

METRIC

MIL-C-83527A
AMENDMENT 1
8 June 1992

MILITARY SPECIFICATION

CONNECTORS, PLUG AND RECEPTACLE, ELECTRICAL,
RECTANGULAR MULTIPLE INSERT TYPE, RACK TO PANEL,
ENVIRONMENT RESISTING, 150°C TOTAL CONTINUOUS
OPERATING TEMPERATURE,
GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-C-83527A, dated 28 December 1988,
and is approved for use by all Departments and Agencies of the
Department of Defense

PAGE 1

Following 2.1.1, add

"2.1.2 Other publications The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids of request for proposal shall apply

ELECTRONIC INDUSTRIES ASSOCIATION (EIA)

EIA 557- EIA STANDARD Implementation of Statistical Process Control (SPC) in Manufacturing Process

(Application for copies should be addressed to the Electronic Industries Association, 2001 Eye Street,
N W , Washington DC 20006)"

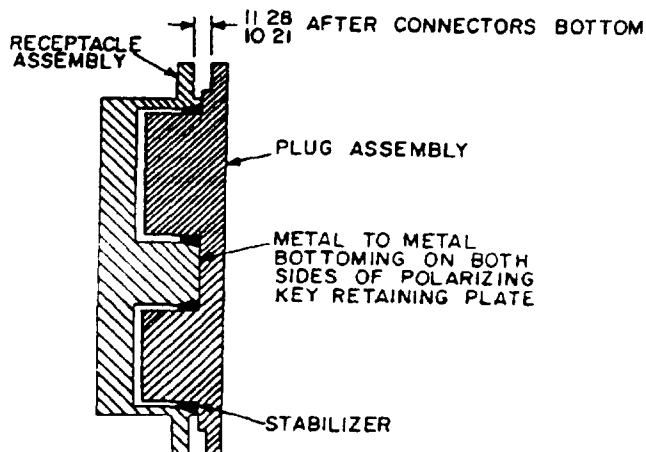
PAGE 3

Following 3.2.1, add

"3.2.1.1 Statistical process control (SPC) The contractor shall implement and use statistical process control techniques in the manufacturing process for parts covered by this specification. The SPC program shall be developed and maintained in accordance with EIA - 557. The SPC program shall be documented and maintained as part of the overall reliability assurance program as specified in MIL-STD-790 "

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FIGURE 1, delete and substitute



NOTES

- 1 Dimensions are in millimeters
- 2 Inch equivalents are given for general information only

AMSC N/A

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FSC 5935

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FIGURE 4, delete and substitute the following

