

Spindles. Service. Solutions.



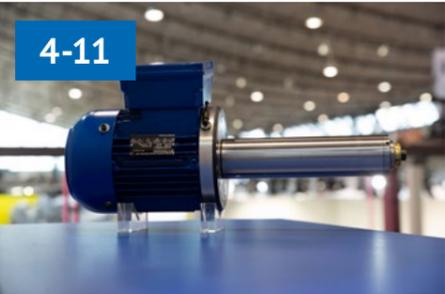
DEUSCHLE

Spindles. Service. Solutions.

since 1966



4-11



Spindles

We do have the right spindle for you. Small series and customized spindles are the core of Deuschle spindles. Since 1992, approx. 3500 new spindles were developed, produced and delivered worldwide.

12-19



Service

We do repair all spindle brands and sizes. More than 50 years of experience and >22000 repaired spindles speak for itself. Latest technology is our equipment. Every spindle is being tested 100% in the test room.

20-25



Solution

We do have the solution all around the spindle itself. Balancing of rotative parts, tool post grinder for lathe machines, low-pressure control units of Fluidax. Accessories like lubrication oil, HSK arbors, grinding arbors etc.

26-27



Deuschle

Our family business was founded in 1966. Starting in a garage, today we employ 40 people. The company is internationally oriented. Even though many things have changed, our quality standards have remained unchanged.

SPINDLES

MADE BY DEUSCHLE



Spindles



... building is not for everyone. More than 50 years of experience with spindles speak for itself. Put the development of your spindle into professional hands, because our motto is: Paying attention to details is the difference between mediocrity and excellence. Our goal: excellence!

Together with you we develop the individual product or choose one of the proven spindles from our versatile spindle program.



This is what distinguishes Deuschle spindles

Proper **selection of ball bearings** is essential to the smooth running of the high-speed spindle. For example, Deuschle works together with well-known manufacturers, who are able to implement the necessary experience and know-how, especially in spindle construction.

Ceramic spindle bearings are primarily installed, which have lower wear, higher maximum speeds and a smaller axial displacement of the shaft compared to steel bearings. Spindles designed for low loads and a low speed range have steel bearings.

The **quality inspection of the products** takes place in a semi-automatic test field and is carried out according to important factors:

- Mechanical and electrical values
- Temperatures
- Vibrations
- Function (sensors, tool change, etc.)
- Pull-in force (kN)
- Volume (dB)

The **arrangement of the bearings** depends on the application load. The front bearing package is usually installed as a fixed bearing, the rear, however, as a floating bearing (with spring preload). This offers a decisive advantage in the machining accuracy (low length growth on the tool side).

High rigidity

Deuschle prefers to use the manual HSK system (HSK-C). Due to the contact between the spindle shaft and the tool plane surface, the stiffness of HSK (hollow shaft taper) is about three times higher than with conventional tapered connections such as BT/ISO taper e.g. DIN 69871.

Excellent change accuracy

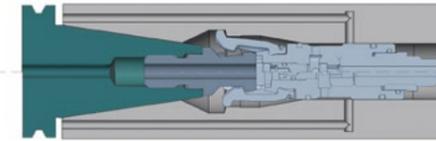
The plane contact between the spindle and the tool enables optimum axial positioning accuracy with the HSK. The reduced conical contact with HSK tools minimizes concentricity errors.

Excellent application in high-speed machining

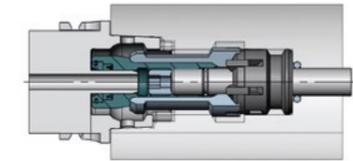
The high centrifugal force increases the effective pull-in force. In the case of the BT/ISO, on the other hand, the centrifugal force counteracts the clamping force. This causes a reduction in the pull-in force.

Excellent torque transmission

The tool of an HSK (hollow shaft cone) has full contact in the spindle cone and on the plane surface when clamped. Due to this defined plane contact, a higher rigidity compared to the BT/ISO (steep taper) is achieved. Further advantages of the HSK are that it is suitable for higher speeds, has an excellent change accuracy (approx. 3µm) and that the pull-in force increases with the speed. Due to the two contact surfaces torques are transmitted force-locking. HSK variants with key stone transmit the torque form-fit.



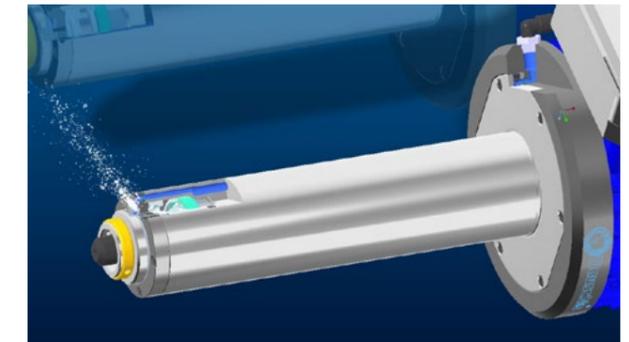
Taper BT/ISO clamped and unclamped position
© by OTT-Spannsysteme



