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MILITARY SPECIFICATION

CONNECTORS, ELECTRICAL, (CIRCULAR, ENVIRONMENT RESISTING), RECEPTACLES AND PLUGS,

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 for environment resisting, circular, electrical connectors and their associated contacts and accessories. These connectors shall utilize crimp or solder (classes H, Y, and N (hermetic)) contacts and be capable of continuous operation within the temperature limits of -65°C (-85°F) to +200°C (+392°F).

1.1.1 Series description. Basic series of connectors are as follows:

a. Series I - Type B bayonet coupling. Transferred to MIL-C-26482 Series II, as applicable (See 6.8.1).
b. Series II - Type T threaded coupling, intermateable with MIL-C-5015. (Inactive for new design, use: MS3450, MS3451, MS3452, MS3456, and MS3459 of MIL-C-5015, as applicable.)
c. Series III - Type T threaded and type B bayonet coupling connectors are intermateable with applicable MIL-C-26500 connectors (see section 6). In addition, requirements for hermetic receptacles with nonremovable contacts are included. The hermetic receptacle shall mate with the appropriate bayonet or threaded type connector and shall meet the same temperature requirements.

1.2 Classification. The classes and types (either bayonet or threaded coupling) are as follows:

Class	Type	Applicable series	Description
R	Bayonet Threaded	III II, III	Aluminum shell, conductive finish, fluid resistant insert
H	B T	III II, III	Steel shell, hermetic, fluid resistant interfacial sealing gasket
C	B T	II, III II, III	Stainless steel, passivated, fluid resistant insert
K	B T	— II, III	Stainless steel, passivated, fluid resistant insert, firewall
A	B T	III II, III	Aluminum shell, anodize, nonconductive finish

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Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Air Force Logistics Command, AFLC/LOIE Wright Patterson AFB, OH 45433 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

Class	Type	Applicable series	Description
S	T	III	Stainless steel, passivated, fluid resistant insert, firewall (plug and receptacle) RFI grounding, self locking (plug)
Y	B T	III II, III	Hermetic, stainless steel
F	Canceled, superseded by class R.		
N	T	III	Plugs, same as class "S" with electro-deposited nickel finish. Receptacles, same as class "Y" or "S" with electrodeposited nickel finish.
W	B T	II, III	Aluminum shell, cadmium, conductive finish, 500 hours salt spray.

1.3 Shell sizes and insert arrangements. Shell sizes and insert arrangements shall be as specified in MIL-STD-1651 for series II and MIL-STD-1554 for series III.

1.4 Insert position. The insert position is the angular position of the insert relative to the master key or keyway of the shell. Insert positions other than normal shall be indicated by the letter shown in MIL-STD-1651 for series II, and by the numeral shown in MIL-STD-1554 for series III.

1.5 Accessories. Accessories shall consist of the items as specified in the supplement to this document.

2. APPLICABLE DOCUMENTS.

2.1 Issues of documents. The following documents of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

P-D-680 - Dry Cleaning Solvent.
QQ-A-225 - Aluminum and Aluminum Alloy Bar, Rod, Wire, or Special Shapes; Rolled, Drawn, or Cold Finish; General Specification for.
QQ-A-367 - Aluminum Alloy Forgings.
QQ-A-591 - Aluminum Alloy Die Castings.
QQ-N-290 - Nickel Plating (Electrodeposited)
QQ-P-416 - Plating, Cadmium (Electrodeposited)
TT-I-735 - Isopropyl Alcohol.
TT-T-291 - Thinner -Paint, Volatile Spirits, Petroleum Spirits.

MILITARY

MIL-G-3056 - Gasoline, Automotive, Combat.
MIL-C-5015 - Connectors, Electric, AN Type, General Specification for.
MIL-H-5606 - Hydraulic Fluid, Petroleum Base, Aircraft Missile and Ordnance.
MIL-T-5624 - Turbine Fuel, Aviation, Grades JP-4 and JP-5.
MIL-S-7742 - Screw Threads, Standard, Optimum Selected Series: General Specification for.
MIL-L-7808 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-A-8243 - Anti-icing and Deicing-Defrosting Fluid.

MIL-A-8625 - Anodic Coatings, for Aluminum and Aluminum Alloys.
MIL-F-14072 - Finishes for Ground Signal Equipment.
MIL-I-17214 - Indicator, Permeability; Low-MU (Go-No-Go).
MIL-C-22520 - Crimping Tools, Terminal, Hand or Power Actuated, Wire Termination, and Tool Kits, General Specification For.
MIL-L-23699 - Lubricating Oil, Aircraft Turbine Engines, Synthetic Base.
MIL-C-25769 - Cleaning Compound, Aircraft Surface, Alkaline Waterbase.
MIL-C-26074 - Coatings, Electroless Nickel, Requirements for.

MIL-C-39029 - Contacts, Electrical Connector, General Specification For.
MIL-C-39029/4 - Contacts, Electrical Connector, Pin, Crimp Removable, (For MIL-C-26482 Series 2, MIL-C-81703 Series 3, MIL-C-83733, and MIL-C-83723 Series 3 Connectors).
MIL-C-39029/5 - Contacts, Electrical Connector, Socket, Crimp Removable, (For MIL-C-26482 Series 2, MIL-C-81703 Series 3, MIL-C-83733, and MIL-C-83723 Series 3 Connectors).
MIL-C-39029/7 - Contacts, Electrical Connector, Pin, Crimp Removable, Shielded, (For MIL-C-26482 Series 2 and MIL-C-81703 Series 3, and MIL-C-83723 Series 3 Connectors).
MIL-C-39029/8 - Contacts, Electrical Connector, Socket, Crimp Removable, Shielded, (For MIL-C-26482 Series 2 and MIL-C-81703 Series 3 and MIL-C-83723 Series 3 Connectors).
MIL-C-39029/9 - Contacts, Electrical Connector, Pin, Crimp Removable, Thermocouple, (For MIL-C-26482 Series 2, MIL-C-81703 Series 3, MIL-C-83723 Series 3, and MIL-C-83733 Connectors).
MIL-C-39029/10 - Contacts, Electrical Connector, Socket, Crimp Removable, Thermocouple, (For MIL-C-26482 Series 2, MIL-C-81703 Series 3, MIL-C-83723 Series 3, and MIL-C-83733 Connectors).
MIL-C-39029/29 - Contacts, Electrical Connector, Pin, Crimp Removable, (For MIL-C-5015 Series MS3450 and MIL-C-83723 Series 2 Connectors).
MIL-C-39029/30 - Contacts, Electrical Connector, Socket, Crimp Removable, (For MIL-C-5015 Series MS3450 and MIL-C-83723 Series 2 Connectors).
MIL-C-39029/73 - Contacts, Electrical Connectors, Socket, Solder, Removable, Shielded, (For MIL-C-83723 Series 3 Connectors).
MIL-C-39019/74 - Contacts, Electrical Connectors, Pin, Solder, Removable, Shielded, (For MIL-C-83723 Series 3 Connectors).
MIL-G-45204 - Gold Plating, Electro-deposited.
MIL-C-45662 - Calibration System Requirements.
MIL-C-55330 - Connectors, Preparation for Delivery Of.

STANDARDS

FEDERAL

Federal Test Method 151 - Metal; Test Methods.

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
MIL-STD-454 - Standard, General Requirement for Electronic Equipment.
MIL-STD-1285 - Marking of Electrical and Electronic Parts.
MIL-STD-1344 - Test Methods for Electrical Connectors.
MIL-STD-1554 - Insert Arrangements for MIL-C-83723 Series III and MIL-C-26500 Environment Resisting, Circular, Electrical Connectors.

MIL-STD-1651 - Insert Arrangements For MIL-C-83723 Series II Environment Resisting, Circular, Electrical Connectors.
MS3165 - Tool, Contact Extraction, Electrical Connector, Crimp Type, Size 8, 4 and 0.
MS3155 - Connector, Electric, Rear Accessory Design Standard.
MS3187 - Plug, End Seal, For MIL-C-26482, MIL-C-5015, MIL-C-81703 and MIL-C-83723 Electrical Connectors.
MS3447 - Tool, Insert-Extract, Wired Contact, Electrical Connector, Size 20, 16 and 12.

MS27534 - Tool, Contact, Insertion-Extraction, Electrical Connector.

(See supplement 1 for associated list of specification sheets and military standards.)

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B46.1-1962 - Surface Texture (Surface Roughness, Waviness and Lay).
ANSI C83.1 (RS-359) - Standard Colors for Color Identification and Coding.

(Application for copies should be addressed to the American Standards Institute, 1430 Broadway, New York, N.Y. 10018, or the Electronic Industries Association, 2001 Eye Street, N.W., Washington, D.C. 20006.)

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 the requirements of this specification and the specification sheet, the latter shall govern.

3.2 Qualification. Connectors and accessories furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.4 and 6.3).

3.3 Materials. Materials which are not specified (see 3.1), or which are not specifically described herein shall be of the lightest practical weight and suitable for the purpose intended.

3.3.1 Dissimilar metals. When dissimilar metals are employed in intimate contact with each other, suitable protection against electrolytic corrosion shall be provided as specified in requirement 16 of MIL-STD-454.

3.3.2 Nonmagnetic materials (except classes H, K, N, S, and Y). The relative permeability of the connector assembly shall be less than 2.0 when measured with an indicator conforming to MIL-I-17214.

3.3.3 Contact materials and plating.

3.3.3.1 Classes H, Y, and N (hermetic). Unless otherwise specified (see 3.1), contacts shall be of ferrous alloy which shall be plated in accordance with MIL-G-45204 over a suitable underplating to the thickness specified (see 3.1).

3.3.3.2 Plating thickness classes H, Y, and N (hermetic). The minimum plating thickness specified shall be measured on surfaces indicated in figure 1. The plating thickness on surfaces and areas not indicated shall be sufficient to ensure plating continuity, uniform utility, appearance, and protection. (See 4.7.35).

3.3.3.3 Solder contacts (hermetics only). Solder contact material shall be as specified in 3.3.3.1. Solder contacts shall be nonremovable from the insert. Solder contacts shall be so designed that during soldering no components shall be damaged nor shall liquid solder escape from the solder cups.

3.3.4 Dielectric materials.

3.3.4.1 Seals and grommets. The resilient material used for seals and grommets shall have a Shore hardness, electrical, and mechanical characteristic suitable for the purpose intended.

3.3.4.2 Inserts. The nonresilient material used for inserts shall be a high grade rigid dielectric having electrical and mechanical characteristics suitable for the purpose intended. The impact strength shall be such that the material shall not chip, crack or break during assembly or normal service.

3.3.4.2.1 Fungus resistance. Finishes and materials shall be certified that they meet requirement 4 of MIL-STD-454.

3.3.4.2.2 Hydrolytic stability. All nonmetallic material shall pass a test to establish hydrolytic reversion resistance. The material shall meet the hydrolytic physical test requirements of one of the military specification tests listed in MIL-STD-454, requirement 47, for a comparable material.

3.3.4.2.3 Vitreous (classes H, Y, and N (hermetic)). Vitreous material shall be employed to seal and insulate contacts in classes H, Y, and N (hermetic) connectors.

3.3.5 Shells and connector components. The materials used for shells and connector components shall be as follows:

3.3.5.1 Classes R, A, and W.

a. Shell:
   Series II - Aluminum alloy per QQ-A-225, 367 or 591.
   Series III - Aluminum alloy per QQ-A-367.
b. Coupling ring and jam nut:
   Series II - Machined or die cast aluminum alloy.
   Series III - Machined aluminum alloy.
c. Insert - Reinforced epoxy resin or other suitable rigid dielectric material.
d. Bayonet pins - Corrosion-resistant steel.
e. Spring fingers - Heat-treated beryllium copper or corrosion-resistant steel. Spring fingers shall be mechanically attached.
f. Gaskets, grommet, and interface seals - Silicone elastomer.

3.3.5.2 Classes C, K, M, S, and Y.

a. Shell - Corrosion-resistant steel (stainless).

3.3.5.3 Class H.

a. Shell - Cold rolled steel.

3.4 Design and construction. The connector shall be designed and constructed to withstand handling and maintenance functions incident to installation and service. Rear accessory interchangeability control dimensions of series III connectors shall be as specified in figure 2.

3.4.1 Configuration. The connectors, contacts, and inserts shall conform to the configuration specified (see 3.1).

3.4.2 Shell design. The connectors shall be of a single piece shell design of a homogeneous material and no bonding or joining of any shell ancillary feature is permitted. The shells for the connectors shall be designed to accept and retain a cable support or accessory as specified (see 3.1).

3.4.2.1 Connector shell. The connector shall be designed in such a manner as to incorporate either a static or dynamic peripheral seal, or both a static and dynamic seal (see 3.4.3.2). For series III connectors, a seal shall be located within the receptacle. For series II, the seal shall be located between the plug shell and the coupling ring of the plug. RFI plug shells shall be designed so that electrical contact is assured between the spring fingers and the receptacle prior to full engagement of the contacts.

3.4.2.2 Shell polarization. The polarization of the connector shall be accomplished by means of integral key(s) and keyway(s) on the mating connectors. The polarization of the counterpart connector shall occur before the pin contacts enter the socket insert and the coupling ring starts to engage. Series II connectors shall have shell polarization in accordance with MIL-C-5015. Series III connectors shall have shell polarization in accordance with MIL-STD-1554.

3.4.2.3 Single hole mounting receptacles. The single hole mounting receptacle shall be provided with a mounting nut and "O" ring, with provision for locking the nut.

3.4.2.4 Screw threads. Screw threads shall be in accordance with MIL-S-7742. Out of roundness is not objectionable provided threads can be checked without forcing thread gages.

3.4.2.5 Lubrication. The internal coupling ring threads on type T connectors, and the coupling ring bayonet grooves on the type B connectors, shall be coated with a suitable lubricant to comply with the performance requirements of this specification.

3.4.2.6 Connector engagement. Connectors shall be coupled and uncoupled by means of a coupling ring on the plug shell. Engagement of the coupling ring shall occur after the plug and receptacle shells are polarized. The series III connectors shall have the coupling ring permanently mounted on the plug.

3.4.2.6.1 Type B connectors. The type B plug shall be coupled to its mating receptacle by means of a grooved coupling ring. The coupling ring shall be so designed that the pin and socket contacts will engage as the coupling ring is tightened in a clockwise direction and disengage as the coupling ring is loosened in a counterclockwise direction. A free rotating coupling ring, mechanically retained, shall be required to fully mate or unmate the type B plug to the receptacle by rotating the coupling ring through 120° maximum as specified (see 3.1). The ring shall be knurled to aid gripping.

3.4.2.6.2 Type T connectors. The type T plug shall be coupled to the mating receptacle by means of a threaded coupling ring. The coupling ring shall be so designed that the pin and socket contacts will engage as the coupling ring is tightened in a clockwise direction and disengage as the ring is loosened. The coupling ring on other than self locking types shall have at least two 0.03 inch diameter safety wire holes, equally spaced about the periphery (see 3.1). The ring shall be knurled to aid gripping, and the ring on series II connectors shall be retained by the rear accessory or other mechanical means.

3.4.2.7 Coupling assurance.

3.4.2.7.1 Type B connectors. The coupling method shall be so designed that safety wiring of coupling ring will not be required. Two visual indicators, which indicate that the coupling ring is in the locked position, shall be provided as follows:

a. The coupling pins on the receptacle shall have their end surfaces of a contrasting color and the ends of the pins shall be visible through suitable holes or slots in the coupling ring.

b. Three axial blue stripes shall be placed on the plug or receptacle shell which will aline with three corresponding stripes on the coupling ring when completely coupled.

3.4.2.7.2 Type T connectors (self locking coupling rings). The coupling mechanism shall be designed such that safety wiring of the coupling ring will not be required. Plugs shall include an antirotation coupling ring. A visual indicator shall show when the connectors are considered completely coupled.

3.4.2.8 Backshell accessories. Backshells shall conform to requirements specified (see 3.1). In addition, they shall have wire sealing grommet compression capability. To prevent twisting the wire sealing grommet, a grommet ferrule of suitable material shall be supplied for compression sealing on all connectors requiring threaded back shell accessories. Backshell assemblies for series III connectors shall conform to MS3155.

