MIL-C-55302(EL)
21 February 1967

MILITARY SPECIFICATION

CONNECTORS, PRINTED CIRCUIT SUBASSEMBLY AND ACCESSORIES

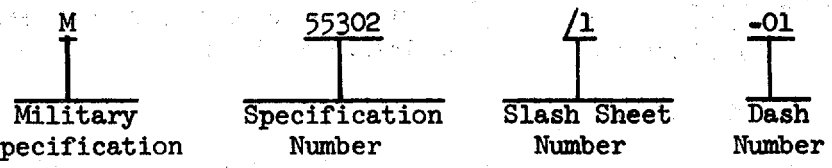
1. SCOPE

1.1 Scope. This specification covers subminiature and ultraminiature connectors (plugs and receptacles) for printed circuit subassembly and their accessories, for use with single-sided printed wiring, multilayer printed wiring, or both, conforming to MIL-STD-275, MIL-P-55110, and MIL-P-55424, respectively (see 6.2).

1.2 Classification.

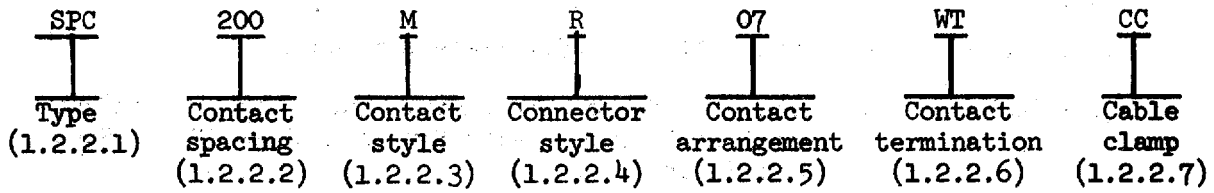
1.2.1 Part numbering. Part numbering is required by Standardization Manual M200 and is comprised as follows:

1.2.1.1



1.2.1.2 Individual part numbers. Individual part numbers for connectors included herein are indicated on the individual specification sheet.

1.2.2 Type designation. The type designation shall be in the following form, and as specified (see 3.1 and 6.2).



1.2.2.1 Type. The type is identified by the three-letter symbol "SPC" or "UPC" denoting subminiature or ultraminiature printed circuit connector.

1.2.2.2 Contact spacing. Contact spacing is identified by a three-digit number which indicates in mils the distance between centers of adjacent contacts in horizontal rows.

1.2.2.3 Contact style. The contact style is indicated by the letter symbol "M" for male, "F" for female, or "H" for hermaphroditic contacts.

1.2.2.4 Connector style. The connector style is indicated by the letter symbol "R" for right angle or "S" for straight through.

1.2.2.5 Contact arrangement. Contact arrangement is identified by a two-digit number indicating the actual number of contacts.

1.2.2.6 Contact termination. Contact termination is identified as follows:

WT - Hook-up wire termination.

P1 - Printed wiring termination for 1/16-inch thick printed wiring boards.

P2 - Printed wiring termination for 3/32-inch printed wiring boards.

1.2.2.7 Cable clamp. Cable clamps for SPC 200 FS connectors shall be identified by the full connector identification associated with each size cable clamp, followed by the indicated identification.

2. APPLICABLE DOCUMENTS.

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

SPECIFICATIONS

Federal

QQ-A-250/8 - Aluminum Alloy, 5052, Plate and Sheet.

QQ-B-626 - Brass, Leaded and Non-Leaded, Rods, Shapes, Forgings and Flat Products, With Finished Edges (Bars, Flat Wire Strips).

QQ-B-750 - Bronze, Phosphor; Bar, Plate, Rod, Sheet, Strip, Flat Wire and Structural and Special-Shaped Sections.

QQ-C-530 - Copper-Beryllium Alloy Bar, Rod, and Wire (Copper Alloy Number 172).

QQ-W-321 - Wire, Brass.

UU-T-111 - Tape, Paper, Gummed (Sealing and Securing).

PPP-B-566 - Boxes, Folding, Paperboard.

PPP-B-636 - Box, Fiberboard.

PPP-B-676 - Box, Setup.

PPP-P-291 - Paperboard, Wrapping, Cushioning.

PPP-T-76 - Tape, Pressure-Sensitive Adhesive Paper, Water Resistant, (for Carton Sealing).

