Designation: F2430 – 04 (Reapproved 2012)

Standard Specification for Bearing, Roller, Needle: Assembly (Thick Outer Race)[1]

This standard is issued under the fixed designation F2430; 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 reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers needle roller bearing assemblies. These assemblies have thick outer rings, cages, rollers, and inner rings. The assemblies consist of a MS51961 thick outer race needle roller bearing as specified in Specification F2246 and a corresponding MS51962 inner ring as specified in Specification F2431

1.2 The bearings being specified are intended to be used on unhardened shafts. MS51961 bearings without inner rings, as specified in Specification F2246, may be used for used directly on hardened shafts (HRC58–65; see Test Methods E18).

1.3 Bearings designed to this specification are intended for use in applications requiring high radial load with minimal angular shaft misalignment.

1.4 This specification contains many of the requirements of MS500072, which was originally developed by the Department of Defense and maintained by the Defense Supply Center in Richmond. The following government activity codes may be found in the Department of Defense, Standardization Directory SD-1.[2]

Preparing activity	Custodians	Review Activity
DLA-GS4	Army –AT Navy-OS Air Force-99	Air Force- 11, 84

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Referenced Documents

2.1 *ASTM Standards:*[3]

E18 Test Methods for Rockwell Hardness of Metallic Materials

F2246 Specification for Bearing, Roller, Needle: Thick Outer Ring With Rollers and Cage

F2431 Specification for Ring Bearing, Inner: For Needle Roller Bearing with Thick Outer Ring

2.2 *Military Standards:*[4]

MIL-STD-130 Identification Marking of U.S. Military Property

MIL-DTL-197 Packaging of Bearings, Associated Parts and Subassemblies

2.3 *ABMA Standards:*[5]

ABMA 4 Tolerance Definitions and Gauging Practices for Ball and Roller Bearings

ABMA 18.2 Needle Roller Bearings Radial, Inch Design

2.4 *ISO Standard:*[6]

ISO 5593 Rolling Bearings—Vocabulary

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to ABMA STD 4 and to ISO 5593.

4. Ordering Information

4.1 When ordering parts in accordance with this specification, specify the following:

4.1.1 ASTM designation number, including year of issue,

4.1.2 Dash number (see Table 1),

[1] This specification is under the jurisdiction of ASTM Committee F34 on Rolling Element Bearings and is the direct responsibility of Subcommittee F34.04 on Automotive/Industrial Bearing.

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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/online/start/.

[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.

[4] Available on the DOD's ASSIST website, http://assist.daps.dla.mil/online/start/.

[5] Available from Techstreet, 3916 Ranchero Dr., Ann Arbor, MI 48108, http://www.techstreet.com.

