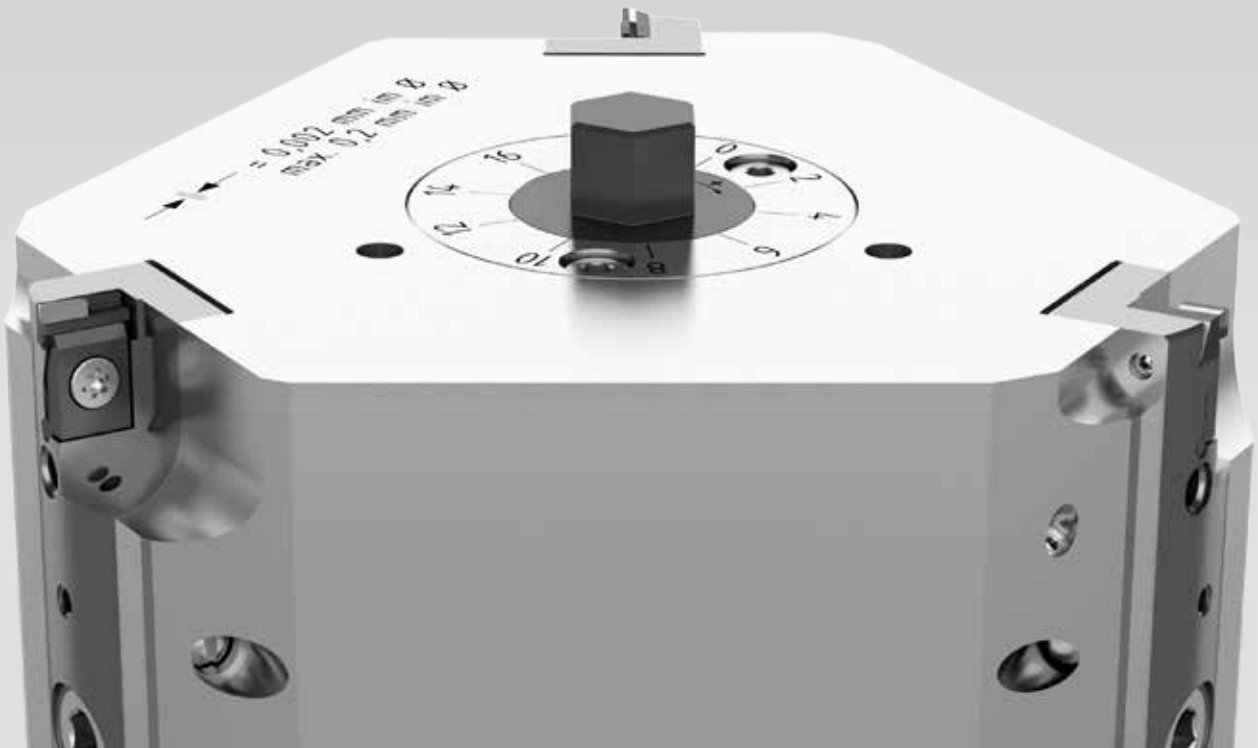
HOLLFELDER
GÜHRING
CUTTING TOOLS

Special tools for customer applications



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 state-of-the-art 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 increases in productivity.

We would be happy to advise 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.

Challenge us with your requirements!
precise* | *flexible*| *innovative
We always appreciate your confidence in us.

Headquarters Nuremberg

Location Zorbau

A reliable partner

HOLLFELDER-GÜHRING CUTTING TOOLS
has achieved a leading position as a reliable partner in the metal cutting industry. Innovative tooling solutions in standard tools as well as in tools made to customers specifications constitute the basis for cost optimised production.

Competence

Individual solutions for complex machining problems, tailor-made to the individual requirements are part of the self-image of our technicians and engineers. With a high qualification and an innovative thinking combined with a lot of experience, we design and manufacture in close contact with our customers tooling systems of highest precision for the µm-accurate machining of complex contours.

Profitability

HOLLFELDER-GÜHRING CUTTING TOOLS offers profitable solutions. The easy adjustment of our tools reduces non-productive times. We achieve a reduction in machining times due to our intelligent combined tools, the high number of effective teeth and the selection of the optimal cutting grade. The advantages are the utmost flexibility, productivity and certainty in process.

Our service

Depending on the technical requirements we analyse the machining processes and suggest tooling solutions which satisfy the high demands of our customers. With the proven tooling solutions of HOLLFELDER-GÜHRING CUTTING TOOLS our customers use highly precise and reliable systems which have achieved an excellent reputation worldwide.

Our service spectrum includes among others:

- In-house machining tests
- Application training also on-site at the customer‘s premises
- Complete CAD-layouts according to customer specifications
- Technical support

Our targets...

…are to steadily increase the efficiency of our precision tools as well as their operational possibilities. Thus our customers are leading obtain a competitive advantage due to the more efficient production with a high certainty in process.

For further information
visit our website
www.hollfelder-guehring.de

Contents

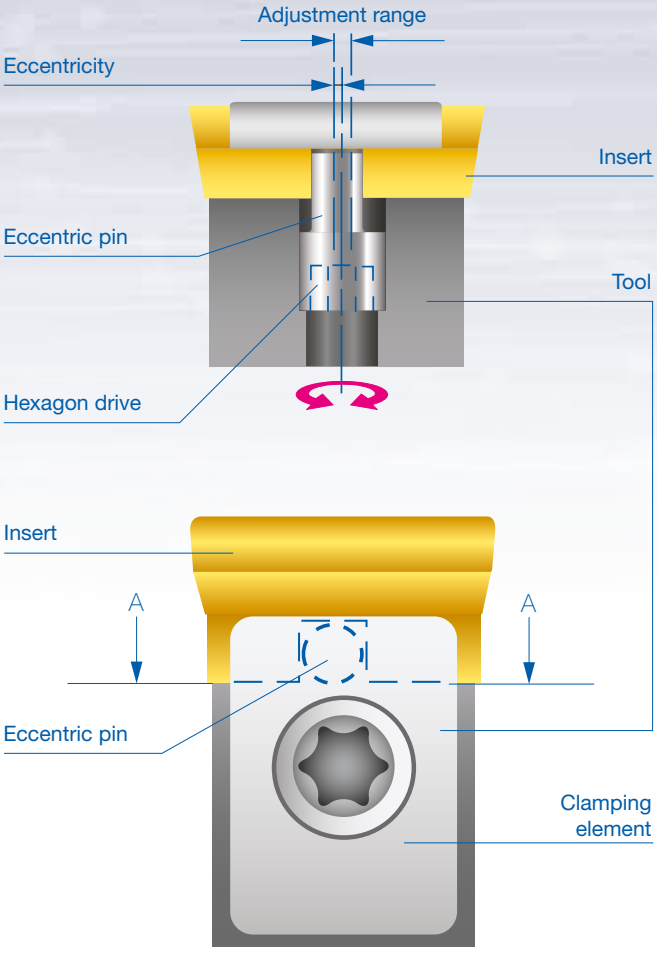
Contents

Adjustment systems

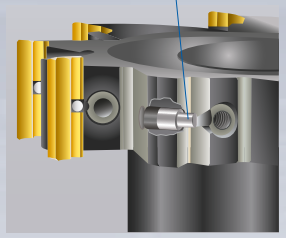
Eccentric pin adjustment

The adjustment systems in the tools constitute the basis for highly precise production results in the most different materials. They are the basis for innovative tooling designs which contribute enormously to the productivity of our customers. The application is simple and saves time.

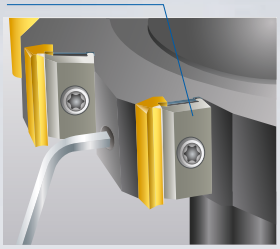
- Eccentric pin for µm-accurate adjustment
- Many design options thanks to open construction
- Design of the clamping system doesn‘t require any support on the side of the pocket seat
- Triangular machining is possible
- Insert can be adjusted in 2 directions



Eccentric pin



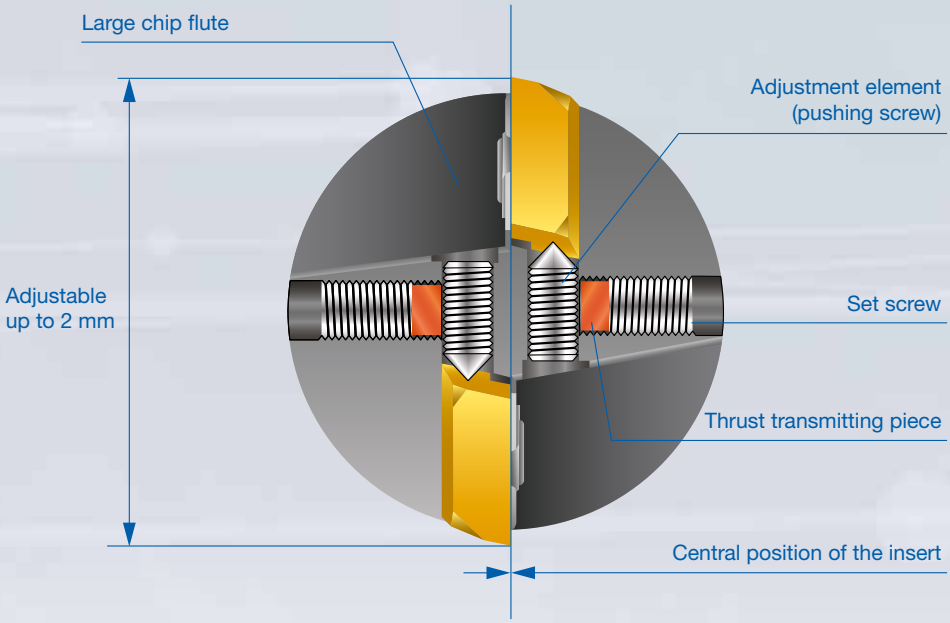
Clamping element



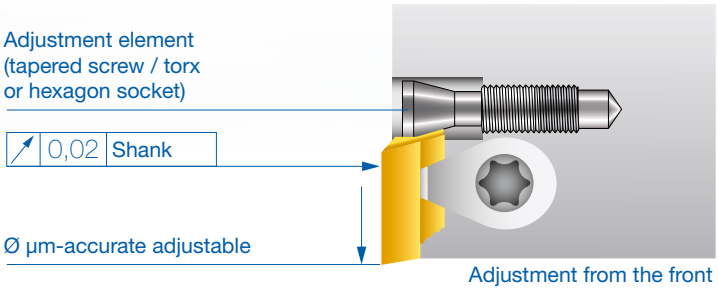
Adjustment key (hex key) to operate the eccentric pin

Radial screw adjustment and adjustment with tapered screw

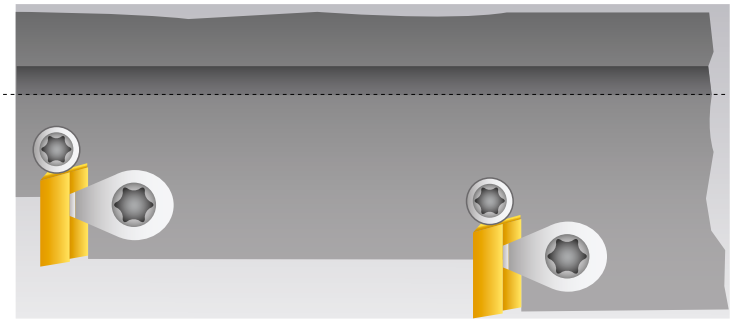
- Radial screw adjustment for µm-accurate diameter adjustment
- Large range of adjustment → up to 2 mm in diameter
- Easy handling thanks to robust design



- µm-accurate diameter adjustment with tapered screw
- Adjustment possible from the front and from the top
- Can be flexibly combined and used



Adjustment from the front



Adjustment from the top

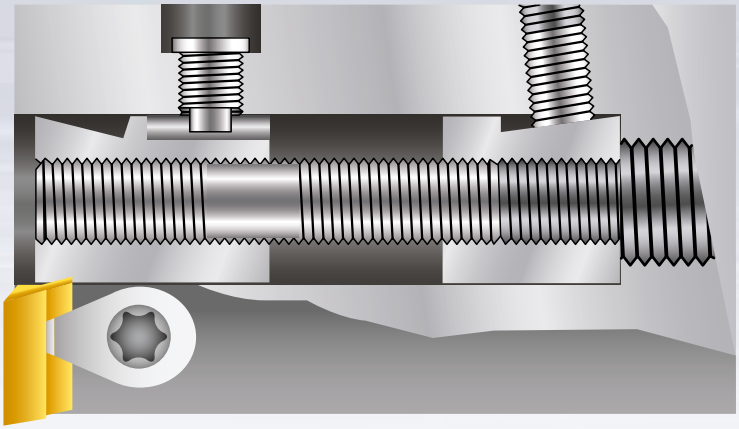
Adjustment systems

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 adjustment of the machining measures

1 revolution
≙ 0.02 mm in Ø

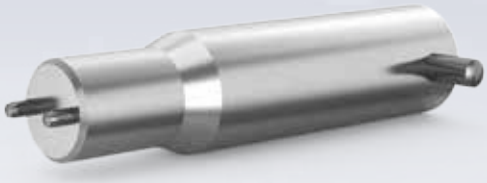
- Adjustment element can be integrated even for small bore diameters
- Advantageous adjustment relation → 1 revolution ≙ 0,2 mm in Ø
- µm-accurate adjustment directly in the machining center
- Low machine downtime



Smart Setting Motion Tools

Pre-setting and re-adjusting of inserts within seconds

- Individual fine adjustment of all finishing inserts.
  One graduation line equals 0.002 mm in diameter
- Diameter adjustment in both directions, plus and minus
- No special equipment required for pre-setting (i.e. magnetic V-gauges)
- Cartridges available with eccentric adjustment, also available with standard ISO insert
- Option: retraction of the inserts via drawbar
  → no workpiece adjustment required
- Option: mechanical operation, using either compressed air or machine coolant
- Time saving of more than 90% per setting cycle

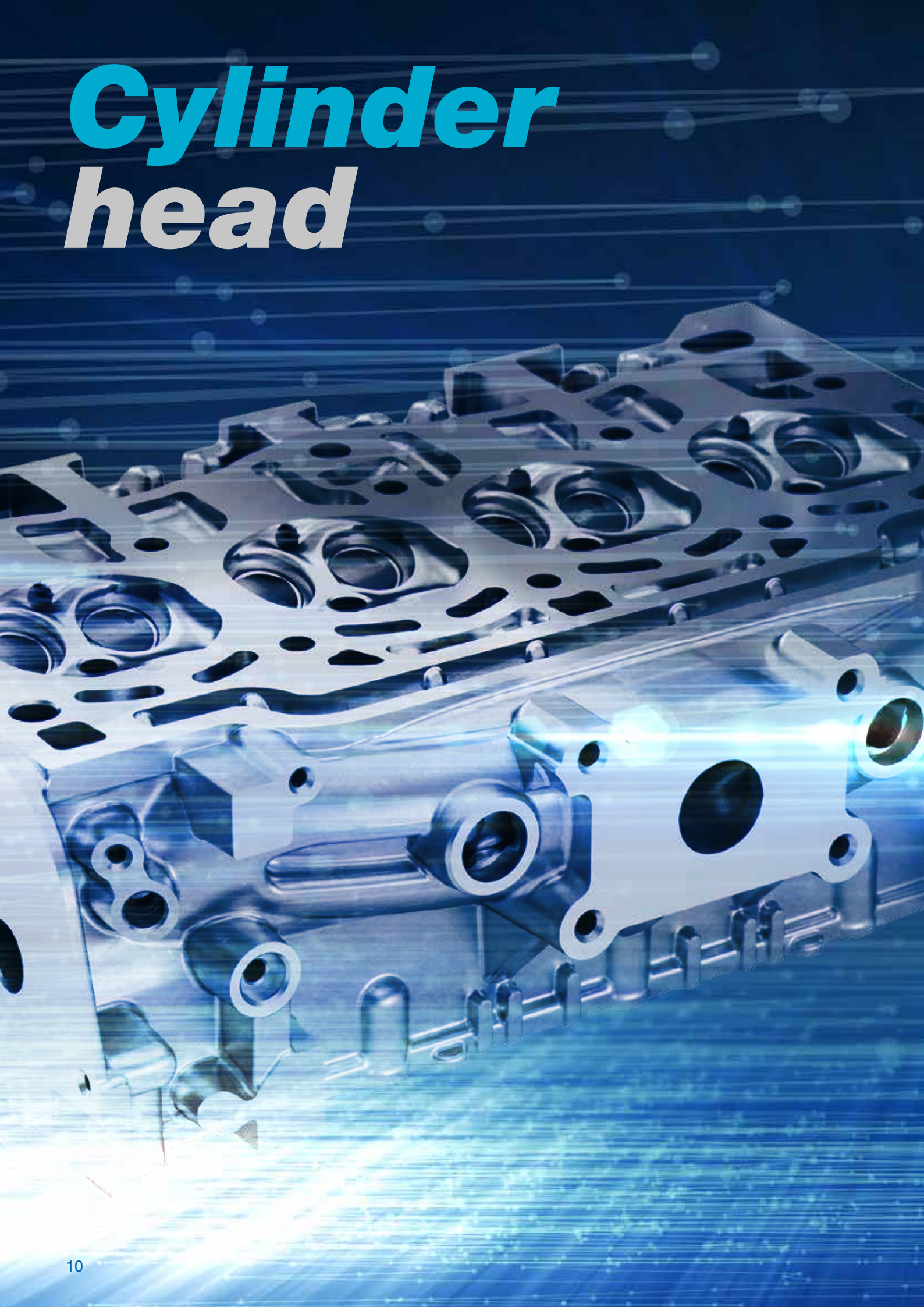


Different adjustment screws

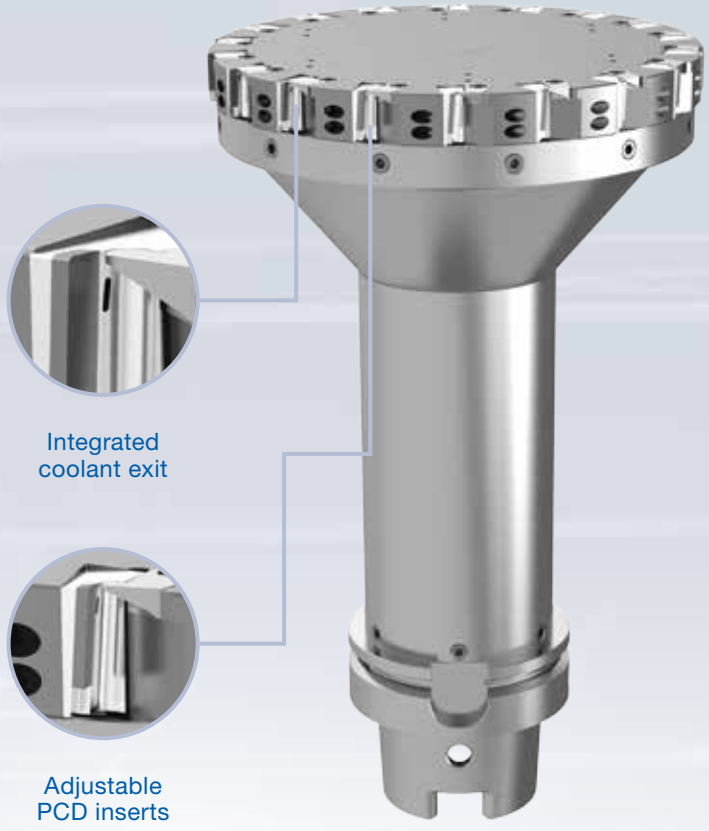
Central adjustment

- Simple pre-setting without special equipment
- Cartridges available with eccentric adjustment, also available with standard ISO insert
- Diameter adjustment in both directions, plus and minus via central adjustment screw
- Automatic readjustment if required. One rotation equals 0.03 mm on radius
- Retracting of the finishing cartridge by means of compressed air
- Expanding of the finishing cartridge inside the honing undercut

Cylinder head



HPC rough milling cutter Ø 163 / L = 232 mm / HSK80-A / Teeth = 18



Requirementss		
Reduction of cycle times		
Solution		
HPC rough milling cutter Ø 163 / L = 232 mm / HSK80-A / Teeth = 18		
Cutting data		
Material		(DIN) ■ AlSi10Mg(Cu) heat-treated
Cutting grade		PCD 30
Cutting speed	m/min	3,000
Feed rate per tooth	mm	0.14
Cutting depth	mm	-6
Result		
50% faster than competitors		
Longer tool life		
Lower power consumption		

Customer benefits

Reduced tooling costs per component

Almost chip-free components, lower cleaning costs

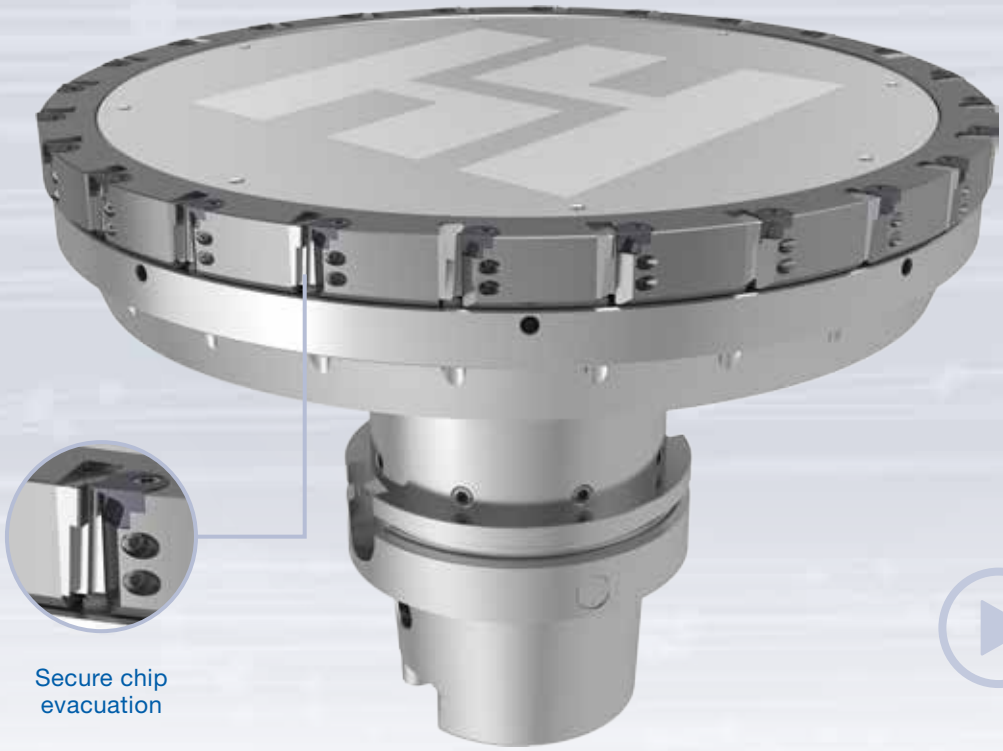
Increased productivity and energy efficiency

Cylinder head

Finish-machining

HPC milling cutter with closed chip flutes / Ø 250 reduced weight

Teeth = 21 + 3 mixure of inserts / Use of wiper inserts



Secure chip evacuation

Requirements		
Chip-free components		
Solution		
HPC milling cutter with closed chip flutes		
Cutting data		
Material		(DIN) ■ AlSi10Mg(Cu) heat-treated
Cutting grade		PCD 30
Cutting speed	m/min	3,500
Feed rate per tooth	mm	0.12
Cutting depth	mm	0.5
Result		
50% faster than competitors		
Longer tool life		
Higher surface finish quality		

Customer benefits

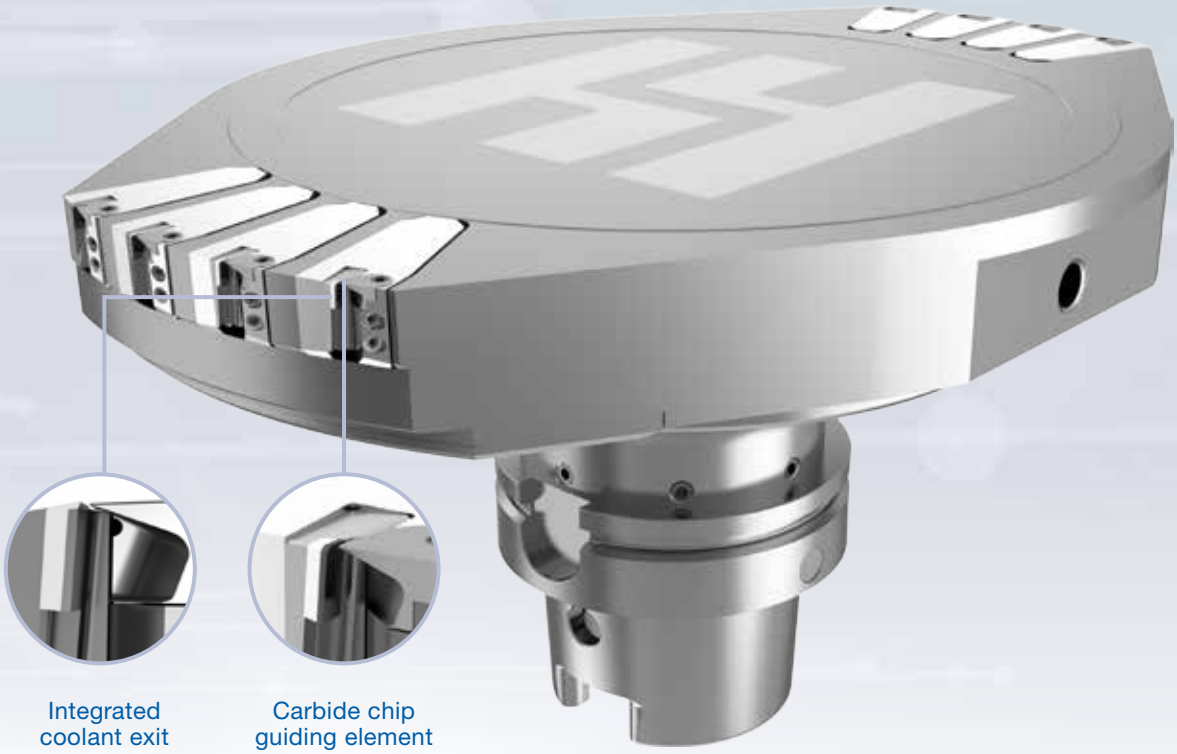
Reduced tooling costs per component

Almost chip-free components, lower cleaning costs

Increased productivity and energy efficiency

HPC bar cutter Ø315 with HSK-A100 / Teeth = 4 + 4 / Teeth$_{eff.}$ = 8

Radially adjustable cartridge → Compensation unequal flute spacing



Requirements		
Combustion chamber milling, required cutter diameter 315 mm		
R_z 6.3 - R_{max} 7 - Wt3 - PMr → 65 %		
Critical capability index Cmk 2.74		
Maximum permissible tool diameter 250 mm		
Solution		
HPC bar cutter Ø315 with HSK-A100 / Teeth = 4 + 4 / Teeth$_{eff.}$ = 8		
Cutting data		
Material		(DIN) ■ GD-AlSi9Cu3
Cutting grade		PCD
Cutting speed	m/min	2,177
Feed rate per tooth	mm	0.13
Cutting depth	mm	0.28
Result		
Uniform surface		
R_z 1,4 - R_{max} 1,67 - Wt 1,28 - PMr 100 %		

Customer benefits

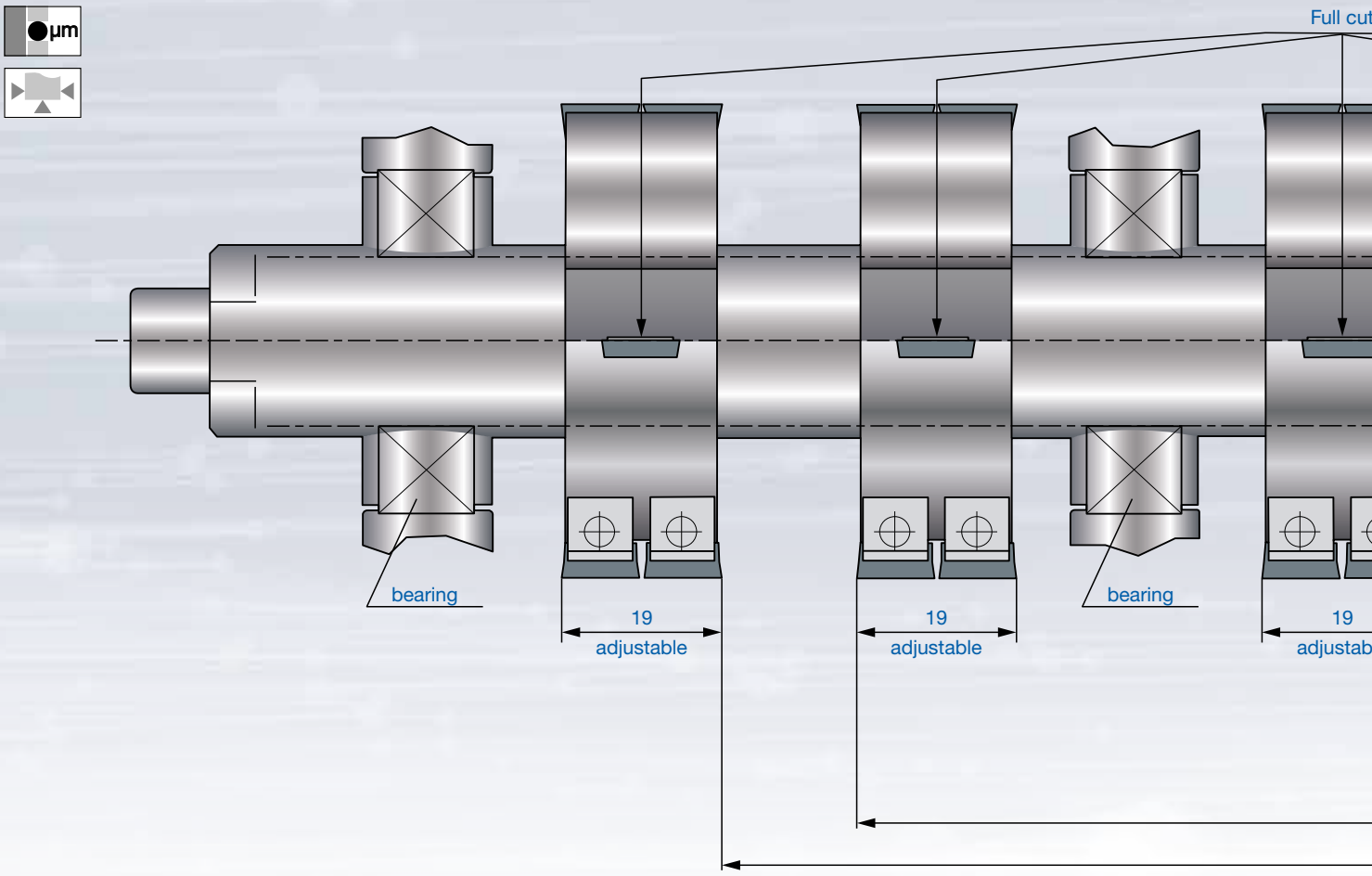
High-precision machining can be carried out on a standard machining center (no special machine required)

Almost chip-free components, lower cleaning costs

Cylinder head

Bearing passage

Gang milling cutter / Teeth$_{eff.}$ = 2



Requirements

Clearance milling, face run-out and milling cutters are adjustable towards each other

Solution

Gang milling cutter / Teeth$_{eff.}$ = 2

Cutting data

Material		(DIN) ■ G-AlSi9Cu
Cutting grade		PCD
Cutting speed	m/min	220
Feed rate per tooth	mm	0.07
Cutting depth	mm	0.7 - 0.8

Result

PCD inserts regrindable and renewable

Narrow tolerances of bearing spacings achievable

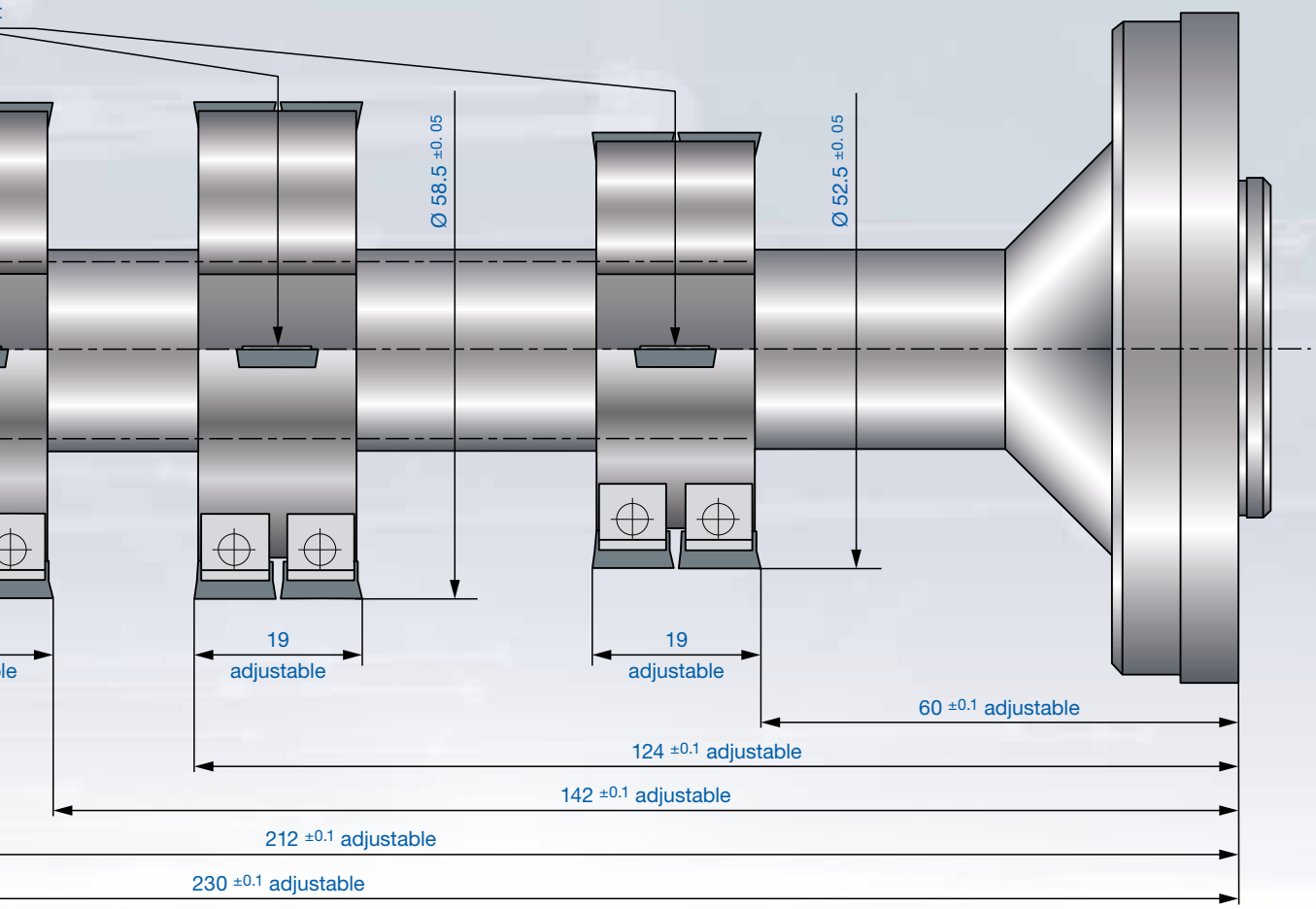
Minimal effort for insert change

Customer benefits

Reduced tooling costs per component

Low non-productive times

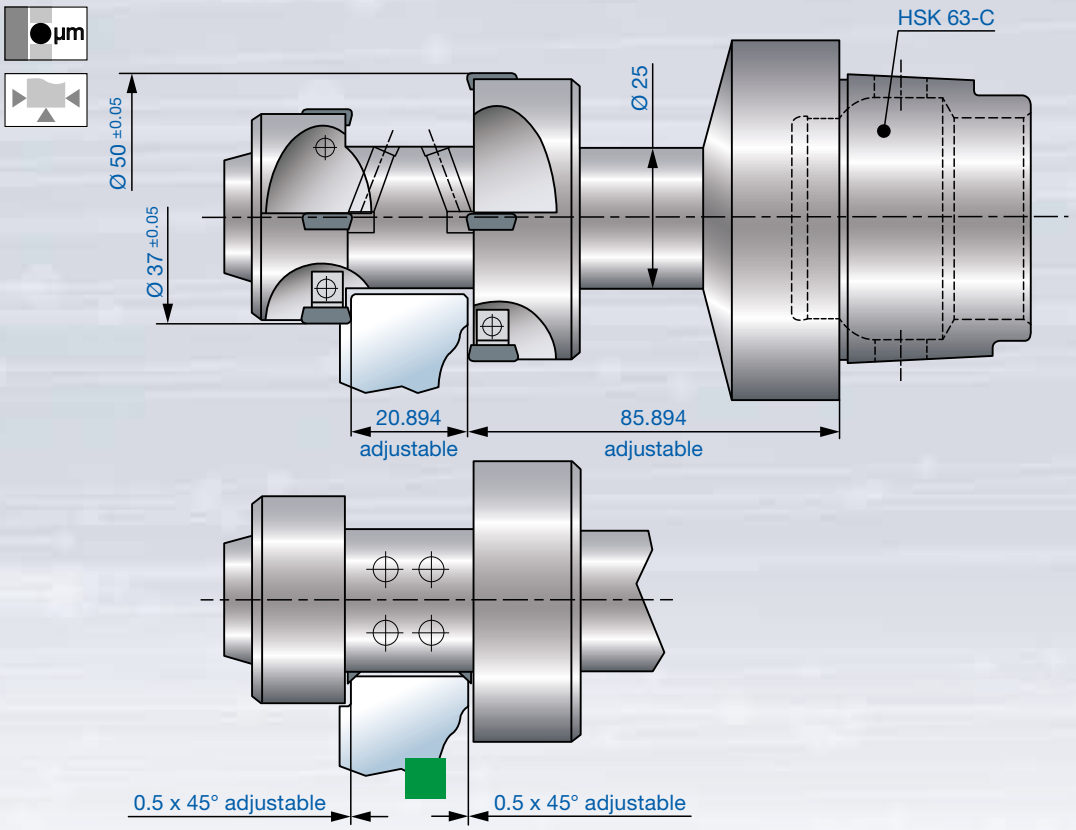
Bearing passage



Cylinder head

Bearing width

Gang milling cutter / Teeth = 2 x 4



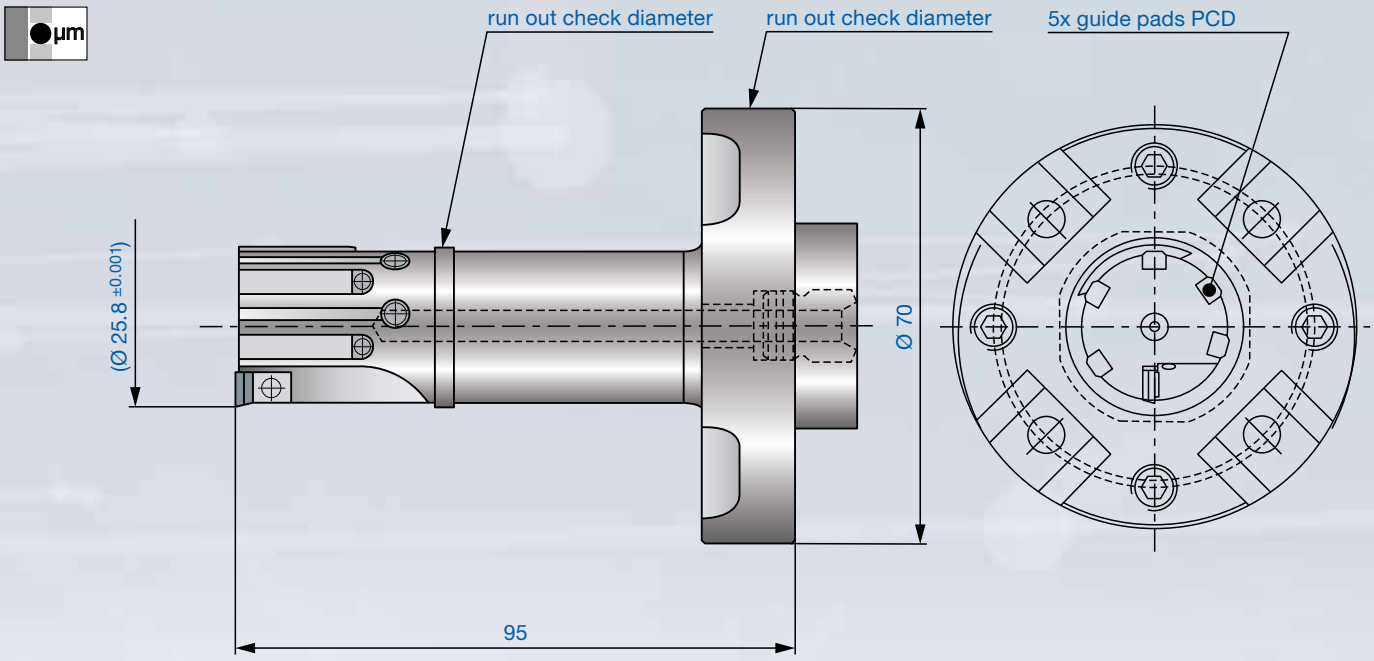
Requirements		
Gang milling cutter for milling the bearing width with chamfering		
Bearing width and chamfer sizes µm-accurate adjustable		
Solution		
Gang milling cutter / Teeth = 2 x 4		
Cutting data		
Material		(DIN) ■ GKAlSi7Mg
Cutting grade		PCD
Cutting speed	m/min	1,200
Feed rate per tooth	mm	0.1
Cutting depth	mm	2.5
Result		
PCD inserts regrindable and renewable		
Narrow tolerances of bearing spacings achievable		
Minimal effort for insert change		
Reduced machining time thanks to combination tool		

