



GA200-VARIO

Boring system for diameters
44 mm - 130 mm

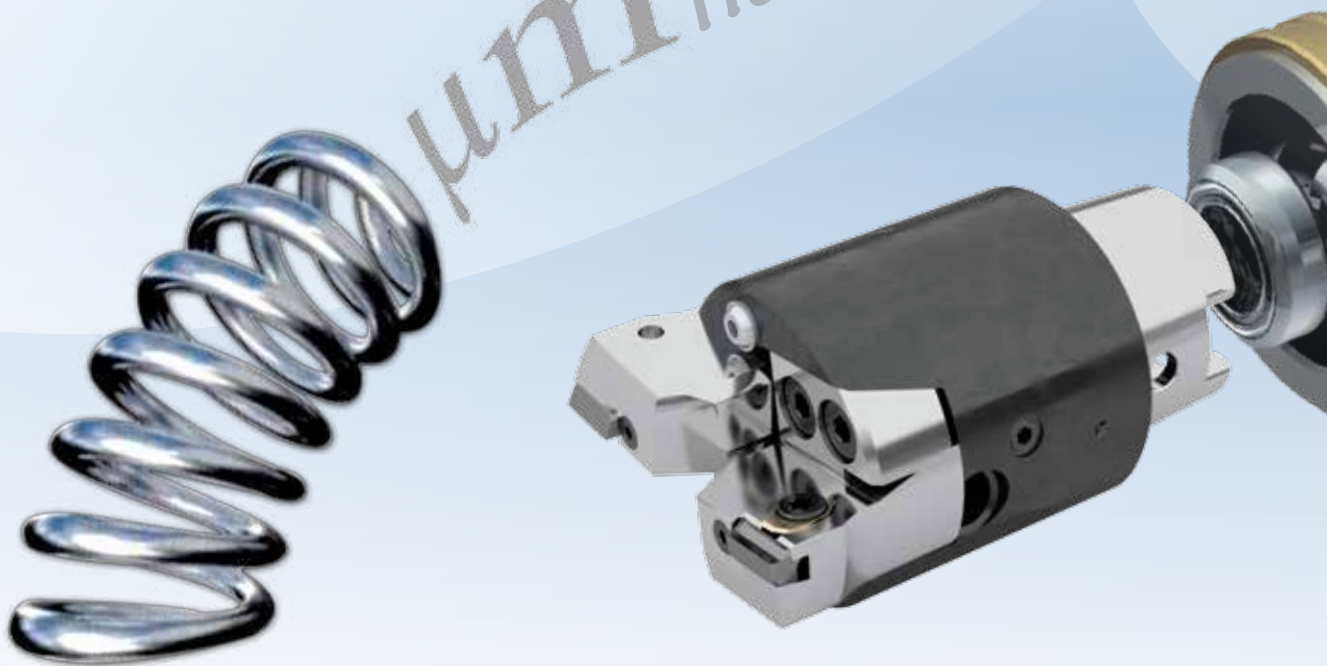


... precise ... flexible ... innovative

The new boring system

Features:

