

INCH - POUND

MIL-C-26500E(USAF)  
AMENDMENT 6  
10 March 2000  

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SUPERSEDING  
AMENDMENT 5  
31 January 1994

## MILITARY SPECIFICATION

### CONNECTORS, GENERAL PURPOSE, ELECTRICAL, MINIATURE, CIRCULAR, ENVIRONMENT RESISTING, GENERAL SPECIFICATION FOR

\* This amendment forms a part of MIL-C-26500E(USAF), dated 12 March 1973, and is approved for use by all Departments and Agencies of the Department of Defense.

#### PAGE 1

1.2, delete the first paragraph and substitute the following:

"1.2 Physical characteristics. The physical characteristics for connectors include a series of plugs and receptacles in which both the socket contact inserts and the mating pin contact inserts have resilient faces. The available forms are as shown below:"

2.1, delete in its entirety and substitute the following:

"2.1 Government documents.

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

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SPECIFICATIONS

FEDERAL

QQ-A-200/8	-	Aluminum Alloy Bar, Rod, Shapes, Tube and Wire, Extruded, and Structural, Shapes, 6061.
QQ-A-225/10	-	Aluminum Alloy Bar, Rod, and Wire; Rolled, Drawn, or Cold Finished, 6262.
QQ-A-367	-	Aluminum Alloy Forgings.
QQ-P-35	-	Passivation Treatments for Austenitic, Ferritic, and Martensitic Corrosion Resisting Steel (fasting devices).
QQ-S-763	-	Steel Bars, Shapes, and Forgings, Corrosion Resisting.
L-P-378	-	Plastic Sheet and Strip (Polyolefin).
PPP-B-566	-	Boxes, Folding, Paperboard.
PPP-B-585	-	Boxes, Wood, Wirebound.
PPP-B-591	-	Boxes, Shipping, Fiberboard, Wood-cleated
PPP-B-601	-	Boxes, Wood, Cleated-Plywood.
PPP-B-621	-	Boxes, Wood, Nailed and Lock-corner.
PPP-B-636	-	Boxes, Shipping, Fiberboard.
PPP-B-676	-	Boxes, Setup.

MILITARY

MIL-M-14	-	Molding Plastics and Molded Plastic Parts, Thermosetting.
MIL-P-116	-	Preservation, Methods of.
MIL-H-5606	-	Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance.
MIL-T-5624	-	Turbine Fuel, Aviation Grades JP-4 and JP-5.
MIL-S-7742	-	Screw Threads, Standard, Optimum Selected Series; General Specification for.
MIL-L-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-A-8625	-	Anodic Coatings, for Aluminum and Aluminum Alloys.
MIL-W-8777	-	Wire, Electrical, Silicone-Insulated, Copper, 600-volt, 200• C.
MIL-L-10547	-	Liners, Case, and Sheet, Overwrap, Water-Vaporproof or Waterproof, Flexible.
MIL-W-16878	-	Wire, Electrical, Insulated, High Temperature.
MIL-W-22759	-	Wire, Electrical, Fluorocarbon-Insulated-Copper or Copper Alloy.
MIL-L-23699	-	Lubricating Oil, Aircraft Turbine Engines, Synthetic Base.
MIL-W-25038	-	Wire, Electrical, High Temperature and Fire Resistant, Aircraft.
MIL-L-27502	-	Lubricating Oil, Aircraft Turbine Engine, Ester Base.
MIL-C-39029	-	Contacts, Electrical Connector, General Specification for.
MIL-C-39029/31	-	Contacts, Electrical Connector, Pin, Crimp Removable.
MIL-C-39029/32	-	Contacts, Electrical Connector, Socket, Crimp Removable.
MIL-C-39029/54	-	Contacts, Electrical Connector, Pin, Crimp Removable, Shielded.
MIL-C-39029/55	-	Contacts, Electrical Connector, Socket, Crimp Removable, Shielded.
MIL-L-46010	-	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting.
MIL-C-55330	-	Connectors, Electrical and Fiber Optic, Packaging of.
MIL-M-83521/6	-	Maintenance Kit, Electrical Connectors, Contacts, and Connector and Cable Accessories: Maintenance Kit for General Purpose Use.
MIL-C-83723/59	-	Connectors, Electrical, (Circular, Environment Resisting), Protective Covers, Plug.
MIL-C-83723/60	-	Connectors, Electrical, (Circular, Environment Resisting), Protective Covers, Electrical, Connector, Receptacles.

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MIL-C-83723/61 - Connectors, Electrical, (Circular, Environment Resisting), Dummy Connector, Receptacles.

