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## FOR MAINTENANCE ONLY DRAWINGS

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PREPARING CONCENTRIC NEUTRAL CABLE FOR TERMINATION

1. POSITION CABLE INTO FINAL LOCATION AND CUT OFF ANY SURPLUS LENGTH. AT THE LOCATION SPECIFIED BY THE ACCESSORY INSTALLATION INSTRUCTIONS, REMOVE THE JACKET AND SECURE THE NEUTRAL AS SPECIFIED.

2. REMOVE THE SEMI-CONDUCTING SHIELD AS FOLLOWS:

   NOTE: ONLY THE APPROVED CABLE SKINNING TOOLS SHALL BE ALLOWED FOR THIS PROCESS. THE USE OF A KNIFE TO SCORE CABLE INSULATION IS STRONGLY PROHIBITED.

   (A) AT THE PROPER LOCATION, SCORE THE INSULATION SHIELD BY MAKING A CIRCULAR CUT PARTIALLY THROUGH THE SHIELD USING THE PROPER SHIELD REMOVAL TOOL (CN 414286). DO NOT CUT THE UNDERLYING INSULATION. (SUGGESTION: PRACTICE WITH A SCRAP PIECE OF CABLE TO BE STRIPPED TO SET THE BLADE OF THE STRIPPING TOOL TO THE PROPER DEPTH.)

   (B) SCORE THE SEMI-CONDUCTING SHIELD TO BE REMOVED BY MAKING A SPIRAL CUT FROM THE CIRCULAR CUT OUT TO THE END OF THE CABLE. DO NOT CUT THE UNDERLYING INSULATION. THE BLADE DEPTH OF THE TOOL MAY BE INCREASED TO CUT ALL THE WAY THROUGH THE SHIELD IN THE LAST 1/2" TO HELP START THE REMOVAL OF THE SHIELD.

   (C) USING PLIERS WITH CLOSE FITTING JAWS (NEEDLE NOSE), LIFT THE SEMI-CONDUCTING SHIELD FROM THE INSULATION. THIS OPERATION IS MUCH EASIER WHEN THE CABLE IS CUT WITH A HACKSAW. WHEN APPROXIMATELY 1/4 OF THE SHIELD IS FREE, GRIP THE SHIELD BY HAND AND REMOVE IT TO WITHIN 1/2" OF THE CIRCULAR CUT.


(3) CAUTION: BLACK DEPOSITS FROM THE SEMI-CONDUCTING SHIELD OR STRAND SHIELD THAT REMAIN ON THE SURFACE OF THE INSULATION MUST BE CAREFULLY AND COMPLETELY REMOVED. THIS IS ACCOMPLISHED BY MOISTENING A CLEAN CLOTH WITH CABLE CLEANING SOLVENT (CN 2055) AND RUBBING BRISKLY OVER THE SURFACE OF THE INSULATION. DO NOT ALLOW ANY SOLVENT TO GET UNDER THE EDGE OF THE SEMI-CONDUCTING SHIELD AT THE CIRCULAR CUT. WIPE THOROUGHLY WITH A CLEAN CLOTH. THE APPROVED NON-METALLIC SANDPAPER PAPER MAY BE USED TO REMOVE RESIDUE WHERE THE CLEANER WILL NOT DO SO.

![Outer Jacket Removal Tool](image1)
![Semi-Con Shield Removal Tool](image2)
![Insulation Stripper #2 - 350 KCM](image3)
![Insulation Stripper #350 - 1000 KCM](image4)
STEP 1: PREPARE CABLE

A. PREPARE CABLE AS SHOWN IN THE VIEW ABOVE. CHECK THE TABLE ABOVE FOR THE PROPER CUTBACK DIMENSIONS.

1. TO REMOVE LC SHIELD, TEMPORARILY PLACE A HOSE CLAMP OR THE CONSTANT FORCE SPRING AT THE CUTBACK POINT. USING NEEDLE NOSE PLIERS, PULL THE LC SHIELD DOWN ALONG THE SEALED EDGE. THIS WILL SEPARATE THE LC SHIELD. USING PLIERS, GRAB THE LC SHIELD NEAR CUT BACK POINT (TENSION SPRING) AND TEAR OFF SHIELD AROUND THE CABLE. THE SHIELD WILL "TEAR" AWAY AT THE EDGE OF THE CLAMP.

IMPORTANT: DO NOT EXTEND SCORING BLADE THROUGH INSULATION SHIELD (SEMI-CON) INTO INSULATION.

NOTE: USE APPROVED PRE-SETTABLE DEPTH TOOLS TO REMOVE THE OUTER JACKET, INSULATION SHIELD (SEMI-CON) AND INSULATION.

B. BEVEL NO MORE THAN 1/4" OF THE INSULATION. THIS IS A MUST FOR EASE OF INSTALLATION OF THIS SPLICE.

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<tr>
<th>CATALOG NUMBER</th>
<th>CABLE TO BE SPLICED</th>
<th>MANUFACTURER CATALOG NUMBER</th>
<th>CUTBACK DIMENSIONS IN INCHES</th>
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<td>A 21&quot; B 11&quot; C 5-3/4&quot; D 2-3/8&quot;</td>
</tr>
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STEP 2: INSTALL COLD SHRINK AND GROUND SOCK (CN 9220101218)

A. PLACE THE COLD-SHRINK SPLICE JACKET ASSEMBLY ONTO EITHER ONE OF THE CABLES AND SLIDE THEM OUT OF THE WAY. POSITION THE END OF THE ASSEMBLY AS SHOWN WITH THE CORE STRANDS IN A MANNER THAT WILL ALLOW THE CORES TO BE REMOVED IN THE EASIEST MANNER.

B. PLACE A GROUND SOCK ONTO THE OTHER END OF THE CABLE AND SLIDE IT BACK OUT OF THE WAY.
A. On the cable with the long cutback dimension, wire brush bare conductor with lay of strand toward end of cable cleaning all "stranded seal" from the outer surface between strands. Wipe conductors thoroughly with a clean cloth moistened with cable cleaning fluid. Do not pour fluid directly on conductor. Allow cable to air dry completely before proceeding.

B. Crimp the one end of the connector according to the manufacturer's instructions as shown above. Make the first crimp near the center of the connector and work toward its end until the appropriate numbers of crimps have been made. Be certain to rotate the crimp 90 degrees between crimps.

C. Remove excess oxide inhibitor with a towel. Take special care to prevent this excess inhibitor from getting onto the cable insulation. This oxide inhibitor must be removed before attempting to clean the cable insulation.

D. Wipe exposed insulation thoroughly with clean cloth moistened with cable cleaning fluid. Wipe in direction away from semi-conducting shield.

  NOTE: Remove nicks and all traces of black, semi-conducting particle residue from exposed insulation by sanding with non-metallic sanding cloth.

  NOTE: Do not pour cleaning fluid directly on cable. Allow cable to dry completely before proceeding.

E. Lubricate the cable insulation and insulation shield with the silicone grease provided in the splice kit. Be certain to apply a liberal amount of silicone grease at the end of the semi-conductive shield to eliminate the possibility of air gaps developing in this area.

F. Slide the splice housing (and one end cap if installing the 3M splice) onto the cable with the long cutback dimension. The housing must be pushed far enough to expose the crimp area of the connector for the other cable end.
STEP 4: SPLICE CONDUCTOR

A. WIRE BRUSH THE CONDUCTOR ON THE OTHER CABLE END (SLIDE END CAP OVER CABLE IF USING A 3M SPLICE). INSERT THE CONDUCTOR INTO THE SLEEVE, AND CRIMP IT AS DONE IN STEP #3 ABOVE FOR THE OTHER END.

NOTE: ENSURE THE GROUND SLEEVE AND ONE PIECE JACKET KIT ARE IN PLACE BEFORE MAKING THE FINAL CONNECTION.

B. CLEAN OXIDE INHIBITOR FROM SLEEVE, CLEAN INSULATION AND APPLY SILICONE GREASE TO THE INSULATION AS DONE FOR THE OTHER CABLE SIDE IN STEP 3.


IF A 3M SPLICE IS BEING USED, THE SPLICE HOUSING IS CENTERED WHEN YOU HAVE BETWEEN 1/16 AND 1/2 INCH BETWEEN THE SPLICE BODY END AND THE END OF THE SEMI-CONDUCTING SHIELD. APPLY SILICONE GREASE TO AREA AT SEMI-CON STEP. THIS WILL PREVENT AIR VOIDS. SLIDE END CAPS INTO PLACE USING A TWISTING MOTION. BE SURE YOU FEEL TWO SNAPS DURING THE INSTALLATION OF THE END CAPS TO ENSURE THEY ARE FULLY SEATED.

IMPRINT OF SEMI-CONDUCTING SHIELD

STEP 5: INSTALL GROUND SOCK AND TENSION SPRING

A. CLEAN THE LAST FIVE INCHES OF THE CABLE JACKET IN PREPARATION FOR SEALING THE SPLICE INSTALLATION.


C. ON THE SHORT CUTBACK CABLE END, INSTALL TWO CONSTANT TENSION SPRINGS OVER THE GROUND SOCK AND LC SHIELD AS SHOWN ABOVE. THE FIRST SPRING IS INSTALLED 1/2" FROM THE EDGE OF JACKET AND THE SECOND ONE 1-1/2" FROM THE JACKET. CINCH (TIGHTEN) LAST LAP OF SPRING.
D. In the direction of the spring wrap, apply two layers of 3/4" vinyl tape over the constant tension springs as shown in view 'A'.

E. As shown in view 'B', fold the excess ends of the ground sock back over the constant tension springs and into contact with the middle portion of the sock. Secure the ends by wrapping them with 3/4 inch vinyl tape.

**STEP 6: INSTALL GROUND BRAID**

A. As shown below on the long cutback cable end, wrap a constant tension spring over the ground sock and over the LC shield 1-1/2" from the edge of the jacket.

B. Cut the ends of the ground sock at the point where it meets the cable jacket using scissors or other appropriate tools. The ground sock must not extend onto the cable jacket.

C. Remove the liners from one of the three mastic strips provided in the kit and wrap the mastic around the cable 1/2" from the edge of the jacket as shown in the left view above. Install only one layer of mastic, discard any excess mastic.

D. Position the ground braid with the U section over the LC shield and the solder block over the mastic to provide a seal.

E. Secure the ground braid to the cable by wrapping a constant tension spring around the portion of the braid that is positioned over the LC shield as shown in the view above on the right. Cinch (tighten) last lap of spring.

F. In the direction of the spring wrap, apply two layers of 3/4" vinyl tape over the constant tension springs.

G. Wrap a second mastic strip directly over the first one. If the two braid ends overlap each other, wrap this mastic strip over the first (lower) braid end and under the second end. Apply a third mastic strip over the two braid ends. Mash the mastic at the solder back to ensure to a good seal, this will provide a moisture block.
STEP 7: PREPARE FOR COLD SHRINK ASSEMBLY

A. PLACE SEVERAL WRAPS OF 3/4" VINYL TAPE AROUND THE GROUND SOCK IN VARIOUS LOCATIONS AS SHOWN ABOVE TO HOLD IT TO THE SPLICE BODY.

A. PLACE MASTIC AT EDGE OF JACKET CUTBACK AND PULL WITH SLIGHT TENSION

CONTINUE TO WRAP MASTIC STRIP ON TOP OF FIRST LAYER AND PULL WITH NO TENSION

PLACE MASTIC AT EDGE OF JACKET CUTBACK AND PULL WITH SLIGHT TENSION

SQUEEZE MASTIC WHERE SECOND LAYER OVERLAPS FIRST LAYER TO PREVENT GAP

PLACE MASTIC AT EDGE OF JACKET CUTBACK AND PULL WITH SLIGHT TENSION

CONTINUE TO WRAP MASTIC STRIP ON TOP OF FIRST LAYER AND PULL WITH NO TENSION

B. APPLY ONE ROLL OF RUBBER MASTIC PROVIDED IN THE KIT ON EACH CABLE JACKET ENDS AS SHOWN ABOVE. PLACE THE STICKY SIDE TOWARD THE CABLE JACKET AND USE SLIGHT TENSION ON THE FIRST LAP. DO NOT APPLY TENSION ON THE REMAINING LAPS. MASH THE MASTIC WHERE THE SECOND LAYER OVERLAPS THE FIRST TO PREVENT A GAP FROM FORMING AT THIS OVERLAP. STRETCH AND TEAR OFF THE END OF THE MASTIC AT THE END OF THE ROLL. THIS WILL PROVIDE A SMOOTH TRANSITION ON TOP LAYER OF MASTIC.

B. SQUEEZE MASTIC WHERE SECOND LAYER OVERLAPS FIRST LAYER TO PREVENT GAP
STEP 8: INSTALL COLD SHRINK ASSEMBLY

A. BEGIN TO INSTALL THE COLD SHRINK TUBE BY COMPLETELY COVERING THE RUBBER MASTIC, AND SLOWLY PULLING AND UNWINDING THE INNER CORE COUNTERCLOCKWISE TOWARD THE SPLICE BODY. THE OUTER CORE SHOULD REMAIN RELATIVELY STATIONARY WHILE UNWINDING THE INNER CORE. IF THE OUTER CORE BEGINS TO MOVE TOWARDS THE FIRST MASTIC SEAL, GENTLY PULL THE OUTER CORE AND JACKETING TUBE TOWARDS THE SECOND MASTIC SEAL AND CONTINUE UNWINDING THE INNER CORE.

B. CONTINUE TO INSTALL THE COLD SHRINK TUBE OVER THE RUBBER MASTIC ON THE OTHER CABLE BY SLOWLY PULLING AND UNWINDING THE OUTER CORE COUNTERCLOCKWISE. THIS PORTION OF THE CORD THE COLD SHRINK TUBE Installs DIFFERENTLY THAN TYPICAL COLD SHRINK PRODUCTS IN THAT AS THE TUBE SHRINKS, THE END ROLLS UNDER. THE TUBE MAY NEED A SLIGHT PUSH TO GET OVER THE SECOND MASTIC SEAL.

C. IF REQUIRED, ATTACH BRAIDED TAIL TO GROUNDING SYSTEM USING A SPLIT BOLT OR OTHER APPROPRIATE CONNECTOR.
STEP 1: PREPARE CABLE

A. PREPARE CABLE AS SHOWN IN THE VIEW ABOVE. CHECK THE TABLE ABOVE FOR THE PROPER CUTBACK DIMENSIONS.

NOTE: CABLE CUTBACKS FOR SHORT AND LONG DIMENSIONS CAN BE REVERSED DEPENDING ON WORKING SPACE AVAILABLE.

LC SHIELD IS SHARP, WEAR WORK GLOVES

1. TO REMOVE LC SHIELD, TEMPORARILY PLACE A HOSE CLAMP OR THE CONSTANT FORCE SPRING AT THE CUTBACK POINT. USING NEEDLE NOSE PLIERS, PULL THE LC SHIELD DOWN ALONG THE SEALED EDGE. THIS WILL SEPARATE THE LC SHIELD. USING PLIERS, GRAB THE LC SHIELD NEAR CUT BACK POINT (TENSION SPRING) AND TEAR OFF SHIELD AROUND THE CABLE. THE SHIELD WILL "TEAR" AWAY AT THE EDGE OF THE CLAMP.

IMPORTANT: DO NOT EXTEND SCORING BLADE THROUGH INSULATION SHIELD (SEMI-CON) INTO INSULATION.

NOTE: USE APPROVED PRE-SETTABLE DEPTH TOOLS TO REMOVE THE OUTER JACKET, INSULATION SHIELD (SEMI-CON) AND INSULATION.

B. BEVEL NO MORE THAN 1/4" OF THE INSULATION. THIS IS A MUST FOR EASE OF INSTALLATION OF THIS SPLICE.

STEP 2: INSTALL COLD SHRINK AND GROUND SOCK (CN 9220101218)

A. PLACE THE COLD-SHRINK SPLICE JACKET ASSEMBLY ONTO EITHER ONE OF THE CABLES AND SLIDE THEM OUT OF THE WAY. POSITION THE END OF THE ASSEMBLY AS SHOWN WITH THE CORE STRANDS IN A MANNER THAT WILL ALLOW THE CORES TO BE REMOVED IN THE EASIEST MANNER.

B. PLACE A GROUND SOCK ONTO THE OTHER END OF THE CABLE AND SLIDE IT BACK OUT OF THE WAY.

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STEP 3: INSTALL CONNECTOR AND SPLICE HOUSING

A. ON THE CABLE WITH THE LONG CUTBACK DIMENSION, WIRE BRUSH BARE CONDUCTOR WITH LAY OF STRAND TOWARD END OF CABLE CLEANING ALL "STRAND SEAL" FROM THE OUTER SURFACE BETWEEN STRANDS. WIPE CONDUCTORS THOROUGHLY WITH A CLEAN CLOTH MOISTENED WITH CABLE CLEANING FLUID. DO NOT POUR FLUID DIRECTLY ON CONDUCTOR. ALLOW CABLE TO AIR DRY COMPLETELY BEFORE PROCEEDING.

B. CRIMP THE ONE END OF THE CONNECTOR ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AS SHOWN ABOVE. MAKE THE FIRST CRIMP NEAR THE CENTER OF THE CONNECTOR AND WORK TOWARD ITS END UNTIL THE APPROPRIATE NUMBERS OF CRIMPS HAVE BEEN MADE. BE CERTAIN TO ROTATE THE CRIMP 90 DEGREES BETWEEN CRIMPS.

C. REMOVE EXCESS OXIDE INHIBITOR WITH A TOWEL. TAKE SPECIAL CARE TO PREVENT THIS EXCESS INHIBITOR FROM GETTING ONTO THE CABLE INSULATION. THIS OXIDE INHIBITOR MUST BE REMOVED BEFORE ATTEMPTING TO CLEAN THE CABLE INSULATION.

D. WIPE EXPOSED INSULATION THOROUGHLY WITH CLEAN CLOTH MOISTENED WITH CABLE CLEANING FLUID. WIPE IN DIRECTION AWAY FROM SEMI-CONDUCTING SHIELD.

NOTE: REMOVE NICKS AND ALL TRACES OF BLACK, SEMI-CONDUCTING PARTICLE RESIDUE FROM EXPOSED INSULATION BY SANDING WITH NON-METALLIC SANDING CLOTH.