3.4.2.9 Color band. The shells of crimp contact connectors shall have blue color bands in accordance with ANSI C83.1 (RS-359), indicating a rear release contact retention system. The location of the color bands on the receptacle shall be in front of the flange and behind the flange or it can be on the flange in the case of the single hole mount receptacle. The location of the color band on the plug shell shall be on the coupling ring. Location shall be such that at least one color band is clearly visible when the connector is mounted, and in either the mated or unmated condition.

3.4.3 Seals.

3.4.3.1 Pin insert interfacial seal. The face of the pin seal shall be of a resilient material bonded to the insert to provide an interfacial seal.

3.4.3.2 Peripheral seals. A resilient material, static or dynamic type peripheral seal, or both static and dynamic seal, shall be provided around the receptacle inserts for series III connectors. Type B, series III connectors shall have an "O" ring dynamic seal. Type T, series II connectors shall have a static/dynamic seal. The peripheral seal on the series II connectors shall be provided as shown on applicable specification sheet (see 3.1).

3.4.3.3 Wire sealing members (rear grommet). The wire sealing member shall provide suitable sealing for overall wire diameters listed in table I and shall not be removable from the shell.

TABLE I. Wire range accommodations.

Contact size	Minimum OD (inch)	Maximum OD (inch)
20	.040	.083
16	.053[a]	.103
12	.097	.158
8	.164	.255
4	.288	.370
0	.415	.550

[a].068 for series II only.

3.4.3.4 Sealing plugs (except classes H, Y, and N (hermetic)). Grommet sealing plugs shall be used in the grommet cavities corresponding to all unwired contacts. The sealing plug shall be in accordance with MIL-C-83723/28 or MS3187. The same sealing plugs shall be used in both connector plug and receptacle. Unless otherwise specified on the purchase order, connectors shall be shipped with sealing plugs. Total quantity shall be 15 percent size 12 and smaller, or one sealing plug, whichever is greater.

3.4.4 Inserts. The inserts shall be rigid plastic and so designed and constructed with proper sections and radii that they will not chip, crack, or break during normal assembly or service. Hollow-type inserts shall not be used. The inserts shall be nonremovable, mechanically retained, and bonded to the shell with the design and construction such that all air paths between cavities are eliminated. The insert engaging faces shall be designed and constructed such that all air paths between cavities at the connector interfaces shall be eliminated when the connectors are mated. The inserts shall be so designed that positive locking of the contacts in the inserts is provided. Socket insert face shall be of a rigid plastic material.

3.4.4.1 Insert arrangements: Insert arrangements shall conform to:

Series II - MIL-STD-1651.
Series III - MIL-STD-1554.

3.4.4.2 Inserts (classes H, Y and N (hermetic)). The classes H, Y, and N (hermetic) receptacle inserts shall be designed and constructed with proper sections and radii that they will not readily chip, crack, or break during normal assembly or service. The inserts shall be nonremovable from the shell and shall meet the requirements of this specification.

3.4.4.3 Contact installation and removal (except classes H, Y, and N (hermetic)). The connector design shall permit individual installation and removal of contacts without removing the insert or sealing members. Installation of the contacts into, and removal of the contacts from the insert shall be accomplished from the rear of the connector and with the aid of tools as specified in 3.4.5.5.

3.4.4.4 Contact arrangement identification. The contact positions shall be permanently designated in contrasting color on the front face of the insert material and on the rear face of the wire sealing grommet as noted on the insert arrangement drawing in MIL-STD-1651 or MIL-STD-1554, as applicable. The interfacial markings of the inserts shall not be raised or recessed on any sealing surfaces and shall be as indicated in figure 3.

3.4.4.5 Insert position. The inserts shall be positioned with respect to the shell within the tolerance specified (see 3.1).

3.4.4.6 Alternate insert position. Alternate insert position shall be as specified in MIL-STD-1651 or MIL-STD-1554, as applicable.

3.4.4.7 Contact alinement. The alinement of the pin contact assembled in either plug or receptacle shall be within the true alinement position specified in MIL-STD-1554 or MIL-STD-1651, as applicable.

3.4.4.7.1 Contact alinement (except classes H, Y, and N (hermetic)). Socket contacts assembled in either plug or receptacle shall allow for contact float of 0.0025 to 0.0085 inch from true alinement position.

3.4.4.7.2 Contact alinement (classes H, Y, and N (hermetic)). The alinement of the pin contact of the classes H, N, and Y receptacles shall be as specified (see 3.1).

3.4.5 Contacts. Contacts shall be designed for crimp termination in all but classes H, Y, and N (hermetic) assemblies which shall be solderable. Crimp type contacts for series II shall conform to MIL-C-39029/29, /30 and for series III to MIL-C-39029/4, /5, /7, /8,/9, /10, /73, and /74. Quantity of contacts shall be a full complement plus one spare for arrangements having 26 contacts or less and two spares, for arrangements having more than 26 contacts. No spares shall be supplied with 0, 4, and 8 contacts. Unless otherwise specified on the purchase order, connectors shall be shipped with contacts. (See 6.2).

3.4.5.1 Spring engagement (series II). The point of spring engagement for series II connectors shall be as shown on figures 4 and 5.

3.4.5.2 Pin engaging end (classes H, Y, and N (hermetic)). The engaging end of pins shall be rounded or of a suitable configuration to allow for directing and centering of the pin in a mating socket contact and shall be as specified (see 3.1).

3.4.5.3 Contact termination. Classes H, Y, and N (hermetic) connectors are designed for solder termination. All other classes are designed for crimp contacts (see 3.1).

3.4.5.4 Surface roughness (classes H, Y, and N (hermetic)). The roughness height rating of all contact mating surfaces, indicated in figure 1, shall be less than the value specified (see 3.1 and 4.7.34).

3.4.5.5 Installing and removal tools. Tools required for assembly or disassembly of pin and socket contacts into their connector inserts shall conform to MS3165, MS3447, MS27534, or MIL-C-83723/31. Unless otherwise specified on the purchase order, connectors shall be shipped with installing and removal tools.

3.4.5.6 Crimping tools. Crimping tools required to crimp contacts shall conform to MIL-C-22520.

3.4.6 Plating.

3.4.6.1 Shells and accessory hardware. The finish on shells and accessory hardware shall be in accordance with the following letter designations:

A - 200°C hard, anodic nonconductive in accordance with MIL-F-14072, finish E516, or MIL-A-8625, type II, class 1.
G,K,S, and Y - 200°C electrically conductive stainless steel, passivated.
R - 200°C, electrically conductive electroless nickel per MIL-C-26074 class 3 or 4, grade B.
H - 150°C, electrically conductive fused tin.
N - 200°C, Electrodeposited nickel in accordance with QQ-N-290, class 2, .0001 to .0002 inch thick.
W - 175°C, olive drab, cadmium in accordance with QQ-P-416 over a suitable underplate to withstand 500 hours salt spray test. Final finish shall be electrically conductive.

3.5 Performance requirements. Connectors, contacts, and accessories shall be designed to meet the performance requirements specified herein when tested in accordance with the specified methods of section 4.

3.5.1 Examination of product. Contacts, connectors, and accessories shall be examined as specified in 4.7.1, and shall meet the requirements indicated herein.

3.5.2 Gage location. The axial location of contacts shall be measured as specified in 4.7.2, using test gages simulating the contacts at minimum material conditions as specified (see 3.1). Gage location measurements shall fall within the range specified for series II connectors in figures 4 and 5, and on series III specification sheets.

3.5.3 Gage retention. The test gages (see 3.5.2) shall be retained in the contact cavities of crimp contact connectors when subjected to the test of 4.7.3. The axial displacement of the test gages while under load shall not exceed 0.012 inch.

3.5.4 Maintenance aging (except classes H, Y, and N (hermetic)). When tested as specified in 4.7.4, connectors shall be capable of meeting the performance requirements of this spetification. Failure to complete these operations shall be cause for rejection.

3.5.5 Contact retention. When tested as specified in 4.7.5, the axial displacement of the contacts shall not exceed 0.012 inch. No damage to contacts or inserts shall result.

3.5.6 Altitude-low temperature. After stabilizing the connector at an altitude of 80,000 feet and a low temperature of -50°C as specified in 4.7.6, the connectors shall withstand 625 Vrms/60 Hz for one minute applied between adjacent contacts and between contacts and shell. There shall be no evidence of dielectric breakdown. With the test voltage removed and the temperature and pressure stabilized at ambient conditions, the connectors shall meet the insulation resistance requirements of 3.5.16.1 and the dielectric withstanding voltage requirements of 3.5.17 at sea level.

3.5.7 Thermal shock (classes H, Y, and N (hermetic) only). When tested as specified in 4.7.7, there shall be no damage detrimental to the operation of the connector. Any evidence of damage resulting from this test shall be cause for rejection.

3.5.8 Temperature cycling (except classes H, Y, and N (hermetic)). When tested as specified in 4.7.8, there shall be no damage detrimental to the operation of the connector. Any evidence of damage resulting from this test shall be cause for rejection.

3.5.9 Air leakage (classes H, Y, and N (hermetic) only). When tested as specified in 4.7.9, any evidence of leakage in excess of 0.01 micron ft^3/h during the test shall be cause for rejection.

3.5.10 Coupling torque (see 4.7.10).

3.5.10.1 Coupling torque (type B only). tested as specified in 4.7.10, on completely assembled connectors, the coupling torque for mating and unmating of counterpart connectors shall meet the torque requirements of table II.

TABLE II. Coupling torque (type B only).

Shell size	Torque (pound inches)	
	Maximum engagement and disengagement	Minimum engagement and disengagement
8	8	1
10	12	1
12	14	2
14	20	4
16	24	4
18	28	4
20	32	6
22	36	7
24	44	7

3.5.10.2 Coupling torque (type T, self locking only). The torque required to couple and uncouple the connectors shall be as specified in table III.

TABLE III. Coupling and uncoupling torque (type T, self locking only).

Series	Shell size	Coupling torque pound-inches Max	Uncoupling torque pound-inches Min	Uncoupling torque pound-inches Max
II	8S	12	8	20
	10S	14	8	25
	10SL	14	8	25
	12	16	10	28
	12S	16	10	28
	14	20	12	35
	14S	20	12	35
	16	24	16	40
	16S	24	16	40
	18	30	22	45
	20	40	28	52
	22	46	35	65
	24	55	40	75
	28	66	50	90
	32	78	60	105
	36	93	65	115
	40	106	70	125
III	8	11	7	18
	10	13	7	23
	12	14	9	25
	14	18	10	32
	16	21	14	36
	18	27	19	40
	22	32	31	59

3.5.11 Altitude immersion (except classes H, Y, and N (hermetic)). When tested as specified in 4.7.11, the mated connector shall meet a minimum insulation resistance of 1,000 megohms. Any evidence of dielectric breakdown or flashover shall be cause for rejection.

3.5.12 Insert retention. When tested as specified in 4.7.12, assemblies shall retain their inserts in their proper location in the shell. Evidence of cracking, breaking, separation from the shell, or loosening of parts shall be cause for rejection.

3.5.13 Salt spray (corrosion). When tested as specified in 4.7.13, unmated connectors and individual contact samples shall show no exposure of base metal due to corrosion which will adversely affect performance.

3.5.14 Contact resistance (classes H, Y, and N (hermetic) only). When tested as specified in 4.7.14, contacts in the mated condition shall meet the contact resistance requirements of table IV.

TABLE IV. Contact resistance.

Class	Contact size	Wire size	Test amps	Maximum voltage drop After corrosion or temporary durability	Maximum voltage drop All others
H, Y, and N (hermetic)	20	20	5.0	75	60
	16	16	10.0	100	85
	12	12	17.0	100	85
	8	8	33.0	75	60
	4	4	60.0	45	30
	0	0	100.0	45	30

3.5.15 Coupling pin strength (type B receptacles only). When tested as specified in 4.7.15, bayonet coupling pins shall withstand a load of 50 ±5 pounds without displacement or perceptible loosening of the coupling pin.

3.5.16 Insulation resistance.

3.5.16.1 Insulation resistance at ambient temperature. When tested as specified in 4.7.16.1, the insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 5,000 megohms.

3.5.16.2 Insulation resistance at elevated temperature. When tested as specified in 4.7.16.2, the insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 200 megohms.

3.5.17 Dielectric withstanding voltage. When tested as specified in 4.7.17, connectors shall show no evidence of flashover or breakdown when subjected to the test voltages and altitudes of table V.

TABLE V. Test voltages, ac rms, 60 Hz.

Altitude	Series III		Series II					
	Service rating I	Service rating II	Inst	A	D	E	B	C
Sea level	1,500	2,300	1,000	2,000	2,800	3,500	4,500	7,000
50,000 ft	500	750	400	600	675	750	825	975
70,000 ft	375	500	260	360	400	440	480	560
110,000 ft	200	200	200	200	200	200	200	200

3.5.18 Durability. When tested as specified in 4.7.18, connectors shall show no damage detrimental to the operation of the connector. Failure to complete this test because of mechanical malfunction of the connector shall be cause for rejection.

3.5.19 Random vibration. When tested as specified in 4.7.19, a current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.

3.5.20 Shock. When tested as specified in 4.7.20, a current discontinuity of 1 microsecond or more, disengagement of the mated connectors, evidence of cracking, breaking, or loosening of parts shall be cause for rejection.

3.5.21 Shell-to-shell conductivity. When tested as specified in 4.7.21, mated plugs and receptacles shall be electrically conductive from the plug accessory thread to the receptacle mounting flange or to the accessory thread on the cable connecting plug. The overall dc resistance shall not exceed .2 ohm. The overall dc resistance for RFI plug connectors (with grounding fingers) shall not exceed .005 ohm.

3.5.22 Humidity. When tested as specified in 4.7.22, wired, mated connectors shall show no deterioration and the insulation resistance shall be 100 megohms or greater.

3.5.23 Shell spring finger forces (type B only). When tested as specified in 4.7.23, the forces necessary to engage and separate grounding plugs with receptacle shells shall be within the values specified in table VI.

TABLE VI. Shell spring finger forces.

Shell size	Axial force in pounds	
	Maximum	Minimum
8 through 10	15	2
12 through 14	20	2
16 through 24	30	2

3.5.24 RFI shielding. When tested in accordance with 4.7.24, the RFI shielding capabilities of mated shells with spring fingers shall not be less than specified in table VII at the specified frequencies.

TABLE VII. RFI shielding effectiveness.

Frequency MHz	Leakage attenuation (dB)	Frequency MHz	Leakage attenuation (dB)
100	65	600	50
200	60	800	45
300	55	1,000	45
400	55		

3.5.25 Ozone exposure. When tested as specified in 4.7.25, the connectors shall show no evidence of cracking of dielectric material or other damage due to ozone exposure that will adversely affect performance.

3.5.26 Fluid immersion. Connectors shall mate properly after having been subjected to the test specified in 4.7.26.

3.5.27 Retention system fluid immersion. When tested as specified in 4.7.27, the insert assemblies shall meet the requirements of subsequent tests specified herein. Effects of the fluids on resilient sealing members shall not be a consideration of this test.

3.5.28 Contact walk-out. When tested as specified in 4.7.28, contacts shall not become dislodged from their normal position.

3.5.29 Installing and removal tool abuse. When tested as specified in 4.7.29, there shall be no evidence of damage to the contacts, the connector inserts or the contact retaining mechanism.

3.5.30 External bending moment. When tested as specified in 4.7.30, using the applicable bending moment shown in table VIII, connectors shall show no evidence of damage detrimental to their normal operation or shall there be any interruption of electrical continuity.

TABLE VIII. External bending moment.

Series	Shell size	Bending moment (pound-inches)
III	8	59
	10	230
	12	290
	14	350
	16	419
	18	433
	20	450
	22	475
	24	500
II	8S	40
	10S, 10SL	90
	12S, 12	180
	14S, 14	200
	16S, 16	250
	18	280
	20	300
	22	350
	24	380
	28	420
	32	500
	36	540
	40	580
	44	620
	48	660

3.5.31 Pin contact stability (sizes 20, 16 and 12 crimp contacts). When tested in accordance with 4.7.31, the total displacement of the contact tip end shall not exceed the amount shown in table IX.

TABLE IX. Contact stability.

