Model 4500-10 Through 4500-16

Cable Splicing

Instruction Manual

GEOKON®

Document Revision: E | Release date: 6/20/24

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1. INTRODUCTION

Splice Kit Manuals

GEOKON Splice Kits are designed for the field splicing of GEOKON instrumentation cables. They offer a quick and permanent solution used to create and encapsulate a cable splice. There are seven different models available, each designed for a specific cable diameter, and one (Model 4500-11) designed for vented cable.

Splice kits for armored 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
4500-10	Splice kit for 0.250" cable
4500-11	Splice kit for 0.335" vented cable, with barbed tube union
4500-12	Splice kit for 0.375" cable
4500-13	Splice kit for 0.500" cable
4500-14	Splice kit for 0.625" cable
4500-15	Splice kit for 0.187" cable
4500-16	Splice kit for 0.312" cable

TABLE 1: *Splice Kit Model List*

2. COMPONENTS

Each kit consists of a clear PVC tube, end caps with Swagelok fittings installed (nylon cable grips for vented cable kits), Posi-Lock connectors, and the epoxy kit(s). Each epoxy kit includes epoxy compound, a wooden mixing paddle, and a mesh sleeve (not used). The vented cable kit (Model 4500-11) will also include a barbed plastic tube union for the vent line.

The quantity of Posi-Lock connectors and epoxy compound, as well as the size of the tube and Swagelok connectors will vary by model number.

FIGURE 1: *Epoxy Kit*

FIGURE 2: *PVC Splice Tube, Standard (Top) or Vented (Bottom)*

FIGURE 3: *Posi-Lock Connectors*

FIGURE 4: *Barbed Tube Union, Only with Vented Unit (Model 4500-11)*

3. INSTALLATION

3.1 SPLICING THE CONDUCTORS

Ensure the cable ends are free of debris during this process. Further precaution should be taken when working with vented cables to prevent water or debris from getting into the vent tube.

1. Loosen the nut on the Swagelok fitting, then push the cable through the fitting and out the other end.

FIGURE 5: *Initial Cable Insertion*

2. Strip the outer jacket of the cable back 38 mm to 50 mm (1.5 to 2 inches). Various tools can be used for this operation; the primary goal is to get the jacket off without nicking the inner conductors or a vent line. Remove inner plastic and foil (if applicable).

Note: For cables with a large quantity of conductors, GEOKON recommends staggering the conductor wire lengths.

3. Strip the jackets of the inner conductors back 6 mm (0.25 inches).

FIGURE 6: *Cable and Conductor Jackets Stripped Back*

4. Loosen the nut on the other end cap and push the other cable through the fitting. Repeat Step 2 and 3 on the second cable.

Note: If conductor lengths were staggered on the first cable, confirm the conductors on the second cable are also staggered accordingly.

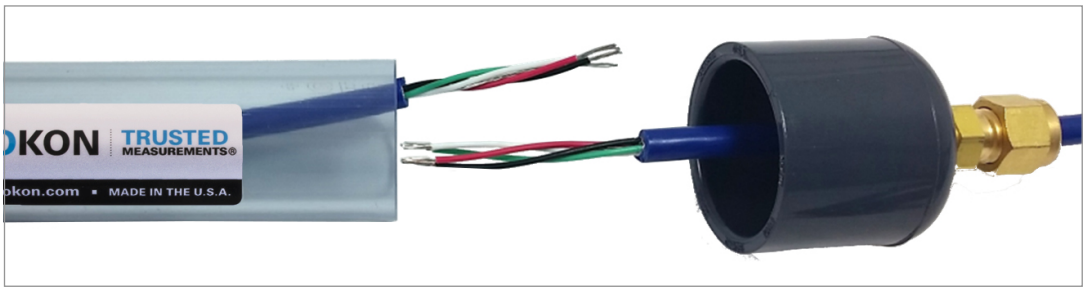

FIGURE 7: *Both Cables Prepared*

5. Following the Posi-Lock connector instructions shown in Figure 8, 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 9.