NOTE: DO NOT POUR CLEANING FLUID DIRECTLY ON CABLE. ALLOW CABLE TO DRY COMPLETELY BEFORE PROCEEDING.

E. LUBRICATE THE CABLE INSULATION AND INSULATION SHIELD WITH THE SILICONE GREASE PROVIDED IN THE SPLICE KIT. BE CERTAIN TO APPLY A LIBERAL AMOUNT OF SILICONE GREASE AT THE END OF THE SEMI-CONDUCTIVE SHIELD TO ELIMINATE THE POSSIBILITY OF AIR GAPS DEVELOPING IN THIS AREA.

F. SLIDE THE SPLICE HOUSING (AND ONE END CAP IF INSTALLING THE 3M SPLICE) ONTO THE CABLE WITH THE LONG CUTBACK DIMENSION. THE HOUSING MUST BE PUSHED FAR ENOUGH TO EXPOSE THE CRIMP AREA OF THE CONNECTOR FOR THE OTHER CABLE END.
STEP 4: SPLICE CONDUCTOR

A. WIRE BRUSH THE CONDUCTOR ON THE OTHER CABLE END (SLIDE END CAP OVER CABLE IF USING A 3M SPLICE), INSERT THE CONDUCTOR INTO THE SLEEVE, AND CRIMP IT AS DONE IN STEP #3 ABOVE FOR THE OTHER END.

NOTE: ENSURE THE GROUND SLEEVE AND ONE PIECE JACKET KIT ARE IN PLACE BEFORE MAKING THE FINAL CONNECTION.

B. CLEAN OXIDE INHIBITOR FROM SLEEVE, CLEAN INSULATION AND APPLY SILICONE GREASE TO THE INSULATION AS DONE FOR THE OTHER CABLE SIDE IN STEP 3.


IF A 3M SPLICE IS BEING USED, THE SPLICE HOUSING IS CENTERED WHEN YOU HAVE BETWEEN 1/16 AND 1/2 INCH BETWEEN THE SPLICE BODY END AND THE END OF THE SEMI-CONDUCTING SHIELD. APPLY SILICONE GREASE TO AREA AT SEMI-CON STEP. THIS WILL PREVENT AIR VOIDS. SLIDE END CAPS INTO PLACE USING A TWISTING MOTION. BE SURE YOU FEEL TWO SNAPS DURING THE INSTALLATION OF THE END CAPS TO ENSURE THEY ARE FULLY SEATED.

STEP 5: INSTALL GROUND SOCK AND TENSION SPRING

A. CLEAN THE LAST FIVE INCHES OF THE CABLE JACKET IN PREPARATION FOR SEALING THE SPLICE INSTALLATION.


NOTE: WHEN EQUIPMENT GROUND OR GROUND ROD IS AVAILABLE, ADVANCE TO STEP 6.

C. STARTING WITH THE (LC) SHEILDED CABLE END, INSTALL TWO CONSTANT TENSION SPRINGS OVER THE GROUND SOCK AND LC SHIELD AS SHOWN ABOVE. THE FIRST SPRING IS INSTALLED 1/2" FROM THE EDGE OF JACKET AND THE SECOND ONE 1-1/2" FROM THE JACKET. CINCH (TIGHTEN) LAST LAP OF SPRING.
D. In the direction of the spring wrap, apply two layers of 3/4" vinyl tape over the constant tension springs as shown in View 'A'.

E. As shown in View 'B', fold the excess ends of the ground sock back over the constant tension springs and into contact with the middle portion of the sock. Secure the ends by wrapping them with 3/4 inch vinyl tape.

---

STEP 6: INSTALL GROUND BRAID

A. As shown below on the long cutback cable end, wrap a constant tension spring over the ground sock and over the LC shield 1-1/2" from the edge of the jacket.

B. Cut the ends of the ground sock at the point where it meets the cable jacket using scissors or other appropriate tools. The ground sock must not extend onto the cable jacket.

C. Remove the liners from one of the three mastic strips provided in the kit and wrap the mastic around the cable 1/2" from the edge of the jacket as shown in the left view above. Install only layer of mastic, discard any excess mastic.

D. Position the ground braid with the U section over the LC shield and the solder block over the mastic to provide a seal.

E. Secure the ground braid to the cable by wrapping a constant tension spring around the portion of the braid that is positioned over the LC shield as shown in the view above on the right. Cinch (tighten) last lap of spring.

F. In the direction of the spring wrap, apply two layers of 3/4" vinyl tape over the constant tension springs.

G. Wrap a second mastic strip directly over the first one. If the two braid ends overlap each other, wrap this mastic strip over the first (lower) braid end and under the second end. Apply a third mastic strip over the two braid ends. Mash the mastic at the solder back to ensure a good seal, this will provide a moisture block.
STEP 7: CONNECTING CONCENTRIC NEUTRAL WIRES TO SPLICE SLEEVE

A. TWIST THE STRAND ON THE OTHER END OF THE GROUND SOCK INTO A BUNDLE.

B. TWIST THE CONCENTRIC NEUTRAL WIRES INTO A BUNDLE. CONNECT THE BUNDLE OF CONCENTRIC NEUTRAL WIRES TO THE BUNDLE OF GROUND SOCK STRANDS WITH A COMPRESSION CONNECTOR AS SHOWN BELOW.

C. TWIST THE GROUND SOCK TO ENSURE THAT IT IS TIGHTLY FORMED AGAINST THE SPLICE HOUSING. PLACE SEVERAL WRAPS OF 3/4" VINYL TAPE AROUND THE GROUND SOCK IN VARIOUS LOCATIONS TO HOLD IT IN TIGHT CONTACT WITH THE SPLICE HOUSING.

D. FILE ANY SHARP EDGES FROM NEUTRAL CONNECTION. APPLY A LAYER OF VINYL PLASTIC SEAL AROUND THE NEUTRAL CONNECTION TO PREVENT DAMAGE TO THE SEMI-CON AND SPLICE JACKET. SECURE IN PLACE WITH 3/4" VINYL TAPE.

STEP 8: PREPARE FOR COLD SHRINK ASSEMBLY

A. PLACE SEVERAL WRAPS OF 3/4" VINYL TAPE AROUND THE GROUND SOCK IN VARIOUS LOCATIONS AS SHOWN ABOVE TO HOLD IT TO THE SPLICE BODY.

B. APPLY ONE ROLL OF RUBBER MASTIC PROVIDED IN THE KIT ON EACH CABLE JACKET ENDS AS SHOWN ABOVE. PLACE THE STICKY SIDE TOWARD THE CABLE JACKET AND USE SLIGHT TENSION ON THE FIRST LAP. DO NOT APPLY TENSION ON THE REMAINING LAPS. MASH THE MASTIC WHERE THE SECOND LAYER OVERLAPS THE FIRST TO PREVENT A GAP FROM FORMING AT THIS OVERLAP. STRETCH AND TEAR OFF THE END OF THE MASTIC AT THE END OF THE ROLL. THIS WILL PROVIDE A SMOOTH TRANSITION ON TOP LAYER OF MASTIC.
STEP 9: INSTALL COLD SHRINK ASSEMBLY

A. BEGIN TO INSTALL THE COLD SHRINK TUBE BY COMPLETELY COVERING THE RUBBER MASTIC, AND SLOWLY PULLING AND UNWINDING THE INNER CORE COUNTERCLOCKWISE TOWARD THE SPLICE BODY. THE OUTER CORE SHOULD REMAIN RELATIVELY STATIONARY WHILE UNWINDING THE INNER CORE. IF THE OUTER CORE BEGINS TO MOVE TOWARDS THE FIRST MASTIC SEAL, GENTLY PULL THE OUTER CORE AND JACKETING TUBE TOWARDS THE SECOND MASTIC SEAL AND CONTINUE UNWINDING THE INNER CORE.

B. CONTINUE TO INSTALL THE COLD SHRINK TUBE OVER THE RUBBER MASTIC ON THE OTHER CABLE BY SLOWLY PULLING AND UNWINDING THE OUTER CORE COUNTERCLOCKWISE. THIS PORTION OF THE COLD SHRINK TUBE INSTALLS DIFFERENTLY THAN TYPICAL COLD SHRINK PRODUCTS IN THAT AS THE TUBE SHRINKS, THE END ROLLS UNDER. THE TUBE MAY NEED A SLIGHT PUSH TO GET OVER THE SECOND MASTIC SEAL.

C. IF REQUIRED, ATTACH BRAIDED TAIL TO GROUNDING SYSTEM USING A SPLIT BOLT OR OTHER APPROPRIATE CONNECTOR.
GENERAL SPLICE INFORMATION

1. ALL SPLICES ARE RATED FOR 200 AMPS.

2. REPAIR SPLICES ARE LONGER THAN OUR NORMAL SPLICES IN ORDER TO SPAN THE GAP THAT OCCURS WHEN A CABLE FAILURE IS CUT OUT OF A RUN OF CABLE. THIS WILL HELP TO ELIMINATE THE OCCASIONAL NEED TO INSTALL TWO SPLICES AND A SHORT LENGTH OF CABLE WHEN A NORMAL SPLICE WILL NOT SPAN THE GAP THAT REMAINS AFTER REMOVING A CABLE FAILURE. **DO NOT USE THIS SPLICE FOR NEW INSTALLATIONS** BECAUSE IT IS MUCH MORE EXPENSIVE THAN OUR NORMAL SPLICE.

3. BE CERTAIN TO WATERPROOF ALL SPLICES. FAILURE TO DO SO WILL JEOPARDIZE THE LIFE OF THE CABLE.

4. WHEN INSTALLING TRANSITION SPLICES, ALWAYS PUSH THE HOUSING ONTO THE SMALLER CABLE FIRST AND THEN PULL IT BACK TO THE PROPER POSITION ON THE LARGER CABLE AFTHER CRIMPING THE CONNECTOR.

5. **ALWAYS USE THE CONNECTOR PROVIDED IN THE SPLICE KIT IF IT IS PROVIDED WITH THE KIT**. DO NOT SUBSTITUTE CONNECTORS.

6. GROUND RODS DO NOT HAVE TO BE INSTALLED WITH SPLICES IN DIRECT BURIED APPLICATIONS.

INSTALLATION INSTRUCTIONS

STEP 1: FOLLOW ALL SAFETY RULES AND PROCEDURES TO INSURE CONDUCTORS ARE SAFE TO HANDLE.

STEP 2: CUT CABLES TO THE DESIRED LENGTH.

STEP 3: REMOVE THE AMOUNT OF CABLE JACKET ON THE SHORT AND LONG END SHOWN IN FIGURE 1 AND TABLE 1.

STEP 4: REMOVE THE LC SHIELD, EXCEPT FOR THE LENGTH SHOWN IN FIGURE 1 WHICH WILL EXTEND BEYOND THE END OF THE CABLE JACKET.

THE LC SHIELD IS TO BE REMOVED BY PLACING ONE OF THE CONSTANT TENSION SPRINGS PROVIDED IN THE GROUND SOCK KIT ON THE LC SHIELD AT THE POINT WHERE THE SHIELD IS TO END, SEPARATING THE OVERLAP OF THE LC SHIELD, AND THEN TEARING OFF THE LC SHIELD AT THE CONSTANT TENSION SPRING. THE LC SHIELD OVERLAP MAY BE SEPARATED BY ROLLING THE GAP OPEN WITH CHANNEL-LOCK PLIERS, TEARING OFF THE OVERLAP BY TWISTING IT AROUND NEEDLE-NOSE PLIERS, OR BY TEARING OFF THE OVERLAP BY GRABBING THE OVERLAP WITH PLIERS AND PULLING IT STRAIGHT DOWN THE CABLE.

STEP 5: **USE AN APPROPRIATE TOOL** AND SCORE THE SEMI-CONDUCTIVE INSULATION SHIELD SO THE LENGTH OF SHIELD SHOWN IN FIGURE 1 AND TABLE 2 CAN BE REMOVED; HOWEVER, **DO NOT REMOVE THE SHIELD AT THIS TIME**.

**NEVER USE A KNIFE TO REMOVE THIS SHIELD.**

STEP 6: REMOVE THE AMOUNT OF INSULATION "D" DIMENSION AS SHOWN IN TABLE 2.

BEVEL NO MORE THAN THE LAST 1/4" OF THE INSULATION WHEN INSTALLING AN ELASTIMOLD SPLICE. THIS BEVEL CAN BE MADE WITH A BEVELING TOOL OR WITH A KNIFE.

STEP 7: REMOVE THE PORTION OF THE SEMI-CONDUCTIVE INSULATION SHIELD SCORED IN STEP 5.

**DO NOT SAND THE INSULATION EXCEPT WHEN IT IS NECESSARY.**

![Diagram showing cable preparation steps](Diagram)

**TABLE 1** - JACKET CUTBACK DIMENSIONS

<table>
<thead>
<tr>
<th>OPERATING COMPANY</th>
<th>A DIMENSION (IN) (LONG CUTBACK)</th>
<th>B DIMENSION (IN) (SHORT CUTBACK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>DEF</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

**FIGURE 1**
PREPARING CABLE ENDS
## TABLE 2 - SEMI-CON AND INSULATION CUTBACK DIMENSIONS FOR 200 AMP SPLICES

<table>
<thead>
<tr>
<th>OPERATING COMPANY AND ITEM NUMBER/CAT ID</th>
<th>CONDUCTOR TO BE SPICED</th>
<th>MANUFACTURER, HOUSING SIZE OR CATALOG NO.</th>
<th>C DIMENSION (IN) (SEMI-CON CUTBACK)</th>
<th>D DIMENSION (IN) (INSULATION REMOVAL)</th>
<th>E DIMENSION (IN) (CHECK DIMENSION)</th>
<th>SPICING SLEEVES (ITEM NUMBER/CAT ID)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEF - CN 326456</td>
<td>#2- 15 KV TO #2 -15 KV</td>
<td>ELASTIMOLD SIZE F</td>
<td>4</td>
<td>1-3/4</td>
<td>4</td>
<td>DEF - #2 TO #2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-M 5411</td>
<td>3-5/8</td>
<td>1-1/4</td>
<td>N/A</td>
<td>(CN 326475)</td>
</tr>
<tr>
<td>DEF - CN 326456</td>
<td>#2- 15 KV TO #1/0 -25 KV</td>
<td>3M 5411 &quot;TRANSITION&quot;</td>
<td>3-1/2</td>
<td>1-1/4</td>
<td>N/A</td>
<td>DEF - #2 TO #1/0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3M-5411</td>
<td>3-5/8</td>
<td>1-1/4</td>
<td>N/A</td>
<td>(CN 140120)</td>
</tr>
<tr>
<td>DEF - CN 326456</td>
<td>#1/0- 15 KV TO #1/0 -25 KV</td>
<td>ELASTIMOLD SIZE F (DEF ONLY)</td>
<td>4</td>
<td>1-3/4</td>
<td>4</td>
<td>DEF - #1/0 TO #1/0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(CN 326478)</td>
</tr>
<tr>
<td>DEP - CN 11173705</td>
<td>#2-25KV TO #2-25 KV</td>
<td>ELASTIMOLD SIZE G OR H</td>
<td>6</td>
<td>2</td>
<td>5&quot; UNCRIMPED</td>
<td>DEP - #2 TO #2</td>
</tr>
<tr>
<td>DEP - CN 11173606</td>
<td></td>
<td>3M 5420</td>
<td>5-1/8</td>
<td>1-5/8</td>
<td>N/A</td>
<td>(CN 11169703)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3M 5451 (DEP ONLY)</td>
<td>6</td>
<td>1-5/8</td>
<td>N/A</td>
<td>DEP - #2 TO #2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(CN 11169406)</td>
</tr>
<tr>
<td>DEP - CN 11173705</td>
<td>#1/0-25KV TO #1/0-25 KV</td>
<td>ELASTIMOLD SIZE G OR H</td>
<td>6</td>
<td>2</td>
<td>5&quot; UNCRIMPED</td>
<td>DEP - #1/0 TO #1/0</td>
</tr>
<tr>
<td></td>
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<td>3M-5451</td>
<td>6</td>
<td>1-5/8</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DEP - #1/0 TO #1/0</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>(CN 11169901)</td>
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<tr>
<td>DEP - CN 11173705</td>
<td>#2-25KV TO #1/0-25 KV</td>
<td>3M 5451</td>
<td>6</td>
<td>1-5/8</td>
<td>N/A</td>
<td>DEP - #2 TO #1/0</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>(CN 11170107)</td>
</tr>
<tr>
<td>DEP - CN 11139300</td>
<td>#1/0-25KV TO #1/0-25 KV</td>
<td>ELASTIMOLD SIZE H (DEP ONLY)</td>
<td>6</td>
<td>2</td>
<td>5&quot; UNCRIMPED</td>
<td>DEP - #2 TO #1/0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(CN 11169802)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3M 54511R &quot;REPAIR&quot;</td>
<td>4-3/4</td>
<td>1-1/2</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
STEP 8: VERIFY THAT ALL CUTBACKS HAVE BEEN MADE TO THE PROPER DIMENSION. CORRECT THE INSULATION AND SEMI-CONDUCTIVE SHIELD CUTBACKS IF THEY ARE NOT WITHIN 1/8" OF THE DIMENSIONS PROVIDED IN TABLE 2.

STEP 9: VERIFY THAT THE RING CUT ON THE SEMI-CONDUCTIVE SHIELD IS STRAIGHT AND SMOOTH ALL THE WAY AROUND THE CABLE. NO POINTS OR UNEVENNESS MAY EXIST. CORRECT ANY IRREGULARITIES THAT EXIST. THESE IRREGULARITIES MAY BE REMOVED WITH A KNIFE AS LONG AS EXTREME CAUTION IS USED AND THAT NO NICKS ARE MADE INTO THE CABLE INSULATION.

STEP 10: VERIFY THAT THE INSULATION IS SMOOTH AND FREE OF ANY NICKS OR CUTS BY CAREFULLY RUBBING IT WITH YOUR FINGERS. ANY NICKS, CUTS, OR DENTS MUST BE REMOVED WITH 240 GRIT ALUMINUM OXIDE CLOTH, SEE TABLE 3. DO NOT USE 120 GRIT ALUMINUM OXIDE CLOTH.

