

MIL-C-55074F(EL)  
6 September 1977  
SUPERSEDING  
MIL-C-55074E(EL)  
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## MILITARY SPECIFICATION

### CONNECTORS, PLUG AND RECEPTACLE, TELEPHONE, ELECTRICAL, SUBASSEMBLY AND ACCESSORIES AND CONTACT ASSEMBLY, ELECTRICAL, GENERAL SPECIFICATION FOR

This specification is approved for use by the Army Electronics Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers the following types of 26 pair connectors, contacts hermaphroditic (see 6.4 and 6.5).

Connector, Plug, Telephone, Electrical U-185( )/G  
Connector, Receptacle, Telephone, Electrical U-186( )/G  
Connector, Receptacle, Telephone, Electrical U-187( )/G  
Contact Assembly, Electrical MX-3227( )/G

#### 2. APPLICABLE DOCUMENTS

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

#### SPECIFICATIONS

##### FEDERAL

L-P-393	- Plastic Molding Material, Polycarbonate, Injection and Extrusion.
FF-S-92	- Screw, Machine: Slotted, Cross-Recessed or Hexagon Head.
QQ-A-250/12	- Aluminum Alloy 7075, Plate and Sheet.
QQ-A-591	- Aluminum Alloy Die Castings.
QQ-C-530	- Copper-Beryllium Alloy Bar, Rod, and Wire (Copper Alloy Numbers 172 and 173).
QQ-P-35	- Passivation Treatment for Austenitic, Ferritic, and Martensitic Corrosion-Resisting Steel (Fastening Devices).
QQ-S-763	- Steel Bars, Wire, Shapes, and Forgings, Corrosion-Resisting.
QQ-W-423	- Wire, Steel, Corrosion-Resisting.
ZZ-R-765	- Rubber, Silicone.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Electronics Command, ATTN: DRSEL-RD-TS-S, Fort Monmouth, NJ 07703, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

FSC 5935

MILITARY

- MIL-M-14 - Molding Plastics and Molded Plastic Parts, Thermosetting.
- MIL-R-6855 - Rubber, Synthetic, Sheets, Strips, Molded or Extruded Shapes.
- MIL-F-14072 - Finishes for Ground Electronic Equipment.
- MIL-G-45204 - Gold Plating, Electrodeposited.
- MIL-C-45662 - Calibration System Requirements.
- MIL-C-55330 - Connectors, Preparation For Delivery of.
- MIL-W-83420 - Wire Rope, Flexible, For Aircraft Control.

SPECIFICATION SHEETS

- MIL-C-55074/1 - Connector, Plug, Telephone, Electrical.
- MIL-C-55074/2 - Connector, Receptacle, Telephone, Electrical.
- MIL-C-55074/3 - Connector, Receptacle, Telephone, Electrical.
- MIL-C-55074/4 - Contact Assembly, Electrical.

STANDARDS

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-169 - Extreme Temperature Cycle.
- MIL-STD-170 - Moisture Resistance Test Cycle for Ground Signal Equipment.
- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
- MIL-STD-417 - Classification System and Tests for Solid Elastomeric Materials.
- MIL-STD-889 - Dissimilar Metals.
- MIL-STD-1285 - Marking of Electrical and Electronic Parts.
- MS35338 - Washer, Lock-Spring, Helical, Regular (Medium) Series.
- MS51957 - Screw, Machine-Pan Head, Cross-Recessed, Corrosion-Resisting Steel, UNC-2A.
- MS51959 - Screw, Machine-Flat Counter Sunk Head, 82°, Cross-Recessed, Corrosion-Resisting Steel, UNC-2A.

DRAWINGS

ELECTRONICS COMMAND

- SC-D-34031 - Cable Assembly, Telephone CX-4566( )/G.
- SC-GL-57982 - Gages for Contact Assembly MX-3227( )/G.
- SC-GL-57996 - Gages for U-185( )/G Connector Housing and Cover.
- SC-GL-57997 - Gages for U-187( )/G Connector Housing and Cover.
- SC-DL-68558 - Contact Assembly, Electrical MX-3227( )/G.
- SC-DL-173805 - Connector, Plug, Electrical U-185( )/G.
- SC-DL-173820 - Connector, Receptacle, Electrical U-187( )/G.
- SC-GL-323007 - Electrical Fixture for U-185( )/G, U-186( )/G, U-187( )/G Connectors and Contact Assembly MX-3227( )/G.
- SC-GL-323023 - Gages for U-186( )/G Housing and Cover.
- SC-DL-349780 - Connector, Receptacle, Electrical U-186( )/G.