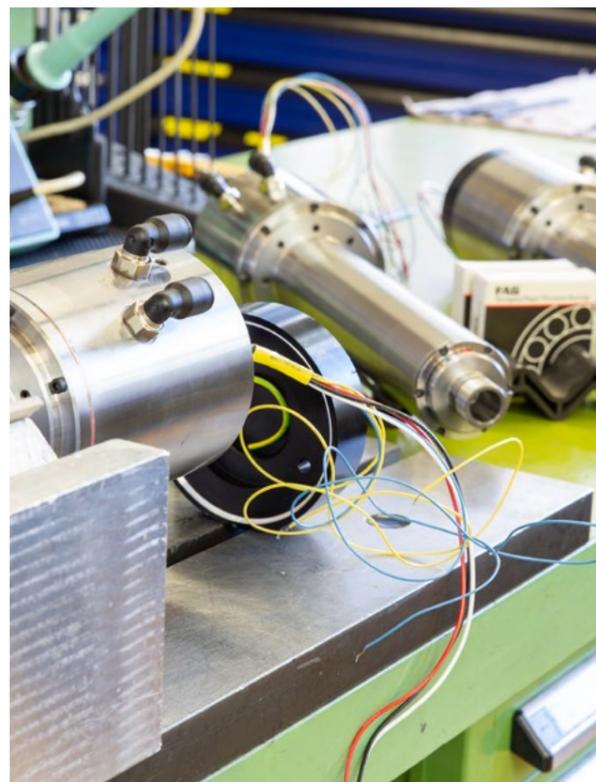
HSK clamped position
© by OTT-Spannsysteme

Deuschle active sealing air technology

The dirt generated during machining is prevented from penetrating the spindle interior by an "active air seal" on the spindle nose. This technique by means of a deep hole drilling through the spindle housing and the labyrinth at the exit point allows admission up to 2 bar. Conventional solutions offer 0.5 bar, which can lead to shorter service life due to contamination.

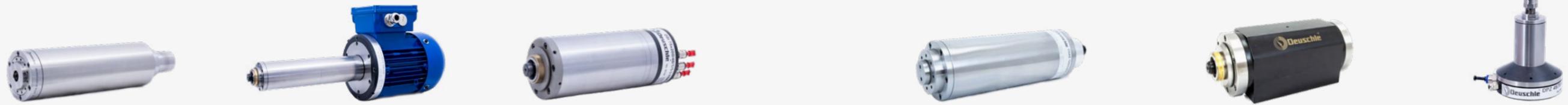


Separate channel for sealing air



Product Overview

The dimensions range are from housing diameter 35 mm to 213 mm. The interfaces are usually HSK-C, external taper and collets. Special designs on request. Here is an excerpt from the standard program.



Economic-Line

Belt-driven spindles

40 mm housing

- Tool adapter: Taper
- Speed: up to 25,000 rpm

50 mm housing

- Tool adapter: Taper
- Speed: up to 27,000 rpm

60 mm housing

- Tool adapter: Cylindrical
- Speed: up to 18,000 rpm

80 mm housing

- Tool adapter: HSK-C50 or External Taper
- Speed: up to 18,000 rpm

100 mm housing

- Tool adapter: HSK-C63
- Speed: up to 18,000 rpm

160 mm housing

- Tool adapter: HSK-C100 or External Taper
- Speed: up to 5,000 rpm

Power-Line

Motor-driven spindles

40 mm housing

- Tool adapter: Collet or HSK-C25
- Speed: up to 48,000 rpm
- Power: up to 1.8 kW

50 mm housing

- Tool adapter: Collet ER16 or HSK-C32
- Speed: up to 36,000 rpm
- Power: up to 3.2 kW

60 mm housing

- Tool adapter: HSK-C32
- Speed: up to 24,000 rpm
- Power: up to 3.2 kW

80 mm housing

- Tool adapter: HSK-C50 or External Taper
- Speed: up to 27,000 rpm
- Power: up to 12.0 kW

100 mm housing

- Tool adapter: HSK-C63 or External Taper
- Speed: up to 18,000 rpm
- Power: up to 18.0 kW