Contact size	Total displacement (inch)
20	.038
16	.062
12	.062

3.5.32 Temperature life with contact loading. When subjected to the test specified in 4.7.32, the contacts shall maintain their specified locations as shown in figures 4 and 5 for series II, and on the series III specification sheets, as applicable, and there shall be no electrical discontinuity in excess of 1 microsecond.

3.5.33 Fireproof (classes K, M (except hermetic) and S). Mated connectors shall prevent the passing of a flame through the connector for a period of at least 20 minutes when tested in accordance with 4.7.33. During this period, there shall be no flame from outgassing or other causes on the end of the connector protected by the firewall. The current specified in table X shall be applied for the first 5 minutes without a break in continuity. During the next minute, the connectors shall not draw more than 2 amperes when a potential of 125 volts rms, 60 Hz is applied between adjacent contacts or between contacts and the shell.

TABLE X. Firewall test currents.

Contact size	DC test current (amperes)
20	7.5
16	22
12	41
8	73
4	135
0	245

3.5.34 Plating adhesion (classes H, Y, and N (hermetic)). The adhesion of the gold plating shall be tested as specified in 4.7.36. Flaking or peeling of the plating shall be considered a failure.

3.5.35 Accessory thread strength. When tested as specified in 4.7.37, the accessory threads and a portion of the connector that accepts accessory hardware shall be capable of withstanding torques specified.

3.6 Interchangeability. The connector plug, receptacles, contacts, and accessories supplied to this specification shall meet the requirements of the applicable specification sheet and shall be completely interchangeable with the components having the same part numbers but supplied by a different manufacturer.

3.7 Marking.

3.7.1 Connectors and accessories. Connectors and accessories shall be metal or ink stamped with the manufacturer's name, trademark, military part number, and date code. Location shall be as shown on the specification sheets (see 3.1). The characters shall be a minimum of .037 inch in height. Stamping shall be in accordance with MIL-STD-1285 where space permits. Metal stamping shall be accomplished before plating.

3.7.2 Contact designation. Contact locations shall be designated with identifiable characters as indicated in MIL-STD-1554 and MIL-STD-1651, as applicable. All positions shall be identified on the front and rear faces of the insert except where space limitations make this impracticable. Location of contact identifying characters shall be in close proximity to the holes but need not be placed exactly where indicated on the standard.

3.8 Workmanship. The connector shall be fabricated in a manner such that the criteria for appearance, fit, and adherence to specified tolerances are observed. Particular attention shall be given to neatness and thoroughness of marking parts, plating, welding, soldering, riveting, staking, bonding, and freedom of parts from burrs and sharp edges which might mar adjacent equipment or cause injury to operating personnel.

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 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.

4.1.1 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 shall be in accordance with MIL-C-45662.

4.2 Classification of inspections. The inspections specified herein are classified as follows:

a. Qualification inspection (see 4.4).
b. Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be made in accordance with MIL-STD-1344.

4.4 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.

4.4.1 Sample size. For each series II or series III connector, the following test samples shall be provided:

a. Two mating pairs, class A, S, R, G, N (except hermetic) or K straight plugs and wall mounting receptacles of each shell size. All service ratings shall be represented. Each arrangement in a given shell size shall be the densest contact arrangement for that particular service rating. One sample of each shell size shall have pin contacts in the receptacle and socket contacts in the plug. The other sample shall have socket contacts in the receptacle and pin contacts in the plug. All samples shall be provided with strain relief cable clamps.
b. Two mating pairs, class H, Y, or N (hermetic) jam nut receptacles and straight plugs, of each shell size. All service ratings shall be represented. Each arrangement in a given shell size shall be the densest contact arrangement for that particular service rating. One sample of each shell size shall have pin contacts in the receptacle and socket contacts in the plug. The other sample shall have socket contacts in the receptacle and pin contacts in the plug. Contractors seeking qualification of one style only in class H, N, or Y shall provide both jam nut receptacles in that style with mating class R, N, or G counterparts.
c. One class G straight plug and counterpart wall mounting receptacle in at least three shell sizes; small, medium, and large. Specimens shall be less inserts and contacts, but with KFI backshells, if applicable.
d. One wall mounting receptacle counterpart for each of the shell sizes selected for 4.4.1 c . Specimens shall be less inserts and (type B) coupling pins.
e. Twelve mating pairs, class R or G straight plugs and wall mounting receptacles, in any representative insert arrangement.
f. Twelve class R or G straight plugs and wall mounting receptacles of various representative shell sizes and insert arrangement.
g. Thirty-five pin contacts, class H, N, or Y of each size. Hermetic contacts shall be in shell/insert assemblies.
h. Three mating pairs of class K, N, or S plugs and wall mounting receptacles of various representative shell sizes.

4.4.2 Preparation of samples.

4.4.2.1 Connector samples. Connector samples with crimp contacts under 4.4.1 a , b, and e shall be terminated to a workable length of suitable wire. Half the samples shall use wires with outer diameters approaching the maximum limit of table I, and the remainder with outer diameters approaching the minimum limit of table I. Connector samples with solder contacts(classes H, N, or Y) shall have 3 feet of suitable nominal gage terminated thereto. Soldering shall be accomplished in accordance with MIL-STD-454.

4.4.3 Inspection routine.

a. Samples provided under 4.4.1 a shall be divided into two numerically equal groups. Each group shall contain roughly the same number of samples with the larger diameter wire as with the smaller diameter wire. One group shall be subjected to the tests of group 1, table XI, in the sequence indicated. The other group shall be subjected to the tests of group 2, table XI, in the sequence indicated.
b. Samples provided under 4.4.1 b shall be divided into two similar groups. One group shall be subjected to the tests of group 1, table XI, in the sequence indicated. The other group shall be subjected to the tests of group 3, table XI, in the sequence indicated.
c. Samples provided under 4.4.1 c shall be subjected to the tests of group 4, table XI, in the sequence indicated.
d. Samples provided under 4.4.1 d shall serve as counterparts for the tests in group 4, table XI.
e. Samples provided under 4.4.1 e shall be subjected to the tests of group 5 table XI, in the sequence indicated.
f. Samples provided under 4.4.1 f shall be subjected to the tests of group 6, table XI, in the sequence indicated.
g. Samples provided under 4.4.1 g shall be divided and subjected to the tests of group 7, table XI, in the quantities indicated therein. No sample group shall be subjected to more than one test.
h. Samples provided under 4.4.1 h shall be subjected to the tests of group 8, table XI, in the sequence indicated.

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

TABLE XI. Qualification and group C.

Test	Requirement paragraph	Test paragraph
Group 1 (all classes)		
Examination of product	3.5.1	4.7.1
1/ Maintenance aging	3.5.4	4.7.4
Thermal shock (classes H, N (hermetic) and Y only)	3.5.7	4.7.7
1/ Temperature cycling	3.5.8	4.7.8
Air leakage (classes H, N (hermetic) and Y only)	3.5.9	4.7.9
Coupling torque	3.5.10	4.7.10
1/ Altitude immersion	3.5.11	4.7.11
Insert retention	3.5.12	4.7.12
Salt spray (corrosion)	3.5.13	4.7.13
Coupling torque (to mate)	3.5.10	4.7.10
Contact resistance (Classes H, Y & N (Hermetics) only)	3.5.14	4.7.14
Uncoupling torque (type T, self locking only)	3.5.10.2	4.7.10
Coupling pin strength (type B only)	3.5.15	4.7.15
External bending moment	3.5.30	4.7.30
Post test examination	---	4.8
Group 2 (classes A, G, K, N (plugs only) R, S, and W)		
Examination of product	3.5.1	4.7.1
Gage location	3.5.2	4.7.2
Gage retention	3.5.3	4.7.3
Maintenance aging	3.5.4	4.7.4
Contact retention	3.5.5	4.7.5.1
Altitude-low temperature	3.5.6	4.7.6
1/ Temperature cycling	3.5.8	4.7.8
Coupling torque	3.5.10	4.7.10
Insulation resistance at elevated temperature	3.5.16.2	4.7.16.2
Dielectric withstanding voltage at sea level	3.5.17	4.7.17.1
2/ Dielectric withstanding voltage at altitude	3.5.17	4.7.17.2
Durability	3.5.18	4.7.18
2/ Random vibration	3.5.19	4.7.19
Shock	3.5.20	4.7.20
Shell-to-shell conductivity (except class A)	3.5.21	4.7.21
Humidity	3.5.22	4.7.22
Contact retention	3.5.5	4.7.5.2
Accessory thread strength	3.5.35	4.7.37
Post test examination	---	4.8

See footnotes at end of table.

TABLE XI. Qualification and group C - Continued.

Test	Requirement paragraph	Test paragraph
Group 3 (classes H, Y, and N (hermetic)		
Examination of product	3.5.1	4.7.1
Thermal shock	3.5.7	4.7.7
Air leakage	3.5.9	4.7.9
Durability	3.5.18	4.7.18
Coupling torque	3.5.10	4.7.10
2/ Random vibration	3.5.19	4.7.19
Shock	3.5.20	4.7.20
Insulation resistance at ambient temperature	3.5.16.1	4.7.16.1
Dielectric withstanding voltage at sea level	3.5.17	4.7.17.1
Humidity	3.5.22	4.7.22
Contact resistance	3.5.14	4.7.14
Post test examination	---	4.8
Group 4 (shells with spring fingers)		
Examination of product	3.5.1	4.7.1
Shell spring finger forces (type B only)	3.5.23	4.7.23
Shell-to-shell conductivity	3.5.21	4.7.21
RFI shielding	3.5.24	4.7.24
Post test examination	---	4.8
Group 5 (dielectrics)		
Examination of product	3.5.1	4.7.1
2/ Temperature life with contact loading	3.5.32	4.7.32
Ozone exposure	3.5.25	4.7.25
Insulation resistance at ambient temperature	3.5.16.1	4.7.16.1
Dielectric withstanding voltage at sea level	3.5.17	4.7.17.1
Fluid immersion	3.5.26	4.7.26
Insert retention	3.5.12	4.7.12
Coupling torque	3.5.10	4.7.10
Post test examination	---	4.8
Group 6 (retention system)		
Examination of product	3.5.1	4.7.1
Contact walk-out	3.5.28	4.7.28
Installing and removal tool abuse	3.5.29	4.7.29
Pin contact stability (sizes 20, 16, & 12 crimp contacts)	3.5.31	4.7.31
Retention system fluid immersion	3.5.27	4.7.27
Contact retention	3.5.5	4.7.5.1
Post test examination	---	4.8

See footnotes at end of table.

TABLE XI. Qualification and group C - Continued.

Test	Requirement paragraph	Test paragraph	Sample size
Group 7 (unwired hermetic contacts)			
Surface roughness	3.4.5.4	4.7.34	5 P
Plating thickness	3.3.3.2	4.7.35	5 P
Plating adhesion	3.5.34	4.7.36	5 P
Group 8 (firewall, classes K, N (except hermetic) and S)			
Fireproof (classes K, N (except hermetic) and S)	3.5.33	4.7.33	

1/ Not applicable to classes H, Y, and N (hermetic).
2/ Qualification only.

4.4.5 Retention of qualification. To retain qualification, the contractor shall forward a report at least every 9 months to the qualifying activity. The qualifying activity shall establish the initial reporting data. The report shall consist of:

a. A summary of the results of the tests performed for inspection of product for delivery (groups A and B) indicating as a minimum the number of lots that have passed and the number that have failed. The results of tests of all reworked lots shall be identified and accounted for.
b. A summary of the results of tests performed for qualification verification inspection including the number and mode of failures. The summary shall include results of all group C inspection tests performed and completed during the reporting period. If the summary of the test results indicates nonconformance with specification requirements, and corrective action acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the qualified products list.

Failure to submit the report within 30 days after the end of each reporting period may result in the loss of qualification for the product. In addition to the periodic submission of inspection data, the contractor shall immediately notify the qualifying activity at any time during the reporting period that the inspection data indicates failure of the qualified product to meet the requirements of this specification.

In the event that no production occurred during the reporting period, a report shall be submitted certifying that the company still has the capabilities and facilities necessary to produce the item. If during two consecutive reporting periods there has been no production, the manufacturer may be required, at the discretion of the qualifying activity, to submit the products (a representative product of each series, type, and class, etc.) to testing in accordance with the qualification inspection requirements.

4.4.6 Qualification of additional connectors. For connectors which differ only in minor details from those which have been qualified, the contractor's test report need only provide inspection and test data necessary to validate the difference with information on identical features for which no inspection or test was performed. Manufacturers who qualify class R connectors and pass the requirements for class A connectors shall be granted qualification for all class A connectors which have the same insert arrangements and shell style as class R connectors. Manufacturers who qualify class "Y" or "S" receptacles and class "S" plugs shall be granted qualification for all class "N" connectors which have the same insert arrangements and shell style as class "Y" or "S" receptacles and class "S" plugs, provided additional requirements affecting plating are met. These requirements shall be determined by the qualifying activity.

4.4.7 Qualification of contacts. Contacts supplied with MIL-C-83723 connectors must be qualified for listing on the QPL for MIL-C-39029, except hermetics.

4.5 Quality conformance inspection.

4.5.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A and B inspections.

4.5.1.1 Inspection lot. An inspection lot shall consist of all connectors covered by the same specification sheets, produced under essentially the same conditions and offered for inspection at one time. In-process controls, unrelated to lot sizes of finished connectors, may be used, provided an equivalent or tighter AQL level is maintained.

4.5.2 Group A inspection. Connectors shall be subjected to the individual tests shown in table XII. For group A inspection, the documentation and standard test conditions of MIL-STD-1344 do not apply.

TABLE XII. Group A inspection.

Group A inspection - Individual tests	Notes
Visual examination - 100% inspection per 4.5.2.1	
Insulation resistance (ambient temperature) - 100% per 4.7.16.1	2/
Dielectric withstanding voltage (sea level) - 100% per 4.7.17.1 (except classes H, N (hermetic) and Y, style P)	1/
Air leakage (classes H, N (hermetic) and Y only) - 100% per 4.7.9	1/

1/ The contractor may use in-process controls for this requirement.
2/ Test between two adjacent contacts and between two peripheral contacts and the shell.

4.5.2.1 Visual examination. 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 that gasket. Gaskets missing, twisted, buckled, kinked, or damaged in any way shall be cause for rejection.

4.5.3 Group B inspection. Group B inspection shall consist of the examinations and tests specified in table XIII, in the order shown, and shall be made on sample units which have been subjected to and have passed the group A inspection. For group B inspection, the documentation and standard test conditions of MIL-STD-1344 do not apply.

TABLE XIII. Group B inspection.

Group B inspection - Sampling tests	Test paragraph	AQL	Notes
Examination of product	4.7.1		
Major		0.25	1/
Minor		1.0	1/
Contact resistance (classes H, N (hermetic) and Y only)	4.7.14	1.0	2/
Shell spring finger forces (type B only) (plugs with spring fingers only)	4.7.23	—	3/

1/ The contractor may use in-process controls for this requirement.
2/ Select sample connectors in accordance with the AQL shown. Test 3 contacts in each sample connector.
3/ Test 5 pieces - No failures permitted.

4.5.3.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 for special inspection level S-4. The AQL shall be as specified in table XIII.

4.5.3.2 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 reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots and shall be clearly identified as reinspected lots.

4.5.3.3 Disposition of sample units. Sample units which have passed all of the group B inspection may be delivered on the contract or purchase order if the lot is accepted and the sample units are still within specified tolerances.

4.5.4 Periodic inspection. Periodic inspection shall consist of group C inspection. Except where the results of these inspections show noncompliance with the applicable requirements (see 4.5.4.1.5), delivery of products which have passed groups A and B inspections shall not be delayed pending the results of these periodic inspections.

4.5.4.1 Group C inspection. Group C inspection shall be performed every 9 months, and 18 months, beginning with the 9 month inspection, which must be accomplished within this period after notification of qualification, and alternating thereafter with the 18 month inspection. Samples submitted to either of these inspections shall have passed groups A and B inspections.

4.5.4.1.1 Nine month inspection. During the 9 month inspections, the following tests shall be performed in accordance with the applicable paragraph:

a. Humidity (see 4.7.22) - On two mating connectors in the most dense arrangement of the largest shell size in regular production during that period.
b. Temperature life (see 4.7.32) - On one mating pair of connectors of any representative size and arrangement. The time period shall be 250 hours.
c. Fluid immersion (see 4.7.26) - On two mating connectors of any representative size and arrangement, one pair being subjected to each of the following fluids.
   1. Jet fuel JP-5 (sample 7 of table XV).
   2. Hydraulic fluid (sample 3 of table XV).