Customer benefits

Reduced tooling costs per component

Low non-productive times

Reaming tool / Teeth = 1



Requirements		
Fine machining with PCD guide pads		
Solution		
Reaming tool / Teeth = 1		
Cutting data		
Material		(DIN) ■ Al
Cutting grade		PCD
Cutting speed	m/min	800
Feed rate per tooth	mm	0.1
Cutting depth	mm	0.3
Result		
Narrow form and position tolerances are maintained		
Surface finish quality R_a 0.5		

Customer benefits

Higher process reliability

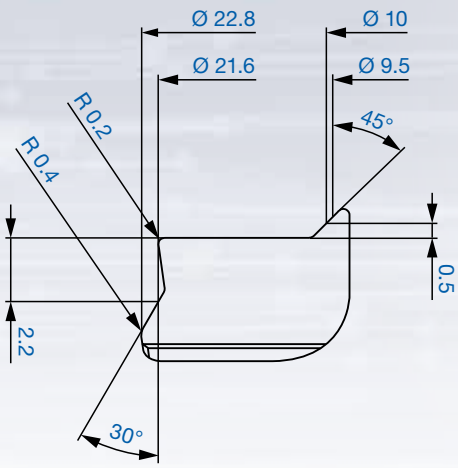
Easy adjustment of the inserts

Cylinder head

Spring seat

Drilling and countersinking tool / Teeth = 2

Profile inserts adjustable and separately replaceable

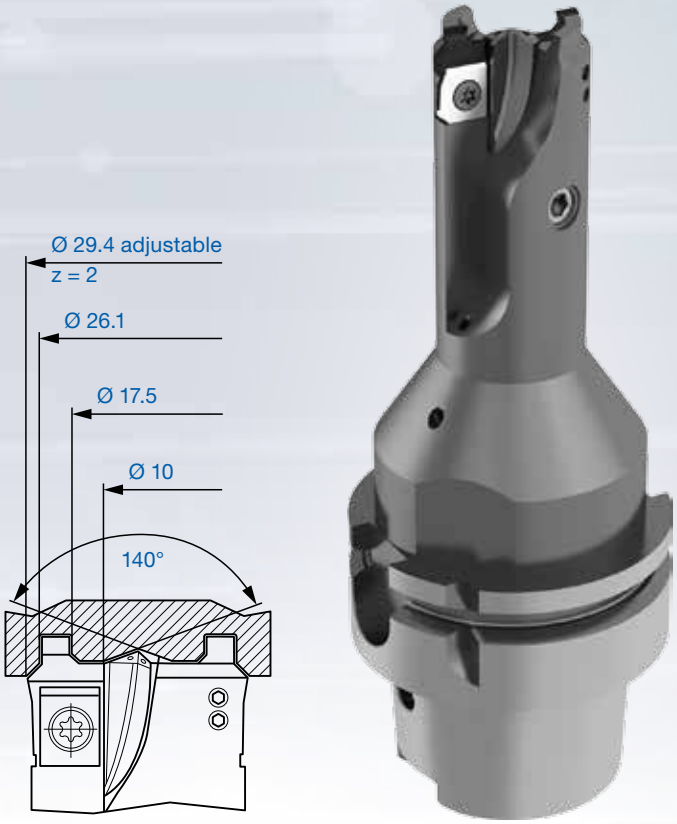


Requirements		
Complete machining of the hole including the spring support		
Solution		
Drilling and countersinking tool / Teeth = 2		
Profile inserts adjustable and separately replaceable		
Cutting data		
Material		(DIN) ■ AlSi10Mg(Cu)
Cutting grade		PCD 10
Cutting speed	m/min	590
Feed rate per tooth	mm	0.075
Result		
Tool life 85,000 drilled holes		
SC-drill regrindable several times		

Customer benefits

Lower tool costs per part compared to brazed tools

Form countersinking tool with PCD inserts and integrated SC-drill / Teeth=2



Requirements

Machining of the complete workpiece contour with one tool

Solution

Form countersinking tool with PCD inserts and integrated SC-drill / Teeth=2

Cutting data

Material		(DIN) ■ AlSi9Cu
Cutting grade		PCD
Cutting speed	m/min	850
Feed rate per tooth	mm	0.15
Cutting depth	mm	4.3

Result

High tool life (>70,000 drilled holes) with simultaneous compliance of tolerances and surface requirements

Customer benefits

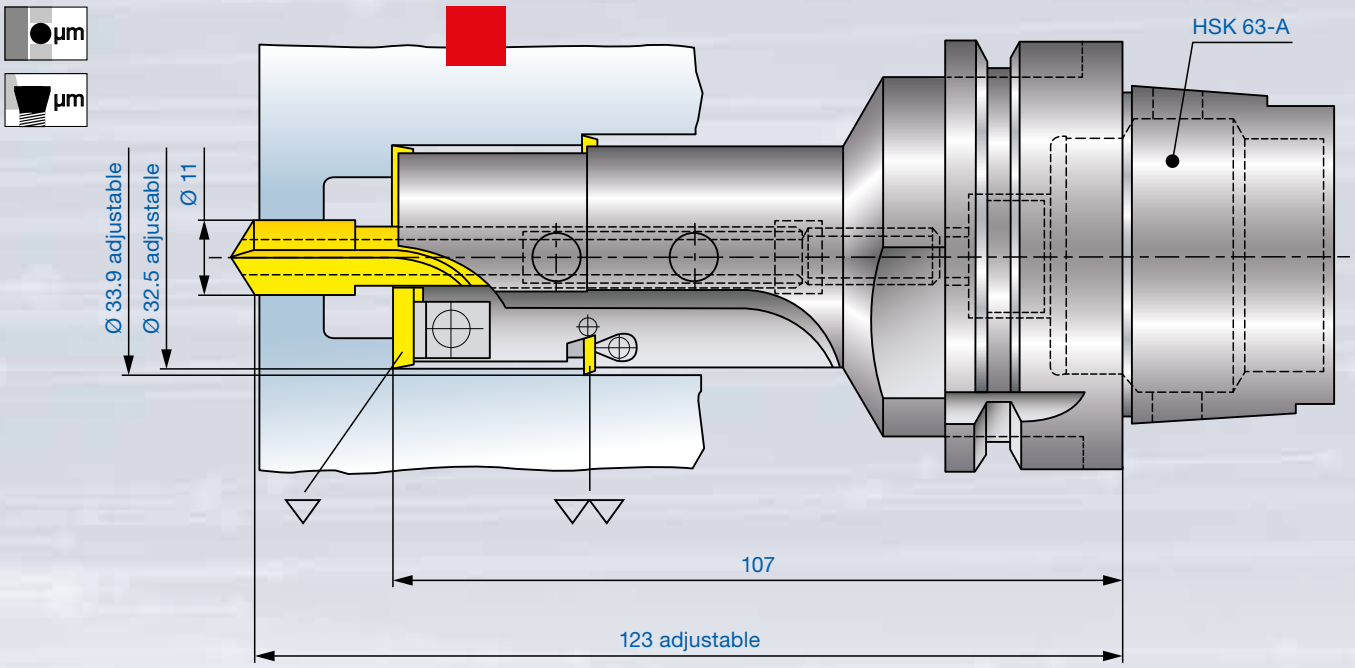
Short processing time

Lower costs per workpiece

Cylinder head

Spring seat

Multi-step fine boring tool / Teeth = 2 per Ø

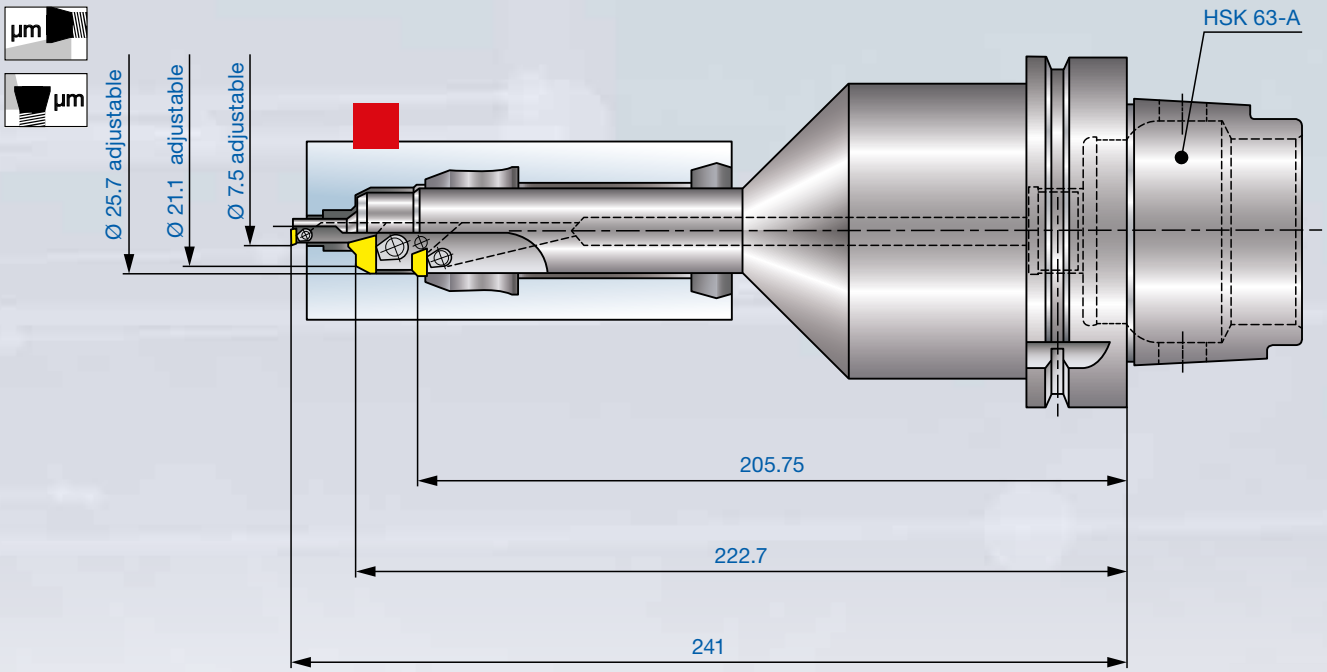


Requirements		
Drilling and fine boring of the spring seat		
Drill length adjustable, fine boring diameters adjustable		
Solution		
Multi-step fine boring tool / Teeth = 2 per Ø		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		carbide coated
Cutting speed	m/min	(Ø 11) 88 / (Ø 33.9) 258
Feed rate per tooth	mm	0.07
Cutting depth	mm	-5
Result		
SC-drill regrindable several times		
Inserts adjustable and separately replaceable		

Customer benefits

Reduced tooling costs per component compared to solid carbide tools

Multi-step fine boring tool / Teeth$_{eff.}$ = 1



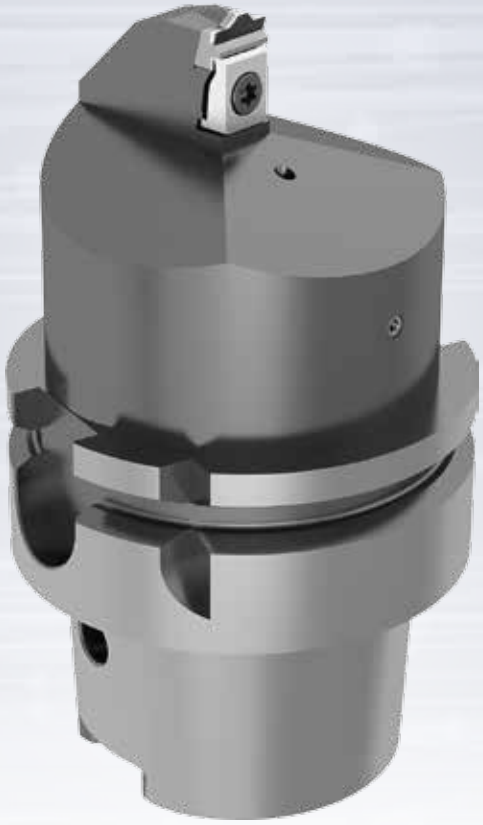
Requirements		
Pre-machining, form inserts for special profile		
All inserts adjustable		
Solution		
Multi-step fine boring tool / Teeth$_{eff.}$ = 1		
Cutting data		
Material		(DIN) ■ GG-Cr
Cutting grade		carbide coated
Cutting speed	m/min	220
Feed rate per tooth	mm	0.07
Cutting depth	mm	0.2-0.8
Result		
Inserts adjustable and separately replaceable		

Customer benefits
Reduced tooling costs per component compared to solid carbide tools

Cylinder head

Broaching of relief groove

Broaching tool / Teeth = 1



Requirements		
Reduction of tool costs and machining time		
Elimination of expensive special milling cutters		
Solution		
Broaching tool / Teeth = 1		
Cutting data		
Material		(DIN) ■ AlSi10Mg(Cu)
Cutting grade		PCD
Cutting speed	m/min	25
Cutting depth	mm	0.5 per stroke
Result		
Long tool life thanks to constant cut		
Low tooling costs		
Significant reduction in machining time		

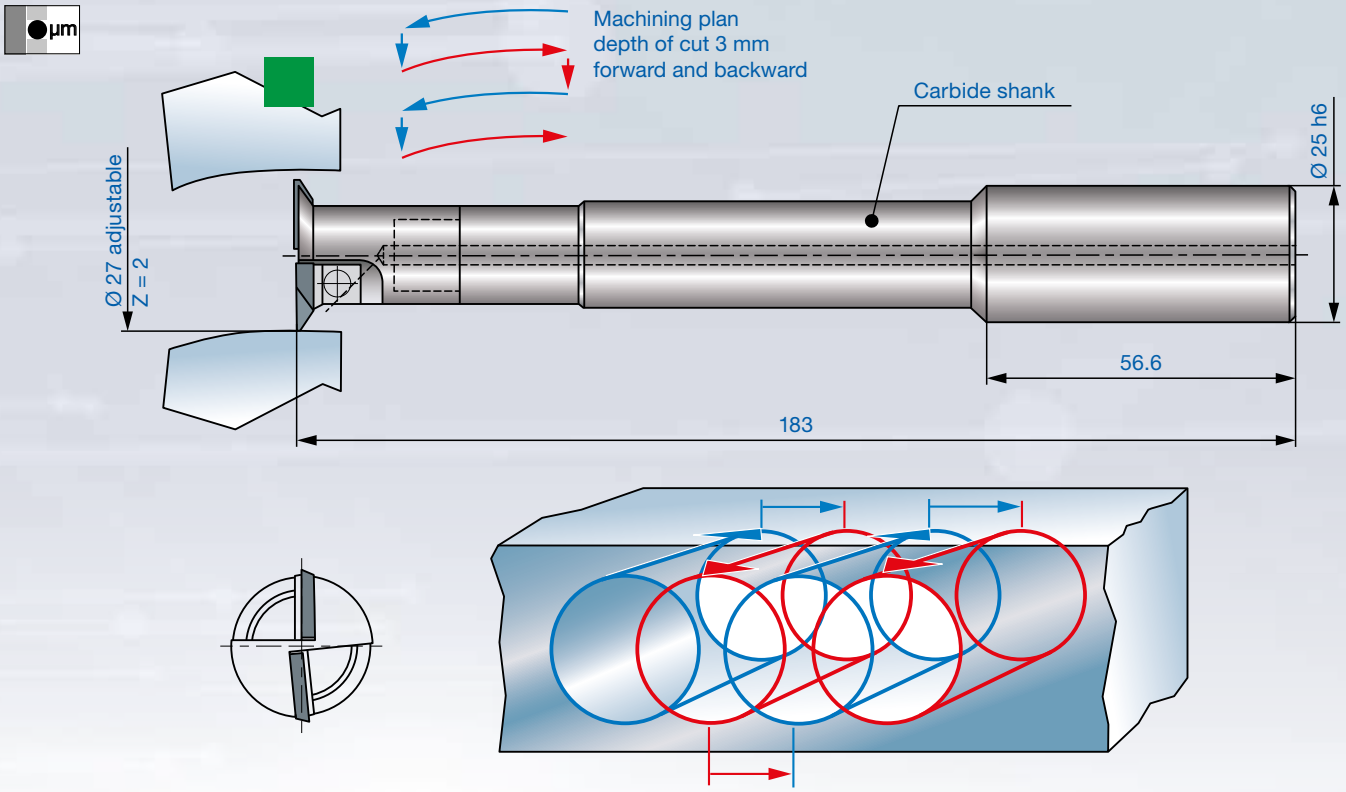
Customer benefits

Lower machine investment - no expensive milling spindle (high-speed)

Reduced tooling costs per component

Induction port milling tool / Teeth = 2

PCD inserts adjustable and replaceable



Requirements		
Complete machining of the in-and outlet ducts		
Solution		
Induction port milling tool / Teeth = 2		
PCD inserts adjustable and replaceable		
Cutting data		
Material		(DIN) ■ AlSi10
Cutting grade		PCD 10
Cutting speed	m/min	1,357
Feed rate per tooth	mm	0.35
Cutting depth	mm	3 forward and backward
Result		
High feed rates		
Consistent surface finish		

Customer benefits
Lower tool costs thanks to interchangeable inserts

Cylinder crankcase

HPC rough milling cutter / Teeth = 15 / up to 8 mm cutting depth

Firm clamping
of the inserts

Requirements		
Increase tool life		
Minimization of edge breakouts on the component		
Solution		
HPC rough milling cutter / Teeth = 15		
Cutting data		
Material		(DIN) ■ AlSi17Cu4 T5 / T6
Cutting grade		PCD 30
Cutting speed	m/min	685
Feed rate per tooth	mm	0.14
Cutting depth	mm	~1.5
Result		
Tool life improvement by factor 4 to 5		
Lower power consumption		
No edge breakouts on the component		

Customer benefits

Reduced tooling costs per component

Almost chip-free components, lower cleaning costs

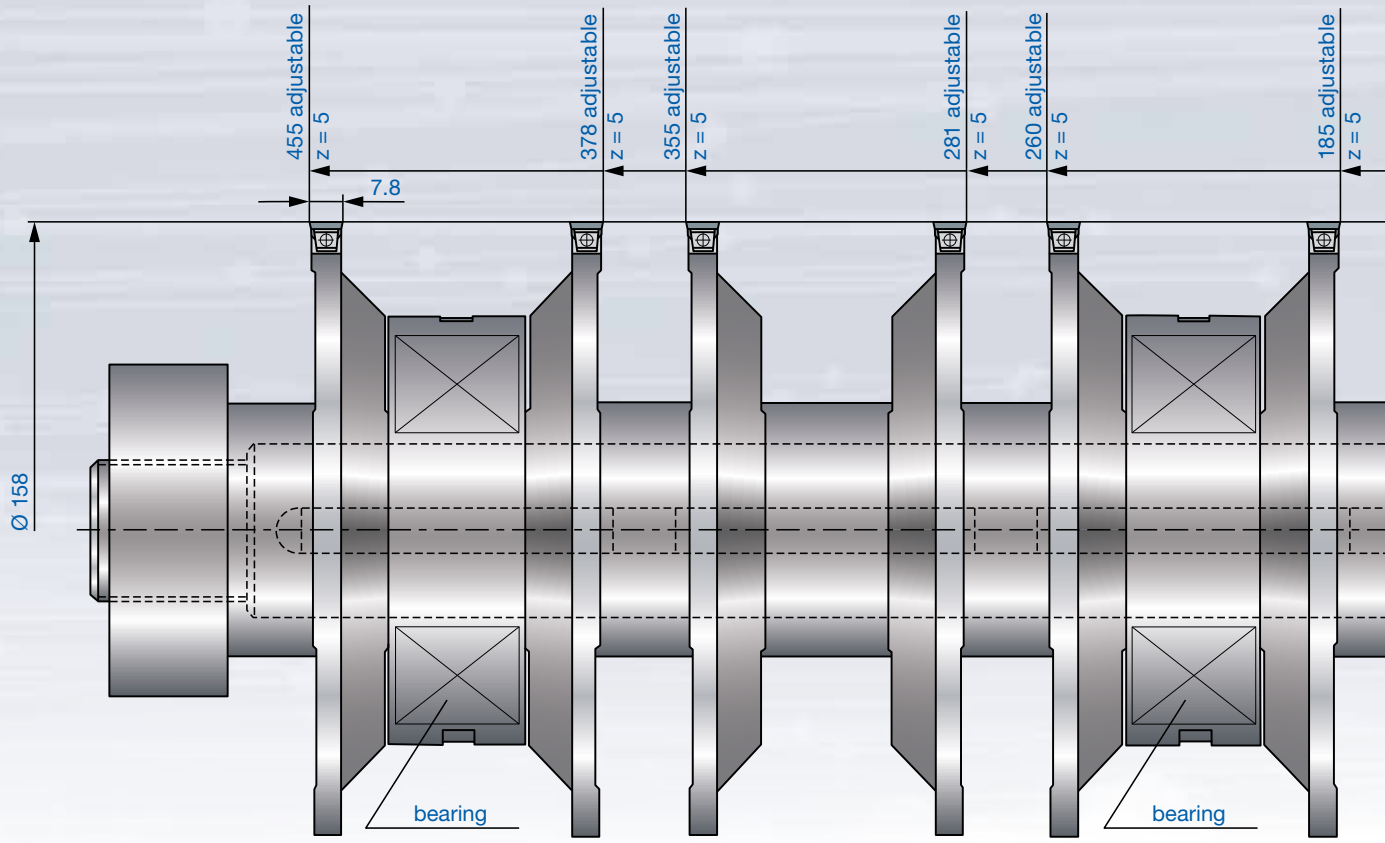
Increased productivity and energy efficiency

Cylinder crankcase

Bearing width

Gang milling cutter / Teeth = 5 per milling cutter

Face run-out and milling cutters adjustable to each other



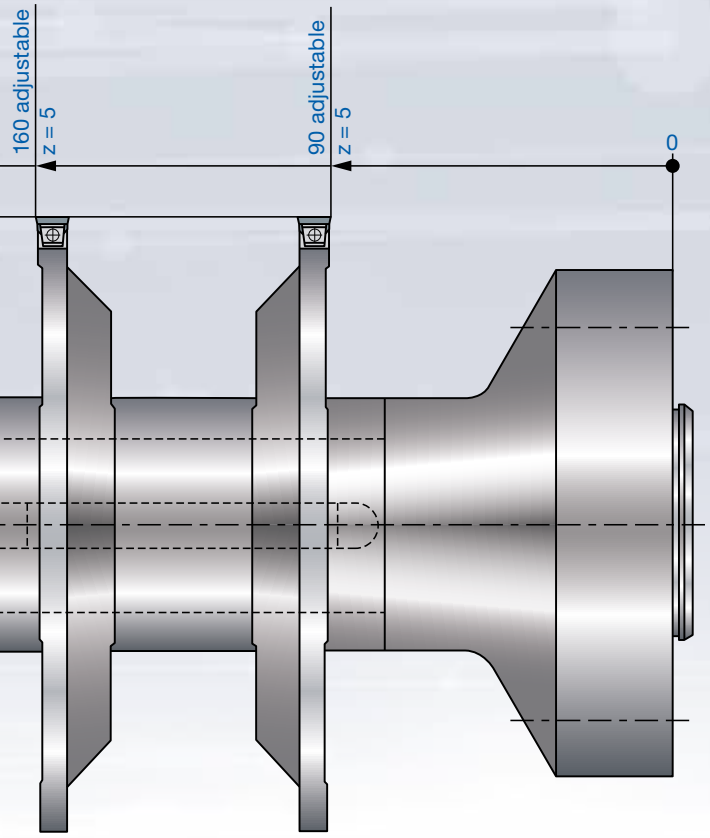
Requirements		
Milling of the bearing width		
Face run-out and milling cutters adjustable to each other		
Solution		
Gang milling cutter / Teeth = 5 per milling cutter		
Cutting data		
Material		(DIN) ■ GD-AlSi9
Cutting grade		PCD/K10
Cutting speed	m/min	500
Feed rate per tooth	mm	0.07
Cutting depth	mm	-5
Result		
Quick and easy changing of the inserts		
Excellent surface finish		
PCD inserts usable on both sides		

Customer benefits

Reduced non-productive times

Half of the costs thanks to double-used PCD inserts

Bearing width

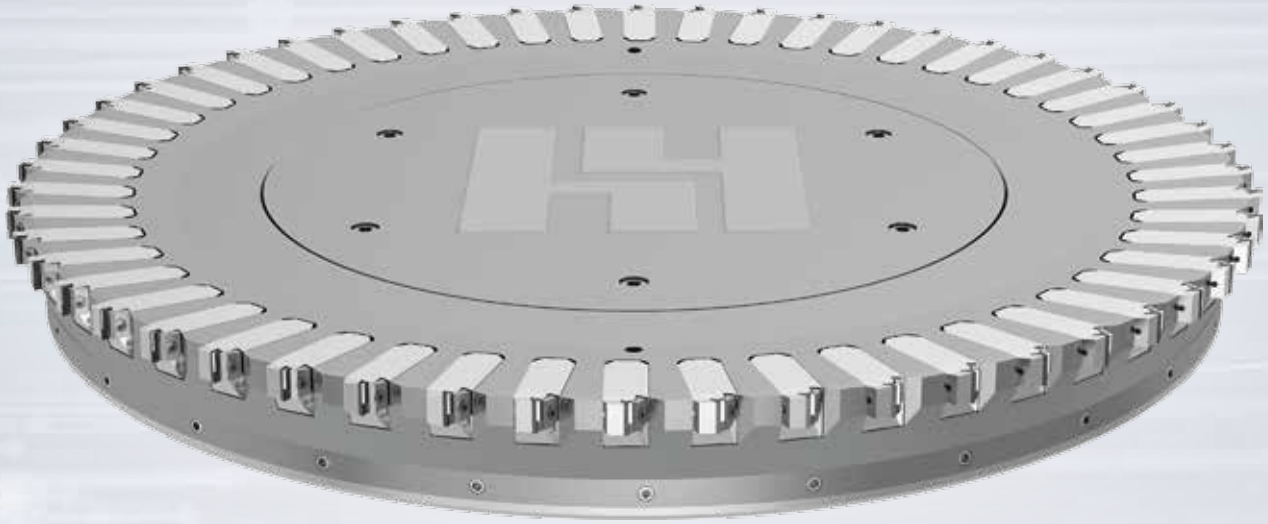


Cylinder crankcase

Sealing surface

Face milling cutter / Ø 500 mm / Teeth = 52

Cartridge solution



Requirements		
Milling of the sealing surface, Aluminium crankcase		
All inserts adjustable		
Solution		
Face milling cutter / Teeth = 52		
Cartridge solution		
Cutting data		
Material		(DIN) ■ GD-AlSi9
Cutting grade		PCD
Cutting speed	m/min	3,000
Feed rate per tooth	mm	0.1
Cutting depth	mm	0.5
Result		
Outstanding tool life		
Easy adjustment of the inserts		

Customer benefits

Low costs per component

Reduced non-productive times

Milling cutter with vibration damper / Teeth = 16 / Teeth$_{eff.}$ = 8

Requirements

Milling the bearing clearances for the crankshaft

Solution

Milling cutter with vibration damper / Teeth = 16 / Teeth$_{eff.}$ = 8

Cutting data

Material		(DIN) ■ AlSi9Cu3
Cutting grade		PCD
Cutting speed	m/min	516
Feed rate per tooth	mm	0.08
Cutting depth	mm	1.5 - 8

Result

Absolutely vibration-free and high quality surface finish

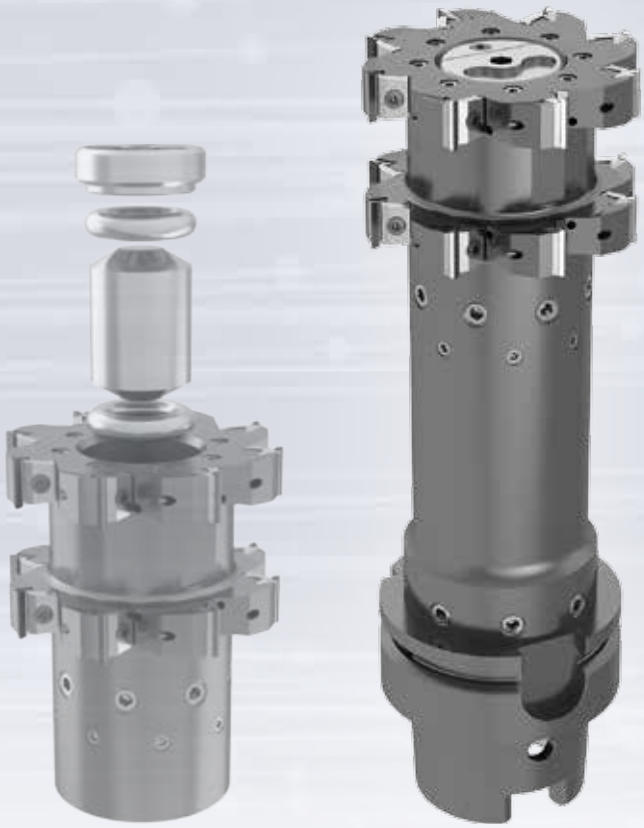
Customer benefits

High tool life of PCD inserts thanks to smoth cutting performance

Cylinder crankcase

Milling thrust bearing seat

Milling cutter with integrated vibration damper / Teeth = 16 (8 + 8)



Requirements

Maximum number of cutting edges, vibration damped for high surface quality

Solution

Milling cutter / Teeth = 16 (8 + 8)

Cutting data

Material		(DIN) ■ AlSi12
Insert		PCD
Cutting speed	m/min	650
Feed rate per tooth	mm	0.1

Result

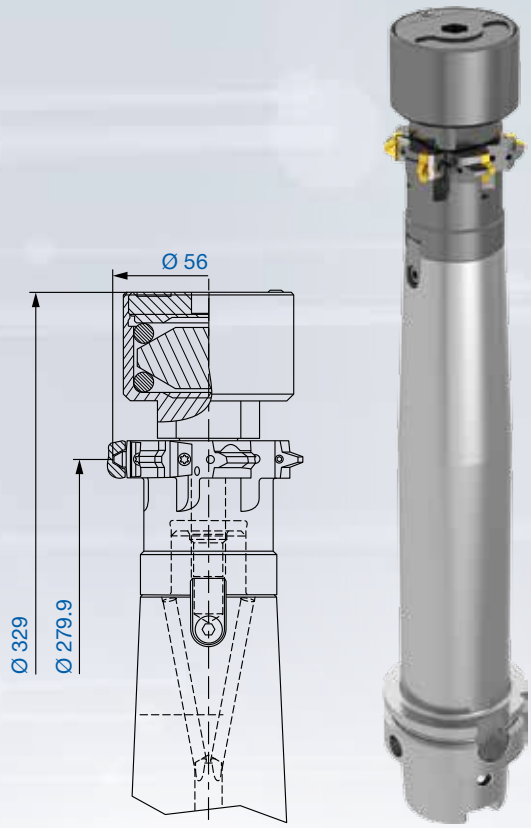
Stable milling operation, surfaces free of vibrations

Customer benefits

Cycle time reduction thanks to high number of cutting edges

Excellent surface finish

Milling cutter with vibration damper / Teeth$_{eff.}$ = 3



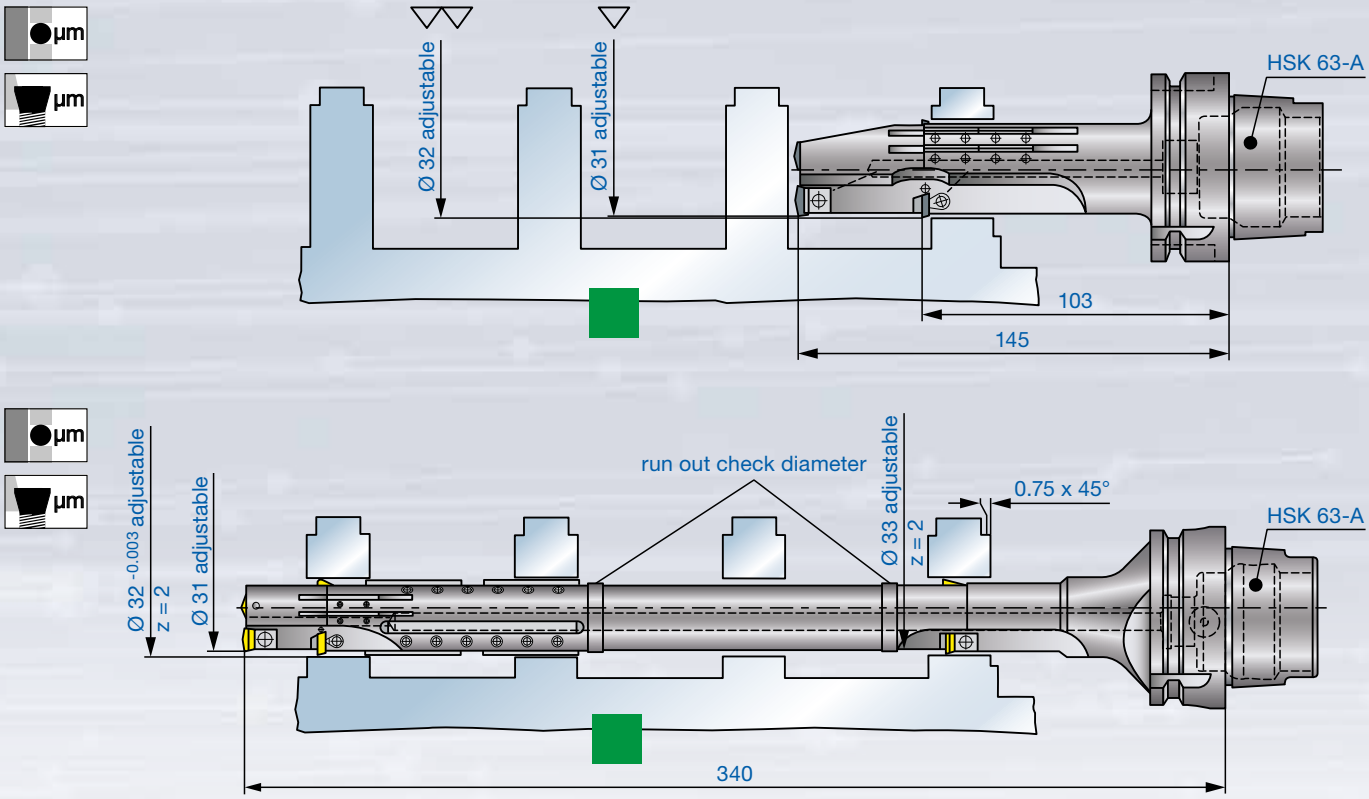
Requirements		
Milling a slot in the bearing diameter		
Extreme protrusion length		
Solution		
Milling cutter with vibration damper / Teeth$_{eff.}$ = 3		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		carbide coated
Cutting speed	m/min	345
Feed rate per tooth	mm	0.03
Cutting depth	mm	3.5
Result		
Smooth cutting performance and good surface quality thanks to the use of a vibration damper		

Customer benefits
High quality components

Cylinder crankcase

Ventilation bore

Drilling and fine boring tool / Teeth (drilling) = Teeth$_{eff.}$ = 1 / (counterboring) = 2



Requirements

Pilot tool with guide pads (drilling into solid - 1. web)

Finish tool with guide pads (drilling into solid)

Solution

Drilling and fine boring tool / Teeth (drilling) = Teeth$_{eff.}$ = 1 / (counterboring) = 2

Cutting data

Material		(DIN) ■ GK-AlSi17Cu4Mg
Cutting grade		K10 / PCD
Cutting speed	m/min	320
Feed rate per tooth	mm	0.07
Cutting depth	mm	into solid / 0.5