Precision-Line

High-frequency spindles

35 mm housing

- Tool adapter: Collet or cylindrical
- Speed: 35,000 rpm
- Power: 0.2 kW

45 mm housing

- Tool adapter: Collet
- Speed: 70,000 rpm
- Power: 1.2 kW

60 mm housing

- Tool adapter: External Taper
- Speed: 30,000 rpm
- Power: 1.0 kW

75 mm housing

- Tool adapter: HSK-C32
- Speed: 42,000 rpm
- Power: 6.0 kW

154 mm housing

- Tool adapter: HSK-C63
- Speed: 21,000 rpm
- Power: 12.0 kW

170 mm housing

- Tool adapter: HSK-C3
- Speed: 4,000 rpm
- Power: 14.0 kW

213 mm housing

- Tool adapter: HSK-C80
- Speed: 20,000 rpm
- Power: 24.0 kW

Dressing-Line

Spindles for dressing application optional with start-up sensor

35 mm housing

- Tool adapter: DM 8 h5
- Speed: 35,000 rpm
- Power: 0.25 kW

54 mm housing

- Tool adapter: DM 20 h3
- Speed: 15,000 rpm
- Power: 0.2 kW

72 mm housing

- Tool adapter: DM 40 h2
- Speed: 16,000 rpm
- Power: 0.45 kW

100 mm housing

- Tool adapter: DM 40 h5
- Speed: 8,000 rpm
- Power: 1.7 kW

Advanced-Line

Spindles with square housing

120 mm housing

- Tool adapter: double side HSK-C40 or HSK-C50
- Speed: 12,000 rpm
- Power: 4.4 kW

120 mm housing

- Tool adapter: one side HSK-C40 or HSK-C50
- Speed: 12,000 rpm
- Power: 4.4 kW

Air-Line

Air-driven spindles

45 mm housing

- Tool adapter: Collet D12
- Machine adapter: HSK, BT, ISO
- Speed: 70,000 rpm
- Power: 1.1 kW
- optional with sensor feedback signal
- optional 0-10V / 4-20mA

Additional information

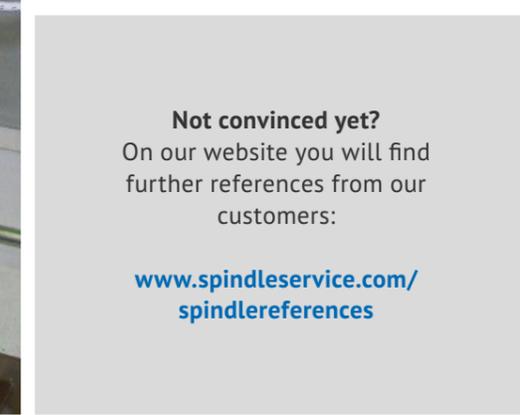
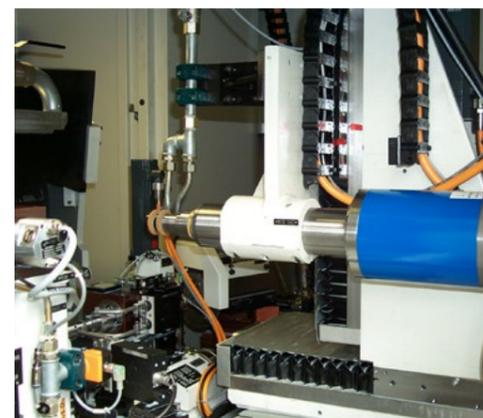
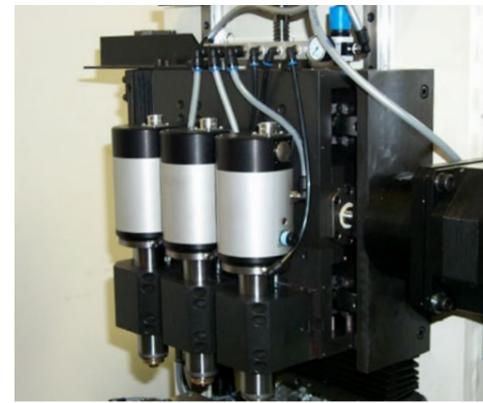
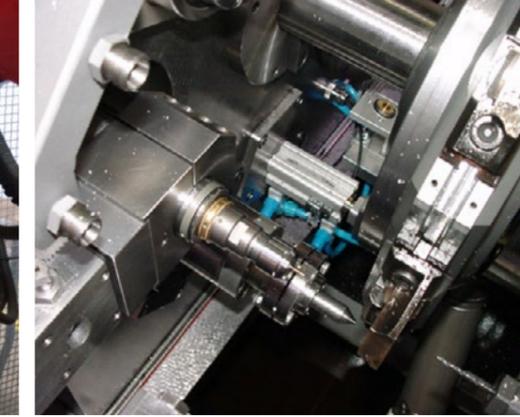
Our technical account managers are available to you personally on site and without obligation. Our website contains technical information for download. Contact us!

www.spindleservice.com/spindles

References of our spindle projects

More than 3,500 new spindles delivered are working reliably worldwide. The applications are very versatile. Almost all industries in the metal and plastics processing industry, as well as the classic custom engineering are equipped with spindles of Deuschle. Whether grinding, drilling, milling, deburring or dressing – let us know your application and the case of need.

We just do it!

