no. 4512			
Code		SK	HSK-C
	l_1		d_1
40,040	40	40	40
40,050	40	40	50
40,063	70	40	63
50,040	40	50	40
50,050	40	50	50
50,063	40	50	63

Extensions HSK-A / HSK-C



Part no. 4549		
Code		HSK-A / HSK-C
	l_1	d_1 / d_3
80,040	80	40
80,050	80	50
100,050	100	50
100,063	100	63
140,063	140	63

Extensions HSK-C



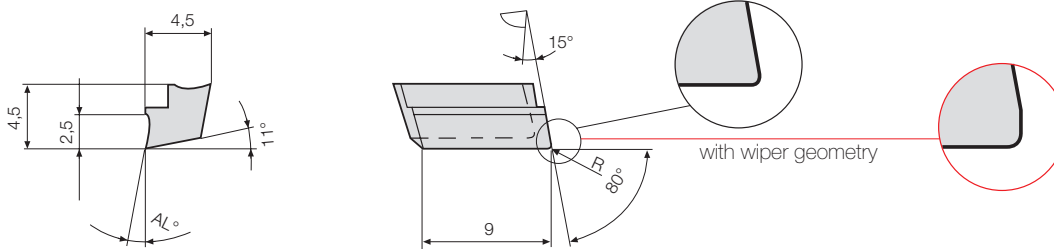
Part no. 4351		
Code		HSK-C
	l_1	d_1 / d_3
50,040	50	40
60,050	60	50
80,063	80	63

Further information can be found in the Guhring catalogue GM300.



Indexable inserts precision ground for GA200-Vario boring systems

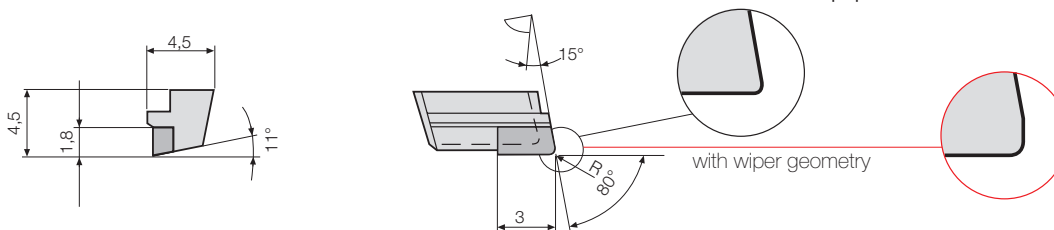
Insert W 4090-..... L



				Part no. 20194 uncoated	Part no. 20460 coated	Part no. 20462 coated
Code	Drawing no.	R	AL°	K10	G12	G16
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 no. 20200 uncoated	Part no. 20465 coated	Part no. 20467 coated
with wiper geometry				K10	G12	G16
Code	Drawing no.	R	AL°	K10	G12	G16
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	●	●	○

Insert W 4093-..... L PCD- / CBN-tipped



				Part no. 20212	Part no. 20213
Code	Drawing no.	R	AL°	PCD 10	CBN 40
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	●	●

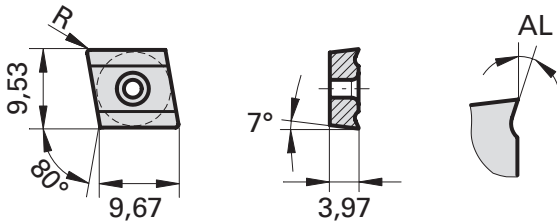
				Part no. 20214
with wiper geometry				PCD 10
Code	Drawing no.	R	AL°	PCD 10
40,930	W 4093-0018 0011 L	0,05	0	●
40,931	W 4093-0218 0011 L	0,2	0	●
40,932	W 4093-0418 0011 L	0,4	0	●

● ex stock ○ on request

Solid carbide ISO indexable inserts precision ground



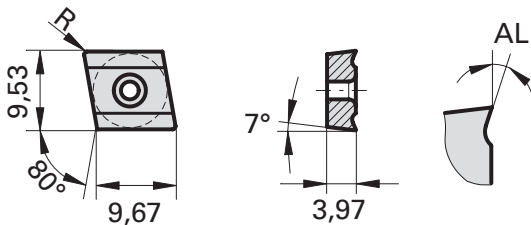
with standard chipbreaker 10°, form C



				Part no. 6678	Part no. 6698	Part no. 6680	Part no. 6686
				uncoated	TiN	TiAlN SuperA	Proton
Code	ISO code	R	AL°	K10	K10	K10	K10
93,020	CCHX 09T302 L 116	0,2	10	•	•	•	•
93,040	CCHX 09T304 L 116	0,4	10	•	•	•	•
93,080	CCHX 09T308 L 118	0,8	10	•	•	•	•

				Part no. 6682	Part no. 6684	Part no. 6676	Part no. 6688
				uncoated	TiN	TiAlN SuperA	Proton
Code	ISO code	R	AL°	P40	P40	P40	P40
93,020	CCHX 09T302 L 116	0,2	10	•	•	•	•
93,040	CCHX 09T304 L 116	0,4	10	•	•	•	•
93,080	CCHX 09T308 L 118	0,8	10	•	•	•	•

with standard chipbreaker 18°, form C



				Part no. 6278	Part no. 6298	Part no. 6662	
				uncoated	TiN	Proton	
Code	ISO code	R	AL°	K10	K10	K10	
93,020	CCHX 09T302 L 216	0,2	18	•	•	•	
93,040	CCHX 09T304 L 216	0,4	18	•	•	•	
93,080	CCHX 09T308 L 218	0,8	18	•	•	•	

				Part no. 6282	Part no. 6284	Part no. 6664	Part no. 6280
				uncoated	TiN	Proton	uncoated
Code	ISO code	R	AL°	P40	P40	P40	P10
93,020	CCHX 09T302 L 216	0,2	18	•	•	•	•
93,040	CCHX 09T304 L 216	0,4	18	•	•	•	•
93,080	CCHX 09T308 L 218	0,8	18	•	•	•	•



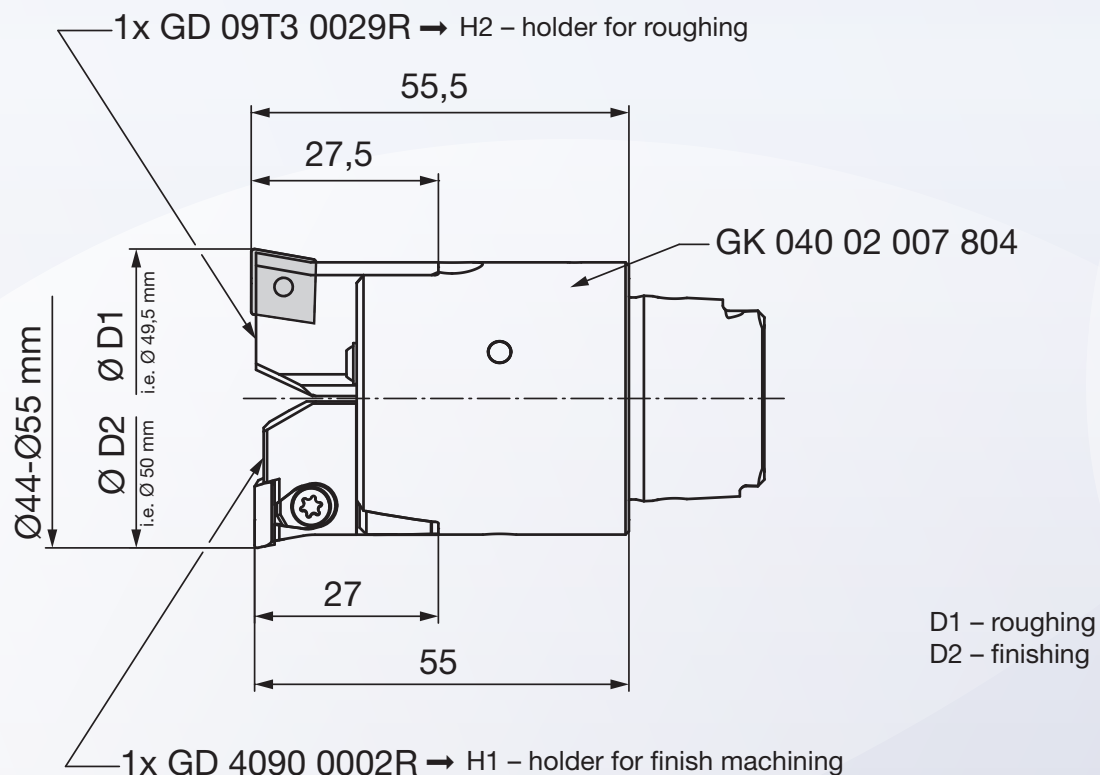
Concept: pre- and finish machining in one step

Technology and advantages

The different roughing holders H2 & H3 were each designed 0.5 mm longer (L1) than the corresponding fine boring holders H1.

Therefore, for example, it is possible to fit two different holders to a basic adapter.

In the following, the diameter range 44 mm – 55 mm is shown as an example:



The roughing insert D1 is adjusted 0.5 mm smaller in diameter than the finishing insert D2. This is set to the final required measurement.

During machining, the roughing insert leads the finishing insert by 0.5 mm due to the longer holder.

→ progressive cutting process $Z_{\text{eff}} = 1$

Advantages:

Roughing and finish machining with one basic adapter in one cut

- the roughing operation can possibly be omitted
- For the production of holes with high geometric requirements
- very high surface quality
 - Maintaining straightness is possible even during interrupted machining processes.

