

METRIC

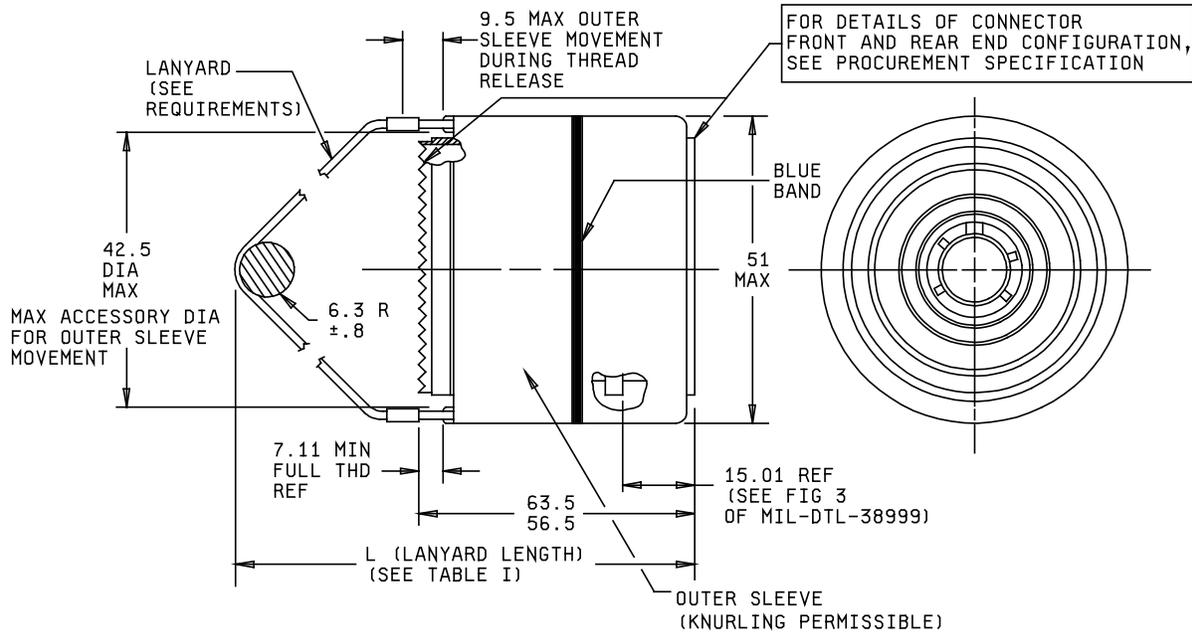
MIL-DTL-38999/31E
 12 March 2014
 SUPERSEDING
 MIL-DTL-38999/31D
 19 April 2002

DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, CIRCULAR, THREADED, PLUG, LANYARD RELEASE,
 FAIL-SAFE, REMOVABLE CRIMP CONTACTS, PINS, SHELL SIZE 25, SERIES III, METRIC

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-DTL-38999.



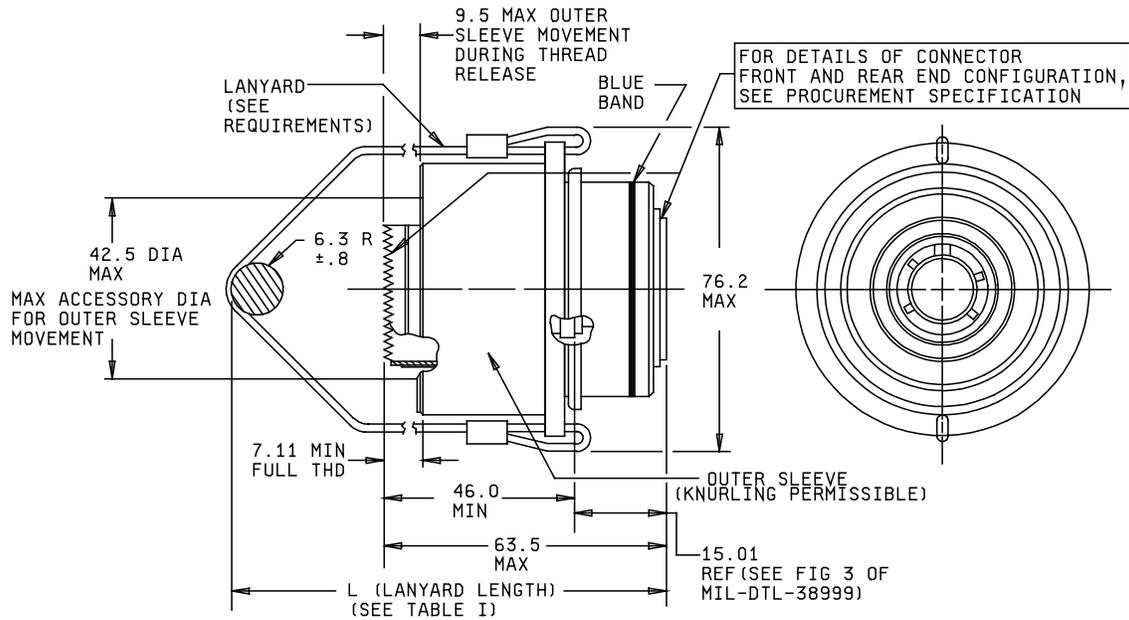
mm	Inches	mm	Inches	mm	Inches	mm	Inches
0.8	.03	7.11	.28	42.5	1.67	56.5	2.22
6.3	.25	9.5	.37	51	2.01	63.5	2.50

