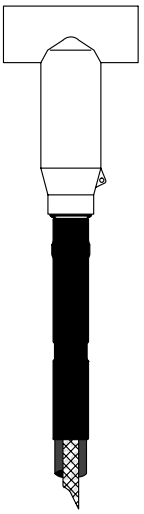
Cold Shrink 5110-OS Series Oil Stop Kits for use with Single Conductor PILC Cables and 600 Amp Cable Accessories

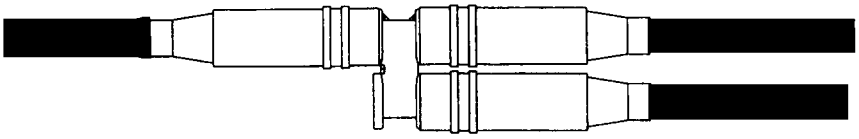
Instruction Sheet



15 kV and 25 kV

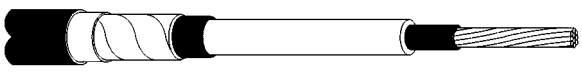
Kit Contents:

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 Rolls for 5113-OS)
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 in kits 5110-OS, 5111-OS and 5112-OS
1 Instruction Sheet in 5113-OS kit



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
5113-OS	1.10" (27,9 mm)	2.00" (50,8 mm)	750-1000 kcmil	350-800 kcmil



Single Conductor PILC Cable

3M Cold Shrink Oil Stop Kits

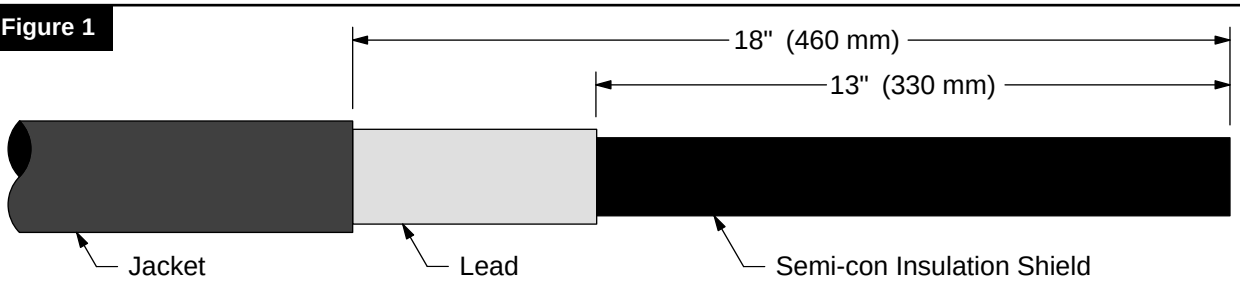
5110-OS **5111-OS**
5112-OS **5113-OS**

78-8124-5510-9-D

A. Prepare PILC Cable

1. Locate cable into final assembled position and allow sufficient clearance for installing 600 amp accessory.
2. Clean cable end for 36" (914 mm). Clean cable jacket if cable is jacketed. Clean the lead if unjacketed using solvent approved for use on power cables.
3. If cable is jacketed, remove 18" (460 mm) of jacket, measuring from cable end. If cable is not jacketed, place a tape marker 18" (460 mm) from cable end.
4. Scrape the lead clean around it's circumference a distance of 6" (145 mm) from cable jacket end or tape marker.
5. Remove the lead 13" (330 mm). **Do not intentionally bell the end of the lead.** Peen down any sharp protruding corner at end of lead.

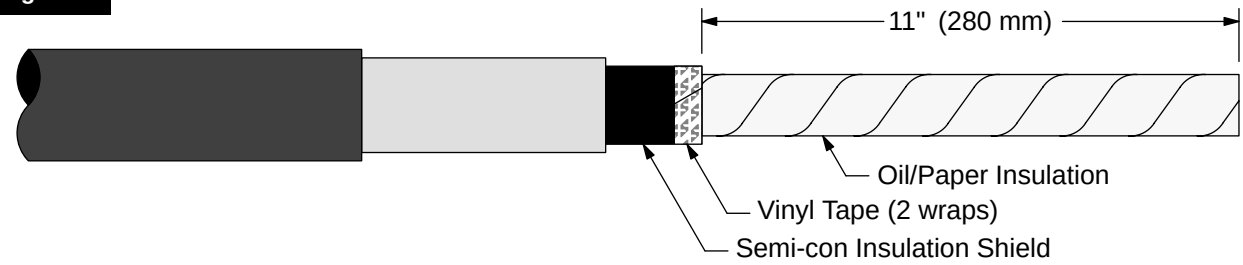
Figure 1



6. Bind the "H" foil or semi-con insulation shield layer with two wraps of vinyl tape at a point 11" (280 mm) from cable end. Remove semi-con shield layer from cable end to the vinyl tape binding. **Do not remove vinyl tape binding.**