Concept: unequal cutting edge spacing 170°

Technology and advantages

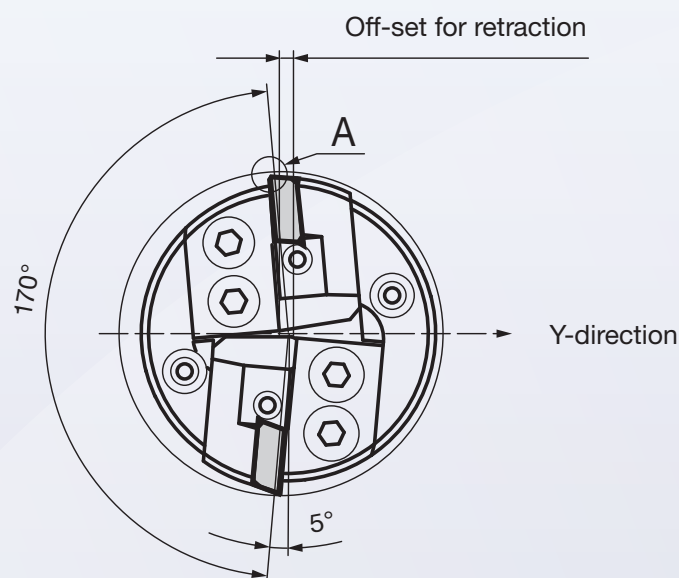
Thanks to the 170° insert spacing the tool can travel up to 0.7 mm in the Y-direction following the conclusion of the finishing operation. Hereby, a clearance of approximately 0.06 mm between hole and insert is created!

The tool can now be drawn from the hole without the surface being damaged by scoring marks caused during retraction!

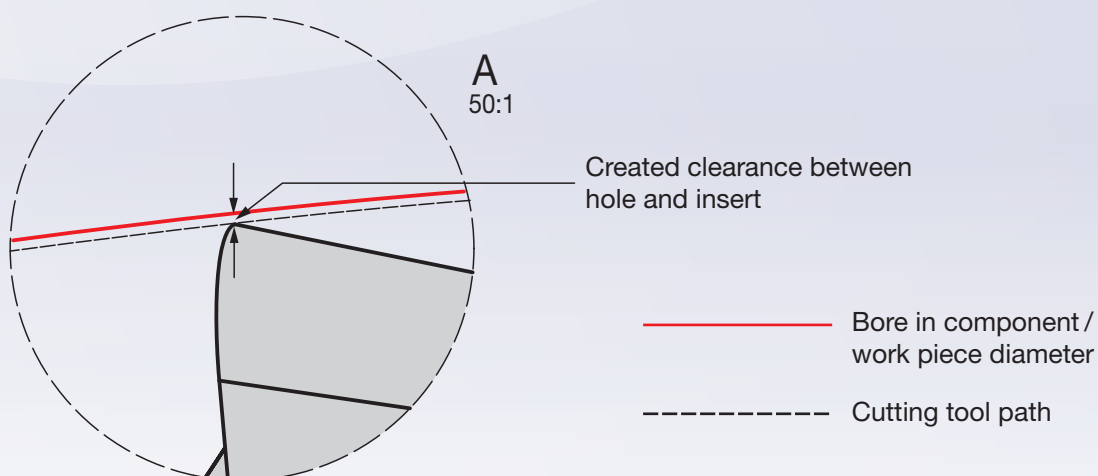
→ higher feed rate through $Z_{\text{eff}} = 2$

1. Fine machining of hole with two effective inserts.
The inserts are turned towards each other by 170°.

2. Orientated spindle stop



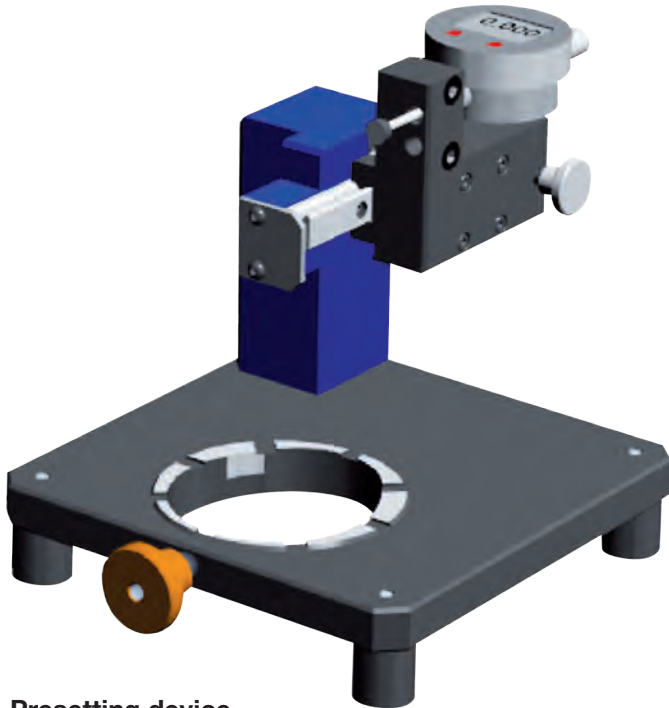
3. Tool travels in Y-direction → Tool free!



4. Tool retraction in rapid traverse → **no score marks!**

H Presetting device for GA200-Vario and...

A setting device was specifically developed for the pre-setting of GA200-Vario tools.

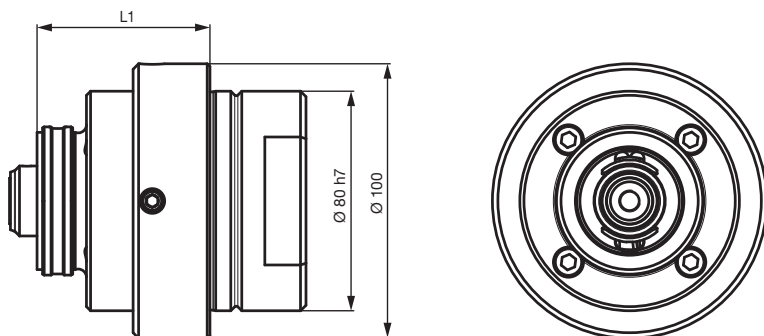


Presetting device

Part no.
302952490

The scope of delivery includes a digital dial gauge. It can be moved horizontally with a rail guide. The large and clear digital display allows easy reading of the measuring value.

By using different setting adapters any tool size can be adjusted with the same setting device.



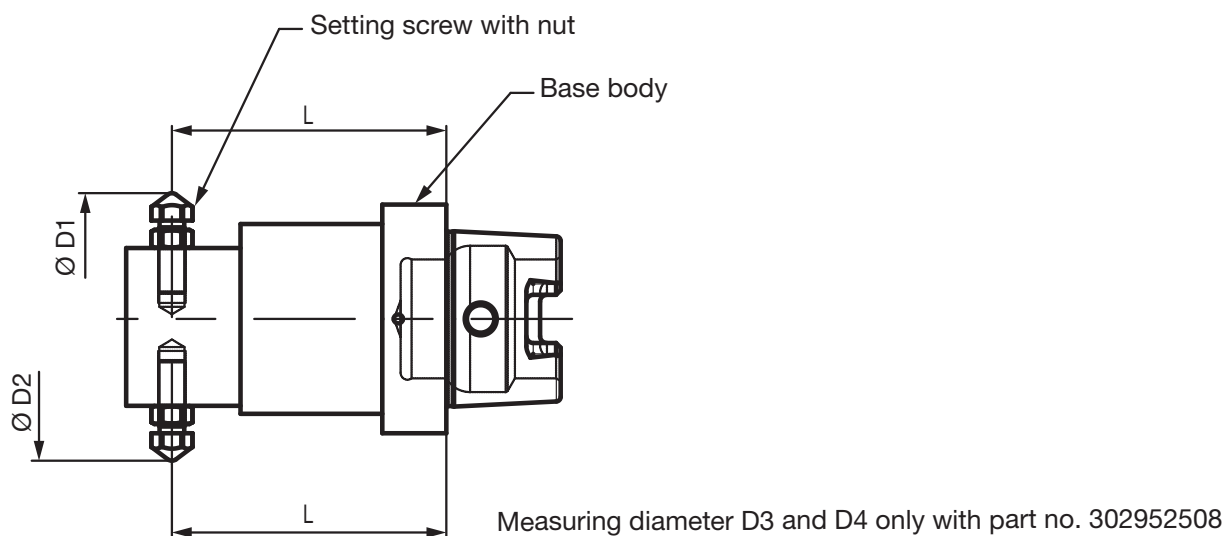
Setting adapter (intermediate flange + adapter flange)

Shank	for diameter D	Length L1	Part no.
HSK 40-C	44-45 mm	68 mm	302954841
HSK 50-C	55-69 mm	63 mm	302954842
HSK 63-C	69-130 mm	63 mm	302954843

...required accessories



In addition, the following measuring masters are required. All diameters are covered.

