

INCH-POUND

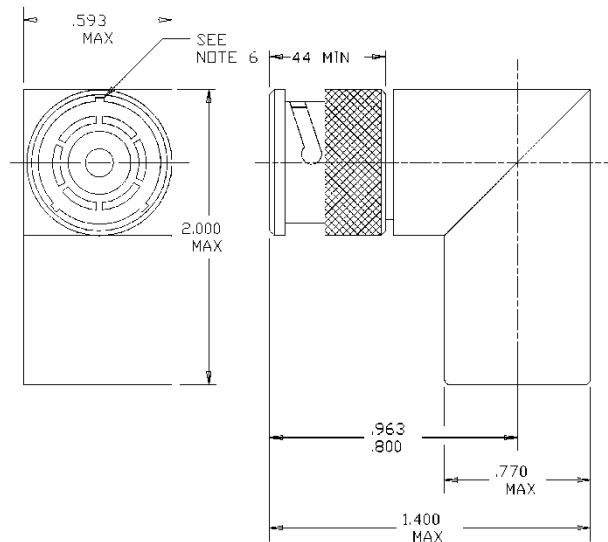
MIL-PRF-49142/7D
w/AMENDMENT 2
22 August 2022
SUPERSEDING
MIL-PRF-49142/7D
w/AMENDMENT 1
24 June 2021

PERFORMANCE SPECIFICATION SHEET

CONNECTOR, PLUG, ELECTRICAL, TRIAXIAL, RADIO FREQUENCY
(SERIES TRB (CABLED), PIN CONTACT, RIGHT ANGLE, CLASS 2)

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

The requirements for acquiring the product described herein shall consist of
this specification sheet and MIL-PRF-49142.



Inches	mm
.44	11.18
.510	12.95
.593	15.06
.770	19.56
.800	20.32
.963	24.46
1.400	35.56
2.000	50.80

FIGURE 1. General configuration.

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NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. 2.000 (50.80 mm) defines the maximum length of the connector when assembled to the appropriate cable.
4. Wrench flats are to accommodate standard wrench openings in accordance with FED-STD-H28.
5. All undimensioned pictorial representations are for reference purpose only.
6. Alternate keying configurations, see MIL-PRF-49142.
7. Interface shall be in accordance with MIL-STD-348, series TRB, pin contact.

FIGURE 1. General configuration - Continued.

ENGINEERING DATA:

Nominal impedance: Non-constant.

Frequency range: 0 to 500 MHz minimum.

Voltage rating: 400 V rms maximum working voltage at sea level. 100 V rms maximum working voltage at 70,000 feet (4.437 kPa).

Temperature range: -65°C to +165°C.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and MIL-STD-348.

Force to engage and disengage:

Longitudinal force: 4 pounds (17.79 N) maximum.

Torque: 2.5 inch-pounds (0.28 Nm) maximum.

Coupling proof torque: Not applicable.

Mating characteristics: See MIL-STD-348 for dimensions.

Intermediate contact:

Test ring ID: .169 inch (4.29 mm) maximum, 16-microinch (0.406 μ m) finish.

Insertion force: 3 pounds (13.34 N) maximum, when inserted a minimum of .093 inch (2.36 mm),

Contacts with slotted members: Shall contact a .173 inch (4.39 mm) minimum diameter ring within .031 inch (.079 mm) of their tip ends.

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Outer contact:

Test ring ID: .319 inch (8.10 mm) maximum, 16-microinch finish (0.406 μ m).

Insertion force: 5 pounds (22.24 N) maximum, when inserted a minimum of .093 inch (2.36 mm).

Contacts with slotted members: Shall contact a .324 inch (8.23 mm) diameter ring within .031 inch (.079 mm) of their tip ends.

Permeability: Applicable.

Hermetic seal: Not applicable.

Leakage: To be added.

Insulation resistance: 5,000 megohms.

Outer conductor retention: 6 pounds (26.69 N) minimum axial force.

Dielectric withstanding voltage: At sea level, 1,200 V rms, between center conductor and intermediate conductor: 500 V rms, between intermediate conductor and outer conductor.

Salt spray (corrosion): Applicable.

Vibration: Applicable.

Shock: Applicable.

