

# SPHERE-ROL<sup>®</sup>

SPHERICAL ROLLER BEARINGS



EMERSON POWER TRANSMISSION

The Problem Solving  
Spherical Roller  
Bearing Series



**McGILL**<sup>®</sup>  
PRECISION BEARINGS

# SPHERE-ROL®

## SPHERICAL ROLLER BEARINGS

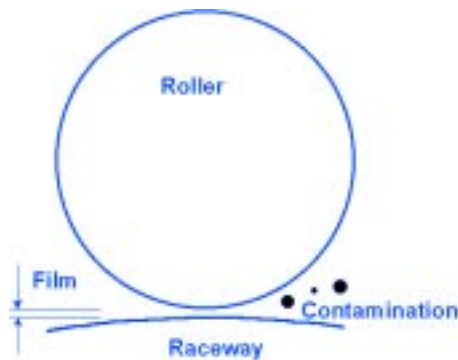
### Reduce Your Costs With SPHERE-ROL Bearings

Seals on SPHERE-ROL bearings can extend life by helping to keep contamination out and lubricant in. This results in a **total cost savings**: reduced downtime for maintenance and less frequent bearing replacement.

SPHERE-ROL bearings are the industry's only "off-the-shelf" spherical roller bearing offered with a choice of three optional seals.

### Seals Extend Bearing Life By Reducing Contamination

It has been shown that even a small amount of contamination can significantly reduce the life of a bearing. In one test, a 0.01% concentration of water reduced the bearing life in half.



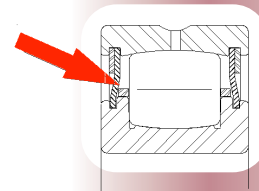
During operation, the bearing rollers and raceways are separated by a very thin film of oil, which can be less than 16 micro inches thick. Small particles of contamination can dent the rollers or raceways and cause premature bearing failure.

Although it is impossible to keep all contamination out of the bearing, reducing the amount of the contamination will improve the bearing performance. SPHERE-ROL bearings are available with three types of seals depending on the application conditions.

### Three Sealing Options Available

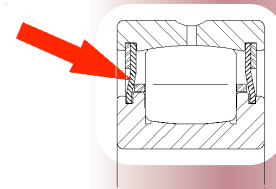
1. **NYLAPLATE® Seal** — A combined labyrinth and contact seal with very low running friction. Helps keep contamination out and retain lubrication at higher operating speeds.

- Temperature limits -30°F to 300°F (-34°C to 150°C)
- Misalignment  $\pm 2^\circ$
- Suffix "S" for single seal
- Suffix "SS" for both sides sealed



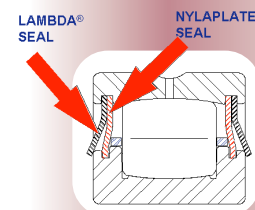
2. **NYLAPLATE High-Temperature Seal** — Teflon materials allow this seal to be used for chemical contamination as well as higher temperatures.

- Max temperature limit 450°F (230°C)
- Misalignment  $\pm 2^\circ$
- Suffix "TS" for single seal
- Suffix "TSS" for both sides sealed



3. **LAMBDA® Seal** — Used for more severe contamination or where substantial amounts of moisture are present (such as water splash). The sealing features of the NYLAPLATE seal are combined with the lip-wiping sealing function of an added contact seal to form the LAMBDA sealing arrangement.

- Temperature limits -30°F to 300°F (-34°C to 150°C)
- Misalignment  $\pm 1^\circ$
- Suffix "YS" for single seal
- Suffix "YSS" for both sides sealed



# SPHERE-ROL SPHERE-ROL

## The Industry's

### SPHERE-ROL Bearings ... The Problem Solving Spherical Roller Bearing

Invented by McGill more than 30 years ago, SPHERE-ROL bearings utilize a single row of rollers which provide a wide variety of advantages. High capacities, high-limiting speeds, longer life under more misalignment and protection from contaminants permit greater design flexibility than typically possible with ordinary two-row designs.

SPHERE-ROL bearings are also dimensionally equivalent to major competitive, two-row spherical unsealed designs.

