[METRIC]
MIL-C-83527A
28 December 1988
SUPERSEDING
DOD-C-83527
15 May 1985

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 specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the requirements, quality assurance criteria and test procedures for the design and fabrication of an environment resisting low insertion force, multiple insert rectangular connector. The low insertion force rectangular connector is intended for use in the electrical/electronic bay areas of military aircraft. The connector shall provide the electrical interface between the avionics equipment and the equipment rack or tray.

1.2 Classification.

1.2.1 Class and series. The connector class shall be identified as follows:

Class R - Environment resisting connector for continuous operation within the temperature limits of -65°C to +150°C.

2. APPLICABLE DOCUMENTS

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).

SPECIFICATIONS

FEDERAL

QQ-A-250	-	Aluminum and Aluminum Alloy Plate and Sheet, General Specification for.
QQ-A-367	-	Aluminum Alloy Forgings.
QQ-P-416	-	Plating, Cadmium (Electrodeposited).
QQ-A-591	-	Aluminum Alloy Die Casting.
VV-D-1078	-	Damping Fluid, Silicone Base (Dimethyl Polysiloxane).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Electronic Support Division, AFLC, 2750 ABW/ES, Gentile Air Force Station, Dayton, Ohio 45444, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter

AMSC N/A FSC 5935

MILITARY

MIL-M-14	-	Molding Plastics and Molded Plastic Parts, Thermosetting.
MIL-C-17	-	Cables, Radio Frequency, Flexible and Semi-Rigid, General Specification for.
MIL-C-22520	-	Crimping Tools, Terminal, Hand or Power Actuated Wire Termination, and Tool Kits.
MIL-W-22759	-	Wire, Electric, Fluoropolymer-Insulated, Copper or Copper Alloy.
MIL-M-24519	-	Molding Plastics, Electrical, Thermoplastic.
MIL-C-39029	-	Contacts, Electrical Connector, General Specification for.
MIL-C-55330	-	Connectors, Electrical and Fiber Optic, Packaging of.
MIL-I-81969	-	Installing and Removal Tools, Connector, Electrical Contact, General Specification for.
MIL-C-85049	-	Connector Accessories, Electrical, General Specification for.

(See supplement 1 for a list of associated specifications.)

STANDARDS

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-790	-	Reliability Assurance Program for Electronic Parts Specifications.
MIL-STD-1285	-	Marking of Electrical and Electronic Parts.
MIL-STD-1344	-	Test Methods for Electrical Connectors.
DOD-STD-1788	-	Avionics Interface Design.
DOD-STD-1842	-	Insert Arrangements for DOD-C-83527 Rack-to-Panel Connectors.
MIL-STD-2175	-	Casting, Classification and Inspection of.
MS27488	-	Plug, End Seal, Electrical Connector.
MIL-STD-45662	-	Calibration Systems Requirements.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN. NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), 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 sheets. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 Qualification. Connectors furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list at the time of award of contract (see 4.4 and 6.3).

3.2.1 Reliability. The contractors' reliability program for assembled connectors and assembly procedures shall meet the requirements of MIL-STD-790.

3.3 Materials. Materials shall be as specified herein. When a definite material is not specified, material shall be used which will enable the connectors to meet the performance requirements of the applicable specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.3.1 Metals. Metals shall be of a corrosion-resistant type or shall be plated or treated to resist corrosion.

3.3.1.1 Dissimilar metals and compatible couples. When dissimilar metals are used in intimate contact with each other, protection against electrolysis and corrosion shall be provided. The use of dissimilar metals in contacts which tend toward active electrolytic corrosion (particularly brass, copper, or steel used in contact with aluminum alloy) is not acceptable. However, metal plating or metal spraying of dissimilar-base metals to provide similar or suitable abutting surfaces is permitted. The use of dissimilar metals separated by a suitable insulating material is also permitted. Dissimilar metals and compatible couples are defined in requirement 16 of MIL-STD-454.

3.3.1.2 Hydrolytic stability. All nonmetallic material shall be selected to meet the hydrolytic reversion resistance requirements specified in requirement 47 of MIL-STD-454 (see 4.1.5 herein).

3.3.2 Nonmagnetic materials. The relative permeability of the wired, assembled, and fully mated connector assembly shall be less than 2.0 when measured in accordance with 4.7.26.

3.3.3 Fungus resistance. Materials used in the construction of these connectors shall be fungus inert in accordance with requirement 4 of MIL-STD-454 (see 4.1.6 herein).

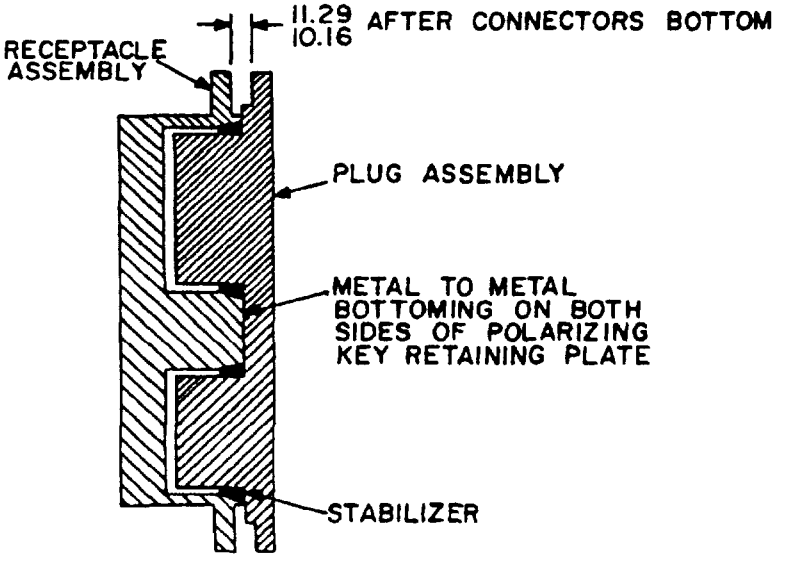
3.3.4 Shell material. Unless otherwise specified, the shell material shall be a high grade aluminum alloy in accordance with QQ-A-250, a forging alloy conforming to QQ-A-367 or die cast alloy per QQ-A-591, composition number 13, A13, 380, A380 or SC114A. When casting process is used, casting shall be inspected to meet MIL-STD-2175, class 3, grade C or better.

3.3.5 Rigid insert material. Rigid insert material shall be selected from glass fiber filled diallyl phthalate per MIL-M-14, type SDG-F or nonflammable thermoplastic per MIL-M-24519. Alternate materials may be used provided they exhibit stability when exposed to long term high temperature and high humidity conditions and meet the performance requirements specified herein.

3.3.6 Resilient insert material. Resilient material shall be a high grade fluorosilicone, high grade silicone, or fluorocarbon elastomer and shall be capable of meeting the performance requirements of this specification.

3.3.7 Finish. All metal parts shall be made of corrosion-resistant materials or be protected to meet the performance requirements of this specification. The shell and backshell hardware shall have cadmium plate in accordance with QQ-P-416 over a suitable underplate to withstand 500-hour salt spray test. Final finish shall be electrically conductive and shall be light to dark in color. Manufacturer is to evaluate for color shielding effectiveness. Connector will meet EMI requirements stated herein and be intermateable with other manufacturers' connector.

3.4 Design and construction. Connectors shall be in accordance with figure 1 and the applicable specification sheet (see 3.1) and shall be constructed to withstand normal handling incident to installation and maintenance in service. Configuration and dimensions to ensure intermateability shall be in accordance with the detail specification sheets. Connectors shall permit individual insertion and removal of contacts without removing the insert (see 3.4.3.9).



mm	Inches
11.27	.443
10.16	.4

NOTES:
1. Dimensions are in millimeters.
2. Inch equivalents are given for general information only.

FIGURE 1. Shell mating condition.

3.4.1 Contacts. Unless otherwise specified (see 3.1), contacts shall be designed for crimp termination, rear release, and rear removal. Contacts shall be as specified in the applicable specification sheets in accordance with MIL-C-39029/93 through MIL-C-39029/100 and shall be qualified to MIL-C-39029 (see 6.2).

3.4.2 Tools. Installing and removal tools shall be as specified in Appendix A and shall be qualified to MIL-I-81969. Crimping tools shall be as specified in Appendix A and shall be qualified to MIL-C-22520 (see 6.2). For cross-reference data (information only) on applicable contacts and tools, see appendix A.

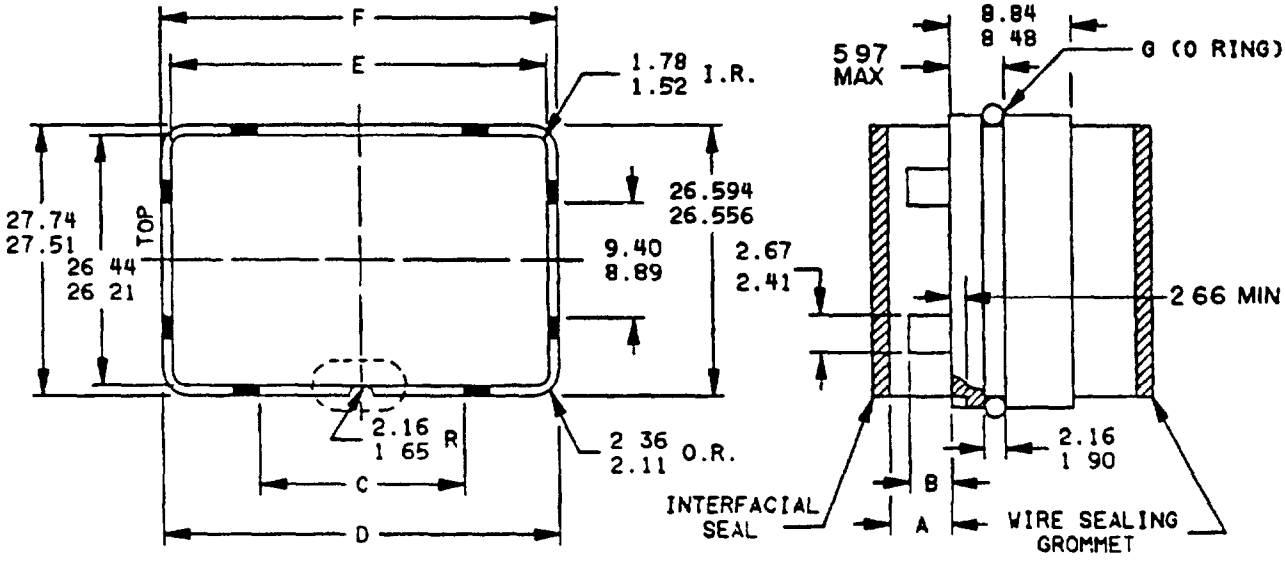


FIGURE 2. Insert interface dimensions for high density insert with size 22 contact cavities arrangements.

SHELL STYLE	INSERT CAVITITES	A	B	C	D	E	F	G
PLUG	A.C.E	13.18 12.98	12.19 11.56	22.10	39.040	38.89	40.18	1.50 W X
RECEP	A.C.E	3.61 3.40	2.67 2.03	21.59	39.002	38.66	39.95	35.00 I.D.
PLUG	B.D.F	13.18 12.98	12.19 11.56	9.40	27.864	27.71	29.01	1.50 W X
RECEP	B.D.F	3.61 3.40	2.67 2.03	8.89	27.826	27.48	28.78	27.81 I.D.

mm	Inches	mm	Inches
1 50	.059	13 18	.519
1 52	060	21 59	850
1 65	065	22 10	.870
1 78	070	26 21	1 032
1 90	.075	26 44	1 041
2 03	.080	26 556	1 0455
2 11	083	26 594	1 0470
2 16	085	27 48	1 082
2 36	093	27 51	1 083
2 41	095	27 71	1 091
2 46	097	27 74	1 092
2 62	103	27 81	1 095
2 66	105	27 826	1 0955
2 67	105	27 864	1 0970
3 40	134	28 78	1 133
3 61	142	29 01	1 142
5 97	235	35 00	1 378
8 48	334	38 66	1 522
8 84	348	38 89	1 531
8 89	350	39 002	1 5355
9 40	370	39 040	1 5370
11 56	455	39 95	1 573
12 19	480	40 18	1 582
12 98	511		

NOTES:
1. Interfacial seal applies to exposed contact inserts only (size 22 socket inserts or other size pin inserts).
2. Dimensions are in millimeters.
3 Inch equivalents are given for general information only.

FIGURE 2 Insert interface dimensions for high density insert with size 22 contact cavities arrangements - Continued