[6] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

TABLE 1 Nominal Bearing Dimensions

MS500072 Dash Number	For Actual Sizes and Tolerances See Specifications F2246 and F2431				MS51961 Bearing Dash Number (Specification F2246)	MS51962 Inner Ring Dash Number (Specification F2431)
	d Bore Diameter, in.	*D* Outside Diameter, in.	*B* Inner Ring Width, in.	*C* Outer Ring Width, in.		
	Nom.	Nom.	Nom.	Nom.		
-1	3/8	1 1/8	3/4	3/4	-1	-1
-2	1/2	1 1/4	3/4	3/4	-2	-2
-3	1/2	1 1/4	1	1	-3	-3
-4	5/8	1 3/8	3/4	3/4	-5	-4
-5	3/4	1 1/2	3/4	3/4	-8	-5
-6	13/16	1 1/2	3/4	3/4	-8	-6
-7	13/16	1 1/2	1	1	-9	-7
-8	7/8	1 5/8	1	1	-11	-8
-9	15/16	1 5/8	1	1	-11	-9
-10	1	1 3/4	1	1	-14	-10
-11	1	1 3/4	1 1/4	1 1/4	-15	-11
-12	1 1/8	1 7/8	1	1	-18	-12
-13	1 1/8	1 7/8	1 1/4	1 1/4	-19	-13
-14	1 3/16	2 1/16	1 1/4	1 1/4	-22	-14
-15	1 1/4	2 1/16	1	1	-21	-15
-16	1 1/4	2 1/16	1 1/4	1 1/4	-22	-16
-17	1 5/16	2 3/16	1	1	-24	-17
-18	1 3/8	2 3/16	1 1/4	1 1/4	-25	-18
-19	1 3/8	2 5/16	1 1/4	1 1/4	-28	-19
-20	1 7/16	2 5/16	1 1/4	1 1/4	-28	-20
-21	1 1/2	2 5/16	1	1	-27	-21
-22	1 1/2	2 5/16	1 1/4	1 1/4	-28	-22
-23	1 5/8	2 9/16	1 1/4	1 1/4	-30	-23
-24	1 3/4	3	1 1/2	1 1/2	-31	-24
-25	1 3/4	3	1 3/4	1 3/4	-32	-25
-26	1 5/16	3 1/4	1 3/4	1 3/4	-34	-26
-27	2	3 1/4	1 1/2	1 1/2	-33	-27
-28	2 3/16	3 1/2	1 3/4	1 3/4	-36	-28
-29	2 1/4	3 1/2	1 1/2	1 1/2	-35	-29
-30	2 3/8	3 3/4	1 3/4	1 3/4	-38	-30
-31	2 1/2	3 3/4	1 1/2	1 1/2	-37	-31
-32	2 3/4	4 1/4	1 3/4	1 3/4	-39	-32
-33	2 3/4	4 1/2	2	2	-40	-33
-34	2 15/16	4 1/2	2	2	-42	-34
-35	3 1/8	4 3/4	2	2	-43	-35
-36	3 1/4	4 3/4	2	2	-43	-36
-37	3 1/4	5	2	2	-45	-37
-38	3 3/8	5	2	2	-45	-38
-39	3 1/2	5 1/4	2	2	-46	-39
-40	3 3/4	5 1/4	2	2	-46	-40
-41	3 3/4	6	2 1/2	2 1/2	-49	-41
-42	4	6 1/2	2 1/2	2 1/2	-51	-42
-43	4 1/2	7	2 1/2	2 1/2	-52	-43
-44	4 1/2	7	3	3	-53	-44
-45	4 3/4	7 1/4	3	3	-54	-45
-46	5	7 1/2	2 1/2	2 1/2	-55	-46
-47	5	7 1/2	3	3	-56	-47
-48	5 1/2	8	2 1/2	2 1/2	-57	-48
-49	5 1/2	8	3	3	-58	-49
-50	6	9 1/8	3	3	-59	-50

4.1.3 Dimensions of roller bearings, including:
4.1.3.1 Bore diameter, in. (mm),
4.1.3.2 Outside diameter, in. (mm),
4.1.3.3 Inner ring width, in. (mm),
4.1.3.4 Outer ring width, in. (mm), and

