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DETAIL SPECIFICATION

CONNECTORS, ELECTRICAL, MINIATURE, RACK AND PANEL ENVIRONMENT RESISTANT, 200°C AMBIENT TEMPERATURE GENERAL SPECIFICATION FOR

Inactive for new design after 22 April 1988. For new design use MIL-DTL-83733.

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

1. SCOPE

1.1 Scope. This detail specification covers the general requirements for rectangular environment-resisting miniature rack and panel type electrical connectors (plug and receptacle, intended for use in electronic and electrical equipment (see 6.1 for restrictions on intended use and application)).

1.2 Classification.

1.2.1 Classes:

R - Environment resistant.
H - Hermetic.

Styles
P - Inserts containing pin contacts.
S - inserts containing socket contacts.

Sizes. Shell sizes A, B, C, and D.

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

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

SPECIFICATIONS

FEDERAL

QQ-A-367 - Aluminum Alloy Forgings.

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

DEPARTMENT OF DEFENSE

MIL-A-8625 - Anodic Coatings, for Aluminum and Aluminum Alloys.
MIL-PRF-23699 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, Mato Code Number O-156.
MIL-W-22759 - Wire, Electric, Fluoropolymer-Insulated, Copper or Copper Alloy.
MIL-DTL-27500 - Cable, Electrical, Shielded and Unshielded, Aerospace.
MIL-C-39029 - Contacts, Electrical Connector, General Specification For.
MIL-C-39029/31 - Contacts, Electrical Connector, Pin, Crimp Removable, (For MIL-C-26482 Series 1, MIL-C-26500, and MIL-C-26518).
MIL-C-39029/32 - Contacts, Electrical Connector, Socket, Crimp Removable, (For MIL-C-26482 Series 1, MIL-C-26500, and MIL-C-26518).
MIL-C-39029/54 - Contacts, Electrical Connector, Pin, Crimp Removable, Shielded, (For MIL-C-26500 (USAF), and MIL-C-26518 (USAF) Connectors).
MIL-C-39029/55 - Contacts, Electrical Connector, Socket, Crimp Removable, Shielded, (For MIL-C-26500 (USAF), and MIL-C-26518 (USAF) Connectors).
MIL-I-81969/17 - Installing and Removal Tools, Connector Electrical Contact, Type I, Class 1, Composition C.
MIL-I-81969/19 - Installing and Removal Tools, Connector Electrical Contact, Type II, Class 1, Composition C.

STANDARDS

MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
MIL-STD-889 - Dissimilar Metals.
MIL-STD-1285 - Marking of Electrical and Electronic Parts.
MIL-STD-1344 - Test Methods for Electrical Connectors.
MS24287 - Mated Assembly, Connector, Rack and Panel, Miniature.
MS27488 - Plug, End Seal, Electrical Connector.

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

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Defense Printing Service Detachment office, Building 4D, Customer Service, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

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

(Application for copies should be addressed to the American Society of Mechanical Engineers, 11 West 42nd street, 13th floor, New York 10017.)

AMERICAN SOCIETY FOR TESTING AND MATERIAL (ASTM)

ASTM A342 - Standard Test Methods for Permeability of Feebly Magnetic Materials.
ASTM B85 - Standard Specification for Aluminum Alloy Die Castings.
ASTM D495 - Standard Test Method for High-Voltage, Low-Current, Dry Arc Resistance of Solid Electrical Insulation.
ASTM D5948 - Standard Specification for Molding Compounds, Thermosetting.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

International Standards Organizations (ISO)

ISO-10012-1 - Quality Assurance Requirements for Measuring Equipment.

(Application for copies should be addressed to the International Organization for Standardization, Case Postale 56, CH-1211, Geneve 20, Switzerland).

NATIONAL CONFERENCE OF STANDARDS LABORATORIES (NCSL)

NCSL Z540-1 - Calibration Laboratories and Measuring and Test Equipment, General Requirements.

(Application for copies should be addressed to the National Conference of Standards Laboratories, 1800 30th St. Boulder CO. 80301)

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 sheets, the latter shall govern.

3.2 Qualification. Connectors furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4.4 and 6.3).

3.3 Materials. Example reference materials are identified herein. However, when an example reference material is not identified, a material shall be used which will enable the connectors, sockets and accessories to meet the performance requirements of this specification. Acceptance or approval of a constituent material shall not be construed as a guaranty of acceptance of the finished product.

3.3.1 Reference critical interface, materials, plating, and processes. The identified reference critical interface materials, plating, and processes have been established to provide assurances that connectors manufactured to this specification will properly interface to similar industry standard or government specified connector systems without problems of electrochemical contamination of critical electrical or mechanical interfaces or generation of incompatible mechanical interface surface wear products. The manufacturer of connectors supplied to this specification are allowed to use alternate recognized industry standard materials, plating, and processes from those identified in 3.3 of this specification. Alternate materials, plating and processes used must be coordinated with the qualifying activity as part of the qualification process. Use of alternates to those referenced guidance items by the supplier must not result in inferior short or long term performance or reliability of supplied connectors as compared with connectors manufactured using the referenced materials, plating, or processes. Short or long term failures or reliability problems due to use of these alternates shall be the responsibility of the supplier.

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

3.3.3 Dissimilar metals. When dissimilar metals are employed in intimate contact with each other, protection against electrolytic corrosion shall be provided, for guidance information reference MIL-STD-889.

3.3.4 Nonmagnetic materials. Unless other wise exempted by this specification, all component parts of class R shall be made from materials which are classified as nonmagnetic (see 3.6.2).

3.3.5 Shells. The shells for class R shall be forced of aluminum alloy 6061 temper T6, in accordance with QQ-A-367. Other materials are permitted provided they meet the performance requirements of this specification and, in their finished form, occupy the same position in the galvanic series as the aluminum shell. Any other parts shall be of high-grade aluminum alloy die casting conforming to ASTM B85 or aluminum forging alloy conforming to QQ-A-367.

3.3.6 Finish. Aluminum parts shall be anodized in accordance with MIL-A-8625 or suitable hard anodizing process to meet the requirements herein. All other metal parts shall be made of corrosion-resistant material or be protected to meet the performance requirements of this specification. The finish of class H shells shall be suitable for soldering or brazing to the mounting surface.

3.4 Design and construction. The connector shall be so designed and constructed that it can withstand service usage.

3.5 Critical interface requirements.

3.5.1 Configuration. The connectors shall conform to the applicable military standards.

3.5.2 Contacts.

3.5.2.1 Contact requirements. The class R connectors shall be designed to meet the performance requirements of this specification using contacts qualified under MIL-C-39029/31 and MIL-C-39029/32. Class H connectors may have contacts of ferrous alloy, rhodium plated in accordance with MIL-C-39029. Coaxial contacts shall conform to MIL-C-39029/54 and MIL-C-39029/55.