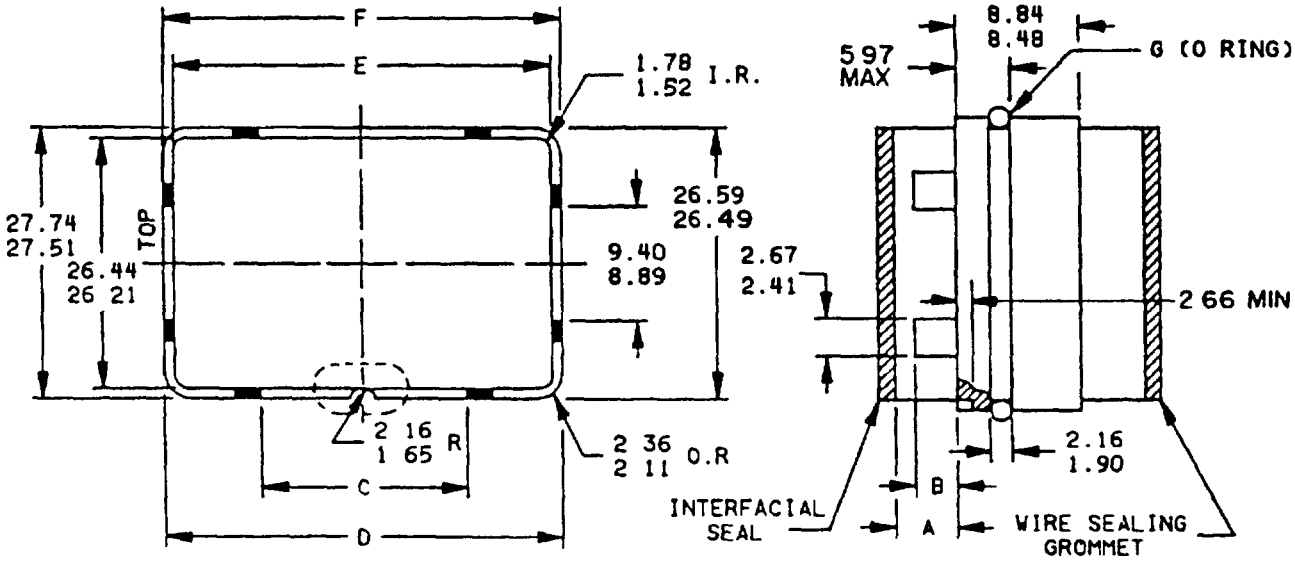


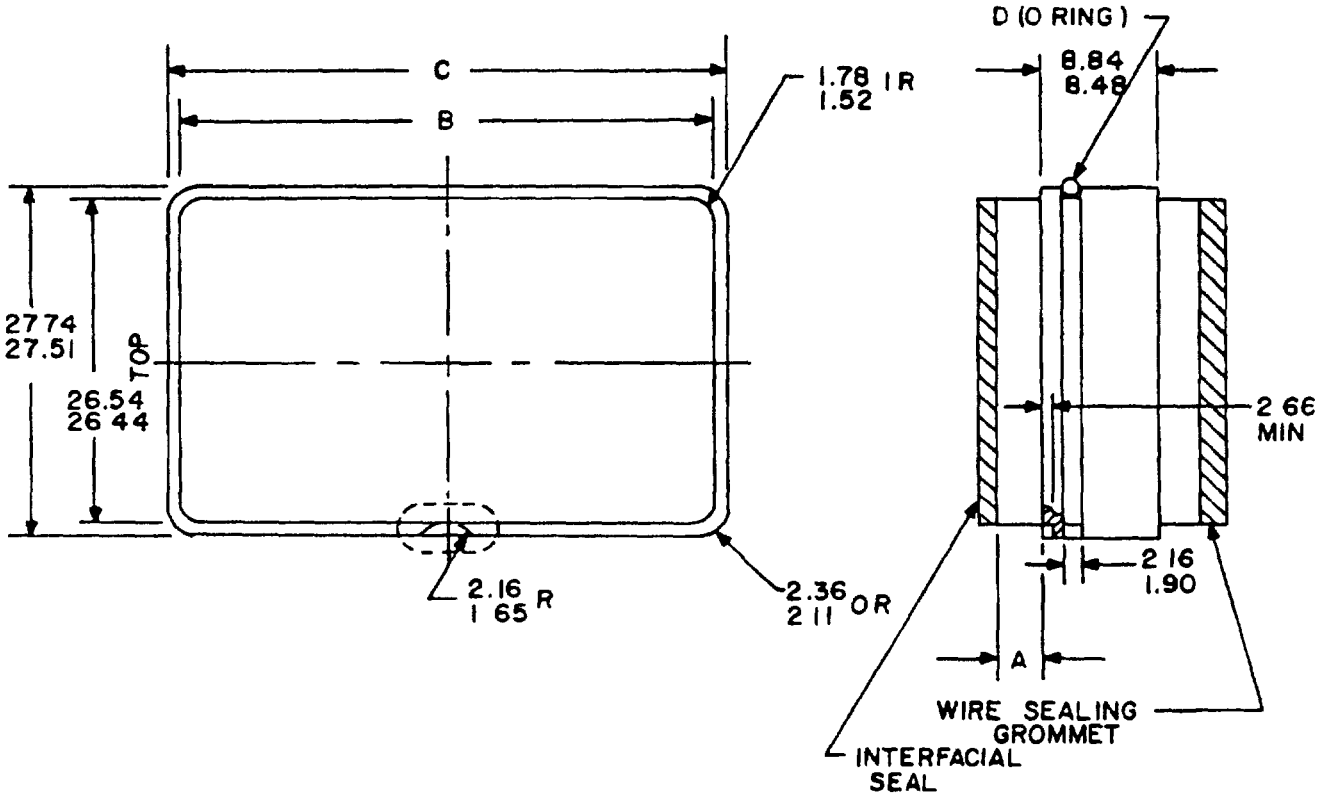
FIGURE 3. Insert interface dimensions for insert arrangements without size 22 contact cavities.

SHELL STYLE	INSERT CAVITIES	A	B	C	D	E	F	G
PLUG	A.C.E	15.65 15.44	12.19 11.56	22.10	39.04	38.89	40.18	1.50 W X
RECEP	A.C.E	1.14 0.94	1.14 0.94	21.59	38.94	38.66	39.95	35.00 I.D.
PLUG	B.D.F	15.65 15.44	12.19 11.56	9.40	27.86	27.71	29.01	1.50 W X
RECEP	B.D.F	1.14 0.94	1.14 0.94	8.89	27.76	27.48	28.78	27.81 I.D.

mm	Inches	mm	Inches
0 94	.037	22 10	.870
1 14	045	26 21	1 032
1 50	059	26 44	1 041
1 52	.060	26 49	1 043
1 65	065	26 59	1 047
1 78	070	27 48	1 082
1 90	075	27 51	1 083
2 11	083	27 71	1 091
2 16	085	27 74	1 092
2 36	093	27 76	1 093
2 41	095	27 81	1 095
2 66	104	27 86	1 097
2 67	105	28 78	1 133
5 97	235	29 01	1 142
8 48	334	35 00	1 378
8 84	348	38 66	1 522
8 89	350	38 89	1 531
9 40	370	38 94	1 533
11 56	455	39 04	1 537
12 19	480	39 94	1 572
15 44	608	39 95	1 573
15 65	616	40 18	1 582
21 59	850		

NOTES:
1. Interfacial seal applies to exposed contact inserts only (size 22 socket inserts or other size pin inserts).
2. Dimensions are in millimeters.
3. Inch equivalents are given for general information only.

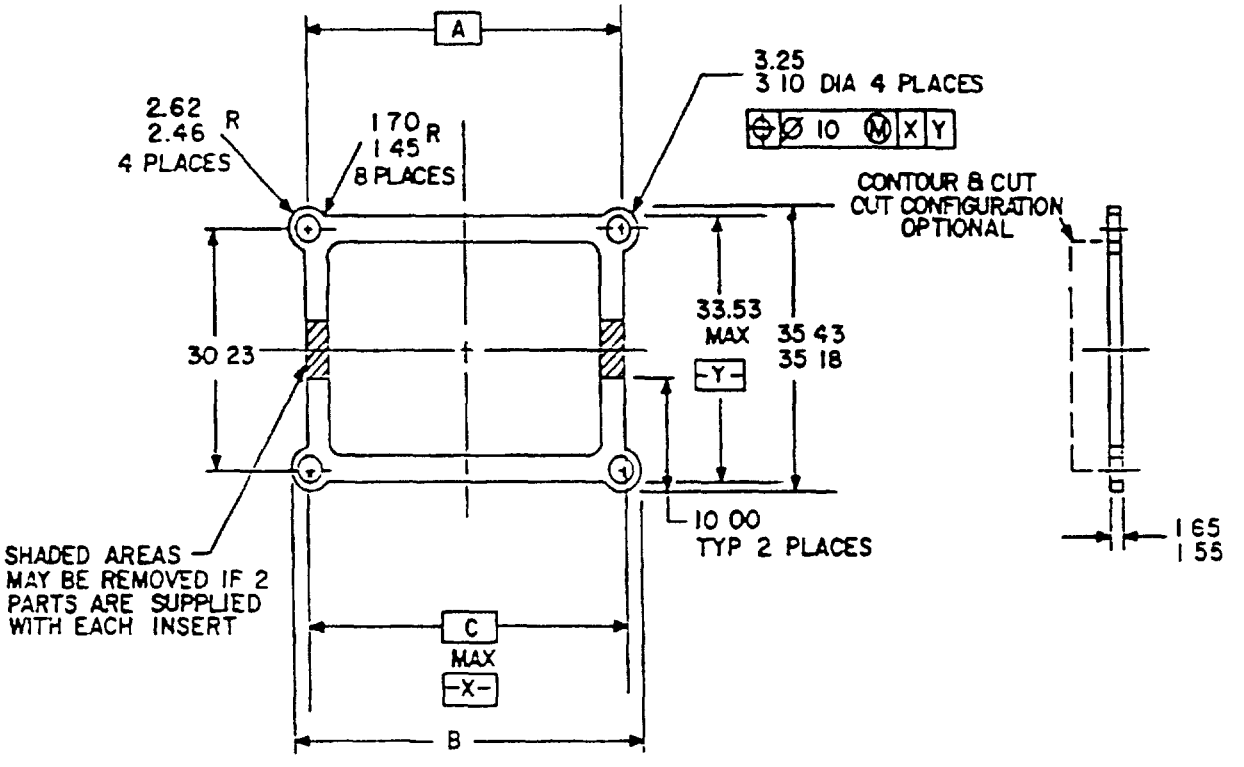
FIGURE 3 Insert interface dimensions for insert arrangements without size 22 contact cavities - Continued



SHELL STYLE	INSERT CAVITIES	A	B	C	D
PLUG	A.C E	15 65 15 44	38 99	40 18	1 50 W X
RECEP	A C E	1.14 0 94	38 86	39.95	35 00 I D.
PLUG	B D F.	15 65 15 44	27 81	29 01	1.50 W
RECEP	B.D F	1 14 0 94	27 68	28 78	X 27 81 I D

NOTE Rib design is permissible.

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



INSERT CAVITIES	A	B	C
A C.E	44.96	50 17 49.91	45 97
B.D.F	33 78	38.99 38.74	34.80

FIGURE 5 Insert retaining plate

3.4.3 Insert. The insert assembly shall be a mono-bloc type design complete with inserts, contact retention members, and appropriate seals bonded into an integral unit. All parts shall be designed and constructed with proper sections and radii so that they will not chip, crack or break in assembly or other normal service. The insert assembly shall be designed and constructed so as to eliminate all air paths between contact cavities and between contact cavities and shell. Peripheral seal shall be lubricated in accordance with 3.4.3.6. The insert assemblies shall meet the interface dimensional requirements specified on figures 2 and 3.

3.4.3.1 Plug insert. Plug insert assemblies shall have rigid dielectric front face. Contact cavities shall be designed for recessed contacts (size 22 pin contacts and socket contacts for all other sizes).

3.4.3.2 Receptacle insert. Receptacle insert assemblies shall have resilient interfacial seal. Contact cavities shall be designed for exposed contacts (size 22 socket contacts and pin contacts for all other sizes).

3.4.3.3 Insert interchangeability. Connector inserts that are qualified by manufacturers shall be interchangeable with those qualified by other manufacturers. The connector inserts shall be tested with a qualified connector as an assembly with requirements stated herein. Inserts are not repairable, however, inserts shall be replaceable (see 3.4.3.6).

3.4.3.4 Insert retention. Individual inserts shall be positively retained within the connector shell by retaining devices in accordance with figure 5.

3.4.3.5 Contact retention. Crimp contacts shall be rear release and positively retained by the insert. The retention mechanism shall be metal and contained in the insert. The contacts shall be free of devices which can be damaged during handling and usage.

3.4.3.6 Insert replaceability. Inserts shall be rear removable and are replaceable after removal of mechanical retainer. No tools other than a screwdriver shall be used. Apply lubrication according to instructions supplied by manufacturer.

3.4.3.7 Insert contact loading.

3.4.3.7.1 Plug inserts. Inserts for use in plugs shall have cavities capable of being loaded with socket contacts, except cavities for size 22 contacts which shall accommodate pin contacts (see 3.1).

3.4.3.7.2 Receptacle inserts. Inserts for use in receptacles shall have cavities capable of being loaded with pin contacts, except cavities for size 22 contacts which shall accommodate socket contacts (see 3.1).

3.4.3.8 Sealing plugs. Sealing plugs, selected from MS27488, shall be available for unused contact cavities for class R connectors. Connectors shall pass all tests required herein with any quantity of the contact holes sealed with the plugs. The same sealing plug shall be used in both the plug and receptacle. Sealing plugs equal to 15 percent of the number of contacts, but not less than 1, shall be included in the unit package. Sealing plugs shall not be supplied for coaxial contact cavities. They must be obtained separately. For indirect shipments (shipments to non-Government agencies), connectors may be ordered without sealing plugs (see 6.2).

3.4.3.9 Wire sealing members (rear grommet). The wire sealing member shall provide suitable sealing for overall wire diameters listed in table I and for contact sizes 22 through 12, shall not be removable from insert assemblies.

TABLE I. Contact size and wire range accommodations.

Wire barrel	Range of outside diameter of finished wire in mm (inches)	Wire gauge range contact required to crimp
22	0.66 to 1.37 (.026) (.054)	AWG 22, 24, 26 1/
20	1.0 to 1.80 (0.039) (0.071)	AWG 20, 22
16	1.73 to 2.62 (.068) (.103)	AWG 16, 18, 20
12	2.46 to 3.43 (.097) (.135)	AWG 12, 14
1 Coaxial (cavity size)	10.62 to 10.97 (.418) (.432)	M17/75-RG-214
5 Coaxial (cavity size)	4.85 to 5.49 (.191) (.216)	M17/28-RG-58 M17/84-RG-223
8 Concentric 2/ Twinax (cavity size)	5.71 to 6.86 (.225) (.270)	M17/176-0002

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

3.4.3.10 Contact cavity and interfacial seal design.

3.4.3.10.1 Size 22 pin contact cavity. Cavities for size 22 pin contacts shall be designed to protect the contacts from protruding beyond the front face of the rigid dielectric insert. Cavity configuration shall be in accordance with figure 6.

3.4.3.10.2 Socket contact cavity. Socket contact cavity (other than for size 22 contact) shall conform to the design of figure 7.

3.4.3.10.3 Interfacial seal. Interfacial seal for receptacle inserts shall be designed in accordance with figure 8.

3.4.4 Contact accommodation. Contact accommodation shall be in accordance with the provisions of DOD-STD-1842 and specification sheets (see 3.1). For contact size and type (information only), see appendix B. The quantity of crimp contacts to be supplied with each connector unit package shall consist of a full complement of contacts plus 1 spare contact for each size used in the arrangement utilizing 26 contacts or less. For arrangements utilizing more than 26 contacts, 2 spare contacts of each size used in the arrangement shall be supplied Spare coaxial and concentric twinax contacts need not be supplied. For indirect shipments (shipments to non-Government agencies), connectors may be ordered without contacts (see 6.2).

3.4.4.1 Contact arrangement identification. The contact positions shall be permanently designated in contrasting color on the front face of the insert material and on the rear face of the wire sealing grommet. The interfacial markings of the inserts shall not be raised or recessed on any sealing surfaces and shall be in accordance with DOD-STD-1842.

3.4.4.2 Contact location. When tested in accordance with 4.7.2, the axial location of contacts from gauging surfaces of insert housing shall be as specified on figure 9.

3.4.5 Shell.

3.4.5.1 Retention system marking. The polarizing key retaining plate on both plug and receptacle shell shall be colored blue to indicate rear release contact retention system.

3.4.5.2 Shell design. The connector shall be of the solid shell design and shall be constructed to positively retain inserts. The configuration shall be as shown in the applicable specification sheet (see 3.1). The engaging skirts and surfaces shall be configured to align the shells while mating and to provide proper guidance for engagement of the pin and socket contacts.

a. The connector receptacle shall provide metal-to-metal bottoming of the connector shells to ensure full connector mating (see figure 1).

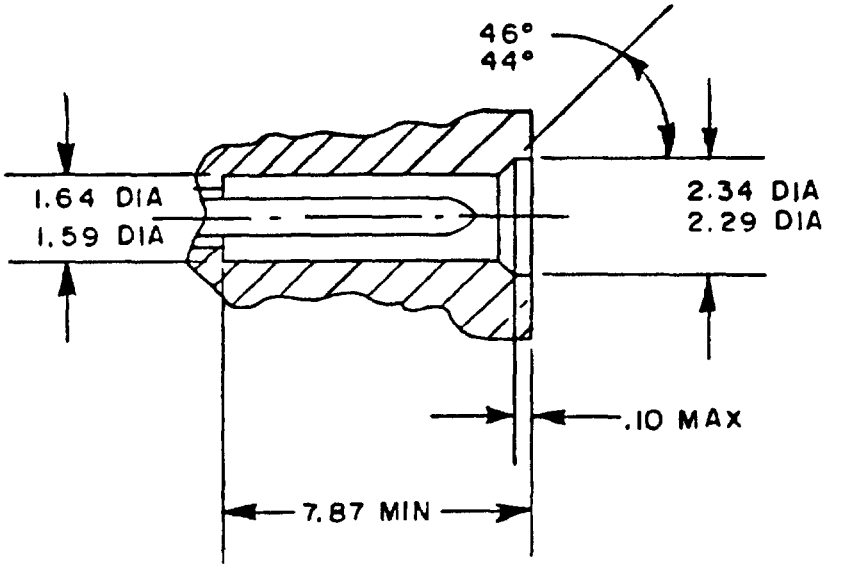
b. When the plug and receptacle are fully mated, the space between the adjacent flanges shall be a minimum of 10.16 millimeters and a maximum of 11.27 millimeters.

c. Minimum contact exposure shall be maintained Contacts shall not extend beyond the shell with the exception of the size 1 coaxial contact.

d. Optional alignment ribs may be provided on the connector plug The number of ribs and the spacing of the ribs is also optional. Ribs shall not be permitted on the connector receptacle.