PPP-T-97 - Tape, Pressure-Sensitive Adhesive, Filament Reinforced.

Military

MIL-M-14 - Molding Plastics and Molded Plastic Parts, Thermosetting.

MIL-P-116 - Preservation, Methods of.

MIL-F-14072 - Finishes for Ground Signal Equipment.

MIL-C-14550 - Copper Plating, (Electrodeposited).

MIL-B-43291 - Boxes, Fiberboard, Corrugated, Double-Wall, Weather Resistant.

MIL-G-45204 - Gold Plating (Electrodeposited).

MIL-C-45662 - Calibration System Requirements.

MIL-P-55110 - Printed Wiring Boards.

MIL-P-55424 - Printed Wiring Boards, Multilayered.

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STANDARDS

Military

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

MIL-STD-129 - Marking for Shipment and Storage.

MIL-STD-130 - Identification Marking of U. S. Military Property.

MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.

MIL-STD-275 - Printed Wiring for Electronic Equipment.

MIL-STD-456 - Military Standard, Date and Source Coding for Electronic Parts.

(See supplement 1 for list of applicable specification sheets.)

(Copies of specifications and standards required by suppliers 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 document forms 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.

National Bureau of Standards

Handbook H28 - Screw-Thread Standards for Federal Services.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.)

3. REQUIREMENTS

3.1 Specification sheets. The individual part requirements shall be as specified herein and in accordance with the applicable specification sheets listed in supplement 1 of this specification. In the event of any conflict between the requirements of this specification and the specification sheets, the latter shall govern (see 6.2).

3.2 Preproduction. Connectors and accessories furnished under this specification shall be a product which has been tested and has passed the preproduction tests specified in 4.5.

3.3 Material. The material for each part shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the connectors and accessories to meet the performance requirement. Certification that such material has met applicable requirements shall be forwarded by the supplier through the cognizant Government inspection element for approval of the procurement activity. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.3.1 Plastic molded thermosetting. Unless otherwise specified (see 3.1), the body material shall be glass-filled diallyl phthalate in accordance with type SDG-F of MIL-M-14.

3.3.2 Metals.

3.3.2.1 Copper alloys. Female contacts and contact terminations shall be beryllium copper per QQ-C-530 or phosphor bronze per QQ-B-750. Male contacts shall be brass per QQ-B-626 or QQ-W-321, phosphor bronze per QQ-B-750 or berrylium copper per QQ-C-530.

3.3.2.1.1 Plating. Both male and female contacts shall be plated with the following materials in the sequence indicated:

3.3.2.1.1.2 Copper. Copper plating shall be in accordance with MIL-C-14550, except that the thickness shall be 0.00004 inch, minimum.

3.3.2.1.1.3 Soft gold. Soft gold plating shall be type 1 per MIL-G-45204, except that the thickness shall be 0.00002 inch minimum.

3.3.2.1.1.4 Hard gold. Hard gold plating shall be type II, class 1 per MIL-G-45204, except that the hardness of the plate shall be 155 diamond pyramid hardness, minimum.

3.3.3 Restricted materials.

3.3.3.1 Flammable, explosive, or toxic. Material shall be nonflammable, nonexplosive, and nontoxic.

3.3.3.2 Corrosion resistance. Connectors and accessories shall be of corrosion-resistant materials or treated to prevent corrosion.

3.3.3.3 Ferrous. Material containing more than 5 percent iron shall not be used for current carrying parts.

3.3.4 Dissimilar metals. When dissimilar metals are used in intimate contact with each other, protection against electrolysis shall be provided. Dissimilar metals are defined in MIL-F-14072.

3.4 Electrical characteristics.

3.4.1 Contact rating. Unless otherwise specified (see 3.1), the maximum current rating for all type contacts shall be 1.0 ampere.

3.4.2 Operating temperature. Unless otherwise specified (see 3.1), connectors shall have an operating temperature of +85°C maximum and -55°C minimum.

3.5 Design and construction. Connectors shall be of the design, construction, and physical dimensions specified (see 3.1).

3.5.1 Threaded parts. Unless otherwise specified (see 3.1), all threaded parts shall be in accordance with H28. Where practicable, all threads shall be in conformity with the coarse-thread series. The fine-thread series shall be used only for applications that might show a definite advantage through their use. Where a special diameter-pitch combination is required, the thread shall be of American National Form and of any pitch between 16 and 3.6 which is used in the fine-thread series.