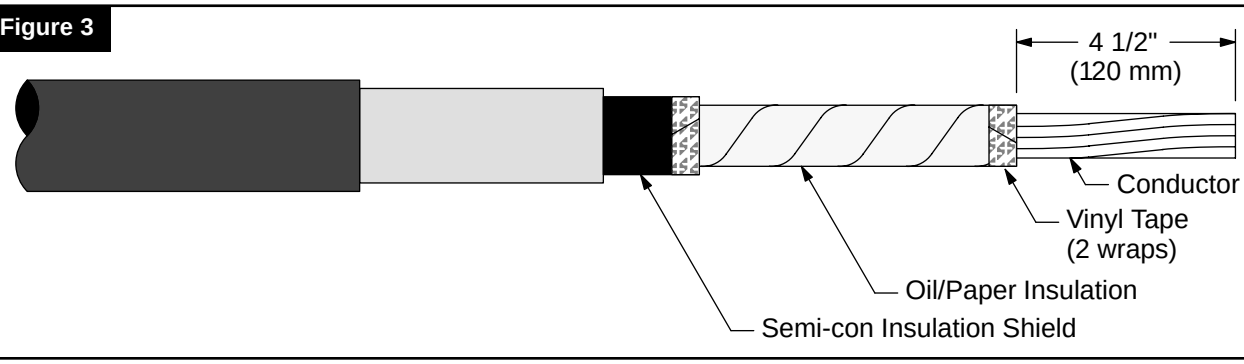
Note: ***If black carbon deposits can be seen on the surface of the exposed cable insulation, remove the top layer(s) of paper insulation to the vinyl tape binding.***

Figure 2



7. Bind the oil/paper cable insulation at a point 4 1/2" (120 mm) from cable end with two wraps of vinyl tape. Remove 4 1/2" (120 mm) of paper insulation from cable end. **Do not remove vinyl tape binding.**