NOTES:

1. Dimensions are in millimeters. Inch equivalents in parentheses are given for information only.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store and issue this configuration.

FIGURE 1. Plug, classes R, W, T, X and Z, type 1.

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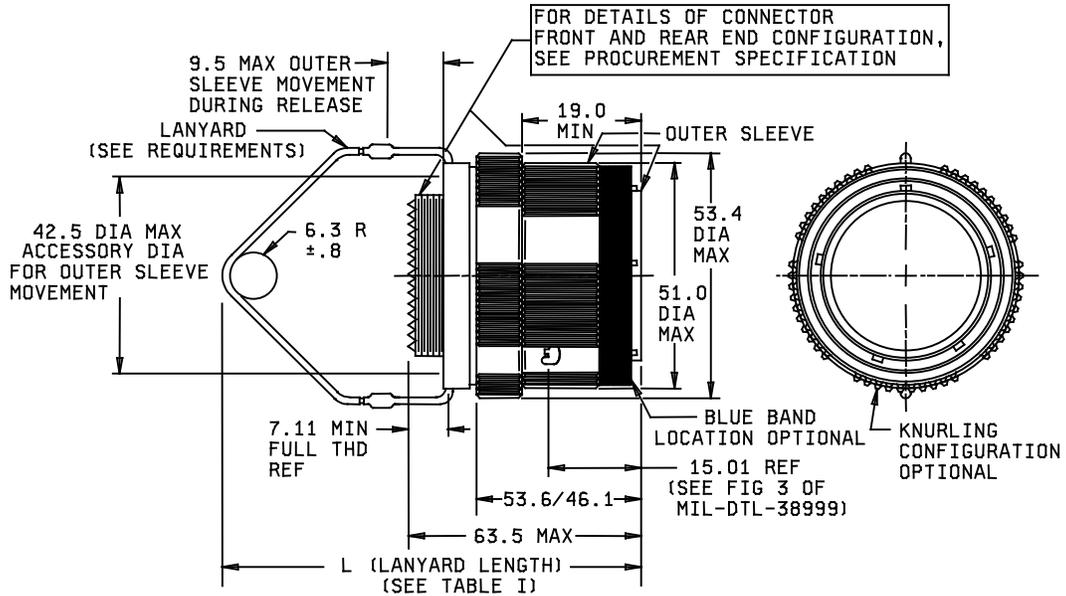


mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches
0.8	.03	7.11	.28	15.01	.59	46.0	1.81	76.2	3.0
6.3	.25	9.5	.37	42.5	1.67	63.5	2.50		

NOTES:

1. Dimensions are in millimeters. Inch equivalents in parentheses are given for information only.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. Inactive for new design. The Government will not stock, store or issue this configuration.
5. Only insert arrangements 25-11 and 25-20 of MIL-STD-1560 apply.

FIGURE 2. Plug, classes W and X, type 2.