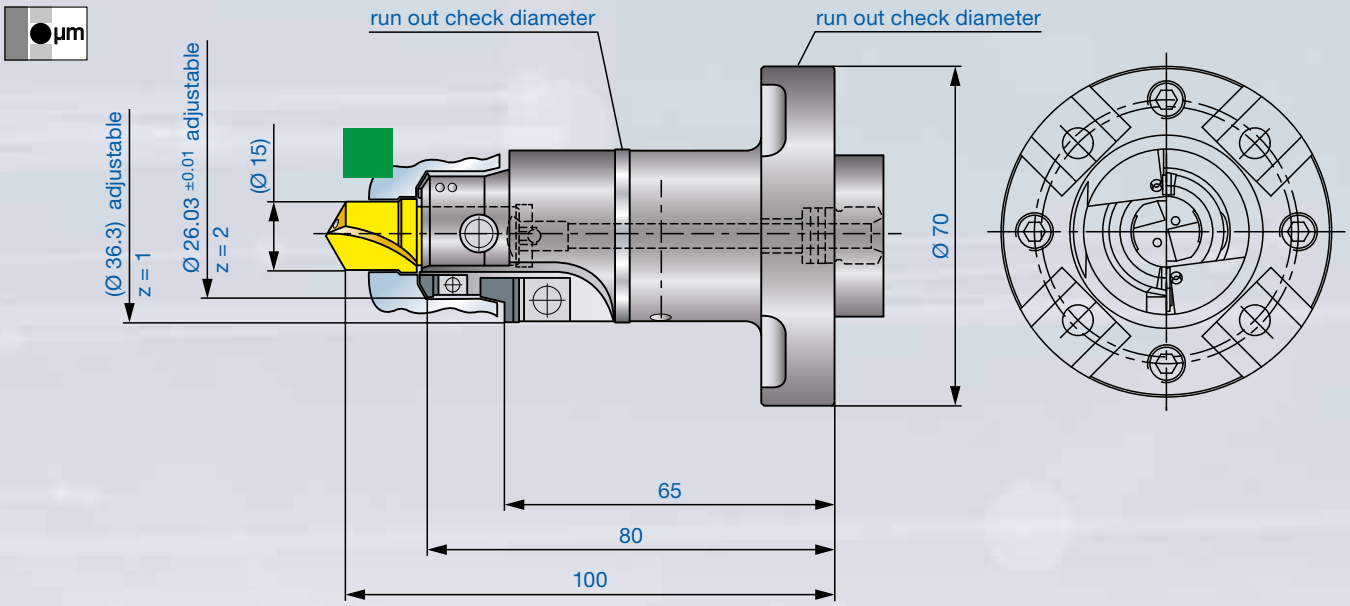
Result

Longer tool life

Customer benefits

Process reliable production processes

Drilling and fine boring tool / Teeth = 2 + 2 + 1



Requirements

Combination tool with solid carbide drill for boring and
adjustable inserts for fine boring and chamfering

Solution

Drilling and fine boring tool / Teeth = 2 + 2 + 1

Cutting data

Material		(DIN) ■ Al	
Cutting grade		PCD	
		drilling	fine boring
Cutting speed	m/min	193	470
Feed rate per tooth	mm	0.3	0.12
Cutting depth	mm	into solid	5.5

Result

Conventional solid carbide drill, regrindable several times
Insert diameter µm-accurate adjustable

Customer benefits

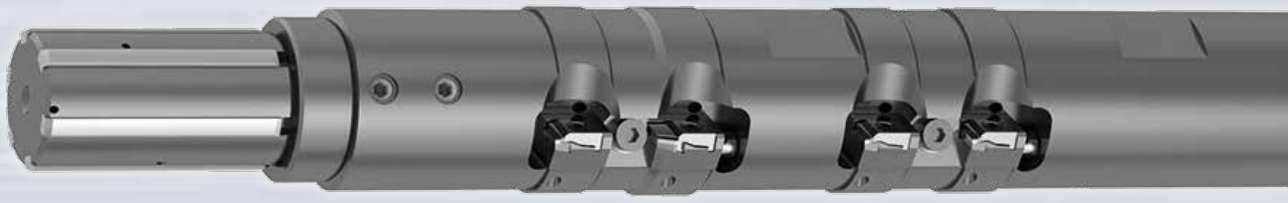
Cost-efficient solution

Cylinder crankcase

Balance shaft bore

Line boring with cartridges and PCD-equipped pilot

Heavy metal holder with carbide guide pads for stabilisation

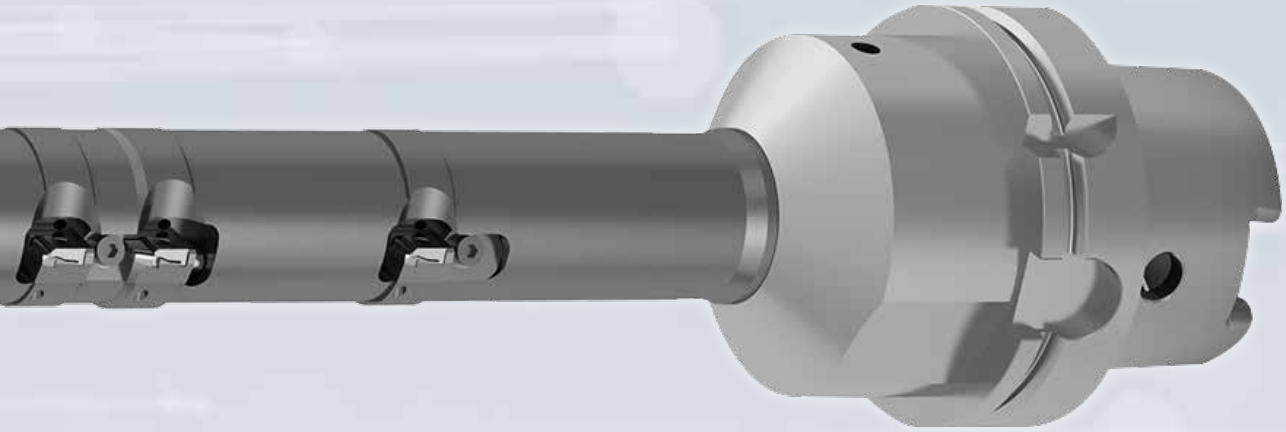


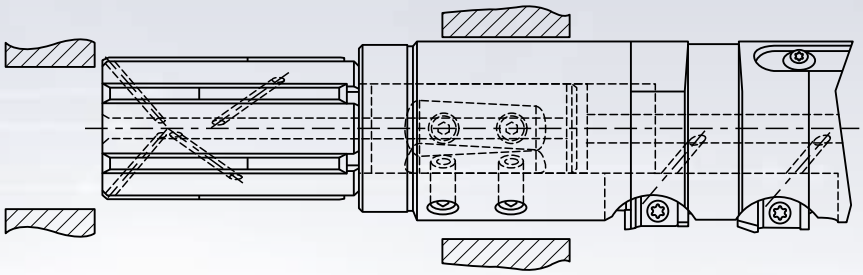
Requirements		
Semi-finish machining with counter bearing in the component		
All inserts adjustable		
Solution		
Line boring with cartridges and PCD-equipped pilot		
Heavy metal holder with carbide guide pads for stabilisation		
Cutting data		
Material		(DIN) ■ AlSi9Cu3
Cutting grade		PCD
Cutting speed	m/min	280
Feed rate per tooth	mm	0.12
Cutting depth	mm	0.5
Result		
High concentricity of bearing diameters		
Simple tool handling		

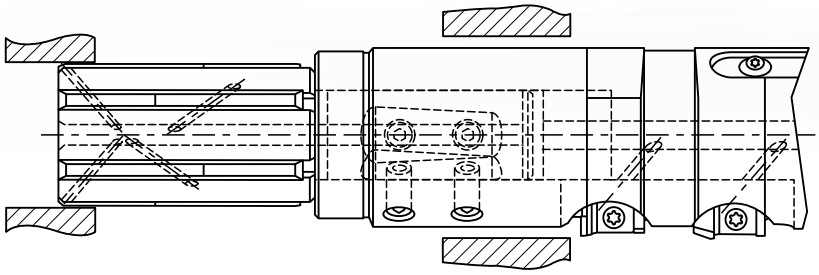
Customer benefits

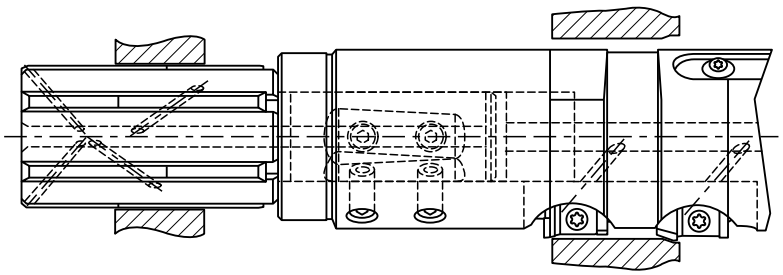
High process reliability

Balance shaft bore







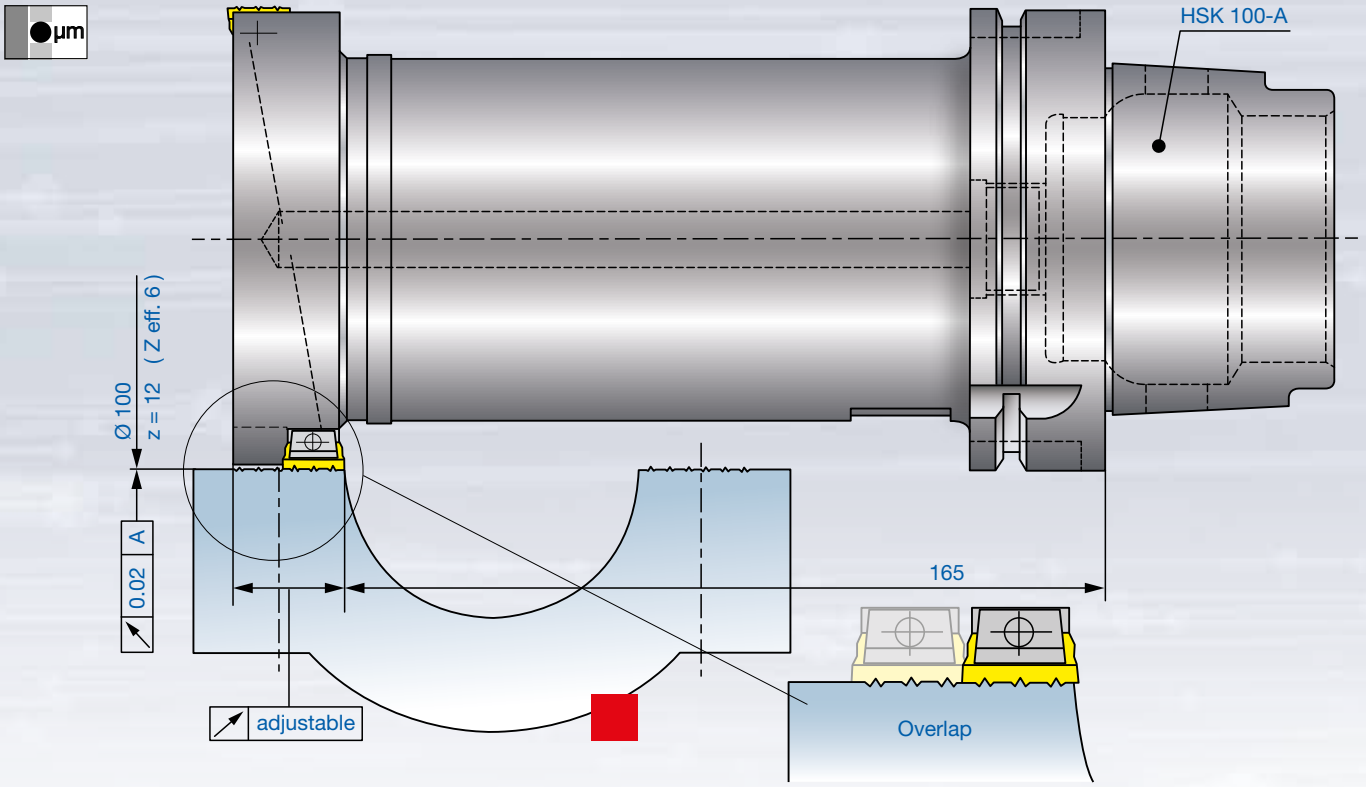


Cylinder crankcase

Bearing cap

Form milling cutter / Teeth = 2 x 6

Transition of the insert profile adjustable



Requirements

Form milling cutter for machining bearing caps

Solution

Form milling cutter / Teeth = 2 x 6

Transition of the insert profile adjustable

Cutting data

Material		(DIN) ■ GGG40
Cutting grade		carbide coated
Cutting speed	m/min	240
Feed rate per tooth	mm	0.1
Cutting depth	mm	1

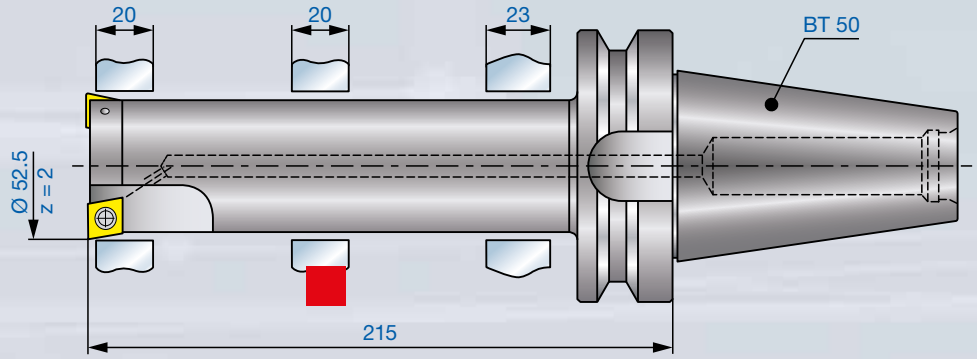
Result

Low cutting forces thanks to cutting division

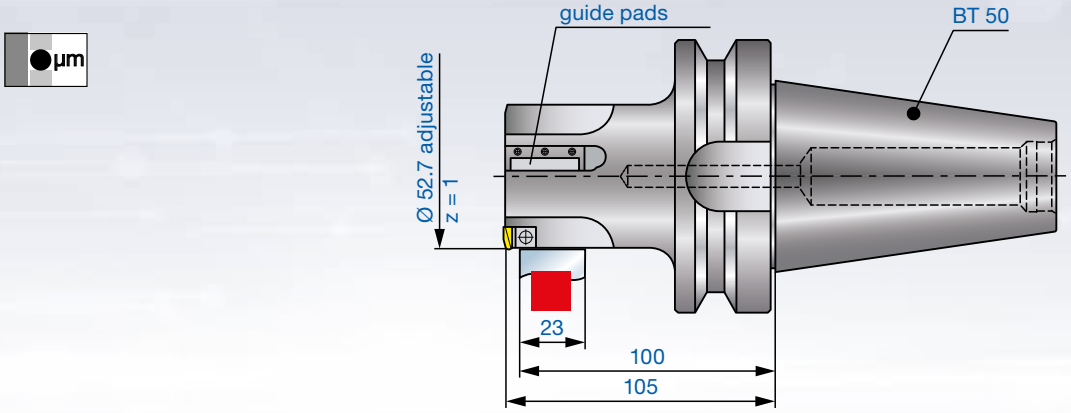
Customer benefits

Cost-effective interchangeable inserts solution

Operation 1: counterboring tool / Teeth = 2



Operation 2: fine boring tool / Teeth = 1



Requirements			
Operation 1: pre-machining from 2 sides			
Operation 2: pilot bore			
Solution			
Operation 1: counterboring tool / Teeth = 2			
Operation 2: fine boring tool / Teeth = 1			
Cutting data		**Operation 1**	**Operation 2**
Material		(DIN) ■ GG	
Cutting grade		carbide coated	
Cutting speed	m/min	150	135
Feed rate per tooth	mm	0.2	0.1
Cutting depth	mm	2.5	0.1
Result			
Simple tool handling thanks to eccentric pin adjustment			
Guide pads easily replaceable			

Customer benefits

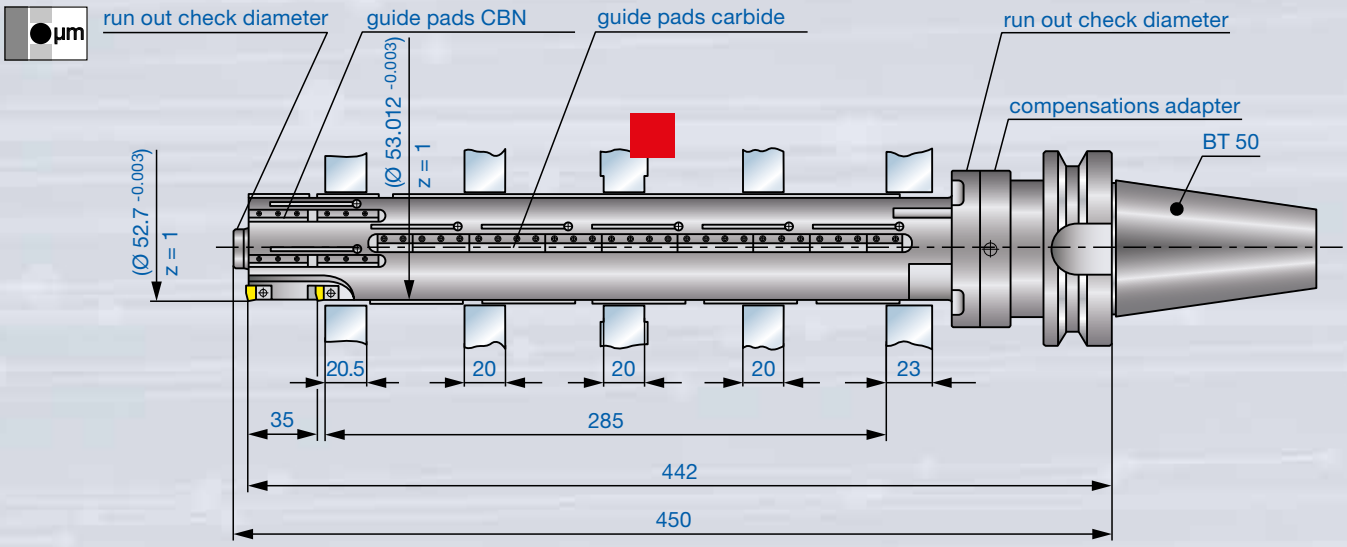
Reduced non-productive times

High quality components

Cylinder crankcase

Crankshaft bore

Operation 3: fine boring tool / Teeth = 1 + 1



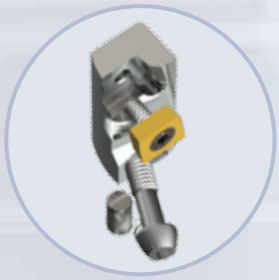
Requirements		
Operation 3: finish-machining		
Solution		
Operation 3: fine boring tool / Teeth = 1 + 1		
Cutting data		**Operation 3**
Material		(DIN) ■ GG
Cutting grade		carbide coated
Cutting speed	m/min	238
Feed rate per tooth	mm	0.1
Cutting depth	mm	0.1
Result		
Simple tool handling thanks to eccentric pin adjustment		
Guide pads easily replaceable		

Customer benefits

Reduced non-productive times

High quality components

Boring tool with integrated vibration damper, adjustable cartridges and ISO indexable inserts / Teeth = 5



KV400 KKH
axially adjustable

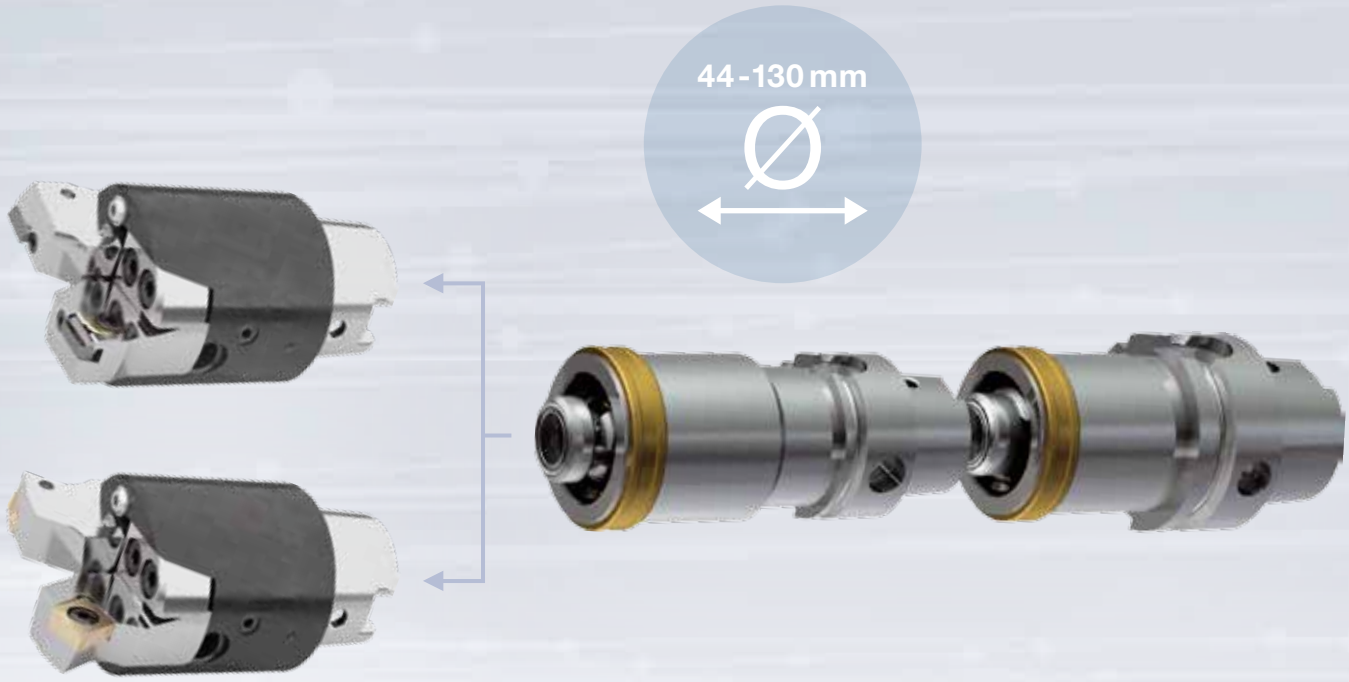
Requirements		
Roughing operation		
Ø 74±01		
Solution		
Boring tool with adjustable cartridges and ISO indexable inserts / Teeth = 5		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		carbide coated
Cutting speed	m/min	150
Feed rate per tooth	mm	0.2
Cutting depth	mm	Ø1 - 1.5
Result		
Very good tool life		
Stable machining process		

Customer benefits
Low costs per component

Cylinder crankcase

Cylinder bore

Boring system GA 200 Vario /
Teeth = 2 for roughing and finish-machining



Requirements		
Roughing operation		
Ø 72.5±0.2 R_z100		
Solution		
GA 200 Vario / Teeth = 2		
Cutting data		
Material		(DIN) ■ GG
Cutting grade		CBN
Cutting speed	m/min	649
Feed rate per tooth	mm	0.2
Cutting depth	mm	Ø1.5 - 2
Result		
Increased tool life		
Simple tool handling		

Customer benefit
Low cost per component

Motor block

Milling of clearance cut for the honing tool

Tight cutting edge spacing

Various cutting materials can be used

With a stable core cross-section, this robust solution can achieve high feed rates

Requirements		
Circular milling a clearance cut for the honing tool into the cylinder bore		
Mixed machining Aluminium and Cast Iron		
Solution		
Circular milling cutter with fixed insert seat		
Double positive cutting geometry		
Cutting data		
Material		■AlSi9/ ■GG25
Cutting grade		PCD/PROTON coated carbide
Cutting speed	m/min	242
Feed rate per tooth	mm	0.18
Cutting depth	mm	6-7
Result		
Short machining time with high cutting depth		

Customer benefits

Solid solution → high feeds possible

Inserts can be changed individually

→ lower costs per component

Cylinder crankcase

Cylinder bore

Automatically adjustable tool / Teeth = 1

SMART SETTING MOTION TOOLS concept

Requirements		
Simple tool handling		
Solution		
Automatically adjustable tool / Teeth = 1		
SMART SETTING MOTION TOOLS concept		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		CBN
Cutting speed	m/min	750
Feed rate per tooth	mm	0.28
Cutting depth	mm	0.3
Result		
Fully automatic diameter adjustment		

Customer benefits

Increase in tool life quantity

Very easy handling and very precise adjustment

Automatically adjustable tool / Teeth = 3 + 2

SMART SETTING MOTION TOOLS concept and control of the drawbar via compressed air

Requirements		
Reduction of processing costs		
Solution		
Automatically adjustable tool / Teeth = 3 + 2		
SMART SETTING MOTION TOOLS concept		
Control of the drawbar via compressed air		
Cutting data		
Material		(DIN) ■ GG
Cutting grade		CBN
Cutting speed	m/min	700
Feed rate per tooth	mm	0.18
Cutting depth	mm	0.3
Result		
Semi-finish and finishing machining in one tool		
No retraction marks thanks to retractable inserts		

Customer benefits

High process reliability

Simple tool handling

Cylinder crankcase

Crankshaft bearing passage

Line boring bar / Teeth = 5 + 5 / Teeth$_{eff.}$ = 1 + 1

SMART SETTING MOTION TOOLS concept

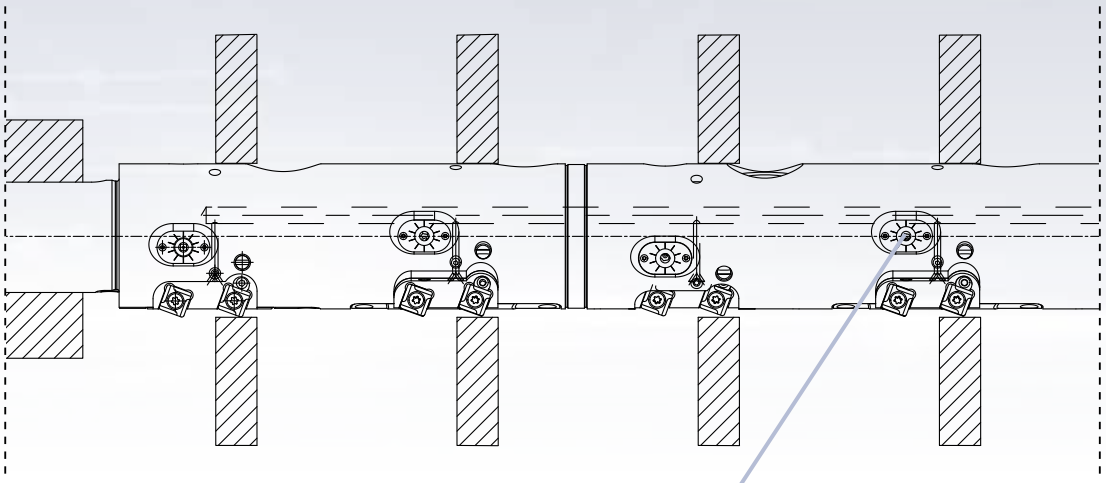
Requirements		
Reduced non-productive time and cycle time		
Defined surface R_z 12 - 20		
Solution		
Line boring bar / Teeth = 5 + 5 / Teeth$_{eff.}$ = 1 + 1		
SMART SETTING MOTION TOOLS concept		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		solid carbide
Cutting speed	m/min	185
Feed rate per tooth	mm	0.27 / 0.2
Cutting depth	mm	0.5
Result		
Non-productive times for re-adjusting reduced from 20 minutes to 2 minutes		
Simple handling		

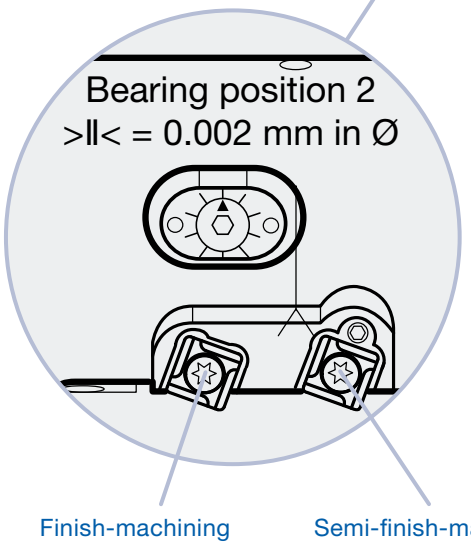
Customer benefits

High process reliability

Dramatic reduction of non-productive time

Crankshaft bearing passage

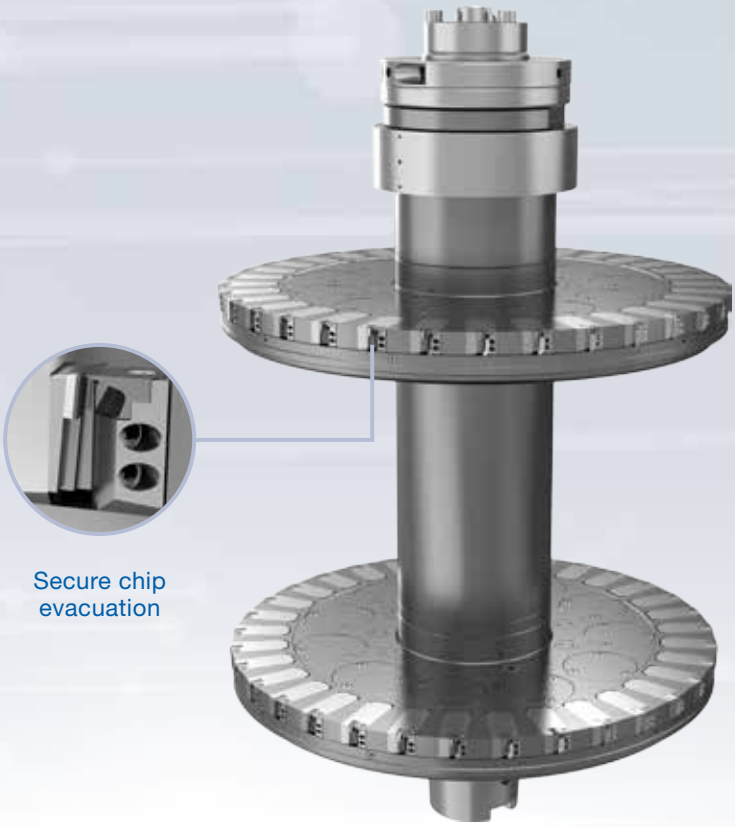




Gearbox components

HPC gang milling cutter Ø 380 mm / Teeth = 2 x 33

Adjustable distance between milling cutters (Dimension 280 mm)



Requirements		
Machining of the sealing surface		
Chip free components		
Simultaneous machining of two components		
Solution		
HPC gang milling cutter Ø 380 mm / Teeth = 2 x 33		
Adjustable distance between milling cutters (Dimension 280 mm)		
Cutting data		
Material		(DIN) ■ AlSi7
Cutting grade		PCD
Cutting speed	m/min	780
Feed rate per tooth	mm	0.07
Cutting depth	mm	0.5
Result		
Excellent surface finish		
Very good tool life		

Customer benefits

Almost chip-free components, lower cleaning costs

Reduced tooling costs per component

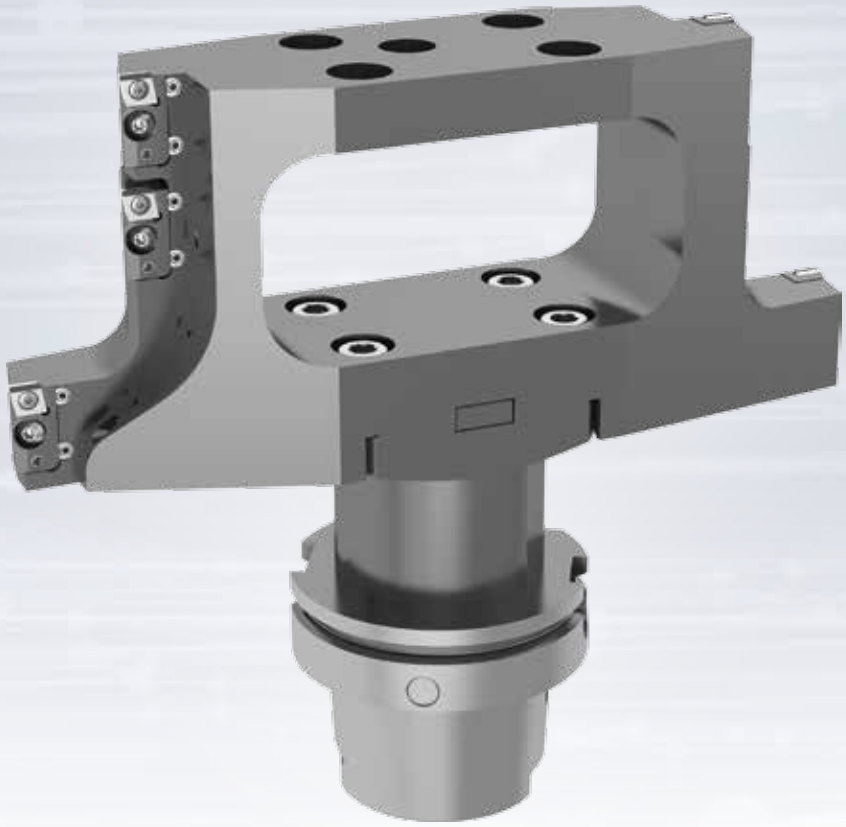
Gearbox case

Pre-machining

Stepped countersinking tool Ø 206 mm + Ø 209 mm + Ø 285 mm / Teeth = 2 + 2 + 2

Basic tool body in steel and aluminium with cartridges

Light-weight design



Requirements		
Minimization of tool weight and tool dimensions		
Solution		
Stepped countersinking tool / Teeth = 2 + 2		
Basic tool body in steel and aluminium with cartridges		
Cutting data		
Material		(DIN) ■ AlADC10
Cutting grade		PCD
Cutting speed	m/min	1,200
Feed rate per tooth	mm	0.12
Result		
Reduced tool weight		

Customer benefits

Slim design saves space within the tool magazine of the machine

Low costs thanks to standard cartridges and ISO inserts

Stepped countersinking tool Ø 219 mm + Ø 220 mm / Teeth = 2 + 4

Basic tool body in steel and aluminium with cartridges

Light-weight design

Requirements

Minimization of tool weight and tool dimensions

Solution

Stepped countersinking tool / Teeth = 4 + 2

Basic tool body in steel and aluminium with cartridges

Cutting data

Material		(DIN) ■ AlADC10
Cutting grade		PCD
Cutting speed	m/min	1,200
Feed rate per tooth	mm	0.1

Result

Reduced tool weight

Customer benefits

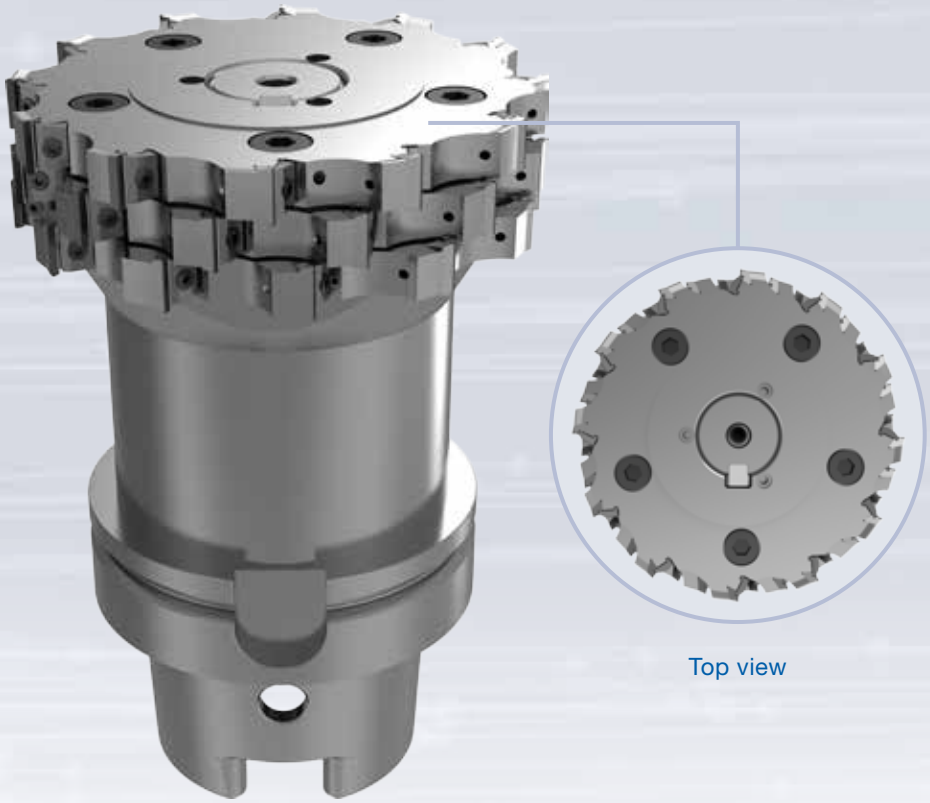
Reduced machining times

Low costs thanks to standard cartridges and ISO inserts

Gearbox case

Shoulder machining

Multi tooth cutter Ø 125 / Teeth = 36 / Teeth$_{eff.}$ = 12



Top view

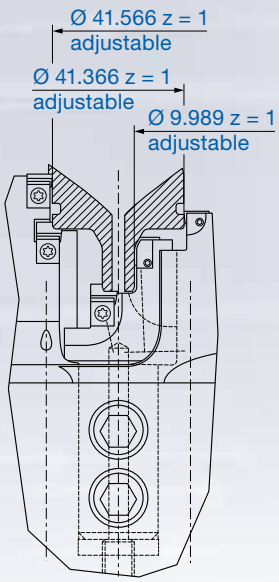
Requirements		
High surface quality on face and shoulder surface		
Solution		
Multi tooth cutter / Teeth = 36 / Teeth$_{eff.}$ = 12		
Cutting data		
Material		(DIN) ■ AlSi9Cu3
Cutting grade		PCD 10
Cutting speed	m/min	2,500
Feed rate per tooth	mm	0.12
Cutting depth	mm	0.8
Result		
Almost uninterrupted shoulder thanks to high concentricity		

Customer benefits

Inserts separately replaceable

Increased productivity and energy-efficiency

Combination tool with adjustable inserts - eccentric pin adjustment / Teeth = 5 / Teeth$_{eff.}$ = 1



Requirements

High concentricity requirements and concentricity of the individual diameters to each other

Adjustability of inserts

Solution

Combination tool with adjustable inserts - eccentric pin adjustment / Teeth = 5 / Teeth$_{eff.}$ = 1

Cutting data

Material		(DIN) ■ AlSi9
Cutting grade		PCD
Cutting speed	m/min	1,380
Feed rate per tooth	mm	0.15

