THIS IS RKB

RKB BEARING INDUSTRIES
Table of Contents

RKB Group

- SWISS PREMIUM CLASS
  - RKB Group Milestones
  - RKB: the Swiss Premium Class Bearing Manufacturer

- WORLD PRESENCE
  - RKB Main Sites
  - RKB Partner Network

- INDUSTRIAL EXPERIENCE
  - Deep Knowledge of All Major Industries
  - A Unique Source for Industrial Bearings

Production

- A MATTER OF STEEL
  - A Full Range of Bearings With a Focus on Large Sizes
  - Only Premium Quality Steels
  - Leading-Edge Heat Treatments

- MANUFACTURING TECHNOLOGY
  - Advanced Technology with a Focus on Flexibility
  - Latest Technology for Medium and Large Size Bearings
  - Automation for Small Sizes

- QUALITY PROGRAM
  - Organizational Efficiency and Flawless Production
  - Certified Metrology and Metallographic Laboratories
  - R&D Meets Production Needs

Service

- ENGINEERING & ASSISTANCE
  - Complete Engineering Support
  - Root Cause Failure Analysis
  - Assistance at Customer’s Site
  - Training and Seminars

- SPECIAL PROJECTS
  - Special Solutions for Special Applications

- JUST IN TIME
  - Huge Stock of Standard and Special Bearings
  - Strong Brand Identity
  - Global Logistics Network

Product Table
RKB: the Swiss Premium Class Bearing Manufacturer

The RKB Bearing Industries Group is the Swiss manufacturing organization which has been operating in the bearing industry since 1936, with a monthly production capacity exceeding 350 tons of machined steel. The experience gained over the years provides RKB with the know-how and expertise necessary for the development and manufacture of technological industrial bearings up to 1925 mm outer diameter.

RKB offers reliable cost-effective solutions, with extreme operational flexibility, leading-edge service, huge stock availability, short delivery time and the typical quality of a consistent premium-class bearing source. With a worldwide distribution network and exports to more than 50 countries, RKB is globally recognized as “The Alternative Power” in the bearing industry.
RKB Group Milestones

RKB traces its roots back to the passion and commitment of the Colleoni family to building a reliable source for high quality rolling bearings and bushings for industry.

The economic boom of 1960’s led Mr. Gianni Colleoni to establish a new and modern facility of 9,000 sqm to expand operations.

RKB starts a close cooperation with technological partners to exchange manufacturing expertise in overseas projects.

RKB embraces the new challenges of the global economy by establishing the RKB Group along with a bunch of branch offices in the world.

RKB management establishes two new production facilities: RKB LN Plant and RKB MS Plant.

RKB T3 Plant celebrates official opening, encompassing an area of 56,000 sqm.

RKB acquires 40,000 sqm of new property for the new T4 Plant. RKB MS Plant relocates to a new site of 8,000 sqm.

RKB opens two new branch offices: RKB SSC in Bucharest and RKB Latam in Mexico.
RKB Group

World Presence

Swiss Premium Class

Industrial Experience

Partner

Europe

Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Czech Republic
France
Germany
Greece

Hungary
Italy
Lithuania
Macedonia
Poland
Portugal
Republic of Kosovo
Romania

Russia
Serbia
Slovenia
Spain
Switzerland
Ukraine
United Kingdom
Deep Knowledge of All Major Industries

Born as a niche supplier of rolling bearings and bushings, at present the RKB Group serves a full range of industries all around the world, having developed specific knowledge and expertise in each of them. Understanding the unique attributes and requirements of every industry is at the base of RKB’s manufacturing and marketing philosophies.

After thousands of successful cases of collaboration with leading OEM and MRO customers in different fields, RKB has gained an unparalleled bearing knowledge.

From shipbuilding to offshore oil platforms, from steelmaking to metalworking, from excavators to tunnel boring machines, from lifting bridges to power transmission applications, from home appliances to giant gearboxes for wind turbines, from heavy automotive to off-highway applications, RKB can point to a history of real gains in all major industries.