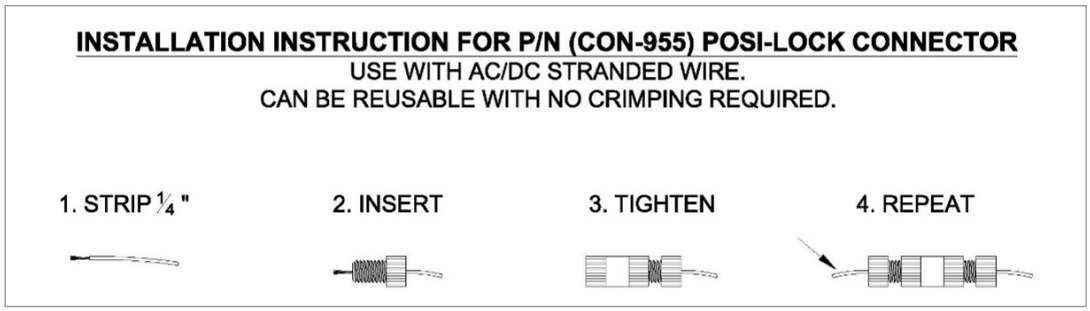

FIGURE 8: *Posi-Lock Instructions*

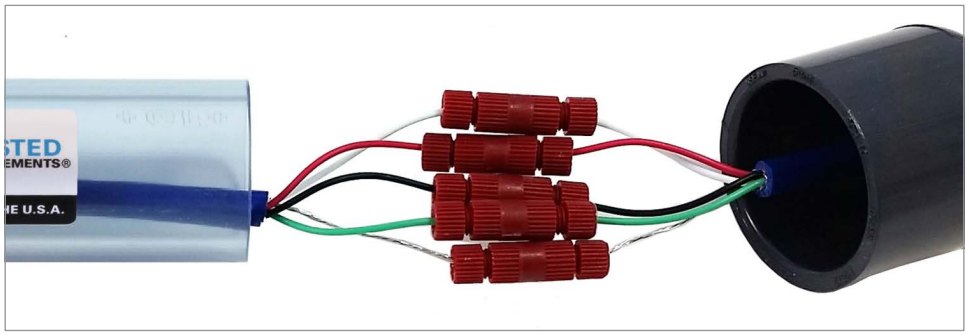

FIGURE 9: *Posi-Lock Connectors Attached to Conductors*

6. **Model 4500-11 Vented Cable Kit Only:** Push the end of both vent lines onto the barbed plastic tube union.
7. Position the Posi-Lock connectors in the center of the clear tube.
8. Tighten the nut on the Swagelok fitting to secure the cable.

Note: Follow the instructions in Appendix B for Swagelok fittings. (Use two wrenches, as shown in Figure 21 of Appendix B, to prevent stripping of the threads in the plastic cap.)

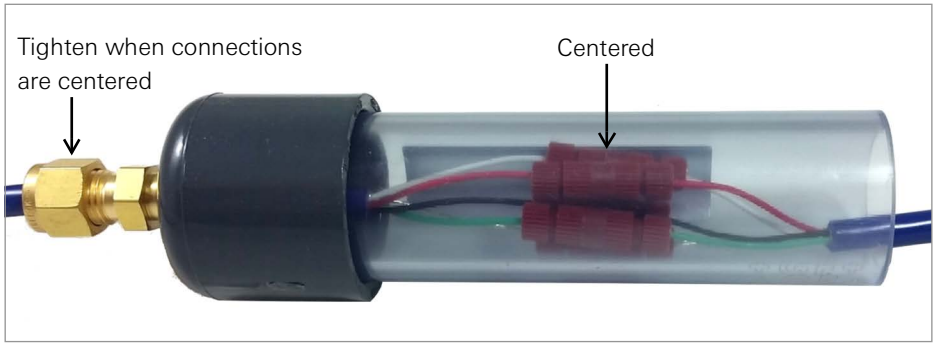

FIGURE 10: *Posi-Lock Connectors Centered Inside the Tube, Tighten Fitting*

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

3.2 PREPARE EPOXY AND ENCASE SPLICE

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

Note: Models 4500-13 and 4500-14 will come with two epoxy kits, complete mixing and poring the first kit before starting the second kit.

Caution! Wear disposable gloves when working with epoxy.

1. Mix the epoxy kit according to the mixing steps on the instructions provided with the kit.
2. Fill the tube with epoxy. Slightly tilt the tube as it is filling to let the air pockets escape.
3. Hold the tube vertically and fill it to the top.
4. Put a bit of epoxy on the outer rim of the tube where the second cap will be installed.
5. Push the cap onto the tube and tighten the Swagelok fitting to secure the cable.

Note: Follow the instructions in Appendix B for Swagelok fittings. (Use two wrenches, as shown in Figure 21 of Appendix B, to prevent stripping of the threads in the plastic cap.)