3.4.5.3 Shell polarization. Shell polarization of the connector shall be accomplished by means of settable posts and keys positioned in accordance with the applicable specification sheet (see 3.1). Polarizing post and key hole shall be as shown on figures 10 and 11. Polarization shall occur before any contacts enter the mating insulator or coaxial contacts begin engagement. The connector shells shall have a minimum of 99 polarizing positions and shall use the code defined by figure 12. All plugs and all receptacles shall be shipped with the posts and keys in position 01 (see figure 12). Each other position shall be selectable by the user without disassembly of the connector.

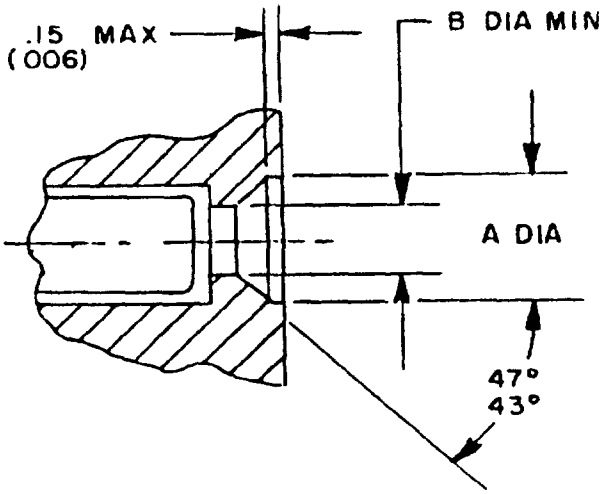
3 4.5.4 EMI feature An EMI feature shall be provided on the plug shell to ensure electrical grounding to the mating receptacle shell and to meet the EMI requirements specified herein The EMI feature shall be retained around each insert housing and shall, during connector mating, make contact to receptacle shell prior to electrical contact mating



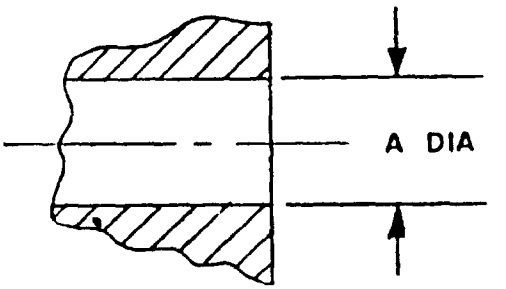
mm	Inches
0.10	.004
1.59	.063
1.64	.065
2.29	.090
2.34	.092
7.87	.310

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

FIGURE 6 Size 22 pin contact cavity



Socket contact cavity
all sizes except 1 coaxial



Socket cavity size
1 coaxial

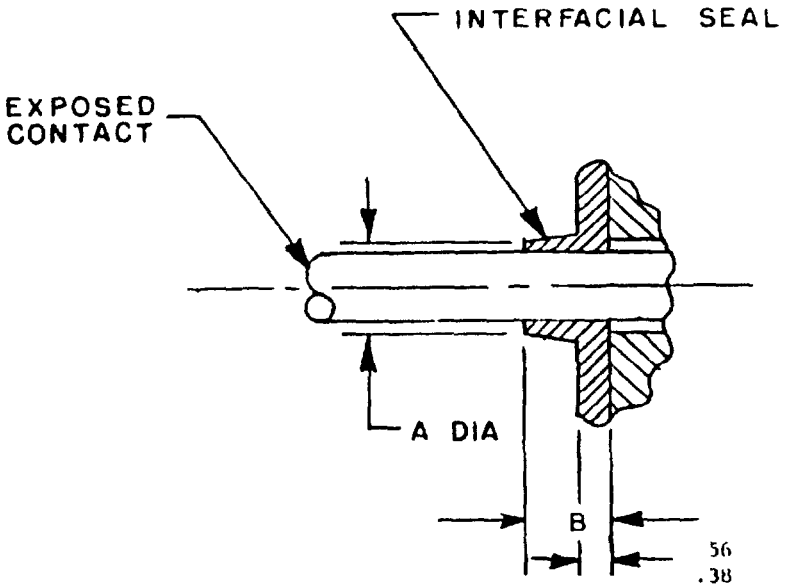
CONFIGURATION A

CONFIGURATION B

Contact Size	A dia.	B dia.
20	2.67 (.105) 2.41 (.095)	1.27 (.05)
16	3.38 (133) 3.12 (123)	2.01 (.079)
12	4.57 (.180) 4.32 (.170)	2.51 (.099)
Size 1 Coaxial	13.07(.515) 12.80(504)	
Size 5 Coaxial	7.29 (.287) 7.04 (.277)	5.72 (.225)
Size 8 Concentric twinax	7.49 (.295) 7.24 (.285)	5.84 (.230)

NOTES
1 Dimensions are in millimeters
2 Inch equivalents are given for general information only
3 Inch equivalents are in parentheses
4 For contact size 22, A diameter and B dimensions are not applicable for configuration A

FIGURE 7 Socket contact cavity



Contact	A Dia.	B
22 Socket	2.29 (.090) 2.13 (.084)	1.75 (.069) 1.55 (.061)
20 Pin	1.83 (.072) 1.68 (.066)	2.54 (.1) 2.29 (.090)
16 Pin	2.51 (.099) 2.34 (.092)	2.67 (.105) 2.41 (.095)
12 Pin	3.33 (.131) 3.15 (.124)	2.79 (.110) 2.54 (.1)
Size 1 Coaxial pin	16.76 (.660) 14.22 (.560)	2.41 (.095) 1.65 (.065)
Size 5 Coaxial pin	7.01 (.276) 6.81 (.268)	2.29 (.090) 2.03 (.080)
Size 8 Concentric twinax pin	7.01 (.276) 6.81 (.268)	2.67 (.105) 2.41 (.095)

NOTES
1. Dimensions are in millimeters.
2. Inch equivalents are given for general information only.
3. Inch equivalents are in parentheses.

FIGURE 8 Exposed contact interfacial seal design.

3.4.5.5 Peripheral environmental seal. A resilient peripheral seal shall be provided around each insert housing of the plug shell to provide environmental peripheral sealing and stabilizing between mating shells. Peripheral seal shall be lubricated with a lubricant conforming to VV-D-1078, grade 100,000 centistokes minimum.

3.4.5.6 Connector mating sequence. Connector mating sequence shall be as follows:

a. Shells, polarizing keys, EMI feature, contacts.

b. Peripheral seal engagement may occur anytime between shells and contacts mating.

3.4.6 Backshell hardware. Backshells shall be in accordance with MIL-C-85049 (see 6.4.2).

3.5 Performance requirements. Connectors, inserts, shells, backshells, contacts, and accessories shall be designed to meet the performance requirements specified herein when tested in accordance with the specified methods of section 4.

3.5.1 Examination of product. Contacts, inserts, shells, backshells, connectors, and accessories shall be examined as specified in 4.7.1, and shall meet the requirements indicated herein.

3.5.2 Mating and separating forces. When tested as specified in 4.7.3 the maximum force needed to mate or separate counterpart plugs and receptacles shall not exceed 1446 newtons for size 2, 1780 newtons for size 3, and 2113 newtons for size 4.

3.5.3 Maintenance aging, contact insertion and removal forces. After testing as specified in 4.7.4, connectors shall be capable of meeting the performance requirements of this specification. After testing, the individual contact insertion and removal forces shall not exceed the values listed in table II. Failure to cpmplete these operations shall be cause for rejection.

3.5.4 Contact retention. When tested as specified in 4.7.5, the axial displacement of the contacts shall not exceed 0.3 mm. No dislodging or damage to contacts or inserts shall result.

TABLE II. Insertion and removal forces.

Contact size 1/	Axial loads (newtons)	
	Insertion	Removal
22	45	36
20	67	45
16	90	67
12	112	90
8 Concentric twinax and size 5 coaxial contacts	135	112

1/ Size 1 coaxial not applicable to table.

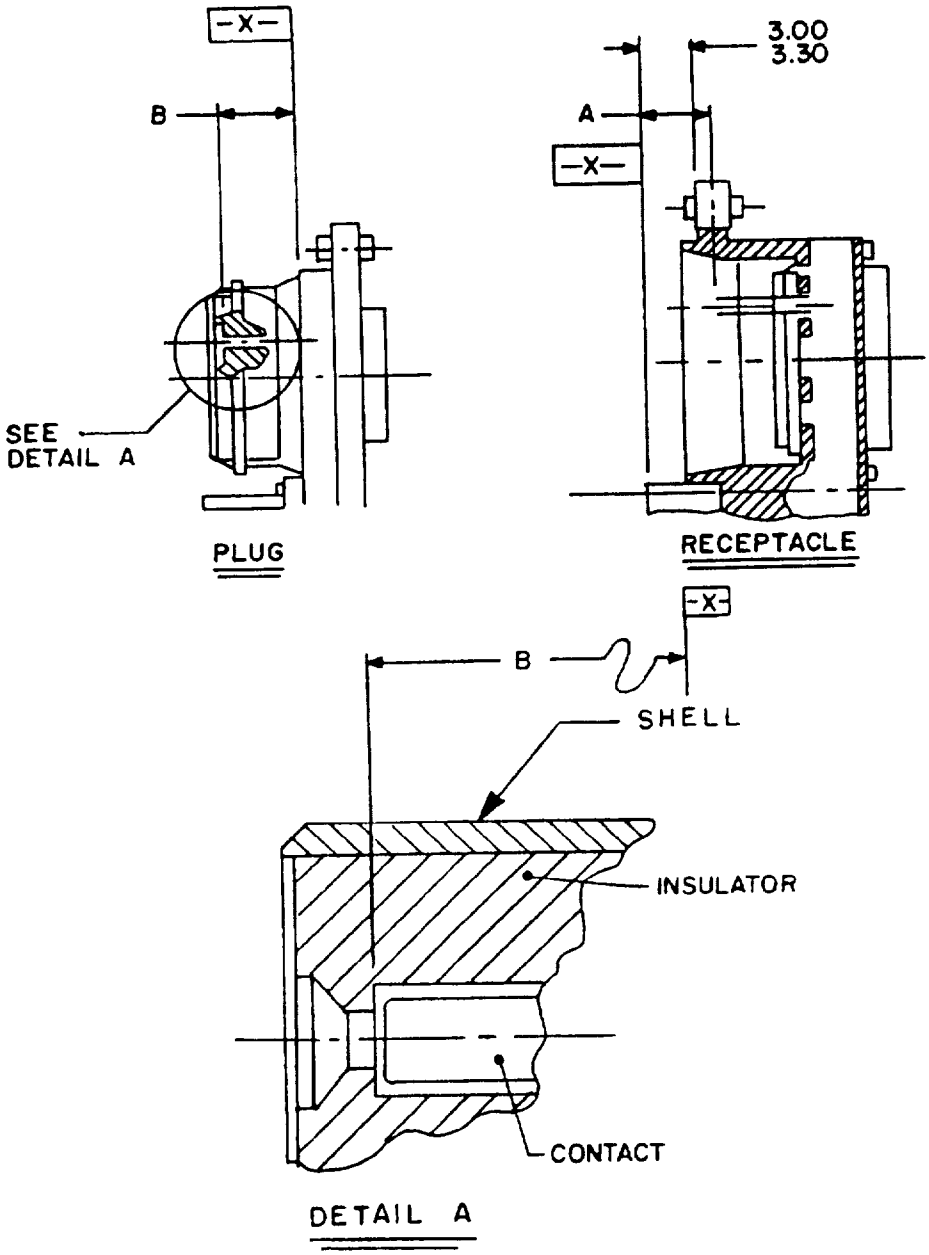
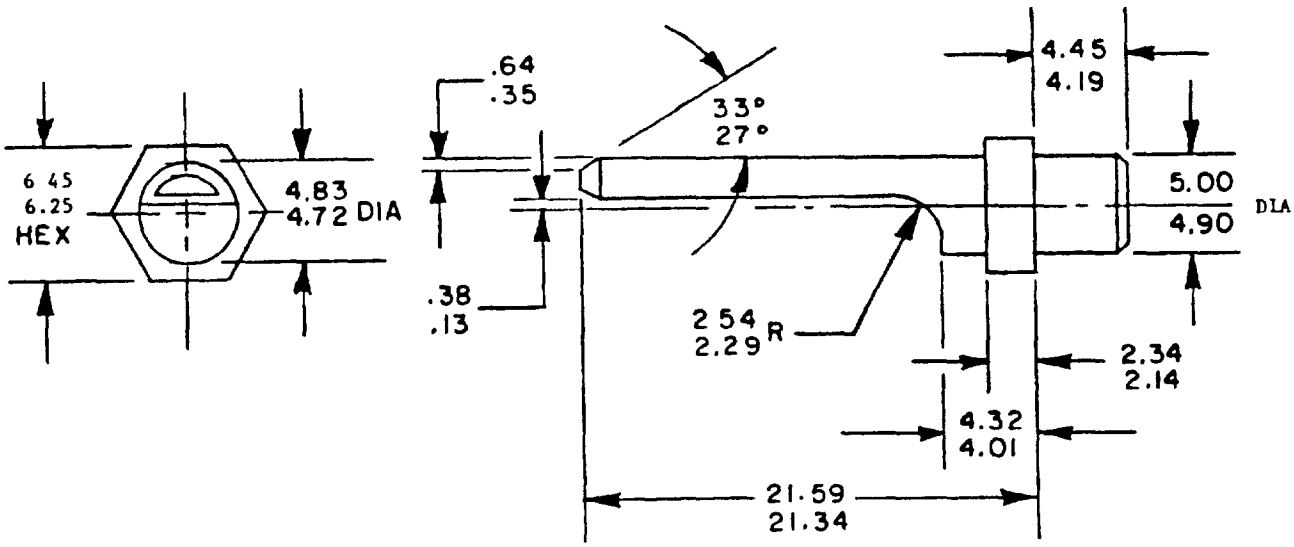


FIGURE 9 Contact location

Contact		A		B	
Size	Type	mm	Inches	mm	Inches
22	Pin	---	---	17.196	0.677
		---	---	16.33	0 643
	Socket	11.18	0 440	---	---
		10.57	0.416	---	---
20	Pin	12.19	0 480	---	---
		11.125	0 438	---	---
	Socket	---	---	18.82	0.741
		---	---	17.55	0 691
16	Pin	10.34	0.407	---	---
		9.07	0.357	---	---
	Socket	---	---	18.31	0.721
		---	---	17.04	0.671
12	Pin	10.34	0.407	---	---
		9.17	0.361	---	---
	Socket	---	---	18.136	0 714
		---	---	17.02	0.670
12 Shielded	Pin	12 19	0.480	---	---
		10.97	0.432	---	---
	Socket	---	---	18 11	0 713
		---	---	16 92	0.666
8 Concentric twinax	Pin	11.07	0 436	---	---
		10.21	0.402	---	---
	Socket	---	---	18 44	0 726
		---	---	17.58	0 692
5 Coax	Pin	11.07	0.436	---	---
		10 21	0.402	---	---
	Socket	---	---	18.44	0.726
		---	---	17.57	0.6917
1 Coax	Pin	11.07	0.436	---	---
		10.21	0.402	---	---
	Socket	---	---	18 44	0.726
		---	---	17.57	0.6917

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.

