



Bonding Procedures for Mini C2™ and Mini LXE Cables

Contents	Section
General	1
3M ScotchLok 4460-D\FO Shield Bond Connector Assembly	2
Electric Motion B-Bond Clamp	3

1. General

1.1 This practice provides general recommendations for bonding the metallic armor layer of OFS Mini C2™ and Mini LXE cables. The document is intended for personnel with prior experience in cable splicing. A working familiarity of terminating cables in splice closures, pedestals, and on equipment frames is necessary as this guide does not cover all aspects of cable splicing and apparatus. If local or company practices differ from these recommendations, those practices or requirements shall supersede this document.

1.2 Bonding is defined as the permanent joining of metallic components to form an electrical path to conduct electrical current that may be imposed on the cable. *Grounding* the cable requires additional bonds or connections through conductive components to earth. This is typically accomplished by bonding the cable to a ground rod or to an effectively grounded conductor. Detailed grounding procedures are not covered in this document.

1.3 Optical fiber cables are typically bonded and grounded at splice closures, cabinets, equipment frames, and building entrances. Consult local, state, or federal requirements to determine the bonding and grounding requirements for your application.

1.4 Article 770 of the 2011 National Electric Code (NEC) requires that the non-current carrying metallic members (e.g., metallic strength members and armor shields) of optical fiber cables be bonded and grounded at the point of entrance into a building. For additional information see TIA/EIA-607, *Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises*. The outside plant engineer or planner should consult with state or local regulatory agencies to determine if local practices supersede the NEC requirements.

1.5 There are several different types of bonding clamps available for use on optical fiber cables. This practice shows two commonly used bond clamps. If a different style of bond clamp is supplied with your closure or apparatus, follow the installation instructions provided by the equipment manufacturer.

1.6 Procedures for bonding and clamping metallic strength-members in a splice closure are dependent on the closure design and the hardware provided by the closure manufacturer. Refer to the manufacturer's documentation for their recommended procedures.

2. 3M ScotchLok¹ 4460-D\FO Shield Bond Connector Assembly

2.1 This section describes installation of the 3M ScotchLok 4460-D\FO Bond Connector (Figure 1) on Mini C2 or Mini LXE cables. This assembly is used to bond both the armor and the metallic strength members. The following components are included in the bond kit.

- Connector Top
- Connector Bottom
- Lock Cap

¹ 3M and ScotchLok are trademarks of the 3M Company, St. Paul, MN.
Page 1 of 8

- Extension Bracket
- Fiber Protector
- Lock Nuts
- Insulating Cap



Figure 1 - 3M ScotchLok 4460-D\FO Shield Bond Connector Assembly

2.2 Remove the cable jacket as described in OFS IP-038, *Sheath Removal for Mini LXE, Mini C2, and Mini C2 DT Optical Fiber Cables*. Expose the strength members about 1 inch beyond the end of the outer jacket as shown in Figure 1.

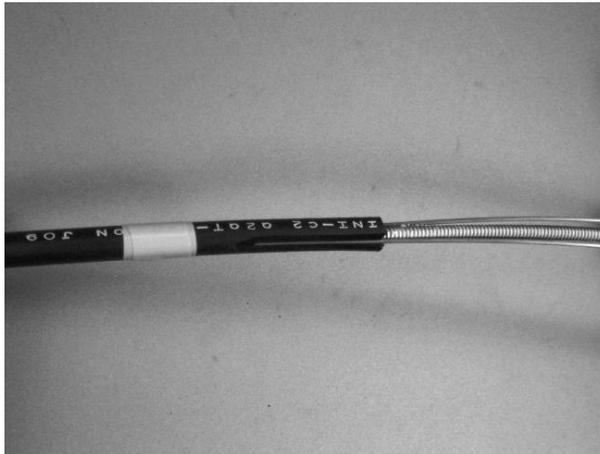


Figure 1 – Remove the cable jacket to expose the strength members and corrugated armor.

2.3 Trim the armor even with the outer cable jacket. Lift the two halves of the outer jacket to expose the armor layer. Separate the armor overlap and lift the armor from the core tube as shown in Figure 2.

