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KRW Leipzig

Rolling bearings for wire rod rolling mills

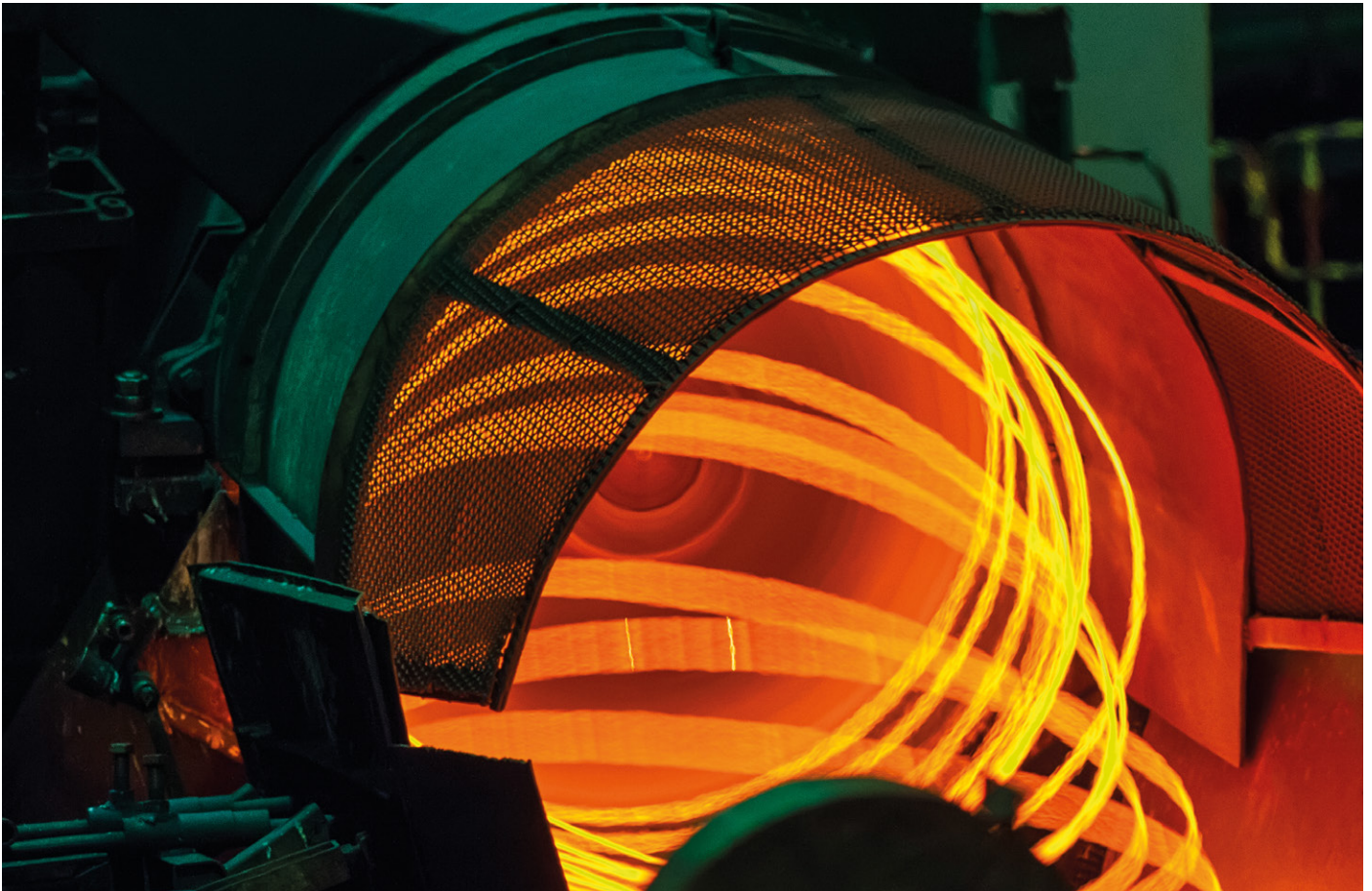
Product range

Product range

Rolling bearings for wire rod rolling mills

Roller bearings used in wire rod rolling mills have to withstand high loads. Very high forces are applied at rolling speeds of up to 125 m/s and sudden load peaks during the first pass of the rolled material. KRW bearings are the best choice here.