3.5.1.1 Engagement of threaded parts. All threaded parts shall engage by at least two full threads.

3.5.2 Connector assembly. All parts of the connector assembly, particularly the contacts, shall not be displaced from their original, normal, fitted position at completion of the specified tests.

3.5.3 Contact compliance. The contact shall be designed to assure proper operation without dependence on mechanical float, and to assure that minimum force (see 3.1) is transmitted to the connection joining the contact to the interconnection media during mating and unmating.

3.5.4 Contact cavities. The arrangement of contact cavities in the insulator body of connectors shall be as specified (see 3.1). Each contact cavity shall be fitted with a contact assembly so confined within the cavity that accidental removal is prevented, and positive alinement of the respective contacts, including the contact termination, is effected.

3.5.4.1 Contact clearance. The tops of the sockets, in their uppermost position, shall be below the upper edge of the contact cavity wall.

3.5.5 Printed wiring terminations. The terminations for both plug and receptacle shall be located on intersection points of a 0.050-inch modular grid. The termination layout shall be in accordance with the printed wiring requirements of MIL-STD-275, MIL-P-55424 and MIL-P-55110.

3.5.6 Hook-up wire termination. The form factor and dimensions of wire termination contacts for these connectors shall be as specified (see 3.1).

3.5.7 Contact identification. All contact positions shall be identified by legible letters or numbers, molded or stamped on the front face of the connector body adjacent to each contact as specified (see 3.1).

3.5.8 Body design. Connector bodies shall be designed and constructed with proper sections and radii so that they will not crack, chip, or break in assembly or in normal service. The insulator body of each plug and receptacle shall be of one-piece construction. Depressions, when used to achieve longer creepage paths, shall not cause structural weakness.

3.5.9 Polarization. To assure correct insertion, a polarization feature shall be a part of each connector assembly.

3.5.10 Alinement. Each connector shall have a feature which will insure proper alinement of contact before mating.

3.5.11 Method of mounting. A method of mounting shall be provided to assure that the forces applied to mate and unmate the mounted connector are not transmitted to the printed wiring termination solder joints.

3.6 Mating and unmating. When tested in accordance with 4.7.2.1, the maximum or minimum, or both, mating and unmating forces shall be as specified (see 3.1).

3.7 Contact life. When tested in accordance with 4.7.2.2, connectors shall show no evidence of cracking or breaking. The contact resistance requirements of 3.8 shall not be exceeded, and mating and unmating requirements of 3.6 shall be met.

3.8 Contact resistance. When tested in accordance with 4.7.2.3, the specified contact resistance requirements shall be met (see 3.1).

3.9 Insulation resistance. When tested in accordance with 4.7.2.4, the initial insulation resistance shall be not less than 5,000 megohms. When tested in accordance with 4.7.2.4, the final insulation resistance shall be not less than 1,000 megohms.

3.10 Dielectric withstanding voltage. When tested in accordance with 4.7.2.5, there shall be no evidence of breakdown of insulation or flashover (see 3.1).

3.11 Vibration. When tested in accordance with 4.7.2.6 there shall be no deleterious effect on the connector body or contacts. During vibration there shall be no interruption in continuity greater than one microsecond of the test circuit which incorporates mated contacts. After the vibration test, the mounting hardware shall show no signs of loosening, fracture or other deterioration, and the connectors shall meet the contact resistance requirements of 3.8 and the mating and unmating force requirements of 3.6.

3.12 Mechanical shock. When tested in accordance with 4.7.2.7, there shall be no physical damage to the connector. During the test there shall be no interruption in continuity greater than one microsecond of the test circuit which incorporates mated contacts. After the test the connectors shall meet the mating and unmating force requirements of 3.6.

3.13 Moisture resistance. When tested in accordance with 4.7.2.8, insulation resistance shall be greater than 1,000 megohms.

3.14 Thermal shock. When a mated pair of connectors is tested in accordance with 4.7.2.9, there shall be no evidence of cracking or crazing of the connector body or other physical damage to the connector assembly. At the extreme temperatures, the connectors shall be capable of being mated and unmated.

3.15 Salt spray (corrosion). When mated connectors are tested in accordance with 4.7.2.10, there shall be no peeling, chipping, or blistering of metal surfaces or exposure of base metal.