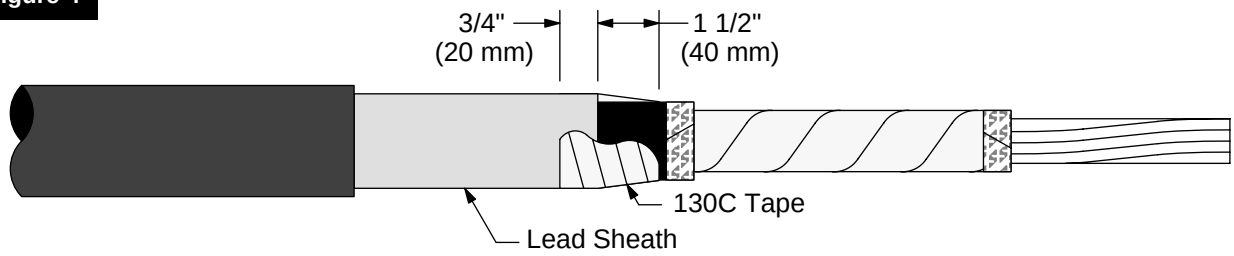
Figure 3



B. Install Oil Stop

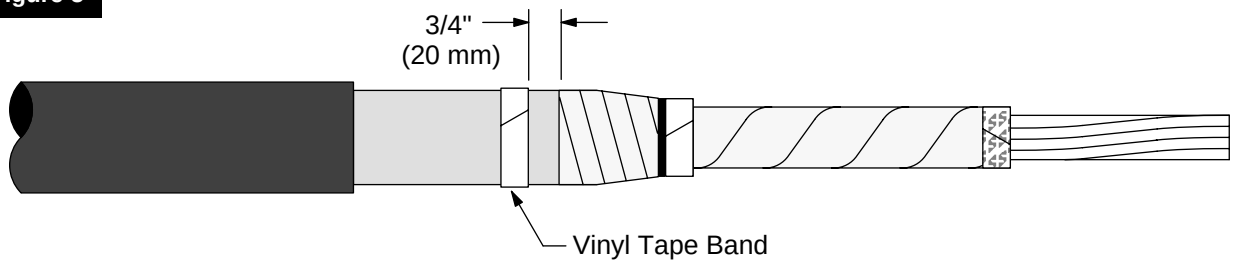
1. Build a smooth taper using Scotch® 130C tape for a distance of 1 1/2" (40 mm) from end of lead onto cable semi-con layer. Start the tape application on the cable semi-con layer at the end of the lead. Fill the step at the edge of the lead by highly stretching the tape during application. Overlap the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

Figure 4



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

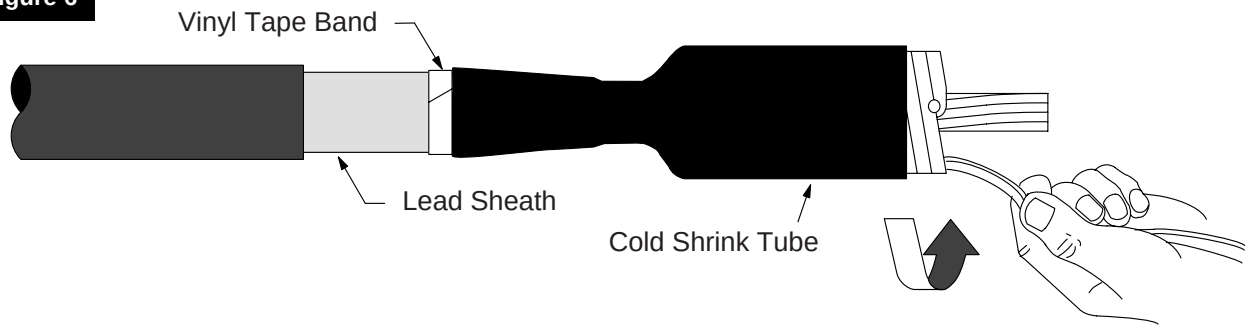
Figure 5



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.

Note: ***If desired, For disconnectable splices (only) on 500 kcmil cable and smaller, slide the receptacle housing on to the cable and park behind the installed oil stop tube.***

Figure 6



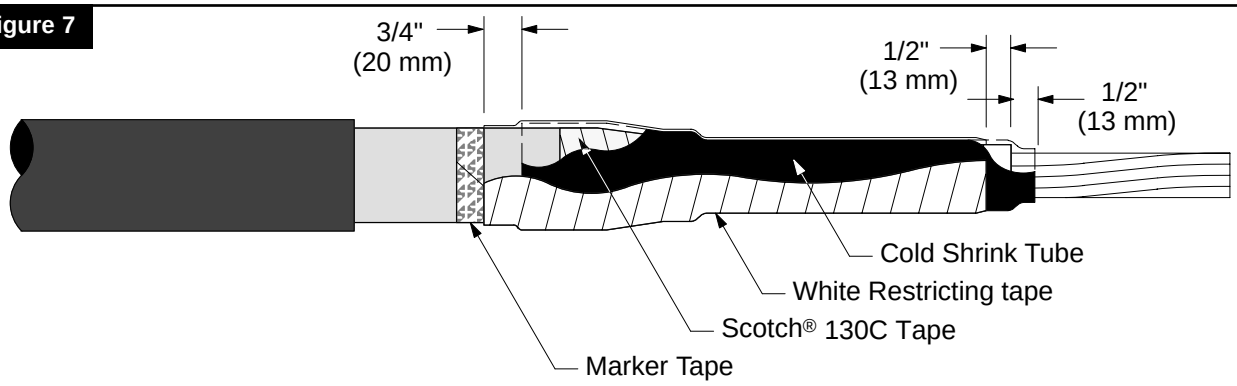
4. Slide the large diameter cold shrink tube onto the cable with the loose core ribbon end going on the cable first, away from the cable end.

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

6. Place a marker tape band on the lead 3/4" (20 mm) from edge of the installed Cold Shrink oil stop tube. Apply 4 half-lapped layers of white restricting tape over tube from the marker tape to 1/2" (13 mm) from end of insulation as shown in Figure 7. The tape does not stretch, but should be applied with constant tension, to avoid wrinkling and restrict the oil. Remove marker tape.

