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2178-C Fiber Optic Splice Case

Instruction

August, 2002
3M™ 2178-C Fiber Optic Splice Case Description

1.0 General

1.1 The 3M™ 2178-C Fiber Optic Splice Cases are closures that can be used in buried, underground, aerial, and pedestal applications. These closures are suitable for short-term pressurization during flash testing. Please refer to your company’s approved applications. Each splice case has two cable entry ports on each end. Port plugs allow the cases to be used for butt or inline splices. The rigid non-encapsulated case provides moisture protection.

1.2 The 3M™ 2180 re-entry kit is used to provide easy reentry.

2.0 Specifications

<table>
<thead>
<tr>
<th>Max Capacity of Splice Tray</th>
<th>2 3M™ 2522 Tray</th>
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<tr>
<td>Max Capacity of Fiber Splice</td>
<td>10-ribbon 3M™ 2522 Tray</td>
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<td>20-ribbon 3M™ 2523 Tray</td>
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<tr>
<td>36-core 3M™ 2524-CF Tray</td>
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<tr>
<td>24-core 3M™ 2524-FT Tray</td>
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Note: The 2178-C Splice Case will accommodate up to four 1.0” (25 mm) diameter cables inline when using 2522 trays. When using 2523 or 2524 trays it is limited to four 0.5” (12.5mm) diameter cables inline. Butt applications will accommodate up to 1.0” (25 mm) diameter cables.
3.0 Kit Contents

3.1 3M™ 2178-C Splice Case Kit Contents:

3.2 3M™ 2180 Re-entry Kit Contents:

3.3 Tools Required:

- 3/8" (10 mm) Hex Driver
- 7/16" (12 mm) Hex Driver
- Needle Nose Pliers
- Cable Splice Knife
- Electrician’s Scissors
- 1/2" (13 mm) Hex Driver
- Side Cutting Pliers
- Cable Stripper
- Wire Cutter for Steel Strength Members
- Screwdriver
2178-C Closure Installation Procedure

Note 1: If wall mount bracket is required for the 2178-C Splice Case uses the 2198 Mounting Bracket Kit. Attach brackets to base (as shown) prior to cable preparation.

Note 2: Torque bolts to 25±5 in-lbs (2.8±0.6 N-m).

Note 3: Proper sealing of the 2178-C Closure depends on strict adherence to these instructions and the use of specified materials. Deviations can cause leakage or case damage. Maintain clean sealing surfaces to ensure proper sealing. DO NOT USE any release agents or other unspecified materials. These types of materials may lead to loss of sealing effectiveness.

4.0 Cable Preparation

Note: When removing cable sheathing, do not cut, kink, or damage underlying layers. If damage occurs, cut back sheath component to adequately inspect and repair.

4.1 Remove 96" (244 cm) of outer cable sheath (and shield or armor, if present). Remove successive sheath layers and wrapping to expose primary tubes protecting fibers. Stagger layers as recommended by cable manufacturer or per standard practice.

4.2 Remove all cable grease. Clean all primary tubes and dielectric strands with approved cleaner. Cover all sharp edges with vinyl tape.

Note: Carefully follow health, safety and environmental instructions as given on Material Safety Data Sheet or container label for cable cleaner solvent being used.

4.3 Trim any solid filler tubes and discard.

Note: Do not trim strength members at this time.

4.4 Scuff 5" (127 mm) of each cable end using supplied sheath scuff.

Note: Do not use a carding brush to scuff sheaths.

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5.0 Cable Installation

5.1 Slide two sealing washers down each cable. Use sealing washers with smallest inside diameter, which will slide on cable.

*Note: If necessary, sealing washers can be split and placed on the cable.*

5.2 Locate cables in appropriate entrance ports, as shown.

5.3 Bonding and grounding for shielded cable.

*Note: Use care when installing shield bond connectors so underlying layers of cable are not damaged.*

a. Install 3M™ Scotchlok™ 4460-D/FO Shield Bond Connector, following instructions provided with connector.

*Note: If necessary to insure proper fit, remove excess coating on central strength member.*

b. If separate external grounding is required, bond "C.O. Cable" and "Field Cable" directly to separate ground studs.