Result

Easy readjustment of the inserts

Customer benefits

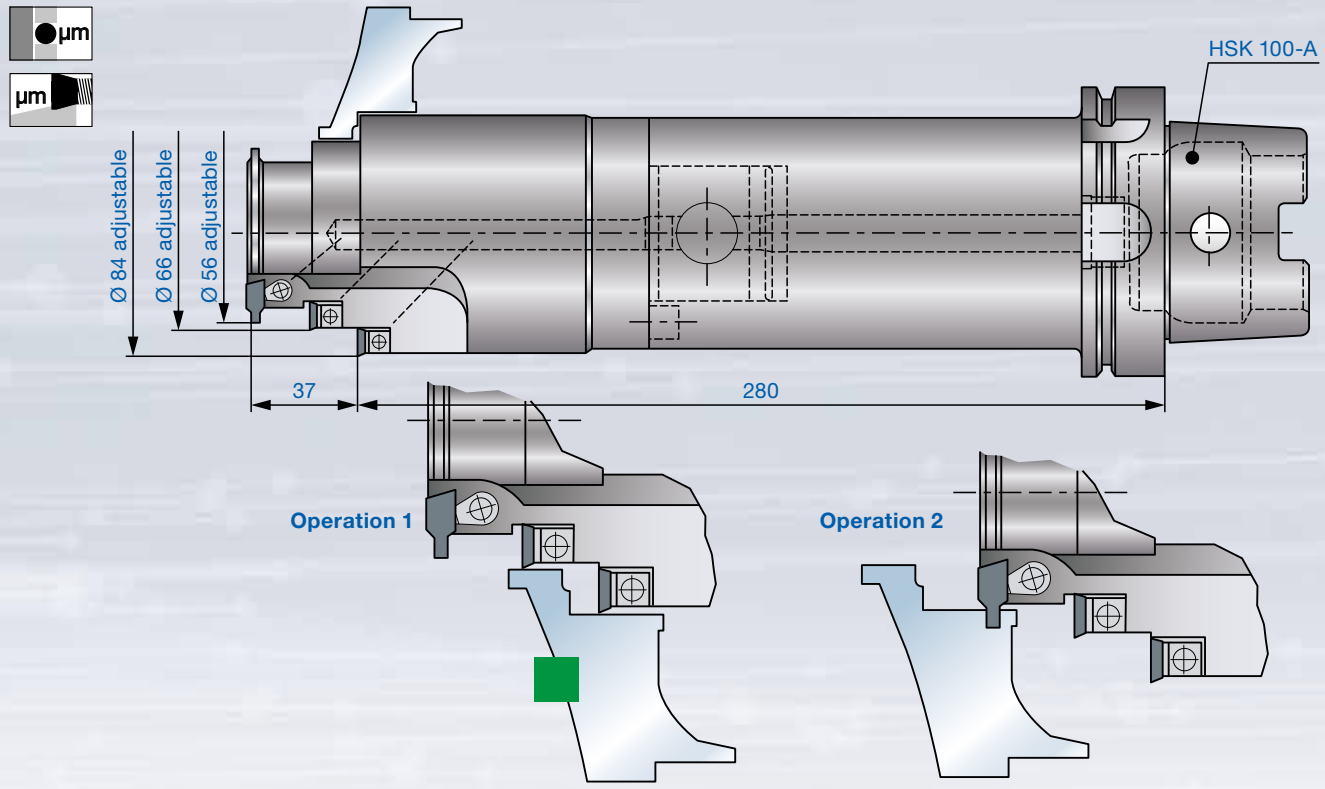
Reduced non-productive times

Cost-effective interchangeable inserts solution

Gearbox case

Bearing seats

Fine boring and circular milling tool / Teeth = 3 per Ø



Requirements

Combination tool for fine boring and circular milling

Solution

Fine boring and circular milling tool / Teeth = 3 per Ø

Cutting data

Material		(DIN) ■ AlSi9	
Cutting grade		PCD	
		fine boring	milling
Cutting speed	m/min	450	517
Feed rate per tooth	mm	0.08	0.12
Cutting depth	mm	-4	-4

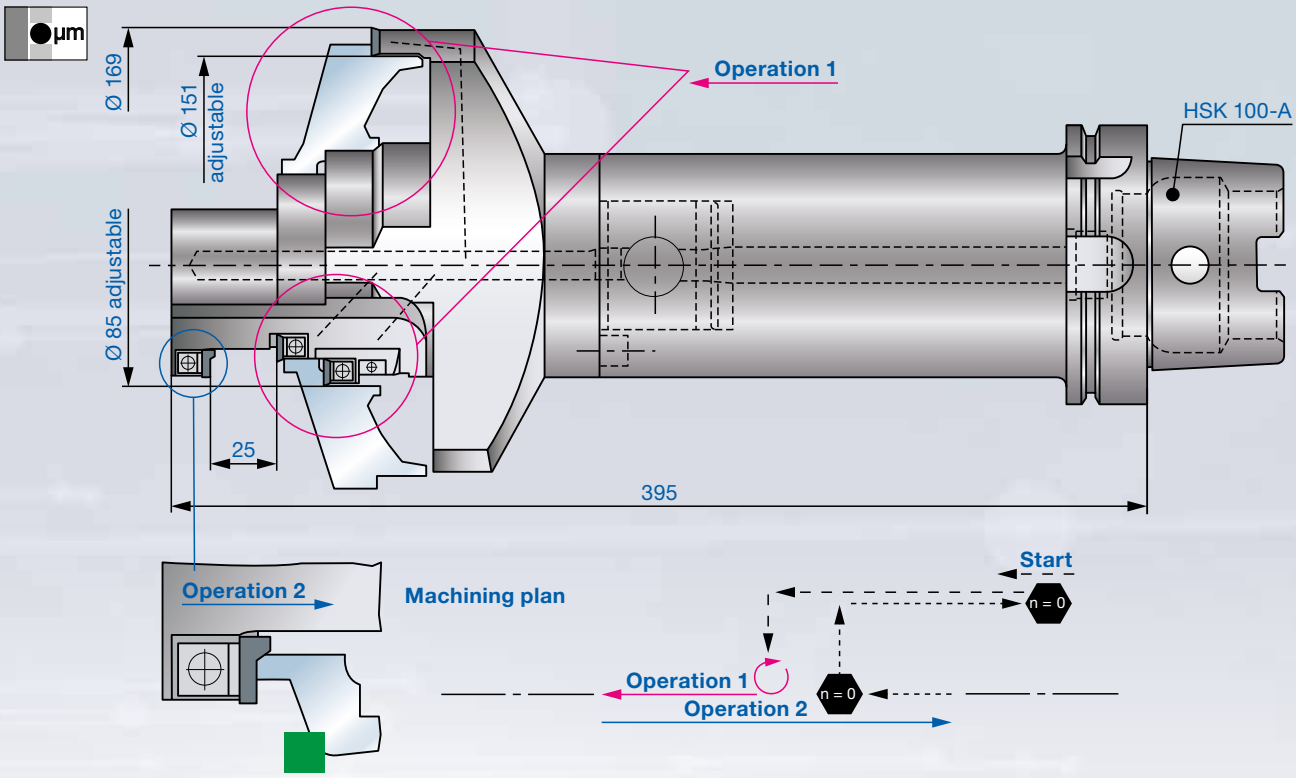
Result

Inserts separately replaceable

Customer benefits

Reduced tooling costs per component

Fine boring tool / Z = 5 / Teeth$_{eff.}$ = 1



Requirements

Combination tool for forward and backward fine boring
and for over turning of outside diameter

Solution

Fine boring tool / Teeth = 5 / Teeth$_{eff.}$ = 1

Cutting data

Material		(DIN) ■ AlSi9
Cutting grade		PCD
Cutting speed	m/min	(Ø 85) 450
Feed rate per tooth	mm	0.12

Result

Inserts separately replaceable

Customer benefits

Reduced machining times
Reduced tooling costs per component

Gearbox case

Valve plate

Face milling cutter Ø 49 mm with heavy metal shank (anti-vibration effect) / Teeth = 8

Requirements

Axial plunging into the component, face miling of the surface through the clamping device

PMr(3) >50 % - R_z 8 - R_{max} 10 and axially adjustable

Solution

Face milling cutter with heavy metal shank (anti-vibration effect) / Teeth = 8

Cutting data		
Material		(DIN) ■ GD-AlSi9Cu3
Cutting grade		PCD
Cutting speed	m/min	2,700
Feed rate per tooth	mm	0.034 - 0.069 - 0.086
Cutting depth	mm	0.6

Result

Excellent surface finish

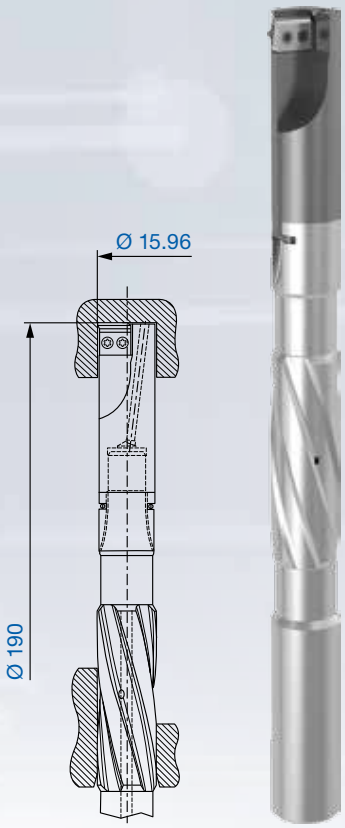
PMr(3) 100 % - R_z 2.2 - R_{max} 2.6

Customer benefits

Very high tool life quantity

Excellent surface finish quality

Fine machining tool with heavy metal shank and twisted guide shank / Teeth = 1



Requirements

Precise diameter and high coaxiality

Solution

Fine machining tool with heavy metal shank and twisted guide shank / Teeth = 1

Cutting data

Material		(DIN) ■ Al
Cutting grade		PCD
Cutting speed	m/min	449
Feed rate per tooth	mm	0.056
Cutting depth	mm	-8

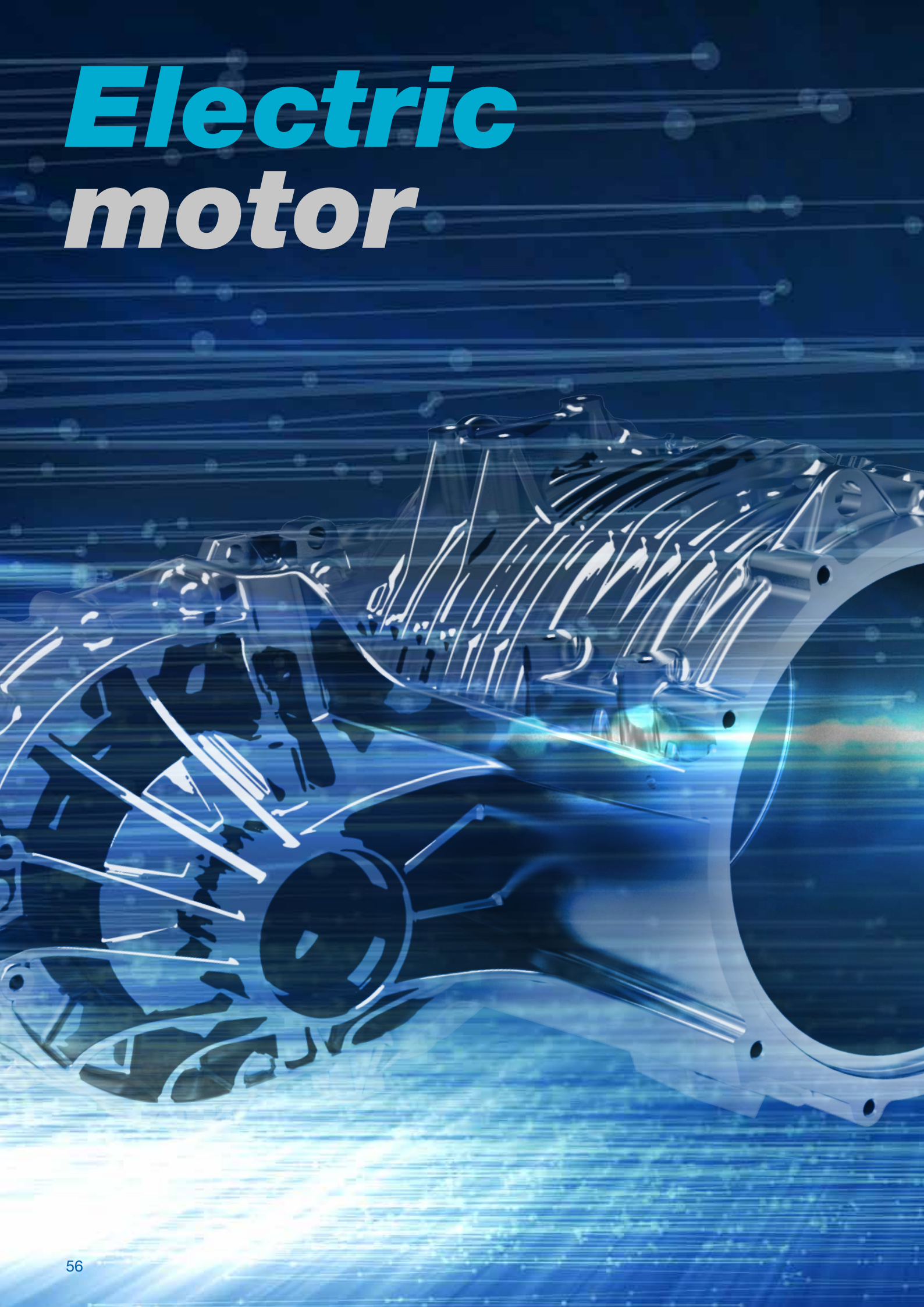
Result

Excellent surface finish quality

Customer benefits

Fewer tools required for machining

Electric motor



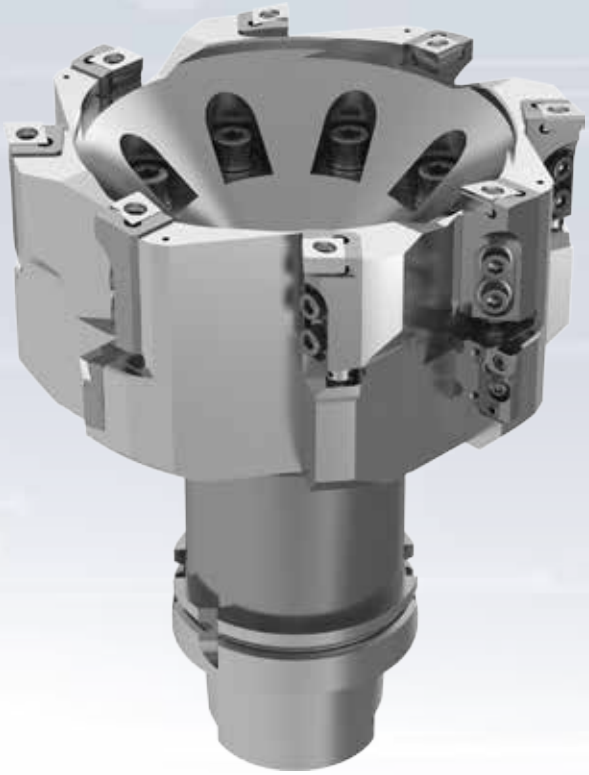
Pre-machining stator bore electric motor

Tangential inserts tool / Teeth = 4 + 4 + 4

External and internal diameter machining Ø218 mm + Ø214 + Ø160 mm

Basic tool body in steel and aluminium with cartridges

Light-weight design



Requirements

Strongly fluctuating allowances and machining several steps reliably

Safety cut required for bottom surface over 28 mm width

Solution

Light-weight stepped countersinking tool / Teeth = 4 + 4 + 4

Tangential inserts with underhand grip installed in the cartridge, thus very stable embedding

Cutting data

Material		AlSi10MgCu-T6
Cutting grade		PCD
Cutting speed	m/min	600 m/min
Feed rate per tooth	mm	0.15

Result

Process reliable machining combined with high feed rates

Long tool life thanks to a stable tool

Customer benefits

Roughing with only one tool

Reduced cycle times

Electric motor

Semi-finish machining stator bore

Adjustable pre-machining tool / Teeth = 4 + 4 + 2 + 2 + 2

Light-weight tool concept with cartridges and PCD guide pads

Light-weight design

Requirements

Exact premachining for finishing tool

Solution

Adjustable ISO indexable inserts combined with different diameters

Light-weight construction with aluminium base body

Cutting data

Material		AlSi10MgCu-T6
Cutting grade		PCD
Cutting speed	m/min	820
Feed rate per tooth	mm	0.12

Result

Stable machining process

Customer benefits

Pre-machining and finishing of several steps

Low cycle time thanks to multi-teeth tool

Finish-machining stator bore

Multi-teeth fine boring tool / Teeth = 6 + 2 + 2 + 2

Light-weight tool concept with cartridges and PCD guide pads

Light-weight design

Requirements

Fitting Ø with high surface quality and short cycle time

Solution

6-fluted tool with mixture of inserts

Light-weight construction with aluminium base body

Cutting data

Material		AlSi10MgCu-T6
Cutting grade		PCD
Cutting speed	m/min	1,000
Feed rate per tooth	mm	0.18

Result

Compliance with all tolerances and surface requirements

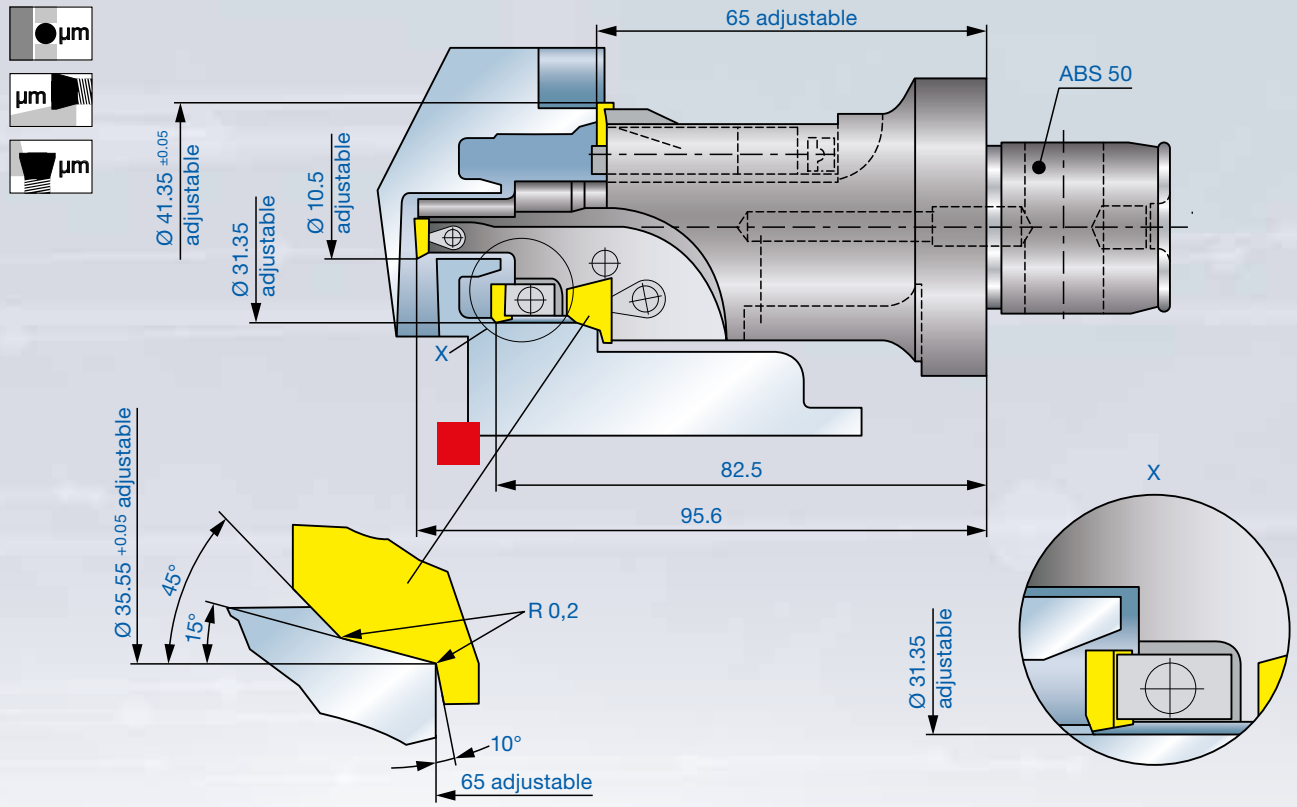
Customer benefits

Low cycle time thanks to a high feed rate

Excellent surface finish quality

Pumps

Multi-step fine boring tool / Teeth = 4 / Teeth$_{eff.}$ = 1



Requirements		
Combination tool, all diameters adjustable		
Solution		
Multi-step fine boring tool / Teeth = 4 / Teeth$_{eff.}$ = 1		
Cutting data		
Material		(DIN) ■ GGG40
Cutting grade		carbide coated
Cutting speed	m/min	(Ø 41.35) 197
Feed rate per tooth	mm	0.15
Cutting depth	mm	-3
Result		
Flexible tool design		
Inserts separately adjustable		

Customer benefits
High flexibility of diameter offsets

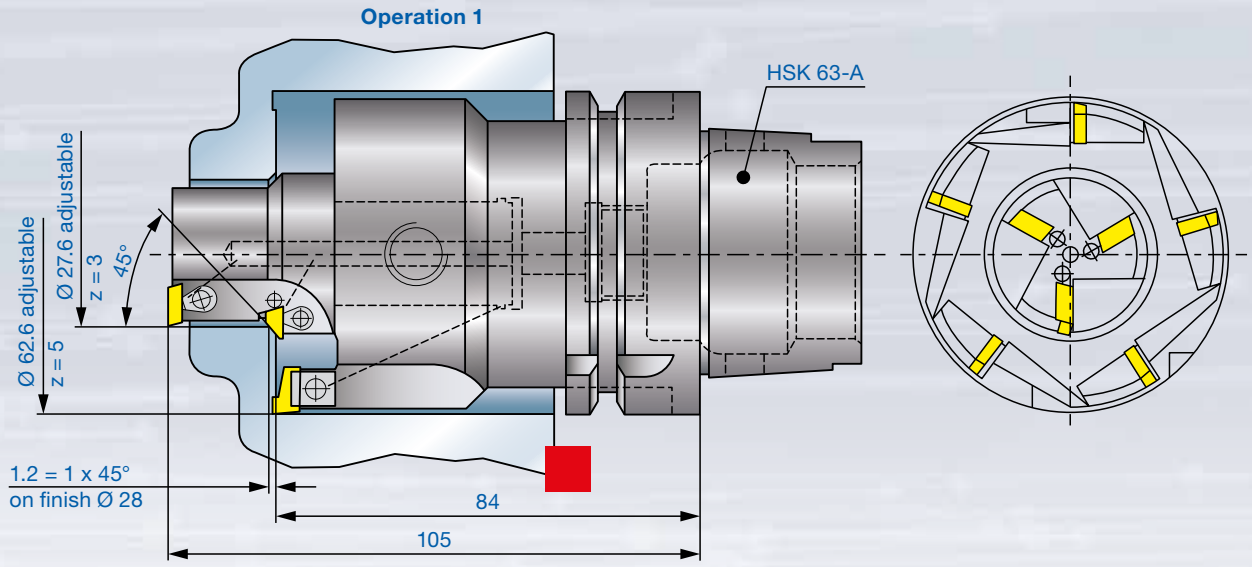
Oil pump

Pump cavity

Operation 1: multi-step fine boring tool / Teeth = 3 + 5

Operation 2: step milling cutter / Teeth = 4 + 8

Operation 3: multi-step fine boring tool / Teeth = 1 + 1 / 3



Requirements

Operation 1: fine boring tool for rough machining of the pump cavity

Operation 2: step milling cutter for simultaneous milling of the sealing surfaces,
distance (dim. 49) µm-accurate adjustable

Operation 3: fine machining of both diameters with CBN

Solution

Operation 1: multi-step fine boring tool / Teeth = 3 + 5

Operation 2: step milling cutter / Teeth = 4 + 8

Operation 3: multi-step fine boring tool / Teeth = 1 + 1 / 3

Cutting data		***Operation 1***	***Operation 2***	***Operation 3***
Material		(DIN) ■ GG25		
Cutting grade		carbide coated	carbide coated	CBN
Cutting speed	m/min	(Ø27.6) 108 (Ø62.6) 242	(Ø23) 92 (Ø63) 250	240
Feed rate per tooth	mm	(Ø27.6) 0.15 (Ø 62.6) 0.09	(Ø 23) 0.12 (Ø 63) 0.06	0.1
Cutting depth	mm	-3	~ 2	0.2

Result

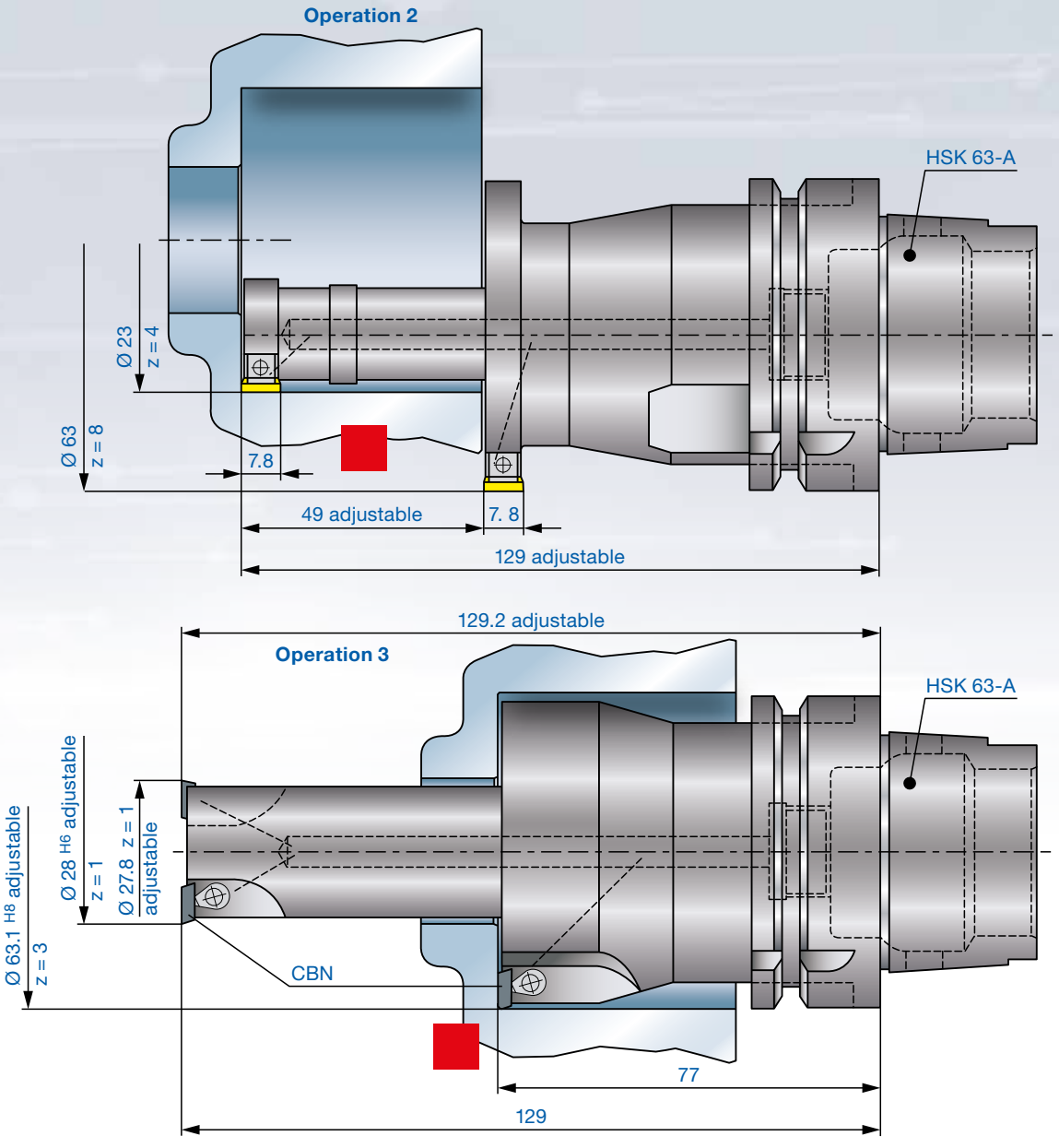
Reduced machining time

Customer benefits

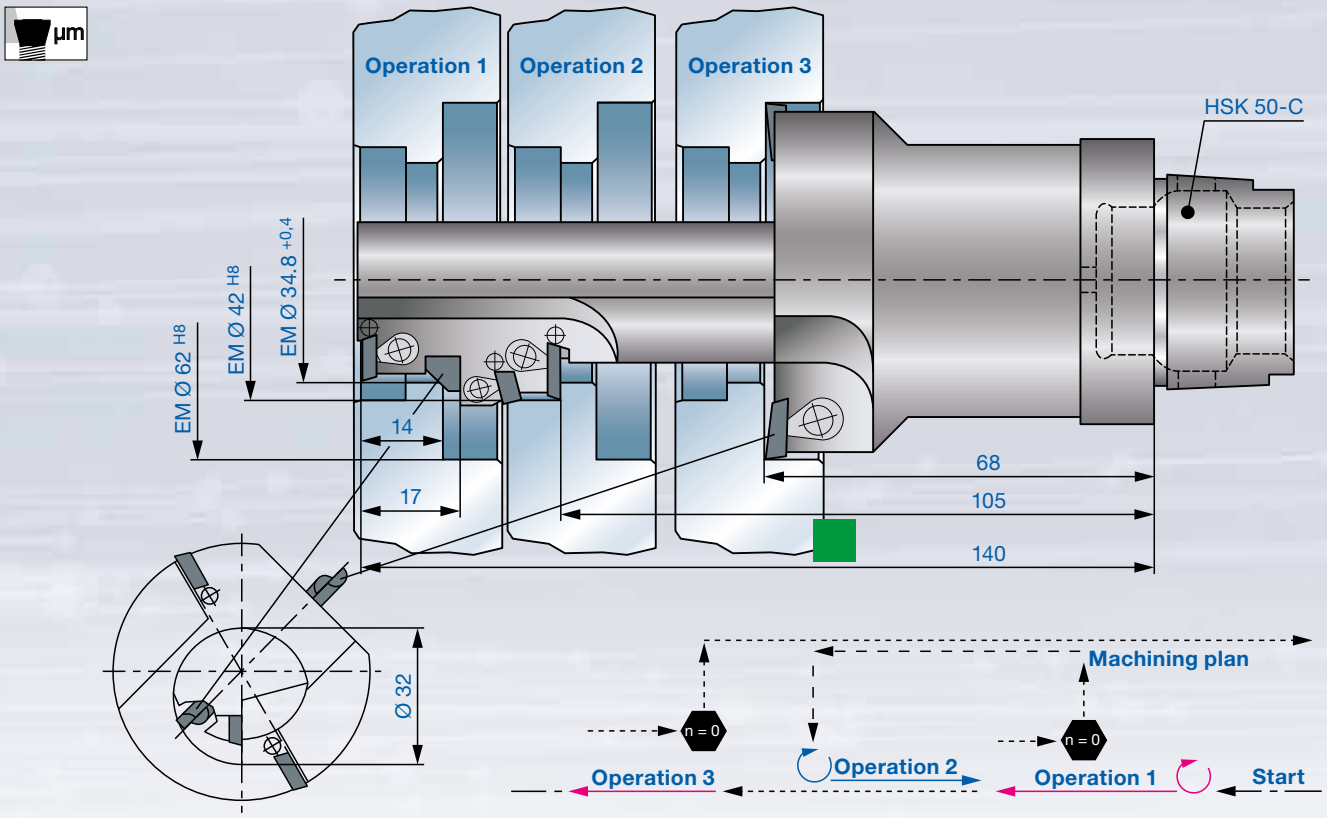
Low costs per component

Higher process reliability

Operation 3: fine machining of both diameters with CBN



Forward and backward fine boring tool / Teeth = 7 / Teeth$_{eff.}$ = 1



Requirements		
Combination tool for 6 machining steps		
All inserts adjustable		
Solution		
Forward and backward fine boring tool / Teeth = 7 / Teeth$_{eff.}$ = 1		
Cutting data		
Material		(DIN) ■ AlSi9
Cutting grade		PCD
Cutting speed	m/min	(Ø62) 467
Feed rate per tooth	mm	0.12
Cutting depth	mm	0.5
Result		
Short processing time		
Inserts can be changed separately		

Customer benefits

Low costs per component

Multi-step fine boring tool / Teeth$_{eff.}$ = 2

Requirements		
Multi-step machining with one tool		
Solution		
Multi-step fine boring tool / Teeth$_{eff.}$ = 2		
Cutting data		
Material		(DIN) ■ ENAC-AlSi12CuNiMg
Cutting grade		PCD 10
Cutting speed	m/min	1,500
Feed rate per tooth	mm	0.13
Result		
Short machining time		
Very good surface quality and dimensional accuracy		
Inserts can be changed separately depending on wear		

Customer benefits

Cycle time reduction thanks to combination of several machining steps

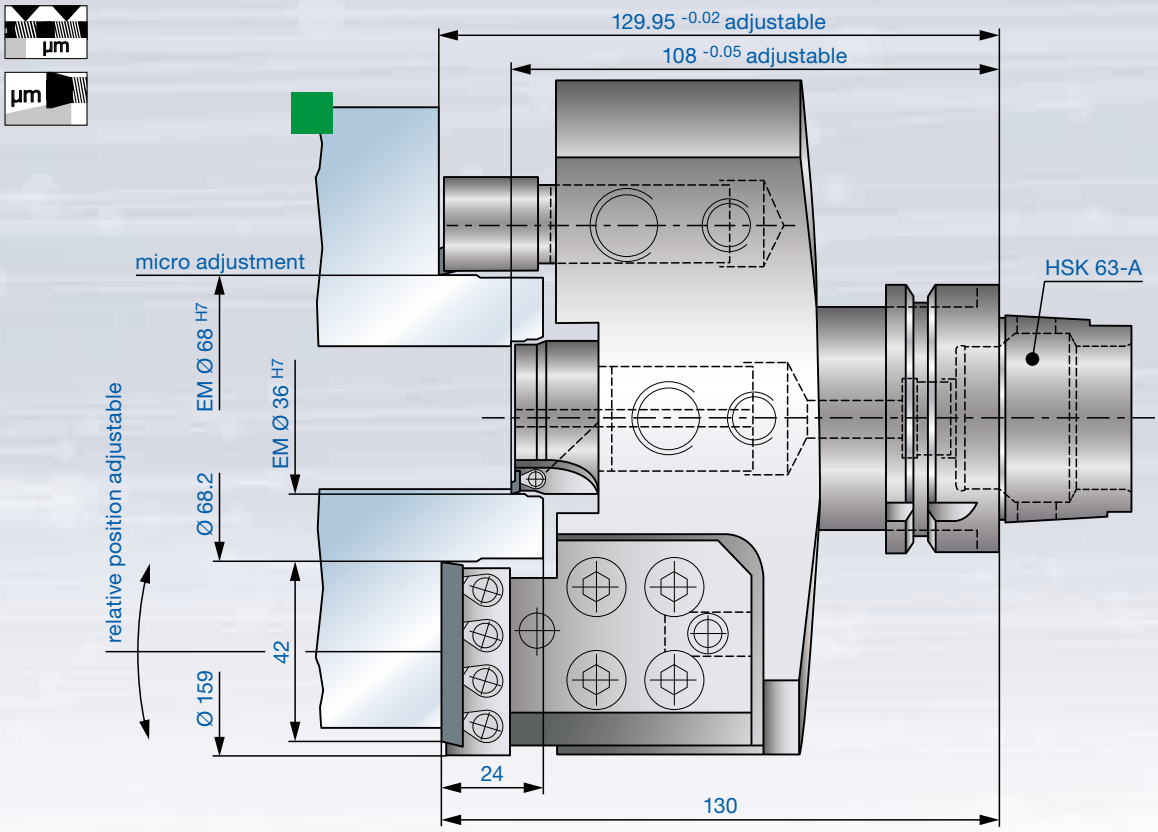
Low costs per component

Injection pump

Flange machining

Modular designed fine boring tool

Angular position of inserts for sealing surface adjustable



Requirements

Combination tool for 6 machining steps, cartridges for different types of workpieces

Inserts adjustable in diameter

Solution

Modular designed fine boring tool

Angular position of inserts for sealing surface adjustable

Cutting data

Material		(DIN) ■ GD-AlSi12Cu
Cutting grade		PCD
Cutting speed	m/min	(Ø68) 641
Feed rate per tooth	mm	0.12
Cutting depth	mm	-4

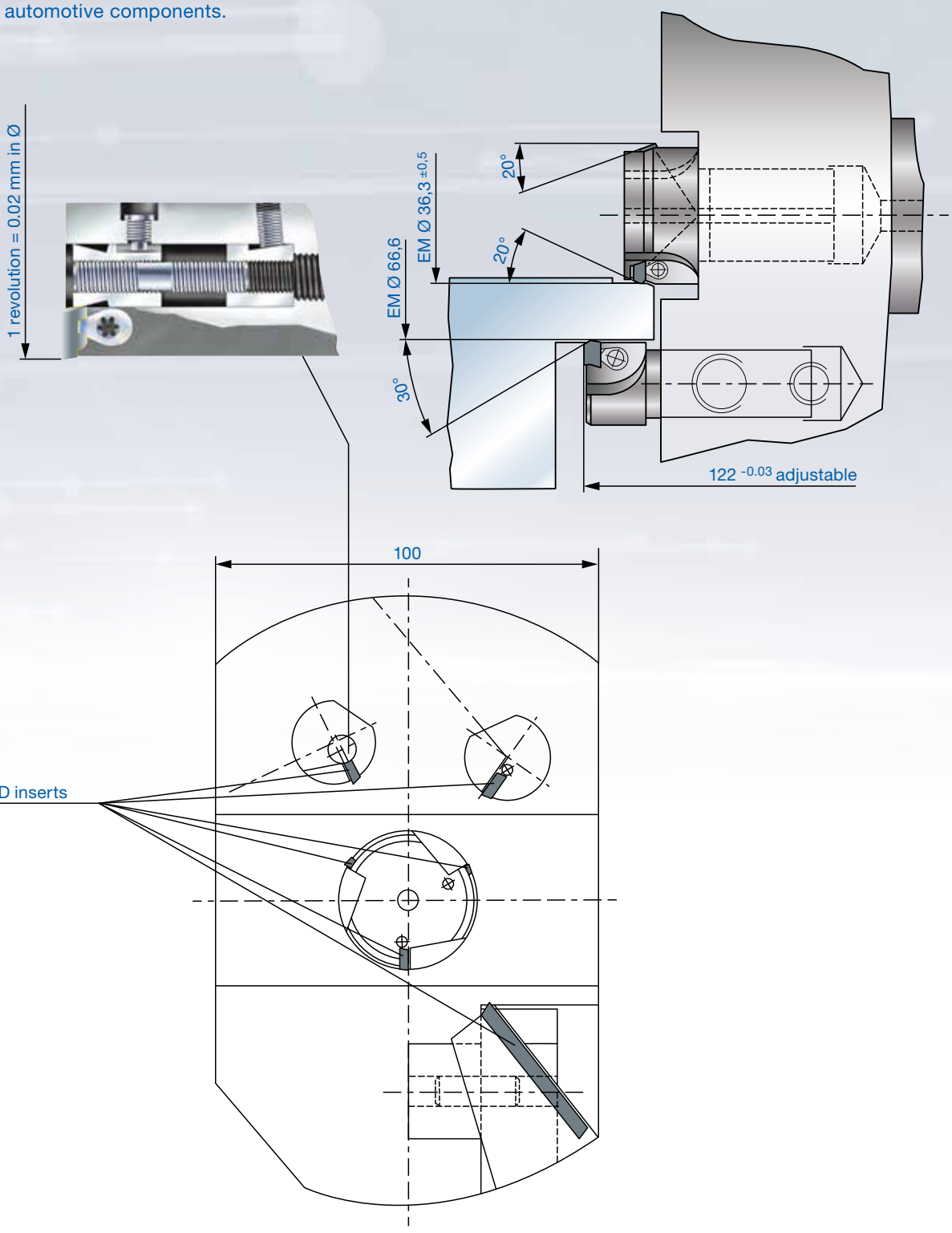
Result

Flexible tool design for high requirements

Customer benefits

High process reliability

Micro-adjustment
allows the precise adjustment of the tool diameter directly in the machine without using any devices, this leads to a reduction of non-productive times in continuously running processes e.g. mass production of automotive components.