Note: ***When going up ramps or over uneven surfaces, the thumb can be used to smooth out the tape as it is applied. The tape should be applied as wrinkle free as possible.***

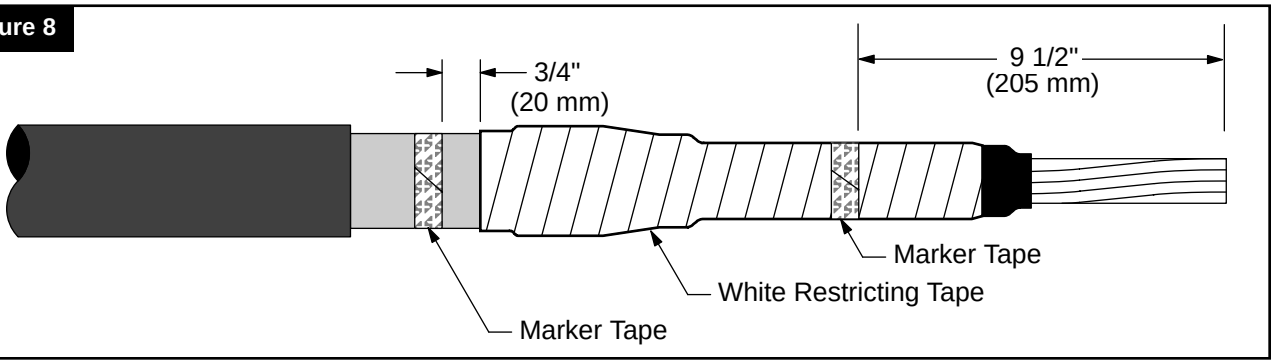
Figure 7



C. Apply 13 Tape

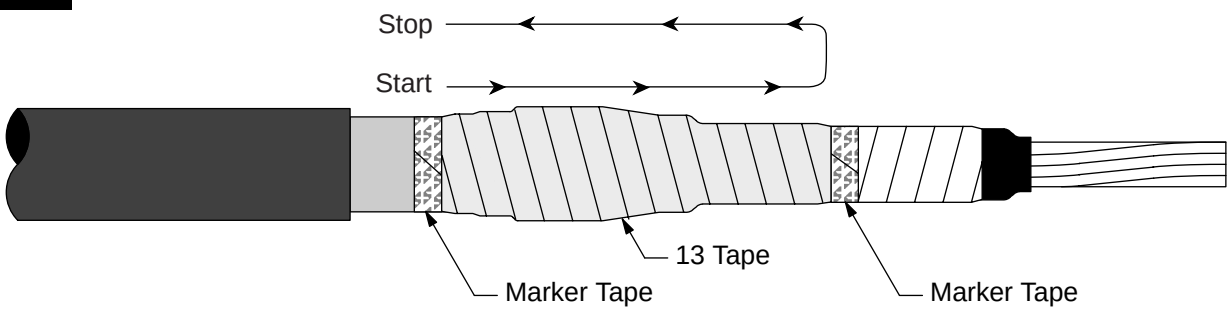
1. Place a marker band on lead 3/4" (20 mm) from edge of white restricting tape. Place another marker 9 1/2" (? mm) measuring from conductor end.

Figure 8



2. Apply Scotch® 13 tape between marker tape bands. Stretch the tape during application. Start at lead end marker, taping to other marker, and then back to the starting location on lead. Break tape by stretching, being careful to secure end with firm pressure. Remove tape markers.