<table>
<thead>
<tr>
<th>TABLE 3 - NON-METALLIC ALUMINUM OXIDE CLOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING AREA</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>DEP</td>
</tr>
<tr>
<td>DEF</td>
</tr>
</tbody>
</table>

IF CUTS WERE MADE INTO THE INSULATION AS A RESULT OF THE STRIPPING TOOL BEING SET TOO DEEP, THEN THE RING CUT MUST BE RELOCATED TO ALLOW THIS CUT TO BE SANDED OUT OF THE INSULATION. THIS CAN BE ACCOMPLISHED BY CUTTING AT LEAST 3/4" OFF THE CONDUCTOR AND THEN REMAKING ALL CUTBACKS FROM THAT POINT.


<table>
<thead>
<tr>
<th>TABLE 4 - COLD SHRINK SPLICE JACKET ASSEMBLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING AREA</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>DEP</td>
</tr>
<tr>
<td>DEF</td>
</tr>
</tbody>
</table>

FIGURE 2
PLACING COLD-SHRINK JACKET ONTO CABLE
STEP 12: PLACE A GROUND SOCK, **SEE TABLE 5**, ONTO EITHER ONE OF THE CABLES AND SLIDE IT OUT OF THE WAY. THIS GROUND SOCK WILL BE INSTALLED LATER. **SEE FIGURE 3**.

### TABLE 5 - COLD SHRINK SPLICE JACKET ASSEMBLY

<table>
<thead>
<tr>
<th>OPERATING AREA</th>
<th>ITEM NUMBER OR CAT ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>9220271258</td>
</tr>
<tr>
<td>DEF</td>
<td>9220271259</td>
</tr>
</tbody>
</table>

**STEP 13:** WIRE BRUSH THE CONDUCTOR OF THE CABLE WITH THE LONG CUTBACK DIMENSION AND IMMEDIATELY PUSH THE CONNECTOR ONTO IT.

DO NOT USE OXIDE CLOTH TO BRUSH THE CONDUCTOR.

DO NOT REMOVE ANY OF THE OXIDE INHIBITOR FROM THE CONNECTOR BEFORE PUSHING IT ONTO THE CONDUCTOR.

**STEP 14:** CRIMP THE CONNECTOR WITH A 5/8” OR BG DIE. MAKE THE FIRST CRIMP NEAR THE CENTER OF THE CONNECTOR AND WORK TOWARD ITS END UNTIL THE APPROPRIATE NUMBER OF CRIMPS HAVE BEEN MADE. BE CERTAIN TO ROTATE THE CRIMP TOOL 90° BETWEEN EACH CRIMP.

**STEP 15:** REMOVE EXCESS OXIDE INHIBITOR WITH A TOWEL. TAKE SPECIAL CARE TO PREVENT THIS EXCESS INHIBITOR FROM GETTING ONTO THE CABLE INSULATION. THIS OXIDE INHIBITOR MUST BE REMOVED BEFORE ATTEMPTING TO CLEAN THE CABLE INSULATION.

**STEP 16:** CLEAN THE CABLE INSULATION ON THE CABLE WITH THE LONG CUTBACK DIMENSION WITH A CLEAN TOWEL AND CABLE CLEANING FLUID, **SEE TABLE 6**, TO REMOVE ANY CONTAMINATION OR PARTICLES OF THE SEMI-CONDUCTING SHIELD THAT MIGHT BE PRESENT ON THE INSULATION.

### TABLE 6 - TOWEL AND CLEANING FLUID

<table>
<thead>
<tr>
<th>OPERATING AREA</th>
<th>TOWEL ITEM NUMBER OR CAT ID</th>
<th>CLEANING FLUID ITEM NUMBER OR CAT ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>2054</td>
<td>30525000</td>
</tr>
<tr>
<td>DEF</td>
<td>2054</td>
<td>2055</td>
</tr>
</tbody>
</table>

ALWAYS CLEAN FROM THE CONNECTOR TOWARDS THE SEMI-CONDUCTING SHIELD. DO NOT EVER TOUCH THE INSULATION WITH THE AREA ON A TOWEL THAT HAS TOUCHED THE SEMI-CONDUCTING SHIELD.
STEP 17: LUBRICATE THE CABLE INSULATION AND INSULATION SHIELD WITH THE SILICONE GREASE PROVIDED IN THE SPLICE KIT OR WITH STOCKED GREASE, SEE TABLE 7. BE CERTAIN TO APPLY A LIBERAL AMOUNT OF SILICONE GREASE AT THE END OF THE SEMI-CONDUCTIVE SHIELD TO ELIMINATE THE POSSIBILITY OF AIR GAPS DEVELOPING IN THIS AREA.

TABLE 7 - SILICONE GREASE

<table>
<thead>
<tr>
<th>OPERATING AREA</th>
<th>ITEM NUMBER OR CAT ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>30520803</td>
</tr>
<tr>
<td>DEF</td>
<td>403133</td>
</tr>
</tbody>
</table>

APPLY SILICONE GREASE WITH A CLEAN TOWEL OR A PLASTIC BAG TURNED INSIDE OUT.

STEP 18: SLIDE THE SPLICE HOUSING ONTO THE CABLE WITH THE LONG CUTBACK DIMENSION. THE HOUSING MUST BE PUSHED FAR ENOUGH TO EXPOSE THE CRIMP AREA ON THE CONNECTOR FOR THE OTHER CABLE.


STEP 20: WIRE BRUSH THE CONDUCTOR OF THE CABLE WITH THE SHORT CUTBACK DIMENSION AND IMMEDIATELY PUSH THE CONNECTOR ONTO IT.

DO NOT USE OXIDE CLOTH TO BRUSH THE CONDUCTOR.

DO NOT REMOVE ANY OF THE OXIDE INHIBITOR FROM THE CONNECTOR BEFORE PUSHING IT ONTO THE CONDUCTOR.

STEP 21: CRIMP THE CONNECTOR WITH A 5/8" OR BG DIE. MAKE THE FIRST CRIMP NEAR THE CENTER OF THE CONNECTOR AND WORK TOWARD ITS END UNTIL THE APPROPRIATE NUMBER OF CRIMPS HAVE BEEN MADE. BE CERTAIN TO ROTATE THE CRIMP TOOL 90° BETWEEN EACH CRIMP.

STEP 22: REMOVE EXCESS OXIDE INHIBITOR WITH A TOWEL. TAKE SPECIAL CARE TO PREVENT THIS EXCESS INHIBITOR FROM GETTING ONTO THE CABLE INSULATION. THIS OXIDE INHIBITOR MUST BE REMOVED BEFORE ATTEMPTING TO CLEAN THE CABLE INSULATION.

STEP 23: CLEAN THE CABLE INSULATION WITH A CLEAN TOWEL AND CABLE CLEANING FLUID. SEE TABLE 6, TO REMOVE ANY CONTAMINATION OR PARTICLES OF THE SEMI-CONDUCTING SHIELD THAT MIGHT BE PRESENT ON THE INSULATION.

ALWAYS CLEAN FROM THE CONNECTOR TOWARDS THE SEMI-CONDUCTING SHIELD. DO NOT EVER TOUCH THE INSULATION WITH THE AREA ON A TOWEL THAT HAS TOUCHED THE SEMI-CONDUCTING SHIELD.

STEP 24: LUBRICATE THE CABLE INSULATION AND INSULATION SHIELD WITH THE SILICONE GREASE PROVIDED IN THE SPLICE KIT OR WITH THE STOCKED GREASE, SEE TABLE 7. BE CERTAIN TO APPLY A LIBERAL AMOUNT OF SILICONE GREASE AT THE END OF THE SEMI-CONDUCTIVE SHIELD TO ELIMINATE THE POSSIBILITY OF AIR GAPS DEVELOPING IN THIS AREA.

APPLY SILICONE GREASE WITH A CLEAN TOWEL OR A PLASTIC BAG TURNED INSIDE OUT.

STEP 25: SLIDE THE SPLICE HOUSING INTO FINAL POSITION BY CENTERING IT BETWEEN THE SEMI-CONDUCTING SHIELD CUTBACKS AS SHOWN IN FIGURE 4 OR FIGURE 5.
INSTALLING 200 AMP PRIMARY SPLICES:
LC SHIELDED CABLE TO LC SHIELDED CABLE
LC SHIELDED CABLE TO CONCENTRIC NEUTRAL CABLE

STEP 26: IF A 3M MODEL 5451 SPLICE IS BEING INSTALLED, USE THE FINGERTIPS OF BOTH HANDS TO ROLL OUT THE FOLDBACKS ON BOTH ENDS OF THE HOUSING. **SEE FIGURE 5.**
STEP 27: RUB THE EXPOSED PORTION OF THE LC SHIELD WITH 240 GRIT ALUMINUM OXIDE CLOTH IN ORDER TO REMOVE ANY SURFACE FILM THAT MIGHT BE PRESENT. (WIRE BRUSHING COULD DAMAGE THE LC SHIELD.) POSITION THE GROUND SOCK OVER THE CENTER OF THE CABLE JACKET CUTBACKS AND, STARTING AT EITHER END, FORM THE SOCK TO THE SHAPES COVERED.  SEE FIGURE 6. TWISTING THE GROUND SOCK WILL HELP TO MOLD IT TO THE SHAPE OF THE SPLICE HOUSING AND CABLE.

FIGURE 6
POSITIONING GROUND SOCK ON CABLE

STEP 28: WRAP ONE OF THE CONSTANT TENSION SPRINGS OVER THE GROUND SOCK AND LC SHIELD 1/4" FROM THE JACKET CUTBACK AS SHOWN IN FIGURE 7 PULL THE FINAL WRAP OF THE SPRING TO INSURE A TIGHT CONNECTION.

FIGURE 7
INSTALLING CONSTANT TENSION SPRING


NOTE: IF THE OTHER END IS LC SHIELD, REPEAT STEPS 27 THROUGH 30, THEN GO TO STEP 33

STEP 31: TWIST THE STRANDS ON THE OTHER END OF THE GROUND SOCK INTO A BUNDLE.

STEP 32: TWIST THE CONCENTRIC NEUTRAL WIRES INTO A BUNDLE. CONNECT THE BUNDLE OF CONCENTRIC NEUTRAL WIRES TO THE BUNDLE OF GROUND SOCK STRANDS WITH AN APPROPRIATE CONNECTOR AS SHOWN IN FIGURE 8A. CUT OFF ANY EXCESS LENGTHS OF CONCENTRIC NEUTRAL WIRES.

FILE ANY SHARP EDGES FROM NEUTRAL CONNECTION. APPLY A LAYER OF VINYL PLASTIC SEAL AROUND THE NEUTRAL CONNECTION TO PREVENT DAMAGE TO THE SEMI-CON AND SPLICE JACKET. SECURE IN PLACE WITH 3/4" VINYL TAPE. SEE FIGURE 8B.
INSTALLING 200 AMP PRIMARY SPLICES:
LC SHIELDED CABLE TO LC SHIELDED CABLE
LC SHIELDED CABLE TO CONCENTRIC NEUTRAL CABLE

STEP 33: TWIST THE GROUND SOCK TO INSURE THAT IT IS TIGHTLY FORMED AGAINST THE SPLICE HOUSING. PLACE SEVERAL WRAPS OF 3/4" VINYL TAPE AROUND THE GROUND SOCK IN VARIOUS LOCATIONS TO HOLD IT IN TIGHT CONTACT WITH THE SPLICE HOUSING. **SEE FIGURE 9.**

STEP 34: CLEAN THE LAST FIVE (5) INCHES OF BOTH CABLE JACKETS WITH CABLE CLEANING FLUID AND A CLEAN TOWEL. THEN SAND THIS AREA WITH 240 GRIT ALUMINUM OXIDE CLOTH.

STEP 35: APPLY THE RUBBER MASTIC PROVIDED IN THE KIT ON BOTH CABLE JACKET ENDS AS SHOWN IN **FIGURE 10.** PLACE THE STICKY SIDE TOWARD THE CABLE JACKET AND USE SLIGHT TENSION. APPLY FIVE (5) WRAPS OF MASTIC ON 1/0 25KV JACKETED CABLE AND USE THE ENTIRE ROLL FOR ANY 15KV CABLE OR 25KV UNJACKETED CABLE.

IF NECESSARY, IT IS ALLOWABLE TO APPLY VINYL TAPE TO THE EDGE OF THE MASTIC AFTER IT HAS BEEN WRAPPED ONTO THE CABLE IN ORDER TO MAKE IT EASIER TO REMOVE THE SPLICE JACKET CORE. HOWEVER, DO NOT COVER MORE THAN 1/2" OF THE TOP OF THE MASTIC WITH TAPE.

IT IS ALSO ALLOWABLE FOR SILICONE GREASE TO BE APPLIED OVER THE ENTIRE SURFACE OF THE MASTIC IN ORDER TO MAKE IT EASIER TO REMOVE THE SPLICE JACKET CORE.
STEP 36: INSTALL THE SMALL COLD-SHRINK JACKET ASSEMBLY ONTO THE CABLE WITH THE SHORT CUTBACK DIMENSION BY PULLING AND WINDING ITS CORE STRAND IN A COUNTER-CLOCKWISE MOTION.

IT IS CRITICAL TO WIND THE LOOSE CORE STRAND AROUND THE CABLE AS YOU PULL IT SO THAT THE STRAND WILL STAY EQUAL WITH THE POINT ON THE OTHER END OF THE CORE WHERE THE STRAND IS TEARING AWAY FROM THE CORE. THIS WILL PREVENT THE STRAND FROM WINDING AROUND THE SPLICE AND BINDING TO IT. AN OCCASIONAL TUG OF THE STRAND WHILE UNWINDING WILL OFTEN MAKE THE CORE REMOVAL EASIER AS WELL.

THIS SMALL COLD-SHRINK ASSEMBLY MUST COVER AT LEAST 3” OF THE LARGER DIAMETER PORTION OF THE SPLICE HOUSING AND AT LEAST 1” OF THE CABLE JACKET BEYOND THE MASTIC. **SEE FIGURE 11.**

![Figure 11](image1.png)

**FIGURE 11**
INSTALLING SMALL COLD-SHRINK JACKET ASSEMBLY

STEP 37: INSTALL THE LARGE COLD-SHRINK JACKET ASSEMBLY ONTO THE CABLE WITH THE LONG CUTBACK DIMENSION BY PULLING AND WINDING ITS CORE STRAND IN A COUNTER-CLOCKWISE MOTION.

IT IS CRITICAL TO WIND THE LOOSE CORE STRAND AROUND THE CABLE AS YOU PULL IT SO THAT THE STRAND WILL STAY EQUAL WITH THE POINT ON THE OTHER END OF THE CORE WHERE THE STRAND IS TEARING AWAY FROM THE CORE. THIS WILL PREVENT THE STRAND FROM WINDING AROUND THE SPLICE AND BINDING. AN OCCASIONAL TUG OF THE STRAND WHILE UNWINDING WILL OFTEN MAKE THE CORE REMOVAL EASIER AS WELL.

THIS LARGE COLD-SHRINK ASSEMBLY MUST COVER AT LEAST 2” OF THE PREVIOUSLY INSTALLED SMALL ASSEMBLY AND AT LEAST 1” OF THE CABLE JACKET BEYOND THE MASTIC. **SEE FIGURE 12.**

![Figure 12](image2.png)

**FIGURE 12**
INSTALLING LARGE COLD-SHRINK JACKET ASSEMBLY
1. Bond each splice to ground rod separately.

2. Ground required approximately every 1320' or minimum of 4 grounds per mile including equipment grounds.

3. For joint trench with other utilities, ground required approximately every 660' or a minimum of 8 grounds per mile including equipment grounds.
CLX (SUBMARINE CABLE) TO WATER IMPERVIOUS CABLE

PREPARING CLX CABLE FOR TRANSITION SPLICE

THIS PROCEDURE IS FOR DE-ENERGIZED CONDITIONS. USE PROPER SAFETY PROCEDURES AS OUTLINED IN THE ACCIDENT PREVENTION MANUAL. BEFORE WORKING ON CABLE, GROUND IT.

STEP ONE

COPPER SHIELDING TAPE

CLX CABLE

REMOVE POLYJACKET EXPOSING COPPER ARMOR TUBE

LENGTH OF CABLE DEPENDS ON THE TYPE OF SPLICE TO BE BUILT. SEE MANUFACTURER'S SPECIFICATIONS FOR CUT BACK MEASUREMENTS.

STEP TWO

SOLDER COPPER SHIELDING TAPE TOGETHER TO PREVENT UNWINDING

STEP THREE

TWO HALF LAPPED LAYERS OF #15 COPPER BRAID OVER EACH LEG AND CORRUGATED COPPER NEUTRAL, SOLDER TO COPPER SHIELDING TAPE AND ARMOR

TRANSITION SPLICE, CLX (SUBMARINE CABLE) TO WATER IMPERVIOUS CABLE

DWG. 26.01-12A

ROBESON GUINN ELKINS 8/12/10 REVISED BY CK'D APPR.
STEP FOUR

PUSH SEMICONDUCTIVE REJACKET TUBE AS FAR BACK TO #15 COPPER BRAID AS POSSIBLE. SHRINK DOWN AND COMPLETE OTHER TWO LEGS THE SAME WAY. CUT OFF ANY EXCESS TUBE.

SEMICONDUCTIVE REJACKET TUBE

SEMICONDUCTIVE REJACKET TUBE

SEMICONDUCTIVE REJACKET TUBE

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SEMICONDUCTIVE REJACTE
PREPARING WATER IMPERVIOUS CABLE FOR TRANSITION SPLICE

STEP ONE

DETERMINE LENGTH OF CABLE NEEDED FOR THE TYPE OF SPLICE BEING BUILT. SEE MANUFACTURER’S SPECIFICATIONS.

STEP TWO

REMOVE POLYJACKET PER MANUFACTURER’S SPECIFICATIONS.