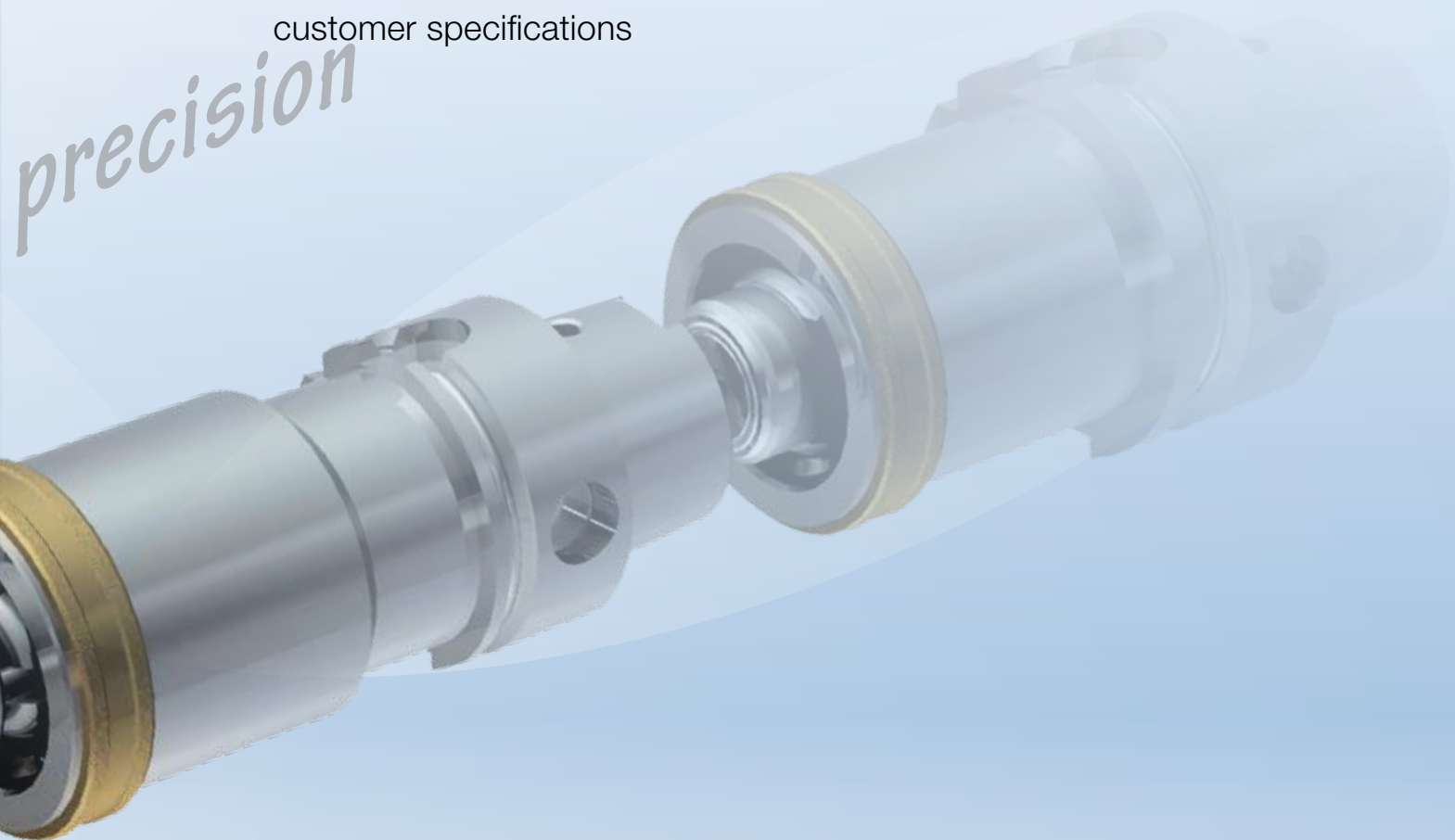
- μm -precise diameter adjustment for fineboring thanks to insert holder with Hollfelder-Guhring tapered screw adjustment
- suitable for roughing with ISO standard inserts as well
- large adjustment range
- internal coolant supply is directed straight to the cutting edge
- different insert holders for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



for diameters from 44 to 130 mm

Advantages of the overall concept:

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





The new boring system GA200-VARIO from Hollfelder-Guhring

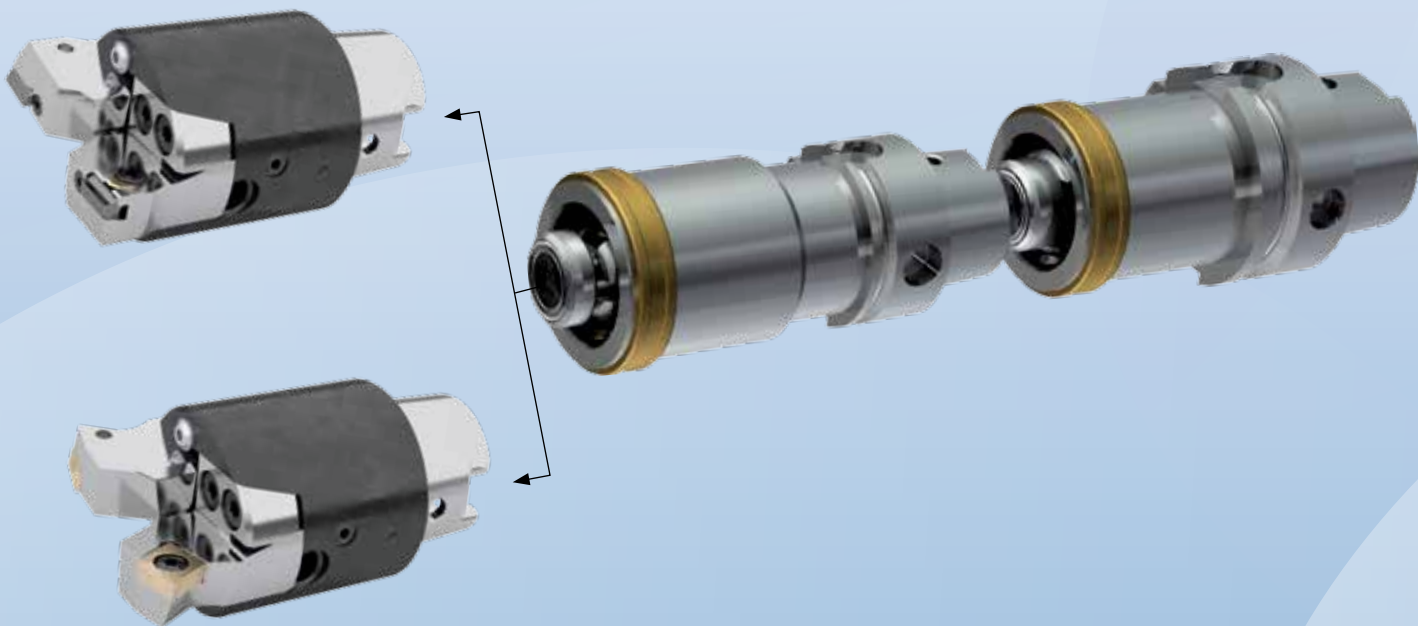
Suitable insert holders and inserts are available for roughing as well as for fine machining.