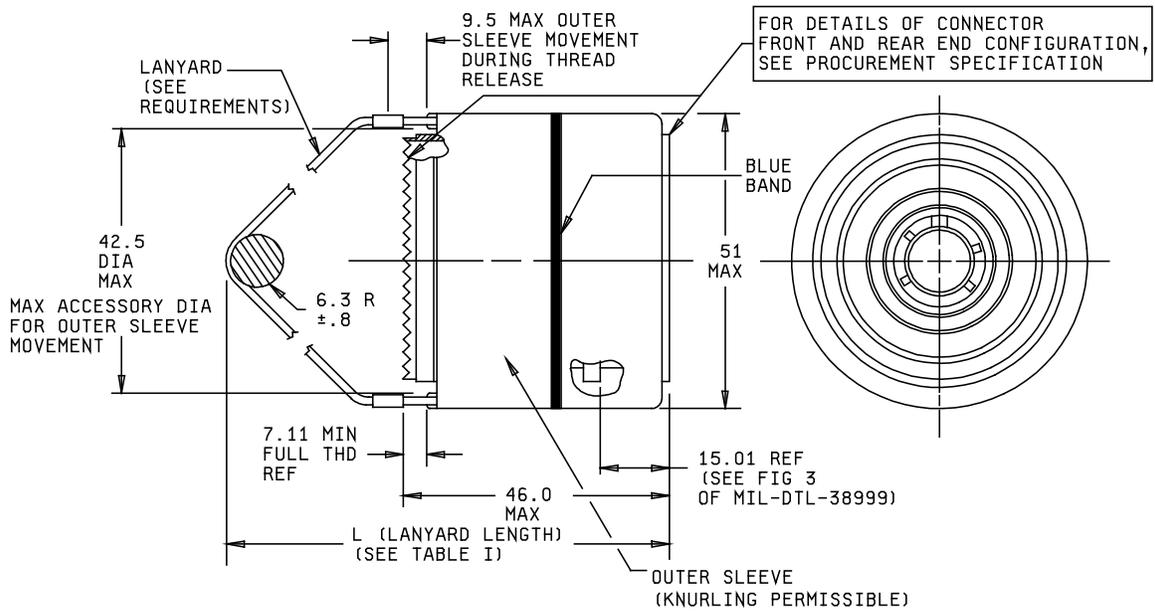


mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches
0.8	.03	7.11	.28	15.01	.59	46.1	1.81	53.6	2.11
6.3	.25	9.5	.37	19.0	.75	53.4	2.10	63.5	2.50

NOTES:

1. Dimensions are in millimeters. Inch equivalents in parentheses are given for information only.
2. Polarization position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store and issue this configuration.

FIGURE 3. Plug, classes J and M, type 3.

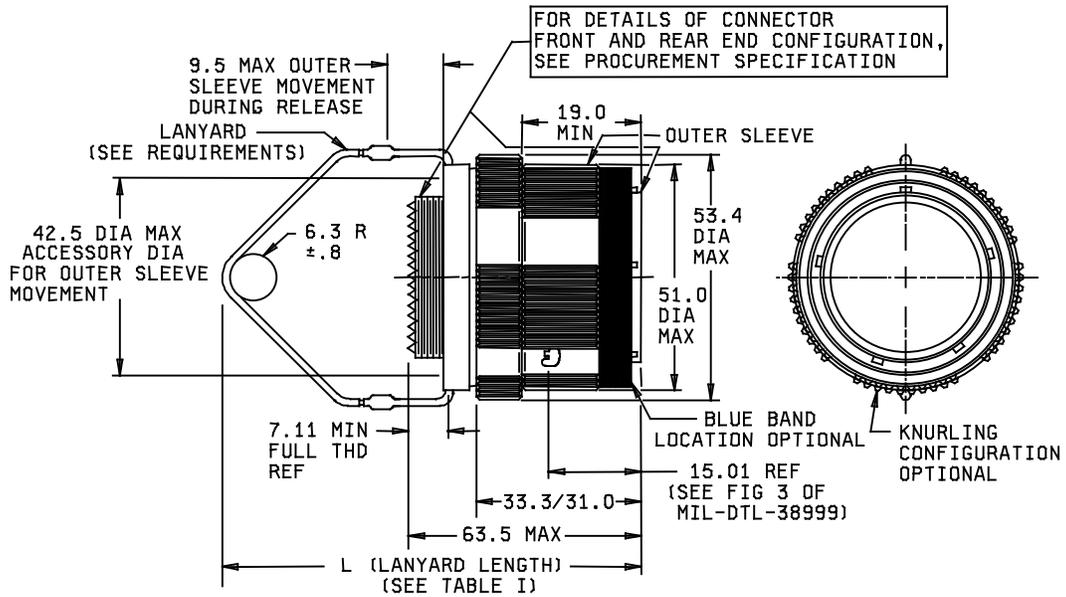


mm	Inches	mm	Inches	mm	Inches	mm	Inches
0.8	.03	7.11	.28	15.01	.59	46.0	1.81
6.3	.25	9.5	.37	42.5	1.67	51	2.00

NOTES:

1. Dimensions are in millimeters. Inch equivalents in parentheses are given for information only.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store and issue this configuration.

