Designation: F2590 – 06 (Reapproved 2013)

Standard Specification for Bearing, Roller, Thrust, Two Channeled Race Surface, Rigid or Flat Seat Type[1]

This standard is issued under the fixed designation F2590; 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.

1. Scope

1.1 This specification covers requirements for rigid or flat seat type, two channeled race surface, thrust roller bearings.

1.2 *Intended Use*—The bearings covered in this specification are intended for use in slow rotating or oscillating applications where pure thrust loads are applied.

1.3 This specification contains many of the requirements of MS17169, 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 Activities
DLA-GS4	Army-AT	Army-MI
	Navy-MC	Air Force-84
	Air Force-99	
	DLA-GS4	

1.4 For design feature purposes, this specification takes precedence over procurement documents referenced herein.

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.

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 limitations prior to use.*

2. Referenced Documents

2.1 *ABMA Standard:*[3]

ABMA Std. 1 Terminology for Anti-Friction Ball and Roller Bearings and Parts

2.2 *ASME Standard:*[4]

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

2.3 *ISO Standard:*[5]

ISO 5593 Rolling Bearings—Vocabulary

2.4 *Military Standards:*[6]

MIL-STD-102 Electronic and Electrical Component Parts

MIL-STD-129 Military Marking for Shipment and Storage

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

2.5 *SAE Standard:*[7]

SAE AMS-STD-66 Steel: Chemical Composition and Hardenability

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to ABMA Std. 1 and ISO 5593.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *steering pivot rating*—steering pivot rating is used to determine what size bearing is needed for a particular application. Bearings with this rating were originally designed and intended for use in the king pins of front axles on large trucks. In this application, the bearings are subject to only oscillation motion, with a lot of shock and vibration loading. The steering pivot rating includes a safety factor of approximately 2.0 to compensate for the indeterminate shock and vibration. Therefore, when these bearings are used in crane hook applications or other similar steady pull applications, the steering pivot rating can be doubled. It should also be kept in mind that these bearings were designed for oscillating or slow rotation applications only and should never be operated at speeds higher than 5 rpm.

3.2.2 *intermittent operation rating*—the intermittent operation rating is used to determine what size bearing is needed for

[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] Available from Techstreet, 777 E. Eisenhower Parkway, Ann Arbor, MI 48108.

[4] Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New Your, NY 10016-5990.

[5] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

[6] Available from the DOD's Assist internet site located at: http://assist.daps.dla.mil/online/start/.

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

a particular application. Bearings with this rating were originally designed and intended for rotational applications operating at speeds of 50 rpm or less.

4. Ordering Information

4.1 Procurement documents should specify the following:
4.1.1 Title, number, and date of this specification,
4.1.2 Part Number (see 9.1),
4.1.3 Nominal dimensions of bearing (bore, outside diameter, height),
4.1.4 Quantity required,
4.1.5 Inspection records required, and
4.1.6 Required packaging.

5. Materials and Manufacture

5.1 *Material*—Steel, alloy, high carbon chromium, type AISI E52100, AMS 6440, or AMS 6444.

6. Physical Properties

6.1 *Heat Treatment*—Bearing races and rollers shall be through hardened to Rockwell C56 to 66.

7. Dimensions, Mass, and Permissible Variations

7.1 See Figs. 1 and 2 and Tables 1 and 2.

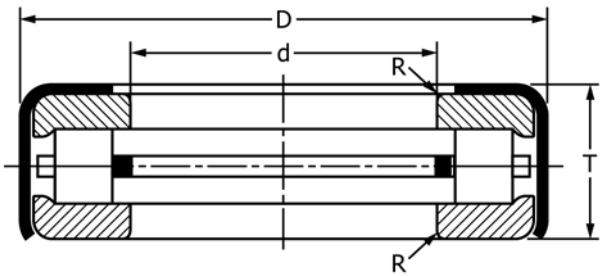

FIG. 1 Retainer Type—Steering Gear Service

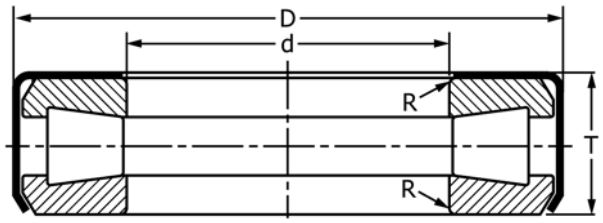

FIG. 2 Retainerless Type—Intermittent Operation—50 RPM Max

8. Workmanship, Finish, and Appearance

8.1 *Surface Finish*—Surfaces described below shall have a surface finish in accordance with ASME B46.1.
8.1.1 *Bearing OD*—32 µin. Ra (0.81 µm Ra) max.
8.1.2 *Bearing Bore*—32 µin. Ra (0.81 µm Ra) max.
8.1.3 *Bearing Face*—32 µin. Ra (0.81 µm Ra) max.
8.1.4 *Roller OD*—16 µin. Ra (0.41 µm Ra) max.
8.1.5 *Bearing Raceway*—16 µin. Ra (0.41 µm Ra) max.
8.1.6 *Retainer Face*—63 µin. Ra (1.60 µm Ra) max.

