



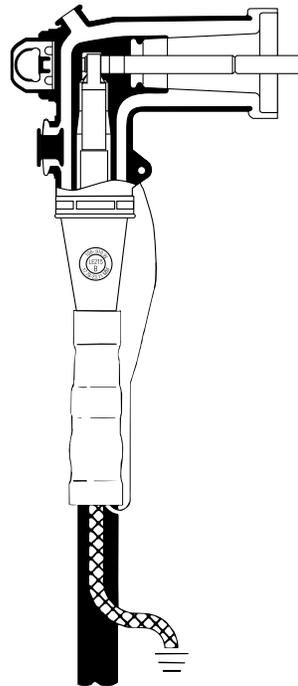
Cold Shrink 5110-OS Series Oil Stop Kits for use with Single Conductor PILC Cables and 200 Amp Cable Accessories

Instruction Sheet

15 kV and 25 kV

Kit Contents:

- 1 Cold Shrink Sealing Tube (large diameter)
- 1 Oil Stop Cold Shrink Tube (small diameter)
- 1 Roll Scotch® 130C High Voltage Rubber Electrical Tape
- 1 Roll Scotch® 13 Semi-conducting Tape
- 1 Roll White Restricting Tape
- 2 Strips Sealing Mastic (black with white release liners, bagged)
- 1 Constant Force Spring
- 1 High Amp Ground Braid with bleed wire
- 2 Instruction Sheets (one for 200 amp accessories and one for 600 amp accessories)



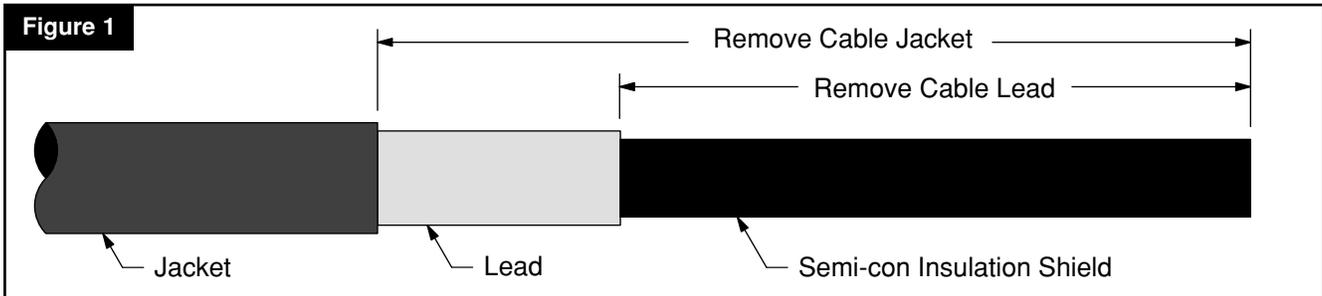
Kit Selection Chart

Kit Number	Minimum Insulation Diameter (Over Paper)	Maximum Lead Diameter	Conductor Size Range	
			15 kV	25/28 kV
5110-OS	.58" (14,7 mm)	1.10" (27,9 mm)	#4 - 3/0 AWG	--
5111-OS	.72" (18,3 mm)	1.30" (33,0 mm)	4/0 AWG - 300 kcmil	#2 - 1/0 AWG
5112-OS	.92" (23,4 mm)	1.60" (40,6 mm)	350 -600 kcmil	2/0 AWG - 300 kcmil

