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AEROSPACE RECOMMENDED PRACTICE

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ARP 1350

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PROCEDURE FOR INSTALLATION AND MOUNTING OF SINGLEHOLE MOUNT, CYLINDRICAL, ELECTRICAL CONNECTORS

1. PURPOSE

This Aerospace Recommended Practice (ARP) establishes standard methods for installing and mounting singlehole mount, cylindrical, sealed-type electrical connectors (see 6.1).

2. SCOPE

This ARP specifies the methods, equipment, and materials to be used in the installation, mounting, and testing of receptacle connectors used in pressure differential applications requiring an effective connector seal.

3. APPLICABLE DOCUMENTS

The following documents shall form a part of this ARP to the extent specified herein. The applicable issue of each shall be that in effect on the date of this document unless otherwise specified in the manufacturer's detail specifications. Supplementary specifications, standards, or the like, which by reference in any of the following publications are indicated to be part thereof, shall not be considered effective except as specifically stated in the manufacturer's detail specifications or as may be otherwise mutually agreed upon between the vendor and the purchaser.

3.1 Military Specifications:

MIL-C-5015	Connectors, Electric, AN Type, General Specification For
MIL-C-26482	Connectors, Electric, Circular, Miniature, Circular, Environment Resisting
MIL-C-38999	Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect, Environment Resisting, Removable Crimp Contacts
MIL-C-81511	Connectors, Electrical, Circular, High Density, Quick Disconnect, Environmental Resistant, Specification for
MIL-C-83723	Connector, Electric, Circular, Environment Resisting, General Specification for

3.2 Military Standards:

MIL-STD-1344	Test Methods for Electrical Connectors
MS20995	Wire, Safety or Lock
MS33540	Safety Wiring, General Practices for
MS33586	Metals, Definition of Dissimilar

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4. GENERAL DESIGN REQUIREMENTS

- 4.1 Applicable Connectors: Connectors affected by this document shall be of the applicable configurations in accordance with MIL-C-5015, MIL-C-26482, MIL-C-38999, MIL-C-81511, and MIL-C-83723.
- 4.2 Dissimilar Metals: Unless protected against electrolytic corrosion, dissimilar metals shall not be employed in intimate contact with each other when mounting connectors. Dissimilar metals are defined in MS33586.
- 4.3 Finishes: The general finish of the box or panel shall be specified by the designer. The finish requirement is usually determined by the application. The actual connector mounting surface roughness shall be as specified herein.
- 4.4 Spacing and Layout: The spacing and layout of connectors on boxes and panels shall be specified by the designer. The designer should provide adequate spacing to allow for actuation of the coupling device. The normal spacing between coupling rings is 0.750 in. (19 mm), minimum.
- 4.5 Spotfacing: Connector mounting areas on boxes, panels, etc., shall be spotfaced when specified by the designer to insure the required level of sealing to reduce wall thicknesses and to ensure flat mounting surfaces for proper torquing and sealing requirements of the receptacle. The spotface finish shall be as specified herein for each applicable connector. Metal mounting surfaces that meet the specified requirements need not be spotfaced.
- 4.5.1 Spotface Diameter: The maximum diameter of the spotface area shall be left to the discretion of the designer. The minimum diameter of the spotface area, as specified herein, for mounting of connectors has been considered to facilitate a leak testing adapter as specified in MIL-STD-1344, Method (TBD).

5. PROCEDURES

5.1 Design, Installation, and Mounting:

- 5.1.1 Clearance Mounting Holes: Mounting hole ("D" shape) dimensions shall be determined from the applicable connector drawing. The holes must be spaced to provide adequate room for connector coupling.
- 5.1.2 Spotfacing: Inner and outer connector mounting surfaces shall be parallel and of a surface finish sufficient to insure proper seating of connectors. When spotfacing is required, the surface area which bears against the connector O-ring shall be of a 63 finish or better and the spotfaced diameter shall be at least 0.010 in. (0.25 mm) greater in diameter than the maximum connector flange dimension. Spotfacing tool marks shall be concentric or spiral about the mounting hole.
- 5.1.3 Panel Thickness: The box or panel thickness of the mounting surface shall be determined from the applicable connector drawing.
- 5.1.4 Lubrication: The use of lubricants to improve O-ring sealing is premissible. The designer shall specify the lubricant that is compatible for the specific application.
- 5.1.5 Torquing: Connector jam nuts shall be torqued to the values specified in Table I.