Figure 9

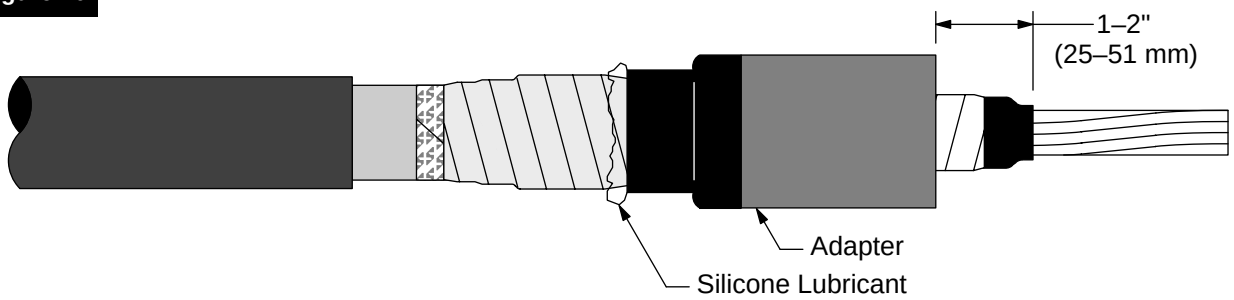


D. Install Adapter

1. Select appropriate size adapter. Clean and lubricate the surface of the white restricting tape and the inside surface of adapter with silicone grease provided with adapter.

3. Carefully slide adapter onto cable until it is 1-2" (25-50 mm) away from the exposed conductor.

Figure 10

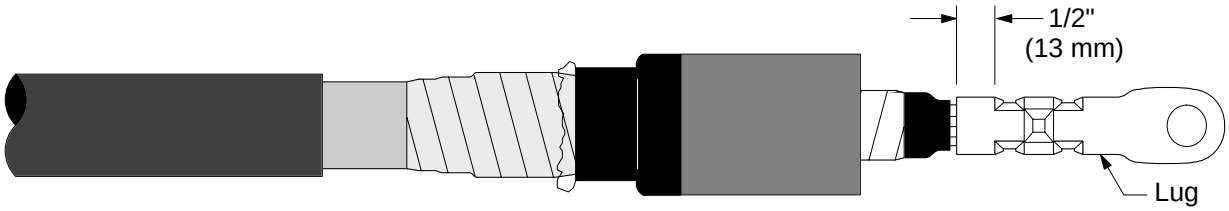


E. Install Lug

1. Select appropriate size lug and crimp onto cable conductor, leaving a minimum of 1/2" (13 mm) uncrimped at lug end. This will be part of the oil stop seal.

Note: ***In all cases, follow connector manufactures recommended crimping information.***

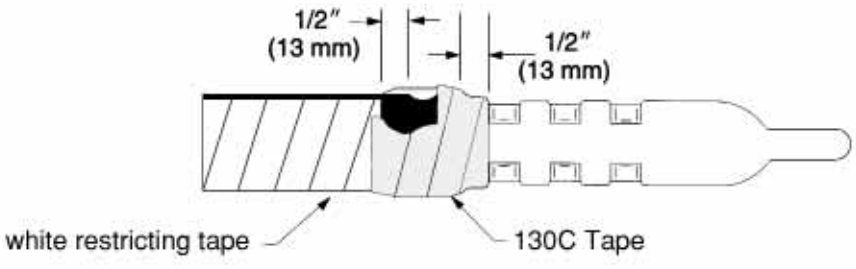
Figure 11



F. Seal Lug/Cable End

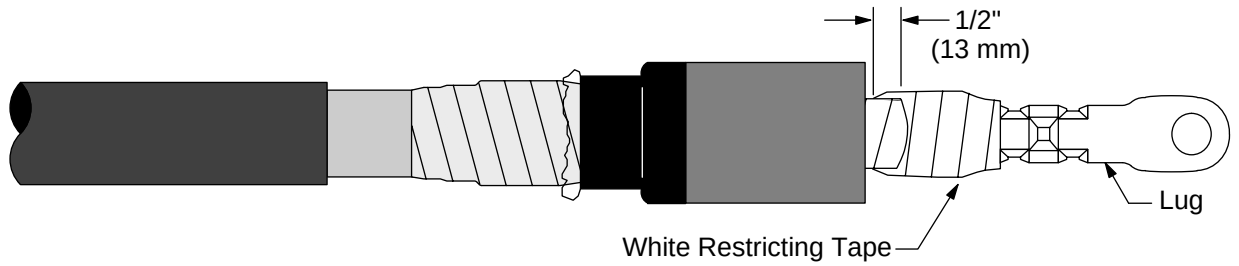
1. Fill the depression between the cable insulation and connector with highly stretched layers of Scotch® 130C tape to the level of the cable insulation. Again make a smooth ramp transition from cable insulation to lug. Finish with two highly stretched layers of 130C tape 1/2" (13 mm) onto the end of the tube and 1/2" (13 mm) onto the lug.