 <p>Single Conductor PILC Cable</p>	<h2 style="margin: 0;">3M™ Cold Shrink Oil Stop Kits</h2> <p style="margin: 0;">5110-OS 5111-OS 5112-OS</p> <p style="margin: 0;">For use on Single Conductor Paper Insulated Lead Cable rated 15 and 25/28 kV</p> <hr/> <p style="font-size: 1.5em; margin: 0;">78-8124-5509-1-B</p>
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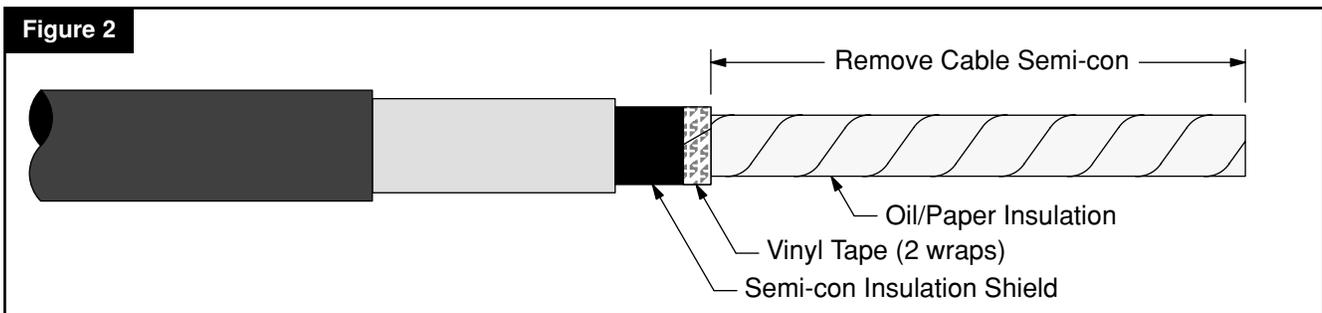
A. Prepare PILC Cable

1. Locate cable into final assembled position and select elbow accessory for installation. Allow sufficient clearance for installing and removing elbow accessory.
2. Clean cable end for 36" (915 mm). Clean cable jacket if cable is jacketed. Clean the lead if unjacketed using solvent approved for use on power cables.
3. Remove cable jacket from cable end per dimension shown in Cable Preparation Table. If cable does not have a jacket, place a tape marker around the lead sheath at the specified dimension as reference for measuring.
4. Scrape the lead clean around it's circumference a distance of 5" (120 mm) from cable jacket end or tape marker.
5. Remove lead from cable end per Cable Preparation Table. **Do not intentionally bell the end of the lead.** Peen down any sharp protruding corner at end of lead.



6. Per Cable Preparation Table, bind the "H" foil or semi-con paper insulation shield layer at the remove semi-con layer dimension with two wraps of vinyl tape. Remove semi-con shield layer from cable end to the vinyl tape binding. **Do not remove vinyl tape binding.**

Note: If black carbon deposits can be seen on the surface of the exposed cable insulation, remove the top layer(s) of paper insulation to the vinyl tape binding.

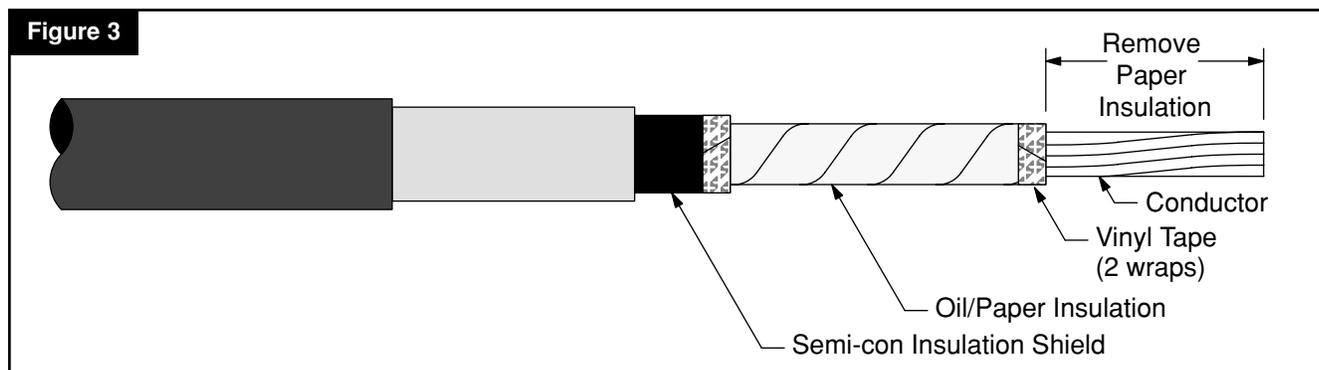


Cable Preparation Table

Elbow Style	Standard	Repair	Replacement
Elastimold	165/166 LR 273/274 LR	167/168 ELR 273/274 ELR	167/168 RLR 273/274 RLR
Cooper	LE215 LE 225	--	--
3M	5810 5811	--	--
Remove Cable Jacket	13 1/4" (335 mm)	14" (355 mm)	14 1/4" (360 mm)
Remove Cable Lead	9" (230 mm)	9 3/4" (250 mm)	10" (255 mm)
Remove Cable Semi-Con Layer	6 1/2" (165 mm)	6 3/4" (170 mm)	7 1/2" (190 mm)
Remove Paper From Cable End	2 3/8" (60 mm)	2 3/8" (60 mm)	1 5/8" (40 mm)