3.16 Interchangeability. Receptacles of a given type shall be capable of being mated with associated plugs meeting the requirements of this specification. The mated connectors and individual plugs and receptacles having related part numbers shall be directly and completely interchangeable with each other with respect to installation and performance as specified herein (see 4.7.1.1).

3.17 Marking. Connectors and accessories shall be marked with the part number in accordance with MIL-STD-130, and shall contain the supplier's name or code symbol and date code as specified in MIL-STD-456.

3.18 Workmanship. Connectors and accessories shall be processed in such a manner as to be uniform in quality and shall be free from burrs, crazing, cracks, voids, pimples, chips, blisters, pinholes, sharp cutting edges, and other defects that will affect life, serviceability, or appearance.

3.18.1 Riveting, upsetting, and spinning-over. When riveting, upsetting, or spinning-over processes are employed, there shall be no evidence of fatigue or undue deformation of uninvolved surfaces of the material being riveted, upset, or spun over.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any other commercial laboratory acceptable to 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 equipment and inspection facilities shall be of sufficient accuracy, quality, and quantity to permit performance of the required inspection. The supplier shall establish calibration of inspection equipment to the satisfaction of the Government. Calibration of standards which control the accuracy of the inspection equipment shall comply with the requirements of MIL-C-45662.

4.2 Classification examinations and tests. The examination and testing of connectors and accessories specified herein shall be classified as follows:

(a) Component-materials inspection (see 4.3).

(b) Preproduction inspection (see 4.5).

(c) Quality conformance inspection (see 4.6).

1. Inspection of product for delivery (see 4.6.1).

2. Inspection of preparation for delivery (see 4.6.2).

4.3 Component-materials inspection. Component-materials inspection shall consist of verification that the component materials listed in table I, used in fabricating the connectors and accessories, are in accordance with the applicable referenced specifications or requirements prior to such fabrication.

Table I. Component materials inspection.

Component material	Requirement paragraph	Applicable specification
Molded thermosetting plastic	3.3.1	MIL-M-14
Phosphor bronze and beryllium copper	3.3.2	QQ-C-530)
Brass wire	3.3.2	QQ-W-321) and MIL-C-45204
Brass (leaded and nonleaded)	3.3.2	QQ-B-626
Aluminum	3.3.3	QQ-A-250/8 and MIL-F-14072
Dissimilar metals	3.3.4	MIL-F-14072

4.4 Inspection conditions. Unless otherwise specified herein, all inspections shall be made at ambient temperature, humidity, and pressure specified in paragraph 2.2, general requirements, of MIL-STD-202.

4.5 Preproduction inspection. Preproduction inspection shall be performed by the supplier, after award of contract and prior to production, at a laboratory acceptable to the Government. Unless otherwise specified by the procuring activity, preproduction approval is valid only on the contract on which it is granted. The activity responsible for preproduction approval is the procuring activity and information pertaining to preproduction inspection may be obtained from that activity.

4.5.1 Sample. Sixteen mated pairs of connectors shall be submitted for preproduction inspection.

4.5.2 Test routine. Sample units will be subjected to the preproduction inspection specified in table II, in the order shown. All sample units will be subjected to the inspection of group I. The sample units will then be divided equally into 2 groups of 8 units each to be subjected to groups II and III tests.

Table II. Preproduction inspection.

Examination or test	Requirement paragraph	Method paragraph
Group I - Sample units 1 - 16		
Visual and mechanical examination - - - -	3.5 to 3.5.10, incl	4.7.1.1
Contact resistance - - - - - - - - - - -	3.8	4.7.2.3
Mating and unmating - - - - - - - - - - -	3.6	4.7.2.1
Dielectric withstanding voltage (sea level)	3.10	4.7.2.5
Insulation resistance - - - - - - - - - -	3.9	4.7.2.4
Group II - Sample units 1 - 8		
Dielectric withstanding voltage (high altitude)	3.10	4.7.2.5
Contact life - - - - - - - - - - - - - - -	3.7	4.7.2.2
Vibration - - - - - - - - - - - - - - - -	3.11	4.7.2.6
Salt spray (corrosion - - - - - - - - - -	3.15	4.7.2.10
Visual and mechanical examination - - - -	3.5 to 3.5.11, incl	4.7.1.1
Interchangeability - - - - - - - - - - -	3.16	4.7.1.1
Group III - Sample units 9 - 16		
Thermal shock - - - - - - - - - - - - - -	3.14	4.7.2.9
Mechanical shock - - - - - - - - - - - -	3.12	4.7.2.7
Moisture resistance - - - - - - - - - - -	3.13	4.7.2.8
Visual and mechanical examination - - - -	3.5 to 3.5.11	4.7.1.1

4.6 Quality conformance inspection.

4.6.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A, B, and C.