CONCENTRIC NEUTRAL WIRES

POLYJACKET

STEP THREE

CLOTH HALF-LAPPED BEDDING TAPE UNDER CONCENTRIC NEUTRAL WIRES TO BE REMOVED BACK TO POLYJACKET EXPOSING THE WATER IMPERVIOUS SHEATH

STEP FOUR

WATER IMPERVIOUS SHEATH OVER SEMICON

NOTES:
1. WATER IMPERVIOUS SHEATH TO REMAIN OVER SHIELD.
2. IN STEP FOUR PREPARE CABLE PER MANUFACTURER’S SPECIFICATIONS.
3. WATER IMPERVIOUS SHEATH AND SEMICON SHIELD TO BE CONSIDERED AS ONLY SEMICON SHIELDING FOR CUTBACK DIMENSIONS.
STEP FIVE

IN STEP FIVE REMOVE INSULATION

PREPARING WATER IMPERVIOUS CABLE FOR TRANSITION SPLICE (CONT'D)

WATER IMPERVIOUS SHEATH OVER SEMICON SHIELD

INSULATION

CONDUCTOR

POLYJACKET WATER IMPERVIOUS CABLE

TRANSITION SPLICE, CLX (SUBMARINE CABLE)

TO WATER IMPERVIOUS CABLE
APPLICATION GUIDE

THE STRESS RELIEF ADAPTER OVERLAPS THE CONDUCTIVE REJACKETING TUBE ONE INCH FOR CONDUCTIVE CONTINUITY.

STRESS RELIEF ADAPTER

1"

1" BLEEDER WIRE

#10 SOLID WIRE

COPPER NEUTRAL

THE LENGTH OF JACKET REMOVAL DEPENDS ON THE TYPE OF SPLICE BEING MADE.

1-4/0 STR. INSULATED COPPER NEUTRAL

MOISTURE SEALED AREA DETAIL

INSTALLING THE NEUTRAL JUMPER AND BLEEDER WIRE

REJACKET TUBE

CLX CABLE

WATER IMPERVIOUS CABLE

INSULATED 1/0 WIRE

JUMPER AND BLEEDER WIRE INSTALLING THE NEUTRAL

COPPER NEUTRAL

1-4/0 STR. INSULATED COPPER TUBE

POLYJACKET CLX CABLE

ALL THREE COPPER HYLUGS TO BE BOLTED TO THE NEUTRAL AND MOISTURE SEALED COPPER "C" CRIMPITS OR COPPER HYLINKS SIZED TO FIT THE WIRE SIZE

CROSS BOND NEUTRAL CONNECTIONS FROM INDIVIDUAL WATER IMPERVIOUS LEGS

2" MOISTURE SEAL

MOISTURE SEALED AREA DETAIL

CLX CABLE

WATER IMPERVIOUS CABLE

JACKET TAPE

SCOTCH TAPE

MOISTURE SEAL

CLX CABLE

MATERIALS

SCOTCH OR PLASTIC TAPE OVER JACKET TAPE (3-HALF LAP LAYERS)

JACKET TAPE OVER MOISTURE SEAL (2-HALF LAP LAYERS)

MOISTURE SEAL OVER 4/0 NEUTRAL AND CLX COPPER TUBE

NOTE:

1. T-BODIES ARE TO BE BUILT TO THE MANUFACTURER'S SPECIFICATIONS.
STRAIGHT SPLICE APPLICATION FOR TRANSITION SPLICE

STRAIGHT SPLICE DETAIL
NOT TO SCALE

MOISTURE SEAL
SEE DETAIL

MOISTURE SEALED AREA
SEE DETAIL

CLX CABLE

WATER IMPERVIOUS CABLE

CLX TO WATER IMPERVIOUS
STRAIGHT SPLICE

TRANSITION SPLICE, CLX (SUBMARINE CABLE)
TO WATER IMPERVIOUS CABLE
THIS PROCEDURE IS FOR DE-ENERGIZED CONDITIONS.
USE PROPER SAFETY PROCEDURES AS OUTLINED IN
THE ACCIDENT PREVENTION MANUAL. NEUTRALS SHOULD
BE JUMPERED OUT UNTIL CONCENTRIC NEUTRALS
ARE SPLICED.
BEFORE WORKING ON CABLE, GROUND IT.
PROPER TOOLS MUST BE USED
IN CABLE PREPARATION. AVOID
THE USE OF KNIVES IN CABLE
PREPARATION.

CONDUCTOR INSULATION
SEMI-CONDUCTING INSULATION SHIELD
CONCENTRIC NEUTRAL
SPLICES ARE PROVIDED WITH LOW VISCOSITY GREASE TO
AID ASSEMBLY. DO NOT USE THIS GREASE ON ELBOWS
AND BUSHINGS BECAUSE IT WILL MAKE SEPARATION VERY
DIFFICULT. USE ONLY HEAVY GREASE ON ELBOWS
AND BUSHINGS TO ALLOW LONG TERM SEPARATION.

REMOVE JACKET AND UNWRAP NEUTRAL WIRES TO MANUFACTURER’S SPECIFIED LENGTH FOR EACH CABLE. CUT CABLE SQUARE AND EVEN. REMOVE THE PROPER AMOUNT OF INSULATION SO THAT THE CONNECTOR CAN BE INSTALLED. STRIP LENGTHS VARY BY SPLICE OR WIRE SIZE. USE THE DIMENSIONS ON THE INSTRUCTION SHEET THAT CAME WITH THE SPLICE.

PROVIDE SUFFICIENT NEUTRAL CONDUCTOR TO BRIDGE THE SPLICE. CAREFULLY CUT AND REMOVE THE EXPOSED INSULATION SHIELD. CUT CABLE INSULATION SHIELD SQUARELY, BEING CAREFUL NOT TO SCORE OR CUT THE CABLE INSULATION. BEVEL THE EDGE OF THE CABLE INSULATION TO THE PROPER DIMENSIONS SPECIFIED BY THE MANUFACTURER.

CLEAN THE OUTER JACKET AND THOROUGHLY CLEAN THE INSULATION TO REMOVE ALL TRACES OF SEMI-CONDUCTING RESIDUE. USE A CLOTH DAMPENED WITH APPROVED CLEANING SOLVENT. ALWAYS WIPE FROM THE END OF THE CABLE TOWARD THE OUTER JACKET.

THIS HOUSING COMES WITH A #1/0 TO #1/0 SOLID CONDUCTOR SPLICING SLEEVE. FOR OTHER SIZE CONDUCTORS, SUBSTITUTE APPROPRIATE SPLICING SLEEVE.
CONFIRM THAT THE INSIDE OF THE SPLICE HOUSING IS CLEAN.

USING THE SILICONE GREASE THAT WAS PROVIDED IN THE KIT, LUBRICATE THE SPLICE BODY AND SEMI-CONDUCTING INSULATION SHIELD OF THE CABLE THAT WAS STRIPPED BACK 12".

TIP: THE PLASTIC NOSE OR ELECTRICAL TAPE ON END OF CONDUCTOR CAN HELP PREVENT DAMAGE TO THE INTERIOR OF SPLICE BODY AND THE CONDUCTOR.

SLIDE SPLICE BODY ON THE LONG STRIP BACK SIDE OF THE CABLE SO AS NOT TO DAMAGE THE INTERIOR OF THE SPLICE BODY.

CLEAN INSULATION AND WIRE BRUSH CONDUCTOR.

SLIDE CONNECTOR ONTO CONDUCTOR UNTIL FIRMLY SEATED. CRIMP THE CONNECTOR. DO NOT OVERLAP CRIMPS.

MAKE THE REQUIRED NUMBER OF CRIMPS ON EACH SIDE. WIPE OFF EXCESS INHIBITOR.

FOR 1/0 SOL. WIRE, USE ONLY 5/8" NOSE DIE (CN 415101). DO NOT USE BURNDY OH25 (CN 415109).

REMOVE EXCESS LUBRICANT AND INHIBITOR.

### Table: Dimensions

<table>
<thead>
<tr>
<th>Non-Crimp Area</th>
<th>Dimensions</th>
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<tbody>
<tr>
<td>Manufacturer</td>
<td>Consult Kit Instructions for proper dimensions</td>
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</table>

CRIMP THE CONNECTOR PER THE MANUFACTURER'S INSTRUCTIONS. CONSULT CRIMPING TABLE IN KIT INSTRUCTIONS.

---

**200 AMP STRAIGHT SPLICE**
CLEAN AND GREASE THE CABLE AND CONNECTOR ON THE SHORT SIDE. SLIDE SPLICE INTO POSITION OVER THE STRIPPED CABLE AND CONDUCTOR USING BUMPS FORMED ON THE TWO ENDS OF THE SPLICE AS A HOUSING CENTERING GUIDE.

NOTE: CENTERING SPLICE BODY OVER CONNECTOR IS VERY IMPORTANT FOR STRESS RELIEF.

POSITION CONCENTRIC NEUTRAL WIRES BACK OVER CABLE AND SPLICE. ATTACH ONE STRAND FROM EACH CABLE TO ITS RESPECTIVE GROUNDING EYE. JOIN NEUTRAL WIRES USING COPPER "C" CONNECTOR.

WATER SEALING

NOTE: THE SPLICE BODY BETWEEN THE JACKETED CABLES SHOULD BE KEPT AS STRAIGHT AS POSSIBLE TO AVOID MECHANICAL STRESSES AND WATER LEAKAGE INTO THE SPLICE BODY.

APPLY AQUA-SEAL TO AREA 1 AND AREA 2. THEN APPLY SELF AMALGAMATED TAPE (CN 390303) FROM JACKET TO JACKET OVERLAPPING (AREA 3). THEN COVER AREA 3 WITH ELECTRICAL TAPE OVERLAPPING.
THIS PROCEDURE IS FOR DE-ENERGIZED CONDITIONS. USE PROPER SAFETY PROCEDURES AS OUTLINED IN THE ACCIDENT PREVENTION MANUAL. BEFORE WORKING ON CABLE, GROUND IT.

STRIP INSULATION FROM CABLE ENDS. AMOUNT OF BARE CONDUCTOR SHOULD EQUAL THE LENGTH OF PROPER SLEEVE PLUS 1/4".

WIRE BRUSH THE CONDUCTORS. INSERT CONDUCTORS INTO THE CONNECTOR AND CRIMP. APPLY AQUA SEAL TO AREA 1. THEN APPLY SELF AMALGAMATED TAPE (SNAKE SKIN) TO AREA 2 AND ELECTRICAL TAPE TO AREA 3.

**INSTALLATION INSTRUCTIONS**

**STEP 1:**
Check above for the insulation removal length and remove this amount from both ends of the cable. Select the correct ring diameter and cut off both ends of the splice housing leaving the correct cable size showing on the open splice cover. Use silicone lubricant to lubricate each cable entrance and the connecting parts of the housing. Slide an end of the splice housing onto each end of the cable.

**STEP 2:**
Wire brush conductor and immediately insert into sleeve, making sure the proper die and tool is used, and the proper number of crimps are made. Rotate successive crimps to keep splice straight. Clean off inhibitor with a clean cloth moistened with solvent.

Wire brush the conductors and immediately insert conductors into the mechanical sleeve and tighten set screws to manufacturer's specifications. Clean off inhibitor with a clean cloth moistened with solvent.

**STEP 3:**
Position the short end of the splice housing over the sleeve and slide the other end of the housing onto the short end to ensure proper positioning of the housing.

---

**NOTES:**
1. Completed splice and cable must be straight to prevent leaking.
2. See DWG. 20.03-03 for storms code.
**STEP 1: TRAIN CABLE**

- **MARKER TAPE**
- **1/4" BEVEL**

**STEP 2: PREPARE CABLE**

A. PREPARE CABLE AS SHOWN IN THE VIEW ABOVE.

1. TO REMOVE LC SHIELD, TEMPORARILY PLACE A HOSE CLAMP OR THE CONSTANT FORCE SPRING AT THE CUTBACK POINT. USING NEEDLE NOSE PLIERS, PULL THE LC SHIELD DOWN ALONG THE EDGE. THIS WILL SEPARATE THE LC SHIELD. USING PLIERS, GRAB THE LC SHIELD NEAR CUT BACK POINT (TENSION SPRING) AND TEAR OFF SHIELD AROUND CABLE. THE SHIELD WILL RIP AWAY AT THE EDGE OF THE CLAMP.

**IMPORTANT:** DO NOT EXTEND SCORING BLADE THROUGH INSULATION SHIELD (SEMI-CON) INTO INSULATION.

**NOTE:** USE APPROVED PRE-SETTABLE DEPTH TOOLS TO REMOVE THE OUTER JACKET, INSULATION SHIELD (SEMI-CON) AND INSULATION.

**STEP 3: REMOVE INSULATION**

A. REMOVE INSULATOR 4-3/8" FROM END OF CABLE.

B. PLACE MARKER TAPE 1" FROM END OF INSULATION SHIELD.

C. BEVEL INSULATION 45° FOR APPROXIMATELY 1/4"

**STEP 4: INSTALL CABLE ADAPTER**

A. WIPE EXPOSED INSULATION THOROUGHLY WITH CLEAN CLOTH MOISTENED WITH CABLE CLEANING FLUID. WIPE IN DIRECTION AWAY FROM SEMI-CONDUCTING SHIELD. DO NOT POUR CLEANING FLUID DIRECTLY ON CABLE. ALLOW CABLE TO DRY COMPLETELY BEFORE PROCEEDING.

**IF NEEDED:** REMOVE NICKS AND ALL TRACES OF BLACK, SEMI-CONDUCTING PARTICLES RESIDUE FROM EXPOSED INSULATION BY SANDING WITH NON-METALLIC SANDING CLOTH.

CABLE ADAPTER WITH SILICONE GREASE PROVIDED. SLIDE CABLE ADAPTER OVER CABLE UNTIL BACK END OF ADAPTER IS FLUSH WITH MARKING TAPE ON SEMI-CONDUCTING INSULATION SHIELD.

**LC SHIELD IS SHARP, WEAR WORK GLOVES**
STEP 5: INSTALL CONNECTOR

A. WIRE BRUSH BARE CONDUCTOR WITH LAY OF STRAND TOWARD END OF CABLE CLEANING ALL "STRAND SEAL" FROM THE OUTER SURFACE.

B. PLACE TERMINAL LUG ON CONDUCTOR. BEFORE MAKING FIRST CRIMP, ALIGN THE TERMINAL LUG SO THE HOLE IN THE LUG WILL ALIGN WITH THE THREADED STUD ON THE CONNECTOR PLUG OR APPARATUS BUSHING.

C. MAKE FIRST CRIMP AT SHOULDER ON TERMINAL LUG. BE SURE TO KEEP CABLE BOTTOMED IN THE TERMINAL LUG WHEN MAKING THE FIRST CRIMP. ROTATE ALTERNATE CRIMPS 90 DEGREES.

STEP 6: INSTALL ELBOW HOUSING

A. WIPE ALL EXCESS INHIBITOR FROM TERMINAL LUG AND ADAPTER SURFACE.

B. SLIDE COLD SHRINK SEALING TUBE (PGN CN 9220098623) OVER CABLE AND POSITION BACK OUT OF THE WAY.

C. REMOVE PROTECTIVE CAP FROM ELBOW HOUSING CABLE ENTRANCE. LUBRICATE CABLE ADAPTER AND INSIDE OF ELBOW HOUSING WITH SILICONE LUBRICANT PROVIDED. SLIDE THE CABLE INTO THE BODY OF ELBOW HOUSING UNTIL THE CABLE CANNOT ADVANCE FURTHER.

STEP 7: INSTALL MASTIC SEAL

A. VERIFY PROPER INSTALLATION OF ELBOW HOUSING IN ACCORDANCE WITH DETAIL 'A'.

B. SELECT ONE OF THREE-MASTIC STRIP FROM LC SHIELD GROUNDING KIT (PGN CN 9220098623). REMOVE LINER AND WRAP MASTIC AROUND CABLE JACKET 1/2 INCH FROM CUT EDGE. DISCARD ANY EXCESS.
**STEP 8: INSTALL GROUND BRAID/BLEEDER WIRE**

A. POSITION TWIN PRE-FORMED GROUND BRAID WITH ONE TAIL ALONG CABLE JACKET AND SOLDER-BLOCK CENTERED ON MASTIC STRIP. A TEMPORARY BINDER OF VINYL TAPE WILL EASE STRAP INSTALLATION.

**STEP 9: INSTALL CONSTANT FORCE SPRING**

A. WRAP BRAID AROUND CABLE METALLIC SHIELD AND SECURE IN PLACE WITH CONSTANT FORCE SPRING. CLINCH (TIGHTEN) LAST LAP OF SPRING.

B. POSITION SECOND TAIL OF THE PRE-FORMED GROUND BRAID ALONG CABLE JACKET WITH SOLDER-BLOCK CENTERED ON MASTIC STRIP. (A SECOND TEMPORARY BINDER OF VINYL TAPE MAY EASE STRAP INSTALLATION).

C. APPLY A SECOND MASTIC STRIP LAYER OVER SOLDER BLOCKS OF GROUND BRAID.

NOTE: IF TAIL OF GROUND STRAP OVERLAPS AT MASTIC, BE SURE TO APPLY STRIP OF MASTIC BETWEEN SOLDER BLOCK OF GROUND STRAPS.

**STEP 10: INSTALL VINYL 3/4” TAPE**

A. STARTING ON THE CABLE LC SHIELD (AHEAD OF THE CONSTANT FORCE SPRING) WRAP TWO HALF-LAPPED LAYERS OF 3/4 INCH VINYL TAPE EXTENDING 1/4 INCH BEYOND MASTIC ONTO CABLE JACKET. RETURN TO STARTING POINT TO COMPLETE SECOND LAYER.

NOTE: APPLY 3/4” TAPE IN THE SAME DIRECTION OF CONSTANT FORCE SPRING. THIS WILL CINCH CONSTANT FORCE SPRING DOWN.
STEP 11: INSTALL COLD SHRINK SEAL

A. APPLY A THIRD MASTIC STRIP TO SEAL AREA 1/4" ABOVE BOTTOM OF ELBOW HOUSING COVER WITH ONE LAYER OF VINYL TAPE.

B. POSITION COLD-SHRINK INSULATOR TO ALIGN WITH STEP IN THE T-BODY AS SHOWN (OVERLAP AT LEAST 1" MIN. TO 1-1/4" MAX).

C. REMOVE INSULATOR CORE BY PULLING WHILE UNWINDING (COUNTER-CLOCKWISE).

D. TRAIN LEAKAGE/DRAIN WIRE TO T-BODY. BE SURE NO PULLING STRESS IS AT COLD SHRINK LOCATION.
**Installation Guidelines**

Position the cable so it is located in the final assembled position with enough slack to provide adequate clearance for future cable movement.

Remove jacket and unwrap neutral wires to manufacturer’s specified length for each cable. Cut cable square and even. Use the dimensions on the instruction sheet that came with the kit.