3.5.2.2 Insertion and removal. The class R connector design shall permit individual insertion and removal of the contacts without removing the insert or sealing members. Insertion of the contacts into and removal of the contacts from the insert shall be accomplished with the aid of tools as shown on MIL-L-81969/17 or /19.

3.5.2.3 Contact alignment.- Inserts for socket contacts shall be so designed that individual contacts will have an overall side play of 0.005 inch (0.13 mm) minimum and 0.015 inch (0.38 mm) maximum at a bending moment of 0.25 inch-pound force (1.11 N) for size 20 and 1 inch-pound force (0.44 N) for sizes 16, 12, and shielded contacts. This requirement applies to unwired contacts.

3.5.2.4 Contact arrangement.- The contact arrangement in inserts shall be as specified by the connector part number and in accordance with the applicable military standards.

3.5.2.5 Contact sizes, wire accommodations, and current ratings. Contact sizes, wire accommodations, and current ratings shall be in accordance with table I.

TABLE I. Contact sizes, wire range accommodations, and current ratings.

Contact size	Wire size	Wire range accommodations OD		Current ratings amperes	Test current amperes
		Min (mm)	Max (mm)		
20	24	0.040 (1.01)	0.090 (2.28)	3.0	3.0
20	22	0.040 (1.01)	0.090 (2.28)	5.0	5.0
20	20	0.040 (1.01)	0.090 (2.28)	7.5	7.5
16	18	0.068 (1.73)	0.130 (3.30)	16.0	10.0
16	16	0.068 (1.73)	0.130 (3.30)	22.0	13.0
12	14	0.106 (2.69)	0.170 (4.32)	32.0	17.0
12	12	0.106 (2.69)	0.170 (4.32)	41.0	23.0
1 shielded 1/	22	0.096 (2.44)	0.120 (3.05)	3.0	3.0
2 shielded 2/	20	0.095 (2.41)	0.145 (3.68)	7.5	7.5

1/ Size 1 shielded contacts conform to M39029/54.
2/ Size 2 shielded contacts conform to M39029/55.

3.5.3 Sealing plugs. Insulated plugs shall be inserted following unwired contacts, except in the case of shielded contacts the unwired contacts shall not be inserted. The plugs shall be in accordance with MS27488. The same sealing plug shall be used in both the connector plug and receptacle.

3.5.4 Inserts. The inserts shall be designed and constructed with proper sections and radii so that they will not readily chip, crack, or break in assembly or normal service. Hollow-type inserts shall not be used. The insert shall be so designed and constructed as to eliminate all air paths between contacts. The pin insert shall have a dynamic peripheral seal, which will contact the mating connector shell before mating is completed. The socket insert shall be resilient and designed with an integral-molded static peripheral seal that will contact the mating connector insert before insert faces contact each other. A peripheral recess shall be provided in the class R pin insert to accept the socket insert seal, as shown on the applicable detail document. Inserts and shells shall be so designed and constructed that the inserts cannot be removed from the shell. The entire insert and wire-sealing member shall either be one integral part or be bonded and shall provide suitable sealing around the wire having overall diameters of the range shown in table I. The inserts shall be so designed that positive locking of the contacts in the inserts is provided. The wire-sealing member shall not be removable from the shell. Contacts for class H connectors shall be fused into a single insert of vitreous material. No metal lattice material shall be used between contacts. A resilient face gasket shall be cemented to the vitreous face.

3.5.5 Shell design. The connectors shall be of the solid shell design and shall be constructed to positively retain inserts.

3.5.5.1 Mating shells. The shells and their mating inserts shall be designed to achieve a face-to-face resilient seal. This seal, together with the integral peripheral seal, is intended to insure that mated connectors will comply with the performance requirements specified herein.

3.5.6 Back shells. When compressed about the wires and contacts by the back shell, the sealing member shall not distort or bind any of the contacts to cause improper operation of the connector.

3.5.7 Weight. The weight of plug and receptacle assemblies shall not exceed the values specified in the applicable military standards.

3.6 Performance. Connectors shall be designed to meet the performance requirements specified herein. Class H and R connectors shall be mounted and mated as shown on MS24287 unless otherwise specified.

3.6.1 Dry arc resistance. When tested as specified in 4.7.2 the dry arc resistance of insert material disk specimens, conforming to designation ASTM D5948 Phenolic with mineral/glass filled, shall be a minimum of 115 seconds when tested in accordance with ASTM D495, except as otherwise specified in 4.7.2.

3.6.2 Magnetic permeability (class R). Unless otherwise exempted by this specification all component parts of class R connectors shall be of a nonferrous material or a material generally considered to be nonmagnetic. When tested as specified in 4.7.3, the magnetic permeability of the assembled connector shall be less than 2.0μ.

3.6.3 Connector mating and unmating forces. The axial force required to fully mate or separate the plug and receptacle shall not exceed the values listed in table II when tested as specified in 4.7.4, either at room temperature or at 125°C +3°C, -0°C.

TABLE II. Mating forces.

Shell size	Pounds (kg)
A	60 (27.21)
B	40 (18.14)
C	25 (11.34)

3.6.4 Maintenance aging. Maintenance aging shall be performed before any environmental testing see 4.7.5.

3.6.5 Contact insertion force. When tested as specified in 4.7.6, the individual contact insertion forces shall not shall not exceed 15 pounds (6.80 kg). The applicable insertion tool shall be used for this test.

3.6.6 Thermal shock. After testing in accordance with 4.7.7 and after subjection to the temperature extremes shown in table III, connectors shall show no evidence of cracking, fracture, or other damage detrimental to the operation of the connector.

TABLE III. Thermal shock cycling extremes.

Extremes	Degrees C
Low	-55^{+0}_{-3}
High	$+260^{+0}_{-3}$

3.6.7 Dielectric withstanding voltage.

3.6.7.1 Dielectric withstanding voltage, sea level. The connectors shall show no evidence of breakdown or flashover when tested in accordance with 4.7.8.1.

3.6.7.2 Dielectric withstanding voltage, altitude. Completely wired and assembled connectors shall show no evidence of breakdown when tested in accordance with 4.7.8.2.

3.6.8 Fluid immersion. After immersion in the fluids specified in 4.7.9, unmated connectors shall mate properly with counterpart connectors.

3.6.9 Vibration. When tested in accordance with 4.7.10, connectors shall not crack or break and there shall be no loosening of parts. Connectors shall be in full engagement during vibration. Interruption of electrical continuity shall not be longer than 10 microseconds.