FIGURE 4. Plug, classes R, W, T, X and Z, type 4.



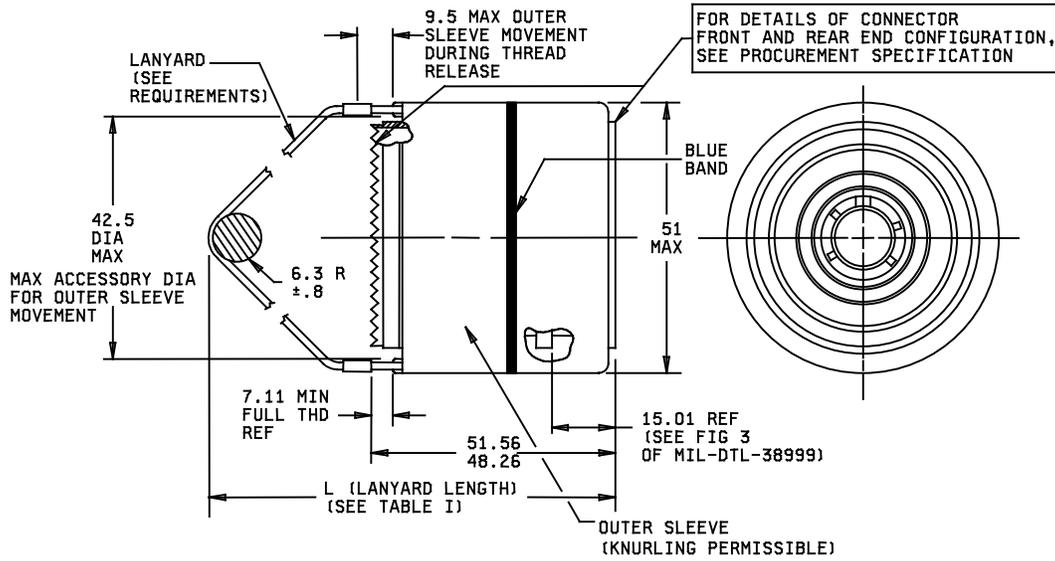
mm	Inches	mm	Inches	mm	Inches	mm	Inches
0.8	.03	9.5	.37	31.0	1.22	51.0	2.01
6.3	.25	15.01	.59	33.3	1.31	53.4	2.10
7.11	.28	19.0	.75	42.5	1.67	63.5	2.50

NOTES:

1. Dimensions are in millimeters. Inch equivalents in parentheses are given for information only.
2. Polarization position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store, and issue this configuration.

FIGURE 5. Plug, classes J and M, type 5.

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mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches
0.8	.03	7.11	.28	15.01	.59	48.26	1.90	51.56	2.03
6.3	.25	9.5	.37	42.5	1.67	51	2.01		

NOTES:

1. Dimensions are in millimeters. Inch equivalents in parentheses are given for information only.
2. Polarizing position N is shown.
3. EMI grounding feature required on this connector.
4. The Government may stock, store and issue this configuration.

FIGURE 6. Plug, classes R, W, T, X and Z, type 6.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and table I.

Interface dimensions shall conform to MIL-DTL-38999.

TABLE I. Summary of connector types.

Types	Material	Shell length type	Shell length	Coupling ring length type	Coupling ring length type
1	All metal	long	63.5 / 56.5 (2.5 / 2.2)	long	---
2	All metal	long	63.5 max (2.5)	long	---
3	All composite	long	63.5 max (2.5)	medium	53.6 / 46.1 (2.1 / 1.8)
4	All metal	short	46.0 max (1.8)	short	---
5	All composite	long	63.5 max (2.5)	short	33.3 / 31.0 (1.3 / 1.2)
6	All metal	medium	51.56 / 48.26 (2.0 / 1.9)	medium	---

This connector mates with MIL-DTL-38999/20 and /24.

Connector shall accept SAE-AS85049 self-locking accessories.

