

INCH-POUND

MIL-PRF-39012E

SUPERSEDING  
MIL-PRF-39012D  
13 July 1995

## PERFORMANCE SPECIFICATION

### CONNECTORS, COAXIAL, RADIO FREQUENCY, 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 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 Part or Identifying Number (PIN), 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.

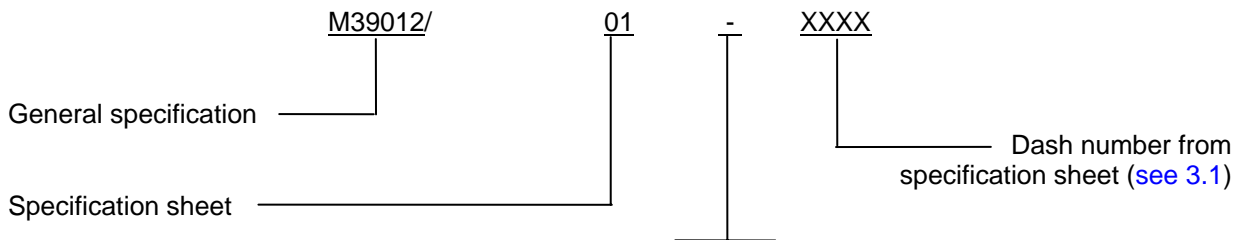
Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center Columbus, ATTN: VAI, P. O. Box 3990, Columbus OH 43218-3990 or by email to [RFConnectors@dla.mil](mailto:RFConnectors@dla.mil). Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

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 be assembled 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 connectors 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 tool 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 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 and plating of the connector body (shell); i.e., “0” for silver plated brass, “3” for passivated corrosion-resistant steel, “4” for gold plated copper beryllium, or “7” for nickel plated brass.

Example:



The “-” designates a standard military PIN. This position, when filled with the letter ‘B’ (i.e. M39012/01BXXXX), signifies a military PIN, 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.)

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 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 cited in sections 3, 4, or 5 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 cited in the solicitation or contract.

#### FEDERAL STANDARDS

[FED-STD-H28](#) - Screw-Thread Standards for Federal Services

#### COMMERCIAL ITEM DESCRIPTIONS

[A-A-59588](#) - Rubber, Silicone

#### DEPARTMENT OF DEFENSE SPECIFICATIONS

(See ASSIST database for list of specification sheets)

#### DEPARTMENT OF DEFENSE STANDARDS

[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

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil>, or from the Standardization Documents 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.

#### ASTM INTERNATIONAL

ASTM A342 - Materials, Feebly Magnetic, Permeability of  
ASTM A484 - Steel, Bars, Billets and Forgings, Stainless  
ASTM A582 - Free-Machining Stainless and Heat-Resisting Steel Bars  
ASTM B16 - Rod, Brass, Free-Cutting, Bar and Shapes for use in Screw Machines  
ASTM B36 - Plate, Brass, Sheet, Strip, and Rolled Bar  
ASTM B88 - Tube, Water, Seamless Copper  
ASTM B121 - Plate, Leaded Brass, Sheet, Strip, and Rolled Bar  
ASTM B124 - Copper and Copper Alloy Forging Rod, Bar, and Shapes  
ASTM B139 - Rod, Phosphor Bronze, Bar, and Shapes

MIL-PRF-39012E

- ASTM B152 - Copper Sheet, Strip, Plate, and Rolled Bar
- ASTM B194 - Copper-Beryllium Alloy Plate, Sheet, Strip and Rolled Bar
- ASTM B196 - Rod and Bar, Copper-Beryllium Alloy
- ASTM B197 - Wire, Alloy, Copper-Beryllium
- ASTM B488 - Gold for Engineering Uses, Electrodeposited Coatings of
- ASTM B700 - Electrodeposited Coatings of Silver for Engineering Uses
- ASTM D2116 - Molding and Extrusion Materials, FEP-Fluorocarbon
- ASTM D4894 - Polytetrafluoroethylene (PTFE) Grandular Molding and RAM Extrusion Materials
- ASTM D4895 - Polytetrafluoroethylene (PTFE) Resins Produced From Dispersion

(Copies of these documents are available from [www.astm.org](http://www.astm.org) or ASTM International, P.O. Box C700, 100 Barr Harbor Drive, Conshohocken, PA 19428-2959.)

