ROBUST AND LONG-LIVED ROLLING BEARINGS FOR MINING, PROCESSING AND CONSTRUCTION
Technical progress in the fields of mining, recovery of oil and gas, processing engineering and construction machinery is accelerating constantly. Powerful computers and increasingly efficient software facilitate more exact calculations and faster designing of machines and plants. New findings, e.g. in the fields of materials technology and tribology, contribute to the development so that performance and reliability are continuously improved.

In the Mining & Construction sector rolling bearings contribute considerably to technical progress. Severe operating and environmental conditions require extremely robust bearings.

Due to our research and development activities and to an intensive exchange of experience with manufacturers and operators of machines and plants the operational reliability of our bearings has increased constantly. The economic efficiency of the bearings has also significantly improved the economic efficiency of machines and plants.

The force with which the cutter head of tunnel boring machines is pressed against the rock in the drilling process is accommodated by FAG bearings. Many of the axial-radial cylindrical roller bearings or tapered roller bearings have outside diameters of more than three meters.

Due to our development partnerships with our customers we know their respective requirements very well. And due to intensive contact to colleges and universities we are familiar with the technological trends. This enables us to offer the right bearings, housings, accessories and services for the entire Mining & Construction sector.
In all subsectors...

In the various “Mining & Construction” subsectors different operating conditions are encountered. Consequently, the bearings must meet special requirements, for example:

**Rolling bearings for the mining industry**

* High operational reliability
* Reduced maintenance requirements
* High load carrying capacity
* Simple mounting and dismounting

**Rolling bearings for processing engineering**

* Long service life
* Utmost load carrying capacity
* Insensitivity to impacts
* Suitability for vibrating stress

**Rolling bearings for the cement industry**

* High operational reliability
* Utmost load carrying capacity
* Insensitivity to high temperatures (rotary tube kiln)

**Rolling bearings for construction machinery**

* High operational reliability
* Compact design with a high load carrying capacity
* Reduced maintenance requirements

**Rolling bearings for the recovery of oil and gas**

* High reliability
* High load carrying capacity in an extremely confined space
* In some cases: corrosion resistance
...AND FOR ALL PLANTS AND MACHINES

A variety of conditions have to be dealt with in the various plants and machines used in the Mining & Construction sector. Bearing dimensions and designs are mainly determined by the following criteria:

- Loads
- Speeds
- Service life
- Environmental conditions

These factors, and possibly others as well, must be taken into account to a varying degree in the designing and dimensioning of the bearings. For many applications, designers can use rolling bearings of the standardized types and designs that are listed in our catalogue WL 41 520 "FAG Rolling Bearings".

Some applications, however, require special rolling bearings, which we have developed for special requirements in this industry. The largest of these bearings, which are used in tunnelling machines, can have outside diameters of more than four meters.

Rolling bearings for plants and machines in the Mining & Construction sector, for example

- Tunnel boring machines
- Road headers
- Mine hoists
- Bucket wheel excavators
- Draglines
- Drilling rig units
- Drilling platforms
- Mooring buoys
- Tanker loading points
- Pumping stations
- Pipelines
- Drilling equipment
- Pipe-laying vessels
- Jaw crushers
- Gyratory crushers
- Hammer crushers
- Vertical grinding mills
- Roller presses
- Tube mills
- SAG mills
- Vibrating screens
- Other vibrating machines
- Rotary tube kilns
- Sintering plants
- Conveyor belts
- Excavators
- Transport equipment and Mine trucks
- Stackers
- Reclaimers
FAG ROLLING BEARINGS ARE THE IDEAL CHOICE FOR APPLICATIONS REQUIRING

• High operational reliability
• High load carrying capacity in a confined space
• Low friction
• Resistance to high temperatures
• Low wear
• Simple mounting
• Reduced requirements on lubrication and maintenance
• Customer-oriented availability
• Cost-effectiveness
Technical Advice

Increasingly shorter development cycles require correct dimensioning and designing of rolling bearings from the start. This applies also to the Mining & Construction sector. Time and cost can be saved if the know-how of experienced rolling bearing specialists is used already in the development stage. For this reason we offer designers assistance in the form of technical publications, our catalogue on CD-ROM and PC calculation programs.

