

Installation Instructions

15kV Ranger 2 Shrink fit Silicone Rubber Termination Indoor Application with High-K Stress Relief for Tape shield, Wire Shield & Unishield® Cables

Contents: Silicone Rubber Termination, Preformed Ground Braid, Constant Force Spring, Lubricant, 1-Strip Copper Foil Tape, 2-Gloves, Instruction Sheets.

Optional Contents: Connector, Cable Support Bracket.

WARNING: 15kV INDOOR KIT DOES NOT RESTORE A MOISTURE RESISTANT SEAL TO CABLE TERMINATION. If termination must be moisture resistant, indoor/outdoor kits must be used.

DANGER

All apparatus must be de-energized during installation or removal of part(s).

Do not touch or move energized products in the work area.

These instructions do not attempt to provide for every possible contingency.

Failure to follow these instructions will result in damage to the product and serious or fatal injury.

This product should be installed only by competent personnel trained in good safety practices involving high voltage electrical equipment. These instructions

FOR MORE INFORMATION ON PARTS, INSTALLATION RATINGS AND COMPATIBILITY, CALL THE NEAREST ELASTIMOLD® OFFICE.

Limited Warranty:

1. T&B warrants that its products will be free from defects in materials or workmanship for a period of two (2) years, except for tools which are warranted separately see warranty accompanying those products). Fisher Pierce® products and Elastimold® Reclosers are warranted for three years; and Joslyn™ VBT and VBU capacitor switches are warranted for four years or 40,000 operations whichever occurs first. Upon prompt notification of a warranted defect, T&B will, at its option, repair or replace the defective product.
2. In no event shall T&B be liable for any consequential, indirect or special damages, nor will T&B be liable for transportation, labor, or other charges arising out of the removal or reinstallation of its products. Liability for breach of warranty is limited to the cost of repair or replacement of the warranted product only.
3. Misuse, misapplication or modification of T&B products immediately voids all warranties.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE SPECIFICALLY DISCLAIMED.

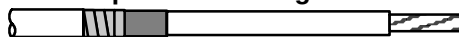
IMPORTANT

1. Check contents of package to ensure they are complete and undamaged.
2. Check all components to ensure proper fit with cable and/or mating products.
3. Read entire installation instructions before starting.
4. Have all required tools at hand and maintain cleanliness throughout the procedure.

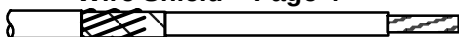
Termination Selection Chart

Catalog Number	Dia. Range Over Insulation Inches (mm)	Dia. Over Jacket Inches (mm)
R2IT15M1	0.64-1.12 (15-30)	1.35 (35) MAX
R2IT15M2	0.84-1.38 (20-35)	1.72 (45) MAX
R2IT15M4	1.30-2.10 (35-55)	2.55 (65) MAX

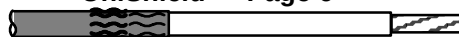
Tape Shield - Page 2



Wire Shield - Page 4



UniShield® - Page 6



Cable Support Bracket (Optional)

Catalog Number	Overall Cable Diameter	Bracket Style
B1	.800-1.250 20 - 32mm	Single
B2	1.100-1.500 28 - 38mm	Single
B3	1.450-1.950 37 - 50mm	Double