Thorough understanding and first-hand experience in designing, R&D, and manufacturing technology are at the base of RKB’s success in every industrial sector.
RKB always specialized in designing and manufacturing all types of rolling bearings:

- Deep groove (DGBBs) and angular contact ball bearings (ACBBs)
- Spherical roller bearings (SRBs), which are the largest share of the current production
- Cylindrical roller bearings (CRBs), particularly multiroll assemblies
- Tapered roller bearings (TRBs), especially multi row arrangements

The challenge of RKB is to offer, as a unique and reliable source, a complete portfolio of innovative high quality rolling bearings, ranging from miniature to extra-large sizes. RKB rolling bearings are manufactured in conformity with ISO, ANSI/ABMA or GOST standards or according to customer’s special requirements. Naturally, customers are supported by RKB's Technical Department in the selection process of the most adequate bearing for their specific applications.
A MATTER OF STEEL

MANUFACTURING TECHNOLOGY

QUALITY PROGRAM

Only Premium Quality Steels

High-quality bearings require high-quality raw materials. Steel cleanliness is the key element in choosing materials that can remarkably improve bearing fatigue performance and load carrying capacity. Based on a long collaboration with the most renowned steelmakers worldwide, RKB can currently rely on different types of steel (5 through-hardening and 2 case-hardening), which are purposely selected according to bearing characteristics and application requirements.
RKB is at the forefront of heat treating processes. Its specialists can rely on automatic heat treatment lines, with multiple salt bath tanks and controlled atmosphere conditions for bainite hardening treatment (HB), furnaces for dimensional stabilization and technology to reduce retained austenite and ensure smooth operation at below zero temperatures. All protocols are expressly studied to give the best hardenability or the most uniform case layer depth (CHD).
RKB T3 Plant and T4 Plant, which together cover a total area of 96,000 sqm, are specifically dedicated to the production of medium and large size bearings, both standard and customized.

Among other things, they feature:

- over 260 machining centers
- latest generation multi-axis CNC lathes
- latest generation multi-axis CNC grinders
- high precision hard turning machine tools to reach stricter bearing dimensional and geometrical parameters
- high precision honing machine tools to improve bearing form characteristics
- special surface treatments to extend bearing resistance to wear and corrosion (AWT and PT)
- centralized digital traceability system for collection of all manufacturing data
Advanced Technology with a Focus on Flexibility

RKB’s business model is based on the concept of a vertically integrated system, according to which all main phases of the production chain are managed within company perimeter. Through the effective control of every manufacturing step, RKB ensures the quality of its products.

RKB is continuously updating its production processes to optimize investments in equipment and to exploit the latest technical and engineering developments. RKB’s manufacturing strategy is supported by the R&D Department, which constantly develops new technologies and techniques to increase product reliability, production flexibility and environmental sustainability.

RKB’s innovative business model can respond quickly to all supply requests, even in small or medium batches.

Finally, the wide use of smart in-line systems for tighter control of manufacturing processes efficiently reduces waste and production allowances and variations, resulting in enhanced overall quality and precision.

Automation for Small Sizes

RKB’s new MS Plant encompasses over 8,000 sqm and is dedicated to manufacturing miniature and small size ball bearings:

- 36 fully automatic production lines
- strictly controlled environmental conditions of all workshops
- in-line Anderon meters for control of 100% output
- centralized digital traceability system for collection of all manufacturing data
Organizational Efficiency and Flawless Production

Since its foundation, the RKB Group has been following a Total Quality Approach devoted to increasing organization efficiency and safeguarding product quality. RKB Executive Headquarters and manufacturing facilities have ISO certifications in quality, environment, and occupational health and safety, which are a mark of distinction and well emphasize the commitment of the Group to sustaining rigorous standards of quality throughout the value chain.

As an additional proof of this, in 2012 RKB was awarded top class rating by D&B, the world’s leading source of commercial information and insight on businesses. In terms of production, RKB has developed a multilevel quality control system to prevent flaws from spreading in the production chain: from steel bar acceptance to forging, from turning to heat treatments, from grinding to assembling.

Naturally, together with the strict in-line controls directly carried out in RKB manufacturing facilities, further dimensional and destructive controls are methodically performed in the metallographic and metrological laboratories of the Group.

R&D Meets Production Needs

Every year the RKB Group invests more than 10% of total turnover for R&D. The main target is to maximize product quality and performance, while reducing overall costs. The main activities of R&D involve:

- advanced calculation tools to predict actual contact areas, load and pressure distributions, and von Mises stresses
- new materials for rings, rollers and cages in direct collaboration with renowned steelmakers worldwide
Certified Metrology and Metallographic Laboratories

All metrological and metallographic laboratories in RKB facilities and Headquarters serve the Quality Assurance of the Group, guaranteeing the consistency of the goods that are finally supplied to customers.