4.6.1.1 Inspection lot. An inspection lot, as far as practicable, shall consist of all the connectors of the same type designation, produced under essentially the same conditions, and offered for inspection at one time.

4.6.1.2 Rejected lots. If an inspection lot is rejected, the supplier may withdraw the lot, rework it to correct the defects, or screen out the defective units, as applicable, and reinspect. Such lots shall be separate from new lots and shall be clearly identified as reinspected lots.

4.6.1.3 Group A inspection. Group A inspection shall consist of the examinations and tests specified in table III, and shall be made on the same set of sample units, in the order shown.

4.6.1.3.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection, and the acceptable quality level (AQL) shall be as specified in table III. Major and minor defects shall be as defined in MIL-STD-105.

Table III. Group A inspection.

Examination or test	Requirement paragraph	Method paragraph	AQL (Percent defective)	
			Major	Minor
Visual and mechanical examination.	3.5 to 3.5.11, incl	4.7.1.1	1.0	4.0
Dielectric withstanding voltage (sea level).	3.10	4.7.2.5	.65	
Insulation resistance.	3.9	4.7.2.4		

4.6.1.4 Group B inspection. Group B inspection shall consist of the examinations and tests specified in table IV, in the order shown. Group B inspection shall normally be performed on inspection lots that have passed Group A inspection and on samples selected from units that have been subjected to and met the Group A inspection.

Table IV. Group B inspection.

Examination or test	Requirement paragraph	Method paragraph
Contact resistance	3.8	4.7.2.3
Mating and unmating	3.6	4.7.2.1
Interchangeability	3.16	4.7.1.1

4.6.1.4.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 for special inspection. Unless otherwise specified herein, normal inspection shall be used at the start of the contract. The AQL shall be 6.5 percent (defective) for each characteristic in table IV and the inspection level shall be S-3 for normal, tightened, and reduced inspection.

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

4.6.1.5 Group C inspection. Group C inspection shall consist of the examination and tests specified in table V, and shall normally be made in the order shown, on sample units that have been subjected to and met group A and group B inspection requirements.

4.6.1.5.1 Sampling for inspection of connectors. For group C inspection, two sample connectors of each style shall be selected at random for each inspection position in table V from every 5000 and fraction thereof of each style produced or every six months, whichever occurs first. The first samples selected shall be at the start of the contract from the first quality conformance inspection production lot.

Table V. Group C inspection.

Examination or test	Requirement paragraph	Method paragraph
Dielectric withstanding voltage (high altitude)	3.10	4.7.2.5
Contact life - - - - - - - - - - - - - - - - - -	3.7	4.7.2.2
Vibration -	3.11	4.7.2.6
Salt spray (corrosion) - - - - - - - - - - - - -	3.15	4.7.2.10
Thermal shcok - - - - - - - - - - - - - - - - -	3.14	4.7.2.9
Mechanical shock - - - - - - - - - - - - - - - -	3.12	4.7.2.7
Moisture resistance - - - - - - - - - - - - - -	3.13	4.7.2.8

4.6.1.5.2 Noncompliance. If a sample fails to pass group C inspection, the supplier shall take corrective action on the materials or process, or both, as warranted, and on all units of product which were manufactured under essentially the same conditions, with essentially the same materials, processes, etc, 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 C 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 and B inspection may be reinstituted; however, final acceptance shall be withheld until the group C reinspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure and the corrective action taken shall be furnished to the contracting officer.

4.6.2 Inspection of preparation for delivery. Sample items and packs shall be selected and inspected in accordance with MIL-P-116 to verify conformance with requirements in section 5 of this specification.

4.7 Method of examination and test.

4.7.1 Visual and mechanical examination.

4.7.1.1 Interchangeability. Physical configuration and dimensional measurements shall meet the requirements of 3.16 and as specified on the individual specification sheet. (See 3.1.)

