cut

UNDERGROUND CABLE 40

cut

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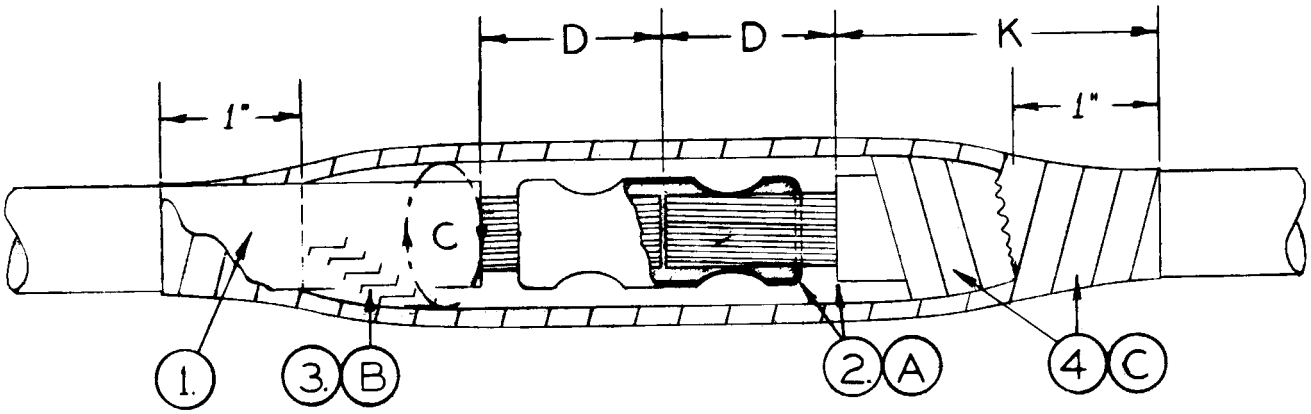
JOINT 1C – 600V.
Rubber or X–Link Poly.
Jacketed Or Non–Jacketed



OPERATIONS

1. Jackets over the insulation are considered a part of the insulation and are not to be removed.
2. Remove insulation back the required length (D) and install crimp sleeve and, if necessary, reducers.
3. Apply tape half lapped to circ. (c) taping gradual slopes at each end. Stretch tape to only 3/4 of its original width. CAUTION: When splicing aluminum cable, wipe off all excess inhibitor.
4. Apply two half–lapped layers of plastic tape extending one inch beyond the original taping.

Copper Cables

	Dimensions				Ins. (mils)
	Size	D	K	c	
#2	01	1–1/2”	3”	2.7”	180
1/0	02	2”	3”	3.6”	180
4/0	03	2”	3”	3.6”	180
500	04	2–1/2”	4”	4.2”	180

Aluminum Cables

	Dimensions				Ins. (mils)
	Size	D	K	c	
1/0	05	1–1/4”	3”	2.7”	180
3/0	06	1–3/4”	3”	3.2”	180
350	07	2”	4”	4.2”	180

		Dist. Std. Or Stk. No.	Description 41 14 31 **	01	02	03	04	05	06	07
				Copper				Alum.		
[1]		17 63 127	Sleeve–Compression, #2, Cu.	1						
		17 54 219	Reducer–#4/0 to #1/0		2					
		17 63 030	Sleeve–Compression, 4/0 Cu.		1	1				
	A	17 63 032	Sleeve–Compression, 500 kcmil, Cu.				1			
		17 63 133	Sleeve–Compression, 1/0, Al					1		
		17 63 125	Sleeve–Compression, 3/0, Al						1	
		17 63 124	Sleeve–Compression, 350 kcmil, Al							1
	B	25 53 080	Tape–Rubber, 3/4”	1	1	1	1	1	1	1
	C	25 53 055	Tape–Plastic	1	1	1	1	1	1	1
		413	Operation Code	1	1	1	1	1	1	1

[1] Sleeves – Splicing, #2 Cu. (Stk. #17 60 273) may be substituted for this sleeve. Apply with Nicopress XPJ Tool.

CABLE – JOINT – 1 C
#6 Cu./Al., 1/0, 3/0, 4/0, 350 , 750 Al. & 500 – 750 Cu. 600V

If #8 CNP cable is to be joined to either a # 6 Cu/Al cable or a #8 CNP cable, refer to additional instructions on Sheet 3.

See Sheet 2 for Special Instructions (Splicing Bare Copper Conductor To Aluminum Cable).

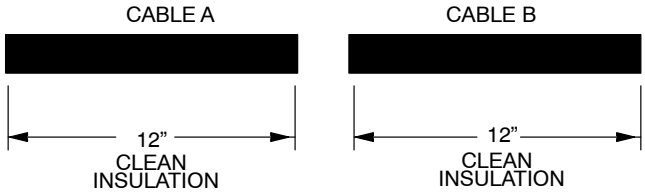


FIGURE 1

1. Thoroughly clean the cable insulation. Clean 12" of insulation on Cable "A" and 12" of insulation on Cable "B". See Figure 1.

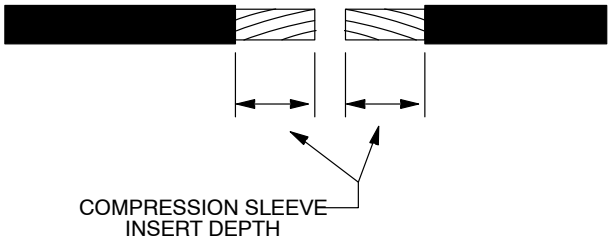


FIGURE 2

2. Check the insert depth of the compression sleeve being used. Remove the length of cable insulation on each cable that corresponds to the insert depth of the compression sleeve. See Figure 2.

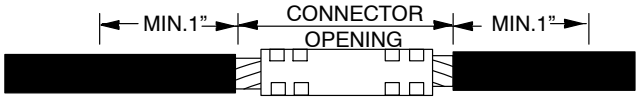


FIGURE 3

3. Install the compression sleeve. Make as many crimps as possible without overlap. Use the dies shown in the table. Remove the excess flash and inhibitor. See Figure 3.

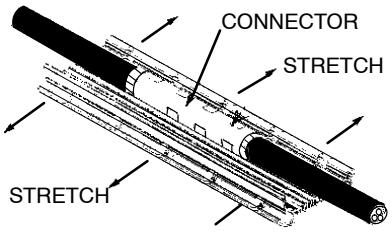


FIGURE 4

4. Prestretch gel wrap sleeve as shown in Figure 4.

NOTE: Warming the sleeve will make it easier to install in cold weather.

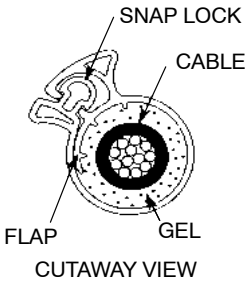


FIGURE 5

5. Center the connector in the sleeve, then wrap the sleeve around the cable and connector. Start at one end, compress the snap locks over the entire length of the sleeve. Ensure that flaps seat under snap locks as shown in Figure 5.

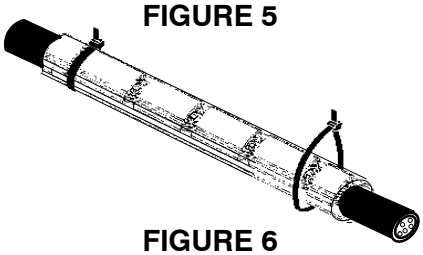


FIGURE 6

6. Install cable ties at outer most notches of the snap locks. Splice is complete and ready for use. See Figure 6.

	Stnd. / Stk. No.	Description 41 14 36 **	01	02	03	04	05	06	07	08	09	10	11	12	13	14	Die Size
	1763133	Sleeve–Compression, 1/0 Al.	1														U249
	1763138	Sleeve–Compression, 1/0 to 3/0 Al.		1													or
	1763125	Sleeve–Compression, 3/0 Al.			1												B49EA
	1763124	Sleeve–Compression, 350 Al.				1											U31ART
	1763144	Sleeve–Compression, 4/0 Al.					1										U249 U28ART
	1763143	Sleeve–Compression, 1/0 to 4/0 Al.						1									or
	1763145	Sleeve – Compression, 3/0 to 4/0 Al.							1								B49EA
	1763141	Sleeve–Compression, 3/0 to 350 Al.								1							U31ART
	1760362	Sleeve–Compression, 6 Al./Cu.									1						PEACH
	1763142	Sleeve–Compression, 750 kcmil Al										1					L39ART
	1763032	Sleeve–Compression, 500 kcmil Cu											1				U34RT
	1760360	Sleeve–Compression, 750 kcmil Cu												1			P39RT
	1760102	Sleeve–Compression, #8 Cu													1		53XPJ "J"
	1760363	Sleeve–Compression, #8 Cu to #6 Al/Cu														2	PEACH
	1754003	Connector–Split Bolt													1	1	
	1762215	Wrap – Gel, 10” Long	1	1	1	1	1	1	1	1							
→	1762217	Wrap – Gel, 8” Long									1				1	1	
	1762282	Wrap – Gel, 12” Long										1	1	1			
		Operation Code 405	1	1	1	1	1	1	1	1	1						
		Operation Code 406										1	1	1	1	1	

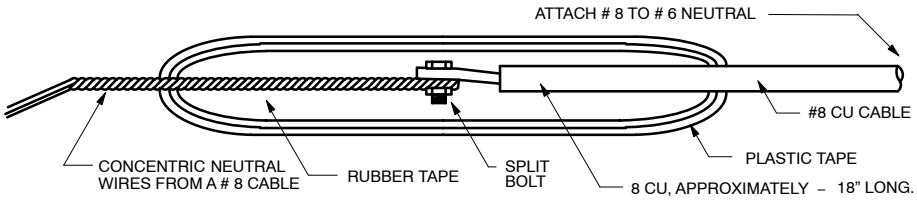
INSTRUCTIONS FOR #8 CNP TO #8 CNP (If voltage is greater than 600V, refer to Dist. Std. 41 24 33 00.)

NOTE: In addition to the instructions shown on Sheet 1, the following shall apply.

1. Unwind the concentric neutral wires from each cable. Remove enough cable to provide a sufficient length of concentric neutral wires for connectiong across the splice.
2. Clean the cables.
3. Check the insert depth of the compression sleeve being used. Remove the installation from each cable that corresponds to the insert depth of the compression sleeve.
4. Install the compression sleeve using the ”J” groove on the Nicopress 53–XPJ tool. Apply three crimps per end.
5. Install gel wrap sleeve as shown on Sheet 1.
6. Connect concentric neutral wires together across the splice with a split bolt.

INSTRUCTIONS FOR #8 CNP TO #6 AL/CU.

1. Follow instructions above.
2. Install the #8 to #6 compression sleeve (Stock #1760355) using the Nicopress Peach Tool. Apply two crimps per end.
3. Attach the concentric neutral wires to the #6 Al/Cu neutral cables as follows:
    a. Unwind concentric neutral from the end of the #8 cable and twist the ends of the concentric together. Obtain a 18” piece of #8 cable with the concentrics removed. Strip approximately 2” of insulation from one end of the short piece of #8 cable.
    b. Using Stock #17–54–003, join the concentrics to the short piece of #8 cable. After covering this connection with 2 layers of 1/2 lapped rubber tape, apply 3 layers of 1/2 lapped plastic tape.
    c. Attach the other end of the short piece of #8 cable to the #6 neutral cable. This connection shall be made according to the instructions shown above. The #6 neutral will be identified by yellow insulation, yellow stirpes or ribs.



CABLE – JOINT – 1 C
1/0, 3/0, 4/0 & 350 600 V
Inline Set Screw Connector Insulated with Gel Wrap Sleeve

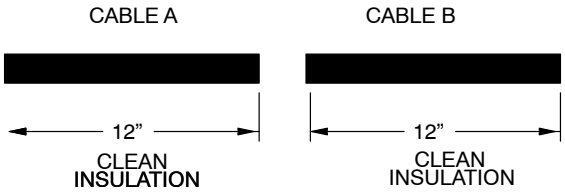


FIGURE 1

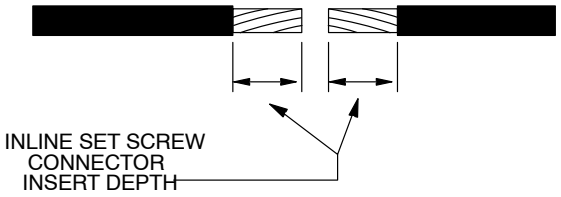


FIGURE 2

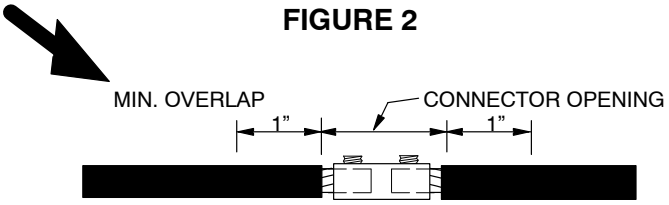


FIGURE 3

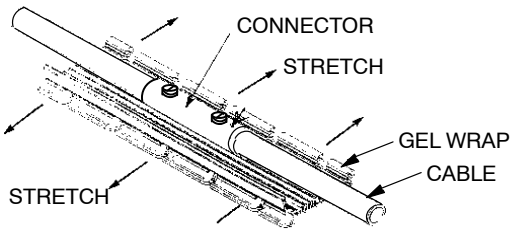
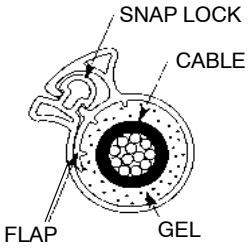


FIGURE 4



CUTAWAY VIEW

FIGURE 5

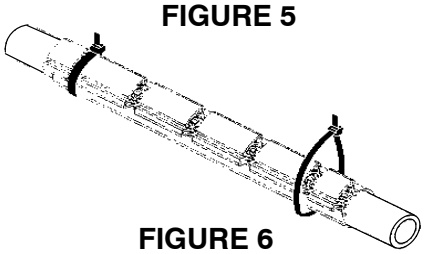


FIGURE 6

1. Thoroughly clean the cable insulation. Clean 12” of insulation on Cable ”A” and 12” of insulation on Cable ”B”. See Figure 1.
2. Check the insert depth of the inline set screw connector (Stk # 17 64 204). Remove the length of cable insulation on each cable that corresponds to the insert depth of the connector. See Figure 2. Remove surface oxides from the exposed conductors with a wire brush. Coat the cleaned conductors with oxide inhibitor (31 59 058).
3. Insert cables into the connector. Tighten the set screws using a 5/16” allen wrench. NOTE: To obtain sufficient torque it may be necessary to hold the connector with a large crescent wrench.
4. Prestretch the Gel Wrap sleeve as shown in Figure 4.

   NOTE: Warming the sleeve will make it easier to install in cold weather.
5. Center the connector in the sleeve then wrap the sleeve around the cable and connector. Start at one end. Compress the snap locks over the entire lenght of the sleeve. Ensure that flaps seat under snap locks as shown in Figure 5.
6. Install cable ties at outermost notches of snap locks. Splice is complete and ready for use. See Figure 6.

	Stnd. / Stk. No.	Description 41 14 37 01	
	17 64 204	Connector – Inline Set Screw 1/0 – 350 kcmil	1
	17 62 215	Wrap – Gel, 10” Long	1
		Operation Code 405	1

NOTE: INSTRUCTIONS AND FIGURES ARE FOR A "Y" SPLICE. FOR A STRAIGHT SPLICE OMIT THE GEL PAD AND WIRE TIE REFERENCED IN STEPS 3 & 4.

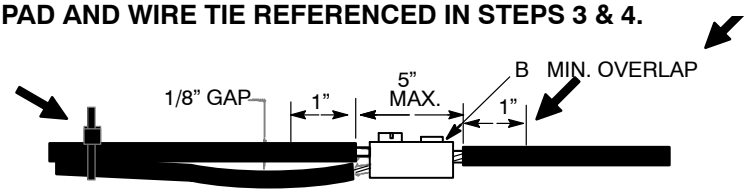


FIGURE 1

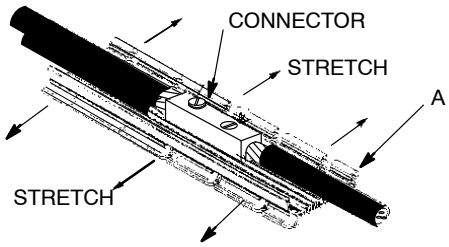


FIGURE 2

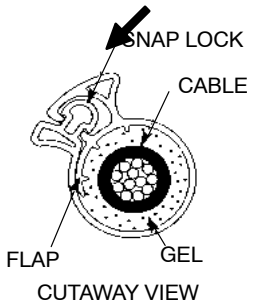


FIGURE 3

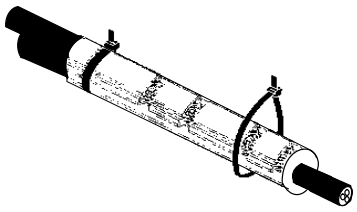


FIGURE 4

1. Remove 1 inch of insulation from each of the cables. Clean the conductors.

2. Install the connector and wipe off any excess inhibitor.

3. Clean the cables as required, and apply a small piece of gel pad around one of the cable of the "Y". Omit this step if making a straight splice.

4. Position a wire tie around the two cables as shown in Figure 1. Omit this step if making a straight splice.

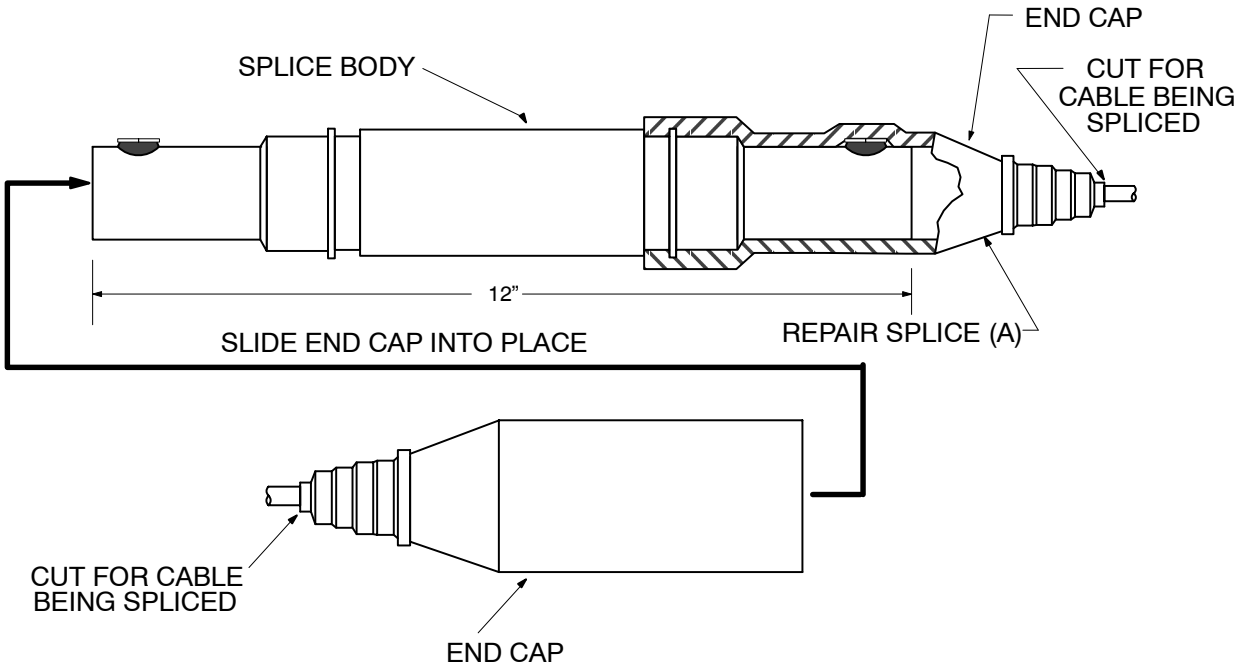
5. Pre stretch the gel wrap sleeve and position it around the cables with the connector centered.

6. Starting at one end of the gel wrap sleeve compress the snap locks over the entire length of the sleeve. Ensure that flaps seat under snap locks as shown in Figure 3.

7. Install the two wire ties in the notches of the snap locks. Splice is complete and ready for use. See Figure 4.

NOTE: Warming the gel wrap sleeve will make it easier to install in cold weather.

		Stnd. / Stk. No.	Description 41 15 31 00	
	A	17 62 217	Wrap – Gel, 8" long	1
	B	17 51 233	Connector, Wire, St. Lt.	1
@	C	17 62 216	Gel Wrap Pad, 2" x 8"	1
			Operation Code 405	1



INSTRUCTIONS:

1. Check insert depth of connector and remove required cable insulation. DO NOT NICK THE CONDUCTOR.
2. Cut appropriate steps on the end caps to match the conductor size.
3. Install silicone grease on the cables and slide the end caps onto the cables.
4. Remove surface oxides from the exposed conductors with a wire brush.
5. Coat the exposed conductors with oxide inhibitor (31 59 058).
6. Insert cables into the connector ports until they hit the stops.
7. Tighten the set screws using a 5/16” allen wrench.
8. Complete the splice by sliding the splice end caps onto the splice body.

	Stnd. / Stk. No.	**Description 41 15 32 01**	
A	17 62 193	Splice – Repair, #6–350 kcmil AL. or CU.	1
		Operation Code 405	1

CABLE JOINT – TRIFURCATING TRANSITION SPLICE

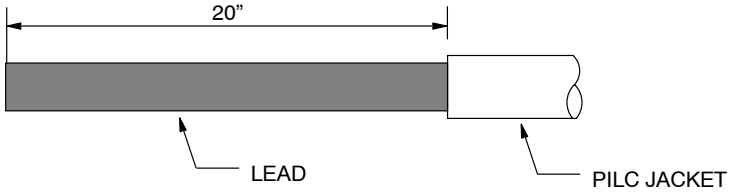
5 kV, Non–Shielded, 3/C PILC To 3 1/C Solid Dielectric
800^3 to 3–750 and 350^3 to 3–350 and $4/0^3$ to 3–1/0

GENERAL INSTRUCTIONS:

1. Adjust the flame so that it is an overall 12 inch bushy flame.
2. Apply the outer 3 to 4 inch tip of the flame to the heat shrink material with a rapid brushing motion.
3. Unless otherwise instructed, start shrinking the tubes at the center working the flame around all sides of the tubes to apply uniform heat.
4. Concentrate on heating the back of the tubes as well as the front of the tubes.
5. If it is necessary to interrupt the shrinking process and the tubes cool, you must reheat prior to shrinking the next tube.
6. Inspect all installed tubes. Reheat any flat spots or wrinkles, paying particular attention to the back of the splice.