FIGURE 11: *Tighten Second Fitting*

6. Allow a few hours for the epoxy to cure. The cable splice is now complete.

APPENDIX A. SPECIFICATIONS

A.1 SPLICE KIT DIMENSIONS

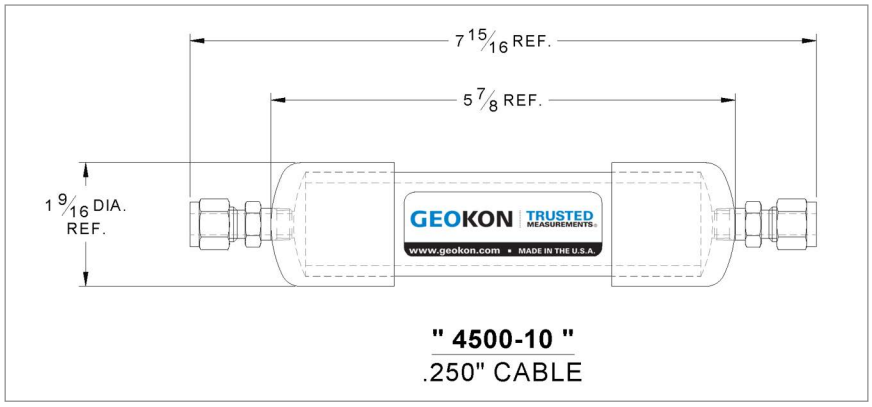

FIGURE 12: *Model 4500-10 for 0.250" Cable*

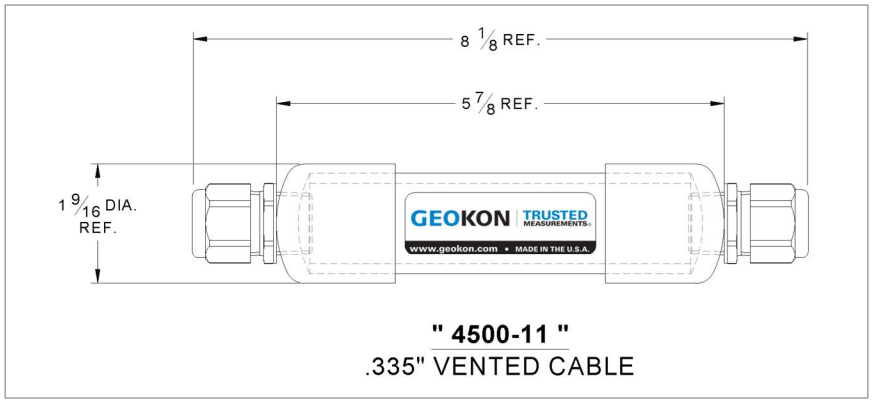

FIGURE 13: *Model 4500-11 for 0.355" Vented Cable*

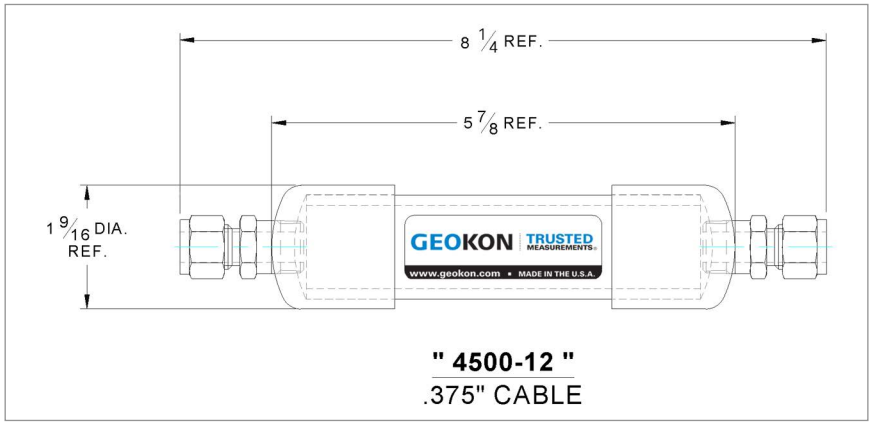

FIGURE 14: *Model 4500-12 for 0.375" Cable*