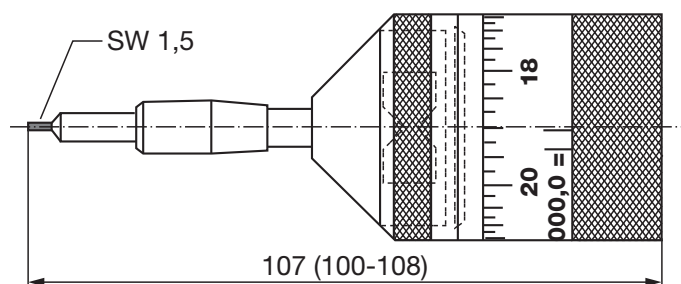


Measuring master

Shank	Measuring diameter D1, D2, D3, D4	Length L	Part no.
HSK 40-C	44 mm, 50 mm	55 mm	302952506
HSK 50-C	55 mm, 62 mm	60 mm	302952507
HSK 63-C	69 mm, 80 mm, 90 mm, 100 mm	60 mm	302952508
HSK 63-C	106 mm, 120 mm	73 mm	302952509

The following setting key enables the customer to re-adjust the fine boring tool during the machining process without having to remove it from the machine.

Setting key for the adjustment of insert type W4090



Setting key (incl. SW 1.5 bit)

Part no.
302896089

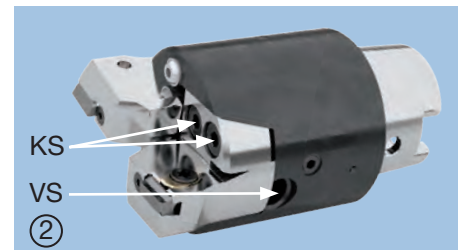
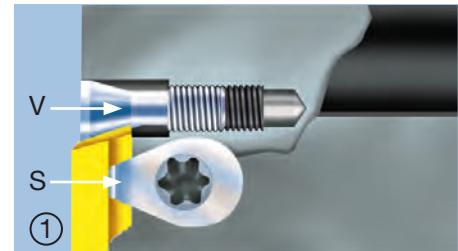
Ordering example:

Quantity	Description	Part no.
1 piece	Adjustment tool	302952490
1 piece	Setting adapter HSK 50-C	302954842
1 piece	Measuring master HSK 50-C	302952507

H Adjustment instruction

Adjustment of holder H1 for fine boring

- The top of the tapered screw (V) must be even flush with the top of the holder body (picture 1)
- Install a new insert into the pocket seat and slightly tighten the clamp set (S)
- Tighten the clamping screw (KS) with torque wrench to 1 Nm max (picture 2)
- Adjust both holders using screw (VS) to within $\varnothing 0.20 - 0,25$ mm of required nominal diameter
- Tighten the clamping screw KS to required torque specification



	KS M4x16 (12.9)	KS M6x25 (12.9)
Torque value	5.1 Nm	17.6 Nm

- **The roughing tool holder (H2, H3) has to be adjusted according to the requested dimension.**

Changing fine boring inserts

Disassembly/Assembly:

- Loosen the clamping set S (1 to 2 turns) and remove the worn insert
- Clean the insert pocket
- Unscrew the tapered screw (V) 1 to 2 full rotations
- Insertion of new insert
- Press insert into the pocket, hold and pre-tension clamping set S to 250 - 350 Ncm

Assembly:

- Fine boring inserts need be adjusted within approximately 0,05 mm to the nominal dimension
- Tighten the clamp set (S) to required torque value

- **Adjust the insert to the required machining diameter via tapered screw.**

It is not necessary to re-tighten the clamping set!

Tightening torques for clamping sets

Tool type	Clamping set S	Torque (Ncm)	Torx size	Taper screw V	Torque wrench fixed DSF Part nr.	Code
H 4090	E 1040	345	Tx 15	E 2997	20063	3,450
Torque wrench adjustable DS		20 - 120			20063	1,200
		100 - 600			20063	6,000

Assembly tools

- SW 3 resp. 5 for KS Part no. 4921 Code 3,000 resp. 5,000
- SW 3 resp. 5 for VS Part no. 4921 Code 3,000 resp. 5,000
- SW 1,5 for V Part no. 4921 Code 1,500



Finish machining of Pin bore on connecting rod

Workpiece	connecting rod
Material	36MnVS4
Tool	GA200-Vario fine boring tool \varnothing 66.00 mm
Number of teeth	2
Insert	acc. to customer specification
Cutting grade	HM with PROTON coating TiAlN
Cutting speed	$v_c = 250$ m/min
Number of revolutions	$n = 1.205$ rev./min
Feed rate	169 mm/min
Feed rate per tooth	0.07 mm
Cutting depth	0.3 mm (0.6 in diameter)
Coolant	yes, internal



H4
HOLLFELDER
GÜHRING
CUTTING TOOLS



Drill- & Chamfering tools

Drill / Chamfering tools

...versatile

HOLLFELDER-GÜHRING CUTTING TOOLS

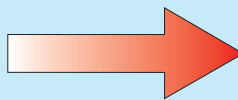
The new Drill / Chamfering tools are applicable for versatile machining tasks and a wide variety of materials.

The features:

- Use in standard hydraulic expansion chucks
- Use of standard solid carbide drills (DIN 6537 L/K) 3xD, 5xD, 7xD
- 3 different chamfering angles as standard available
- Standard inserts in carbide (uncoated and coated) as well as in PCD available

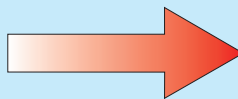
Advantages by use of these tools:

High runout accuracy due to use in hydraulic expansion chucks



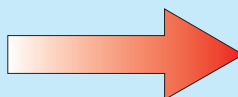
High tool life on drills and inserts

One tool holder for different chamfering angles



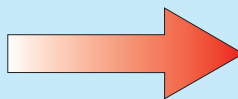
Reduced amount of tool bodies

Easy handling, assembly and setup



Reduced non-productive times

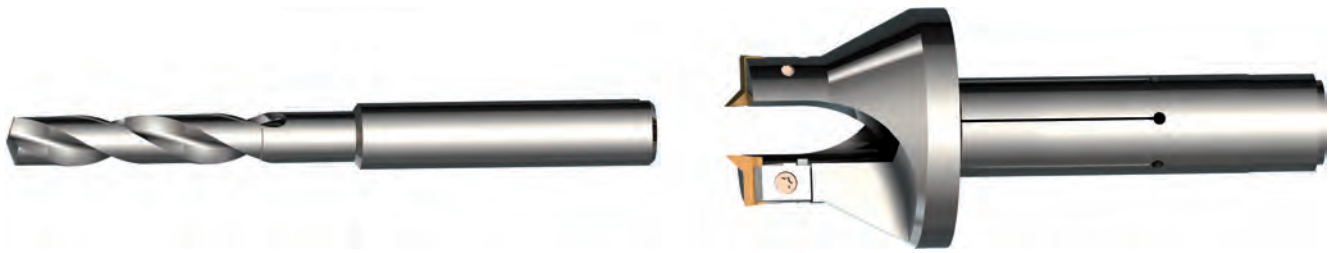
Suitable for all standard hydraulic expansion chucks



No additional costs for special chucks

H Drill / Chamfering tools

Possible drill-adapter combinations

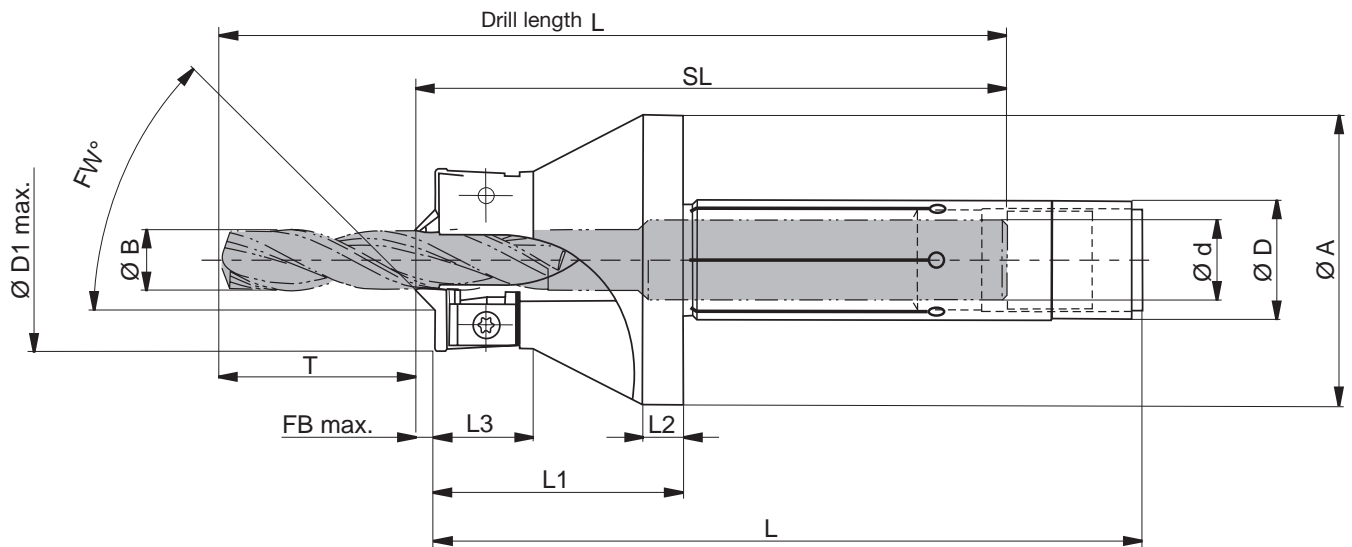


Drawing number	FB	Insert	SL	SL	Ø B	Drill 3xD T DIN 6537 K Twisted		Drill 5xD T DIN 6537 L Twisted		Drill 7xD T	
						from	to	from	to	from	to
H 2006-1206 0000 R	1.8	W 2006-..... L	59.3	50.3	4.0 - 4.2	6.7 - 15.7	14.7 - 23.7	15.7 - 24.7			
					4.3 - 4.7	6.7 - 15.7	14.7 - 23.7	25.7 - 34.7			
					4.8 - 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 10	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 GÜHRING GM 300 program and the solid carbide drill line RT 100 (DIN 6537 L/K) .
 More information can be found in the corresponding GÜHRING catalogs.