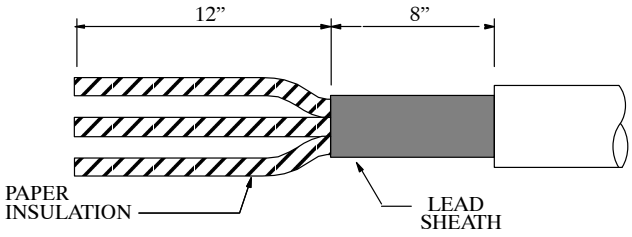
I PREPARE PILC CABLE

Remove 20” of outer jacket from PILC cable.



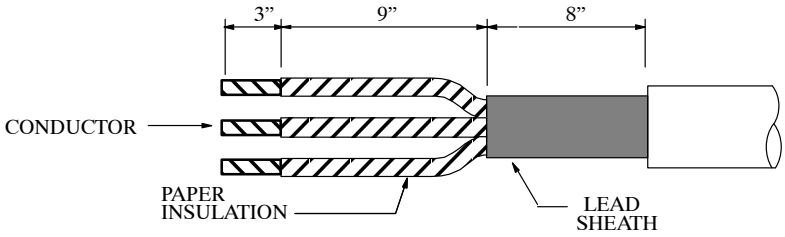
II PREPARE AND REMOVE LEAD SHEATH

Remove lead oxide from the lead sheath and clean sheath with solvent. Remove 12” of lead sheath and remove all belting and bedding tapes spreading phase legs back to the lead sheath cutback.



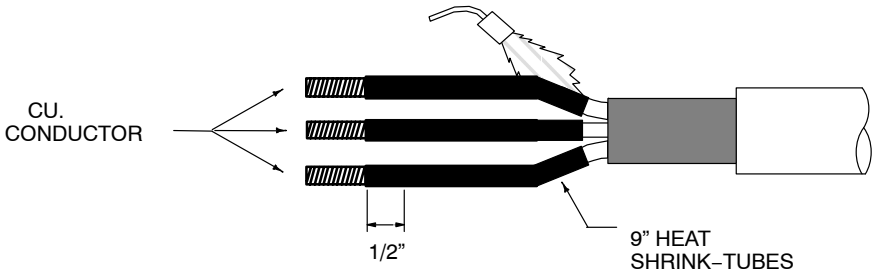
III CUTBACK PAPER INSULATION

Remove 3” of paper insulation from each phase of the PILC cable.



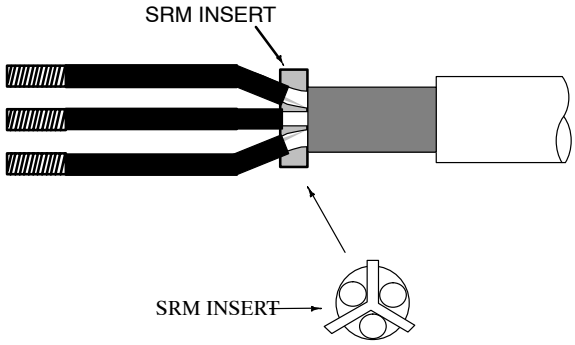
IV SHRINK 9" TUBES

Shrink a 9" tube onto each phase. The tube should be pushed up to the lead sheath cutoff as far as possible. The other end should overlap the conductor by 1/2 inch.



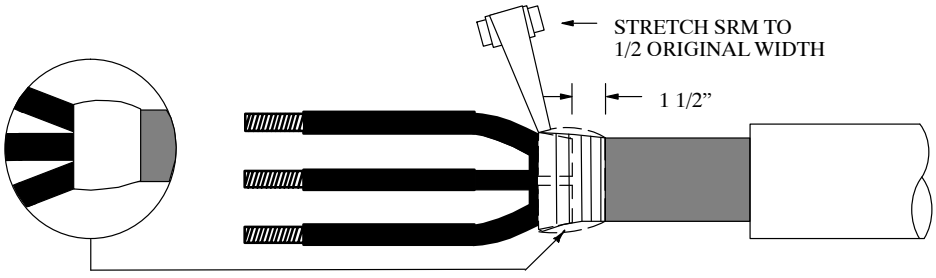
V ASSEMBLE SRM INSERT

Using two 3" strips of SRM, fold into "Y" insert as shown. Stuff this insert between phase legs as shown.



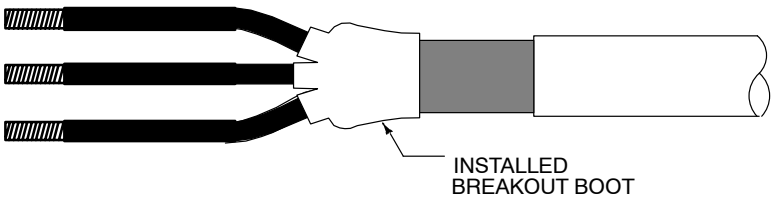
VI INSTALL OIL SEAL

Using 3 to 4 SRM strips fill in the area between the 9 inch sleeves and the lead sheath cutoff. Overlap the 9 inch sleeves by 1/2" and the lead sheath by 1–1/2". Stretch the SRM while applying.

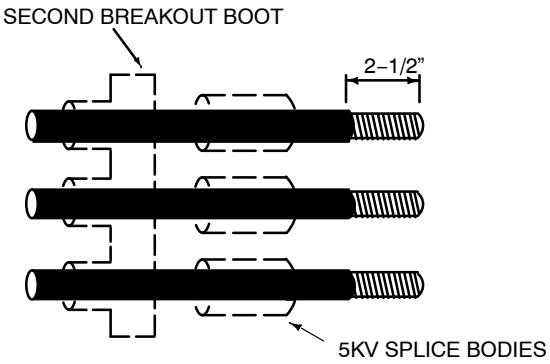


VII POSITION OUTER BREAKOUT BOOT

Slide breakout boot down the legs and over the lead sheath cutoff. The breakout boot should butt up hard against the applied SRM. Shrink the breakout boot in place starting at the fingers and working toward the other end.



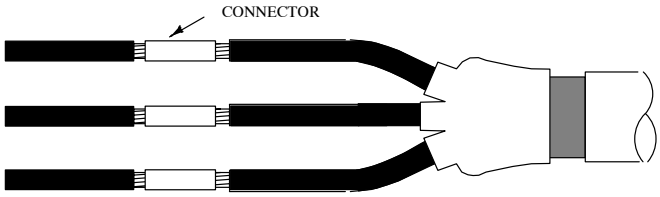
VIII PREPARE THE SOLID DIELECTRIC CABLE SIDE



Remove 2–1/2" of jacket and insulation from each phase of solid dielectric cable. Slide the second cable breakout boot down the cable with the fingers facing outward. Slide one 5kV splice body down each phase cable.

IX INSTALL CONNECTORS

Install the connectors using the rounding tool to round the sectored PILC cable. If soldering, protect the insulation and oil barrier tubes by wrapping the area with cotton material or glass tape. Make sure that the connectors are smooth.

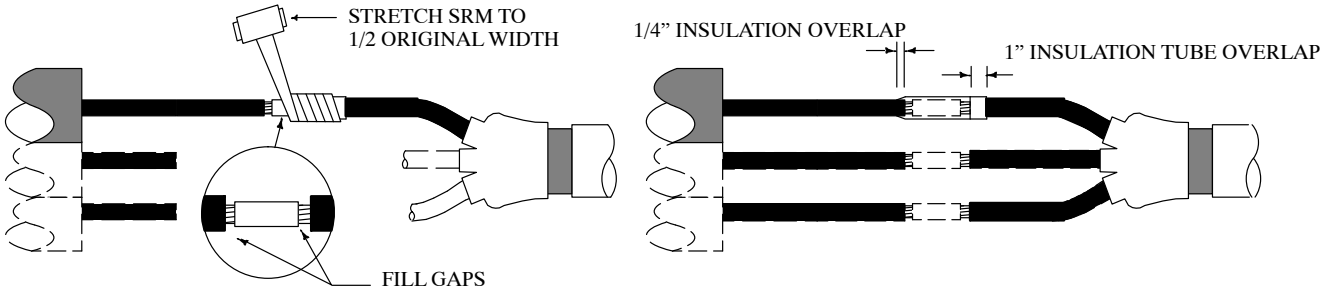


X APPLY SRM OVER CONNECTOR

NOTE: COMPLETE STEP X WORKING ON ONE PHASE AT A TIME.
Remove backing from one side of a long strip of SRM, roll the SRM and remaining backing strip into a convenient size.

While removing the remaining backing strip, tightly wrap the SRM around the connector and exposed conductor. Be sure to fill the gaps and low spots around the connector.

Continue to wrap the SRM onto the insulation as shown.



Cover SRM on each phase with 1 layer of plastic tape.

XI APPLY 5 kV COLD SHRINK SPLICE BODY TO EACH PHASE

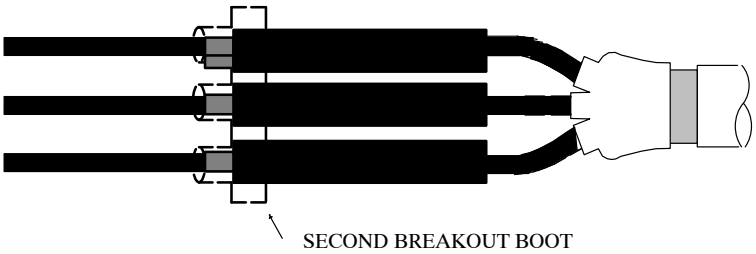
Center each 5kV splice body over phase connectors. Pull the core out counter–clockwise. Shrink down each tube one at a time.

XII APPLY SEALANT TO SOLID DIELECTRIC CABLES

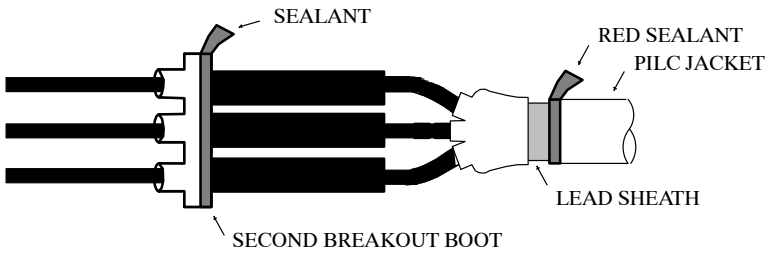
Wrap one layer of sealing mastic around each solid dielectric phase cable. Sealant is to be placed at the end of each 5kV splice body.

XIII PLACE SECOND BREAKOUT BOOT AND SHRINK

Slide second breakout boot toward the splices stopping where the breakout ”fingers” meet the 5kV splice bodies. Shrink breakout starting at the fingers and working toward splice center.



XIV APPLY SEALANT AT END OF SECOND BREAKOUT AND AT PILC JACKET CUTOFF



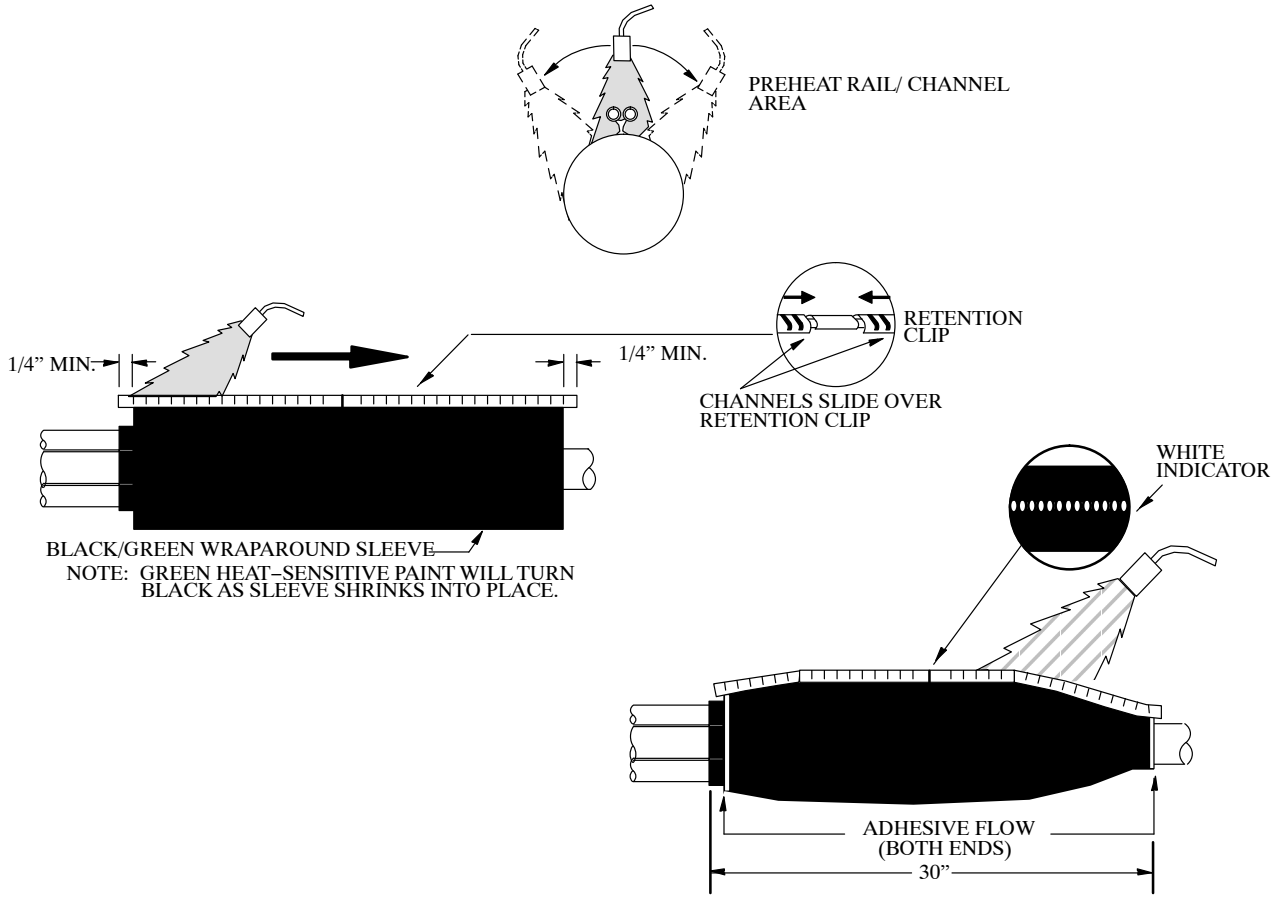
Apply one layer of sealant over the breakout body as shown. Allow breakout to cool before applying sealant. Wrap another layer of sealant around the PILC cable at the jacket cutoff.

XV POSITION AND SHRINK WRAPAROUND SLEEVE

1. Cut the 48” wraparound sleeve down to 30”. The sleeve may be reduced to a minimun 24” where a shorter overall splice is necessary.
2. Remove the backing from the wraparound sleeve and center sleeve over splice.
3. Slide the metal retention clip onto the butted rails. Connect the channels by overlapping the retention clip as shown below.
4. Channel(s) must overlap sleeve edges by 1/4” minimum.
5. Preheat evenly along both sides of the rail/channel area until this area begins to shrink. (Critical step)
6. Begin shrinking at the center of the sleeve and work all the way around the sleeve and toward each end.
7. Apply heat until the sleeve is completely shrunk and the green paint is completely converted to black.
8. Post heat the entire length, concentrating on the metal channel area. The post heat should be for 30 seconds after the sleeve is completely shrunk. A white line should be visible in the channel gaps indicating sufficient heating.
9. Look for adhesive flow at both ends of the sleeve.
10. The sleeve to cool before moving or placing in service.

CABLE JOINT – TRIFURCATING TRANSITION SPLICE

5 kV, Non–Shielded, 3/C PILC To 3 1/C Solid Dielectric
800^3 to 3–750 and 350^3 to 3–350 and 4/0^3 to 3–1/0



THE SPLICE IS NOW COMPLETE

		Stnd. / Stk. No.	Description 41 23 23 **	01	02	03
	A	12 53 018	Tubing–H.S., 2.0" I.D. x 9" Long	3		
		12 53 078	Tubing–H.S., 1.5" I.D. x 9" Long		3	3
	B	12 53 082	Tubing–H.S., 2.15" – 7.10" Range x 48" Long, Split Sleeve	1	1	1
	C	17 55 300	Splice–Straight, 5kV, 350–750 kcmil	1	1	
		17 55 301	Splice–Straight, 5kV, #2–300 kcmil			1
	D	12 53 080	Breakout Boot, 4.90–2.32" Cable, 2.00–1.00" Legs	2		
		12 53 081	Breakout Boot, 3.20–2.00" Cable, 1.45–0.75" Legs		2	2
	E		Yellow SRM Strips	10	10	10
	F		Sealant Strips	8	8	8
	G	17 60 504	Sleeve–Compression 800 kcmil to 750 kcmil	3		
		17 60 359	Sleeve–Compression 350 kcmil		3	
		17 63 143	Sleeve–Compression 4/0 AWG to 1/0 AWG			3
			Operation Code 719	1	1	1

41 23 23 01 800 kcmil, 3C, PILC to 3–750 NSR

41 23 23 02 350 kcmil, 3C, PILC to 3–350 NSR

41 23 23 03 4/0 AWG, 3C, PILC to 3–1/0 NSR

CABLE JOINT–1C
Cold–Shrinkable Rubber Splice
1/0–750 Cu, Non–Shielded, 5kV

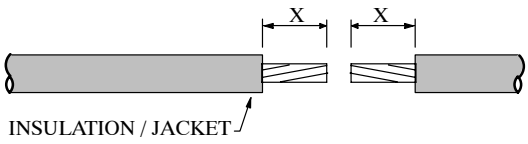


FIGURE 1

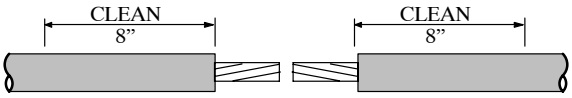


FIGURE 2

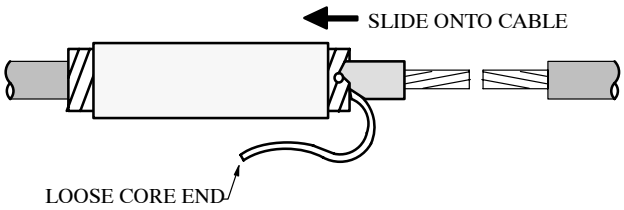


FIGURE 3

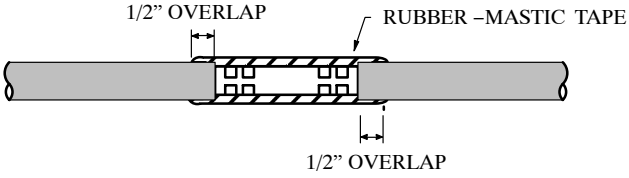


FIGURE 4

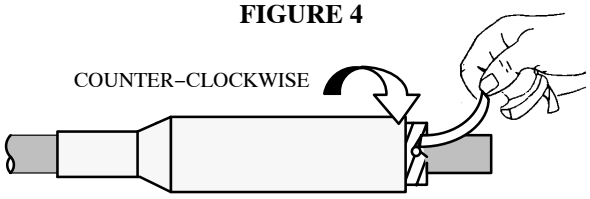


FIGURE 5

1. Remove the insulation/jacket as shown in Figure 1. ”X” dimension is the insert depth of the connector being used.

   NOTE: The connectors, used on 350 kcmil and 750 kcmil cables, shall not exceed a length of 6–1/4”. The connector, used on 1/0 cable, shall not exceed a length of 4–1/2”.

2. Clean the cable insulation/jacket with the cleaning pads provided. See Figure 2.
3. Slide cold shrink splice onto one of the cables. See Figure 3.
4. Install the 1/0 connector with a U–25RT die, install the 350 kcmil connector with a U–31RT die, and install the 750 kcmil connector with a P–39RT die. Make as many crimps as possible on each side of the connector. Do not overlap crimps.
5. Overwrap the installed connector with the rubber–mastic tape provided. Apply the tape with the mastic side in towards the connector. Use the tape to build up the thickness to the level of the cable insulation then overlap the tape 1/2” onto the insulation. DO NOT apply an excess amount of the rubber–mastic tape. See Figure 4.

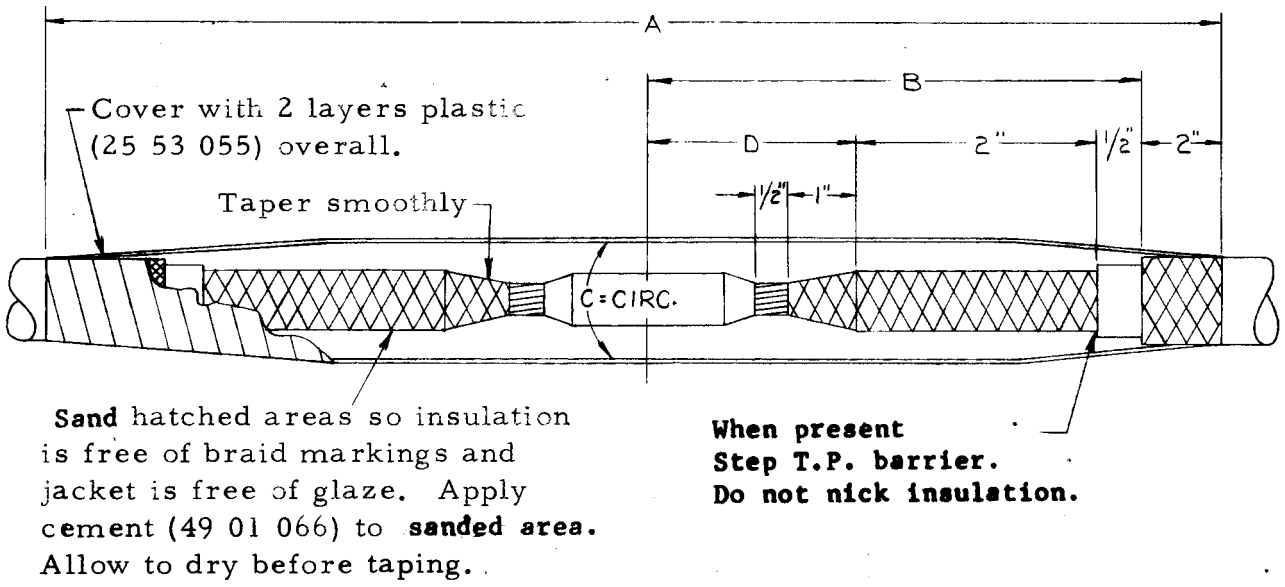
   NOTE: The rubber–mastic tape should be stretched during installation, so that its width is reduced to approximately 1–1/2” or less.

