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KRW Leipzig

Machine Tools and Processing Machines

Industry range

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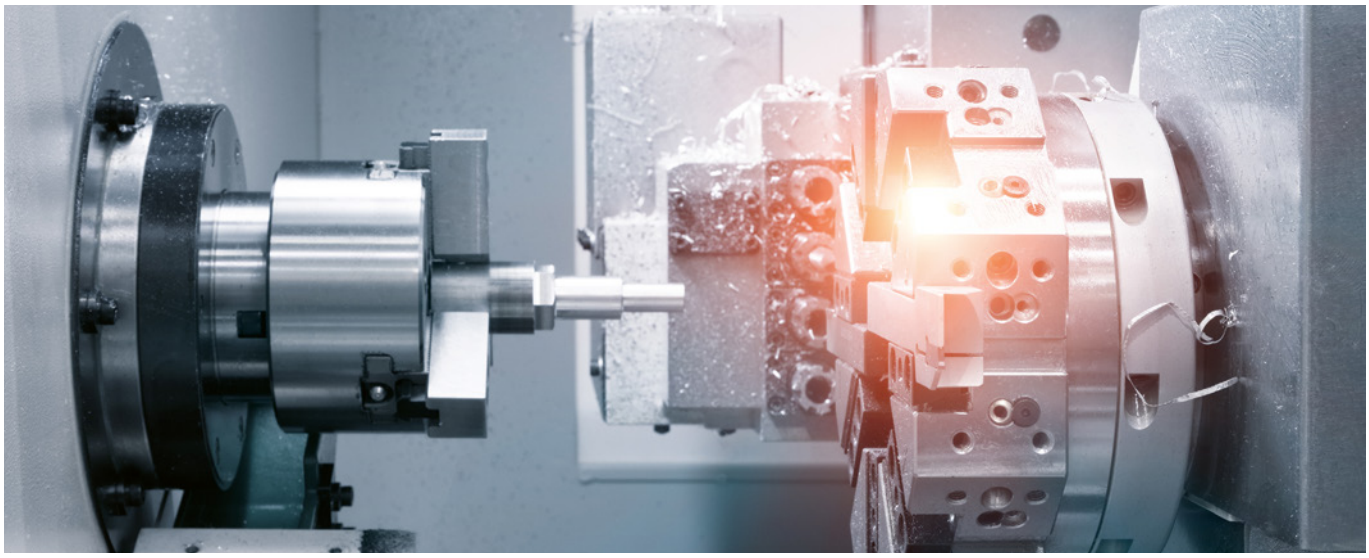
In no other product the requirements for the accuracy of the bearings are as high as in machine tools. Whether it is a spindle, rotary axis or rotary table, bearings play a decisive role in defining the limits of the machining tool. Bearings from Kugel- und Rollenlagerwerk Leipzig GmbH stand for highest precision and reliability. We are very proud of our reputation as an innovator and stand by the world's best machining tool manufacturers as a partner to make their products even better.

KRW's bearings and services will increase the productivity of your machines while minimizing down-time due to maintenance. We have always focused on the efficient use of energy and resources. This is achieved not least by optimized service life and high reliability of the machine designs.

KRW bearing arrangements are deployed in large spindles, rotary tables, steady rests and many other components. In many of the custom solutions that we have implemented, our products are much more than just rolling bearings. From preset bearing packages to "ready to install" solutions including position-ing systems and connections for sensors, pneumatics, hydraulics and lubrication – the rolling bearing experts at KRW will compile the very best bearing design for your individual application.

The perfect rolling bearing for every application

KRW provides all-round support for its customers in the design of the bearing arrangement. Our specialists for application engineering and product development work together with you to find the optimum bearing solution and implement it in practice. We always keep your application and its special requirements for the rolling bearings in mind. Our KRW project management team will accompany you throughout the whole process.