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

2.2 Other publications. The following 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 Standard for Federal Services.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.)

3. REQUIREMENTS

3.1 Specification sheets. The individual part requirements shall be as specified herein and in accordance with the applicable specification sheets and the Electronics Command drawings. In the event of any conflict between the requirements of this specification, the specification sheets and the Electronics Command drawings, the following shall be the order of precedence:

- a. Electronics Command drawings.
- b. Specification sheets.
- c. Specification.

3.2 Qualification. Connectors, accessories and contact assembly furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for the opening of the bids (see 4.5 and 6.3).

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, accessories and contact assembly to meet the performance requirement. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.3.1 Nonmagnetic materials. Nonmagnetic parts are not applicable.

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

3.3.3 Metals.

3.3.3.1 Copper alloys. Hermaphroditic contacts and contact terminations shall be beryllium copper as specified in QQ-C-530.

3.3.3.2 Aluminum. Where applicable, aluminum shall be as specified in QQ-A-250/12 (Alloy 7075) or QQ-A-591, painted or anodized to meet the requirements of MIL-F-14072 (see 3.1).

3.3.3.3 Corrosion resisting steel. Where applicable, corrosion resisting steel shall be 300 series, low magnetic permeability in accordance with QQ-S-763 and passivated per QQ-P-35 or to finish E300 as specified in MIL-F-14072 (see 3.1).

3.3.3.4 Contact plating. Contacts shall be gold plated in accordance with MIL-G-45204 type II, class 2, grade D. Silver underplating shall not be used.

3.3.4 Restricted materials.

3.3.4.1 Flammable, explosive, or toxic. Material shall be nonflammable, nonexplosive, and nontoxic over the operating temperature range.

3.3.4.2 Corrosive resistance. Connectors, accessories, and contact assemblies shall be of corrosion-resistant materials or treated to prevent corrosion.

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

3.3.5 Dissimilar metals. Where dissimilar metals are used in intimate contact with each other, protection against electrolysis and corrosion shall be provided. Dissimilar metals shall be as defined in MIL-STD-889. Dissimilar metals such as brass, copper, or steel (except corrosion-resisting steel, passivated in accordance with 3.3.3.3) shall not be used in intimate contact with aluminum or aluminum alloy.

3.3.6 Cast and molded parts.

3.3.6.1 Castings. Castings shall be of uniform quality and condition, and free from harmful cracks, shrinkage, porosity, gas holes, foreign matter, and other injurious defects. The surface of the castings shall be free from pits, parting lines, porous areas, fins, ridges, modules, raised metal, and scale. All castings shall be completely cleaned prior to presentation for inspection. Castings shall not be plugged or welded, nor shall imperfections be filled in.

3.3.6.2 Molded parts. Molded parts shall be uniform in quality, condition, and color. The molded parts shall be clean, smooth, free from porous areas, foreign materials, weak sections, bubbles, flash and any other injurious defects.

3.3.6.3 Rubber and elastomeric material. Rubber and elastomeric material shall be in accordance with ZZ-R-765, MIL-R-6855, and MIL-STD-417 as specified (see 3.1).

3.4 Design and construction. Connectors, accessories, and contact assembly shall be of the design, construction, and physical dimensions specified (see 3.1).

3.4.1 Threaded parts. Unless otherwise specified (see 3.1), all threaded parts shall be in accordance with H28.

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

3.4.2 Connector assembly. No parts of the connector assembly shall be permanently displaced from their original, normal, fitted position (see 3.1) at completion of the specified tests.

3.4.2.1 Contact compliance. The contact shall be designed to assure proper operation without dependence on mechanical float, and to assure that minimum force is transmitted to the connection joining the contact to the interconnecting media during mating and unmating.

3.4.3 Cleaning. After assembly, the connectors shall be cleaned thoroughly and shall be free from particles of solder, flux, and other foreign material.

3.4.4 Finish, protective. Equipment shall be given protective finish in accordance with MIL-F-14072 and as specified (see 3.1).

3.5 Continuity (contact assembly). When tested as specified in 4.7.3, the resistance value shall not exceed 1.0 ohm.

3.6 Dielectric strength (contact assembly). When tested as specified in 4.7.4, the contact assembly shall be rejected if the automatic tester fails to proceed after a period of 1 minute.

3.7 Insulation resistance (contact assembly). When tested as specified in 4.7.5, the initial insulation resistance shall be not less than 1,000 megohms. During the moisture resistance test (see 4.7.19) and the high humidity and high temperature test (see 4.7.20), the insulation resistance shall be not less than 10 megohms.

