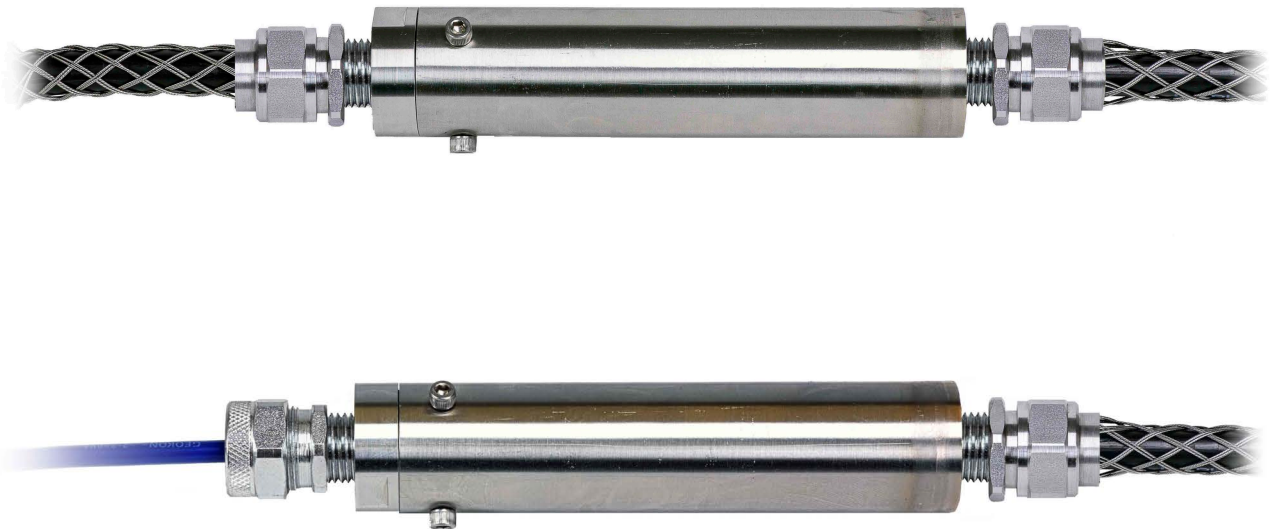




Model 4500-9-HDF1 and 4500-9-HDF2

Armored Cable Splicing

Instruction Manual



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1. INTRODUCTION



GEOKON Model 4500-9-HDF1 and 4500-9-HDF2 Armored Cable Splice Kits are designed for the field splicing of GEOKON armored instrument cables. They offer a quick and permanent solution used to create and encapsulate a cable splice. There are two different models available, with options to either splice to another armored cable, or to a smaller diameter unarmored cable.

Splice kits for standard cable, high temperature cable, and settlement system cables are also available. View the manuals of available splice kit models at geokon.com/Cables.

1.1 SPLICE KIT MODEL LIST

Model Number	Description
4500-9-HDF1	Splice kit for 0.500" armored to 0.500" armored cable
4500-9-HDF2	Splice kit for 0.500" armored to 0.250" unarmored cable