- SB 22200 Series — 20 mm to 150 mm bore diameter
- SB 22300 Series — 40 mm to 100 mm bore diameter

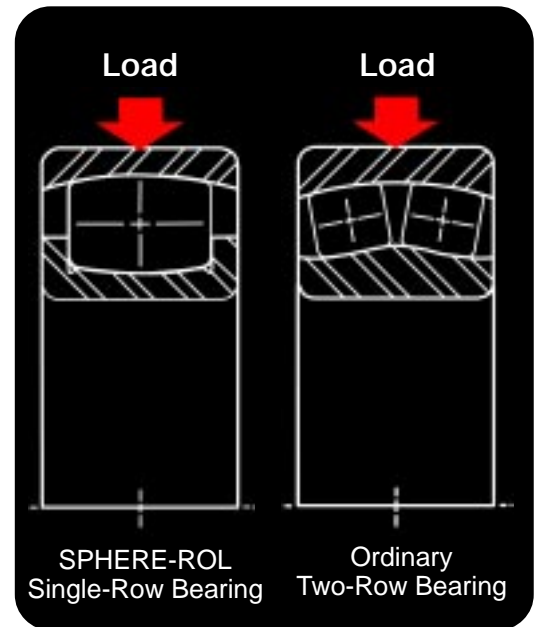


### Larger Diameter Rollers Increase Load Capacity And Life... Reduce Downtime And Lower Costs

Larger diameter rollers in single-row design can increase dynamic load ratings (by as much as 14%). This equates to a significant improvement in fatigue life – up to 55% in a given application. Load ratings are influenced additionally by the length of contact of the rolling elements and the number of rollers. The SPHERE-ROL design utilizes the optimum number of maximum diameter rollers. Roller effective length is approximately the same as the two-row design.

Single-row SPHERE-ROL bearings provide more space between roller end and bearing face. This allows for:

- Optional integral sealing
- Greater misalignment capability



# Single-Row Spherical Roller Bearings

## Only "Off-The-Shelf" Sealed Spherical Roller Bearings

### Dimensionally Interchangeable With Unsealed Designs

The dimensions of SPHERE-ROL bearings with integral NYLAPLATE seals meet ABMA/ISO specifications. This feature removes the need for special redesigns when changing from unsealed competing bearings.

Integral seals can reduce OEM costs in four ways:

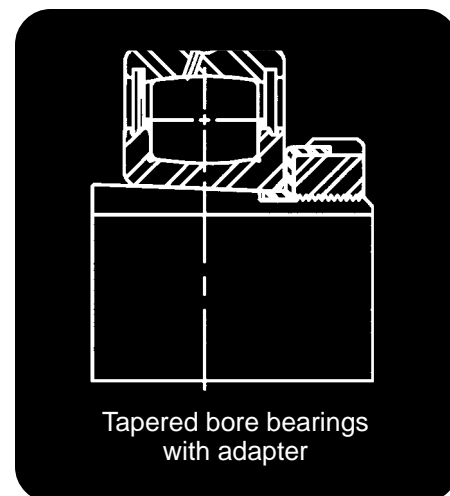
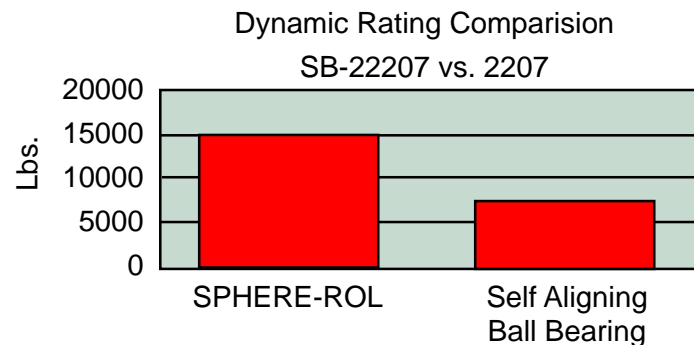
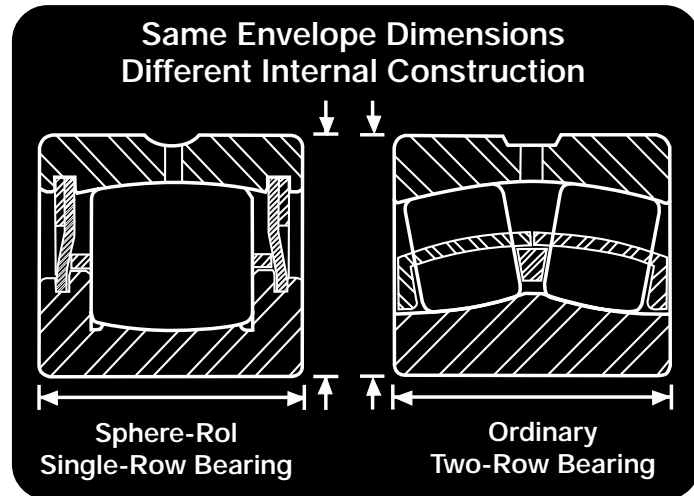
- Cost of external seals eliminated
- Seal housing cost eliminated
- Housing machining costs reduced
- Faster design time

### SPHERE-ROL Bearings Can Help Solve Your Heavy Load Problems

In many applications, SPHERE-ROL bearings have also replaced double-row ball bearings with significantly improved performance. Dimensionally interchangeable with 2200 AND 2300 Series double-row ball bearings, SPHERE-ROL bearings can provide over 100% more load carrying capability with integral seals.