Figure 12



2. Apply 4 half-lapped layers of white restricting tape over the 130C tape. Overlap the previously applied white restricting tape a minimum of 1/2" (13 mm) and extend beyond the 130C tape on the lug.

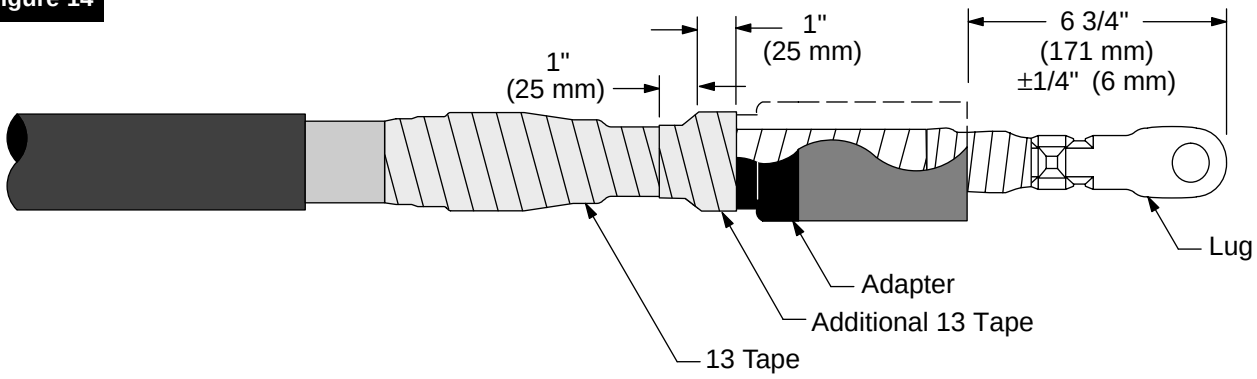
Figure 13



G. Position Adapter

1. Apply silicone lubricant to the surface of the exposed white restricting tape. Slide adapter into position so that the distance from adapter to cable end (lug) is 6 3/4" (170 mm) ± 1/4" (5 mm).
2. Lock adapter in place by applying 13 tape at the small end of adapter. Stretch tape when applying. Start the tape 1" (25 mm) from adapter on the previously applied 13 tape. Wrap the tape toward the adapter, filling the step at the adapter end. Complete tape application by applying several wraps of the tape over the small end of the adapter.

