

INCH-POUND

MIL-PRF-39012D  
AMENDMENT 3  
16 July 2002  
SUPERSEDING  
AMENDMENT 2  
7 July 1998

PERFORMANCE SPECIFICATION  
CONNECTORS, COAXIAL, RADIO FREQUENCY  
GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-PRF-39012D, dated 13 July 1995,  
and is approved for use by all Departments and Agencies of the Department of Defense.

PAGES 1 through 3

Sections 1 and 2; delete and substitute:

"1. SCOPE

1.1 Scope. This specification covers the general requirements and tests for radio frequency connectors used with flexible RF cables and certain other types of coaxial transmission lines.

1.2 Classification. Connectors are of the following classes, categories, and PIN's, as specified (see 3.1).

1.2.1 Class. The class of connectors consists of the following:

- a. Class 1 - A class 1 connector is a connector which is intended to provide superior RF performance at specified frequencies, and for which all RF characteristics are completely defined.
- b. Class 2 - A class 2 connector is intended to provide mechanical connection within an RF circuit providing specified RF performance.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Supply Center Columbus, ATTN: VAI, 3990 East Broad Street, Columbus OH 43216-5000 by using the self-address Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

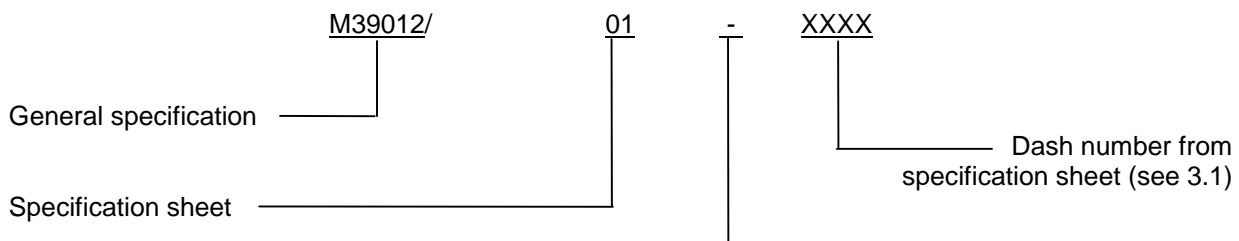
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1.2.2 Categories. The categories of connectors are designated by an A (field serviceable), B (non-field replaceable), C (field replaceable solder center contact), D (field replaceable crimp center contact), E (field replaceable) and F (field replaceable crimp, for semirigid cable) as follows:

- a. Category A - Connectors, which do not require special tools to assemble are designated as category A connectors. Standard wrenches, soldering equipment, pliers, etc., are not defined as special tools.
- b. Category B - Connectors, which require special tools to assemble are designated as category B connectors. These connectors may be used for original installations only. Field replacement is intended to be made by categories A, C, D, E, or F connectors, which will provide the same form, fit and function. Category B will not be stocked or procured by the Government.
- c. Category C - Connectors, which require only standard military crimping tools and standard cable stripping dimensions to assemble are designated as category C connectors. The standard military crimping tool is as specified (see 3.1).
- d. Category D - Connectors, which require only standard military crimp tools for the center, contact and outer ferrule, and standard cable stripping dimensions to assemble are designated as category D connectors. The standard military crimp tools is as specified (see 3.1).
- e. Category E - Connectors using semi-rigid cables with standard stripping dimensions and using standard military tools. The method of assembly of the connector to the cable outer conductor will be by solder.
- f. Category F - Connectors using semirigid cables with standard stripping dimensions and using standard military assembly tools. The method of assembly of the connector to the cable will be solderless.

1.2.3 Part or Identifying Number (PIN). The PIN consists of the letter "M" followed by the basic specification sheet number, and a sequentially assigned four-digit dash number. The first digit in the dash number designates the material of the connector body (shell); i.e., "0" for brass, "3" for corrosion-resistant steel, or "4" for copper beryllium.

Example:



The "-" designates a standard military part. This position, when filled with the letter 'B' (i.e. M39012/01BXXXX), signifies a military part, which is for OEM use only. The part is assembled to the cable with special tooling. Acquisition of this type part by any agency other than OEM's is prohibited and will result in the substitution of the equivalent military replacement part (i.e., if "M39012/01BXXXX" is submitted for acquisition, "M39012/01-XXXX" will be recommended).

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## 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 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, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

#### SPECIFICATIONS

##### FEDERAL

\* A-A-59588 - Rubber, Silicone.

#### STANDARDS

##### FEDERAL

FED-STD-H28 - Screw-Thread Standards for Federal Services.