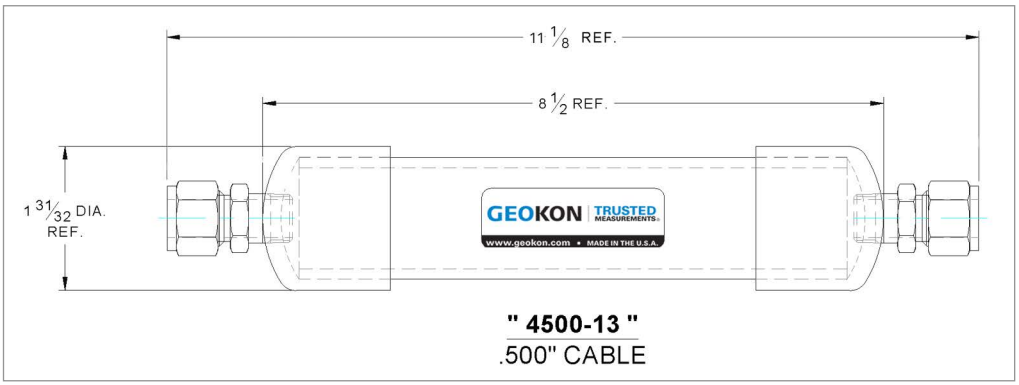

FIGURE 15: *Model 4500-13 for 0.500" Cable*

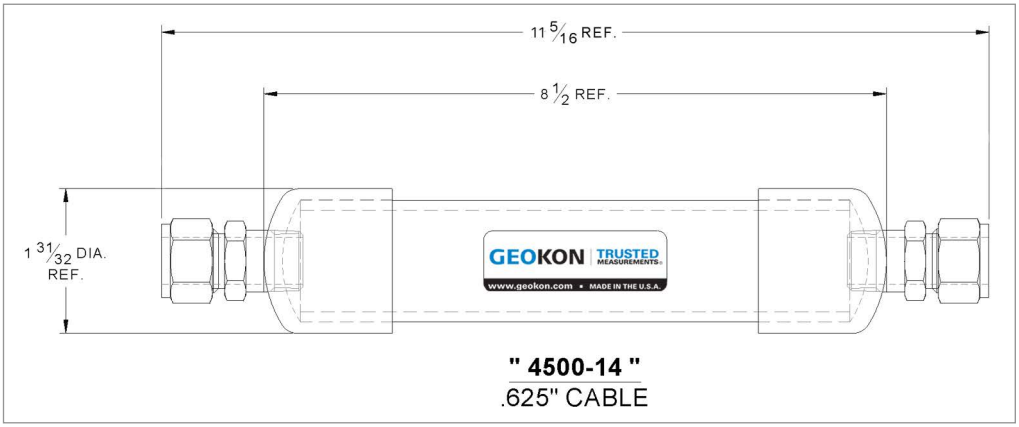

FIGURE 16: *Model 4500-14 for 0.625" Cable*

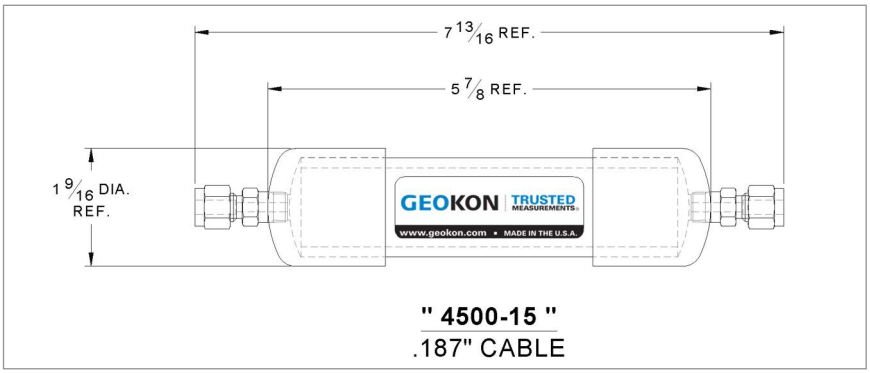

FIGURE 17: *Model 4500-15 for 0.187" Cable*

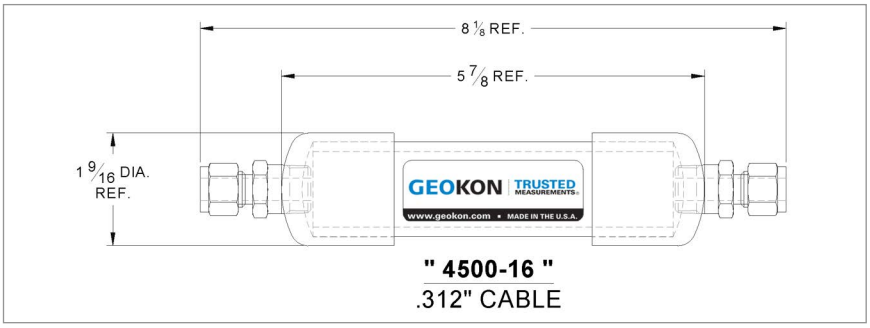

FIGURE 18: *Model 4500-16 for 0.312" Cable*

APPENDIX B. SWAGELOK TUBE FITTING INSTRUCTIONS

These instructions apply to one inch (25 mm) and smaller fittings.

