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25 March 2004

MEMORANDUM FOR MILITARY AND INDUSTRY DISTRIBUTION

SUBJECT: Proposed Revision to MIL-PRF-83526 and new specification sheet as Tabulated:

Document Number	Project Number	Document Number	Project Number
MIL-PRF-83526C	6060-0152	MIL-PRF-83526/16	6060-0155

The attached subject documents are proposed to, revise the basic document and add a specification sheet (/16).

Revision MIL-PRF-83526C includes:

- Removal of canceled and inactive references and replacement with other references, incorporation of text into document or reference in section 6.
- Revision to meet MIL-PRF-961E requirements.
- Relocate intermateability and interoperability qualification inspection procedures to Appendix A.
- Addition of Change in optical transmittance, Return loss and Ambient light susceptibility requirements.
- Revision of verification procedures for Coupling force and Coupling torque.
- Addition of Mud test.
- Increase qualification sample size to eight to provide two units for intermateability and interoperability testing.
- Revise TABLE II Qualification inspection as follows:
 - Add group V, Interoperability and intermateability testing.
 - Delete inspections repeated in groups I, II, III and IV.
- Extended qualification reporting interval.
- Specified sample size for groups A and B inspections (Table III).
- Expanded time interval between group C inspections.
- Retitled Workmanship inspection to Visual examination and expanded requirements covered.
- Added Environmentally preferable material requirement to section 6.
- Updated concluding material.

MIL-PRF-83526/16 is being created to address the next generation four fiber optic connector.

If these documents are of interest to you, please type comments on FORM 155, Compilation of Comments or reply by e-mail message. Comments originating from military departments must be identified as either "Essential" or "Suggested". Essential comments should be supported by data.

Military review activities should forward comments to their custodians or this office, as applicable, in sufficient time to allow for consolidating the department reply.



Comments should be returned to this Center no later than COB 12 May 2004.

Indicate below your interest and FAX or e-mail, along with FORM 155, to DSCC-VAT, DSN 850-6939 or commercial 614-692-6939, or e-mail comments to <mailto:eugene.ebert@dla.mil>.

_____ CONCUR _____ NO INTEREST _____ WILL REPLY BY DEADLINE

COMPANY NAME _____ POINT OF CONTACT

PHONE _____ E-MAIL

/S/

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Attachments: MIL-PRF-83526
MIL-PRF-83526/16

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Note: This draft, dated 25 March 2004 prepared by DLA-CC, has not been approved and is subject to modification, DO NOT USE PRIOR TO APPROVAL. (Project 6060-0153)

INCH-POUND

MIL-PRF-83526/16
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PERFORMANCE SPECIFICATION SHEET

CONNECTOR, FIBER OPTIC, CIRCULAR HERMAPHRODITIC, IN-LINE MOUNTING, 4 POSITIONS

This specification is approved for use by the Department of the Army and is available 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-83526

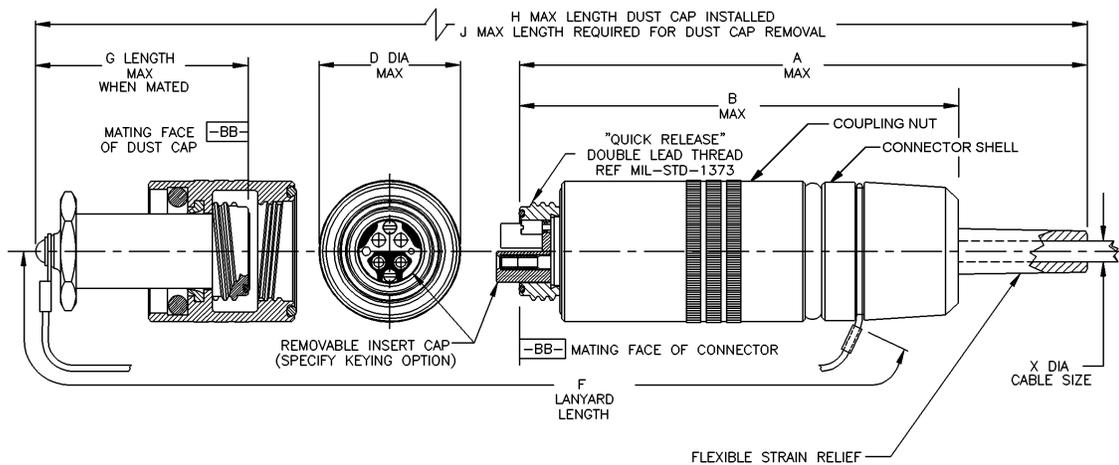


FIGURE 1. Plug connector with hermaphroditic dust cap.

