

3. SELF-ALIGNING RADIAL BALL BEARINGS



ROLLING BEARINGS

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3.1. Self-aligning ball bearings

INTRODUCTION:

3. Self-aligning ball bearings

3.1. Dimension series

- 10.. 12.. 13.. 14.. 22.. 23.. - cylindrical bore
- 12..K 13..K 22..K 23..K
- tapered bore of 1:12 taper
- 112.. 113..
- extended inner ring
- 115.. - bearing with special sleeve, 1:15 taper

3.2. Structure

Self-aligning ball bearings are inseparable. They have two rows of balls and a spherical track of the outer ring, what enables both rings to align to each other freely. There are self-aligning ball bearings with cylindrical or tapered bore of 1:12 taper in an open version as well as in the sealed one (2RS). 112- and 113-series possess a wide inner ring, additionally equipped with mounting cuts.



Fig.11 Self-aligning radial ball bearing

115-series is produced together with a special sleeve, whereas the taper of the tapered bore is 1:15.

3.3. Cages

Cages of self-aligning ball bearings are always guided on rolls, and made both of steel or brass and of thermoplastic material. The most common cages are stamped from steel sheet – without designation behind the bearing symbol. Thermoplastic material cages have TV, TN9, TNG designations. Solid brazen cages have M designation.

3.4. Features

Self-aligning bearings thanks to their structure have the ability to compensate misalignments, shaft deflections and deformations of bearing mountings. The principle of operation of self-aligning bearings can be compared to that of self-aligning bearings in mountings. Bearings with a cylindrical bore are mounted directly on the shaft, and their tapered-bore versions are fixed directly on tapered tenons or with the help of an adapter sleeve on cylindrical tenons. Self-aligning ball bearings with wide inner ring are fixed in the axial direction with the help of screws or pins in cuts of one side of the inner ring. At the same time the screw or the pin prevent the inner ring from turning on the shaft. Self-aligning ball bearings can deflect from the central position up to 4°, but sealed version only up to 1,5°.

3.5. Application

Specific features, relatively simple construction, easiness of mounting and dismounting are the reasons why the self-aligning bearings are applied in nearly all industry branches. They are especially recommended in applications where misalignment may increase through the shaft deflection or assembly errors. Bearings with wide inner ring are applied in ungrounded shafts in the first place.



Fig.12 Self-aligning radial ball bearings with the extended inner ring