6. Center the splice over the connector area. Remove the core by unwinding counter–clockwise, starting with the loose core end. An occasional tug of the core strand while unwinding will aid in core removal. Splice is complete after the core is removed.

Stnd. / Stk. No.	Description 41 24 30 **		01	02	03
17 55 301	Splice, Straight, 5 kV, #2–300 kcmil	(Kt)	1		
17 55 300	Splice, Straight, 5 kV, 350 kcmil–750 kcmil	(Kt)		1	1
17 60 357	Sleeve, Compression, 1/0	(Ea)	3		
17 60 359	Sleeve, Compression, 350 kcmil	(Ea)		3	
17 60 360	Sleeve, Compression, 750 kcmil	(Ea)			3
	Operation Code 422		3	3	3

NOTE: QUANTITIES SHOWN ARE FOR MAKING THREE JOINTS.

CABLE – JOINTS
5kV 1/0 – 750 Single Cond.
Unshielded (N.S.) Jacketed



	Dimensions				Insulation Over Connector
Conductor	A	B	C	D	
1/0	14	5	3–3/4	2–1/2	.346 Mils
350	14–1/2	5–1/4	5	2–3/4	.370 Mils
750	15–1/2	5–3/4	6–1/2	3–1/4	.341 Mils

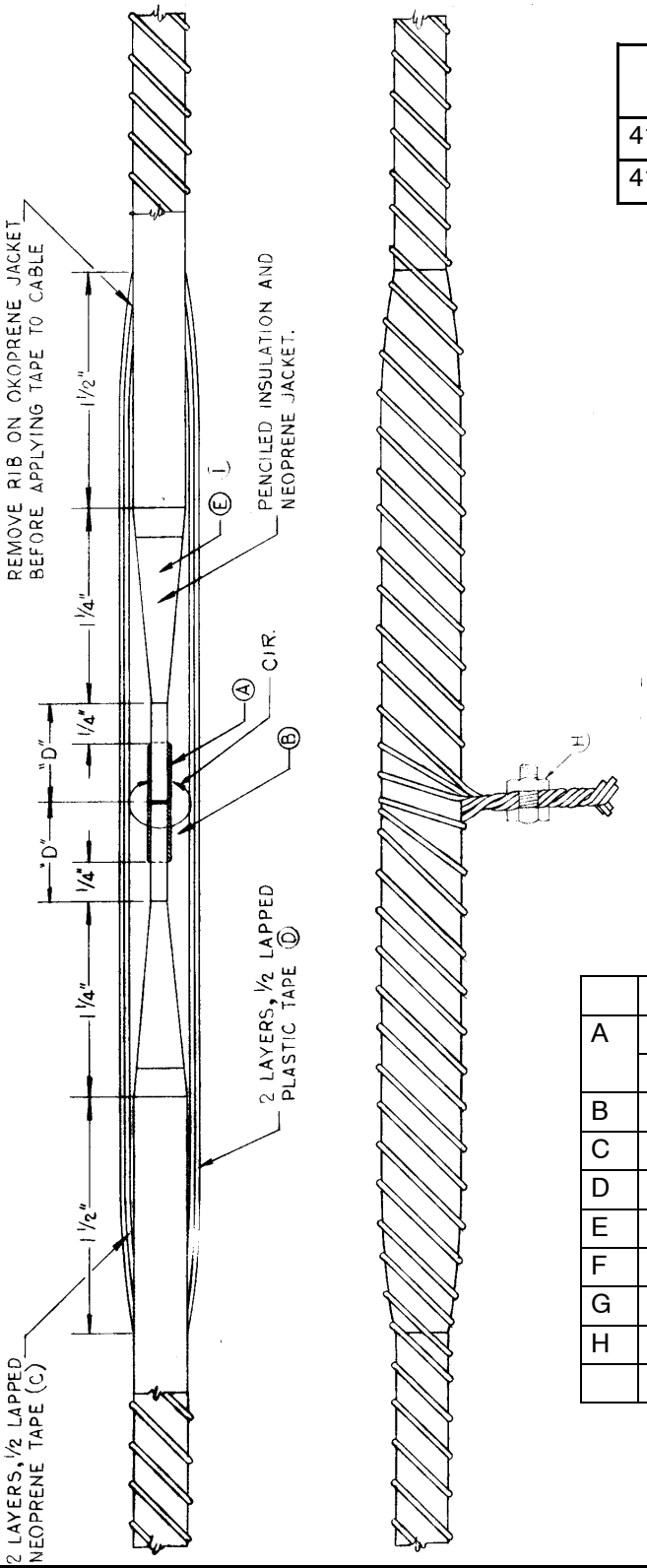
MATERIALS FOR THREE JOINTS		**Size**	**1/0**	**350**	**750**	**Unit**
Stk. No.	**Description**	**41 24 31 ****	**01**	**02**	**03**	
17 60 022	Connector – 1/0		3			Ea
17 60 045	Connector – 350			3		Ea
17 60 054	Connector – 750				3	Ea
22 02 273	Solder – 50–50		3	3	3	Lbs
49 01 066	Cement – Rubber		1	1	1	Cn
25 53 070	Tape – Rubber, HV		3	2	3	Roll
25 53 074	Tape – High Volt., 1–1/2" Wide			2	3	Roll
25 53 055	Tape – Plastic		1	2	2	Roll
22 05 213	Cloth – Sand		8	8	8	Ft.
22 02 255	Paste – Soldering		1	1	1	Cn.
418	Operation Code		3	3	3	

NOTE:

Kerite cable shown. Overall dimensions are the same for other cables without T.P. barriers.

NOTE:

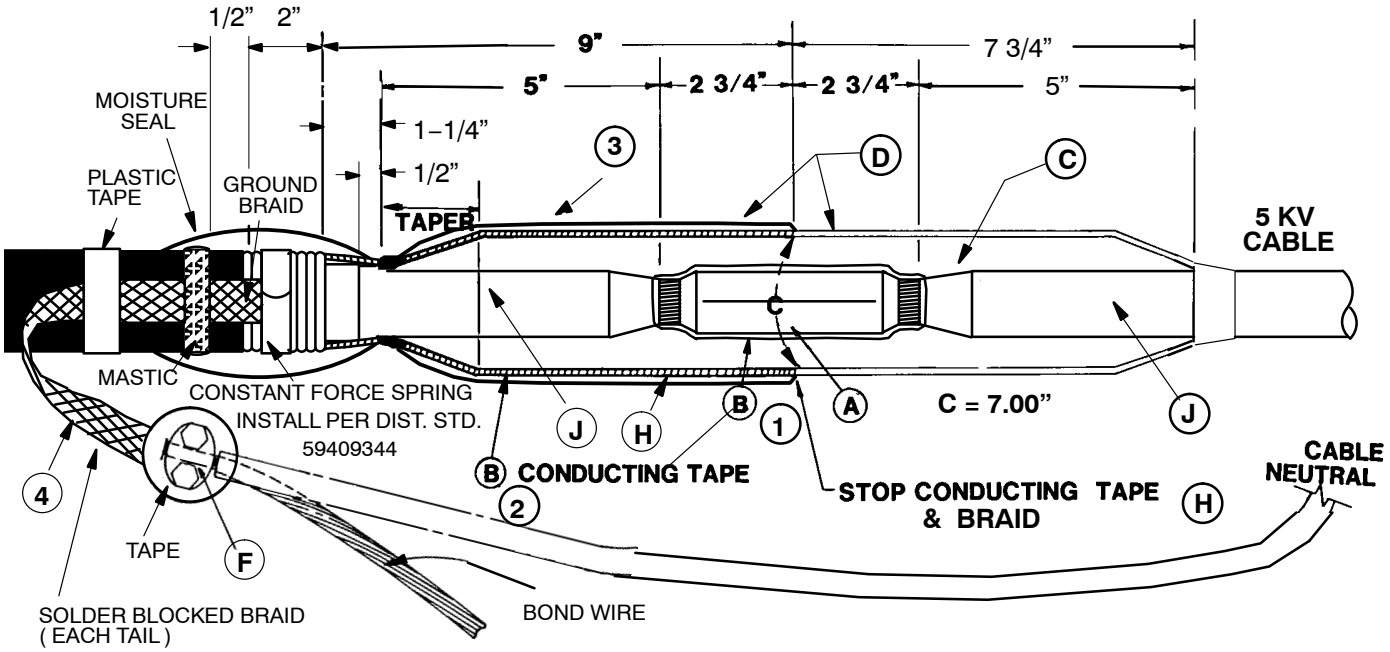
1. Rubber cement over connector, conductor, and surrounding insulation.



	Size Conductor	"D"	Circum.
41 24 32 01	#6	1"	3"
41 24 32 02	#2	1–1/4"	3–3/4"

	Stk. No.	Description 41 24 32 **	01	02
A	17 60 006	Sleeve – #6	1	
	17 60 273	Sleeve – #2		1
B	25 53 070	Tape – H.V. Rubber (Rl.)	2	2
C	25 53 053	Tape – Neoprene (Rl.)	1	1
D	25 53 055	Tape – Plastic	1	1
E	49 01 066	Cement – Rubber	1	1
F	22 02 275	Solder – String (Lb.)	1/10	1/10
G	22 05 213	Cloth – Sanding (Ft.)	1	1
H	17 54 182	Connector – #2	1	1
	417	Joint – Straight R.	1	1

CABLE JOINT
5 kV
750 LCX or LCR to 5 kV Rubber



(1) Cover connector & bare copper strands with one half lapped layer of conducting rubber tape.

(2) Extend one half lapped layer of conducting rubber from the factory shielding halfway across the joint.

(3) Prior to sealing , tape one layer of butt lapped copper braid from the metal LC shield to the center of the splice

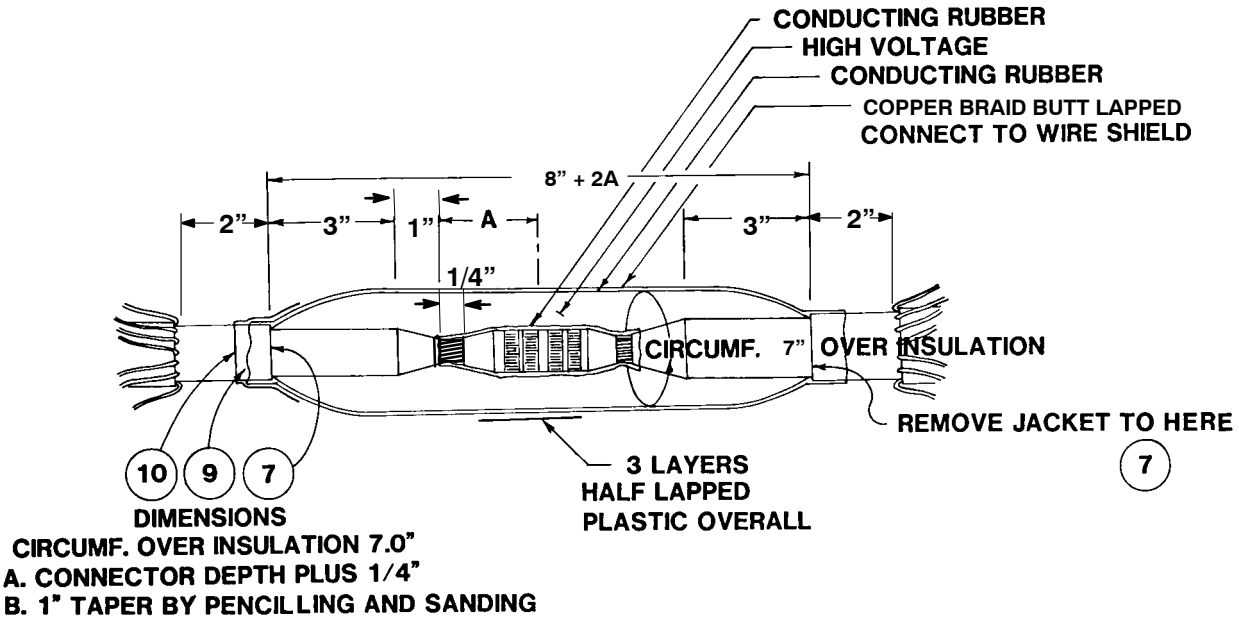
(4) Exposed braid must be solder blocked or covered with a heat–shrinkable sleeve (Stk.# 12 53 079).

NOTES:

1. All taping half lapped.

		Stnd. / Stk. No.	Description	Qty.	
	A	17 60 054	Connector – Split 750	3	Solder Block
	B	25 53 076	Tape – Rubber Conducting	1	Half Lapped
	C	25 53 070	Tape – Rubber High Volt	4	
	D	25 53 055	Tape – Plastic	2	3 Layers Min.
	E	17 54 306	Connector – Cable Grounding, Constant Force Spring	1	
	F	17 54 140	Connector – Two Bolt	1	
@	G	31 53 055	Compound – Sealer	As Req'd.	
	H	18 66 101	Braid – Copper	1	
	J	49 01 066	Cement – Adhesive	1	
		418	Operation Code	1	

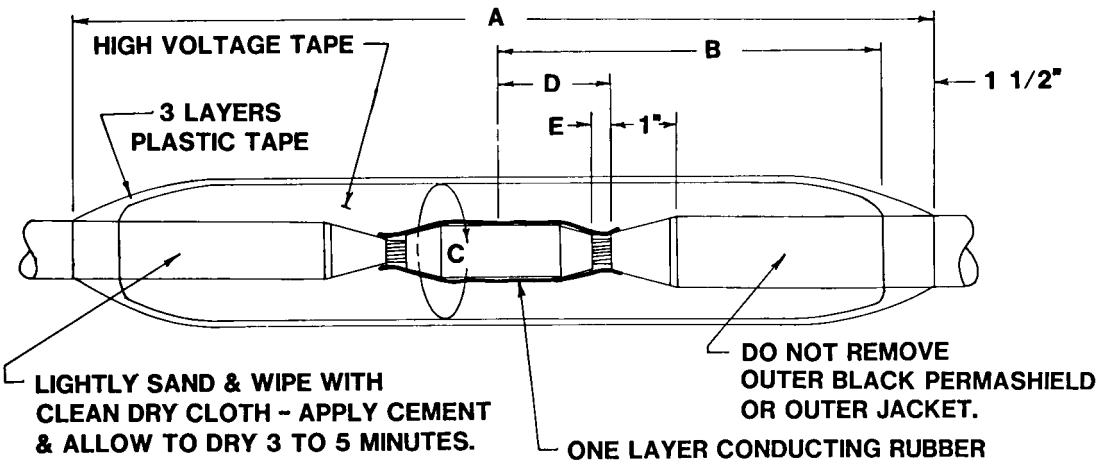
CABLE – JOINT
5 kV
1000 kcmil Al. Wire Shield



1. Pull drain wires thru the cable jacket 6" plus dimension A.
2. Strip each side to remove semi–con for 4 1/4" plus the depth of the connector.
3. Remove all of insulation from a length equal to the connector depth plus 1/4 inch. (Dimension "A")
4. For Dimension "B", taper the insulation to the conductor. Shave with a knife and sand to produce a smooth surface with sand cloth. Insure insulation is clean and free of contamination.
5. Crimp on connector. File out any excessive flashing. Prior to installing the connector, clean the exposed conduc-tor with stainless steel wire brush. Use one of the stocked stainless steel wire brushes.
6. Cover connector, and bare strands with one layer of conducting rubber tape, half lap.
7. Fill in low spots with high voltage rubber tape (25 53 070) to produce a smooth area from the top of one pencil to the other.
8. Tape high voltage rubber tape in continuous half lapped passes from the edge of one stripped jacket completely across to the other. Shorten each pass to produce taper effect.
9. Tape to 7.0 inch circumference.
10. Tape one layer of conducting tape completely across splice (See No. 9 on sketch).
11. Cover joint with one layer butt lapped copper braid.
12. Cover entire splice with 3 layers of plastic tape, half lapped.
13. Connect wire shield across splice with copper connector (split bolt).
14. Seal jacket cut offs per Dist. Std. **59 40 90 14**.

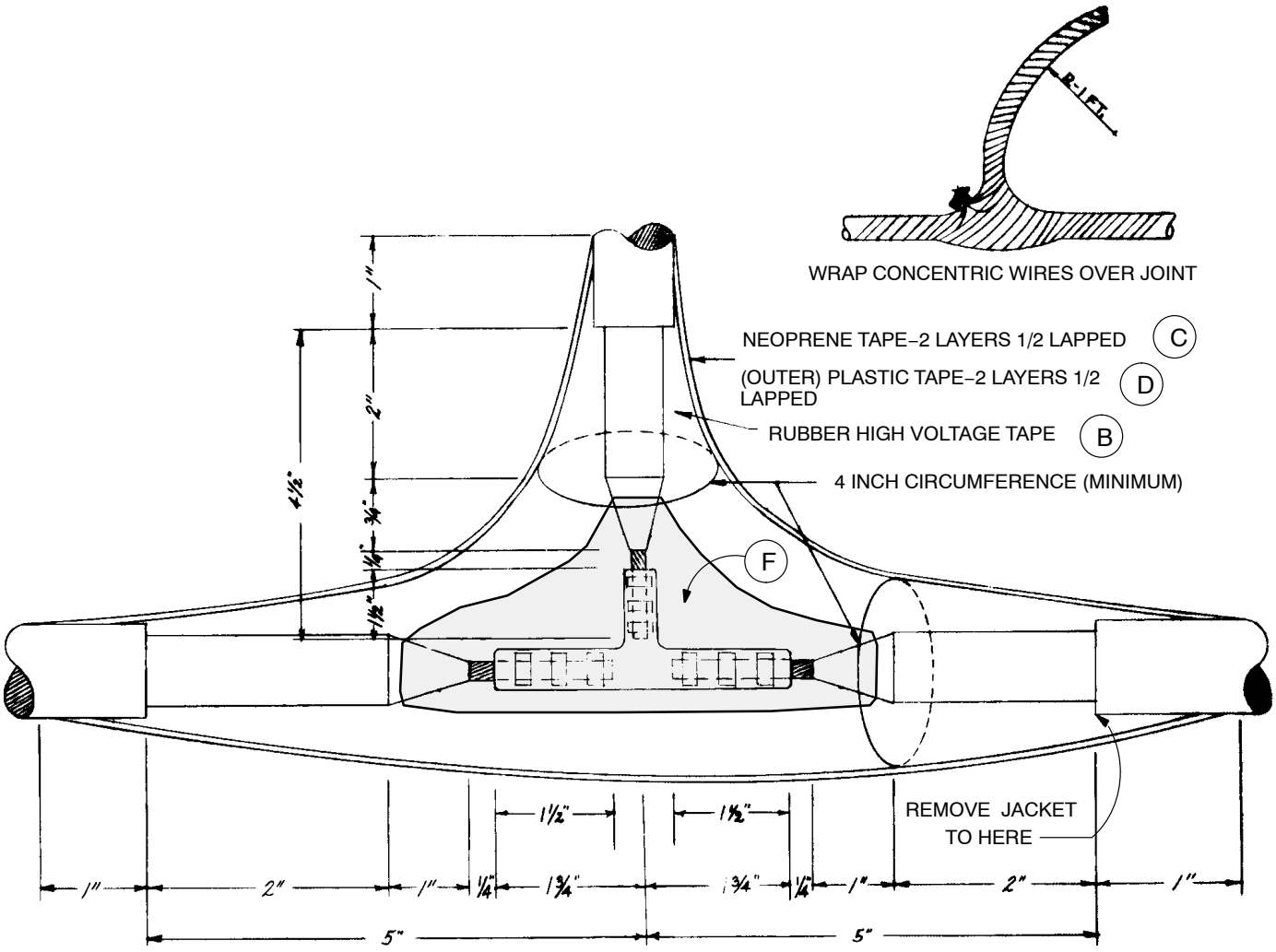
	Stnd. / Stk. No.	Description		
	17 60 055	Connector – 1000 kcmil	1	Ea
	25 53 076	Tape – Conducting	3	Rls
	25 53 070	Tape – Insul. High Volt	6	Rls
	18 66 101	Braid – Copper	2	Rls
	25 53 055	Tape – Plastic	2	Rls
	22 05 213	Cloth – Sanding	4	Ft
	17 54 182	Connector – Split Bolt	1	Ea
		Operation Code 418	1	

CABLE – JOINT
5 kV 1/0 – 1000 Single Cond.
Non – Shielded Cable



DIMENSIONS IN INCHES						INSULATION OVER CONNECTOR SHIELD
Conductor	A	B	C	D	E	
1/0 AWG	14	5–1/2	4	2	1/2	.346" + .040
4/0 AWG	14	5–1/2	4–3/4	1–3/4	1/2	.360" +.040
350 kcmil	14–1/2	5–3/4	5–1/2	1–3/4	1/2	.375" +.040
500 kcmil	15	6	6–1/4	2	1/2	.345" +.040
750 kcmil	15–1/2	6–1/4	6–1/2	2–1/2	3/4	.341" +.040
1000 kcmil	17	7	7–1/2	3	3/4	.367" +.040

