

Precision Boring Mill KG

The Next Step of Precision



P-SERIES
K-SERIES
T-SERIES
MILLFORCE-SERIES

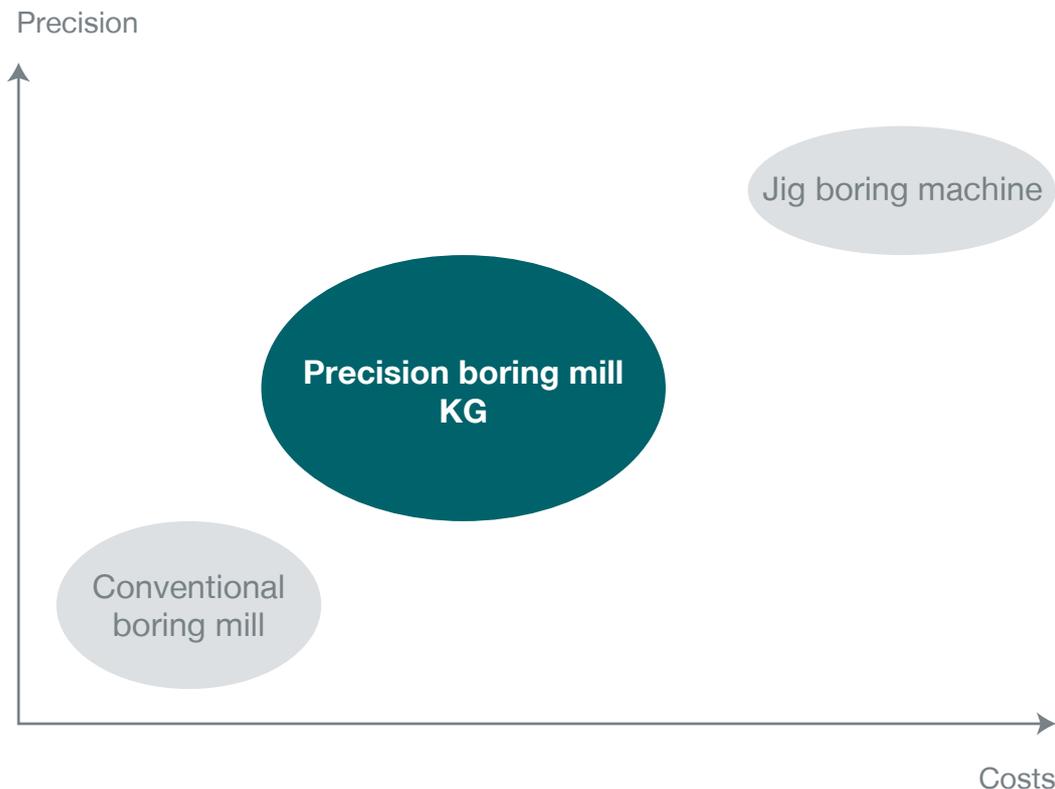
 **UNIONCHEMNITZ**

Precision in Perfection

With its planer type precision boring mill KG, UnionChemnitz achieves the next level of precision. It is the result of a successful mix of many years' know-how, carefully selected materials and the absolute will to innovate. KG is the solution for all those who manufacture and machine their workpieces to the highest quality standards.

Based on the well-established K-Series, UnionChemnitz has developed a machine which unites the advantages of a classic boring mill with those of a jig boring machine. Flexibility combined with much higher precision and investment costs which are well below those of a jig boring machine are the distinguishing factors of the new machine. KG is the first machine tool to close the market gap between a conventional boring mill and a jig boring machine.

Complex, prismatic workpieces with dimensions of more than 2,500 x 2,000 x 1,500 mm and a weight of more than 6 t are machined with extremely high precision.