8.2 Bearing shall be free of all defects that affect its serviceability.

9. Product Marking

9.1 The MS Part Number consists of MS17169, plus the dash number. Example: MS17169-1.

9.2 Marking shall consist of the MS Part Number and the manufacturer's identification in accordance with MIL-STD-130.

9.3 The marking shall appear on the bearing's OD.

10. Preservation, Packaging, and Packing

10.1 Preservation, packaging, and packing shall be as specified in the acquisition document.

11. Keywords

11.1 bearing; MS17169; steering pivot; thrust bearing

TABLE 1 Dimensions and Tolerances

d			D	T	R	Fig. No.	Bearing Number			
Bore, in.	Tolerance		Outside Dia., in.	Tol., -0.000	Height, ±0.005 in.	Radius or Chamfer		Without Oil Holes in O.D. Band		With Oil Holes in O.D. Band	
	+	–						†Code Number[A]	Dash No.	Code Number[A]	Dash No.
0.6350	0.004	0.003	1.6250	+0.010	0.5000	0.031 R	1	994 x 73036 x 0000	1		
0.7600	0.004	0.002	1.6250	+0.010	0.5310	0.031 R	1	994 x 73001 x 0000	2		
0.8220	0.006	0.000	1.6250	+0.010	0.5310	0.031 R	1	994 x 73005 x 0000	3		
0.8220	0.006	0.000	1.6600	+0.010	0.5310	0.031 x 45°	1	994 x 73023 x 0000	4		
0.8850	0.004	0.002	1.8906	+0.010	0.5940	0.031 R	1	994 x 73006 x 0000	5		
0.9470	0.004	0.002	1.8906	+0.010	0.5940	0.031 R	1	994 x 73034 x 0000	6		
1.0100	0.004	0.004	2.0000	+0.010	0.6250	0.031 R	1	994 x 73002 x 0000	7		
1.0720	0.004	0.004	2.0000	+0.010	0.6250	0.031 R	1	994 x 73021 x 0000	8		
1.1350	0.004	0.004	2.1875	+0.010	0.6250	0.031 R	1	994 x 73003 x 0000	9		
1.1975	0.004	0.002	2.1875	+0.010	0.6250	0.031 R	1	994 x 73020 x 0000	10		
1.2600	0.004	0.004	2.1875	+0.010	0.6250	0.031 R	1	994 x 73004 x 0000	11	994 x 73029 x 0000	39
1.2600	0.000	0.005	2.6250	+0.005	0.7656	0.031 x 45°	2	994 x 73007 x 0000	12		
1.3850	0.000	0.005	2.6250	+0.005	0.7656	0.031 x 45°	2	994 x 73008 x 0000	13		
1.4470	0.000	0.005	2.6250	+0.005	0.7656	0.031 x 45°	2	994 x 73025 x 0000	14	994 x 73009 x 0000	42
1.5100	0.000	0.005	2.8590	+0.005	0.8438	0.031 x 45°	2	994 x 73022 x 0000	15	994 x 73042 x 0000	43
1.5730	0.000	0.005	2.8590	+0.005	0.8438	0.031 x 45°	2	994 x 73036 x 0000	16		
1.6350	0.000	0.005	2.8590	+0.005	0.8438	0.031 x 45°	2	994 x 73010 x 0000	17		
1.7600	0.000	0.005	3.2660	+0.005	0.9375	0.031 x 45°	2	994 x 73011 x 0000	18	994 x 73012 x 0000	46
1.9470	0.002	0.002	3.6720	+0.005	1.0313	0.031 x 45°	3	994 x 73030 x 0000	19		
1.9470	0.002	0.002	3.6720	+0.005	1.0620	0.031 x 45°	2	994 x 73013 x 0000	20		
2.0100	0.002	0.002	3.6720	+0.005	1.0313	0.125 R	3	994 x 73014 x 0000	21	994 x 73043 x 0000	49
2.0100	0.002	0.002	3.6720	+0.005	1.0625	0.125 R	2	994 x 73015 x 0000	22	994 x 73016 x 0000	50
2.0720	0.002	0.002	3.6720	+0.005	1.0620	0.031 x 45°	2		23	994 x 73037 x 0000	51
2.0720	0.002	0.002	3.6720	+0.005	1.0310	0.031 x 45°	3	994 x 73031 x 0000	24		
2.5100	0.002	0.002	4.3750	+0.005	1.0625	0.031 x 45°	2	994 x 73028 x 0000	25	994 x 73026 x 0000	53
2.5100	0.002	0.002	4.3750	+0.005	1.0156	0.031 x 45°	3		26	994 x 73017 x 0000	54
3.0100	0.002	0.002	5.2500	+0.008	1.3125[B]	0.093 R	3	994 x 73018 x 0000	27		
3.0100	0.002	0.002	5.2500	+0.008	1.3750[B]	0.093 R	2	994 x 73027 x 0000	28		

[A] The Bearing Code Number is per the obsolete MIL-STD-102. These code numbers are provided for reference only.
† Editorially corrected.
[B] Tol. +0.000, 0.008.

TABLE 2 Load Ratings

Retainer Type			Retainerless Type		
Bearing Dash Number	Figure Number	Steering Pivot Rating, lb	Bearing Dash Number	Figure Number	Intermittent Operation Rating, 50 rpm max, lb
1	1	2450	12	2	7450
2	1	2450	13	2	7450
3	1	2450	14 and 42	2	7450
4	1	2765	15 and 43	2	8320
5	1	3840	16	2	8320
6	1	3840	17	2	8320
7	1	4125	18 and 46	2	11345
8	1	4125	19	3	15485
9	1	4415	20	2	15485
10	1	4415	21 and 49	3	15485
11 and 39	1	4415	22 and 50	2	15485
			23 and 51	2	15485
			24	3	15485
			25 and 53	2	21650
			26 and 54	3	21650
			27	3	31455
			28	2	31455