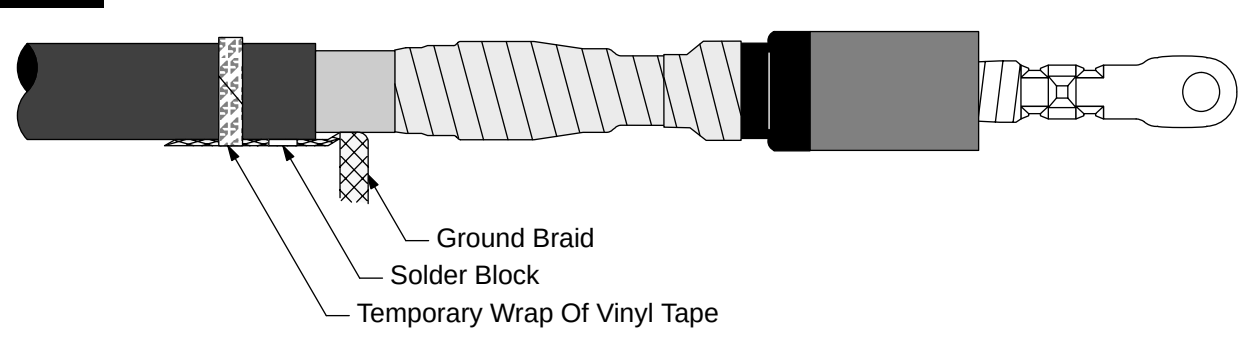
Figure 14



H. Install Ground Braid

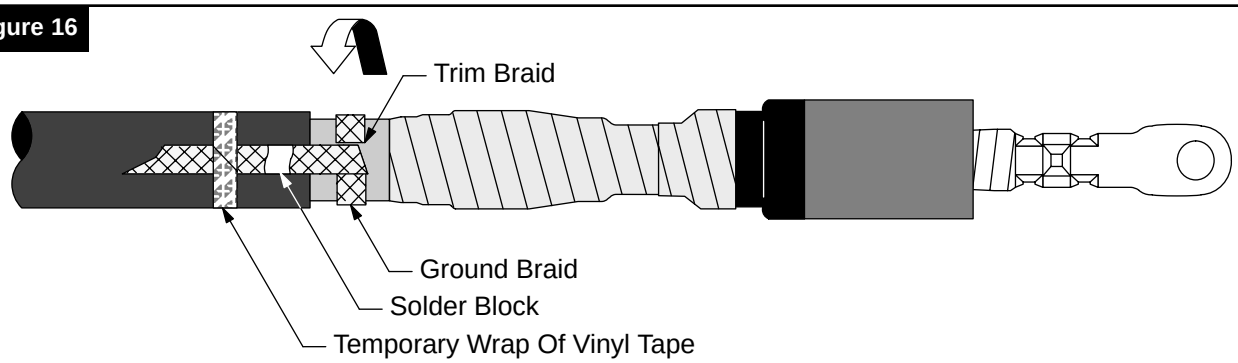
1. Lay the ground braid with solder block and bleed wire positioned on the cable as shown. Hold the braid in this position by applying a temporary wrap of vinyl tape over the braid end that extends along the cable jacket.

Figure 15



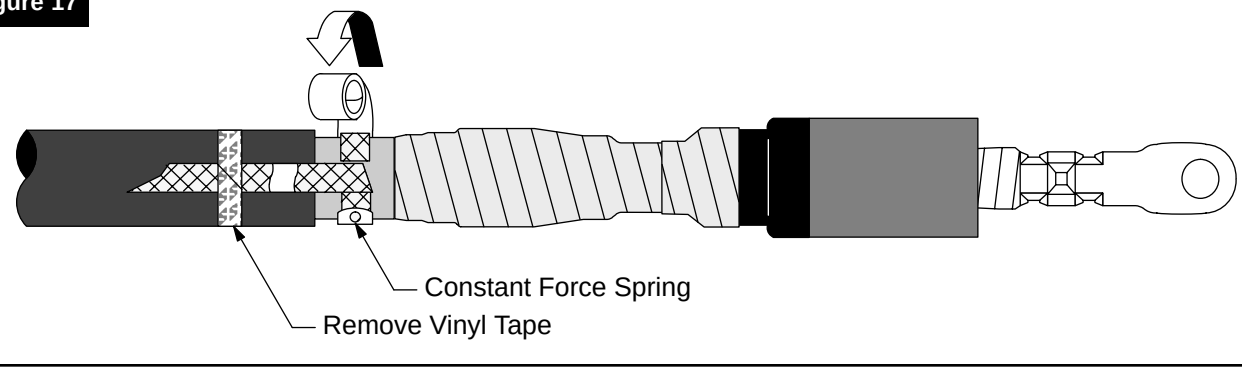
2. Wrap the braid end around the exposed cable lead, between the Scotch® 13 tape and the cable jacket or marker tape for one full wrap. Trim off and discard excess braid.

Figure 16



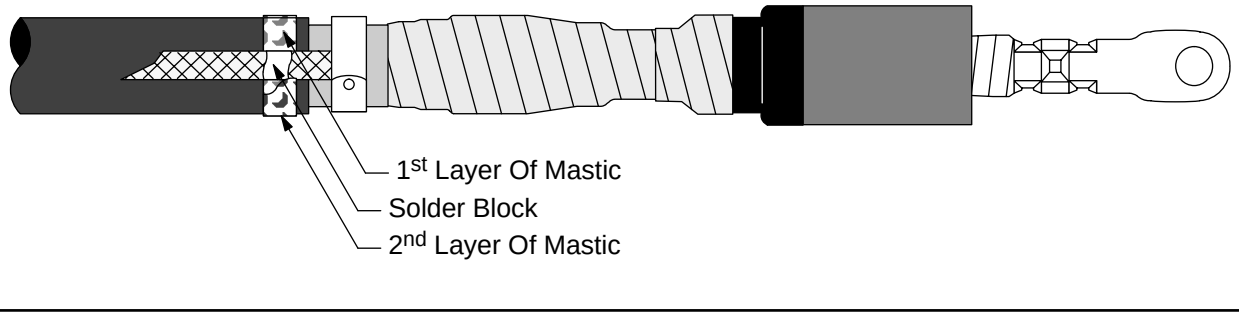
3. Position end of constant force spring over wrapped braid end so spring will unwind in the same direction as the braid. Hold braid and spring in place and pull (to unwind) the spring around the braid and itself. Cinch (tighten) the applied spring in its final position. Remove temporary wrap of vinyl tape.