Rolling bearings in wire rod rolling mills are used for the safe and accurate bearing arrangement of shafts, axles and bevel gearboxes. High speeds and dynamic loads represent a major challenge here. Depending on the shape and temperature of the rolled material, the initial peak loads are more than twice the rolling force or rolling mill torque. The result is a significant reduction in the service life of the rolling bearings.

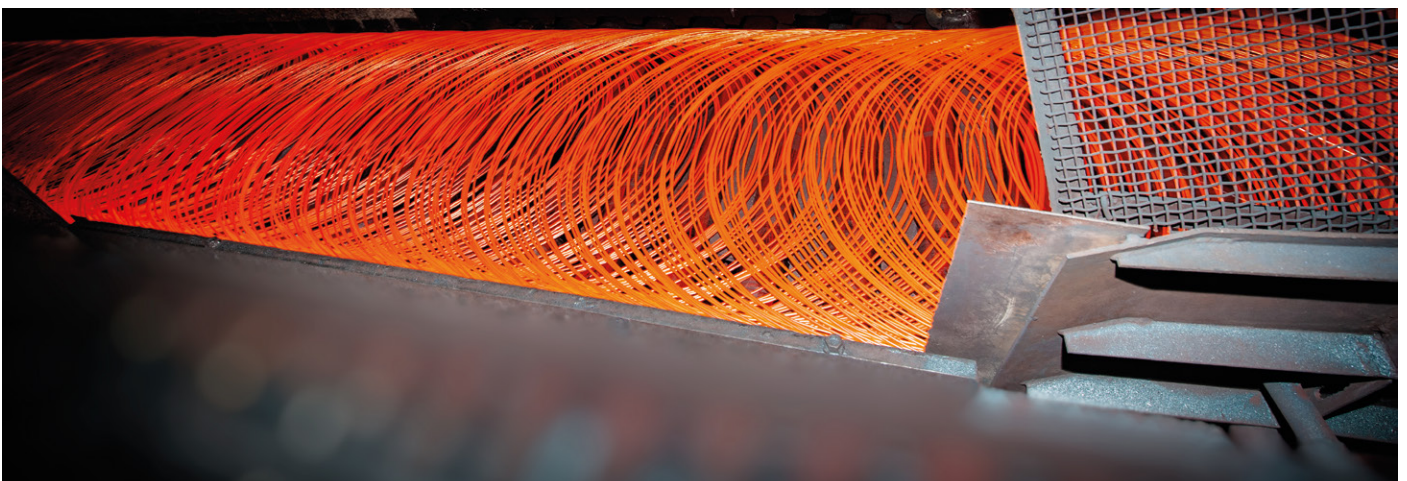


In order to ensure the durable and safe operation of the wire rod rolling equipment, high-precision special bearings are used that can absorb the forces that occur, and guarantee low-friction and low-vibration rotation with the components. KRW manufactures precision bearings to DIN 620 with accuracy standards P5–P2 especially for this demanding application. In doing so, long, expensive downtimes are avoided, while a high quality of rolled products is achieved.

Special operating conditions require special rolling bearings

The combination of quality, development expertise and flexibility – which is rare in the rolling bearing industry – makes KRW the ideal partner when the standard on offer is simply not the solution you require. Our experts in application technology and product development always understand the bearing as an element of an entire machine. So we are able to find the best solution for your bearing arrangement. As a medium-sized company, we are very flexible, so that any adaptation and innovation can be realized easily and quickly. The reasons for a customized bearing solution are different, and the possibilities are varied.

Special rolling bearing designs are primarily required when the operating conditions demand special properties from a bearing type. Together with the customer, a requirements profile is created that takes into account the expected specific conditions of the future area of application. Especially in the area of special applications, additional properties are often expected from the rolling bearing that cannot be reproduced by a through-hardened standard steel. KRW also manufactures bearings and bearing components using special materials for these applications. All KRW bearing components are produced, tested and assembled in Germany.