### Easy Installation

The SPHERE-ROL bearing is available with a tapered bore option which allows for more control of operating diametral clearance. With the optional adapter, tapered bore SPHERE-ROL bearings can be installed with a simple catalog procedure. Unlike ordinary two-row bearings, SPHERE-ROL bearings do not require feeler gages for installation.



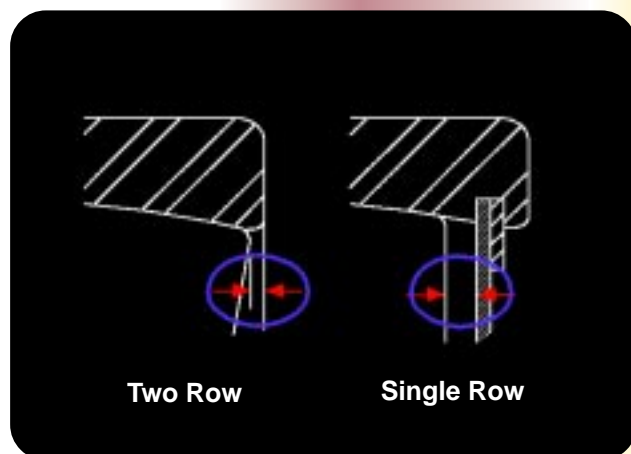
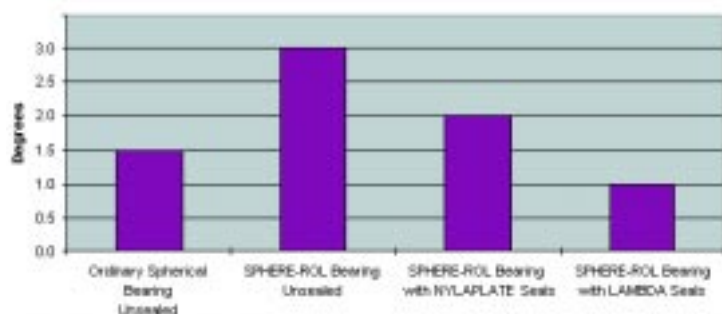
# Roller Bearings SPHERE-ROL

## Roller Bearing

### Longer Life With More Misalignment

The SPHERE-ROL bearing single-row design provides more space to accommodate misalignment, which gives up to 100% greater misalignment capability than two-row designs.

Misalignment Comparison



### One Design for Standard and Vibratory Applications

Ordinary two-row spherical roller bearings rely on the cage for accurate roller guidance which can make them inappropriate in certain vibratory applications. With its unique single-row design, the SPHERE-ROL inner ring provides accurate roller guidance and prevents roller skew. The SPHERE-ROL cage is only required to space the rollers. This allows the case-hardened cage to have a reduced radial cross-section and weight that minimize the centrifugal forces in vibratory applications. The result is a single cage design suitable for both standard and vibratory applications.

### Combination Load Capacity

SPHERE-ROL bearings are designed to carry combination radial and thrust loads, but are not recommended for pure thrust loads. For applications with thrust to radial load ratios of less than 12%, thrust load can be disregarded for life calculations. For applications with thrust to radial load ratios exceeding 12%, contact the McGill Engineering Department for equivalent load formula calculations.





## McGill: Precision Solutions For Tough Applications

### CAMROL® Cam Followers

When you want the right cam followers for your needs, come to the company that invented cam followers: McGill. Since 1937 we have expanded our line to include more off-the-shelf designs than any other manufacturer.



TRAKROL® Special-Duty Cam Follower Bearings are designed and built for longer life under combination radial and thrust loads ... special seals extend life in more contaminated applications.



CAGEROL® and GUIDEROL® Needle Bearings offer a wide range of solutions for heavy-duty applications. Available with five different sealing configurations.

For ordering information, contact your authorized McGill Distributor or McGill Customer Service: Telephone: 219-465-2200, FAX: 219-465-2290

#### Application Considerations

The proper selection and application of power transmission products and components, including the related area of product safety, is the responsibility of the customer. Operating and performance requirements and potential associated issues will vary appreciably depending upon the use and application of such products and components. The scope of the technical and application information included in this publication is necessarily limited. Unusual operating environments and conditions, lubrication requirements, loading supports, and other factors can materially affect the application and operating results of the products and components, and the customer should carefully review its requirements. Any technical advice or review furnished by Emerson Power Transmission Corporation and its divisions with respect to the use of products and components is

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