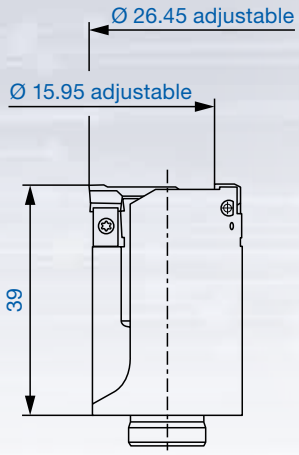


Injection pump

Axial grooving

Axial grooving tool with heavy metal shank / Teeth = 2 / Teeth$_{eff.}$ = 1

Replaceable head design

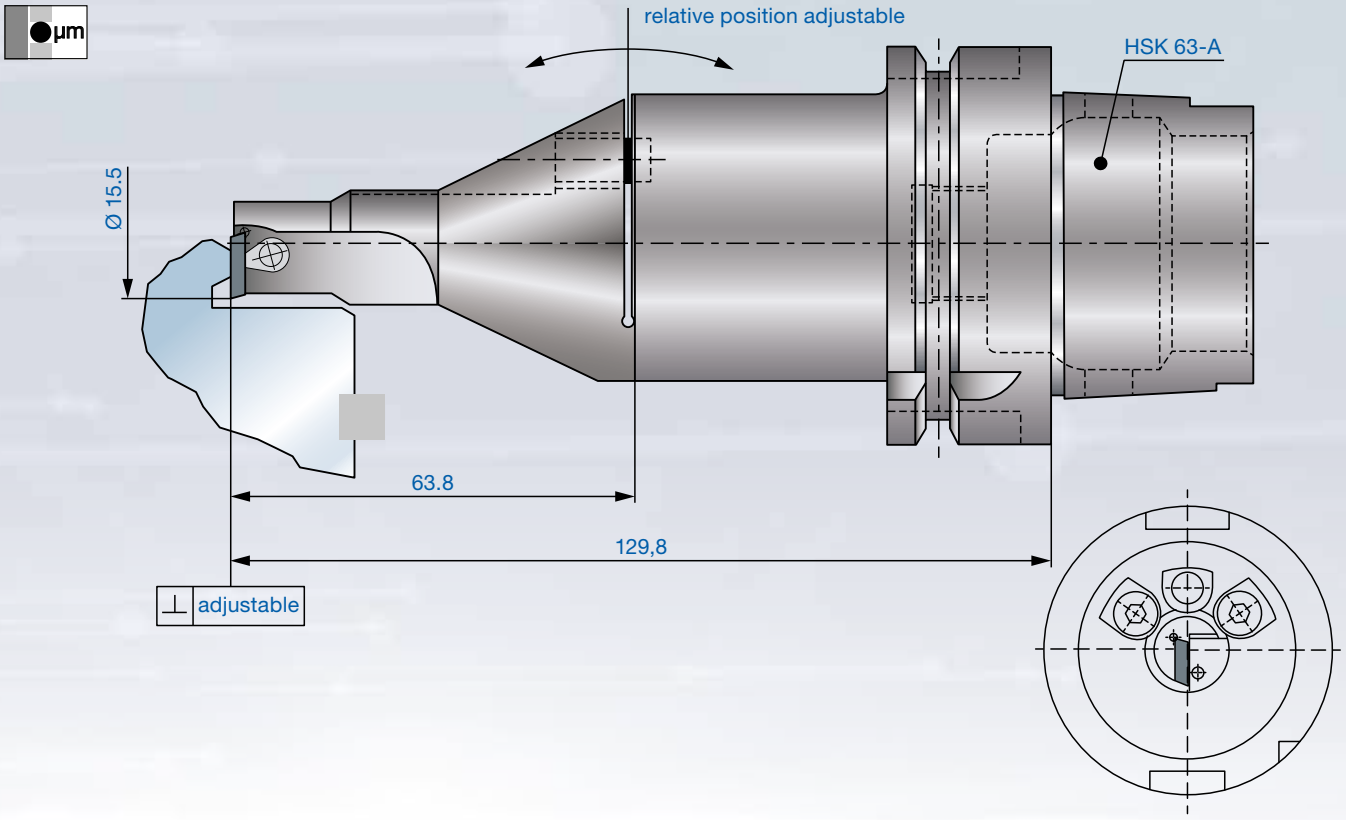


Requirements		
Grooving tool with adjustable inserts		
Solution		
Axial grooving tool with heavy metal shank / Teeth = 2 / Teeth$_{eff.}$ = 1		
Replaceable head design		
Cutting data		
Material		(DIN) ■ 20MnCr5
Cutting grade		carbide coated
Cutting speed	m/min	(Ø21,2) 121
Feed rate per tooth	mm	0.08
Cutting depth	mm	into solid
Result		
Good chip control thanks to cutting division		
Excellent surface finish		

Customer benefits

High process reliability

Fine boring tool / Teeth = 1



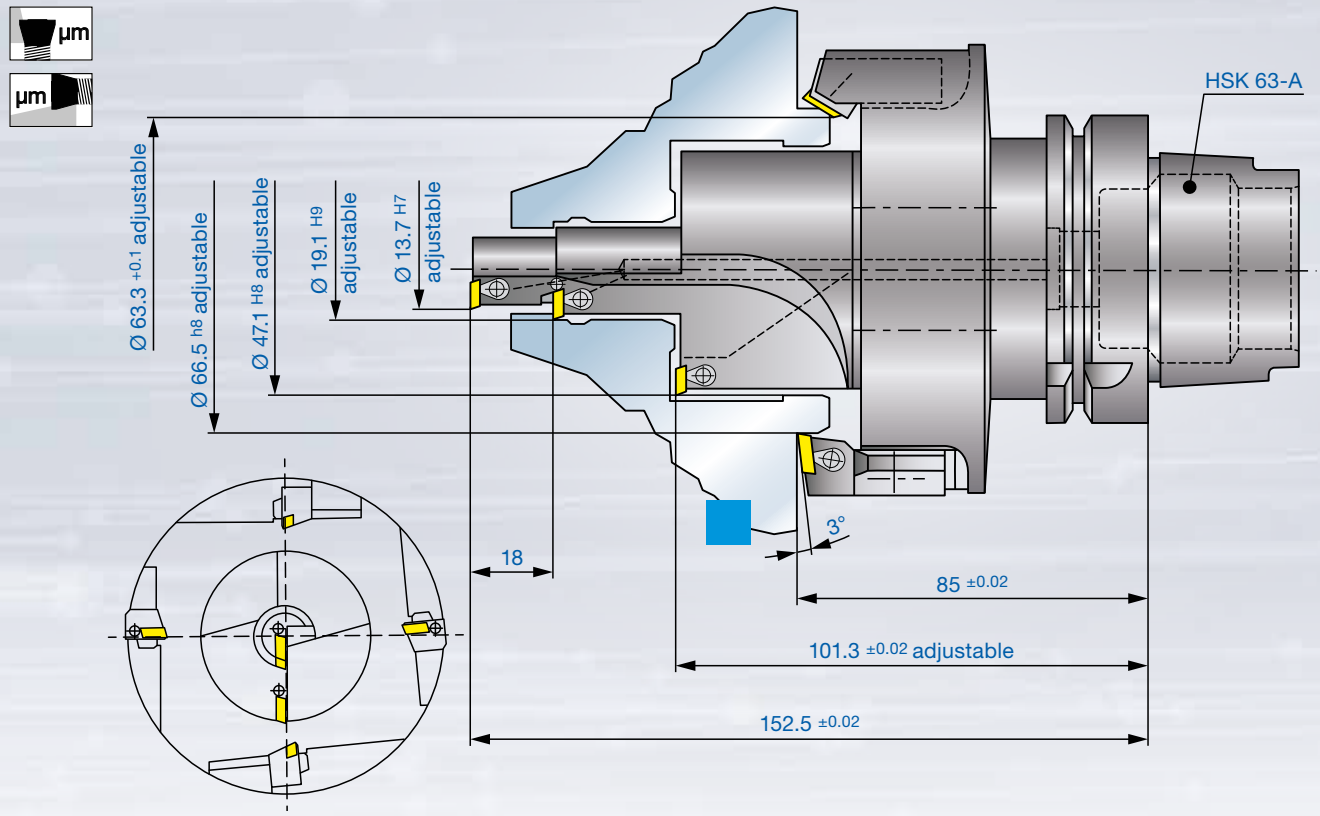
Requirements			
Hard machining of the sealing surface			
Angular position of inserts on tool holder adjustable			
Solution			
Fine boring tool / Teeth = 1			
Cutting data			
Material	60 - 62 HRC		(DIN) ■ 20MnCr5
Cutting grade			CBN
Cutting speed		m/min	195
Feed rate per tooth		mm	0.025
Cutting depth		mm	0.2
Result			
Excellent surface finish quality			
Very good tool life			
Regrindable CBN inserts			

Customer benefits
Low costs per component

Injection pump

Cam cavity

Multi-step fine boring tool / Teeth = 7 / Teeth$_{eff.}$ = 1 / (Ø 66.5 + Ø 63.3) Teeth = 2



Requirements

Combination tool for 5 machining steps

Solution

Multi-step fine boring tool / Teeth = 7 / Teeth$_{eff.}$ = 1 / (Ø 66.5 + Ø 63.3) Teeth = 2

Cutting data

Material		(DIN) ■ 20MnCr5
Cutting grade		carbide coated
Cutting speed	m/min	(Ø 13.7) 37 (Ø 66.5) 180
Feed rate per tooth	mm	(Ø 13.7) 0.15 (Ø 66.5) 0.075
Cutting depth	mm	(Ø 13.7) 0.5 (Ø 66.5) 0.5 - 1.5

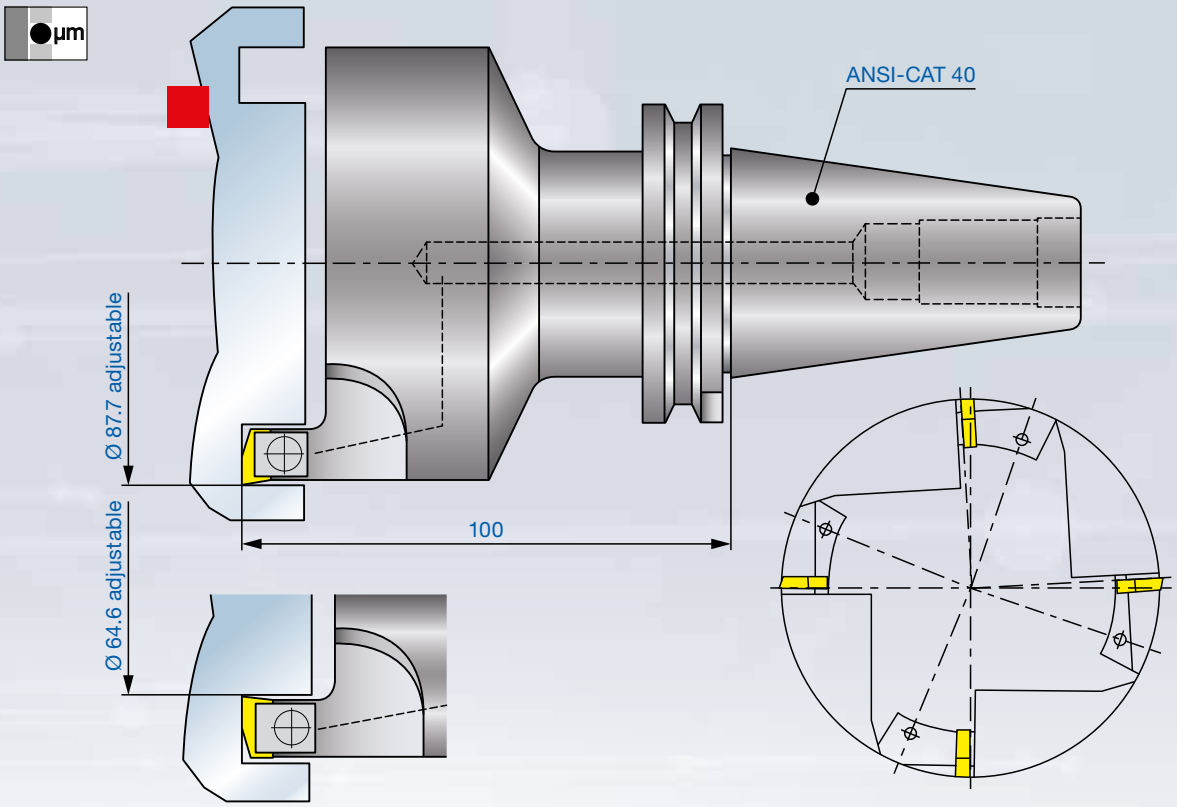
Result

Inserts separately adjustable and replaceable

Customer benefits

Low costs per component

Fine boring/grooving tool / Teeth = 2 + 2



Requirements		
Inside and outside diameter adjustable		
Solution		
Fine boring/grooving tool / Teeth = 2 + 2		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		carbide coated
Cutting speed	m/min	220
Feed rate per tooth	mm	0.1
Cutting depth	mm	~ 12, entire cutting width
Result		
Very good tool life		

Customer benefits

Low costs per component

High process reliability

Simple tool handling

Injection pump

Pre-machining connecting flange

OD turning tool, stationary tool (turning machine) / Teeth = 2 + 2 + 1 + 1

Requirements

Reduction of cycle times

Solution

OD turning tool, stationary tool (turning machine) / $Teeth_{eff.}$ = 2 / 1

Cutting data

Material		(DIN) ■ X17CrNi16/1.4057
Cutting grade		carbide coated
Cutting speed	m/min	200
Feed rate per tooth	mm	0.125
Cutting depth	mm	4

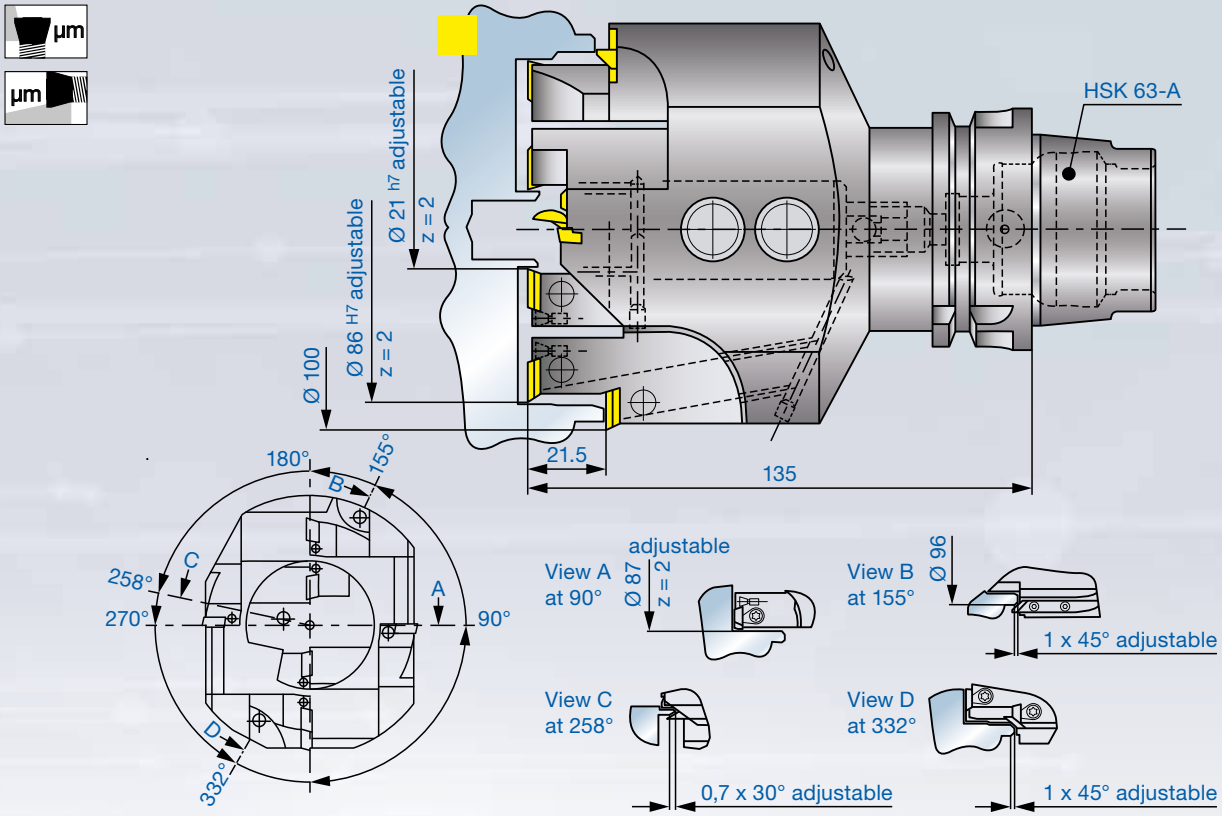
Result

Faster machining with consistent quality

Customer benefits

Reduced cycle times up to 66 %

Multi-step fine boring tool / Teeth = 2 + 2 + 2 + 1 + 1 + 1 + 1



Requirements		
Combination tool, all diameters adjustable		
Solution		
Multi-step fine boring tool / Teeth = 2 + 2 + 2 + 1 + 1 + 1 + 1		
Cutting data		
Material		(DIN) ■ X2CrNi19-11
Cutting grade		carbide coated
Cutting speed	m/min	25 - 100
Feed rate per tooth	mm	0.025
Cutting depth	mm	0.4
Result		
Flexible tool design		

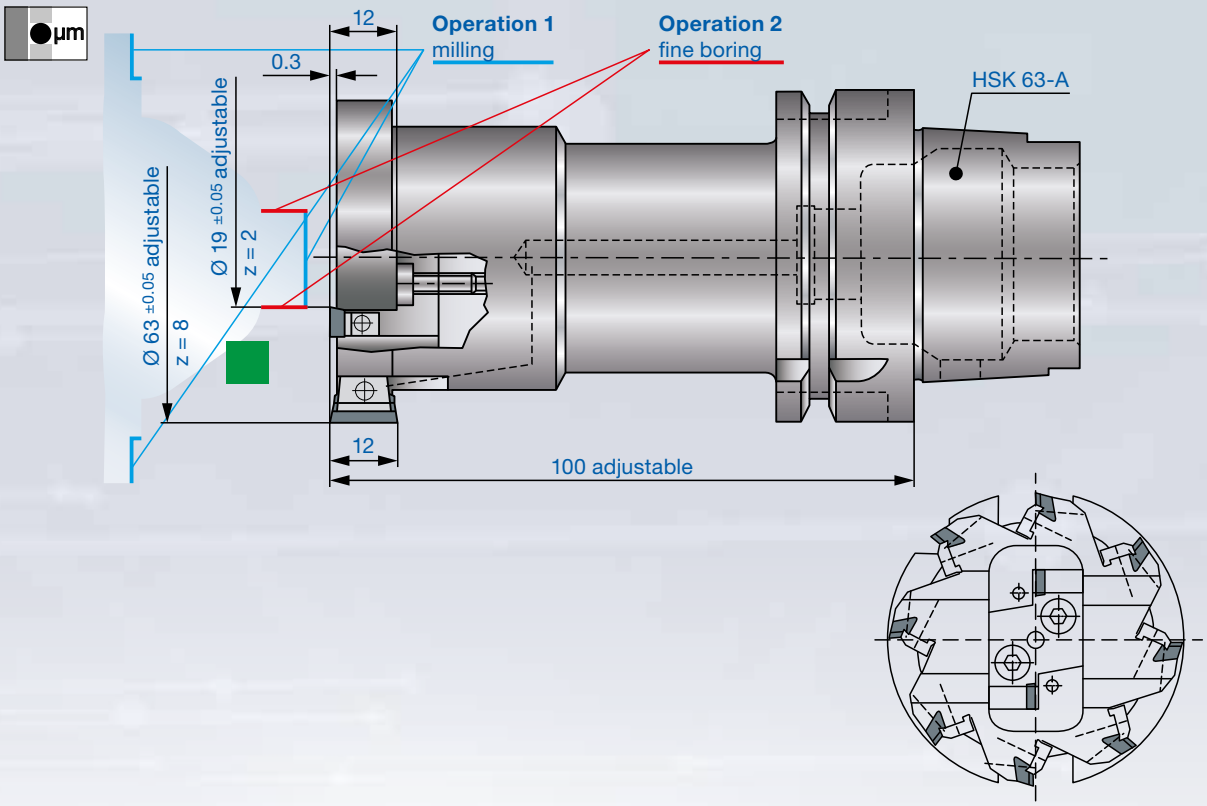
Customer benefits

Short machining time

Low costs per component

Various automotive components

Milling and overturning tool / Teeth = 8 (milling), 2 (fine boring)



Requirements

Milling and overturning of a stud with one tool

Face runout of the milling cutter and diameter of the fine boring tool are adjustable

Solution

Milling and overturning tool / Teeth = 8 (milling), 2 (fine boring)

Cutting data

Material		(DIN) ■ GDAlSi12	
Cutting grade		PCD	
		milling	fine boring
Cutting speed	m/min	(Ø63) 1.800	(Ø19) 543
Feed rate per tooth	mm	0.12	0.12
Cutting depth	mm	0.8	0.8

Result

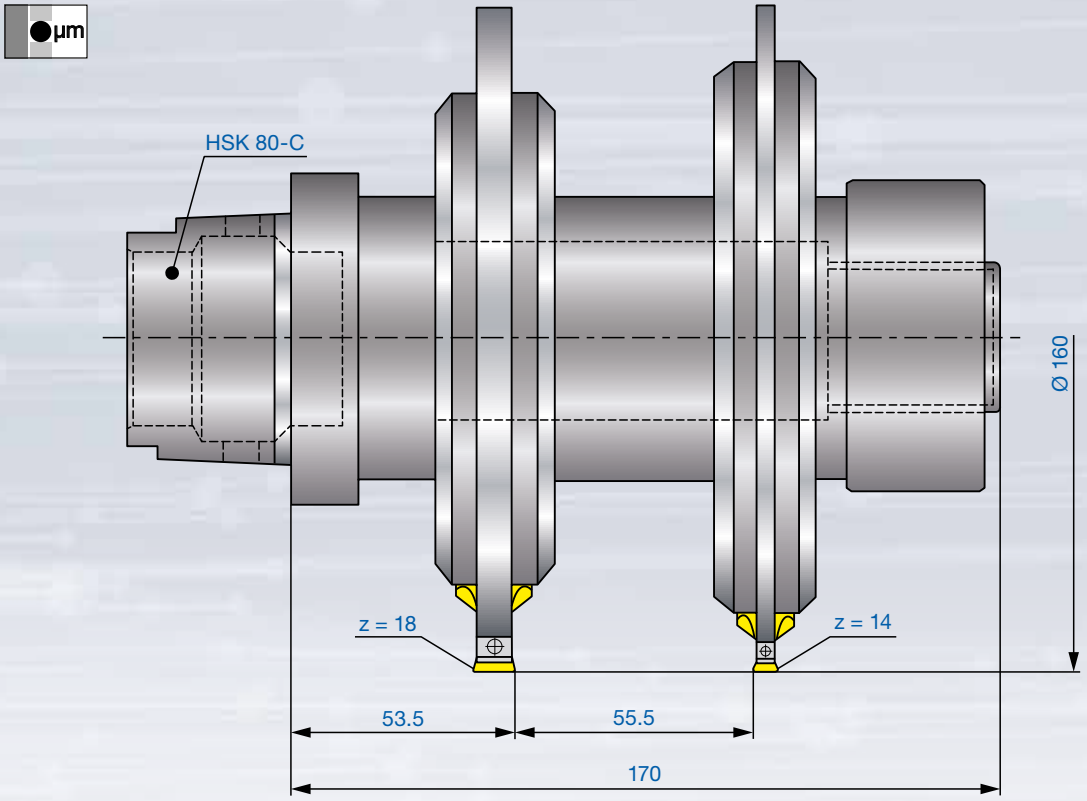
Reduced machining time thanks to combination tool

Customer benefits

Low costs per component

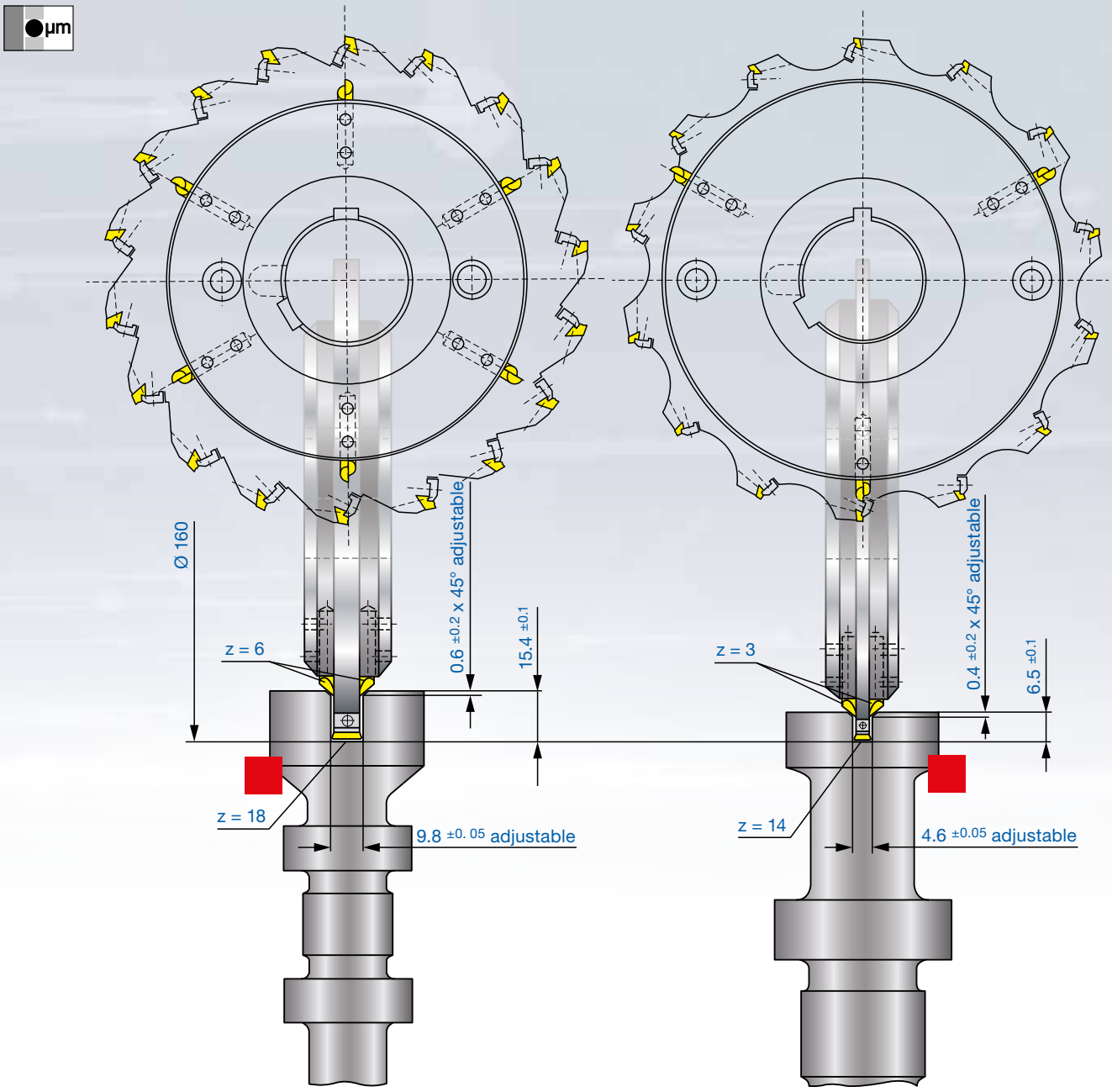
Increased productivity

Gang milling cutter / Teeth = 18 / 14

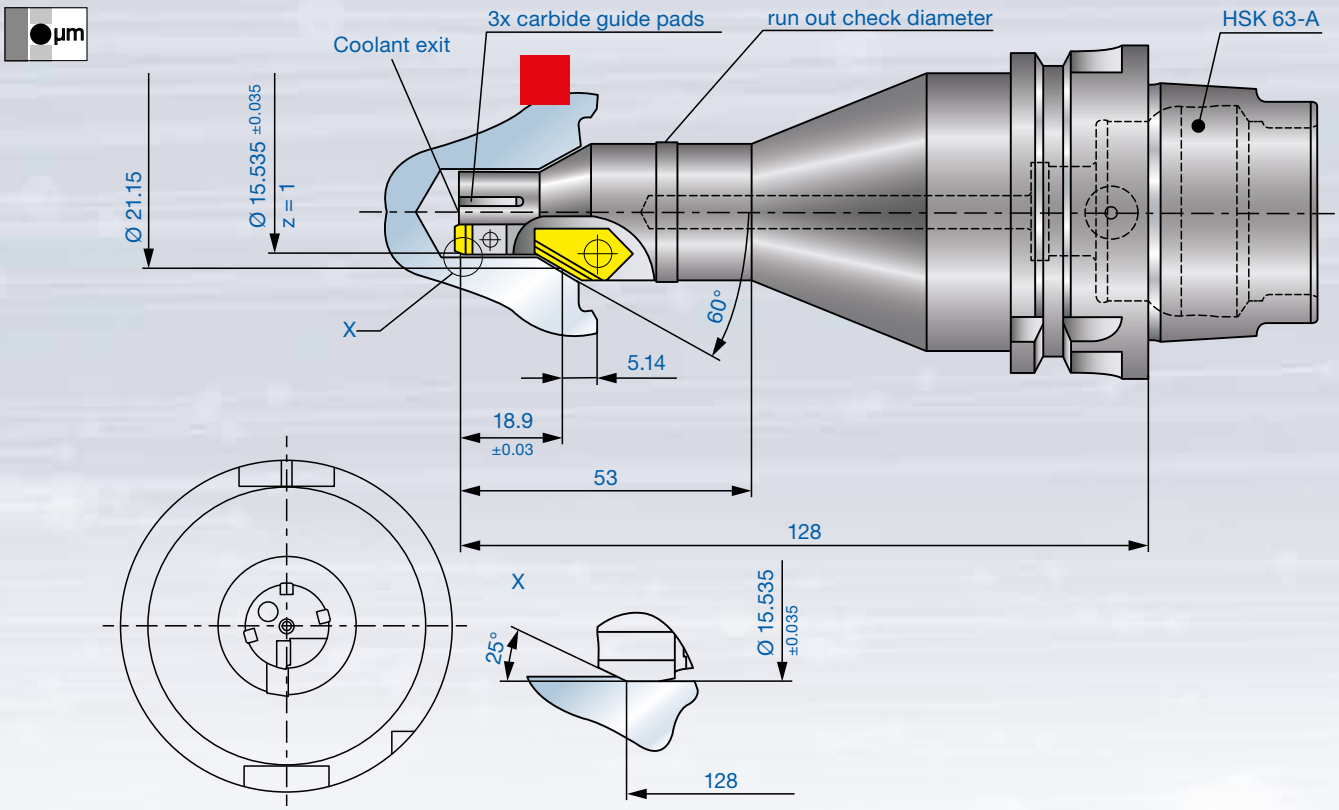


Requirements		
Machining of two types of camshafts with only one tool		
Solution		
Gang milling cutter / Teeth = 18/14		
Cutting data		
Material		(DIN) ■ GGG40
Cutting grade		carbide coated
Cutting speed	m/min	80
Feed rate per tooth	mm	0.06
Cutting depth	mm	Teeth = 18/16 Teeth = 14/7
Result		
Reduced non-productive times		
Reduced machining stations		

Customer benefits
Increased productivity


µm
Ø 160
z = 6
0.6 ±0.2 x 45° adjustable
15.4 ±0.1
z = 18
9.8 ±0. 05 adjustable
z = 3
0.4 ±0.2 x 45° adjustable
6.5 ±0.1
z = 14
4.6 ±0.05 adjustable

Fine boring and chamfer tool / Teeth = 1 + 1



Requirements

Fine boring tool with carbide guide pads for machining of the flange bore

Solution

Fine boring and chamfer tool / Teeth = 1 + 1

Cutting data

Material		(DIN) ■ GGG60
Cutting grade		carbide coated
Cutting speed	m/min	80
Feed rate per tooth	mm	0.12
Cutting depth	mm	0.15

Result

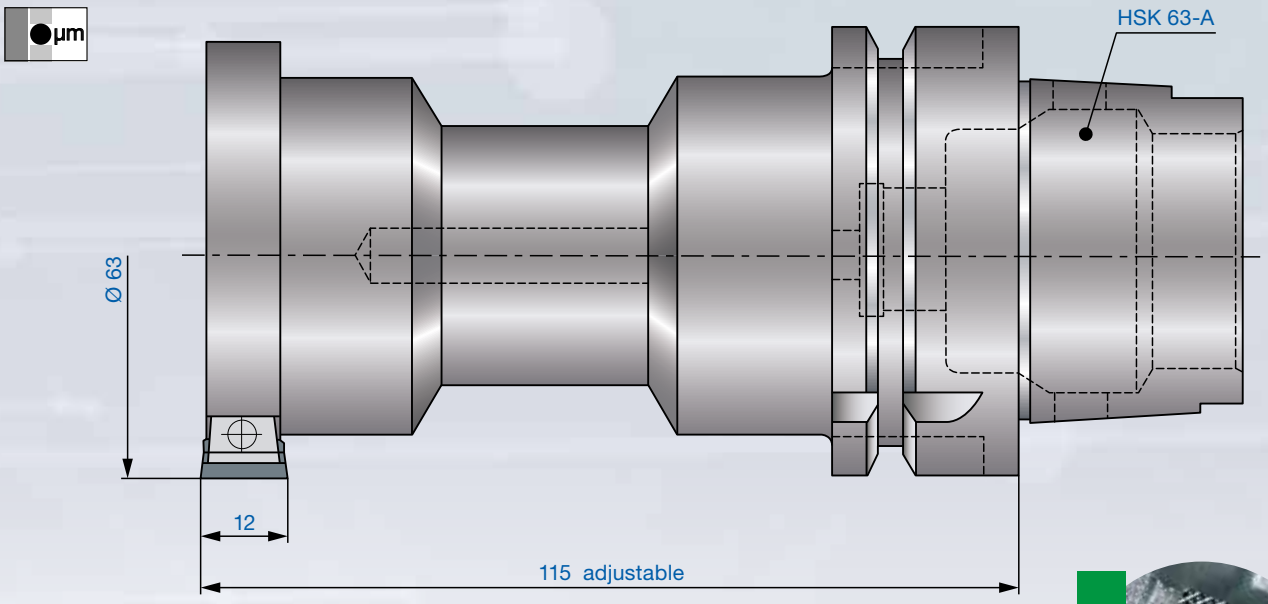
High dimensional accuracy thanks to tool concept with guide pads

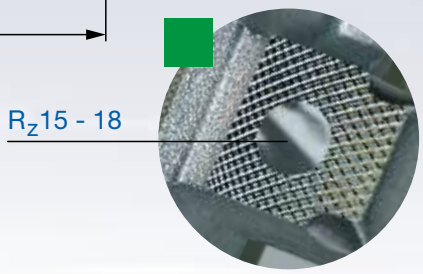
Customer benefits

Higher process reliability

Special face milling cutter / Teeth = 8

Equipped with standard PCD inserts





Requirements		
Milling of the sealing surface with a defined surface roughness		
All inserts axially adjustable		
Solution		
Special face milling cutter / Teeth = 8		
Equipped with standard PCD inserts		
Cutting data		
Material		(DIN) ■ AlSi12Cu
Cutting grade		PCD
Cutting speed	m/min	3560
Feed rate per tooth	mm	0.16
Result		
High machining speed thanks to special insert geometry		
Constant wear - all inserts set to same height		

Customer benefits

Low costs per component

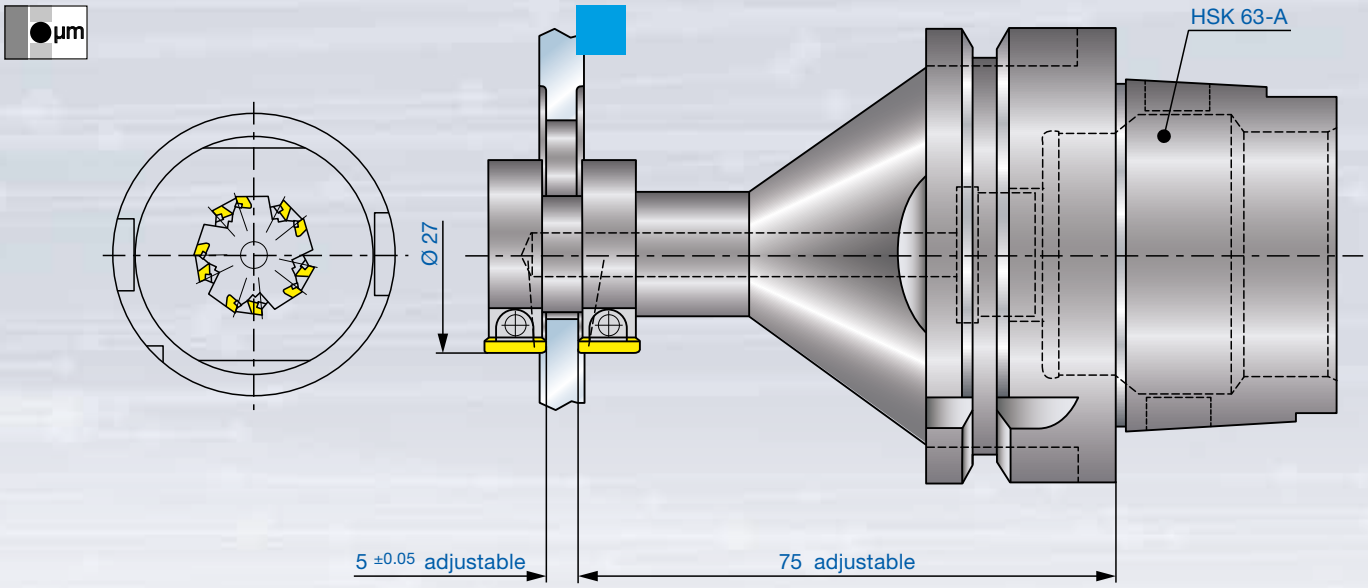
Increased productivity

Gearshift fork

Gang milling cutter (monoblock) / Teeth = 10 / Teeth$_{eff.}$ = 5

Inserts interchangeable among each other, thus both cutting edges of the inserts can be used

All inserts adjustable (dim. 5 mm)



Requirements		
Very unstable component, requires low cutting forces of the tool		
Machining of the two ring surfaces in one cut		
Solution		
Gang milling cutter (monoblock) / Teeth = 10 / Teeth$_{eff.}$ = 5		
Inserts interchangeable among each other thus both cutting edges of the inserts can be used		
All inserts adjustable (dim. 5 mm)		
Cutting data		
Material		(DIN) ■ C35-520 N/mm^2
Cutting grade		carbide coated
Cutting speed	m/min	120
Feed rate per tooth	mm	0.1
Cutting depth	mm	both sides 0.6
Result		
Short machining time		
Inserts usable on both sides		

Customer benefits

Low costs per component

Axle carrier

Gang milling cutter

Large radii can be achieved

Tangential inserts with PCD cutting edges

Requirements

Milling connection taps in a single step

Solution

Gang milling cutter for double-sided milling of two taps

Cutting data

Material		AlSi9
Cutting grade		PCD
Cutting speed	m/min	1,250
Feed rate per tooth	mm	0.1
Cutting depth	mm	3-12!