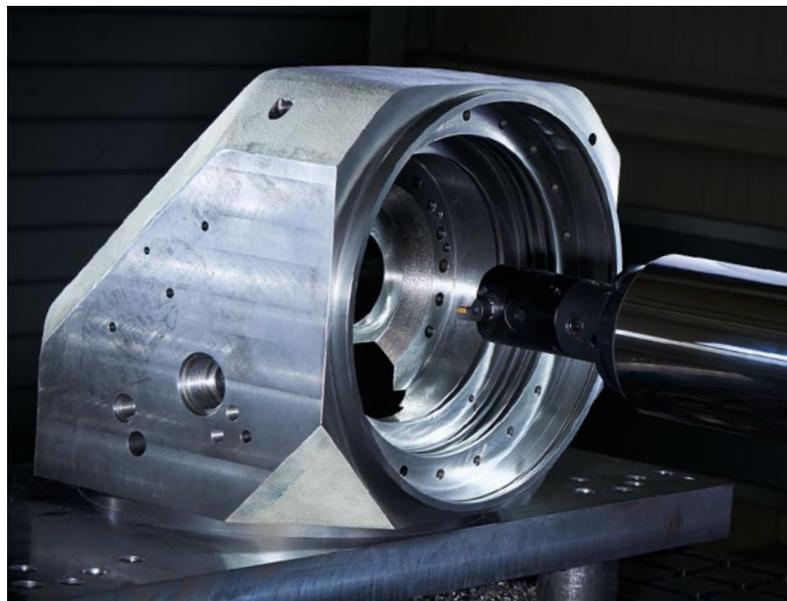
Industries & Applications

Flexibility and highly precise machining results – KG fulfills the highest demands in:

- Coaxiality
- Axial inclination
- Axial deviation – including flip-over machining
- Planeness ($\leq 10 \mu/2,500 \text{ mm}$)
- Evenness ($\leq 8 \mu/\text{m}^2$)
- Parallelism

The precision boring mill has been developed specifically for those highly demanding industries which depend on the highest precision and maximum performance. Among those are:

- Gear manufacturing
- Classic mechanical engineering
- Manufacturing of fittings, pumps and compressors
- Manufacturing of precision parts

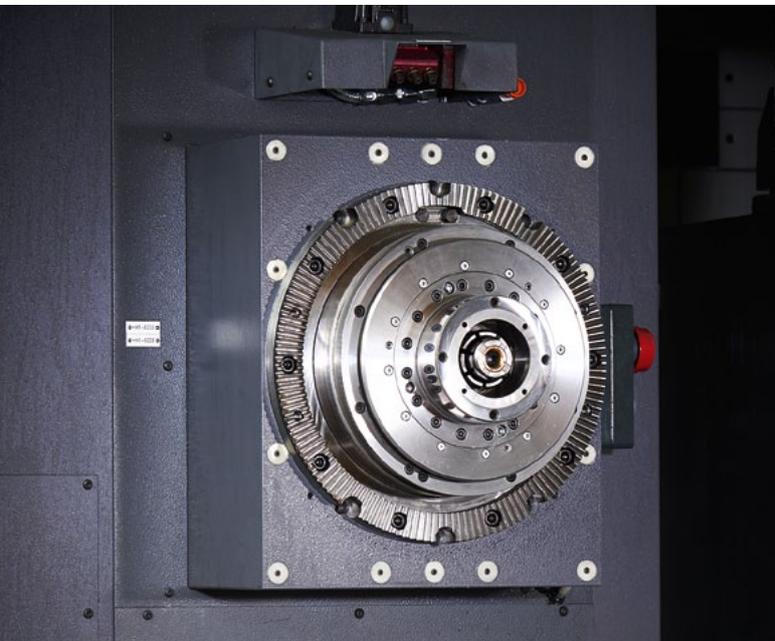


Highly precise machining of a milling unit



Precision boring mill with air-conditioned work area

Advantages & Unique Features



The boring spindle provides high flexibility

The machine concept is based on the well-established planer type boring mills. Various amendments and a specialized thermal management result in a unique combination of flexibility and precision.