3.8 Contact resistance (contact assembly). When tested as specified in 4.7.6, the voltage drop shall be not greater than 7 millivolts between the contacts of each circuit of the mated contact assemblies. The calculated resistance of the two jumper wires of each circuit shall be deducted from the measured resistance.

3.9 Air leakage (contact assembly and connector). When tested as specified in 4.7.7, there shall be no evidence of any leakage at the cable entry, minor gasket, screw holes or through the castings and contact assembly. To check the major gasket, the contact assembly shall be removed.

3.10 Immersion (contact assembly and connector). When tested as specified in 4.7.8, the connector and contact assembly shall meet the requirements of dielectric strength and insulation resistance (see 3.6 and 3.7) and there shall be no evidence of water in the connector housing.

3.11 Interchangeability (contact assembly and connector). When tested as specified in 4.7.9, like units, assemblies, and subassemblies shall be physically and functionally interchangeable, without modification of such items or of the connector. Individual items shall not be hand-picked for fit. Reliance shall not be placed on any unspecified dimension, characteristic, etc.

3.12 Durability (contact assembly and connector). When tested as specified in 4.7.10, the contact resistance measurements shall be within 10 percent of the measurements taken prior to durability. The connector shall meet the electrical requirements of 3.5 through 3.8. There shall be no evidence of base metal showing on the contact, distorted or broken contacts, or binding in the locking cams.

3.13 Mating of covers (cover). After a pair of covers has been mated as specified in 4.7.11, a pull of 5 pounds applied along the long axis of the covers shall not result in separation and they shall meet the requirements for interchangeability (see 3.11).

3.14 Contact durability (contact assembly). After a pair of contact assemblies has been tested as specified in 4.7.12, the contact assemblies shall meet the requirements for continuity, dielectric strength, and insulation resistance (see 3.5, 3.6, and 3.7 respectively).

3.15 Pull (connector). When tested as specified in 4.7.13, the contact assembly shall show no straining of individual conductors or penetration of the grip to the steel braid of the cable and the assembly shall meet the requirements for continuity, dielectric strength, insulation resistance and immersion (see 3.5, 3.6, 3.7, and 3.10 respectively).

### 3.16 Shock drop.

3.16.1 Shock drop (connector). When tested as specified in 4.7.14.1, the connectors shall be operable and any physical damage shall be minor (see table VI). The connector (including contact assembly) shall then meet the electrical requirements of 3.5 through 3.8 and the air leakage requirements of 3.9.

3.16.2 Shock drop (contact assembly). When tested as specified in 4.7.14.2, the contact assemblies shall be operable and any physical damage shall be minor (see table VI). The contact assembly shall then meet the electrical requirements of 3.5 through 3.8, and the air leakage requirements of 3.9.

### 3.17 Vibration.

3.17.1 Vibration (mated connector). When tested as specified in 4.7.15.1, the mated connectors shall not disengage as a result of vibration and both connectors shall then meet the electrical requirements of 3.5 through 3.8 and the air leakage requirements of 3.9.

3.17.2 Vibration (contact assembly). When tested as specified in 4.7.15.2, the contact assemblies shall meet the electrical requirements of 3.5 through 3.8 and the air leakage requirements of 3.9.

3.18 Temperature cycling (contact assembly and connector). When tested as specified in 4.7.16, the connector shall meet the requirements for continuity, dielectric strength and insulation resistance (see 3.5, 3.6, and 3.7, respectively). Note: Continuity shall exist through the mated pair of connectors.

3.19 Ninety degree bend (connector U-185( )/G). When tested as specified in 4.7.17, connector U-185( )/G shall be capable of being bent in a 180° arc five times at the boot assembly after exposure to a temperature of -65°F. There shall be no deterioration of the boot assembly.

3.20 Mating at high and low temperature extremes (connector). When tested as specified in 4.7.18, the connector shall be capable of being mated and mated without difficulty after exposure at -65°F and at +150°F.

3.21 Moisture resistance (connector). When tested as specified in 4.7.19, the connector shall meet the requirements for insulation resistance (see 3.7) and there shall be no evidence of corrosion.

3.22 High humidity and high temperature (connector). When tested as specified in 4.7.20, the connector shall meet the requirements for insulation resistance (see 3.7) and there shall be no evidence of corrosion.

3.23 Marking. Connectors, accessories and contact assembly shall be marked in accordance with MIL-STD-1285 and as specified (see 3.1).

3.24 Workmanship. Connectors, accessories and contact assembly 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 adversely affect life, serviceability, or appearance. The connectors, accessories and contact assembly shall comply with the requirements of 3.3.6.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality and quantity to permit performance of the required inspection shall be established and maintained by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with MIL-C-45662.