Thermal shock: Applicable (except high test temperature shall be +200°C for connectors using +200°C cables).

Moisture resistance: Applicable.

Conductor resistance: In milliohms, maximum.

	<u>Initial</u>	<u>After environment</u>
Center conductor:	2.0	2.5
Intermediate conductor	0.5	0.6
Outer conductor (Silver plated)	0.2	0.3
Outer conductor (Nickel plated)	0.4	0.6

Dash number and applicable cable: See table I.

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TABLE I. Dash number and applicable cable.

*Dash number ("X" in the dash number allows material options, refer to the basic document) <u>1/</u>	Cable <u>2/</u>
Category A – No special tools required <u>3/ 4/</u>	
X001 <u>5/</u> X101 X201	M17/134-00001 M17/134-00003
X002 <u>5/</u> X102 X202	M17/134-00002 M17/134-00004
X003 <u>6/</u>	M17/178-00001
X004 <u>6/</u>	M17/179-00001
X005 <u>6/</u>	M17/116-RG307
X006 <u>5/</u> X106 X206	M17/176-00002 <u>7/ 10/</u>
X007 <u>5/</u> X107 X207	M17/177-00001 <u>7/</u>
X008 <u>5/</u> X108 X208	M17/178-00001
X009 <u>5/</u> X109 X209	M17/179-00001
X010 <u>5/</u> X110 X210	M17/135-00003 M17/135-00005
X011 <u>5/</u> X111 X211	M17/135-00004 M17/135-00006

See notes at end of table.

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TABLE I. Dash number and applicable cable – Continued.

*Dash number ("X" in the dash number allows material options, refer to the basic document) <u>1/</u>	Cable <u>2/</u>
Category G – Use of SAE AS22520 tool required for assembly <u>3/ 8/ 9/</u>	
X012 <u>5/</u> X112 X212	M17/135-00003 M17/135-00005
X013 <u>5/</u> X113 X213	M17/134-00001 M17/134-00003
X014 <u>5/</u> X114 X214	M17/134-00002 M17/134-00004
X015 <u>5/</u> X115 X215	M17/116-RG307
X016 <u>5/</u> X116 X216	M17/45-RG108 <u>10/</u> M17/186-00001 <u>10/</u>
X017 <u>5/</u> X117 X217	M17/176-00002 <u>7/ 10/</u>
X018 <u>5/</u> X118 X218	M17/177-00001 <u>7/</u>
X019 <u>5/</u> X119 X219	M17/178-00001
X020 <u>5/</u> X120 X220	M17/179-00001
X021 <u>5/</u> X121 X221	M17/135-00004 M17/135-00006

See notes at end of table.

TABLE I. Dash number and applicable cable – Continued.

- * Not for Naval Air Systems Command (AS) use.
- 1/ The "X" is placed in the dash number to allow the user connector body plating options provided in the general specification. Only connectors of the same materials are to be intermated to reduce the possibility of dissimilar problems, including galvanic corrosion.
- 2/ The latest version of each cable shall be applicable.
- 3/ These connectors have captivated center contacts.
- 4/ These parts are no longer restricted from Navy use.
- 5/ Preferred keying arrangement.
- 6/ Inactive for new design (see table III).
- 7/ Cables to be used for the +200°C thermal shock test.
- 8/ These connectors are assembled using the applicable crimping tool to the specified cables.
- 9/ Complete connector assembly shall consist of a body, center contact, intermediate contact, ferrule, and assembly instructions.
- 10/ These cables are twin conductor cables.

Corona level:

Altitude: 70,000 feet (4.437 kPa).

Voltage: 250 V rms minimum.

RF high potential withstanding voltage:

800 V rms, between center conductor and intermediate conductor.

200 V rms, between intermediate conductor and outer conductor at 5 MHz to 7.5 MHz.

Leakage current: Not applicable.

Cable retention force (for cable .200 inch (5.08 mm) to .325 inch (8.25 mm) outside dimension): 40 pounds (177.93 N) minimum.

Coupling mechanism retention force: 100 pounds (444.82 N) minimum.

Rise time degradation: 400 picoseconds maximum. (Not applicable to connectors using twin conductor cables.)