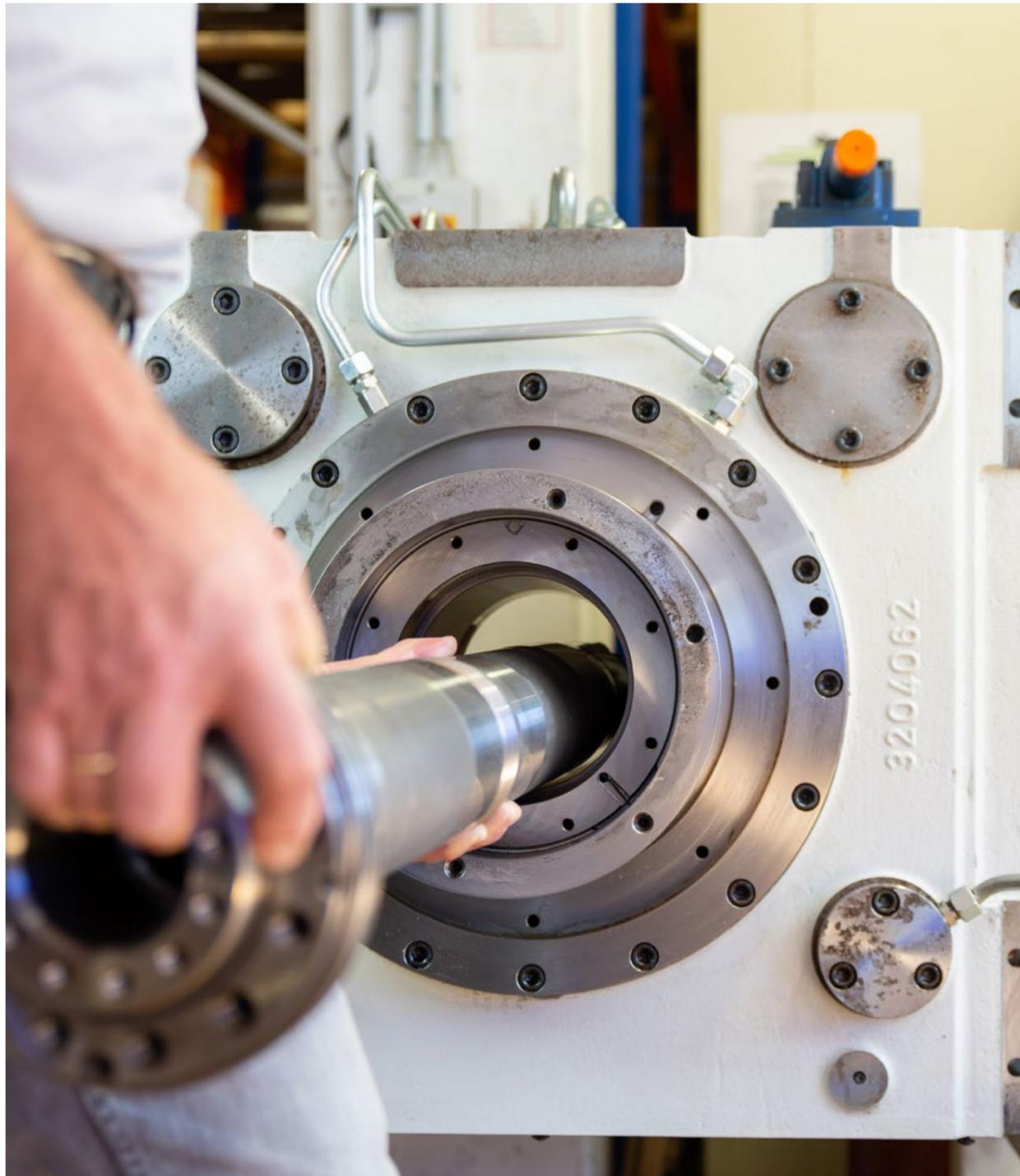


Not convinced yet?
On our website you will find further references from our customers:

www.spindleservice.com/spindlereferences

SPINDLESERVICE





There are no hopeless cases for us!

You receive professional repair and exchange spindles service on spindle units of all common makes and machine manufacturers.

We repair spindles of machine manufacturers such as Deckel Maho, DMGMORI, Gildemeister, Mitsubishi, Hermle, Voumard, Jung, Mikron, Vollmer, Huron, Forest, Chiron, Okuma, EIMA, Quaser, Roeder, Hurco, Weeke, HOMAG, IMA, Fadal, UVA, Lidköping, Bridgeport and many others.

We repair spindles made by Voumard, Fischer, Weisser, Omlat, GMN, GF, Fortuna, Renaud, Precise, KaVo, Perske, Jager, Ibag, Heller, Hauser, Gamfior, Faemat, FAG, Bryant, Colombo, Deuschle, Blohm, SKF, Weiss, Kessler, Junker, UVA, TDM, HSD, StepTec, UKF, DMGMORI, IMT, Jung, Royal, AWEA, Quaser and many others.

Spindle Service

Thanks to the decades of experience of our employees, special training with various spindle manufacturers and our own spindle construction department, we can repair all spindles – motor spindles or externally driven spindles. The active supplier relationships with manufacturers of clamping systems, bearings, rotary joints and seals allow us to obtain original parts in a short time. Spindle-specific components can be calculated, designed and created by PTC's 3D CAD system as needed (shafts, rings, flanges, etc.). Flexible suppliers and in-house manufacturing enable timely production of the highest quality.

