Designation: F2431 – 04

StandardSpecification for Ring Bearing, Inner: For Needle Roller Bearing with Thick Outer Ring[1]

This standard is issued under the fixed designation F2431; 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 Department of Defense.

1. Scope

1.1 This specification covers inner rings for needle roller bearings having thick outer rings.

1.2 The inner rings being specified are intended for use on unhardened shafts in conjunction with the MS51961 needle roller bearings specified in Specification F2246.

1.2.1 For needle roller bearings with thin outer rings (Specification F2162, MS17131, MS52141) use inner rings specified in Specification F2163.

1.3 Inner rings 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 MS51962, 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–84

2. Referenced Documents

2.1 *ASTM Standards:*[3]

E18 Test Methods for Rockwell Hardness of Metallic Materials

F2162 Specification for Bearing, Roller, Needle: Drawn Outer Ring, Full Complement, Without Inner Ring, Open and Closed End, Standard Type

F2163 Specification for Ring, Bearing, Inner: for Needle Roller Bearing With Drawn Outer Ring

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

2.2 *ANSI Standard:*[4]

ASME B46.1 Surface Texture (Surface Roughness, Waviness, and Lay)

2.3 *SAE Standards:*[5]

SAE J404 Chemical Compositions of SAE Alloy Steels

SAE AMSSTD66 Steel: Chemical Composition and Hardenability

2.4 *Military Standard.*[6]

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

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

2.5 *ABMA Standards:*[7]

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

ABMA 18.2 Needle Roller Bearings Radial, Inch Design

2.6 *ISO Standard:*[4]

ISO 5593 Rolling Bearings—Vocabulary

3. Terminology

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

4.1.3 Dimensions of inner ring, including:

[1] This specification is under the jurisdiction of ASTM Committee F34 on Rolling Element Bearings and is the direct responsibility of Subcommittee 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 from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

[5] Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

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

[7] Available from Techstreet, 1327 Jones Drive, Ann Arbor, MI 48105.