TABLE 1: Splice Kit Model List

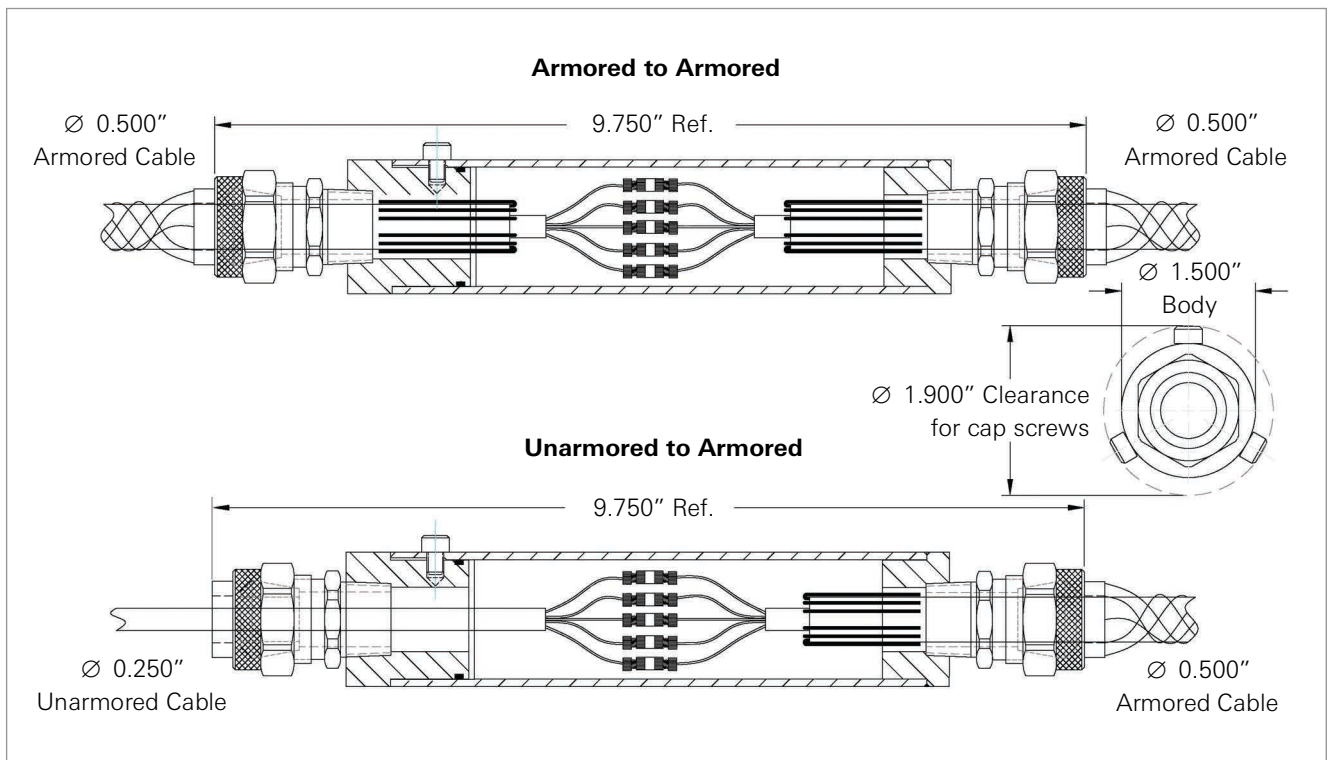


FIGURE 1: Model 4500-9-HDF1 (Top) and 4500-9-HDF2 (Bottom)

One end of the splice tube features a removable end cap, allowing access to the inside of the tube. The other end of the tube is fixed. Both tube ends feature removable fitting nuts, designed to accept cables of multiple sizes.

2. COMPONENTS

Each kit consists of a stainless steel splice tube assembly, Posi-Lock connectors, a 5/32" Allen wrench, two 5.5" long 1/6" clear poly heat shrink, and an epoxy kit. Each epoxy kit includes epoxy compound, a wooden mixing paddle, and a mesh sleeve (not used).



FIGURE 2: Stainless Steel Splice Tube Assembly (Expanded View), 4500-9-HDF-1 (Top) and 4500-9-HDF2 (Bottom)