4.7.2 Test procedure.

4.7.2.1 Mating and unmating (see 3.6). After 10 unmonitored cycles of insertion and withdrawal, the forces required to fully insert and withdraw a plug from the receptacle shall be measured. Each plug and receptacle so mated shall be considered as one test specimen where further testing of the plug or receptacle is indicated. The measuring equipment shall conform to the following:

(a) The axis of insertion of the male contacts and mating receptacle contacts or hermaphroditic contacts as applicable shall coincide during insertion and withdrawal.

(b) The speed of insertion of the plug into the receptacle contacts shall not exceed 2 inches per minute for constant speed machines, or the rate of loading shall not exceed 80 pounds per minute for constant-rate-of-force machines.

(c) Scale mechanisms shall have no dashpots or other damping devices.

(d) Scales shall be calibrated in 1/8-pound steps or less, and shall be accurate to within 1/8 pound.

4.7.2.2 Contact life (see 3.7). Each unit shall be subjected to 500 insertion and withdrawal cycles. The following details shall apply:

(a) The axis of the male contacts and mating receptacle contacts shall coincide during insertion and withdrawal.

(b) The speed of insertion of the plug into the receptacle shall not exceed 2 inches per minute.

(c) At the conclusion of this test, the contact resistance shall be measured in accordance with 4.7.2.3, and the mating and unmating forces shall be measured in accordance with 4.7.2.1.

4.7.2.3 Contact resistance (see 3.8). The contact resistance between a minimum of seven mated contact pairs on each test unit shall be measured in accordance with method 307 of MIL-STD-202. (See paragraph 6.3.12).

(a) Method of connection - At extreme ends of contacts.

(b) Test current - 10 milliamperes.

(c) Number of activations prior to measurement - 10.

(d) Number of test activations - 1.

(e) Number of measurements per activation - 7 (one for each contact.)

4.7.2.4 Insulation resistance (see 3.9). Mated connectors shall be tested in accordance with method 302 of MIL-STD-202. The following details and exceptions shall apply:

(a) Test-condition letter - B.

(b) Special preparation - The connector shall be mated, but not on a printed wiring board.

(c) Point of measurement - Between the odd numbered contacts connected together (positive), and all even-numbered contacts and all other metallic parts connected together (grounded potential).

4.7.2.5 Dielectric withstanding voltage (see 3.10). Mated connectors shall be tested in accordance with 4.7.2.5.1 and, when specified, in accordance with 4.7.2.5.2 (see 3.1).

4.7.2.5.1 At sea level. Mated connectors shall be tested in accordance with method 301 of MIL-STD-202. The following details and exceptions shall apply:

(a) Preparation - Mated, but not mounted on a printed wiring board.

(b) Magnitude of test voltage - As specified (see 3.1).

(c) Nature of potential - AC.

(d) Duration of application of test voltage - 60 seconds.

(e) Points of application of test voltage - Between all odd-numbered contacts connected together and all even-numbered contacts and all other metallic parts connected together.

(f) Method of connection of test voltage to specimen - Affix test probes to terminations described in 4.7.2.5.1(e) above by clips or solder.

4.7.2.5.2 At high altitude. Mated connectors shall be tested as specified in 4.7.2.5.1, and in accordance with method 105 of MIL-STD-202. The following details shall apply:

(a) Magnitude of test voltage - As specified (see 3.1).

(b) Test-condition letter - B.

(c) Tests during subjection to reduced pressure - Voltage test only (see 3.1).

4.7.2.6 Vibration (see 3.11). Connectors shall be tested in accordance with method 204 of MIL-STD-202. The following details shall apply:

(a) Mounting - For right angle connectors the receptacle shall be mounted on a 1/16-inch epoxy glass printed wiring board which in turn shall be firmly mounted on the vibration table. Each plug shall be mounted in the normal manner at one end of a rectangular epoxy glass laminate board of 1/16 inch thickness and width equal to plug length +1/8 inch maximum. A stabilizing arrangement shall be provided as indicated on figure 1, such that a resisting force shall exist through a compliant material (rubber with a Shore A durometer of about 25) which will prevent the mated connectors from separating during vibration and shock. The resisting medium shall contact the top and side surfaces of the test jig only, and no initial load shall be imparted to the connector other than the weight of the test jig. For straight-through connectors, a mated pair shall be mounted on individual parallel wiring boards and sec secured by bolts and stand-offs as indicated in figure 2 so that the distance between the wiring boards is equal to the height of the assembled connectors. Suitable monitoring circuit shall be provided to detect any interruption greater than 1 microsecond.