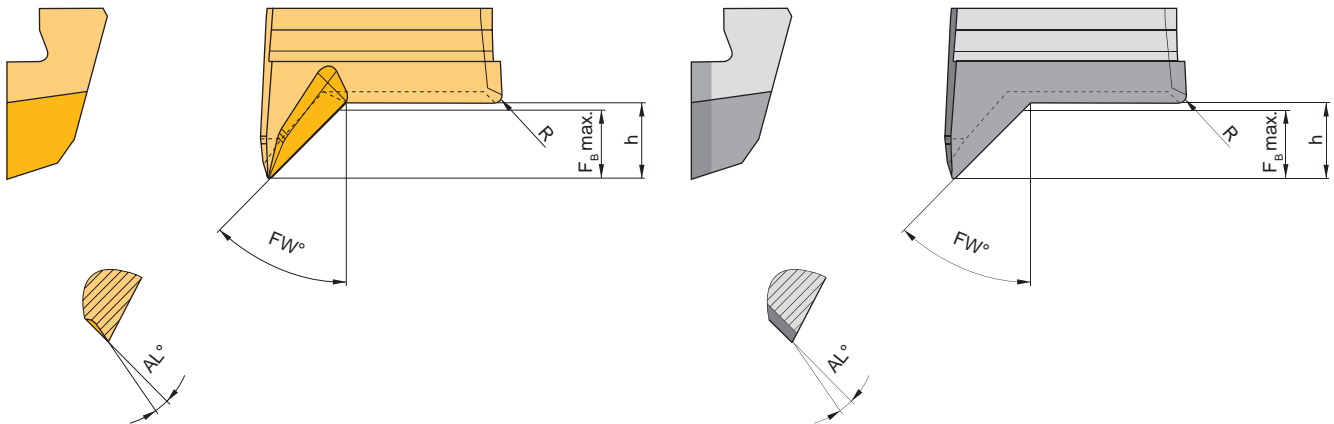


The cutting data recommendations in the table are guide values and depend to a high degree on the stability of the machine, fixture and workpiece.

Cutting group	Material group	Composition / Structure	Tensile strength	Hardness	Cutting speed	Recommended cutting grade	Feed rate f_z mm/z	
							RM (MPa)	HB HRC
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	K10/G12		
11	Cast steel	annealed	680	250	60-110			
12-13	High-alloy tool steel	hardened and tempered	1100	325	50-60			
14.1	Stainless steel	ferritic/martensitic annealed	680	200	50-90			
14.2	Stainless steel	martensitic	810	240	40-80			
15	Stainless steel	austenitisch quenched	610	180	40-80			
16	Stainless steel	austenitic/ferritisch (duplex)	880	260	40-80			
17	Grey cast iron	perlitic/ferritic		180	110-160			
18	Grey cast iron	perlitic (martensitic)		260	100-150			
19	Cast iron with nodular cast iron	ferritic		160	80-130			
20	Malleable	perlitic		250	70-120			
21	Aluminium	ferritisch		130	90-150			
22	Aluminium forging alloys	perlitic		230	80-140			
23	Aluminium casting alloys	not heat treatable		60	-1000			
24	Aluminium casting alloys	aushärtbar/ausgehärtet		100	-800			
25	Aluminium casting alloys	<12% Si not heat treatable		75	-1000			
26	Aluminium casting alloys	<12% Si heat treatable/heat treated		90	-800			
27	Aluminium casting alloys	>12% Si not heat treatable		130	-600			
28	Copper	Machined alloys, Pb >1%		110	70-120			
29	Copper alloys (bronze, brass)	CuZn, CuSnZn		90	70-120			
30	Copper alloys (bronze, brass)	Cu, lead free Copper/electrolyte copper		100	70-120			
31	Non metallic materials	Duroplastic			-200			
32	Non metallic materials	Reinforced materials			-200			
33	Heat treatable alloys	Fe-based annealed		200	30-50			
34		Heat treatable alloys	heat treated		230	30-50		
35		Heat treatable alloys	Ni- or Co-based annealed		250	20-40		
36		Heat treatable alloys	heat treated		350	20-40		
37		Heat treatable alloys	cast		320	20-40		
38	Titanium alloys	Pure titanium	400		20-40			
39		Titanium alloys	Alpha-beta alloys	1050		20-40		

Carbide inserts uncoated / coated

PCD inserts



Code	Drawing nr.	F _b max max. Chamfer width	FW° Chamfer angle	AL° Rake angle	R Radius	h Heigth	Part nr.			
							20362	20363	20364	20365
							Cutting grade			
							K10	G12	G16	PKD 10
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

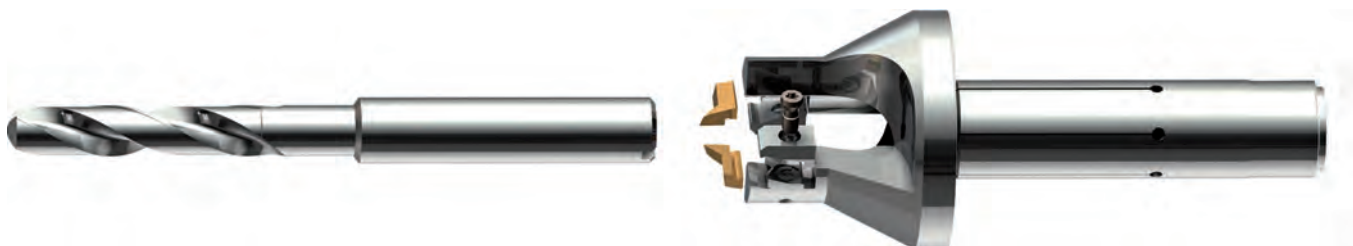
Ordering example:

e.g. 30° PCD 10 Chamfering insert for adaptor H 2006-...

reading from the table: Drawing number = W 2006-1830 0000 L PCD 10,

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 145-147



Turning tools

Boring bars / cartridges
for the internal machining





Boring bars with minimum working diameter from 5 mm

Technical information

90° / 95° approach angle - shank with clamping flange

page 128
page 129
page 130

90° / 95° approach angle - shank round version
with minimum working diameter from 6 mm

page 131-132

90° / 95° approach angle - with carbide shank, internal coolant supply
with minimum working diameter from 6 mm

page 133-134

Copying boring bars with minimum working diameter from 12 mm
93° / 107°30' approach angle

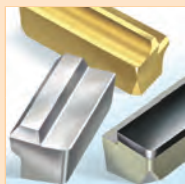
page 135

Spare part boring bars

page 136

Special tooling

page 137



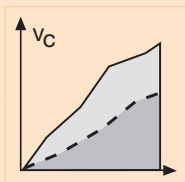
Inserts

Grade selection - carbide, carbide coated, PCD, CBN

page 138

Insert program

from page 139



Application recommendations

page 143

Cutting data recommendations

page 144



Form „Request for special tooling“

page 148



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.

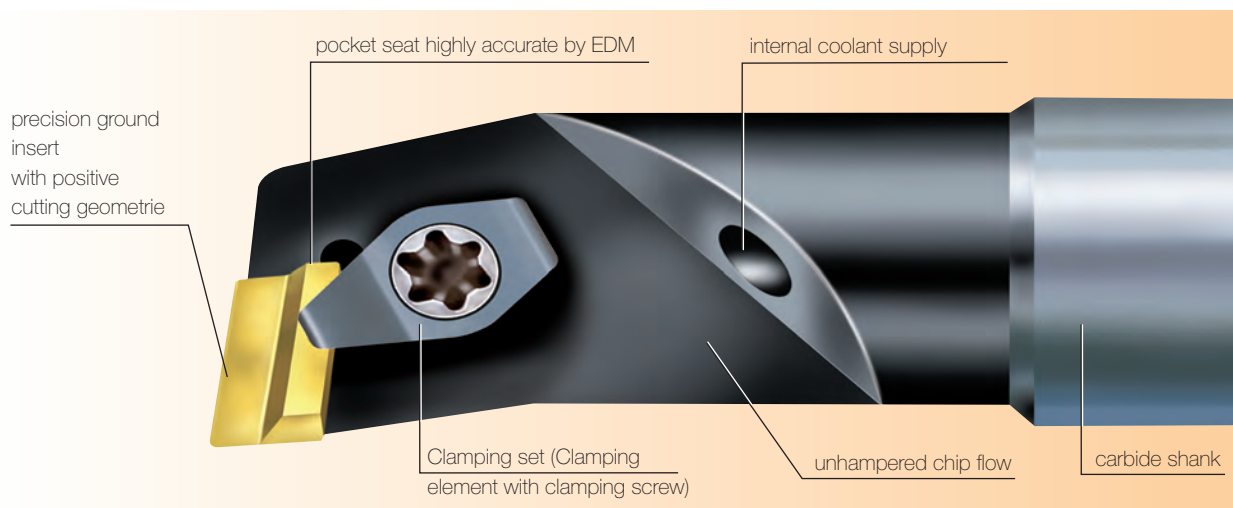
Clamping and releasing the insert is handled by means of a single clamp screw and is therefore very easy; at the same time the requirement for stock-keeping of spare-parts is reduced to a minimum.