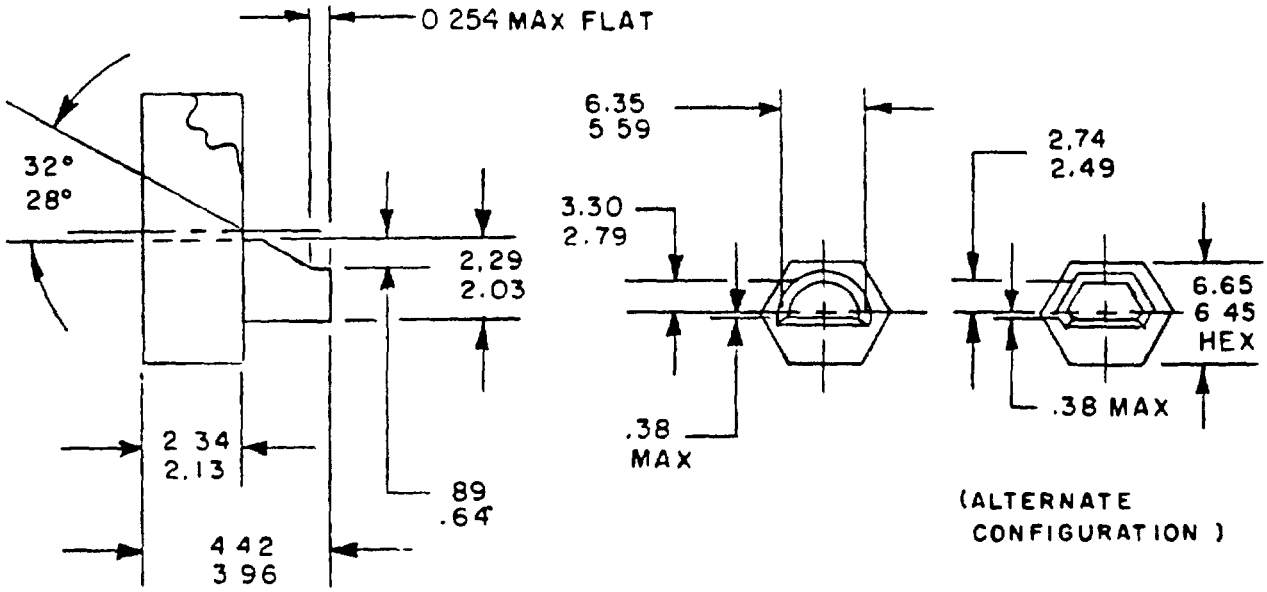
FIGURE 9 Contact location - Continued



mm	Inches	mm	Inches
0.13	.005	4.32	.170
0.35	.014	4.45	.175
0.38	.015	4.72	.186
0.64	.025	4.83	.190
2.14	.084	4.90	.193
2.29	.090	5.00	.197
2.34	.092	6.45	.254
2.54	.158	6.65	.262
4.19	.165	21.34	.841
		21.59	.850

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

FIGURE 10 Plug polarizing post

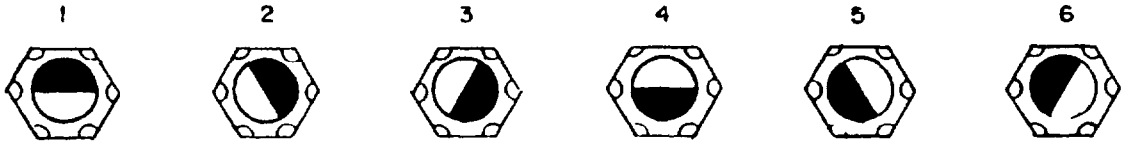


mm	Inches	mm	Inches
0.254	.01	2.34	.092
0.38	.015	2.49	.098
0.64	.025	2.74	.108
0.645	.025	2.79	.110
0.665	.026	3.30	.130
0.89	.035	3.96	.156
2.03	.080	4.42	.174
2.13	.084	5.59	.220
2.29	.090	6 35	.25
		6.65	.25
		6.65	.26

NOTES:
1. Dimensions are in millimeters.
2. Inch equivalents are given for general information only.

FIGURE 11 Receptacle key hole polarizing insert

Polarization positions.



PLUG				RECEPTACLE			
POSITION	LEFT POST	CENTER POST	RIGHT POST	POSITION	LEFT KEY	CENTER KEY	RIGHT KEY
00	-	-	-	00	-	-	-
01	1	1	1	01	4	4	4
02	2	1	1	02	4	4	3
03	3	1	1	03	4	4	2
04	4	1	1	04	4	4	1
05	5	1	1	05	4	4	6
06	6	1	1	06	4	4	5
07	1	1	6	07	5	4	4
08	2	1	6	08	5	4	3
09	3	1	6	09	5	4	2
10	4	1	6	10	5	4	1
11	5	1	6	11	5	4	6
12	6	1	6	12	5	4	5
13	1	1	5	13	6	4	4
14	2	1	5	14	6	4	3
15	3	1	5	15	6	4	2
16	4	1	5	16	6	4	1
17	5	1	5	17	6	4	6
18	6	1	5	18	6	4	5
19	1	1	4	19	1	4	4
20	2	1	4	20	1	4	3
21	3	1	4	21	1	4	2
22	4	1	4	22	1	4	1
23	5	1	4	23	1	4	6
24	6	1	4	24	1	4	5
25	1	1	3	25	2	4	4
26	2	1	3	26	2	4	3
27	3	1	3	27	2	4	2
28	4	1	3	28	2	4	1
29	5	1	3	29	2	4	6
30	6	1	3	30	2	4	5
31	1	1	2	31	3	4	4
32	2	1	2	32	3	4	3
33	3	1	2	33	3	4	2
34	4	1	2	34	3	4	1
35	5	1	2	35	3	4	6
36	6	1	2	36	3	4	5
37	1	2	1	37	4	3	4
38	2	2	1	38	4	3	3
39	3	2	1	39	4	3	2
40	4	2	1	40	4	3	1
41	5	2	1	41	4	3	6
42	6	2	1	42	4	3	5
43	1	2	6	43	5	3	4
44	2	2	6	44	5	3	3
45	3	2	6	45	5	3	2
46	4	2	6	46	5	3	1
47	5	2	6	47	5	3	6
48	6	2	6	48	5	3	5
49	1	2	5	49	6	3	4

PLUG				RECEPTACLE			
POSITION	LEFT POST	CENTER POST	RIGHT POST	POSITION	LEFT KEY	CENTER KEY	RIGHT KEY
50	2	2	5	50	6	3	3
51	3	2	5	51	6	3	2
52	4	2	5	52	6	3	1
53	5	2	5	53	6	3	6
54	6	2	5	54	6	3	5
55	1	2	4	55	1	3	4
56	2	2	4	56	1	3	3
57	3	2	4	57	1	3	2
58	4	2	4	58	1	3	1
59	5	2	4	59	1	3	6
60	6	2	4	60	1	3	5
61	1	2	3	61	2	3	4
62	2	2	3	62	2	3	3
63	3	2	3	63	2	3	2
64	4	2	3	64	2	3	1
65	5	2	3	65	2	3	6
66	6	2	3	66	2	3	5
67	1	2	2	67	3	3	4
68	2	2	2	68	3	3	3
69	3	2	2	69	3	3	2
70	4	2	2	70	3	3	1
71	5	2	2	71	3	3	6
72	6	2	2	72	3	3	5
73	1	3	1	73	4	2	4
74	2	3	1	74	4	2	3
75	3	3	1	75	4	2	2
76	4	3	1	76	4	2	1
77	5	3	1	77	4	2	6
78	6	3	1	78	4	2	5
79	1	3	6	79	5	2	4
80	2	3	6	80	5	2	3
81	3	3	6	81	5	2	2
82	4	3	6	82	5	2	1
83	5	3	6	83	5	2	6
84	6	3	6	84	5	2	5
85	1	3	5	85	6	2	4
86	2	3	5	86	6	2	3
87	3	3	5	87	6	2	2
88	4	3	5	88	6	2	1
89	5	3	5	89	6	2	6
90	6	3	5	90	6	2	5
91	1	3	4	91	1	2	4
92	2	3	4	92	1	2	3
93	3	3	4	93	1	2	2
94	4	3	4	94	1	2	1
95	5	3	4	95	1	2	6
96	6	3	4	96	1	2	5
97	1	3	3	97	2	2	4
98	2	3	3	98	2	2	3
99	3	3	3	99	2	2	2

NOTES
1. Darkened portion indicates extended part of post in plug. Light portion indicates key hole in receptacle.
2. Mating faces shown with top up

FIGURE 12 Polarization positions

3.5.5 Temperature cycling. When tested as specified in 4.7.6, connectors shall meet the performance requirements of the remaining test sequence. There shall be no damage detrimental to the operation of the connectors.

3.5.6 Insert retention. When tested as specified in 4.7.7, connectors shall retain their inserts in their proper location in the shell. The maximum axial displacement allowed shall be .25 mm. Evidence of cracking, breaking, separation from the shell, or loosening shall be cause for rejection of parts.

3.5.7 Salt spray (corrosion). After testing as specified in 4.7.8.1 and 4.7.8.2, unmated connectors and individual contact samples shall show no exposure of basic metal (due to corrosion) which will adversely affect performance.

3.5.8 Contact resistance. The contact resistance shall be in accordance with the applicable specification sheet of MIL-C-39029 and shall be tested in accordance with 4.7.9 herein.

3.5.9 Insulation resistance at ambient temperature. When tested as specified in 4.7.10.1, the insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 1,000 megohms.

3.5.10 Insulation resistance at elevated temperature. When tested as specified in 4.7.10.2, the insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 1,000 megohms.

3.5.11 Dielectric withstanding voltage. When tested as specified in 4.7.11.1 and 4.7.11.2, connectors shall show no evidence of flashover or breakdown.

3.5.12 Durability. When tested as specified in 4.7.12, the connector shall show no defects detrimental to the operation of the connectors and shall meet the subsequent test requirements (see 4.4.1).

3.5.13 Vibration. When tested as specified in 4.7.13, a current discontinuity of 1 microsecond or more, evidence of cracking, breaking, or loosening of parts shall be cause for rejection. Damaged fixtures or tiedowns may be repaired or replaced to complete the test.

3.5.14 Shock. When tested as specified in 4.7.14, a current discontinuity of 1 microsecond or more, evidence of cracking, breaking, or loosening of parts shall be cause for rejection. Damaged fixtures or tiedowns may be repaired or replaced to complete the test.

3.5.15 Static load. When tested as specified in 4.7.15, during and after the application of the specified forces, connectors shall show no evidence of damage detrimental to their normal operation nor shall there be any interruption of electrical continuity. The connectors shall withstand a compressive load of 10,888 newtons, a vertical load of 5,115 newtons, and a side load of 2,265 newtons.

3.5.16 Shell-to-shell conductivity. When tested as specified in 4.7.16, plugs and receptacles shall be electrically conductive. The maximum potential voltage between the shells of the connector pair shall not exceed 2.5 millivolts.

3.5.17 Humidity. When tested as specified in 4.7.17, the insulation resistance shall be 1,000 megohms or greater. Connectors shall show no deterioration or damage that will adversely affect performance.

3.5.18 EMI shielding. When tested in accordance with 4.7.18, the EMI shielding capabilities of mated shells shall not be less than that specified in table III at the specified frequencies.

TABLE III. EMI shielding effectiveness.

Frequency (MHz)	Leakage attenuation (dB)	Frequency (MHz)	Leakage attenuation (dB)
100	65	400	62
200	63	800	60
300	63	1,000	60

3.5.19 Ozone exposure. When tested as specified in 4.7.19, the connectors shall show no evidence of cracking of dielectric material, deterioration of resilient seals, or other damage due to ozone exposure that will adversely affect performance.

3 5.20 Fluid immersion. After immersion in the fluids as specified in 4.7 20, connectors shall unmate and mate properly and resilient materials shall not swell to the extent that cracks and tears appear. There shall be no evidence of material reversion. Shells, plating, and dielectric materials shall show no evidence of deterioration, distortion, or material reversion.

3.5.21 Altitude immersion. When tested in accordance with 4.7.22, the mated connector shall meet the requirements of dielectric withstanding voltage as specified in 3.5.11.

3.5.22 Contact walkout. When tested as specified in 4.7.21, contacts shall not become dislodged from their normal position.

3.5.23 Installing and removal tool abuse (qualification only). When tested as specified in 4.7.23, there shall be no evidence of damage to the contacts, the connector inserts, or the contact retaining mechanism.

3.5.24 Contact stability (sizes 22, 20, 16, and 12 crimp contacts). When tested in accordance with 4.7.24, the total displacement of the contact tip end shall not exceed 0.25 mm for the size 22 socket contact, 1.0 mm for the size 20 pin contact, and 1 5 mm for the size 16 and size 12 pin contact.

3.5.25 Temperature life with contact loading. When subjected to the test specified in 4.7.25, the contacts shall maintain their previously measured location with not more than 0.3 mm change.

3.5.26 Size 8 concentric twinax cavity grounding. When tested in accordance with 4.7.27, the maximum potential drop between the size 8 concentric twinax outer body and the connector mounting flange shall not exceed 10.0 mV.

3.6 Interchangeability. The connector plugs, receptacles, inserts, contacts, and accessories supplied to this specification shall meet the requirements of the applicable specification sheet (see 3.1) and shall be completely interchangeable with the components having the same part or identifying numbers (PIN) but supplied by another qualified connector manufacturer.

3.7 Marking.

3.7.1 Connectors and accessories. Connectors and accessories shall be marked in accordance with method I of MIL-STD-1285, and shall include the military part or identifying number (see 3.1), the manufacturer's name or code symbol, Manufacturer's Commercial and Government Entity (CAGE), and date code. The characters shall be a minimum of 1.5 millimeters in height. If used, metal stamping shall be accomplished before plating. Connector shell marking and insert marking shall remain legible after completion of the tests specified in 4.5.

3.7.2 Insert identification. The military part or identifying number, manufacturer's identification, Manufacturer's Commercial and Government Entity (CAGE), and date code shall appear on the side of the insert in a contrasting color.

3.7.3 Contact designation. Contact locations shall be designated with identifiable characters as indicated on the applicable specification sheet (see 3.1). All positions shall be identified on the front and rear faces of the insert except where space limitations make this impracticable. Location of contact identifying characters shall be in close proximity to the holes but need not be placed exactly where indicated on the standard. Inserts containing size 22 contacts shall be marked with a 5 by 5 grid pattern rear face in accordance with 5.2 of DOD-STD-1842.

3.8 Workmanship. The connector shall be fabricated in a manner such that the criteria for appearance, fit, and adherence to specified tolerances are observed. Particular attention shall be given to neatness and thoroughness of marking parts, plating, welding, soldering, riveting, staking, bonding, and freedom of parts from burrs and sharp edges.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, 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 this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspections 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 ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 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 shall be in accordance with MIL-STD-45662.

4.1.3 Reliability assurance program. A reliability assurance program shall be established and maintained in accordance with MIL-STD-790 Evidence of such compliance shall be verified by the qualifying activity of this specification as a prerequisite for qualification and continued qualification.

4.1.4 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 assembly and 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 for certified piece parts obtained from the qualified connector manufacturer, except when there is cause for rejection. All assemblies produced at the assembly plant shall be subjected to examination of product to assure that the assembly process conforms to that established at the qualified manufacturing plant. Quality control requirements, including Government inspection surveillance, shall be the same as required for the qualified connector manufacturer.

4.1.5 Hydrolytic stability. Certification of requirement 47 of MIL-STD-454 is required (see 3.3.1.2 herein).

4.1.6 Fungus resistance certification. Certification of requirement 4 of MIL-STD-454 is required (see 3.3.3 herein).

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

a. Qualification inspection (see 4.4).

b. Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-1344 and MIL-STD-202.

4.4 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.

4.4.1 Sample size and receptacles. A minimum of 13 plugs and receptacles shall be subjected to the examinations and tests in table IV, in the sequence shown.

4.4.1.1 Test groups I, II, III and IV. Each test group shall consist of a minimum of three completely assembled plugs and receptacles representing the class (1.2.1), shell size (see 3.1), and each of the insert arrangements (MIL-STD-1842) for which qualification is desired.

4.4.1.2 Test group V. Sample shall consist of a modified size 2 shell (see 3.1) plug and receptacle (see 4.7.18).

4.4.2 Preparation of samples. Unless otherwise specified, for signal-power contacts (sizes 22, 20, 16, and 12), half the number of each contact size in each connector shall be wired with the largest allowable AWG size using MIL-W-22759/43 wires. The remaining number of contacts shall be wired with the smallest allowable AWG size using MIL-W-22759/33 wires For shielded contacts and concentric twinax contacts, use applicable cables per MIL-C-17. Termination tools shall be in accordance with appendix A herein.