Spindles

The tool spindle – also known as the work spindle or machine spindle – and its bearing arrangement is the heart of every conventional tool or CNC machine. It is used to mount the tool and is driven directly or indirectly by the motor. As the interface between the drive and the tool holder, the tool spindle is consequently exposed to particularly high loads. When it comes to the quality of the spindle-bearing system, the most important factors are the cutting volume and the machining precision. Speed, feed rate and resistance of the material to be processed require a precise design of the spindle bearing.

A particular strength of KRW is the development and manufacture of bearings for large spindles. From standardized spindle bearings to ultra-precision multi-row cylindrical roller bearings for roller grinding machines, our product portfolio offers the very highest precision for achieving perfect machining results.

Types

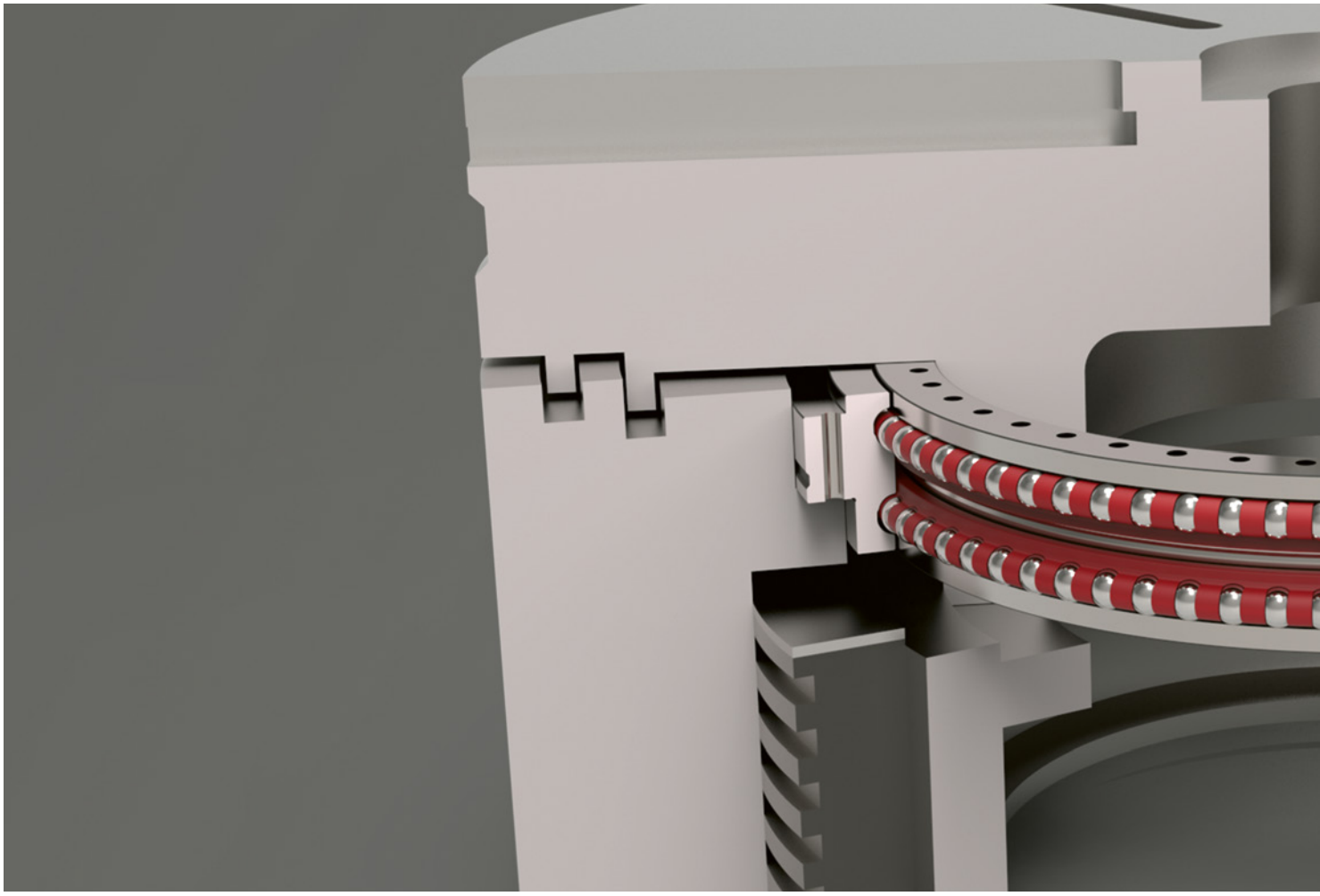
Type	Series
Angular contact ball bearings or spindle bearings	718, 719, 70, 72
Cylindrical roller bearings	NU, N, NNU, NN