AMERICAN NATIONAL STANDARDS INSTITUTE, (ANSI)

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

(Copies of these documents are available online from <http://www.ansi.org> or from the American National Standards Institute, 25 West 43 Street, 4<sup>th</sup> Floor, New York, NY 10036.)

IEEE Operations Center

- IEEE Standard 287 - Precision Coaxial Connectors

(Copies of these documents are available online from <http://www.corporate-communications@ieee.org> or from the IEEE Operations Center, 445 Hoes Lane, Piscataway, New Jersey 08854-1331.)

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA INC. (AIA/NAS)

- NASM20995 - Wire, Safety or Lock

(Copies of these documents are available online from <http://aia-aerospace.org> or from the Aerospace Industries Association of America, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3901.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- SAE-AMS-QQ-N-290 - Nickel Plating (Electrodeposited)
- SAE-AMS-QQ-S-763 - Steel Bars, Wire, Shapes, and Forgings; Corrosion Resistant
- SAE-AMS-2700 - Passivation of Corrosion Resistant Steels

(Copies of these documents are available online from <http://www.sae.org> or from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale. PA 15096-001.)

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

- EIA-364 - Electrical Connector/Socket Test Procedures Including

(Copies of these documents are available online at <http://www.eia.org> or from the Electronic Industries Alliance, Technology Strategy & Standards Department, 2500 Wilson Boulevard, Arlington, VA 22201.)

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 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.

3. REQUIREMENTS

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

3.2 Qualification. Connectors furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4.3 and 6.3).

3.3 Critical Interface material. Material shall be as specified herein and in table I. If materials other than those specified are used, the contractor shall certify to the qualifying activity that the substitute material enables the connectors to meet the requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the product. When a definite material is not specified, a material shall be used which will enable the connector to meet the requirements of this specification.

TABLE I. Materials.

Component material	Applicable specification
Steel	ASTM A484, ASTM A582, SAE-AMS-QQ-S-763
Brass	ASTM B16, ASTM B36, ASTM B121
Phosphor bronze	ASTM B139
Soft copper	ASTM B152
Copper	ASTM B88, ASTM B124
Copper-Beryllium	ASTM B194, ASTM B196, ASTM B197
PTFE fluorocarbon	ASTM D4894, ASTM D4895
FEP fluorocarbon	ASTM D2116
Silicon rubber	A-A-59588

3.3.1 Critical interface materials and finish. Unless otherwise specified (see 3.1), connector center contacts and bodies shall be plated in the following manner in order to meet the requirements of this specification and avoid detrimental interactions between dissimilar metals.

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 II, code C, class 1.27, over 50 micro inches (1.27µm) minimum of nickel in accordance with SAE-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 II, code C, class 1.27, over 50 micro inches (1.27 µm) minimum of nickel in accordance with SAE-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.

NOTE: No PIN changes will be made as a result of this plating change. The change will be tracked via the manufacturer's date code.

3.3.1.2 Connector bodies. All brass bodied connectors shall be silver plated in accordance with ASTM-B700 to a minimum thickness of 0.0002 inch (0.005 mm) over a copper underplate or shall be nickel plated in accordance with SAE-AMS-QQ-N-290 over a copper underplate, only when specified on the individual specification sheet. If not specifically noted the plating shall be silver. (Note of caution! Nickel plated connectors may cause Passive Intermodulation (PIM) problems. The user is ADVISED to check the application involved when choosing this type of plating.) All copper beryllium bodied connectors shall be gold plated to a minimum thickness of 50 micro inches (1.27 $\mu$ m) in accordance with ASTM B488, type II, code C, class 1.27, over a copper flash. All corrosion resistant steel bodied connectors shall be passivated in accordance with SAE-AMS-2700, 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.). (Past experience has shown that these plating conditions allow these connectors to meet the performance requirements of this specification.)