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.



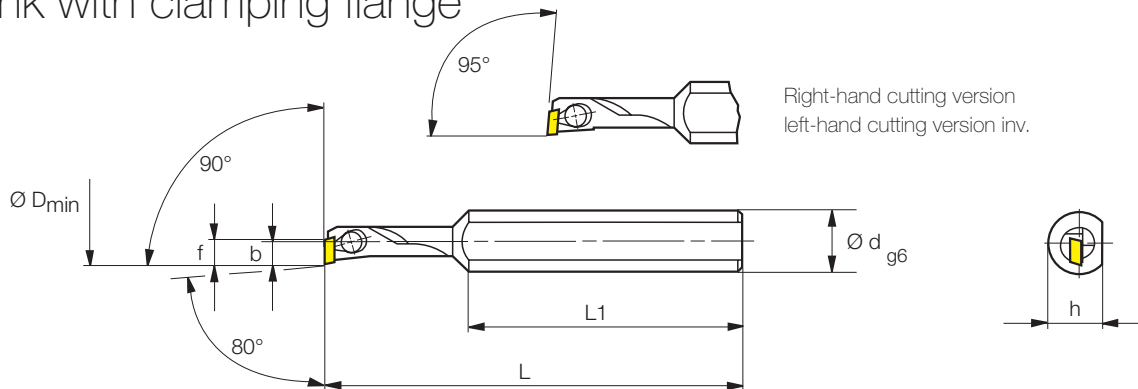


Boring bars

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

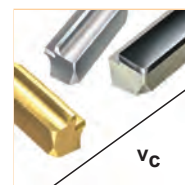
Ordering example: 1 piece H 1733-0800 3390 R = Ordering number: 20030 6,000



Shank with clamping flange 1733-...



Spare parts page 136



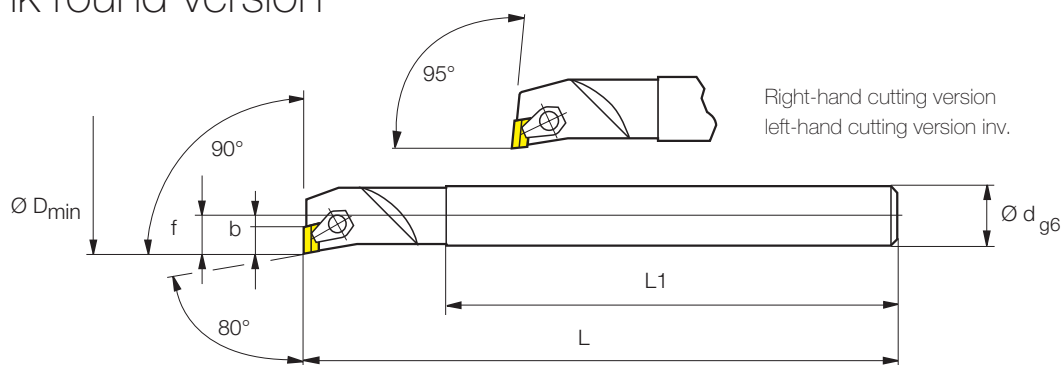
Grade selections and insert geometries page 138

Boring bars

starting from 6 mm working diameter

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

Shank round version

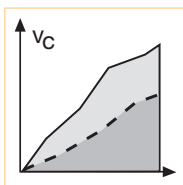


Part nr. 20032									
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	L ₁	L	Inserts*
90° approach angle									
6,000	H 8003-0600 0390 R	●	6	6	3.25	3.00	44	60	W 8003-... L
8,000	H 8005-0600 0490 R	●	8	6	4.50	4.50	44	60	W 8005-... L
10,000	H 8005-0800 0590 R	●	10	8	5.50	4.50	60	80	↓
12,000	H 8005-1000 0690 R	●	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 144



Form „Request for customer specific tools“ page 148



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

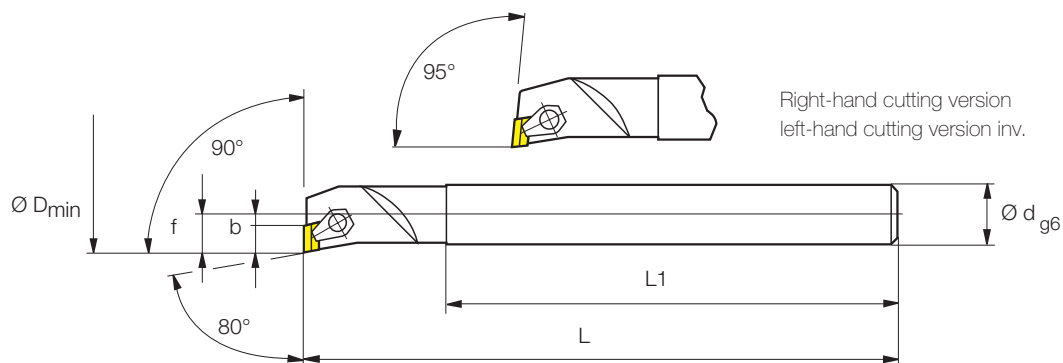


Boring bars

starting from 6 mm working diameter

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

Shank round version



Part nr. 20033									
Code	Drawing nr.		$\varnothing D_{min}$	$\varnothing d$	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

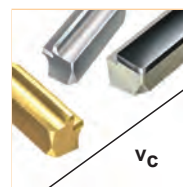
Ordering example: 1 piece H 8003-0600 0390 L = Ordering number: 20033 6,000



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



Spare parts
page 136



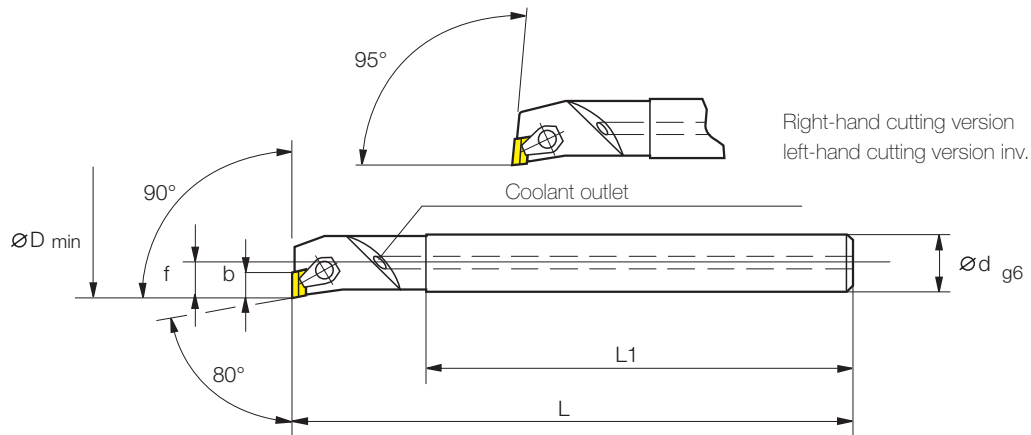
Grade selections and
insert geometries
page 138

Boring bars

starting from 6 mm working diameter

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

Carbide shank with internal coolant supply

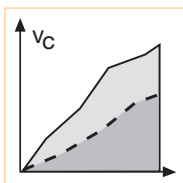


Part nr. 20034									
Code	Drawing nr.		Ø D _{min}	Ø d	f	b	L ₁	L	Inserts*
90° approach angle									
6,000	HH 8003-0600 0390 R	●	6	6	3.25	3.00	70	100	W 8003-... L
8,000	HH 8005-0600 0490 R	●	8	6	4.50	4.50	84	100	W 8005-... L
10,000	HH 8005-0800 0590 R	●	10	8	5.50	4.50	105	125	↓
12,000	HH 8005-1000 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 144



Form „Request for customer specific tools“ page 148



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

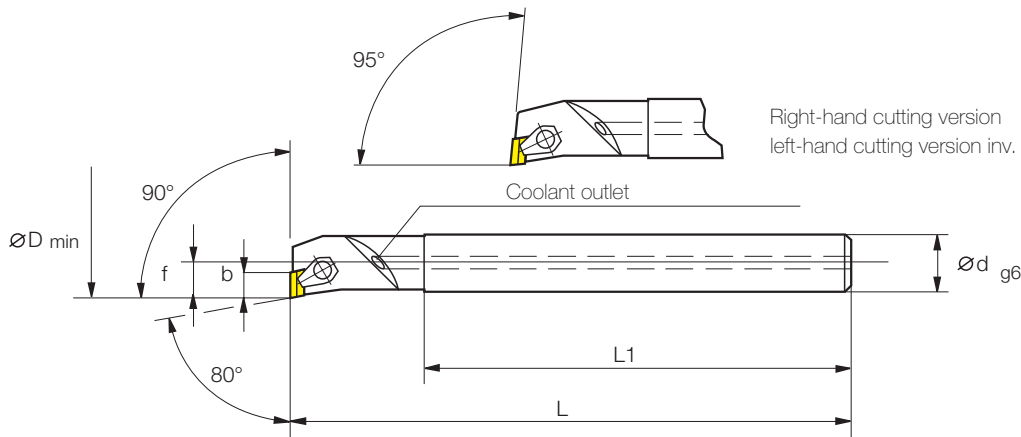


Boring bars

starting from 6 mm working diameter

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

Carbide shank with internal coolant supply

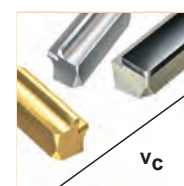
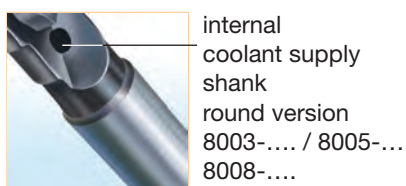