Depending upon the basic adapter the adjustment range is 11-24 mm in Ø

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

basic adapter 5 => D = 106 -130 mm

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



impresses with high flexibility and enormous accuracy



HOLLFELDER-GÜHRING CUTTING TOOLS

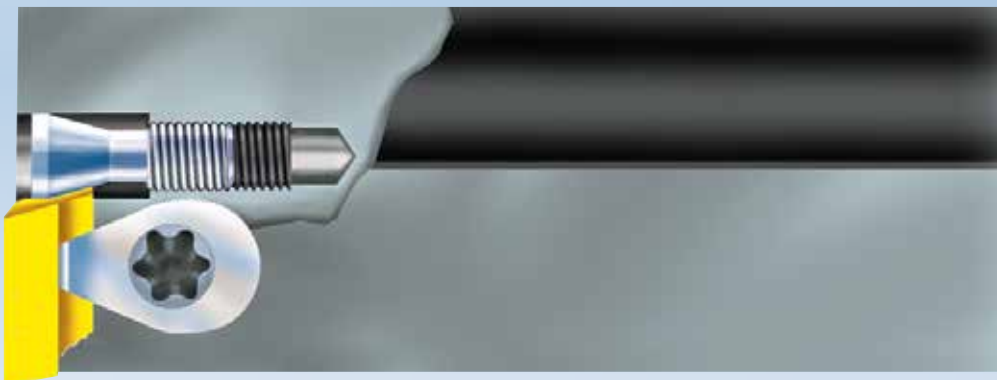
The tapered screw adjustment of the fine boring cartridges provide the possibility to μm -accurately adjust all insert diameters. The capability of this high-performance tooling system can be applied for a variety of machining tasks and is optimally suited for all different kinds of materials as well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

Features of the fine boring holder:

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

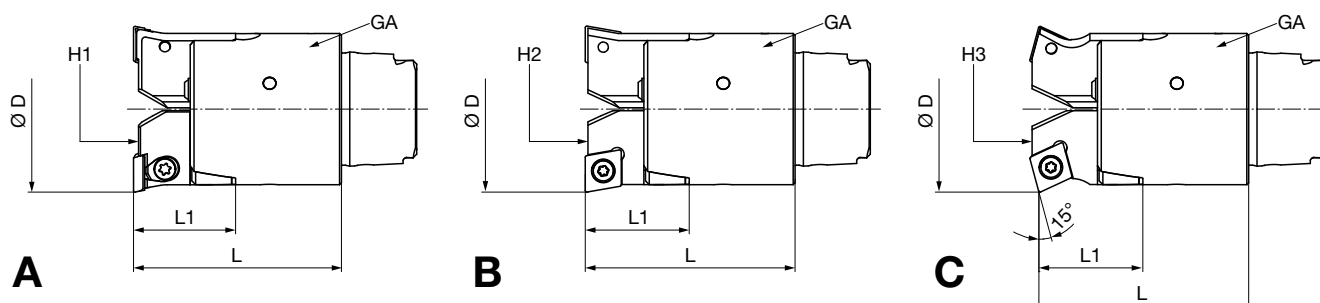
The advantages:

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



Further information regarding this adjustment system as well as instructions can be found on page 14.

