



TIMKEN

TIMKEN RAIL
INNOVATION ON TRACK

STRENGTHENED BY TECHNOLOGY

Every day we work to advance the rail industry with innovations that improve productivity, safety and efficiency.

Across a wide range of industries, engineers at Timken technology centers around the world collaborate with customers to design, engineer and test a continuous stream of new and next-generation products and solutions in response to our customers' needs. We share innovations across our organization, from aerospace to turbine technologies, so the best thinking around those industries benefits our offering to the rail industry.

GLOBAL CUSTOMER SUPPORT

With nearly 200 technology, manufacturing, sales and distribution facilities in 30 countries, Timken provides a global network with a single commitment to meet customer needs. Whether working on a breakthrough new design or trying to improve the reliability and extend the life of existing products, Timken engineers are eager to share their expertise with customers.

ENGINEERING SERVICES

Timken technical and service engineers stationed worldwide respond to customer requests. With their extensive experience, our engineers help customers identify optimum solutions for their individual applications. They also tap into the data, testing and technical resources needed to solve current issues in the field, or help customers avoid potential issues in the future. Specific services include:

- Life cycle calculations
- Interface design options
- Bearing inspections and evaluations at the customer's facility or at our audit lab

TRAINING THAT EQUIPS YOUR TEAM

From bearing basics and beyond, we provide the right training to help you maximize uptime. We show your team how to properly install and maintain bearings, sharing the latest technology and time-tested processes, to get the most out of your investment. We offer a variety of training resources, and our experienced engineers tailor training sessions to your audience and deliver it to your site.

RAIL BEARING FUNDAMENTALS WORKSHOP

This three-day course offered in the United States and China teaches customers the basics of:

- Track side inspection – bearing performance monitoring
- Bearing reconditioning
- Bearing mounting and dismounting – bearing mounting shop procedures
- Rail bearing damage analysis
- Timken bearing repair capabilities





REPAIR SERVICES FROM THE BEARING EXPERTS

Through our global rail bearing services footprint, Timken breathes new life into used bearings by replacing worn and damaged parts and returning the bearing to work for many more years of reliable service. Every year, we put our world class services into action, reconditioning and remanufacturing hundreds of thousands of bearings and component parts.

We use custom designed equipment and the same precise gauging and inspection procedures followed when we manufacture a new bearing. Along with significant cost savings, reconditioned bearings include the equivalent of a new bearing warranty. Our operations in India, North America and South Africa are approved by the Association of American Railroads and certified under the AAR M-1003 Quality Assurance Program.

Our unique perspective as both a new bearing manufacturer and a bearing reconditioner allows us to discover opportunities for design enhancements and improved maintenance practices based on actual field performance.

We offer a variety of reconditioning services that can be integrated with existing maintenance programs. In some regions, our specialists travel to perform services on location.

TIMKEN® BEARINGS

AP™ AND SP™ BEARINGS

Timken revolutionized the rail industry by introducing the first self-contained, pre-assembled, pre-lubricated journal roller bearing. Manufactured from high quality steel, Timken® AP™ and SP™ bearings are engineered specifically to provide the reliability and dependability the rail industry demands.

AP-2™ BEARING

To meet the growing challenges of increased loads and speeds, we developed the Timken® AP-2™ bearing for freight cars. Based on the design of the AP bearing, we engineered the AP-2 bearing to minimize journal axle flexure and fretting wear. When integrated with Timken premium seals and polymer cages, AP-2 bearings can offer significant energy savings.

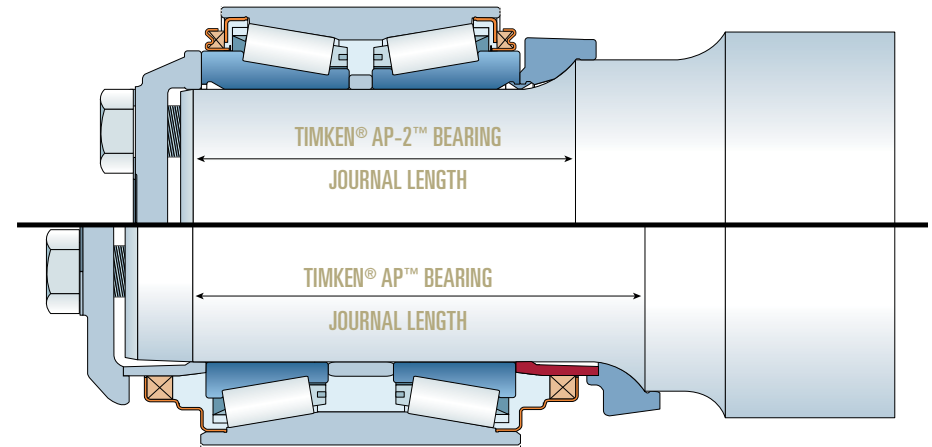
MOTOR SUSPENSION UNIT BEARINGS

Timken tapered bearings for MSU applications offer long life and enhanced reliability and accommodate environmental factors including:

- Thermal expansions
- Bearing load distribution
- Intermittent thrust loading
- Vibration and shock loading
- Axial deflections and housing eccentricities

GEARBOX BEARINGS

Made from the highest quality alloy steels for long-lasting strength and durability, we manufacture a wide variety of tapered roller bearings and cylindrical bearings for rail gearboxes. We offer special features designed for your environment, including enhanced cages and internal geometries suitable for operating at high rotational speeds and shock loading. Tapping into their extensive expertise, Timken engineers can recommend the right bearing with the right features for your application.