FIGURE 4: Posi-Lock Connectors



FIGURE 4: Allen Wrench



FIGURE 5: Heat Shrink



FIGURE 6: Epoxy Kit

3. INSTALLATION

3.1 REMOVABLE END PREPARATION

1. Remove the three #10-32 x 3/8" long hex socket head cap screws from the circumference of the tube.

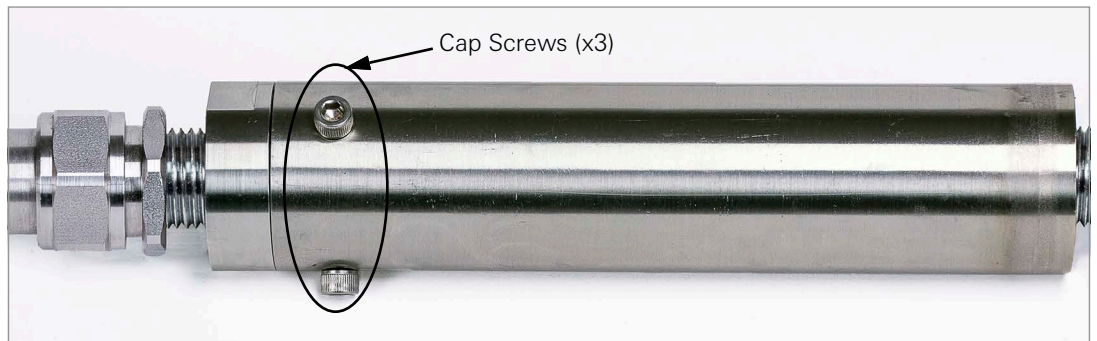


FIGURE 7: Remove the Cap Screws

2. Detach the removable end cap from the tube.



FIGURE 8: Remove the Removable End Cap

3. Unscrew and remove the cable fitting nut from the connector adapter.



FIGURE 9: Unscrew the Fitting Nut

4. Prepare the cable for the **removable end** of the splice by following Section 3.1.1 (for unarmored cable) or Section 3.1.2 (for armored cable).

3.1.1 UNARMORED CABLE

1. Slide the unarmored cable through the outer end of the fitting nut.

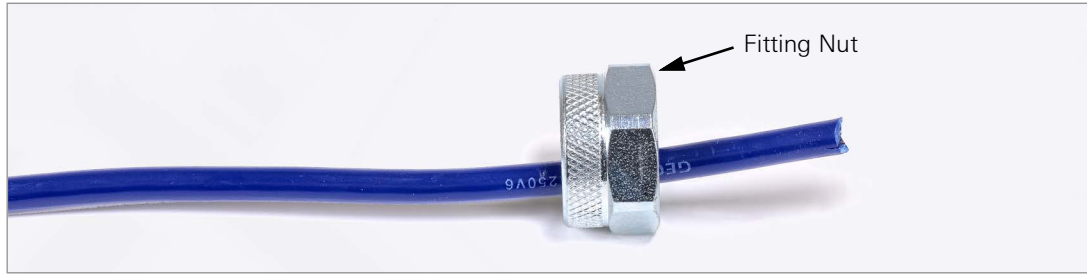


FIGURE 10: Install the Fitting Nut

2. Slide the cable through the black grommet, and then through the removable end cap.



FIGURE 11: Install the Removable End Cap

3. Strip the cable's outer jacket back approximately 40 mm (1 1/2") from the end to expose the wire leads.



FIGURE 12: Outer Jacket Stripped

4. Unwind the leads and remove the foil to expose the two twisted pair wires and shield wire.
5. Strip the insulation back approximately 12 mm (1/2") on the all four lead wires.

Note: Do not connect the fitting nut to the connector adapter at this time.

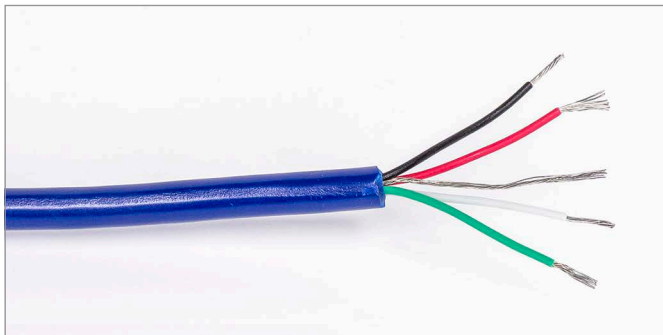


FIGURE 13: Lead Wires Stripped

6. For instructions on making the splice, see Section 3.3.

3.1.2 ARMORED CABLE

1. Slide the armored cable through the outer end of the Kellems grip and through the fitting nut.

Note: Compress the Kellems grip lengthwise to aid in sliding the cable.