4.4.3 Qualification of contacts. If a manufacturer submits qualification samples of MIL-C-83527 connectors, contacts supplied with the samples shall be either qualified to MIL-C-39029 or contacts that have been submitted to the qualifying activity for approval.

4.4.4 Failures. Any failure shall be cause for refusal to grant qualification.

4.4.5 Retention of qualification. To retain qualification, the contractor shall forward a report at least every 12 months to the qualifying activity. The qualifying activity shall establish the initial reporting date. The report shall consist of a summary of the results of tests performed for group B inspection including the number and mode of failures. The summary shall include results of all group A inspection tests performed and completed during the reporting period. If the summary of the test results indicates nonconformance with 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 30 days after the end of each reporting 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 if at any time during the reporting period 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 the products (a representative product of each connector) to testing in accordance with the qualification inspection requirements.

4.5 Quality conformance inspection.

4.5.1 Inspection of product for delivery. Inspection of product for delivery shall consist of group A inspection.

4.5.1.1 Inspection lot. An inspection lot shall consist of all connectors covered by one specification sheet, produced under essentially the same conditions, and offered for inspection at one time.

4.5.2 Group A inspection. Each connector shall be subjected to the individual tests shown in table V. For group A inspection, the documentation and standard test conditions of MIL-STD-1344 do not apply.

4.5.2.1 Visual examination. Each connector shall be visually examined for completeness, workmanship, and identification requirements. Attention shall be given to those assemblies that require a seal to determine the condition of that seal Seals missing, twisted, buckled, kinked, or damaged in a manner affecting functional performance shall be cause for rejection.

TABLE IV. Qualification test sequence.

Test or group	I	II	III	IV	V	Requirement paragraph	Test method paragraph
Examination of product	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
Maintainence aging, contact insertion and removal forces				X		3.5.3	4.7.4
Temperature cycling	X	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 1/	X		X 5/		3.5.13	4 7.13.1 and 4 7.13.2
Static load			X			3.5.15	4.7.15
Shock	X					3.5.14	4.7.14
Durability	X					3.5.12	4.7.12
Insulation resistance (ambient temperature)		X	X			3.5.9	4.7.10.1
Dielectric withstanding voltage (sea level)			X			3.5.11	4.7.11.1
Altitude immersion			X			3.5.21	4.7.22
Salt spray (corrosion)			X 2/	X 3/		3.5.7	4.7.8.1 and 4.7.8.2
Contact resistance	X	X		X		3.5.8	4.7.9
Insulation resistance (ambient temperature)	X					3.5.9	4.7.10.1
Insulation resistance (elevated temperature)	X					3.5.10	4.7.10.2
Dielectric withstanding voltage (both)	X					3.5.11	4.7.11.1 and 4.7.11.2
Shell-to-shell conductivity					X	3.5.16	4.7.16
EMI shielding					X	3.5.18	4.7.18
Contact walkout (one connector)			X			3.5.22	4.7.21
Ozone exposure	X					3.5.19	4.7.19
Contact stability		X				3.5.24	4.7.24
Temperature life with contact loading			X			3.5.25	4.7.25

See footnotes at end of table.

TABLE IV. Qualification test sequence - Continued.

Test or group	I	II	III	IV	V	Requirement paragraph	Test method paragraph
Fluid immersion 4/	X	X	X	X		3.5.20	4.7.20
Contact retention	X	X	X	X		3.5.4	4.7.5
Insert retention	X	X	X	X		3.5.6	4.7.7
Examination of product	X	X	X	X	X	3.5.1	4.7.1

1/ Functional vibration.
2/ Standard salt spray.
3/ Dynamic salt spray.
4/ Test samples shall be divided into three subgroups and each subgroup shall be exposed to a different fluid.
5/ Endurance vibration

TABLE V. Group A inspection.

Group A inspection - individual tests
Visual examination - 100 percent inspection in accordance with 4.5.2.1
Insulation resistance (ambient temperature) - 100 percent of parts produced in accordance with 4.7.10.1 1/ 2/
Dielectric withstanding voltage (sea level) - 100 percent of parts produced in accordance with 4.7.11.1 1/

1/ The manufacturer may use in-process controls for this requirement.
2/ Test between two adjacent contacts and between two peripheral contacts and the shell.

4.5.3 Periodic inspection. Periodic inspection shall consist of group B inspection. Except where the results of this inspection show noncompliance with the applicable requirements (4.5.3.1.4), delivery of products which have passed group A shall not be delayed pending the results of periodic inspections.

4.5.3.1 Group B inspection. Group B periodic testing shall be performed on a 36-month basis. The qualifying activity shall specify the sample size for these tests. Samples submitted for group B testing shall have passed group A inspection. Group B tests shall be as specified in table VI.

TABLE VI. Group B inspection.

Inspection	Requirement paragraph	Test method paragraph
Examination of product	3.5.1	4.7.1
Mating and separating forces	3.5.2	4.7.3
Altitude immersion	3.5.21	4.7.22
Vibration (endurance)	3.5.13	4.7.13.2
Salt spray (standard)	3.5.7	4.7.8.1
Examination of product	3.5.1	4.7.1

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

4.5.3.1.2 Disposition of sample units. Sample units which have been subjected to group B inspection shall not be delivered on the contract or purchase order.

4.5 3.1.3 Noncompliance. If a sample fails to pass group B inspection, the manufacturer shall take corrective action on the materials, processes, or both, as warranted, and on all units of product which are to be corrected and which were manufactured with essentially the same materials, processes, etc., 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 B inspection shall be repeated on additional sample units (all inspections, or the inspection which the original sample failed, at the option of the qualifying activity). Group A inspection may be reinstituted; however, final acceptance shall be withheld until the group B reinspection has shown that 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 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.

4.7 Methods of examination and test.

4 7 1 Examination of product (see 3.5.1). The connectors, accessories, and piece parts shall be examined to ensure conformance with this specification and the applicable detail drawings not covered by the performance requirements of 3.5. In-process controls of component parts, unrelated to lot sizes of finished connectors, may be utilized in lieu of examination of these components in the finished connectors to assure conformance of these component parts. EXamination in a continuing manner shall be performed to assure compliance with the following requirements:

a. Applicable specification sheet.

b. Materials.

c. Design and construction.

d. Interchangeability.

e. Marking.

f. Workmanship.

4.7.2 Contact location (see 3.4.4.3). When measured with gauge pins and proper gauges, axial location of contacts from mating face shall meet the requirements of 3.4.4.3.

4.7.3 Mating and separating forces (see 3.5.2). Counterpart plug and receptacle pairs shall be loaded with contacts and mounted in a test fixture. Each connector pair shall be mated and unmated 13 times. During the eleventh, twelveth, and thirteenth cycle, the maximum allowable mating force shall be applied and the connector pair shall bottom at least at one point in the bottoming surface areas.

4.7.4 Maintenance aging, contact insertion, and removal forces (see 3.5.3). Connectors shall be tested in accordance with method 2002 of MIL-STD-1344. A minimum of 20 percent, but not less than five of the contacts in each connector shall then be removed and reinserted 10 times with the aid of the applicable approved tools, the forces required to do so being measured on the first and last of each of the contact insertion and removal cycles.

4.7.5 Contact retention (see 3.5.4). The contact retention shall be tested as specified in method 2007 of MIL-STD-1344. The following details and exceptions shall apply:

a. Applied axial load: Preload to 15 newtons maximum. Apply load as specified in table VII.

b. Special requirements: Where the test sequence requires maintenance aging prior to contact retention, the contacts which were subjected to maintenance aging shall also be selected for contact retention.

c. Axial direction: The applicable forces shall be applied along the longitudinal axial of individual contacts in the direction tending to displace the contacts to the rear.

d. Only the contacts to be tested need be installed in the connector.

TABLE VII. Axial load for contact retention test.

Contact size	Axial load newtons
22	55
20	90
16	112
12	135
1 and 5 coaxial	112
8 concentric twinax	112

4.7.6 Temperature cycling (see 3.5.5). Mated connectors shall be subjected to the temperature cycling of MIL-STD-1344, method 1003, test condition A, except that steps 2 and 4 shall be of 2 minutes maximum duration, the temperature of step 1 shall be -65°C +0°C, -5°C (-85°F) and the temperature of step 3 shall be 150°C +5°C, -0°C (302°F).

4.7.7 Insert retention (see 3.5.6). Connectors shall be tested in accordance with method 2010 of MIL-STD-1344. The following details and exceptions shall apply:

a. Connectors shall be unwired and unmated.

b. Load force of 200 newtons applied to front, then the rear face of each insert.

4 7 8 Salt spray (corrosion) (see 3.5.7).

4.7.8.1 Standard test. Unmated connectors shall be tested in accordance with method 1001 of MIL-STD-1344. The following details and exceptions shall apply:

a. Test condition letter: A.

b The samples shall not be mounted but shall be suspended from the top of the chamber using waxed twine or string, glass rods, or glass cord.

c. Wire ends must be protected to prevent salt migration.

4.7.8.2 Dynamic test. The wired, assembled, plugs and receptacles shall be mated and unmated 50 cycles at a rate of 300 cycles per hour maximum. The mating and unmating shall be accomplished so that the plug and receptacle are completely separated during each cycle. The connectors shall then be subjected to the salt spray test in accordance with method 1001 of MIL-STD-1344. The following details and exceptions apply.

a. The connectors shall be tested for 452 hours mated followed by 48 hours unmated.

b. The connectors shall not be mounted but shall be suspended from the top of the chamber using waxed twine or string, glass rods, or glass cord.

c. Wire ends must be protected to prevent salt migration.

After the salt spray exposure, the remaining number of durability cycles specified in 4.7.12 shall be completed.

4.7.9 Contact resistance (see 3 5 8). The contact resistance of mated contacts shall be measured in accordance with MIL-STD-1344, methods 3004 and 3002 Method 3002 applies only to size 22 contacts and shall precede method 3004. To facilitate testing, voltage probes may be so positioned as to include a reasonable length of wire providing the resistance of the wire is subtracted from the contact resistance value obtained.

4.7.10 Insulation resistance.

4.7.10.1 Insulation resistance at ambient temperature (see 3.5.9). Unmated connectors shall be tested as specified in method 3003 of MIL-STD-1344. The following details and exceptions shall apply; where it is undesirable to install actual contacts in connectors, simulated contacts may be used in performing this test.

4.7.10.2 Insulation resistance at elevated temperature (see 3.5.10). Unmated connectors shall be tested as specified in method 3003 of MIL-STD-1344 Connectors shall be exposed to a temperature of 150°C +5°C, -0°C for 30 minutes Measurement shall be made while the connectors are still in the chamber at the specified temperature.

4.7.11 Dielectric withstanding voltage (see 3.5.11).

4.7.11.1 Dielectric withstanding voltage (sea level). Unmated connectors shall be tested in accordance with method 3001 of MIL-STD-1344 with the following details and exceptions:

a. The magnitude of the test voltage shall be 1,500 volts rms at 60 Hz, with the exception of size 22 contacts which shall have test voltage of 1,300 volts rms at 60 Hz.

b. Fifty percent of the contacts shall be tested, but in no case shall less than six dielectric withstanding voltage readings be taken. If the number of contacts is three or less, all contacts must be tested.

c. For quality conformance testing, simulated contacts may be used in performing this test.

4.7.11.2 Dielectric withstanding voltage (altitude). Mated connectors and unmated connector halves shall be tested in accordance with method 3001 of MIL-STD-1344 with the following details and exceptions:

a. The magnitude of the test voltage shall be as specified in table VIII.

b. Fifty percent of the contacts shall be tested, but not less than six applications made, unless the number of contacts is three or less in which case, all must be tested.

c. The leads of all test circuits shall be brought out through the walls of the chamber. There shall be no wire splices inside the chamber. The wire ends of all leads shall be unsealed.

d. The chamber shall be evacuated to each of the specified altitude pressure equivalents listed in table VIII.

TABLE VIII. Test voltages - 60 Hz rms.

Altitude (KPA)	Mated (volts)	Unmated (volts)
11.6	800	550
4.4	800	350
1.1	800	200

4.7.12 Durability (see 3.5.12). Wired and assembled plugs and receptacles shall be subjected to test method 2016 of MIL-STD-1344. The following details and exceptions shall apply:

a. 500 cycles of mating unmating (including electrical contact engagement).

b. Engagement and complete separation shall be similar to that encountered in service, and may be accomplished by machine.

4.7 13 Vibration (see 3.5.13). Wired, mated connectors shall be subjected to vibration tests in accordance with method 2005 of MIL-STD-1344. The following details and exceptions shall apply:

a. Each vibration test requirement in accordance with table IV shall include two identical pairs of sample connectors. First test sample pair shall be subjected to functional vibration test in accordance with 4.7.13.1 and in the sequence in accordance with table IV. Second test sample pair shall be subjected to endurance vibration test in accordance with 4.7.13.2. For endurance vibration test samples, preconditioning and post test in accordance with table IV are not required.

b. Test fixture design. Test fixture design shall be in accordance with figure 13. In addition, appropriate strain gauges shall be securely attached to the rear surface of the fixture backplate (away from line replaceable unit (LRU)) to monitor fixture backplate reactions. Design details of fixture assembly shall be submitted to qualifying activity.

c. Test LRU. Test dummy loaded LRU shall be designed in accordance with figures 14 and 15. Design details (including proposed deviations) shall be submitted to qualifying activity.

d. With test plug connector mounted to the fixture and test receptacle connector mounted to test LRU, the assembled LRU shall be installed in the fixture using the test swing bolts specified. The test swing bolts shall be torqued evenly until the loading backplate registers a total load of 660 pounds ±5 percent (through the strain gauge reading).

e. All contacts in the test connectors shall be wired in a number of series circuits, and 100 +0, -20 mA current shall be caused to flow through each circuit during vibration. Each circuit shall be wired to detector with sufficient sensitivity to detect loss of continuity of one microsecond or longer.

f. Backplate loading. Appropriate strain gauge shall be securely attached to fixture backplate or LRU backplate to monitor backplate reactions.

g. Lubrication of bottom surface of dummy LRU and top surface of fixture or wear plate may be employed.

4.7.13.1 Functional vibration.

a. Test curve: In accordance with figure 16.

b. Duration. Two hours each in all three axes.