Your advantages at a glance:

- Boring mill with high basic precision in all axes
- Boring spindle allows machining of contours deep within the workpiece (W-axis with elevated spindle bearing)
- Extremely high torque
- Excellent access to the work area for manual process monitoring
- Outstanding thermal stability of the whole machine
- Compensation of the remaining deviation of the TCP by the help of intelligent temperature compensation

The Foundation of Outstanding Precision



Established as a reliable solution: the K-Series

The concept of the new precision boring mill is based on the K-Series by UnionChemnitz. K-Series machines have been established in the market for many years and successfully fulfill a variety of applications. Due to their design as planer type machines, they offer the best foundation for highly precise machining results in terms of construction.

These results are achieved by the high stability of the machine on the one hand and its compact build on the other. There is no cross slide: the separate beds of the X and Z-axes can be perfectly aligned to guarantee an even distribution of load. The three guideways of the Z-axis minimize the column tilt.

Focused on Precision

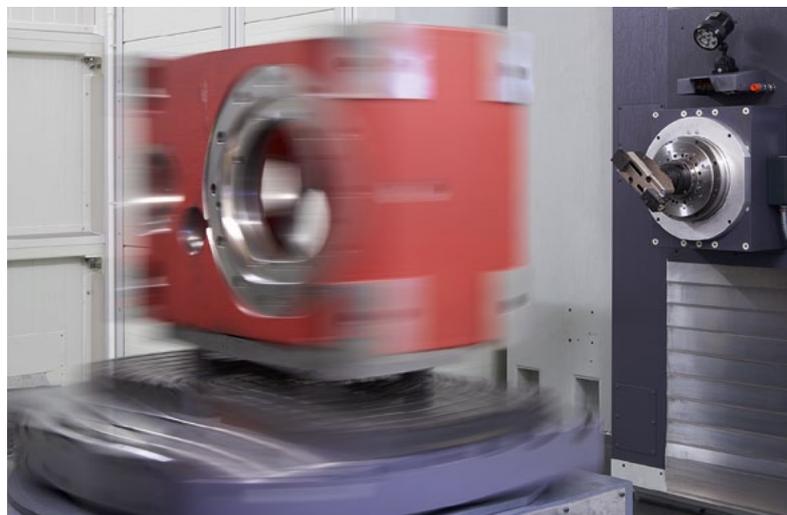
Developed and manufactured to meet the highest standards – KG demonstrates its outstanding quality in every last detail. Various design amendments turned a conventional boring mill into a precision boring mill which sets benchmarks in terms of geometrical precision, positioning accuracy and thermal stability.

Machine technology for highest geometrical and positioning accuracy:

- Strong ribbing for higher stiffness of the entire machine
- Highly precise manufacturing of all structural components
- Assembly to the highest quality standards
- Linear guideways of the highest precision level
- Hand-scraped guideways – including the B-axis (table)
- Maximized table stability (GGG50)
- Precision-ground table surface
- Tool taper HSK A100 for better coaxiality
- Highly precise measuring devices

Technology for highest thermal stability:

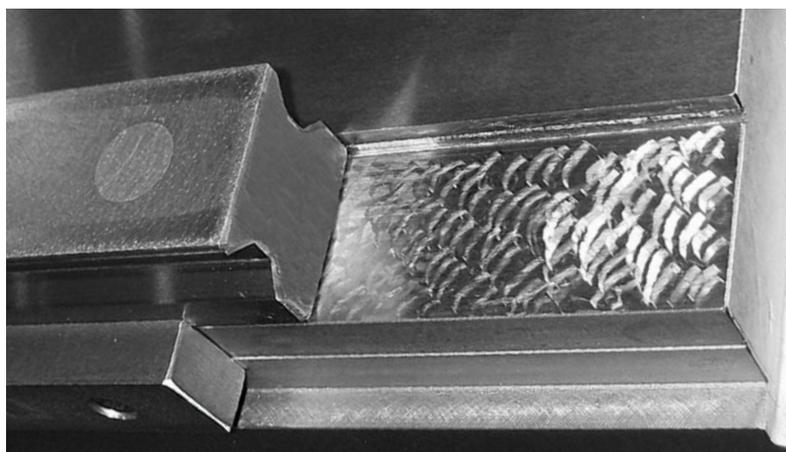
- Ceramic hybrid bearings for the main spindle to avoid heat development
- Length compensation of the boring spindle
- Cooling unit with heating and cooling device
- Temperature-controlled gear oil cooling
- Main spindle and Y-axis drives are water-cooled