Rotary tables

The bearing arrangement of rotary tables requires high running accuracy and rigidity. Since the axial force is predominant and a large tilting moment arises as a result of eccentric force application, special challenges are placed on the bearing arrangement. Due to their adapted internal design and the precise manufacturing tolerances, these bearings achieve better radial/axial runout than solutions for other systems.

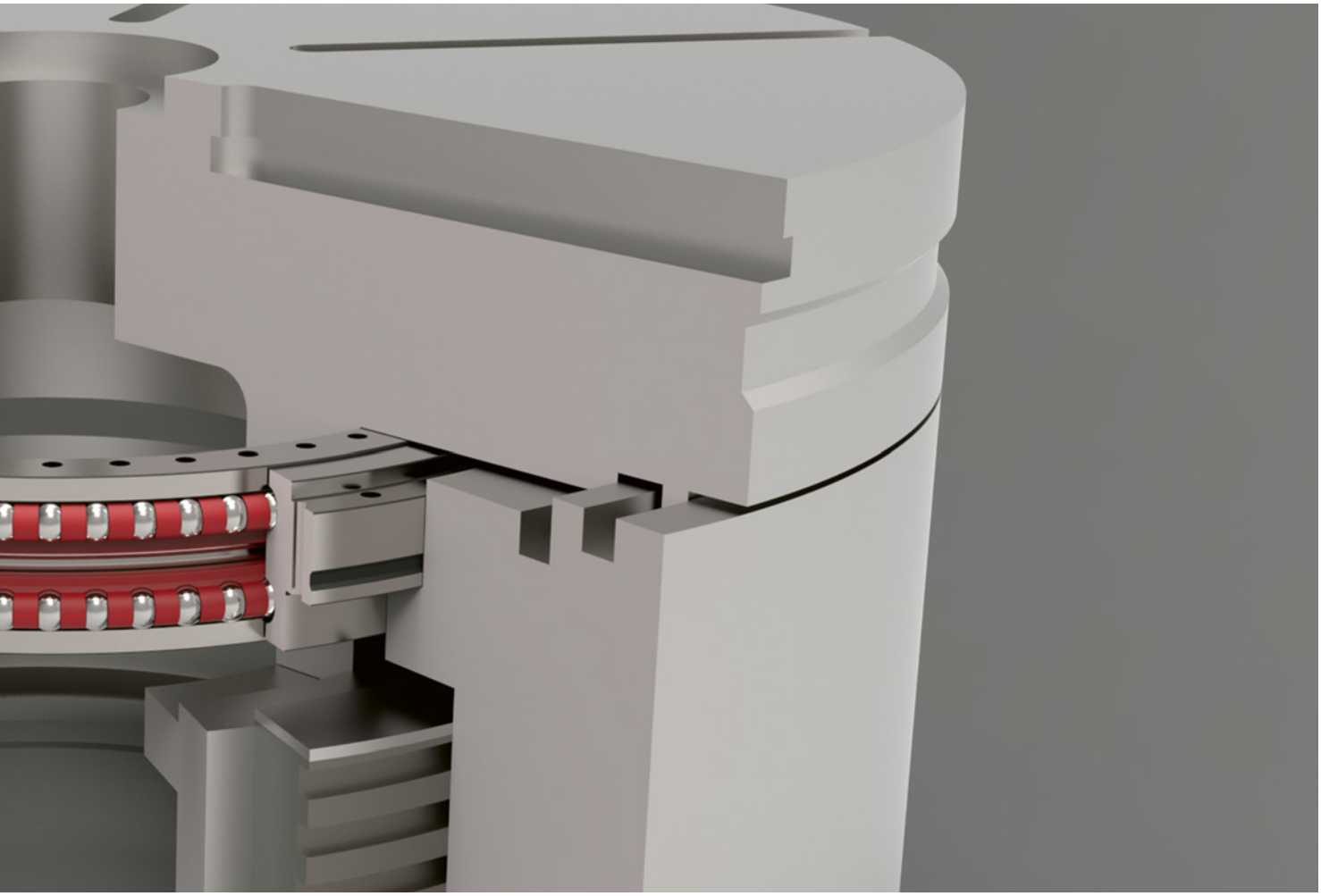
KRW manufactures high precision axial/radial cylindrical roller bearings and precision angular contact ball bearing units for shaft diameters up to 2,300 mm for rotary table applications as well as for dividing heads and multi-spindle drilling heads of machining centers.