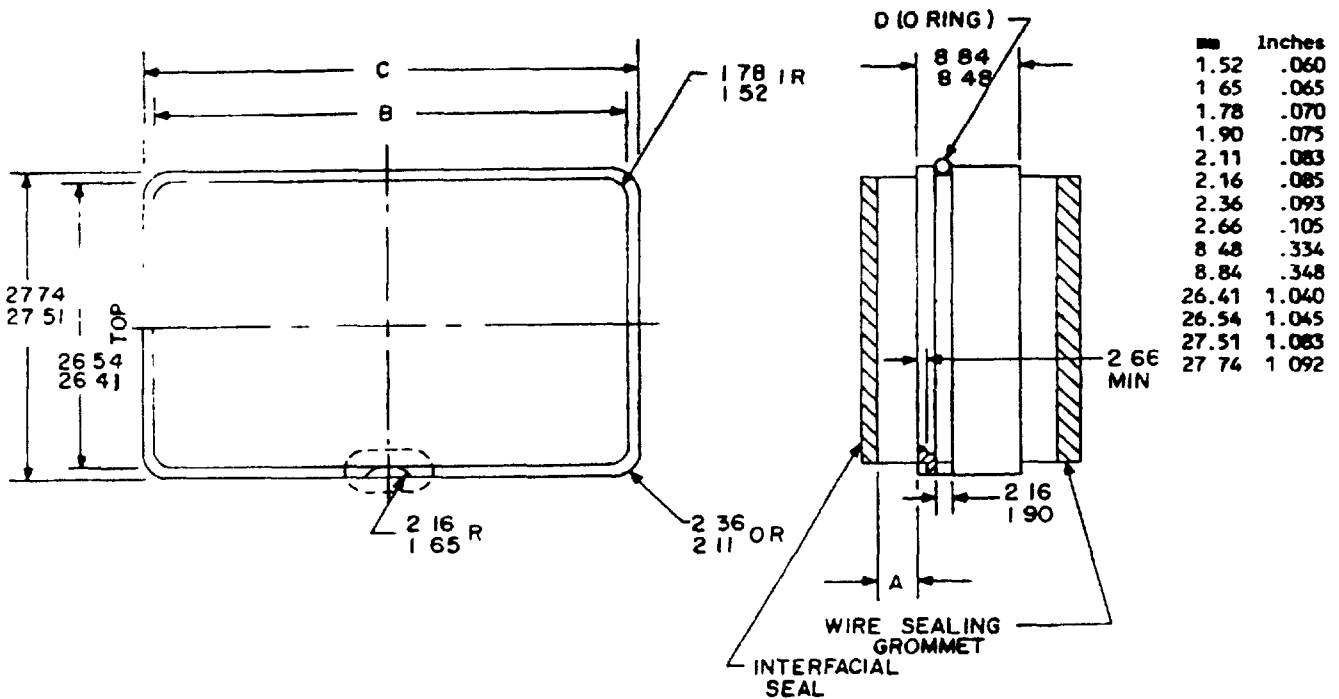


FIGURE 4 Insert interface dimensions for arrangements without size 22 contact cavities (metallic insert only)

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3.4.3, last line, delete "figures 2 and 3" and substitute "figures 2, 3, and 4."

3.4.3.4, last line, add " When retaining screws are used a minimum torque of 226 Nm is required "

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TABLE 1, delete and substitute the following

TABLE I Contact size and wire range accommodate

Wire barrel	Range of outside diameter of finished wire in mm (inches)	Wire gauge range contact required to crimp
22	0.76 to 1.32 (.030) (.052)	AWG 22, 24, 26 <u>1/</u>
20	0.89 to 1.52 (.035) (.060)	AWG 20, 22, 24 <u>1/</u>
16	1.21 to 2.03 (.048) (.080)	AWG 16, 18, 20
12	2.31 to 2.90 (.091) (.114)	AWG 12, 14
1 coax (cavity size)	10.62 to 10.97 (.418) (.432)	M17/75-RG214
5 coax	4.85 to 5.49 (.191) (.216)	M17/28-RG58 M17/84-RG223
8 concentric twinax <u>2/</u> (cavity size)	5.71 to 6.86 (.225) (.270)	M17/176-0002

1/ AWG 24 and 26 shall not be used for airframe wiring2/ Wire sealing for size 8 concentric twinax shall be accomplished through an intermediate member

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3 4 5 2b, delete "10.16 millimeters and a maximum of 11.27 millimeters" and substitute "10.21 millimeters and a maximum of 11.28 millimeters"

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FIGURE 9, delete and substitute the following:

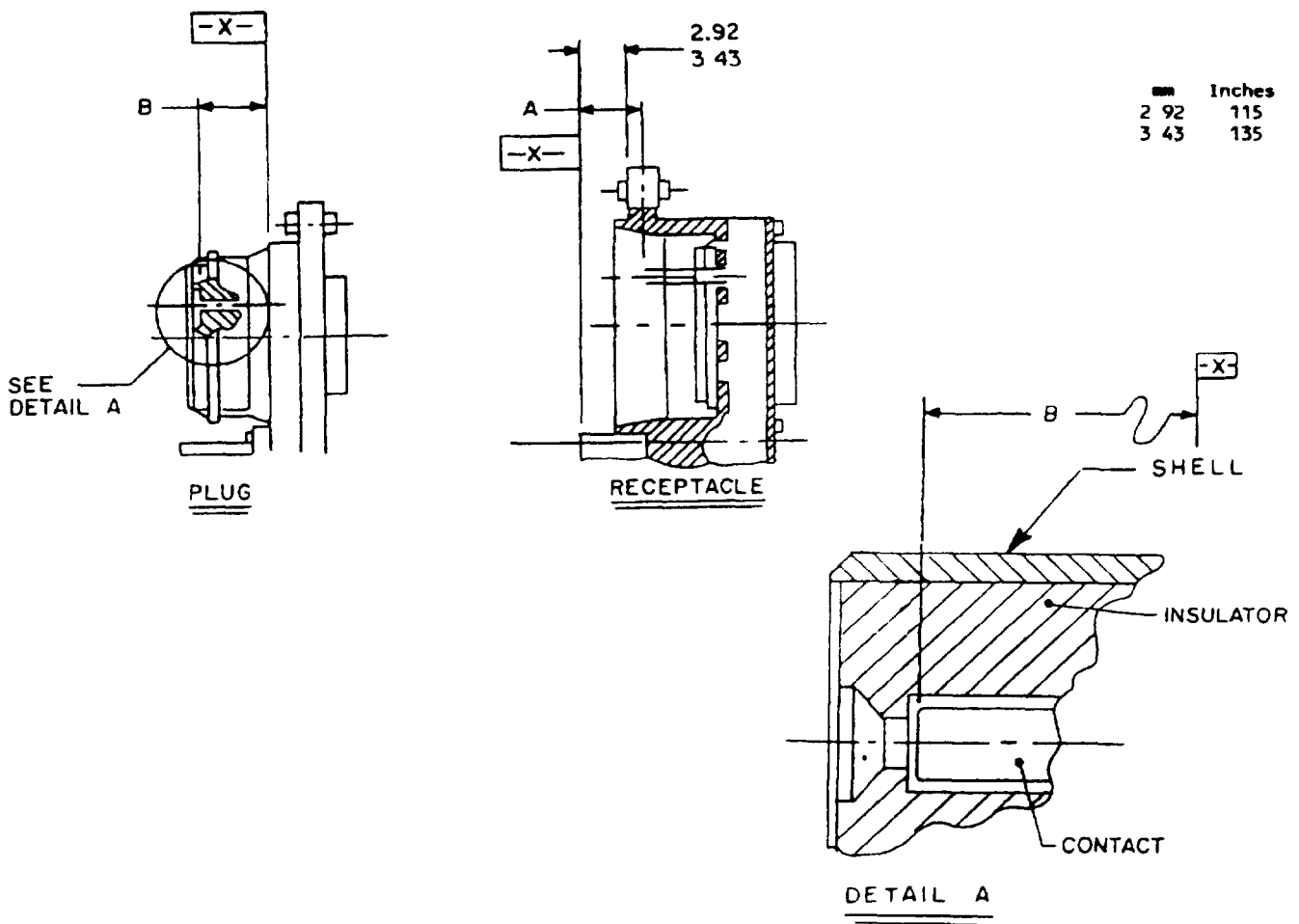


FIGURE 9 Contact location

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FIGURE 9, delete and substitute the following

Contact		A		B	
Size	Type	mm	Inches	mm	Inches
22	Pin	----	----	17 196	0.667
	Socket	11 18 10 57	0 440 0 416	16 33 ----	0.643 ----
20	Pin	12 19	0 480	----	----
	Socket	11 125 ----	0 438 ----	18 82 17 55	0 741 0 691
16	Pin	10 34	0 407	----	----
	Socket	9 07 ----	0 357 ----	18 31 17 04	0 721 0.671
12	Pin	10 34	0 407	----	----
	Socket	9 17 ----	0 361 ----	18 136 17 02	0 714 0 670
12 Shielded	Pin	12 19	0 480	----	----
	Socket	10 97 ----	0 432 ----	18 11 16 92	0 713 0 666
8 Concentric twinax	Pin	11 07	0 436	----	----
	Socket	10 21 ----	0 402 ----	18 44 17 58	0 726 0 692
5 Coax	Pin	11 18	0 440	----	----
	Socket	10 26 ----	0 404 ----	18 24 17 57	0 718 0.692
1 Coax	Pin	10 79	0 425	----	----
	Socket	9 83 ----	0.387 ----	20.34 19.53	0.801 0.769

NOTES

- 1 Dimensions are in millimeters
- 2 Inch equivalents are given for general information only
- 3 All measurements are to the tip or front face of contacts

FIGURE 9 Contact Location - Continued

PAGE 23

3 5 17, Line 2, delete "1000 megaohms" and substitute "100 megaohms"

