

INCH - POUND

MIL-B-81820F
Amendment 2
30 June 1995
SUPERSEDING
Amendment 1
23 January 1995

MILITARY SPECIFICATION

BEARINGS, PLAIN, SELF-ALIGNING, SELF-LUBRICATING,
LOW SPEED OSCILLATION, GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-B-81820F, dated 21 February 1994, and is approved for use by all Departments and Agencies of the Department of Defense.

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2.1.1, Specifications, Federal: Under QQ-P-35 add "QQ-P-416 Plating, Cadmium (Electrodeposited)."

2.1.1, Standards, Military: Delete "MILSTD-105 Sampling Procedures and Tables for Inspection by Attributes."

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3.2.1, Second Sentence: After AMS-2417, Type 2, add "or QQ-P-416 Type II, Class 2." Delete "(6.7)."

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AMSC N/A

FSC 3120

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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*4.4, Delete Section 4.4 through 4.4.3 and replace with the following:

***4.4 Quality conformance inspections** The quality conformance inspections shall consist of the inspections listed in Table V.

*4.4.1 Inspection lot. The inspection lot shall consist of finished bearings, having a single part number, manufactured by the procedures established for the original qualified bearings, swaged on the same tool setup, produced as one continuous run or order or portion thereof, and with one or more liner bonding runs, which can be defined by means of in-house processing records.

*4.4.2 Sampling.

*4.4.2.1 **Sample for** quality conformance tests (a) through (d). The sample bearings shall be selected at random from each inspection lot in accordance with Table VI-A. If no defect is found in the sample the lot shall be accepted for these tests. If any defects are found in the sample, the entire lot shall be 100% inspected for each defective characteristic found, and all defective parts shall be removed from the lot.

*4.4.2.2 Sample for quality conformance test (e). Inspection shall be 100% of the lot. All defective parts shall be removed from the lot.

*4.4.2.3 Sample for quality conformance tests (f) and (g). The sample bearings shall be selected at random from each inspection lot in accordance with Table VI-B. (At the bearing manufacturer's option, the sample bearing for these destructive inspections may be selected at random from the non-pairable defective-parts rejected from the inspection lot during quality conformance tests (a) through (d).) If no defect is found in the sample the lot shall be accepted for these tests. A lot which was rejected under Normal Inspection of Table VI-B shall be reinspected under Tightened Inspection of Table VI-B. If a defect is found in the Tightened Inspection sample, the entire lot shall be rejected and shall not be offered for sale or acceptance under this specification or any other military specification.

*4.4.2.4 Sample for quality conformance test (h). Each lot of bearings which is provided without preload torque shall be 100% inspected for radial clearance in accordance with 3.5.10 and 4.6.10. All defective parts shall be removed from the lot.

*4.4.2.5 Sample for quality conformance tests (i). Each lot of bearings which is provided without preload torque shall be 100% inspected for axial clearance in accordance with 3.5.11 and 4.6.11. All defective parts shall be removed from the lot.

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*4.4.3 Quality assurance certification. For each inspection lot the manufacturer shall maintain and supply to the purchaser upon demand:

- a. Certified copies of all records or quality conformance tests specified in 4.4 and the purchase order.
- b. Certification that the bearings were provided without any change in the product design, description, materials or bonding related operations from those supplied for qualification testing per 4.3.1.1 and 4.3.1.2.

These records and certifications shall identify the manufacturer of the bearings, the address of the plant where they were manufactured, the purchaser and the purchase order number (see 6.4).

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TABLE V. Quality Conformance Inspections.

Examination or Test	Critical Characteristics	Major Characteristics	Minor Characteristics	Special Inspection Plan	Requirement Paragraph	Test Paragraph
(a) Dimensions / MS Ref.						
Bore "B"		X			3.4.1	4.5.1
O. D. "D"		X			3.4.1	4.5.1
Outer Ring Width "H"		X			3.4.1	4.5.1
Ball Flat Diameter "M"			X		3.4.1	4.5.1
Ball Flat Width "W"		X			3.4.1	4.5.1
Groove Depth ⁽¹⁾ "P"		X			3.4.1	4.5.1
Groove Pitch Diam. ⁽¹⁾ "E"		X			3.4.1	4.5.1
Groove Root Radius ⁽¹⁾			X		3.4.1	4.5.1
Groove Side Face Angle ⁽¹⁾			X		3.4.1	4.5.1
Outer Race Chamfer ⁽²⁾		X			3.4.1	4.5.1
(b) Identification of Product			X		3.6	4.5.1
(c) Workmanship			X		3.7	4.5.1
(d) Preparation for Delivery			X			4.5.2
(e) No-Load Rotational Breakaway Torque				100% Inspection	3.5.6	4.6.4
(f) Conformity				Destructive Inspection	3.4.4	4.6.8
(g) Liner Condition and Bond Integrity				Destructive Inspection	3.4.5	4.6.9
(h) Radial Clearance ⁽³⁾				100% Inspection	3.5.10	4.6.10
(i) Axial Clearance ⁽³⁾				100% Inspection	3.5.11	4.6.11

(1) Inspection applies only to MS14102, MS14104, MIL-B-81820/1 and MIL-B-81820/4 parts.

(2) Inspection applies only to MS14102, MS14103, MIL-B-81820/2 and MIL-B-81820/3 parts.

(3) Inspection applies only to bearings which are provided Without preload torque (see requirements of paragraphs 3.5.10 and 3.5.11).

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* **TABLE VI-A. Sampling Plan for Quality Conformance Inspections Except
Destructive Inspections.
Zero-Based Acceptance Plan (C=0)**

LOT SIZE	SAMPLE SIZE		
	Acceptance number in all cases is zero. "A" indicates the entire lot must be inspected.		
	Critical Characteristics	Major Characteristics	Minor Characteristics
1-2	A	A	A
3-8	A	A	3
9-12	A	A	3
13-15	A	13	3
16-25	A	13	3
26-50	A	13	5
51-90	A	13	6
91-150	A	13	7
151-280	A	20	10
281-500	A	29	11
501-1200	A	34	15
1201-1249	A	42	18
1250-3200	1250	42	18
3201-10,000	1250	50	22

* **TABLE VI-B. Destructive Inspection Sampling Plan.
Zero-Based Acceptance Plan (C=0)**

Lot Size	Normal Inspection			Tightened Inspection		
	Sample Size	Accept	Reject	Sample Size	Accept	Reject
2-50	2	0	1	4	0	1
51-500	3	0	1	6	0	1
501-5000	5	0	1	10	0	1
5001-50000	8	0	1	16	0	1

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6.7: Delete entire paragraph.

6.8: Renumber to "6.7."

User Activities: Move Navy -SH under "Review Activities" and delete "User Activities."

The margins of this amendment are marked with asterisks to indicate where changes (additions, modifications, corrections or deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations, Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous amendment.

Custodians:

Army - AV
Navy - AS
Air Force-99

Preparing Activity:

Navy - AS

(Project 3120-0750)

Review Activities:

Army-AR
Navy - SH
Air Force -84
DLA - IS