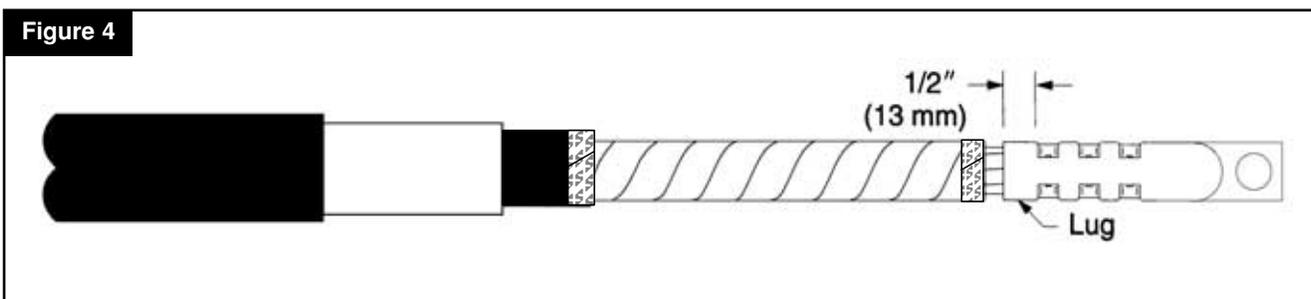
B. Install Lug

1. Bind the paper insulation with two wraps of vinyl tape at the remove paper insulation dimension per Cable Preparation Table. Remove paper insulation from cable end. Do not remove vinyl tape binding.



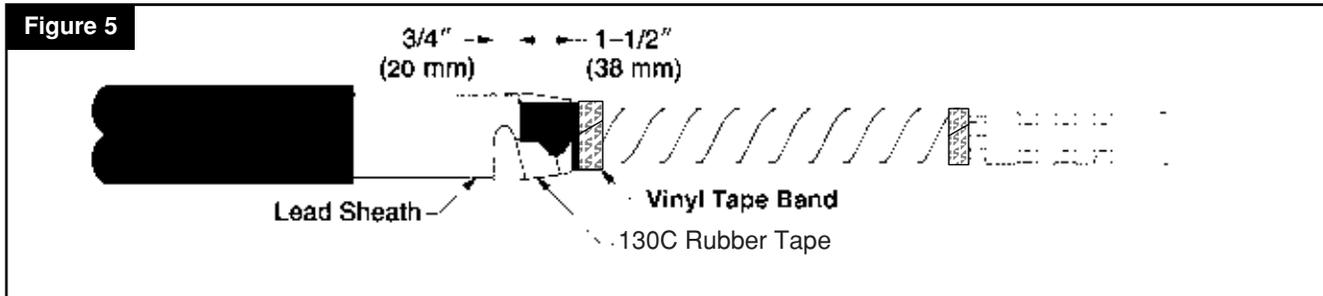
2. Crimp lug or connector for use with elbow onto cable conductor leaving a minimum of 1/2" (13 mm) uncrimped. This will be part of the oil stop seal.

Note: In all cases, follow connector manufacturer's recommendation for crimping.