3.6.10 Physical shock. During and after testing in accordance with 4.7.11, connectors shall show no sign of damage.

3.6.11 Durability. When tested in accordance, with 4.7.12, mated pairs of fully assembled connectors shall show no mechanical or electrical defects.

3.6.12 Moisture resistance. During or after the test specified in 4.7.13, the insulation resistance values shall not be less than 1,000 megohms.

3.6.13 Insulation resistance.

3.6.13.1 Insulation resistance. When connectors are tested as specified in 4.7.14.1, the insulation resistance shall be greater than 5,000 megohms, when measured separately between pairs of contacts and between the shell and any contact. Shielded contacts shall be measured between inner conductor and shield and between shield and closest adjacent shields to shell and shell.

3.6.13.2 Insulation resistance at high temperature. When tested in accordance with 4.7.14.2 and at an ambient temperature of 200°C +3°C, -0°C, the insulation resistance of connectors shall be greater than 2,000 megohms, when measured separately between any two contacts and between the shell and any contact. Shielded contacts shall be measured between inner conductor and shield and between shield and closest adjacent shields to shell and shell.

3.6.14 Salt spray (corrosion). After being tested in accordance with 4.7.15, the connectors shall show no exposure of basic metal.

3.6.15 Temperature life. After subjection to the test of 4.7.16, the connectors shall perform satisfactorily and shall pass the succeeding tests in the qualification test sequence.

3.6.16 Contact resistance. After subjection to tests specified in 4.7.17, and when tested as specified in MIL-C-39029, except with a mating plug, the average contact resistance value of any 10 contacts of class H connectors shall not exceed those of table IV by more than 700 percent. No individual contact shall exceed the specified value by more than 1100 percent.

TABLE IV. Contact resistance (Maximum potential drop in millivolts).

Contact	Wire size	Test current amperes	Potential drop across Y-Y at 25°C	Potential drop across Y-Y at 200°C	Potential drop across Y-Y after corrosion
20	24	3.0	12.0	25	23
20	22	5.0	13.5	26	23
20	20	7.5	15.0	26	23
16	20	7.5	12.0	26	23
16	18	15.0	20.0	36	38
16	16	20.0	21.0	36	38
12	12	35.0	22.0	36	38
12	14	25.0	21.0	33	35
12	16	20.0	20.0	32	35

3.6.17 Ozone exposure. At the end of the ozone exposure test of 4.7.18, the connectors shall evidence no cracking of materials or other damage which will adversely affect subsequent performance in the qualification test sequence.

3.6.18 Insert retention. When tested in accordance with 4.7.19, completely assembled and unmated connectors shall withstand an axial load of 45 psi (310.26 kPa) in either direction for a period of at least 5 seconds without being dislocated from their normal position in the shell.

3.6.19 Air leakage.

3.6.19.1 Air leakage (class R). When tested in accordance with 4.7.20.1, class R receptacles shall prevent leakage of more than 1 cubic inch (16.39 cubic cm) of air per hour. Air leakage shall be measured at temperatures and pressures specified in 4.7.20.1.

3.6.19.2 Air leakage (class H connectors). When tested in accordance with 4.7.20.2, and when subjected to a pressure differential of 30 psi (207 kPa) across the connector, class H connectors shall not exhibit an air leakage rate that will produce a pressure change of more than 0.2 micron per cubic foot (0.028 cubic meter) per hour. The specified leakage rate shall apply through the connector only and not through the flange and mounting surface sealing area.

3.6.20 Contact retention. When tested as specified in 4.7.21, the individual contact-locking mechanism on unmated connectors shall withstand, in both directions, the axial loads specified in table V. During the test, the axial displacement of the contact shall not exceed 0.012 inch (0.305 mm) when pressures are applied from the face side.

TABLE V. Axial loads for contact retention test, class R.

Contact size	Axial loads pounds (kg)
20	15 (6.80)
16	25 (11.34)
12	35 (15.88)
#1 shielded	30 (13.61)
#2 shielded	45 (20.41)

3.6.21 Altitude immersion. When tested in accordance with 4.7.22, connectors shall maintain an insulation resistance of 5,000 meg-ohms and shall withstand a dielectric withstanding voltage of 1,500 volts rms at sea level, except the withstanding voltage for shielded contacts shall be 1,000 volts rms between the inner conductor and shield, and closest adjacent shields to shell and shell.

3.7 Marking. Connectors and accessories shall be permanently marked in accordance with MIL-STD-1285 where space permits, and as indicated below:

a. Complete PIN to be marked shall be as specified (see 3.1).

b. Manufacturer's CAGE code.

c. Manufacturer's date code.

d. Manufacturer's lot code (manufacturer's option).

e. Pin number 1 identifier.

3.7.1 Insert marking. The contact identification and arrangement shall be as specified (see 3.1). Letters or numerals shall be raised and clearly legible or shall appear in legible contrasting colors. Positioning and arrangement of the numerals shall be such as to avoid confusion between contacts. Markings shown in applicable specification sheets are for the pin insert front and socket rear. Socket face and pin rear is opposite tab, as specified. Where space limitations render legibility or proper functioning of the connector possible, or where such designations may render possible confusion between contacts, contact position designations may be omitted after the grid pattern has been established.

3.8 Workmanship. Connectors and accessories shall meet all design dimensions and intermateability requirements of this specification. Loose contacts, poor molding fabrication, damage or improperly assembled contacts, peeling, or chipping of plating or finish, galling of mated parts, nicks and burrs of metal parts and post-molding warpage shall be considered adequate basis for rejection of items of quality inferior for the purpose intended.

4. VERIFICATION

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

a. Qualification inspection (see 4.4).

b. Conformance inspection (see 4.6).

c. Inspection conditions (see 4.4.1).

4.2 Supplier responsibility. The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize their own or any other inspection facilities and services acceptable to the Government Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth; in the specification where such inspections are deemed necessary to insure supplies and services conform to prescribed requirements.

4.2.1 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in (applicable test method document or applicable paragraph(s) in the specification).

4.2.2 Verification testing. The following identified tests and test methods assure socket integrity within typical operating conditions and applications. Alternate commercial industry standard test methods are allowed, however when an alternate method is used, the alternate method must be coordinated with the qualifying activity prior to performance of the test. The test methods described herein are proven methods and shall be the referee method in cases of dispute.

4.2.3 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy qualify and quality to permit performance of the required inspection shall be established and maintained by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment (i.e. NCSL Z540-1, ISO 10012-1 part, or comparable standards) shall be required.