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TABLE I. Plug connector with hermaphroditic dust cap dimensions.

Designator	Descriptions	Dimensions			
		Max		Min	
		Inches	mm	Inches	mm
A	Length mating face to end of strain relief	6.350	161.29	---	---
B	Length mating face to end of rear cap	4.800	121.92	---	---
D	Diameter of connector at knurl	1.555	39.50	---	---
F	Length of lanyard	7.000	177.80	6.750	171.45
G	Length mating face to end of dust cap	2.377	60.38	---	---
H	Length from end of installed dust cap to end of the strain relief	8.250	209.55	---	---
J	Length required for dust cap removal	8.498	215.85	---	---
X	Diameter of fiber optic cable	.379	9.63	.190	4.83

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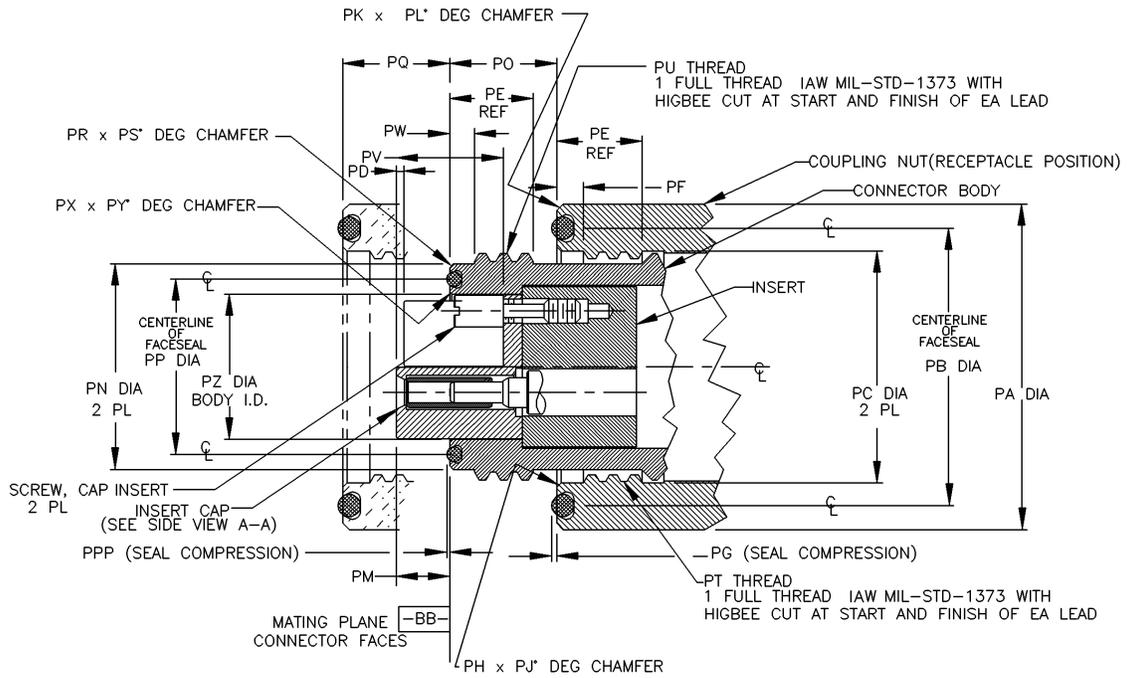


FIGURE 2. Plug interface dimensions.

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TABLE II. Plug interface dimensions.