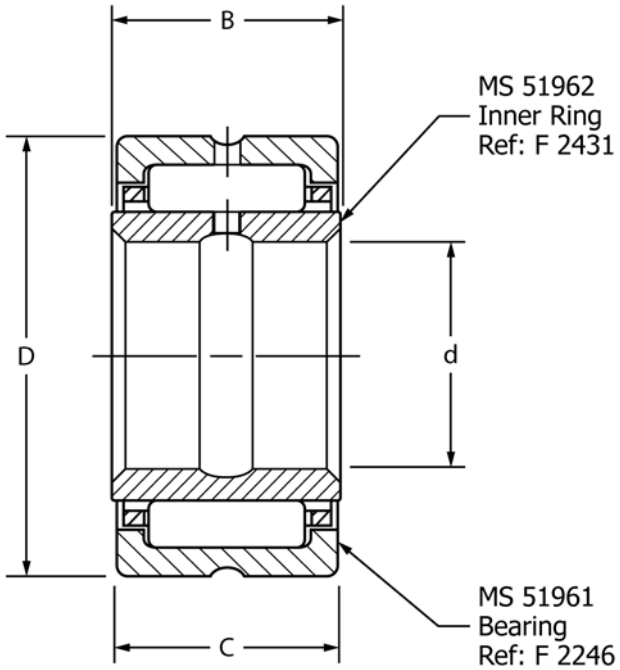

FIG. 1 Schematic Drawing—Roller Bearing Assembly

4.1.4 Level of packaging and preservation (for Military procurements).

5. Materials and Manufacture

5.1 *Bearing*—Materials for the MS51961 bearing are specified in Specification F2246,

5.2 *Inner Rings*—Materials for the MS51962 inner rings shall be specified in Specification F2431.

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

6. Other Requirements

6.1 *Heat Treatment:*

6.1.1 *Bearing*—Heat treatment for the bearing components is specified in Specification F2246.

6.1.2 *Inner Rings*—Heat treatment for the inner ring is specified in Specification F2431.

6.2 *Protective Coating:*

6.2.1 Unless specified otherwise, bearing assemblies shall be furnished without plating.

6.2.2 Manufacturer shall coat bearing assemblies with rust preventive film.

6.3 *Lubrication*—Unless specified otherwise, bearing assemblies shall be furnished without lubrication.

7. Dimensions and Permissible Variations

7.1 Bearing assemblies shall be made up in mating sets as specified in Table 1.

7.2 Bearing assemblies are intended to be installed on shafts where maximum taper does not exceed 0.0005 in./in. (0.0005 mm/mm) of bearing width.

7.3 The dimensions given in Table 1 are for engineering reference only.

7.3.1 Actual sizes and tolerances for the MS51961 bearings may be found in Specification F2246.

7.3.2 Actual sizes and tolerances for the MS51962 inner rings may be found in Specification F2431.

7.4 Load ratings and limiting speeds for the MS51961 bearings may be found in Specification F2246.

8. Workmanship, Finish, and Appearance

8.1 Surface finish requirements for the MS51961 bearings may be found in Specification F2246.

8.2 Surface finish requirements for the MS51962 inner rings may be found in Specification F2431.

9. Inspection

9.1 Inspection of the product shall be agreed upon between the purchaser and the supplier as part of the purchase contract.

10. Rejection and Rehearing

10.1 Products that fail to conform to the requirements of this specification may be rejected. Rejection should be reported to the producer or supplier promptly and in writing. In case of dissatisfaction with the results of the test, the producer or supplier may make claim for rehearing.

11. Certification

11.1 When specified in the purchase order or contract, the purchaser shall be furnished certification that samples representing each lot have been either tested or inspected as directed in this specification and the requirements have been met. When specified in the purchase order or contract, a report of the test results shall be furnished.

12. Product Marking

12.1 Marking shall consist of the part number and the manufacturer's identification in accordance with MIL-STD-130.

12.1.1 The part number shall consist of the MS500072 designation plus the dash number (see Table 1), for example, MS500072-6.

12.1.2 Alternative marking, in lieu of marking the bearing assembly:

12.1.2.1 The bearing outer ring may be marked with the MS51961 designation plus the appropriate dash number. For example, in a MS500072-6 assembly the outer ring may be marked MS51961-8.

12.1.2.2 The inner ring may be marked with the MS51962 designation plus the appropriate dash number. For example, in a MS500072-6 assembly the inner ring may be marked MS51962-6.

13. Packaging

13.1 Unless otherwise specified in the contract or purchase order, military procurements shall be packaged and preserved in accordance with MIL-DTL-197. Level of packaging and preservation method shall be as specified in the contract or purchase order.

14. Keywords

14.1 cage; inner ring; MS500072; MS51961; MS51962 ; needle roller; outer ring; radial bearing