Boring system for diameters from 44-130 mm



Basic adapter

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

Fine boring holder

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

Holder for roughing

Diameter D	Length L1	H3 – Holder for roughing 180°	Part no.
44-55 mm	27,5 mm	GD 09T3 0029R	302824702
55-69 mm	27,5 mm	GD 09T3 1184R	302824703
69-86 mm	27,5 mm	GD 09T3 1185R	302824704
86-106 mm	27,5 mm	GD 09T3 1186R	302824705
106-130 mm	35,5 mm	GD 09T3 2251R	302824706
alternative			
Diameter D	Length L1	H3 – Holder for roughing 150°	Part no.
44-55 mm	27,5 mm	GD 09T3 0028R	302824374
55-69 mm	27,5 mm	GD 09T3 1181R	302824378
69-86 mm	27,5 mm	GD 09T3 1182R	302824381
86-106 mm	27,5 mm	GD 09T3 1183R	302824386
106-130 mm	35,5 mm	GD 09T3 2250R	302824390

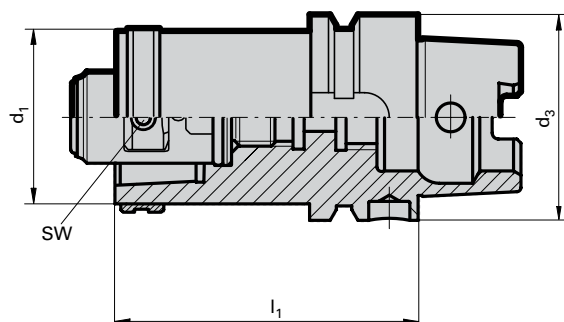
* balancing quality must be checked

Ordering example:

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

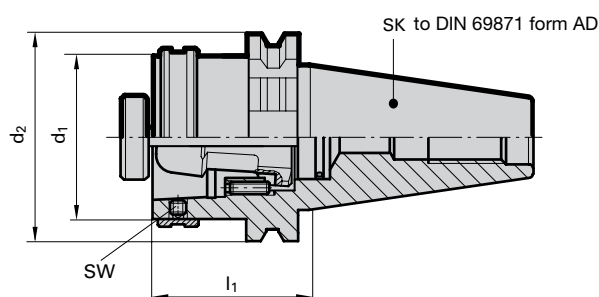
Reductions, basic adapters and extensions

Reductions HSK-A / HSK-C



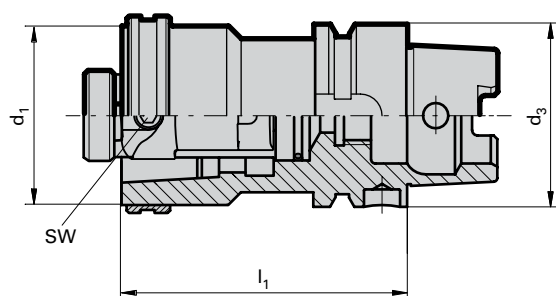
Part no. 4355			
Code		HSK-A	HSK-C
	l_1	d_3	d_1
40,063	70	63	40
50,063	80	63	50
50,100	90	100	50
63,100	100	100	63

Basic adapters SK / HSK-C



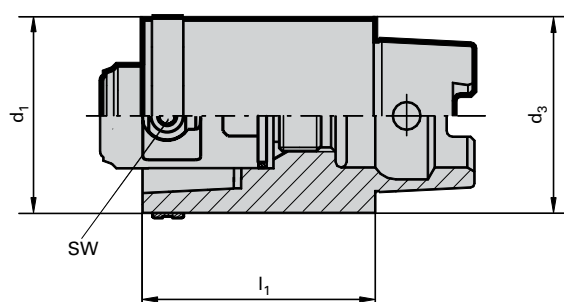
Part no. 4512			
Code		SK	HSK-C
	l_1		d_1
40,040	40	40	40
40,050	40	40	50
40,063	70	40	63
50,040	40	50	40
50,050	40	50	50
50,063	40	50	63

Extensions HSK-A / HSK-C



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

Extensions HSK-C



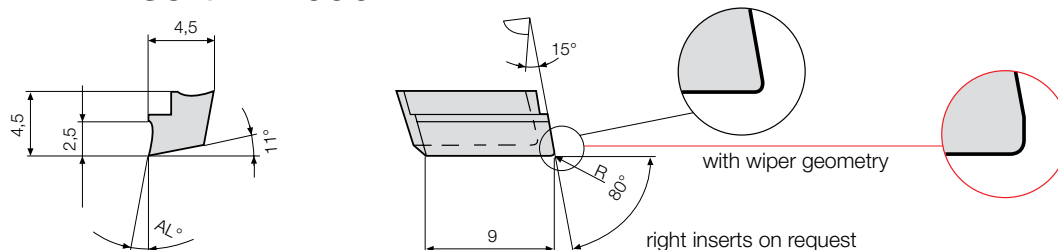
Part no. 4351		
Code		HSK-C
	l_1	d_1 / d_3
50,040	50	40
60,050	60	50
80,063	80	63

Further information can be found in the Guhring catalogue GM300.