4.5.4.1.2 Eighteen month inspection. During the 18 month inspections, mating connector sample units shall be selected and tested in accordance with a, b, and c, as applicable. 18 month inspection for class A connectors need not be performed provided class R connectors are inspected.

a. Two mating classes A, K, N, R, S, and W plugs and receptacles in each type shall be provided. These samples shall include at least three shell sizes, small, medium, and large, manufactured during the period. One mating sample of each configuration shall be fully wired with the maximum diameter wire of table I and subjected to the applicable tests of table XI, group 1. The remaining samples shall be fully wired with the minimum diameter wire of table I and subjected to the applicable tests of table XI, group 2.
b. Two mating class G plugs and classes H, H (hermetic), and Y receptacles in each type shall be provided. These samples shall include at least three shell sizes, small, medium, and large, manufactured during the period. Half the plugs shall be wired with maximum diameter wire per table I, and the other half with minimum wire per table I. The receptacles shall be wired with nominal gage wire. One mating pair of each shell size shall be subjected to the tests of table XI, group 1, and the remainder to the tests of table XI, group 3.

c. Sufficient quantities of classes H, N (hermetic), and Y shall be provided to furnish a minimum of 50 socket contacts of each mating end size. Mating Class C plugs with pin contacts shall be provided to furnish mating pins. These samples shall be fully wired with suitable wire of nominal gage and subjected to the tests of table XI, group 7.

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

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

4.5.4.1.5 Noncompliance. If a sample fails to pass group C inspection, the contractor shall take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which were manufactured under essentially the same conditions, with essentially the same materials, processes, etc., and which are considered subject to the same failure. Acceptance of the product (related lots) shall be discontinued until corrective action, acceptable to the Government, has been taken. After the corrective action has been taken, group C inspection shall be repeated on additional sample units (all inspections, or the inspection which the original sample failed, at the option of the Government). Groups A and B inspections may be reinstituted; however, final acceptance shall be withheld until the group C reinspection has shown that corrective action was successful. In the event of failure after reinspection, information concerning the failure and corrective action taken shall be furnished to the cognizant inspection activity and the qualifying activity.

4.6 Inspection of packaging. The sampling and inspection of the preservation-packaging, packing, and container marking shall be in accordance with the requirements of MIL-C-55330.

4.7 Methods of examination and test.

4.7.1 Examination of product (see 3.5.1). The connectors, accessories, and piece parts shall be examined to insure conformance with this specification and the applicable detail components not covered by the performance requirements of 3.5. In-process controls of component parts, unrelated to lot sizes of finished connectors, may be utilized in lieu of examination of these components in the finished connectors to assure conformance of these component parts. Examination in a continuing manner shall be performed to assure compliance with the following requirements:

a. Applicable specification sheet.
b. Materials.
c. Design and construction.
d. Interchangeability.
e. Marking.
f. Workmanship.

4.7.2 Gage location (see 3.5.2). Applicable test gages conforming to the requirements specified in 3.5.2 shall be installed in three randomly selected cavities in each connector, with the necessary rear hardware removed. With the test gages fully seated back against the contact retention device, the axial location of the front end of the gages shall be measured relative to the reference point indicated in figures 4 and 5, as applicable.

4.7.3 Gage retention (see 3.5.3). Applicable test gages shall be installed in three randomly selected cavities in each connector, with the accessory rear hardware removed. The axial load specified in table XIV shall be applied to individual test gages in both directions. The load shall be applied at a rate of 1 pound per second until the specified load has been reached. Gage displacement shall be measured with respect to the connector shell after an initial load of 2 pounds has been applied to assure that all slack has been taken up. The measured displacement shall meet the requirements of 3.5.3.

TABLE XIV. Axial load for contact retention test (all except classes H, Y, and N (hermetic)).

Contact size	Axial load $^{+3}_{-0}$ lbs
20	20
16	25
12	30
8	50
4	60
0	75

4.7.4 Maintenance aging (except classes H, Y, and N (hermetic))(see 3.5.4). Connectors shall be tested in accordance with method 2002 of MIL-STD-1344. After installing all contacts, each connector shall be mated and unmated 10 times. A minimum of 20 percent, but not less than three of the contacts in each connector shall then be removed and reinserted 10 times with the aid of appropriate tools. A simulated socket contact conforming to figure 6 shall be used in place of three of the socket contacts.

4.7.5 Contact retention (see 3.5.5).

4.7.5.1 Contact retention (procedure I). The contact retention shall be tested as specified in method 2007 of MIL-STD-1344. The following details and exceptions shall apply:

a. Number of samples - The test shall be performed on 20 percent of the contact complement, but not less than three contacts in each connector half.
b. Applied axial load - Preload to 3 pounds maximum. Apply load as specified in table XIV.
c. Special requirements - Where the test sequence requires maintenance aging prior to contact retention, the contacts which were subjected to maintenance aging shall also be selected for contact retention.
d. Axial direction - The applicable forces shall be applied along the longitudinal axis of individual contacts in the direction tending to displace the contacts to the rear.
e. Only the contacts to be tested need be installed in the connector.

4.7.5.2 Contact retention (procedure II). The contact retention shall be tested as specified in method 2007 of MIL-STD-1344. Unwired contacts may be installed in the cavities to be tested. The following details and exceptions shall apply:

a. Number of samples - Same as 4.7.5.1a.
b. Applied axial load - Same as 4.7.5.1b.
c. Special requirements - Same as 4.7.5.1c.
d. Axial direction - Same as 4.7.5.1d, except the direction shall tend to displace the contacts to the front.
e. Only the contacts to be tested need be installed in the connector.

4.7.6 Altitude-low temperature (see 3.5.6). Wired, mated, assembled connectors with strain relief clamps installed shall be conditioned in a dry oven at a temperature of 50 ±5°C for a minimum of 8 hours.

a. Reduce the chamber internal temperature to -50 $^{+0}_{-4}$°C and maintain until the connector stabilizes.
b. Reduce the chamber internal pressure to simulate an altitude of 80,000 feet (21 torr).
c. Maintain the above connector temperature and chamber pressure for 1 hour minimum.
d. Apply 625 Vrms 60 Hz between the connector shell and all contacts for 1 minute, minimum. Indication of disruptive discharge shall require reapplication and maintenance of the test voltage for 60 seconds.
e. With the test voltage removed, increase the chamber internal pressure and temperature to standard ambient conditions and allow the connector to stabilize.
f. With the connector mated, subject the connector to the insulation resistance test of 4.7.16.1 and the dielectric withstanding voltage test of 4.7.17.1.

4.7.7 Thermal shock (classes H, Y, and N (hermetic) only)(see 3.5.7). Unmated receptacles shall be subjected to 10 cycles of thermal shock in the following manner:

a. The receptacle shall be suspended for 10 $^{+1}_{-0}$ minutes in the center of a cold water bath with a volume of approximately 1 cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall not exceed 4°C (39°F).
b. The receptacle shall be suspended for 10 $^{+1}_{-0}$ minutes in the center of a hot water bath with a volume of approximately 1 cubic foot. No dimension of the bath shall be less than 10 inches. The water temperature shall not be less than 90°C (201°F).

The time of transfer from one bath to the other shall not exceed 5 seconds. At the end of the tenth cycle, the receptacle shall have the excess moisture shaken off and then be dried in a forced air oven at 66 ±5°C for 15 ±1 minutes.

4.7.8 Temperature cycling (except classes H, Y, and N (hermetic))(see 3.5.8). Mated connectors shall be subjected to the temperature cycling of MIL-STD-202, method 102, test condition C, except that steps 2 and 4 shall be of 2 minutes maximum duration and the temperatures of step 3 shall be 200 $^{+5}_{-0}$°C (392°F).

4.7.9 Air leakage (classes H, Y, and N (hermetic) only)(see 3.5.9). The connector shall be mounted in a suitable test apparatus. A pressure differential of 1 atmosphere shall be applied across the connector. A suitable means to determine the leakage through the connector of air or other pressurizing gas, containing not less than 10 percent helium by volume, shall be employed while the specified pressure is applied.

4.7.10 Coupling torque (see 3.5.10). For qualification testing, mating halves shall be coupled and uncoupled. The forces or torques which must be applied to facilitate full coupling and uncoupling shall be measured and recorded. For quality conformance testing, suitable gages may be used instead of the appropriate counterparts.

4.7.11 Altitude immersion (except classes H, Y, and N (hermetic))(see 3.5.11). Mated connectors shall be tested in accordance with method 1004 of MIL-STD-1344. The following details shall apply:

a. All wire ends shall be located within the chamber and exposed to the chamber atmosphere, but not submerged or sealed.
b. At the end of the third cycle while the mated connectors are still submerged in the solution, the insulation resistance shall be measured as specified in 4.7.16.1 and the dielectric withstanding voltage test shall be performed as specified in 4.7.17.1.
c. Paragraphs 4.4 and 5.e of method 1004 shall not apply.

4.7.12 Insert retention (see 3.5.12). Connectors shall be tested in accordance with method 2010 of MIL-STD-1344. Samples shall be wired. The load to be applied shall be as follows:

Shell size	Test pressures lb_f/in^2
8 through 12	150
14 through 18	100
20 through 22	75
24 through 28	60
32 through 40	45
44 through 48	30

4.7.13 Salt spray (corrosion) (see 3.5.13).

4.7.13.1 Standard test (all classes except W). Unmated connectors and individual contact samples shall be tested in accordance with method 1001 of MIL-STD-1344. The following details and exceptions shall apply:

a. Test condition letter - B.
b. The samples shall not be mounted but shall be suspended from the top using waxed twine or string, glass rods, or glass cord.

4.7.13.2 Dynamic test (class W only). The wired, assembled plugs and receptacles shall be mated and unmated 50 cycles at a rate of 300 cycles per hour maximum. The mating and unmating shall be accomplished so that the plug and receptacle are completely separated during each cycle. The connectors shall then be subjected to the salt spray test in accordance with method 1001 of MIL-STD-1344. The following details and exceptions shall apply:

a. The connectors shall be tested for 452 hours mated followed by 48 hours unmated.
b. The connectors shall not be mounted, but shall be suspended from the top of the chamber using waxed twine or string, glass rods, or glass cord.
c. Wire ends must be protected to prevent salt migration. After the salt spray exposure the remaining number of durability cycles specified in 4.7.18 shall be completed.

4.7.14 Contact resistance (classes H, Y & N (hermetics) only) (see 3.5.14). The contact resistance of mated contacts shall be measured in accordance with method 3004 of MIL-STD-1344.

4.7.15 Coupling pin strength (type B receptacles only)(see 3.5.15). One coupling pin in each receptacle shall be subjected to a $50\ ^{+5}_{-0}$ pound load applied to the swaged end along the major axis of the coupling pins on swaged pins, and perpendicular to the pin centerline on the exposed portion of welded or brazed pins. A steel test fixture contoured to the shape of the coupling pin shall be used for application of the load on the welded or brazed pins. Socket inserts may be removed from receptacles when necessary to admit the test tip.

4.7.16 Insulation resistance (see 3.5.16).

4.7.16.1 Insulation resistance at ambient temperature. Unmated connectors shall be tested as specified in method 3003 of MIL-STD-1344. The following details and exceptions shall apply:

a. For lot quality conformance testing, where it is undesirable to install actual contacts in connectors, simulated contacts and special techniques may be used in performing this test.
b. The tolerance on the applied voltage shall be ±10 percent.

4.7.16.2 Insulation resistance at elevated temperature. Unmated connectors shall be tested as specified in method 3003 of MIL-STD-1344. The following details and exceptions shall apply:

a. The tolerance on the applied voltage shall be ±10 percent.
b. Connectors shall be exposed to a temperature of 200^{+5}_{-0}°C for 30 minutes. Measurement shall be made while the connectors are still in the chamber at the specified temperature.

4.7.17 Dielectric withstanding voltage (see 3.5.17).

4.7.17.1 Dielectric withstanding voltage (sea level). Unmated connectors shall be tested in accordance with method 3001 of MIL-STD-1344 with the following details and exceptions:

a. The magnitude of the test voltage shall be as specified in table V.
b. The test voltage shall be applied between adjacent pairs of contacts and between peripheral contacts and the shell. Fifty percent of the contacts shall be tested, but not less than six applications made, unless the number of contacts is three or less in which case all must be tested.
c. For quality conformance testing, simulated contacts and special techniques may be used in performing this test.

4.7.17.2 Dielectric withstanding voltage (altitude). Mated connectors and unmated connector halves with pin contacts shall be tested in accordance with method 3001 of MIL-STD-1344 with the following details and exceptions:

a. The magnitude of the test voltage shall be as specified in table V.
b. The test voltage shall be applied between adjacent pairs of contacts and between peripheral contacts and the shell. Fifty percent of the contacts shall be tested, but not less than six applications made, unless the number of contacts is three or less in which case all must be tested.
c. The leads of all test circuits shall be brought out through the walls of the chamber. There shall be no wire splices inside the chamber. The wire ends of all leads shall be unsealed.
d. Only the engaging faces of classes H, Y, and M (hermetic) connectors shall be subjected to the high altitude. The rear faces shall be suitably protected.
e. The chamber shall be evacuated to each of the specified altitude pressure equivalents listed below.

Altitude ft	Equivalent pressure psia
50,000	87.5
70,000	35.5
110,000	5.74

4.7.18 Durability (see 3.5.18). Connector halves shall be mated and unmated 250 times for assemblies with grounding fingers and type "T", and 500 times for type "B" assemblies without grounding fingers at a rate not exceeding 300 cycles per hour. The test may be performed by hand or by mechanical means, but the coupling ring shall be operated as in normal service.

4.7.19 Random vibration (see 3.5.19). Wired, mated connectors shall be subjected to the test specified in method 214, MIL-STD-202. The following details shall apply:

a. The connector shall be mounted on the table by normal means.
b. Test condition II - Letter J shall be used.
c. The duration of test shall be 8 hours in the longitudinal direction and 8 hours in the perpendicular direction.
d. All contacts shall be wired in a series circuit and 100 to 150 milliamperes shall be caused to flow during vibration.

4.7.20 Shock (see 3.5.20). Wired, mated connectors shall be subjected to one shock in each direction in each of three mutually perpendicular axes. The pulse shall be an approximate half sine wave of 300G ±15 percent magnitude, with a duration of 3 ±1 milliseconds. Receptacles shall be mounted on a shock fixture by normal means. All contacts shall be wired in a series circuit and 100 to 150 milliamperes of current shall flow through the series circuit during shock. Suitable means shall be employed to monitor the current flow and to indicate any discontinuity of more than 1 microsecond. The wire bundle shall be clamped to fixed points at least 8 inches from the rear of the connector.

4.7.21 Shell-to-shell conductivity (see 3.5.21). The dc resistance of the wired, mated, assembled connectors shall be measured from a point on the rear accessory thread of the plug to the mounting flange of the receptacle, or the rear thread of a cable connecting receptacle. The point of measurement on the square flange receptacle shall be adjacent to the mounting holes and adjacent to the "O" ring on the front or mounting side of the flange for the single hole mount receptacle. The dc resistance shall not exceed the values specified in 3.5.21 when measured by the voltmeter-ammeter method. The applied potential shall be 1-1/2 Vdc maximum. A resistance shall be inserted in the circuit to limit the current to .100 ±.010 ampere. Probes with spherical ends of .05 inch minimum radius shall be used to make the voltage measurements on the connectors. The probes shall not puncture or otherwise damage the connector finish.

4.7.22 Humidity (see 3.5.22). Wired, mated connectors, shall be subjected to the humidity test specified in method 1002 of MIL-STD-1344. The following details and exceptions shall apply:

a. Test condition letter - Type II omitting subcycle step 7b.
b. The mated connectors shall be mounted in a vertical position.
c. After a minimum of 3 hours of step 7a of final cycle and while the connectors are still subjected to high humidity, the insulation resistance shall be measured when the chamber temperature reaches 20 ±5°C and condensation is on the connectors.

