INCH-POUND

MIL-C-83522/2G
17 May 2006
SUPERSEDING
MIL-C-0083522/2F
29 March 1991

MILITARY SPECIFICATION SHEET

CONNECTOR, PLUG, FIBER OPTIC, SINGLE TERMINUS, THREADED, (STRAIGHT NOSE INTERFACE), LENSLESS, EPOXY, FOR 50/125 μm, 62.5/125 μm, AND 100/140 μm

Inactive for new design
after 17 August 1999

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-C-83522.

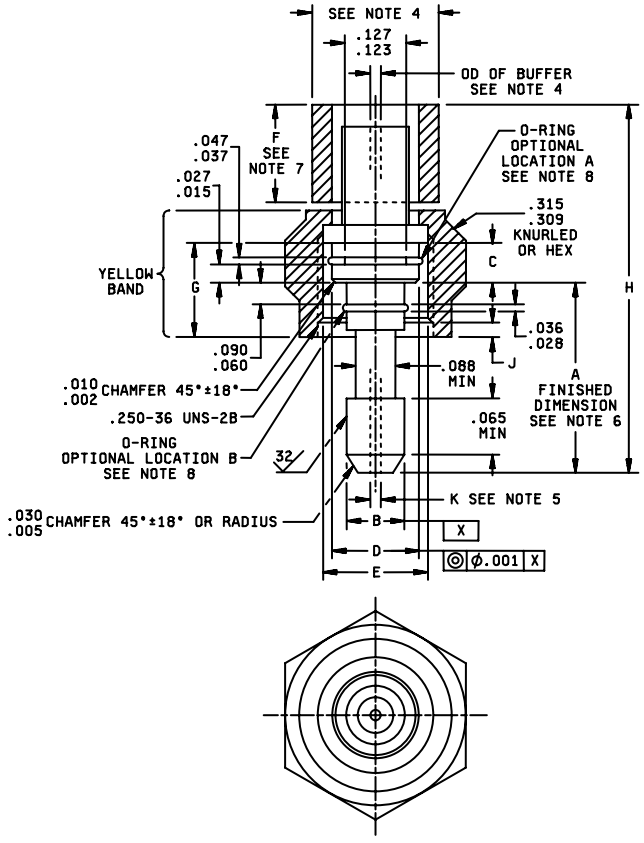
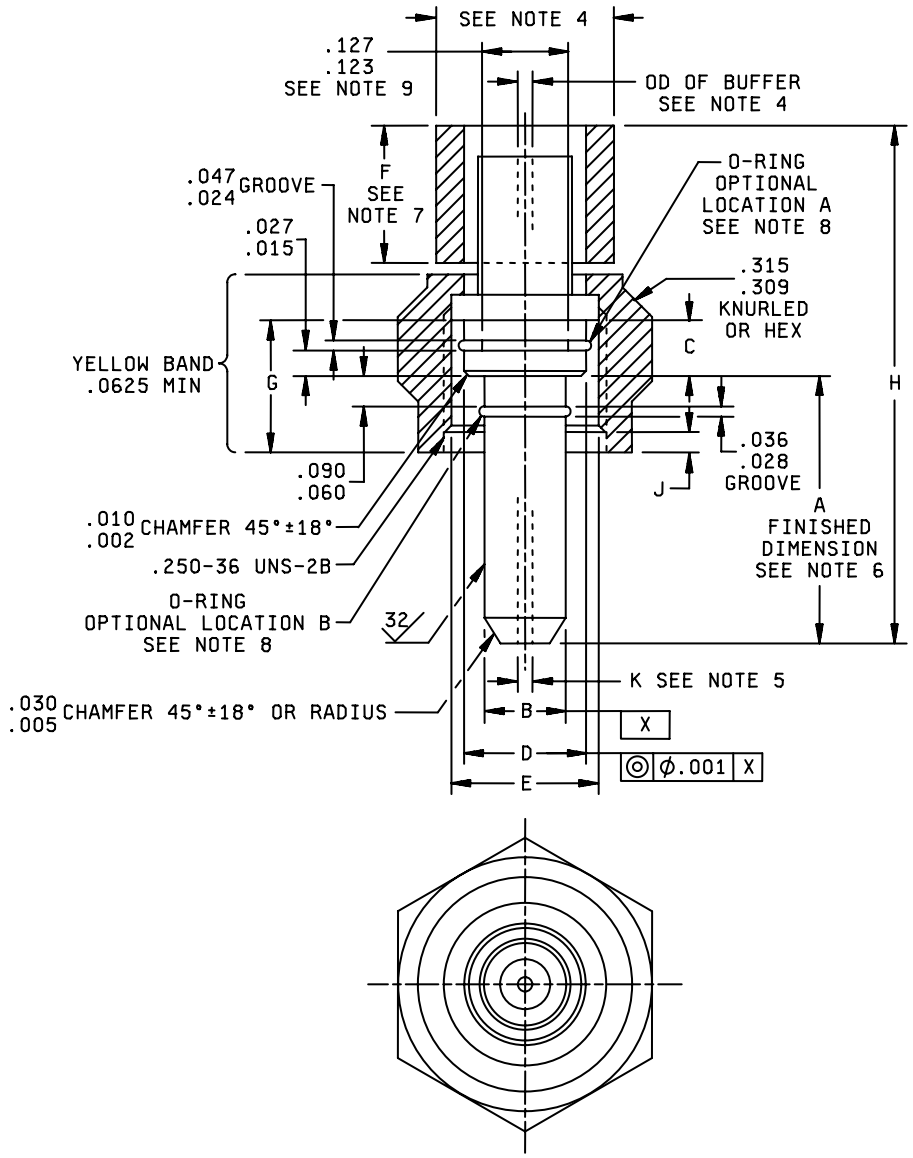