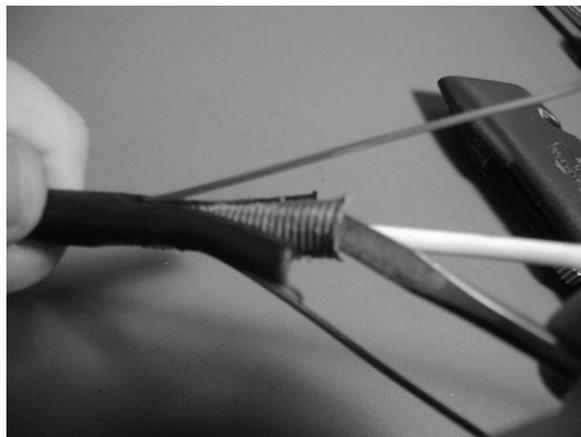


Figure 2 – Separate the armor overlap and lift the armor.

2.4 Trim the plastic guard as required to fit under the armor and insert the plastic guard between the armor and the central core tube (Figure 3).

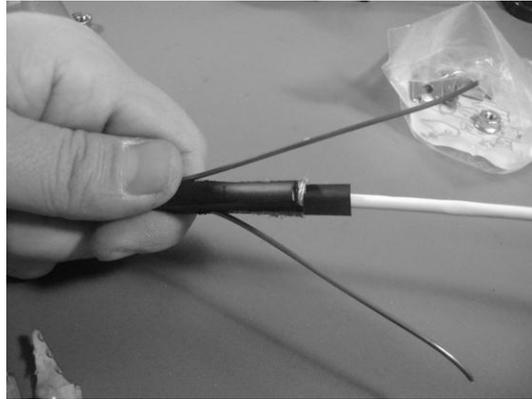


Figure 3 – Insert the plastic guard.

2.5 Insert the bottom half of the bond clamp between the plastic guard and the armor. Exercise caution when inserting the bond clamp to prevent damage to the central core tube. Assemble the extension bracket and top half of the bond connector over the stud and tighten with a lock nut (Figure 4).

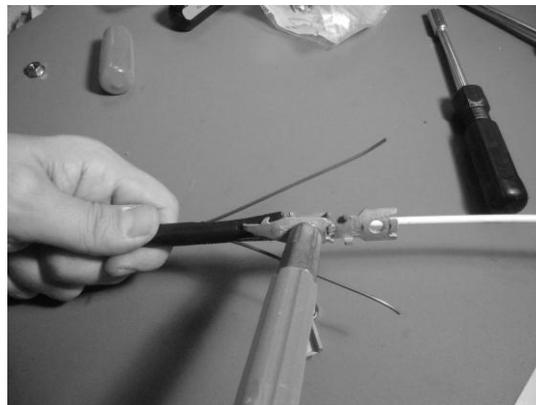


Figure 4 - Assemble connector bottom, extension bracket, and connector top.

2.6 Attach the lock cap on the bottom side of the extension bracket. Trim the metallic strength members as required to clamp between the lock cap and the extension bracket. Install a lock nut over the stud of the lock cap to secure the strength members (Figure 5).

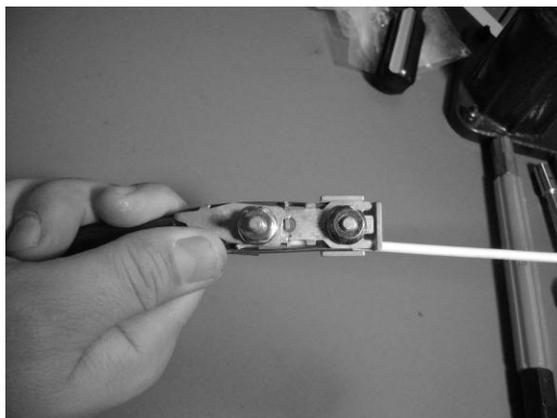


Figure 5 – Trim the strength wires and secure between the lock cap and extension bracket.

2.7 Attach a bond wire to the bond clamp stud and fasten with a lock nut (Figure 6). Connect the bond wire to an approved ground as required by local practice.



Figure 6 – Attach a bond wire to the bond clamp.

2.8 Wrap the exposed strength members and the bottom section of the bond clamp with electrical tape. Over wrap adjacent layers of tape by one-half wrap (Figure 7).

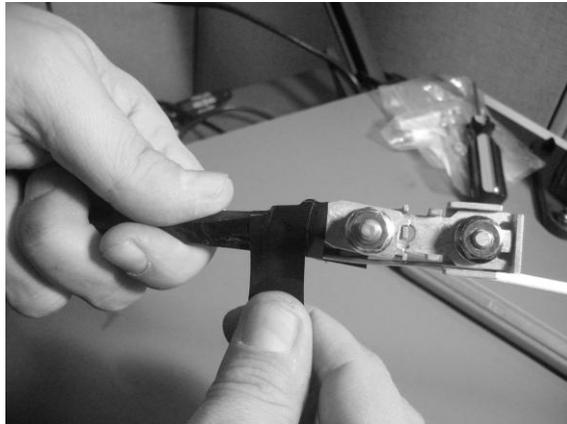


Figure 7 – Wrap the exposed strength members with tape.