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

- a. Materials inspection (see 4.3).
- b. Qualification inspection (see 4.5).
- c. Quality conformance inspection (see 4.6).

4.3 Materials inspection. Materials inspection shall consist of certification supported by verifying data that the 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. Materials inspection.

Material	Requirement paragraph	Applicable specification
Plastic, molded thermosetting - - -	3.3.2	MIL-M-14
Copper alloys - - - - - - - - - -	3.3.3.1	QQ-C-530
Aluminum- - - - - - - - - - - -	3.3.3.2	QQ-A-250/12, QQ-A-591, MIL-F-14072
Corrosion resisting steel - - - -	3.3.3.3	QQ-S-763, QQ-P-35, MIL-F-14072
Contact plating - - - - - - - - -	3.3.3.4	MIL-G-45204
Dissimilar metals - - - - - - - -	3.3.5	MIL-STD-889
Rubber and elastomeric material - -	3.3.6.3	ZZ-R-765, MIL-R-6855, MIL-STD-417

4.4 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-202.

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

4.5.1 Sample size. The sample group shall consist of the sample units specified in table II.

4.5.2 Inspection routine. Sample units (connectors or contact assembly) shall be subjected to the inspections specified in table II in the order shown.

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



4.5.4 Retention of qualification. To retain qualification the contractor shall furnish the following reports to the qualifying activity at the time intervals specified:

- a. 12 month intervals - A summary of the results of both group A and group B tests performed for inspection of product for delivery, indicating as a minimum the number of lots that have passed and the number that have failed. The results of tests of all reworked lots shall be identified and accounted for. In addition the results of group C tests shall be furnished.
- b. 24 or 36 month intervals - A summary of the results of group D tests performed for qualification inspection, including the number and mode of failures. The contractor shall forward the initial report at the end of 24 months; subsequent reporting periods will be 36 months. The qualifying activity shall establish the initial reporting date. If the summary of the test results indicates nonconformance with the specification requirements, and corrective action acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the qualified products list.

Failure to submit the report within 60 days after the end of each 12-, 24- or 36-month period may result in loss of qualification for the product. In addition to the periodic submission of inspection data, the contractor shall immediately notify the qualifying activity at any time during the 12-, 24- or 36-month period that the inspection data indicates failure of the qualified product to meet the requirements of this specification.

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

4.6 Quality conformation inspection.

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

4.6.1.1 Inspection lot. An inspection lot shall consist of all the connectors, accessories or contact assembly, of the same part number, produced under essentially the same conditions, and offered for inspection at one time.

4.6.1.2 Group A inspection. Group A inspection shall consist of the inspections specified in table III, in the order shown.

TABLE III. Group A inspection.

Inspection	Requirement paragraph	Test method paragraph	AQL (percent defective)	
			Major	Minor
Continuity (contact assembly) - - - - -	3.5	4.7.3	} .65% inspection by automatic means	
Dielectric strength (contact assembly)- -	3.6	4.7.4		
Insulation resistance (contact assembly)-	3.7	4.7.5		
Visual and mechanical inspection- - - - -	3.1, 3.3, 3.4 thru 3.4.4, 3.23 & 3.24	4.7.1	1.0	4.0
Air leakage (contact assembly and connector)- - - - -	3.9	4.7.7	1.0	---

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

4.6.1.2.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.3 Group B inspection. Group B inspection shall consist of the inspections specified in table IV, in the order shown, and the sample shall be selected from inspection lots that have passed group A inspection.

TABLE IV. Group B inspection.

Inspection	Requirement paragraph	Test method paragraph	AQL (percent defective)	
			Major	Minor
Immersion (contact assembly and connector) - - - - -	3.10	4.7.8	1.5	---
Interchangeability (contact assembly and connector)- - -	3.11	4.7.9	4.0	---

4.6.1.3.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 for special inspection level S-3. The sample size shall be based on the inspection lot size from which the sample was selected for group A inspection. The AQL shall be as specified in table IV.

4.6.1.3.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.3.3 Disposition of sample units. Sample units which have passed all the group B inspection may be delivered on a contract if the lot is accepted.

4.6.2 Periodic inspection. Periodic inspection shall consist of groups C and D inspections. Except where the results of these inspections show noncompliance with the applicable requirements (see 4.6.2.1.4), delivery of products which have passed groups A and B inspections shall not be delayed pending the results of these periodic inspections.

4.6.2.1 Group C inspection. Group C inspection shall consist of the inspections specified in table V, in the order shown. Group C inspection shall be made on sample units selected from inspection lots which have passed the groups A and B inspections..

TABLE V. Group C inspection.