3.3.2 Dissimilar metals. Dissimilar metals between which an electromotive couple may exist shall not be placed in contact with each other. Reference is made to [MIL-STD-889](#) for definition of dissimilar metals.

3.3.3 Nonmagnetic materials. All parts (except hermetic sealed connectors) shall be made from materials which are classed as nonmagnetic ([see 3.8](#)).

3.3.4 Spring members. Unless otherwise specified ([see 3.1](#)), center contact spring members shall be made of copper beryllium.

3.3.5 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable 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.

3.4 Configuration and features. Connectors shall be of the configuration and physical dimensions specified ([see 3.1](#)). On class I connectors ([see 1.2.1](#)) each half of a connector pair must be separately optimized in VSWR ([see 4.6.11](#)). It is not permitted to compensate for discontinuities of one connector by the design of the mating connector.

3.4.1 Mating (visual indication). When applicable ([see 3.1](#)), a visual means shall be provided to indicate when two mating connectors are properly mated.

3.4.2 Screw threads. Screw threads shall be in accordance with [FED-STD-H28](#) unless otherwise specified ([see 3.1](#)).

3.4.3 Connector interfaces. Connector interfaces shall be in accordance with [MIL-STD-348](#) unless otherwise specified ([see 3.1](#)).

3.5 Force to engage/disengage.

3.5.1 Bayonet and threaded types. When tested as specified in [4.6.2.1](#), the torque necessary to completely couple or uncouple the connectors shall not exceed that specified ([see 3.1](#)). Also the longitudinal force necessary to initiate the engaging or disengaging cycle shall not exceed that specified ([see 3.1](#)).

3.5.2 “Push on” connector types. When tested as specified in 4.6.2.2, the forces necessary to fully engage or disengage the connector shall not exceed that specified (see 3.1).

3.6 Coupling proof torque. When tested as specified in 4.6.3, the coupling mechanism (threaded types) shall not be dislodged, and the connector shall meet requirements of 3.5.1. The interface dimensions of the connector shall remain as specified (see 3.1).

3.7 Mating characteristics. When connectors are tested as specified in 4.6.4, the mating dimensions shall be gauged as specified and the dimensions shall remain within the specified tolerances (see 3.1).

3.8 Permeability of nonmagnetic materials. When connectors (except hermetic sealed) are tested as specified in 4.6.5, the permeability ( $\mu$ ) shall be less than 2.0. The permeability does not apply to connector hardware.

3.9 Hermetic seal (pressurized connectors). When connectors are tested as specified in 4.6.6, the leakage rate shall not exceed that specified (see 3.1).

3.10 Leakage (pressurized connectors). When connectors are tested as specified in 4.6.7, there shall be no leakage as detected by escaping air bubbles.

3.11 Insulation resistance. When connectors are tested as specified in 4.6.8, the insulation resistance shall not be less than that specified (see 3.1).

3.12 Center contact retention. When all class I connectors, and class II where applicable (see 3.1) are tested as specified in 4.6.9, 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 or torque.

3.13 Corrosion. When connectors are tested as specified in 4.6.10, there shall be no exposure of the base metal on the interface or mating surface, and they shall meet the requirements of 3.5.1 or 3.5.2 as applicable.

3.14 Voltage standing wave ratio (VSWR). When connectors are tested as specified in 4.6.11, the VSWR shall not exceed that specified over the frequency range specified (see 3.1).

3.15 Connector durability. When connectors are tested as specified in 4.6.12, they shall show no evidence of severe mechanical damage and the coupling device shall remain functional. Connectors shall meet the applicable requirements of 3.5 and 3.7.