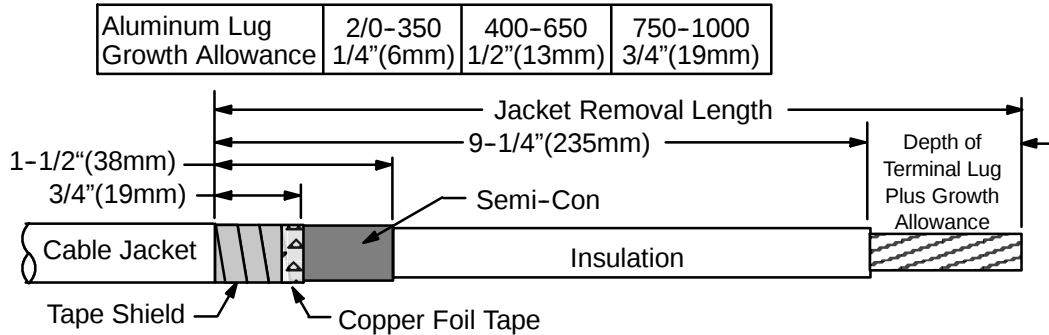
Thomas & Betts

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Tape Shielded Cable

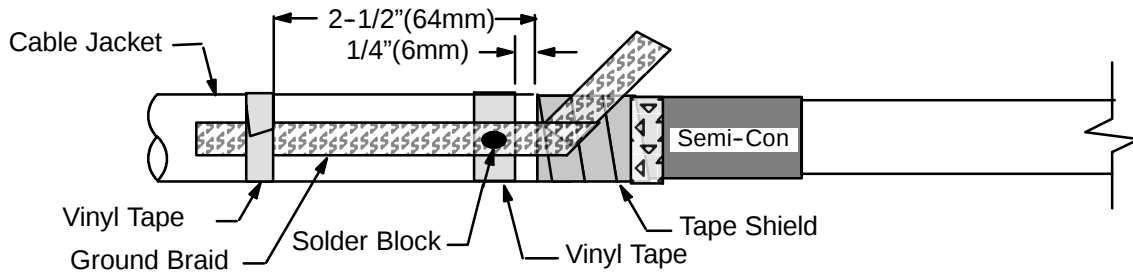
STEP 1 Prepare Cable

1. Check to be sure cable size fits within insulation range as shown in the Termination Selection Chart, Page 1.
2. Train cable into position and cut to length required for installation.
3. Prepare cable using dimensions shown below. **Be sure to allow for depth of terminal lug.** To prevent tape shield from unrolling, hold down edge with a single wrap of the supplied copper foil tape as shown. **Provide additional exposed conductor distance to account for growth during crimping of ALUMINUM lugs or connectors as follows:**



STEP 2 Install Ground Braid

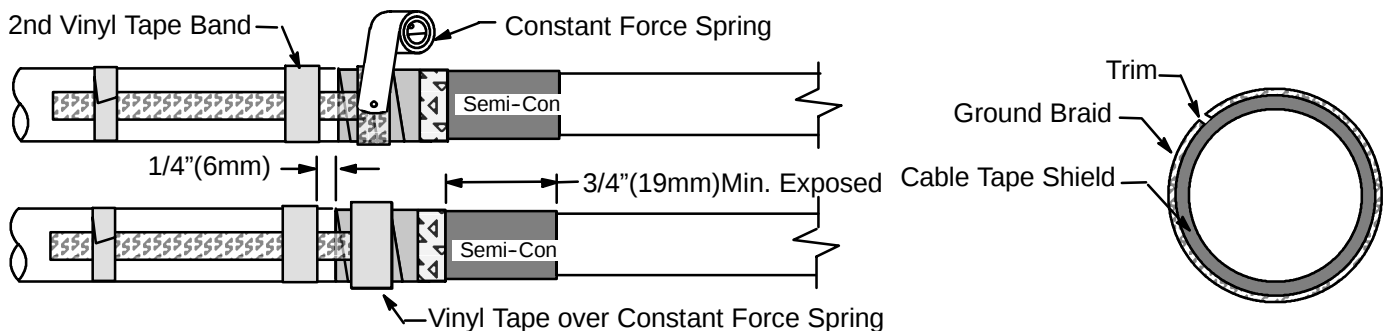
1. Carefully wrap one (1) band of vinyl tape around the cable jacket 1/4" (6mm) from jacket end as shown. **Position tape carefully, it serves as a marker for positioning the termination.**
2. Position preformed ground braid with short tail over tape shield and solder block centered over vinyl tape strip. Secure ground braid to cable jacket using vinyl tape. See figure below.



3. Carefully apply a second vinyl tape band directly over original tape marker and ground braid solder block. Use care in maintaining the 1/4" (6mm) dimension which serves as a marker for termination body installation, see below.
4. Wrap ground braid around cable tape shield one complete wrap, trim excess to prevent overlap and secure in place with constant force spring. Wrap spring in same direction as ground braid. **Cinch (tighten) the spring** after wrapping the final winding, see below.
5. Secure spring with two (2) wraps of vinyl tape, see below.

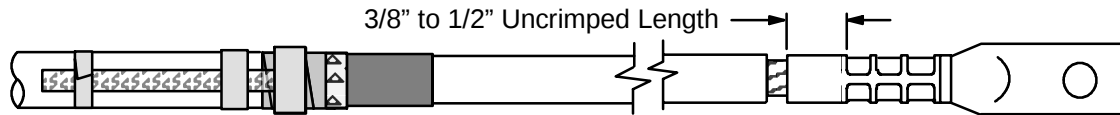
SPECIAL NOTE FOR CLOTH OR PAPER SEMI-CON INSULATION SHIELD

In cable with cloth or paper semi-conductive shields it is recommended the shield be over wrapped with one half-lapped layer of highly stretched semi-conductive rubber tape such as Scotch t No. 13.



STEP 3 Install Lug or Connector

1. Check to ensure termination assembly fits over the selected lug. If lug will not fit through the termination core, clean the insulation and slide termination on cable before installing lug. **Do not remove core at this time.**
2. Position connector/lug and crimp according to manufacturer's directions. Do not crimp the last 3/8" to 1/2" of the connector. Remove excess oxide inhibitor and all sharp crimp flashings/edges following crimping.

