



Designation: F 2162 – 01

Standard Specification for Bearing, Roller, Needle: Drawn Outer Ring, Full Complement, Without Inner Ring, Open and Closed End, Standard Type¹

This standard is issued under the fixed designation F 2162; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This specification covers standard-type needle roller bearings having drawn outer rings, full complement, without inner rings, with either open or closed ends.

1.2 The use of recycled materials that meet the requirements of the applicable material specification without jeopardizing the intended use of the item is encouraged.

1.3 The inner rings specified in this specification are not intended for use in flight critical systems of aircraft.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information only.

NOTE 1—This specification was originally developed by the Department of Defense and maintained by the Defense Supply Center Richmond. It is intended to replicate the requirements of MS 17130.

2. Referenced Documents

2.1 ASTM Standards:

E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials²

E 140 Standard Hardness Conversion Tables for Metals (Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Rockwell Superficial Hardness, Knoop Hardness, and Scleroscope Hardness)²

E 384 Test Method for Microindentation Hardness²

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2.2 ASME Standard:

ASME B 46.1 Surface Texture Surface Roughness, Waviness, and Lay³

2.3 SAE Standard:

SAE J-404 Chemical Composition of SAE Alloy Steels⁴

2.4 Military Standard:

MIL-STD-130 Identification Marking of US Military Property⁵

2.5 American Bearing Manufacturer's Association (ABMA) Standard:

STD 4 Tolerance Definitions and Gauging Practices For Ball and Roller Bearings⁶

2.6 ISO Standards:

ISO 5593 Rolling Bearings—Vocabulary⁷

ISO 1132 Rolling Bearings—Tolerances—Definitions⁷

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to ABMA STD 4 Tolerance Definitions and Gauging Practices for Ball and Roller Bearings, ISO 1132 Rolling Bearings—Tolerances—Definitions, and to ISO 5593 Rolling Bearings—Vocabulary

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *average life (L_{50})*, *n*—for a radial roller bearing, the number of revolutions that 50 % of a group of bearings will complete or exceed before the first evidence of fatigue developments.

3.2.1.1 *Discussion*—The average life maybe as much as five times the rating life.

3.2.2 *basic dynamic load rating (C_r)*, *n*—for a radial roller bearing, that calculated, constant radial load that a group of apparently identical bearings with stationary outer rings can theoretically endure for a rating life of one million revolutions of the inner ring.

3.2.2.1 *Discussion*—Since applied loading as great as the basic dynamic load rating tends to cause local plastic deformation of the rolling surfaces, it is not anticipated that such heavy loading would normally be applied.

3.2.3 *basic static load rating (C_{or})*, *n*—for a radial roller bearing, that uniformly distributed static radial load which produces a maximum contact stress of 580 000 psi (4000 Mpa) at the center of the contact of the most heavily loaded rolling element.

¹ This specification is under the jurisdiction of ASTM Committee F34 on Rolling Element Bearings and is the direct responsibility of Subcommittee F34.01 on Rolling Element.

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² *Annual Book of ASTM Standards*, Vol 03.01.

³ Available from Global Engineering Documents, 15 Inverness Way, East Englewood, CO 80112.

⁴ Available from SAI International, 400 Commonwealth Dr., Warrendale, PA 15096-0001.

⁵ Available from USA Information Systems, 1092 Laskin Rd., Ste. 208, Virginia Beach, VA 23451.

⁶ Available from the American Bearing Manufacturer's Association, 1200 19th St. NW, Ste. 300, Washington, DC 20036-2401.

⁷ Available from ANSI, 1819 L St. NW, Ste. 600, Washington, DC 20036.