Figure 17



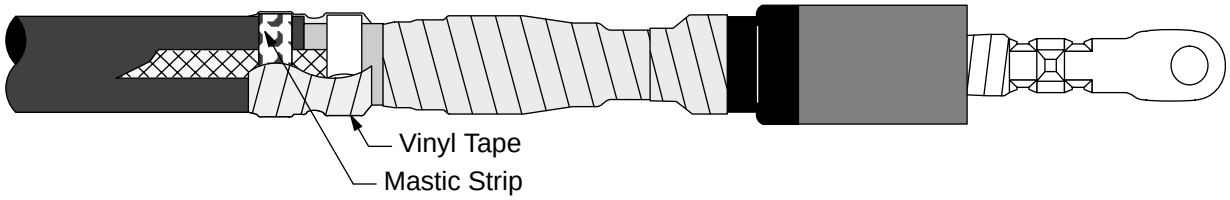
4. Remove liner from one strip of black mastic and wrap the strip around the cable jacket, under the ground braid solder block. Do not stretch the mastic when applying. Press the solder block section into the mastic.
5. Using second mastic strip, wrap a layer over the solder block and previously applied mastic layer.

Figure 18



6. Over wrap mastic, edge of cable jacket and constant force spring with tightly applied wraps of vinyl tape.

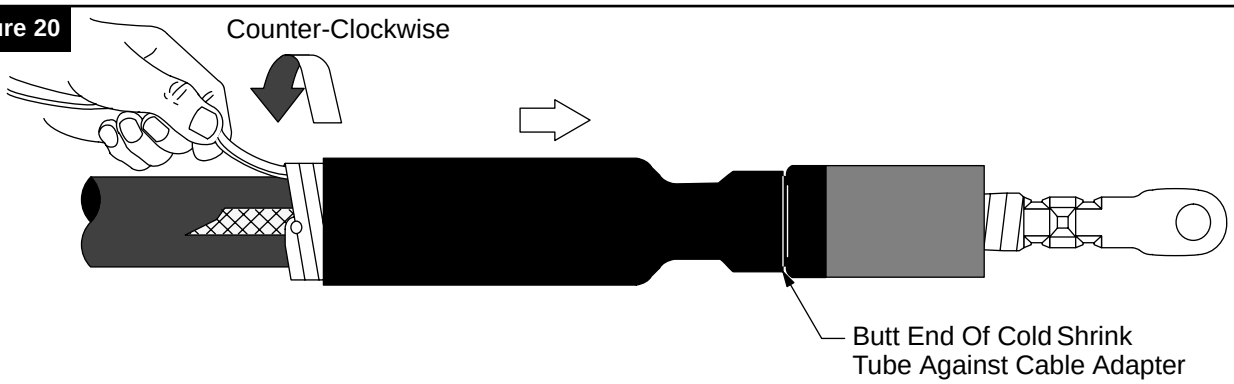
Figure 19



I. Install Cold Shrink Sealing Tube

1. Position cold shrink tube (previously slid onto cable) over the small end of cable adapter. Remove the tube's inner supporting core by lightly pulling while unwinding the loose core ribbon end counter-clockwise. As core is unwound, butt end of rubber tube against cable adapter's main body.

Figure 20



J. Install Front Stop

Note: ***This step is required for disconnectable splice. It is not required for 600 Amp elbow.***

1. Lock the insulation adapter in position by applying multiple wraps of 130C tape over the crimped section of the connector to the insulation adapter. Stretch the tape when applying. Taper the tape application from the connector to the adapter for a distance of 2 1/2" (60 mm). Do not exceed the diameter of the insulation adapter.

Figure 21

K. Install 600 Amp Cable Accessory

1. Prepare all cables and install accessories per accessory manufacturer's instructions.
2. Attach 14 AWG ground lead (from ground braid assembly) to the 600 amp device grounding eye. Connect ground braid to system ground.

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