

REV -
SIT -
7486959
NAVSEA DRAWING NO.
ESWS 499

APPLICATION

NEXT ASSY	USED ON

REVISIONS

REV	DESCRIPTION	DATE	APPROVED

NOTES:

- IDENTIFICATION OF THE SUGGESTED ITEMS HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY.
- SUBSTITUTION OF ITEMS IS NOT ALLOWED WITHOUT APPROVAL OF THE DESIGN ACTIVITY, NSWCCD-SSES CODE 9631.
- INDIVIDUAL ITEMS SHALL BE PROCURED USING THE VENDOR PART NUMBER.
- LOOP BACK CONNECTOR SHALL BE PROCURED USING THE BASE DRAWING NUMBER ONLY. REQUIREMENTS FOR THE LOOP-BACK CONNECTOR IS DEFINED ON SHEETS 3 AND 4.
- QUANTITIES SHOWN ARE FOR THE INDIVIDUAL ITEMS AND MAY NOT CORRESPOND TO THE QUANTITY SUPPLIED FOR THE VENDOR PART NUMBER LISTED.

REV STATUS OF SHEETS	REV SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CAGE CODE CONTRACT NO.		DEPARTMENT OF THE NAVY NAVAL SEA SYSTEMS COMMAND WASHINGTON, D.C. 20362-5101					
FRACTIONS n	DECIMALS .XXn	APPROVED	G. Brown	9-19-00	PIERSIDE CONNECTIVITY, LOOP-BACK CONNECTOR, FIBER OPTIC, INTERFACE WITH HERMAPHRODITIC RECEPTACLE				
ANGLES P	.XXXn	APPROVED	CDR M. ZIEGLER	9-30-00					
DO NOT SCALE DRAWING		APPROVED	D. INMAN	9-30-00					
MATERIAL:		ENGINEER	E. Bluebond	9-18-00					
FINISHES:		ACCEPTED FOR NAVSEA	H. LEWIS	9-30-00	SIZE A	CAGE 53711	ESWS 499	DRAWING NO. 7486959	REV -
		APPROVED BY NAVSEA	(SIGN ONLY IF ENGINEERING HAS BEEN "PROVED" BY MANUFACTURE AND TEST)		SCALE: NONE	UCI	WT GRP	SHEET	1 OF 4

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Loop-Back Connector

Intended use.

Loop-back connector is to be used for the fiber optic, pierside connectivity application and to be installed on a hermaphroditic (compatible) connector receptacle. Shipboard interconnection boxes containing the hermaphroditic receptacle are installed at the port and starboard locations on most, large deck surface ship classes, or at a central location on a submarine and the small deck surface ship classes. Shore interconnection boxes with the hermaphroditic receptacle are found at the pier riser. The loop-back connector may be used to verify operation of the ship network or the shore network, if the optical loss budget is not exceeded, when a fiber optic umbilical assembly is not connected between the ship and the pier. This verification may be used during troubleshooting or system checkout prior to umbilical assembly attachment.

Application notes:

1. The intent is to use the loop-back connector during system checkout; however, the loop-back connector may also be attached whenever an umbilical assembly is not used to connect the ship to the shore. The loop-back connector sealing requirements allows for long term, outdoor exposure.
2. The loop-back connector can be mated to a hermaphroditic cable plug (found on the ends of the umbilical assembly) when the cable plug is placed in the back position; however, the dust covers (on the loop-back connector and the cable plug) cannot be mated together.

Constraints.

1. Useful life/reliability. Minimum bend diameter of the fiber between each corresponding pin and socket termini pair is less than that specified by the fiber manufacturers. The useful lifetime of this component is not known. Like any test cable assembly, this component will require replacement or refurbishment after prolonged use.
2. Wavelength of operation. For a single mode fiber, the optical performance may be degraded at the 1550 nm wavelength.

For purposes of ordering a Loop-Back Connector to the NAVSEA Drawing number, the loop-back connector is to consist of the item in table 1A. Specify NAVSEA Drawing number 7486959-S for this test component.

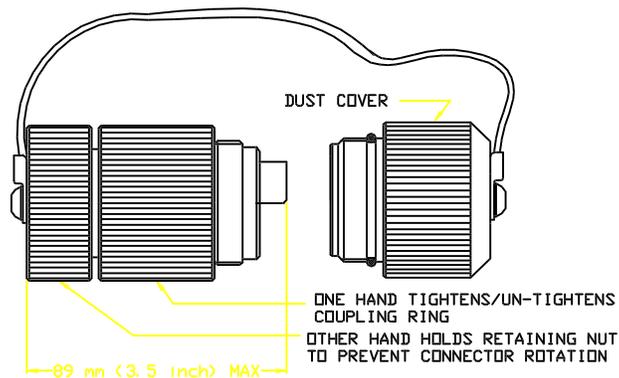


FIGURE 1. LOOP-BACK CONNECTOR

SIZE A	CAGE 53711	ESMWS 499	DRAWING NO. 7486959	REV -
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Table 1A. Hermaphroditic Test Connector, Loop-Back Configuration
See notes 1/ to 11/