Inspection	Requirement paragraph	Test method paragraph	Number of sample units for inspection <u>1/</u>
Durability (contact assembly and connector)- - - - -	3.12	4.7.10	2
Mating of covers (cover)- - - - -	3.13	4.7.11	2
Contact durability (contact assembly) - - - - -	3.14	4.7.12	2
Pull (connector)- - - - -	3.15	4.7.13	2

1/ All inspections may be performed on the same two sample units.

4.6.2.1.1 Sample plan. Each 12 months the number of sample units specified in table V shall be subjected to the inspections shown. If there has been no production run during this period, the inspections shall be conducted on sample units selected from the first production run made following this period.

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

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

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

4.6.2.2 Group D inspection. Group D inspection shall consist of the inspections specified in table VI, in the order shown. Group D inspection shall be made on sample units selected from inspection lots which have passed the groups A and B inspections.

4.6.2.2.1 Sampling plan. Each 24 or 36 months (see 4.5.4b.) the number of sample units specified in table VI shall be subjected to the inspections shown. If there has been no production run during this period(s), the inspections shall be conducted on sample units selected from the first production run made following this period.

TABLE VI. Group D inspection.

Inspection	Requirement paragraph	Test method paragraph	Connector type					
			U-185	U-185	U-187	U-185	U-186	U-185
Continuity (contact assembly) - - -	3.5	4.7.3	M	M	M	M	M	M
Dielectric strength (contact assembly) - - - - -	3.6	4.7.4	M	M	M	M	M	M
Insulation resistance (contact assembly) - - - - -	3.7	4.7.5	M	M	M	M	M	M
Visual and mechanical inspection - -	3.1, 3.3, 3.4 thru 3.4.4, 3.23 & 3.24	4.7.1	M	M	M	M	M	M
Air leakage (contact assembly and connector) - - - - -	3.9	4.7.7	M	M	M	M	M	M
Immersion (contact assembly and connector) - - - - -	3.10	4.7.8	M	M	M	M	M	M
Interchangeability (contact assembly and connector) - - - - -	3.11	4.7.9	M	M	M	M	M	M
Contact durability (contact assembly) - - - - -	3.14	4.7.12	M	M	M	M	M	M
Durability (contact assembly and connector) - - - - -	3.12	4.7.10	M	M	M	M	M	M
Mating of covers (cover) - - - - -	3.13	4.7.11	C	C	C	C	C	C
Pull (connector) - - - - -	3.15	4.7.13	U	U	U	U	U	U
Contact resistance (contact assembly) - - - - -	3.8	4.7.6	M	M	M	M	M	M
Shock drop - - - - -	3.16	4.7.14	M	M	M	M	M	M
Visual and mechanical inspection - -	3.1, 3.3, 3.4 thru 3.4.4, 3.23 & 3.24	4.7.1	M	M	M	M	M	M
High humidity and high temperature (connector) - - - - -	3.22	4.7.20	M	M	M	M	M	M
Vibration - - - - -	3.17	4.7.15	M	M	M	M	M	M
Temperature cycling (contact assembly and connector) - - - - -	3.18	4.7.16	M	M	M	M	M	M
Ninety degree bend (connector U-185( )/G) - - - - -	3.19	4.7.17	U	U	U	U	U	U
Mating at high and low temperature extremes (connector) - - - - -	3.20	4.7.18	M	M	M	M	M	M
Moisture resistance (connector) - - -	3.21	4.7.19	M	M	M	M	M	M/C

Code: M = Connector mated  
 U = Connector unmated  
 C = Connector assembly only

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

4.6.2.2.3 Disposition of sample units. Sample units which have been subjected to group D inspection shall not be delivered on the contract.

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

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

#### 4.7 Method of examination and test.

4.7.1 Visual and mechanical inspection. The connectors or contact assembly shall be examined for the defects listed in table VII and to determine compliance with each of the requirements of 3.1.3.3, 3.4 to 3.4.4 inclusive, 3.16, 3.23 and 3.24.

TABLE VII. <sup>v1</sup> Classification of visual and mechanical defects.

Classification	Defects
Major	Locking lug chipped or broken. Locking ring chipped or broken. Threads stripped. Rubber boot cut or ripped. Sharp edges on housing. Epoxy resin on contacts or terminals. Locking ring not operating freely. Housing chipped or broken. Contacts missing, broken, or bent. Contact assembly chipped or broken. Any foreign objects or material preventing the mating of connectors. Cuts or abrasions of gaskets. Scratches, cuts, abrasions, etc., with exposure of bare metal.
Minor	Screws missing. Finish not as specified. Marking incorrect. Scratches, cuts, abrasions, etc., without exposure of bare metal. Finish adhesion-flaking, peeling, or chipping. Wire grip missing. Scratches, cuts, abrasions, etc., of contact assembly. Caps not properly secured to block. Boot not properly bonded to gland.