Stnd. / Stk. No.	Description 41 24 35 **	01	02	04	05	06	07	
17 60 022	Connector – 1/0	3						EA
17 60 036	Connector – 4/0		3					EA
17 60 045	Connector – 350			3				EA
17 60 052	Connector – 500				3			EA
17 60 054	Connector – 750					3		EA
17 60 055	Connector – 1000						3	EA
49 01 066	Cement – Rubber	1	1	1	1	1	1	CN
25 53 070	Tape – Rub. High Volt1"	3	3	2	3	4	4	RL
25 53 074	Tape – Rub., High Volt 1–1/2"			2	2	4	4	RL
22 05 213	Cloth – Sanding	6	6	8	8	8	8	FT
22 02 255	Paste – Soldering	1	1	1	1	2	2	CN
25 53 076	Tape – Rub, Conducting	1	1	1	1	1	1	RL
25 53 055	Tape – Plastic	1	1	2	2	3	3	RL
418	Operation Code	3	3	3	3	3	3	



INSTRUCTIONS FOR "T" JOINT

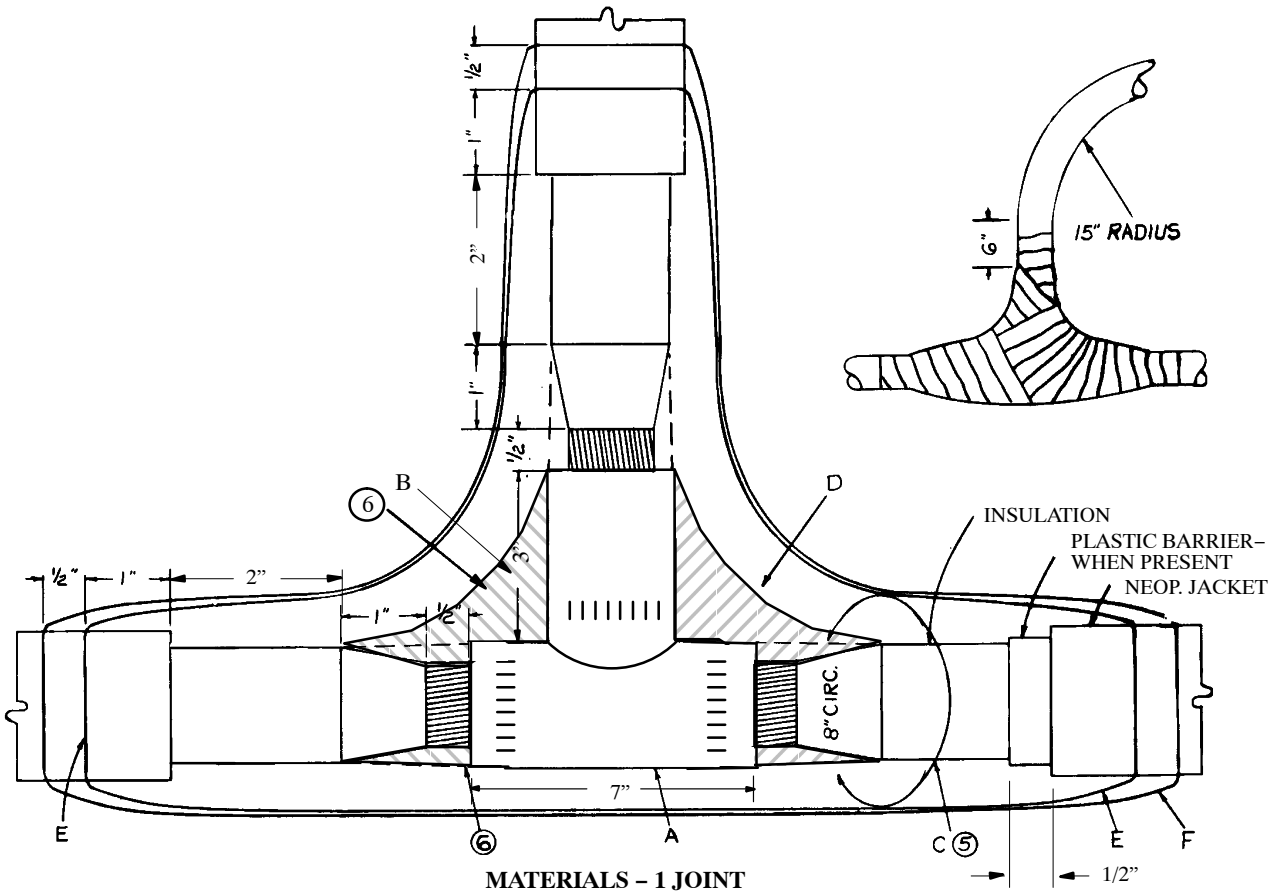
1. Cut each cable one foot longer than needed to obtain proper training.
2. Measure 13–1/2" back and apply several wraps of friction tape around cable and concentric wires. Untwist strands and train out of the way. To be re–wrapped later.
3. Cut 12" off the end of each of the cables. The cables should be trained so that the "T" tap cable trains down from above the joint at no less than one foot radius bend.
4. Remove insulation and jacketing to the dimensions shown.* (Pencil after installing connector).
5. Install connector using the J grove for #6 and the X grove for #2 Nicopress sleeves.
6. Pencil the insulation and roughen jacket and insulation with sanding cloth. Wipe clean with approved solvent.
7. Apply rubber cement over the entire joint and allow to dry. Apply sealing compound as shown. Tape with high voltage rubber tape obtaining a uniform covering of the desired thickness.
8. Apply two half lapped layers of neoprene tape over the joint and cover this with two half lapped layers of plastic.
9. Twist concentric wires back over the joint connecting the ends with a split bolt connector. Protect this connector with air seal and plastic tape.

NOTE:

In constructing joints on the other phases, stagger as necessary to obtain proper training. * If jacket is tight on the insulation, it may be treated as a part of the insulation; however, any indentations made by the concentric neutral must be sanded out.

		Stnd. / Stk. No.	41 25 31 ** Description	01	02
				Qty.	
	A	17 54 223	Connector – #2 to #2	1	
		17 54 222	Connector – #2 to #6		1
	B	25 53 070	Tape – H.V. Rubber	2	2
	C	25 53 053	Tape – Rubber, Moisture Proofing	1	1
	D	25 53 055	Tape – Plastic	1	1
	E	49 01 066	Cement – Rubber	1	1
	F	31 53 055	Compound – Sealing, Cable	1	1
		419	Operation Code	1	1

CABLE JOINTS
5 kV
750 Run To 750 Tap



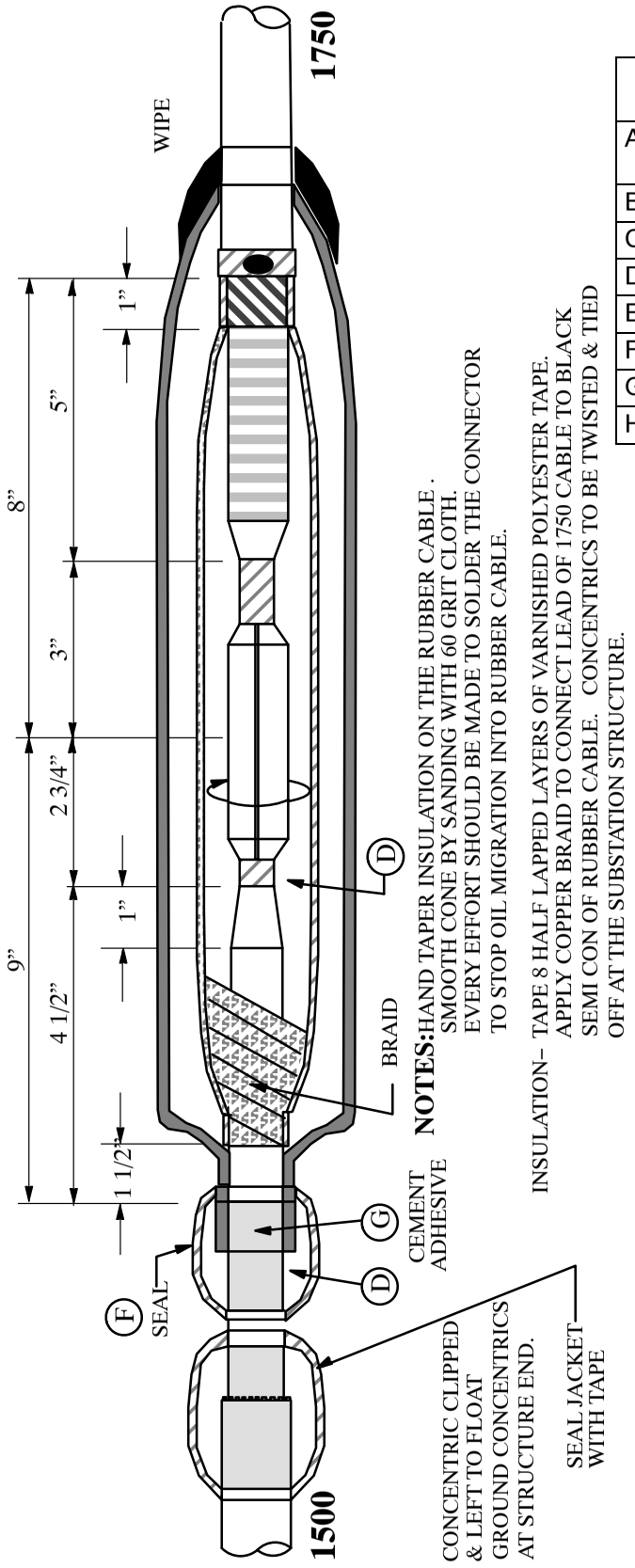
MATERIALS – 1 JOINT

INSTRUCTIONS

1. Train cables into position maintaining bending radius and cut cable.
2. Strip off 6 1/2" of neoprene jacket on the mains and 5 1/2" of the neo jacket on the tap cable. Do not disturb plastic barrier. Strip down to the conductor 3 1/2" on the mains & 2 1/2" on the tap cable.
3. Pencil off 1" of insulation and remove plastic barrier as shown.
4. Crimp on connector smoothing with sanding cloth and roughen jacket, poly barrier and rubber insulation.
5. Wipe clean and paint exposed plastic, rubber and jacket with cement.
6. Tape pencilled slopes to level and work sealing compound into crotches.
7. Tape to circumference with high voltage tape. Apply first layers with limited tension. Remaining layers tightly stretched.
8. Cover joint with one layer of halflapped neoprene tape.
9. Finish joint with two layers of plastic tape, tightly stretched, & finish with one moderately stretched layer.

		Stnd. / Stk. No.	Description	Qty.
	A	17 54 239	Connector–Cable, T	1
	B	31 53 055	Compound – Sealing, Cable	1
	C	49 01 066	Cement, Rubber	1
	D	25 53 074	Tape–Rubber, H.V.	4
	E	25 53 053	Tape–Rubber, Moisture Proofing, 3/4"	2
	F	25 53 055	Tape–Plastic, 3/4"	2
		743	Operation Code	1

CABLE – JOINT
5kV
1750 PILC to 1500 Rubber



NOTES: HAND TAPER INSULATION ON THE RUBBER CABLE . SMOOTH CONE BY SANDING WITH 60 GRIT CLOTH. EVERY EFFORT SHOULD BE MADE TO SOLDER THE CONNECTOR TO STOP OIL MIGRATION INTO RUBBER CABLE.

INSULATION– TAPE 8 HALF LAPPED LAYERS OF VARNISHED POLYESTER TAPE. APPLY COPPER BRAID TO CONNECT LEAD OF 1750 CABLE TO BLACK SEMI CON OF RUBBER CABLE. CONCENTRICS TO BE TWISTED & TIED OFF AT THE SUBSTATION STRUCTURE.

	Stnd. / Stk. No.	Description Materials – 1 – Joint		
A	17 60 057	Connector–1500 kcmil, Split, Soldered	1	Ea
B	12 53 062	Sleeve–Lead 3–1/2 x 20" Long	1	EA
C	25 53 063	Tape–Varnish Polyester	1	CN
D	25 53 070	Tape–Rubber High Voltage	1	RL
E	18 66 101	Braid–Copper, 1" Wide	1	RL
F	25 53 055	Tape–Plastic, PVC	1	RL
G	49 01 066	Cement–Adhesive Rubber & Poly	1	CN
H	31 51 049	Compound–Insulating, Joint	1	CN

		JOINT STANDARD NUMBERS					
Std. No.	**Description 41 31 ** OPERATION CODE**	**11 00**	**12 01**	**12 02**	**12 03**	**12 04**	**12 05**
		759	**724**				
12 53 062	Sleeve–Lead, 3–1/2" x 20"		1				
12 53 063	Sleeve–Lead, 4" x 21"			1			
12 53 064	Sleeve–Lead, 4–1/2" x 22"				1	1	
12 53 065	Sleeve–Lead, 5" x 24"						1
12 53 052	Sleeve–Lead, 5–1/2" x 28"	1					
12 53 061	Sleeve–Lead, 7–1/2" x 36"						
17 60 022	Connector–Copper, 1/0 AWG		3				
17 60 036	Connector–Copper, 4/0 AWG			3			
17 60 045	Connector–Copper, 350 kcmil				3	3	
17 60 052	Connector–Copper, 500 kcmil						3
17 60 054	Connector–Copper, 750 kcmil						
17 60 069	Connector–Copper, 800 kcmil	3					
17 60 057	Connector–Copper, 1500 (1750) kcmil						
22 02 282	Solder–Wiping (Lb.)	12	12*	12*	12*	12*	12*
22 02 273	Solder–50–50 (Lb.)	3	3*	3*	3*	3*	3*
22 02 276	Solder–String, 1/4" (Lb.)	1	1*	1*	1*	1*	1*
22 02 255	Solder–Paste (Cn.)	1	1*	1*	1*	1*	1*
25 53 022	Tape–V.P., 1" x 8 Yd. (Rl.)	1			1*	2*	2*
25 53 053	Tape–Neoprene, 3/4" x 30' Rl.						
25 53 071	Tape–Silicone Rubber (Rl.)						
25 53 076	Tape–Rubber, Conducting 3/4" x 15'						
31 53 007	Stearine (Pk.)	1	1*	1*	1*	1*	1*
22 05 213	Cloth–Sanding, 1–1/2" W(Ft.)	4	2*	2*	2*	2*	2*
31 51 062	Petrolatum – 3 Lb. Pkg. (Pk.)	3	3	3	3	3	3
18 66 101	Braid–Copper Mesh, 1" x 15' Rl.	3	3*	3*	3*	3*	3*
17 63 129	Disc–Tinned Copper, 1/32" x .75" dia.[1]						
12 53 071	Plate–End, 5.5" I.D. x 1.75"[1]						
	UNIT SPLICE STOCK NO. 17–62–	**None**	**022[5]**	**022[5]**	**022[5]**	**022[5]**	**022[5]**

		JOINT STANDARD NUMBERS			
Std. No.	**Description 41 32 ** OPERATION CODE**	**11 01**	**11 02**	**11 03**	**12 00**
		725			**726**
12 53 062	Sleeve–Lead, 3–1/2" x 20"				
12 53 063	Sleeve–Lead, 4" x 21"	1			
12 53 064	Sleeve–Lead, 4–1/2" x 22"				
12 53 065	Sleeve–Lead, 5" x 24"		1		
12 53 052	Sleeve–Lead, 5–1/2" x 28"	1		1	
12 53 061	Sleeve–Lead, 7–1/2" x 36"				1
17 60 022	Connector–Copper, 1/0 AWG	3			
17 60 036	Connector–Copper, 4/0 AWG	3	3		
17 60 045	Connector–Copper, 350 kcmil		5	3	
17 60 052	Connector–Copper, 500 kcmil				3
17 60 054	Connector–Copper, 750 kcmil			3	
17 60 069	Connector–Copper, 800 kcmil				1
17 60 057	Connector–Copper, 1500 (1750) kcmil				3
22 02 282	Solder–Wiping (Lb.)	12*	12*	12*	12
22 02 273	Solder–50–50 (Lb.)	3*	3*	3*	3
22 02 276	Solder–String, 1/4" (Lb.)	1*	1*	1*	1
22 02 255	Solder–Paste (Cn.)	1*	1*	1*	1
25 53 022	Tape–V.P., 1" x 8 Yd. (Rl.)	1*	2*	2*	2
25 53 053	Tape–Neoprene, 3/4" x 30' Rl.				
25 53 071	Tape–Silicone Rubber (Rl.)				
25 53 076	Tape–Rubber, Conducting 3/4" x 15'				
31 53 007	Stearine (Ea.)	1*	1*	1*	1
22 05 213	Cloth–Sanding, 1–1/2" W(Ft.)	2*	2*	2*	2
31 53 028	Compound–Insul. Oil Insol.	1	1	1	2
18 66 101	Braid–Copper Mesh, 1" x 15' Rl.	3*	3*	3*	2
17 63 129	Disc–Tinned Copper, 1/32" x .75" dia.[1]				
12 53 071	Plate–End, 5.5" I.D. x 1.75"[1]				
	UNIT SPLICE STOCK NO. 17–62–	**022[5]**	**022[5]**	**022[5]**	**None**

Std. No.	Description 41 36 ** OPERATION CODE	JOINT STANDARD NUMBERS						
		11 01	11 02	11 03	11 04	11 05	11 06	11 07
		435						
12 53 062	Sleeve–Lead, 3–1/2" x 20"	1						
12 53 063	Sleeve–Lead, 4" x 21"		1					
12 53 064	Sleeve–Lead, 4–1/2" x 22"			1	1	1		
12 53 065	Sleeve–Lead, 5" x 24"						1	
12 53 052	Sleeve–Lead, 5–1/2" x 28"							1
12 53 061	Sleeve–Lead, 7–1/2" x 36"							
17 60 022	Connector–Copper, 1/0 AWG							
17 60 036	Connector–Copper, 4/0 AWG							
17 60 045	Connector–Copper, 350 kcmil							
17 60 052	Connector–Copper, 500 kcmil							
17 60 054	Connector–Copper, 750 kcmil							
17 60 069	Connector–Copper, 800 kcmil							
17 60 057	Connector–Copper, 1500 (1750) kcmil							
22 02 282	Solder–Wiping (Lb.)	12	12	12	12	12	12	12
22 02 273	Solder–50–50 (Lb.)	2	2	2	2	2	2	2
22 02 276	Solder–String, 1/4" (Lb.)	1	1	1	1	1	1	1
22 02 255	Solder–Paste (Cn.)	1	1	1	1	1	1	1
25 53 022	Tape–V.P., 1" x 8 Yd. (Rl.)	1	1	1	1	1	1	1
25 53 053	Tape–Neoprene, 3/4" x 30' Rl.							
25 53 071	Tape–Silicone Rubber (Rl.)							
25 53 076	Tape–Rubber, Conducting 3/4" x 15'							
31 53 007	Stearine (Ea.)	1	1	1	1	1	1	1
22 05 213	Cloth–Sanding, 1–1/2" W(Ft.)	2	2	2	2	2	2	2
31 51 062	Petrolatum – 3 Lb. Pkg. (Pk.)	1	1	1	1	1	1	1
18 66 101	Braid–Copper Mesh, 1" x 15' Rl.	3	3	3	3	3	3	3
17 63 129	Disc–Tinned Copper, 1/32" x .75" dia.[1]							
12 53 071	Plate–End, 5.5" I.D. x 1.75"[1]							
	UNIT SPLICE STOCK NO.	**NONE**	**NONE**	**NONE**	**NONE**	**NONE**	**NONE**	**NONE**

Notes:

"*" means material included in unit splice shown at bottom of column.

[1] Made by Utility Shop.

[5] Stocked at Storeroom 75.

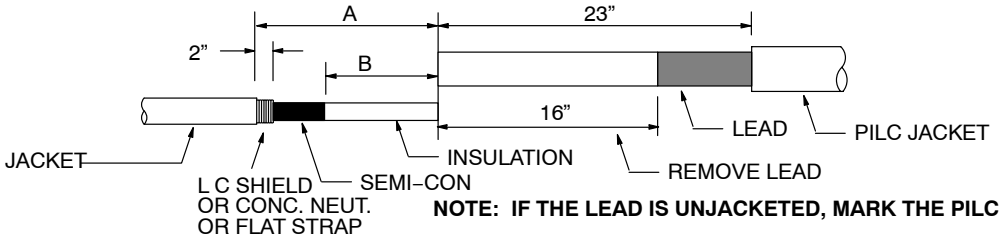
Unless otherwise noted, Petrolatum is referred to as "Compound" and "Oil Insoluble Compound" or "Insulating Compound" in the standard drawings.

CABLE JOINT – TRIFURCATING TRANSITION SPLICE
15 kV, 3/C PILC To 3 1/C Extruded Solid Dielectric
Raychem Heat–Shrinkable

I GENERAL INSTRUCTIONS

1. Adjust the flame so that it is an overall 12–inch bushy flame.
2. Apply outer 3– to 4– inch tip of the flame to heat–shrinkable material with a rapid brushing motion.
3. Unless otherwise instructed start shrinking tubes at the center working the flame around all sides of the tubes to apply uniform heat.
4. Concentrate on heating the back of the tubes as well as the front of the tubes.
5. If it is necessary to interrupt the shrinking process and the tubes cool, you must reheat prior to shrinking the next tube.
6. Inspect all installed tubes. Reheat any flat spots or wrinkles, paying particular attention to the back of the splice.

II PREPARE CABLES



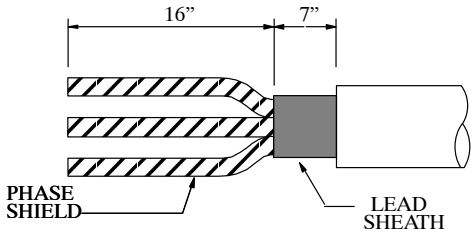
NOTE: IF THE LEAD IS UNJACKETED, MARK THE PILC CABLE AS SHOWN

CABLE SIZES	A	B
1/0 3 – 4/0 3 PILC TO 3–#2, 3–1/0, OR 3–4/0	10"	5"
350 3 PILC TO 3–350, OR 3–4/0	12"	5–1/2"
800 3 PILC TO 3–750	12"	5–1/2"

SECURE END OF FLAT STRAP, CONCENTRIC NEUTRAL, OR LC SHIELD WITH A LENGTH OF COPPER FOIL TAPE OR MINIMAL WIDTH WRAP OF PLASTIC TAPE.