FAG engineers are well versed in the entire field of rolling bearing engineering. They advise their customers in all questions regarding application and design, and they offer a calculation service which is tailored to this industry’s specific requirements. Together with our customers we develop individual solutions to their specific problems.

In some cases the FAG service for more operational reliability comprises not only technical advice but also accompanies the rolling bearings throughout their entire service life (see also page 9).
ROLLING BEARINGS, HOUSINGS AND ACCESSORIES - STANDARD AND SPECIAL DESIGNS

In our printed catalogue “FAG Rolling Bearings” and in our electronic catalogue on CD-ROM mainly ball bearings, roller bearings, housings and accessories of standardized dimensions are listed. With these products many applications problems can be solved quickly and cost-effectively. The standard rolling bearings mostly used in the "Mining & Construction" sector, as well as their characteristics and their suitability for the different requirements, are listed in the table.

Standard Rolling Bearings

To enable our customers in the Mining & Construction sector to solve even complex application problems, our target industry programme comprises not only standard rolling bearings but also special bearing designs, plus the suitable housings and accessories, which are adapted to special requirements such as high accelerations, high temperatures or aggressive substances.

In case of need, special designs are developed and produced just for such special applications.

Target Industry Stock

Selected products from our target industry programme are available to our customers at short notice due to our special developed sophisticated stock management. With this stock management we are able to reduce drastically costs for stock keeping of our customers as well as to guarantee a fast availability at marketable prices.
Quality Management as a Comprehensive Approach

Our yardstick for acting in matters of quality is the rating we receive from our customers. It is important to identify and meet their requirements and expectations to their satisfaction.

Quality is vital not only in regard to the product but rather to all activities and services. For this reason FAG decided to take a group-wide quality approach some time ago. All procedures of the FAG quality assurance system are described in our quality manual and have been certified in accordance with DIN EN ISO 9000 et seq.

CIP

FAG has introduced the Continuous Improvement Process (CIP) in its production, sales and service departments. The main emphasis of our comparison with the best is on Quality, Costs, Logistics, Performance and Motivation. The CIP Star shows for the production departments of the entire FAG Group which of several specified targets have already been met and where further improvement is required.
THE FAG SERVICE

We do not regard service as an optional extra but as an integral part of our offer portfolio. It accompanies the rolling bearings throughout their entire service life. Our motto “Service for more reliability” means that our customers can at any time rely on receiving personal support and advice. On request we provide customers with all the instruments they need to perform mounting, measuring, diagnosing and maintenance jobs independently.

FAG SERVICES PROGRAMME

- Mounting service
- Measuring instruments and mounting devices
- Mounting seminars
- Application engineering support
- PC calculation programs
- Publications
- Catalogue on CD-ROM
- Rolling bearing seminars
- Lubrication recommendations
- Arcanol rolling bearing greases
- Diagnosing instruments
- Online monitoring
- Damage diagnosis
- Repair of large rolling bearings
- Target industry stock
"On-time delivery" is a decisive yardstick for evaluating the efficiency of a rolling bearing manufacturer. Our sophisticated logistics concept ensures the worldwide availability of FAG products.

Our sales companies and trading partners in all important commercial centres of the world offer a 24-hour delivery service.

FAG distributors can be found in classified directories and/or yellow pages in the category "Rolling and Plain Bearings" or "Ball Bearings".

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**Head of Industry Unit**  
Phone ++49 9721 91 3683

**Construction Machinery, Mining Machinery**  
Phone ++49 9721 91 3055

**Tunnelling Machines, Onshore and Offshore Installations**  
Phone ++49 9721 91 3954

**Material Processing, Cement Industry**  
(Crushing machines, vibrating machines, rotary tube kilns, sintering plants):  
Phone ++49 9721 91 3883

**Conveyor Systems**  
Phone ++49 9721 91 4593

**Target Industry Stock Management**  
Phone ++49 9721 91 4595 and -4565