4.2.4 Assembly distributor. Assembly distributors must be listed on, or approved for listing on, the applicable Qualified Product List (QPL). The qualified connector manufacturer shall certify that the assembly distributor is approved for the distribution of the manufacturer's parts. The assembly distributor shall use only piece parts supplied by the qualified connector manufacturer. No testing other than visual examination is required of certified piece parts obtained from the qualified connector manufacturer, except when there is cause for rejection. All assemblies produced at the assembly distributor's plant shall be subjected to examination of product to assure that the assembly process conforms with that established at the qualified manufacturing plant. Quality control requirements, including Government inspection surveillance, shall be the same as required for the qualified connector manufacturer.

4.3 Materials inspection. Materials inspection shall consist of certification supported by verifying data that the materials, as specified by example, in table I, and on the specification sheets (see 3.1), used in fabricating the connectors, are in accordance with the applicable referenced specifications or performance requirements prior to such fabrication (see 3.3, 4.7.1.1, and 6.2).

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. Use of alternate materials, plating, and processes (see 3.3.1) shall be identified for inclusion in the product test documentation.

4.4.1 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-1344 and MIL-STD-202.

4.5 Sample size and inspection routine.

a. Four complete connectors, mounted in accordance with MS24287, (see table VI, test samples 1, 3, 5, and 7) shall be wired with MIL-W-22759 wire with insulation of extruded construction. The wire gauge shall be the smallest for which the contacts are designed, i.e., size 20 contacts with 24 AWG wire, size 16 contacts with 18 AWG, and size 12 contacts with 14 AWG wire. Five percent of the contacts in each connector shall be omitted and the holes filled with sealing plugs. These connectors, when tested in a mating condition, shall be positioned at the maximum panel spacing specified in the applicable detail document.

b. Four complete connectors, mounted in accordance with MS24287, (see table VI, test samples 2, 4, 6, and 8), shall be wired with MIL-W-22759 wire with insulation of extruded construction. The wire gage shall be the largest for which the contacts are designed, i.e., size 16 contacts with 16 AWG wire, and size 12 contacts with 12 AWG wire. Five percent of the contacts in each connector shall be omitted and the holes filled with sealing plugs. Shielded contacts shall be wired with MIL-DTL-27500 shielded wire as specified on the applicable military standard using tools and assembly procedures recommended by the manufacturer. These connectors, when tested in a mating condition, shall be positioned at the maximum panel spacing specified in the applicable detail document.

c. The manufacturer shall determine that the insert materials meet the requirements of 3.6.1 and shall submit a certificate of compliance with the connectors submitted for qualification testing.

d. Four hermetic receptacles, together with four mating plugs, shall constitute a sample. These connector's shall be mounted in accordance with MS24287. Two complete connectors shall be selected and wired with MIL-W-22759 wire, with insulation of extruded construction. The wire gauge shall be the smallest for which the contacts are designed, i.e., size 20 contacts with 24 AWG wire, size 16 contacts with 18 AWG wire, and size 12 contacts with 14 AWG wire. Five percent of the contacts in each plug connector shall be omitted and the holes shall be filled with sealing plugs. When tested in a mating condition, these connectors shall be positioned at the maximum panel spacing specified in the applicable military standard. The remaining two complete connectors shall be wired with MIL-W-22759 wire with insulation of extruded construction. The wire gauge shall be the largest for which the contacts are designed, i.e., size 20 contacts with 20 AWG wire, size 16 contacts with 16 AWG wire, sand size 12 contacts with 12 AWG wire. Five percent of the contacts in each plug connector shall be omitted and the holes filled with sealing plugs. When tested in a mating condition, these connectors shall be positioned at the minimum panel spacing specified in the applicable military standard. If the supplier of the receptacles is not a producer of plugs they may furnish plugs made by a qualified supplier. The applicable tests shall be those of table VI. Wires used for the earlier tests may be removed for the air leakage test. The hermetic receptacles shall be mounted, as in service, in sealed metal cans for any altitude test. Jumper wires shall be used inside the cans. Should a failure occur which could be attributed to the plug, the results shall be reported to the qualifying activity that will supply instructions.

TABLE VI. Qualification and periodic inspection (connectors).

Inspection	Requirement paragraph	Method paragraph	Class R sample number								Class H
			1	2	3	4	5	6	7	8	All
Inspection of product	3.1, 3.3, 3.5, 3.7, and 3.8	4.7.1.1	X	X	X	X	X	X	X	X	X
Dry arc resistance (insert material disks)	3.6.1	4.7.2									
Magnetic permeability (Class R)	3.6.2	4.7.3	X	X	X	X	X	X	X	X	X
Connector mating and unmating force	3.6.3	4.7.4	X	X	X	X	X	X	X	X	X
Maintenance aging	3.6.4	4.7.5	X	X	X	X	X	X	X	X	X
Contact insertion force	3.6.5	4.7.6					X	X	X	X	
Thermal shock	3.6.6	4.7.7	X	X	X	X	X	X	X	X	X
Dielectric withstanding voltage	3.6.7	4.7.8.									
At sea level	3.6.7.1	4.7.8.1	X	X	X	X	X	X	X	X	X
At altitude 1/	3.6.7.2	4.7.8.2	X								X
Fluid immersion	3.6.8	4.7.9							X	X	
Vibration (mated)	3.6.9	4.7.10	X	X			X	X			X
Physical shock	3.6.10	4.7.11	X	X							X
Durability	3.6.11	4.7.12	X	X							X
Moisture resistance	3.6.12	4.7.13	X	X							X
Insulation resistance	3.6.13.1	4.7.14.1	X	X							X
Salt spray (corrosion (unmated))	3.6.14	4.7.15	X	X							X
Temperature life	3.6.15	4.7.16			X	X					X
Contact resistance	3.6.16	4.7.17			X	X					X
Insulation resistance (high temp) 2/	3.6.13.2	4.7.14.2			X	X					X
Ozone exposure (unmated)	3.6.17	4.7.18					X	X			
Insulation resistance	3.6.13.1	4.7.14.1					X	X			
Insert retention	3.6.18	4.7.19	X	X							
Connector mating and unmating force	3.6.3	4.7.4	X	X	X	X	X	X	X	X	X
Dielectric withstanding voltage (mated)	3.6.7.1	4.7.8.1	X	X	X	X	X	X			X
Air Leakage (Class R)	3.6.19.1	4.7.20.1	X	X			X	X			
Air leakage (Class H)	3.6.19.2	4.7.20.2									X
Contact retention	3.6.20	4.7.21	X	X	X	X	X	X			
Altitude immersion	3.6.21	4.7.22	X	X			X	X	X	X	X
Insulation resistance	3.6.13.1	4.7.14.1			X	X	X	X	X	X	X
Dielectric withstanding voltage, altitude (mated)	3.6.7.2	4.7.8.2	X	X	X	X	X	X	X	X	X
Contact insertion force	3.6.5	4.7.6					X	X	X	X	X
Examination of product	3.1, 3.3, 3.5, 3.7, and 3.8	4.7.1.2	X	X	X	X	X	X	X	X	X

1/ For initial Qualification only.
2/ Unless conducted during thermal shock.