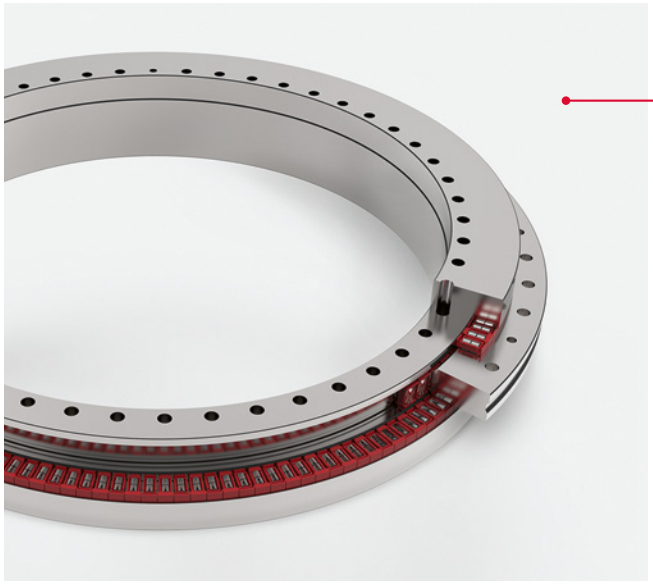
The appropriate design and high-precision manufacture of the adjacent structure is the basic prerequisite to be able to fully utilize the accuracy and running characteristics of the bearing within the rotary table. In addition to the optimal choice of fit, all conversion parts must be manufactured with correspondingly precise form and position tolerances. Depending on the installation, a distinction must be made as to which precision class of the bearing is required (standard tolerance or restricted axial and radial runout – suffix PR50) and whether the inner ring or the outer ring is the rotating part of the bearing.



ROTAB® – KRW bearing solutions for rotary tables

Roller bearings of the KRW ROTAB® series are rotary table bearings of maximum precision for the highest demanding machining tasks in machining tools. The ready-to-install preloaded and greased bearing units support combined loads from axial and radial forces as well as tilting moments. With the ROTAB® series, KRW is offering a modular, interchangeable single-bearing solution for the very first time in the segment of large rotary table bearings, both for heavy milling operations as well as for high-speed turning operations.