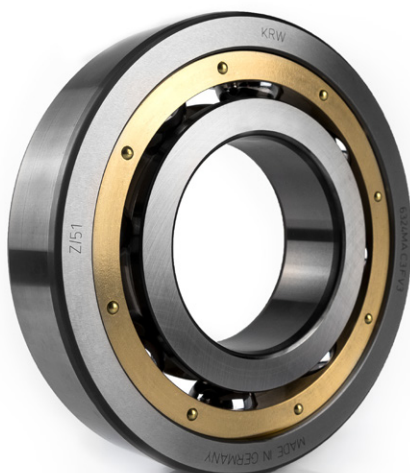


Rolling bearing precision from Germany

Cylindrical roller bearing

Cylindrical roller bearings can support very high radial forces due to the linear contact between the rolling element and bearing ring. Their high speed suitability makes them ideal for use in wire rod rolling mills.

Cylindrical roller bearings from KRW are designed as standard with optimized contact surfaces between rolling elements and raceways. The logarithmic profiling of the cylindrical rollers prevents instances of damaging edge stress, even at very high loads. The cages used provide particularly high strength and stability to withstand strong acceleration and deceleration forces. Single row cylindrical roller bearings can be dismantled and are, therefore, easy to mount and dismount.



Deep groove ball bearing

Deep groove ball bearings are capable of supporting axial loads in both directions simultaneously with radial loads. This is possible, even at high speeds, which makes the sound- and vibration-optimized deep groove ball bearing one of the most widely used rolling bearing types. However, the radial load limit of ball bearings is significantly lower than that of roller bearings with line contact due to the point contact.

Deep groove ball bearings from KRW are versatile and particularly easy to maintain. The self-retaining, non-separable bearings are reliable and easy to assemble.

Angular contact ball bearings

Single-row angular contact ball bearings are characterized by the inclined arrangement of the raceways of the inner and outer rings, as well as the resulting force-transmitting contact angle. They are always combined with a second bearing, given that an axial load always causes a radial load and vice versa. In pairs, KRW angular contact ball bearings can thus support axial and combined forces in addition to radial forces, and are particularly suitable for high speed requirements.

In the case of combined bearing sets, a distinction is made between O, X and tandem arrangements on the basis of the pressure line curve. Bearings with an X arrangement are less suitable for accommodating torque loads, whereas the O arrangement is very stiff and allows only a small tilting clearance. In tandem arrangements, axial forces can only be absorbed on one side. Single row angular contact ball bearings cannot be dismantled.



Four point contact ball bearing

Four point contact ball bearings are a special form of single row angular contact ball bearings. A split inner or outer ring creates two pressure angles and the four-point contact that gives it its name. This enables them to absorb radial forces and high axial forces acting on both sides even in confined spaces.

In practice, four point contact ball bearings are often used as pure thrust bearings and combined with a radial bearing. For this purpose, they should be provided with clear radial clearance to the housing and installed directly next to the supporting radial bearing. The radial load carrying capacity is often not used due to the elasticity of the split ring. Four point contact bearings are demountable but not self-retaining. The axial pitch of a bearing ring ensures an efficient assembly.



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 roller bearings is the second most common cause of premature bearing failure after lubrication. Heavy and large roller 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 roller 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 analyses of machine components and strength analysis

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

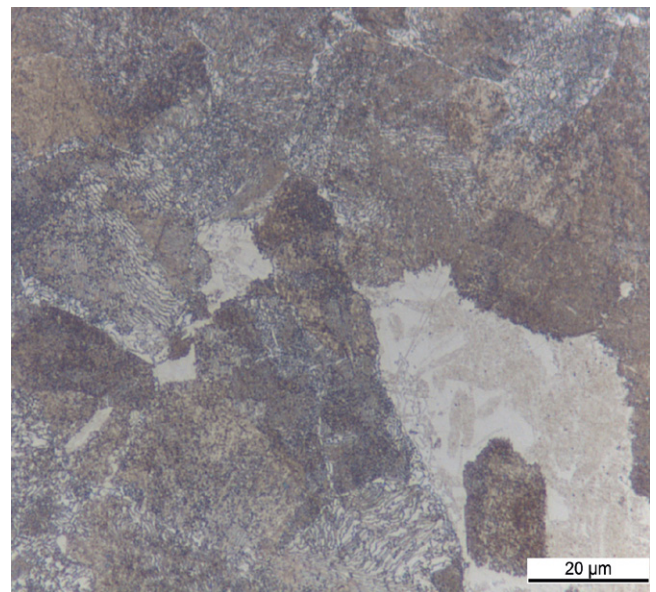
Quality and Certification

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.