4.7.2 Test conditions.

4.7.2.1 Automatic testing. The inspection for continuity 4.7.3, dielectric strength 4.7.4, and insulation resistance 4.7.5 shall be performed on all equipments by automatic means using electrical fixtures specified on SC-GL-323007. Automatic equipment other than that referenced on SC-GL-323007 shall have prior Government approval. The automatic test equipment as specified is programmed to test each terminal in turn with the remaining terminals connected together to ground for dielectric strength and insulation resistance simultaneously. The automatic test equipment is also programmed to test for continuity sequentially--terminals 1A through 26A, 1B through 26B with the readout on the tester showing 1 through 52.

4.7.2.2 Preconditioning. The contractor shall be permitted to precondition the equipments prior to performing any electrical tests except the electrical tests performed after the immersion test 4.7.8 and during the moisture resistance test 4.7.19 and high humidity and high temperature test 4.7.20. The preconditioning shall consist of removing surface moisture from the equipment by wiping, drying, blowing, or heating. The application of heat shall be limited to 3 minutes. For those equipments subjected to immersion 4.7.8, moisture resistance 4.7.19, and high humidity and high temperature 4.7.20, unmated and without protective covers, a 24 hour waiting period in an ambient room temperature is permitted. However, if the contractor exercises this option of preconditioning, the contractor shall precondition all samples selected by quality assurance representatives immediately prior to testing.

4.7.2.3 Preparation of samples for immersion and air leakage tests. The connectors and contact assembly shall be prepared for the tests listed in immersion 4.7.8 and air leakage 4.7.7 in the following manner:

- a. Connector U-185( )/G. The cable entrance of each connector shall be sealed using a plug having a diameter of 0.625 maximum.
- b. Connector U-186( )/G. The cable entrance of each connector shall be sealed using a plug having a diameter sufficient to seal.
- c. Connector U-187( )/G. The connector shall be mounted to a flat metal plate, not less than 1/8 inch thick, using the sealing gasket and the six mounting screws.
- d. Contact Assembly MX-3227( )/G. The contact assembly shall be mounted in connector housing U-185( )/G, U-186( )/G, or U-187( )/G and prepared as indicated in a., b., or c. above.

NOTE: When air leakage tests are being performed, air may be applied through the plug or the metal plate.

4.7.2.4 Preparation of samples for tests (excluding immersion and air leakage tests). The connectors assembled with minimum of 10 feet of Cable WM-130()/G, shall be prepared for the tests listed in 4.7.13 pull, 4.7.16 temperature cycling, 4.7.17 ninety degree bend, 4.7.19 moisture resistance, and 4.7.20 high humidity and high temperature, in the following manner:

- a. Connector Plug U-185( )/G shall be wired in accordance with USAECOM drawing SC-D-34031.

- b. Connector Receptacle U-186( )/G shall be wired in accordance with USAECOM drawing SC-D-34031. The cable jacket shall be stripped back sufficiently to permit clamping of the cable core at the cable entry. A sealant shall be used to prevent penetration of moisture through the cable entrance.
- c. Connector Receptacle U-187( )/G shall be wired in accordance with USAECOM drawing SC-D-34031. The connector shall be mounted using the rubber sealing gasket and the six screws on a flat metal plate which is not less than 1/8 inch thick. Cable wired to the contact assembly shall be fed through a hole drilled into the metal plate and a clamp shall be provided to alleviate strain on the contact assembly terminals. A sealant shall be used to prevent penetration of moisture through the cable entrance.
- d. Contact assembly MX-3227( )/G mounted in connector housing U-185( )/G, U-186( )/G, or U-187( )/G shall be wired in accordance with USAECOM drawing SC-D-34031 and prepared as indicated in a., b., or c. above.

NOTE: All materials used for preparation shall be furnished by the contractor.

4.7.3 Continuity (contact assembly) (see 3.5). The wiring between each male contact and its corresponding female contact shall be tested electrically by automatic means (see 4.7.2.1) to determine compliance with the requirement specified in 3.5.

4.7.4 Dielectric strength (contact assembly) (see 3.6). The contact assembly shall be tested by automatic means (see 4.7.2.1). The 1,000 volts supplied by the tester shall be applied instantaneously and the sequence of test shall be as fast as the tester will permit. The contact assembly shall meet the requirement of 3.6.