Carefully cut and remove the exposed insulation shield. Cut cable insulation shield squarely, being careful not to score or cut the cable insulation. Install tape marker to manufacturer’s dimension shown.
REMOVE INSULATION TO THE PROPER DIMENSIONS SPECIFIED BY THE MANUFACTURER. BEVEL THE EDGE OF THE CABLE INSULATION.

CLEAN THE OUTER JACKET AND THOROUGHLY CLEAN THE INSULATION TO REMOVE ALL TRACES OF SEMI-CONDUCTING RESIDUE. USE A CLOTH SOAKED WITH APPROVED CLEANING SOLVENT. ALWAYS WIPE FROM THE END OF THE CABLE TOWARD THE OUTER JACKET.

THOROUGHLY LUBRICATE THE CABLE INSULATION, ALWAYS WORKING TOWARD THE INSULATION SHIELD.

PUSH ONE ADAPTER TUBE ONTO EACH CABLE WITH A TWISTING MOTION. WHEN PROPERLY POSITIONED, THE END OF THE ADAPTER TUBE SHOULD ALIGN WITH THE MARKER TAPE ON THE INSULATING SHIELD.

NOTE: WHEN PROPERLY POSITIONED, THE INTERNAL STEP IN THE END OF THE ADAPTER TUBE IS FIRMLY AGAINST THE EDGE OF THE SEMICONDUCTING SHIELD, BUT DOES NOT GO PAST IT.
CLEAN CONDUCTOR

WIRE BRUSH THE CONDUCTOR AND IMMEDIATELY INSERT INTO THE COMPRESSION LUG. ROTATE CONNECTOR TO DISTRIBUTE INHIBITOR. ROTATE CONNECTOR INTO ALIGNMENT WITH FINISHED T-BODY POSITION. CRIMP THE CONNECTOR. DO NOT OVERLAP CRIMPS.

MAKE THE REQUIRED NUMBER OF CRIMPS ON EACH SIDE.

REMOVE EXCESS LUBRICANT

CAUTION: SHARP EDGES PRODUCED BY CRIMPING SHOULD BE SMOOTHED BY FILING. BE SURE ALL FILINGS HAVE BEEN REMOVED FROM CABLE.

NOTE: BE SURE CONNECTOR FLAT IS PROPERLY ALIGNED FOR COMPLETE INSTALLATION WITH MINIMUM CONDUCTOR STRAIN.

LUBRICATE ADAPTER TUBE AND INSIDE OF ELBOW CABLE ENTRANCE. INSTALL ELBOW ONTO ADAPTER TUBE UNTIL THE ELBOW CANNOT ADVANCE FURTHER. REMOVE TAPE MARKER.

NOTE: MAKE SURE CABLE ADAPTER IS STILL FLUSH WITH TAPE MARKER. IF NOT, REPOSITION CABLE ADAPTER.
CLEAN AND LUBRICATE MATING INTERFACES OF T-BODY AND MATING PARTS (e.g., INSULATING PLUG, REDUCING WELL PLUG OR DEADBREAK TAP PLUG).

INSERT PLUG INTO T-BODY, LINING UP THE HOLE IN THE COMPRESSION CONNECTOR WITH THE STUD ON THE MATING PART.

CLEAN AND LUBRICATE MATING INTERFACES OF APPARATUS BUSHING AND T-BODY WITH LUBRICANT SUPPLIED.

**Equipment Application**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
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<tbody>
<tr>
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<tr>
<td>ELBOW WITH 500 KCMIL ADAPTER</td>
<td>EB5006DB15F</td>
</tr>
<tr>
<td>ELBOW WITH 750 KCMIL ADAPTER (LC SHIELD GROUND KIT)</td>
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</tr>
<tr>
<td>ELBOW 1000 KCMIL (LC SHIELD GROUND KIT)</td>
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<tr>
<td>1000 KCMIL</td>
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NOTES:

1. A REDUCING WELL PLUG OR DEADBREAK TAP PLUG REQUIRES AN INSULATED MATING APPARATUS ON THE 200A INTERFACE. TO CAP INTERFACE, FOLLOW INSTRUCTIONS SUPPLIED WITH APPARATUS USED.

2. THE 200A LOADBREAK BUSHING CAN BE USED FOR:
   - TEST POINT (FULL VOLTAGE)
   - ELBOW ARRESTER
   - GROUNDING

CONNECT TIE-OFF TAB OF T-BODY WITH AT LEAST ONE STRAND OF DRAIN WIRE TO CABLE CONCENTRIC NEUTRAL WIRES.
INSTRUCTIONS FOR INSTALLING 200 AMP ELBOWS ON 15KV OR 25KV CABLE IN NON-SUBMERSIBLE APPLICATIONS

NOTES: LEAVE THE ELBOW AND INSERT IN THE PLASTIC BAG AS LONG AS POSSIBLE IN ORDER TO PREVENT CONTAMINATION.
TAKE PRECAUTION TO KEEP THE ARC TIP ON ELBOW PROBES AS CLEAN AS POSSIBLE. THIS INCLUDES ANY CONTACT WITH SKIN.

INSTALLATION INSTRUCTIONS

STEP 1: FOLLOW ALL SAFETY RULES AND PROCEDURES TO INSURE CONDUCTORS ARE SAFE TO HANDLE.

STEP 2: TRAIN CABLE TO THE CENTER OF THE TRANSFORMER BUSHING AS SHOWN IN FIGURE 3. THE CABLE MUST FORM A GRADUAL ARC FROM THE GROUND TO THE BUSHING IN ORDER TO PROVIDE ENOUGH CABLE TO REACH BOTH BUSHINGS AND THE STANDOFF BRACKET. THIS WILL ALLOW FOR FUTURE SWITCHING.

STEP 3: CUT THE CABLE SQUARELY AT THE CENTER OF THE TRANSFORMER BUSHING.

STEP 4: REMOVE THE AMOUNT OF CABLE JACKET SHOWN IN FIGURE 4.

STEP 5: REMOVE THE LC SHIELD, EXCEPT FOR THE LENGTH SHOWN IN FIGURE 4 WHICH WILL EXTEND BEYOND THE END OF THE CABLE JACKET.

THE LC SHIELD IS TO BE REMOVED BY PLACING ONE OF THE CONSTANT TENSION SPRINGS PROVIDED IN THE GROUND BRAID KIT ON THE LC SHIELD AT THE POINT WHERE THE SHIELD IS TO END, SEPARATING THE OVERLAP OF THE LC SHIELD, AND THEN TEARING OFF THE LC SHIELD AT THE CONSTANT TENSION SPRING. THE LC SHIELD OVERLAP MAY BE SEPARATED BY ROLLING THE GAP OPEN WITH CHANNEL-LOCK PLIERS, TEARING OFF THE OVERLAP BY TWISTING IT AROUND NEEDLE-NOSE PLIERS, OR BY TEARING OFF THE OVERLAP BY GRABBING THE OVERLAP WITH PLIERS AND PULLING IT STRAIGHT DOWN THE CABLE.

FIGURE 3
CUTTING CABLE TO PROPER LENGTH

FIGURE 4
CUTTING CABLE TO PROPER LENGTH
STEP 6: **USE AN APPROPRIATE TOOL** AND SCORE THE SEMI-COONDUCTIVE INSULATION SHIELD SO THE LENGTH
OF THE SHIELD SHOWN IN **FIGURE 4** CAN BE REMOVED; HOWEVER, **DO NOT** REMOVE THE SHIELD AT
THIS TIME.

**NEVER USE A KNIFE TO REMOVE THIS SHIELD.**

STEP 7: REMOVE THE AMOUNT OF INSULATION SHOWN IN **FIGURE 4**.

IT IS NOT REQUIRED TO BEVEL THE EDGE OF THE CABLE INSULATION WHEN INSTALLING AN ELBOW,
BUT THIS DOES ALLOW THE ELBOW TO BE MORE EASILY INSTALLED. BEVEL NO MORE THAN THE LAST
1/4" OF THE INSULATION. THIS CAN BE ACCOMPLISHED WITH A BEVELING TOOL OR KNIFE.


**DO NOT SAND THE CABLE INSULATION EXCEPT WHEN IT IS NECESSARY.**

![Diagram of cable end]

**FIGURE 4**
PREPARING CABLE END

STEP 9: VERIFY THAT ALL CUTBACKS HAVE BEEN MADE TO THE PROPER DIMENSION. CORRECT THE INSULATION
AND SEMI-COONDUCTIVE SHIELD CUTBACKS IF THEY ARE NOT WITHIN 1/8" OF THE DIMENSIONS
PROVIDED IN **FIGURE 4**.

STEP 10: VERIFY THAT THE RING CUT ON THE SEMI-COONDUCTIVE SHIELD IS STRAIGHT AND SMOOTH ALL THE
WAY AROUND THE CABLE. NO POINTS OR UNEVENNESS MAY EXIST. CORRECT ANY IRREGULARITIES
THAT EXIST. THESE IRREGULARITIES MAY BE REMOVED WITH A KNIFE AS LONG AS **EXTREME CAUTION**
IS USED AND THAT **NO** NICKS ARE MADE INTO THE CABLE INSULATION.

STEP 11: VERIFY THAT THE INSULATION IS SMOOTH AND FREE OF ANY NICKS OR CUTS BY CAREFULLY
RUBBING IT WITH YOUR FINGERS. ANY NICKS, CUTS, OR DENTS MUST BE REMOVED WITH 240 GRIT
ALUMINUM OXIDE CLOTH, SEE TABLE 1. **DO NOT USE 120 GRIT ALUMINUM OXIDE CLOTH.**

<table>
<thead>
<tr>
<th>TABLE 1 - NON-METALLIC ALUMINUM OXIDE CLOTH</th>
</tr>
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<tbody>
<tr>
<td>OPERATING AREA</td>
</tr>
<tr>
<td>DEP</td>
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<td>DEF</td>
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</table>

**IF CUTS WERE MADE INTO THE INSULATION AS A RESULT OF THE STRIPPING TOOL BEING SET TOO
DEEP, THEN THE RING CUT MUST BE RELOCATED TO ALLOW THIS CUT TO BE Sanded OUT OF THE
INSULATION. THIS CAN BE ACCOMPLISHED BY CUTTING AT LEAST 3/4" OFF THE CONDUCTOR AND THEN
REMAKING ALL CUTBACKS FROM THAT POINT.**
STEP 12: WIRE BRUSH THE CONDUCTOR OF THE CABLE AND IMMEDIATELY PUSH IT INTO THE CONNECTOR.

- DO NOT USE OXIDE CLOTH TO BRUSH THE CONDUCTOR.
- DO NOT REMOVE ANY OF THE OXIDE INHIBITOR FROM THE CONNECTOR BEFORE PUSHING IT ONTO THE CONDUCTOR.

POSITION THE CONNECTOR ON THE CONDUCTOR SO THAT THE FLAT SIDE FACES THE TRANSFORMERS BUSHING WHEN THE CABLE IS TRAINED INTO POSITION. BUTT THE CONNECTOR AGAINST THE CONDUCTOR AND CRIMP ACCORDING TO THE MANUFACTURER’S INSTRUCTIONS. STARTING AT THE "TOP" OF THE CONNECTOR (THE CRIMP MARK NEAREST THE THREADED HOLE), MAKE FOUR (4) CRIMPS USING A 5/8" OR BG DIE. SUCCESSIVE CRIMPS WILL PROGRESS TOWARD THE CABLE INSULATION AND THE CRIMPING TOOL MUST BE ROTATED 90° BETWEEN EACH CRIMP TO PREVENT THE CONNECTOR FROM BOWING. SEE FIGURE 5. REMOVE ANY SHARP FLASH.

**FIGURE 5**
POSITIONING AND CRIMPING THE CONNECTOR TO THE CONDUCTOR
INSTRUCTIONS FOR INSTALLING 200 AMP ELBOWS
ON 15KV OR 25KV CABLE
IN NON-SUBMERSIBLE APPLICATIONS

STEP 12: (ALTERNATIVE)
THIS PROCEDURE MAY BE FOLLOWED INSTEAD OF THE ONE LISTED IN STEP 12 IF THE TRANSFORMER IS DE-ENERGIZED AND ALL APPLICABLE SAFETY PROCEDURES ARE FOLLOWED.

A. INSERT THE THREADED END OF THE PROBE INTO THE EYE OF THE COMPRESSION CONNECTOR, HAND TIGHTEN, AND INSERT THE PROBE INTO THE BUSHING INSERT OR A STANDOFF INSERT IN ORDER TO POSITION THE CONNECTOR.

TAKE PRECAUTIONS TO PREVENT TOUCHING THE ARC TIP ON THE PROBE WITH YOUR HANDS AND TO PREVENT IT FROM BECOMING CONTAMINATED. HOLD IT IN A TOWEL IF NECESSARY.

B. WIRE BRUSH THE CONDUCTOR OF THE CABLE AND IMMEDIATELY PUSH IT INTO THE CONNECTOR.

DO NOT USE OXIDE CLOTH TO BRUSH THE CONDUCTOR.

DO NOT REMOVE ANY OF THE OXIDE INHIBITOR FROM THE CONNECTOR BEFORE PUSHING IT ONTO THE CONDUCTOR.

C. MAKE ONE CRIMP AT THE "TOP" OF THE CONNECTOR (THE CRIMP MARK NEAREST THE THREADED HOLE) USING A 5/8" OR BG DIE.

D. REMOVE THE PROBE FROM THE BUSHING INSERT AND UNSCREW THE PROBE FROM THE CONNECTOR.

E. MAKE THE REMAINING THREE (3) CRIMPS USING A 5/8" OR BG DIE. SUCCESSIVE CRIMPS WILL PROGRESS TOWARD THE CABLE INSULATION AND THE CRIMPING TOOL SHOULD BE ROTATED 90° BETWEEN EACH CRIMP TO PREVENT THE CONNECTOR FROM BOWING. REMOVE ANY SHARP FLASH.

STEP 13: REMOVE EXCESS OXIDE INHIBITOR WITH A TOWEL. TAKE SPECIAL CARE TO PREVENT THIS EXCESS INHIBITOR FROM GETTING ONTO THE CABLE INSULATION. THIS OXIDE INHIBITOR MUST BE REMOVED BEFORE ATTEMPTING TO CLEAN THE CABLE INSULATION.

STEP 14: CLEAN THE CABLE INSULATION WITH A CLEAN TOWEL AND CABLE CLEANING FLUID, SEE TABLE 2, TO REMOVE ANY CONTAMINATION OR PARTICLES OF THE SEMI-CONDUCTING SHIELD THAT MIGHT BE PRESENT ON THE INSULATION.

STEP 15: LUBRICATE THE CABLE INSULATION AND INSULATION SHIELD WITH THE SILICONE GREASE PROVIDED IN THE ELBOW KIT OR WITH GREASE FROM STOCK (SEE TABLE 3). BE CERTAIN TO APPLY A LIBERAL AMOUNT OF SILICONE GREASE AT THE END OF THE SEMI-CONDUCTIVE SHIELD TO ELIMINATE THE POSSIBILITY OF AIR GAPS DEVELOPING IN THIS AREA.

### TABLE 2 - TOWEL AND CLEANING FLUID

<table>
<thead>
<tr>
<th>OPERATING AREA</th>
<th>TOWEL ITEM NUMBER OR CAT ID</th>
<th>CLEANING FLUID ITEM NUMBER OR CAT ID</th>
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</table>

ALWAYS CLEAN FROM THE CONNECTOR TOWARDS THE SEMI-CONDUCTING SHIELD. DO NOT EVER TOUCH THE INSULATION WITH THE AREA ON A TOWEL THAT HAS TOUCHED THE SEMI-CONDUCTING SHIELD.

### TABLE 3 - SILICONE GREASE

<table>
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<tr>
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APPLY SILICONE GREASE WITH A CLEAN TOWEL, OR A PLASTIC BAG TURNED INSIDE OUT.
STEP 16: SLIDE THE BODY OF THE ELBOW ONTO THE CABLE USING A BACK AND FORTH MOTION UNTIL THE THREADED EYE OF THE CONNECTOR IS CENTERED IN THE ELBOW CAVITY. THE LAST 1/2" OF THE RUBBER IN THE ELBOW IS KEYED TO ACCEPT THE FLAT PORTION OF THE CONNECTOR. NO ROTATION SHOULD OCCUR IN THE LAST 1/2" OF INSERTION IN ORDER TO PREVENT DAMAGE TO THE CONDUCTOR. REMOVE ALL EXCESS SILICONE GREASE.


**TABLE 4 - PROBE INSERTION TORQUE WRENCH**

<table>
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</thead>
<tbody>
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<tr>
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<td>414453</td>
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</table>

DO NOT APPLY GREASE TO THE PROBE THREADS OR ANY OTHER PART OF THE PROBE. TAKE PRECAUTIONS TO PREVENT TOUCHING THE ARC TIP ON THE PROBE WITH YOUR HANDS AND TO PREVENT IT FROM BECOMING CONTAMINATED. HOLD IT IN A TOWEL IF NECESSARY.

**SKIP TO STEP 21 IF CONCENTRIC NEUTRAL CABLE IS BEING USED.**

STEP 18: RUB THE EXPOSED PORTION OF THE LC SHIELD WITH 240 GRIT ALUMINUM OXIDE CLOTH IN ORDER TO REMOVE ANY SURFACE FILM THAT MIGHT BE PRESENT. (WIRE BRUSHING COULD DAMAGE THE LC SHIELD.) POSITION THE PREFORMED GROUND BRAID, (SEE TABLE 5), WITH THE “U” SECTION OVER THE EXPOSED LC SHIELD WITH THE FOLDS FACING OUTWARD AND THE TWO TAILS EXTENDING ALONG THE CABLE JACKET. SEE **FIGURE 6**.

**TABLE 5 - LC SHIELD GROUND BRAID FOR 200 AMP ELBOW**

<table>
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<tr>
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</thead>
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</table>

STEP 19: SECURE THE BRAID TO THE LC SHIELD BY WRAPPING A CONSTANT TENSION SPRING AROUND THE PORTION OF THE BRAID THAT IS POSITIONED OVER THE LC SHIELD AS SHOWN IN **FIGURE 6**. BE CERTAIN TO TWIST THE LAST WRAP OF THE SPRING TO INSURE THAT IT IS TIGHT.