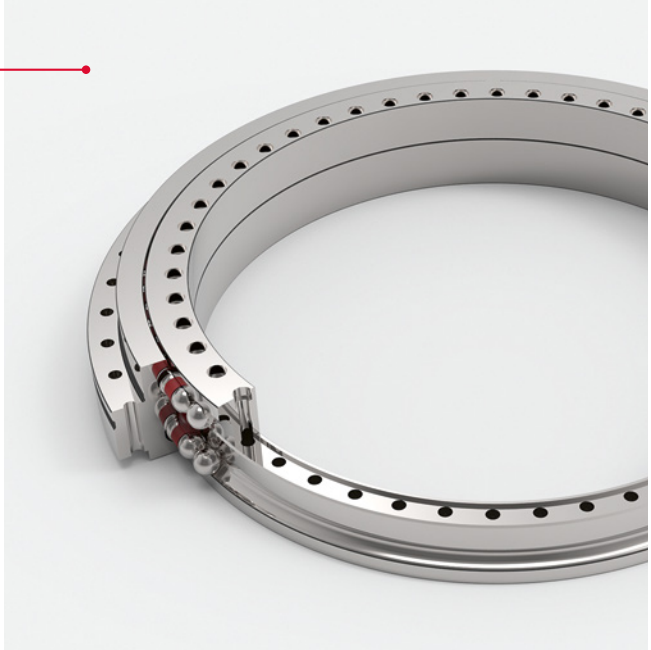
ROTAB® ARS

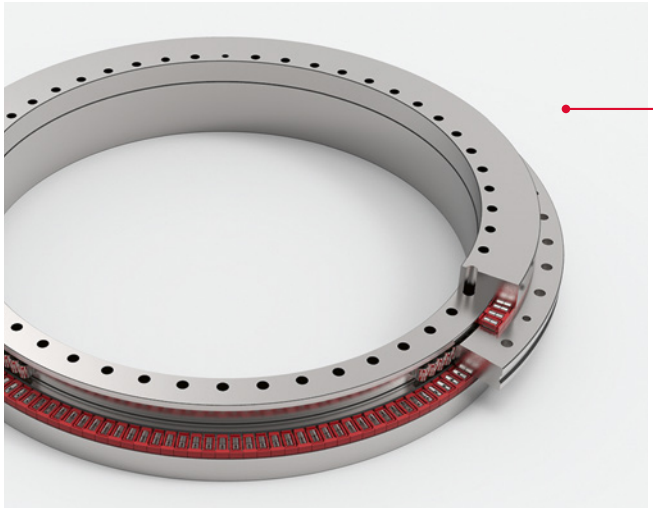
The special inner geometry of the ROTAB® ARS with an optimized roller design and super finished surfaces reduces the frictional moment by up to 50% compared to established competing products. The intelligent cage design also reliably prevents grease loss even at high speeds. This reduces the amount of lubricant required and also increases operational reliability. The associated downtimes due to relubrication are significantly reduced.

ROTAB® DBS

The preloaded angular contact ball bearing unit offers the necessary rigidity for demanding milling and turning tasks and achieves very high rotational speeds. The sophisticated design and the high precision of the bearing lead to a much smaller frictional moment compared to a conventional axial/radial bearing. This results in substantial energy savings over the operating time of the machine as well as very low self-heating of the system.

A simple grease lubrication is therefore sufficient for almost all applications. This significantly reduces both the costs of the table design as well as the maintenance effort for high-speed rotary tables.



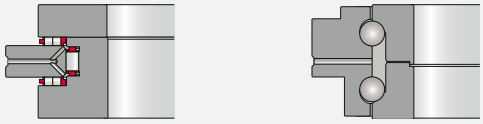
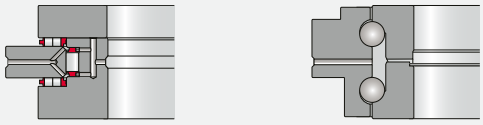
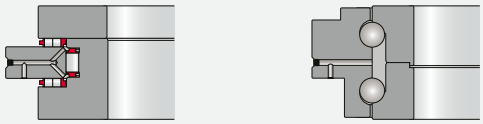
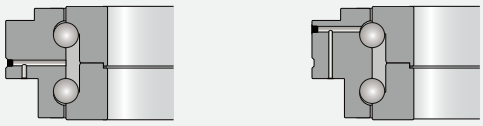
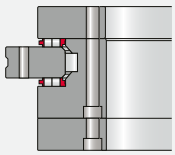


ROTAB® AR

For standard applications of slowly rotating rotary tables, the ROTAB® AR also offers the classic variant of the axial/radial bearing.