Indexable inserts precision ground for GA200-Vario boring systems

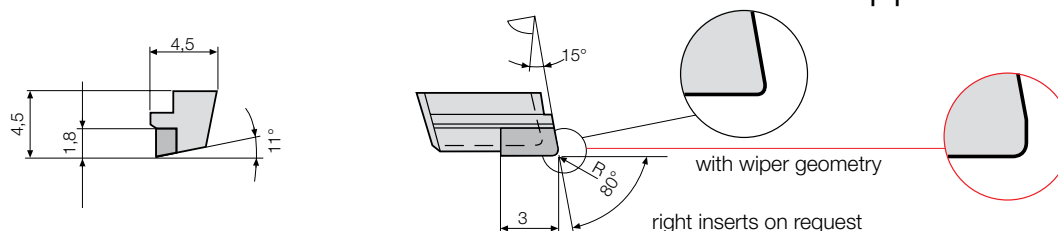
Insert W 4090-..... L



				Part no. 20194 uncoated	Part no. 20460 coated	Part no. 20462 coated
Code	Drawing no.	R	AL°	K10	G12	G16
40,900	W 4090-0225 1000 L	0,2	10	●	●	●
40,901	W 4090-0425 1000 L	0,4	10	●	●	●
40,902	W 4090-0225 1620 L	0,2	16	●	●	○
40,903	W 4090-0425 1620 L	0,4	16	●	●	○

				Part no. 20200 uncoated	Part no. 20465 coated	Part no. 20467 coated
Code	Drawing no.	R	AL°	K10	G12	G16
40,900	W 4090-0225 1011 L	0,2	10	●	●	●
40,901	W 4090-0425 1011 L	0,4	10	●	●	●
40,902	W 4090-0225 1611 L	0,2	16	●	●	○
40,903	W 4090-0425 1611 L	0,4	16	●	●	○

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



				Part no. 20212	Part no. 20213
Code	Drawing no.	R	AL°	PCD	CBN
40,930	W 4093-0018 0000 L	0,05	0	●	
40,931	W 4093-0218 0000 L	0,2	0	●	●
40,932	W 4093-0418 0000 L	0,4	0	●	●
40,933	W 4093-0818 0000 L	0,8	0	●	●

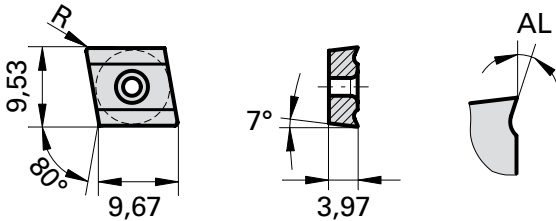
				Part no. 20214
Code	Drawing no.	R	AL°	PCD
40,930	W 4093-0018 0011 L	0,05	0	●
40,931	W 4093-0218 0011 L	0,2	0	●
40,932	W 4093-0418 0011 L	0,4	0	●

● ex stock ○ on request

Solid carbide ISO indexable inserts precision ground

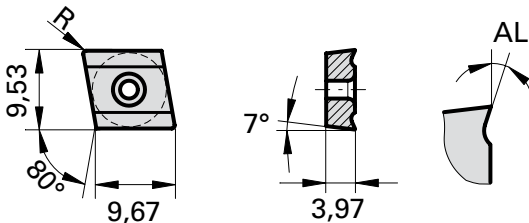


with standard chipbreaker 10°, form C



				Part no. 6678	Part no. 6698	Part no. 6680	Part no. 6686
				uncoated	TiN	TiAlN SuperA	Proton
Code	ISO code	R	AL°	K10	K10	K10	K10
93,020	CCHX 09T302 L 116	0,2	10	•	•	•	•
93,040	CCHX 09T304 L 116	0,4	10	•	•	•	•
93,080	CCHX 09T308 L 118	0,8	10	•	•	•	•
				Part no. 6682	Part no. 6684	Part no. 6676	Part no. 6688
				uncoated	TiN	TiAlN SuperA	Proton
Code	ISO code	R	AL°	P40	P40	P40	P40
93,020	CCHX 09T302 L 116	0,2	10	•	•	•	•
93,040	CCHX 09T304 L 116	0,4	10	•	•	•	•
93,080	CCHX 09T308 L 118	0,8	10	•	•	•	•

with standard chipbreaker 18°, form C



				Part no. 6278	Part no. 6298	Part no. 6662	
				uncoated	TiN	Proton	
Code	ISO code	R	AL°	K10	K10	K10	
93,020	CCHX 09T302 L 216	0,2	18	•	•	•	
93,040	CCHX 09T304 L 216	0,4	18	•	•	•	
93,080	CCHX 09T308 L 218	0,8	18	•	•	•	
				Part no. 6282	Part no. 6284	Part no. 6664	Part no. 6280
				uncoated	TiN	Proton	uncoated
Code	ISO code	R	AL°	P40	P40	P40	P10
93,020	CCHX 09T302 L 216	0,2	18	•	•	•	•
93,040	CCHX 09T304 L 216	0,4	18	•	•	•	•
93,080	CCHX 09T308 L 218	0,8	18	•	•	•	•