(b) Electrical-load conditions - 1 ampere maximum.

(c) Test-condition letter - C.

(d) Measurements - See 3.8.

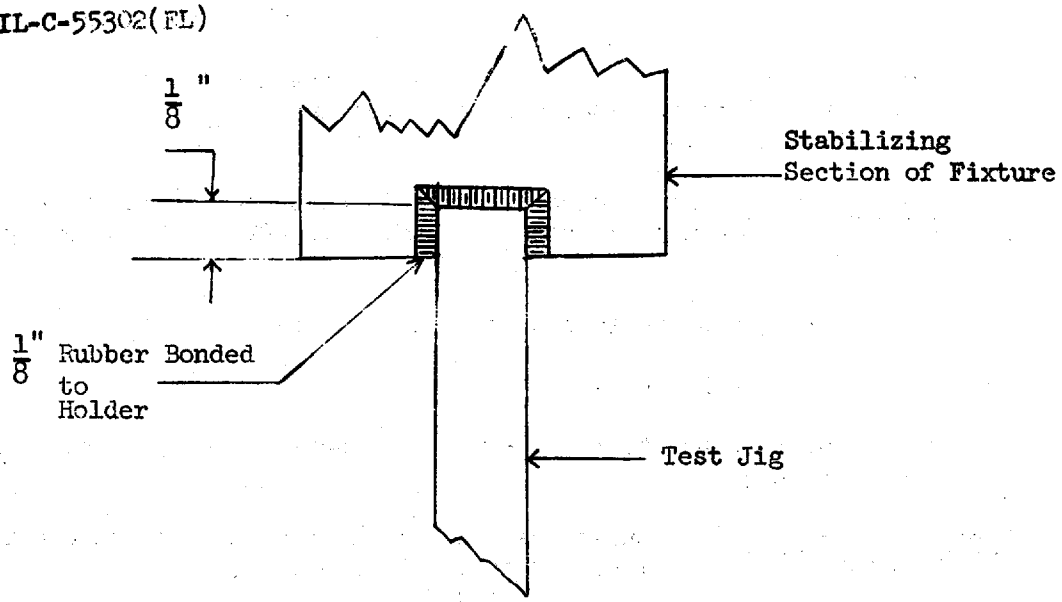

Figure 1

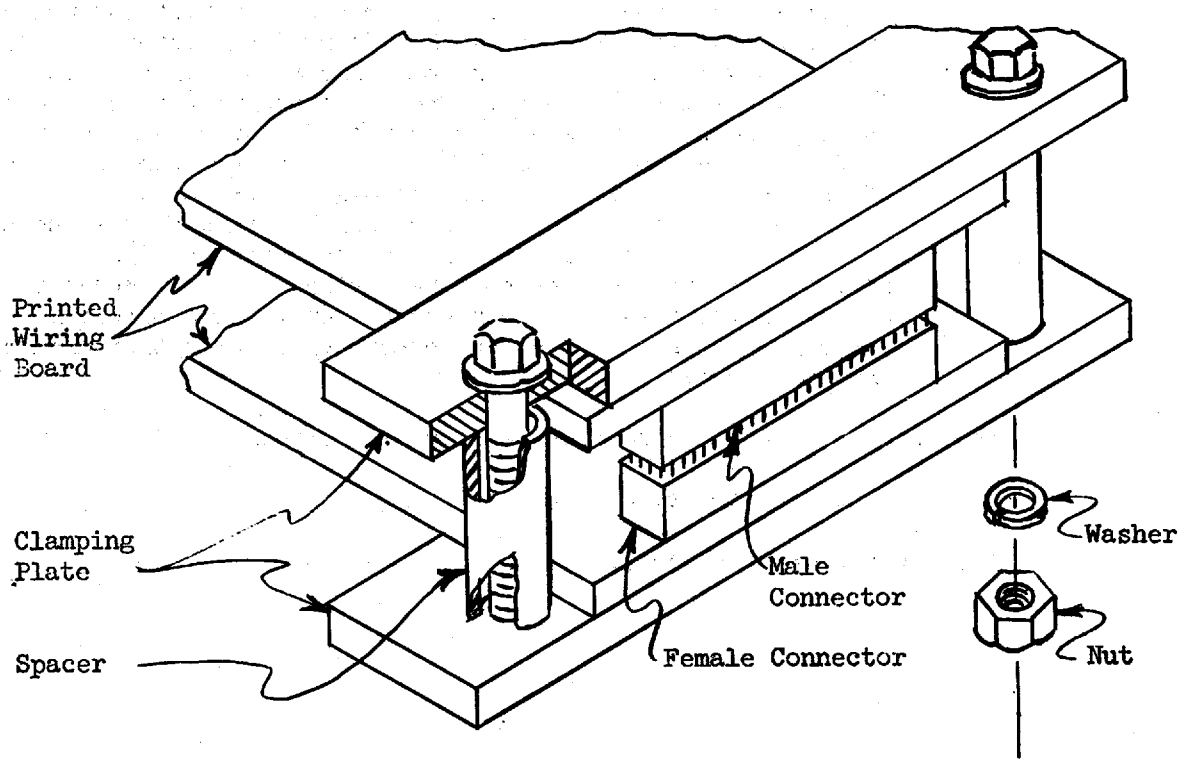

Figure 2

4.7.2.7 Mechanical shock (see 3.12). Mated connectors shall be tested in accordance with method 202 of MIL-STD-202. The following details shall apply:

(a) Mounting method and accessories - In accordance with 4.7.2.6(a) and suitable monitoring circuit to detect any interruption greater than 1 microsecond.

(b) Acceleration requirements - 50 g.

(c) Number of blows - One blow in both directions along each of three mutually perpendicular axis for a total of six shocks.

(d) Test current - 1 ampere maximum.

(e) Measurements after shock - See 3.6 and 3.8.

4.7.2.8 Moisture resistance (see 3.13). Connectors shall be tested in accordance with method 106 of MIL-STD-202, except steps 7a and 7b shall not be required. The mated pairs, unmounted, shall be wired as specified in 4.7.2.4. The following details shall apply:

(a) Loading voltage - 100 volts d.c.

(b) Final measurements - See 3.9.

4.7.2.9 Thermal shock (see 3.14). Mated connectors shall be tested in accordance with method 107 of MIL-STD-202. The following details shall apply:

(a) Special mounting - The connector halves shall be mounted on 1/16-inch thick epoxy glass printed wiring boards. Tests for mating shall be conducted during the fifth cycle of this test.

(b) Test-condition letter - A.

4.7.2.10 Salt spray (corrosion) (see 3.15). Mated connectors shall be tested in accordance with method 101 of MIL-STD-202. The following details shall apply:

(a) Applicable salt solution - 5 percent.

(b) Test-condition letter - B.

(c) Measurements after exposure - See 3.9.