**Figure 6**

Installing Prefomed Braid

INSTRUCTIONS FOR INSTALLING 200 AMP ELBOWS ON 15KV OR 25KV CABLE IN NON-SUBMERSIBLE APPLICATIONS

26.04-00E
STEP 20: Tightly wrap two half-lapped layers of 3/4" vinyl tape (see Table 6) in the same direction as the constant tension spring from the edge of the LC shield, across the constant tension spring, and down the cable jacket to the point where it covers the solder connection of the drain wire on the ground braid. See Figure 7.

Do not place vinyl tape on the semi-conducting shield.

### Table 6 - 3/4" Vinyl Tape

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</table>

**Figure 7**

Applying vinyl tape and attaching bleeder wire

STEP 21: Loop the drain wire (single wire attached to the grounding braid), or one of the concentric neutral strands if using concentric neutral cable, through the grounding eye on the elbow and wrap lightly as shown in Figure 7. Be careful not to damage the grounding eye. Cut off any excess lengths of the drain wire on the ground braid and use this, or stocked drain wire see Table 7, to ground the surface of the bushing insert.

### Table 7 - Drain Wire

<table>
<thead>
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</table>
INSTRUCTIONS FOR INSTALLING 200 AMP ELBOWS ON 15KV OR 25KV CABLE IN NON-SUBMERSIBLE APPLICATIONS

**STEP 22:** REMOVE THE PROTECTIVE COVER FROM THE BUSHING INSERT AND THOROUGHLY COVER THE ENTIRE SURFACE OF THE BUSHING INSERT INTERFACE WITH A LIGHT COATING OF SILICONE GREASE (SEE TABLE 2). SEE FIGURE 8.

**DO NOT** APPLY GREASE TO THE ARC QUENCHING MATERIAL ON THE END OF THE PROBE OR ON THE THREADS OF THE PROBE.

TAKE PRECAUTIONS TO PREVENT TOUCHING THE ARC TIP ON THE PROBE WITH YOUR HANDS AND TO PREVENT IT FROM BECOMING CONTAMINATED. HOLD IT IN A TOWEL IF NECESSARY.

**STEP 23:** USING A HOT-STICK, PLACE THE ELBOW ON THE BUSHING INSERT BY INSERTING THE PROBE APPROXIMATELY 2" INTO THE OPENING OF THE INSERT. YOU WILL FEEL A SLIGHT RESISTANCE AT THIS POINT. MAKE SURE THE ELBOW IS LINED UP WITH THE BUSHING AND THEN PUSH THE ELBOW ONTO THE BUSHING WITH THE HOTSTICK USING A STRAIGHT, QUICK, AND STEADY FORCE. IT IS ALSO A GOOD PRACTICE TO PUSH THE ELBOW A SECOND TIME TO MAKE CERTAIN THE ELBOW WAS FULLY SEATED.

![Figure 8](image.png)

**FIGURE 8**
PUSHING ELBOW ONTO BUSHING USING HOT STICK


**STEP 25:** INSTALL DIRECTIONAL LABELS ON THE JACKETED PORTION OF THE CABLE (NOT ON THE SEMICON LAYER).

**NOTE:** ENSURE ALL CABLES ARE PROPERLY MARKED. CHECK WITH AN OHM METER IF NECESSARY.

**STEP 26:** REMOVE ANY TEMPORARY MARKING TAPE.
APPLICATION:

THE FUSED ELBOW IS APPLICABLE FOR STUB FED SINGLE-PHASE TRANSFORMER, SINGLE-PHASE LOADS ONLY. IT INSTALLS ON A 200 AMP BUSHING INSERT OR ON A 200 AMP ADAPTER ON A 600 AMP ELBOW.

NOTES:

1. FOLLOW INSTRUCTIONS IN PACKAGE TO ASSEMBLE AND INSTALL THE FUSED ELBOW.

2. THE ONLY FUSE SIZE STOCKED IS 40 AMPS. TO PROPERLY COORDINATE, THE SOURCE SIDE FUSE MUST BE AT LEAST 65K OR 65E.

3. THE FUSE IS RATED FOR 15KV USE ONLY.

BILL OF MATERIALS

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EACH KIT CONTAINS INSTRUCTIONS, ELBOW, MALE CONTACT PROBE, AND SILICONE LUBRICANT.

BEFORE WORKING ON CABLE, GROUND IT.

IN THE ACCIDENT PREVENTION MANUAL.

USE PROPER SAFETY PROCEDURES AS OUTLINED IN THIS PROCEDURE IS FOR DE-ENERGIZED CONDITIONS.

INSTALLATION GUIDELINES

TRAIN CABLE TO FINAL ASSEMBLED POSITION ALLOWING SLACK FOR LOADBREAK OPERATION.

CUT CABLE 18" PAST CENTERLINE OF BUSHING. THIS WILL LEAVE ENOUGH NEUTRAL CONDUCTOR FOR EASY MAKEUP.

REMOVE JACKET AND UNWRAP NEUTRAL WIRES TO A POINT 9" BELOW CENTERLINE OF BUSHING. (FOR UN)JACKETED CABLE, SECURE THE NEUTRAL TO THE PRIMARY CABLE WITH AN EXTRA PIECE OF NEUTRAL WIRE. TWIST THE NEUTRAL WIRES TOGETHER INTO A SINGLE CONDUCTOR. DO NOT BIND THE PRIMARY CABLE WHEN TWISTING THE NEUTRALS.

CUT THE CABLE SQUARE AND EVEN AT THE CENTERLINE OF THE BUSHING. REMOVE THE INSULATION SO THAT THE CONNECTOR CAN BE INSTALLED. STRIP LENGTHS CAN VARY BY ELBOW. USE THE DIMENSIONS ON THE INSTRUCTION SHEET THAT CAME WITH THE ELBOW.

PROPER TOOLS MUST BE USED IN CABLE PREPARATION. AVOID THE USE OF KNIVES IN CABLE PREPARATION.

STRIP LENGTH VARIES BY MANUFACTURER. CONSULT KIT INSTRUCTIONS FOR PROPER LENGTH.

200 AMP LOADBREAK ELBOW

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<td></td>
<td></td>
<td>1</td>
<td>1/0 STR COPPERTOP CONNECTORS</td>
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* EACH KIT CONTAINS INSTRUCTIONS, ELBOW, MALE CONTACT PROBE, AND SILICONE LUBRICANT.

NOTE: ELBOW (CN 326410) IS TO BE USED FOR 1/0 SOLID, 1/0 STR & #2 STR

CRIMP THE CONNECTOR PER THE MANUFACTURER'S INSTRUCTIONS. CONSULT CRIMPING TABLE IN KIT INSTRUCTIONS.

PROPER TOOLS MUST BE USED IN CABLE PREPARATION. AVOID THE USE OF KNIVES IN CABLE PREPARATION.

CAREFULLY REMOVE THE PROPER AMOUNT OF INSULATION SHIELD USING A SEMICON STRIPPER. STRIP LENGTHS CAN VARY BY ELBOW. USE THE INSTRUCTION SHEET THAT CAME WITH THE ELBOW. **DO NOT** NICK OR SCORE INSULATION.

INSULATION LENGTH VARIES BY MANUFACTURER. CONSULT KIT INSTRUCTIONS FOR PROPER LENGTH.

200 AMP LOADBREAK ELBOW
CLEAN THE CABLE BY WIPING WITH A CLEAN RAG THAT HAS CLEANING SOLVENT ON IT. DO NOT POUR CLEANING SOLVENT DIRECTLY ONTO THE CABLE. IMPORTANT - DO NOT ALLOW CLEANING SOLVENT TO CONTACT THE WHITE END OF THE CONTACT PROBE. IT CAN CAUSE THE MATERIAL TO SWELL AND JAM THE ELBOW IN THE BUSHING.

APPLY SILICONE LUBRICANT TO THE CLEAN INSULATION. KEEP THE ELBOW AND CABLE CLEAN. USING A DOWNWARD TWISTING MOTION, SLIDE THE ELBOW ONTO THE CABLE.

ALIGN THE HOLE IN THE CONNECTOR WITH THE HOLE IN THE ELBOW. INSERT THE CONTACT PROBE INTO THE THREADED HOLE AND TURN BY HAND SEVERAL TURNS. CHECK THAT THE PROBE HAS NOT CROSS-THREADED. TIGHTEN THE PROBE TO PROPER TORQUE USING THE PROBE INSTALLATION TORQUE WRENCH (CN 414453).

NOTE: MANY ELBOW FAILURES HAVE BEEN TRACED TO IMPROPER INSTALLATION OF THE PROBE. PROPER TORQUE IS CRITICAL TO ELBOW LIFE.

DO NOT USE SILICONE TO LUBRICATE THREADS ON CONNECTOR.

USING AN EXTRA PIECE OF NEUTRAL WIRE, ATTACH ONE END TO THE GROUNDING EYE ON THE ELBOW, AND TWIST THE OTHER END WITH THE OTHER NEUTRAL CONDUCTORS. CRIMP OR BOLT THE TWISTED NEUTRAL TO GROUND.

CONSULT THE MSDS BOOK FOR THE PERSONAL PROTECTIVE EQUIPMENT NECESSARY TO USE THE CLEANING SOLVENT.

USE A RAG TO CLEAN CABLE. DO NOT SQUIRT CLEANER DIRECTLY ONTO CABLE.

DO NOT ALLOW CLEANER TO COME IN CONTACT WITH PROBE.
NOTES:

1. AREA MUST BE CLEAR OF OBSTRUCTIONS THAT WOULD INTERFERE WITH OPERATIONS OF THE ELBOW CONNECTOR.

2. GRASP ELBOW FIRMLY WITH SHOTGUN STICK. POSITION TIP OF PROBE INTO END OF LOADBREAK BUSHING.

3. SLOWLY INSERT ELBOW ONTO BUSHING UNTIL A SLIGHT BUMP IS FELT.

4. MAINTAINING A FIRM GRASP ON THE SHOTGUN STICK, THRUST THE ELBOW THE REST OF THE WAY ONTO THE BUSHING.

5. PUSH AGAIN ON THE ELBOW USING THE SHOTGUN STICK, AND THEN PULL GENTLY TO MAKE SURE THAT IT IS SECURE.

6. APPLY AN EVEN THIN LAYER OF HIGH VISCOSITY SILICONE GREASE TO INSERT BUSHING BEFORE INSTALLING ELBOW. DO NOT USE THIN SILICONE GREASES ON ELBOWS AND BUSHINGS. HIGH VISCOSITY GREASE PROMOTES FUTURE EASE OF REMOVAL.

7. EXTENDED BUSHING INSERT IS TO BE USED ONLY WHERE EXTRA LENGTH IS NEEDED TO CLEAR SECONDARY CONDUCTORS THAT INTERFERE WITH THE PROPER OPERATION OF THE ELBOW.

THE SHOTGUN STICK REQUIRED TO ASSURE PROPER SEATING OF THE ELBOW ONTO THE BUSHING. PUSHING ON BY HAND CANNOT ASSURE ALL GASSES ARE EXPELLED AND ELBOW IS FULLY SEATED. SEE SECTION 6.01 OF THE ACCIDENT PREVENTION MANUAL.
**Installation Instructions:**

These installation instructions apply to 3M QTIII termination kits supplied under the item numbers listed in **Table 1** when installed on LC shielded cables.

<table>
<thead>
<tr>
<th>Conductor Size</th>
<th>Compatible Unit</th>
<th>Termination Item Number</th>
<th>Connector Item Number</th>
<th>Ground Strap Item Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/0 AWG</td>
<td>TRM10AL225KITC</td>
<td>11171907</td>
<td>PROVIDED IN KIT</td>
<td>9220272265</td>
</tr>
<tr>
<td>350 MCM</td>
<td>TRM350AL625KITC</td>
<td>11173101</td>
<td>9220126011</td>
<td>PROVIDED IN KIT</td>
</tr>
<tr>
<td>750 MCM</td>
<td>TRM750AL625KITC</td>
<td>11173101</td>
<td>1178902</td>
<td>PROVIDED IN KIT</td>
</tr>
</tbody>
</table>

**Duke Energy Florida (DEF):**

<table>
<thead>
<tr>
<th>Conductor Size</th>
<th>Compatible Unit</th>
<th>Termination Item Number</th>
<th>Connector Item Number</th>
<th>Ground Strap Item Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/0 AWG</td>
<td>TRM10AL215KITF</td>
<td>310510</td>
<td>311185</td>
<td>9220271443</td>
</tr>
<tr>
<td>500 MCM</td>
<td>TRM500AL615KITF</td>
<td>310645</td>
<td>155326</td>
<td>PROVIDED IN KIT</td>
</tr>
<tr>
<td>750 MCM</td>
<td>TRM750AL615KITF</td>
<td>310645</td>
<td>155336</td>
<td>PROVIDED IN KIT</td>
</tr>
<tr>
<td>1000 MCM</td>
<td>TRM1KLAL615KITF</td>
<td>310645</td>
<td>155334</td>
<td>PROVIDED IN KIT</td>
</tr>
</tbody>
</table>

**Step 1:** Follow all safety rules and procedures to ensure conductors are safe to handle.

**Step 2:** Remove the amount of cable jacket shown in **Figure 1** and **Table 2**.

**Step 3:** Remove the LC shield, except for the length shown in **Figure 1** and **Table 2** which will extend beyond the end of the cable jacket.

The LC shield is to be removed by placing one of the constant tension springs provided in the ground braid kit on the LC shield at the point where the shield is to end, separating the overlap of the LC shield, and then tearing off the LC shield at the constant tension spring. The LC shield overlap may be separated by rolling the gap open with channel-lock pliers, tearing off the overlap by twisting it around needle-nose pliers, or by tearing off the overlap by grabbing the overlap with pliers and pulling it straight down the cable.

**Step 4:** **Use an appropriate tool** and score the semi-conductive insulation shield so the length of shield shown in **Figure 1** and **Table 2** can be removed; however, do **not** remove the shield at this time.

Never use a knife to remove this shield.

**Step 5:** Remove the amount of insulation shown in **Figure 1** and **Table 2**.

**Step 6:** Remove the portion of the semi-conductive insulation shield scored in **Step 4**.

Do **not** sand the cable insulation except when it is necessary.

![Figure 1: Cable Preparation](image)

3M QTIII Terminations on 15KV & 25KV LC Shielded Cables

Duke Energy Progress (DEP)

Duke Energy Florida (DEF)
**TABLE 2**

<table>
<thead>
<tr>
<th>CABLE SIZE</th>
<th>DIMENSION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>1/0 AWG (15KV)</td>
<td>9-1/4&quot;</td>
<td>6-1/4&quot;</td>
</tr>
<tr>
<td>1/0 AWG (25KV)</td>
<td>11-1/4&quot;</td>
<td>8-1/4&quot;</td>
</tr>
</tbody>
</table>

DUKE ENERGY FLORIDA (DEF)

DUKE ENERGY PROGRESS (DEP)

DUKE ENERGY PROGRESS & FLORIDA (DEP & DEF)

* These are 25KV terminators used for both 25KV cable in DEP and 15KV cable in DEF.

**STEP 7:** Verify that all cutbacks have been made to the proper dimension. Correct the insulation and semi-conductive shield cutbacks if they are not within 1/8" of the dimensions provided in Table 2.

**STEP 8:** Verify that the ring cut on the semi-conductive shield is straight and smooth all the way around the cable. No points or unevenness may exist. Correct any irregularities that exist. These irregularities may be removed with a knife as long as extreme caution is used and that no nicks are made into the cable insulation.

**STEP 9:** Verify that the insulation is smooth and free of any nicks or cuts by carefully rubbing it with your fingers. Any nicks, cuts, or dents must be removed with 240 grit aluminum oxide cloth, see Table 3. Do not use 120 grit aluminum oxide cloth.

**STEP 10:** Clean the last 6 inches of the jacket with cable cleaning fluid and a clean towel. Then sand this area with 240 grit aluminum oxide cloth.

**STEP 11:** Rub the exposed portion of the LC shield with 240 grit aluminum oxide cloth in order to remove any surface film that might be present. (Wire brushing could damage the LC shield.) Position the ground braid with the "U" section over the LC shield directly adjacent to the cable jacket with the folds facing outward. See Table 1 for the ground braid for #1/0 cables; it is included in the termination kit for all other cable sizes.

**TABLE 3 - NON-METALLIC ALUMINUM OXIDE CLOTH**

<table>
<thead>
<tr>
<th>OPERATING AREA</th>
<th>ITEM NUMBER OR CAT ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>30633705</td>
</tr>
<tr>
<td>DEF</td>
<td>9220275434</td>
</tr>
</tbody>
</table>

If cuts were made into the insulation as a result of the stripping tool being set too deep, then the ring cut must be relocated to allow this cut to be sanded out of the insulation. This can be accomplished by cutting at least 3/4" off the conductor and then remaking all cutbacks from that point.

**3M QTIII TERMINATIONS ON**

**15KV & 25KV LC SHIELDED CABLES**
STEP 12: SECURE THE GROUND BRAID TO THE CABLE BY WRAPPING A CONSTANT TENSION SPRING AROUND THE PORTION OF THE BRAID THAT IS POSITIONED OVER THE LC SHIELD AS SHOWN IN FIGURE 2. BE SURE TO PULL THE LAST WRAP OF THE SPRING TO INSURE THAT IT IS TIGHT. TIGHTLY WRAP TWO HALF-LAPPED LAYERS OF 3/4" VINYL TAPE, SEE TABLE 4, AROUND THE CONSTANT TENSION SPRING IN ORDER TO KEEP IT TIGHT.

<table>
<thead>
<tr>
<th>TABLE 4 - 3/4&quot; VINYL TAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING AREA</td>
</tr>
<tr>
<td>DEP</td>
</tr>
<tr>
<td>DEF</td>
</tr>
</tbody>
</table>

FIGURE 2
INSTALLING TWIN PRE-FORMED GROUND BRAID


CAUTION: THE LOCATION OF THE COLOR CODING TAPE IS VERY CRITICAL BECAUSE IT ALSO SERVES AS THE MARKER TO POSITION THE TERMINATION BODY.

FIGURE 3
APPLYING COLOR CODING TAPE FOR MARKER

![Second Mastic Band](image)

**FIGURE 4**
WRAPPING SECOND MASTIC BAND


![Two Half-Lapped Layers of 3/4" Vinyl Tape](image)

**FIGURE 5**
WRAPPING TWO HALF-LAPPED LAYERS OF 3/4" VINYL TAPE

STEP 17: REMOVE THE SHIPPING CORE BY PULLING THE RED LOOSE CORE STRAND AND UNWINDING IT IN A COUNTER-CLOCKWISE DIRECTION. THIS IS THE LOOSE CORE STRAND THAT EXTENDS OUT OF THE BOTTOM OF THE TERMINATION HOUSING. THIS CORE MUST BE REMOVED BEFORE THE TERMINATION HOUSING IS SLID ONTO THE CABLE.