TABLE I

Thread Size	Torque Value				Thread Size	Torque Value			
	Minimum		Maximum			Minimum		Maximum	
	Inch-lb	(N·m)	Inch-lb	(N·m)		Inch-lb	(N·m)	Inch-lb	(N·m)
.5000	20	(2.26)	26	(2.94)	1.5000	100	(11.30)	110	(12.43)
.5625	26	(2.94)	32	(3.62)	1.6250	110	(12.43)	120	(13.56)
.6250	26	(2.94)	32	(3.62)	1.7500	120	(13.56)	130	(14.69)
.6875	30	(3.39)	36	(4.07)	1.8750	140	(15.82)	150	(16.95)
.7500	34	(3.84)	40	(4.52)	2.0000	150	(16.95)	160	(18.08)
.8125	40	(4.52)	46	(5.20)	2.0625	160	(18.08)	170	(19.21)
.8750	46	(5.20)	50	(5.65)	2.1250	170	(19.21)	180	(20.34)
.9375	50	(5.65)	55	(6.22)	2.2500	170	(19.21)	180	(20.34)
1.0000	55	(6.22)	60	(6.78)	2.3125	180	(20.34)	190	(21.47)
1.0625	60	(6.78)	65	(7.34)	2.3750	190	(21.47)	200	(22.60)
1.1250	70	(7.91)	75	(8.48)	2.5000	200	(22.60)	210	(23.73)
1.1875	75	(8.48)	80	(9.04)	2.6250	210	(23.73)	220	(24.86)
1.2500	80	(9.04)	85	(9.60)	2.7500	220	(24.86)	230	(25.99)
1.3125	85	(9.60)	90	(10.17)	2.8750	230	(25.99)	240	(27.12)
1.3750	90	(10.17)	95	(10.73)	3.0000	240	(27.12)	250	(28.25)
1.4375	100	(11.30)	110	(12.43)					

5.1.6 Jam Nut Safety Wiring: The requirement for safety wiring of connector jam nuts shall be determined by the designer. Where safety wiring is required the jam nuts shall be safety wired with MS20995 wire. The material-type and size of the wire selected shall be as required for the specific application. (NOTE: The use of corrosion resistant steel, 0.020 in. (0.51 mm) diameter wire is preferred.) Unless otherwise specified, safety wiring procedures shall be in accordance with the following:

- (a) The double twist method of safety wiring as illustrated in Fig. 1 shall be used as the common method of safety wiring.
- (b) For closely spaced connectors (less than 4 in. (101 mm)), the number of units that can be safety wired by a 24 in. (610 mm) length of wire shall be the maximum number in a series.
- (c) For widely spaced connectors (4 to 6 in. (101 to 152 mm)), 3 units shall be the maximum number safety wired in series.
- (d) For connectors spaced more than 6 in. (152 mm) apart, safety wire tie points shall be provided to shorten the span of lockwire to less than 6 in. (152 mm) (See Fig. 1c and 1d).
- (e) Connectors shall be safety wired in such a manner that the safety wire shall be put in tension when jam-nuts tend to loosen.
- (f) The safety wire should always be installed and twisted so that the loop around the head stays down and does not tend to come up over the bolt head and leave a slack loop.
- (g) A pigtail of 0.250 to 0.500 in. (6.35 to 12.7 mm) (3 to 6 twists) shall be made at the end of the wiring and bent back and under.
- (h) Individual connectors may be safety wired to a bolt, nut, or other part having a free safety hole. Safety wire holes may be drilled or screws added to facilitate safety wiring (see Fig. 1c and 1d).