

codex



**Solutions
for Railway
Applications**

About Codex

Codex d.o.o. is a Slovenia-based company with 30+ years of experience in supplying high-quality bearings and power transmission components in several industries.

With operations, product development, and quality departments at our HQ in Slovenia (EU), complemented by additional quality inspection laboratory in Shanghai, we ensure consistent product quality and reliable supply for more than 180 OEM customers and over 450 distribution partners worldwide.

Today, Codex is a trusted and preferred supplier to industry leaders.

Beyond product supply

Through a well-established quality assurance system, we define and source products precisely according to customer specifications. Our sales and engineering team also provide:

- technical & certification support,
- product development and design support,
- identification of suitable replacements,
- standard bearings and power transmission elements in stock,
- storage support for elastomers,
- consulting and training.

Codex Facilities



CERTIFIED
ISO 14001



CERTIFIED
ISO 9001



Railway applications

Codex's solutions are designed to meet the railway industry's strict performance and reliability requirements. Our core strength lies in understanding application requirements and managing the supply chain to deliver the optimal balance of performance, durability and cost.

We specialise in production of bearings and mechanical components for:

- braking systems
- axles
- door systems,
- traction motors & gearboxes



Bearings for braking systems

Railway braking systems require highly reliable bearing solutions capable of operating under demanding environmental conditions, vibration and varying loads. Bearings used in brake actuators, brake calipers and auxiliary mechanisms must provide smooth operation, long service life and consistent performance throughout the maintenance interval. Also, high-quality sealing and corrosion protection are essential to ensure safe and dependable braking performance.

The most commonly used bearing types for braking systems include:

- Deep groove ball bearings
- Axial deep groove ball bearings
- Needle roller bearings
- Axial needle roller bearings
- Cylindrical roller bearings

Traction motor bearings

Traction motors operate at high rotational speeds and are subjected to significant dynamic loads, vibration and elevated temperatures. Bearing reliability is essential for ensuring efficient power transmission, minimizing maintenance requirements and maximizing vehicle availability. For modern traction motors, electrically insulated bearings are frequently applied to protect against stray electrical currents and prevent premature bearing failure.

The most commonly used bearing types for traction motors include:

- Cylindrical roller bearings
- Deep groove ball bearings
- Electrically insulated bearings



MAIN ADVANTAGES OF ELECTRICALLY INSULATED BEARINGS

Electrically insulated bearings are a simple and cost-effective solution against bearing damage by preventing raceway damage and premature lubricant ageing. With a dielectric breakdown strength of 1,000 V or 3,000 V (AC/DC), they are fully interchangeable with conventional bearings, offering the same dimensions and technical properties. Available with insulation on either the outer or inner ring.



Bearings for gearboxes

Railway gearboxes operate under high radial and axial loads while being exposed to continuous vibration and demanding operating conditions. Bearing performance is critical for efficient power transmission, low noise levels and extended gearbox lifetime. Proper lubrication, dimensional accuracy and reliability are key factors for maximizing operational availability.

The most commonly used bearing types for gearboxes:

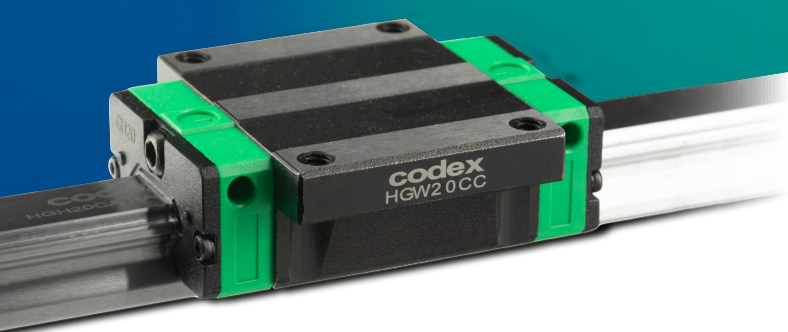
- Cylindrical roller bearings
- Deep groove ball bearings
- Tapered roller bearings
- Angular contact ball bearings
- Four point contact bearings

Bearings for axles

Railway axles and wheelsets operate under extremely high radial loads, impact forces and continuous vibration. Bearing reliability is essential for safe operation, vehicle stability and long maintenance intervals. Bearings for axles must provide low friction, precise guidance and consistent performance under varying speeds, temperatures and track conditions.

The most commonly used bearing types for axles include:

- Tapered roller bearings
- Cylindrical roller bearings
- Spherical roller bearings



Bearings for door systems

Automatic railway door systems require compact and reliable bearing solutions to ensure smooth, quiet and maintenance-friendly operation throughout millions of operating cycles. Bearings are used in drive units, guide rollers, hinges and linear movement mechanisms where low friction and high wear resistance are essential.

The most commonly used components for door systems include:

- Ball bushings
- Shaft systems
- Linear guides
- Cam roller bearings
- Bushings
- Needle roller bearings
- Deep groove roller bearings
- Double row ball bearings
- Swivel bearings

Sealing solutions for Railway Industry

In 2026, Codex opened a dedicated **elastomer warehouse with controlled storage conditions tailored to rubber components**. Stable temperature, regulated humidity and protection from sunlight, ozone, dust and other environmental influences help prevent premature ageing and preserve material properties.

Digital stock monitoring, batch traceability and efficient stock rotation provide full end-to-end tracking—including batch numbers, production dates and product expiry dates—ensuring consistent quality, reliable availability and a longer shelf life.

Our **electronic data exchange through EDI** (electronic data interchange) enables time-saving, automated and error-free order processing. Orders are transferred directly to our logistics system, while order confirmations are sent via EDI or PDF. Electronic dispatch advice (DESADV) and invoicing (INVOIC) complete the process. To minimise setup costs, we rely on standardised processes and data formats.



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