4.7.23 Shell spring finger forces (type B only) (see 3.5.23). Plugs shall be completely mated and unmated with receptacles without inserts, and coupling pins. On the initial mating and unmating, the forces necessary to engage and separate shall be within the values specified in table VI.

4.7.24 RFI shielding (see 3.5.24). The RFI shielding effectiveness of mated connectors with RFI backshells shall be measured in a triaxial radio frequency leakage fixture. The RFI leakage from the conductor inside the connector in the inner coaxial line into the outer coaxial line shall be measured at the frequencies specified in table VII within a frequency accuracy of ±5 percent. The level of detected signal power shall be indicated by a tunable radio frequency field intensity meter isolated from the test circuit by a 3 to 10 dB pad. Care shall be taken to ensure that the signal is a result of RFI leakage from within the mated connector and not due to a faulty termination inside the fixture. All terminations inside the fixture, whether to the RFI backshells or between internal conductors, shall have a leakage at least 10 dB less than the test requirement. The test arrangement shall be as shown in figures 7 and 8. The signal source shall be set to the desired frequency. The signal shall be fed through a 3 to 10 dB isolation pad to a parallel circuit consisting of a coaxial switch (DPDT) so connected that the signal can be manually or electronically fed alternately to the fixture and to a variable 100 dB reference attenuator. The attenuator shall be adjustable in 1 dB steps and calibrated to ±3 dB.

a. The inserts may be removed from the connectors under test or the contacts removed and a hole drilled through the inserts to accomodate a center conductor of suitable geometry to provide a good 50 ohm impedance match with the ID of the mated connector shells and RFI backshells. Tapered transitions may be used to provide a means of changing diameters without introducing significant discontinuities in the line. The maximum VSWR in the inner coaxial line shall be 1.5. The outer shell of the test fixture shall be so constructed as to provide a good 50 ohm impedance match with the OD of the mated connector shells, coupling ring and RFI backshells. The maximum VSWR of the outer coaxial line shall be 1.5.
b. A sliding circumferential short shall be positioned behind the connector on the signal input end of the fixture to provide for tuning the outer coaxial line for maximum output at each test frequency. The allowable travel of this short shall be greater than 1/2 wave length at the lowest test frequency or 1.5 meters minimum for 100 MHz. The inner coaxial line shall be terminated in a fixed 50 ohm load impedance behind the connector at the output end of the fixture.
c. The connectors used to couple together the various elements of the test system shall be of a low leakage type which have a nominal impedance of 50 ohms, a VSWR of less than 1.5, and a minimum leakage attenuation of 100 dB. The output impedance of the signal source and the input impedance of the detector shall be nominally 50 ohms with a maximum VSWR of 1.5. The input and output VSWR of the standard attenuator shall be less than 1.5 in the 20 to 100 dB range.
d. The relative signal level in the variable attenuator shall be equaled to that through the leakage fixture by adjusting the attenuator. The signal loss in the fixture can then be read from the setting on the variable attenuator.

4.7.25 Ozone exposure (see 3.5.25). The unmated connectors shall be subjected to ozone having a concentration from 0.010 to 0.015 percent by volume for 2 hours at room temperature. At the end of the specified period, the samples shall be examined for signs of ozone deterioration as specified.

4.7.26 Fluid immersion (see 3.5.26). Counterpart connectors shall be fully immersed as specified in table XV for the required periods. At least one pair of mating counterpart connectors shall be immersed in each fluid. After removal from the fluid , each pair of connectors shall remain for 1 hour in free air at room conditions in a position to allow the fluid to drain from the insert faces. Subsequent testing shall be performed on connectors mated with the same mating connectors used previously in testing.

4.7.27 Retention system fluid immersion (see 3.5.27). Connectors shall be unmated and contacts shall be removed. Connectors shall be immersed in the fluids listed in table XV (one sample per fluid) for 20 hours at room temperature. After removal, excess fluid shall be allowed to drain from the connectors for 4 hours and the contacts shall be reinstalled.

TABLE XV. Fluids for fluid immersion test.

Sample number	Test fluid	Test procedure
1	MIL-L-7808	Immerse unmated connectors in fluid at 120 ±3°C for 5 minutes. Remove connectors and allow to drain for a minimum of 1 hour at room temperature. Fluid shall be drained from all recesses. Mate connectors and expose to 125 ±3°C in an air circulating oven for 6 hours. Repeat procedure for a total of seven cycles.
2	MIL-L-23699	
3	MIL-H-5606	Immerse unmated connectors in fluid at 85 ±3°C for 5 minutes. Remove connectors and allow to drain for a minimum of 1 hour at room temperature. Fluid shall be drained from all recesses. Mate connectors and expose to 100 ±3°C in an air circulating oven for 6 hours. Repeat procedure for a total of seven cycles.
4	Hydraulic fluid - North American Rockwell Specification ST0145LB0001 (Same as M2-V Chevron Oil, Chevron International Oil Co.)	
5	MIL-A-8243	Immerse mated connectors in fluid at 65 ±3°C for 5 minutes. Remove connectors and allow to drain for a minimum of 1 hour at room temperature. Fluid shall be drained from all recesses. Unmate and expose connectors to 100 ±3°C in an air circulating oven for 6 hours. Repeat procedure for a total of seven cycles.
6	MIL-C-25769 (diluted for cleaning)	
7	MIL-T-5624 Grade JP-5	Same as procedure 1, except that the fluid shall be at 25 ±3°C, and oven at 55 ±3°C for 6 hours.
8	Coolant-dielectric fluid synthetic silicate ester base	Unmated connectors shall be pre-conditioned at 175°C for 30 minutes. Immerse connectors fully in room temperature fluid for 1 minute. Remove connectors and allow to stabilize at room temperature for 1 hour minimum. Fluid shall be drained from all recesses.
9	Commercial regular gas MIL-G-3056 (type 1)	The wired, assembled, unmated connector shall be immersed in the fluid at 25 ±3°C for 5 minutes, removed from the fluid and exposed to free air for 24 ±2 hours. This conditioning cycle shall be repeated until the connector has been subjected to five complete cycles. For a maximum of two cycles, the exposure to free air may be extended to 75 hours.
10	One part by volume of isopropyl alcohol, per TT-I-735, grade A or B, and three parts by volume of mineral spirits per TT-T-291, grade 1 or P-D-680, type 1	
11	1-1-1 trichloroethane	
12	Azeotrope of trichlorotrifluoroethane and methylene chloride	

4.7.28 Contact walk-out (see 3.5.28). Two contacts in each plug and receptacle shall be tested. The contacts shall be crimped to stranded steel cable of an appropriate size and installed in the connector. The unmated connector shall be mounted in a test fixture as shown in figure 9. A 3 pound load shall be applied to the cable. One 360° rotation of the fixture with the connector mounted shall constitute one cycle. The connector shall be subjected to 100 cycles at a rate of 10 to 20 cycles per minute. Contact cavities used in this test shall be excluded from further testing.

4.7.29 Installing and removal tool abuse (see 3.5.29). Five contact cavities in each connector shall be subjected to each of the tests in 4.7.29.1 through 4.7.29.4. Different contact cavities shall be used for each test. Should a tool become damaged during any of the testing it shall be replaced. Failure of a tool shall not constitute a test failure. Contact cavities used in this test shall not be subject to further testing.

4.7.29.1 Removal tool rotation. The applicable contact removal tool shall be inserted as if to remove a contact and an axial load of 3 pounds shall be applied. With the force applied, the tool shall be rotated 180° and then removed, also removing the contact. The contact shall be reinserted. These steps shall be repeated three times on each of the five contacts selected.

4.7.29.2 Installing tool rotation. The contact shall first be removed. With the applicable contact installing tool, the contact shall be reinstalled and an axial load of 3 pounds applied to the tool. With the force applied, the tool shall be rotated 180° and then removed. These steps shall be repeated three times on each of the five contacts selected.

4.7.29.3 Installing tool thrust. The contact shall first be removed. With the applicable contact installing tool, the contact shall be reinstalled and an axial load of 10 pounds applied to the tool. These steps shall be performed only once on each of the five contacts selected. A new tool shall be used for each contact.

4.7.29.4 Removal tool thrust. The applicable contact removal tool shall be inserted as if to remove the contact and an axial load of 10 pounds shall be applied to the tool. The tool shall then be removed, also removing the contact. These steps shall be performed only once on each of the five contacts selected. A new tool shall be used for each contact.

4.7.30 External bending moment (see 3.5.30). The receptacle connector shall be mounted as in normal service to a rigid panel. Before mating the plug connector to the receptacle, an adapter or test torque arm shall be attached as shown on figure 10. After mating the plug and receptacle connectors, the distances "L" from the point of load application and "P" to the mounting panel shall be determined. The load to be applied at point "P" shall then be determined as the bending moment listed in table VIII divided by the lever arm "L". This load shall be applied at a rate of approximately 10 pounds per second until the required load is achieved. The load so applied shall be held for a period of 1 minute after which the load shall be released. Continuity of the contacts shall be monitored during the test. The test circuit used to monitor this test shall be capable of detecting any discontinuity of 1 microsecond or greater.

4.7.31 Pin contact stability (see 3.5.31). The unmated connectors shall have 10 percent (but not less than one) of their pin contacts subjected to this test. Gage pins conforming dimensionally to the applicable military standard for the contacts shall be used. The connector shall be held in a holding device. A force of 3 pounds shall be applied to the exposed rod as shown on figure 11. The rate of load application shall not exceed 1 inch per minute. The total pin tip displacement shall be measured as shown on figure 11. Contact cavities used in this test shall be excluded from further testing.

4.7.32 Temperature life with contact loading (see 3.5.32). Connectors with removable contacts shall have one mating pair of contacts removed and replaced with contacts crimped to steel cable or steel-cored copper wire (copperweld) of an appropriate size. The axial location of these contacts shall be measured for conformance to the applicable dimensions of figures 4, 5, or the applicable specification sheets, as applicable, with a load of 2 pounds approximately applied to seat the contact back against the retention device. The connector shall then be mounted in a fixture as shown in figure 12. A weight equal to 50 percent of the axial load specified in table XIV for the applicable contact size shall be suspended freely from each steel wire. A current of 100 ±10 milliamperes, supplied from a 10.0 Vdc maximum power source shall be applied to the test contacts and a suitable instrument shall be used to monitor the circuit for discontinuities in excess of 1 microsecond. The connector, mounted as shown in figure 12, shall then be exposed to 200 ±3°C for a period of 1,000 hours. After the connectors return to ambient temperature, they shall be unmated and the contact locations remeasured with approximately 2 pounds axial load applied to seat the contact back against the retention device.

4.7.33 Fireproof (classes K, N, (except hermetic) and S) (see 3.5.33). The mated, torqued, and wired connector shall be mounted on a fixture in accordance with figures 13 and 14. The plug wire bundle shall be wrapped with glass tape or protected by suitable means to insure that the wire bundle is capable of meeting the electrical requirements of this test. The connector assembly shall be subjected to 1,093°C minimum flame (measured .250 inch from the assembly) for a period of 20 minutes. The flame shall be directed at and envelop the connector plug assembly. The input to the burner shall be natural gas at a flow rate equivalent to an input of 33,000 to 37,000 BTU/hr during the entire duration of the test. Simultaneously, the assembly shall be vibrated continuously at 33 Hz with a total excursion of 0.250 inch. During the first 5 minutes of the test, all contacts shall carry the dc current specified. During the sixth minute of the test, the potential specified in 3.5.33 shall be applied between adjacent contacts and between contacts and shell.

4.7.34 Surface roughness (classes H, Y,and N (hermetic))(see 3.4.5.4). The surface roughness of samples shall be measured with a suitable instrument.

4.7.35 Plating thickness (classes H, Y, and N (hermetic))(see 3.3.3.2). Plating thickness measurements shall be obtained in accordance with Beta-back scatter radiation or by method 521 of Federal Test Method Standard No. 151 with the following modifications:

a. The specimens shall consist of a right angle cross section of the selected surface to be measured. The sample shall be coated with a plating to protect edges during grinding and polishing, and mounted in plastic material such as a phenolic or acrylic resin. In mounting, care shall be taken that voids do not form between the specimens and the mounting material.
b. The section to be examined shall be ground and polished by regular metallographic methods, using successively finer abrasives, the last of which shall not be coarser than 500 mesh.
c. The thickness of coating on the exposed section shall be measured at five random locations under a magnification of at least 500 diameters. Measurements shall be expressed to a minimum of two significant figures.

4.7.36 Plating adhesion (classes H, Y, and N (hermetic)). Sizes 12, 16, and 20 contacts shall be bent repeatedly through an angle of 180 degrees on a diameter equal to the outside diameter of the specimen until fracture of the basic metal occurs. Suitable equipment shall be used to cause the fracture to occur in the area where plating adhesion is to be determined, as indicated in figure 1. A sharp pointed tool shall be used to determine if any area of the coating can be separated from the basic metal. The plating area shall then be examined at a magnification of four diameters. The contact may be sectioned longitudinally for this test when necessary. Contact sizes 0, 4, and 8 shall be maintained at their temperature limit (200 ±3°C) for a minimum of 1/2 hour and inspected to the requirements of 3.5.34.

4.7.37 Accessory thread strength (see 3.5.35). The mated connector shall be mounted as in normal service to a rigid panel. The torque wrench shall be attached as shown in figure 15. After mating the plug and receptacle connectors, a torque shall be applied to the accessory end of the plug at a rate of approximately 10 pounds per second until the required torque is achieved (table XVI). The load so applied shall be held for a period of 1 minute after which the load shall be released. The test shall be repeated on the accessory end of the receptacle. The connectors shall then be unmated and inspected to 3X magnification for damage or breakage.

TABLE XVI. Accessory thread strength.

Shell size	Minimum torque in/lb
8	75
10	100
12	140
14	150
16	150
18	150
20	175
22	175
24	175

4.8 Post test examination. The tested connectors and contacts shall be examined to determine the effects of previous testing. Any evidence of cracking, loosening of parts, carbon tracking, excess wear, or missing parts shall be recorded.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-C-55330.

6. NOTES

6.1 Intended use (all classes).

a. Connector backshells must be installed to meet the specified moisture sealing requirements.
b. Class G connectors are stainless steel connectors intended for use in environment resisting applications that require a peripheral shield, 200°C service temperature, and fluid resistance.
c. Class R connectors are intended for use in environment resisting applications at 200°C service temperature. They have conductive finish with fluid resistance requirements.
d. Class H receptacles are intended for use in applications where pressures must be contained by the connectors across walls or panels on which they are mounted. They shall have fluid resistance insert face seal. Class H receptacles are limited to 150°C service temperature.
e. Class S connectors are intended for use in firewall applications where RFI protection is required. These connectors have self-locking coupling nuts, which eliminates the need for safety wiring and are rated at 200° service temperature.
f. Class A connectors are intended for use in applications where a conductive shell is not required. Class A connectors also provide excellent durability and resistance to salt spray.

g. Class K connectors are intended for use in firewall applications where RFI protection is not required. Class K connectors are available with self-locking coupling nuts.
h. Series II receptacles are intended to replace MS3100 and MS3102 connectors for classes IV and V Air Force modification.
i. Series II plugs are intended to replace MS3106, MS3108, and MS25183 connectors for classes IV and V Air Force modification.
j. Mechanical strain reliefs are intended for use where a saddle type clamp is desired.
k. Shrink strain reliefs are intended to provide wire support and vibration dampening when used.
l. To remove unwired contacts, contact contractors for specific tools and instructions.
m. Class Y receptacles are intended for use in applications where pressures must be contained by the connectors across walls or panels on which they are mounted. They shall have fluid resistance insert face seal. Class Y receptacles are rated at 200°C service temperature.
n. Type T threaded are intermateable but not completely interchangeable with applicable MIL-C-26500 threaded connectors. Type B bayonets are completely interchangeable with applicable MIL-C-26500 bayonet connectors.
o. Class N connectors are for the same use as class S or Y with electro-deposited nickel finish.
p. Class W connectors are intended for use in environment resisting applications at 175°C service temperature where extreme corrosion resistance requirements exist.