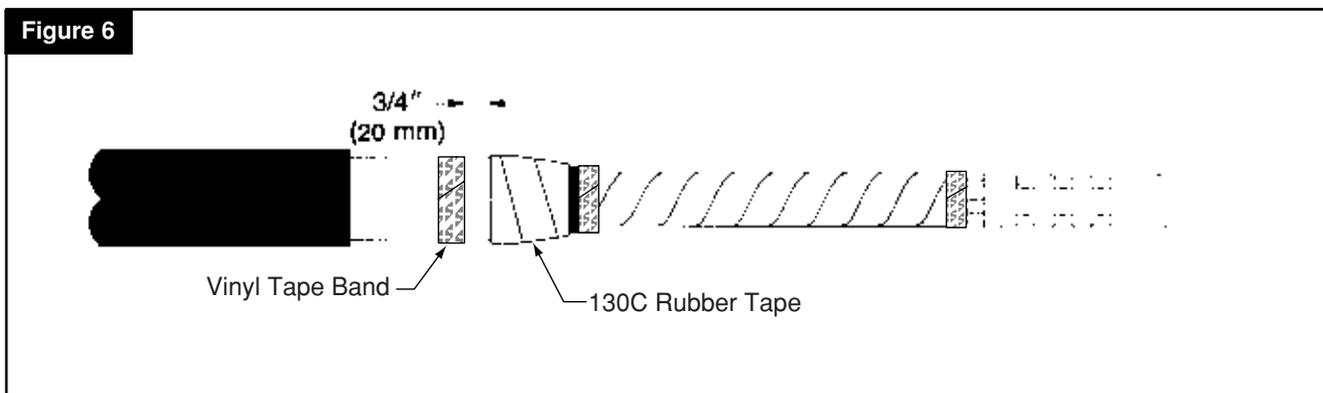


C. Install Oil Stop

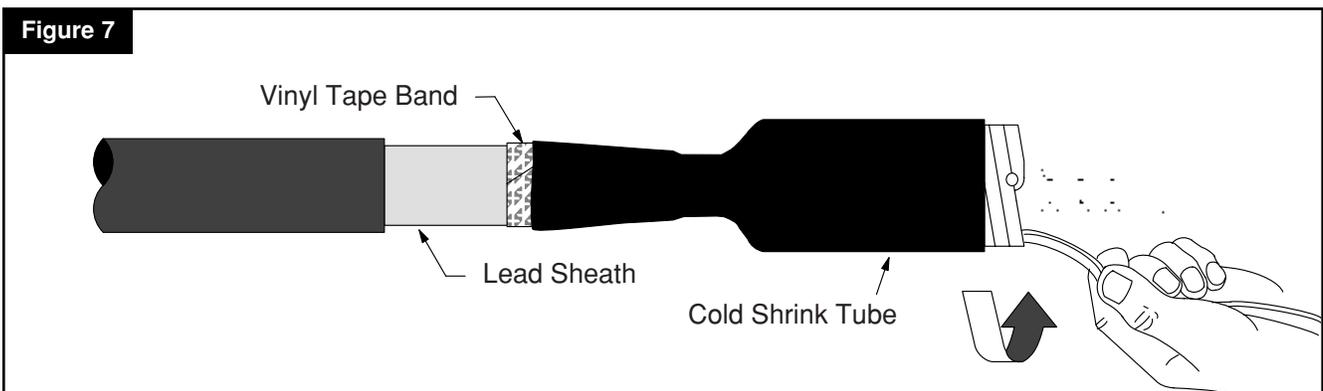
1. Build a smooth taper using Scotch® 130C tape for a distance of 1 1/2" (40 mm) from end of lead onto cable semi-con layer. Start the tape application on the cable semi-con layer at the end of the lead. Fill the step at the edge of the lead by highly stretching the tape during application. Overlap the last two layers 3/4" (20 mm) onto lead.



2. Apply a vinyl tape marker band around lead at a point 3/4" (20 mm) from 130C rubber tape on lead.

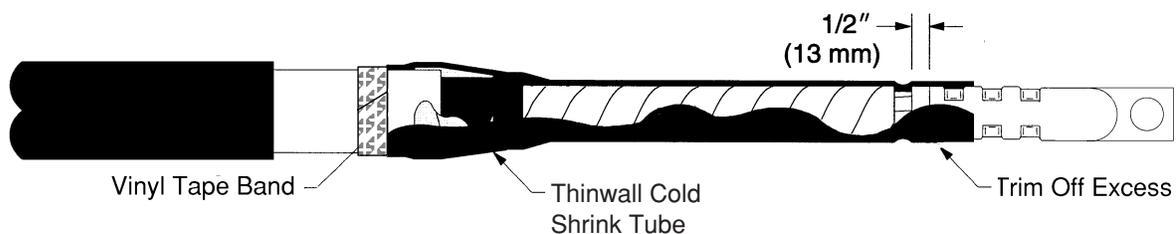


3. Slide the small diameter cold shrink tube onto the cable, with the loose core ribbon end extending toward cable end. Slowly, unwind the core ribbon counter-clockwise allowing the rubber to shrink to the cable. As the rubber contacts the cable, locate the leading edge of the tube next to the applied vinyl tape band on lead. Release your grip on the assembly once the tube has made secure contact with the lead. Unwind all of the core ribbon and remove the vinyl tape band.