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

4.5.4 Verification of qualification. To retain qualification, the contractor shall verify in coordination with the qualifying activity the capability of manufacturing products, which meet the performance requirements of this specification. Refer to the qualifying activity at any time that the inspection data indicates failure of the qualified product to meet the performance requirements of this specification.

4.6 Conformance inspection.

4.6.1 Inspection of products for delivery. Inspection of product for delivery shall consist of group A inspection.

4.6.1.1 Group A inspection. Group A inspection shall consist of the tests specified in table VII.

TABLE VII. Group A inspection.

Inspection	Requirement paragraph	Test paragraph
Examination of product	3.1, 3.3, 3.5, 3.7, and 3.8	4.7.1.1
Dielectric withstanding voltage	3.6.7.1	4.7.8.1

4.6.1.2. Sampling plan. Statistical sampling and inspection for the samples submitted for group A inspection shall be on a lot by lot basis with sample sizes as listed in table VIII. Any occurrence of a failure shall be considered as failure of the lot.

TABLE VIII. Lot and sample size.

Lot size	Sample size
1 to 50	5
51 to 90	7
91 to 150	11
151 to 280	13
281 to 500	16
501 to 1200	19
1201 to 3200	23
3201 to 10000	29
10001 to	35

4.6.1.3 Inspection lot. An inspection lot shall consist of all connectors or removable crimp contacts, as applicable, covered by a single specification sheet, produced under essentially the same conditions, and offered for inspection at one time.

4.6.1.4 Disposition of sample units. Sample units, which have passed group A inspection, may be delivered on a contract or purchase order if the lot is accepted.

4.6.2 Group B inspection (periodic). Periodic inspection shall consist of a 12-month inspection and a 36-month requalification. Delivery of products, which have passed group A inspection, shall not be delayed pending the results of these periodic inspections. Upon passing this inspection two consecutive times, the supplier may select sample connectors every 36 months. If production of a particular PIN is not current, the periodic inspection tests shall take place at the time production is resumed. The testing shall revert to the original schedule, which is applied to a newly qualified product. If periodic classes on both R and H is desired, one completely assembled plug and receptacle of each class shall be subjected to the examinations and tests in lieu of two of a single class.

4.6.2.1 Group B inspection. Group B inspection shall consist of the examinations and tests specified in table IX, in the order shown, and the sample shall be selected from inspection lots that have passed group A inspection. Connectors shall be selected at random during each 36-month integrated production period (see 4.6.2.2).

4.6.2.2 Sampling plan. Connectors shall be selected at random from production as follows:

a. Class R samples 1, 3, and 5 of table IX shall be in accordance with 4.5a.

b. Class R samples 2, 4, and 6 of table IX shall be in accordance with 4.5b.

c. Class H samples shall be in accordance with 4.5d.

TABLE IX. Group B inspection.

Inspection	Requirement paragraph	Method paragraph	Class R sample number						Class H
			1	2	3	4	5	6	All
Inspection of product	3.1, 3.3, 3.5, 3.7, and 3.8	4.7.1.1	X	X	X	X	X	X	X
Maintenance aging	3.6.4	4.7.5	X	X	X	X	X	X	X
Thermal shock	3.6.6	4.7.7	X	X	X	X	X	X	X
Dielectric withstanding voltage 1/	3.6.7.1	4.7.7.1	X	X					X
Moisture resistance	3.6.12	4.7.13			X	X			X
Insulation resistance	3.6.13.1	4.7.14.1			X	X			
Air leakage (Class R)	3.6.19.1	4.7.20.1	X	X					
Air leakage (class H)	3.6.19.2	4.7.20.2							X
Altitude immersion	3.6.21	4.7.22	X	X			X	X	X
Insulation resistance	3.6.13.2	4.7.14.1					X	X	X
Mating and unmating forces	3.6.3	4.7.4	X	X	X	X	X	X	X
Dielectric withstanding voltage (unmated)	3.6.7.1	4.7.7.1	X	X			X	X	X
1/	3.6.20	4.7.21	X	X					
Contact retention	3.1, 3.3, 3.5,	4.7.1.1	X	X	X	X	X	X	X
Inspection of product	3.7, and 3.8								

1/ Sea level.

4.6.2.3 Failures. If any sample units fail to pass periodic inspection, the entire lot shall be considered to have failed.

4.6.2.4 Noncompliance. If a sample fails to pass group B 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 shall be discontinued until corrective action, acceptable to the Government, has been taken. After the corrective action has been taken, group B inspection shall be repeated on additional sample units (all inspection, or the inspection, which the original sample failed, at the option of the Government). Groups A inspections may be reinstituted; however, final acceptance shall be withheld until the group B reinspection has shown that the 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.

4.6.2.5 Disposition of sample units. Sample units, which have been subjected to the periodic inspection, shall not be delivered on a contract or purchase order.

4.7 Methods of inspection.

4.7.1 Test methods. The following identified tests and test methods assure connector and contact integrity within typical operating conditions and applications. Alternate commercial industry standard test methods are allowed however when an alternate method is used, the alternate method must be coordinated with the qualifying activity prior to performance of the test. The test methods described herein are proven methods and shall be the referee method in cases of dispute.

4.7.1.1 Inspection of product. Connectors and associated hardware shall be examined to verify that the design, construction, physical dimensions, marking, and workmanship are in accordance with the applicable requirements (see 3.1, 3.3, 3.5, 3.7, 3.7.1 and 3.8).

4.7.1.2 Final inspection of product. Final examination of crimp contacts shall include a thorough examination to insure that identification markings are legible, the contact is free from mechanical defects, there are no cracks around the crimp area, and the contacts meet the physical requirements specified herein. Examination shall be made with a device having magnification power of approximately 3X.

