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Radial Bearings of Ball, Cylindrical Roller and Spherical Roller Types - Metric Design ANSI/ABMA 20:2011



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RADIAL BEARINGS OF BALL, CYLINDRICAL ROLLER AND SPHERICAL ROLLER TYPES, METRIC DESIGN

1 Scope

This standard includes:

- (a) basic plan for the boundary dimensions of metric radial ball and roller bearings;
- (b) general rules for extension of the basic plans;
- (c) dimensions and tolerances for snap ring groove and locating snap rings;
- (d) dimensions for radial ball bearings with flanged outer ring; and
- (e) tolerances for boundary dimensions, chamfers, various runouts and internal clearance.

This standard does not contain any direction pertaining to internal bearing design nor any indication as to availability of bearings.

Airframe bearings, instrument ball bearings, needle roller bearings, tapered roller bearings, thrust bearings and other bearing types and series not conforming to these basic plans for boundary dimensions are covered in other ANSI/ABMA Standards.

2 Basic plan for boundary dimensions of radial bearings

2.1 Object of the plan. The object of this plan is to reduce the number of sizes as much as possible so as to promote economic production and yet to provide a sufficient number of sizes and proportions to satisfy present and future needs of bearing users. These needs are comprehensive and varying. Therefore, the plan embraces a wide range of bearing sizes and proportions which, when the needs arise, may be extended in accordance with the general rules given in the Standard.

Bearing manufacturers should select from the basic plan those sizes and proportions that are suitable for the bearing types and applications under consideration. Bearing users should select bearings from manufacturers' specifications, giving preference to those bearings whose dimensions conform to the basic plan.

Another object of this plan is to achieve the benefits of international standardization of bearing dimensions. This has been accomplished due to the fact that this plan was developed in cooperation with the International Organization for Standardization (ISO) and generally conforms to those standards adopted by ISO. Differences from ISO standards are noted in the text or tables of this standard.

2.2 Metric and inch equivalents. Metric bearings of dimensions conforming to the plan are manufactured in plants using the metric system of measurement and also in plants using the inch system of measurement. When the inch system is used, the basic metric boundary dimensions are converted to equivalent inch dimensions in accordance with ANSI/IEEE 268 carried to four decimal places.

The metric dimensions and their equivalent inch dimensions differ by 0.00005 inch or less (except for width in radial dimensions series 32, 92, 33, and 93), an amount that is too small to be of practical significance. Therefore bearings made to either system of measurement are equally acceptable as being in accord with this standard.

Most ball and cylindrical roller bearings, manufactured in USA to the radial dimension series 32, 92, 33, and 93 have fractional inch width dimensions. When converting these to millimeters carried to one decimal place, the resulting discrepancy is 0.05 mm (0.002 inch) or less which in this case is too small to be of practical significance.