

MIL-R-70337
15 January 1988

MILITARY SPECIFICATION
RING, RETAINING, ROUND SECTION
GENERAL SPECIFICATION FOR

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 requirements for retaining rings,
round section.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and
standards form a part of this specification to the extent specified herein.
Unless otherwise specified, the issues of these documents shall be those listed
in the issue of the Department of Defense Index of Specifications and Standards
(DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

QQ-P-416 - Plating, Cadmium (Electrodeposited)
PPP-H-1581 - Hardware (Fasteners and Related Items), Packaging of

MILITARY

MIL-C-81562 - Coatings, Cadmium, Tin-Cadmium and Zinc (Mechanically
Deposited)
MIL-R-70337/1 - Ring, Retaining, Round Section, External, Closed Type

Beneficial comments (recommendations, additions, deletions) and any
pertinent data which may be of use in improving this document should be
addressed to: Commander, US Army Armament Research, Development and Engineer-
ing Center, ATTN: SMCAR-ESC-S, Picatinny Arsenal, NJ 07806-5000 by using the
self-addressed Standardization Document Improvement Proposal (DD Form 1426)
appearing at the end of this document or by letter.

AMSC N/A

FSC 5365

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STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

(Copies of specifications, standards and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

ASTM

ASTM A227/A227M - Steel Wire, Cold-Drawn for Mechanical Springs
ASTM A313 - Chromium-Nickel Stainless and Heat Resisting Steel Spring Wire
ANSI/ASTM A380 - Cleaning and Descaling Stainless Steel Parts, Equipment and Systems.
ASTM A510 - General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel.

(Application for copies should be addressed to ASTM, 1916 Race Street, Philadelphia, PA 19103.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

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3. REQUIREMENTS

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

3.2 Material. Recycled and reclaimed materials shall be used to the maximum extent practicable. 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.

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

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 QQ-P-416, Type II, Class 2 (.0003 thick) or MIL-C-81562 Type II, Class 2 (.0003 thick).

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

3.4 Dimensions and tolerances. Dimensions and tolerances shall be in accordance with the applicable specification sheet (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 46-53HRC.

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

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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4.1.1 Responsibility for compliance. All items must meet all requirements of Sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 Quality conformance inspection. Quality conformance inspection shall be as specified in Table I.

TABLE I. QUALITY CONFORMANCE INSPECTION.

INSPECTION	REQUIREMENT PARAGRAPH	TEST PARAGRAPH
Protective finish or surface treatment (as applicable)	3.3	4.3.2, 4.3.3
Dimensions	3.4	4.3.1
Workmanship	3.6	4.3.1

4.2.1 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.

4.2.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units and resubmit for inspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots and shall be clearly identified as reinspected lots.

4.2.3 Sampling for visual and dimensional examination. A random sample of retaining rings shall be taken from each lot in accordance with MIL-STD-105 Insection Level II. The Acceptable Quality Level (AQL) shall be as indicated in Table II.

4.2.4 Inspection of packaging. The sampling and inspection of the preservation, packing and container marking shall be in accordance with the requirements of PPP-H-1581.

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4.3 Methods of inspection.

4.3.1 Visual and dimensional examination. Samples of retaining rings shall be examined to verify conformance with this specification and applicable specification sheet. Examination shall be conducted in accordance with Table II.

TABLE II. CLASSIFICATION OF DEFECTS.

CATEGORY	DEFECT	INSPECTION METHOD
CRITICAL	NONE DEFINED	
Major 101 102	AQL = 2.5 percent defective Inside diameter, not as specified (see 3.4) Wire diameter, not as specified (see 3.4)	CIE $\frac{1}{2}$ CIE $\frac{1}{2}$
Minor 201 202 203	AQL = 4.0 percent defective Protective finish or surface treatment missing or incomplete (see 3.3) (as applicable) Gap, not as specified (see 3.4) Workmanship (see 3.6)	Visual CIE $\frac{1}{2}$ Visual

$\frac{1}{2}$ Commercial inspection equipment

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

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

4.3.4 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 requirements. The requirements for packaging shall be in accordance with PPP-H-1581 (see 6.2).

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6. NOTES

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 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification and applicable specification sheet.
- b. Applicable specification sheet part number (see 3.1).
- c. Level (degree) of protection in accordance with PPP-H-1581, ordering data (see 5.1).

6.3 Keyword listing: Ring, retaining
Ring, snap
Ring, wire

Custodians:
Army - AR
Air Force - 99

Preparing Activity:
Army - AR

Review Activities:
Army - AT, ER, GL, MI
Air Force - 82
DLA - IS

Agent:
DLA - IS

User Activities:
Army - ME
Navy - OS, SH
NSA - NS

(Project 5365-0118)

Civil Agencies Coordinating Activities:
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