III PREPARE AND REMOVE LEAD SHEATH

Remove lead oxide from the lead sheath and clean with an approved solvent. Remove the lead sheath as shown.



NOTE: FOR PHASE HOLDING

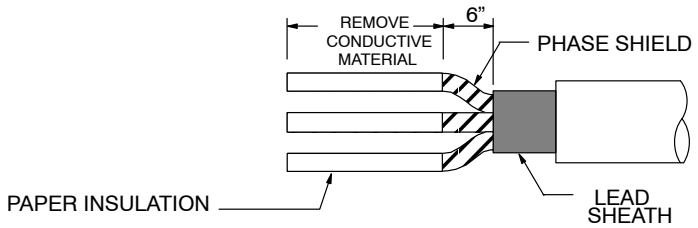
If an existing 3/C PILC cable is being cut and spliced to three new single conductor cables, "Phase Holding" may be required. After opening the lead sheath to expose the shielded phase conductors, place several wraps of colored tape around each phase before cutting the conductors. Use "white" to signify the "Held Phase A", blue to signify the "Held Phase B" and "red" to signify the "Held Phase C". The phase colors do not identify the actual phases but they represent the "Held Phase" of the system.

Due to the covering of the phases during the preparation of the splice, it will be necessary to move the markers several times throughout the splicing process. Each time the "Phase Holding" tape is to be moved to a new location, "Phase Holding" will be noted in the installation instructions.

If "Phase Holding" is not a requirement for this splice, then the "Phase Holding" comments should be ignored.

IV REMOVE SHIELD

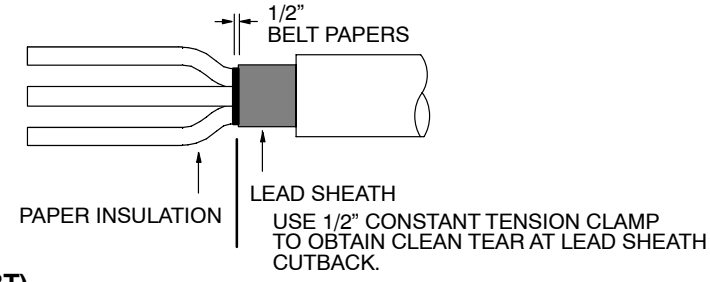
1. Cut back any bedding and/or shield tapes over all three phases to the lead sheath cutback.
2. Cut back phase shields and remove any conductive material from paper insulation as shown.



NOTE: TAPE PHASE SHIELDS AT EDGE TO PREVENT UNWRAPPING. DO NOT USE STRING. USE ONE WRAP OF COLORED "PHASE HOLDING" TAPE OR PLASTIC TAPE.

IF BELTED PILC CABLE

REMOVE BELT PAPERS AS SHOWN

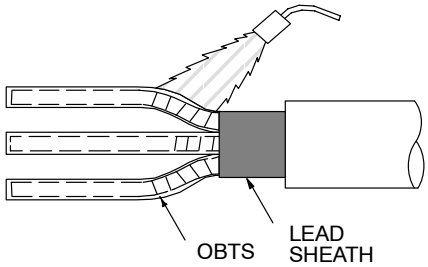


V POSITION AND SHRINK OIL BARRIER TUBES (OBT)

1. Place an oil barrier tube over each phase, butted to the lead sheath cutback.
2. Shrink the OBT's in the crotch area first. After the crotch is done, shrink one tube at a time.
3. Inspect the installed OBT's. The OBT's should have a smooth, wrinkle–free surface after shrinking. Reheat to smooth any wrinkled areas.

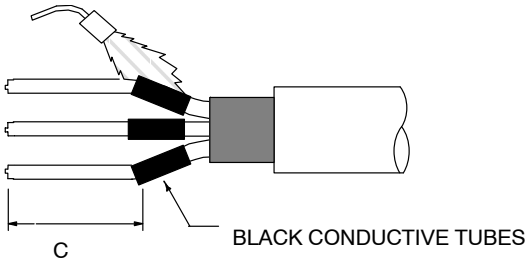
NOTES: (A) OBT MAY SHRINK 1/4 – 1/2" AWAY FROM LEAD SHEATH CUTBACK. THIS IS OK.

(B) TO ACHIEVE A SMOOTH, WRINKLE–FREE INSTALLATION, USE A REDUCED FLAME TO INSTALL THE THIN–WALLED OBT'S.



Phase Holding: Wrap a layer of "Phase Holding" tape to the connection end of the OBT before positioning and shrinking the Black Conductive Tubes.

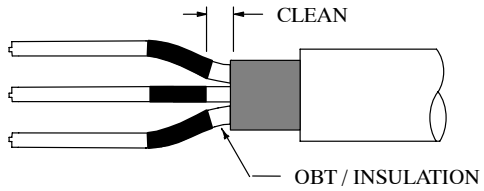
VI POSITION AND SHRINK BLACK CONDUCTIVE TUBES



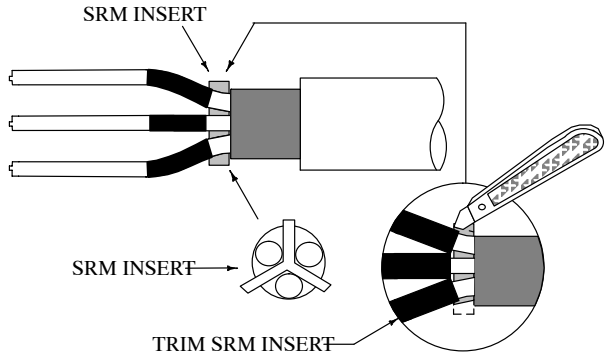
1. Place a black conductive tube over each phase and position as shown.
2. Shrink the tubes in place starting at the end nearest to the center of the splice.

CABLE SIZES	C
$1/0^3$ and $4/0^3$ PILC	6"
350^3 and 800^3 PILC	6–1/2"

VII CLEAN OBTS AND INSTALL SRM INSERT



1. Using an approved solvent, clean the OBT/insulation, as shown.

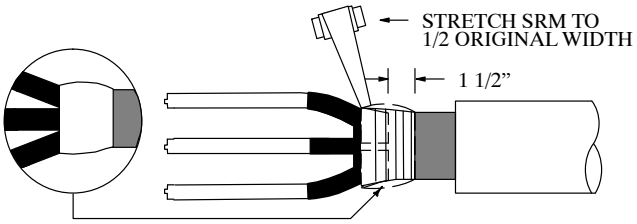


2. Assemble SRM insert per box instructions.
3. Spread the phases and position the SRM insert as shown

NOTE: THE SRM INSERT IS PACKAGED INSIDE THE CONDUCTIVE BREAKOUT.

4. Trim SRM insert to extend 1/8" beyond each phase.
5. Reclean the lead sheath using an approved solvent.

VIII INSTALL OIL SEAL

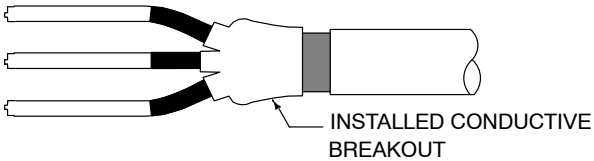


1. Mark the lead sheath 1–1/2" from the end.
2. Remove the backing from one side of a long strip of SRM. Roll the SRM and remaining backing strip into a convenient size.
3. While removing the remaining backing strip, tightly wrap the SRM from the mark on the lead sheath to the outer edge of the SRM insert.
4. Four to six strips of SRM should be used to build the SRM to the shape shown.

NOTES: (A) THE SRM WILL STICK BETTER IF THE LEAD SHEATH IS PRE–HEATED.

(B) DO NOT OVER APPLY SRM, THE FINISHED DIAMETER MUST NOT EXCEED THAT OF THE BREAKOUT BOOT.

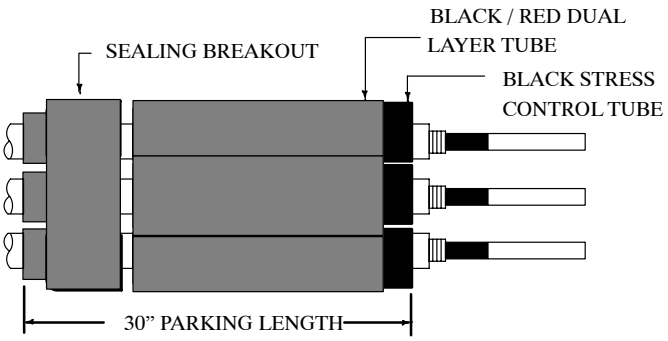
IX POSITION AND SHRINK CONDUCTIVE BREAKOUT



1. Position the conductive breakout over the SRM so that the inside butts up hard against the SRM.
2. Shrink the conductive breakout in place starting at the fingers and working toward the other end.
3. After the breakout has shrunk continue to apply heat until the breakout has a smooth, uniform surface.

Phase Holding: After breakout is cool, apply "Phase Holding" tape to the fingers of the cable breakout (last and final location for "Phase Holding" tape).

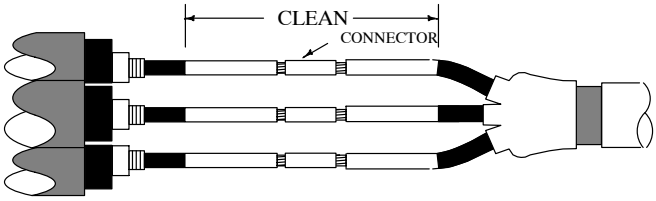
X POSITION SPLICE COMPONENTS ON SOLID DIELECTRIC CABLES



1. Clean 30" of cable jacket.
2. Place sealing breakout over the cables with the fingers pointing away from the splice center.
3. Place one set of nested tubes over each clean cable.

XI REMOVE INSULATION AND INSTALL CONNECTORS

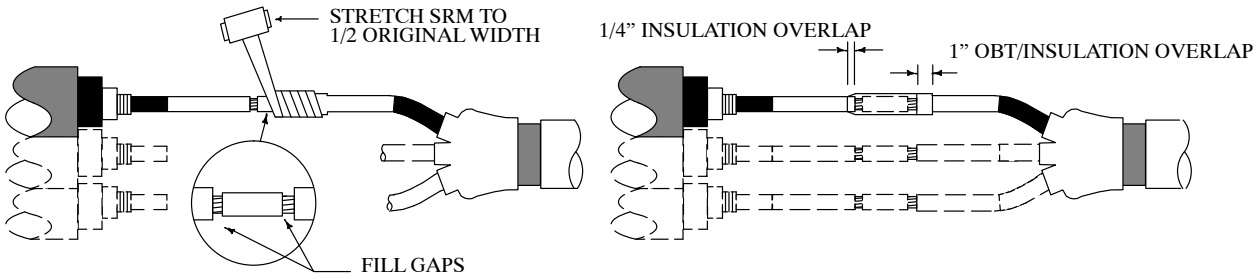
1. Determine the insert depth of the connector.
2. The insulation cutback should equal the connector insert depth plus 1/4".
3. Install the connectors. Protect the OBTS, if using soldered connector by wrapping them with cotton or glass fiber tape.
4. Make sure connections are smooth.
5. Using an approved solvent, clean the insulation as shown. Pay particular attention to the OBT/insulation surface.



XII APPLY SRM OVER CONNECTOR

NOTE: Complete Steps XII and XIII working on one phase at a time.

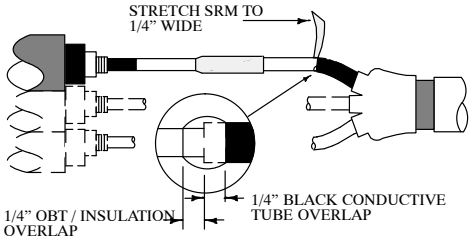
1. Remove backing from one side of a long strip of SRM, roll the SRM and remaining backing strip into a convenient size.
2. While removing the remaining backing strip, tightly wrap the SRM around the connector and exposed conductor. Be sure to fill the gaps and low spots around the connector.
3. Continue to wrap the SRM onto the insulation as shown.



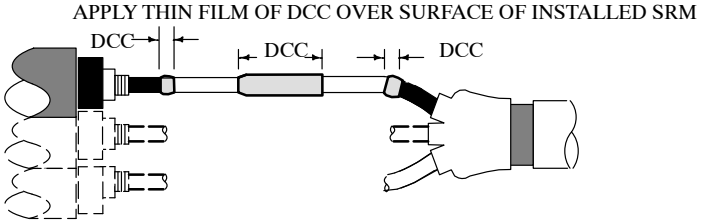
NOTE: IF THE CONNECTOR DIAMETER IS LARGER THAN THE INSULATION DIAMETER, APPLY TWO HALF–LAPPED LAYERS OF SRM OVER THE ENTIRE CONNECTION.

XIII APPLY SRM AT BLACK CONDUCTIVE TUBE AND SEMI–CON STEPS, APPLY DISCHARGE CONTROL COMPOUND, AND THEN POSITION BLACK STRESS CONTROL TUBE

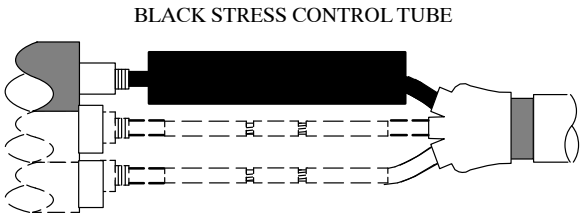
1. Remove the backing from the short angle–cut piece of SRM. Place the tip of SRM at the black conductive tube step and tightly wrap to fill the step. Overlap black conductive tube and OBT/insulation and taper as shown.
2. Repeat the above procedure for the semi–con step.



3. Snip open the end of the DCC tube and apply a thin film of compound on the SRM over the connector and semi–con steps.



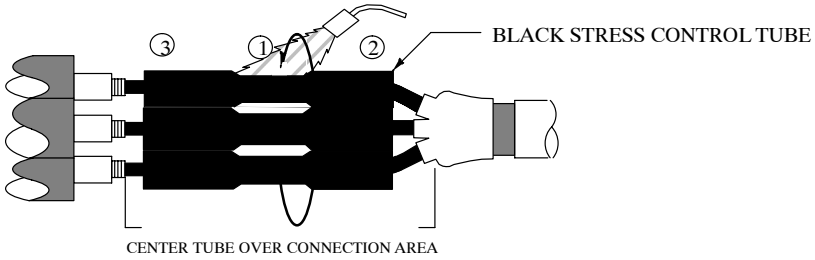
4. Center the black stress control tube over the completed connector area. Be sure to equally overlap the semi–con and the black conductive tube.



COMPLETE STEPS XII AND XIII FOR THE REMAINING TWO PHASES BEFORE PROCEEDING TO STEP XIV.

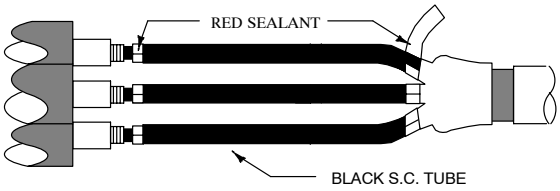
XIV SHRINK BLACK STRESS CONTROL TUBES

1. Make sure that each tube is centered over the connection area, equally overlapping the semi–con and black conductive tube.
2. Shrink all three tubes in place at the same time.
3. Begin shrinking at center of tubes (1), working torch with a smooth brushing motion around the tubes.
4. After center portions shrink, work torch toward one end (2), then to opposite end (3). Post heat all tubes.
5. Apply sufficient heat to ensure softening of the SRM, indicated by a smooth surface profile.



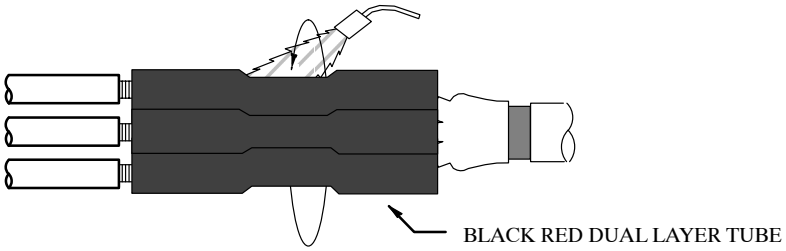
XV APPLY RED SEALANT

1. Remove backing from red sealant.
2. Using light tension, wrap sealant over the cable and butt against the black stress control tube as shown.
3. Build the sealant to the level of the black stress control tube.

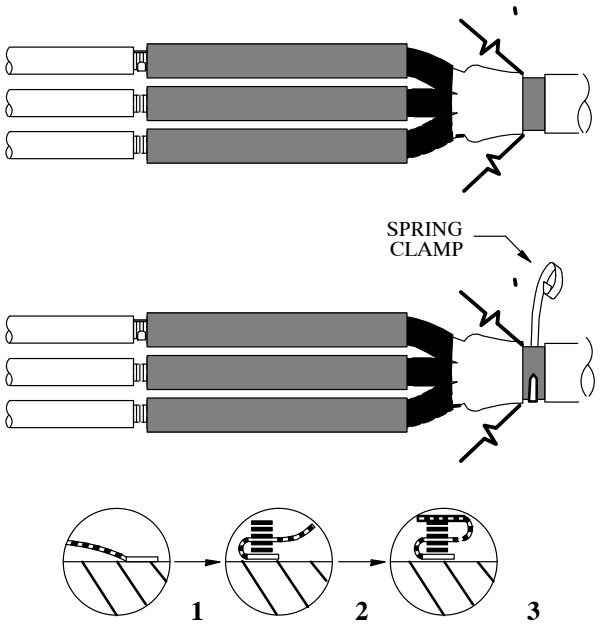


XVI POSITION AND SHRINK BLACK/RED DUAL LAYER TUBES

1. Center the tubes over the black stress control tubes.
2. Shrink in place using the method described in XIV except stop shrinking 5” from each end. Then shrink each end.
3. After initial shrinking, heat the entire tubes for approximately 1 minute. The raised ridges should disappear. Absence of ridges can be observed by visual inspection and by feeling the surface with a gloved hand.



XVII INSTALL GROUND LEADS TO PILC CABLE

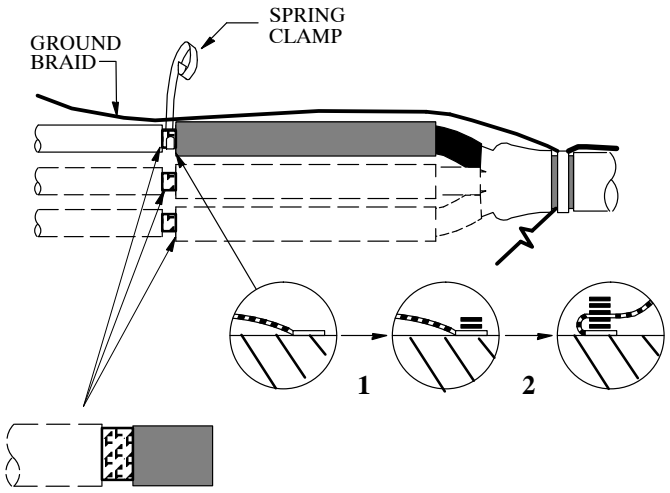


NOTE:

There are three (3) long braids provided with this kit. One end of the braid has a short length of heat shrink tube installed next to a 2" wide solder block. This is the end of the braid which will be positioned over the jacket for external grounding.

1. Wrap three layers of 2" wide copper mesh around the cleaned lead sheath on the 3/C PILC side of the joint. Tie off with a half hitch or equivalent knot.
2. Lay the three (3) braids across the joint evenly spaced around the joint circumference so that the braids overlap the mesh and the solder block is positioned over the jacket and aligned with the cable jacket cutback. Temporarily tape the braids into position.
3. (1) Wrap two turns of the LARGE spring clamp OVER the three (3) braids and mesh. (2) Fold the long end of the braid back over the spring clamp and wrap two additional turns. (3) Fold long end one more time over the spring clamp and complete wrapping the spring clamp over the braid. (The long end of the braid should be going across the splice at this time.)

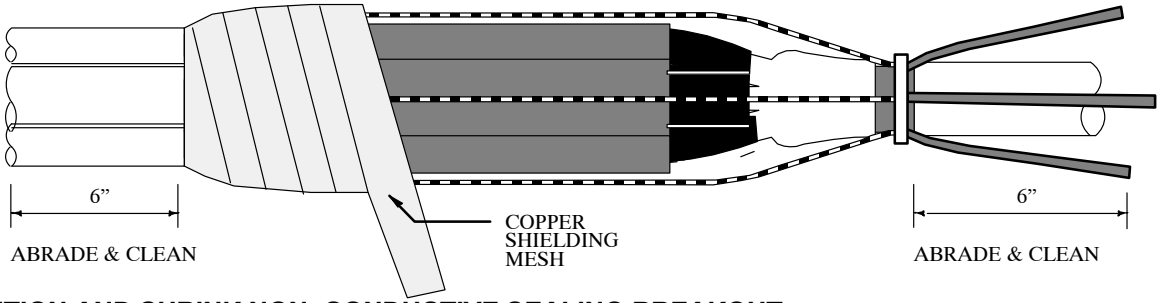
XVIII INSTALL GROUND LEADS TO METALLIC SHIELDS



1. Wrap three layers of 2" wide copper mesh around the metallic shields of the solid dielectric cable and tie off with a half hitch or equivalent knot. (Wrap around flat strap, concentric wires or LC Shield.)
2. (1) Lay braid directly over the mesh. (2) Wrap two turns of the SMALL spring clamp OVER the braid and mesh. (3) Fold back the braid over the spring clamp and complete wrapping the spring clamp over the braid. (Excess braid should be going across the splice at this time.) Excess braid may be cut off or left over the splice.
3. Repeat this step for remaining phases until all three phases are completed.