FIGURE 14: Install the Kellems Grip Fitting

2. Slide the cable through the black grommet, and then through the removable end cap.

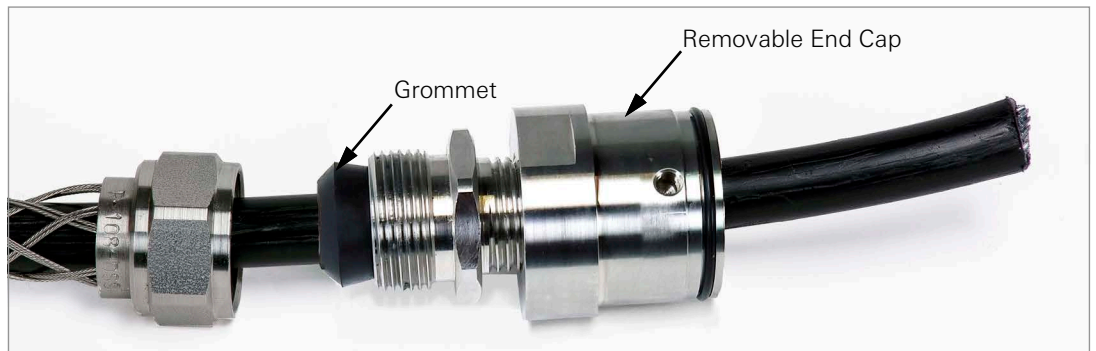


FIGURE 15: Install the Removable End Cap

3. Strip the cable's outer jacket back approximately 40 mm (1 1/2") from the end to expose the armor and wire leads.



FIGURE 16: Outer Jacket Stripped

4. Bend the exposed armor backward over the outer jacket.

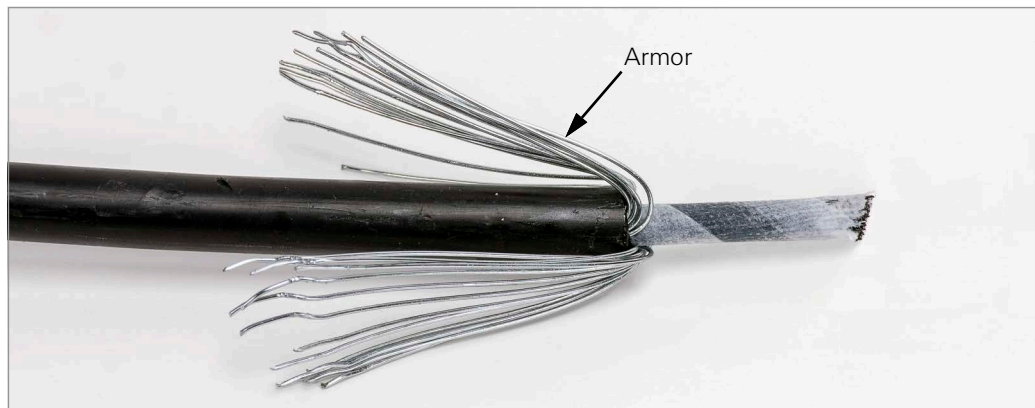


FIGURE 17: Bend Armor Over Jacket

- Remove the paper and 25 mm (1") of inner jacket to expose the braided shield.