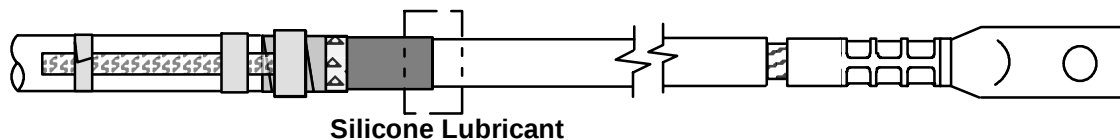


STEP 4 Clean Cable Insulation and Lug Barrel Using Standard Practice

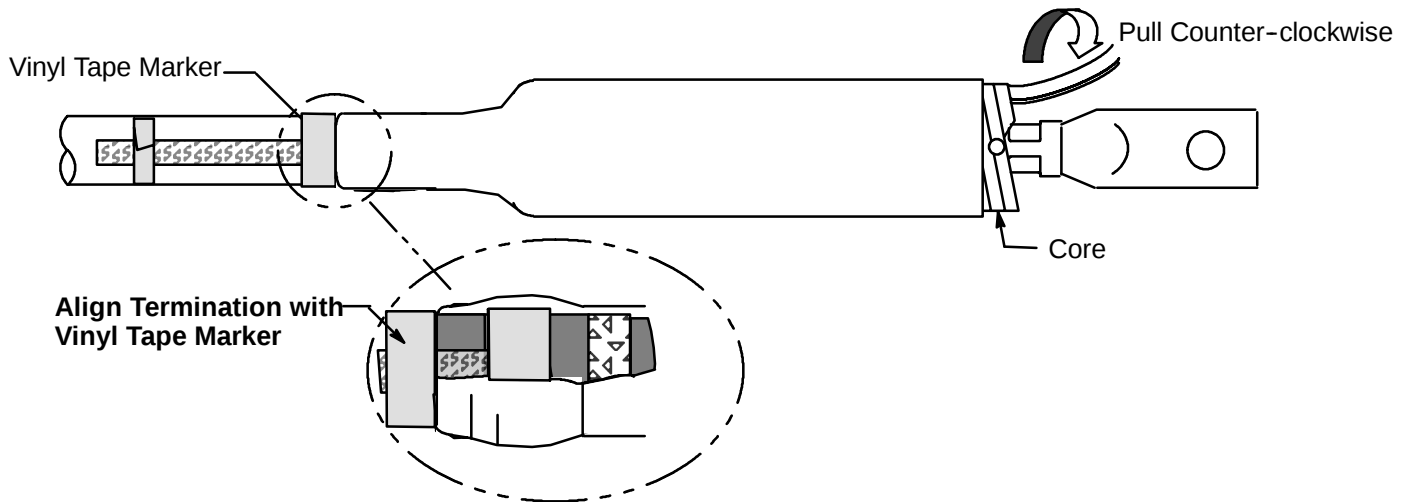
1. Wipe the cable insulation with solvent saturated pads. **Do not allow solvent to touch semi-con insulation shield.**
2. If abrasive must be used:
 - a. Use on insulation only. **Do not use abrasive on semi-con insulation shield.**
 - b. Use only aluminum oxide abrasive; grit 120 or finer.
 - c. Be careful not to reduce the cable insulation diameter below that allowed by the kit.

STEP 5 Install Termination

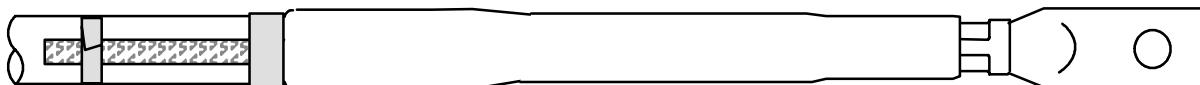
1. Cover the edge of the semi-con insulation shield with a liberal coating of silicone grease. **On this product the silicone is used to fill the step at the semi-con cut off.**



2. Slide the termination body onto the cable, **align the Termination edge with forward edge of tape marker** as shown below. Carefully begin to remove core. Recheck Termination position and continue to remove core. **Do not push or pull on termination assembly while removing core.**