4.7.2 Dry arc resistance. A minimum of 5 disk specimens of insert material conforming to designation ASTM D5948 Phenolic mineral/glass filled, shall be tested in accordance with ASTM D495, employing the circuit shown on figure 1 with details as follows:

a. A 12-kV (minimum) transformer.

b. The kVA rating of the transformer not specified, but 10 milliamperes (rms) shall be obtainable.

c. Sufficient external resistance may be added in the leg of the circuit that is not grounded if necessary to obtain the required 10 milliamperes across the electrodes in air (not reading on test specimen).

d. The cable on the resistance side shall be supported by air.

e. The floor or chamber shall have a 1-inch (25.4 mm) thick insulating sheet for support of the specimen under test.

f. A milliammeter shall be placed in the circuit between the ground and the arc electrodes.

g. The specimens shall be cleaned with a clean cloth dampened with alcohol and dried with a soft, clean, dry cloth before each test.

h. The arc electrodes shall be cleaned with a soft, clean cloth dampened with alcohol and dried with a soft, clean, dry cloth before each test.

i. The primary voltage shall be controlled with a variable tap autotransformer.

j. Relative humidity shall be between 30 and 40 percent.

k. The interrupter shall cause an arc to flow 1/4 second and cease l-3/4 seconds repeatedly during the first minute and to flow 1/4 second and cease 3/4 second repeatedly during the second minute.

l. The electrodes shall consist of *2* steel rods, 0.168 inch (4.23 mm) diameter, equipped with tungsten wire tips, 0.060 inch (1.52 mm) in diameter, which have conical points with a 60° included angle. The electrodes shall be mounted to an insulated block at 45° to the vertical and shall be adjusted to give a gap of 0.320 inch (8.13 mm). Both electrodes shall be in the same horizontal and vertical planes.

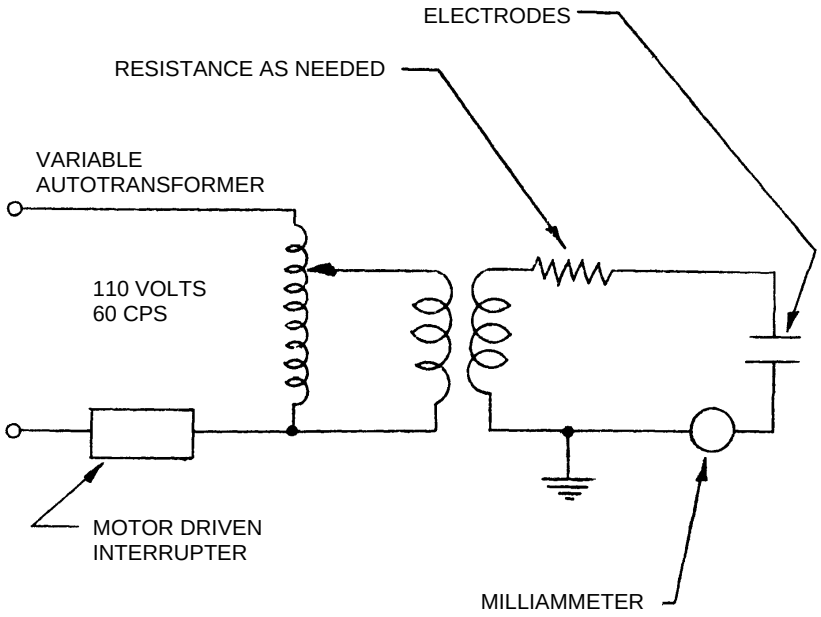

FIGURE 1. Arc resistance test circuit.

4.7.3 Magnetic permeability (see 3.6.2). Permeability shall be measured on class R connectors with an instrument conforming to ASTM A342. The connectors may be wired or unwired but shall not be carrying current.

4.7.4 Connector mating and unmating forces (see 3.6.3). The axial force mate the connectors shall be measured by applying a force at that the mating operation is completed in approximately 10 seconds. This test shall be performed both at room temperature and at required to such a rate that the mating operation is completed in approximately 10 seconds. This test shall be performed both at room temperature and at 125°C, +3°C, -0°C.

4.7.5 Maintenance aging (see 3.6.4). Each contact shall be inserted, removed, and reinserted using applicable insertion and removal tools. The connector shall be mated and unmated 10 times and at least 10 of the contacts in both plugs and receptacles shall be removed and inserted 9 times, using applicable insertion and removal tools. The force measurements required by 4.7.6 shall be made on the third insertion of 5 contacts of each of the connectors. The purpose of the procedure is to provide accelerated maintenance aging of the contact, contact locking mechanism, and sealing provisions prior to environmental testing.

4.7.6 Contact insertion force (see 3.6.5). During this test the sealing members shall be relaxed. The force required to push the contacts into their normal position within the insert, using the applicable insertion tool, shall be measured (see 4.7.5).

4.7.7 Thermal shock (see 3.6.6). The wired, mated connectors shall be subjected to 5 continuous cycles of temperature change. The two temperature extremes specified in table III shall form the limits the cycle. The first exposure shall be from room temperature to the lowest extreme. The connectors shall be maintained at each extreme for a period of 30 +5, -0 minutes in each cycle. The connectors shall be transferred from one chamber to the other for the temperature chamber. The time of exposure at room temperature shall not exceed 2 minutes during each transfer. Exposure to low temperature, then high, shall form one cycle. During the last high temperature exposure the insulation resistance test of 4.7.14.1 may be conducted. Upon completion of the last cycle 3 the connectors shall be returned to room ambient conditions for inspection and additional specified tests.

4.7.8 Dielectric withstanding voltage (see 3.6.7).

4.7.8.1 Dielectric withstanding voltage (sea level) (see 3.6.7.1). Mated and unmated connectors shall be tested in accordance with MIL-STD-202, method 301. Test voltages, as shown in table X, shall be applied between the closest 3 pairs of contacts and also between the shell and the 3 contacts closest to the shell. Voltage potentials listed for shielded contacts in table X are between inner conductor and shield, and closest adjacent shields to shell and shell.

4.7.8.2 Dielectric withstanding voltage (altitude) See 3.6.7.2). The connectors shall be placed in a suitable chamber at room temperature and tested at 20,000 foot intervals, starting at 10,000 feet and concluding at 110,000 feet. The test, for both mated and unmated connectors, shall be in accordance with MI-STD-202, method 301. Test voltages, as shown in table X, shall be applied between the closest 3 pairs of contacts as well as between the shell and the 3 contacts closest to the shell. Voltage potentials listed in table X for shielded contacts shall be tested between inner conductor and shield and between shield and closest adjacent contact, and closest adjacent shields to shell and shell.

TABLE X. Dielectric withstanding test voltages (AC-rms).