Result

Process reliable machining of combined work steps

Customer benefit

Long tool life thanks to PCD-coated cutting inserts

Short machining times as a result of multiple operations being combined in one tool

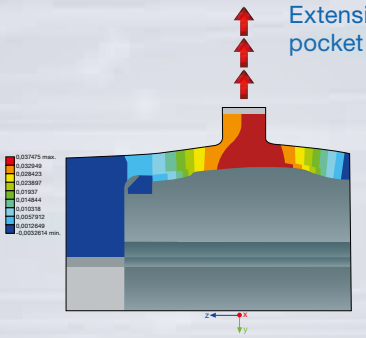
Steering housing

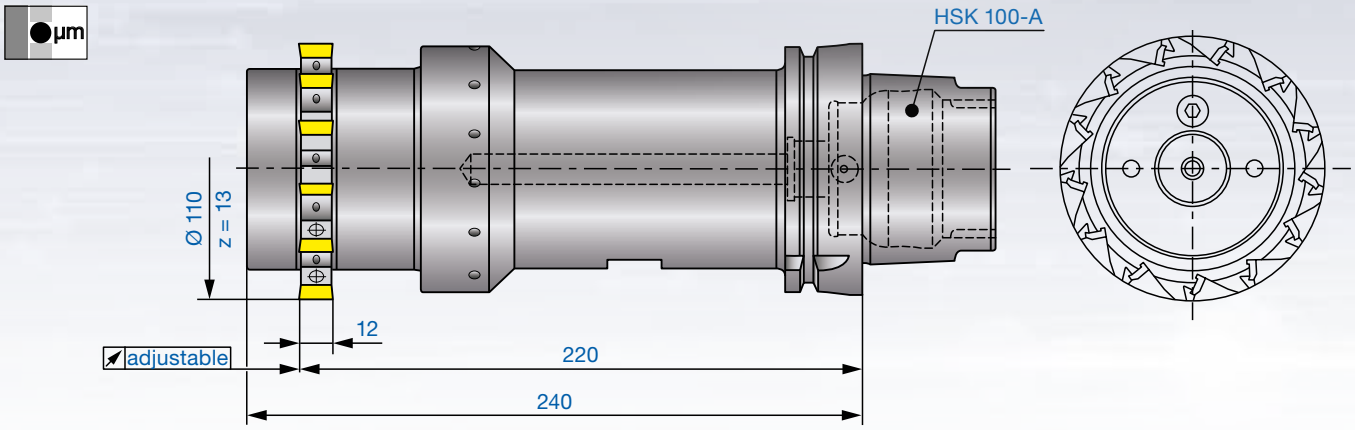
Reaming tool / Teeth = 13

Adjustment range 60 µm for diameter ➙ 5 µm per turn

Interchangeable inserts

- Diameter µm-accurate adjustable
- Adjustment to both directions
- Adjustment range 60 µm for diameter ➙ 5 µm per turn
- Interchangeable inserts





Requirements

Diameter µm-accurate adjustable in both directions

Solution

Reaming tool / Teeth = 13

Adjustment range 60 µm for diameter ➙ 5 µm per turn

Freely selectable and exchangeable inserts

Cutting data

Material		(DIN) ■ GGG50
Cutting grade		carbide coated
Cutting speed	m/min	160
Feed rate per tooth	mm	0.2
Cutting depth	mm	0.25

Result

Reduced non-productive time thanks to adjustment options on the machine

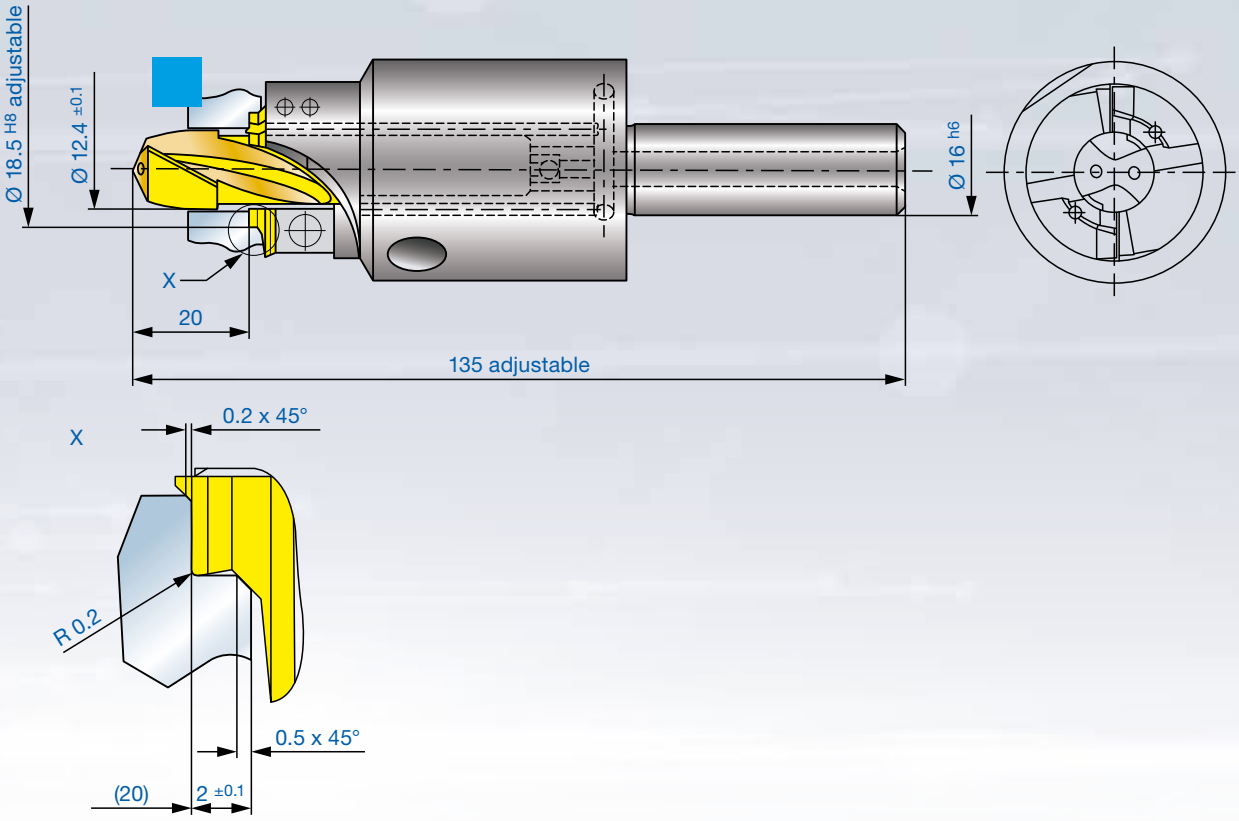
Customer benefits

High process reliability

High productivity

Combination tool for the complete component contour

Ø 18,5 H8 adjustable by means of eccentric pin adjustment



Requirements

Combination tool for the complete component contour

Solution

Drilling and fine boring tool / Teeth = 2

Ø 18,5 H8 adjustable by means of eccentric pin adjustment

Cutting data

Material		(DIN) ■ Ck45	
Cutting grade		carbide coated	
		drilling	fine boring
Cutting speed	m/min	71	141
Feed rate per tooth	mm	0.12	0.08
Cutting depth	mm	into solid	3

Result

Reduction of machining time thanks to combination tool

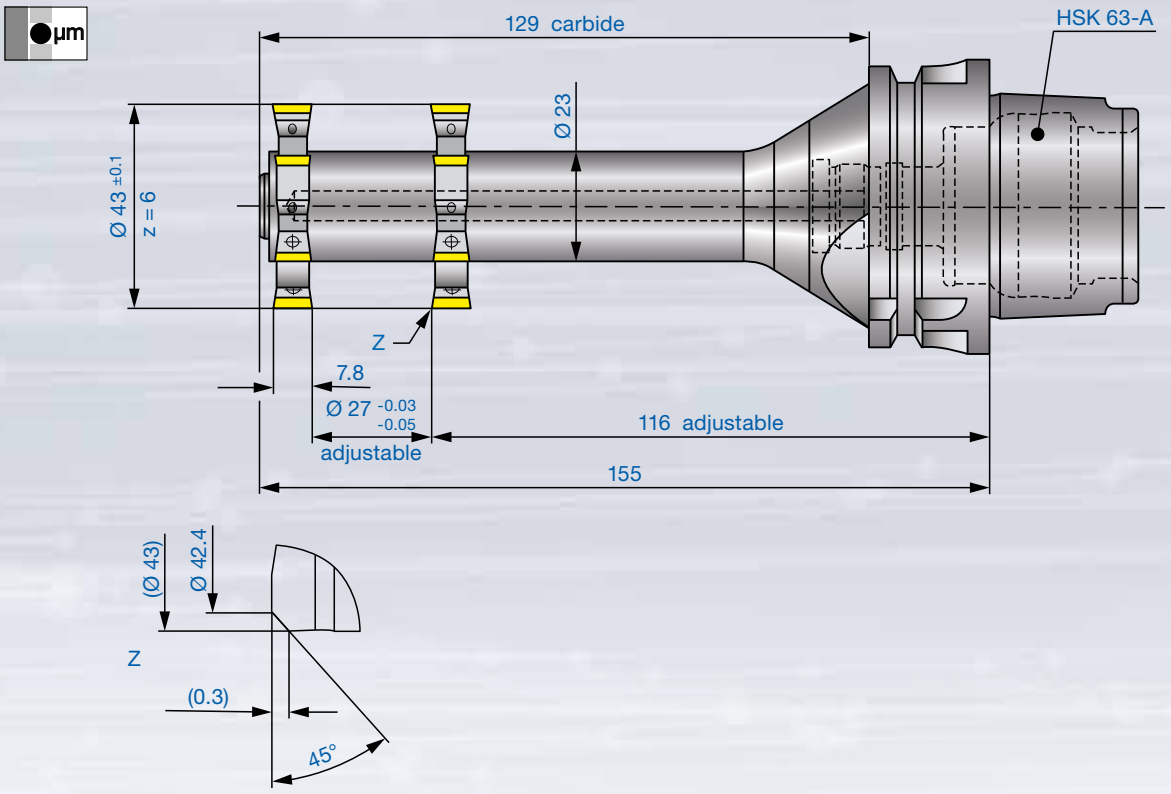
Customer benefits

Low costs per component

Increased productivity

Balance shaft housing

Gang milling cutter / Teeth = 6 + 6

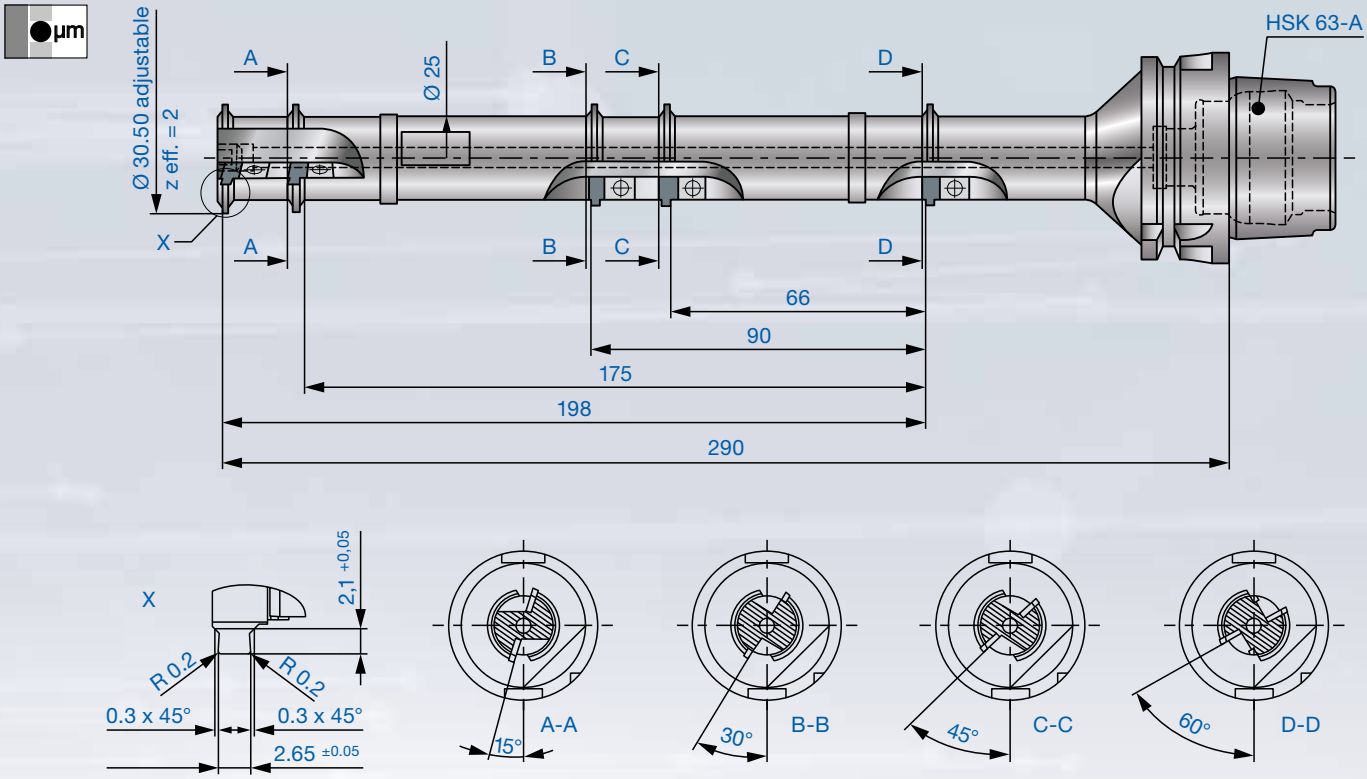


Requirements		
Machining of both ring surfaces in one cut		
Solution		
All inserts adjustable (dim. 5 mm)		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		carbide coated
Cutting speed	m/min	270
Feed rate per tooth	mm	0.15
Cutting depth	mm	0.2
Result		
Short machining time		
Inserts usable on both sides		

Customer benefits

Low costs per component

Circular milling cutter / Teeth = 2 + 2 + 2 + 2 + 2



Requirements		
Circular milling cutter for the machining of grooves		
Solution		
Circular milling cutter / Teeth = 2 + 2 + 2 + 2 + 2		
Cutting data		
Material		(DIN) ■ Al
Cutting grade		PCD
Cutting speed	m/min	490
Feed rate per tooth	mm	0.1
Cutting depth	mm	0.5 - 1.0
Result		
Tool life tripled		

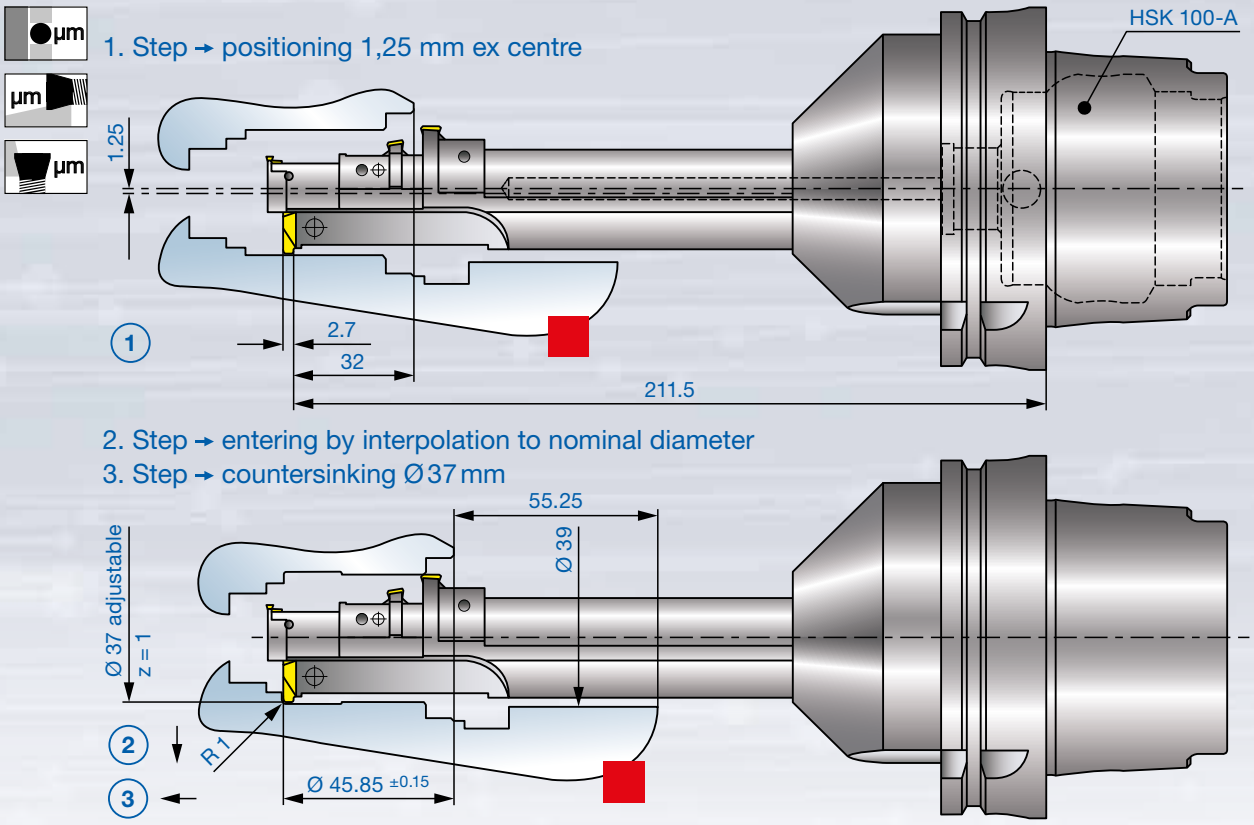
Customer benefits

Reduced tooling costs

Reduced handling costs

Brake caliper

Interpolation turning tool / Teeth = 4 + 1

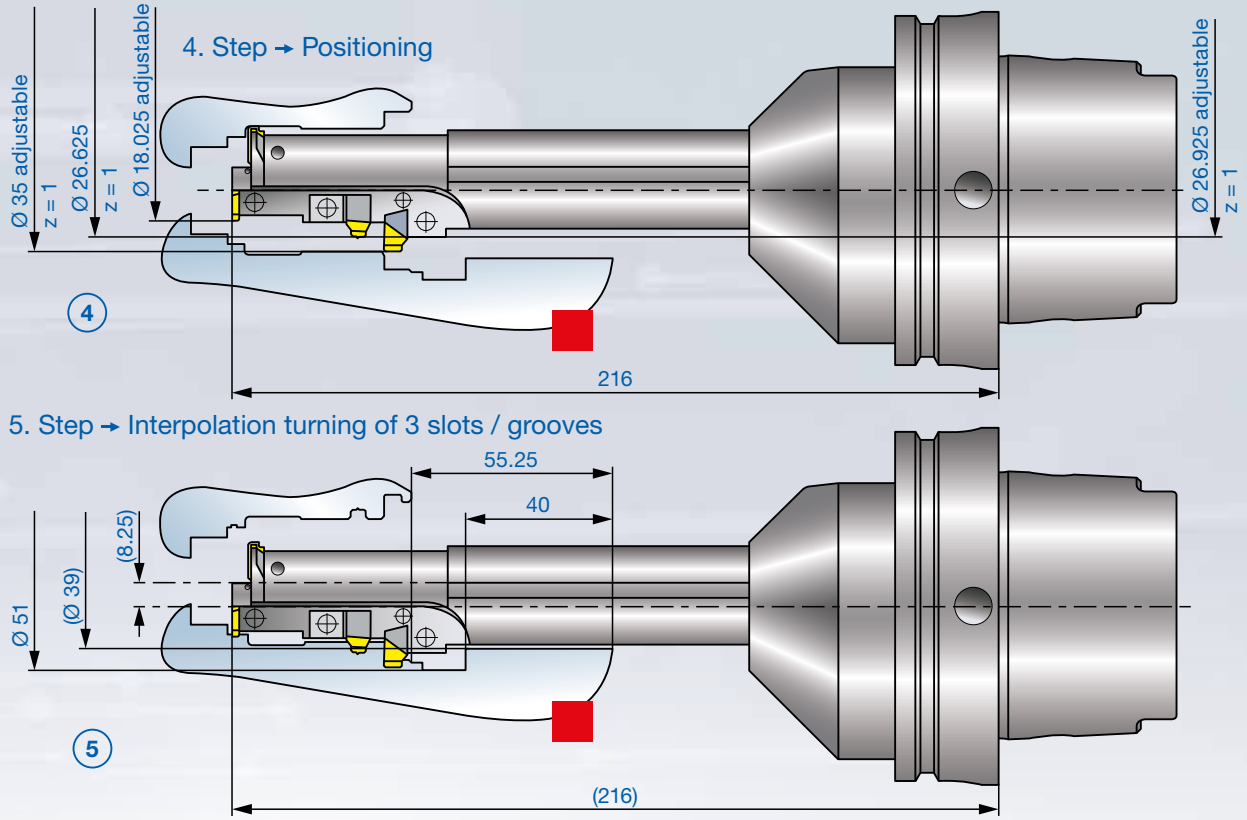


Requirements		
Combination tool for Ø 37 mm plus seal grooves		
Solution		
Interpolation turning tool / Teeth = 4 + 1		
Cutting data		
Material		(DIN) ■ GGG45
Cutting grade		carbide coated
Cutting speed	m/min	70
Feed rate per tooth	mm	0.12
Cutting depth	mm	0.75
Result		
Reduction of machining time thanks to combination tool		
Long tool life thanks to constant cut (interpolation turning process)		

Customer benefits

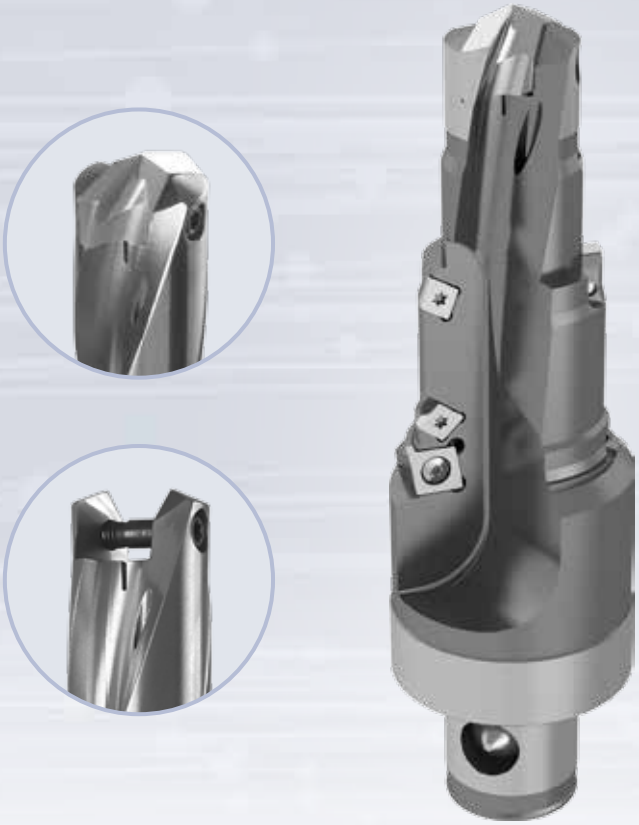
Low costs per component

High productivity


4. Step → Positioning
Ø 35 adjustable
z = 1
Ø 26.625
z = 1
Ø 18.025 adjustable
Ø 26.925 adjustable
z = 1
4
216
5. Step → Interpolation turning of 3 slots / grooves
55.25
40
(8.25)
(Ø 39)
Ø 51
5
(216)

Timing housing

Drilling and countersinking tool with interchangeable inserts



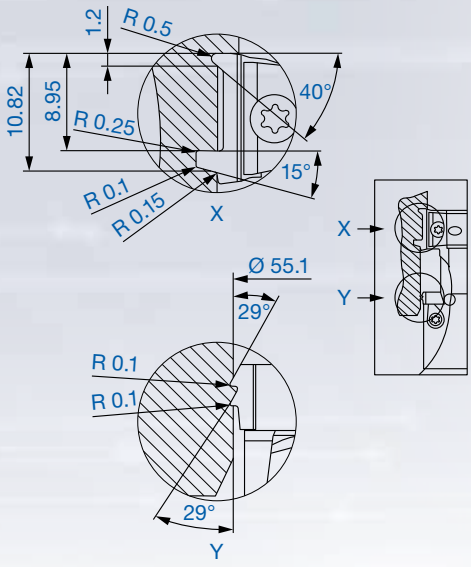
Requirements		
Machining of the complete workpiece contour with one tool		
Solution		
Step tool with interchangeable inserts		
Cutting data		
Material		(DIN) ■ GGG40
Cutting grade		carbide coated
Cutting speed	m/min	52 (Ø27.7)
Feed rate per tooth	mm	0.28
Cutting depth	mm	into solid
Result		
Tool life tripled		

Customer benefits

Reduced tooling costs

Reduced handling costs

Circular milling cutter with form inserts / Teeth = 4 + 4



Requirements		
Grouping of several groove machining operations		
Solution		
Circular milling cutters with form inserts / Teeth = 4 + 4		
Cutting data		
Material		(DIN) ■ GD-AlSi9Cu3
Cutting grade		PCD
Cutting speed	m/min	1,060
Feed rate per tooth	mm	0.13
Result		
High positional accuracy of the grooves and edge outlines in relation to each other		
Several grooves can be produced with one tool		

Customer benefits

High process reliability

High productivity

Balance shaft

Multi-fluted OD tool / Teeth = 3 + 1

Coolant outlet at front for 1-channel MQL system

1 MQL BY HOLLFELDER GÜHRING

Requirements		
Reduction of costs per component		
Solution		
Multi-fluted OD tool / Teeth = 3 + 1		
Cutting data		
Material		(DIN) ■ C56E2
Cutting grade		carbide coated
Cutting speed	m/min	160
Feed rate per tooth	mm	0,2
Cutting depth	mm	6 mm in Ø
Result		
Increased tool life by 60 %		
Low cutting forces		
Very good chip control		

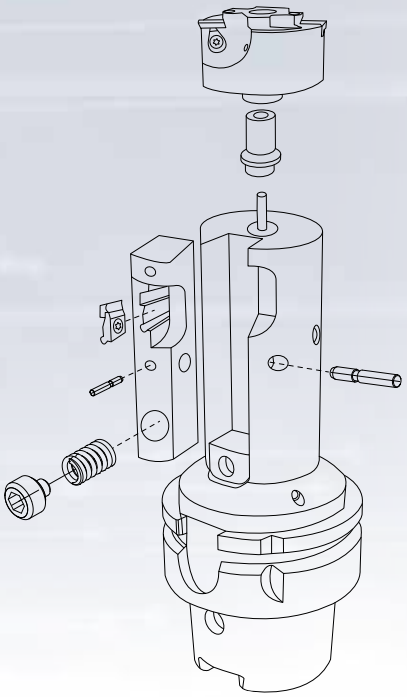
Customer benefits

Significant reduced costs per component

Automatically adjustable tool / Teeth = 2 + 1

SMART SETTING MOTION TOOLS concept

Machining diameter can be set µm-accurately larger and smaller by means of a central adjusting screw



Smart Setting Motion Tools

Requirements		
Reduction of non-productive times		
Solution		
Automatically adjustable tool / Teeth = 2 + 1		
SMART SETTING MOTION TOOLS concept		
Machining diameter can be set µm-accurately larger and smaller by means of a central adjusting screw		
Cutting data		
Material		(DIN) ■ 36MnVS4
Cutting grade		carbide coated
Cutting speed	m/min	138
Feed rate per tooth	mm	0.1 / 0.2
Result		
High tool life quantity (it is re-adjusted approx. 2x per tool life)		
Easy handling by readjusting the machining diameter directly in the machine spindle		

Customer benefits

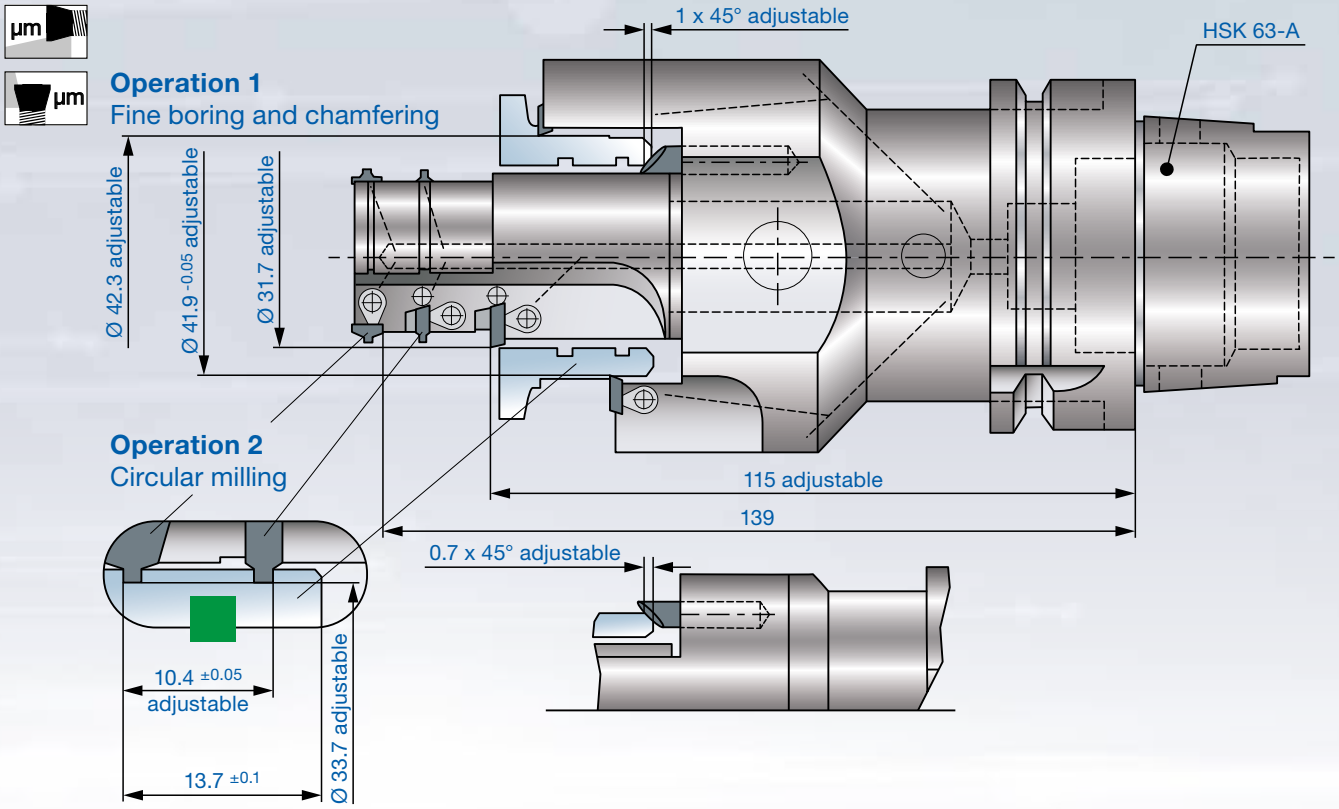
High productivity

General engineering

Fine boring, chamfering and circular milling tool
Teeth = 8 / Teeth$_{eff.}$ = 1 per Ø (fine boring) / Teeth = 8 / eff. 2 per Ø (milling)

Middle part exchangeable for different types of components

All inserts adjustable



Requirements

Combination tool for fine boring, chamfering and milling

Solution

Fine boring, chamfering and circular milling tool / Teeth = 8 / Teeth$_{eff.}$ = 1 je Ø (fine boring) / Teeth = 8 / Teeth$_{eff.}$ = 2 je Ø (milling)

Middle part exchangeable for different types of components

All inserts adjustable

Cutting data

Material		(DIN) ■ GD-AlSi9Cu3
Cutting grade		PCD
Cutting speed	m/min	(Ø31.7) 750 (Ø42.3) 1000
Feed rate per tooth	mm	(milling) 0.065 0.13
Cutting depth	mm	2 - 3

Result

Short machining time

High dimensional accuracy

Customer benefits

Low costs per component

Reduced non-productive times

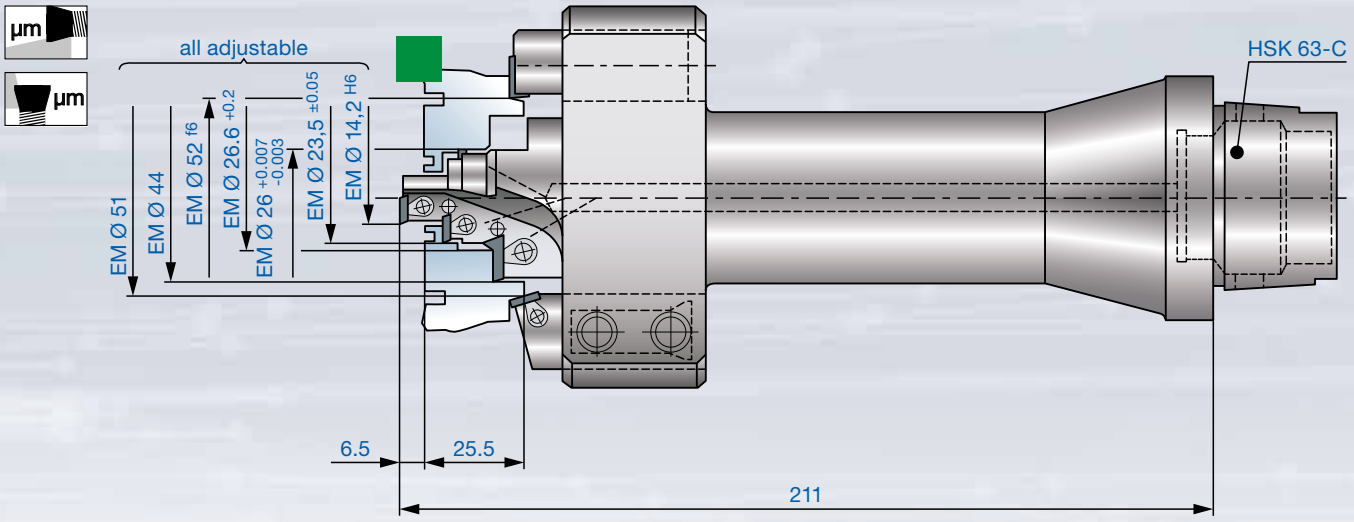
Gearbox case

for angle grinders

Fine boring, chamfering and face tool / Teeth = 6 eff. 1 per Ø

All inserts adjustable

Exchangeable cartridges for different types of housings



Requirements		
Combination tool for 6 machining steps		
Solution		
Fine boring, chamfering and face tool / Teeth = 6 eff. 1 per Ø		
All inserts adjustable		
Exchangeable cartridges for different types of housings		
Cutting data		
Material		(DIN) ■ GD-AlSi9Cu3
Cutting grade		PCD
Cutting speed	m/min	800
Feed rate per tooth	mm	-0.15
Cutting depth	mm	0.5
Result		
Short machining time		
High dimensional accuracy		

