Bearing designs

Spherical roller bearings

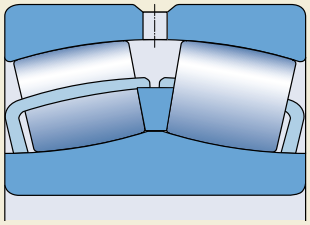
Extract from the Railway technical handbook, volume 1, chapter 4, page 96 to 98

Spherical roller bearings

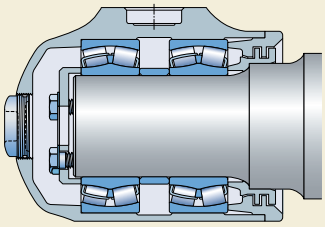
Today, spherical roller bearings are mainly used for freight cars. The bearings in this application are typically applied as sets of two double row bearings. Spherical roller bearings have two rows of rollers with a common sphered raceway in the outer ring and two inner ring raceways inclined at an angle to the bearing axis.

The commonly used bearing is the specific size SRB 130 x 220, basic SKF designation 229 750, which is produced in some variants according to specific customer's requirements. The boundary dimensions 130 x 220 x 73 of this bearing deviate from standard catalogue bearings.

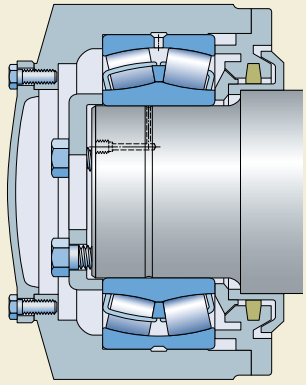
In addition, a full assortment of different sizes of spherical roller bearings can be used for further applications, see the SKF *General Catalogue*. These standard bearings are offered for full bore axleboxes with a closed front cover.



Spherical roller bearing design



Typical application of an axlebox assembly fitted with a set of two spherical roller bearings 229 750 separated by an inner ring spacer



Axlebox fitted with a single spherical roller bearing

Design features

The bearing consists of an inner and outer ring, rollers, cages and guide ring. The bearing can accommodate misalignment due to the sphered raceways and rollers. The bearing is not separable. Axlebox bearing applications with spherical roller bearings are based on very long field experience.

One advantage of spherical roller bearings for freight car applications is the smaller outside diameter of 220 mm in comparison to 240 mm for cylindrical roller bearings and units designed for 130 mm shaft diameter and 25 t axleload. This advantage stimulates axlebox engineering, which can be designed smaller and lighter compared with other designs.

Single bearing arrangement

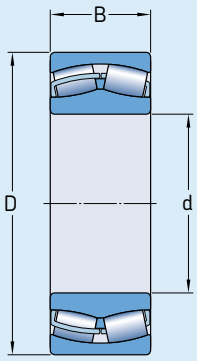
Single spherical roller bearings in axleboxes are used to gain more flexibility in the axlebox design. This design accommodates misalignment and shaft deflection.

This bearing can accommodate shaft-to-housing misalignment because its outer ring has a sphered raceway which is shared by the two rows of rollers.

Product range

The dimensions of standard spherical roller bearings can be obtained from the SKF *General Catalogue*. In addition to the standard bearing execution, specific customized features can be offered to the railway industry. These bearings have the suffix VA355 and R505. The special design of the 229 750 spherical roller bearing is listed in the table on the next page.

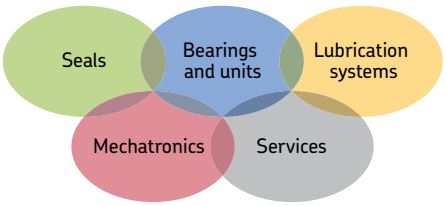
SRB spherical roller bearing



Size	Principal dimensions			Basic designation
	d	D	B	
–	mm			–
SRB 130 x 220	130	220	73	229750

These figures are for information only. Contact SKF for detailed product specifications.

Dimensions of standard spherical roller bearings can be found in the SKF *General Catalogue*.



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Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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