6.2 Ordering data. Procurement documents should specify the following:

a. Procurement of items to this specification will be only from sources that, prior to closing date of bids, have received qualification of the product within terms of the Armed Services Procurement Regulations, ASPR, paragraph 1-1101 through 1-1111 (see 6.3).
b. Title, number, and date of this specification.
c. The part number in accordance with the applicable specification sheet (see 3.1).
d. Accessories.
e. Special handling, if applicable.
f. Special ordering instructions, see 3.4.3.4, 3.4.5, and 3.4.5.5.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in the applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of contractors is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the Qualified Products List is: AFLC/LOIE, Wright Patterson AFB, Ohio 45433.

6.4 Assembly plants. Assembly plants must be listed on or approved for listing on the applicable Qualified Products List. The qualified connector contractor shall certify that the assembly plant is approved for the distribution of the contractor's parts. The assembly plant shall use only piece parts supplied by the qualified connector contractor. No testing other than visual examination is required of certified piece parts obtained from the qualified connector contractor, except when there is cause for rejection. All assemblies produced at the assembly plant shall be subject to the quality assurance provisions specified herein. Quality control requirements, including Government inspection surveillance, shall be the same as required for the qualified connector contractor.

6.5 Patent notice. The Government has a royalty free license under the U.S. Patents listed below for the sole and express purpose of making or having made and used by or for the Government for governmental purposes only the electrical connectors and parts therefore specifically disclosed and described in this military specification and related specification sheets and military standards.

Patent numbers

3110093 expires November 12, 1980.
3158424 expires November 24, 1981.

6.6 Copyright notice. All information disclosed in this specification and related specification sheets and military standards which is or may be copyrighted by the International Telephone and Telegraph Corporation is reproduced herein with the express permission of the copyright owner.

6.7 Drawing notes.

a. Dimensions are in inches.
b. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
c. Metric equivalents are in parentheses.

6.8 Supersession data.

6.8.1 Series I connectors. Series I connectors are inactive as of 19 March 1975 and are transferred to MIL-C-26482, and are superseded by the Military Standards as listed below.

MIL-C-83723 specification sheet	Superseded by
1	MS3470
2	MS3470
3	MS3472
4	MS3472
5	MS3474
6	MS3474
7	MS3471
8	MS3471
9	MS3440
10	MS3440
11	MS3443
12	MS3443
13	MS3476
14	MS3476
33	MIL-C-39029/4
34	MIL-C-39029/5
36	No superseding document
37	No superseding document
38	No superseding document
39	No superseding document
40	No superseding document
41	No superseding document
42	MS3475
43	MS3475
44	MS3181
45	MS3115
46	MS3180
48	No superseding document
49	No superseding document

6.8.2 Series II connectors. Series II connectors are inactive for new design. Use the military standards associated with MIL-C-5015 as listed below.

MIL-C-83723 specification sheet	Superseded by
17	MS3451
18	MS3451
19	MS3450
20	MS3450
21	MS3452
22	MS3452
23	MS3456
24	MS3456
25	MS3142
26	MS3143
27	MS3109 or MS3117 and MS3158 or MS3416
29	MIL-C-39029/29
30	MIL-C-39029/30
35	No superseding document
50	No superseding document
52	MS3459
53	MS3459

6.9 Previous editions of some specification sheets used a "-" in lieu of a "/" in the part number; Example: M83723/83XXXXXX is the same as M83723-83XXXXXX. These parts are identical, but new parts shall be marked with a "/".

6.10 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes."

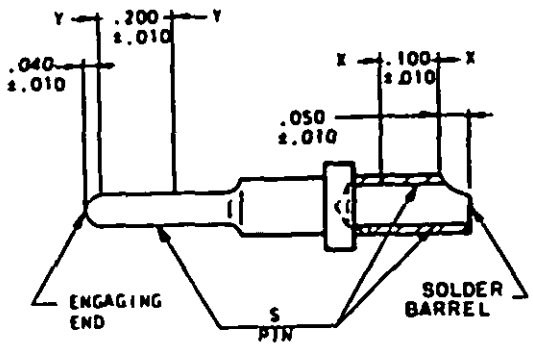
Custodians:
Army - EL
Navy - AS
Air Force - 85

Review activities:
Army - MI, AR
Navy - EC
Air Force - 11, 15, 17, 99
DLA - ES

User activities:
Army -
Navy - OS
Air Force -

Preparing activity:
Air Force - 85

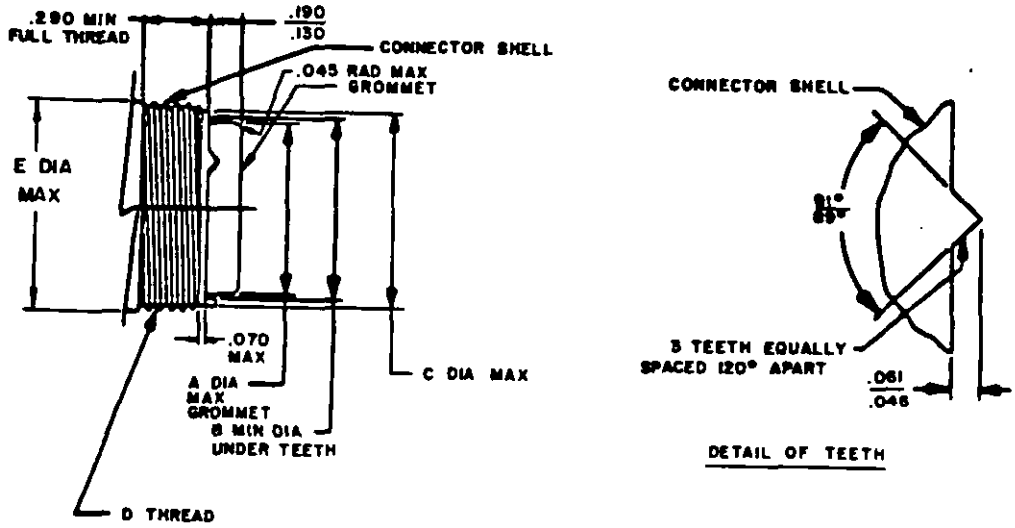
(Project 5935-3007)



NOTES:
1. Surface roughness to be measured on surface S between Y - Y.
2. Plating thickness to be measured on surface S between Y - Y on pin contacts.
3. Plating adhesion to be determined on surface S between X - X and between Y - Y.
4. Pin contacts to be examined on surface S between Y - Y for exposure of basis metal.
5. Surface roughness per ANSI B46.1962.

INCHES	MM
.010	.25
.040	1.02
.050	1.27
.100	2.54
.200	5.08

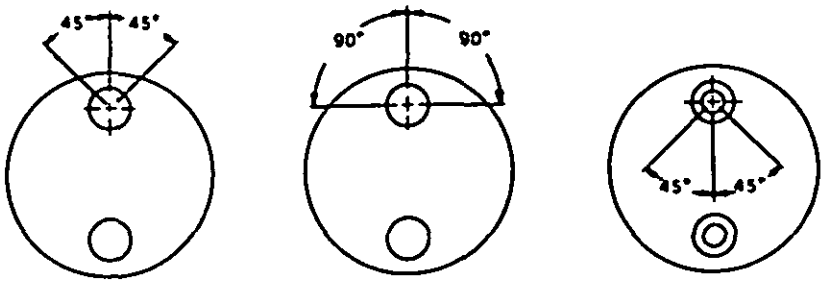
FIGURE 1. Surface details. (See 3.3.3.2, 3.4.5.4, and 4.7.37.)



Size	A	B	C	D Thread (class 2)	E Dia Max
8	.305	.370	.437	.500-20 UNF	.500
10	.405	.497	.572	.625-24 UNEF	.625
12	.531	.613	.687	.750-20 UNEF	.750
14	.665	.738	.812	.875-20 UNEF	.875
16	.790	.863	.937	1.000-20 UNEF	1.000
18	.869	.919	.992	1.062-18 UNEF	1.062
20	.994	1.044	1.117	1.188-18 UNEF	1.187
22	1.119	1.169	1.242	1.312-18 UNEF	1.312
24	1.244	1.294	1.367	1.438-18 UNEF	1.437

INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.045	1.14	.497	12.62	.812	20.62	1.117	28.37
.046	1.17	.500	12.70	.863	21.92	1.119	28.42
.061	1.55	.531	13.49	.869	22.07	1.169	29.69
.070	1.78	.572	14.53	.875	22.23	1.187	30.15
.130	3.30	.613	15.57	.919	23.34	1.188	30.18
.190	4.83	.625	15.88	.937	23.80	1.242	31.55
.290	7.37	.665	16.89	.992	25.20	1.244	31.60
.305	7.75	.687	17.45	.994	25.25	1.294	32.87
.370	9.40	.738	18.75	1.000	25.40	1.312	33.32
.405	10.29	.750	19.05	1.044	26.52	1.367	34.72
.437	11.10	.790	20.07	1.062	26.97	1.437	36.50
						1.438	36.53

FIGURE 2. Rear accessory interchangeability control dimensions. (Series III only) (See 3.4.)



NOTES:

1. Contact identification letters or numbers on rear grommet face of socket and pin insert shall be within 45° either side of vertical centerline above the contact cavity.
2. Letters or numbers shall be placed on socket insert engaging face as shown. They shall be above the horizontal centerline of the chamfered lead-ins. Where space precludes their application an ever expanding orbital line is permissible.
3. Letters or numbers on the engaging face of the pin insert shall be on the raised seal barrier above or beside the pin contact cavity. They shall not extend into the lower sector of the raised seal barrier which extends 45° either side of the vertical centerline. Letter on the engaging face of series II pin inserts may be placed on the interfacial seal in close proximity to the raised individual seal barriers.
4. On outer row of contacts individual cavity identification may be deleted from those cavities where space precludes its application, or they may be located 120° either side of the vertical centerline above or beside the contact cavity provided the insert pattern can be easily determined and legibility is not impaired.
5. Underscoring of lower case letters is optional.
6. The interfacial markings of the inserts shall not be raised or recessed on the front engaging faces except that raised or recessed characters are permissible on the resilient cones around pin contacts.

FIGURE 3. Insert cavity identification locations. (See 3.4.4.4.)

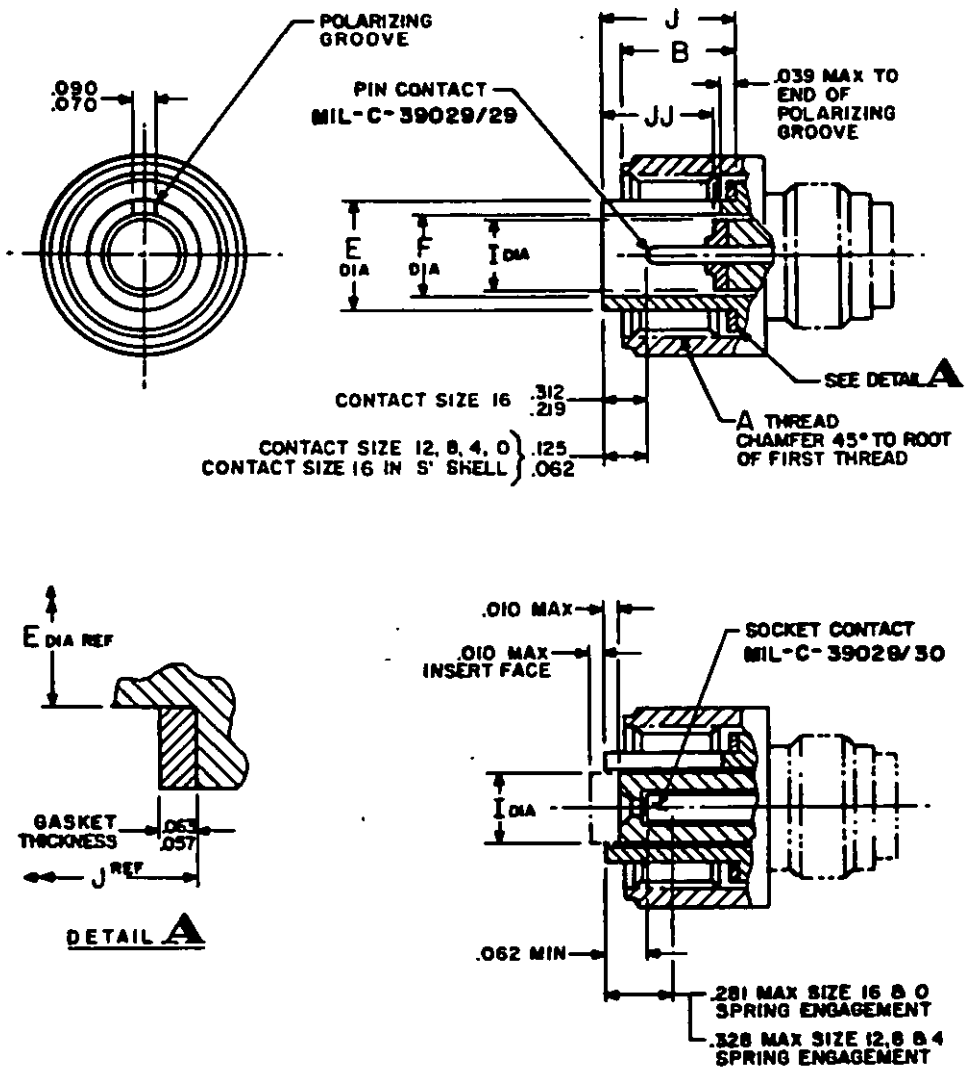
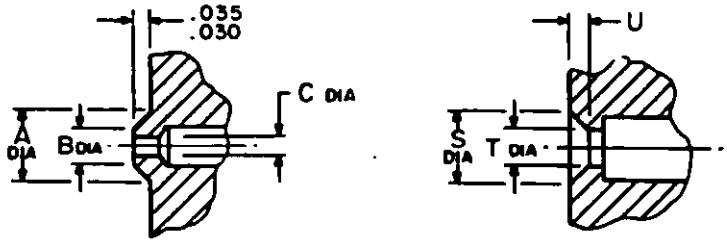


FIGURE 4. Plug, type T, rear release, interface dimensions (Series II). (See 3.4.5.1, 3.5.2, 3.5.32, and 4.7.32.)