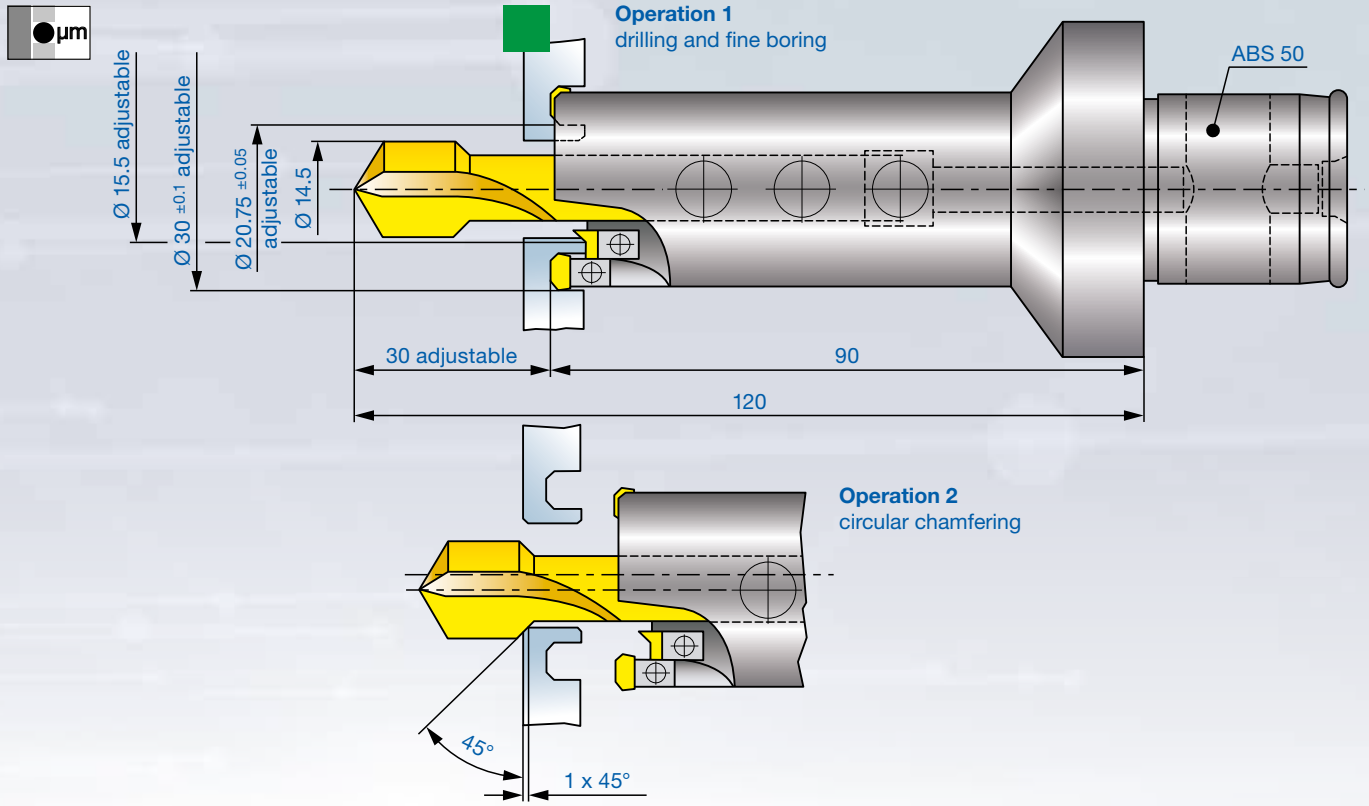
Customer benefits

Low costs per component

Reduced non-productive times

Drilling and fine boring tool

Inserts adjustable



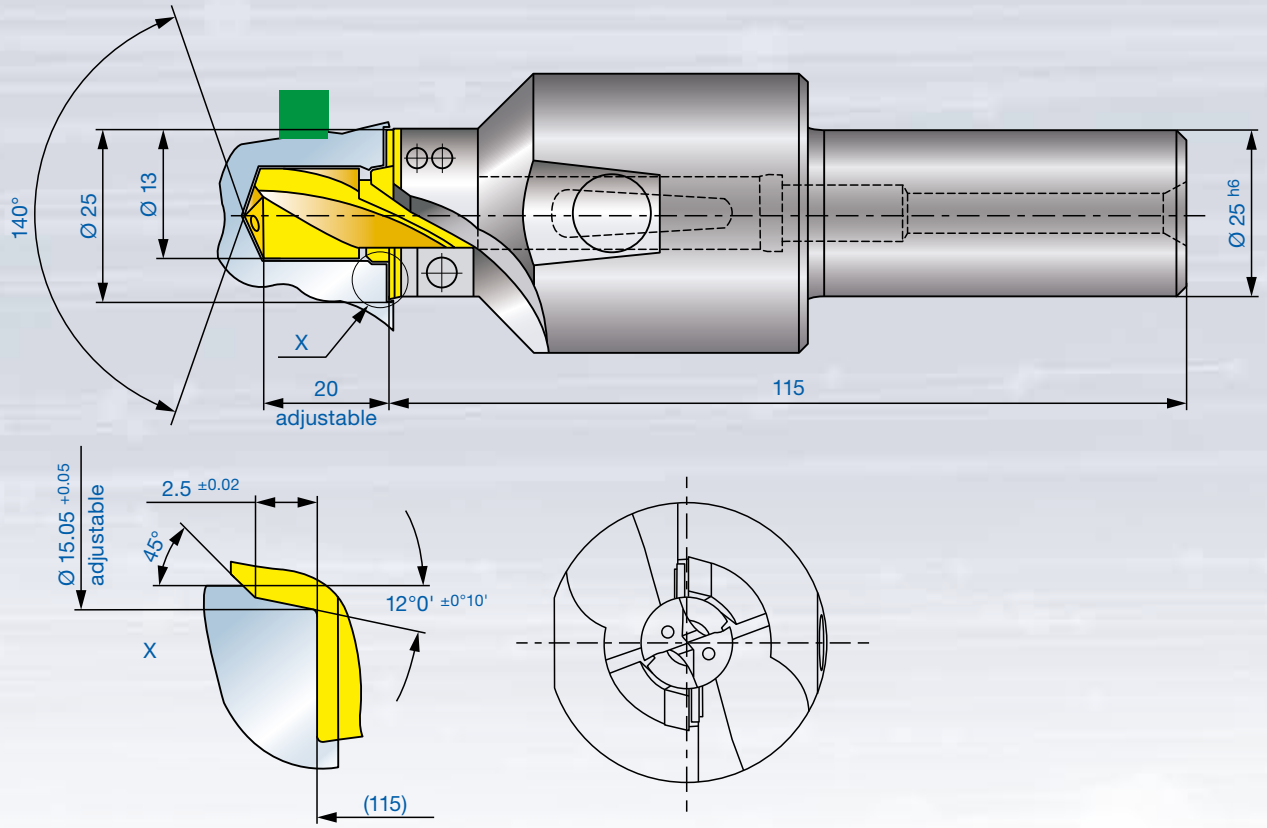
Requirements			
Combination tool for 5 machining steps			
Diameter of the chamfer and the facegroove adjustable			
Solution			
Drilling and fine boring tool			
Inserts adjustable			
Cutting data			
Material		(DIN) ■ AlSi12	
Cutting grade		carbide coated	
		drilling and chamfering	fine boring and chamfering
Cutting speed	m/min	(Ø14.5) 160	(Ø30) 331
Feed rate per tooth	mm	0.15	0.07
Cutting depth	mm	7.25	4.9
Result			
Short machining time			
High dimensional accuracy			

Customer benefits

Low costs per component

Reduced non-productive times

Drilling and fine boring tool



Requirements			
Drilling, chamfering and fine boring in one tool			
Solution			
Drilling and fine boring tool			
Cutting data			
Material		(DIN) ■ Al	
Cutting grade		K10	
		drilling	fine boring
Cutting speed	m/min	374	374
Feed rate per tooth	mm	0.38	0.09
Cutting depth	mm	into solid	1.3
Result			
Short machining time			
High dimensional accuracy			
Solid carbide drill regrindable for several times			

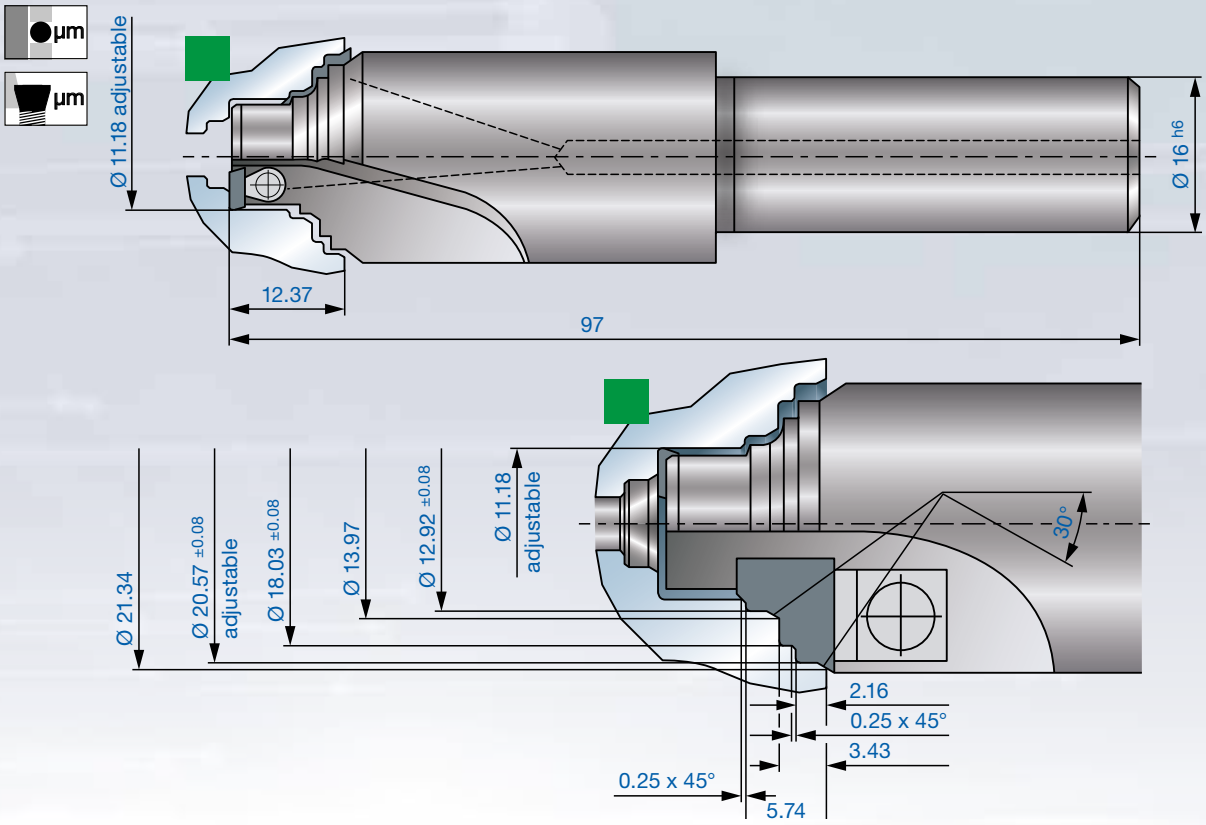
Customer benefits

Low costs per component

Reduced non-productive times

Fine boring and chamfering tool with indexable inserts

PCD-form inserts with 5 steps, all diameters adjustable



Requirements

Multi-step fine boring tool for hydraulic connection

Solution

Fine boring and chamfering tool with indexable inserts

PCD-form inserts with 5 steps, all diameters adjustable

Cutting data

Material		(DIN) ■ GDAlSi9
Cutting grade		PCD
Cutting speed	m/min	(Ø21.34) 700
Feed rate per tooth	mm	0.1
Cutting depth	mm	-5

Result

Simple correction of diameters by means of taper screw or eccentric pin adjustment

Inserts separately replaceable

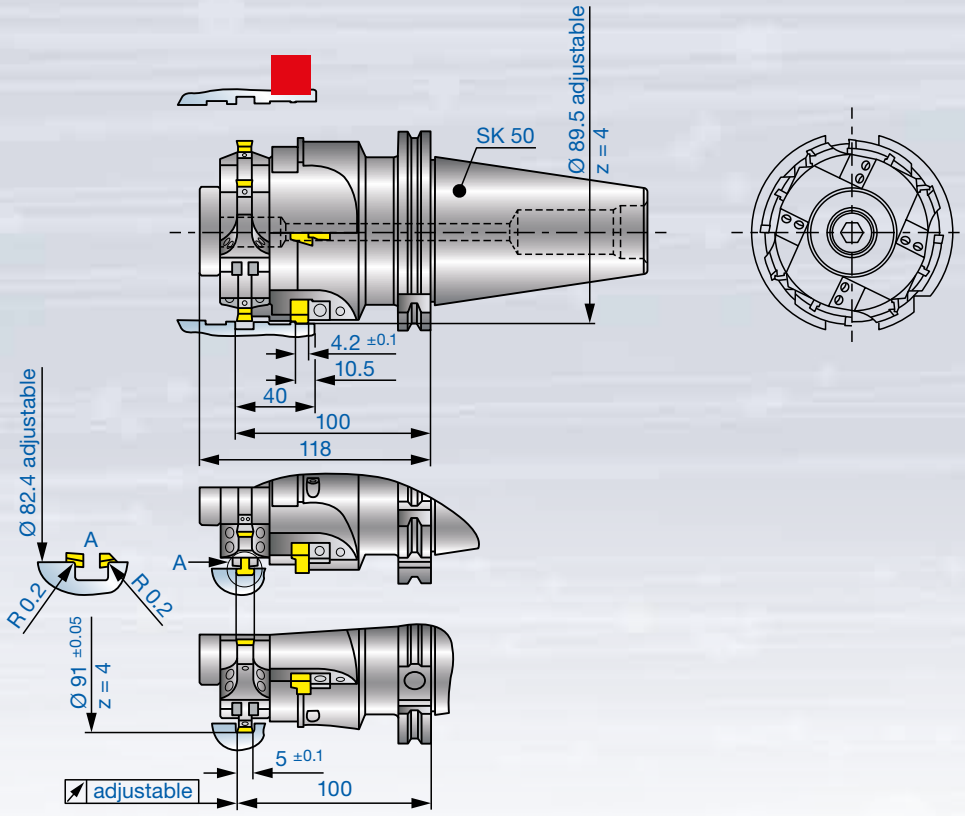
Customer benefits

Low costs per component

Brake component

for wind mill

Circular milling cutter / Teeth = 16 / Teeth$_{eff.}$ = 4



Requirements		
Multi-step circular milling cutter for machining grooves		
Solution		
Circular milling cutter / Teeth = 16 / Teeth$_{eff.}$ = 4		
Cutting data		
Material		(DIN) ■ GGG40
Cutting grade		carbide coated
Cutting speed	m/min	95
Feed rate per tooth	mm	0.11
Cutting depth	mm	4
Result		
Short machining time		
High dimensional accuracy		

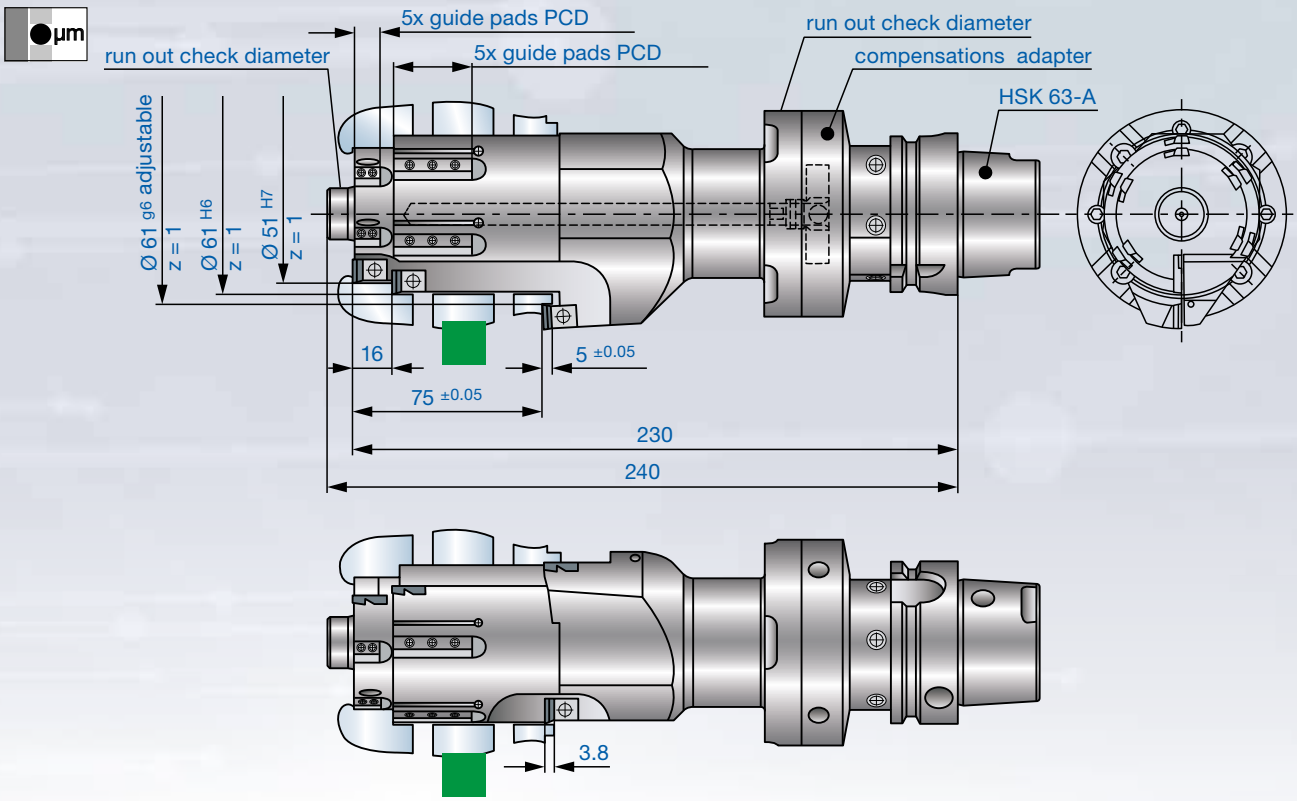
Customer benefits

Low costs per component

Reduced non-productive times

Stepped fine boring tool with clamped PCD guide pads / Teeth = 4 / Teeth$_{eff.}$ = 1

All inserts adjustable



Requirements		
Multi-step fine boring tool		
Solution		
Stepped fine boring tool with clamped PCD guide pads / Teeth = 4 / Teeth$_{eff.}$ = 1		
All inserts adjustable		
Cutting data		
Material		(DIN) ■ AlSi11Cu2(Fe)
Cutting grade		PCD
Cutting speed	m/min	600
Feed rate per tooth	mm	0.1
Cutting depth	mm	0.2
Result		
Excellent surface finish		
Simple tool handling		

Customer benefits

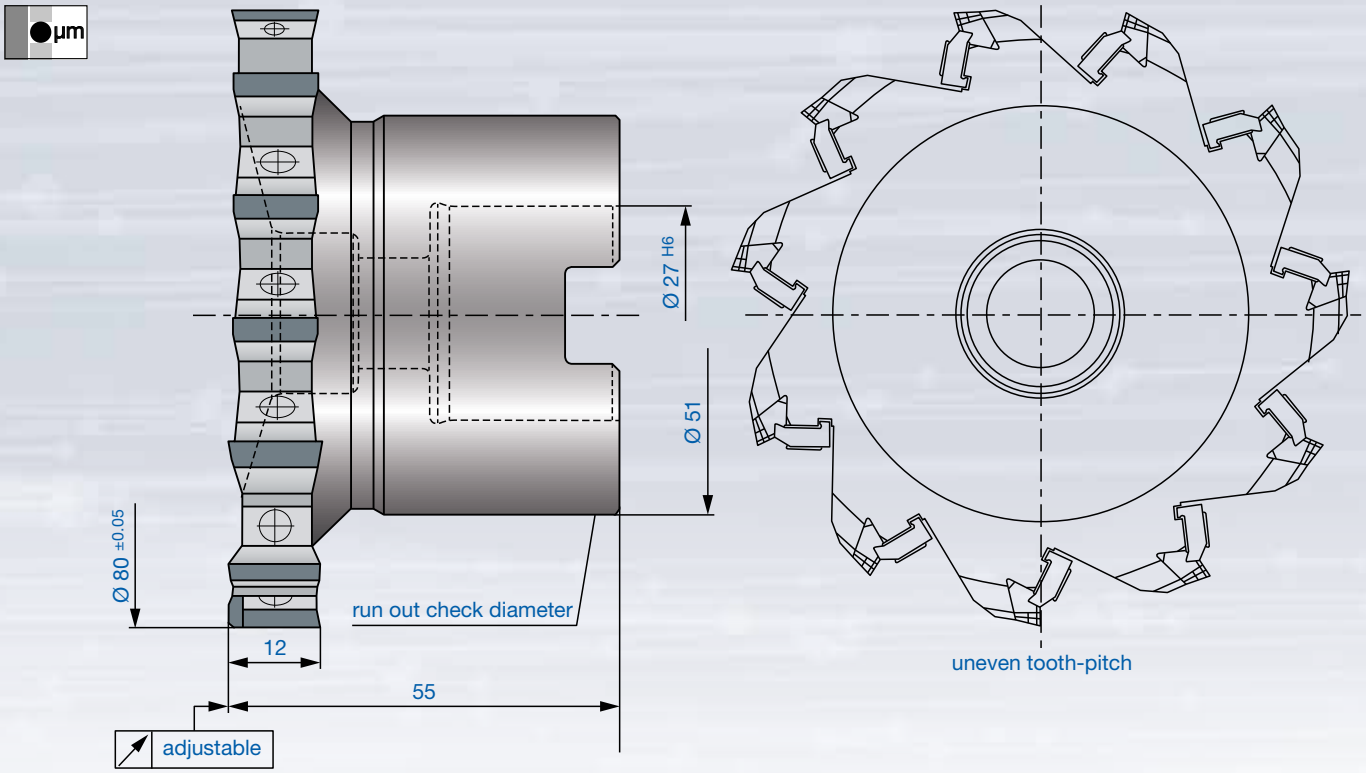
Higher process reliability

Low costs for replacing the PCD guide pads, if necessary

Compressor housing

Put on milling cutter Ø 80 mm / Teeth = 8 + 3

Mixed assembly: semi finish inserts (Teeth = 8) and wiper inserts (Teeth = 3)



Requirements

Surface finish R_z max. 20 µm

Flatness 0.05 mm

Solution

Put on milling cutter Ø 80 mm / Teeth = 8 + 3

Mixed assembly: semi finish inserts (Teeth = 8) and wiper inserts (Teeth = 3)

Cutting data

Material		(DIN) ■ GG25
Cutting grade		CBN
Cutting speed	m/min	1,200
Feed rate per tooth	mm	0.140
Cutting depth	mm	0.10

Result

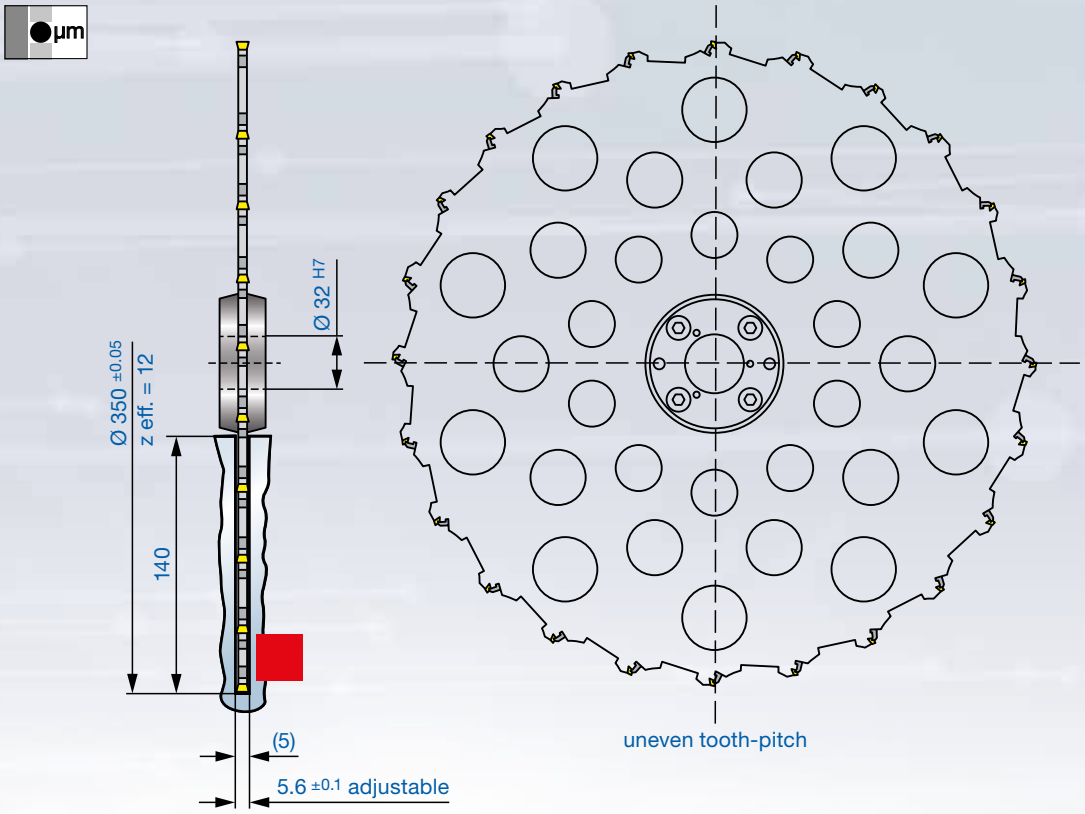
Increased tool life by 300 - 400 %

Customer benefits

Dramatically reduced costs per component

Side milling cutter Ø 350 mm / Teeth = 12 + 12

Width 5.6 mm adjustable



Requirements

Milling of the rotor grooves

Solution

Side milling cutter Ø 350 mm / Teeth = 12 + 12

Width 5.6 mm adjustable

Cutting data

Material		(DIN) ■ GGG50
Cutting grade		carbide coated
Cutting speed	m/min	80
Feed rate per tooth	mm	0.05
Cutting depth	mm	140

Result

Finish machining of slots in one cut

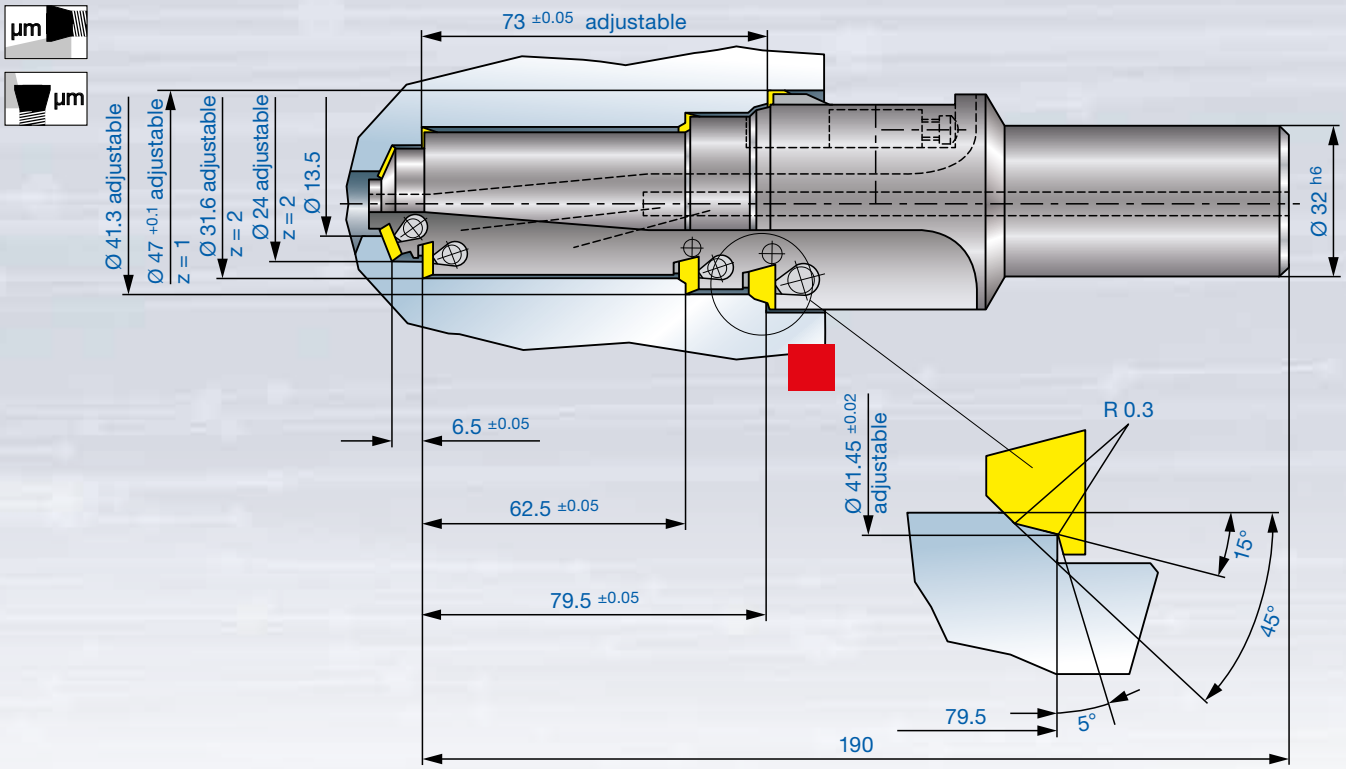
Therefore dramatic shortening of processing time compared to the grinding process

Customer benefits

Dramatically reduced costs per component

Connection holes valve block

Multi-step fine boring tool with adjustable inserts / Teeth = 8 / Teeth$_{eff.}$ = 2



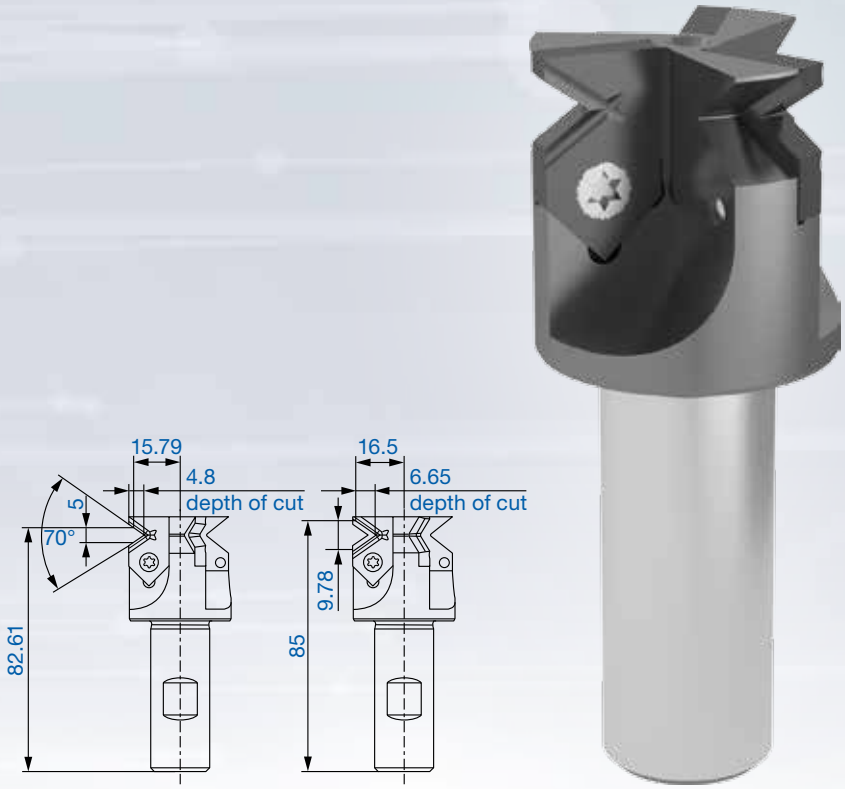
Requirements		
Tool for hydraulic connection		
All diameters adjustable		
Solution		
Multi-step fine boring tool with adjustable inserts / Teeth = 8 / Teeth$_{eff.}$ = 2		
Cutting data		
Material		(DIN) ■ GGG50
Cutting grade		carbide coated
Cutting speed	m/min	(Ø47) 180
Feed rate per tooth	mm	(Ø47/Ø41) 0.1
Cutting depth	mm	-5
Result		
Short machining time		
Stable machining process		

Customer benefits

Low costs per component

Milling tool with fixed insert seat / Teeth = 3

Machining of different sizes with one holder and different interchangeable inserts



Requirements		
Geometric shape accuracy		
Mixed machining (Steel unhardened / hardened)		
Faster machining		
Solution		
Milling tool with fixed insert seat / Teeth = 3		
Cutting data		
Material		(DIN) ■ Toolox 33
Cutting grade		CBN / carbide
Cutting speed	m/min	CBN 250 / carbide 140
Feed rate per tooth	mm	CBN 0.03 / carbide 0.03
Cutting depth	mm	4.8 resp. 6.65
Result		
Higher surface finish quality		
Reduced tooling costs		

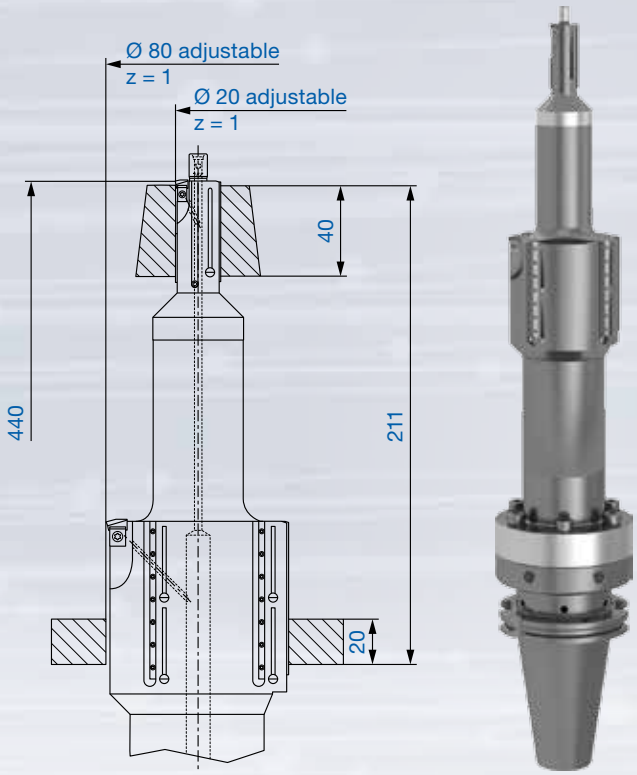
Customer benefits

Cycle time reduction with higher surface quality

Only one tool required for different workpiece geometries

Reduced tooling costs

Countersinking tool with guide pads / Teeth = 1 + 1



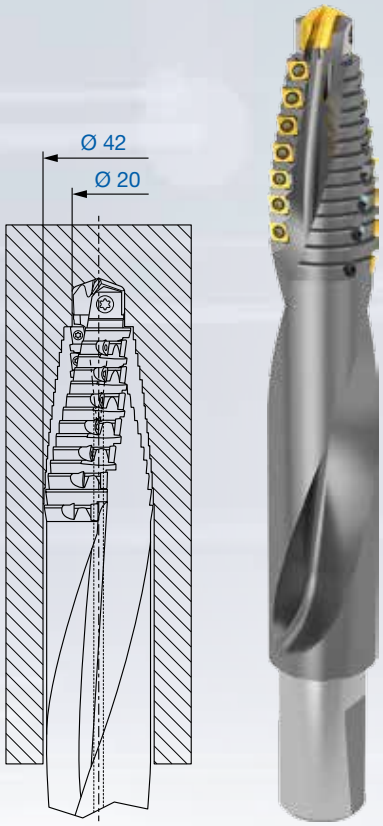
Requirements		
Manufacturing of fitting diameters		
High surface finish quality		
Solution		
Countersinking tool with guide pads / Teeth = 1 + 1		
Cutting data		
Material		(DIN) ■ GG25
Cutting grade		carbide coated
Cutting speed	m/min	88
Feed rate per tooth	mm	0.075
Cutting depth	mm	0.2
Result		
Very good coaxiality despite the long distance to be bridged		
Diameter can be set with micrometre precision		

Customer benefits

Reduction of the number of tools

Long tool life

Drilling and countersinking tool (HT 800 + 14 steps) / Teeth = 16



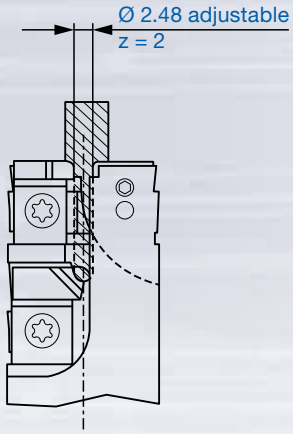
Requirements		
Increasing the process reliability		
Solution		
Drilling and countersinking tool (HT 800 + 14 steps) / Teeth = 16		
Cutting data		
Material		(DIN) ■ GGG40
Cutting grade		carbide
Cutting speed	m/min	120
Feed rate per tooth	mm	0.4
Cutting depth	mm	into solid
Result		
Faster machining time		

Customer benefits

High process reliability

Longer tool life

Fine boring tool with adjustable form inserts / Teeth = 2 + 1



Requirements

Alternative solution to a ground carbide tool

Solution

Fine boring tool with adjustable form inserts / Teeth = 2 + 1

Cutting data

Material		(DIN) ■ CuZn39Pb3R500
Cutting grade		carbide uncoated
Cutting speed	m/min	76
Feed rate per tooth	mm	0.065
Cutting depth	mm	into solid

Result

Tool life: 1,000,000 plug contacts

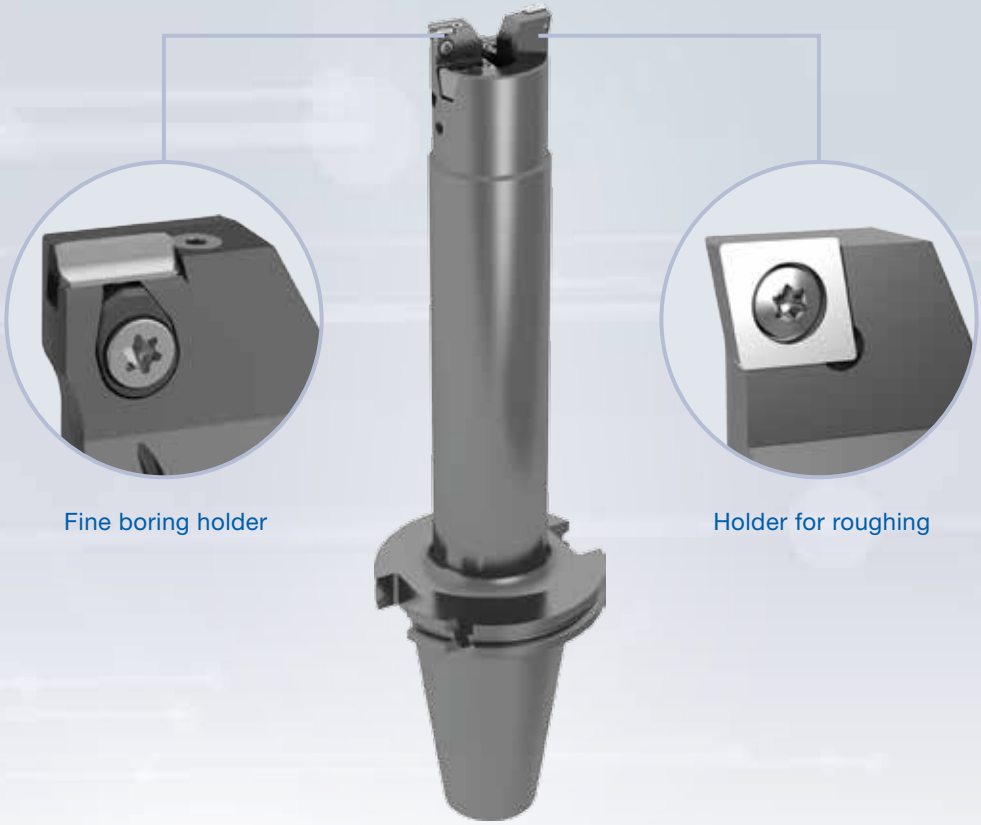
µm-accurate adjustability of diameters

Customer benefits

No regrinding of the entire tool necessary

Reduced storage costs

GA200 Vario special solution (roughing/finishing combination) / Teeth = 1 + 1



Fine boring holder

Holder for roughing

Requirements

Reduction of machining time

Solution

GA200 Vario special solution (roughing/finishing combination) / Teeth = 1 + 1

Cutting data

Material		(DIN) ■ CuZn35Pb2Al
Cutting grade		carbide / PCD
Cutting speed	m/min	300
Feed rate per tooth	mm	0.06
Cutting depth	mm	4