Stable table with precision-ground surface for machining demanding workpieces



Activated temperature compensation



Hand-scraped guideways

Customized Packages – Options

For production halls without air conditioning, UnionChemnitz offers optional equipment:

- Air-conditioned operating platform including space to temper measuring devices
- Air-conditioned enclosure of the entire machine, including additional storage space for workpieces

Many additional options available on demand, such as:

- Precision interface for adding equipment
- Comprehensive extension of control functions
- Automatic tool changer



User-friendly operation from the air-conditioned operating platform



Highly precise machining of a gear housing

Positioning accuracy

Positioning accuracy according to VDI / DGQ 3441*

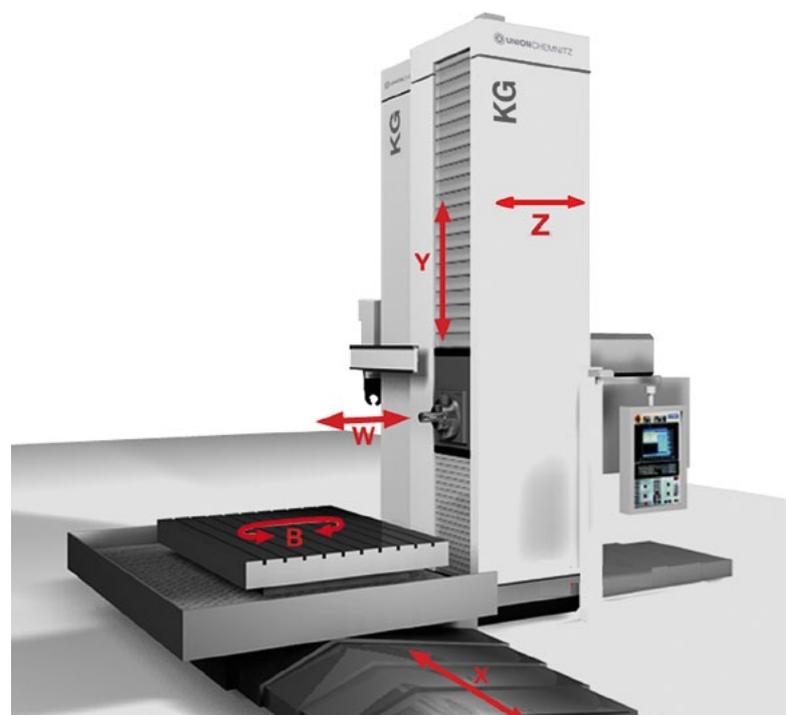
Positions		KG
Positioning uncertainty P_{linear}	μm	< 8
Average pos. tolerance spread $P_{\text{smaxlinear}}$	μm	< 6
Reversal error $U_{\text{maxlinear}}$	μm	< 3
Positioning deviation P_{alinear}	μm	< 4
Positioning uncertainty P_{rot}	arcsec	< 8
Average pos. tolerance spread P_{smaxrot}	arcsec	< 5
Reversal error U_{maxrot}	arcsec	< 4
Positioning deviation P_{arot}	arcsec	< 6

* Tolerances valid in air-conditioned environment only.

Machine Specifications – Example

KG 110/125

X-axis	mm	2,000
Y-axis	mm	1,600
Z-axis	mm	1,500
W-axis	mm	550
Main drive S1	kW	31
Torque, max.	Nm	1,870
Speed, max.	min^{-1}	4,000 / 3,700
Table size	mm	1,000 x 1,250
Table load	t	6
Tool magazine	Pockets	40
Tool taper		HSK A100



UNION
Werkzeugmaschinen GmbH Chemnitz
Clemens-Winkler-Str. 5
09116 Chemnitz · Germany

T: +49 (0) 371 8741-0
F: +49 (0) 371 8741-407

info@unionchemnitz.com

Contact worldwide:



unionchemnitz.com/contact

Ident-No. KG-2016/07-en | Subject to change