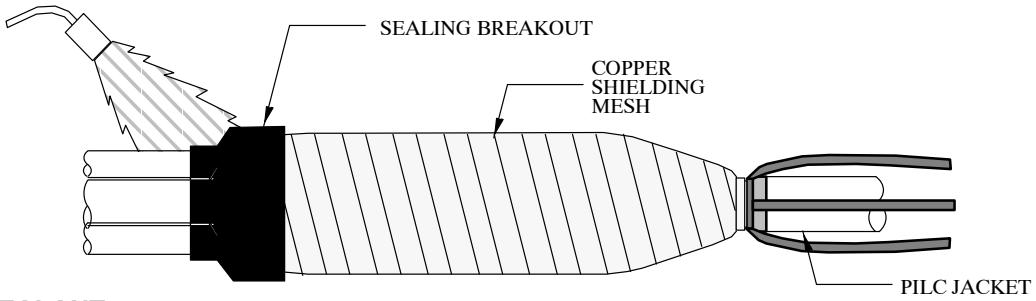
XIX APPLY SHIELDING MESH

1. Starting over the ground connections on the extruded solid dielectric cable side of the splice, wrap one half–lapped layer of 2" wide shielding mesh across the splice and tie off to the PILC cable lead sheath.
2. Abrade and solvent clean the cable jackets (or lead sheath) as shown.



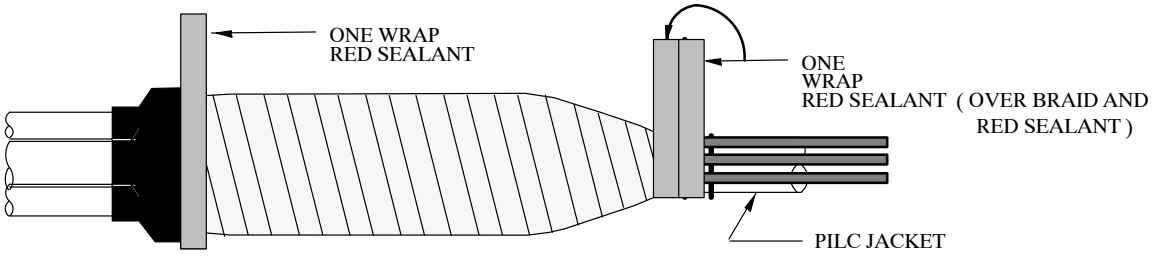
XX POSITION AND SHRINK NON–CONDUCTIVE SEALING BREAKOUT

1. Slide the breakout into position. Make sure that the full length of the fingers of the breakout are over the cable jackets and the body is extending over the splice.
2. Shrink in place starting at the fingers and working toward the splice center.



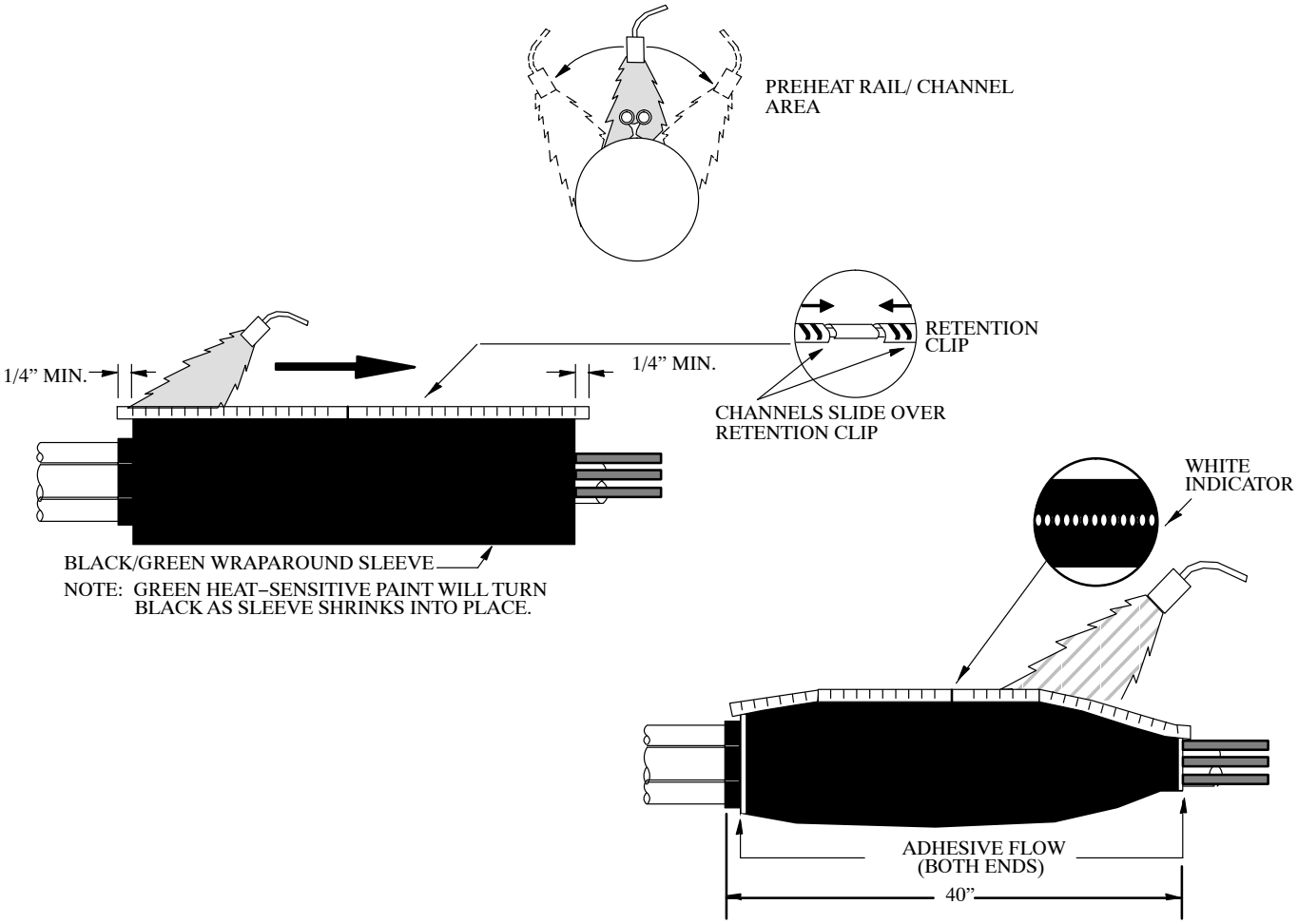
XXI APPLY RED SEALANT

1. Allow the breakout to cool sufficiently to touch before proceeding.
2. Apply two single wraps of red sealant under the ground braids on the PILC cable side. Wraps should be side by side and butted up to the cable jacket cutback.
3. Lay the braids down and press the solder blocked portion and the end of the heat shrink tubing into the red sealant.
4. Apply two additional single wraps of red sealant over the braids and the first layers of red sealant.
5. Apply one wrap of red sealant over the body of the breakout as shown.



XXII POSITION AND SHRINK WRAPAROUND SLEEVE

1. Remove or tape over all sharp points to prevent puncture of wraparound sleeve.
2. Remove the backing from the wraparound sleeve and center sleeve over splice.
3. Slide the metal retention clip onto the butted rails. Connect the channels by overlapping the retention clip as shown below.
4. Channel(s) must overlap sleeve edges by 1/4" minimum.
5. Preheat evenly along both sides of the rail/channel area until this area begins to shrink. (Critical Step)
6. Begin shrinking at the center of the sleeve and work all the way around the sleeve and toward each end.
7. Apply heat until the sleeve is completely shrunk and the green paint is completely converted to black.
8. Post heat the entire length, concentrating on the metal channel area. The post heat should be for 30 seconds after the sleeve is completely shrunk. A white line should be visible in the channel gaps indicating sufficient heating.
9. Look for adhesive flow at both ends of the sleeve.
10. The sleeve to cool before moving or placing in service.



THE SPLICE IS NOW COMPLETE

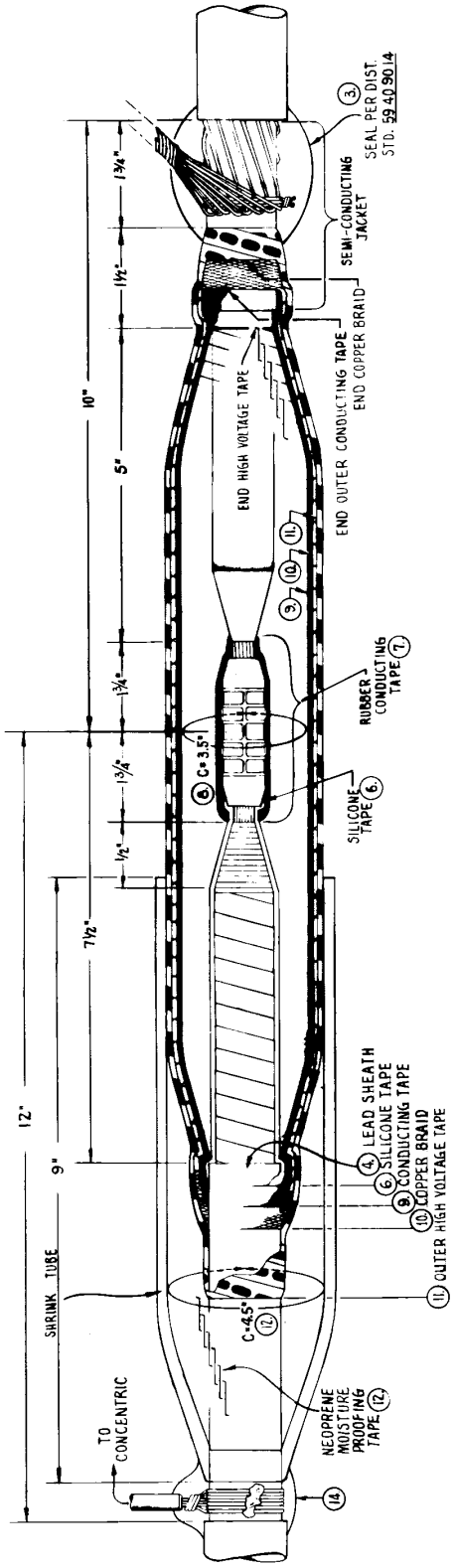
	Stnd. / Stk. No.	Description 41 33 22 **	01	02	03	04	05	06	07
A	17 05 308	Splice–Cond., Trif., H.S., 1/0–4/0 AWG	1	1	1	1			
	17 05 307	Splice–Cond., Trif., H.S., 350 kcmil					1	1	
	17 05 306	Splice–Cond., Trif., H.S., 750–800 kcmil							1
B	17 60 357	Sleeve–Cmpsn., 1/0 Cu	3						
	17 60 344	Sleeve–Cmpsn., 1/0 – #2 Al.		3					
	17 63 143	Sleeve–Cmpsn., 1/0 – 4/0 Al.			3				
	17 60 317	Sleeve–Cmpsn., 4/0 Al.				3			
	17 63 201	Sleeve–Cmpsn., 350 – 4/0 Al.					3		
	17 60 359	Sleeve–Cmpsn., 350 kcmil Cu.						3	
	17 60 504	Sleeve–Cmpsn., 800 kcmil to 750 kcmil Cu.							3
C	25 53 055	Tape–Plastic (RL)	1	1	1	1	1	1	1
		Operation Code 729	1	1	1	1	1	1	1

HEAT SHRINK SPLICE STANDARDS
FOR COMMON CABLE SPLICES

PILC CABLE	TO	SOLID DIELECTRIC CABLE	STANDARD
1/0 [3]		3–1/0 CNRP	41 33 22 01
1/0 [3]		3–#2 ALCNRP	41 33 22 02
1/0 [3]		3–4/0 ALCNRP	41 33 22 03
4/0 [3]		3–4/0 ALCNRP	41 33 22 04
350 [3]		3–4/0 ALCNRP	41 33 22 05
350 [3]		3–350 CNRP	41 33 22 06
350 [3]		3–350 FSRP, RW	41 33 22 06
800 [3]		3–750 LCRP	41 33 22 07
800 [3]		3–750 FSRP, RW	41 33 22 07
800 [3]		3–1000 TSRP	41 33 22 07*

*800 kcmil to 1000 kcmil connector is not included in the standard.

CABLE – JOINT
15 kV Oil Stop
#2 CNX or CNR – #4 PILC



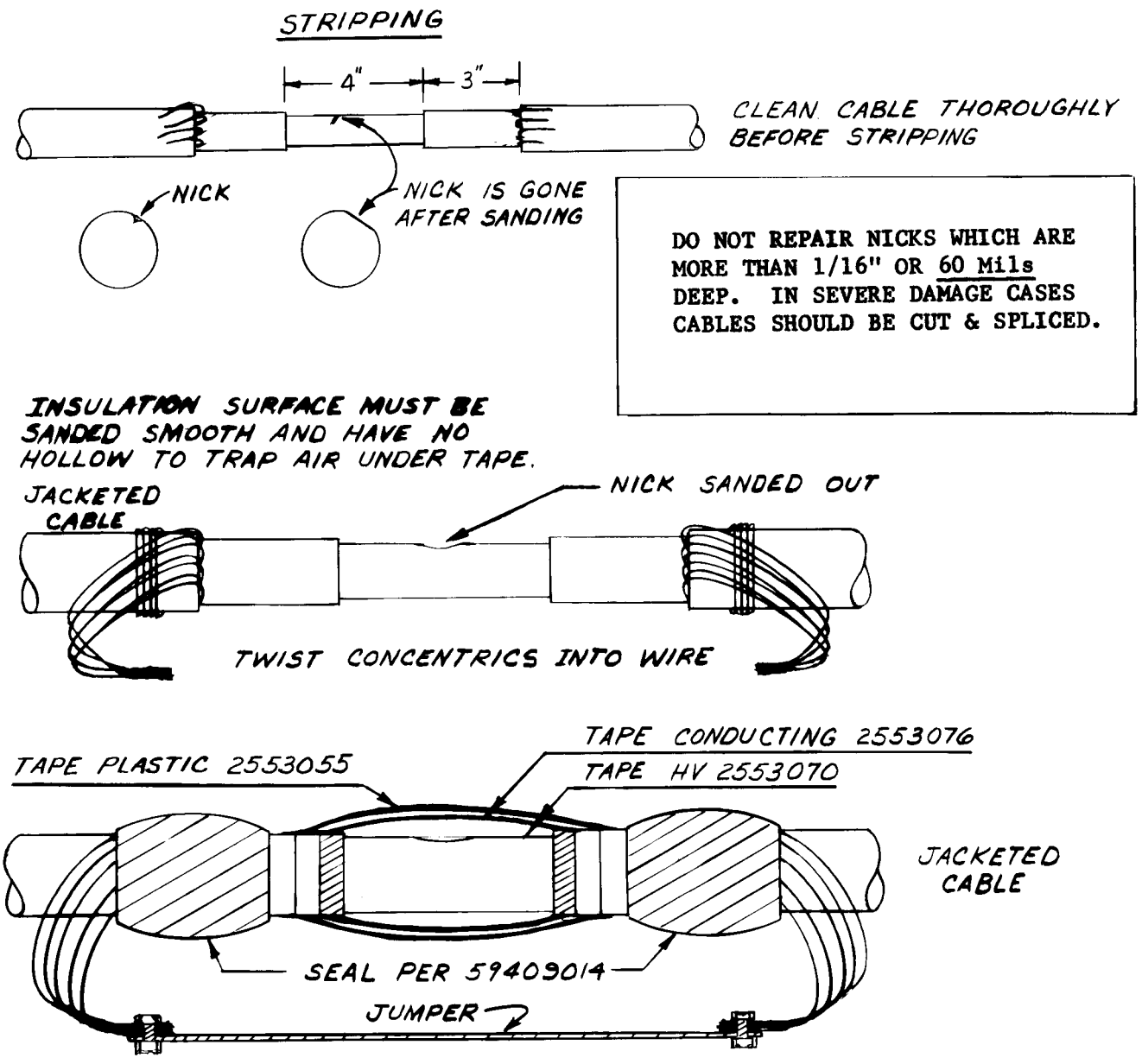
1. Cut cable at center of joint.
2. Remove 12” of jacket from the lead cable side.
3. Remove 10” of overall jacket from the poly side. The off concentrics in the manner indicated per Dist. Std. **59 40 90 14**.
4. Strip both cables to dimensions shown. Place 9 inch heat shrink tube over the lead cable side.
5. Install #2 to #4 Cu. connector. Use X groove of XPJ Nicopress. Three crimps per side.
6. Start 1/2 inch onto the lead and tape one half–lapped layer of silicone tape to cover as shown.
7. Cover the connector with one layer of conducting tape.
8. Insulate the entire joint with high voltage rubber tape to a circumference of 3.5 inches.
9. Cover with one half–lapped layer of conducting tape.
10. Cover with one layer of butt–lapped copper braid.
11. Cover with 3 layers of half–lapped high voltage rubber tape as shown.
12. Tape the lead end of joint with Neoprene moisture proofing tape to a 4.5 inch circumference.
13. Using a propane torch carefully shrink the protective 9 inch sleeve over the lead side. Apply heat until the mastic oozes out of both sides.
14. Tin a #4 covered wire onto the lead sheath. Seal the bond with Kearney air seal covering with plastic tape. Connect to the concentric with a #2 split bolt.

NOTE: 1) Sealing on the lead side is very important to the life of this joint.
2) Remove top layer of silverized paper or black paper to the lead sheath.

	Stnd. / Stk. No.	Description	Qty.	Unit
	17 60 318	Sleeve #4 – #2	1	EA
	25 53 071	Tape – Silicone Rubber	1	RL
	25 53 070	Tape – High Voltage	4	RL
	25 53 076	Tape – Rubber Conducting	1	RL
	18 66 101	Braid – Copper	1	RI
	25 53 055	Tape, Plastic 3/4”	1	RL
	31 53 055	Compound – Sealer	1	LB
	12 53 018	Sleeve–Plastic 2.0” x 9”	1	EA
@	25 53 053	Tape – Neoprene, Moistureproof	As Reqd	RL
→	18 54 026	Wire #4 Covered	2	FT
	17 54 182	Connector Split Bolt #2	1	EA
→	723	Operation Code	1	

CABLE – JOINT

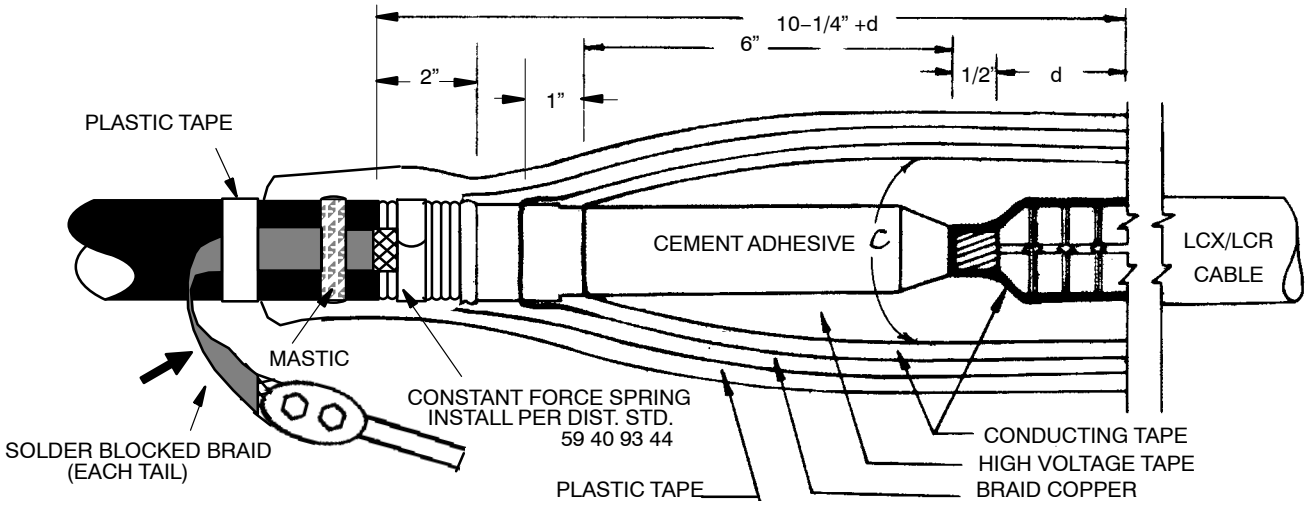
15 kV – Cable Repairs
#2, 4/0, & 750 CNX or CNR



NOTES:

1. The nick must be completely sanded out. #60 axolite cloth (22 05 213).
2. Tape high voltage tape tightly a minimum of 5 half lapped layers – to 7–dependent on severity of damage.
3. Seal jacketed cables per 59 40 90 14.
4. Use jumper size as noted.

Cable	Jumper	Connector	Stk. No.
all #2	#4 AWG	#4 Split Bolt	17 54 004
1–4/0	#2 AWG	2 Bolt	17 54 145
3–4/0	#2 AWG	#2 Split Bolt	17 54 182
3–750	#2 AWG	2 Bolt	17 54 139



Cir. (In)	"d" (In.)	d – Dimension	Stk. No.
7.0	1–3/4	Connector – Copper, 750 kcmil, Split Sleeve	17 60 054
7.0	2–1/4	Sleeve – Copper, 750 kcmil, H.V. Oil Stop	17 60 360
8.0	3	Sleeve – Al. 750 kcmil, H.V.	17 60 316

1. Train cables and clean–up 3 ft. either side of the center of the splice.
2. Remove the outer jacket for 10–1/4" inches plus the dimension "d" in the table.
3. Remove the corrugated copper shield to leave 2" of shield.
4. Remove the insulation shield by carefully scoring and peeling to leave 1–3/4" of extruded shield beyond the copper shield.
5. Taper the insulation to the conductor using the tapering tool, baring the conductor for length "d" in table plus 1/2 inch.
6. Apply the connector/ sleeve.
   a. Tin per Standard **59 40 91 46**, if Stk # 17–60–054 is used.
   b. Crimp using Y46 tool, U39RT die, and adapter (Stock #86–04–168), if Stock #17–60–360 is used. Apply as many crimps as possible without overlap.
   c. Crimp using Y46 tool, U39ART die, and adapter (Stock #86–04–168), if Stock #17–60–316 is used. Ap-ply as many crimps as possible without overlap.
7. Clean up connector and surrounding bare insulation using approved cleaner.
8. Install ground connectors per Dist. Std. **59 40 93 44**. DO NOT SEAL NOW. ◀ --
9. Item Step Taping

Item	Step	Taping
A	a	Cover bare metal in connector area–one half lapped layer.
G	b	Apply cement to bare insulation. Allow to dry
B	c	Tape to circumference with high voltage tape.
A	d	Tape one half lapped layer of conducting tape. Cover joint and 1 inch of factory extruded shield.
C	e	Tape one butt lapped layer of copper braid, across the splice making metal to metal contact on each side.
E	f	Seal ground connection per Dist Std. **59 40 93 44**.