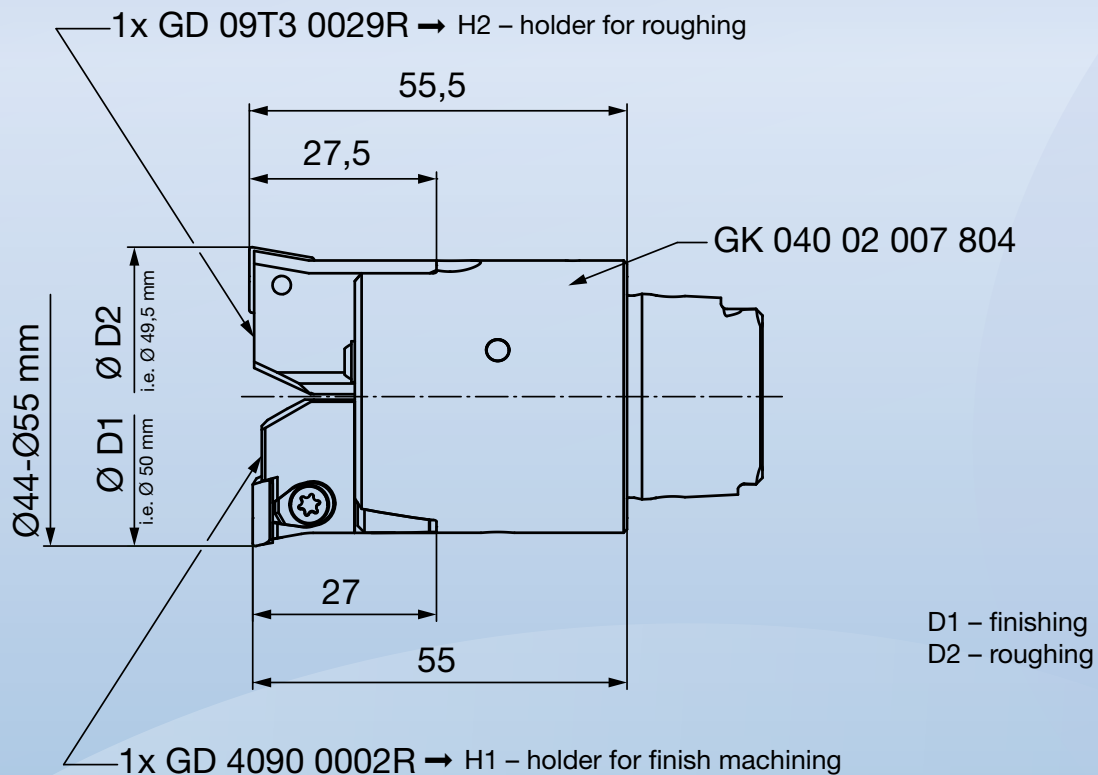
Concept: pre- and finish machining in one step

Technology and advantages

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

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

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



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

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

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

Advantages:

Roughing and finish machining with one basic adapter in one cut

- the roughing operation can possibly be omitted

For the production of holes with high geometric requirements

- very high surface quality
- Maintaining straightness is possible even during interrupted machining processes.

Concept: unequal cutting edge spacing 170°

Technology and advantages

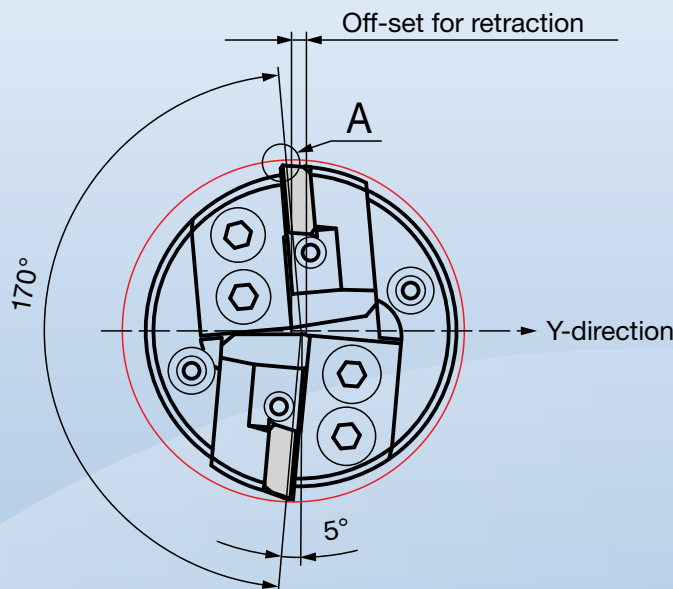
Thanks to the 170° insert spacing the tool can travel up to 0.7 mm in the y-direction following the conclusion of the finishing operation. Hereby, a clearance of approximately 0.06 mm between hole and insert is created!