Designator	Descriptions	Dimensions					
		Linear				Degrees	
		Max		Min		Max	Min
		Inches	mm	Inches	mm		
PA	Coupling nut, outside diameter	1.555	39.50	1.518	38.56	---	---
PB	Coupling nut, secondary face-seal centerline diameter	1.298	32.97	1.292	32.82	---	---
PC	Coupling nut, inside diameter (2 places)	1.094	27.79	1.088	27.63	---	---
PD	Insert cap guide wing setback (2 places)	.049	1.24	.036	0.91	---	---
PE	Coupling nut and plug body thread lengths (2 places)	.410	10.41	.370	9.40	---	---
PF	Coupling nut thread guide-in length	.115	2.92	.135	3.43	---	---
PG	Coupling nut face seal available compression	.025	0.64	.016	0.41	---	---
PH	Coupling nut internal chamfer	.020	0.51	.010	0.25	---	---
PJ		---	---	---	---	47	43
PK	Coupling nut external chamfer	.020	0.51	.010	0.25	---	---
PL		---	---	---	---	47	43
PM	Insert cap protrusion	.248	6.30	.243	6.17	---	---
PN	Plug body thread guide-in diameter and guide diameter (2 places)	.960	24.38	.955	24.26		
PO	Coupling nut rearward $\frac{1}{2}$ retraction limit	.517	13.13	.513	12.95	---	---
PP	Plug body primary face seal centerline diameter	.821	20.85	.816	20.73	---	---
PQ	Coupling nut forward extension limit	.504	12.80	.492	12.50	---	---
PR	Plug body external chamfer	.022	0.56	.012	0.30	---	---
PS		---	---	---	---	47	43
PV	Insert intrusion cavity depth	.503	12.78	.497	12.62	---	---
PW	Plugbody thread guide-in length	.125	3.17	.105	2.67	---	---
PX	Plugbody internal chamfer	.010	0.25	.005	0.13	---	---
PY		---	---	---	---	47	43
PZ	Plug body inside diameter	.680	17.27	.678	17.22	---	---
PPP	Plugbody face seal available compression	.020	0.51	.012	0.30	---	---

See footnote at end of table.

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TABLE II. Plug interface dimensions - Continued.

Designator	Description	Dimensions	Units
PT	Internal coupling nut thread	1.0625 -2B-, 1P-.2L-double stub thread 60° "V" 1 full thread in accordance with MIL-STD-1373, except with higbee cut at start and finish of each lead. Minor diameter : 1.004(25.50 mm)/1.014 (25.76 mm) (special diameter not in accordance with MIL-STD-1373) Major diameter: 1.076(27.33 mm)/1.086 (27.58 mm) Pitch diameter: 1.0285(26.124 mm)/1.0405(26.429 mm)	Thread designation
PU	External plug body thread	1.0625 -2A-, 1P-.2L-double stub thread 60° "V" 1 full thread in accordance with MIL-STD-1373, except with higbee cut at start and finish of each lead. Minor diameter : .9705(24.651 mm)/.9885(25.108 mm) Major diameter: 1.050(26.67 mm)/1.060(26.92 mm) (special diameter not in accordance with MIL-STD-1373. Pitch diameter: 1.0165(25.82 mm)/1.0265(26.07 mm) Dryfilm lube on external thread.	Thread designation

1/ .513 (13.03 mm)/.517 (13.13 mm) are fixed dimensions if no compliance is provided. Greater tolerance allowed if compliance of coupling nut location maintains all sealing requirements.