3.16 Contact resistance. When connectors are tested as specified in 4.6.13, the contact resistance of the center contact, outer contact, and braid to connector shall be as specified (see 3.1). The following statement takes precedence over any specification sheet interpretation. The outer contact resistance values given for steel bodied connectors are typical values and are for engineering information purposes only.

3.17 Dielectric withstanding voltage. When connectors are tested as specified in 4.6.14, there shall be no evidence of breakdown.

3.18 Vibration. When the cabled (or wired, as applicable) connector is tested as specified in 4.6.15, there shall be no electrical interruptions exceeding 1 microsecond ( $\mu\text{s}$ ), or as otherwise specified (see 3.1). There shall be no evidence of visual mechanical damage after the test, and the contact resistance of the center contact shall not be changed by more than the specified amount (see 3.1 and 3.16).

3.19 Shock (specified pulse). When the cabled (or wired, as applicable) connector is tested as specified in 4.6.16, there shall be no electrical interruptions exceeding 1  $\mu\text{s}$  unless otherwise specified (see 3.1). There shall be no evidence of visual or mechanical damage after the test, and the contact resistance of the center contact shall not be changed by more than the specified amount (see 3.1).

3.20 Thermal shock. After testing as specified in 4.6.17, there shall be no evidence of visual mechanical damage to the connector and it shall meet the dielectric withstanding voltage requirement (see 3.17), and the contact resistance specified for the center contact shall not be exceeded (see 3.16).

3.21 Moisture resistance. When connectors are tested as specified in 4.6.18, there shall be no evidence of damage. They shall withstand the dielectric withstanding voltage specified (see 3.17), and the insulation resistance shall not be less than that specified (see 3.11).

3.22 Corona level. When connectors are tested as specified in 4.6.19, at the altitude and voltage specified (see 3.1), there shall be no evidence of sustained corona discharge.

3.23 RF high potential withstanding voltage. When connectors are tested as specified in 4.6.20, there shall be no breakdown, or the leakage current specified shall not be exceeded (see 3.1).

3.24 Cable retention force. When connectors are tested as specified in 4.6.21, there shall be no evidence of mechanical failure, loosening, rupture, or discontinuity. The direct clamping of the cable jacket shall not be the primary method of cable retention.

3.25 Coupling mechanism retention force. When tested as specified in 4.6.22, the coupling mechanism shall not be dislodged from the connector and shall be capable of meeting the requirements of 3.5.1 immediately after the test.

3.26 RF leakage. When connectors are tested as specified in 4.6.23, the total leakage, cable to cable shall not exceed that specified (see 3.1).

3.27 RF insertion loss. When connectors are tested as specified in 4.6.24, the insertion loss shall not exceed that specified (see 3.1).

3.28 Assembly instructions. Complete assembly instructions shall be furnished by the vendor with each connector procured under this specification. It is not the intention of this specification to require assembly instructions with uncabled connectors (i.e., solder pot, solder tab or posts, etc.). Assembly instructions shall include:

- a. Cable preparation – stripping dimensions and tolerances.
- b. List and description of crimping or special tools if required (see 1.2.2).
- c. Pictorial presentation of sub-assemblies and loose piece parts
- d. Sufficient pertinent dimensions for verification of correct parts; as a minimum the cable entry openings for conductor, dielectric, braid, and jacket shall be specified.
- e. Recommended cable clamp tightening torque (if applicable).
- f. Military PIN and manufacturer's PIN.

3.29 Marking. Connectors and associated fittings shall be permanently and legibly marked in accordance with the general marking requirements of [ML-STD-130](#) with the military PIN ([see 1.2.3](#)), manufacturer's federal supply code, and final assembly date code. The marking location is optional; when practicable, a location should be picked that will be least likely to be covered in cable assembly or installation. Marking is required on all parts manufactured to this specification unless specifically excepted ([see 3.1](#)).