The metrological laboratories are equipped with latest generation devices for the measurement of raceway and roller profile, roughness, waviness, roundness and all other geometrical and form parameters that may affect bearing quality and therefore performance.

The same applies to the metallographic and metallurgical laboratories, where highly skilled and trained engineers use leading-edge equipment to perform all kinds of analyses, including micro-hardness test, evaluation of steel non-metallic inclusions, segregation and porosity, blue fracture test and many other analyses.

- **heat treatments** to increase bearing fatigue life by reaching optimal material microstructure
- **surface coatings** to reduce friction coefficient and increase wear and corrosion resistance
- **endurance tests** performed on special test rigs according to sudden death method
- **technical seminars** to transfer latest findings to design department
- **collaboration with academic centers** on tribology and bearing design
Bearing Design

In order to optimize bearing performance, RKB makes extensive use of proprietary and commercial software systems, which strictly comply with the relevant international standards. Along with classic 2D drafting and 3D modeling tools for mechanical engineering, RKB can also count on a set of specifically developed evolutionary algorithms for mono- and multi-objective optimal design of bearing macro-geometry in order to maximize bearing life. Finally, finite element (FEM) and semi-analytical (SAM) methods are selectively used to refine design solutions through advanced simulations.

Co-Engineering Activities

Whether it is a greenfield project or an existing application, RKB’s Technical Department can be actively involved to co-engineer and co-design with the customer’s technical office. Joint activities mainly base on the chance of creating synergies between different domains of knowledge and expertise. In case of new applications, RKB can offer technical advice regarding:

- **selection** of bearing type, size, arrangement, fit with conjugate parts, internal clearance or preload, seals, and lubricant
- **calculation** of actual bearing loads, residual internal clearance or preload after mounting and in operation, bearing starting and operating torque, operating temperature, etc.

For machinery already in operation, RKB can provide value-added recommendations for:

- **lubrication** system and lubricants, in order to favor elastohydrodynamic conditions and decrease overall operating temperature
- **regreasing intervals** and grease amount to be used
- **bearing handling and maintenance**

Root Cause Failure Analysis

RKB can perform a full bearing root cause failure analysis (RCFA) by which it’s possible to:

- identify the **mechanisms** that caused the bearing to fail in a specific application
- assess bearing **steel cleanliness** for the eligibility process of steel suppliers
- analyze steel **microstructure and hardness** to validate heat treatment processes
- investigate **fracture nucleation and growth** using the latest optical microscopy techniques
Training and Seminars

Training is a cost-effective investment that yields higher productivity and increased efficiency. For this reason, RKB’s Technical Department can offer a comprehensive and customizable portfolio of seminars, featuring highly skilled experts in the bearing industry.

The attendees of the training courses, which may take place both in RKB Headquarters and at the customer’s plant, will increase their knowledge on the most significant bearing-related topics, thus improving their working efficacy.
Bearings for Gyrofin Stabilizer Systems

SPECIAL PROJECTS

Bearings for Wire Rod Mill Stands
Special Solutions for Special Applications

RKB is actively engaged in the development, management and oversight of hundreds of special projects worldwide to support clients in the implementation of original and customized bearing solutions for their applications.

Collaborating with OEM and MRO companies, RKB can develop the best technical proposals in order to meet customer requirements in terms of specifications and rolling bearing performance.

Bearings for Jacking System in Offshore Platforms

Bearings for Cone Crushers
Bearings for Vertical Lifting Systems

Bearings for Heavy Lift Dockside Crane Winches
Bearings for Work Rolls of Hot Rolling Mill Stands

Bearings for Front and Rear Axles of Dump Trucks
RKB has an ever growing network of local warehouses directly run in cooperation with its regional partners to ensure proximity and fast delivery. Naturally, all storage areas are under controlled environmental conditions to guarantee perfect conservation of the bearings.

Besides, RKB’s highly specialized packaging, specifically created to protect the bearings in unfavorable conditions, is easily recognized and ensures brand identity all over the world.

**Huge Stock of Standard and Special Bearings**

RKB believes that stock availability is a crucial function for a world class bearing manufacturer’s consistency, market presence and brand awareness.

The RKB Group has one of the largest stocks of rolling bearings worldwide. With over 6,000 part numbers ranging from small to extra-large sizes, the current stock reflects the long standing experience and international vocation of RKB to support customers in a variety of industries worldwide.