##### \* DEPARTMENT OF DEFENSE

MIL-STD-130 - Identification Marking of U.S. Military Property.  
MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.  
MIL-STD-348 - Radio Frequency Connector Interfaces.  
MIL-STD-889 - Dissimilar Metals.  
MIL-STD-1344 - Test Methods for Electrical Connectors.

(See supplement 1 for list of specification sheets.)

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Defense Printing Service Detachment Office, Building 4D, Customer Service, 700 Robbins Avenue, 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 the documents, which are DoD adopted, are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- \* ASTM A342 - Materials, Feebly Magnetic, Permeability of.
- ASTM A484 - General Requirement for Stainless and Heat-Resisting Wrought Steel Product (except wire).
- ASTM A582 - Free-Machining Stainless and Heat-Resisting Steel Bars, Hot-Rolled or Cold-Finished.
- ASTM B16 - Free-Cutting Brass Rod, Bar and Shapes for use in Screw Machines.
- \* ASTM B36 - Brass Plate, Sheet, Strip and Rolled Bar.
- ASTM B88 - Tube, Water, Seamless Copper.
- ASTM B121 - Leaded Brass Plate, Sheet, Strip and Rolled Bar.
- ASTM B124 - Copper and Copper Alloy Forging Rod, Bar and Shapes.
- ASTM B139 - Phosphor Bronze Rod, Bar and Shapes.
- ASTM B152 - Copper Sheet, Strip, Plate and Rolled Bar.
- ASTM B194 - Copper Beryllium Alloy Plate, Sheet, Strip and Rolled Bar.
- ASTM B196 - Copper Beryllium Alloy Rod and Bar.
- ASTM B197 - Copper Beryllium Alloy Wire.
- \* ASTM B488 - Gold for Engineering Uses, Electrodeposited Coating of.
- ASTM B700 - Electrodeposited Coatings of Silver for Engineering Uses.
- ASTM D2116 - FEP Fluorocarbon Molding and Extrusion Materials.
- \* ASTM D4894 - Polytetrafluoroethylene (PTFE) Grandular Molding and RAM Extrusion Materials, Standard Specification.
- \* ASTM D4895 - Polytetrafluoroethylene (PTFE) Resins Produced From Dispersion, Test Method For.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103).

AMERICAN NATIONAL STANDARDS INSTITUTE, INC.

- ANSI B46.1-1962 - Surface Texture.

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

- IEEE Standard 287 - Standard for Precision Coaxial Connectors.

(Application for copies should be addressed to the Institute of Electrical and Electronic Engineers, Inc., 345 East 47<sup>th</sup> Street, New York, NY 10017.)

\* NATIONAL AEROSPACE STANDARDS COMMITTEE (NA/NAS)

- NASM20995 - Wire, Safety, or Lock.

(Application for copies should be addressed to the Aerospace Industries Association of America, 1250 Eye Street, N.W., Suite 1200, Washington, DC, United States, 20005-3924).

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Society of Automotive Engineers, Inc.

- \* AMS-QQ-N-290 - Nickel Plating (Electrodeposited)
- \* AMS-QQ-P-35 - Passivation Treatment for Corrosion – Resistant Steel.
- \* AMS-QQ-S-763 - Steel Bars, Wire, Shapes, and Forgings; Corrosion Resistant.

(Application for copies should be addressed to SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated specifications or specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.”

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- \* TABLE I Materials, Applicable specification, delete “WW-T-799”, ASTM-D1457” and ZZ-R-765” and substitute “ASTM-B88”, “ASTM-D4894” and “A-A-59588”, respectively.

- \* 3.3.1.1, delete and substitute:

“3.3.1.1 Center contacts. The male pin shall be plated to a minimum gold thickness of 50 micro inches (1.27µm) in accordance with ASTM B488, type 3, grade C, class 1.27, over 50 micro inches (1.27µm) minimum of nickel in accordance with AMS-QQ-N-290, class 1, measured anywhere along the mating surface, for all series. The socket contact shall be plated to a minimum of 50 micro inches (1.27 µm) of gold in accordance with ASTM B488, type 3, grade C, class 1.27, over 50 micro inches (1.27 µm) minimum of nickel in accordance with AMS-QQ-N-290, class 1, including the I.D., measured at a depth of .040 inch minimum. The plating on non-significant surfaces in the I.D. shall be of sufficient thickness to ensure plating continuity and uniform utility and protection. This plating may consist of an underplate only. A silver underplate shall not be permitted.”