B.1 INSTALLATION

1. Fully insert the tube into the fitting until it bumps against the shoulder.

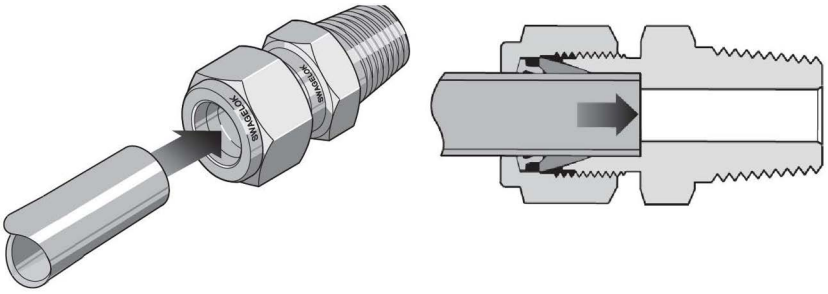

FIGURE 19: *Tube Insertion*

2. Rotate the nut until it is finger tight. (For high-pressure applications as well as high-safety-factor systems, further tighten the nut until the tube will not turn by hand or move axially in the fitting.)
3. Mark the nut at the six o'clock position.

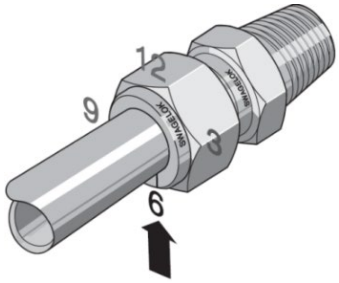

FIGURE 20: *Make a Mark at Six O'clock*

4. While holding the fitting body steady, tighten the nut one and one quarter turns, until the mark is at the nine o'clock position.

Note: For 1/16-inch, 1/8-inch, 3/16-inch, and 2, 3, and 4 mm fittings, tighten the nut three-quarters of a turn until the mark is at the three o'clock position.

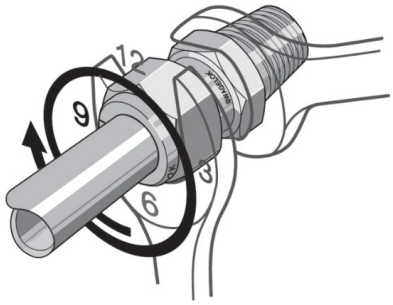

FIGURE 21: *Tighten One and One-Quarter Turns*

B.2 REASSEMBLY INSTRUCTIONS

Swagelok tube fittings may be disassembled and reassembled many times.

Warning! Always depressurize the system before disassembling a Swagelok tube fitting.

1. Prior to disassembly, mark the tube at the back of the nut, then make a line along the nut and fitting body flats. **These marks will be used during reassembly to ensure the nut is returned to its current position.**

FIGURE 22: *Marks for Reassembly*

2. Disassemble the fitting.
3. Inspect the ferrules for damage and replace if necessary. If the ferrules are replaced the connector should be treated as a new assembly. Refer to the section above for installation instructions.
4. Reassemble the fitting by inserting the tube with pre-swaged ferrules into the fitting until the front ferrule seats against the fitting body.

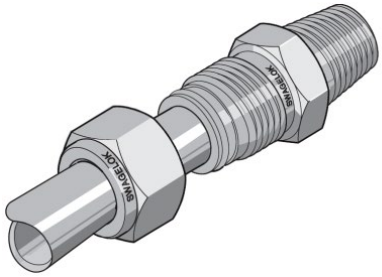

FIGURE 23: *Ferrules Seated Against Fitting Body*

5. While holding the fitting body steady, rotate the nut with a wrench to the previous position as indicated by the marks on the tube and the connector. At this point, there will be a significant increase in resistance.
6. Tighten the nut slightly.

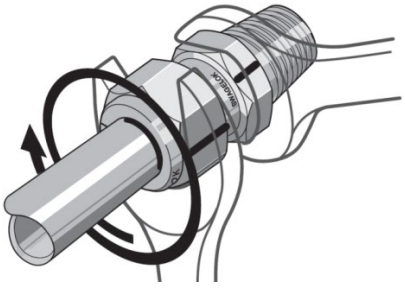

FIGURE 24: *Tighten Nut Slightly*

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