Naturally, besides a well-stocked warehouse in terms of bearing variety and availability, a strong logistics organization is strictly necessary to efficiently serve the international market.

For this reason, all RKB stocks around the world are run by a proprietary software system (ASSM - Active Stock System Management) that optimizes lead time and drastically decreases machine downtime for the customer.

**Strong Brand Identity**

RKB has an ever growing network of local warehouses directly run in cooperation with its regional partners to ensure proximity and fast delivery. Naturally, all storage areas are under controlled environmental conditions to guarantee perfect conservation of the bearings.

Besides, RKB’s highly specialized packaging, specifically created to protect the bearings in unfavorable conditions, is easily recognized and ensures brand identity all over the world.
Finally, RKB’s stock strategy features the “JIT Bundle” which supports a special form of in-house consignment stock program to ease the customer’s financial position and ensure availability of requisite spare parts based on a partnership approach.

**Global Logistics Network**

The RKB Group can rely on a series of modern logistics hubs in the world’s most strategic areas:

- **Switzerland** central hub: 15,000 sqm to deliver bearings to overseas countries
- **Italy** hub: 14,000 sqm to deliver bearings to European Union countries and Turkey
- **Romania** hub: 2,500 sqm to deliver bearings to East Europe countries
- **India** hub: 2,000 sqm to deliver bearings to Indian market
<table>
<thead>
<tr>
<th>PRODUCT TABLE</th>
</tr>
</thead>
</table>

**Cylindrical Roller Bearings**

**O.D. up to 1800 mm**

<table>
<thead>
<tr>
<th>Single Row Cylindrical Roller Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>NU</td>
</tr>
</tbody>
</table>

**O.D. up to 1800 mm**

<table>
<thead>
<tr>
<th>Double Row Cylindrical Roller Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNU</td>
</tr>
</tbody>
</table>

**O.D. up to 1400 mm**

<table>
<thead>
<tr>
<th>Multi Row Cylindrical Roller Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF2D</td>
</tr>
<tr>
<td>3NCF</td>
</tr>
</tbody>
</table>

**O.D. up to 1600 mm**

<table>
<thead>
<tr>
<th>Single Direction Cylindrical Roller Thrust Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>81M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Double Direction Cylindrical Roller Thrust Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS+GS</td>
</tr>
</tbody>
</table>

**Tapered Roller Bearings**

**O.D. up to 1800 mm**

<table>
<thead>
<tr>
<th>Single Row Tapered Roller Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Single Row Paired Tapered Roller Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB</td>
</tr>
</tbody>
</table>

**O.D. up to 1925 mm**

<table>
<thead>
<tr>
<th>Double Row Tapered Roller Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDO</td>
</tr>
</tbody>
</table>

**O.D. up to 1925 mm**

<table>
<thead>
<tr>
<th>Multi Row Tapered Roller Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQO</td>
</tr>
<tr>
<td>2TDONA</td>
</tr>
</tbody>
</table>

**O.D. up to 1600 mm**

<table>
<thead>
<tr>
<th>Single Direction Tapered Roller Thrust Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>TKCR</td>
</tr>
</tbody>
</table>

**O.D. up to 1600 mm**

<table>
<thead>
<tr>
<th>Double Direction Tapered Roller Thrust Bearings</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTK1</td>
</tr>
</tbody>
</table>
Ball Bearings

O.D. up to 1900 mm

- Single Row Deep Groove Ball Bearings
- Single Row Angular Contact Ball Bearings

O.D. up to 1925 mm

- Single Row Paired Angular Contact Ball Bearings
- Double Row Angular Contact Ball Bearings

O.D. up to 1600 mm

- Single Direction Thrust Ball Bearings
- Double Direction Thrust Ball Bearings

Spherical Roller Bearings

O.D. up to 1580 mm

- Spherical Roller Bearings

O.D. up to 1400 mm

- Toroidal Roller Bearings

O.D. up to 1400 mm

- Spherical Roller Thrust Bearings

Other Products

O.D. up to 400 mm

- Track and Needle Roller Bearings

O.D. up to 1800 mm

- Special and Split Roller Bearings

Notes

1. Bearing dimensional and running accuracy according to ISO/AFBMA/GOST standards
2. All bearings available in metric and inch sizes, with cylindrical or tapered bore
3. Special features available on request