Part nr. 20035									
Code	Drawing nr.		$\varnothing D_{min}$	$\varnothing d$	f	b	L_1	L	Inserts*
90° approach angle									
6,000	HH 8003-0600 0390 L	●	6	6	3.25	3.00	70	100	W 8003-... R
8,000	HH 8005-0600 0490 L	●	8	6	4.50	4.50	84	100	W 8005-... R
10,000	HH 8005-0800 0590 L	●	10	8	5.50	4.50	105	125	↓
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



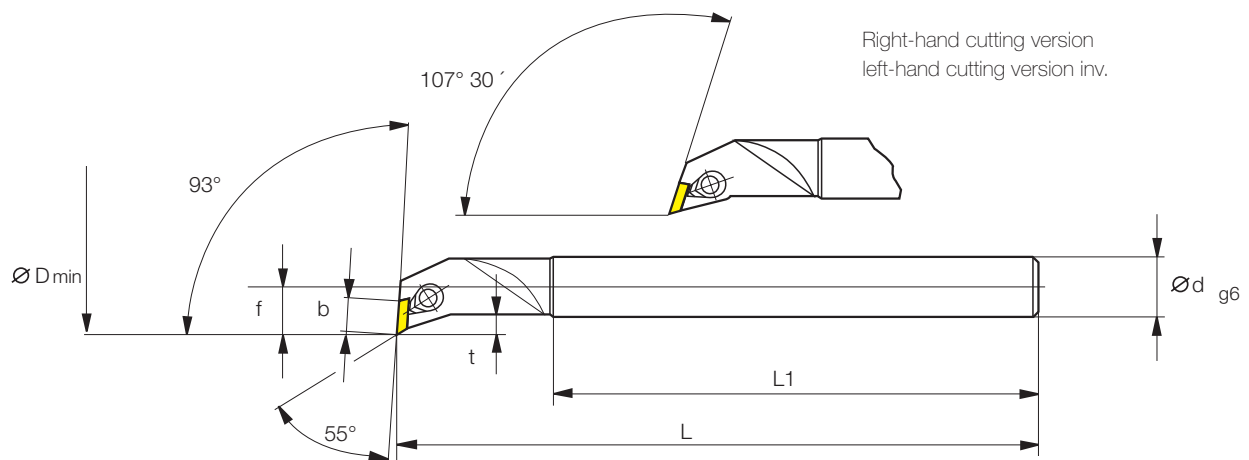
Copying boring bars

starting from 12 mm working diameter



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

Shank round version

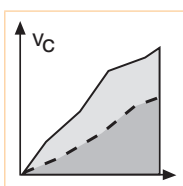


Part nr. 20036										
Code	Drawing nr.		Ø D	Ø d	f	b	t	L ₁	L	Inserts*
93° approach angle										
12,000	H 5506-1000 0793 R	●	12	10	7.00	6.80	2.5	75	100	W 5506-... L
16,000	H 5506-1200 0993 R	●	16	12	9.50	6.80	4	95	125	
20,500	H 5506-1600 1293 R	●	20.5	16	12.50	6.80	5	110	150	
107°30' Einstellwinkel										
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 144



Form „Request for customer specific tools“ page 148



Shank round version 5506-....

H Boring bars

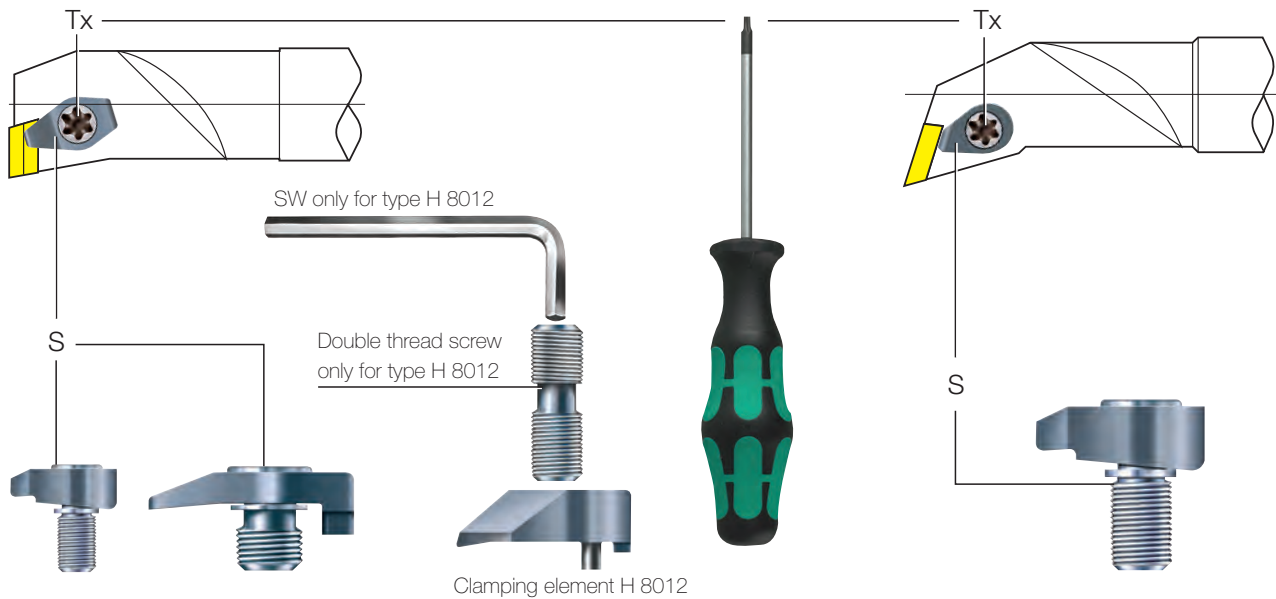
starting from 5 mm working diameter

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 145-147

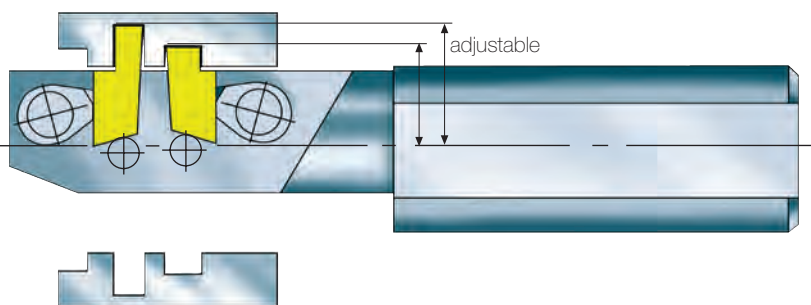
Customer spec. turning tools

Application examples



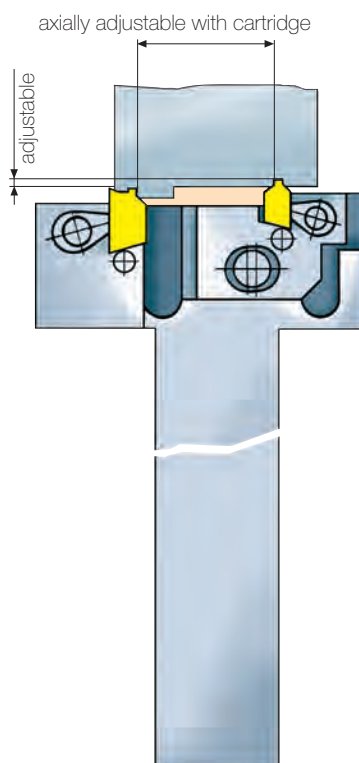
Application: Camshaft regulator

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	$V_C = 220$ m/min ($\varnothing 29.1$)
Number of revolutions	$n = 2.408$ min ⁻¹
Feed rate	$V_f = 241$ mm/min
Feed rate per tooth	$f_z = 0.1$ mm
Depth of cut	~4.5 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	$V_C = 120$ m/min
Number of revolutions	$n = 764$ min ⁻¹
Feed rate	$V_f = 76$ mm/min
Feed rate per tooth	$f_z = 0.1$ mm
Depth of cut	2 mm
Coolant	yes, external



H Application recommendations

Inserts precision ground

Grade matrix
Grade selection
Chipbreaker recommendation

Carbide / carbide coated / PCD / CBN


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	—	—	—	● n	—	—
Chipbreaker	→		-1000 -1020				-1000 -1020		
H26	P40	TiN PVD	t ● n	● n	—	—	▲ n	—	—
Chipbreaker	→		-1000 -1020	-1620 -2420					
PCD 10	Grainsize 10µm		—	—	—	▲	—	—	—
Chipbreaker	→					-0000			
CBN			—	—	t ● n	—	—	t ▲ n	
Chipbreaker	→				-0000			-0000	

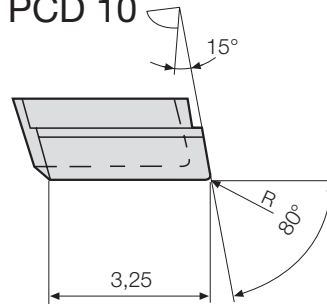
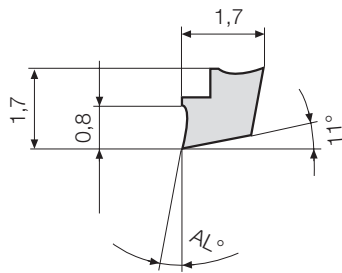
▲ = very good applicable ● = applicable — = not applicable * = for Titanium t = dry n = wet
 Further cutting material, coatings and geometries on request.

