CABLE SPLICING INSTRUCTIONS

Before you begin:

Ensure the splicing kit is appropriate for your cables and well conditions. Refer to the label and application data for more information.

Even if you have installed a similar kit in the past, the procedure and materials may have changed – read the instructions before beginning.

About Shrink Tubes

This kit relies on the proper installation of various types of shrink tubes. They may be installed using either a heat gun or a torch (propane preferred, though butane may be used). The heat gun must be capable of reaching at least 400 °F.

If using a torch, adjust it for a blue flame with an orange tip. A blue pencil type flame is too hot. To prevent scorching, keep the flame moving and angle the flame in the direction the shrinking is to proceed in order to warm and partially shrink the material ahead of the work area. Once the tube is properly oriented on the splice, begin shrinking it in the center and work toward the ends.

After shrinking, the tubing should lie smoothly and uniformly on the substrate. If the sleeve has adhesive inside, it should have flowed so that a small amount is visible at the ends of the seal area.

Cleanliness

Solvents appropriate for cleaning the types of cables being spliced should be used to remove any debris, oils, or grease that may be on the wires. Care should be taken to prevent contamination of the cables to be spliced.
Step 1
Remove the jacket and any liner materials for a distance of 160 mm on both cables.

If the drop cable is armored, terminate the armor 50 mm from the end of the jacket and secure any loose ends of armor, taking care not to damage the jacket material beneath the armor.

Step 2
Using a medium grit abrasive paper (P100), abrade the outer jacket for a distance of 175 mm beyond the trimmed end.
Step 3

Cut back the jacket as shown below

![Diagram showing Step 3](image)

**Step 4**

Clean and degrease the jacket of the motor lead with an appropriate solvent and shrink the medium sized insulating sleeve at the end of the motor lead jacket. After cleaning the motor lead wires, install the four small shrink tubes as shown below:

![Diagram showing Step 4](image)

Install the 4-1 adapter over the shrink tubes and shrink it in place, starting at the end of the motor jacket.

Note: Allow the shrink tubes and 4-1 adapter to cool completely before flexing them.
Step 5

Trim the wires to the lengths shown below:

* Some installers find it easier to “trim-to-fit” these wires as the cables are being joined together in Step 8.

Step 6

Trim the insulation on the wires as required by the splice sleeve. Typically this will be half the length of the sleeve.
Step 7
Place the large insulating sleeve over the drop-cable jacket

Step 8
Slip the small insulating sleeves over the longer ends of the lead wires and install the butt connectors by crimping with an appropriate tool per the manufacturer’s instructions.

NOTE: If the colors of the cables do not match, take note of which colors are connected to allow proper phase connections at the surface.

Remove any sharp corners on the crimp sleeve, taking care to remove all filings from the splice.
Step 9

Apply a bed of mastic tape over each of the crimped connectors, filling in all voids, half-lapping the mastic tape and overlapping the insulation by 10mm on the top layer. The last layer should be slightly higher than the surrounding insulation. If the two cables have different insulation diameters, fill in the mastic to blend between the two sizes.

Step 10

Using an appropriate solvent, clean and degrease the insulation of both cables.

Center the shrink tubes over the butt connector and shrink them in place, heating first in the center of the sleeve and working to the ends. A heat gun with a deflector is recommended for this step because the heat is more controllable, and insulation damage less likely to occur.
Step 11

Clean and degrease the lead wires and the jacket ends of both cables. Overlapping the cable jackets by 20-30 mm, install half-lapped sealing mastic tape, stretching it slightly as it is applied. Apply enough mastic to build to a smooth transition between the two cables.

Fill in between the wires as required to build a smooth base for the tape.
Step 12
Center the large outer protective insulating sleeve over the splice and shrink it in place, beginning with the center and working toward the ends. An appropriately adjusted torch can be used to shrink this tube.

Step 13
The splice is now completed – allow it to cool before flexing or otherwise applying stress to it.
Appendix A

This procedure gives a method of splicing a flat armored cable, having double ground wires, to a round 4-wire jacketed motor lead:

Step A1

Remove the armor and fabric braid of the flat drop cable and motor lead jacket as shown below:

If required by the shroud design, ensure that the motor lead is passed through the shroud cap before proceeding to the next step.

Step A2

Wrap two turns of 130 C tape around each of the flat cable lead wires positioned as shown to anchor the barrier tape during the following operations.
Step A3

Clean and degrease the jacket of the motor lead with an appropriate solvent and shrink the medium sized insulating sleeve at the end of the motor lead jacket. After cleaning the motor lead wires, install the four small shrink tubes as shown below:

Install the 4-1 adapter over the shrink tubes and shrink it in place, starting at the end of the motor jacket.

Note: Allow the shrink tubes and 4-1 adapter to cool completely before flexing them.
Step A4

Trim the wires to the lengths shown below. Strip the lead insulation as appropriate for the splicing sleeve, typically one-half the length of the sleeve. Remove the barrier tape between the 130 C tape and the end of the armored cables.

Step A5

NOTE: If the colors of the cables do not match, take note of which colors are connected to allow proper phase connections at the surface.

* Some installers find it easier to “trim-to-fit” these wires as the cables are being joined together in Step A7.
Step A6

Lightly abrade with P100 grade abrasive paper and clean the exposed wire insulation with alcohol wipes. Slide the large insulating sleeve over the armor of the flat cable, and 120 mm (long) small sleeves over each of the armored cable insulated conductors and a 90 mm (short) sleeve over the motor lead ground wire (green).

Step A7

Crimp the splicing sleeves as recommended by the manufacturer on each wire pair. Remove any burrs raised by the crimping process. The two ground wires are combined in one end of the ground wire splice sleeve.
Step A8

Lightly abrade with P100 grade abrasion paper and clean the exposed wire insulation and motor lead jacket (for a distance of 175 mm) with an appropriate solvent and wrap sealing mastic over each of the splice sleeves, continuing 10 mm onto the insulation of the lead wires.

Step A9

Center the small heat shrink insulating sleeves over the connections and shrink them in place, beginning in the center and working the heat toward the ends. Be careful not to scorch any of the sleeves or insulation. Shrink the medium sleeve on the clean jacket of the motor lead.

Note: Allow the shrink tubes to cool before flexing them.
Step A10
Install one wrap of sealing mastic over each of the lead wires individually, bundle them together, and fill the voids with sealing mastic.

Step A11
Wrap the filled splice with lightly tensioned sealing mastic tape, building the layer to, or slightly beyond, the level of the outside profiles of the two cables. Extend the wrap 10-20 mm onto the motor lead and 10-20 mm onto the end of the armor.
Step A12

Over-wrap the mastic tape in the opposite direction with 130 C tape.

Step A13

Center the large heavy-walled sleeve over the splice and shrink it into place.

The splice is now completed – allow it to cool before flexing or otherwise applying stress to it.
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