The standard version of this bearing type comes with a lubricating grease consisting of a semi-synthetic base oil and lithium soap thickener. The high-pressure absorption capacity of this grease also ensures a stable lubricating film and low-wear running even under high loads.

ROTAB® – Versions and suffixes

Model (design)	Suffix	Description
Three radial relubrication holes in the outer ring	Standard	
Three additional radial relubrication holes in the inner ring	SIR3	
One additional planar-side relubrication hole in the outer ring	SARP1	
Two additional planar-side relubrication holes in the outer ring, on both sides next to the locating pin hole/raceways can be lubricated separately	SARP2	
Six additional planar-side relubrication holes in the outer ring/raceways can be lubricated separately	SARP6	
Axial and radial runout tolerance restricted by 50%	PR50	Axial and radial runout tolerances according to table “bearing tolerances” restricted by 50%
Constricted connection dimension H1	H1	Connection dimension according to table “bearing tolerances” restricted
Constricted connection dimension H2	H2	Connection dimension according to table “bearing tolerances” restricted
Bearing preload for installation with supported L-section ring	VU	
Bearing preload customized, specific to application	VAX.VRY	X corresponds to individual axial preload in µm, Y corresponds to individual radial preload in µm
Ungreased bearing	L0	Bearing is delivered in an ungreased, preserved condition
Marking of the tightening scheme	E10A	Marking of the tightening scheme for screws on the outer and inner ring
Individual specifications	FV5XX	Customization

If you have any questions regarding the design or technical details of our ROTAB® series, please contact the KRW application technology team. We will of course support you in the design and arrangement of your table bearing.

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Flexible manufacturing

We are partners of our customers, so we are always working to make you even more competitive. That is why Kugel- und Rollenlagerwerk Leipzig GmbH continuously invests in the development of new, innovative and future-oriented products. As a medium-sized rolling bearing manufacturer, we are very proud of our high vertical range of manufacture. We employ variable manufacturing cells and state-of-the-art processing technologies in all areas of production.

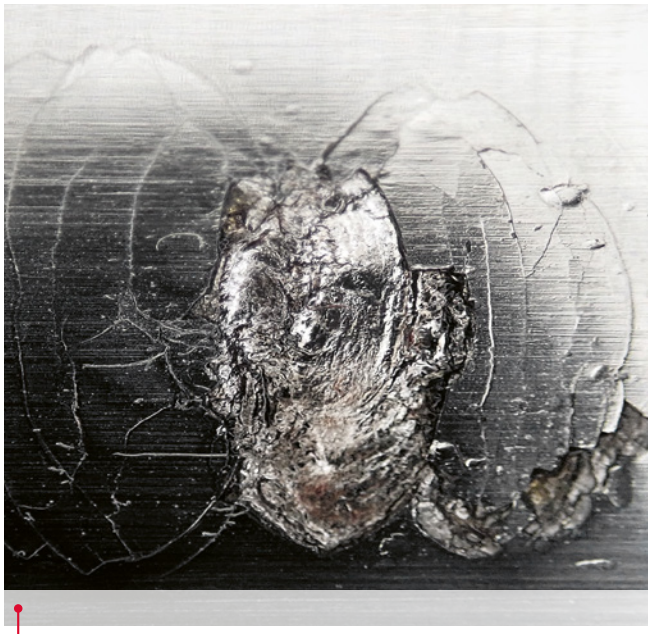
Our expertise for your success

Development competence and flexibility are what define KRW, especially when the standard is not the solution. Our experts in application technology and product development always understand the bearing as an element of an entire machine. This is why we are able to support our customers with our well-founded knowledge and find the best solution for every bearing arrangement.