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



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

Carbide / carbide coated / PCD 10



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	Part 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	Part 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 10
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 10
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	●

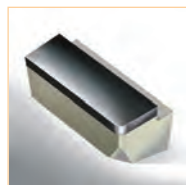
*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● 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



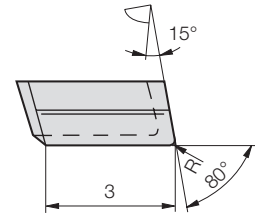
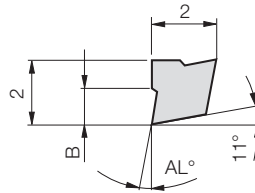
Insert
PCD 10-fullface
W 1733-.... L



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

Insert W 8003-..... L/R* Carbide / carbide coated

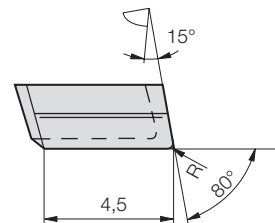
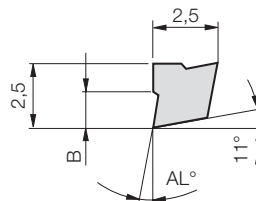
Left-hand cutting versions
right-hand cutting versions inv.



					Part nr. 20233	Part nr. 20234 uncoated	Part nr. 20235	Part nr. 20236 coated	Part 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 coated	Part 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.

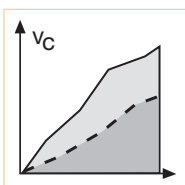


					Part nr. 20243	Part nr. 20244 uncoated	Part nr. 20245	Part nr. 20246 coated	Part nr. 20247
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,050	W 8005-0012 1020 L	0.05	1.2	10	●	●	●	○	●
80,051	W 8005-0212 1020 L	0.2	1.2	10	●	●	●	●	●
80,052	W 8005-0416 1020 L	0.4	1.6	10	●	●	●	●	
					Part nr. 20248	Part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

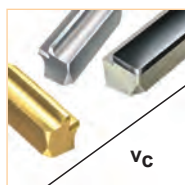
*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request

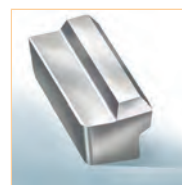
Ordering example: 1 piece W 8003-0014 1020 L H26 = Ordering number: 20237 80,030



Application
recommendations
page 143



Grade selections and
insert geometries
page 138



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

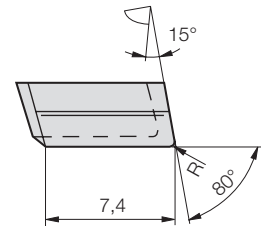
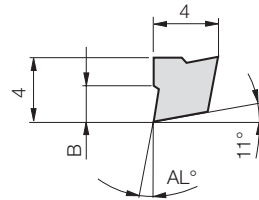
Indexable inserts precision ground for boring bars starting from 6 mm working diameter



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

Carbide / carbide coated

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



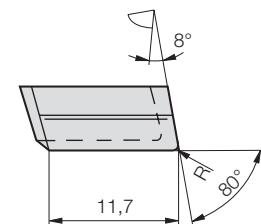
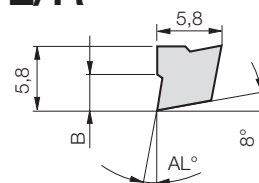
					Part nr. 20253	Part nr. 20254 uncoated	Part nr. 20255	Part nr. 20256 coated	Part nr. 20257
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,080	W 8008-0218 1000 L	0,2	1,8	10	●	●	●	○	●
80,081	W 8008-0422 1000 L	0,4	2,2	10	●	●	●	●	●
80,082	W 8008-0826 1000 L	0,8	2,6	10	●	●	●	●	●
80,083	W 8008-0226 2420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

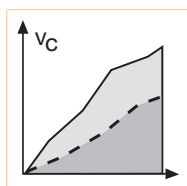


					Part nr. 20263	Part nr. 20264 uncoated	Part nr. 20265	Part nr. 20267 coated	Part nr. 20268
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
80,120	W 8012-0422 1000 L	0,4	2,2	10	●	●	●	○	●
80,121	W 8012-0826 1000 L	0,8	2,6	10	●	●	●	●	●
80,122	W 8012-0436 2420 L	0,4	3,6	24	○	●	●	○	●
80,123	W 8012-0836 2420 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
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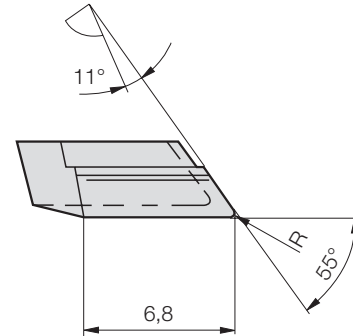
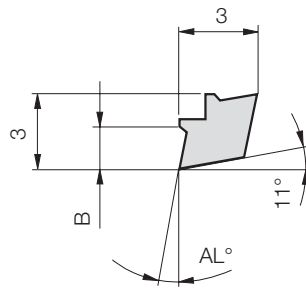
Insert
carbide coated
W 8008-..... L
W 8012-..... L



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.



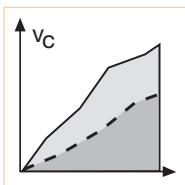
					Part nr. 20275	Part nr. 20276	Part nr. 20277	Part nr. 20278	Part nr. 20279
					uncoated		coated		
Code	Drawing nr.	R	B	AL°	P10	P40	K10	H25	H26
55,060	W 5506-0210 1000 L	0.2	1.0	10	●	●	●	●	○
55,061	W 5506-0414 1000 L	0.4	1.4	10	●	●	●	●	○
55,062	W 5506-0214 1620 L	0.2	1.4	16	○	○	●	○	○
55,063	W 5506-0414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

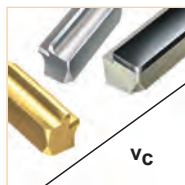
*Please note: Left-hand boring bars have to be fitted with right-hand inserts and right-hand boring bars with left-hand inserts!

● ex stock ○ on request

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



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Grade selections and
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Insert
carbide coated
W 5506-.... L