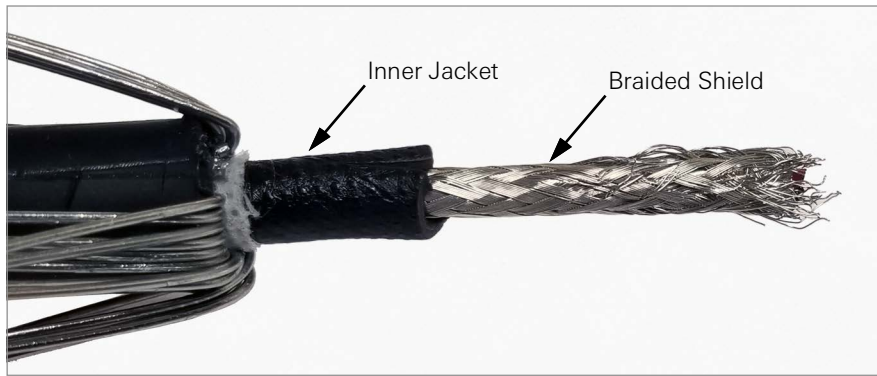


FIGURE 18: Braided Shield

- Remove the braided shield to expose the two twisted pair wires and shield wire.



FIGURE 19: Braided Shield Removed

- Remove the foil to expose the 2 pair wire leads and shield wire.
- Strip the insulation back approximately 12 mm (1/2") on the four lead wires.

Note: Do not connect the fitting nut to the connector adapter at this time.

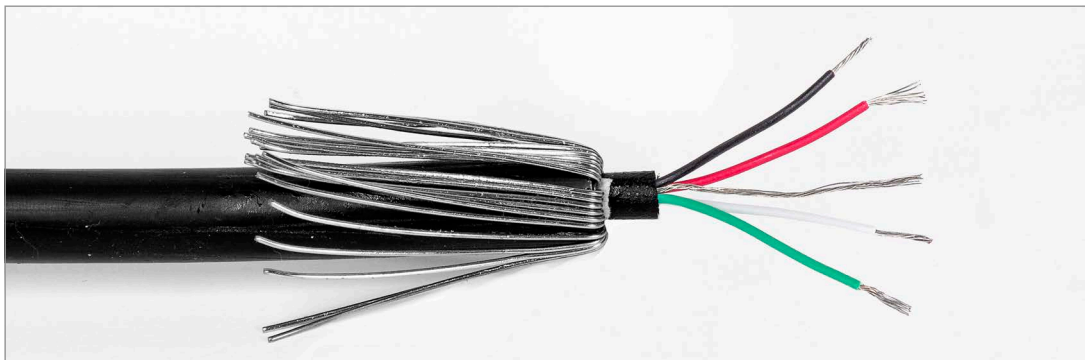


FIGURE 20: Lead Wires Stripped

3.2 FIXED END PREPARATION

1. Unscrew and remove the cable fitting nut from the fixed end of the tube.

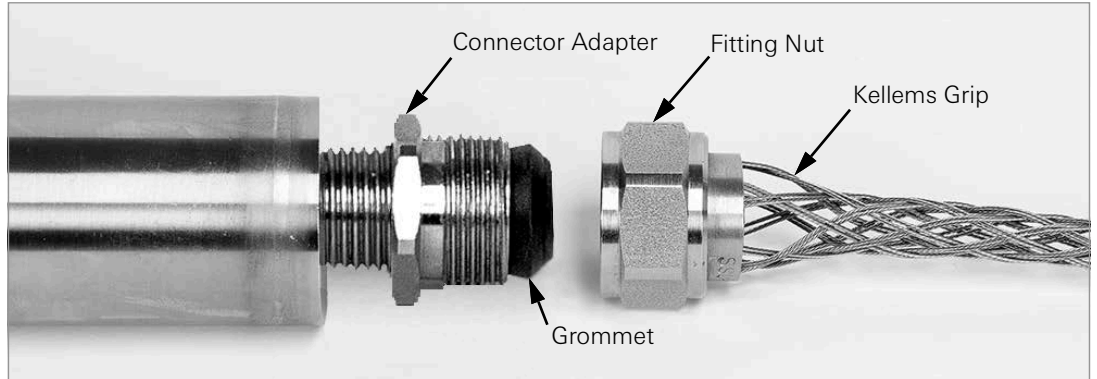


FIGURE 21: *Unscrew the Fitting Nut*

2. Slide the armored cable through the outer end of the Kellems grip and through the fitting nut.

Note: Compress the Kellems grip lengthwise to aid in sliding the cable.

