INCH-POUND

MIL-DTL-55074G
13 March 2013
SUPERSEDING
MIL-C-55074F(EL)
6 September 1977

DETAIL 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 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). The connectors intended use is in military communication systems using 26 pair cable, telephone WM-130( ) /G.

1.2 Classification and Part or Identifying Number(PIN).

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 General. The documents listed in this section are specified in section 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbook. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

Comments, suggestions, or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAI, P.O. Box 3990, Columbus, Ohio 43218-3990, or email to RFConnectors@dscc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

AMSC N/A FSC 5935

DEPARTMENT OF DEFENSE SPECIFICATIONS

A-A-59588 - Rubber, Silicone
MIL-DTL-55074/1 - Connector, Plug, Telephone, Electrical
MIL-DTL-55074/2 - Connector, Receptacle, Telephone, Electrical
MIL-DTL-55074/3 - Connector, Receptacle, Telephone, Electrical
MIL-DTL-55074/4 - Contact Assembly, Electrical
MIL-DTL-14072 - Finishes for Ground Electronic Equipment
MIL-DTL-45204 - Gold Plating, Electrodeposited
MIL-DTL-55330 - Connectors, Preparation For Delivery of

FEDERAL STANDARD

FED-STD-H28 - Screw-Thread Standard for Federal Services.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-202 - Electronic and Electrical Components
MIL-STD-810 - Environment Test Methods and Engineering Guidelines.
MIL-STD-889 - Dissimilar Metals.
MIL-STD-1285 - Marking of Electrical and Electronic Parts

(Copies of these documents are available online at https://assist.dla.mil/quicksearch/ or Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094).

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM B85/B85M - Aluminum-Alloy Die Castings
ASTM B196/B196M - Copper-Beryllium Alloy Bar, Rod, and Wire
ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM D5948 - Standard Specification for Molding Compounds, Thermosetting

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

SAE INTERNATIONAL

SAE AMS 2700 - Passivation of Corrosion Resistant Steels.
SAE AMS-QQ-S-763 - Steel, Corrosion Resistant, Bars, Wire, Shapes, and Forgings

(Copies of these documents are available online at http://www.sae.org or from the SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

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

3.2 First article. When specified (see 6.3), a sample shall be subjected to first article inspection in accordance with 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, 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 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3.2 Nonmagnetic materials. Nonmagnetic parts are not applicable.

3.3.3 Plastic, molded thermosetting. Unless otherwise specified (see 3.1), the body material shall be glass-filled diallyl phthalate in accordance with type SDGF of ASTM D5948.

3.3.4 Metals.

3.3.4.1 Copper alloys. Hermaphroditic contacts and contact terminations shall be beryllium copper as specified in ASTM B196/B196M.

3.3.4.2 Aluminum. Where applicable, aluminum shall be as specified in ASTM B209/B209M (Alloy 7075) or ASTM B85/B85M, painted or anodized to meet the requirements of MIL-DTL-14072 (see 3.1).

3.3.4.3 Corrosion resisting steel. Where applicable, corrosion resisting steel shall be 300 series, low magnetic permeability in accordance with SAE AMS-QQ-S-763 and passivated per SAE AMS 2700 or to finish E300 as specified in MIL-DTL-14072 (see 3.1).

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

3.3.5 Restricted materials.

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

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

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

3.3.6 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.

3.3.7 Cast and molded parts.

3.3.7.1 Casting. 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.

3.3.7.2 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.

3.3.7.3 Rubber and elastomeric material. Rubber and elastomeric material shall be in accordance with A-A-59588 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 FED-STD-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.

3.4.3 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.

3.4.3.1 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 MI-DTL-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 mega ohms. During the moisture resistance test (see 4.7.19) and the high humidity and high temperature test (see 4.7.18), the insulation resistance shall be not less than 10 mega ohms.

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 trauma 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). 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. VERIFICATION

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

a. Material inspection (see 4.3).
b. First article inspection (see 4.5).
c. Conformance inspection (see 4.6).

4.2 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.