3. Connect ground braid to system ground



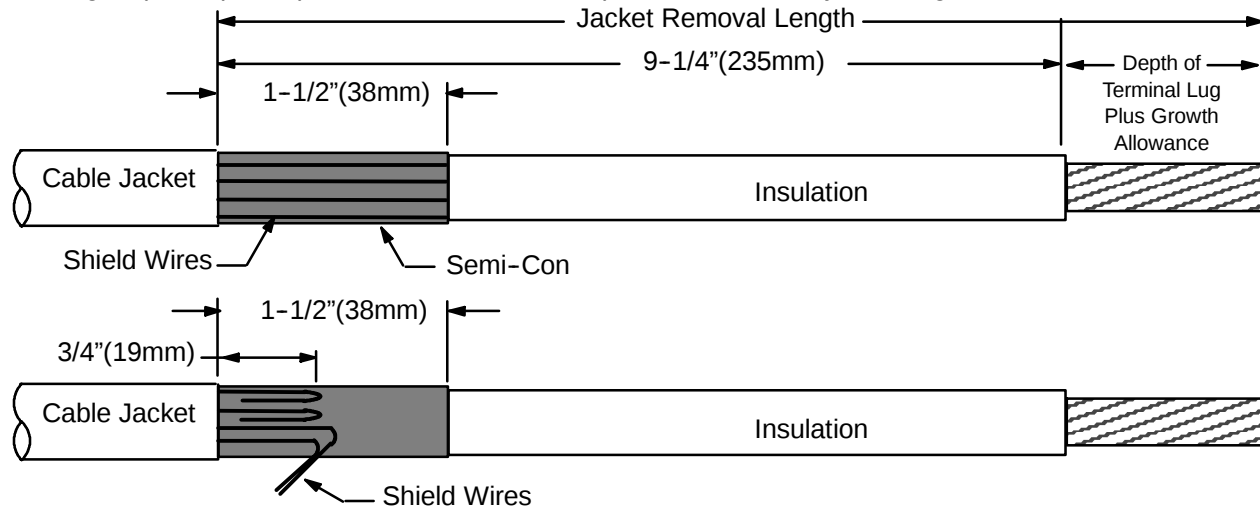
Wire Shielded Cable

STEP 1 Prepare Cable

1. Check to be sure cable size fits within insulation range as shown in the Termination Selection Chart, Page 1.
2. Train cable into position and cut to length required for installation.
3. Prepare cable using dimensions shown below. **Be sure to allow for depth of terminal lug. Provide additional exposed conductor distance to account for growth during crimping of ALUMINUM lugs or connectors as follows:**

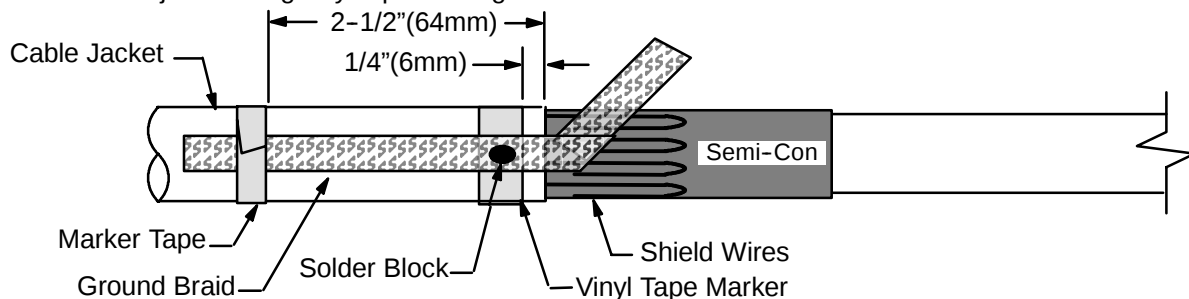
Aluminum Lug Growth Allowance	2-350	400-650	750-1000
	1/4"(6mm)	1/2"(13mm)	3/4"(19mm)