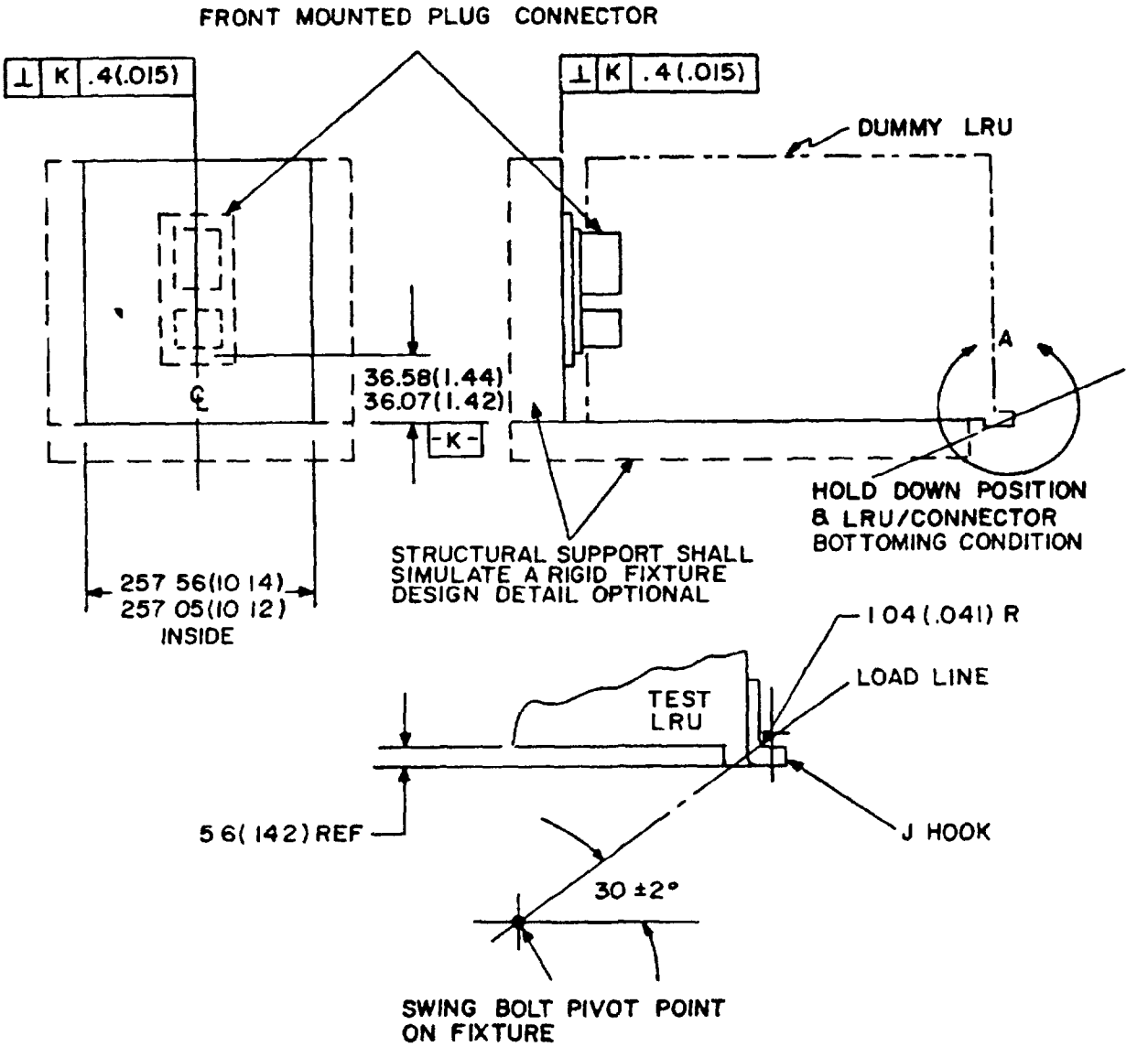
c. All circuits shall be monitored for discontinuity through the vibration test.

4.7.13.2 Endurance vibration.

a. Test curve: In accordance with figures 16 and 17.

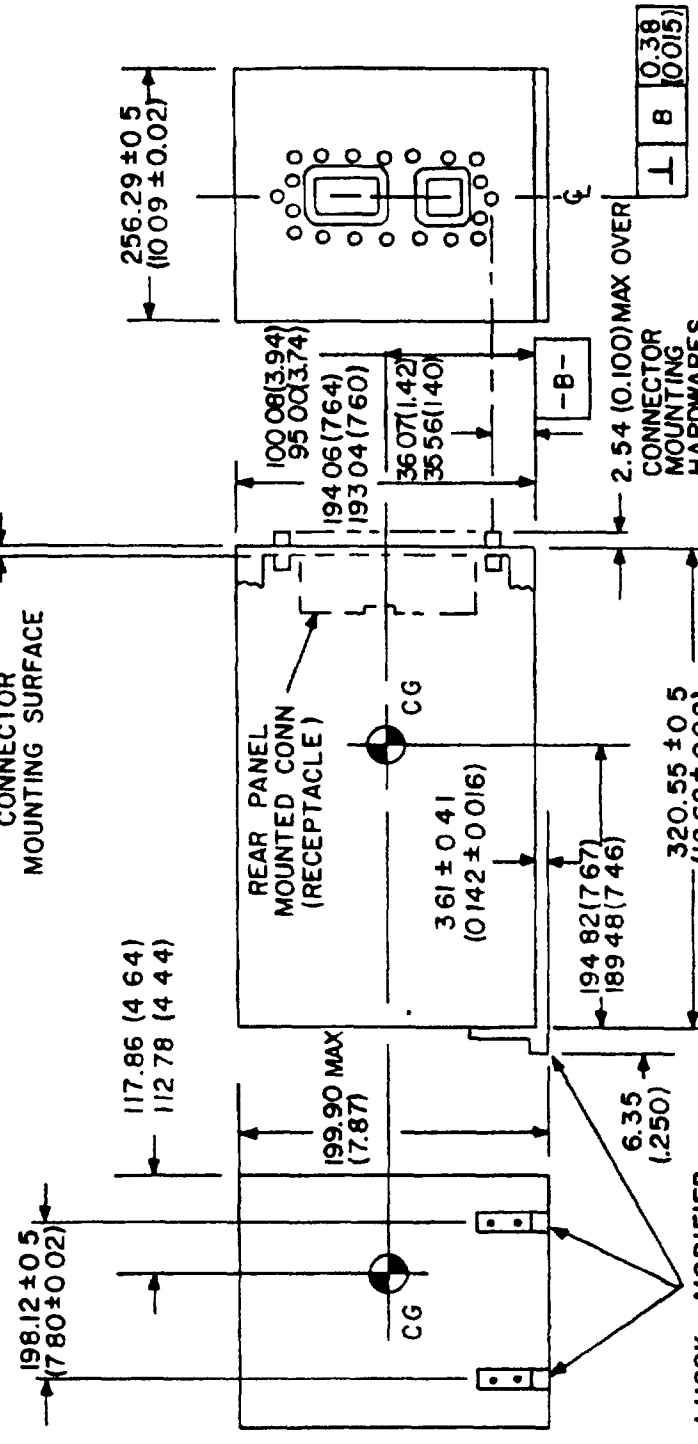
b. Duration. 2.5 hours each in all three axes at figure 17 level. Immediately following completion of each 2.5 hours, subject the test specimen to 2 minutes of vibration at figure 16 level.

c. Monitoring All circuits shall be monitored for discontinuity during the figure 16 level vibration.



NOTES
1 For hold down positions see figures 14 and 15.
2 Hold down devices shall be Tridair P/N HD-1201/-101 evenly torqued to result in specified loads in the fixture backplate
3 Connector shall be mounted to the fixture using NAS 601 screws and NAS 1291-CD6M locknuts Screws shall be torqued to .17 - .23 kg/m (15 - 20 in-lb) Other hardwares may be used if equivalent strength and locking features are maintained
4 Dimensions are in millimeters
5 Inch equivalents are in parentheses

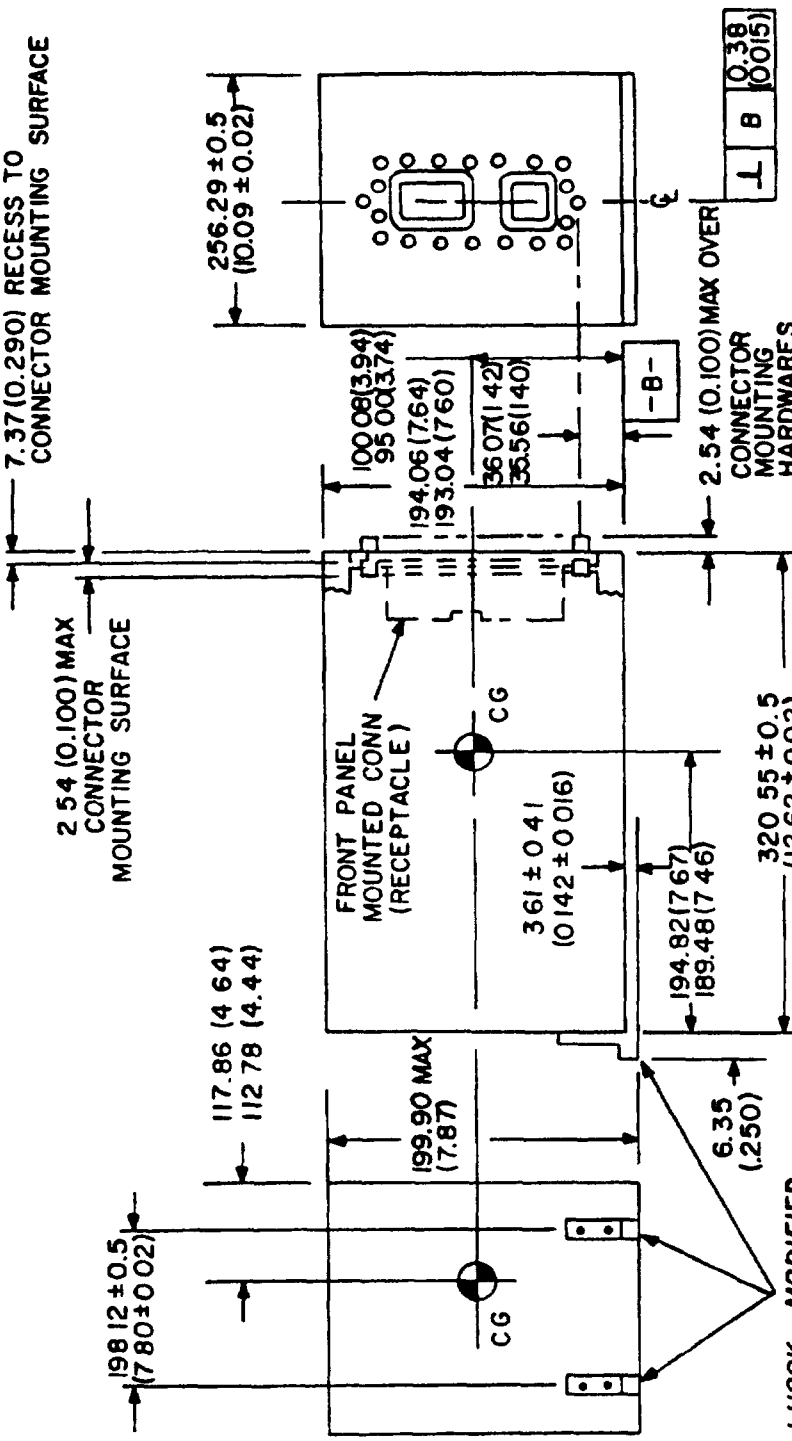
FIGURE 13 Structural support design



NOTES:

1. LRU shall be dummy loaded to 27.22 ±0.23 kg (60.0 ±0.5 lbs) with center of gravity as shown.
2. Connector location shall be based on datum boss of connector flange.
3. LRU shall be constructed such that dummy load is evenly distributed and the sides properly supported to simulate a rigid body.
4. Connector shall be mounted to the LRU using NAS 601 screws and NAS 1291-C06M locknuts. Screws shall be torqued to 0.17-0.23 kg-m (15-20 in-lbs).
5. Other hardwares may be used if equivalent strength and locking features are maintained.

FIGURE 14 Dummy loaded LRU, rear panel mounted connector configuration.



NOTES:
1. LRU shall be dummy loaded to 27.22 ±0.23 kg (60.0 ±0.5 lbs) with center of gravity as shown.
2. Connector location shall be based on datum boss of connector flange.
3. LRU shall be constructed such that dummy load is evenly distributed and the sides properly supported to simulate a rigid body.
4. Connector shall be mounted to the LRU using NAS 601 screws and NAS 1291-C06M locknuts. Screws shall be torqued to 0.17-0.23 kg-m (15-20 in-lbs).
5. Other hardwares may be used if equivalent strength and locking features are maintained.

FIGURE 15. Dummy loaded LRU, front panel mounted connector configuration.

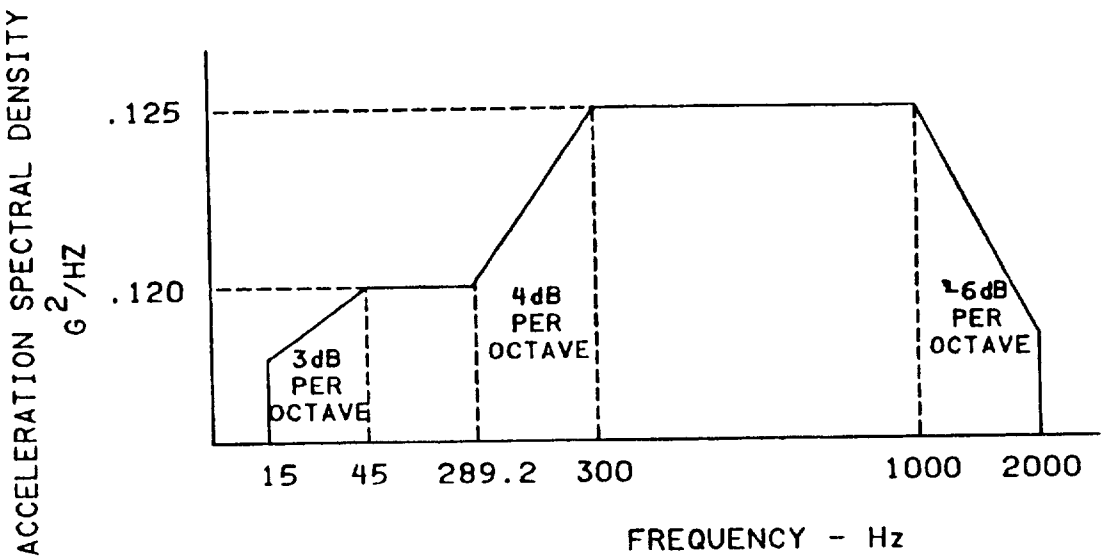


FIGURE 16 Functional vibration test curve

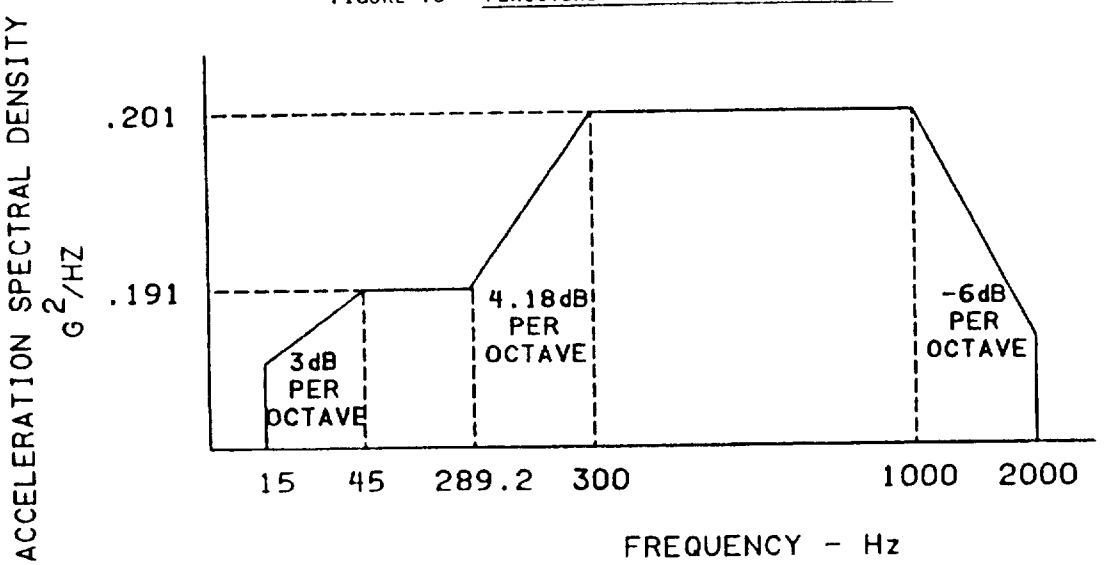


FIGURE 17 Endurance vibration test curve

4.7.14 Shock (see 3.5.14). The connectors shall be tested in accordance with method 2004 of MIL-STD-1344. The following details shall apply.

a. Test condition letter: H (30 G, 11 ms, half sine).

b. Test setup shall be same as for vibration test (see figure 13).

c. All contacts shall be wired in a series circuit and a 100 +10, -0 milliamperes current shall be used.