As part of the disassembling and analysis of a spindle repair all components such as bearing flanges, housings, spindle shafts and shaft taper adapters (HSK, BT/ISO, etc.) are measured accurately.

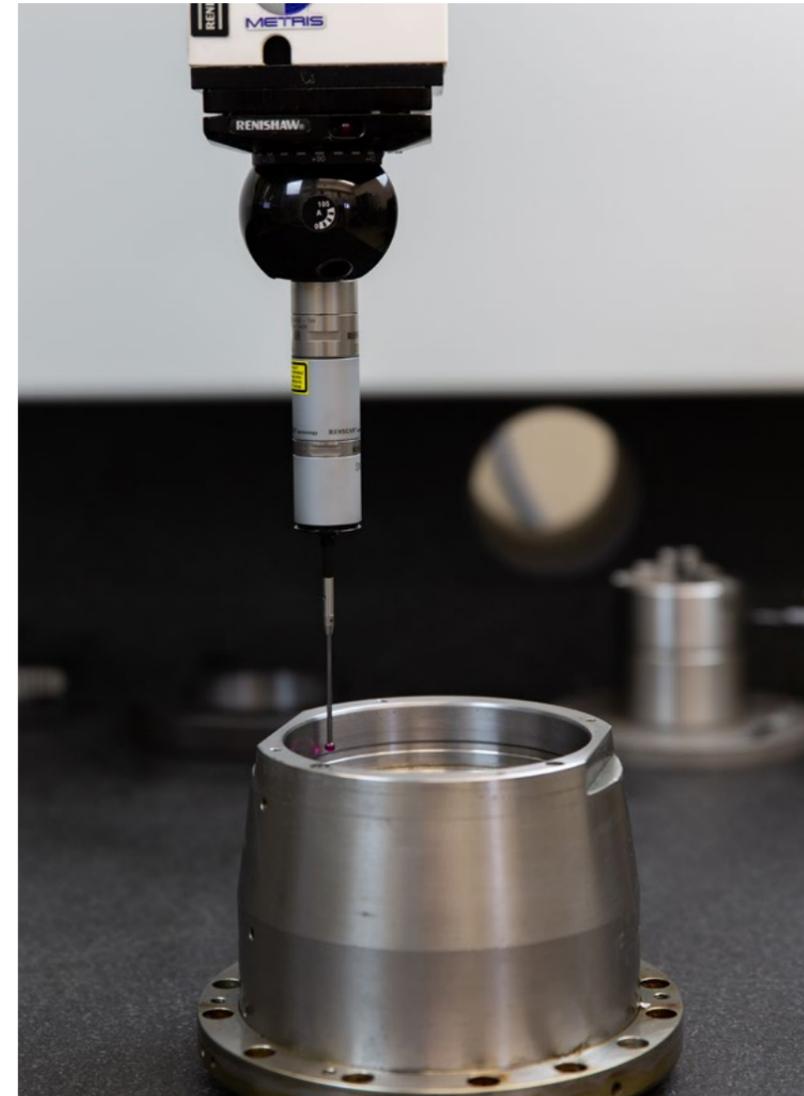
For this purpose, a Metris 3D measuring machine and a Mahr measuring machine are available in order to be able to determine seat and geometry errors with the highest measuring accuracy.

We are able to repair all damages such as worn-out bearing seats, defective clamping systems, leaking cylinders and rotary joints. A machine park with grinding, milling and turning machines is available in the house. Thus, the delivery times can be designed and express repairs can be realized. The result of the individual measures corresponds to the quality and accuracy of the original condition.

Further information is available at:
www.spindleservice.com/spindleservice



*Paying attention
to details makes
the difference!*



*Tested quality
accurate to 0.1µm!*

3D metrology

State-of-the-art 3D measurement technology with all-ceramic gantries guarantees the highest measuring accuracy. The air conditioning of the measuring room is a matter of course. This is where the first building blocks of the 100% quality of spindle repair are created.

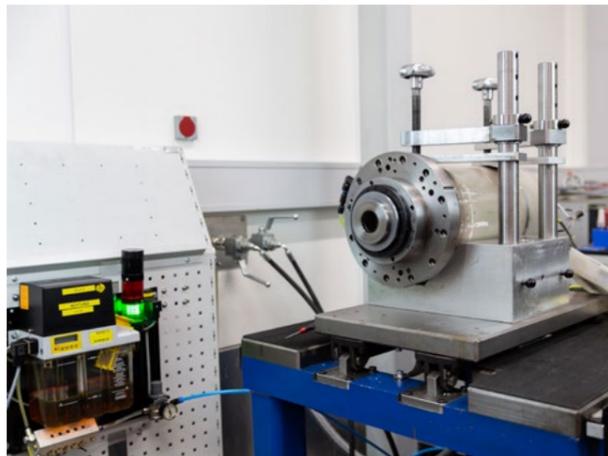
When disassembling and analyzing a spindle repair, the components are measured on the measuring machines. Thus, it can already be determined at this stage whether a distortion of a component is present – e.g. a worn bearing seat or HSK size out of tolerance. The measurement results are the decision basis on which we decide for the processing or the exchange of a component. 300 measuring and test equipment support this analysis.