STEP 18: CHECK TO INSURE THE TERMINATION ASSEMBLY WILL FIT OVER THE SELECTED LUG. IF THE LUG WILL NOT FIT THROUGH THE TERMINATION CORE, SLIDE THE TERMINATION ONTO THE CABLE BEFORE INSTALLING THE LUG. DO NOT REMOVE THE CORE AT THIS TIME.

STEP 19: WIRE BRUSH THE CONDUCTOR OF THE CABLE AND IMMEDIATELY PUSH THE CONNECTOR ONTO IT. THE CONNECTORS TO BE USED ARE LISTED IN TABLE 3.

DO NOT USE OXIDE CLOTH TO BRUSH THE CONDUCTOR.

DO NOT REMOVE ANY OF THE OXIDE INHIBITOR FROM THE CONNECTOR BEFORE PUSHING IT ONTO THE CONDUCTOR.

| TABLE 5 |
|------------------|---------------|-----------|
| CABLE SIZE       | CRIMP TOOL DIE | NUMBER OF CRIMPS |
| 1/0 AWG          | 5/8, BG       | 4         |
| 350 MCM          | 1-1/8", 13A   | 3         |
| 500 MCM          | 1-5/16", U327 | 3         |
| 750 MCM          | 1-1/2", U39ART| 3         |
| 1000 MCM         | 1-1/2", U39ART| 3         |

3M QTIII TERMINATIONS ON
15KV & 25KV LC SHIELDED CABLES

BE CERTAIN CRIMP TOOLS ARE PROPERLY ADJUSTED BEFORE USING.

![COLOR CODING TAPE (MARKER)]

**FIGURE 6**
PREPARATION FOR TERMINATION BODY

STEP 21: REMOVE EXCESS OXIDE INHIBITOR WITH A TOWEL. TAKE SPECIAL CARE TO PREVENT THIS EXCESS INHIBITOR FROM GETTING ONTO THE CABLE INSULATION. THIS OXIDE INHIBITOR MUST BE REMOVED BEFORE ATTEMPTING TO CLEAN THE CABLE INSULATION.

STEP 22: CLEAN THE CABLE INSULATION WITH A CLEAN TOWEL AND CABLE CLEANING FLUID, SEE TABLE 6, TO REMOVE ANY CONTAMINATION OR PARTICLES OF THE SEMI-CONDUCTING SHIELD THAT MIGHT BE PRESENT ON THE INSULATION.

<table>
<thead>
<tr>
<th>OPERATING AREA</th>
<th>TOWEL ITEM NUMBER OR CAT ID</th>
<th>CLEANING FLUID ITEM NUMBER OR CAT ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>2054</td>
<td>30525000</td>
</tr>
<tr>
<td>DEF</td>
<td>2054</td>
<td>2055</td>
</tr>
</tbody>
</table>

ALWAYS CLEAN FROM THE CONNECTOR TOWARDS THE SEMI-CONDUCTING SHIELD. DO NOT EVER TOUCH THE INSULATION WITH THE AREA ON A TOWEL THAT HAS TOUCHED THE SEMI-CONDUCTING SHIELD.

STEP 23: IF NECESSARY, APPLY A SMALL AMOUNT OF SILICONE GREASE OVER THE VINYL TAPE. THIS WILL MAKE IT EASIER TO PROPERLY POSITION THE TERMINATION HOUSING AND TO REMOVE THE CORE.

CAUTION: MAKE SURE THE TERMINATION BODY REMAINS AT THE EDGE OF THE MARKER TAPE. SEE FIGURE 7. THE TERMINATION CAN PREMATURELY FAIL IF ITS BODY IS NOT PROPERLY POSITIONED.

STEP 25: REMOVE THE COLOR CODE MARKING TAPE.
STEP 1: PREPARE CABLE

A. REMOVE JACKET, LC SHIELD, INSULATION SHIELD (SEMI-CON) AND INSULATION PER DIMENSIONS SHOWN.

1. TO REMOVE LC SHIELD, PLACE A HOSE CLAMP OR THE CONSTANT FORCE SPRING AT THE CUTBACK POINT. USING NEEDLE NOSE PLIERS, PULL THE LC SHIELD DOWN ALONG THE GLUED EDGE. THIS WILL SEPARATE THE LC SHIELD. USING PLIERS, GRAB THE LC SHIELD NEAR CUTBACK POINT (TENSION SPRING) AND TEAR OFF SHIELD AROUND THE CABLE. THE SHIELD WILL "TEAR" AWAY AT THE EDGE OF THE CLAMP.

IMPORTANT: DO NOT EXTEND SCORING BLADE THROUGH INSULATION SHIELD (SEMI-CON) INTO INSULATION.

NOTE: USE APPROVED PRE-SETABLE DEPTH TOOLS FOR REMOVING OUTER JACKET, INSULATION SHIELD (SEMI-CON) AND INSULATION.

B. SELECT ONE OF TWO MASTIC STRIPS FROM KIT AND REMOVE RELEASE LINER. USING LIGHT TENSION APPLY A SINGLE WRAP OF MASTIC AROUND THE CABLE JACKET 1/4" FROM CUT EDGE OF JACKET. CUT OFF EXCESS MASTIC.

STEP 2: INSTALL GROUND CLAMP

A. POSITION THE GROUND STRAP WITH THE "U" SECTION OVER THE METALLIC SHIELD DIRECTLY ADJACENT TO CABLE JACKET CUT EDGE. POSITION ONE TAIL OF THE GROUND STRAP, EXTENDING OVER CABLE JACKET WITH SOLDER BLOCK OVER MASTIC STRIP.

B. SECURE THE GROUND STRAP TO THE CABLE JACKET 4 1/2" FROM CABLE SEMI-CON EDGE USING VINYL TAPE.

NOTE: PLACE THIS TAPE WITH CARE, IT ALSO SERVES AS A MARKER FOR POSITIONING THE TERMINATOR.
3M TERMINATOR INSTALLATION INSTRUCTIONS

C. WRAP THE GROUND STRAP AROUND THE METALLIC CABLE SHIELD AND SECURE IN PLACE WITH THE CONSTANT FORCE SPRING. CINCH (TIGHTEN) THE SPRING AFTER WRAPPING THE FINAL TURN.

D. POSITION THE REMAINING END OF THE GROUND STRAP TAIL (WITH THE SOLDER BLOCK OVER THE MASTIC STRIP) OVER THE CABLE JACKET AND PARALLEL TO THE FIRST GROUND STRAP TAIL.


NOTE: IF TAIL OF GROUND STRAP OVERLAPS AT MASTIC, BE SURE TO APPLY STRIP OF MASTIC BETWEEN THE SOLDER BLOCK OF GROUND STRAPS.

F. SECURE THE GROUND STRAP TO CABLE JACKET 4-1/2″ FROM THE CABLE SEMI-CON EDGE USING VINYL TAPE. APPLY TAPE OVER PREVIOUSLY APPLIED MARKER TAPE.

G. WRAP TWO HALF-LAPPED LAYERS OF 3/4″ VINYL TAPE AROUND MASTIC SEAL, CONSTANT FORCE SPRING AND EXPOSED LC SHIELD.

NOTE: WRAP VINYL TAPE IN THE SAME DIRECTION OF THE CONSTANT FORCE SPRING.

IMPORTANT: DO NOT COVER SEMI-CON INSULATION MORE THAN 1/4″, 1-1/4″ OF SEMI-CON MUST BE LEFT LEFT EXPOSED TO MATE WITH STRESS RELIEF MATERIAL.
STEP 3: INSTALL TERMINAL LUG


B. POSITION THE TERMINAL LUG AND CRIMP ACCORDING TO MANUFACTURER’S DIRECTIONS.
   1. REMOVE EXCESS OXIDE INHIBITOR.
   2. WITH A FILE, REMOVE SHARP EDGES FROM CRIMPED TERMINAL LUG.

STEP 4: CLEAN CABLE

A. CLEAN THE CABLE INSULATION WITH PROGRESS ENERGY APPROVED CABLE CLEANER. DO NOT SUBSTITUTE. SOME CLEANERS AND DEGREASERS WILL DAMAGE THE CABLE. DO NOT WIPE FROM INSULATION SHIELD (SEMI-CON) TOWARDS INSULATION. IF AN ABRASIVE MUST BE USED, USE ONLY PROGRESS ENERGY APPROVED, NON-METALLIC, ALUMINUM OXIDE SANDING CLOTH. DO NOT USE SANDING CLOTH ON INSULATION SHIELD (SEMI-CON).

STEP 5: INSTALL TERMINATOR

A. SLIDE THE TERMINATOR BODY ONTO THE CABLE AND REMOVE THE CORE. PULL WHILE UNWINDING, COUNTER-CLOCKWISE, STARTING WITH THE LOOSE END. MAKE SURE THE TERMINATOR BODY (NOT THE CORE) IS BUTTED UP TO THE EDGE OF THE VINYL TAPE MARKER PREVIOUSLY APPLIED. AFTER ONE CORD IS REMOVED, (JUST STARTS TO COLLAPSE) IT MAY BE POSSIBLE TO SLIDE THE TERMINATOR TO MATCH UP EXACTLY WITH THE MARKER TAPE.

   NOTE: ONCE THE TERMINATOR HAS COLLAPSED OVER THE MASTIC AREA, THERE IS NO NEED TO CONTINUE SUPPORTING THE ASSEMBLY. DO NOT ATTEMPT TO PUSH OR PULL THE TERMINATOR ASSEMBLY WHILE UNWINDING THE CORE.

   B. CONNECT THE GROUND STRAP TO THE SYSTEM NEUTRAL USING A SPLIT BOLT OR OTHER APPROPRIATE CONNECTOR.


NOTE: THE MATERIAL BEING REMOVED AT THIS STEP IS POLYPROPYLENE AND CAN BE RECYCLED WITH OTHER WASTE.
**STEP 1: PREPARE CABLE**

A) REMOVE OUTER JACKET 8-1/2" + X (SEE CHART) FROM END OF CABLE.  
B) WRAP ONE LAYER OF MASTIC STRIP AROUND CABLE JACKET 1/4" BELOW OUTER JACKET CUTBACK LOCATION. CUT OFF EXCESS MASTIC.

- **NOTE:** KEEP NEUTRALS SEPARATED AS THEY ARE FOLDED BACK TO ASSURE A GOOD "X" MARKING.

**CABLE SIZE**  
350 1/4" + DEPTH OF TERMINAL LUG  
500 1/2" + DEPTH OF TERMINAL LUG  
750 3/4" + DEPTH OF TERMINAL LUG  
1000 3/4" + DEPTH OF TERMINAL LUG  

FOR "LUG DEPTH", MEASURE THE OUTSIDE OF THE LUG FROM THE TOP (CRIMP) INDICATOR TO THE BOTTOM OF THE LUG. DO NOT REMOVE INHIBITOR!

**STEP 2: PREPARE MOISTURE SEAL**

A) FOLD CONCENTRIC NEUTRAL WIRES BACK.  
B) SECURE NEUTRAL WIRES TO CABLE JACKET WITH VINYL ELECTRICAL TAPE 2" BELOW OUTER JACKET CUT BACK.

- **NOTE:** SECURING TAPE ALSO SERVES AS MARKING TAPE.

**STEP 3: PREPARE MOISTURE SEAL (CONT.)**

- A) WRAP SECOND LAYER OF MASTIC STRIP OVER NEUTRAL WIRES AND PREVIOUSLY APPLIED MASTIC (ONE LAYER, CUT OFF EXCESS).
- B) WRAP TWO STRETCHED LAYERS OF 3/4" VINYL ELECTRICAL TAPE TIGHTLY OVER MASTIC. KEEP SEAL DIAMETER SMALL SO THAT CORE WILL BE EASY TO REMOVE.

- **NOTE:** DO NOT EXTEND VINYL ELECTRICAL TAPE WRAPPING MORE THAN 1/4" BEYOND MASTIC.

**STEP 4: PREPARE CABLE**

A) REMOVE SEMI-CON 6" + X FROM END OF CABLE.  
B) REMOVE INSULATION "X" DIMENSION (SEE CHART IN STEP 1 ABOVE) FROM END OF CABLE.

- **IMPORTANT:** DO NOT EXTEND SCORING BLADE THROUGH SEMI-CON INTO INSULATION.

**NOTE:** SPECIAL CARE SHOULD BE TAKEN NOT TO CUT OR NICK THE INSULATION OR CONDUCTOR (IF REQUIRED). REMOVE NICKS AND ALL TRACES OF SEMI-CONDUCTING PARTICLE RESIDUE FROM EXPOSED INSULATION BY SANDING WITH NON-METALLIC SANDING CLOTH. Wipe exposed insulation with a clean cloth moistened with cable cleaning fluid. DO NOT ALLOW SOLVENT TO TOUCH SEMI-CON!
**MANUFACTURER’S “RECOMMENDED CUT BACKS”**

**STEP 5: INSTALL LUG**

- **A)** Insert conductor in compression lug.
- **B)** Crimp between knurl marks starting at top of barrel. Note: Rotate crimps 90°. Do not crimp last 1/2” of lug.
- **C)** Clean excess inhibitor from cable and lug.

**STEP 6: INSTALL TERMINATOR**

- **A)** Note: Discard ground strap and constant force spring supplied with kit for (JCN & CN) cable.
- **B)** Slide terminator over cable. Gently remove excess core aligning base with marker tape.
- **C)** Hold terminator (at the base) with one hand while removing core with other hand. Remove core by unwinding counterclockwise.

**IMPORTANT:**
Check to ensure terminator will fit over the lug. If the lug will not fit, slide terminator onto the cable.

**BILL OF MATERIALS**

<table>
<thead>
<tr>
<th>MACRO UNIT</th>
<th>CU ITEM NO.</th>
<th>COMPATIBLE UNIT</th>
<th>QTY REQ’D</th>
<th>CATALOG NUMBER</th>
<th>QTY PER CU</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>310645</td>
<td>TERM, CABLE, 15 &amp; 25 KV, 150 KV BIL</td>
<td>1</td>
<td>155326</td>
<td>LUG, COMP, 2-HOLE, 500, AL</td>
<td></td>
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<tr>
<td>1</td>
<td>310645</td>
<td>TERM, CABLE, 15 &amp; 25 KV, 150 KV BIL</td>
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<td>LUG, COMP, 2-HOLE, 750, AL</td>
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<td>2</td>
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<td>1</td>
<td>155334</td>
<td>LUG, COMP, 2-HOLE, 1000, AL</td>
<td></td>
</tr>
</tbody>
</table>
REPAIR OF PREVIOUS DESIGN TERMINATORS

STEP 1
- REPLACE THE OLD TERMINATOR

THE TERMINATOR SHOWN IS AN OLD ELASTIMOLD DESIGN CONTAINING A STRESS CONE AND INDIVIDUAL SKIRTS. THIS PROCEDURE IS ALSO APPLICABLE TO OTHER OLD TERMINATIONS SUCH AS THE INDOOR STRESS CONE AND SILICONE TAPE TERMINATION.

STEP 2
- REMOVE ALL PARTS OF THE OLD TERMINATOR
- PREPARE CUTBACK AREA AS SHOWN IN STEP 3

STEP 3
- IT IS IMPORTANT TO PREPARE THE CUTBACK AREA AS SHOWN TO ENSURE THE EXPOSED SEMI-CON IS IN GOOD CONTACT WITH STRESS RELIEF MATERIAL INSIDE TERMINATOR.
- IT MAY BE NECESSARY TO MOVE THE CONCENTRIC NEUTRAL UP TO MEET THE 2-1/2" DIMENSION AS SHOWN. THIS WILL ENSURE THE BOTTOM OF THE TERMINATOR IS IN CONTACT WITH THE CONCENTRIC WIRES AS REQUIRED IN STEP 4.
- FOLLOW APPROPRIATE INSTALLATION DRAWING TO INSTALL TERMINATOR.

VINYL TAPE USED FOR SECURING AND MARKING

STEP 4
- REMOVE CORE OF TERMINATOR BY PULLING AND UNWINDING COUNTERCLOCKWISE

DUE TO THE LENGTH OF THE OLD TERMINATOR, THE NEW TERMINATOR MAY NOT COVER THIS AREA OF INSULATION. SEE STEP 5.

(By design, bottom of the terminator must be in contact with the neutral wires.)

ALIGN BASE OF TERMINATOR WITH MARKER TAPE

STEP 5
- COVER THE EXPOSED INSULATION AND SEAL THE AREA BETWEEN THE CABLE AND THE TERMINAL LUG WITH A HALF LAPPED LAYER OF GRAY SILICONE TAPE (CN 21151808 AND CN 390138), COVER THE SILICONE TAPE WITH ONE LAYER OF VINYL PLASTIC TAPE TO HOLD THE SILICONE TAPE IN PLACE.
INSTALLATION GUIDELINES

TRAIN CABLE TO FINAL ASSEMBLED POSITION.

REMOVE JACKET AND UNWRAP NEUTRAL WIRES TO MANUFACTURER’S SPECIFIED LENGTH.

CUT THE CABLE SQUARE AND EVEN. REMOVE THE INSULATION SO THAT THE CONNECTOR CAN BE INSTALLED. STRIP LENGTHS VARY BY TERMINATOR OR WIRE SIZE. USE THE DIMENSIONS ON THE INSTRUCTION SHEET THAT CAME WITH THE TERMINATOR.

STRIP LENGTH VARIES BY MANUFACTURER. CONSULT KIT INSTRUCTIONS FOR PROPER LENGTH.

THIS ILLUSTRATION IS FOR DE-ENERGIZED CONDITIONS. USE PROPER SAFETY PROCEDURES AS OUTLINED IN THE ACCIDENT PREVENTION MANUAL.

BEFORE WORKING ON CABLE, GROUND IT.

PROPER TOOLS MUST BE USED IN CABLE PREPARATION.

AVOID USE OF KNIVES IN CABLE PREPARATION.