Altitude feet (Km)	Unmated				Mated	
	Style S voltages	Shielded 1/ contact	Style P voltages	Shielded 1/ contact	Standard contact	Shielded 1/ contact
Sea level	1500	1000	1500	1000	1500	1000
10,000 (3.05)	1250	825	1250	825	1250	1000
30,000 (9.14)	750	500	700	500	1000	1000
50,000 (15.24)	500	325	450	325	1000	1000
70,000 (21.34)	350	200	275	200	1000	1000
90,000 (27.43)	250	200	200	200	1000	1000
110,000 (33.53)	250	200	200	200	1000	1000

1/ Voltage potential between inner conductor and shield.

4.7.9 Fluid Immersion (see 3.6.8). The unmated connectors shall be immersed in aviation lubricating oil in accordance MIL-PRF-23699 for 20 hours (samples 7 and 8.). Upon removal from the fluid, the unmated connectors shall remain in free air at room temperature for 1 hour. The connectors shall then be mated and subjected to the high potential test specified in 4.7.8.1.

4.7.10 Vibration (see 3.6.9). The connector assembly shall be mounted as specified herein and vibrated in accordance with MIL-STD-202, method 2O4, condition B. In addition, the vibration shall be conducted at a low temperature ambient -55°C and high ambient 200°C. All contacts shall be wired in series with at least 100 milliamperes of current allowed to flow. A suitable instrument shall be employed to monitor the current flow and to indicate any discontinuity of contact or interruption of current flow. Duration of vibration at extreme temperatures shall be 25 percent of the duration specified for the standard temperature condition. The following shall apply:

Connector mounting - The vibration mounting shall be in accordance with figure 2 except as noted herein. The plug and receptacle shall be mounted on separate adapter plate, using the connector's normal mounting provisions and suitable hardware. The adapter plate for the plug shall be attached to the mounting bracket. The adapter plate for the receptacle shall be subsequently attached to the plug adapter plate in a manner simulating the normal mated condition in the aircraft.

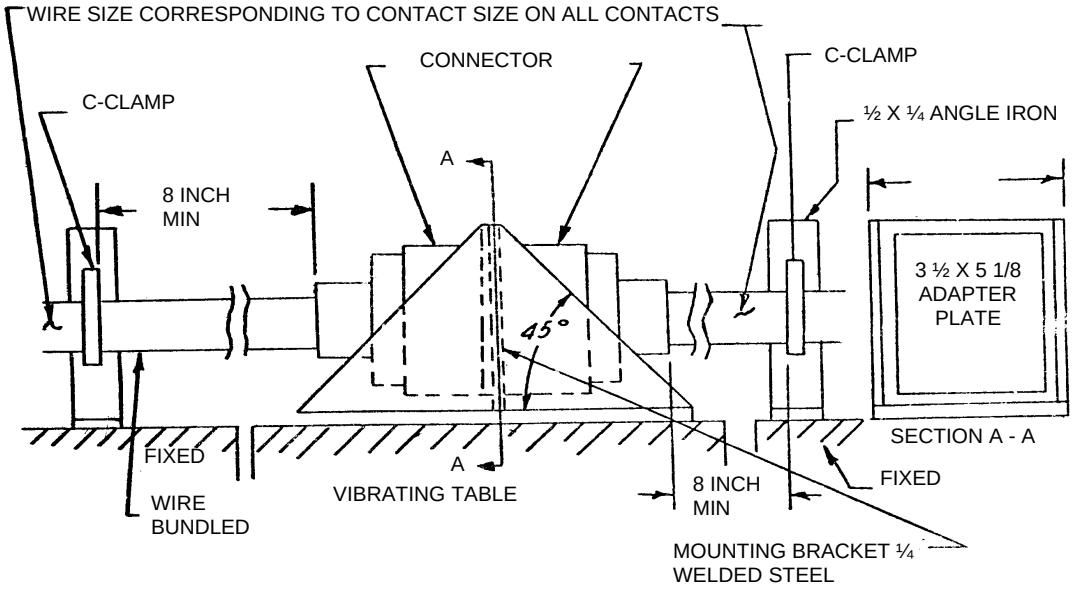

FIGURE 2. Vibration testing equipment.

4.7.11 Physical shock (see 3.6.10). Wired connectors shall be tested in accordance with method 2004 of MIL-STD-1344, test condition A. Receptacles shall be mounted by a method similar to the vibration tests on the sock device or carriage. Plugs shall be engaged with the receptacles. The connectors shall be fully wired and the wire bundle or cable clamped to points that move with the connector. A minimum of 8 inches (203.2 mm) of wire or cable shall be unsupported behind the rear of each connector.

4.7.12 Durability (see 3.6.11). The connector assemblies shall be subjected to 500 cycles of mating and unmating at a rate not exceeding 600 cycles per hour. The mating and unmating shall be accomplished in a manner similar to subjection in service. After 500 cycles, the plug and receptacle assemblies shall pass the remaining sequence of tests.

4.7.13 Moisture resistance (see 3.6.12). The mated and wired connectors shall be subjected to a moisture resistance test in accordance with MIL-STD-2O2, method 106, with the following exceptions and details:

a. Step 7b, vibration not required.
b. There shall be no drip loops in the wires.
c. Wires shall be brought out of the chamber through vapor-tight seals.
d. There shall be no wire splices in the chamber.
e. Upon completion of step 6 of the final cycle, while the connectors are still subjected to high humidity, the insulation resistance shall be measured.
f. The class H receptacles shall not have their rear portion enclosed for this test, but shall have their rear portion blown dry before the insulation resistance test.

4.7.14 Insulation resistance.

4.7.14.1 Insulation resistance (see 3.6.13.1). The connectors shall be tested in accordance with MIL-STD-202, method 302, test condition B. For test purposes, the resistance shall be measured separately between the closest 3 pairs of contacts, which were inserted and removed 10 times in maintenance aging. Shielded contacts shall be measured between inner conductor and shield, between shield and closest adjacent contact, and closest adjacent shields to shell and shell.

4.7.14.2 Insulation resistance at high temperature (see 3.6.13.2). The insulation resistance of mated connectors shall be measured in accordance with 4.7.14.1 except that the connectors shall have been exposed to an ambient temperature of 200°C +3°C, -0°C for a period of 30 minutes. The resistance shall be measured while the connector is at the elevated temperature.

4.7.15 Salt spray (corrosion) (see 3.6.14). Wired specimens of connectors shall be subjected to a salt spray test in accordance with MIL-STD-202, method 101, test condition B. Immediately after exposure, the exterior surface of the connectors shall be thoroughly washed with tap water. The specimens shall then be dried in a circulating air oven at a temperature of 38°C, +3°C, -0°C for a maximum period of 12 hours. The specimens 5 shall then be removed and inspected.