3.30 Workmanship. Connectors and associated fittings shall be processed in such a manner as to be uniform in quality and shall be free from sharp edges, burrs and other defects that will affect life, serviceability or appearance.

3.31 Manufacturers' control drawing. Connector manufacturers shall insure that special tooling and dies are documented. The replacement category A, C, D, E, or F PIN's shall be listed on the manufacturers' control drawing.

3.32 Safety wire hole pullout. When applicable ([see 3.1](#)), the connectors are to be tested as specified in [4.6.25](#). There shall be no evidence of hole tear out.

#### 4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection ([see 4.3](#))
- b. Conformance inspection ([see 4.4](#)).
- c. Periodic inspection ([see 4.5](#)).

4.2 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of [MIL-STD-202](#) or [EIA-364](#). For each test of threaded coupling connectors, where the test is performed on mated pairs, the pair shall be torqued to the specified value ([see 3.1](#)).

4.3 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the Government ([see 6.3](#)) on sample units produced with equipment and procedures normally used in production.

4.3.1 Sample size. Thirty class 1 connectors of the same PIN, or eighteen class 2 connectors of the same PIN with its mating connector ([see 1.2.1](#)), shall be subjected to qualification inspection.

4.3.2 Group qualification. For group qualification of all series of connectors covered by this specification ([see 3.1](#)). Group qualification will be limited to those connectors for which evidence of manufacturing capability is demonstrated by providing engineering drawings to the qualifying agency. The Government reserves the right to authorize performance of any or all qualification inspection of additional types in the group that are considered necessary for qualification within each group.

4.3.3 Inspection routine. The sample shall be subjected to the inspections specified in table II. All sample units shall be subjected to the inspection of group I. The sample units shall then be divided equally into six groups of 5 units (class 1) or three units each (class 2) and subjected to the inspection for their particular group and in the sequence given for that group.

MIL-PRF-39012E

4.3.4 Failures. One or more failures shall be cause for refusal to grant qualification approval.

4.3.5 Retention of qualification. To retain qualification, the contractor shall verify in coordination with the qualifying activity the capability of manufacturing products which meet the performance requirements of this specification. Refer to the qualifying activity for the guidelines necessary to retain qualification to this particular specification. The contractor shall immediately notify the qualifying activity at any time that the inspection data indicates failure of the qualified product to meet the performance requirements of this specification.

MIL-PRF-39012E

TABLE II. Qualification inspection.

Examination or test	Requirement paragraph	Test method paragraph
<u>Group I</u>		
Visual and mechanical examination		
Material	3.3	4.6.1.1
Finish	3.3.1	
Dissimilar metals	3.3.2	
Configuration and features (dimensions)	3.4	4.6.1.2
Marking	3.29	
Mating (visual indication)	3.4.1	4.6.1.1
Force to engage/disengage		
Bayonet and threaded types	3.5.1	4.6.2.1
"Push-on" connector types	3.5.2	4.6.2.2
Coupling proof torque	3.6	4.6.3
Mating characteristics	3.7	4.6.4
Permeability of nonmagnetic materials	3.8	4.6.5
Workmanship	3.30	4.6.1
Hermetic seal (pressurized connectors only)	3.9	4.6.6
Leakage (pressurized connectors only)	3.10	4.6.7
Insulation resistance	3.11	4.6.8
<u>Group II</u>		
Center contact retention	3.12	4.6.9
Corrosion	3.13	4.6.10
<u>Group III</u>		
VSWR (cabled)	3.14	4.6.11
Connector durability	3.15	4.6.12
Safety wire hole pullout	3.32	4.6.25
<u>Group IV</u>		
Center contact resistance	3.16	4.6.13
Dielectric withstanding voltage	3.17	4.6.14
Vibration <u>1/</u>	3.18	4.6.15
Shock (specified pulse) <u>1/</u>	3.19	4.6.16
Thermal shock	3.20	4.6.17
Moisture resistance	3.21	4.6.18
Corona level <u>1/</u>	3.22	4.6.19
RF high potential withstanding voltage <u>1/</u>	3.23	4.6.20
Cable retention force	3.24	4.6.21
Coupling mechanism retention force	3.25	4.6.22
<u>Group V</u>		
RF leakage <u>1/</u>	3.26	4.6.23
<u>Group VI</u>		
RF insertion loss <u>1/</u>	3.27	4.6.24
<u>Group VII</u>		
Contact resistance	3.16	4.6.13

See note at end of table.

