

14. INSERT BALL BEARINGS

ROLLING BEARINGS

ŁOZYSKA TOCZNE



ROSCINETTI

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INTRODUCTION:

14. Single-row radial insert ball bearings

Insert ball bearings are in fact single-row radial deep-groove ball bearings with modified surface of the outer ring. They evolved from single-row radial ball bearings.

They are available in three dimension series:

- **2** – Equivalent of the 62-series ball bearing
- **X** – Intermediate series between equivalents of 62- and 63-series ball bearings
- **3** – Equivalent of the 63-series ball bearing

The most typical feature of insert ball bearings – which also sets them apart from deep-groove ball bearings – is the spherical outside surface of the outer ring. Such design allows to mount these bearings in bearing housings, in which they acquire their specific features. The variety of insert ball bearing types results from differences in their structure, which in turn are caused by different ways of the mounting process.



Fig.43 K6-Type radial insert ball bearing

- **K6..** – Deep-groove ball bearing with spherical outer track without modifications of the inner ring.
- **UC..** – insert ball bearing with the inner ring asymmetrically extended on both sides.



Fig.44 UC-Type radial insert ball bearing



Fig.45 SA (FD)-Type radial insert ball bearing

- **SA..(FD..)** – Self-aligning bearing with the inner ring extended on one side. Off-centre fixing ring is put on the extended part of the ring.
- **SB..** – Self-aligning bearing with the inner ring extended on one side (simplified version of the UC-type bearing).
- **SC..** – Self-aligning bearing with the inner ring extended on both sides. Off-centre fixing ring is put on the extended part of the ring (widened version of the SA-bearing).
- **UK..** – Self-aligning bearing with tapered bore of 1:12 taper to be mounted with H23-series sleeve.

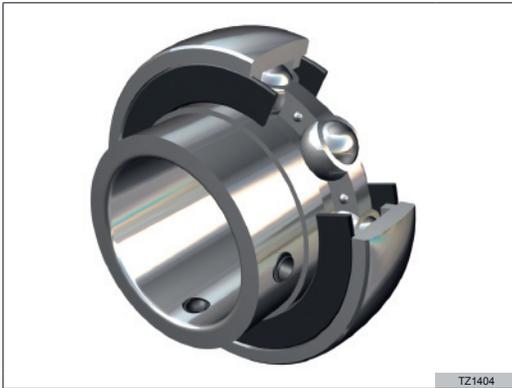


Fig.46 SB-Type radial insert ball bearing

14.1. Seals and lubrication

All self-aligning bearings are manufactured with plastic or metal seals or a combination of both. They are filled with lubricant, which will do for the whole life of the bearing under condition that the bearing is operated under moderate conditions. However, in case of continuous and intensive operation self-aligning bearings require additional lubrication. There is a hole in the inner ring that serves this purpose, sometimes there is a lubricating groove, too, which trans-

ports lubricant to the inside of the running bearing. Bearing housings, in which self-aligning bearings are mounted, are equipped with lubricating nipples. It is very important for a lubricating hole of the mounted bearing to be located on the same side as the lubricating nipple's mouth.

14.2. Structure differences

Main dimensions of self-aligning bearings produced by most manufacturers are the same, however the location of the lubricating hole and groove may be different. European standard differs in this regard from the Japanese one. One should not forget, that in case of bearings being operated under hard conditions, additional lubrication may have a key impact on their longevity.

14.3. Features and application

Self-aligning bearings mounted in bearing housings make up the so-called bearing units. After having been seated in the bearing housing, they acquire features of self-aligning bearings. Owing to their features, which comprise above all easiness of mounting and dismounting, own lubricant reserve, effective seal and self-alignment ability, they are applied in agriculture machines, construction machines, conveyors, mining machines, textile machines and many other installations. Cast-iron and tin bearing housings are designed for self-aligning bearings.