REMOVE PROPER AMOUNT OF INSULATION TO INSTALL CONNECTOR

CONDUCTOR

SEMICONDUCTING INSULATION SHIELD

CONCENTRIC NEUTRAL 18” MINIMUM LENGTH

JACKETED CABLE

EACH KIT CONTAINS INSTRUCTIONS, TERMINATOR SILICONE GREASE, 18” PIN STEM FOR #2, 1/0 AND 4/0, 2 HOLE LUG ISSUED WITH 500, 250 AND 1000 KCM.

<table>
<thead>
<tr>
<th>STEM CONNECTOR</th>
<th>CN</th>
<th>STEM CONNECTOR</th>
<th>CN</th>
<th>2-HOLE LUGS</th>
<th>CN</th>
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<tbody>
<tr>
<td>#2 STR</td>
<td>311185</td>
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<td>500 KCM</td>
<td>155326</td>
<td>750 KCM</td>
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<tr>
<td>1/0 SOLID</td>
<td>311185</td>
<td>4/0 STR</td>
<td>311186</td>
<td>1000 KCM</td>
<td>155334</td>
<td>#2 STR</td>
<td>155303</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1/0 SOLID</td>
<td>155303</td>
<td>1/0 STR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4/0 STR</td>
<td>155313</td>
<td></td>
</tr>
</tbody>
</table>
SOLVENT.

NECESSARY TO USE THE CLEANING PERSONAL PROTECTIVE EQUIPMENT
CONSULT THE MSDS BOOK FOR THE USE OF KNIVES IN CABLE
PREPARATION. AVOID PROPER TOOLS MUST BE USED
PREPARATION.

CONDUCTOR

SEMI-CONDUCTING INSULATION SHIELD

NEUTRAL

JACKETED CABLE

CLEAN THE OUTER JACKET AND THOROUGHLY CLEAN THE INSULATION TO REMOVE ALL TRACES OF SEMI-CONDUCTING RESIDUE. USE A CLOTH SOAKED WITH APPROVED CLEANING SOLVENT. ALWAYS WIPE FROM THE END OF THE CABLE TOWARD THE OUTER JACKET.

PROPER TOOLS MUST BE USED IN CABLE PREPARATION. AVOID USE OF KNIVES IN CABLE PREPARATION.

CONSULT KIT INSTRUCTIONS MANUFACTURER.

STRIP LENGTH VARIES BY USING FAULT INDICATOR ON ENERGIZED CABLES.

PROPER PERSONAL PROTECTIVE EQUIPMENT MUST BE USED WHEN INSTALLING FAULT INDICATOR ON ENERGIZED CABLES.

CLOTH

CLEANER
WIRE BRUSH THE CONDUCTOR. INSTALL THE CONNECTOR. MAKE SURE THE CONNECTOR DOES NOT "BANANA" AND THERE ARE NO SHARP EDGES. USE A FILE TO REMOVE ANY FLASHING ON SHARP METAL POINTS.

NOTE: CONNECTOR WILL BE EITHER A STEM OR LUG DEPENDING ON THE CABLE SIZE AND APPLICATION.

THE WATER SEAL FOR THE CABLE JACKET IS BUILT INTO THE COLD SHRINK TERMINATOR. REFER TO MANUFACTURER'S INSTRUCTIONS FOR WATER SEAL DETAILS.
NOTE: INSTALL HAND APPLIED WATER STOP ON ALL OUTDOOR TERMINATORS THAT DO NOT HAVE BUILT-IN WATER STOPS.

INSTALLATION PROCEDURES

STEP 1

WRAP A PAD OF AQUA-SEAL AROUND THE CABLE JACKET IN AREA 1.

NOTE: THE AQUA-SEAL ON AREA 2 SHOULD BE EQUALLY SPACED ABOVE AND BELOW THE JACKETED CABLE.

STEP 2

PULL THE CONCENTRIC NEUTRAL DOWN OVER THE AQUA-SEAL APPLIED IN STEP 1, AREA 1 AND USE A TIE TO SECURE THE CONCENTRIC NEUTRAL. NEXT APPLY A SECOND AQUA-SEAL PAD AROUND AREA 2.

STEP 3

APPLY SELF AMALGAMATED TAPE (SNAKE SKIN) OVER THE AQUA-SEAL, THEN APPLY VINYL TAPE OVER THE SNAKE SKIN.


TWIST THE CONCENTRIC neutral BELOW THE TIE WIRE TOGETHER.
DESCRIPTION AND OPERATION

1. FAULT INDICATION - INDICATOR LED WILL LIGHT UP RED WHEN FAULTED FLASHING 30 TIMES PER MINUTE.

2. RESET - INDICATOR RESETS IF 10A OR MORE OF CURRENT IS RESTORED, AFTER 4 HOURS IF POWER IS NOT RESTORED, OR IF MANUALLY RESET.

3. MOUNTING - THE FIBER OPTIC CABLE ASSEMBLY IS INSTALLED ON THE INDICATOR USING A SNAP ACTION CONNECTOR. THE DISPLAY END IS INSTALLED BY DRILLING A 5/16" HOLE, INSERTING FRONT LENS THROUGH THE 5/16" HOLE, AND SECURING FIBER OPTIC SOCKET INTO FRONT LENS. TO INSTALL FI SENSOR ON CABLE, OPEN JAWS, ATTACH SHOTGUN STICK, AND PLACE SENSOR ON CABLE ABOVE THE CONCENTRIC NEUTRAL AND BELOW THE TERMINATOR. THEN PUSH SHOTGUN STICK FOR JAWS OF SENSOR TO SECURE AROUND CABLE. REMOVE SHOTGUN STICK.

4. LINE POWER - IF LINE POWER IS REMOVED, THE INDICATOR WILL CONTINUE TO INDICATE THE LAST STATE DISPLAYED BEFORE LINE POWER WAS REMOVED.

5. OPERATING POWER - THE INDICATOR ITSELF IS POWERED BY A LONG LIFE BATTERY WHICH IS NOT REPLACEABLE. REPLACE ENTIRE UNIT AFTER 10 YEARS (DATE ON INDICATOR REFERS TO BATTERY INSTALLATION).

APPLICATION

6. SENSOR IS CALIBRATED FOR USE ON #2 AL THROUGH 1000 AL CABLE (1.0" THROUGH 2.52" DIAMETER CABLE) ON S&C VISTA NEXT GENERATION SWITCHGEAR.
DESCRIPTION AND OPERATION

1. FAULT INDICATION - A FAULT IS INDICATED BY A RED "F" FLAG IN THE INDICATOR WINDOWS. A WHITE "N" FLAG WILL BE SHOWN DURING NORMAL OPERATION.

2. RESET - THE INDICATOR WILL RESET WHEN THE CONDUCTOR AROUND WHICH THE SENSOR HAS BEEN INSTALLED EXCEEDS 3 AMPS ON INDICATOR LABELED "RESET" PHASE.

3. MOUNTING - THE INDICATOR AND SENSOR ARE WATERPROOF AND MAY BE MOUNTED OR PLACED IN ANY POSITION. THE INDICATOR MAY BE WALL MOUNTED IN VAULTS OR MANHOLES USING 1/4" BOLTS OR SCREWS.

4. LINE POWER - IF LINE POWER IS REMOVED, THE INDICATOR WILL CONTINUE TO INDICATE THE LAST STATE OF LINE CURRENT BEFORE LINE POWER WAS REMOVED.

5. CONTROL CABLES - CONTROL CABLES ARE 20' LONG.

INSTALLATION OF SENSOR

1. INSTALL SENSORS ON THE PRIMARY CABLE JUST BELOW THE TERMINATOR.

2. PLACE SENSOR AROUND CONDUCTOR ABOVE THE GROUND BRAID.

3. USE BRACKET CN 70284 TO INSTALL DIAL ON TERMINAL POLE (INCLUDED IN CU FCIULD12N3PFF).

4. BRACKET USED TO ATTACH DIAL TO SG IS INCLUDED IN KIT.

APPLICATION

1. INSTALL ON THE CABLE AT A 600 AMP RISER POLE AND ON THE 600 AMP SIDE OF PAD-MOUNTED SWITCHGEAR.

SPECIAL APPLICATION FAULT INDICATOR

1. FEEDER CABLE BEHIND SINGLE-PHASE TRIP PROTECTIVE DEVICE - USE CU FCIUSD10N1PFF

<table>
<thead>
<tr>
<th>ITEM</th>
<th>COMPATIBLE UNIT</th>
<th>CATALOG NUMBER</th>
<th>COMPATIBLE UNIT DESCRIPTION</th>
<th>TRIP (AMP)</th>
<th>RESET (AMP)</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FCIULD12N3PFF</td>
<td>323457</td>
<td>FAULT INDICATOR UG LARG DIAL 3PH</td>
<td>1200</td>
<td>3 MIN.</td>
<td>PME SG W/ LRG WINDOW</td>
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<tr>
<td>2</td>
<td>FCIUSD12N3PFF</td>
<td>323456</td>
<td>FAULT INDICATOR UG SML DIAL 3PH</td>
<td>1200</td>
<td>3 MIN.</td>
<td>PME/PMH SG W/ SML WINDOW</td>
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<tr>
<td>3</td>
<td>FCIUSD10N1PFF</td>
<td>9220224226</td>
<td>FAULT INDICATOR UG SML DIAL 3PH W/ 1PH OP</td>
<td>1200</td>
<td>3 MIN.</td>
<td>*PME/PMH SG W/ SML WINDOW AND HIGH SIDE FUSES</td>
</tr>
</tbody>
</table>

* SEE NOTE 1 UNDER "SPECIAL APPLICATION FAULT INDICATOR"
DESCRIPTION AND OPERATION

1. FAULT INDICATOR - THE INDICATOR ROTOR MUST BE SET TO INDICATE BLACK FOR TOGGLE UNITS OR WHITE FOR PUSH BUTTON UNITS. WHEN A FAULT OCCURS, ALL ROTORS BETWEEN THE DIP POLE AND THE FAULT WILL ROTATE TO THE RED POSITION.

2. RESET - AFTER CLEARING A FAULT, ALL INDICATORS FROM THE FAULT LOCATION BACK TO THE DIP POLE MUST BE MANUALLY REST.

3. MOUNTING - FAULT INDICATORS CAN BE DISASSEMBLED AND REASSEMBLED ON THE PRIMARY CABLE AFTER CABLE TERMINATIONS HAVE BEEN INSTALLED.

INSTALLATION OF SENSOR

1. INSTALL FAULT INDICATOR ON THE LOAD SIDE PRIMARY CABLE OF EACH TRANSFORMER, SWITCH, OR OTHER DISCONNECTABLE DEVICE LOCATED ON A SINGLE PHASE PRIMARY LOOP.

2. ALL FAULTED CIRCUIT INDICATORS (FCI'S) ARE TO BE INSTALLED ABOVE THE TWISTED CONCENTRIC NEUTRAL. ON ELBOWS, THE FCI WILL BE ON THE SEMI-CONDUCTING INSULATION SHIELD.

3. ON OUTDOOR TERMINATORS WITH BUILT-IN WATER STOP, THE FCI WILL BE OVER THE DOUBLED BACK CONCENTRIC NEUTRAL.

APPLICATION

SINGLE-PHASE TRANSFORMERS – DO NOT INSTALL FAULT INDICATORS

THREE-PHASE TRANSFORMERS – INSTALL FAULT INDICATORS ON LOAD SIDE CABLES WHEN THE TRANSFORMER IS WITHIN A LOOP SYSTEM OR ON A RADIAL SYSTEM CONTAINING MORE THAN ONE TRANSFORMER. FAULT INDICATORS ARE NOT REQUIRED ON A SINGLE, RADIAL FED, THREE-PHASE TRANSFORMER.
THIS PROCEDURE IS FOR DE-ENERGIZED CONDITIONS. USE PROPER SAFETY PROCEDURES AS OUTLINED IN THE ACCIDENT PREVENTION MANUAL. NEUTRALS SHOULD BE JUMPERED OUT UNTIL CONCENTRIC NEUTRALS ARE SPLICED.

BEFORE WORKING ON CABLE, GROUND IT.

PROPER TOOLS MUST BE USED IN CABLE PREPARATION. AVOID THE USE OF KNIVES IN CABLE PREPARATION.

CONDUCTOR INSULATION

SEMI-COATING

INSULATION SHIELD

CONCENTRIC NEUTRAL

JACKETED CABLE

SPLICES ARE PROVIDED WITH LOW VISCOSITY GREASE TO AID ASSEMBLY. DO NOT USE THIS GREASE ON ELBOWS AND BUSHINGS BECAUSE IT WILL MAKE SEPARATION VERY DIFFICULT. USE ONLY HEAVY GREASE ON ELBOWS AND BUSHINGS TO ALLOW LONG TERM SEPARATION.

REMOVE JACKET AND UNWRAP NEUTRAL WIRES TO MANUFACTURER'S SPECIFIED LENGTH FOR EACH CABLE. CUT CABLE SQUARE AND EVEN. REMOVE THE PROPER AMOUNT OF INSULATION SO THAT THE CONNECTOR CAN BE INSTALLED. STRIP LENGTHS VARY BY SPLICE OR WIRE SIZE. USE THE DIMENSIONS ON THE INSTRUCTION SHEET THAT CAME WITH THE SPLICE.

PROVIDE SUFFICIENT NEUTRAL CONDUCTOR TO BRIDGE THE SPLICE. CAREFULLY CUT AND REMOVE THE EXPOSED INSULATION SHIELD. CUT CABLE INSULATION SHIELD SQUARELY, BEING CAREFUL NOT TO SCORE OR CUT THE CABLE INSULATION.

CLEAN THE OUTER JACKET AND THOROUGHLY CLEAN THE INSULATION TO REMOVE ALL TRACES OF SEMI-CONDUCTING RESIDUE. USE A CLOTH DAMPENED WITH APPROVED CLEANING SOLVENT. ALWAYS WIPE FROM THE END OF THE CABLE TOWARD THE OUTER JACKET.

## Compatible Units

<table>
<thead>
<tr>
<th>Compatible Unit</th>
<th>Description</th>
<th>Lengths</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPRi500S00F</td>
<td>SPLICE, PRIMARY</td>
<td>500 TO 200</td>
<td></td>
</tr>
<tr>
<td>SPPRiTA750S750F</td>
<td>SPLICE, PRIMARY</td>
<td>750 TO 150</td>
<td></td>
</tr>
<tr>
<td>SPPRi1K1K25KF</td>
<td>SPLICE, PRIMARY</td>
<td>1000 TO 1000</td>
<td></td>
</tr>
</tbody>
</table>

**600 AMP STRAIGHT SPLICE (FMO)**
CONFIRM THAT THE INSIDE OF THE SPLICE HOUSING IS CLEAN.

USING THE SILICONE GREASE THAT WAS PROVIDED IN THE KIT, LUBRICATE THE SPLICE BODY AND SEMI-CONDUCTING INSULATION SHIELD OF THE CABLE.

TIP: PLASTIC NOSE OR ELECTRIC TAPE ON END OF CONDUCTOR CAN HELP PREVENT DAMAGE TO THE INTERIOR OF SPLICE BODY AND THE CONDUCTOR.

SLIDE SPLICE BODY ON LONG STRIP BACK SIDE OF THE CABLE SO AS NOT TO DAMAGE THE INTERIOR OF THE SPLICE BODY.

CLEAN INSULATION AND WIRE BRUSH CONDUCTOR
ALUMINUM CONDUCTORS SHOULD BE WIRE BRUSHED BEFORE CRIMPING.

INSERT THE CONDUCTOR INTO THE CONNECTOR BEFORE CRIMPING, BE SURE THE CONDUCTOR IS COMPLETELY INSERTED INTO THE POCKET, RESTING AGAINST THE CENTER STOP. CRIMP THE CONNECTOR. WIPE OFF EXCESS INHIBITOR.

LUBRICATE INSULATION
SLIDE SPLICE BODY OVER CONNECTOR.
Wipe off excess grease from the splice assembly and cable, and remove the marker tapes from the insulation shield.

Position concentric neutral wires back over cable and splice. Join the neutral wires using a copper "C" connector.

**Note:** The splice body between the jacketed cables should be kept as straight as possible to avoid mechanical stresses and water leakage into the splice body.

Apply Aqua-Seal to area 1 and area 2. Then apply self amalgamated tape (CN 390303) from jacket to jacket (area 3). Then cover area 3 with electrical tape.

**Cross Bonding Parts**

**Bill of Materials**

<table>
<thead>
<tr>
<th>CATALOG NUMBER</th>
<th>QTY PER CU</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>190132</td>
<td>3</td>
<td>Copper connector, C-Crimp</td>
</tr>
<tr>
<td>190208</td>
<td>2</td>
<td>#2 solid copper</td>
</tr>
<tr>
<td>190312</td>
<td>6</td>
<td>#2 strand BC to ground rod</td>
</tr>
<tr>
<td>160103</td>
<td>1</td>
<td>Ground rod connector</td>
</tr>
</tbody>
</table>

**Notes:**

1. Ground required approximately every 1320' or minimum of 4 grounds per mile including equipment grounds.

2. For joint trench with other utilities, ground required approximately every 660' or a minimum of 8 grounds per mile including equipment grounds.
splice assembly instructions

Clean and lubricate mating interfaces of all T-bodies and mating parts (i.e., insulating plugs and connecting plugs).

Begin by inserting an insulating plug into a T-body, lining up hole in compression connector with stud on plug.

Insert a connecting plug into open interface of T-body, and thread onto insulating plug.

Secure connecting plug using spanner wrench. Use torque wrench to tighten insulating plug to 55 ft.-lbs. of torque.

Insert interface of connecting plug into interface in second T-body. Be sure to line up hole in compression connector with stud on plug.

To assemble a 3- or 4-way splice, repeat the steps described above for installing additional connecting plugs and T-bodies.

To complete the splice, insert second insulating plug into open interface on end of T-body and thread onto connecting plug. Secure connecting plug with spanner wrench and use torque wrench to tighten second insulating plug to 55 ft.-lbs. of torque.

Clean and lubricate inner surface of two insulating plug caps with lubricant supplied.

Push caps onto insulating plugs until they snap into place.

Connect tie-off tabs of T-bodies with at least one strand of drain wire to cable concentric neutral wires or to common ground point.

Notes:
1. For details on how to terminate cable in T-bodies, refer to DWGs. 26.03-12A, 26.03-12B, 26.03-12C, 26.03-14A and 26.03-14B.