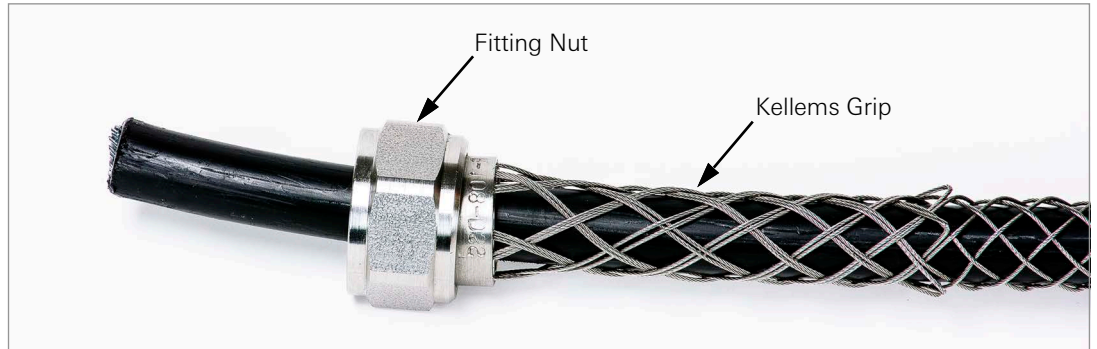


FIGURE 22: *Install the Kellems Grip Fitting*

3. Slide the cable through the black grommet, and then through the tube.

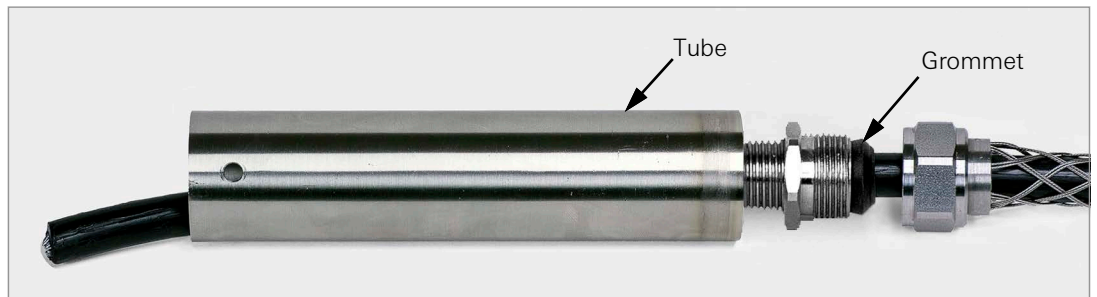


FIGURE 23: *Install Through the Grommet and Tube*

4. Prepare the cable in the same manner as described in Section 3.1.2.

3.3 MAKING THE SPLICE

1. Following the Posi-Lock connector instructions shown in Figure 24, connect the individual conductors of the two cables together. Make sure to connect color to color and connect the ground wires together. When tightening the Posi-Lock connectors, tighten finger tight only. The completed connection is shown in Figure 25.