4. Bend leaving 1" (25mm) of exposed shield wires back upon themselves to jacket edge.

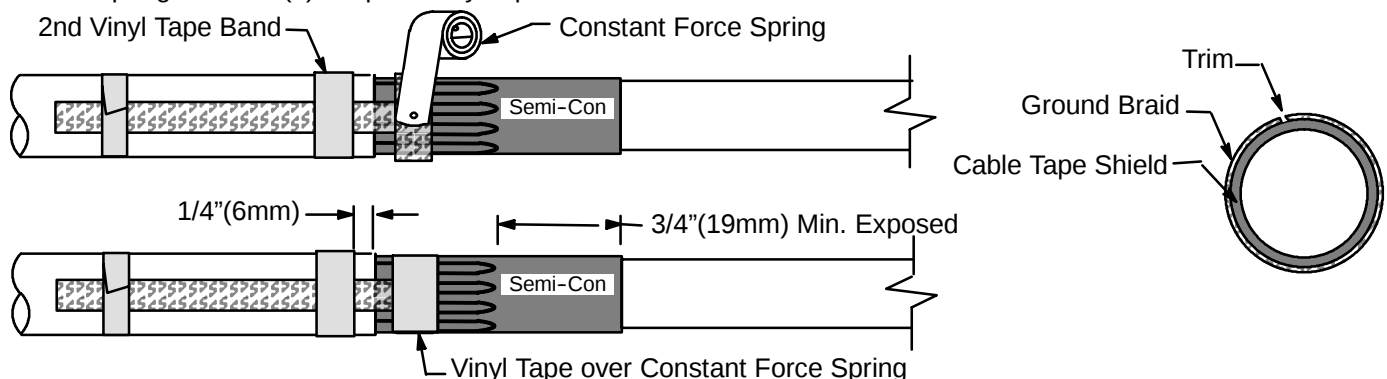


STEP 2 Install Ground Braid

1. Carefully wrap one (1) band of vinyl tape around the cable jacket 1/4" (6mm) from jacket end as shown. **Position tape carefully, it also serves as a marker for positioning the termination.**
2. Position preformed ground braid with short tail over shield wires and solder block centered over vinyl tape marker. Secure ground braid to cable jacket using vinyl tape. See figure below.

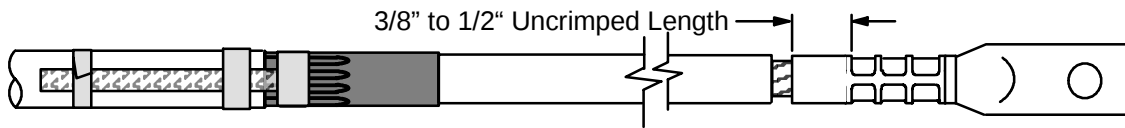


3. Carefully apply a second vinyl tape band directly over original tape marker and ground braid solder block. Use care in maintaining the 1/4" (6mm) dimension which serves as a marker for termination body installation.
4. Wrap ground braid around cable shield wires one complete wrap, trim excess to prevent overlap and secure in place with constant force spring. Wrap spring in same direction as ground braid. **Cinch (tighten) the spring** after wrapping the final winding.
5. Secure spring with two (2) wraps of vinyl tape.



STEP 3 Install Lug or Connector

1. Check to ensure termination body assembly fits over the selected lug. If lug will not fit through the termination core, clean the insulation and slide termination on cable before installing lug. **Do not remove core at this time.**
2. Position connector/lug and crimp according to manufacturer's directions. Do not crimp the last 3/8" to 1/2" of the connector. Remove excess oxide inhibitor and all sharp crimp flashings and edges following crimping.

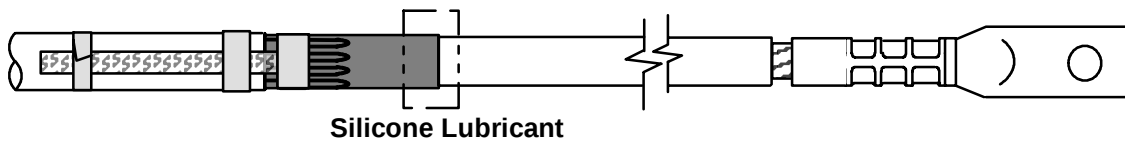


STEP 4 Clean Cable Insulation and Lug Barrel Using Standard Practice

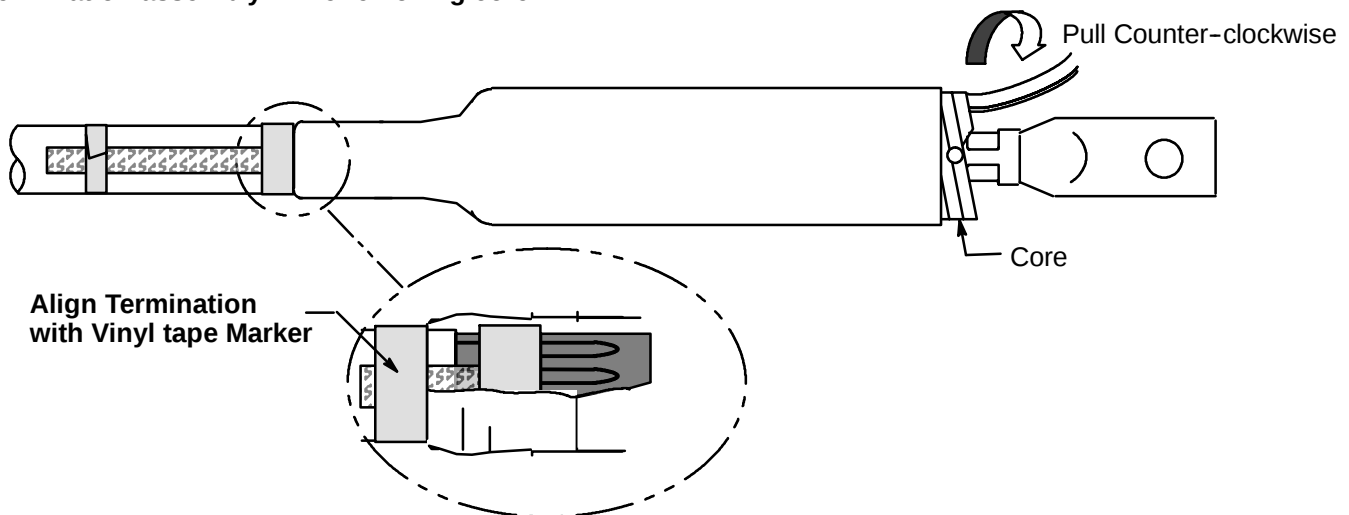
1. Wipe the cable insulation with solvent saturated pads. **Do not allow solvent to touch semi-con insulation shield.**
2. If abrasive must be used:
 - a. Use on insulation only. **Do not use abrasive on semi-con insulation shield.**
 - b. Use only aluminum oxide abrasive; grit 120 or finer.
 - c. Be careful not to reduce the cable insulation diameter below that allowed by the kit.