(d) Air drying and examination - See 3.15.

4.7.2.11 Inspection for interchangeability. The dimensions indicated below shall be gaged or measured to determine conformance to the physical interchangeability requirements of 3.16. When a listed dimension is not within specified design limits, it shall be considered a major defect. Conformance with requirements of 3.6 constitutes verification that 4.7.1.1 has been met.

(a) External and internal dimensions of cases, covers, and insertable assemblies, when such dimensions affect mating parts.

(b) Dimensions of cavities, when such dimensions affect insertion of items.

(c) Location of connectors, locking pins, fasteners, slides and mountings, as applicable, which receive mating parts of plug-in assemblies and major units; and location of the mating parts on the plug-in assembly or major unit.

4.7.2.12 Electrical characteristics.

4.7.2.12.1 Contact rating. Conformance to the requirements of 3.3.2 and applicable specification sheets (see 3.1) constitutes verification of 3.4.1.

4.7.2.12.2 Operating temperature. Conformance to the requirements of 3.14 constitutes verification of 3.4.2.

4.7.2.13 Restricted material. Conformance to 4.3 and table I constitutes verification of 3.3.3.

5. PREPARATION FOR DELIVERY.

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning. Connectors shall be cleaned in accordance with process C-1 of MIL-P-116.

5.1.1.2 Drying. Connectors shall be dried in accordance with the applicable procedures of MIL-P-116.

5.1.1.3 Unit packaging. Each connector shall be packaged in accordance with method 1C-1 of MIL-P-116. Cushion each connector by wrapping in paperboard conforming to PPP-P-291, and secure with tape conforming to UU-T-111, prior to placing in bag.