- Standard rolling bearings
- Bearings in special dimensions
- Integrated bearing solutions
- Customized rolling bearings
- Application-optimized bearing solutions
- Rolling bearing components
- Special precision components
- Rolling bearing accessories

Service and Engineering

In addition to the common standard roller bearing types, the KRW portfolio offers an extensive range of special bearings for individual bearing solutions. Our application engineers will support you from the selection and design of the best roller bearing solution through to assembly and disassembly on your site.



Close up of a material fatigue

Mounting support

Pre-damage during assembly or handling of rolling bearings is the second most common cause of premature bearing failure after lubrication. Heavy and large rolling bearings in particular are not easy to assemble. They can be easily damaged by carelessness, incorrect transport or errors made during assembly.

Avoid such unnecessary problems and costs! Our engineers will advise you before the installation of the bearing and help you to avoid initial mistakes. We recommend the best assembly strategy and are also available to support you on site.

Diagnosis and damage analysis

Rolling bearings are by far one of the most heavily loaded machine components. Thus, in the case of machine defects, the most obvious signs and massive damage can often be found on the bearings.

However, the rolling bearing itself is only rarely the cause. We help you to find the cause of the bearing failure and to avoid damage in the future.

Take advantage of our experience and our extensive capabilities:

- Visual bearing diagnosis
- Lubricant analysis
- Metallographic examinations and evaluation of roller bearings
- Metrological analysis of all components
- Measurement of form deviations and surface structures of roller bearing components
- SEM examination for the detection of e.g. elements or current passage
- Verification of bearing design and calculation of bearing arrangement
- FE analysis of machine components and strength analysis

The experienced KRW application technology team will be pleased to support you.

Installation manual for rotary table bearings

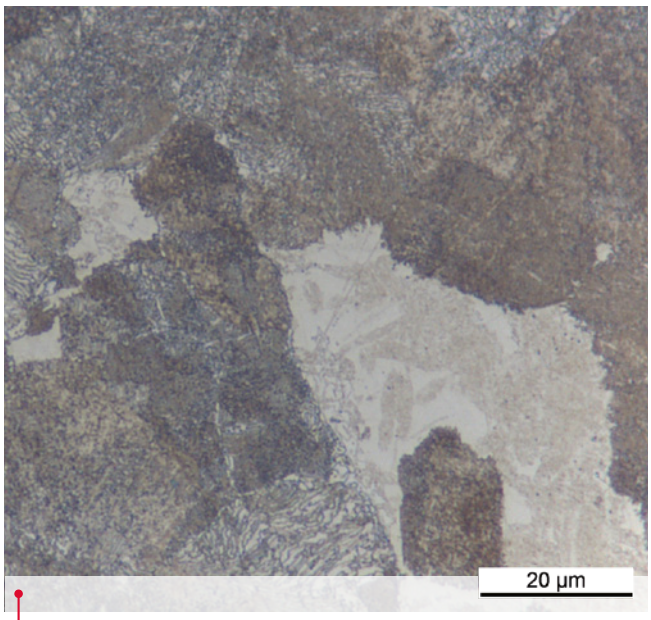
Quality and Certification

High-precision roller bearings require first-class quality. This is ensured by our innovative manufacturing processes, our quality management system and our high standards of occupational safety and environmental protection. Quality assurance is an important part of our manufacturing process and is supported by regular audits. This allows us to guarantee consistent and highest product quality to our customers.

Material testing

In addition to material technology tests such as hardness testing, metallographic examinations to determine the chemical composition, determine the degree of purity and assess the respective microstructures have become standard for roller bearing applications.

Ultrasonic, magnetic particle, eddy current and grinding burn tests are also carried out in our in-house materials testing laboratory. Thus, we are able to ensure the quality of the materials before and after heat treatment.



Microstructure of a rolling bearing component

Certified quality

Our quality management is certified according to DIN EN ISO 9001. In addition, KRW meets the high requirements of the energy management system of DIN EN ISO 50001.

As a Q1 supplier of Deutsche Bahn with manufacturer-related product qualification (HPQ) KRW has been qualified to supply safety-relevant components such as wheelset bearings for more than ten years.

Notes

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