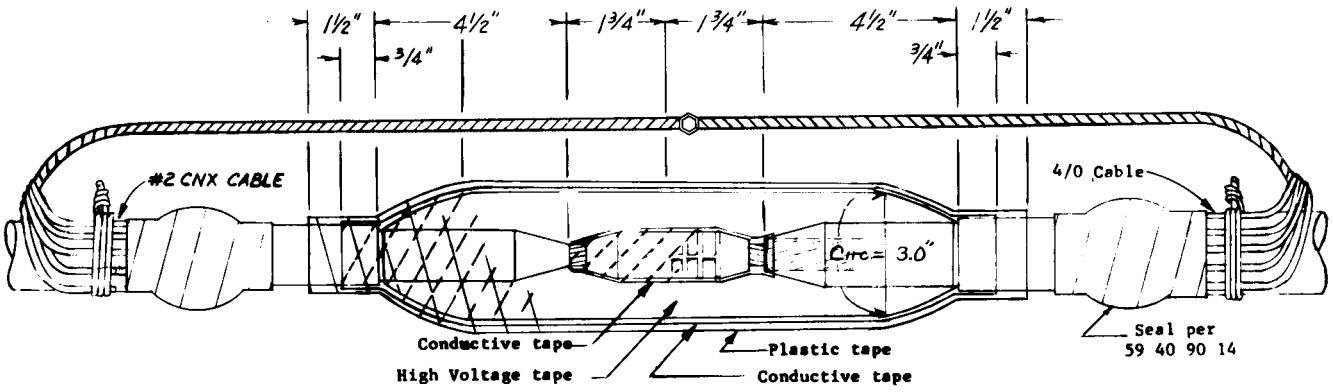
D g Seal joint and ground connection with 3 layers of half lapped plastic tape.

10. Connect ground leads across joint and to the bonding system, using a two–bolt connector and #2 copper wire.

		Stnd. / Stk. No.	Description	Qty.
	A	25 53 076	Tape – Rubber Conducting	1
	B	25 53 070	Tape – High Voltage	6
	C	18 66 101	Braid – Copper	2
	D	25 53 055	Tape – Plastic	2
	E	17 54 306	Connector – Cable Grounding, W/Constant Force Spring	2
	F	17 54 140	Connector – Wire, 2–Bolt	1
	G	49 01 066	Cement Adhesive	1
@	H	18 54 027	Wire – #2 Copper	As Req'd
			Operation Code 721	

CABLE – JOINT
15 kV
#2 CNX or CNR to 4/0

41 34 33 03
Sheet 1 of 1



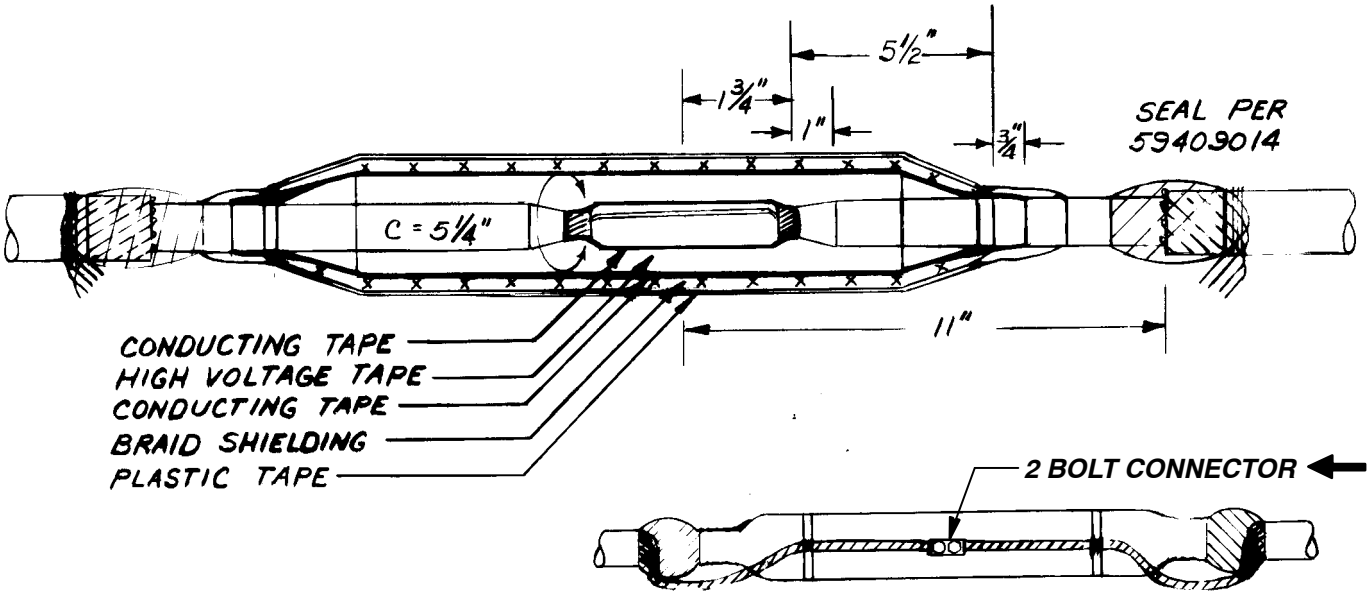
1. Train cables to final joint location and cut to length with a hacksaw.
2. Remove 10 inches of the outer jacketing when present. Install jacket seals per Dist. Std. **59 40 90 14**.
3. Strip outer shield and insulation to the dimensions indicated above. The insulation must be pencilled to smooth conical tapers. (6–1/4 inches of shield – 1–3/4 inches of bare conductor.)

NOTE: When pencilling tools are not available, sand tapers smooth with #60 grit axolite cloth–sanding 22–05–213. This operation may be accomplished after sleeve compression.

4. Knick the top layer of strands – bend and break off at the edge of the cable insulation of the 4/0 cable.
5. Install #2 aluminum tapered high voltage sleeve with the X groove of the XPJ tool with a minimum of two crimps per end.
6. Complete the tapering of the cable insulation with sand cloth. Clean splice insulation with a cloth dampened with Chlorothene.
7. Apply one half lapped layer of conducting rubber taper to cover all exposed metal of connector and cable strands.
8. Tape with high voltage tape over the connector area filling in the low place between the cable insulations until a smooth transistion between the #2 and 4/0 insulations is present.
9. Continue to tape with high voltage tape beginning 1/8 inch from the edge of the cables extruded conducting shield across the joint to within 1/8 inch of the shielding on the opposite side.
10. Shorten up taping passes forming tapers at both ends. Full insulation thickness is required over the connector and insulation tapers. Tape to 3 inch circumference.
11. Cover the taped insulation and 3/4 inch of factory shield with one half lapped layer of conducting rubber tape.
12. Cover the entire splice with three half lapped layers of plastic tape.
13. Connect concentric wires with a split bolt as shown. Tape concentrics against splice body taking care the connector is not hard against the joint puncturing the insulation.

Stnd. / Stk. No.	Description	Qty.	Unit
17 60 313	Sleeve, #2 Aluminum	1	Ea
25 53 070	Tape, Rubber, High Voltage	3	Rl
25 53 076	Tape, Rubber, Conductive	1	Rl
25 53 055	Tape, Plastic PVC	1	Rl
17 54 182	Connector – #2 Split Bolt	1	Ea
31 53 055	Compound Sealer, Poly.	1	Lb
721	Operation Code		

CABLE – JOINT
15 kV
350 kcmil CNX or CNR, P

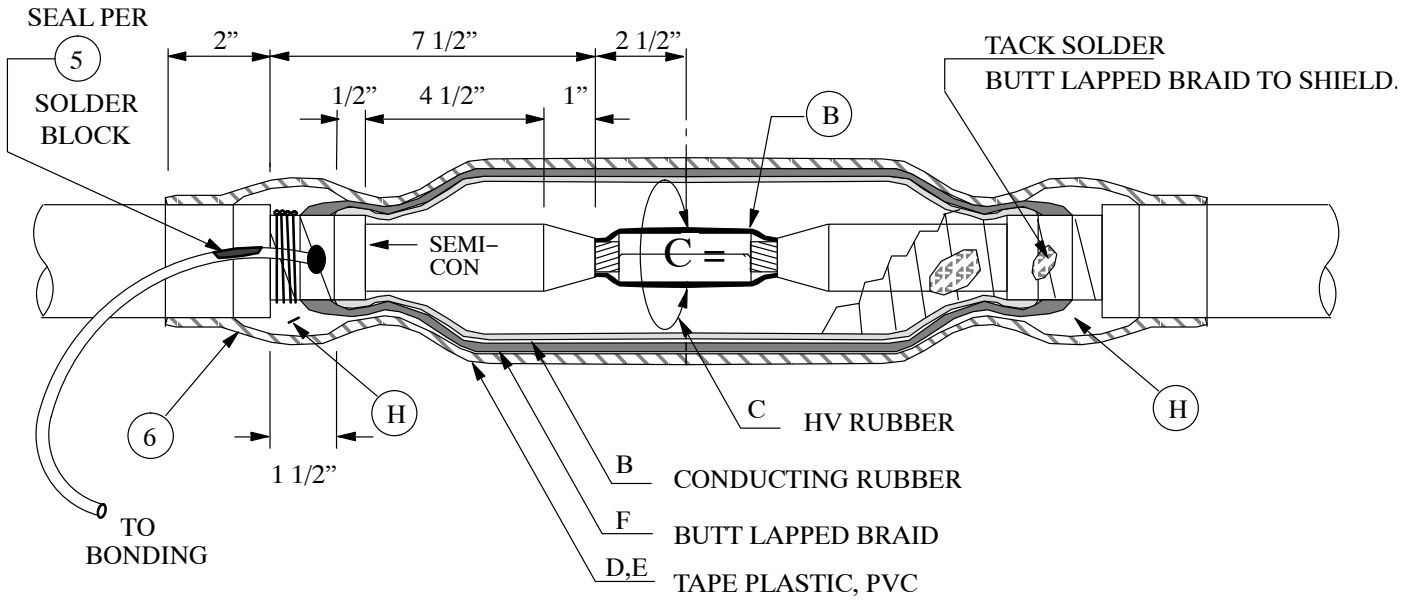


NOTES:

1. Overlap cables and strip out concentric to connect across joint.
2. Strip per dimensions shown. Poly insulation must be smooth – 1 pencilled finishing with #60 grit axolite sanding cloth. Clean insulation.
3. Cover insulation with glass cloth during connector tinning. Finger wipe and sand connector smooth.
4. Cover bare conductor and connector with one layer half lapped conducting tape.
5. Tape with high voltage tape filling in over the connector first. Tape to a 5–1/4 inch circumference tapering down in a 2 to 3 in long taper at each end.
6. Cover with one half lapped layer of conducting rubber tape.
7. Cover the conducting tape with one butt lapped layer of copper shielding braid.
8. Cover the joint taping with two half lapped layers of plastic tape.
9. Construction the jacket seals as indicated per Dist. Standard **59 40 90 14**.
10. Connect concentrics across the joint taping them to the body of the splice as shown.

Stnd. / Stk. No.	Description	Qty.	Unit
17 60 045	Connection–350 kcmil – Soldered type	1	Ea
25 53 076	Tape, Rubber, Conductive	1	Rl
25 53 070	Tape, Rubber, High Voltage	2	Rl
25 53 055	Tape, Plastic PVC	2	Rl
18 66 101	Braid – Copper, 1" x 15'	2	Rl
31 53 055	Compound Sealer, Poly.	1	Lb
17 54 140	Connector–Wire, #8–4/0 Cu, 2 Bolt	1	Ea
721	Operation Code		

CABLE – JOINT
15 kV Tape Shield
1000 kcmil Rubber Insulated



HACKSAW CUT TO POSITION CENTER OF SPLICE BETWEEN SUPPORTS.

NOTES:

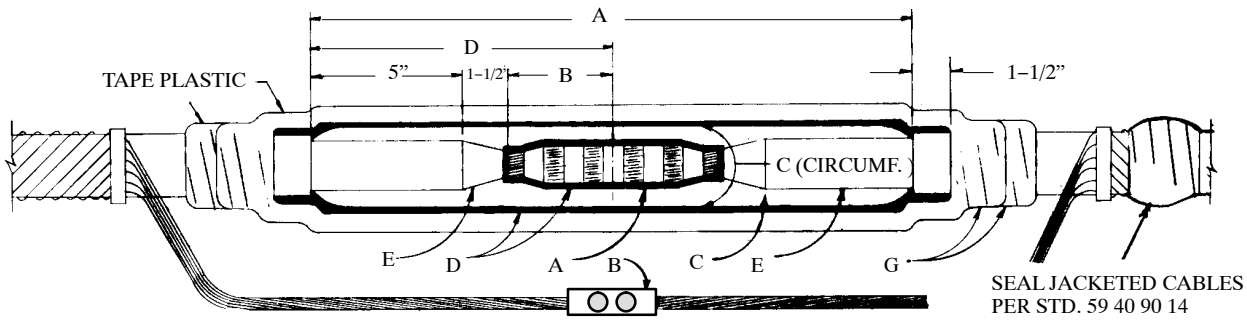
1. Strip 10 inches of jacket and succeeding cable elements as shown. Taper insulation one inch to conductor.
2. Protect tapers with glass tape and tin connector.
3. One layer of conducting rubber (1/4” lap tightly) taper to taper over connector.
4. Butt lapp shielding braid factory tape to factory tape.
5. Solder tack at each end with one #7 conductivity copper braid shield to shield (not shown in drawing) solder block braid in seal area.
6. In water holes tape extra water seal over end of factory shield and jacket (several layers of HV rubber).
7. Cover entire splice with 3 half lapped layers of plastic tape – 1–1/2 or 3/4 inch wide tape.

C = Circumference = 6–1/8” – 335 Mils

		Stnd. / Stk. No.	Description	Qty.
	A	17 60 055	Connector–1000 kcmil, Soldered	1
	B	25 53 076	Tape, Rubber, Conducting	3
	C	25 53 070	Tape, Rubber, High Voltage 1”	8
	D	25 53 055	Tape, Plastic PVC 3/4 inch	1
	E	25 53 077	Tape, Plastic PVC 1–1/2 inch	1
	F	18 66 101	Braid – Copper 1 inch Wde	2
@	G	22 02 282	Solder – As Required	–
	H	18 66 189	Braid – Grounding 3/4”	2
	I	31 53 055	Compound Sealer	As Req’d
		OP Code 418		1

CABLE – JOINT
15 kV
4/0, 750 Straight Al.

41 34 33 **



Dimensions (Inches)	a	b	Circ.	d	Tooling Die	Crimps Per End	Insulation Over Conn.
Cable Size 4/0	17	2	5–1/2	8–1/2	U249	1	360 Mils.
Cable Size 750	20	3–1/2	8	10	L39 ART	2	410 Mils.

NOTES:

1. Cut the cable with 20" overlap to provide sufficient length of concentric wires.
2. Measure 24 inches from each end, secure the concentrics with tape and unwind concentric wires.
3. Mark and cut cables at center of overlap.
4. Ring the conductive jacket "d" inches from the end and remove. Do not nick the cable insulation.
5. Pencil the insulation to bare "b" inches of conductor.
6. Install the connector sleeve with the die indicated in the table.
7. Wipe off excess inhibitor.
8. Cover the connector and bare strands with 1 layer of conducting tape. (Half lap item "D").
9. Paint exposed insulation with cement, item "E".
10. Apply high voltage tape, first filling in level at the connector and then taping across the joint just to the conducting jacket sloping in until circumference "C" is obtained.
11. Cover joint and 1–1/2 inches of jacket with one layer of conducting tape "D".
12. a) Butt lap one layer of copper braid covering the conducting rubber tape.
    b) Cover the copper braid plus 2 inches of cable with two layers of half lapped plastic tape.

    41 34 34 06 – 4/0 Splice
    41 34 34 07 – 750 Splice

	Stnd. / Stk. No.	Description 41 34 33 **	06	07
A	17 60 317	Sleeve – Splicing 4/0	1	
	17 60 316	Sleeve – Splicing, 750		1
B	17 54 140	Connector – Two Bolt, 4/0 Cu.	1	1
C	25 53 070	Tape – Poly, HV, 1" x 30" (rl.)	2	6
D	25 53 076	Tape – Cond., Rubber (rl.)	1	3
E	49 01 066	Cement – Rubber	1	1
F	18 66 101	Braid – Cu. 1" x 15'	1	3
G	25 53 055	Tape – Plastic	1	2
	721	Operation Code	1	1

THIS SHEET FOR INSTALLATION OF 3M CABLE SPLICES STANDARD SPLICE

NOTES:

a. When a cold–shrinkable sleeve or no sleeve is used, connect one or two concentric wires on each end to the grounding eyes.

b. When splicing a nonjacketed cable to a long length of jacketed cable seal the jacketed side per **59 40 90 14**.

Read the cautionary statement on Sheet 8 before starting.

1. There must be an 8 inch overlap of the cables, Figure 1. Wipe clean 2 feet each side.

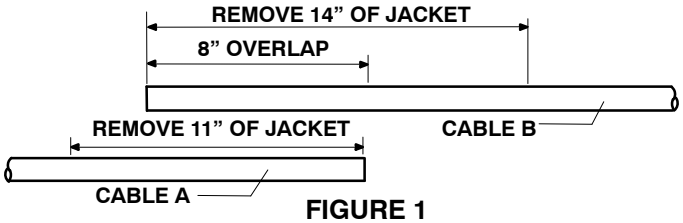


FIGURE 1

2. Place the shrinkable sleeve on either cable.
3. Remove 14 inches of jacket Cable B, 11 inches of jacket Cable A.
4. For single phase cables train the concentric wires in two bundles each side, 5 wires per bundle. See Figure 2. For three phase cables train concentric wires in one 6 wire bundle.

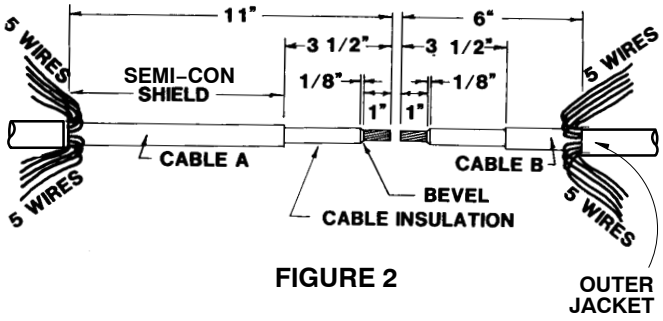


FIGURE 2

5. Cut 8 inches off Cable B. Cut cables with a hack saw so that the cable ends butt together at the splice center.
6. Strip cables for splicing per Figure 2, clean cables – DO NOT USE SILICONE SPRAY ON CABLES OR SPLICE BODY.
7. Prior to installing the connector, clean the exposed conductor with a stainless steel wire brush. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes.
8. Lubricate insulation and semi–con shield of Cable A with silicone grease. Install splice body onto Cable A, leaving conductor exposed for the connector. NOTE: Lubricate bore with silicone grease to aid installation.
9. Install connector using the Y–35 handpress with the U25ART die. Make as many crimps per end as possible without overlap. File flashing down. Remove excess inhibitor.

10. Lubricate insulation and semi–con shield of Cable B with silicone grease. Slide splice body onto Cable B and into final position over the connector. Use the bumps formed on the splice ends as guides for centering. See Figure 3.
11. Connect concentrics with two sleeves on Side A. For single phase cables place 5 wires per side into each sleeve. For three phase cables place all 6 wires into one sleeve. Crimp using the “P” or ”J” groove of the XPJ Nicopress tool as shown on sleeve. Snug sleeves and wires tightly against splice and cable. See Figure 3.

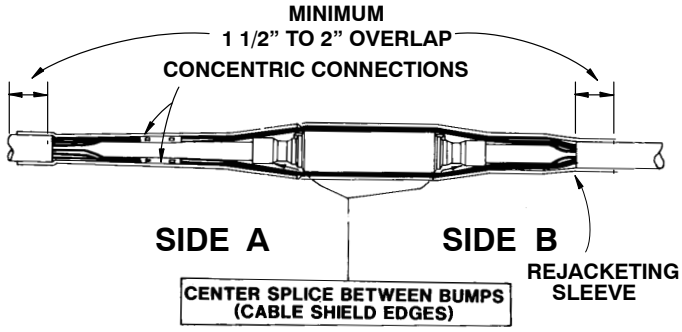


FIGURE 3

12. Slide shrinkable sleeve over the splice and shrink it down. To install cold–shrinkable sleeves, follow the manufacturters’ instructions.

THIS SHEET FOR INSTALLATION OF ELASTIMOLD CABLE SPLICES STANDARD SPLICE

NOTES:

a. When a cold–shrinkable sleeve or no sleeve is used, connect one or two concentric wires on each end to the grounding eyes.

b. When splicing a nonjacketed cable to a long length of jacketed cable seal the jacketed side per **59 40 90 14**.

Read the cautionary statement on Sheet 8 before starting.