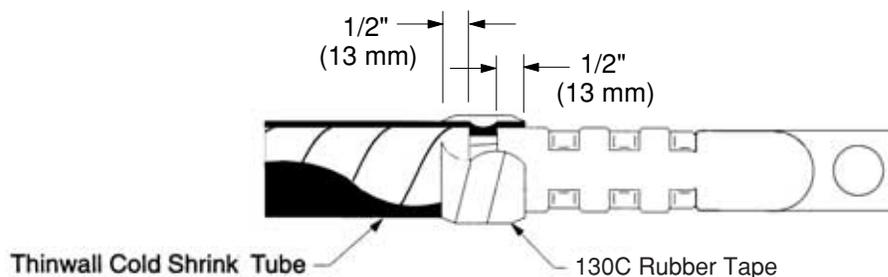
- The oil barrier tube should overlap 1/2" (13 mm) onto connector. Any excess overlap should be cut off and discarded.

Figure 8



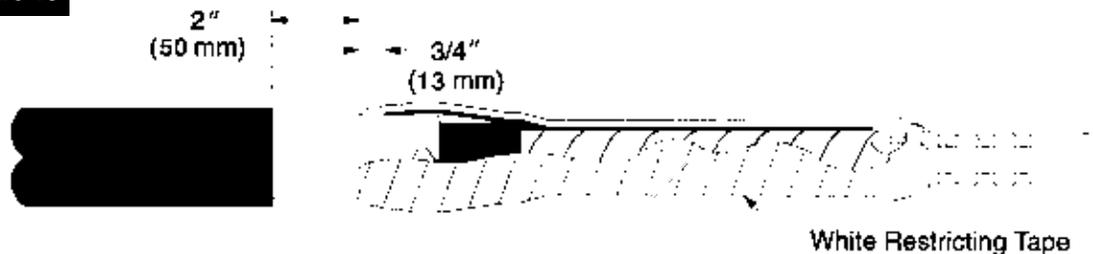
- Fill in the depression formed between the oil/paper cable insulation and the end of the connector with Scotch(130C tape. Make a cord out of a piece of the tape and drive the rubber tube in the area of the depression tight to the cable conductor. Finish the tape application by applying two half-lapped layers 1/2" (13 mm) onto cable insulation and 1/2" (13 mm) onto oil barrier tube over connector.

Figure 9



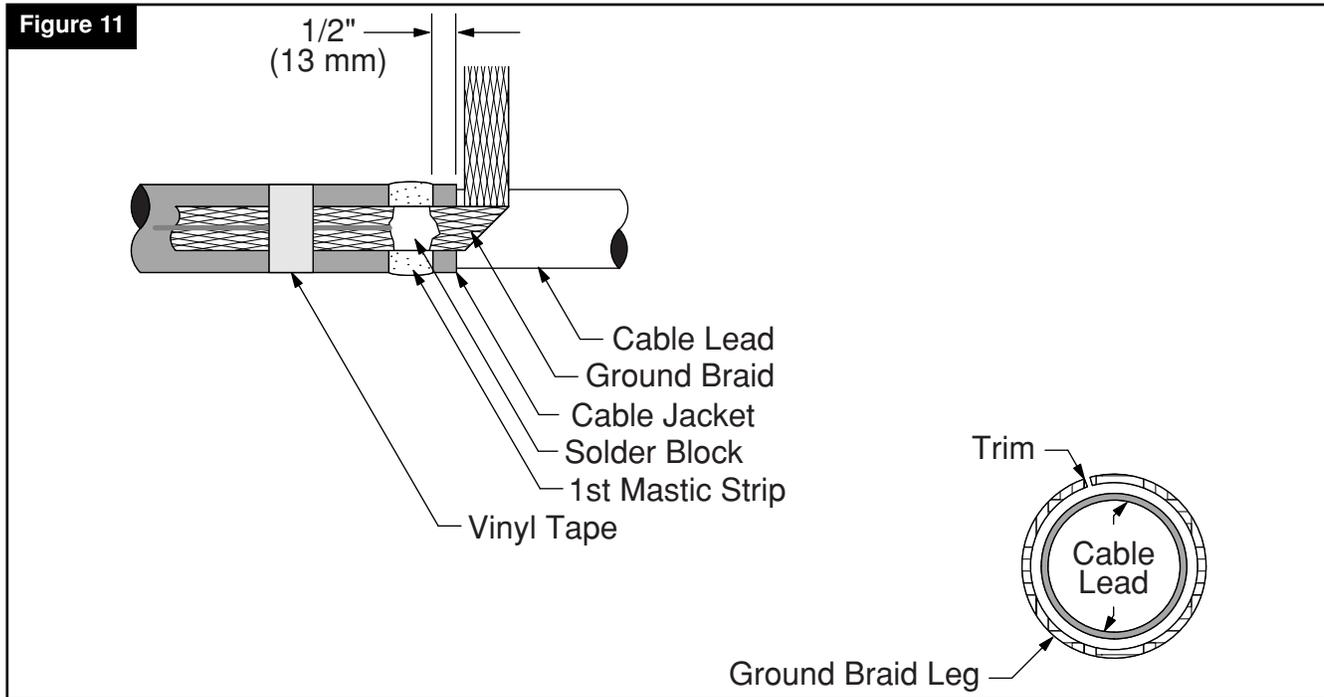
- Apply 4 half-lapped layers of white restricting tape (white tape with smooth surface) over the oil barrier tube and applied Scotch 130C tape. Start and end the tape on the exposed lead next to the end of the oil barrier tube, 2" (50 mm) from the end of the cable jacket. Apply tape with constant tension to avoid wrinkling.