Cylindrical roller bearings

Roller bearings

- Variety of designs available
- Higher load ratings than dimensionally equivalent deep groove ball bearings
- Suitable for high speeds

Type	Dimensions [mm]	Weight [kg]	Load rating [kN]		Limit speed [rpm]	Bearing clearance Radial / Axial	Replacement bearing	
			C ₀	C			Morgan	SMS Meer
06.05.16	60x130x31	2	150	145	8500	0.060~0.90 ¹	162250-HA	360011
06.05.05	60x130x46	3	246	241	8500	0.080~0.110 ¹	162250-HB	360361
06.12.34	130x200x33	3.6	230	169	4900	0.145~0.190	162250-G	360016
06.12.37	130x200x33	3.6	230	169	4900	0.100~0.145	162250-GA	360009
06.12.35	130x220x46	4.9	394	272	4900	0.100~0.145	162250-GC	360019
06.13.18	140x220x36	5	347	261	4500	0.124~0.163	162250D+DA	360023
06.13.03	140x250x42	10	480	360	3000	0.124~0.160	162250-V	360551
NU1034MPA.P63	170x260x42	8.2	408	283	3300	0.120~0.170	-	360088
NU234E.MPA.P63	170x310x52	17.8	820	615	2900	0,120~0,170	-	360085
NU1040M3.C3	200x310x51	14.1	655	426	2800	0140~0.195	-	360084
N226E.M3.C3	130x230x40	7.2	461	369	4000	0.100~0.145	M438106B	360415
06.39.01	400x500x46	19.4	530	300	2400	0.300~0.350	M438106D	F7590361

¹ Bearing clearance: C4 or individually adjustable

Angular contact ball bearings

Ball bearings

- Absorption of axial and radial forces
- Suitable for very high speeds
- Mounting in pairs

The bearing clearance can be adjusted according to customer requirements.

Type	Dimensions [mm]	Weight [kg]	Load rating [kN]		Limit speed [rpm]	Bearing clearance Radial / Axial	Replacement bearing	
			C ₀	C			Morgan	SMS Meer
03.12.04	130x200x33	3.7	132	129	5000	0.000~0.012	162250-Y	360010
7220B.MP.UA	100x180x34	3.7	115	132	4800	0.055~0.067 ²	MA438106A	360416

² for paired installation

Deep groove ball bearings

Ball bearings

- Universally applicable
- Absorption of radial and axial forces in both directions
- High speed suitability

The bearing clearance can be adjusted according to customer requirements.

Type	Dimensions [mm]	Weight [kg]	Load rating [kN]		Limit speed [rpm]	Bearing clearance Radial / Axial	Replacement bearing	
			C ₀	C			Morgan	SMS Meer
6028	140x210x33	4.1	109	111	5500	0.071~0.144	162250X	360030

Four point contact ball bearings

Ball bearing

- ▶ Absorption of axial forces in both directions
- ▶ Low radial loads can be accommodated
- ▶ Design with split inner or outer ring possible

The bearing clearance can be adjusted according to customer requirements.

Type	Dimensions [mm]	Weight [kg]	Load rating [kN]		Limit speed [rpm]	Bearing clearance Radial / Axial	Replacement bearing	
			C ₀	C			Morgan	SMS Meer
QJ228N2.MPA.C3	140x250x42	10.1	437	331	4400	0.160~0.220	-	360571
QJ234N2.MPA.C3	170x310x52	19.5	635	426	3500	0.185~0.250	-	360086

Do you have any questions or need further information about our products?

Please contact our sales team at:

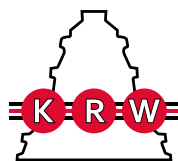


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Notes



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