4.7.16 Temperature life (see 3.6.15). The mated connectors shall be subjected to an ambient temperature of 200°C, +3°C, -0°C for a period of 1000 hours. The contacts shall carry sufficient current, not exceeding the rated current, to maintain a contact temperature of 238°C, +3°C, -0°C.

4.7.17 Contact resistance (see 3.6.16). This test shall be conducted at both of the temperatures specified in MIL-C-39029 before and after durability and corrosion testing.

4.7.18 Ozone exposure (see 3.6.17). 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.

4.7.19 Insert retention (see 3.6.18). Unmated connectors shall be subjected to axial loads in either direction separately as specified herein. The loading shall be increased gradually at an approximate rate of 1 pound per second until the specified load is reached. The specified load shall be maintained for 5 seconds. The load-applying device may be shaped as necessary to reduce the pressure at individual points.

4.7.20 Air leakage.

4.7.20.1 Air leakage, class R (see 3.6.19.1). Class R wired connectors shall be mounted in a test apparatus, arranged to permit application of a 30-psi pressure differential across the connector. The test shall be performed in both directions after 33 minutes of exposure to the low temperature extreme specified in table III and while samples are at the low temperature. Means shall be provided for determining leakage of air through the connector.

4.7.20.2 Air leakage, class H (see 3.6.19.2). Class H connectors shall be mounted in a test apparatus for the application of the specified test pressure across the connectors. Prior to test at least 10 percent, with a minimum of 3 of the contacts, shall have short wires soldered into normal service positions. Means shall be provided for determining leakage of air or of pressurized gas, containing not less than 10 percent helium by volume 3 through the connector while the specified pressure is applied.

4.7.21 Contact retention (see 3.6.20). An axial load as shown in table V shall be applied to the contacts of the unmated connectors in both directions. The axial rate of load application shall be approximately one pound per second after the slack of the contact has been taken up. The connector shall have all the contacts in place during the test and shall meet the requirements of 3.6.20.

4.7.22 Altitude Immersion (see 3.6.21). Connectors shall be immersed in a container of water at approximately 20°C and placed in a chamber. A quantity of salt, 5 percent by weight shall be added to make the water conductive. The chamber pressure shall be reduced to approximately 1 inch (2.54 cm) of mercury and maintained for a period of 30 minutes. The chamber pressure shall then be returned to atmospheric pressure and while at the submerged condition, the insulation resistance requirements specified in 3.6.13.1 shall be met. This shall be considered to be one cycle. Two additional environmental cycles shall be run. At the end of the last cycle, the electrical tests conducted at the end of the first cycle shall be repeated, and a dielectric withstanding voltage of 1500 volts rms shall be applied between the same points as those used for insulation resistance measurements. The voltage shall be applied while the connectors are still immersed, but at sea level. Rate of pressure change shall be 10,000 feet (3.05 km) per minute. The test voltages for shielded contacts shall be 1,000 volts rms between inner conductor and shield, and closest adjacent shields to shell and shell.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contracting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. All connectors and contacts covered by this specification are intended for use in airborne, ground support, and shipboard electrical and electronic equipment where presence of residual magnetism must be held to very low levels to avoid interference with nearby sensitive instrumentation. The connectors and contacts covered by this specification are military unique because they must be able to operate at high altitude (70,000 feet (21.34 km) maximum), operate at a temperature range of -55°C to +200°C, withstand 48 hours of salt spray (without exposure of base metals, pitting and porosity of finishes), and 100 g's of shock with no electrical discontinuities. Commercial electronic connectors and contacts are not designed to withstand such extreme and sudden environmental conditions and would experience catastrophic failure.

a. Class R connectors are intended for use in environment resisting applications where the operating temperature range of -55°C to +200°C is experienced.

b. Class H connectors are intended applications requiring hermetic sealed applications.

c. All classes of connectors are for use in applications wherein presence of residual magnetism must be held to very low levels to avoid interference with nearby sensitive instrumentation.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.

b. Title, number, and date of the applicable specification sheet, and the complete PIN (see 1.2.1 and 3.1).

c. Certificate of compliance covering materials, when required.

d. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1 and 2.2).

e. Packaging requirements (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL No. 28804 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, 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 the Defense Supply Center Columbus, P.O. Box 3990, ATTN: DSCC-VQ, Columbus, Ohio 43216-5001. Application procedures should conform to the "Provisions Governing Qualification" (see 6.3.1).

6.3.1 Provisions governing qualification. Copies of "Provisions Governing Qualification" may be obtained upon application to Standardization Document Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

6.4 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs. Table XI lists the Environmental Protection Agency (EPA) top seventeen hazardous materials targeted for major usage reduction. If any of these hazardous materials are required, it is recommended that it be used only when other materials cannot meet performance requirements.

TABLE XI. EPA top seventeen hazardous materials.

Benzene	Dichloromethane	Tetrachloroethylene
Cadmium and compounds	Lead and compounds	Toluene
Carbon Tetrachloride	Mercury and compounds	1,1,1 - Trichloroethane
Chloroform	Methyl Ethyl compounds	Trichloroethylene
Chromium and compounds	Methyl Isobutyl Ketone	Xylenes
Cyanide and compounds	Nickel and compounds	

6.5 Subject term (keyword listing).

Contacts
Crimp
Current
Dielectric
Finish
Heat
Humidity
Inspection
Insulation displacement
Lead
Magnetic permeability
Materials
Mating force
Qualification
Sampling
Socket
Solderability
Tin

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

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Air Force - 99

Preparing activity:
DLA - CC

(Project: 5935-F601)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7, and send to preparing activity.
3 The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-DTL-26518	2. DOCUMENT DATE *(YYYYMMDD)* 000719

3. DOCUMENT TITLE

CONNECTORS, ELECTRICAL, MINIATURE, RACK AND PANEL, ENVIRONMENT RESISTANT, 200°C AMBIENT TEMPERATURE, GENERAL SPECIFICATION FOR

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include zip code)*	d. TELEPHONE *(Include Area Code)* (1) Commercial (2) DSN *(if applicable)*	7. DATE SUBMITTED *(YYYYMMDD)*

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE *(Include Area Code)*
Defense Logistics Agency **Defense Supply Center, Columbus**	(1) Commercial **614-692-0538** (2) DSN **850-0538**
c. ADDRESS *(Include Zip Code)* **DSCC-VAI** **P.O. Box 3990** **Columbus, Ohio 43216-5000**	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** **Defense Standardization Program Office (DLSC-LM)** **8725 John J. Kingman Road,Suite 2533** **Fort Belvoir, Virginia 22060-6621** **Telephone (703) 767-6888 DSN 427-6888**