

## Why SKF?

# Why SKF CARB toroidal roller bearings?

The SKF CARB toroidal roller bearing is self-aligning like a spherical roller bearing and axially free like a cylindrical roller bearing. SKF developed the CARB bearing especially for the non-locating position in a self-aligning bearing system.



### Common applications

- Paper machines
- Continuous casters
- Fans and blowers
- Crushers and grinding mills
- Industrial transmissions
- Conveyors
- Hydraulic motors and pumps
- Wind turbines

### Perfect for self-aligning bearing systems

Self-aligning bearing systems traditionally have two spherical roller bearings: one keeps the shaft in place, and the other moves axially in its housing if the shaft expands or contracts due to changes in the operating temperature. This usually works well, but sliding friction between the bearing and the housing can cause axial forces that result in heat, vibrations, and self-induced loads, which reduce bearing service life. A CARB toroidal roller bearing in the non-locating position solves the problem.

### Tight fit with axial freedom

A CARB bearing accommodates misalignment and axial displacement within the bearing without inducing internal axial loads, causing virtually no increase in friction. This eliminates the need to compromise between tight fit and axial freedom, allowing tight fits to prevent common issues with conventional bearing arrangements, such as ring creep and fretting corrosion. The results are lower operating temperatures, reduced vibration levels, and improved reliability, bearing and lubricant life, and energy consumption.

### Technical features

- SKF Explorer performance class with super-clean steel
- Floating bearing with self-aligning capability
- Very high radial load capacity
- Also available in needle roller bearing dimensions

### Technical benefits

- Reduced noise and vibration levels
- Reduced operating temperatures
- Allows low cross-section height arrangement
- Eliminates stick-slip (erratic and uneven motion of the free bearing due to friction between bearing and housing)

### User benefits

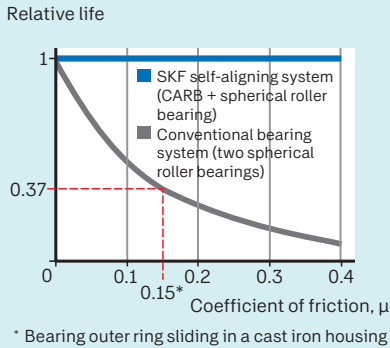
- Improved machine reliability
- Significantly longer bearing service life
- Optimized service interval

### Supporting your sustainability goals

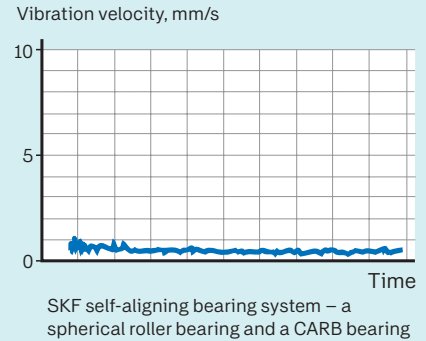
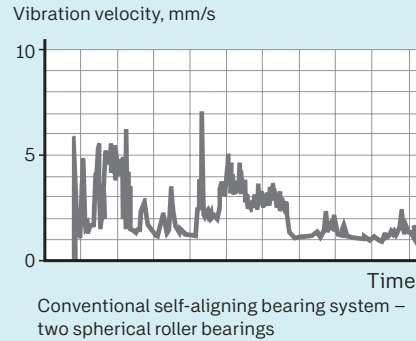
Your choice of components impacts sustainability. CARB toroidal roller bearings can reduce material and energy use, reduce waste, and lower CO<sub>2</sub> emissions due to extended bearing life, low friction, and low grease consumption. You can reduce emissions even more by choosing to remanufacture your CARB bearing after its first service life.

## Boosts bearing system life

Life comparison of an SKF self-aligning system and a conventional system as a function of housing friction coefficient

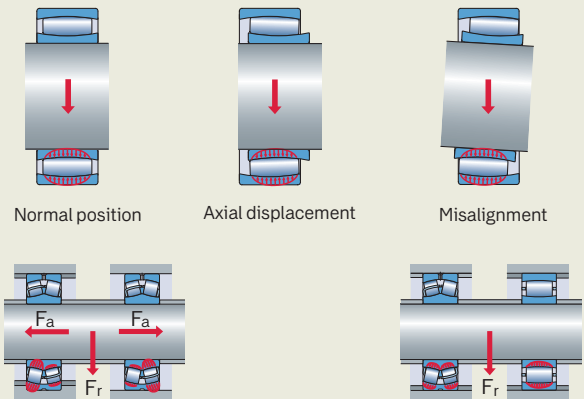


Fan vibration was significantly reduced after the SKF self-aligning bearing system was installed



## Unique features of the SKF self-aligning bearing systems

- Unique internal geometry provides an optimal load distribution between the rollers and raceways, irrespective of misalignment, to provide the best possible bearing load distribution.
- Allowed axial displacement  $\sim \pm 10\%$  of the bearing width
- Can accommodate up to  $0.5^\circ$  of misalignment
- Misalignment does not reduce service life or increase friction
- Compact design

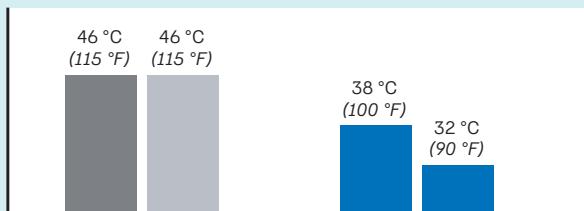


**Conventional arrangement with two Spherical roller bearings in pair:** Axial bearing forces from thermal shaft expansion leading to non-optimally loaded bearings.

**SKF self-aligning bearing system:** Axial counter forces eliminated, bearings optimally loaded.

## Reduced operating temperatures

Lower operating temperatures extend relubrication intervals for the SKF self-aligning bearing system in an industrial fan application (interval doubles per  $15^\circ\text{C}$ )



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## CARB bearing assortment

The SKF standard assortment of CARB bearings comprises bearings in 13 ISO dimension series. Bore diameters range from 25 to 1 800 mm.



**Standard**  
For all speeds and applications.



**Full complement**  
Maximum load carrying capacity for low speed applications.



**Sealed full complement**  
Contaminant resistant, maintenance free, for low speeds.

skf.com

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PUB BU/P8 19778 EN · January 2024

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