*Note: Torque ground stud nut to 35±5 in-lbs (4±0.6 N-m).*

c. If separate external grounding is not required, bond across splice to either ground stud.

d. Wrap each cable with two wraps of 3/4" (19 mm) rubber tape. Position tape 0.5" (12.7 mm) from cable sheath end.
5.4 Strength Member Termination for Non-Shielded Cable

a. Wrap each cable with two wraps of 3/4" (19 mm) rubber tape. Position tape 1/4" (6.4 mm) from end of cable.

b. Cut strength member 1.75" (44.5 mm) from cable sheath end.

Install strength members into 3M™ 2172 Strength Member Clamp by loosening screw and placing strength member under screw assembly. Insure strength member is flush with end of clamp prior to tightening the screw. Install rubber boot onto clamp.

Note: If necessary to insure proper fit, remove excess coating on strength member.

5.5 Insert two cable tie down brackets into the plastic "U" channels near the cable entry ports.

5.6.1 Build cable entrance seals by wrapping sealing tape between sealing washers 2.0" (51 mm) from each cable sheath end. Wrap each cable until sealing tape outside diameter (OD) is flush with sealing washer OD.

Note: Sealing tape must be flush with sealing washer diameter OD of 1.31" (33 mm). The maximum tape diameter OD should be no more than 1.4" (36 mm).

5.6.2 Press cable entrance seals into cable ports as shown.
3M™ 2172 Strength Member Clamp:
Attach each cable to closure base by installing a hose clamp through slot on the strength member clamp, then route hose clamp under cable tie down bracket and tighten.

5.7 Attach cables to closure base, using one of the two methods below: 3M™ Scotchlok™ 4460-D/FO Shield Bond Connector: Attach each cable to closure base by installing a hose clamp around the cable and under the cable tie down bracket and tighten.

5.8 Install one green cable tie on the "C.O. Cable" and trim. Install one blue cable tie on each "Field Cable" and trim.

*Note: Cable ties may also be placed inside case per company standard practice.*

6.0 Primary Tube Preparation

6.1 Gather all primary tubes from "C.O. Cable" and install one green cable tie approximately 36" (914 mm) from sheath end. Install one blue cable tie on the "Field Cable" primary tubes. Install two blue cable ties on "Branch Cable" primary tubes.

6.2 Coil primary tube bundles inside closure base per company standard or organizer installation instructions.

6.3 Install organizer and splice per company standard or organizer installation instructions.
7.0 Splice Cable Assembly

*Note: If 3M™ 2183 Universal Aerial Hanger Bracket is to be used, follow its practice prior to splice case assembly.*

7.1 Seal Closure Walls
a. Lay sealing cord into channel along both sides of closure base. **Do not stretch sealing cord.**

b. Lay strip of sealing cord 1.5" (38 mm) in length over the word "mastic" between the cable entrance ports on each end of closure base.

7.2 Seal Plug Construction
a. Wrap each plug two times with sealing tape. Sealing tape OD should be flush with plug OD.

b. Press seal plugs into each vacant cable entrance port.

7.3 Before placing closure cover on the closure base, insure that the air valve matches up with "Air Valve End" note on base.

7.4 Screw all bolts until they have been threaded several complete turns into the nut inserts.

7.5 Tighten ten (10) bolts half way down in sequence shown. Then tighten ten (10) bolts in sequence shown until there is metal to metal contact. Bolts may be partially pulled down with air impact wrench. Final tightening should be done with a hand wrench to 20 ft-lbs. (27.12N-m) torque. **Case leakage may occur if procedure is not followed.**

*Note: See label and numbers on cover of splice case.*

7.6 After 5 minutes, retighten bolts to 20 ft-lbs. (27.12 N-m) maximum.
7.7 Flash test splice case with 8 psi (.55 bars) **MAXIMUM, THEN RELEASE PRESSURE.**

7.8 If leaks are detected, retighten bolts.

**8.0 Splice Case Reentry**

8.1 Remove the 10 bolts holding splice case halves together.  
*Note: See label on cover of splice case.*

8.2 Using four of these bolts, loosely screw one bolt into each of the four threaded corner inserts in the closure cover.

8.3 Beginning in any corner, screw in bolt until the closure halves been pried apart about .25" (6 mm). Repeat with the other bolt on same end of closure.

8.4 Follow same procedure with the bolts on opposite end of closure. Continue screwing bolts in .25" (6 mm) increments until the case halves can be easily separated by hand.

*Note: If splice case is to be reassembled, old sealant must be removed and cable entrance port seals reconstructed. The 2180 Cable Kit is needed to reseal splice case.*
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