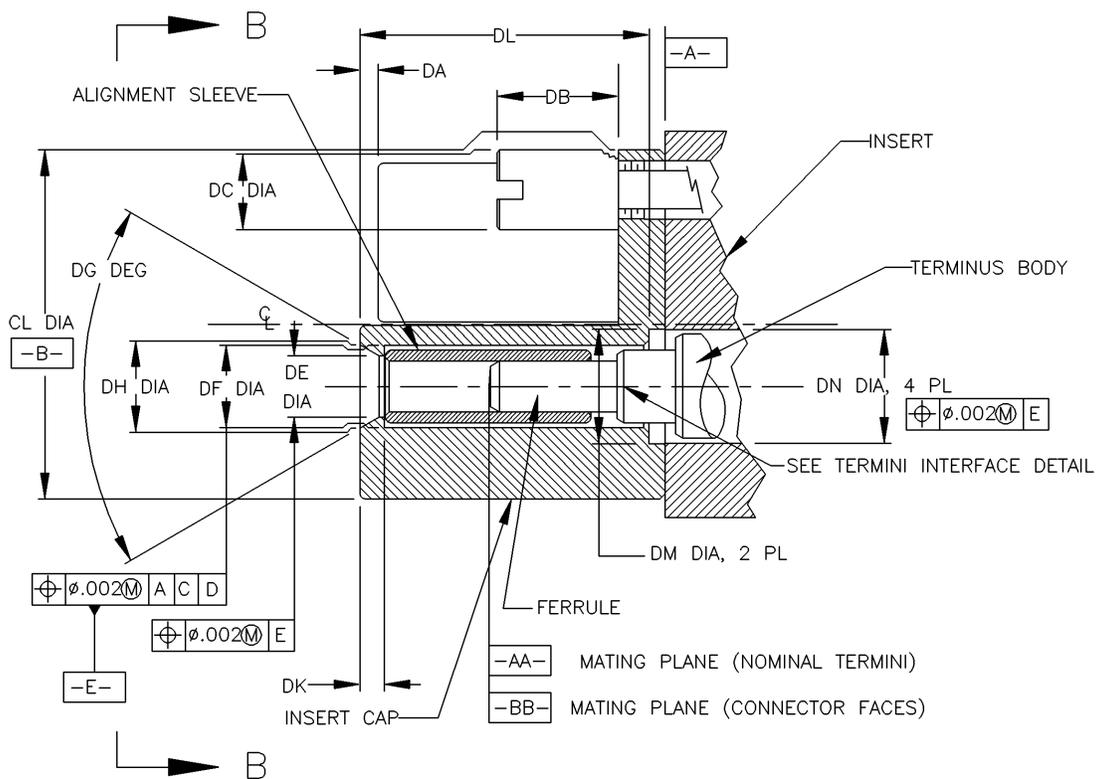


FIGURE 3. Side view cross-section of insert cap (View A-A).

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TABLE III. Insert interface dimensions

Designator	Descriptions	Dimensions			
		Max		Min	
		Inches	mm	Inches	mm
DA	Insert cap guide wing setback (2 places)	.049	1.24	.036	0.91
DB	Height for head of insert retaining screw (2 places)	.234	5.94	.212	5.38
DC	Head diameter for insert retaining screw (2 places)	.154	3.91	.148	3.76
CL	Insert cap outside diameter	.675	17.14	.673	17.09
DE	Through hole guide diameter for ferrule (2 places)	.119	3.02	.117	2.97
DF	Diameter of alignment sleeve cavity (2 places)	.162	4.11	.158	4.01
DH	Diameter of guide angle for ferrule (2 places)	.165	4.19	.160	4.06
DK	Set-back for alignment sleeve cavity (2 places)	.049	1.24	.045	1.14
DL	Length for alignment sleeve cavity (2 places)	.569	14.45	.560	14.22
DM	Counterbore diameter for alignment sleeve cavity (2 places)	.225	5.72	.219	5.56
DN	Insert body terminus cavity bore diameter (4 places)	---	---	.219	5.56
DG	Guide angle for ferrule (2 places)	(degrees)			
		62		58	