FIGURE 1. Dimensions and configuration (step-down nose).



Optional view (straight nose)

FIGURE 1. Dimensions and configuration - Continued.

	Min	Max
A	.3858 (9.799)	.3863 (9.812)
C	.080 (2.03)	.100 (2.54)
D	.179 (4.55)	.182 (4.62)
E	.220 (5.59)	.233 (5.92)
F	.485 (12.32)	
G	.183 (4.65)	.224 (5.69)
H		.150 (38.1)
J	.015 (0.38)	.045 (1.14)
B	Plug must not enter .118 hole gauge	Plug must enter .124 dia. hole gauge

K dimension		
50/125 μm fiber	62.5/125 μm	100/140 μm fiber
132.0 max 127.5 min	132.0 max 127.5 min	147.0 max 142.5 min

Inches	mm	Inches	mm
.001	0.03	.047	1.19
.002	0.05	.060	1.52
.005	0.13	.0625	1.589
.010	0.25	.065	1.65
.015	0.38	.088	2.24
.024	0.61	.090	2.29
.027	0.69	.123	3.12
.028	0.71	.127	3.23
.030	0.76	.250	6.35
.036	0.91	.309	7.85
.037	0.94	.315	8.00

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Millimeters are in parentheses.
4. Dimensions for fiber optic cable shall be in accordance with MIL-PRF-85045.
5. K dimension is specified in micrometer. This dimension is critical to fiber alignment. Dimensions for fiber optic fiber shall be in accordance with MIL-PRF-49291.
6. Dimensions A are obtained after product has been assembled.
7. Ferrule may be integral part of component.
8. O-ring is required. Component shall be machined for either O-ring location A or location B.
9. Dimension of O-ring area.

FIGURE 1. Dimensions and configuration – Continued.

Part or Identifying Number (PIN): See table I.

TABLE I. PIN.

PIN M83522/2-	Fiber size μm	Spaceflight applications	Fiber size μm
03	50/125	06	50/125
03	62.5/125	07	62.5/125
04	100/140	08	100/140

REQUIREMENTS:

Metals: The plug housing shall be of corrosion resistant steel in accordance with SAE-AMS-QQ-S-763, class 303 or nickel plated brass in accordance with ASTM-B36/B36M alloys C23000, C24000, C26000, or C26800 or ASTM-B16/B16M or ASTM-B122/B122M alloys C377000, C46400, C48200, or C48500. Other metal components shall be of corrosion resistant steel in accordance with SAE-AMS-QQ-S-763, class 303; nickel plated beryllium copper in accordance with ASTM-B196/B196M except alloy C17000, ASTM-B197/B197M, or ASTM-B194 except alloy C17000 or nickel plated brass in accordance with ASTM-B36/B36M alloys C23000, C24000, C26000, or C26800 or ASTM-B16/B16M or ASTM-B122/B122M alloys C377000, C46400, C48200, or C48500.

Lubricants: No lubricants shall be allowed for spaceflight parts.

Epoxies: Use Trabond 230, Eccobond 1448 or an equivalent epoxy approved by the qualifying activity.