Result

Reduction of required tools from 2 to 1

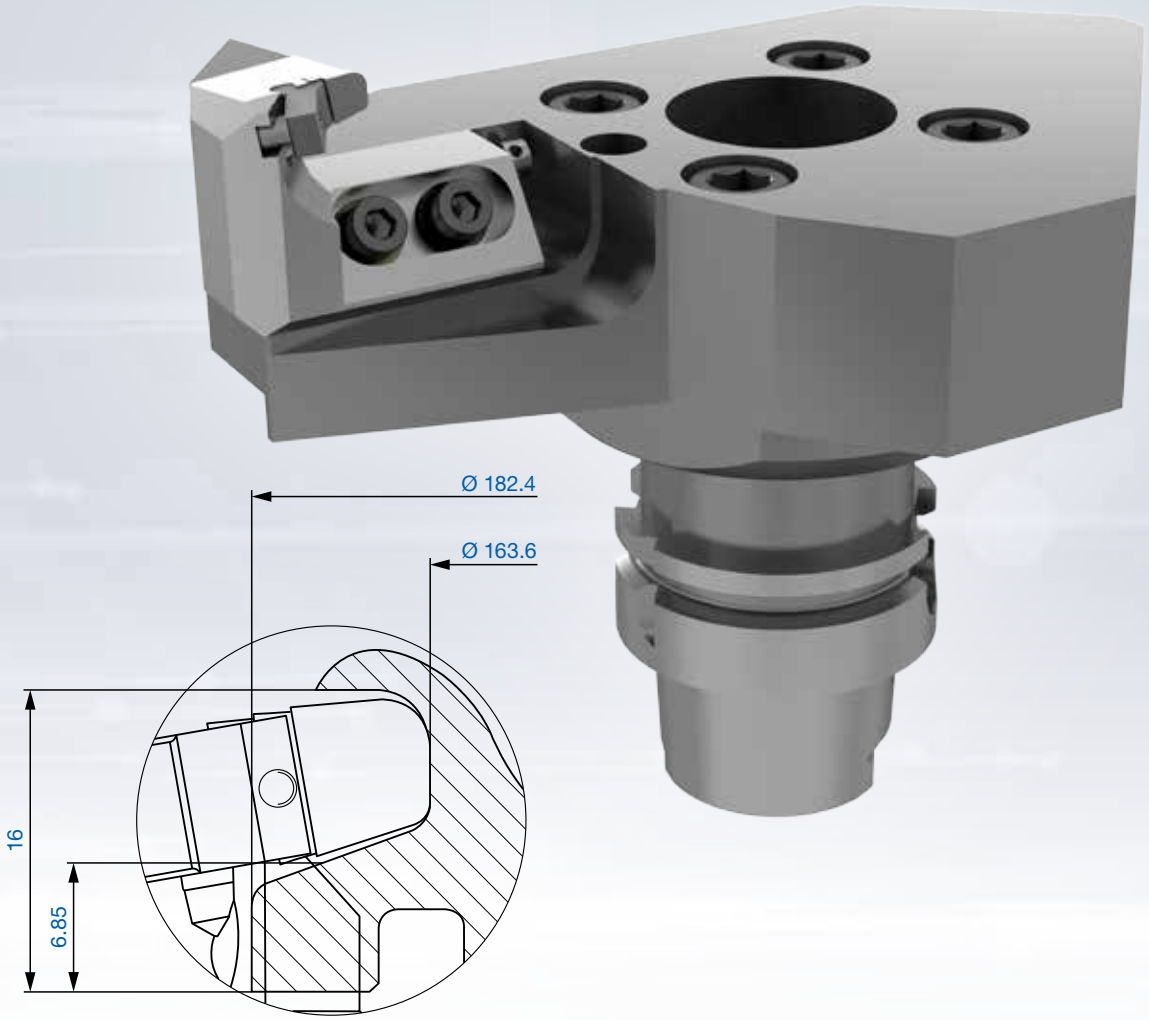
Customer benefits

Cycle time reduction machining with consistent quality

Reduced tooling costs

Turbocharger housing

Interpolation turning tool / Teeth = 1



Requirements		
Machining of a V-contour despite limited space conditions		
Solution		
Interpolation turning tool / Teeth = 1		
Cutting data		
Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	100
Feed rate per tooth	mm	0.1
Result		
Very short machining time		
Flexible and stable tool concept with cartridge		
Long tool life		

Customer benefits
Low costs per component

Turbocharger housing

Pre-machining

Stepped countersinking tool

Various inserts adjustable

Requirements		
Several machining steps in one tool		
Solution		
Stepped countersinking tool		
Various inserts adjustable		
Cutting data		
Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	95
Feed rate per tooth	mm	0.1
Result		
Very short machining time thanks to maximum possible number of teeth		
Thanks to the division of the chip spaces, it is possible		
to combine several machining steps		

Customer benefits

Lower tool costs by using ISO inserts

Reduced cycle times

Fine boring tool / Teeth = 1 + 1

Adjustment of the diameter by fine adjustment

Smart Setting Motion Tools

Requirements		
Step tool for finishing operation		
Solution		
Countersinking tool / Teeth = 1 + 1		
Adjustment of the diameter by means of thread wedge adjustment		
Cutting data		
Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	120
Feed rate per tooth	mm	0.075
Result		
Short machining time		

Customer benefits

Lower tool costs by using ISO inserts

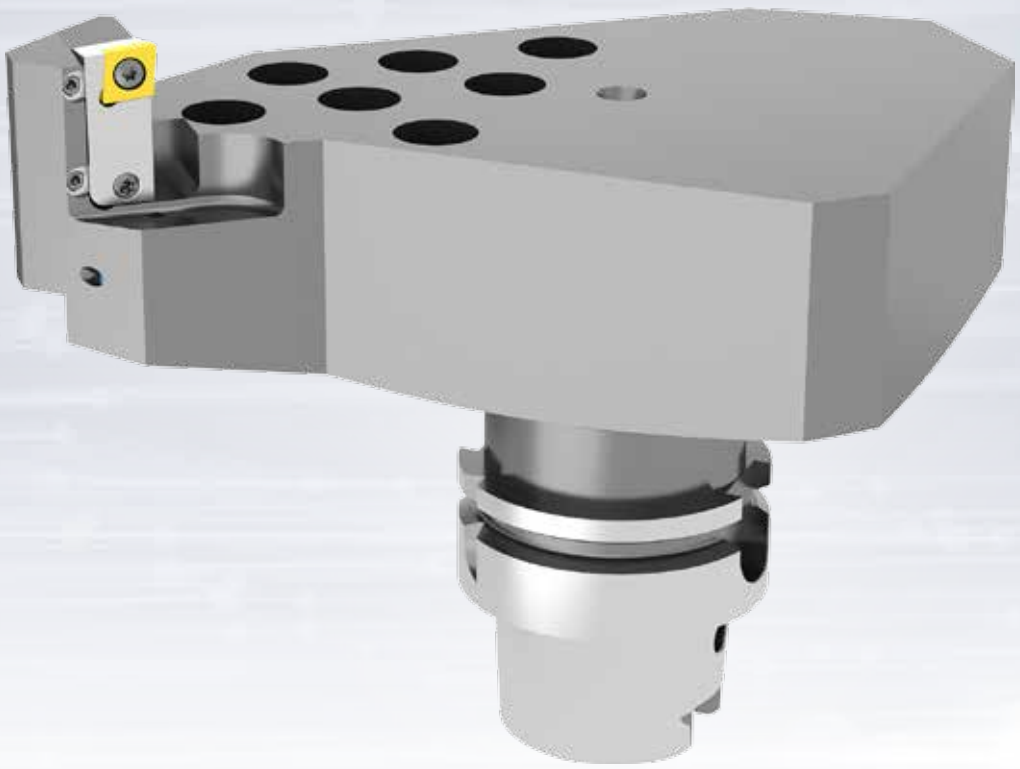
µm accurate adjustment directly at the spindle ➙ low machine downtime

Turbocharger housing

Finish-machining

Countersinking and interpolation tool in one Ø 182.4 mm ➝ Finishing

Plane surface from 182.4 to 155.698 mm ➝ Interpolation process



Requirements

Different machining processes in one tool

Solution

Countersinking and interpolation tool in one Ø 182.4 mm ➝ Finishing

Plane surface from 182.4 to 155.698 mm ➝ Interpolation process

Cutting data

Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	100
Feed rate per tooth	mm	0.1

Result

2 machining processes in one tool

Adjustment of the diameter by means of thread wedge adjustment

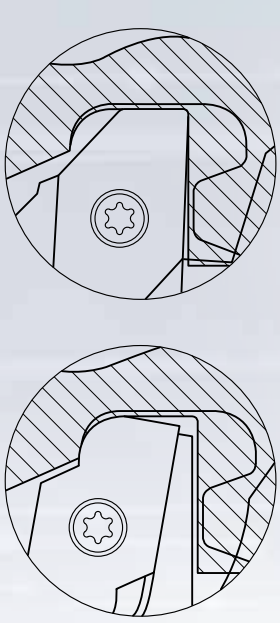
Customer benefits

Lower tool costs by using ISO inserts

Axial grooving tool / Teeth = 2 + 2

Division of the contour into two different cutting insert geometries

Compact tool concept



Requirements		
Pre-machining of a complex contour		
Solution		
Axial grooving tool / Teeth = 2 + 2		
Division of the contour into two different cutting insert geometries		
Compact tool concept		
Cutting data		
Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	110
Feed rate per tooth	mm	0.125
Result		
Simple tool handling		

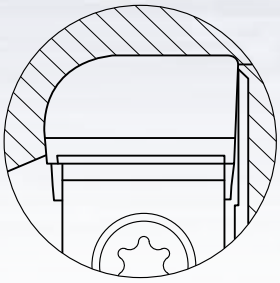
Customer benefits

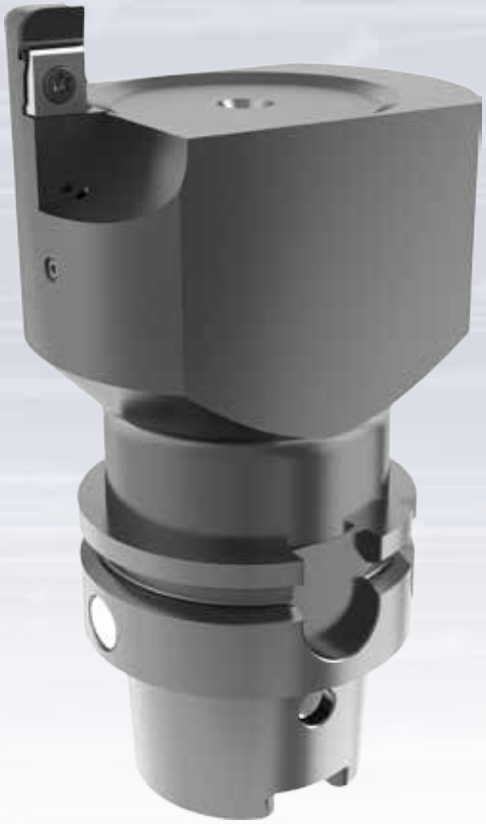
Low costs per component thanks to multi-fluted insert

Turbocharger housing

Finish-machining

Axial grooving tool with profile insert / Teeth = 1





Requirements		
Finishing of a complex contour		
Solution		
Axial grooving tool with profile insert / Teeth = 1		
Cutting data		
Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	100
Feed rate per tooth	mm	0.1
Result		
Very good surface quality and dimensional accuracy		
µm-accurate adjustability of diameter		

Customer benefits

Low costs per component

Axial grooving tool, adjustable diameter / Teeth = 1 + 1

Division of the contour on two different inserts

Compact tool concept

Requirements		
Pre-machining of a complex contour		
Solution		
Axial grooving tool, adjustable diameter / Teeth = 1 + 1		
Division of the contour on two different inserts		
Compact tool concept		
Cutting data		
Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	95
Feed rate per tooth	mm	0.09
Result		
Simple tool handling		
Inserts µm-accurate adjustable		

Customer benefits

Low costs per component thanks to long tool life

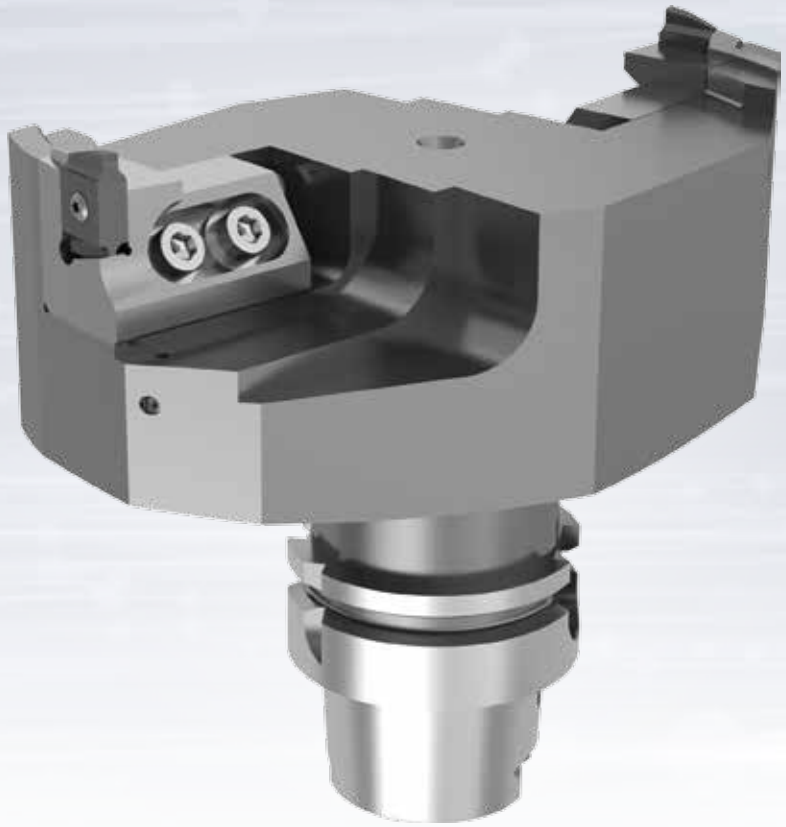
Turbocharger housing

Pre-machining

Axial grooving tool, adjustable diameter / Teeth = 1 + 1

Division of the contour into two different cutting inserts

Compact tool concept with cartridges



Requirements

Pre-machining of a complex contour

Solution

Axial grooving tool, adjustable diameter / Teeth = 1 + 1

Division of the contour into two different cutting inserts

Compact tool concept with cartridges

Cutting data

Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	110
Feed rate per tooth	mm	0.15

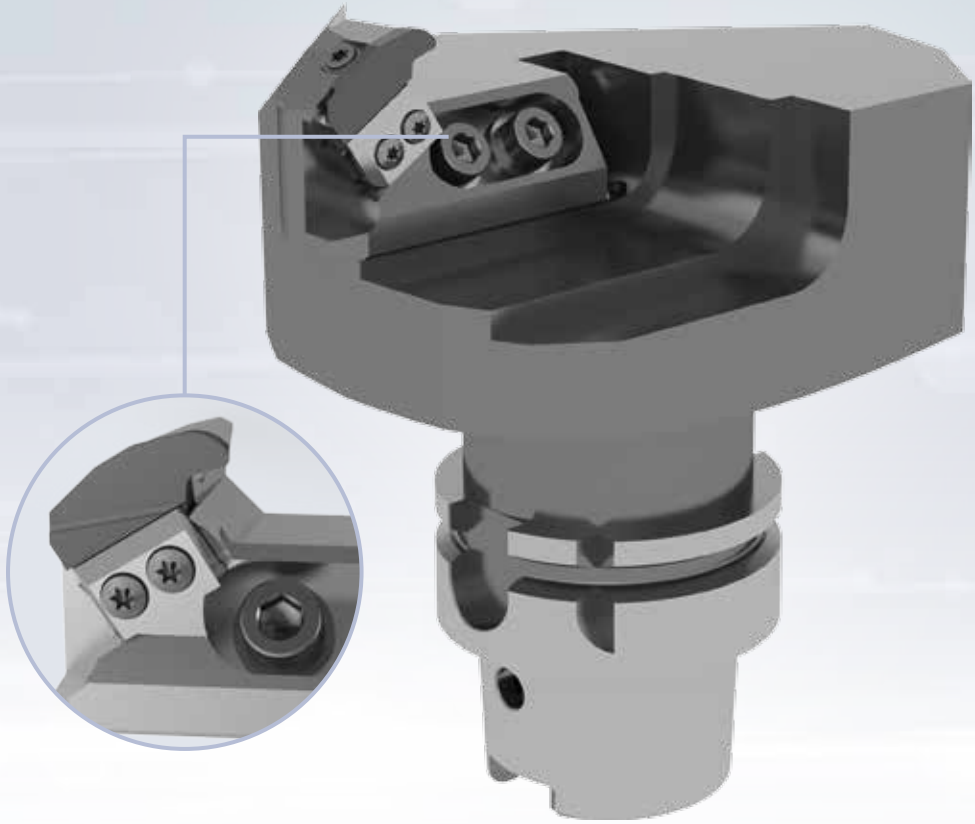
Result

Simple tool handling

Customer benefits

Low costs per component thanks to multi-edge insert

Interpolation turning tool / Teeth = 1

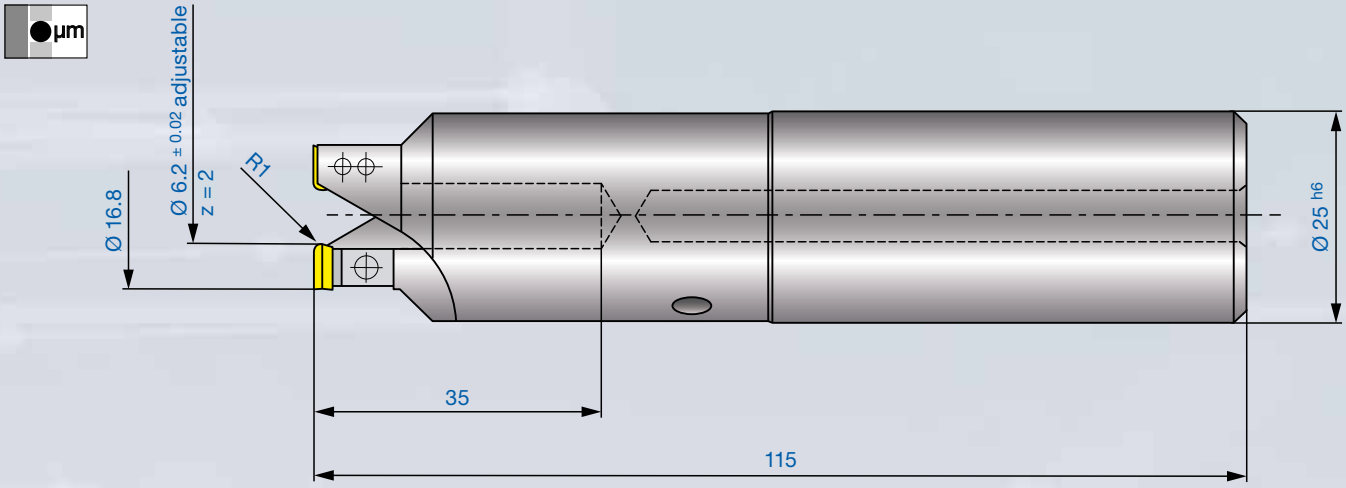


Requirements		
Machining of a V-contour despite limited space conditions		
Solution		
Interpolation turning tool / Teeth = 1		
Cutting data		
Material		(DIN) ■ GX40NiCrSiNb38-19
Cutting grade		carbide coated
Cutting speed	m/min	110
Feed rate per tooth	mm	0.15
Result		
Very short machining time		
Flexible and stable tool concept with cartridge		
Long tool life		

Customer benefits
Low costs per component

Aviation technology

Axial grooving tool / Teeth = 2



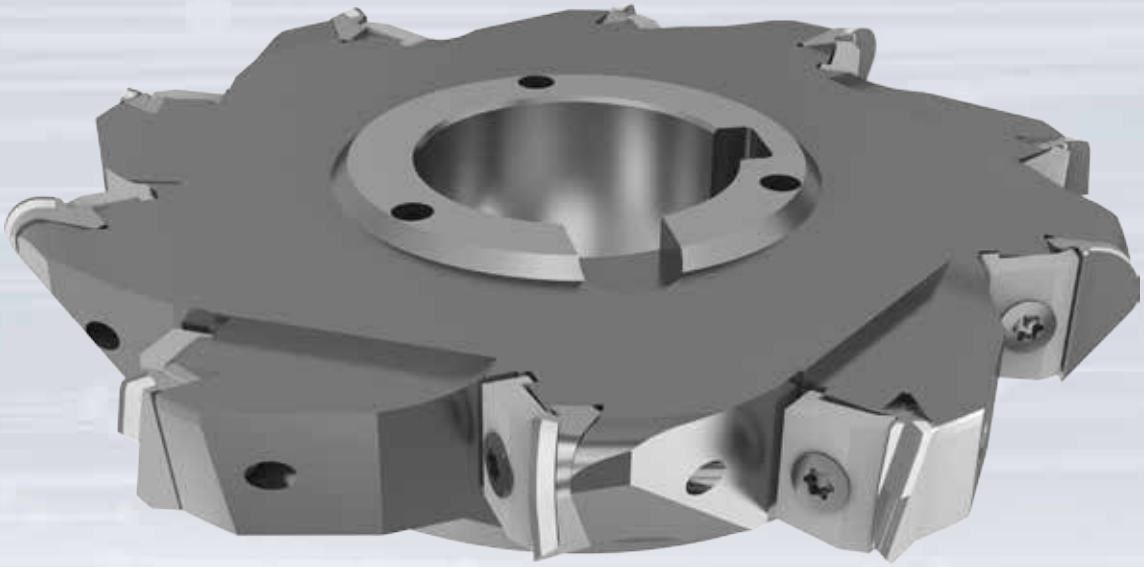
Requirements		
Machining of various outside diameters		
with high requirements for diameter tolerance and roundness		
Reduction of machining time		
Solution		
Axial grooving tool / Teeth = 2		
Cutting data		
Material		(DIN) ■ TiAl6V4
Cutting grade		carbide
Cutting speed	m/min	48
Feed rate per tooth	mm	0.03
Feed rate per tooth	mm	0.25
Result		
Significantly shorter machining time due to double fluted tool		
Uniform distribution of cutting forces compared to a single-fluted tool -		
resulting in very high roundness and uniform wall thickness		

Customer benefits

High process reliability

Aircraft wing

Side milling cutter with distribution of cut / Teeth = 10 / Teeth$_{eff.}$ = 5



Requirements

Increase in process reliability

Reduction of delamination with so called mesh material

Solution

Side milling cutter with distribution of cut / Teeth = 10 / Teeth$_{eff}$ = 5

Cutting data

Material		(DIN) ■ Composite / CFK
Cutting grade		PCD
Cutting speed	m/min	370
Feed rate per tooth	mm	0.08
Cutting width	mm	0

Result

Increase in tool life quantity

Customer benefits

Higher quality, therefore lower costs for re-work

Drilling and countersinking tool with interchangeable inserts / Teeth = 1

Insert diameter µm-accurate adjustable

1 MQL BY HOLLFELDER GÜHRING

Requirements		
Machining of rivet holes		
Burr-free transition from holes to chamfer		
Solution		
Drilling and countersinking tool with interchangeable inserts / Teeth = 1		
Insert diameter µm-accurate adjustable		
Cutting data		
Material		(DIN) ■ CFK/titanium
Cutting grade		PCD
Cutting speed	m/min	380
Feed rate per tooth	mm	0.11
Cutting depth	mm	into solid
Result		
High quality of chamfer or transition thanks to PCD cutting insert		
High concentricity accuracy of the solid carbide drill due to use of hydraulic chuck		

Customer benefits

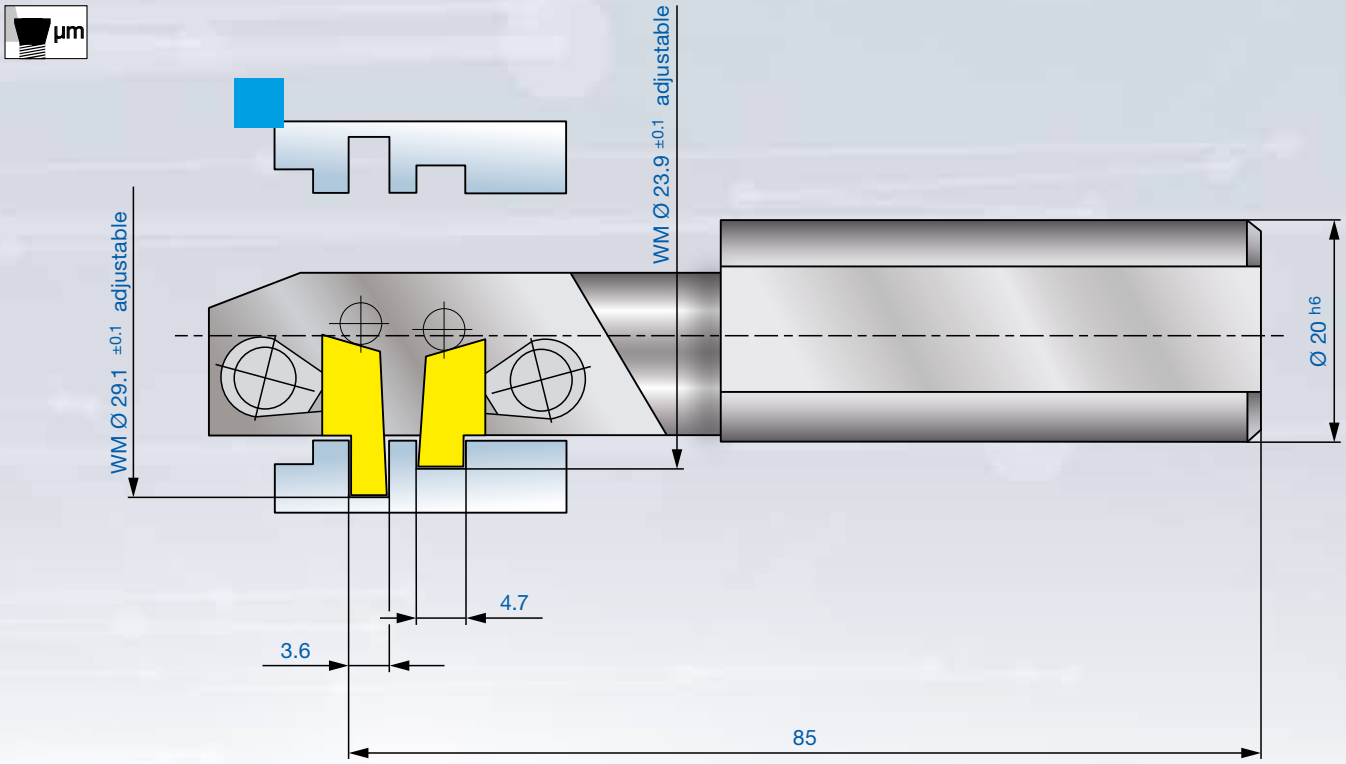
High process reliability

Low costs per component

Turning tools

Grooving tool for turning machines / Teeth = 2 / Teeth$_{eff.}$ = 1

Grooving inserts adjustable towards each other



Requirements

Narrow tolerances of the grooves to each other

Reduction of machining time

Solution

Plunging tool for turning machines / Teeth = 2 / Teeth$_{eff.}$ = 1

Grooving inserts adjustable towards each other

Cutting data

Material		(DIN) ■ Sind D 11 (sintered metal)
Cutting grade		carbide coated
Cutting speed	m/min	(Ø 29.1) 220
Feed rate per tooth	mm	0.1
Cutting depth	mm	~ 4.5

Result

Reduced machining time thanks to combination tool

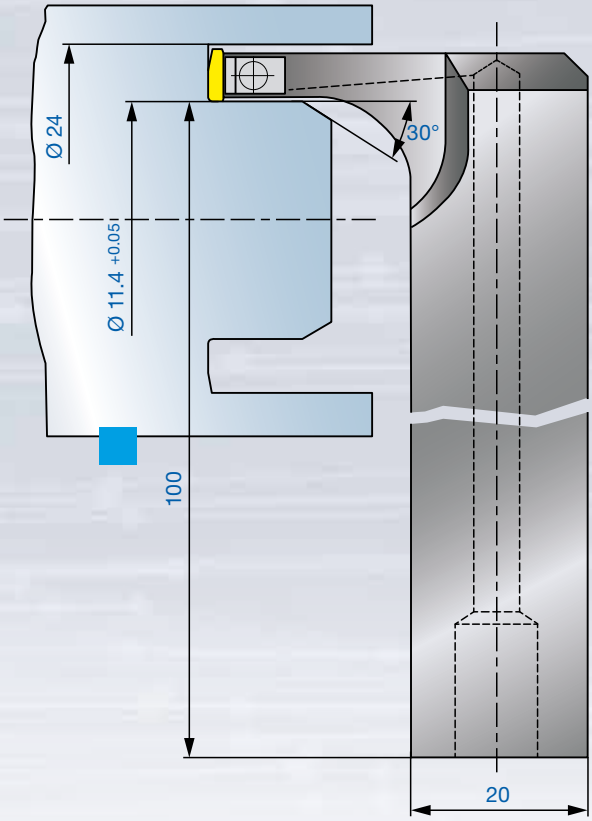
Customer benefits

Low costs per component

Reduced non-productive times thanks to simple tool handling

Case

Grooving tool / Teeth = 1



Requirements

Finish machining chamfer 30° and Ø 11.4 + 0.05

Solution

Grooving tool / Teeth = 1

Cutting data

Material		(DIN) ■ 9SMn28K
Cutting grade		carbide coated
Cutting speed	m/min	(Ø 11.4) 95
Feed rate per tooth	mm	0.12
Cutting depth	mm	-1

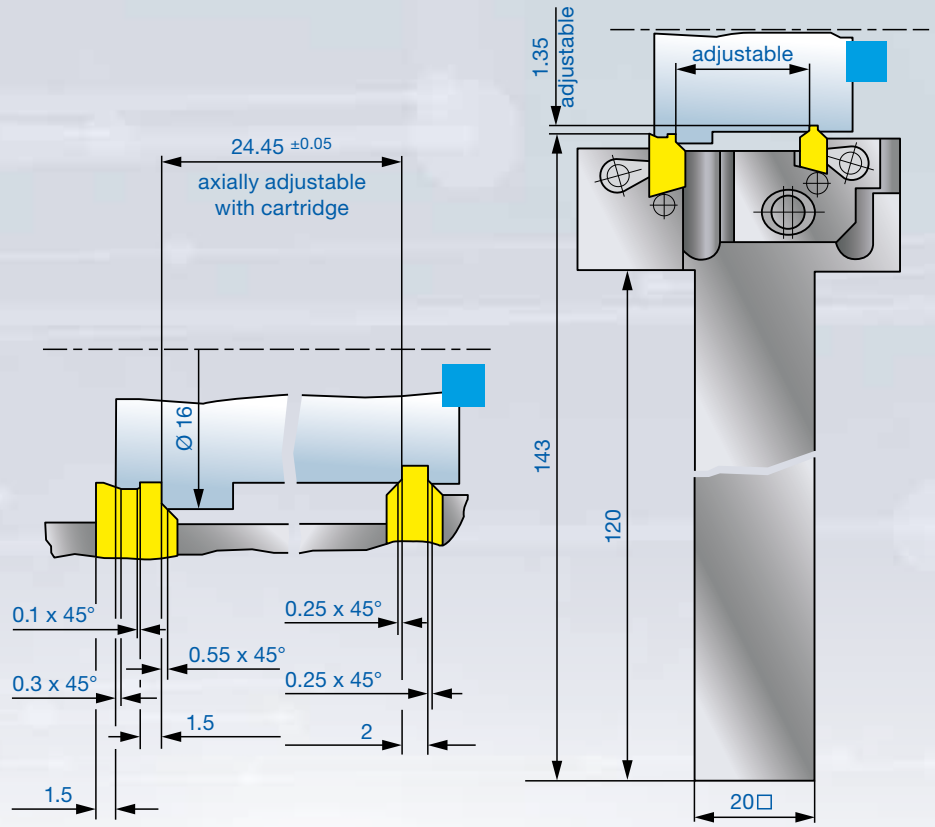
Result

High dimensional accuracy thanks to precision-ground cutting insert

Customer benefits

High process reliability thanks to stable insert clamping

Grooving tool / Teeth = 2 / Teeth$_{eff.}$ = 1

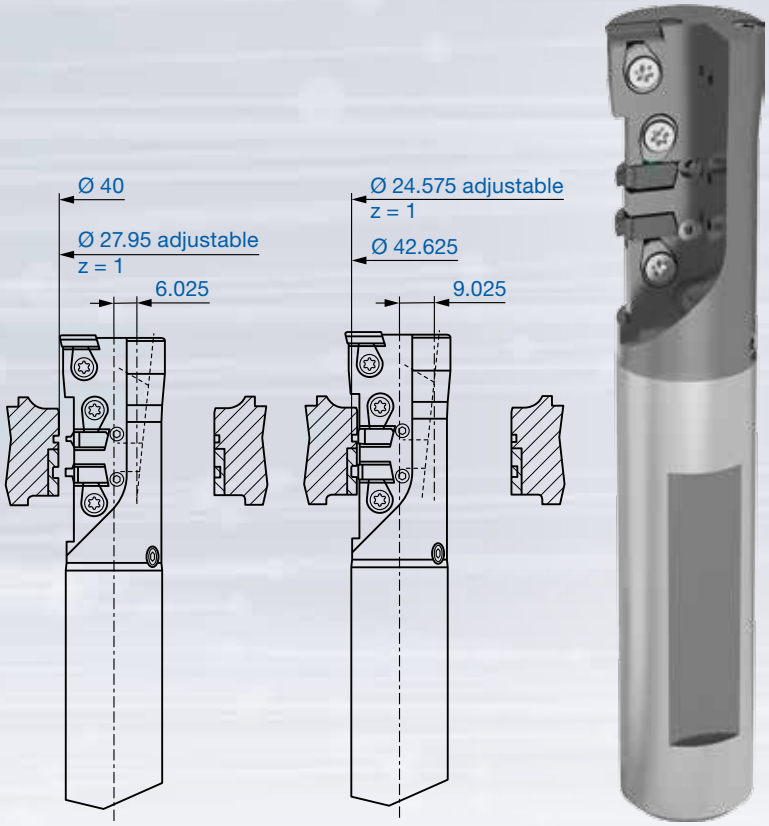


Requirements		
Groove turning - profil recess		
Recesses adjustable towards each other		
Solution		
Grooving tool / Teeth = 2 / Teeth$_{eff.}$ = 1		
Cutting data		
Material		(DIN) ■ 9SMn28K
Cutting grade		carbide coated
Cutting speed	m/min	120
Feed rate per tooth	mm	0.1
Cutting depth	mm	2
Result		
Complete machining with one tool		

Customer benefits
Cycle time reduction

Bearing bracket

Combi turning tool (finishing/grooving) / Teeth = 3 / Teeth$_{eff.}$ = 1 + 1



Requirements

Reduction of cycle time

Solution

Combi turning tool (finishing/grooving) / Teeth = 3 / Teeth$_{eff.}$ = 1 + 1

Cutting data

Material		(DIN) ■ AlSi12Cu1(Fe) EN-AC47100 / 11SMn30 + C1,0715	
Cutting grade		carbide coated / uncoated	
		grooving	finishing
Cutting speed	m/min	240	320
Feed rate per tooth	mm	0.12	0.1

Result

Reduced machining times

Customer benefits

Saving of tool places on turret

Holder for skiving operations / Teeth = 1

Requirements		
Very high surface quality		
Reduction of machining time		
Solution		
Holder for skiving operations / Teeth = 1		
Cutting data		
Material		(DIN) ■ steel
Cutting grade		carbide coated
Cutting speed	m/min	225
Feed rate per tooth	mm	1.5
Cutting depth	mm	0.4
Result		
Very fast machining time		
Excellent surface finish quality		

Customer benefits

Cycle time reduction

Up to 10x faster than conventional turning

Saving of one work step (grinding)

Enquiry form

for special tools

Customer _____ Date _____

Contact person _____ Telephone _____

Street _____ Fax _____

Town/post code _____ E-Mail _____

Workpiece _____ Drawing number _____

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 R_a = _____ R_z = _____ Others _____

Stock _____ mm ☐ In Radius ☐ In diameter a_p = _____ a_e = _____

Fixture ☐ Stable ☐ Instable ☐ Very instable

Interference ☐ No ☐ Yes _____ mm

Machine ☐ MC ☐ Transferline ☐ Lathe ☐ Turn / milling centre ☐ 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/end milling cutter ☐ Disc milling cutter Power _____

Shank style/Form _____ Size _____

Tool balanced ☐ No ☐ Yes > Balancing grade G _____ at _____ 1/min

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

Coolant ☐ Internal ☐ External ☐ Without
☐ Emulsion ☐ Oil ☐ MQL ☐ Dry

Remarks _____

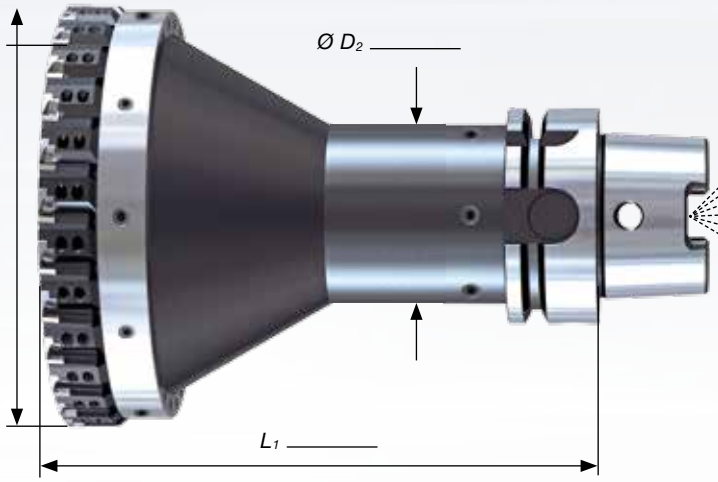
_____

Enquiry form

for HPC special milling cutter

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

Company name/no. if available	Contact person
Street	Town/post code
Telephone	e-mail address
Date	Signature



HSK-A _____

HSK-C _____

HSK- _____

SK DIN 68971

BT _____

CAT _____

Workpiece	_____	Width of cut (a_e)	_____	Maximum no. of teeth ☐	
Material	_____	IC (bar)	_____	Reduced no. of teeth _____	Rough milling cutter ☐
Allowance (a_p)	_____	MQL 1 channel ☐		Maximum tool weight _____	Finish milling cutter ☐
Surface finish R_z	_____	MQL 2 channel ☐			

Enquiry form

for automatically adjustable tools

Customer _____ Date _____

Contact person _____ Telephone _____

Street _____ Fax _____

Town/post code _____ e-mail _____

Workpiece _____ Drawing number _____

Material _____ Hardness/tensile strength _____

Designation workpiece / 3D model required!

Machining ☐ Crankshaft bearing passage ☐ Balance shaft ☐ Cylinder liner

Required surface finish R_a = _____ R_z = _____ Others _____

Stock _____ mm ☐ in radius ☐ in Diameter

Machine ☐ MC ☐ Transferline ☐ Multi-spindle machining

Machine manufacturer _____

Machine type _____

Spindle ☐ Steep taper DIN _____ Size _____

☐ HSK DIN _____ Size _____

☐ Others _____ ☐ With Internal coolant

☐ max. Rpm _____ ☐ Without internal coolant

☐ Power _____ KW

Retraction of the inserts required (drawbar)? ☐ Yes ☐ Air ☐ Emulsion ☐ Mechanical

☐ No

Hubmechanismus ☐ Yes ☐ No

Lagerung ☐ Intermediate bearing ☐ Counter bearing → drawing required!

Tool ☐ Right-hand cutting ☐ Left-hand cutting

Cutting data (current process) v_c = _____ m/min f = _____ mm/U ☐ mm/teeth ☐ mm/min

Coolant ☐ Emulsion ☐ MQL ☐ Air (dry)

Description of machining strategy (e.g., maching direction? roughing/finishing?)

_____

_____

_____

_____

_____

Our innovative tooling systems are used all over the world in many areas in the metal cutting industry. Both the highly precise standard tools which can be used flexibly as well as our customer specific innovative tooling solutions qualify us as a reliable partner in the metal machining industry. Thanks to many years of experience and our specific know-how we will increase your productivity.

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