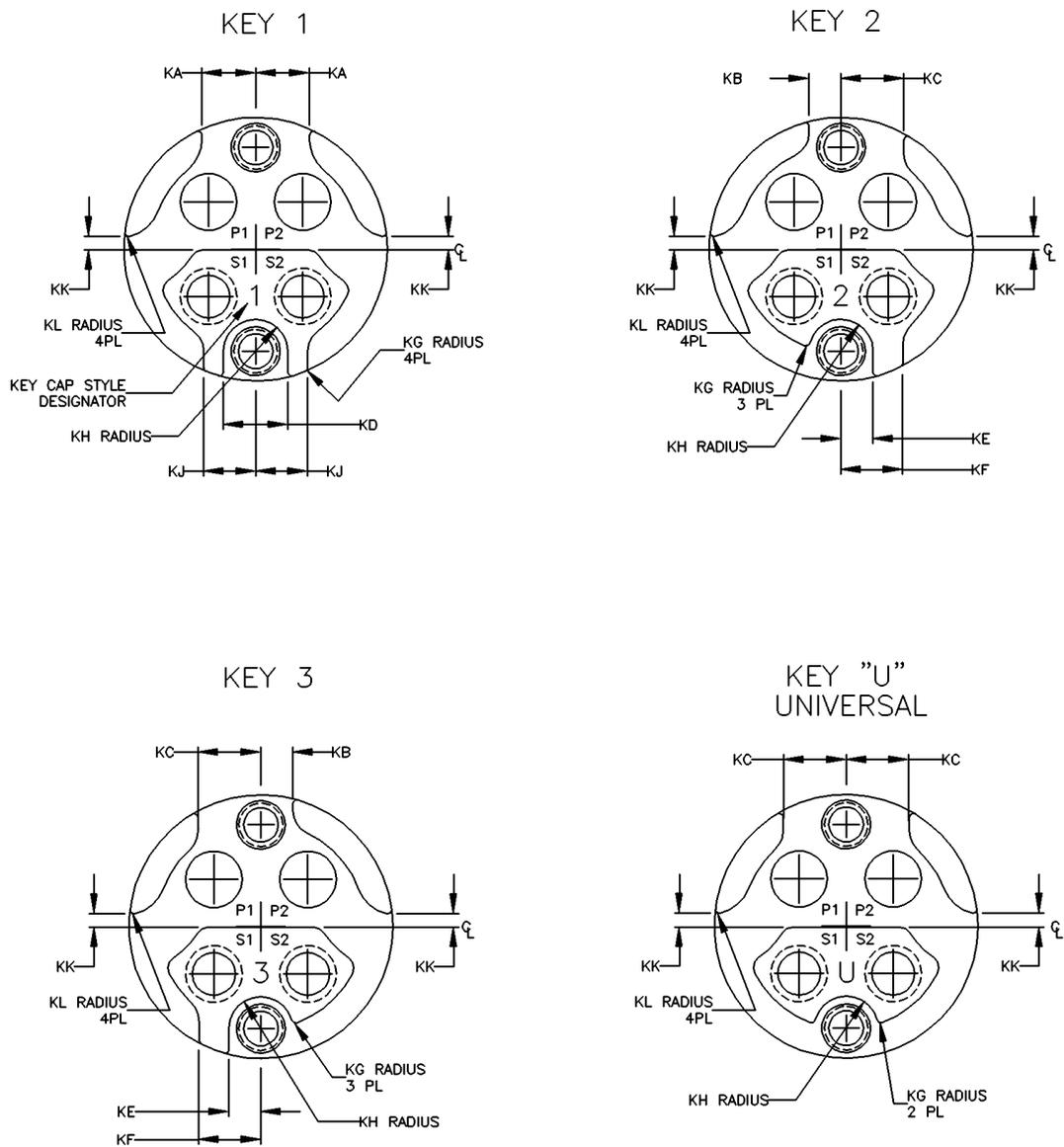


FIGURE 4. Insert cap interface dimensions (View B-B) - Continued.

TABLE IV. Insert cap interface dimensions.