2.9 Place the insulating cap over the bond clamp. Cut a longitudinal slit in the cap to slide over the stud of the bond clamp (Figure 7). Tape the rubber cap to the cable to keep it in place.

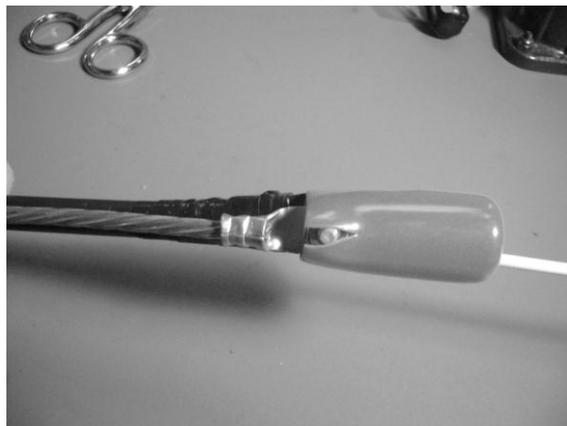


Figure 8 – Install the insulating cap over the bond clamp.

3. Electric Motion B-Bond Clamp

3.1 This section describes installation of an Electric Motion B-Bond Clamp (Figure 9) on Mini C2 or Mini LXE cables. The metallic strength members are not attached to the B-bond clamp, so this bond clamp is used in applications where the metallic strength members are bonded in the splice closure or terminal equipment. The following components are included in the bond kit.

- Connector Top
- Connector Bottom
- Lock Nuts



Figure 9 – Electric Motion B-Bond clamp.

3.2 Remove the cable jacket as described in OFS IP-038, *Sheath Removal for Mini LXE, Mini C2, and Mini C2 DT Optical Fiber Cables*. Expose the strength members about 3-1/2 in. beyond the end of the outer jacket as shown in Figure 10.

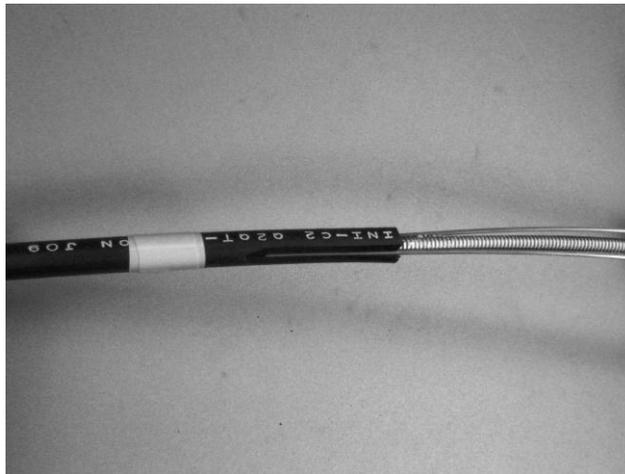


Figure 10 – Remove the cable jacket to expose the strength members and corrugated armor.

3.3 Trim the armor even with the outer cable jacket. Lift the two halves of the outer jacket to expose the armor layer. Separate the armor overlap and lift the armor from the core tube as shown in Figure 11.

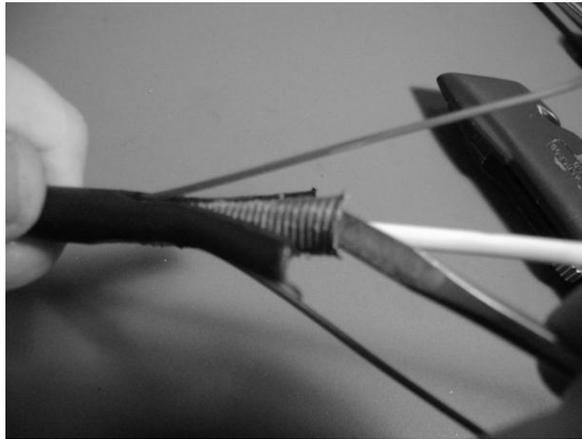


Figure 11 – Separate the armor overlap and lift the armor.

- 3.4** Punch a hole in the armor (Figure 12) to accommodate the stud of the connector bottom.

