



Standard Specification for Annular Ball Bearings for Instruments and Precision Rotating Components¹

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1. Scope

1.1 This specification covers annular ball bearings intended primarily for use in instrument and precision rotating components. Instrument and precision ball bearings should meet tolerances specified in ABMA Standard 12.2, Instrument Ball Bearings Inch Design for Classes ABEC 5P and 7P.

1.2 *Intended Use*—Ball bearings defined by this specification are intended for use in critical components of instrument systems. Such components range from air circulating blowers and drive motors through precision gear trains, gyro gimbals, and pickoffs to rate integrating spin-motors.

1.3 The specification contains many of the requirements of MIL-B-81793, which was originally developed by the Department of Defense and maintained by the Naval Air Systems Command (Navy-AS) in Lakehurst, NJ. The following government activity codes may be found in the Department of Defense, Standardization Directory SD-1.²

Preparing activity	Custodians	Review activities
Navy - AS	Army - AT	Army-AV
	Navy - AS	Navy - MC, SH
	Air Force - 99	Air Force-84
	DLA - GS	

1.4 *Classification*—Annular ball bearings for instrument and precision rotating components shall be of the following types, as specified:

1.4.1 *Type I*—Annular ball bearing, for instruments and precision rotating components, deep groove, unflanged; (See [Annex A1 – Annex A4](#))

1.4.2 *Type II*—Annular ball bearing, for instruments and precision rotating components, deep groove, flanged; (See [Annex A5 – Annex A8](#))

1.4.3 *Type III*—Annular ball bearing, for instruments and precision rotating components, deep groove, unflanged, inner ring extended; (See [Annex A9 – Annex A12](#))

1.4.4 *Type IV*—Annular ball bearing, for instruments and precision rotating components, deep groove, flanged, inner ring extended; (See [Annex A13 – Annex A16](#))

1.4.5 *Type V*—Annular ball bearing, for instruments and precision rotating components, angular contact, unflanged, nonseparable, and counterbored outer ring; (See [Annex A17 – Annex A20](#))

1.4.6 *Type VI*—Annular ball bearing, for instruments and precision rotating components, angular contact, flanged, nonseparable, and counterbored outer ring on flange side; (See [Annex A21 – Annex A24](#))

1.4.7 *Type VII*—Annular ball bearing, for instruments and precision rotating components, angular contact, unflanged, separable, and stepped inner ring; (See [Annex A25 – Annex A28](#))

1.4.8 *Type VIII*—Annular ball bearing, for instruments and precision rotating components, angular contact, flanged, separable, and stepped inner ring; (See [Annex A29 – Annex A32](#))

1.4.9 *Type IX*—Annular ball bearing, for instruments and precision rotating components, angular contact, unflanged, nonseparable, and stepped inner ring. (See [Annex A33 – Annex A36](#))

1.5 *Inch-Pound Specification*—This specification covers only the inch-pound bearings.

1.5.1 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards*:³

[A240/A240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure](#)

¹ This specification is under the jurisdiction of ASTM Committee F34 on Rolling Element Bearings and is the direct responsibility of Subcommittee F34.06 on Aerospace.

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² The military codes that are listed in SD-1 give the address and phone numbers of the DoD contacts. These are found in the DoD's ASSIST website <http://assist.daps.dla.mil/>.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.