STEP 5 Install Termination

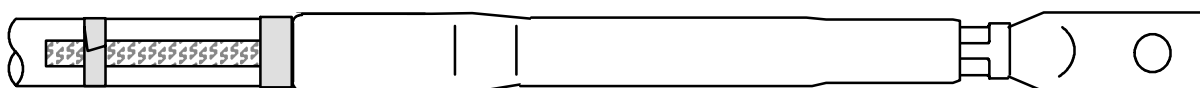
1. Cover the edge of the semi-con insulation shield with a liberal coating of silicone grease. **On this product the silicone is used to fill the step at the semi-con cut off.**



2. Slide the termination body onto the cable, **align the skirt with the forward edge of the tape marker** as shown below. Carefully begin to remove core. Recheck termination position and continue to remove core. **Do not push or pull on termination assembly while removing core.**



3. Connect ground braid to system ground.



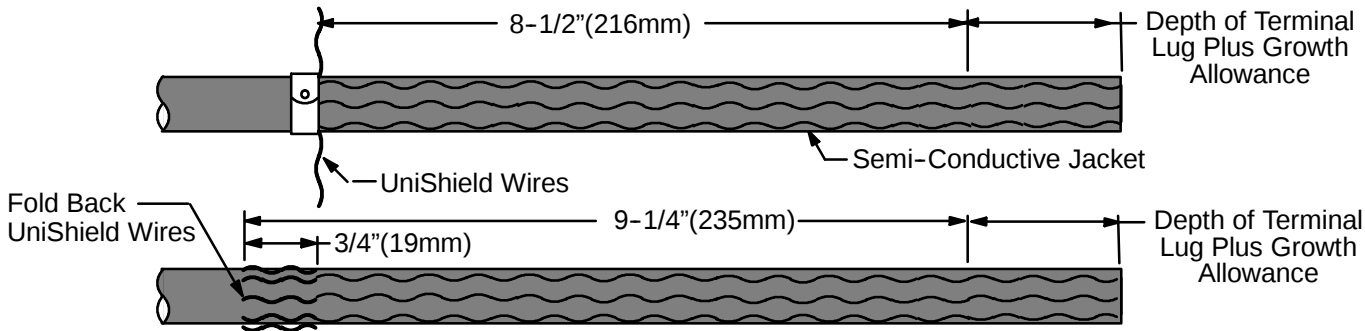
UniShield® Shield Cable

STEP 1 Prepare Cable

- 1. Check to be sure cable size fits within insulation range as shown in the Termination Selection Chart, Page 1.
- 2. Train cable into position and cut to length required for installation.
- 3. Prepare cable using dimensions shown below. **Be sure to allow for depth of terminal lug. Provide additional exposed conductor distance to account for growth during crimping of ALUMINUM lugs or connectors as follows:**

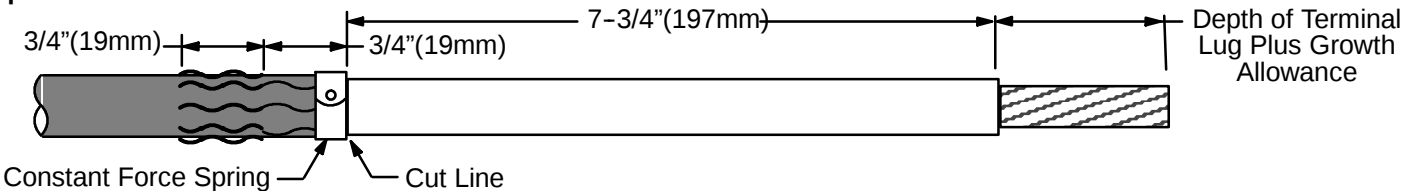
Aluminum Lug Growth Allowance	2-350 1/4"(6mm)	400-650 1/2"(13mm)	750-1000 3/4"(19mm)
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- 4. Install constant force spring and pull shield wires through semi-conductive jacket to leading edge of spring.
- 5. Remove constant force spring. Bend shield wires back upon cable jacket 3/4"(19mm). Cut excess unishield wire and discard.