Designator	Descriptions	Dimensions			
		Inches		mm	
		Max	Min	Max	Min
CA	Clearance hole diameter for pin terminus in cap (2 places)	.162	.158	4.11	4.01
CD	Termini hole location coordinates (4 places)	.1205 Nom		3.061 Nom	
CG	Mounting screw hole location coordinates (2 places)	.260 Nom		6.60 Nom	
CH	Center mating plane offset clearance	.002	.001	0.05	0.03
CK	Concave radius on insert cap tower (2 places)	.229	.209	5.82	5.31
CJ	Location coordinates for "CK" radius (2 places)	.110	.090	2.79	2.29
CQ		.358	.338	9.09	8.58
CL	Outside diameter of insert cap and guide	.675	.673	17.14	17.09
CS	Fillet radius on insert cap tower <u>1/</u>	.090	.078	2.29	1.98
CT	Convex radius on insert tower (2 places) <u>2/</u>	.264	.262	6.71	6.65
CU	Corner radius on insert tower (4 places)	.036	.028	0.91	0.71
CW	Convex radius on guide wings (2 places)	.104	.094	2.64	2.39
CX	Concave radius on guide wing (2 places) <u>2/</u>	.269	.267	6.83	6.78
CY	Convex radius on guide wing (2 places)	.104	.094	2.64	2.39
KA	Guide wing spacing (2 places)	.139	.137	3.53	3.48
KD	Width of clearance notch for screw head <u>3/</u>	.170	.158	4.32	4.01
KH	Radius of clearance notch for screw head	.085	.079	2.16	2.01
KK	Offset dimension for guide wings (2 places)	.043	.023	1.09	0.58
KG	Corner break edge radius on tower (4 places) <u>4/</u>	.015	.005	0.38	0.13
KL	Corner break edge radius on wings (4 places)	.015	.010	0.38	0.25
KB	Spacing for large guide wing <u>5/</u>	.084	.082	2.13	2.08
KC	Spacing for small guide wing <u>5/</u>	.162	.160	4.11	4.06
KE	Tower rib inside dimension <u>5/</u>	.079	.085	2.01	2.16
KF	Tower rib outside dimension <u>5/</u>	.159	.157	4.04	3.99
KJ	Outside tower rib width dimension (2 places) <u>3/</u>	Depth			
		.134	.132	3.40	3.35
CB	Internal thread for captive retaining screw (2 places)	Thread designation			
		.112-40 UNC-2B			

See footnotes at top of next page.

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TABLE IV. Insert cap interface dimensions - Continued.

- 1/ "CS" radius 2 places on key 1, 1 place on key 2 and key 3, and not used on key "U".
- 2/ Center of "CT" and "CX" radii are at center of datums -A- and -B-.
- 3/ "KA", "KD", and "KJ" apply to key 1 configuration only.
- 4/ "KG" radius 4 places on key 1, 3 places on key 2 and key 3, and 2 places on key "U".
- 5/ "KB", "KC", "KE", and "KF" apply to key 2, key 3, or key "U".

NOTES:

1. Dimensions are in inches. Metric equivalents are provided for reference.
2. Unless otherwise specified, tolerances are ± 0.010 for three place decimals, ± 0.03 for two place decimals, and ± 0.1 for one place decimals. Angular tolerances are $\pm 0^\circ 30'$.
3. Unless otherwise specified, dimensions are symmetrical about centerlines.

REQUIREMENTS:

Dimensions and configurations: In-line connectors, see figures 1 through 4 and tables I through IV. Termini and sleeves shall be in accordance with MIL-PRF-29504/16 (proposed).

Materials: See table V.

Weight: 2.0 pounds maximum.

Color: See table V.

Finish: Shall be zinc-nickel alloy plated in accordance with SAE AMS2417.

Fiber optic cable requirements: Shall be in accordance with MIL-PRF-85045/8-B2A.

Mating force: 10 pounds maximum.

Coupling torque: 40 inch-pounds maximum.

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TABLE V. Material description.

Part description	Material	Finish
Screws for insert cap	Stainless steel	Passivation in accordance with QQ-P-35
Insert cap	Aluminum 6061-T6 or 2024-T3/T4	Zinc-nickel alloy plated in accordance with SAE AMS2417
Dust cover assembly	Aluminum 6061-T6 or die cast aluminum 380	Zinc-nickel alloy plated in accordance with SAE AMS2417
Coupling nut	Aluminum 6061-T6	Zinc-nickel alloy plated in accordance with SAE AMS2417
Insert	Aluminum 6061-T6 or 2024-T3/T4	Zinc-nickel alloy plated in accordance with SAE AMS2417
Connector body	Aluminum 6061-T6 or 2024-T3/T4	Zinc-nickel alloy plated in accordance with SAE AMS2417
Lanyard	Stainless steel cable nylon coated	None

Epoxy: Epoxy is not furnished with the connector. Epoxy shall conform to MIL-PRF-24792.

Installation and removal tools: Tools are not furnished with the connector.

Threads: Applicable, except threads shall be metric in accordance with FED-STD-H28 or inch-series in accordance with MIL-STD-1373.

Termini: Applicable, except termini shall be in accordance with MIL-PRF-29504/16 (proposed).

Terminus insertion and removal methods: Terminus insertion and removal methods shall be defined in the assembly instructions.