Test field 100%

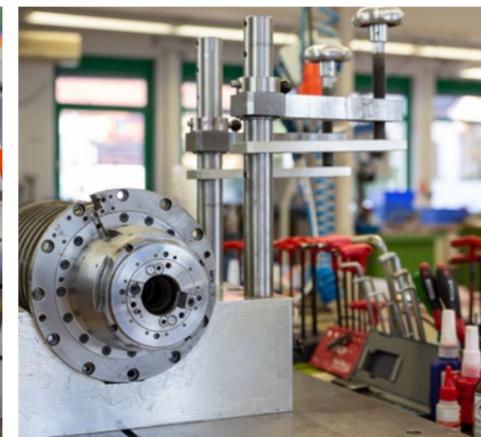
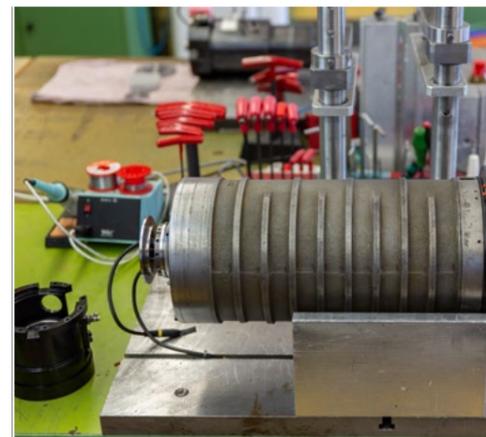
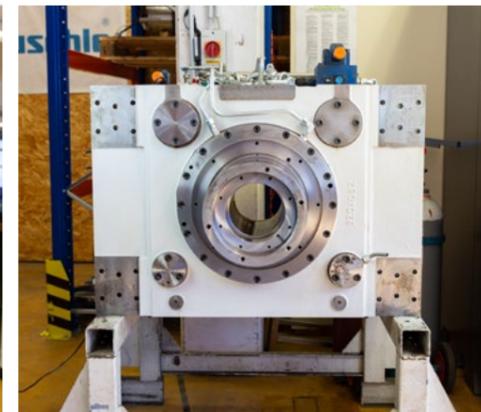
Before each delivery, the repaired spindle is subjected to an extensive test run of approx. 8 hours. The start-up cycle of the bearings is carried out and the residual vibration is measured at maximum speed. Should it be necessary, the spindle – according to DIN-ISO 1940 – can be re-balanced, so that only a small residual imbalance remains. The spindles are tested by us depending on the spindle mounting position in the machine: horizontal or vertical! Nothing is left to chance.

Of course, all functions and parameters are monitored and measured during the final check. The measurement results are electronically documented and archived. For each spindle, an individual, detailed test protocol is created. It will be handed out to the customer. Deuschle is DIN EN ISO 9001: 2015 and DIN EN ISO 14001: 2015 certified.