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

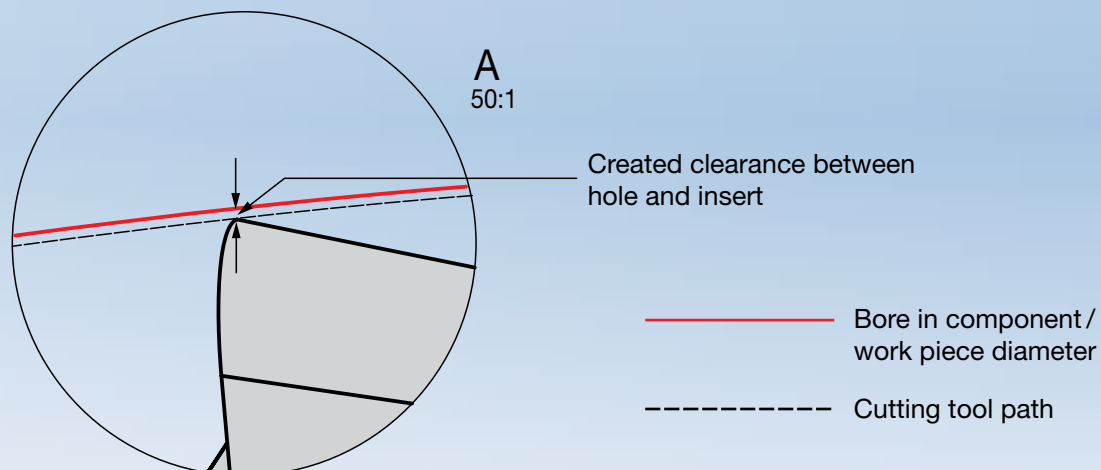
→ higher feed rate through $Z_{\text{eff}} = 2$

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

2. Orientated spindle stop



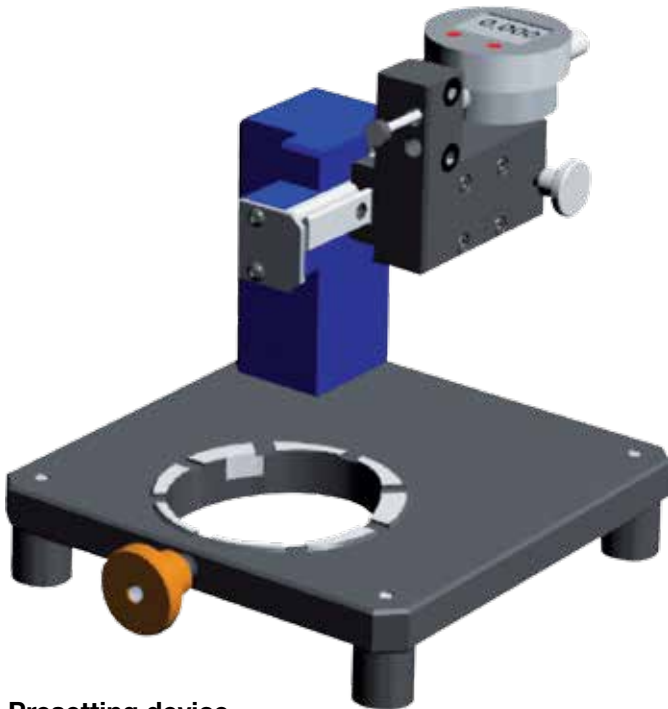
3. Tool travels in y-direction → Tool free!