Insertion loss: Applicable, except maximum insertion loss per connection for 62.5/125 µm fiber shall be 0.75 dB. Samples shall be tested for coupling loss in accordance with TIA-455-34, method A and TIA-455-20. The initial loss measurements shall be performed in accordance with TIA-455-34. Thereafter, coupling loss changes monitored during and after other tests shall be in accordance with TIA-455-171 except that the initial launch conditions established using TIA-455-34, method A (the initial coupling loss measurements) shall not be changed. Upon the completion of each test, samples shall be examined for compliance.

Crosstalk: Applicable, except test in accordance with TIA/EIA-455-42: FOTP-42, -60 dB maximum.

Part or Identifying Number (PIN). Example of PIN: M83526/16- (dash number from table VI). Additional manufacturer's marking allowed. Key positions, see figure 5.

Fiber optic yellow band: Shall be applied to the connector shell in the area between the lanyard and the strain relief.

PIN construction: M83526/16 - XX - X

See table VI

See table VII

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TABLE VI. PIN channel configuration.

M83526/16-XX	Description
01	Four channel connector for 62.5/125 μm fiber
02	Four channel connector for 9/125 μm fiber
03	Four channel connector for 62.5/125 (P1-S1) and 9/125 μm fiber (P2-S2)
04	Two channel connector for 62.5/125 μm fiber (P1-S1)
05	Two channel connector for 9/125 μm fiber (P1-S1)

TABLE VII. PIN key configuration.

M38526/16- -X	Key configuration (see figure 4)
1	1
2	2
3	3
U	U

Insert retention axial strength: Not applicable.

Insert retention radial strength: Not applicable.

Mating durability: Applicable, except 2,000 complete cycles shall be accomplished.

Impact: Applicable, except omit standard wall pipe on test fixture and drop pad shall be 2 inch (50.80 mm) thick fir planks on top of 4-inch (101.60 mm) thick concrete slab.

Cable retention: Applicable except test in accordance with EIA/TIA-455-6: FOTP-6. Load shall be maintained for ten minutes.

Crush resistance: Applicable, except test load shall be 450 pounds.

Thermal shock: Applicable except test in accordance with EIA/TIA-455-71: FOTP-71, condition B-0 except 10 cycles, high temperature 85°C and low temperature -62°C.

Shock: Applicable, except test condition A shall be utilized.

Salt spray: Applicable per basic document (MIL-PRF-83526).

Water pressure: Applicable, except minimum depth shall be 1.0 m for a period of not less than 24 hours. Bulkhead connectors shall be mounted on a 4 inch (101.6 mm) sealed cube. No ingress of water into the cube is allowed. Test shall be accomplished using 3 sets of samples: In-line connectors mated with dust caps; bulkhead connectors mated with dust caps; and, in-line connectors mated with bulkhead connectors.

Fungus resistance: Applicable per basic document (MIL-PRF-83526). Following the test, examination of the test samples shall reveal no evidence of deterioration of component parts or constituent materials that will adversely affect performance.

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Conformance and periodic inspection:

Qualification inspection sample size: Applicable, except the following minimum test samples shall be provided for each connector series:

- a. Eight in-line connectors mated with another eight in-line connectors. Larger sample sizes to allow parallel testing is allowed.
- b. Eight bulkhead connectors mated with six in-line connectors. Larger sample sizes to allow parallel testing is allowed.

Conformance inspection sample unit preparation: Applicable, except in cases where no MIL-PRF-85045 qualified sources exist, cable shall be specified by the qualifying activity.

Intermateability and interoperability tests apply.

Referenced documents. In addition to MIL-PRF-83526 are:

MIL-PRF-29504	MIL-STD-1373	FED-STD-428	TIA/EIA-455-20	TIA/EIA-455-98
MIL-PRF-24792	MIL-STD-810	SAE-AMS2417	TIA/EIA-455-34	TIA/EIA-455-171
MIL-PRF-85045	FED-STD-H28	TIA/EIA-455-6	TIA/EIA-455-42	

Custodians:
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Navy - SH
Air Force - 11

Preparing activity:
DLA - CC

(Project 6060-0153)

Review activities:
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Air Force - 13, 19, 93, 99
NASA - NA
MISC - DI

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