4.7.15 Static load (see 3.5.15). Wired connectors shall be mounted on separate steel or aluminum plates 2.5 millimeters thick. The mated connectors shall support the specified load applied uniformly to the mounting plates in each of the three principal axes, A - mating compression, B - vertical shear, C - sideload shear, in accordance with figure 18. Force shall be applied gradually at a rate approximately 100 N/s and the final specified value shall be maintained for 1 minute.

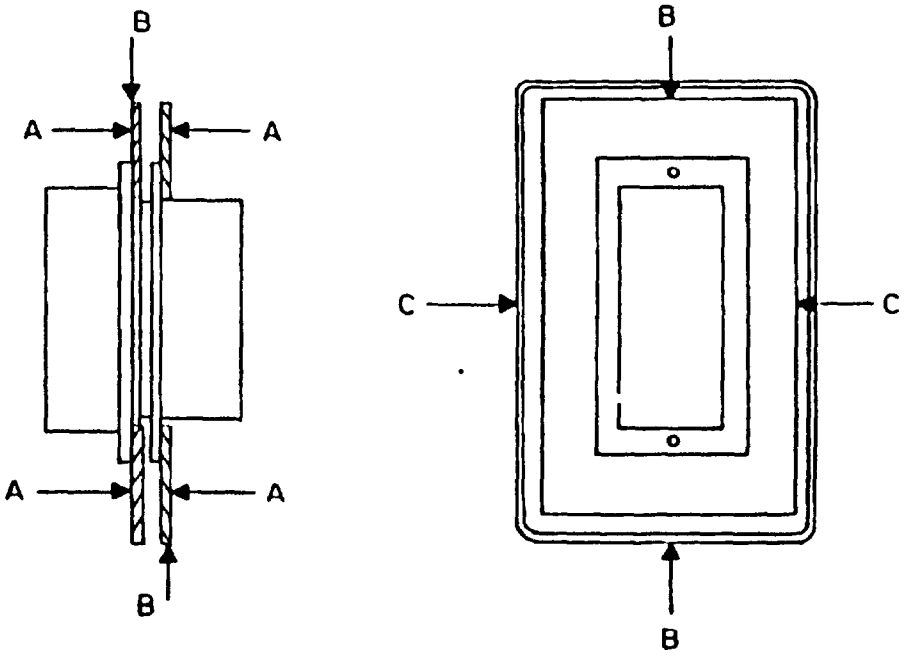


FIGURE 18 Static load test arrangement

4.7.16 Shell-to-shell conductivity (see 3.5.16). Each shell cavity of mated connector pairs shall be subjected to the test specified in method 3007 of MIL-STD-1344. Measuring points shall be rear surfaces of mounting flange.

4.7.17 Humidity (see 3.5 17). Wired, mated connectors shall be subjected to the humidity test specified in method 1002 of MIL-STD-1344. The following details and exceptions shall apply:

a Type I.

b. Test condition letter. A.

c. The mated connectors shall be mounted in a horizontal position.

4.7.18 EMI shielding (see 3.5.18).

4.7.18.1 Test sample. A size 2 plug and receptacle shell shall be used for this test. Shells shall be modified by removing all excess metals except the housing and flange around insert cavity B (see figure 19). Peripheral and EMI seals shall remain on the plug shell. Alternate test fixturing may be used subject to the approval of the qualification activity.

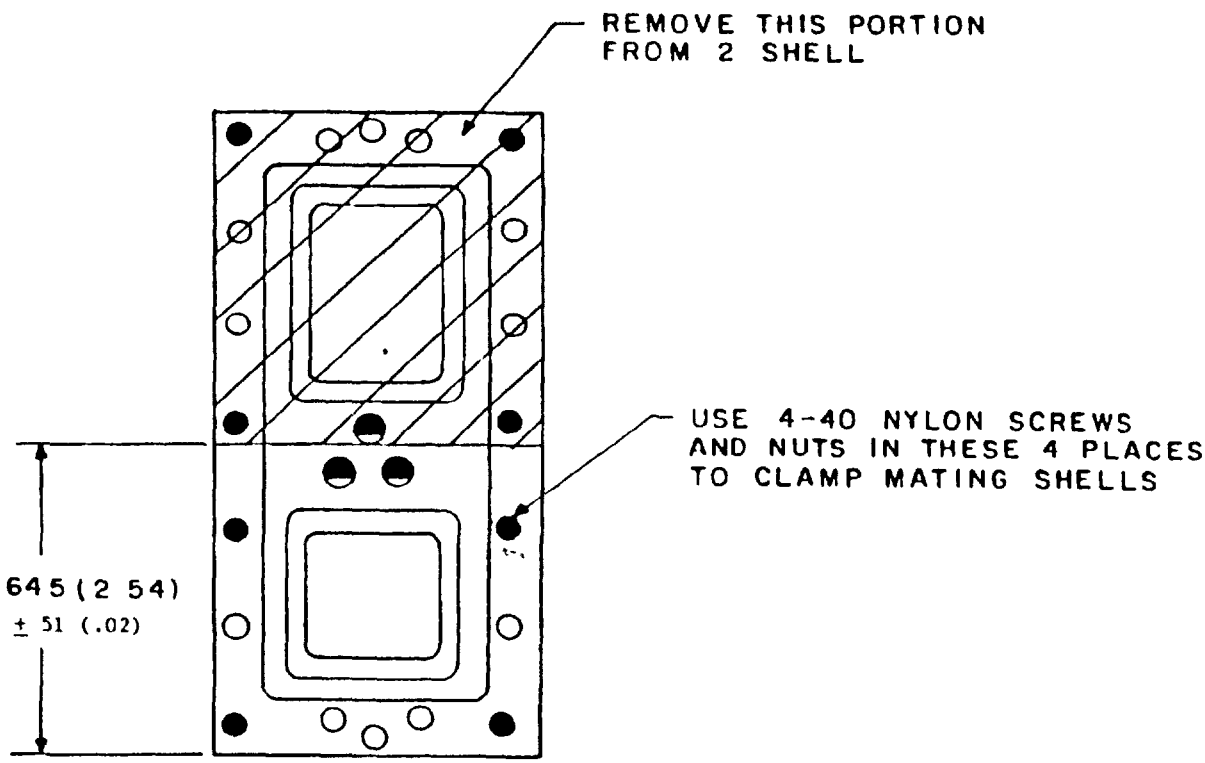


FIGURE 19 Connector preparation - EMI test

4.7.18.2 Sample preparation. The inserts may be removed from the connectors under test or the contacts removed and a hole drilled through the inserts to accommodate a center conductor of suitable geometry to provide a good 50-ohm impedance match with the inside diameter of the mated connector shells.

Tapered transition may be used to provide a means of changing diameters without introducing significant discontinuities in the line. The maximum VSWR in the inner coaxial line shall be 1.5:1. The outer shell of the test fixture shall be so constructed as to provide a good 50-ohm impedance match with the outside shape of the mated connector shells and the transition section. The maximum VSWR of the outer coaxial line shall be 1.5:1. Four nylon screws and nuts (size 4-40) shall be used to clamp the mating connector shells together to simulate normal LRU hold down force.

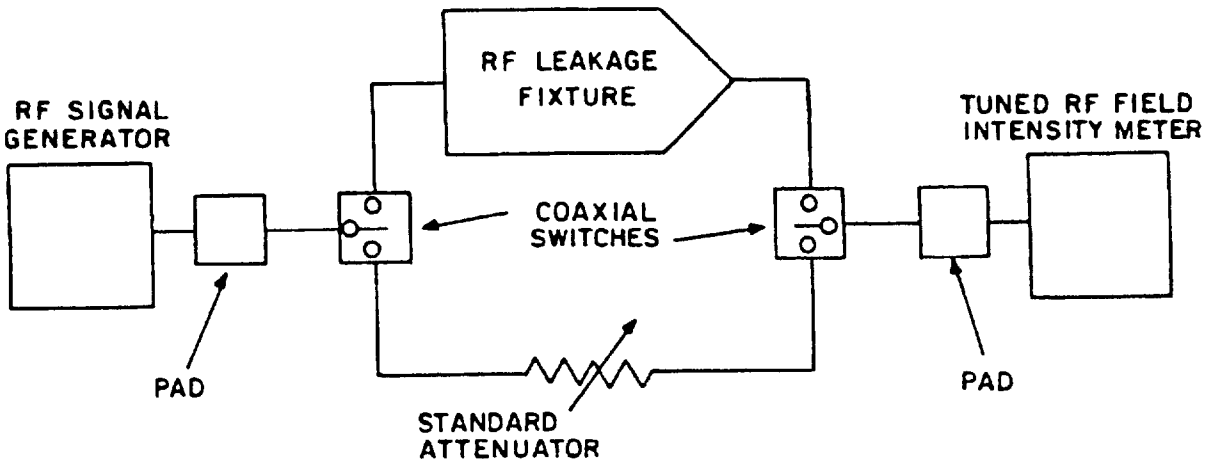
4.7.18.3 Test procedure. The EMI shielding effectiveness of mated connectors shall be measured in a triaxial radio frequency leakage fixture as shown on figure 20. The EMI leakage from the conductor inside the connector in the same inner coaxial line into the outer coaxial line shall be measured at the frequencies specified in table III within a frequency accuracy of ±5 percent. The level of detected signal power shall be indicated by tunable radio frequency field intensity meter isolated from the test circuit by a 3 to 10 dB pad. Care shall be taken to ensure that the signal is a result of EMI leakage from within the mated connector and not due to a faulty termination inside the fixture. All terminations inside the fixture, whether to the transition section or between internal conductors, shall have a leakage at least 10 dB less than the test requirements. The signal source shall be set to the desired frequency. The signal shall be fed through a 3 to 10 dB isolation pad to a parallel circuit consisting of a coaxial switch (DPDT) so connected that the signal can be manually or electronically fed alternately to the fixture and to a variable 100 dB reference attenuator. The attenuator shall be adjustable in 1 dB steps and calibrated to ±3 dB.

A sliding circumferential short shall be positioned behind the connector on the signal input end of the fixture to provide for turning the outer coaxial line for maximum output at each test frequency. The allowable travel of this short shall be greater than 1/2 wavelength at the lowest test frequency of 1.5 meters minimum for 100 MHz. The inner coaxial line shall be terminated in a fixed 50-ohm load impedance behind the connector at the output end of the fixture.

The connectors used to couple together the various elements of the test system shall be of a low-leakage type which have a nominal impedance of 50 ohms, a VSWR of less than 1.5:1 and a minimum leakage attenuation of 100 dB. The output impedance of the signal source and the input impedance of the detector shall be nominally 50 ohms with a maximum VSWR of 1.5:1. The input and output VSWR of the standard attenuator shall be less than 1.5·1 in the 20 to 100 dB range.

The relative signal level in the variable attenuator shall be equaled to the signal level through the leakage fixture by adjusting the attenuator. The signal loss in the fixture can then be read from the setting on the variable attenuator.

4.7.19 Ozone exposure (see 3.5.19). The unmated connectors shall be subjected to the test specified in method 1007 of MIL-STD-1344. At the end of the specified period, the samples shall be examined for signs of ozone deterioration as specified.



SCHEMATIC TEST SYSTEM

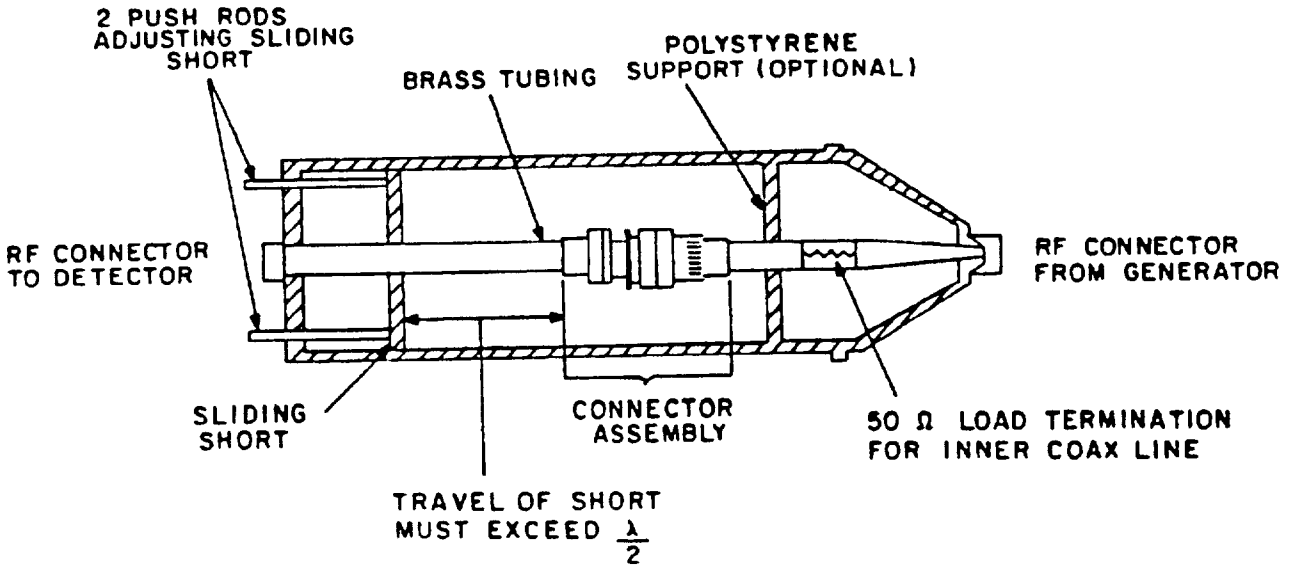


FIGURE 20 EMI test setup

4.7.20 Fluid immersion (see 3.5.20). Connector samples shall be subjected to the test specified in method 1016 of MIL-STD-1344. Following the fluid immersion cycles, the connectors shall be tested for mating and separating forces as specified in 4.7.3 and dielectric withstanding voltage at sea level as specified in 4.7.11.1 within 3 hours. The following details apply:

a. Connectors shall be wired.

b. One connector shall be immersed in each fluid.

c. For fluid (L), the temperature of the oven for the conditioning phase shall be 150°C.

4.7.21 Contact walk-out (see 3.5.22). Two contacts in each plug and receptacle shall be tested. The contacts shall be crimped to stranded steel cable of an appropriate size and installed in the connector. The unmated connector shall be mounted in a test fixture as shown on figure 21. A 1.4 kilogram load shall be applied to the cable. One 360° rotation of the fixture with the connector mounted shall constitute one cycle. The connector shall be subjected to 100 cycles at a rate of 10 to 20 cycles per minute. Contact cavities used in this test shall be excluded from further testing.

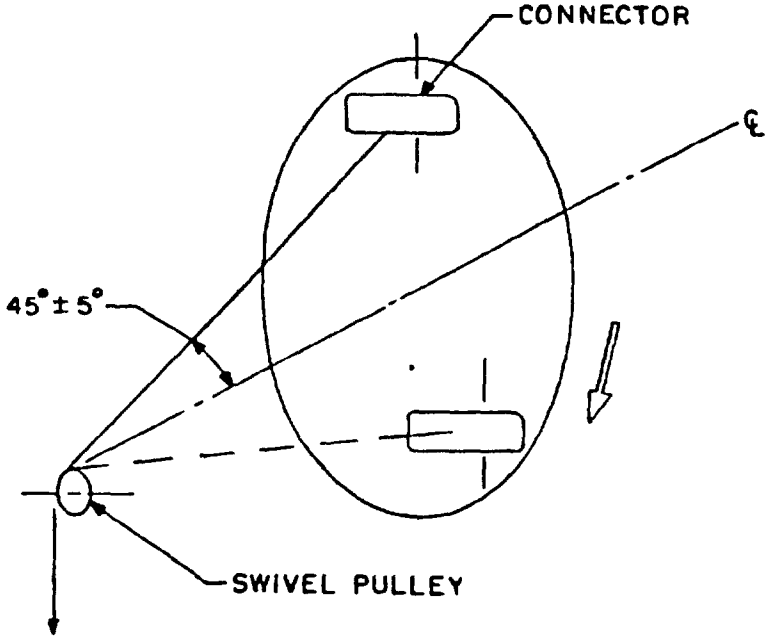


FIGURE 21. Contact walkout test attangement.