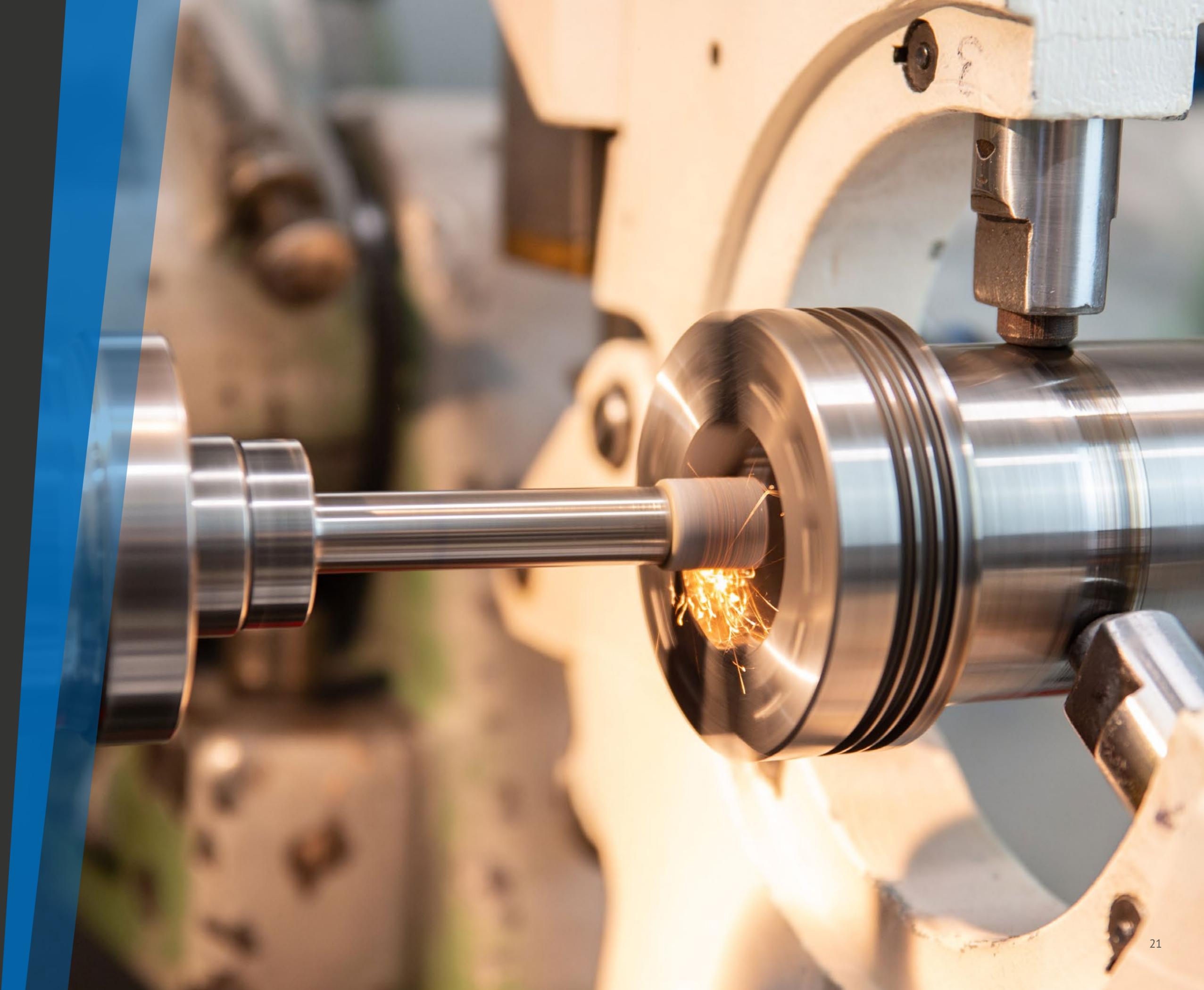
References Spindle Service

Every year more than 700 spindles of all sizes and types are repaired by us.



On our website you will find further references from our customers:
www.spindleservice.com/servicereferences

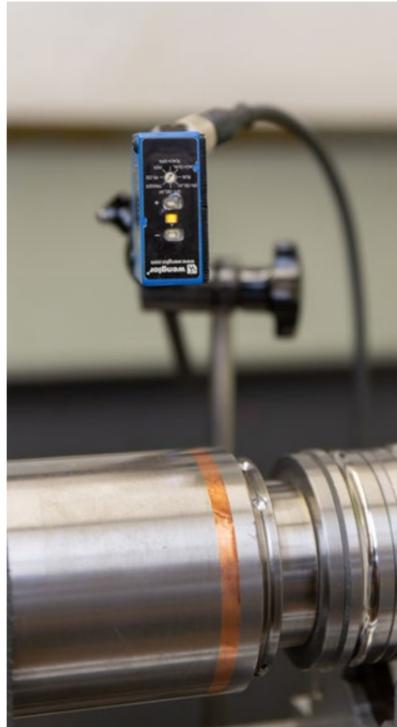
SOLUTIONS



Balancing

Balancing of all stressed parts of the spindle system is essential. This applies equally to milling spindles, grinding spindles and turning spindles alike. It is not only evident in the components inside the spindle, but also in use with a wide variety of tools.

The balancing quality G 2.5 therefore is considered when using spindle systems as state-of-the-art. In many cases, this is not the case and leads to spindle failures. Then, we do support you with analyzes on site, at our factory or quite traditionally as a supplier of these services when sending the spindle to us for repair.



Balancing according to DIN ISO 1940-1

- HSK, ISO, SK, BT tool holders
- Spindle shafts partially assembled or complete
- rotors, rotor shafts
- couplings
- fan blades, fans
- grinding arbors
- up to 200 kg of rotating mass and 500 kg unit weight



FLUIDAX Low-pressure Control Units

In 2012, Deuschle was able to acquire Fluidax products from Switzerland. With conventional cooling lubrication systems, the cooling lubrication is left to chance to the tool cutting edge. Only with large volumes of liquids acceptable results are achieved.

With **FLUIDAX** sprayers you benefit from:

- The targeted cooling/lubrication of the tool cutting edge
- the massive withdrawal of heat at the reference point
- The high exit velocity of the spray jet
- The overcoming of the air cushion in high-speed tools
- The distribution of the sprayed liquid into the smallest droplets (40-60 µm)
- extended tool life
- precisely metered quantities
- even distribution of coolant/lubricant
- low consumption resp. high savings in consumption and disposal costs

Suitable for water, fatty alcohols, emulsions, oils, rust inhibitors and release agents, graphite solutions, fragrances and dyes and much more.