FIGURE 24: Posi-Lock Instructions

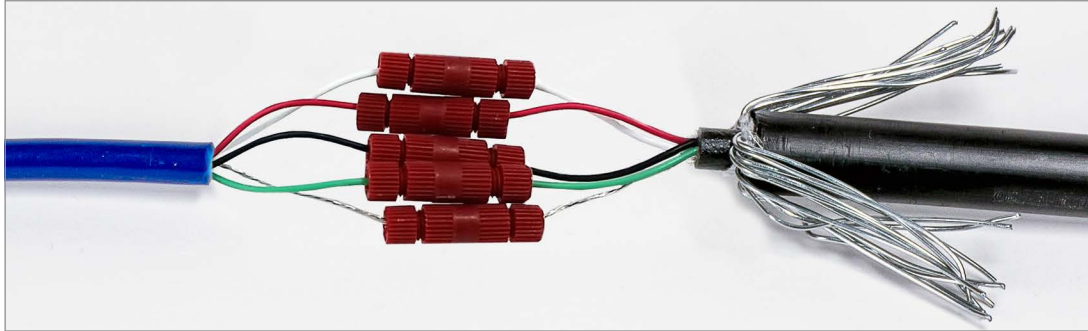


FIGURE 25: Posi-Lock Connectors Attached to Conductors (Unarmored to Armored Cable Connection Shown)

2. Position the Posi-Lock connectors in the center of the tube.

Important! Be careful not to disrupt the spliced wire leads.

- a. Slide the cable through the removable cap towards the center of the tube. The Kellems grip and grommet will need to be adjusted manually to achieve this. This step creates slack in the cable inside the tube.
 - b. On the fixed end of the tube, pull the cable away from the center, out through the grommet. This step removes slack created in the previous step.
 - c. Repeat as needed until the wire splice is in the center of the tube.
3. Reconnect the fixed end of the tubing. Ensure the grommet is firmly and snugly in place, slide the fitting nut over the grommet and screw it onto the connector adapter.

Note: Make sure the cable does not move during this step.

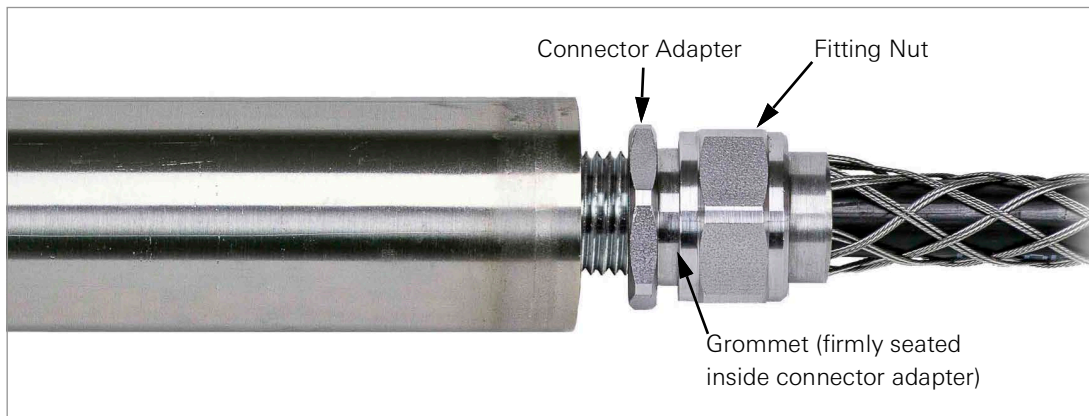


FIGURE 26: Reconnect the Fixed End

- On the removable end side, assemble the fittings together. Ensure the grommet is firmly and snugly in place, slide the fitting nut over the grommet and screw it onto the connector adapter.
Do not assemble the fittings to the tube.

Note: Make sure the cable does not move during this step.