4.7.22 Altitude immersion (see 3.5.21). Mated connector shall be tested in accordance with method 1004 of MIL-STD-1344. The following details shall apply:

a. All wire ends shall be located within the chamber and exposed to the chamber atmosphere but not submerged or sealed.

b. At the end of the third cycle while the connectors are still submerged in the solution, at ambient temperature, the dielectric withstanding voltage test shall be performed as specified in 4.7.11.1.

4.7.23 Installing and removal tool abuse (see 3.5.23). Tools used shall be in accordance with MIL-I-81969. Five contact cavities in each insert shall be subjected to each of the tests in 4.7.23.1 through 4.7.23.4. Different contact cavities shall be used for each test. Should a tool become damaged during any of the testing, it shall be replaced. Failure of a tool shall not constitute a test failure. Contact cavities used in this test shall not be subjected to further testing.

4.7.23.1 Removal tool rotation. The applicable contact removal tool shall be inserted as if to remove a contact and an axial load of 13 newtons shall be applied. With the force applied, the tool shall be rotated 180° maximum and then removed, also removing the contact. The contact shall be reinserted. These steps shall be repeated three times on each of the five contacts selected.

4.7.23.2 Installing tool rotation. The contact shall first be removed. With the applicable contact installing tool, the contact shall be reinstalled and an axial load of 13 newtons applied to the tool. With the force applied, the tool shall be rotated 180° maximum and then removed. These steps shall be repeated three times on each of the five contacts selected.

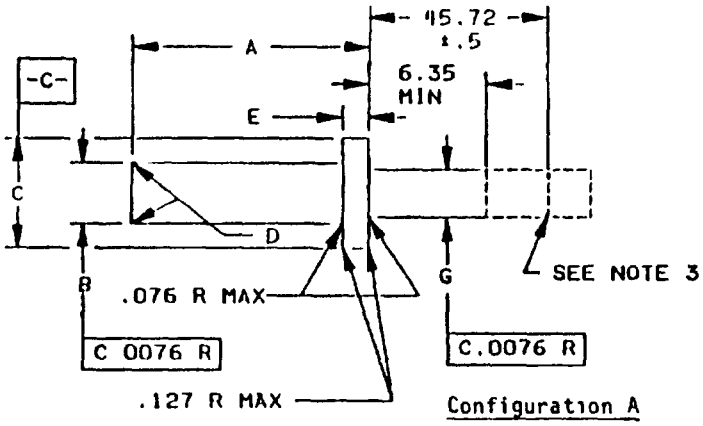
4.7.23.3 Installing tool thrust. The contact shall first be removed. With the applicable contact installing tool, the contact shall be reinstalled and an axial load of 45 newtons applied to the tool. These steps shall be performed only once on each of the five contacts selected. A new tool shall be used for each contact.

4.7.23.4 Removal tool thrust. The applicable contact removal tool shall be inserted as if to remove the contact and an axial load of 45 newtons shall be applied to the tool. The tool shall then be removed, also removing the contact. These steps shall be performed only once on each of the five contacts selected. A new tool shall be used for each contact.

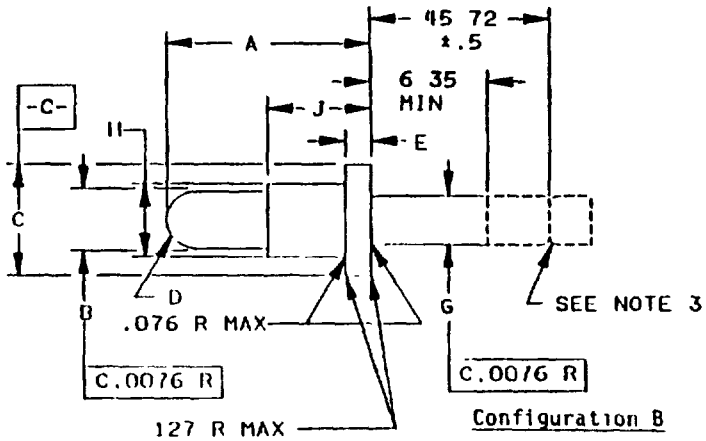
4.7.24 Contact stability (see 3.5.24). The unmated connectors shall have 10 percent (but not less than one) of their contacts subjected to this test. Gauges conforming dimensionally to figure 22 shall be used. The connector shall be held in a holding device. A moment shall be applied to the exposed rod as shown on figure 23. The rate of load application shall not exceed 5 millimeter per second. The total gauge tip displacement shall be measured as shown on figure 23. Contact cavities used in this test shall be excluded from further testing.

4.7.25 Temperature life with contact loading (see 3.5.25). Connectors with contacts removed from an untested connector cavity and replaced with contacts crimped or otherwise attached to steel cable or steel-cored copper wire (copper-weld, or equivalent) of an appropriate size. The axial location of these contacts shall be measured with a load of approximately 2 pounds applied to seat the contact back against the retention device. A weight equal to 50 percent of the axial load for the applicable contact size shall be suspended freely from each steel wire. A current of 100 milliamperes maximum shall be applied to the test contacts and a suitable instrument shall be used to monitor the circuit for discontinuities in excess of 1 microsecond. The mounted connector shall then be exposed to 150°C +5°C, -0°C for 1,000 hours minimum. After the connectors return to ambient temperature, they shall be unmated and the contact locations remeasured with approximately 2 pounds axial load applied to seat the contact back against the retention device.

4.7.26 Nonmagnetic materials (see 3.3.2). Connectors shall be tested as specified in method 3006 of MIL-STD-1344.



Configuration A



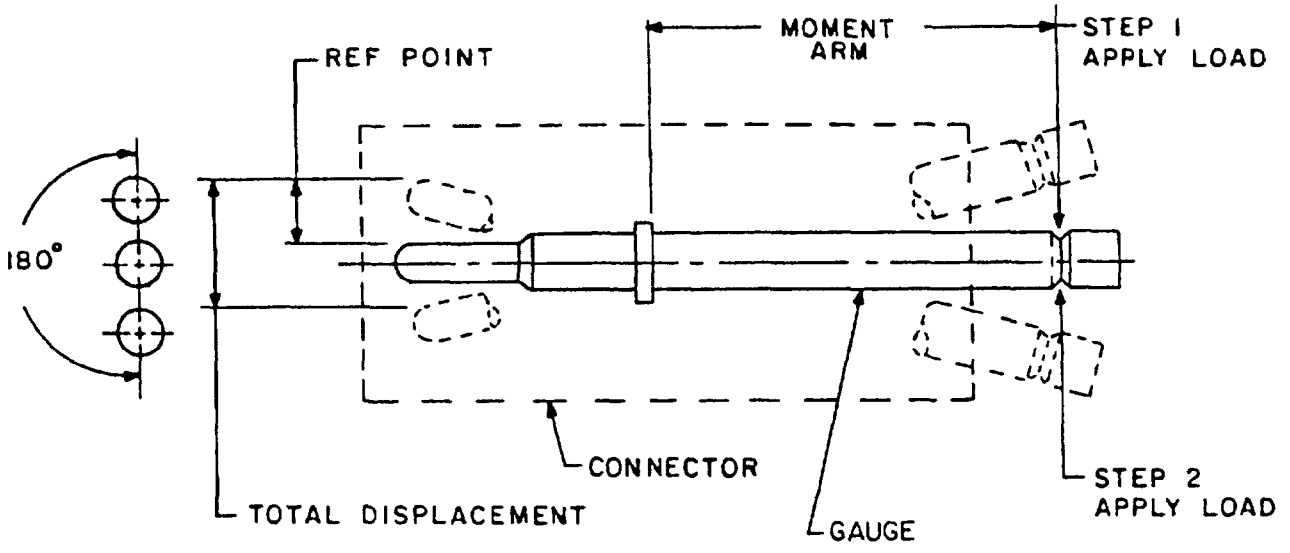
Configuration B

mm	Inches
.0051	.0002
.0076	.0003
.0127	.0005
.0750	.0030
.1020	.0040
.1270	.0050
.8382	.0330
.9910	.0390
1.2700	.0500
1.524	.0600
1.562	.0615
1.7272	.0580
1.7526	.0690
2.0328	.0320
2.3620	.0930
2.6162	.1030
2.7940	.1100
3.3020	.1300
3.7592	.1480
3.8354	.1510
3.9624	.1550
4.7244	.1860
5.0419	.1935
5.1250	.2018
6.3500	.2500
10.1350	.4010
15.6720	.6170
17.2974	.6810

Contact Size	A + 0127 -.0000	B DIA +.0051 -.0000	C DIA + 0051 -.0000	D RAD	E +.0000 - 0051	G dia. +.0000 - 0051	H dia +.0051 -.0000	Figure	J + 0127 -.0000
22	10.1850	1.5240	1.7272	102/ 000	.8382	1.2700	-----	21A	----
20	15.6720	.9910	2 0828	Spherical	.8382	1.7272	1.7526	21B	3.9624
16	17.2974	1.5620	3.3020	Spherical	.8382	2.6162	2.7940	21B	5.1250
12	17.2974	2.3620	4.7244	Spherical	.8382	3.8354	3 7592	21B	5.0419

NOTES:
1. Material: Hardened tool steel.
2. Finish. 32 microinches polished.
3. Design of rear extension is optional, but must have a groove provided as indicated.
4. Dimensions are in millimeters.
5. Inch equivalents are given for general information only.

FIGURE 22 Gauge configuration



Contact size	Moment Newton meter
22	0 03 (4.5)
20	0.20 (28.4)
16	0.25 (35.5)
12	0.25 (35.5)

Step 1 - Apply load to determine reference point
Step 2 - Apply load in opposite direction and measure total displacement

NOTE Inch-ounce equivalents are in parentheses

FIGURE 23 Contact stability test arrangement

4.7.27 Size 8 cavity grounding (see 3.26). Unmated connectors, with size 8 concentric twinax contacts installed, shall be tested in accordance with method 3007 of MIL-STD-1344. The following details and exceptions shall apply:

a. Points of measurements. Front surface of connector mounting flange and size 8 concentric twinax outer body (2.54 mm maximum from rear edge of the contact).

b. To facilitate testing, voltage probes may be so positioned as to include a reasonable length of cable, providing the resistance of the additional length of cable is subtracted from the resistance value obtained.

4.8 Post test examination. The tested connectors and contacts shall be examined to determine the effects of previous testing. Any evidence of cracking, loosening of parts, carbon tracking, excess wear, or missing parts shall be recorded.

5. PACKAGING

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

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 are intended for use in conjunction with military standard rack- or tray-mounted avionics units to provide for mechanically secure attachment, and quick removal and replacement of the avionics unit. They withstand high vibration, and are environmentally resistant and shielded against electromagnetic interference when engaged.

6.1.1 Application guidance. The application of the connector is described in DOD-STD-1788. An individual line replaceable unit (LRU) cannot have multiple connectors, but each connector's shell variant can accommodate multiple inserts. Inserts are limited to two sizes, but each size of insert shall accommodate multiple pin/socket, and coaxial contact configurations.

6.2 Acquisition requirements. Acquisition documents must 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 or identifying number.

c. Whether contacts, sealing plugs, and tools are included (see 3.4.1, 3.4.2, 3.4.3.6, and 3.4.4).

d. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).

6.3 Qualification. With respect to products requiring qualifications, awards will be made only for products which are, at the time set for opening of bids, qualified 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 contractors 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. For all series, the activity responsible for the qualified products list is the Air Force 2750th Air Base Wing, Electronic Support Division (2750th ABW/ES), Gentile AFS, Dayton, Ohio 45444; however, information pertaining to qualification of products may be obtained from the Defense Electronics Supply Center (DESC-E), Dayton, Ohio 45444.

6.3.1 Evaluating activity. The activity responsible for evaluating the qualification test reports if other than DESC-E is listed on the applicable specification sheets (see 3.1). The qualifying activity (DESC-E) will notify the prospective contractor as to where the test reports are to be forwarded. The evaluating activity is responsible for notifying the prospective contractor that the test report is acceptable.

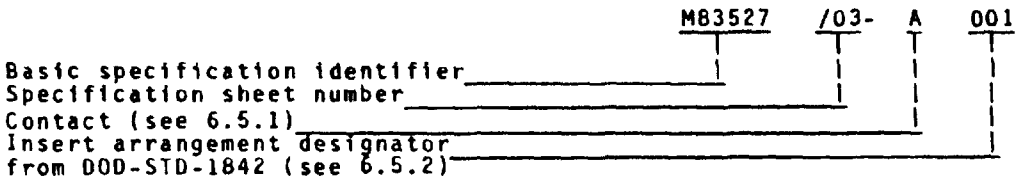
6.3.2 Copies of "Provisions Governing Qualification SD-6". Copies of "Provisions Governing Qualification SD-6" may be obtained upon application to Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

6.4 Definitions.

6.4.1 Rated temperature. Rated temperature is the maximum value of the temperature range and also the maximum hot spot temperature of the connector.

6.4.2 EMI backshell. An EMI backshell is a device which is designed to control electromagnetic interference caused by the radiation of signals at interconnecting areas.

6.5 Part or identifying number (PIN). An example of the military PIN is shown below:



6.5.1 Contacts. When ordering the complete connector with contacts, a designator "A" shall be used, and when ordering without contacts, a designator "B" shall be used.

6.5.2 Insert. When ordering the complete military part or identifying number with insert pattern, use MIL-STD-1842. When ordering the insert pattern only, use MIL-C-83527/7 (plug) and MIL-C-83527/8 (receptacle).

6.6 Subject term (key word) listing.

EMI feature
EMI shielding effectiveness
Peripheral seal
Resilient material

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

APPENDIX A

CONTACT AND TOOL CROSS REFERENCE

10. SCOPE

10.1 Scope. This appendix is intended for cross referencing contacts and tools for MIL-C-83527 connectors. This appendix is not a mandatory part of the specification. The information contained herein is intended for guidance only.

20. APPLICABLE DOCUMENTS

20.1 Government documents. The following documents form a part of this appendix to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-C-22520	-	Crimping Tools, Terminal, Hand or Power Actuated Wire Termination, and Tool Kits.
MIL-C-39029	-	Contacts, Electrical Connector, General Specification For.
MIL-I-81969	-	Installing and Removal Tools, Connector, Electrical Contact, General Specification For.

APPENDIX A

Contacts and tools.

Contact size and type	Pin	Socket	Installing tool	Removal tool	Crimp tool	Positioner
22-20	M39029/93	M39029/94	M81969/1-01	M81969/1-01	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	---	M81969/28-02	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 Concentric twinax	M39029/96	M39029/95	M81969/14-06	M81969/14-06	Inner M22520/2-01 Intermediate and Outer M22520/5-01	Inner M22520/2-37 Intermediate and Outer M22520/5-200

APPENDIX B

CONTACT SIZE AND TYPE

10. SCOPE

10.1 Scope. This appendix is intended for reference to specify all contact sizes and types applicable to MIL-C-83527 connectors. This appendix is not a mandatory part of the specification. The information contained herein is intended for guidance only.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

30. GENERAL REQUIREMENTS

30.1 Contact size and type. See table IX.

TABLE IX. Contact size and type

Size	Termination		Design/application		
	Crimp	Solder	Solid	Shielded	Data Bus
22	X	X	X		
20	X	X	X		
16	X	X	X		
12	X		X	X	
8	X				X
5	X			X	
1	X			X	

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - AS
Air Force - 85

Review activities:
Navy - EC
Air Force - 11, 17, 99
DLA - ES

Preparing activity:
Air Force - 85

Agent:
DLA - ES

(Project 5935-3623)