Item	National Stock Number	Quantity Required	Description	Cage Code	Part Or Identifying No.
6009CJ	None	1	Loop-back connector, fiber optic, pierside connectivity application, interface with hermaphroditic receptacle	53669	1020189H

Notes for table 1A:

1/ The loop back connector and dust cover shall meet Commercial Item Description (CID) A-A-XX159 Fiber Optic Connectors, Hermaphroditic, Multiple Removable Termini, Draft dated 31 July 1999 or latest version except for strain relief and dimensional requirements. Loop-back connector shall meet the front end dimensional requirements and the optical, environmental and mechanical performance requirements specified for the hermaphroditic connector cable plug, part number CP-12-DI-A-12. Length from the front of the detachable socket insert to the rearmost portion (excluding any hardware to affix the dust cover) shall not exceed 3.5 inch. The loop-back dust cover shall be as specified for the hermaphroditic cable plug, part number DP-A. Approval process for this component to be in accordance with NSWCCD-SSES Itr 9504 Ser 9542/27 of 13 Mar 98 or latest revision. Vendor quality system to be equivalent to that specified in enclosure (2). NSWCCD-SSES audit may be substituted for DSCC audit if deemed appropriate.

2/ Termini in the loop-back connector shall meet Commercial Item Description (CID) A-A-XX160 Removable Termini For Multiple Termini Fiber Optic Connectors, Draft dated 31 July 1999 or latest version. Approval process for this component to be in accordance with NSWCCD-SSES Itr 9504 Ser 9542/27 of 13 Mar 98 or latest revision. Vendor quality system to be equivalent to that specified in enclosure (2). NSWCCD-SSES audit may be substituted for DSCC audit if deemed appropriate.

3/ Coated fiber, single mode, per TIA/EIA-492CAAA, built up with a 900 ±50 um (micron) buffer shall be used. Fiber shall have an operating temperature of -28 to 65 °C.

4/ Coated fiber, 62.5/125 um multimode per TIA/EIA-492AAAA, built up with a 900 ± 50 um buffer shall be used. Fiber shall have an operating temperature of -28 to 65 °C.

5/ Routing of buffered fiber. Fiber shall be routed so that one end of the fiber shall be terminated with a pin terminus, the other end with a socket terminus. The pin terminus and the socket terminus shall be inserted into the corresponding pin and socket cavities in the loop-back connector insert (such as 1J to 1P). Termini-to-termini routing shall be done in a manner to ensure that a minimum bend diameter of 25 mm (1.0 in) is not exceeded.

6/ Pin-out positions in the loop-back connector are as follows for multimode and single mode termini:

- a. Multimode positions: 1J to 1P, 2J, to 2P, 3J to 3P, 4J to 4P.
- b. Single mode positions: 5J to 5P, 6J to 6P.

7/ Each loop-back connector shall be tested to verify the optical performance requirements for link loss and return loss. Perform the link loss test per Method 7F1 of MIL-STD-2042 with the following variations:

- a. Connect one hermaphroditic connector MQJ to the loop-back connector.
- b. Connect the pin terminus end in the loop-back connector (socket terminus in the MQJ) to the LED/laser source.
- c. Connect the corresponding socket terminus in the loop-back connector (pin terminus in the MQJ) to the power meter.
- d. Record the optical power, designated as P₂, for that fiber.
Note: The fiber is in a "loop" from the pin terminus to the socket terminus.
- e. Obtain the optical power for the other fibers in the same manner.
- f. Cable assembly loss shall not exceed the limits specified in table 1B.

Perform return loss test per Method 7I1 except that only one hermaphroditic MQJ shall be used. Return loss optical requirements shall be the same as that specified for the pigtail assembly without ST's in table 7I1-II of MIL-STD-2042.

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Notes for table 1A (continued):

8/ Loop-back connector shall contain the following permanent markings: a yellow band, manufacturer name or logo, manufacturer part number, date code.

9/ Functional requirement. Loop-back connector design shall allow use of both hands on the loop-back connector while threading and un-threading (mating and un-mating) from the hermaphroditic receptacle as indicated in figure 1.

10/ Interoperability. Testing of the loop-back connector configuration, as specified in CID A-A-XX159, is not required if interoperability for cable plug and receptacle configurations are met.

11/ Re-enterable. The rear portion of the loop-back connector shall be re-enterable for repair purposes. Capability for re-entry must be possible at the level of a central repair facility as opposed to being done in the field.

Table 1B. Cable Assembly Loss Performance Limits

Performance	Multimode @ 1300 nm (dB)	Single Mode @ 1310 nm (dB)
Maximum acceptable loss	1.5	1.5

Table 2. Hermaphroditic Test Connector, Loop-Back Configuration
Recommended Sources Of Supply

Item	Vendor Name	Part Number	Vendor Address	Vendor Phone/FAX
6009CJ	Packard Hughes Interconnect	1020189H	17150 Von Karman Ave. Irvine, CA 19685	(949) 660-5704 (949) 660-6981

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