Figure 10

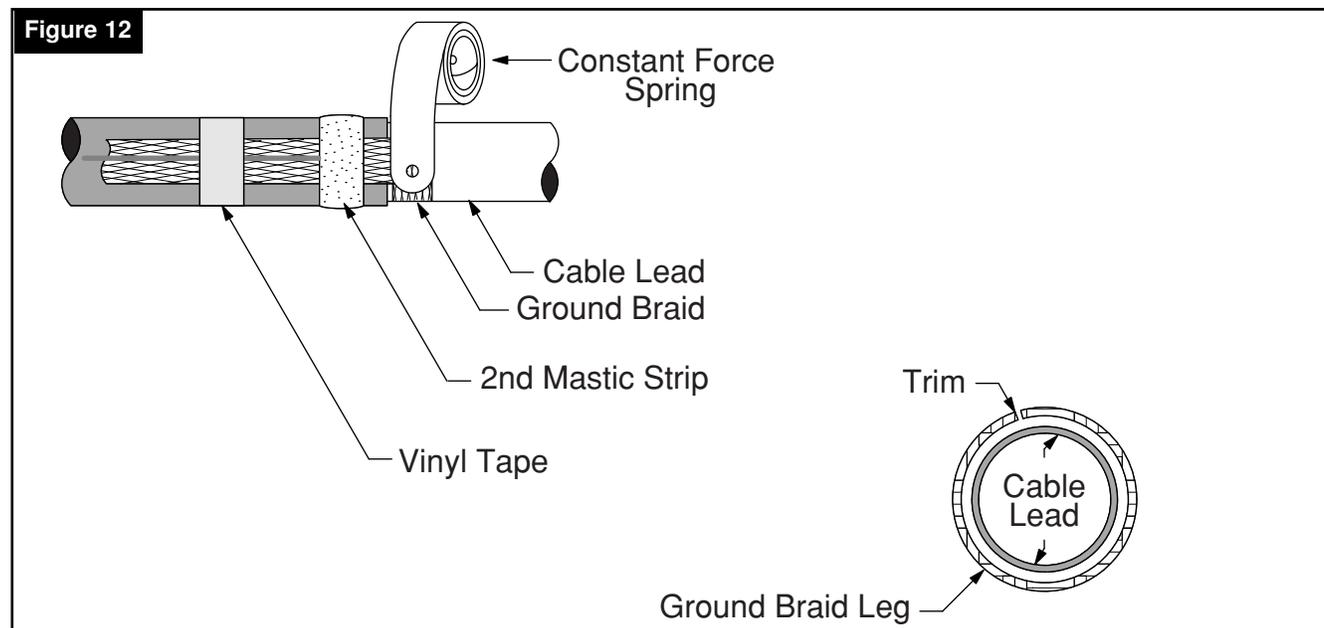


D. Install Ground Braid

1. Select one of two mastic sealing strips. Remove the white release liners and using light tension, wrap the strip around the cable jacket 1/2" (13 mm) from jacket end.
2. Place the ground strap on the cable with the bleed wire on the outside and braid tail (long end) and bleed wire extending away from cable end. Locate the solder blocked section of braid and press it into the applied mastic. Apply second mastic strip over ground braid solder block and previously wrapped mastic. Temporarily, bind ends of braid tail and bleed wire to the cable jacket. Wrap the ground braid leg around the exposed lead sheath and at the point where the braid would over lap, cutoff and discard excess.



3. Secure ground braid to cable lead sheath using a constant force spring. Start the spring on the braid folded section and wrap the spring over the braid. Pull the spring coil around the cable allowing the spring to unwind and rewrap around the ground braid and itself.

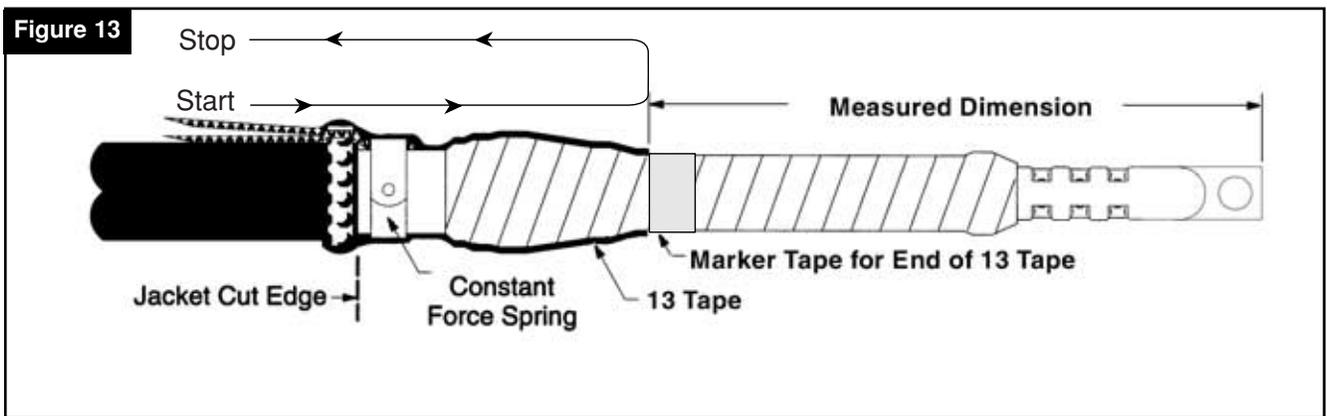


4. For the elbow being installed, place a marker tape around the white restricting tape at the **reestablish semi-con shield layer dimension** per the following table, measuring from the end of the cable connector.