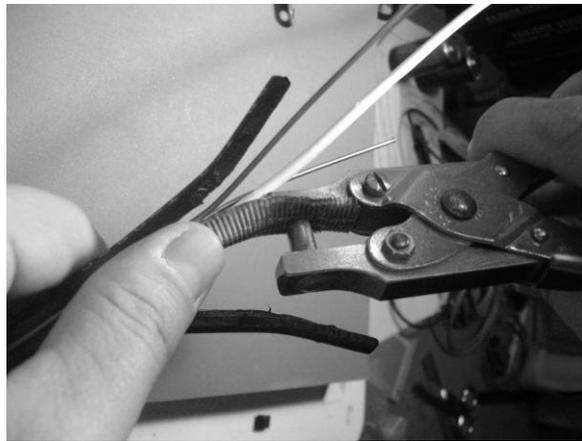


Figure 12 – Punch a hole in the armor.

- 3.5** Insert the bottom half of the bond clamp below the armor. Align the stud with the hole in the armor (Figure 13).

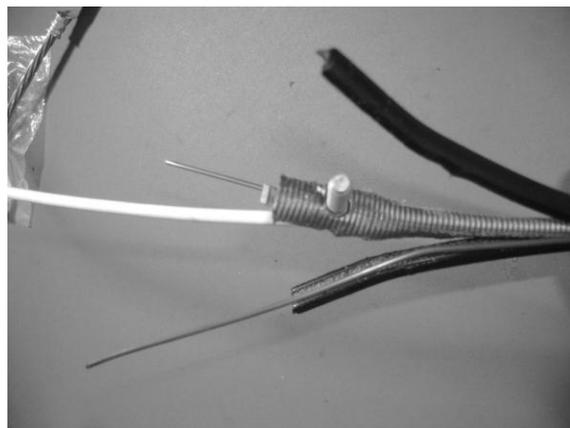


Figure 13 - Install bottom half of bond clamp.

- 3.6** Assemble the top half of the bond clamp over the armor and fasten to the stud with a lock nut (Figure 14).

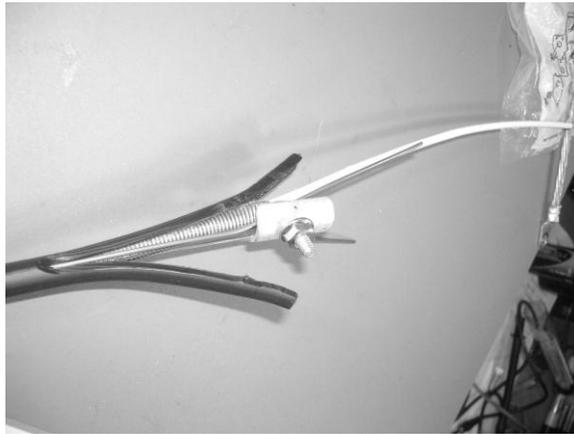


Figure 14 - Install top half of bond clamp.

3.7 Wrap the exposed strength members with electrical tape. Over wrap adjacent layers of tape by one-half wrap (Figure 15).



Figure 15 – Wrap the exposed strength members with vinyl tape.

3.8 Attach a bond wire to the stud of the bond clamp and tighten with a lock nut (Figure 16). Connect the bond wire to an approved ground as required by local practice.

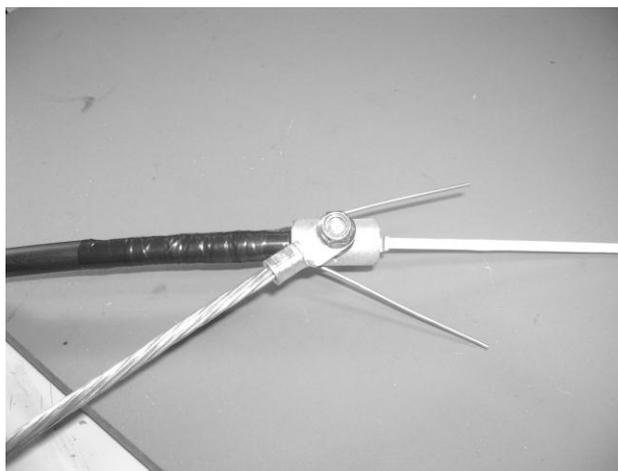


Figure 16 – Connect the bond wire to the bonding clamp.

3.9 Trim and attach the strength members in the splice closure or terminal equipment as required.

For additional information please contact your sales representative. You can also visit our website at www.ofsoptics.com or call 1-888-FIBER-HELP (1-888-342-3743) from inside the USA or 1-770-798-5555 from outside the USA.

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