SHELL SIZE	A THREAD CLASS 2B	B +.000 -.062	E DIA +.000 -.010	F DIA +.015 -.000	I DIA +.000 -.020	J ±.005	JJ ±.011
8S	.500-28 UNEF	.414	.365	.252	.250	.570	.510
10S	.625-24 UNEF		.440	.323	.320		
10SL			.446	.398	.397		
12S	.750-20 UNEF		.555	.450	.448		
12		.664				.757	.698
14S	.875-20 UNEF	.414	.675	.526	.525	.570	.510
14		.664				.757	.698
16S	1.000-20 UNEF	.414	.805	.651	.650	.570	.510
16		.664				.757	.698
18	1.125-18 UNEF		.930	.776	.770		
20	1.250-18 UNEF		1.050	.932	.925		
22	1.375-18 UNEF		1.175	1.026	1.020		
24	1.500-18 UNEF		1.300	1.151	1.145		
28	1.750-18 UNS		1.520	1.370	1.365		
32	2.000-18 UNS		1.770	1.620	1.615		
36	2.250-16 UN		1.980	1.838	1.830		
40	2.500-16 UN		2.230	2.057	2.045		
44	2.750-16 UN		2.485	2.310	2.300		
48	3.000-16 UN		2.735	2.560	2.550		

1/ ON SHELL SIZE 10SL 'E' DIA TOLERANCE IS +.000, -.006 AND 'F' DIA TOLERANCE IS +.006, -.000

FIGURE 4. Plug, type T, rear release, interface dimensions (Series II). (See 3.4.5.1, 3.5.2, 3.5.33, and 4.7.32.) - Continued



PIN INSERT | SOCKET INSERT

CONTACT SIZE	A DIA	B DIA	C DIA	S DIA	T DIA	U
16	.130 .140	.135 .137	.061 .058	.140 .130	.079 .072	.035 .031
12	.208 .198	.188 .184	.093 .090	.204 .193	.111 .104	.040 .035
8	.310 .300	.270 .265	.141 .138	.306 .295	.159 .152	.040 .035
4	.396 .386	.355 .350	.224 .221	.392 .381	.262 .254	.033 .027
0	.578 .568	.537 .533	.356 .353	.573 .563	.414 .366	.033 .027

INSERT ENTRY

INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.005	.13	.135	3.43	.320	8.13	.568	14.43	1.300	33.02
.006	.15	.138	3.51	.323	8.20	.570	14.48	1.365	34.67
.010	.25	.140	3.56	.328	8.33	.573	14.55	1.370	34.80
.011	.28	.141	3.58	.350	8.89	.578	14.68	1.375	34.93
.015	.38	.150	3.81	.353	8.97	.625	15.88	1.500	38.10
.020	.51	.152	3.86	.355	9.02	.650	16.51	1.520	38.61
.027	.69	.159	4.04	.356	9.04	.651	16.54	1.615	41.02
.031	.79	.184	4.67	.365	9.27	.664	16.87	1.620	41.15
.033	.84	.188	4.78	.366	9.30	.675	17.15	1.750	44.45
.035	.89	.193	4.90	.381	9.68	.698	17.73	1.770	44.96
.039	.99	.198	5.03	.386	9.80	.750	19.05	1.830	46.48
.040	1.02	.204	5.18	.392	9.96	.757	19.23	1.838	46.69
.057	1.45	.208	5.28	.396	10.06	.770	19.56	1.980	50.29
.058	1.47	.219	5.56	.397	10.08	.776	19.71	2.000	50.80
.061	1.55	.221	5.61	.398	10.11	.805	20.45	2.045	51.94
.062	1.57	.224	5.69	.414	10.52	.875	22.23	2.057	52.25
.063	1.60	.234	5.94	.440	11.18	.925	23.50	2.230	56.64
.070	1.78	.250	6.35	.446	11.33	.930	23.62	2.250	57.15
.072	1.83	.256	6.50	.448	11.38	.932	23.67	2.300	58.42
.079	2.01	.262	6.65	.450	11.43	1.000	25.40	2.310	58.67
.082	2.08	.265	6.73	.500	12.70	1.020	25.91	2.485	63.12
.090	2.29	.270	6.86	.510	12.95	1.026	26.06	2.500	63.50
.093	2.36	.281	7.14	.525	13.34	1.050	26.67	2.550	64.77
.104	2.64	.295	7.49	.526	13.36	1.125	28.58	2.560	65.02
.111	2.82	.300	7.62	.533	13.54	1.145	29.08	2.735	69.47
.125	3.18	.306	7.77	.537	13.64	1.151	29.24	2.750	69.85
.130	3.30	.310	7.87	.555	14.10	1.175	29.85	3.000	76.20
.131	3.33	.312	7.92	.563	14.30	1.250	31.75		

FIGURE 4. Plug, type T, rear release, interface dimensions (Series II). (See 3.4.5.1, 3.5.2, 3.5.32, and 4.7.32.) - Continued

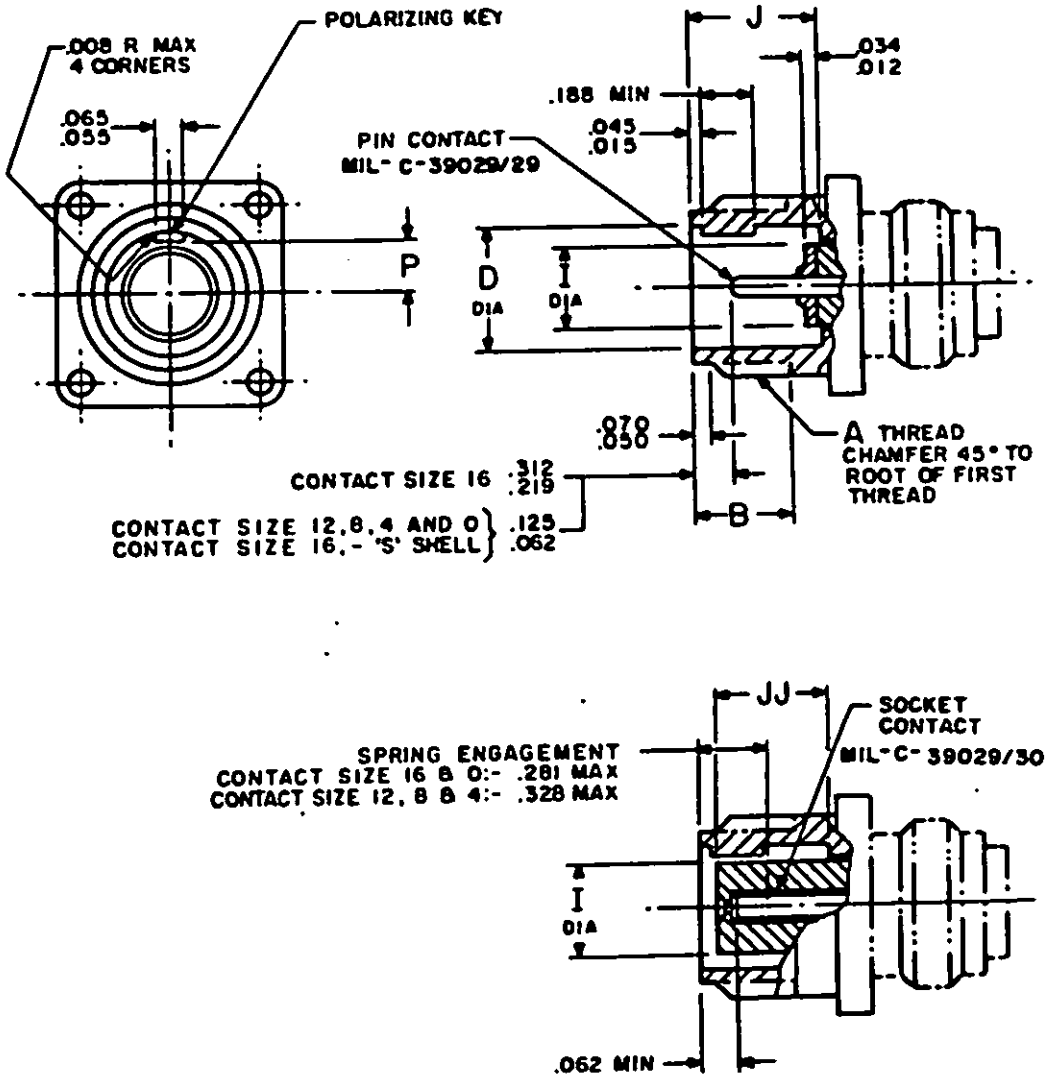
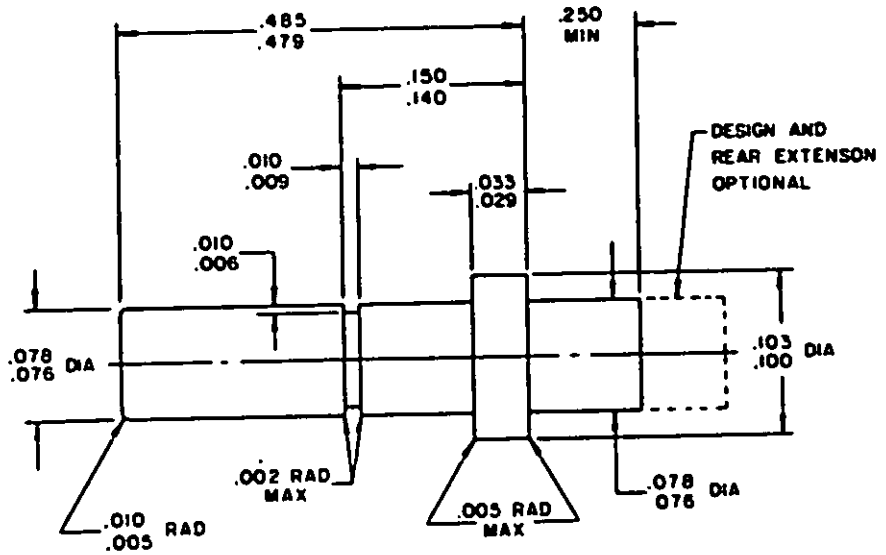


FIGURE 5. Receptacle, type T, rear release, interface dimensions (Series II). (See 3.4.5.1, 3.5.2, 3.5.32, and 4.7.32.)

SHELL SIZE	A THREAD CLASS 2A	B MIN THREAD	D DIA +.015 -.000	I DIA +.000 -.020	J ±.005	JJ ±.010	P +.010 -.000
8S	.500-28 UNEF	.375	.370	.250	.536	.533	.130
10S	.625-24 UNEF		.448	.320			.165
10SL				.397			
12	.750-20 UNEF	.625	.558	.448	.724	.721	.224
12S		.375			.536	.533	
14	.875-20 UNEF	.625	.678	.525	.724	.721	.263
14S		.375			.536	.533	
16	1.000-20 UNEF	.625	.808	.650	.724	.721	.325
16S		.375			.536	.533	
18	1.125-18 UNEF	.625	.933	.770	.724	.721	.385
20	1.250-18 UNEF		1.053	.925			.463
22	1.375-18 UNEF		1.178	1.020			.510
24	1.500-18 UNEF		1.303	1.145			.573
28	1.750-18 UNS		1.523	1.365			.683
32	2.000-18 UNS		1.773	1.615			.808
36	2.250-16 UN		1.985	1.830			.915
40	2.500-16 UN		2.237	2.045			1.023
44	2.750-16 UN		2.492	2.300			1.150
48	3.000-16 UN		2.742	2.550			1.275

INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM
.005	.13	.219	5.56	.525	13.34	.933	23.70	1.615	41.02
.008	.20	.224	5.69	.533	13.54	1.000	25.40	1.750	44.45
.010	.25	.250	6.35	.536	13.61	1.020	25.91	1.773	45.03
.012	.30	.263	6.68	.558	14.17	1.023	25.98	1.830	46.48
.015	.38	.281	7.14	.573	14.55	1.053	26.75	1.985	50.42
.020	.51	.312	7.92	.625	15.88	1.125	28.58	2.000	50.80
.034	.86	.320	8.13	.650	16.51	1.145	29.08	2.045	51.94
.045	1.14	.325	8.26	.678	17.22	1.150	29.21	2.237	56.82
.050	1.27	.328	8.33	.683	17.35	1.178	29.92	2.250	57.15
.055	1.40	.370	9.40	.721	18.31	1.227	31.17	2.300	58.42
.062	1.57	.375	9.53	.724	18.39	1.250	31.75	2.492	63.30
.065	1.65	.385	9.78	.750	19.05	1.303	33.10	2.500	63.50
.070	1.78	.397	10.08	.770	19.56	1.365	34.67	2.550	64.77
.125	3.18	.448	11.38	.808	20.52	1.375	34.93	2.742	69.65
.130	3.30	.468	11.89	.875	22.23	1.500	38.10	2.750	69.85
.165	4.19	.500	12.70	.915	23.24	1.523	38.68	3.000	76.20
.188	4.78	.510	12.95	.925	23.50				

FIGURE 5. Receptacle, type T, rear release, interface dimensions (Series II). (See 3.4.5.1, 3.5.2, 3.5.32, and 4.7.32.) - Continued



Material - Hardened tool steel.
Finish - 32 microinch polished.

NOTE: Diameters to be concentric within .004 T.I.R.

FIGURE 6. Simulated size #20 socket contact for maintenance aging test. (See 4.7.4.)

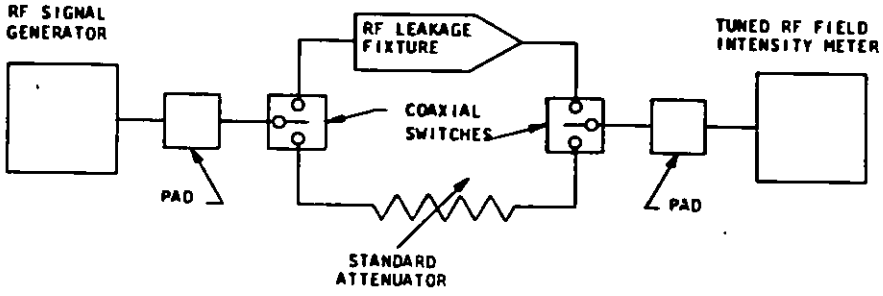


FIGURE 7. Test system for RFI leakage test. (See 4.7.24.)

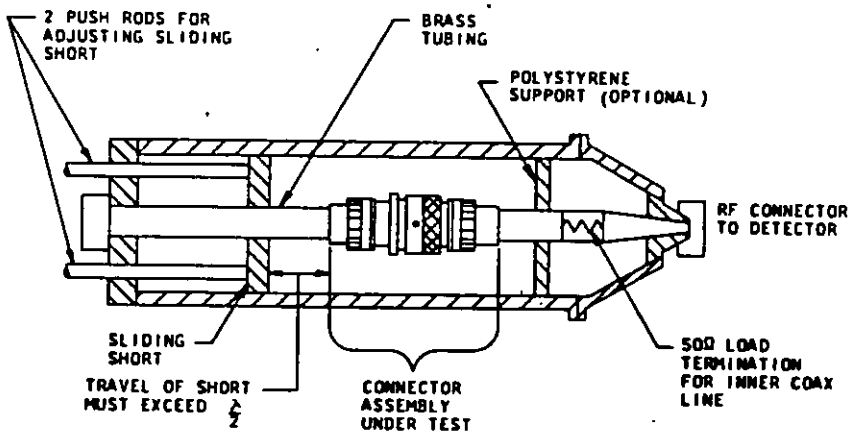


FIGURE 8. RFI leakage test fixture. (See 4.7.24.)

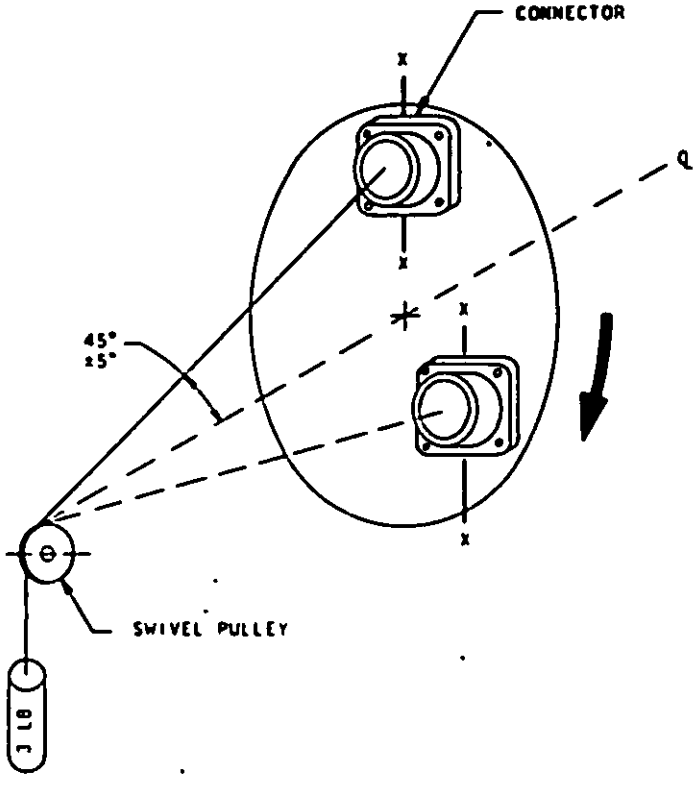


FIGURE 9. Contact walk-out test setup. (See 4.7.28.)