Materials: All materials shall not emit greater than 1.0 percent total mass loss and 0.1 percent collected volatile, condensable materials in accordance with ASTM-E-595 for spaceflight applications.

Connector tip: Polyetherimide (for spaceflight parts).

Dimensions and configuration: See figure 1.

Visual inspection: 3X magnification required.

Fiber optic cable requirements:

Cable diameter: In accordance with MIL-PRF-85045.

Cable configuration: In accordance with MIL-PRF-85045.

Fiber diameter: 50/125 μm, 62.5/125 μm, and 100/140 μm.

Fiber numerical aperture: In accordance with MIL-PRF-49291.

Fiber type: Multimode.

Fiber optical contact:

Method of optical alignment: Precision diameter fit.

Lens configuration: Not applicable.

Coating requirements: Not applicable.

Optical requirements:

Number of optical termini: One.

Coupling loss (attenuation): 2 dB maximum per mated pair. The maximum change per mated pair during test shall be 0.5 dB for spaceflight applications.

Weight: 6 grams maximum.

Polarization: Not applicable.

Safety wire holes: Required for spaceflight applications, and optional for all other applications.

Force to engage and disengage:

Longitudinal force: 12 pounds maximum.

Torque: 4 inch-pounds maximum.

Coupling proof torque: 5 inch-pounds minimum.

Coupling mechanism retention force: 60 pounds minimum.

Ozone exposure: Not applicable.

Pressure altitude: The pressure shall be 1 X 10^{-6} atmospheres and temperature shall be at the maximum operating value. Connector attenuation increase shall not exceed 1 dB at any interval of the test.

Submersion: Not applicable.

Fluid immersion: Not applicable.

Durability: 200 cycles, 1 dB maximum change.

Low temperature: 1 dB maximum change.

Temperature life: For spaceflight parts, temperature life shall be in accordance with EIA-455-4, conditions 5 and F. Four samples shall be tested for qualification inspection. No failures shall be allowed.

Plug accessories: Each plug shall be supplied with a minimum of one crimp ferrule as needed (see figure 1); two alignment sleeves (see figure 2); one protective cable-end cap; one 1.5 inch length of heat-shrink tubing or one rubber boot; and one set of assembly instructions. The assembly instructions shall include a listing of the epoxies specified in this specification sheet and a cleaning procedure statement as follows:

Cleaning procedures: Dampen lens tissue (paper wipes or cotton swab) with a small amount of isopropyl alcohol or water. Gently wipe the face of the connector, removing any debris, particularly around the optical fiber, using clean lens tissue (paper wipes, cotton swab). Dry face of connector by blowing with dry air.

NOTE: The plug mates with MIL-C-83522/4 receptacle; MIL-C-83522/5 receptacle, MIL-C-893522/7 receptacle; MIL-C-83522/8 receptacle; or a MIL-C-83522/3 adapter. Connection to any other type plug may result in excessive coupling loss.

Group A testing: Group A testing for spaceflight parts shall consist of 100 percent testing of the parts.

Group B testing: For spaceflight applications, the sample size for group B testing shall be per table II. A sample of parts shall be randomly selected from each lot in accordance with table II, if one or more defects are found, the lot shall not be supplied to this document. In addition to tests listed in MIL-C-83522 (for group B inspection), the following tests shall be performed.

Thermal shock: Four samples.

Temperature: Four samples.

Vibration: Four samples.

Tensile loading: Four samples.

Table II. Sample size

Lot size		Sample size
1 to	8	All
9 to	500	8
501 to	10000	32
10001 to	35000	50
35001 to	500000	80
500001 and	over	125

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Referenced documents: In addition to MIL-C-83522, this document references the following:

MIL-PRF-49291	MIL-C-83522/7	ASTM-B36/B36M	ASTM-B197/B197M
MIL-C-83522/3	MIL-C-83522/8	ASTM-B122/B122M	ASTM-E595
MIL-C-83522/4	MIL-PRF-85045	ASTM-B194	EIA-455-4
MIL-C-83522/5	ASTM-B16/B16M	ASTM-B196/B196M	SAE-AMS-QQ-S-763

Custodians:
Army – CR
Navy – SH
Air Force – 11
DLA - CC

Preparing activity:
DLA - CC

(Project 6060-2006-012)

Review activities:
Navy – AS
Air Force – 02, 03, 19, 33, 93, 99
DIA - DI
NASA – NA

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 http://assist.daps.dla.mil/.