

INCH-POUND

MIL-DTL-70337A
31 July 2015
SUPERSEDING
MIL-R-70337
15 January 1988DETAIL SPECIFICATION
RING, RETAINING, ROUND SECTION

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the procurement requirements for retaining rings, round section.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-5541	Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-DTL-70337/1	Ring, Retaining, Round Section, External, Closed Type

(Copies of these documents are available online at <http://quicksearch.dla.mil/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

Comments, suggestions, or questions on this document should be addressed to DLA Troop Support - Industrial Hardware Division (ATTN: Code FHTE), 700 Robbins Avenue, Philadelphia, PA 19111-5096 or email trpspspecspa@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

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AMERICAN SOCIETY FOR QUALITY (ASQ)

ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes.

(Copies of this document are available from www.asq.org American Society for Quality Control, 600 North Plankinton Avenue, Milwaukee, WI 53203.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A227/A227M	Standard Specification for Steel Wire, Cold-Drawn for Mechanical Springs
ASTM A313/A313M	Standard Specification for Stainless Steel Spring Wire
ASTM A380/A380M	Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems
ASTM A510/A510M	Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel
ASTM F1941	Standard Specification for Electrodeposited Coatings on Threaded Fasteners (Unified Inch Screw Threads (UN/UNR))

(Copies of these documents are available from www.astm.org or the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE AMS-C-81562	Coatings, Cadmium, Tin-Cadmium and Zinc (Mechanically Deposited)
SAE AMS-QQ-P-416	Plating, Cadmium (Electrodeposited)

(Copies of these documents are available from www.sae.org or the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Specification sheet. The individual item requirements shall be as specified herein and in accordance with specification sheet MIL-DTL-70337/1. In the event of any conflict between requirements of this specification and MIL-DTL-70337/1, the latter shall govern (see 6.2).

3.2 Materials. Round section retaining rings shall be fabricated of the following materials, as specified (see 3.1).

3.2.1 Carbon steel wire. Carbon steel wire shall be Grade 1060 through 1095 (UNS G10600 through G10950) in accordance with ASTM A227/A227M with Grades as specified in ASTM A510/A510M.

3.2.2 Corrosion resistant steel wire. Corrosion resistant steel wire shall be Type 316 (UNS S31600) in accordance with ASTM A313/A313M.

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3.2.4 Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3 Protective finish or surface treatment. Retaining rings shall be furnished with a protective finish or surface treatment, as specified (see 3.1).

3.3.1 Carbon steel. Carbon steel retaining rings shall be cadmium plated in accordance with SAE AMS-QQ-P-416, Type II, Class 2 (0.0003 thick) or SAE AMS-C-81562 Type II, Class 2 (0.0003 thick).

3.3.2 Corrosion resistant steel. Corrosion resistant steel retaining rings shall be cleaned, descaled and passivated in accordance with ASTM A380/A380M.

3.3.3 Zinc Nickel plating. As an alternative to cadmium plating, carbon steel retaining rings may be ZnNi plated in accordance with ASTM F1941 Fe/Zn-Ni 8ET alkaline zinc nickel electroplate, 12%-16% mass percent nickel, with chemical conversion coating per MIL-DTL-5541 TYPE II CLASS 1A.

3.4 Dimensions and tolerances. Dimensions and tolerances shall be in accordance with specification sheet MIL-DTL-70337/1 (see 3.1) and as specified herein and shall apply after protective finish, if applicable.

3.5 Hardness. Carbon steel rings shall have a hardness of 46-53 HRC.

3.6 Workmanship. Retaining rings shall be free from surface contamination, tool marks and other imperfections which may adversely affect useability.

4. VERIFICATION

4.1 Conformance inspection. Conformance inspection shall be in as specified in Table I.

TABLE I. Conformance Inspection.

Inspection	Requirement Paragraph	Test Paragraph
Protective finish or surface treatment (as applicable)	3.3	4.2.2, 4.2.3
Dimensions	3.4	4.2.1
Workmanship	3.6	4.2.1

4.1.1 Inspection lot. An inspection lot shall consist of all retaining rings covered by a single specification sheet, of the same material and finish, nominal size, produced by the same manufacturer under essentially the same conditions, and submitted for acceptance at one time.

4.1.2 Sampling for visual and dimensional examination. A random sample of retaining rings shall be taken from each lot in accordance with ASQ Z1.4 Inspection Level II.

4.1.3 Inspection of packaging. The sampling and inspection of the preservation, packing and container marking shall be in accordance with the requirements of 5.1.

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4.2 Methods of inspection.

4.2.1 Visual and dimensional examination. Samples of retaining rings shall be examined to verify conformance with this specification and specification sheet MIL-DTL-70337/1. Examination shall be conducted in accordance with Table II.

TABLE II. Classification of Defects.

Category	Defect	Inspection Method
Critical	None Defined	
Major		
101	Inside diameter, not as specified (see 3.4)	CIE <u>1/</u>
102	Wire diameter, not as specified (see 3.4)	CIE <u>1/</u>
Minor		
201	Protective finish or surface treatment missing (see 3.3)	Visual
202	Gap, not as specified (see 3.4)	CIE <u>1/</u>
203	Workmanship (see 3.6)	Visual

1/ Commercial inspection equipment

4.2.2 Protective finish. Samples of carbon steel retaining rings shall be inspected for adequacy of plating in accordance with 3.3.1.

4.2.3 Surface treatment. Samples of corrosion resistant steel retaining rings shall conform to the inspection after cleaning tests specified in 3.3.2.

4.2.4 Material inspection. Material inspection shall consist of certification supported by verifying data that the materials used in fabricating the retaining rings are in accordance with the applicable paragraphs listed in 3.2 prior to such fabrication.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Retaining rings acquired under this specification are intended for the purpose of locating and positioning machined parts or bearings on shafts or pins.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Title, number and date of applicable specification sheet (see 3.4).
- c. Applicable specification sheet part number (see 3.1).
- d. Copies and distribution of test certifications.
- e. Packaging requirements (see 5.1).

6.3 Subject term (key word) listing.

Cadmium
Passivate

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodian:

Army - AR
Navy - OS
Air Force - 99
DLA - IS

Preparing Activity:

DLA - IS

(Project 5325-2015-004)

Review Activity:

Army - AT, CR, CR4, GL, MI
Navy - SH
Air Force - 71
NSA - NS

NOTE: The activities listed above were interested in this document as of the date of document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.