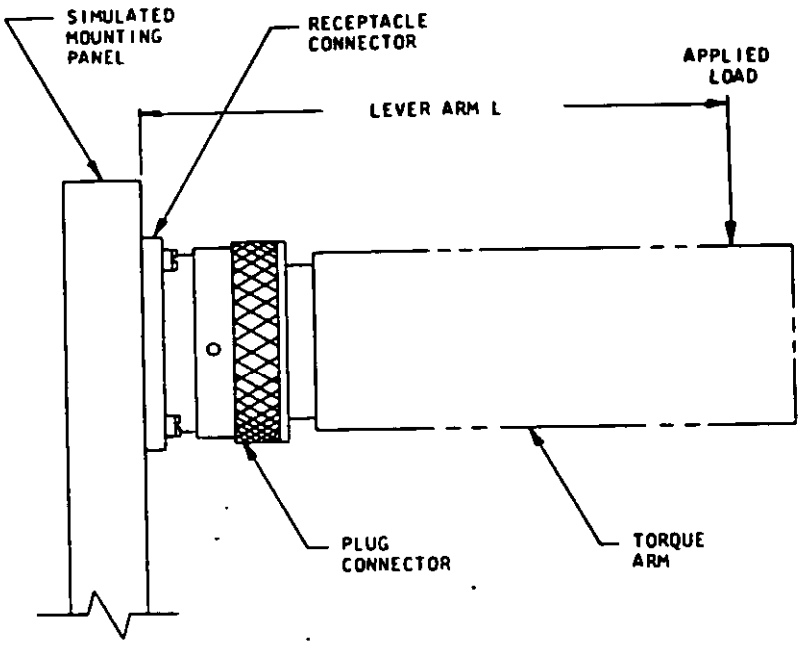
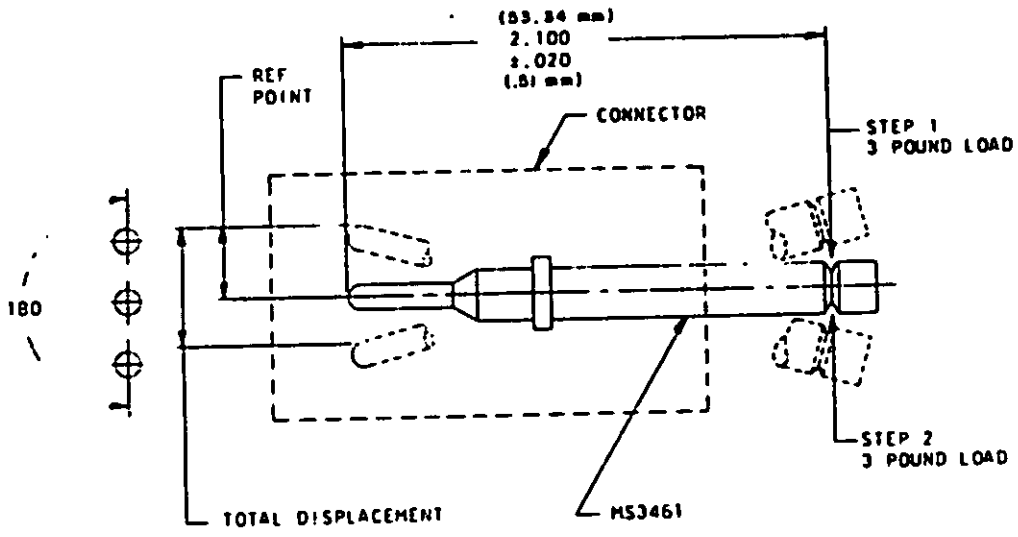


FIGURE 10. External bending moment test setup. (See 4.7.30.)



STEP 1. - APPLY LOAD TO DETERMINE REFERENCE POINT.

STEP 2 - APPLY LOAD IN OPPOSITE DIRECTION (180°) AND MEASURE TOTAL DEFLECTION.

FIGURE 11. Pin contact stability test. (See 4.7.31.)

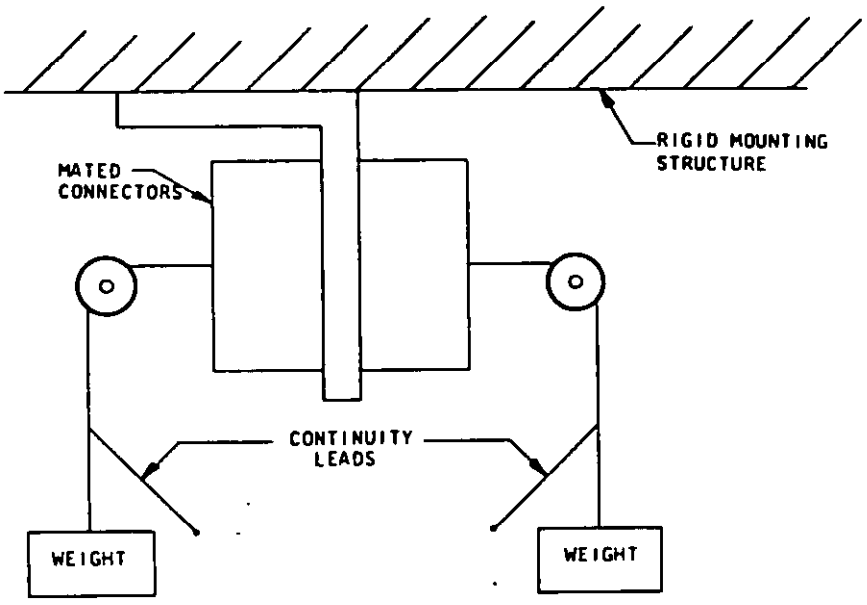


FIGURE 12. Fixture for temperature life with contact loading (orientation optional). (See 4.7.32.)

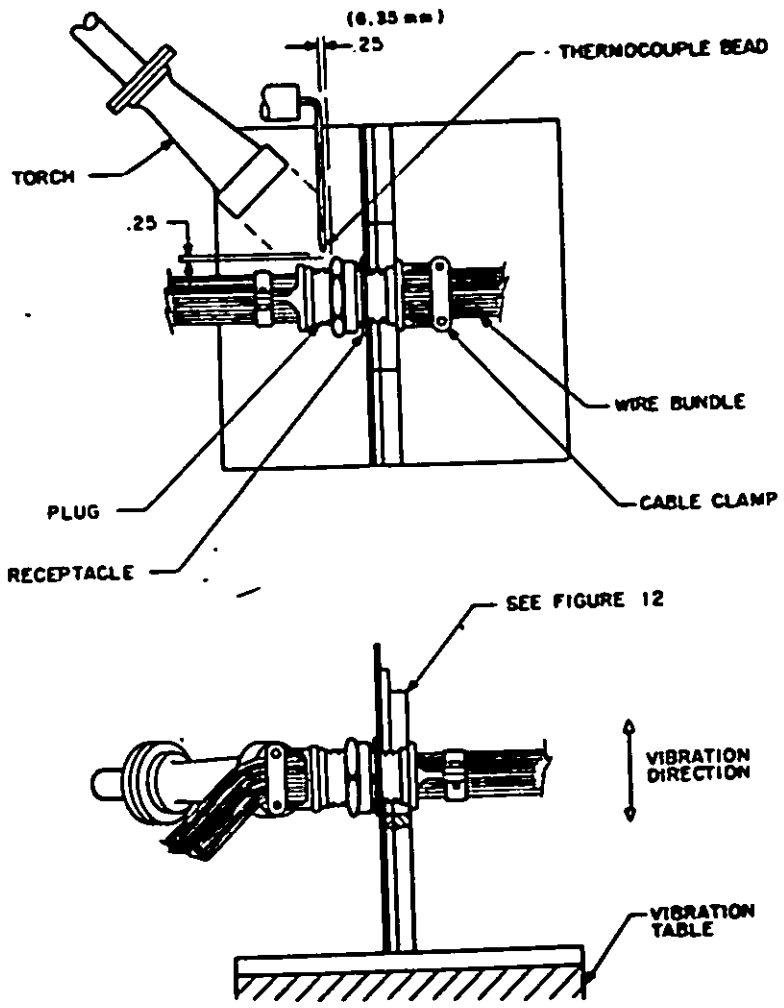
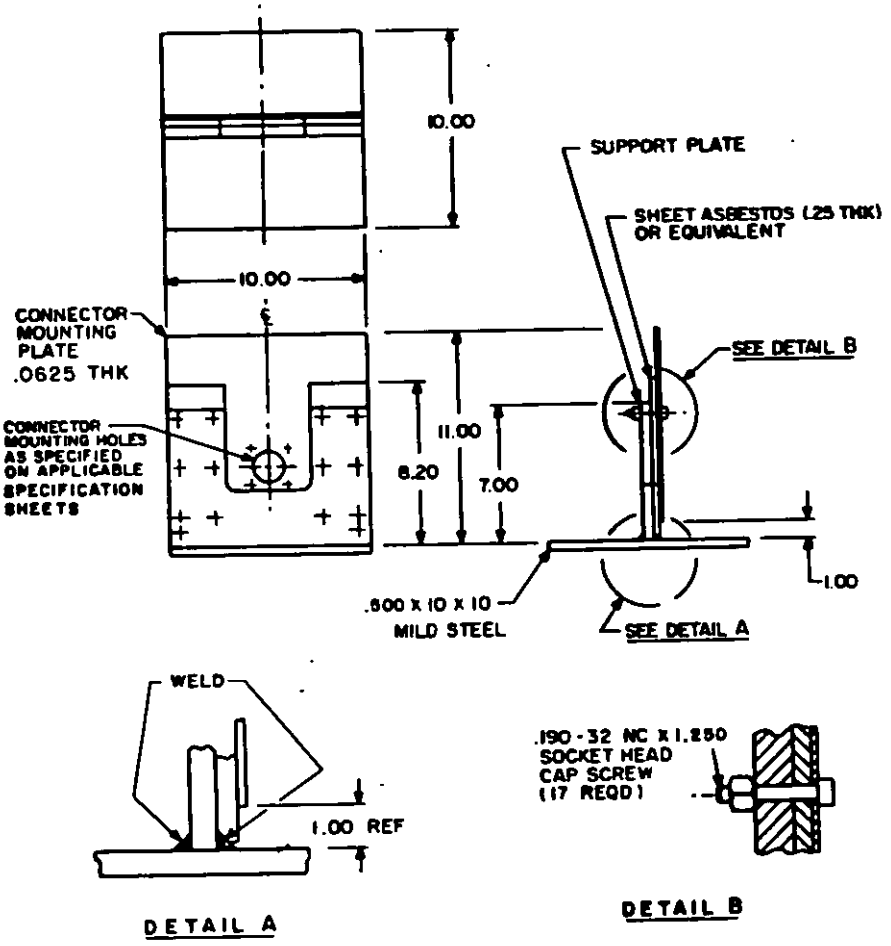


FIGURE 13. Firewall test setup. (See 4.7.33.)



INCHES	MM
.0625	1.59
.190	4.83
.250	6.35
.500	12.70
1.000	25.40
1.250	31.75
7.000	177.80
8.200	208.28
10.000	254.00
11.000	279.40

FIGURE 14. Firewall fixture of assembly (typical). (See 4.7.33.)

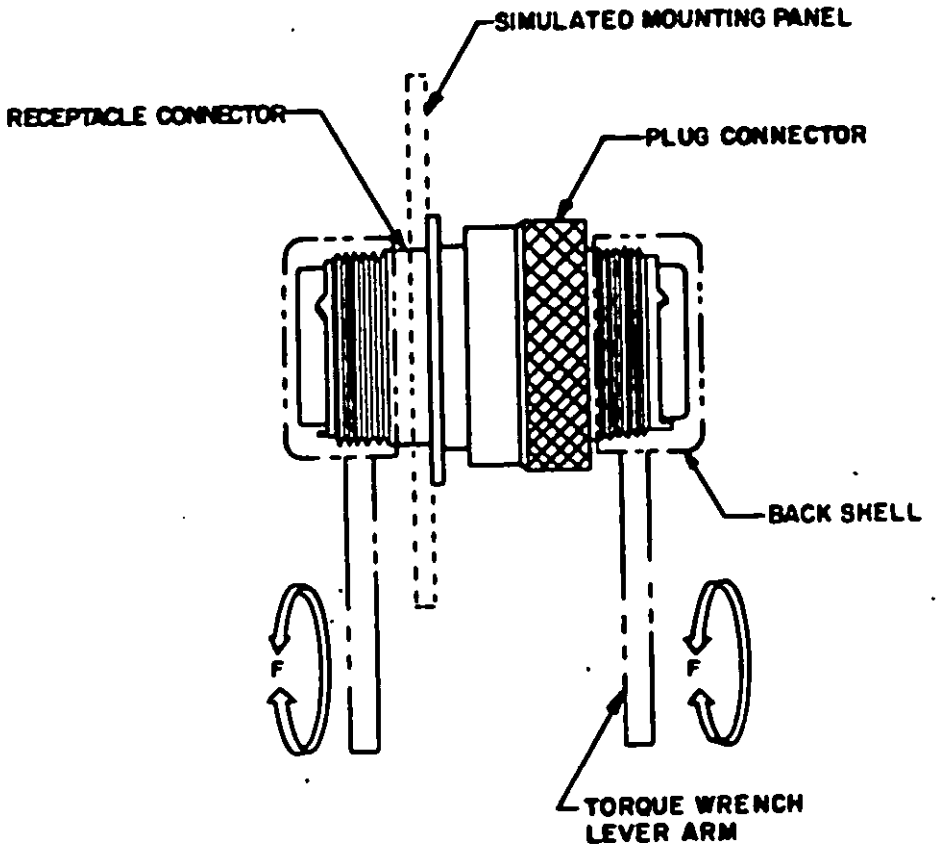
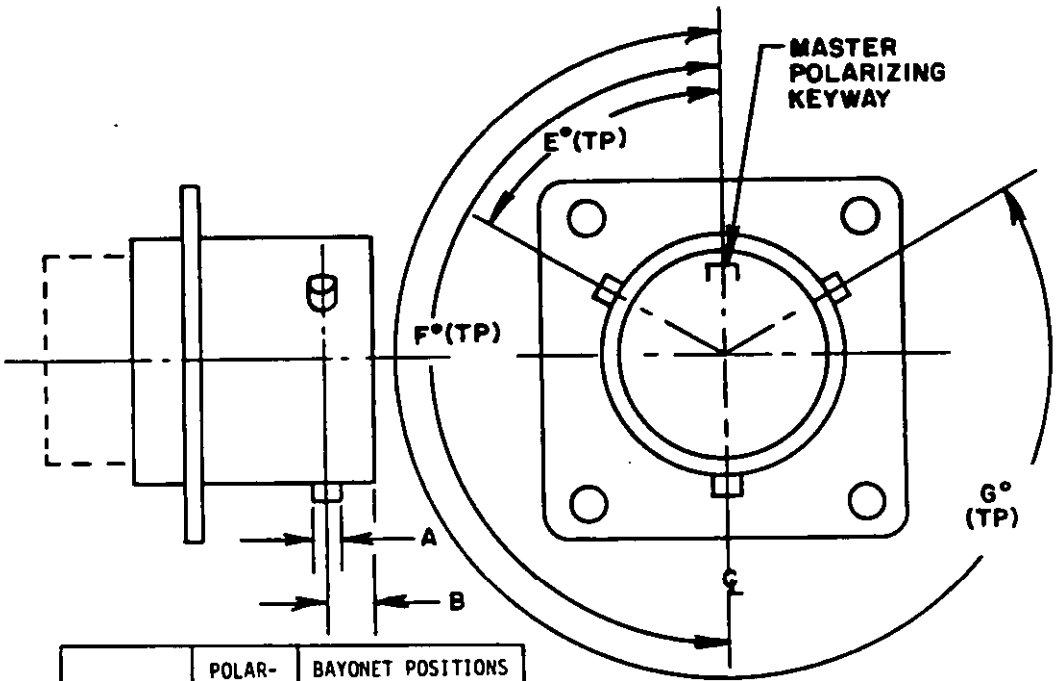


FIGURE 15. Torque test setup. (See 4.7.37.)



SHELL SIZE	POLAR-IZING POSIT.	BAYONET POSITIONS		
		E°	F°	G°
8, 10	N	60	180	300
	1	60	180	300
	2	60	180	300
	3	60	180	300
	4	60	180	300
	5	60	180	300
12, 14, 16, 18, 20, 22, 24	N	50	170	290
	1	50	170	290
	2	50	170	290
	3	50	170	290
	4	50	170	290
	5	50	170	290
8, 10	6	46	166	286
	7	46	166	286
	8	60	180	300
	9	89	209	329
10	10	60	180	300
12, 14, 16, 18, 20, 22, 24	6	50	170	290
	7	50	170	290
	8	40	170	290
	9	40	170	290
	10	50	170	290

DIM A	-SHELL SIZE 8-.078 .075 -SHELL SIZES 10 THRU 24-.093 .090 SEE NOTE 3
DIM B	-SHELL SIZE 8-.101 .097 -SHELL SIZE 10 THRU 24-.094 .090

INCHES	MM
.075	1.90
.078	1.98
.090	2.29
.093	2.36
.094	2.39
.097	2.46
.101	2.57

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only and are based upon 1.00 inch = 25.4 mm.
3. Three (3) pins to be located within .004 (.10 mm) either side of (TP) relative to master polarizing keyway.

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FIGURE 16. Bayonet pins.

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