For insert arrangements: See MIL-STD-1560.

Lanyard:

- a. 1.57 millimeter minimum diameter, seven strands of stainless steel capable of withstanding an 890 Newton pull test after assembly with connector.
- b. Coupling design optional. Cable shall be covered with a suitable protective sleeving to preclude possible chafing or abrading of wires.
- c. Class J and M connectors, 2.54 millimeters nominal diameter, Kevlar™ (or equivalent para-aramid synthetic fiber cord) capable of withstanding an 840 Newton pull test after assembly with connector.

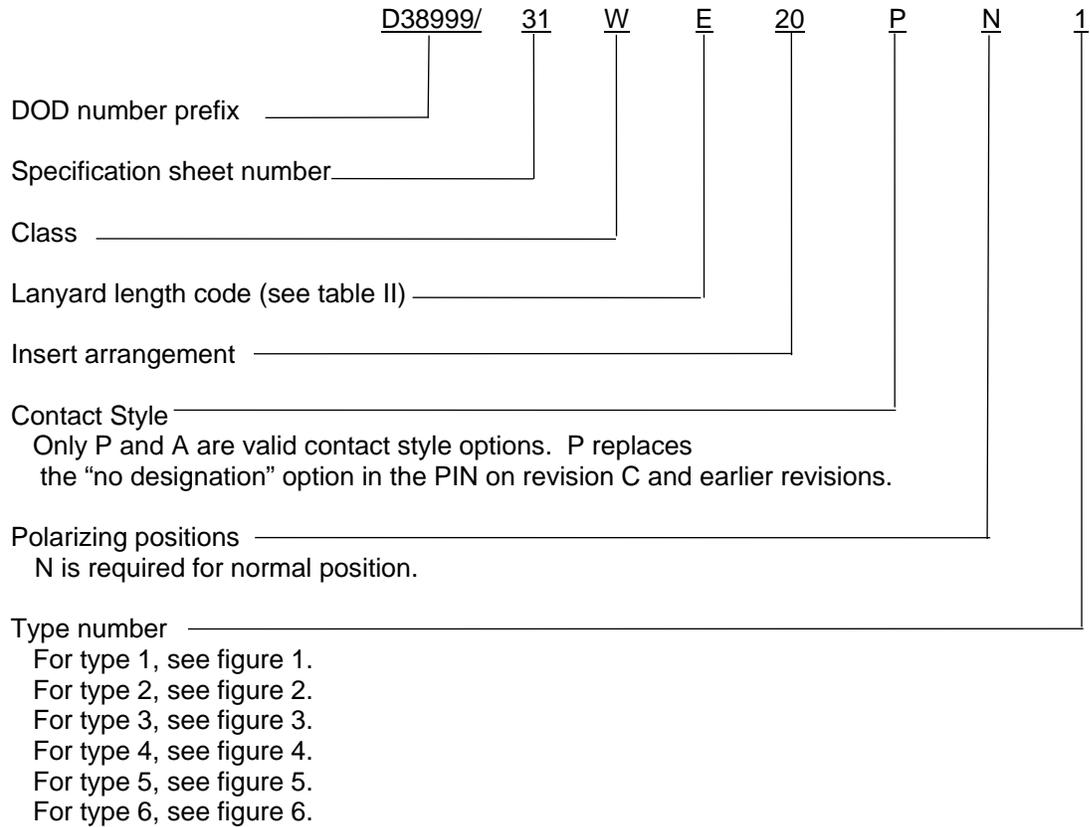
Connector shall disengage from any coupling condition including partially mated.

Connector design shall incorporate a swivel action for the lanyard to prevent twisting of the cable.

Spare contacts: The twin-axial and coaxial contacts are exempted from the spare contact requirements of MIL-DTL-38999.

The Government may stock, store and issue types 1, 3, 4, 5 and 6 only (see figures 1, 3, 4, 5 and 6).

Part or Identifying Number (PIN) example (Note: The PIN example applies to all figures):



NOTE: The term PIN is equivalent to the term (part number, identification number, and type designator), which was previously used in this specification.

TABLE II. Lanyard length codes.