Connector durability: 500 cycles minimum at 12 cycles per minute maximum.

Part or Identifying Number (PIN): M49142/07- (dash number from table I). **CAUTION: A NICKEL PLATED BODY COMBINATION IS AVAILABLE. THIS COMBINATION IS NOT FOR USE IN APPLICATIONS WHERE PASSIVE INTERMODULATION GENERATION (PIM) MAY BE A CONCERN.** (https://www.amphenolrf.com/library/download/link/link_id/584611/)

Group qualification: See table II.

Cross-reference of cables: See table III.

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TABLE II. Group qualification. 1/

Groups	Submission and qualification of any of the following dash numbers	Qualifies the following dash numbers
I	X*01 X*02 X*07	X*01 X*02 X*07
II	X*03 X*04 X*08 X*09	X*03 X*04 X*08 X*09
III	X*06	X*06
IV	X*13 X*14 X*15 X*18	X*13 X*14 X*15 X*18
V	X*16 X*17	X*16 X*17
VI	X*19 X*20	X*19 X*20
VII	X*10 X*11	X*10 X*11
VIII	X*12 X*21	X*12 X*21

1/ If a connector manufacturer produces a connector which meets all the requirements for two or more connector PIN's (within same series), the manufacturer may receive qualification approval for two or more connector PIN's by qualifying the one connector. It is not necessary that such connectors be in the same group. Each connector, however, must be marked with its own appropriate PIN. For group qualification, the connectors must be of similar design. Qualification of connectors qualifies connectors of the same body material and finish only. "X" designates body material and finish. The "*" designates keying (see MIL-PRF-49142).

TABLE III. Cross-reference of cables.

Preferred cable	Superseded cable
M17/177-00001	380-10045-1
M17/178-00001	D3-7619-5/336
M17/179-00001	D3-7619-5/338

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Retention of qualification: To retain qualification, the qualified manufacturer shall test and report all Group A, Group B and Group C inspections in accordance with MIL-PRF-49142. All Group C subgroup inspections from Table VII of MIL-PRF-49142 are required.

M49142/7 subgroup 1 inspections may be waived when M49142/3 and M49142/4 subgroup 1 inspections have been performed and passed.

M49142/7 subgroup 2 inspections may be waived when M49142/3, M49142/4, M49142/8 and M49142/11 subgroup 2 inspections have been performed and passed.

M49142/7 subgroup 3 inspections may be waived when M49142/3 and M49142/8 subgroup 3 inspections have been performed and passed.

M49142/7 subgroup 4 inspections may be waived when M49142/3, M49142/6, M49142/8 and M49142/11 subgroup 4 inspections have been performed and passed.

M49142/7 subgroup 5 inspections may be waived when M49142/3 and M49142/4 subgroup 5 inspections have been performed and passed.

Table IV lists the minimum subgroup tests required to qualify M49142/3 through M49142/12 for each finish.

TABLE IV. Retention of qualification by similarity table. 1/ 2/

MIL-PRF-49142 Table VII Subgroup	/3 & /8		/4 & /10	/5 & /9		/6 & /11		/7 & /12	
1	/3-X*08	---	/4-X*04	---	---	---	---	---	---
2	/3-X*08	/8-X*06	/4-X*04	---	---	---	/11-X*06	---	---
3	/3-X*08	/8-X*06	---	---	---	---	---	---	---
4	/3-X*08	/8-X*06	---	---	---	/6-X*07	/11-X*06	---	---
5	/3-X*08	---	/4-X*04	---	---	---	---	---	---
Units	15	9	9	0	0	3	6	0	0

1/ The "X" in the dash number refers to body material and finish combinations. Only connector combinations of the same material and finish allow for retention of that specific connector. Refer to the basic specification for the material and finish requirements.

2/ The "*" signifies connector keying configuration. Only one keying configuration is required to retain all keying combinations.

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced documents. In addition to MIL-PRF-49142, this document references the following:

MIL-STD-348

FED-STD-H28

SAE-AS22520

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CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force - 85
NASA - NA

Preparing activity:
DLA - CC

(Project 5935-2022-139)

Review activities:

Army - AR, AT
Navy - AS, MC, OS
Air Force – 19

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