TABLE 1 Inner Ring Dimensions

Dash Number	*d* Bore Diameter, in.			*F* Outside Diameter, in.			*B* Width, in. +0.000, -0.005	*r* Radius, in. (see 7.3)	Mating Bearing MS51961 Dash Number (see Specification F2246)
	Nom.	Min.	Max.	Nom.	Min.	Max.			
-1	3/8	0.3746	0.3750	5/8	0.6241	0.6245	0.760	0.025	-1
-2	1/2	0.4996	0.5000	3/4	0.7488	0.7493	0.760	0.040	-2
-3	1/2	0.4996	0.5000	3/4	0.7488	0.7493	1.010	0.040	-3
-4	5/8	0.6246	0.6250	7/8	0.8738	0.8743	0.760	0.040	-5
-5	3/4	0.7496	0.7500	1	0.9988	0.9993	0.760	0.040	-8
-6	13/16	0.8120	0.8125	1	0.9988	0.9993	0.760	0.040	-8
-7	13/16	0.8120	0.8125	1	0.9988	0.9993	1.010	0.040	-9
-8	7/8	0.8745	0.8750	1 1/8	1.1236	1.1241	1.010	0.040	-11
-9	15/16	0.9370	0.9375	1 1/8	1.1236	1.1241	1.010	0.040	-11
-10	1	0.9995	1.0000	1 1/4	1.2485	1.2491	1.010	0.040	-14
-11	1	0.9995	1.0000	1 1/4	1.2485	1.2491	1.260	0.040	-15
-12	1 1/8	1.1245	1.1250	1 3/8	1.3735	1.3741	1.010	0.040	-18
-13	1 1/8	1.1245	1.1250	1 3/8	1.3735	1.3741	1.260	0.040	-19
-14	1 3/16	1.1870	1.1875	1 1/2	1.4984	1.4990	1.260	0.060	-22
-15	1 1/4	1.2495	1.2500	1 1/2	1.4984	1.4990	1.010	0.060	-21
-16	1 1/4	1.2495	1.2500	1 1/2	1.4984	1.4990	1.260	0.060	-22
-17	1 5/16	1.3210	1.3125	1 5/8	1.6234	1.6240	1.010	0.060	-24
-18	1 3/8	1.3745	1.3750	1 5/8	1.6234	1.6240	1.260	0.060	-25
-19	1 3/8	1.3745	1.3750	1 3/4	1.7484	1.7490	1.260	0.060	-28
-20	1 7/16	1.4370	1.4375	1 3/4	1.7484	1.7490	1.260	0.060	-28
-21	1 1/2	1.4995	1.5000	1 3/4	1.7484	1.7490	1.010	0.060	-27
-22	1 1/2	1.4995	1.5000	1 3/4	1.7484	1.7490	1.260	0.060	-28
-23	1 5/8	1.6245	1.6250	2	1.9982	1.9989	1.260	0.060	-30
-24	1 3/4	1.7495	1.7500	2 1/4	2.2482	2.2489	1.510	0.060	-31
-25	1 3/4	1.7495	1.7500	2 1/4	2.2482	2.2489	1.510	0.060	-32
-26	1 15/16	1.9370	1.9375	2 1/2	2.4982	2.4989	1.760	0.080	-34
-27	2	1.9995	2.0000	2 1/2	2.4982	2.4989	1.510	0.080	-33
-28	2 3/16	2.1869	2.1875	2 3/4	2.7482	2.7489	1.760	0.080	-36
-29	2 1/4	2.2494	2.2500	2 3/4	2.7482	2.7489	1.510	0.080	-35
-30	2 3/8	2.3744	2.3750	3	2.9982	2.9989	1.760	0.080	-38
-31	2 1/2	2.4994	2.5000	3	2.9982	2.9989	1.510	0.080	-37
-32	2 3/4	2.7494	2.7500	3 1/4	3.2478	3.2487	1.760	0.080	-39
-33	2 3/4	2.7494	2.7500	3 1/4	3.2478	3.2487	2.010	0.080	-40
-34	2 15/16	2.9369	2.9375	3 1/2	3.4978	3.4987	2.010	0.080	-42
-35	3 1/8	3.1244	3.1250	3 3/4	3.7478	3.7487	2.010	0.100	-43
-36	3 1/4	3.2494	3.2500	3 3/4	3.7478	3.7487	2.010	0.100	-43
-37	3 1/4	3.2494	3.2500	4	3.9976	3.9985	2.010	0.100	-45
-38	3 3/8	3.3742	3.3750	4	3.9976	3.9985	2.010	0.100	-45
-39	3 1/2	3.4992	3.5000	4 1/4	4.2476	4.2485	2.010	0.100	-46
-40	3 3/4	3.7492	3.7500	4 1/4	4.2476	4.2485	2.010	0.100	-46
-41	3 3/4	3.7492	3.7500	4 1/2	4.4976	4.4985	2.510	0.100	-49
-42	4	3.9992	4.0000	5	4.9975	4.9985	2.510	0.100	-51
-43	4 1/2	4.4992	4.5000	5 1/2	5.4975	5.4985	2.515	0.100	-52
-44	4 1/2	4.4992	4.5000	5 1/2	5.4975	5.4985	3.015	0.100	-53
-45	4 3/4	4.7492	4.7500	5 3/4	5.7473	5.7483	3.015	0.120	-54
-46	5	4.9990	5.0000	6	5.9973	5.9983	2.515	0.120	-55
-47	5	4.9990	5.0000	6	5.9973	5.9983	3.015	0.120	-56
-48	5 1/2	5.4990	5.5000	6 1/2	6.4973	6.4983	2.515	0.120	-57
-49	5 1/2	5.4990	5.5000	6 1/2	6.4973	6.4983	3.015	01.20	-58
-50	6	5.9990	6.0000	7 1/4	7.2469	7.2481	3.015	0.120	-59

4.1.3.1 Bore diameter, in. (mm),
4.1.3.2 Outside diameter, in. (mm),
4.1.3.3 Width, in. (mm), and
4.1.3.4 Radius, in. (mm),
4.1.4 Level of packaging and preservation (for Military procurements).