More information at www.spindleservice.com/fluidax



Tool Post Grinder

The Urben Tool Post Grinder ES can be used as a stand-alone or as a support device. Its manageability convinces in many fields of application and is indispensable for:

- machining of small to large-sized workpieces
- the production of turning and grinding operations in one clamping
- the grinding of parts
- the application in mold making
- the grinding of rubber and plastics
- the dressing of diamond and Borazon grinding wheels
- the face grinding and tool grinding

The Tool Post Grinder convinces with:

- A stable cast body for a low-vibration operation
- a quick adjustment of the center-height
- a quick change from OD to ID grinding – without Spindle exchange (!)
- High precision design – Swiss Made!

More information at www.spindleservice.com/toolpostgrinder



Accessory Service

True to the motto: "Everything from one source", we offer you complete, high-quality accessories around the use of your spindle. Please feel free to contact us with your request.



HSK Internal grinding arbors

From HSK-C25 to HSK-C100 in various dimensions.



HSK Grinding wheel flanges

From HSK-C25 to HSK-C63.



Spindle holder

From diameter 35mm to 120mm for exactly cylindrical clamping.

As additional accessories we have for you:

- HSK collet chucks
- drive pulleys
- Torque wrenches
- Collets
- Finely filtered spindle oils (HLP 22, 32, 46, 68)

Consulting service

Our technical account managers and service technicians are there for you throughout Europe. Personally. Do not hesitate to contact us!

More information at www.spindleservice.com/consultingservice

Frequency converter and Cooling units (Chillers)

Frequency converter for operating spindles. Available as desktop unit, 19" rack-mounted device, in housing, as control cabinet unit or on castors. Any size is available to customer or spindle requirements.



Cooling units for liquid-cooled spindles are available from us. Depending on the spindle power, approx. 15% is recommended as cooling capacity. The sizes are depending on the cooling capacity. Available as a stand-alone unit, as a 19-inch rack-mounted unit, in the housing or on castors.

Spindle Hotel

Regular run-in cycle to maintain the immediate readiness of the replacement spindle is essential, especially for grease-lubricated spindles to delay the aging process. Testing and documentation of all spindle functions at a quarterly fixed price.

- Proper storage of the spindles
- Warranty starts on delivery
- Certified ownership of your spindle on our warehouse
- Immediate access to your spindle



Machine Tool Service / Field-Service

Through our specially trained and experienced technicians, and by cooperation with selected partner companies, we can remove the defective spindle from your machine and reinstall it as well as put back into operation after repair or spindle exchange. Of course, all necessary adjustments such as M19, Cycle 19, Cycle 800, etc. are checked.

As part of the installation, a geometric measurement of the machine takes place so that it works again with the highest accuracy.

More information at www.spindleservice.com/machinetoolservice



Company

For decades, Deuschle Spindel-Service GmbH has specialized in the repair and production of spindle units. This began in 1966 with our founder, Karl Deuschle offering his expertise in HSC (High-speed cutting) technology. As a consultant, he laid down the foundation for offering excellent services for spindles. The same approach has informed the company's current market strategy, which is completely customer-oriented and constantly optimized.



Foundation paper



2nd Workshop in 1980



Company in 1989

Due to increasing demand, along with increasingly individual development of mechanical and automotive engineering, Deuschle has been challenged to redefine concepts of service. These innovations range from the classic change of new bearings, the regrinding and balancing of components, as well as retrofits up to the development of new spindle systems with integrated Industry 4.0 capabilities. Our extensive know-how of over 50 years has been honored by many loyal customers.

The Deuschle team consists of over 40 qualified employees in Germany with a subsidiary in South Korea. We operate in several industries including metalwork, energy, electronics, medical technology, as well as in the wood and plastics industries. Wherever we are mentioned, Deuschle is named as a potential supplier and an excellent partner.



Samuel Deuschle
President & CTO

Jonathan Deuschle
President & CEO
Dipl. of BA and Engineering (FH)

Exceptional customer service enables the company to be on the pulse of the times. In doing so, Deuschle focuses on customers who demand timely and customized project specification. For customers with defined machinery repair, we offer contracts to service and maintain their spindles. Deuschle also conducts modifications on existing spindles, with new spindle developments being carried out in close collaboration with the customer. We utilize the "PTC Creo Parametric" CAD system for this purpose.

As a system supplier, Deuschle not only services and delivers the spindle itself, we also supply all peripheral devices that are required for the smooth operation of a spindle system. These include frequency converters, cooling units, tool holders, finely filtered lubricants and other accessories; exchange spindles are available as well.

For further information and product overview, check our company brochures or visit our website.

More information at www.spindleservice.com



There are countless reasons to choose Deuschle! Download a list with only 33 of those good reasons here:

www.spindleservice.com/33reasons

Or visit us at a trade fair and let us convince you personally. Current dates are available on our website.

www.spindleservice.com/tradefairs

We are pleased to meet you!



Proven Quality made by Deuschle!





Contact

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*Paying attention to details is the difference
between mediocrity and excellence
– our goal: excellence.*