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	ASTM D5948
Copper alloys	3.3.3.1	ASTM B196/B196M
Aluminum	3.3.3.2	ASTM B209/B209M, ASTM B85/B85M, MIL-DTL-14072
Corrosion resisting steel	3.3.3.3	SAE AMS-QQ-S-763, SAE AMS 2700
Contact plating	3.3.3.4	MIL-DTL-45204
Dissimilar metals	3.3.5	MIL-STD-889
Rubber and elastomeric material	3.3.6.3	A-A-59588

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 First article inspection. First article inspection shall be performed by the contractor, after award of the contract and prior to production, at a location acceptable to the Government. First article inspection shall

be performed on sample units which have been produced with equipment and procedures normally used in production. First article approval is valid only on the contract under which it is granted unless extended by the Government to other contracts (see 6.3).

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 first article approval.

TABLE II. First article inspection.

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

See note at end of table.

TABLE II. First article inspection – Continued.

Connector type 1/														
U-185	U-185	U-185	U-186	U-185	U-187	U-185	U-187	U-185	U-187	U-185	U-186	U-186	U-187	U-185
M	M	M	M	M	M	M	M	M	M	M	M	U	U	U
M	M	M	M	M	M	M	M	M	M	M	M	U	U	U
M	M	M	M	M	M	M	M	M	M	M	M	U	U	U
M	M	M	M	M	M	M	M	M	M	M	M	U	U	U
M	M	M	M	M	M	M	M	M	M	M	M	U	U	U
M	M	M	M	M	M	M	M	M	M	M	M	U	U	U
M	M	M	M	M	M	M	M	M	M	M	M	U	U	U
M	M	M	M	M	M	M	M							
M	M	M	M	M	M	M	M							
C	C	C			C									
U	U													
M	M	M	M	M	M	M	M							
								M	M	M	M	U/C	U	U
								M	M	M	M	U	U	U
								M	M	M	M	C	U	U
								M	M	M	M			
								M	M	M	M			
								U	U					U
								M	M	M	M			
								M	M	M	M	U/C	U	U

1/ For test purposes, connector mates with test fixture.
Code: M = Connector mated, U = Connector unmated, C = Connector assembly only

4.5.4 Disposition of first article sample units. Sample units which have been subjected to first article testing shall not be delivered on any contract or purchase order. The Government reserves the right to retain the sample units or to require the supplier to furnish the sample units with the first article test report.

4.6 Conformance 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
Continuity (contact assembly)	3.5	4.7.3
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
Air leakage (contact assembly and connector)	3.9	4.7.7

4.6.1.2.1 Group A sampling plan. Statistical sampling and inspection shall be performed on an inspection lot basis with a random sample of components selected in accordance with table IV. The acceptance levels shall be based upon the zero defective sampling plan. No failures shall be permitted.

TABLE IV. Group A sampling plan.

Lot size	Sample size
1 - 13	100 percent
14 - 150	13
151-280	20
281-500	29
501-1,200	34
1201-3200	42
3201-10000	50

4.6.1.2.2 Group A 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. 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 V, in the order shown, and the sample shall be selected from inspection lots that have passed group A inspection.

TABLE V. Group B inspection.

Inspection	Requirement paragraph	Test method paragraph
Immersion (contact assembly and connector)	3.10	4.7.8
Interchangeability (contact assembly and connector)	3.11	4.7.9

4.6.1.3.1 Group B Sampling plan. Statistical sampling and inspection shall be performed on an inspection lot basis with a random sample of components selected in accordance with table VI. Acceptance shall be based upon the zero defective sampling plan. No failures shall be permitted.

TABLE VI. Group B sampling plan.

Lot size	Sample size
2-25	1
26-150	2
151-10000	4

4.6.1.3.2 Group B 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. 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 VII, in the order shown. Group C inspection shall be made on sample units selected from inspection lots which have passed the groups A and B inspections.

TABLE VII. Group C inspection.