Code	L ± 6 (.24)
E	153 (6)
F	166 (6.5)
G	178 (7)
H	191 (7.5)
I	203 (8)
J	216 (8.5)
K	229 (9)
L	242 (9.5)

QUALIFICATION: Connectors shall meet the qualification requirements of MIL-DTL-38999 with the exceptions and additions specified below. Group C periodic requalification testing, including the selection of Group C test samples, shall be in accordance with testing specified in this specification sheet and MIL-DTL-38999 Group C, 24 month testing.

Durability:

Wired connectors shall meet the durability requirements of MIL-DTL-38999, with the following exceptions: The total number of cycles of mating and unmating shall be 500, in the following sequence:

200 cycles of normal mating and unmating, 50 cycles of normal mating with pull-separation unmating, 200 cycles of normal mating and unmating, 50 cycles of normal mating with pull-separation unmating. The lanyard release velocity during the pull-separation unmating cycles shall be 9.15 m/s \pm 10%.

Pull-separation at temperature:

In addition to mating and unmating by normal coupling ring rotation, the connector shall be capable of lanyard-pull-separation at any angle within 15° of the normal axis after exposure for 1 hour minimum at the following temperatures as shown in table III: Room ambient temperature, -65°C (+ 0°C / -5 °C), and at the maximum temperature of the specified class. Each pull test will be conducted within three (3) minutes after removal from the temperature chamber without forced heating or cooling. Maximum separation forces shall be 400 Newtons for a straight (0°) pull and 445 Newtons for a 15° pull.

Note: The pull-separation test is performed at a relatively low rate using conventional test equipment. Actual pull rates and pull-separation forces have been found to be much higher when this connector is used in flight.

TABLE III. Separation test temperatures.

Pull Type	Step 1	Step 2	Step 3
Straight, 0° Pull	Room ambient	-65° + 0° / -5 °C	max temperature of specified connector class
15° Pull	Room ambient	-65° + 0° / -5 °C	max temperature of specified connector class

Fail-safe disengagement:

Connectors shall be partially mated with the plug coupling ring rotated approximately 50 percent of full coupling. Pull-separation shall be conducted in accordance with the pull-separation at temperature test requirements specified above.

Vibration:

Wired, mated connectors shall meet the vibration requirements of MIL-DTL-38999 with the following exceptions:

- a. Sine vibration: Connectors shall be subjected to the test specified in method 204, test condition G, of MIL-STD-202.
- b. Random vibration: Connectors shall be subjected to the test specified in EIA-364-28, test condition VI, letter "J", ambient temperature. Duration shall be 8 hours in the longitudinal direction and 8 hours in a perpendicular direction, for a total of 16 hours.
- c. The Qualifying Activity will define the accessory load and cable to be used in the random sine vibration tests.

Ice resistance:

The mated, wired connectors with accessories attached shall be placed in a chamber and the temperature reduced and stabilized such that the item is maintained at -18°C (tolerance of +0°C, -5°C) for 1 hour. After stabilization of the chamber temperature, the test item shall be sprayed with water pre-cooled to 2°C (tolerance of +5°C, -0°C), for a period of five (5) minutes. The test item shall be located a maximum of 305 mm (12 inches) from the spray nozzle. The entire test item shall be exposed to the spray. After completion of water spray, the test item shall remain in the chamber at -18°C (tolerance of +0°C, -5°C) for an additional 30 minutes. Upon completion of the 30 minute cold soak period, the test item shall be removed from the chamber and immediately (within two (2) minutes) subjected to uncoupling by use of the lanyard mechanism. The force required to separate the connector shall not exceed the 400 Newton straight pull and the 445 Newton 15° pull by more than 50 percent.

Dust (fine sand):

Upon completion of the dust test, the test items shall be removed from the chamber and immediately subjected to uncoupling by use of the lanyard mechanism. The force required to separate the connectors shall not exceed the required values specified for pull-separation by more than 25 percent.

External bending moment:

Wired connectors shall meet the external bending moment requirements of MIL-DTL-38999 with the following exceptions: Size 25 shall be 28.3 Newton-meters.

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

Referenced documents. In addition to MIL-DTL-38999, this document references the following:

MIL-DTL-38999/20
MIL-DTL-38999/24
MIL-STD-202
MIL-STD-1560
EIA-364-28
SAE-AS85049

CONCLUDING MATERIAL

Custodians:

Army – CR
Navy - AS
Air Force – 85
DLA - CC

Preparing activity:

DLA - CC

(Project 5935-2013-148)

Review activities:

Army - AR, MI
Navy - EC, MC, OS
Air Force - 19, 99

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>.