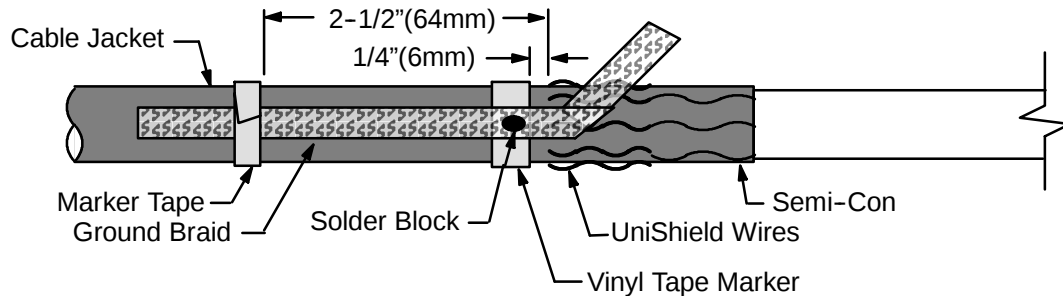
- 6. Remove semi-conductive jacket to cut line shown below.
- To ease jacket removal, install constant force spring as shown and ring cut 80% through jacket at cut line. Remove jacket sections by pulling against constant force spring. DO NOT BELL SEMI-CON JACKET. Remove constant force spring.

Note: Some UniShield® cables feature dual-layer semi-conductive jackets. Both layers must be removed during cable preparation.

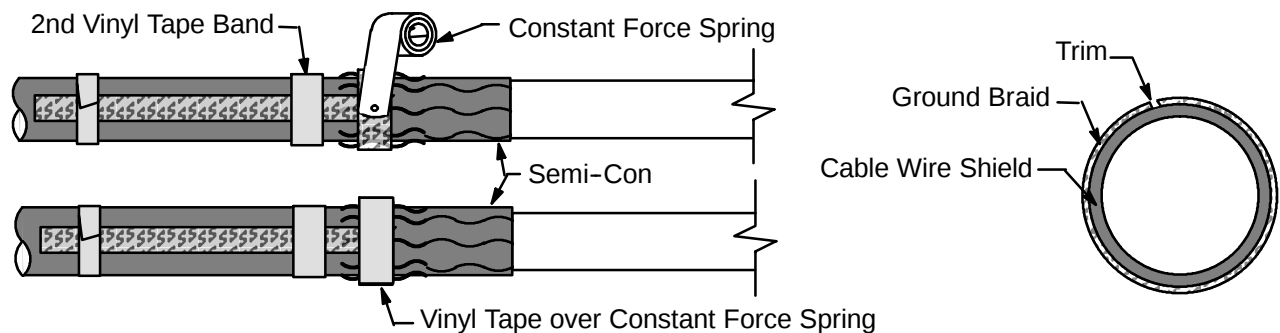


STEP 2 Install Ground Braid

1. Carefully wrap one (1) band of vinyl tape around the cable jacket $\frac{1}{4}$ " (6mm) from shield wire end as shown. **Position vinyl tape carefully, it also serves as a marker for positioning the termination.**
2. Position preformed ground braid with short tail over unshield wires and solder block centered over vinyl tape marker. Secure ground braid to cable jacket from cable shield wire end using vinyl tape. See figure below.

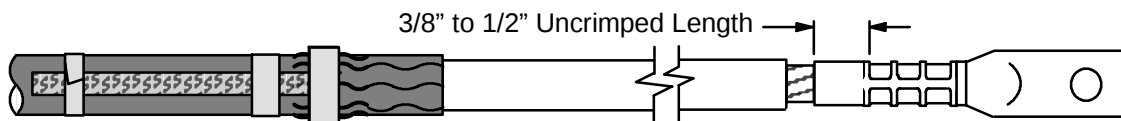


3. Carefully apply a second vinyl tape band directly over original tape marker and ground braid solder block. Use care in maintaining the $\frac{1}{4}$ " (6mm) dimension which serves as a marker for termination body installation.
4. Wrap ground braid around cable shield wires one complete wrap, trim excess to prevent overlap and secure in place with constant force spring. Wrap spring in same direction as ground braid. **Cinch (tighten) the spring** after wrapping the final winding.