4.7.5 Insulation resistance (contact assembly) (see 3.7). The contact assembly shall be tested by automatic means (see 4.7.2.1). The test will be performed with a voltage of 1,000 volts as supplied by the tester, except that during the moisture resistance test 4.7.19 and high humidity and high temperature test 4.7.20 the voltage shall be 100 volts. The contact assembly shall meet the requirement of 3.7.

4.7.6 Contact resistance (contact assembly) (see 3.8). The electrical resistance of each circuit in a pair of mated contact assemblies shall meet the requirements of 3.8, when measuring the voltage drop across the circuit carrying a 3 ampere dc current. The circuit consists of 2 pair of mated contacts and 2 jumper wires. The contact assemblies shall be engaged leaving a clearance between the insulator blocks of 0.015 +.003 -.000 inch.

4.7.7 Air leakage (contact assembly and connector) (see 3.9). The contact assembly and connector prepared in accordance with 4.7.2.3 shall be submerged in water not deeper than 6 inches. Air at 15 psi shall then be applied internally to the equipment. After stabilization, the connector shall be observed for a minimum of 30 seconds and meet the requirements of 3.9. This test shall then be repeated using air at 2.5 psi.

NOTE: Air leakage performed in any other manner must have Government approval.

4.7.8 Immersion (contact assembly and connector) (see 3.10). The contact assembly and connector prepared in accordance with 4.7.2.3 shall be immersed to a depth of 3 feet of water for 16 hours to determine compliance with the requirements of 3.10. Fifty percent shall be mated, twenty-five percent shall be with protective cover in place and the remainder shall be without protective cover.

4.7.9 Interchangeability (contact assembly and connector) (see 3.11). The connector shall be gaged using the appropriate gages listed below, to determine conformance to the physical and functional interchangeability requirement of 3.11. When a mechanical or electrical value is not within specified or design limits, it shall be considered a major defect.

Gage list

SC-GL-57982, SC-GL-57996 and SC-GL-323007 for connector, plug, telephone, electrical U-185( )/G.  
SC-GL-57982, SC-GL-323023 and SC-GL-323007 for connector, receptacle, telephone, electrical U-186( )/G.  
SC-GL-57982, SC-GL-57997 and SC-GL-323007 for connector, receptacle, telephone, electrical U-187( )/G.  
SC-GL-57982 and SC-GL-323007 for contact assembly MX-3227( )/G.

4.7.10 Durability (contact assembly and connector) (see 3.12). The connector shall be tested for compliance with 4.7.6 contact resistance, measurements shall be recorded. The connectors shall then be subjected to 200 cycles of mating and unmating. A cycle shall consist of mating, locking and unlocking of the cams and a complete separation of the connectors. When connector U-186( )/G or U-187( )/G is being procured the test shall be performed using a contractor furnished connector U-185( )/G as the mating connector, contact assembly MX-3227( )/G used within the U-185( )/G housing shall be from the lot submitted for inspection. Connectors U-186( )/G and U-187( )/G shall be firmly mounted by the mounting screws during the test. The connector shall meet the requirements of 3.12.

4.7.11 Mating of covers (cover) (see 3.13). Covers shall be firmly mated with each other 200 times. The covers shall then meet the requirements of 3.13.

4.7.12 Contact durability (contact assembly) (see 3.14). Contact assemblies shall be subjected to 200 cycles of mating and unmating to determine compliance with the requirements of 3.14. There shall be no readjustment of contacts. Mating and unmating may be accomplished mechanically without housings. Clearance of  $.015 +.003 -.000$  shall be provided between the contact assemblies to simulate mated condition when in the housings.

NOTE: This test may be conducted concurrently with 4.7.10.

4.7.13 Pull (connector) (see 3.15). The connector U-185( )/G (see MIL-C-55074/1(EC)) prepared in accordance with 4.7.2.4 shall be subjected to a 800 pound static load for 16 hours followed by twenty-five 200 pound pulls and relaxations. A minimum of 3 feet of cable connected to each connector shall be subjected to the load. The assembly shall meet the requirements of 3.15.

#### 4.7.14 Shock drop.

4.7.14.1 Shock drop (connector) (see 3.16.1). The connector (including a contact assembly) shall be dropped a distance of 36 inches on each edge and face for a total of 12 drops. Six drops shall be made with the protective cover on, the remaining 6 drops shall be made with the cover off. In addition, a pair of mated connectors shall be dropped a distance of 36 inches on each side for a total of 12 drops. The floor or barrier receiving the impact shall be 2 inch fir backed by concrete or a rigid steel frame. Connectors (including contact assembly) shall meet the requirements of 3.16.1.