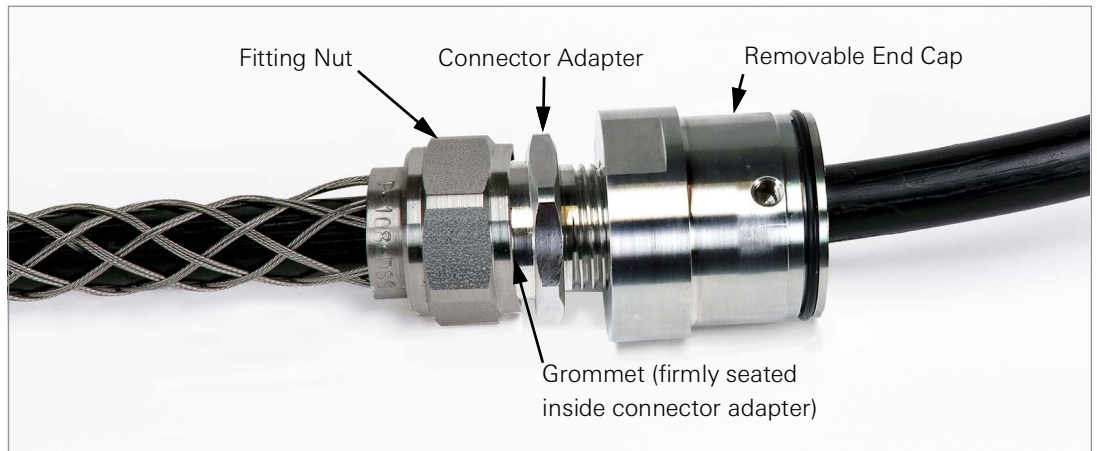


FIGURE 27: Removable End, Assemble the Fittings

- Take readings at the readout station to confirm the sensor and the thermistor are reading properly.

3.4 PREPARE EPOXY AND ENCASE SPLICE

Preview all steps below before mixing. The following steps must be performed quickly to prevent premature curing.

Caution! Wear disposable gloves when working with epoxy.

- Mix the epoxy kit according to the mixing steps on the instructions provided with the kit.
- Fill the tube with epoxy. Slightly tilt the tube as it is filling to let the air pockets escape.
- Hold the tube vertically and fill it until the epoxy is approximately 19 mm (3/4") short from the top of the tube.
- Push the removable end cap onto the tube and secure by reinstalling the three cap screws.

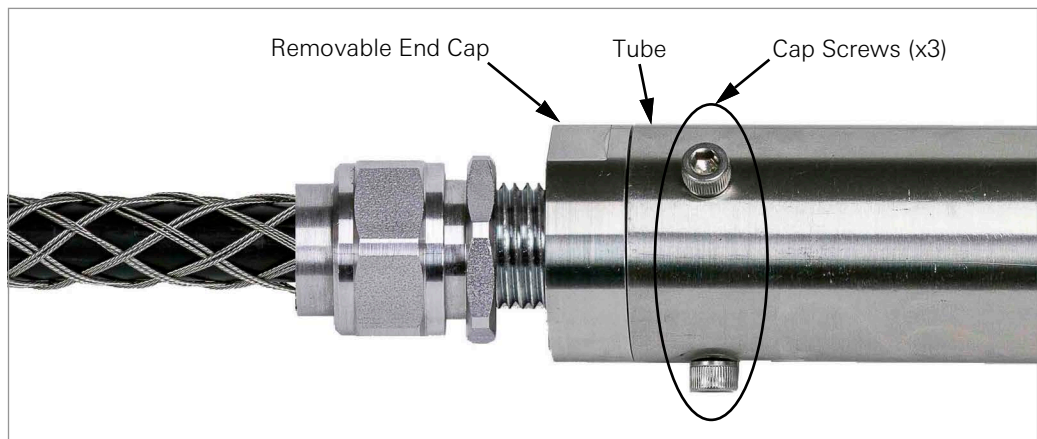


FIGURE 28: Secure the Removable End Cap to the Tube

- Allow the splice assembly to lay horizontally to ensure the epoxy coats the entire cable splice.
- Allow a few hours for the epoxy to cure. The cable splice is now complete.

GEOKON®

GEOKON
48 Spencer Street
Lebanon, New Hampshire
03766, USA

Phone: +1 (603) 448-1562
Email: info@geokon.com
Website: www.geokon.com

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