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

Presetting device for GA200-Vario and

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

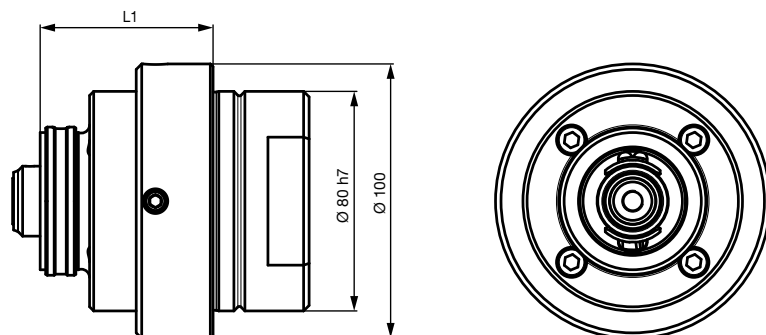


Presetting device

Part no.
302952490

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

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



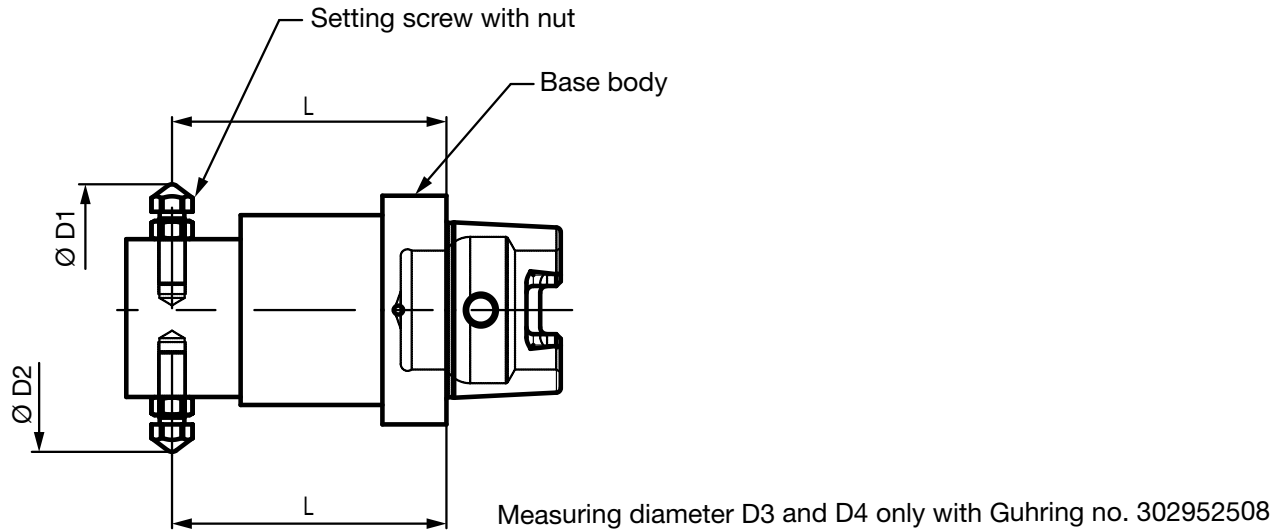
Setting adapter (intermediate flange + adapter flange)

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

required accessories



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

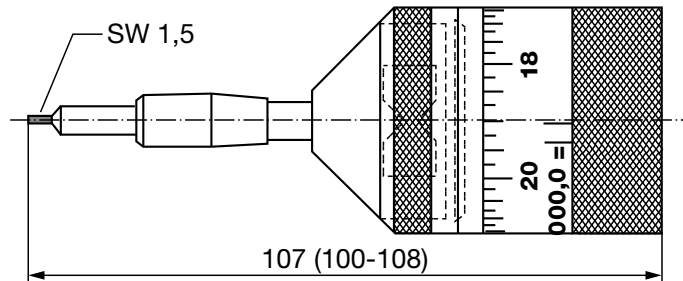


Measuring master

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

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

Setting key for the adjustment of insert type W4090



Setting key (incl. SW 1.5 bit)

Part no.
302896089

Ordering example:

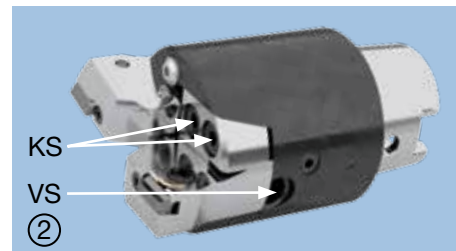
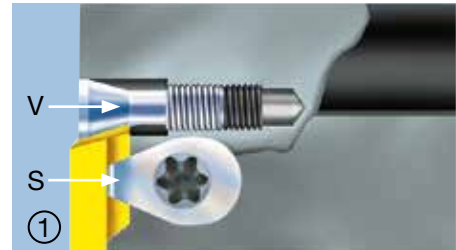
Quantity	Description	Part no.
1 piece	Adjustment tool	302952490
1 piece	Setting adapter HSK 50-C	302954842
1 piece	Measuring master HSK 50-C	302952507

H Adjustment instruction

Adjustment of holder H1 for fine boring

- The top of the tapered screw (V) must be even flush with the top of the holder body (picture 1)
- Install a new insert into the pocket seat and slightly tighten the clamp set (S)
- Tighten the clamping screw (KS) with torque wrench to 1 Nm max (picture 2)
- Adjust both holders using screw (VS) to within $\varnothing 0.20 - 0.25$ mm of required nominal diameter
- Tighten the clamping screw KS to required torque specification

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



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

Changing fine boring inserts

Disassembly/Assembly:

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

Assembly:

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

The use of a torque wrench is highly recommended:

E5001 adjustable 100-600 Ncm E5400-15 fixed 345 Ncm for Tx15

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

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

Tightening torques for clamping sets

Tool body series	Clamping set S	Torque Ncm	Torx size	Taper screw V
H 4090	E 1040	345	Tx 15	E 2997

Assembly tools

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



Finish machining of Pin bore on connecting rod

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



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