STEP 3 Install Lug or Connector

1. Check to ensure termination assembly fits over the selected lug. If lug will not fit through the termination core, clean the insulation and slide termination on cable before installing lug. **Do not remove core at this time.**
2. Position connector/lug and crimp according to manufacturer's directions. Do not crimp the last $\frac{3}{8}$ " to $\frac{1}{2}$ " of the connector. Remove excess oxide inhibitor and all sharp crimp flashings and edges following crimping.

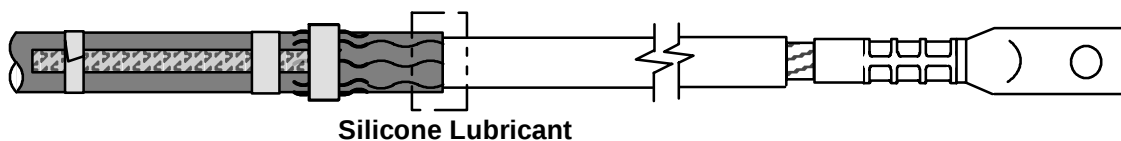


STEP 4 Clean Cable Insulation and Lug Barrel Using Standard Practice

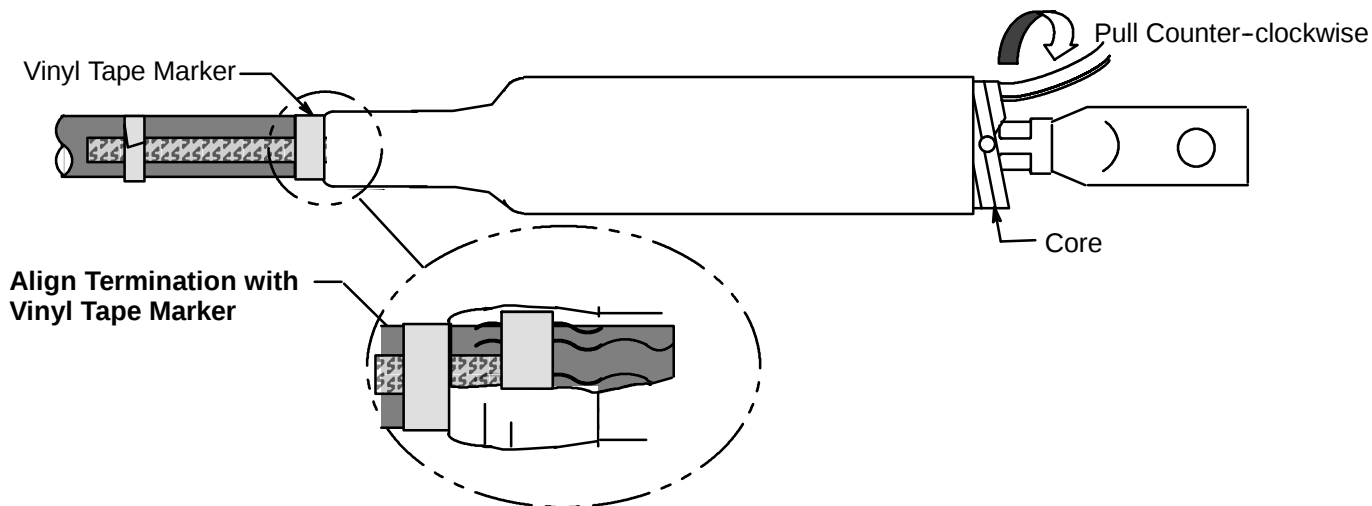
1. Wipe the cable insulation with solvent saturated pads. **Do not allow solvent to touch semi-con insulation shield.**
2. If abrasive must be used:
 - a. Use on insulation only. **Do not use abrasive on semi-con insulation shield.**
 - b. Use only aluminum oxide abrasive; grit 120 or finer.
 - c. Be careful not to reduce the cable insulation diameter below that allowed by the kit.

STEP 5 Install Termination

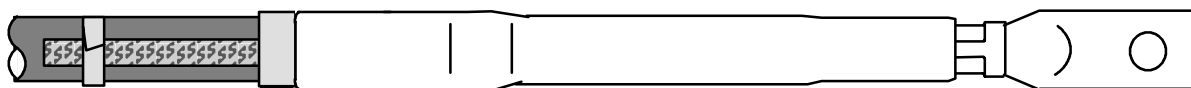
1. Cover the edge of the semi-conductive jacket with a liberal coating of silicone grease. **On this product the silicone is used to fill the step at the semi-con cut off.**



2. Slide the termination body onto the cable, **align termination with forward edge of tape marker** as shown below. Carefully begin to remove core. Recheck termination position and continue to remove core. **Do not push or pull on termination assembly while removing core.**



3. Connect ground braid to system ground.



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