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Following 4 1.3, add

"4 1.3.1 Statistical process control. A SPC program shall be established and maintained in accordance with EIA - 557. Evidence of such compliance shall be verified by the qualifying activity as a prerequisite for qualification and retention of qualification "

4 4 1, delete and substitute the following

"4 4.1 Sample size A minimum of 14 plugs and receptacles shall be subject to the examinations and tests in table IV, in the sequence shown "

Following 4 4 1 2, add

"4 4 1.3 Test group VI Test group VI sample shall consist of a completely assembled mated pair of a plug and receptacle connector using a shell size 2A "

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4 4 2, delete "The remaining number of contacts shall be wired with the smallest allowable AWG size using MIL-W-22759/33 wires " and substitute "The remaining number of contacts shall be wired with the smallest allowable AWG size using MIL-W-22759/33 or MIL-W-22759/43 wires Samples of group VI (altitude immersion) may exclude AWG 24 and 26 wires "

4 4 5, line 2, delete "12 months" and substitute "36 months"

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TABLE IV, delete and substitute the following

TABLE IV Qualification test sequence

Test or group	I	II	III	IV	V	VI	Requirement paragraph	Test method paragraph
Examination of product	X	X	X	X	X	X	3 5 1	4 7 1
Nonmagnetic materials	X	X	X	X			3 3.2	4.7.26
Size 8 cavity grounding	X						3 5.26	4.7 27
Insulation resistance (ambient temperature)	X	X					3.5.9	4.7.10.1
Insulation resistance (elevated temperature)	X	X					3 5.10	4.7.10 2
Dielectric withstanding voltage (both)	X	X					3.5 11	4.7.11.1 and 4 7 11 2
Mating and separating forces	X	X	X	X			3 5 2	4 7 3
Maintenance aging, contact insertion and removal forces				X			3 5 3	4 7 4
Temperature cycling	X	X			X		3 5 5	4 7 6
Dielectric withstanding voltage (sea level)	X	X					3 5 11	4 7 11 1
Humidity		X					3 5 17	4 7 17
Insulation resistance (ambient temperature)		X					3 5 9	4 7 10 1
Insulation resistance (elevated temperature)		X					3 5 10	4 7 10.2
Vibration	X <u>1/</u>			X <u>2/</u>			3 5 13	4 7 13 1 and 4 7 13 2

See footnotes at end of table

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TABLE IV Qualification test sequence - Continued

Test or group	I	II	III	IV	V	VI	Requirement paragraph	Test method paragraph
Static load			X				3 5 14	4 7 15
Shock ^{3/}	X						3 5 12	4 7 14
Durability	X						3 5 9	4 7 12
Insulation resistance (ambient temperature)			X				3 5 11	4 7 10 1
Dielectric withstanding voltage (sea level)			X				3 5 21	4 7 11 1
Altitude immersion						X	3 5 7	4 7 22
Salt spray (corrosion)			X ^{4/}	X ^{5/}				4 7 8 1 and 4 7 8 2
Contact resistance	X	X					3 5 8 3 5 9	4 7 9 4 7 10 1
Insulation resistance (ambient temperature)	X						3 5 10	4 7 10 2
Insulation resistance (elevated temperature)	X						3 5 11	4 7 11 1
Dielectric withstanding voltage (sea level)	X						3 5 16	4 7 16
Shell-to-shell conductivity					X		3 5 18	4 7 18
EMI shielding					X		3 5 22	4 7 18
Contact walkout (one connector)			X				3 5 19	4 7 21
Ozone exposure	X						3 5 24	4 7 19
Contact stability		X					3 5 25	4 7 24
Temperature life with contact loading			X				3 5 20	4 7 25
Fluid immersion	X	X	X	X			3 5 4	4 7 20
Contact retention	X	X	X	X			3 5 6	4 7 5
Insert retention	X	X	X	X			3 5 1	4 7 7
Examination of product	X	X	X	X	X			4 7 1

1/ Functional vibration

2/ Endurance vibration

3/ Shock may be tested immediately following each plane of vibration

4/ Dynamic salt spray

5/ Standard salt spray

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4 7.9, last line, add: "Eight contact pairs of each contact size in each insert shall be tested. If less than eight contacts are present, 100% of the contact pairs for that contact size shall be tested."

4 7 10, last line, add: "Seven measurements per insert shall be taken (including some adjacent contacts and some contact to shell)."