ADVANTAGES OF AN AP-2 BEARING

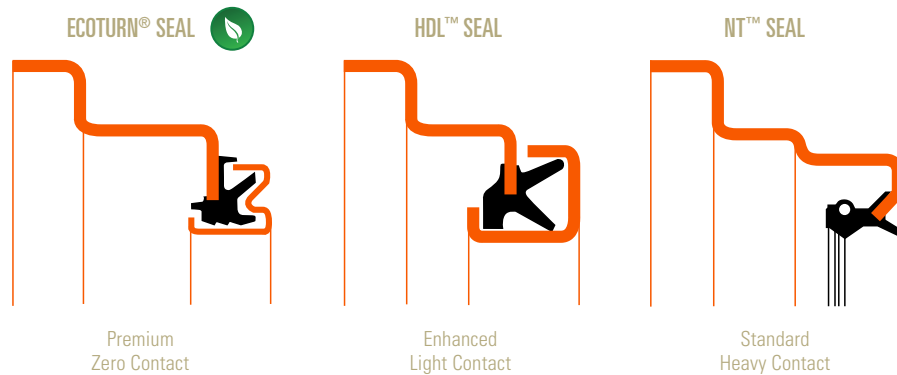
The Timken® AP-2™ design provides a shorter distance between the cone face and the dust guard, which reduces the amount of movement and the resultant wear on the cone back face. Also, by removing the seal wear ring, axle grooving and the resulting scrapping or expensive repairs of the axle are eliminated.



RELATED PRODUCTS

SEALING SOLUTIONS

A seal's capability to retain lubricating grease and exclude contaminants, including water, is one of the most critical components that impact overall journal bearing and system performance. Timken offers a range of sealing solutions designed to help extend the life of the bearing, including enclosures and three AAR-approved seal designs.



ADVANTAGES OF A NON-CONTACTING SEAL

Contacting or rubbing surfaces in a seal creates torque. Higher torque leads to higher bearing temperatures and requires more power and more fuel to operate. Contacting surfaces also cause components to wear down over time, reducing the ability to exclude contaminants. Reducing contact with the seal helps bearings run cooler, last longer and require less maintenance over the bearing life.



BACKING RINGS

The Timken® Sure-Fit™ universal backing ring is designed to significantly reduce loose backing ring problems by providing an interference fit between an undersized axle dust guard diameter section and the backing ring.

Sure-Fit backing rings are designed to:

- Reduce wheel set removals
- Enhance water exclusion capabilities to help prevent fillet corrosion and pitting
- Improve safety and reliability of the wheel set
- Increase axle life and reduce axle scrap rate
- Protect your wheel set investment

PREMIUM RAIL GREASE

Timken premium rail grease is specifically formulated for use in railroad car wheel journals. It lasts longer and provides better protection against water etching compared to conventional freight journal greases. Fortified with a high-performance corrosion inhibitor for increased bearing protection, it can withstand the toughest conditions including humid environments. It provides excellent mechanical shear stability, water resistance and oxidation stability for reliable performance. This lubricant meets AAR specification M-942-98.

MOTOR SUSPENSION UNIT TUBES

Using the latest software, our engineers collaborate with customers to design MSU tubes specific to their applications. With modern foundry, machining and measuring capabilities, our MSU tubes are manufactured to provide reliable performance under the stress of heavy loads. We sell MSU tubes individually and as fully-machined and assembled packages with Timken® tapered roller bearings.





TIMKEN PRODUCTS AND SERVICES

FOR LOCOMOTIVES

Whether you are moving people or freight, Timken provides the ingenuity to boost locomotive power and performance.

Timken offers for locomotives:

- Journal bearings and housings
- MSU bearings, tubes and assemblies
- Sealing solutions
- Greases
- Reconditioning and remanufacturing services

FOR FREIGHT CARS

However grueling the conditions may be, Timken products ensure smooth transport across the far reaches of the world – from the desert to the Arctic Circle.

Timken provides freight cars with:

- Journal bearings
- Sealing solutions
- Backing rings
- Greases
- Reconditioning and remanufacturing services

FOR PASSENGER AND TRANSIT CARS

For the most precious of all cargo, Timken provides safety and reliability – offering peace of mind for customers.

Timken supports passenger and transit cars with:

- Journal bearings and housings
- Gearbox bearings
- Sealing solutions
- Greases
- Reconditioning and remanufacturing services



CALL ON US

Timken strengthens the rail industry with an innovative and high-performing suite of bearings and related products and services. For more information, contact a local Timken representative or visit www.timken.com/rail.

TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance mechanical components, including bearings, belts, gears, chain and related mechanical power transmission products and services.

Stronger. Commitment. Stronger. Value. Stronger. Worldwide. Stronger. Together. | Stronger. By Design.

www.timken.com