Application recommendations

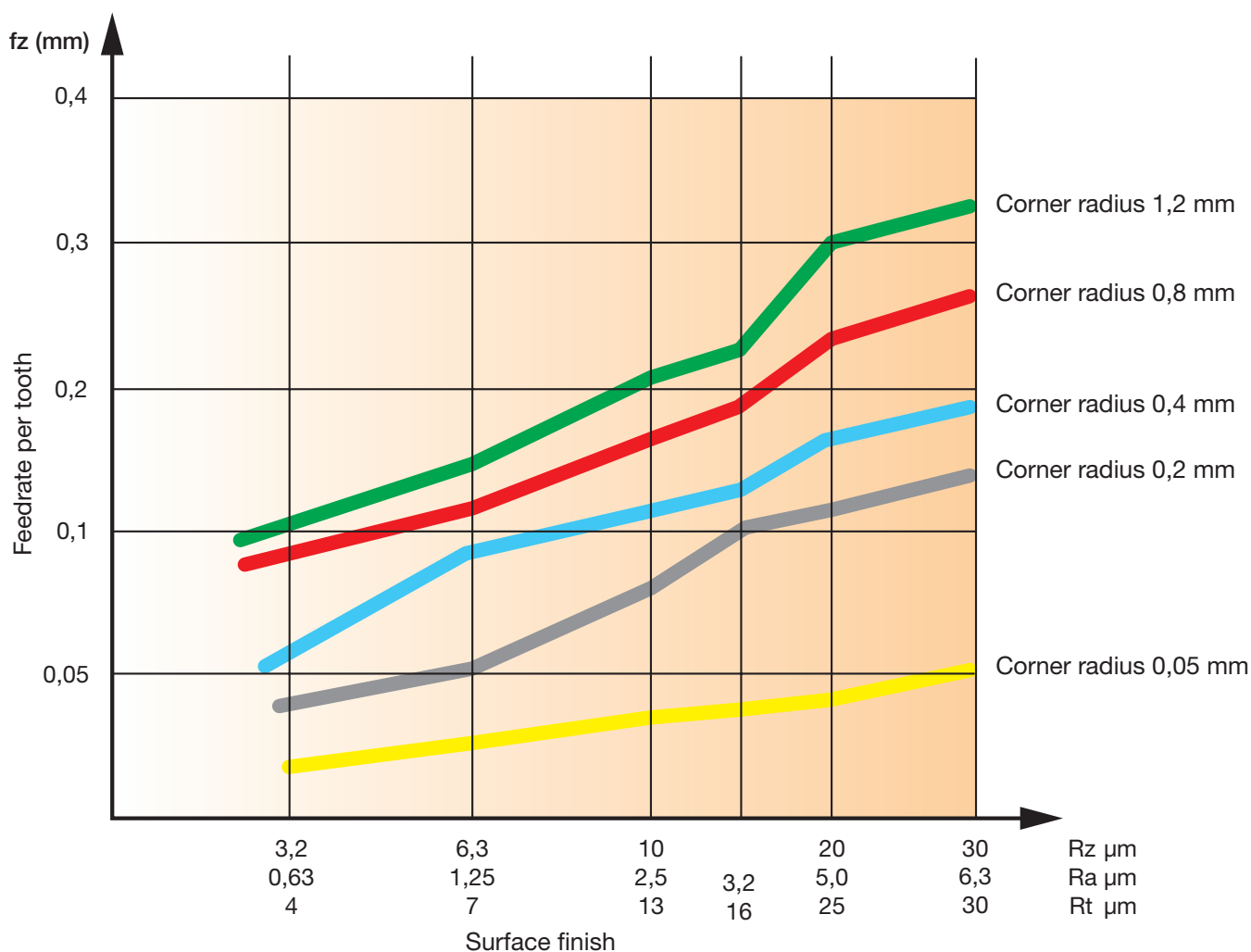
Inserts for boring bars



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



H 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		Cutting speed V_c m/min	recom. Cutting grade	feed rate fz mm/z					
			RM (MPa)	HB HRC			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	tempered	1020	300	60-110							
9	Machining steel	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 10						
22	forging alloys	heat treatable/heat treated		100	-800	↓						
23	Aluminium casting alloys	<12% Si not heat treatable		75	-800							
24		<12% Si heat treatable/ heat treated		90	-800							
25		>12% Si not heat treatable		130	-1000	PKD 10						
26	Copper	machined alloys, Pb >1%		110	70-120	H02/K10						
27	copper alloy (bronze, brass)	CuZn, CuSnZn		90	70-120	↓						
28		Cu, lead free copper/electrolyte copper		100	70-120							
29	Non metallic materials	Duroplastic			-200	K10/PKD 10						
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	CBN						
39												

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)

H 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
E6004	20063	0,120
E6005	20063	0,151

Torx interchangeable blade

Drawing nr.	Part nr.	Code
Tx6	20078	6,000
Tx7	20078	7,000

Torx-bits

Drawing nr.	Part nr.	Code
Tx5-bit	4917	5,000
Tx6-bit	4917	6,000
Tx7-bit	4917	7,000
Tx7-bit long	20080	7,000
Tx8-bit	4917	8,000
Tx9-bit	4917	9,000
Tx10-bit	4917	10,000
Tx15-bit	4917	15,000

Bit universal holder

Drawing nr.	Part nr.	Code
Tx-bit	20079	6,300

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

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
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
E5032	20051	2,501
E5482	20051	2,502

Clamping sets for drill and chamfering tools

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

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

Clamping screw

Drawing nr.	Part nr.	Code
	20080	3,000
	20080	3,500

Adjustment screw

Drawing nr.	Part nr.	Code
	20081	4,000

Ordering example: SW 5.0 = Ordering number 4921 5,000 (Part nr. + Code)

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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 : _____

HOLLFELDER-GÜHRING CUTTING TOOLS

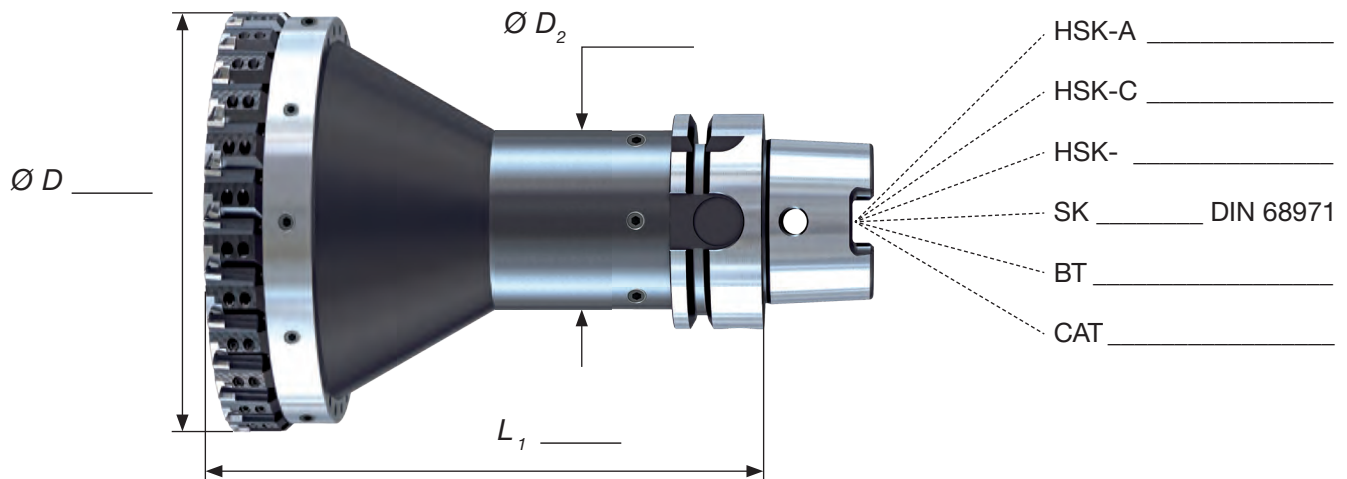
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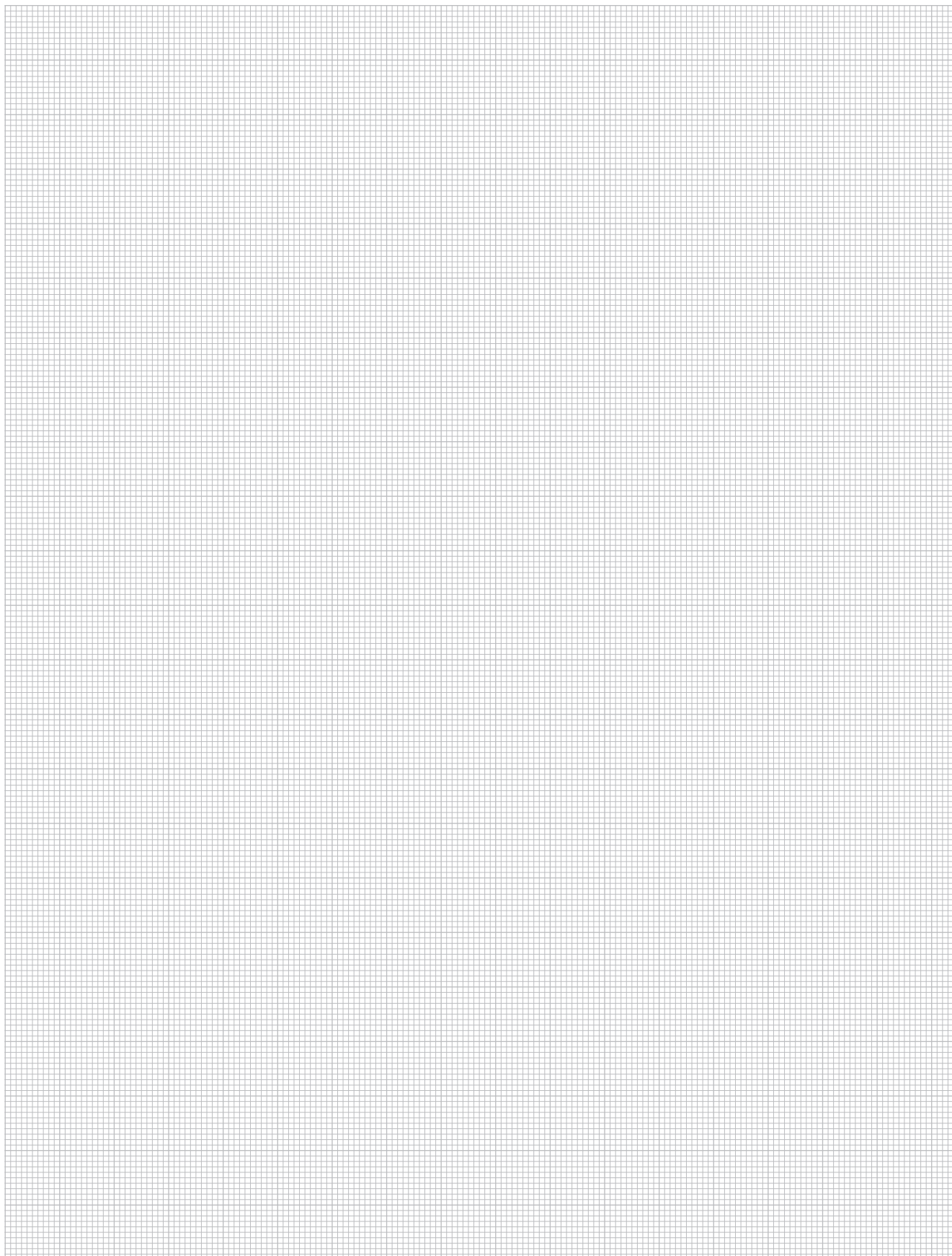
Inquiry form for HPC special milling cutters

Please complete the enquiry form and fax: +49 (0) 911 / 64 19 22-10 or scan and send direct to info@hollfelder-guehring.de
 An online enquiry can be found at www.hollfelder-guehring.de

_____		<input type="checkbox"/>	_____
Company name/No. if available	new customer		Contact
_____			_____
Address			Town/post code
_____			_____
Telephone			Fax
_____			_____
Date			Signature



Workpiece _____	Width of cut (ae) _____	Maximum no. of teeth <input type="radio"/>	
Material _____	IC (bar) _____	Reduced no. of teeth _____	Rough milling cutter <input type="radio"/>
Allowance (ap) _____	MQL 1 channel <input type="radio"/>	Maximum tool weight _____	Finish milling cutter <input type="radio"/>
Surface finish (Rz) _____	MQL 2 channel <input type="radio"/>		



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