- \* 3.3.1.2, delete and substitute:

“3.3.1.2 Connector bodies. All brass bodied connectors shall be silver plated in accordance with ASTM-B700 to a minimum thickness of 0.0002000 inch over a copper underplate. All copper beryllium bodied connectors shall be gold plated to a minimum thickness of 50 micro inches (1.27µm) in accordance with ASTM-B488, type 3, grade C, class 1.27, over a copper flash. All corrosion resistant steel bodied connectors shall be passivated in accordance with AMS-QQ-P-35, unless otherwise specified (see 3.1). NOTE: Ferrous or nickel alloys shall not be used on brass or copper beryllium bodied connectors (i.e. coupling nuts, etc.). 1/

- \* 3.4, delete “(see 4.7.12)” and substitute “(see 4.7.11)”

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- \* 3.12, delete and substitute the following:

“3.12 Center contact retention. Axial force. When all class I connectors, and class II where applicable (see 3.1) are tested as specified in 4.7.9, the center contacts must not be displaced from the specified interface dimensions in the uncabled connector by the application of the specified axial force (see 3.1) in either direction. Torque. When connectors are tested as specified in 4.7.9, there shall be no rotation of the center contact (see 3.1).

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3.8, add the following sentence:

"The permeability requirement does not apply to connector hardware."

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4.1, 4.1.1, and 4.1.2 delete and substitute:

"4.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment (i.e., industry standard, military standard) shall be required."

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\* TABLE III, group A Inspection, inspection column, next to dielectric withstanding voltage add the following new note "2/".

\* At the bottom of the table add the following new note:

"2/ See table VI for the correct sampling size for this test requirement."

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\* TABLE VI, under VSWR sample size add; "Dielectric Withstanding Voltage sampling size"

\* 4.6, 4.6.1, 4.6.1.1, delete and substitute:

"4.6 Periodic inspection. Periodic inspection shall consist of group C. Except where the results of these inspections show noncompliance with the applicable requirements (see xxx), delivery of products which have passed group A and B shall not be delayed pending the results of these periodic inspections. Based on several successful group C inspections the Qualifying Activity may authorize extending the reporting period.

4.6.1 Group C inspection. Group C inspection shall consist of the inspections specified in table VII, in the order shown. When a manufacturer has connectors qualified under various MS military standards or military specification sheets, the qualifying activity may authorize group C tests that do not require redundant testing on similar features. Group C inspection shall be performed on sample units selected from inspection lots that have passed group A and B inspection. A manufacturer's normal production tests, group A or B tests may be used to fulfill all or part of group C inspection; however, all of group C inspection shall be completed as specified in table VII. Data used may be accumulated within the previous 24 months.

4.6.1.1 Sampling plan. Twelve sample units of the same part number shall be selected from the first lot produced after the date of notification of qualification. Thereafter, one sample unit from a lot produced every six months shall be selected until six samples units are collected. At the end of the 36-month reporting period the samples shall be divided equally and subjected to the inspection of the six subgroups in accordance with table VII. If at the end of the 36-month reporting period the required number of samples are not available, the sample units shall be selected either from stock or a current production lot unless the Government considers it more practical to select a sample from current production. Sample units selected from stock shall have been produced after the date of notification of

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qualification or subsequent to the date code of the previous group C inspection sample units. Group C inspection shall be performed on sample units produced using the same manufacturing facilities and processes as units normally offered for acquisition. When there has been no production of a particular type for 36 months or more, sample units shall be selected from the next production lot presented for acceptance and for each subsequent 36-month period. When the specification sheet covers more than one part number, the part number subjected to group C inspection shall be the same part number specified for qualification; however, the group C inspection sample unit(s) need not be submitted to inspections not specified for qualification."

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At the end of each of the following paragraphs 4.7.2.1, 4.7.2.2, 4.7.3, and 4.7.4: Add:

"NOTE: As an option for this test, a qualified mating connector may be used in place of the standard steel jig with the approval of the qualifying agency."

- \* 4.7.5, delete reference to "MIL-I-17214" and substitute "ASTM-A342".

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- \* 4.7.9 add the following:

"Torque: The torque specified shall be applied to the center contact of an unmated connector for a minimum period of 10 seconds."

- \* 4.7.25, delete reference to "MS20995" and substitute "NASM20995".

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- \* 4.7.18e, delete (see 2.6.14)" and substitute "(4.7.14)".

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- \* 6.3 Qualification, delete the last sentence and substitute the following:

"The activity responsible for the Qualified Products List is the Defense Supply Center, Columbus (DSCC-VQ), 3990 East Broad St. Columbus, Ohio 43216-5000."

- \* 6.6, delete in its entirety.

The margins of this amendment are marked with an asterisk to indicate where changes 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 last previous amendment.

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CONCLUDING MATERIAL

Custodians:

Army - CR  
Navy - EC  
Air Force - 11  
NASA - NA

Preparing activity:  
DLA - CC

(Project 5935-4300-000)

Review activities:

Army - AR, AT, MI  
Navy - AS, MC, OS, SH  
Air Force - 19, 99