4.7.14.2 Shock drop (contact assembly) (see 3.16.2). Contact assembly MX-3227( )/G mounted in a connector housing and held in place by the mounting studs shall be dropped as outlined in 4.7.14.1 above. Contact assemblies shall meet the requirements of 3.16.2. This test may be conducted concurrently with 4.7.14.1.

#### 4.7.15 Vibration test.

4.7.15.1 Vibration test (mated connector) (see 3.17.1). Connector U-185( )/G, U-186( )/G or U-187( )/G (all including a contact assembly) shall be mounted securely to a plate on the vibration table. A second connector shall be mated to it. The mated connectors shall then be subjected to a simple harmonic motion having an amplitude of 0.03 inch (0.06 inch maximum total excursion). The frequency may be varied uniformly between the approximate limits of 10 and 55 hertz. The entire frequency range, from 10 to 55 hertz and return to 10 hertz shall be traversed in approximately 1 minute. The motion shall be applied for a period of 30 minutes in each of 3 mutually perpendicular directions (total of 90 minutes). The connectors shall meet the requirements of 3.17.1.

4.7.15.2 Vibration test (contact assembly (see 3.17.2). Each contact assembly MX-3227( )/G shall be mounted in connector housing and held in place by the mounting studs. One shall be secured to a plate on a vibration table and the other mated to it. The vibration motion, direction and duration shall be as in 4.7.15.1. The contact assemblies shall meet the requirements of 3.17.2. This test may be conducted concurrently with 4.7.15.1.

4.7.16 Temperature cycling (contact assembly and connector) (see 3.18). Connectors, mated and prepared in accordance with 4.7.2.4, shall be subjected to the temperature cycle shown on MIL-STD-169. Measurements shall be taken on steps 1, 5 and 10, and shall meet the requirements of 3.18.

4.7.17 Ninety degree bend test (connector UG-185( )/G) (see 3.19). Connectors U-185( )/G prepared in accordance with 4.7.2.4 shall be conditioned at  $-65^{\circ}\text{F} \pm 2^{\circ}$  for 24 hours. Within 5 minutes of being removed from the chamber the cable shall be bent in a  $180^{\circ}$  arc five times at the boot assembly. There shall be no deterioration of the equipment as required by 3.19.

4.7.18 Mating at high and low temperature extremes (connector) (see 3.20). Sample connectors, 1/2 mated and 1/2 unmated, shall be placed in a temperature chamber and conditioned at  $-65^{\circ}\text{F} \pm 2^{\circ}$  for 24 hours. Within 5 minutes of being removed from the chamber the connectors shall be mated and unmated to determine compliance with 3.20. The above shall be repeated at  $+150^{\circ}\text{F} \pm 2^{\circ}$ .

4.7.19 Moisture resistance test (connector) (see 3.21). Connectors prepared in accordance with 4.7.2.4, mated, unmated with protective cover in place and unmated without protective cover shall be subjected to 15 continuous 48-hour cycles per MIL-STD-170. Temperature, relative humidity, and period of time for each portion of the cycle shall conform to the standard. Insulation resistance measurements shall be made during the measurement periods shown on the standard. The connectors shall meet the requirements of 3.21.

4.7.20 High humidity and high temperature (connector) (see 3.22). Connectors prepared in accordance with 4.7.2.4, mated, unmated with protective cover in place and unmated without protective cover shall be placed in a chamber at  $86^{\circ}\text{F} \pm 5^{\circ}$  and a relative humidity of 92 to 98 percent. The temperature and humidity shall be maintained continuously for 5 days. While still at these conditions, the insulation resistance shall be measured on the last day and the equipment shall meet the requirements of 3.22.

## 5. PACKAGING

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

## 6. NOTES

6.1 Intended use. The connectors covered by this specification are intended for use in military communication systems using 26 pair cable, telephone WM-130( )/G.

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Title, number, and date of the applicable specification sheet, and the complete part number.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in the applicable qualified products list, whether or not such products have been so listed by that date. The attention of the contractors is called to this requirement and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification, in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the qualified products list is the U S Army Electronics Command, Department of the Army, Fort Monmouth, NJ 07703.

6.4 Nomenclature. The parentheses in the nomenclature will be deleted or replaced by a letter identifying the particular design; for example, U-185W/G. The contractor should apply for nomenclature in accordance with the applicable clause in the contract. (See 1.1.)

6.5 Hermaphroditic contact. A hermaphroditic contact is a contact that mates with another identical contact (excluding termination type).

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

Custodian:  
Army - EL

Preparing activity:  
Army - EL

Agent:  
DLA - ES

(project 5935-A054)