STANDARDS

FEDERAL

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

MILITARY

MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-202	-	Test Methods for Electronic and Electrical Component Parts.
MIL-STD-454	-	Standard General Requirements for Electronic Equipment.
MIL-STD-1344	-	Test Methods for Electrical Connectors.
MIL-STD-1554	-	Insert Arrangements for MIL-C-83723 Series III and MIL-C-26500 Environment Resisting, Circular, Electrical Connectors.
MIL-STD-45662	-	Calibration Systems Requirements.
MS25471	-	Wire, Electrical-Silicone-Insulated, Copper, 600 Volt, 200• C Polyester Jacket.
MS27034	-	Connector, Receptacle, Electrical, Pin Insert, Cylindrical, Miniature, Hermetic, Solder Mount.
MS27186	-	Plug, End Seal, Electrical Connector Size 16, 20, and 50 Ohm Coaxial.
MS27291	-	Support, Cable, Electrical Connector.
MS27488	-	Plug, End Seal, Electrical Connector.
MS27558	-	Support, Cable, Right Angle. Closed.
MS27559	-	Support, Cable, Right Angle.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)"

PAGE 3

2.2, delete in its entirety and substitute the following:

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A342 - Standard Test Methods for Permeability of Feebly Magnetic Materials.

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

3.3.1, line 2: Delete "MIL-S-8625" and substitute "MIL-A-8625".

3.3.3, delete in its entirety.

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3.4.1.1.2, line 2: Delete "on the applicable military standard" and substitute " in MIL-STD-1554."

3.4.1.1.7, line 1, following MIL-S-7742 add: "and FED-STD-H28 as applicable"

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3.4.1.1.8, delete "MIL-L-8937" and substitute "MIL-L-46010".

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3.4.2, delete "MS24254", "MS27185", "MS27184", and "MS24255" and substitute "MIL-C-39209/31", "MIL-C-39209/55", "MIL-C-39209/54", and "MIL-C-39209/32" respectively.

TABLE II, delete and substitute the following:

"TABLE II. Sealing plug part numbers."

Contact size	Superseding part Number	Superseded part number
20	MS27488-20	MS27186-1
16	MS27488-16	MS27187-1
12	MS27488-12	MS27187-2
22 (Shielded)	MS27488-4	MS27187-4

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3.4.6, delete "MS27426" and substitute "MIL-M-83521/6".

3.4.7b, delete in its entirety.

3.4.7c, delete in its entirety.

3.4.7f, delete "MS27296 or MS27297" and substitute "MIL-C-83723/61".

3.4.7g, delete "MS27292, MS27293, MS27294, or MS27295" and substitute "MIL-C-83723/59 or MIL-C-83723/60".

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3.5.2, line 2: Delete "the applicable military standards" and substitute "MIL-STD-1554."

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3.22 and 3.22.1, delete and substitute the following:

"3.22 Air leakage (class H receptacles). When tested in accordance with 4.7.18, and subjected to a pressure differential of 15 lb<sub>f</sub>/in<sup>2</sup> across the receptacle, the receptacle shall not exhibit an air leakage rate that will produce a pressure change of more than 0.01 micron of mercury per cubic foot per hour (1 x 10<sup>-7</sup> standard cm<sup>3</sup>/s at 1 atmosphere). The specific leakage rate shall apply through the connector only and not through the brazed or welded joint between the connector and the mounting flange."

3.26, first sentence, delete "the table I of MIL-C-26636" and substitute "accordance with MIL-C-39029". Also, last sentence, delete "of table I of MIL-C-26636" and substitute "in accordance with MIL-C-39029".

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3.27, following second sentence, add:

"Inserts and grommets shall be free from blowholes, burrs, flash, cracks, tears, swelling and shrinkage, and any other defect that would be detrimental to the performance of the connector."

4.1, lines 2 and 3: Delete the word "supplier" and substitute "contractors."

4.1.1, delete and substitute the following:

"4.1.1 Responsibility for compliance. All items must meet all requirements of section 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the government to acceptance of defective material.

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

After 4.1.2, add:

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

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4.4.2.1.4(b), delete and substitute the following:

"(b) The samples shall be divided equally into four groups and subjected to the tests specified in groups I, II, III, and VI of table VI in the sequence specified."

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TABLE VI: Delete in its entirety and substitute the following:

TABLE VI. Qualification inspection.