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4 7 11 1b and 4 7 11 2b, delete "Fifty percent" and substitute "Twenty percent"

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TABLE VIII, delete and substitute the following

TABLE VIII Test voltages - 60 Hz rms

Altitude (KPA)	Mated (volts)	Unmated (volts)
11.6	750	550
4.4	750	350
1.1	750	200

4.7.12a, delete "(including electrical contact engagement)"

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4.7.13a, delete in its entirety

4.7.13e, delete "All contacts" and substitute "Fifty percent of the contacts"

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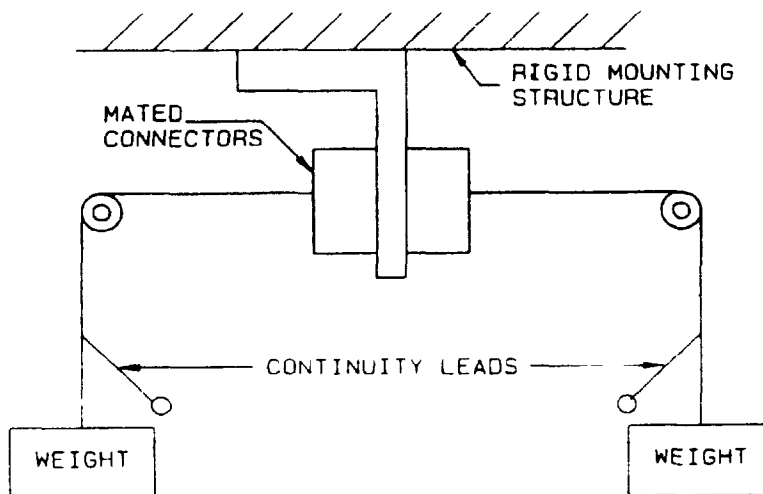
FIGURE 13, delete "257.56 (10.14) / 257.05 (10.12) INSIDE", and substitute "257.05 (10.12) MINIMUM INSIDE"

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4.7.14c, delete "All contacts" and substitute "Fifty percent of the contacts"

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4.7.25, delete "Connectors with contacts removed from an untested connector cavity and", and substitute "Connector pairs shall have one mating pair of contacts removed from an untested cavity and" At the end paragraph, add "The connector shall be mounted in a fixture as shown on figure 21A "



Orientation optional

FIGURE 21A Typical fixturing for temperature life with contact loading

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4 7 27, delete " Size 8 cavity grounding (see 3 26) " and substitute "Size 8 cavity grounding (see 3 5 26)"

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APPENDIX A, delete and substitute the following

Contacts and tools

Contact size and type	Pin	Socket	Installing tool	Removal tool	Crimp tool	Positioner
22-22	M39029/93	M39029/94	M81969/1-01	M81969/1-01 1/	M22520/2-01	M22520/2-23
20-20	M39029/93	M39029/94	M81969/1-02	M81969/1-02	M22520/2-01 M22520/7-01	M22520/2-08 M22520/7-02
16-16	M39029/93	M39029/94	M81969/1-03	M81969/1-03	M22520/1-01 M22520/7-01	M22520/1-02 Blue M22520/7-03
12-12	M39029/93	M39029/94	M81969/14-04	M81969/28-02	M22520/1-01	M22520/1-11
1 Coax	M39029/97	M39029/98	-----	M81969/XX	Inner M22520/XX Outer M22520/XX	Inner M22520/XX Outer M22520/XX
5 Coax	M39029/99	M39029/100	-----	M81969/28-01	Inner M22520/2 01 Outer M22520/5-01	Inner M22520/XX Outer M22520/5-45A
8 Concen- tric twinax	M39029/96	M39029/95	M81969/14-06	M81969/28-03	Inner M22520/2-01 Intermediate and outer M22520/5-01	Inner M22520/2-37 Intermediate and outer M22520/5-104

1/ The minimum length of removal tool M81969/1-01 is not long enough to ensure that the size 22 contact can be extracted

CONCLUDING MATERIAL

Custodians
Army - CR
Navy - AS
Air Force - 85Review activities
Navy - AS
Air Force - 11, 17, 99
DLA - ESPreparing activity
Air Force - 85Agent
DLA - ES

(Project 5935-3802)