TABLE II. Qualification inspection – Continued.

1/ These tests to be performed only during initial qualification as long as the qualifying design and manufacturing process has not been changed.

4.4 Conformance inspection.

4.4.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A and B inspection.

4.4.1.1 Inspection lot. An inspection lot shall consist of all connectors of the same PIN produced under essentially the same conditions, and offered for inspection at one time.

4.4.1.2 Group A inspection. Group A inspection shall consist of the inspection specified in table III in the order shown.

4.4.1.2.1 Sampling plan (group A). Table III tests shall be performed on a production lot basis. Samples shall be selected in accordance with [table IV](#). If one or more defects are found, the lot shall be screened for that particular defect and defective parts removed. A new sample of parts shall be selected in accordance with [table IV](#) and all group A tests again performed. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification. When defects have no effect on the use or performance of the subject parts, reworking of the parts may be permitted upon approval of both the Preparing and Qualifying activities. Such allowances are infrequent and only apply to particular circumstances..

TABLE III. Group A inspection.

Inspection	Requirement paragraph	Test method paragraph	Sampling procedure
Visual and mechanical examination			See table IV
Material	3.3		
Finish 1/	3.3.1		
Dissimilar metals	3.3.2		
Configuration and features	3.4	4.6.1.1	
Marking	3.29		
Workmanship	3.30		
Mating (visual indication)	3.4.1		
Dielectric withstanding voltage	3.17	4.6.14	
Hermetic seal (pressurized connectors only)	3.9	4.6.6	
Leakage (pressurized connectors only)	3.10	4.6.7	

1/ Verification of finish may be accomplished using the manufacturer’s process controls providing these controls are clearly equal to or more stringent than the requirements of this specification.

4.4.1.2.2 Visual inspection (group A inspection). Each connector shall be visually examined for completeness, workmanship, and identification requirements. Attention shall be given to those assemblies that require a gasket to determine the condition of the gasket. Gaskets missing, twisted, buckled, kinked, or damaged in any way shall be cause for rejection.

MIL-PRF-39012E

TABLE IV. Inspection level.

Lot size	Visual and mechanical inspection
1 to 19	All
20 to 280	20
281 to 1,200	47
1,201 to 3,200	53
3,201 to 10,000	68
10,001 to 35,000	77
35,001 to 150,000	96
150,001 to 500,000	119
500,001 and over	143

4.4.1.3 Group B inspection. Group B inspection shall consist of the inspections specified in table V in the order shown, and shall be made on sample units which have been subjected to and passed the group A inspection. Connectors having identical piece parts may be combined for lot purposes and shall be in proportion to the quantity of each PIN numbered connector produced.

4.4.1.3.1 Group B sampling plan. A sample of parts shall be randomly selected in accordance with table VI. If one or more defects are found, the lot shall be screened for that particular defect and defects removed. After screening and removal of defects, a new sample of parts shall be randomly selected and subjected to all tests in accordance with table V. If one or more defects are found in the second sample, the lot shall be rejected and shall not be supplied to this specification.

TABLE V. Group B inspection.

Inspection	Requirement paragraph	Test method paragraph
Force to engage/disengage		
Bayonet and threaded type	3.5.1	4.6.2.1
"Push-on" connector type	3.5.2	4.6.2.2
Coupling proof torque	3.6	4.6.3
Mating characteristics	3.7	4.6.4
Permeability of nonmagnetic materials	3.8	4.6.5
Insulation resistance	3.11	4.6.8
VSWR (cabled) <u>1/</u>	3.14	4.6.11

1/ Destructive test. When a VSWR failure occurs the defect which caused the failure shall be determined and the entire lot shall be screened for that/those particular defects and defects removed. A new sample of parts shall be selected in accordance with [table VI](#) and all tests again performed.