Inspection	Requirement paragraph	Test method paragraph	Test group					
			I	II	III	IV	V	VI
Visual and mechanical examination	3.1, 3.4, 3.5 and 3.27	4.7.1	X	X	X	X	X	X
Torque to couple and uncouple	3.6	4.7.2	X	X	X	X	X	
Ground resistance (class G)	3.7	4.7.3	X					
Maintenance aging	3.8	4.7.4	X					
Contract insertion and removal forces, except class H	3.9	4.7.5	X		X			
Durability	3.10	4.7.6	X				X	
Thermal shock	3.11	4.7.7	X				X	
Dielectric withstanding voltage (unmated)	3.12	4.7.8	X	X	X	X	X	
Vibration	3.13	4.7.9	X				X	
Shock (specified pulse)	3.14	4.7.10	X				X	
Ozone exposure (unmated)	3.15	4.7.11	X					
Moisture resistance	3.16	4.7.12	X				X	
Insulation resistance	3.17	4.7.13					X	
Salt spray (corrosion)	3.18	4.7.14	X				X	
Magnetic permeability, except class H	3.19	4.7.15		X				
Temperature life	3.20	4.7.16		X		X		
Insulation resistance (hi temp)	3.17.1	4.7.13.2		X		X		
Insulation resistance	3.17	4.7.13	X					
Insert retention	3.21	4.7.17	X					
Insert retention (class H)	3.21.1	4.7.17.1					X	
Dielectric withstanding voltage (unmated)	3.12	4.7.8	X	X		X	X	
Air leakage (class H)	3.22	4.7.18					X	
Contact retention	3.23	4.7.19	X				X	
Altitude immersion	3.24	4.7.20	X				X	
Fluid immersion (classes E, G, K, and R)	3.25	4.7.21			X			
Fluid immersion (class F)	3.25.1	4.7.21.1			X			
Torque to couple and uncouple	3.6	4.7.2	X	X	X		X	
Insulation resistance	3.17	4.7.13		X	X	X	X	
Dielectric withstanding voltage, altitude	3.12.1	4.7.8.2						
Mated				X	X	X		
Unmated			X	X		X	X	
Contact insertion and removal forces, except class H	3.9	4.7.5			X			
Fireproof (class K)	See	See						X
Insulation resistance (class K)	applicable	applicable						X
Dielectric withstanding voltage (mated)(class K)	military standards	military standard						X
Contact retention, fireproof (class K)								X
Contact resistance	3.26	4.7.22		X		X	X	
Visual and mechanical examination	3.1, 3.4, 3.5, and 3.27	4.7.1	X	X	X	X	X	X

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TABLE VII, delete in its entirety and substitute the following:

TABLE VII. Group B inspection.

Inspection	Requirement paragraph	Test method paragraph	AQL
Visual and mechanical examination	3.1, 3.4, 3.5, and 3.27	4.7.1	1
Contact retention	3.23	4.7.19	1
Dielectric withstanding voltage	3.12	4.7.8.1	1
Insulation resistance	3.17	4.7.13.1	1
Visual and mechanical examination	3.1, 3.4, 3.5, and 3.27	4.7.1	1

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TABLE VIII, delete and substitute the following:

TABLE VIII. Group C inspection.

Inspection	Requirement paragraph	Test method paragraph	Test group						
			I	II	III	IV	V	VI	VII
Maintenance aging	3.8	4.7.4	X	X	X	X	X	X	
Durability	3.10	4.7.6	X		X		X		
Thermal shock	3.11	4.7.7	X		X		X		
Vibration	3.13	4.7.9	X		X		X		
Shock, specified pulse	3.14	4.7.10	X		X		X		
Moisture resistance	3.16	4.7.12	X		X		X		
Insulation resistance	3.17	4.7.13	X		X		X		
Insulation resistance (hi temp)	3.17.1	4.7.13.2		X		X		X	
Insert retention	3.21	4.7.17	X		X		X		
Altitude immersion	3.24	4.7.20	X		X		X		
Fluid immersion (class F)	3.25.1	4.7.21.1	X						
Torque to couple and uncouple	3.6	4.7.2	X	X	X	X	X	X	
Fireproof	See	See	X						X
Insulation resistance (fireproof)	applicable	applicable							X
Contact retention (fireproof)	military standard	military standard							X
Visual and mechanical examination	3.1, 3.4, 3.5, and 3.27	4.7.1	X	X	X	X	X	X	X

4.6.2, delete and substitute the following:

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

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4.7.7, delete and substitute the following:

"4.7.7 Thermal shock (see 3.11). Mated connectors shall be subjected to the thermal shock of MIL-STD-202, method 107, test condition C, except steps 2 and 4 shall be 2 minutes maximum duration. The temperatures of step 3 shall be +200°C +5°C, -0°C (392°F)."

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4.7.15, delete "MIL-I-17214" and substitute "ASTM A342".

PAGE 22

4.7.18 and 4.7.18.1, delete and substitute the following:

"4.7.18 Air leakage, class H (see 3.22). Receptacles shall be mounted in a test apparatus arranged to permit application of 15lb<sub>f</sub>/in<sup>2</sup> pressure differential across the connector. Prior to test, at least 10 percent with a minimum of three of the contacts shall have short wires soldered into normal service positions. The leakage rate shall be determined while 15lb<sub>f</sub>/in<sup>2</sup> pressurized air or gas, containing not less than 10 percent helium by volume, is applied to the connector."

PAGE 23

4.7.21(b), delete "MIL-L-27502" and substitute "MIL-L-23699".

4.7.21.1, line 1: Delete "group IV" and substitute "group III".

4.7.22, delete "table I of MIL-C-26636" and substitute "MIL-C-39029".

5. and 5.1, delete and substitute the following:

"5. PACKAGING

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

6.3, delete and substitute the following:

\* "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 (QPL) whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have 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 qualifications of these connectors and the Qualified Product List (QPL), is the Defense Supply Center Columbus, Attn: DSCC-VQ, 3990 East Broad Street, Columbus, Ohio 43213-1199."



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The margins of this amendment are marked with an asterisk to indicate where changes from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

CONCLUDING MATERIAL

Custodians:  
Air Force - 11  
DLA - CC

Preparing activity:  
DLA - CC

Review activity:  
Air Force - 99

(Project 5935-4273)