Inspection	Requirement paragraph	Test method paragraph	Number sample units for inspection 1/
Durability (contact assembly and connector)	3.12	4.7.10	2
Mating of covers (cover)	3.12	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 VI 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 reinstituted; 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 VIII, 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 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 VIII. Group D inspection. 1/

Inspection	Requirement paragraph	Test method paragraph	Connector Type					
			U-185	U-185	U-185	U-187	U-185	U-186
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				
Durability (contact assembly and connector)	3.12	4.7.10	M	M				
Mating of covers (cover)	3.13	4.7.11	C	C				
Pull (connector)	3.15	4.7.13	U	U				
Contact resistance (contact assembly)	3.8	4.7.6	M	M				
Shock drop	3.16	4.7.14			M	M		U
Visual and mechanical inspection	3.1, 3.3,3.4 thru 3.4.4, 3.23 & 3.24	4.7.1			M	M		U
High humidity and high temperature (connector)	3.22	4.7.20			M	M	M	M
Vibration	3.17	4.7.15			M	M	M	M
Temperature cycling (contact assembly and connector)	3.18	4.7.16			M	M	M	M
Ninety degree bend(connector U-185()/G)	3.19	4.7.17			U		U	
Mating at high and low temperature extremes (connector)	3.20	4.7.18			M	M	M	M
Moisture resistance (connector)	3.21	4.7.19			M	M	U	U/C

1/ 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 £hall 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 reinstituted; 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-DTL-55330.

4.7 Method of examination and test.

4.7.1 Visual and mechanical. The sample shall be examined to verify that the design, construction, physical characteristics and dimensions, marking, and workmanship are in accordance with the applicable requirements. (See 3.1, 3.3, 3.4 to 3.4.4, 3.16, 3.23 and 3.24).

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 GL-SC-B-323236. Automatic equipment other than that referenced on GL-SC-B-323236 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 Pre-conditioning. 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.

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.

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.

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 400 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 400 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-DTL-55074/1 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 following temperature cycle consisting of 5 steps. The rate of temperature change between steps shall be as rapid as possible and is to be accomplished by moving the connectors within 5 minutes from one environmental chamber, which is at the temperature and humidity conditions of any given step to another environmental chamber, which is at the temperature and humidity conditions of the next step. Measurements shall be taken on steps 1, 3, and 5 and shall meet the requirements of 3.18. When measurements are taken on steps 1, 3, and 5, practical thermal equilibrium shall first be attained. Practical thermal equilibrium is attained when the temperature of any selected surface of the equipment changes less than I°F during a 1/2 hour period while the ambient temperature is steady at specified temperature.

Step 1: Temperature 77°F ±3°F, relative humidity less than 75%; minimum exposure is the time necessary to reach practical thermal equilibrium. Measurements shall be taken.

Step 2: Temperature 163°F ±3°F, humidity is uncontrolled; minimum exposure is 24 hours or to practical thermal equilibrium, whichever occurs first. No measurements shall be taken.

Step 3: Same as step 1. Measurements shall be taken.

Step 4: Temperature -83°F ±3°F, humidity is uncontrolled; minimum exposure is 24 hours or to practical thermal equilibrium, whichever occurs first. No measurements shall be taken.

Step 5: Same as step 1. Measurements shall be taken.

4.7.17 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°F ±2° 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°F ±2°.

4.7.18 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 tested in accordance with method 507, procedure III of MIL-STD-810 for 30 continuous 24-hour cycles. Insulation resistance measurements shall be made at the required test steps. For step 7, insulation resistance measurements shall be made near the end of every fifth cycle while still at 30°C (86°F) and 95% relative humidity. The equipment shall meet the requirements of 3.21.

4.7.19 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°F ±5° 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. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service’s system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

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 Acquisition requirements. Acquisition 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 PIN.
c. When first article is required (see 3.1).

6.3 First article. Invitations for bids should provide that the Government (DLA Land and Maritime, Attn: VQ, P.O. Box 3990, Columbus, OH 43218-3990; vqe.chief@dla.mil) reserves the right to waive the requirement for first article samples to those bidders offering products which have been previously acquired or tested by the Government. The bidders offering such products, who wish to rely on such production or tests, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending acquisition.

6.4 Nomenclature. The empty 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 Subject term (key word) listing.

Interconnections
Hermaphroditic

6.7 Changes from previous issue. Marginal notations are not used in this standard to identify changes with respect to the previous issue due to the extent of the changes.

CONCLUDING MATERIAL

Custodians:
Army – CR
DLA - CC

Preparing activity:
DLA-CC

(Project: 5935-2011-117)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.