MIL-PRF-39012E

TABLE VI. Inspection level.

Lot size		Sample size	VSWR sample size
1 to	4	All	1
5 to	15	5	1
16 to	50	5	2
51 to	90	5	3
91 to	150	11	3
151 to	280	13	3
281 to	500	16	3
501 to	1,200	19	5
1,201 to	3,200	23	5
3,201 to	10,000	29	5
10,001 to	35,000	35	5
35,001	and over	40	8

4.4.1.3.2 Disposition of sample units. Sample units which have passed all the group B inspection may be delivered on the contract or purchase order, if the lot is accepted. Any connector deformed or otherwise damaged during testing shall not be delivered on the contract or order.

4.5 Periodic inspection. Periodic inspection shall consist of group C. Except where the results of these inspections show noncompliance with the applicable requirements ([see 4.5.1.4](#)), delivery of products which have passed groups A and B shall not be delayed pending the results of these periodic inspections.

4.5.1 Group C inspection. Group C inspection shall consist of the inspections specified in [table VII](#), in the order shown. Group C inspection shall be made on sample units selected from inspection lots which have passed the groups A and B inspection.

4.5.1.1 Sampling plan. Twelve sample units of the same PIN shall be selected from the first lot produced after the date of notification of qualification. Thereafter, twelve sample units of the same PIN shall be selected from current production after 200,000 connectors have been produced, or not less than once every 3 years, whichever occurs first. The sample units shall be divided equally and subjected to the inspections of the six subgroups.

4.5.1.2 Failures. If one or more sample units fails to pass group C inspection, the lot shall be considered to have failed.

4.5.1.3 Disposition of sample units. Sample units which have been subjected to group C inspection shall not be delivered on the contract or order.

MIL-PRF-39012E

4.5.1.4 Noncompliance. If a sample fails to pass group C inspection, the manufacturer shall notify the qualifying activity and the cognizant inspection activity of such failure and take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which are manufactured under essentially the same materials and processes, and which are considered subjected to the same failure. Acceptance and shipment of the product shall be discontinued until corrective action, acceptable to the qualifying activity has been taken. After the corrective action has been taken, group C inspection shall be repeated on additional sample units (all tests and examinations, or the test which the original sample failed, at the option of the qualifying activity). Groups A and B inspections may be reinstated, however, final acceptance and shipment shall be withheld until the group C inspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure shall be furnished to the cognizant inspection activity and the qualifying activity.

TABLE VII. Group C inspection.

Inspection	Requirement paragraph	Test method paragraph
Subgroup 1		
Center contact retention	3.12	4.6.9
Corrosion	3.13	4.6.10
Subgroup 2		
VSWR (cabled)	3.14	4.6.11
Connector durability	3.15	4.6.12
Safety wire hole pullout	3.32	4.6.25
Subgroup 3		
Center contact resistance	3.16	4.6.13
Vibration <u>1/</u>	3.18	4.6.15
Shock (specified pulse) <u>1/</u>	3.19	4.6.16
Thermal shock	3.20	4.6.17
Moisture resistance	3.21	4.6.18
Corona level <u>1/</u>	3.22	4.6.19
RF high potential withstanding voltage <u>1/</u>	3.23	4.6.20
Cable retention forces	3.24	4.6.21
Coupling mechanism retention force	3.25	4.6.22
Subgroup 4		
RF leakage <u>1/</u>	3.26	4.6.23
Subgroup 5		
RF insertion loss <u>1/</u>	3.27	4.6.24
Subgroup 6		
Contact resistance	3.16	4.6.13

1/ These tests to be performed only during initial qualification as long as the qualifying design and manufacturing process has not been changed.























