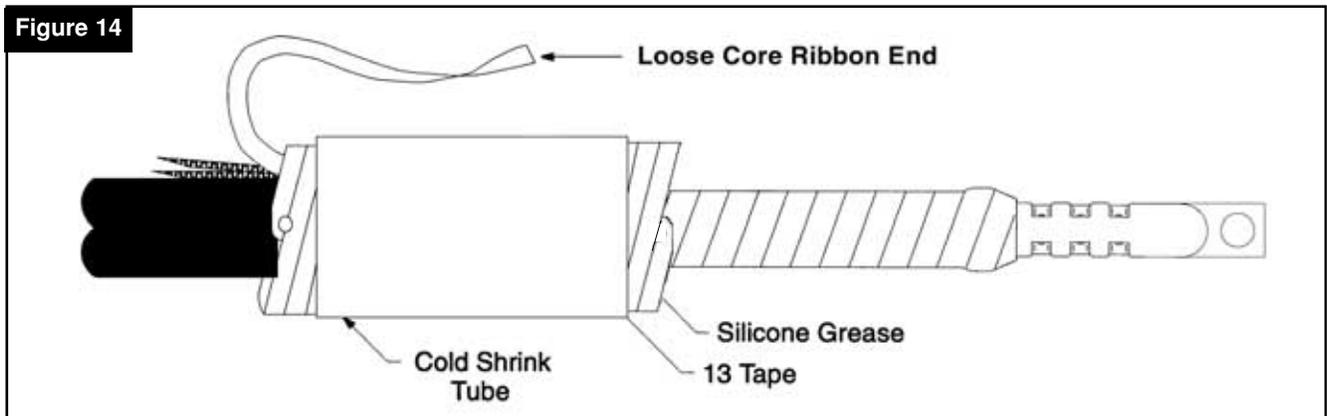
Reestablish Insulation Shield Layer

Elbow Style	Standard	Repair	Replacement
Elastimold	165/166 LR 273/274 LR	167/168 ELR 273/274 ELR	167/168 RLR 273/274 RLR
Cooper	LE215 LE 225		
3M	5810 5811		
Reestablish Semi-con Shield Layer From:	6 7/8" (175 mm)	10 3/4" (275 mm)	17 1/2" (445 mm)

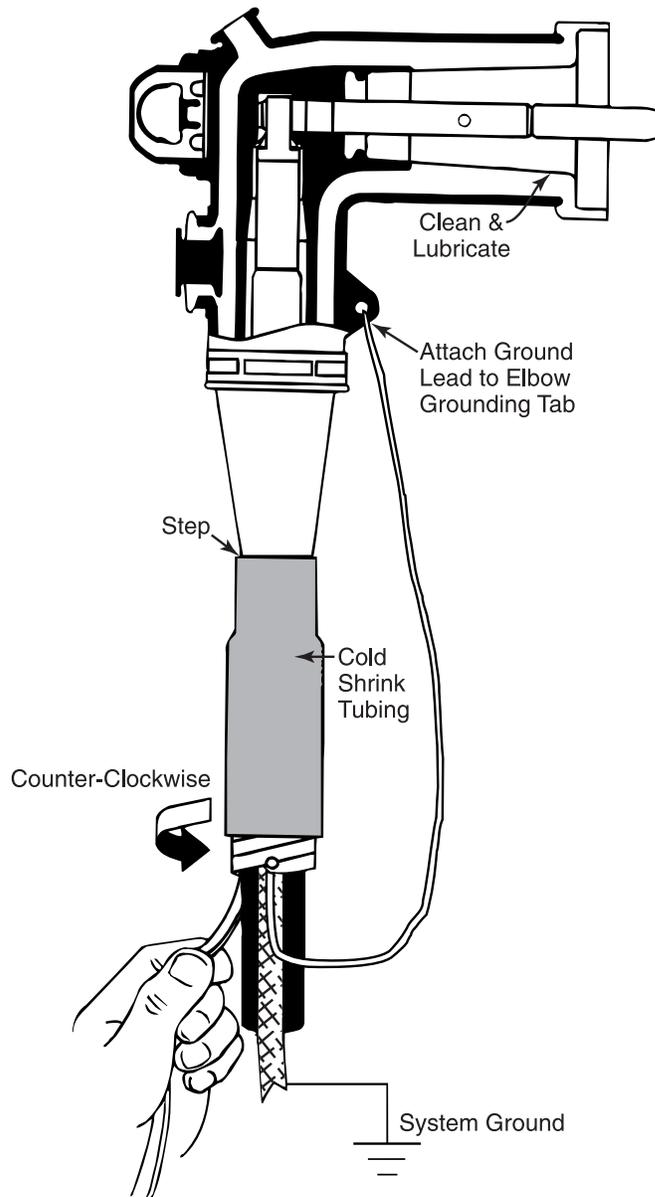
- Apply Scotch® 13 Semi-conducting Tape. Stretch the tape during application. Start the tape on the cable jacket over mastic seal and constant force spring and extend the application to the tape marker band applied in the previous step and then back to the starting location on the cable jacket. Break tape by stretching, being careful to secure end with firm pressure. Remove marker tape band applied around the white restricting tape.



- Slide the cold shrink sealing tube onto the prepared cable with the loose core ribbon end going on the cable first, away from cable end.



7. Install elbow following elbow manufacturer's instruction.
8. Position cold shrink tube (previously slid onto cable) over the small end of the 200 Amp elbow. Remove the tube's inner support core by lightly pulling while unwinding the loose core ribbon end in a counter-clockwise direction. As the core is unwound, butt end of rubber against elbow's main body.
9. Attach the 14 AWG ground lead (from ground braid assembly) to the elbow-grounding eye. Connect ground braid to system ground.



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