1. There must be an 8 inch overlap of the cables, Figure 1. Wipe clean 2 feet each side.

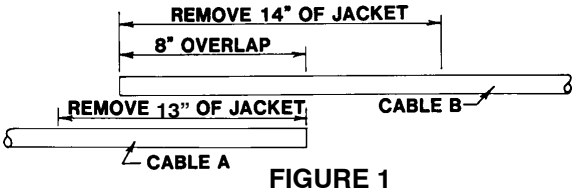


FIGURE 1

2. Place the shrinkable sleeve on either cable.
3. Remove 14 inches of jacket Cable B, 13 inches of jacket Cable A.
4. For single phase cables, train the concentric wires in two bundles each side, 5 wires per bundle. See Figure 2. For three phase cables, train the concentric wires in one 6 wire bundle.
5. Cut 8 inches off Cable B. Cut cables with a hacksaw so that the cable ends butt together at the splice center.
6. Strip cables for splicing per Figure 2, clean cables – DO NOT USE SILICONE SPRAY ON CABLES OR SPLICE BODY.

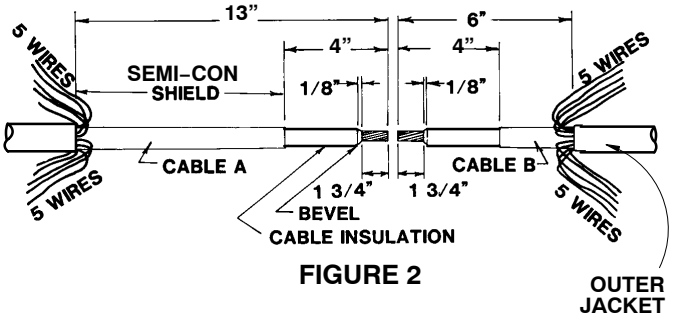


FIGURE 2

7. Prior to installing the connector, clean the exposed conductor with a stainless steel wire brush. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes.
8. Lubricate insulation and semi–con shield of Cable A with silicone grease. Install splice body onto Cable A, leaving conductor exposed for the connector. NOTE: Lubricate bore with silicone grease to aid installation.

9. Install connector using Y–35 handpress with U25ART die. Make as many crimps per end as possible without overlap. File flashing down. Remove excess inhibitor.
10. Lubricate insulation and semi–con shield of Cable B with silicone grease. Slide body onto Cable B and into final position over the connector. Use the bumps formed on the splice ends as guides for centering. See Figure 3.
11. Connect concentrics with two sleeves on Side A. For single phase cables place 5 wires per side into each sleeve. For three phase cables place all 6 wires into one sleeve. Crimp using the ”P” or ”J” groove of the XPJ Nicopress tool as shown on sleeve. Snug sleeves and wires tightly against splice and cable. See Figure 3.

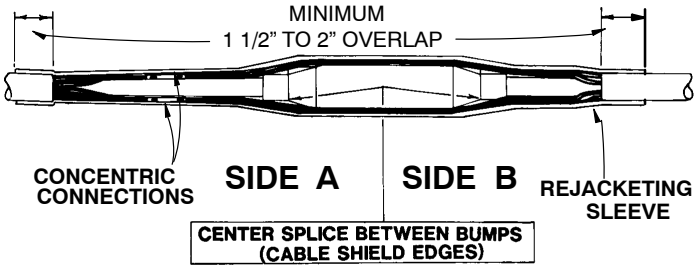


FIGURE 3

12. Slide shrinkable sleeve over the splice and shrink it down. To install cold–shrinkable sleeves, follow the manufacturers’ instructions.

THIS SHEET FOR INSTALLATION OF COOPER CABLE SPLICES STANDARD SPLICE

NOTES: a. When a cold–shrinkable sleeve or no sleeve is used, connect one or two concentric wires on each end to the grounding eyes.

b. When splicing a nonjacketed cable to a long length of jacketed cable, seal the jacketed side per 59 40 90 14.

Read the cautionary statement on Sheet 8 before starting.

1. There must be an 8 inch overlap of the cables, Figure 1. Wipe clean 2 feet each side.

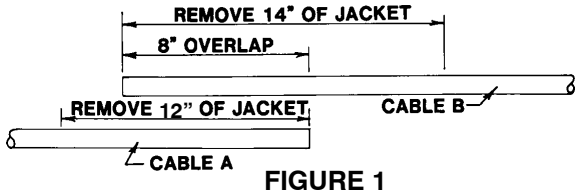


FIGURE 1

2. Place the shrinkable sleeve on either cable.
3. Remove 14 inches of jacket Cable B, 12 inches of jacket Cable A.
4. For single phase cables train the concentric wires in two bundles each side, 5 wires per bundle. See Figure 2. For three phase cables train concentric wires in one 6 wire bundle.
5. Cut 8 inches off Cable B. Cut cables with a hacksaw so that the cable ends butt together at the splice center.
6. Strip cables for splicing per Figure 2, clean cables – DO NOT USE SILICONE SPRAY ON CABLES OR SPLICE BODY. Prior to installing the connector, clean the exposed conductor with a stainless steel wire brush. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes.

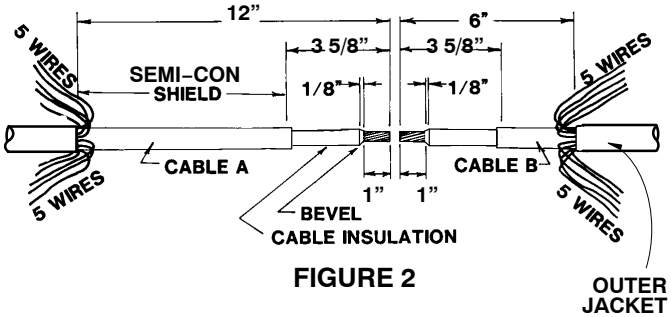


FIGURE 2

7. Lubricate insulation and semi–con shield of Cable A with silicone grease. Apply one wrap of tape to the end of the conductor on Cable A. Install splice body onto Cable A, leaving conductor exposed for the connector. NOTE: Lubricate bore with silicone grease to aid installation.
8. Remove tape from the conductor on Cable A. Clean bare conductors with a wire brush prior to installing the connector.

9. Install connector using the Y–35 handpress with the U25ART die. Make as many crimps per end as possible without overlap. Leave the center 1/4" of the connector uncrimped. File flashing down. Remove excess inhibitor.
10. Lubricate insulation and semi–con shield of Cable B with silicone grease. Slide splice body onto Cable B and into final position over the connector. Use the bumps formed on the splice ends as guides for centering. See Figure 3.
11. Connect concentrics with two sleeves on Side A. Place 5 wires per side into each sleeve. Crimp using the "P" or "J" groove of the XPJ Nicopress tool. Snug sleeves and wires tightly against splice and cable. See Figure 3.

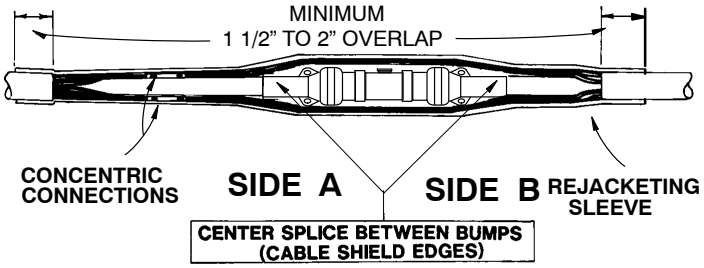


FIGURE 3

12. Slide shrinkable sleeve over the splice and shrink it down. To install cold–shrinkable sleeves, follow the manufacturers' instructions.

3M LONG REPAIR SPLICE

1. Cut out damaged cable section, do not exceed 6.0 inches. Retain neutral wires from damaged section. Use a hack saw to get clean cuts.
2. Prepare cables as shown in Figure 1. If cable is jacketed, remove jacket to expose neutral wires. For single phase cables train the concentric wires in two bundles each. For three phase cables train the concentric wires in one 6 wire bundle. Place the shrinkable sleeve on one of the cables.

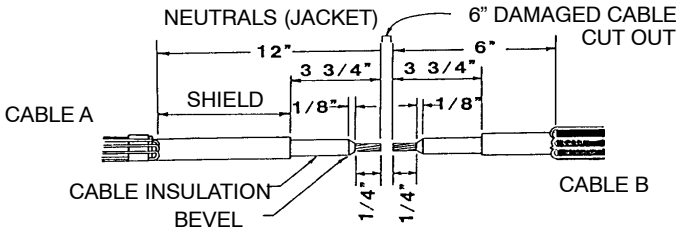


FIGURE 1

3. Fold neutrals back and clean dirt off of the semi–con shield and the insulation. Use a dry cloth. Prior to installing the connector, clean the exposed conductor with a stainless steel wire brush. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes.
4. Install the connector on Cable A only and crimp using Y–35 handpress with U–25 ART die or B24EA die as shown in Figure 2. Wipe off excess inhibitor and file flashing down.

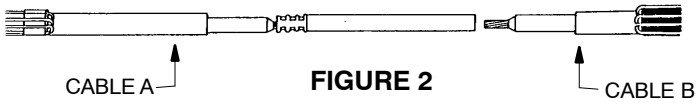


FIGURE 2

5. Lubricate connector, insulation, semi–con, and splice bore with silicone grease. Install splice body onto connector and Cable A until un–crimped connector end is exposed approximately 2 inches. Do Not Use Spray Silicone.
6. Install Cable B into connector and crimp. Clean off excess inhibitor and file flashing down.
7. Lubricate insulation and semi–con of Cable B and the exposed connector and bore area of the splice body with silicone grease. Slide splice body only onto Cable B. Use bumps formed on splice ends as guides for centering.
8. Tape down concentric strands at ends of splice.
9. Attach one concentric from cable through its splice grounding eye and back to the concentric neutral wires. (Cold–shrinkable sleeved and Non–jacketed cables only.)
10. Twist the strands together and jumper across the splice using cable neutral wires and retained neutral wires.For single phase cables connect each bundle using 2 sleeves and the "P" or "J" groove of the XPJ Nicopress tool as shown on sleeve. (See Figure 3.) For three phase cables connect the bundle using 1 sleeve. Make sure that the nuetral wires are against the splice body.

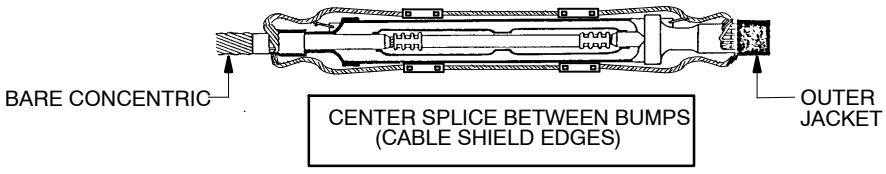


FIGURE 3

NOTES:

a. Slide shrinkable sleeve over splice and shrink down.
Install cold–shrinkable sleeves per manufacturer's instructions.

b. When splicing a non jacketed cable to a long length of jacketed cable, seal the jacketed side per 59 40 90 14.

Notes	Stnd. / Stk. No.	Description 41 34 34 **	05	07	08	09	10	11	14	15	16
	17 55 283	Splice – #2 Al Str. 15kV	1	1	1	1	1	1			
	17 55 288	Splice – Long Repair, #2 Al. Str. 15kV							1		1
	17 60 506	Sleeve – #2 Solid Al		1							
	17 60 505	Sleeve – 1/0 Str. Al	1								
	17 60 501	Sleeve – Transition #2 Str. to #2 Solid Al, or #4 Cu Str.					1				
	17 60 502	Sleeve – Transition #2 Str. to 1/0 Str. Al				1					
	17 60 408	Sleeve – Transition #2 Solid to 1/0 Str. Al			1						
	17 60 409	Sleeve – Long Repair, #2 Al, Solid, or #4 Str. Cu, 15kV							1		
	17 62 250	Splice – Long Repair, 1/0 Al Str. 15kV								1	
	17 60 103	Sleeve – #4 Str. Cu.	2	2	2	2	2	2	4	4	4
	17 55 371	Sleeve Cold–Shrinkable	1	1	1	1	1	1	1	1	1
		Operation Code 404	1	1	1	1	1	1	1	1	1

15kV Splice	Dist. Std.
#2 Al Stranded, 15kV	41 34 34 11
#2 Al Solid, 15kV	41 34 34 07
1/0 Al Stranded, 15kV	41 34 34 05
Transition #2 Str. to #2 Solid Al, or #4 Str. Cu	41 34 34 10
Transition #2 Stranded to 1/0 Stranded Al	41 34 34 09
Transition #2 Solid to 1/0 Stranded Al	41 34 34 08
Long Repair #2 Al, Stranded, 15kV	41 34 34 16
Long Repair #2 Al, Solid or #4 Str. Cu, 15kV	41 34 34 14
Long Repair #1/0 Stranded, 15kV	41 34 34 15

CAUTIONARY STATEMENT

The standard splice (Stk. #17–55–283) is for #2 stranded aluminum cables (Stk. #18–07–238 and Stk. #18–07–237). If any cables other than the standard #2 stranded aluminum cables are to be spliced together, the compression sleeve in the standard splice must be discarded and replaced by one of the compression sleeves shown in the materials list.

DO NOT CHANGE THE CABLE PREPARATION DIMENSIONS SHOWN FOR EACH APPROVED SUPPLIER'S SPLICE WHEN SUBSTITUTING A COMPRESSION SLEEVE FOR THE STANDARD #2 COMPRESSION SLEEVE. THIS IS ESPECIALLY IMPORTANT WHEN SUBSTITUTING A 2" LONG COMPRESSION SLEEVE FOR THE 3" LONG COMPRESSION SLEEVE IN THE ELASTIMOLD SPLICE. IF THE DIMENSIONAL REQUIREMENTS SHOWN ARE NOT MAINTAINED – THE SPLICE WILL FAIL.

THIS SHEET FOR INSTALLATION OF 3M CABLE JOINTS.

NOTES:

a. For cold shrink sleeves or no rejacketing sleeves, connect one or two concentric wires on each end to the grounding eyes.

b. When splicing a nonjacketed cable to a long length of jacketed cable seal the jacketed side per **59 40 90 14**.

c. When splicing in manholes an external ground connection is required – see sheet 4 for instructions.

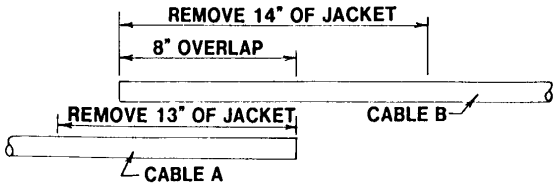


FIG 1

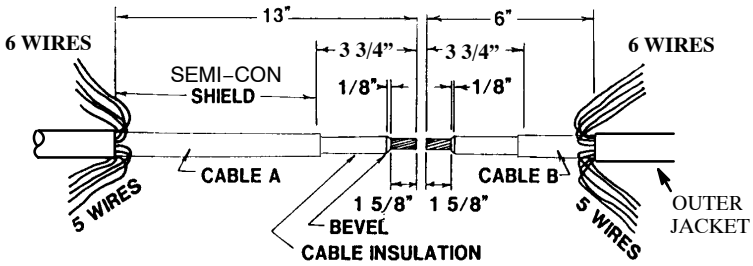


FIG 2

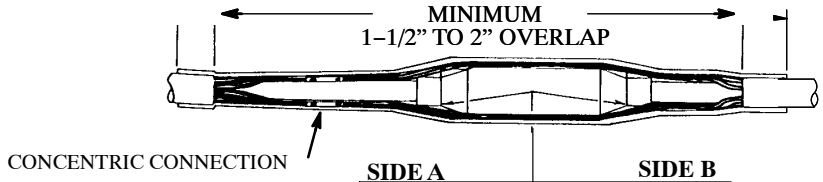


FIG 3

1. There must be an 8 inch overlap of the cables. Fig. 1. Wipe clean 2 feet each side.
2. Remove 14 inches of jacket from Cable B, 13 inches of jacket from Cable A.
3. Place the shrinkable sleeve(s) on either cable.
4. Train the concentric wires in two bundles each side, 5 and 6 wires per bundle. See Fig. 2.
5. Cut 8 inches off Cable B. Cut cables with a hacksaw so that the cable ends butt together at the splice center.
6. Strip cables for splicing per Fig. 2, clean cables – DO NOT USE SILICONE SPRAY ON CABLE OR JOINT.
7. **Clean the bare conductors with a stainless steel wire brush prior to installing the connector. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes.**
8. Lubricate insulation and semi–con shield of Cable A with silicone grease. Install splice body onto Cable A, leaving conductor exposed for the connector. NOTE: Lubricate bore with silicone grease to aid installation.
9. Install connector using Y–35 handpress with U249 or U28ART die. Make one crimp per side with the U249 or two crimps per side with the U28ART die. File the flashing down.
10. Lubricate insulation and semi–con shield of Cable B with silicone grease. Slide splice body onto Cable B and into final position over the connector. Use the bumps formed on the splice ends as guides for centering. See Fig. 3.
11. Connect concentric with two sleeves on Side A. Place 5 and 6 wire bundles into connectors. Crimp using the P or J groove of XPJ Nicopress tool as shown on sleeve. Snug sleeves and wires tightly against splice and cable. See Fig. 3. NOTE: 4/0 single phase cables with twenty #12 concentrics require three wire bundles and three #2 sleeves.
12. For the cold shrink sleeve, place a layer of mastic around the end of each cable jacket. Slide the first cold shrink sleeve over the splice with the end of the sleeve overlapping the opposite cable jacket cut off (or mastic strip) by 2 inches. Shrink the sleeve down.
    Wrap one layer of mastic at the inner end of the shrunken sleeve. Slide the second sleeve over the splice and overlap the first sleeve by 2 inches. Shrink the second sleeve down.

THIS SHEET FOR INSTALLATION OF ELASTIMOLD CABLE JOINTS.

NOTES:

a. For cold shrink sleeves or no rejacketing sleeves, connect one or two concentric wires on each end to the grounding eyes.

b. When splicing a nonjacketed cable to a long length of jacketed cable seal the jacketed side per **59 40 90 14**.

c. When splicing in manholes an external ground connection is required – see sheet 4 for instructions.

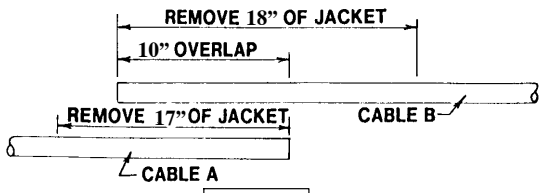


FIG 1

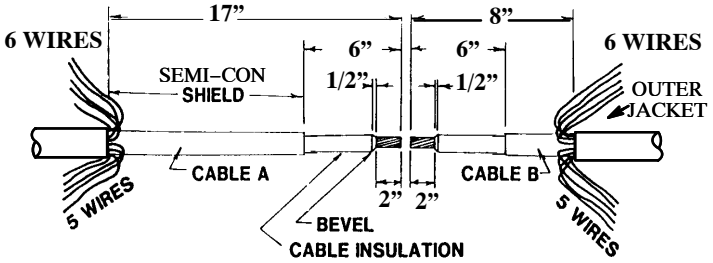
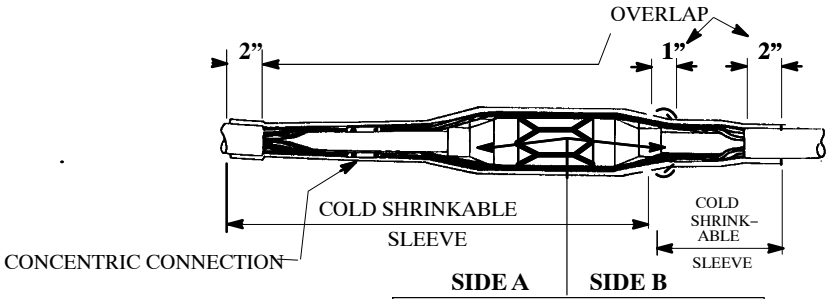


FIG 2



CENTER SPLICE BETWEEN BUMPS (CABLE SHIELD EDGES)

FIG 3

1. There must be a 10 inch overlap of the cables, Fig. 1. Wipe clean 2 feet each side.
2. Remove 18 inches of jacket from Cable B, 17 inches of jacket from Cable A.
3. Cut a 6 inch piece of heat–shrinkable sleeve from Stock #12–53–076. Place the 6 inch heat–shrinkable sleeve and a 24 inch heat–shrinkable sleeve on the cables. Cold shrink–install the cold–shrinkable sleeves on the cable.
4. Train the concentric wires in two bundles each side, 5 and 6 wires per bundle. See Fig. 2.
5. Cut 10 inches off Cable B. Cut cables with a hacksaw so that the cable ends butt together at the splice center.
6. Strip cables for splicing per Fig. 2, clean cables – DO NOT USE SILICONE SPRAY ON CABLES OR JOINT.
7. Clean the bare conductors with a stainless steel wire brush prior to installing the connector. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes.
8. Lubricate insulation and semi–con shield of Cable A with silicone grease. Install splice body onto Cable A, leaving conductor exposed for the connector. NOTE: Lubricate bore with silicone grease to aid installation.
9. Install connector using Y–35 handpress with the U249 or U28ART die. Make one crimp per side with the U249 or two crimps per side with the U28ART die. File the flashing down.
10. Lubricate insulation and semi–con shield of Cable B with silicone grease. Slide splice body onto Cable B and into final position over the connector. Use the bumps formed on the splice ends as guides for centering. See Fig. 3.
11. Connect concentrics with two sleeves on Side A. Place 5 and 6 wire bundles into separate sleeves. Crimp using the P or J groove of the XPJ Nicopress tool as shown on sleeve. Snug sleeves and wires tightly against splice and cable. See Fig. 3. NOTE: 4/0 single phase cables with twenty #12 concentrics require three wire bundles and three #2 sleeves.

12. For the cold shrink sleeve, place a layer of mastic around the end of each cable jacket. Slide the first cold shrink sleeve over the splice with the end of the sleeve overlapping the opposite cable jacket cut off (or mastic strip) by 2 inches. Shrink the sleeve down.
    Wrap one layer of mastic at the inner end of the shrunken sleeve. Slide the second sleeve over the splice and overlap the first sleeve by 2 inches. Shrink the second sleeve down.

CAUTIONARY STATEMENT FOR 3/0 TO 4/0 SPLICING

The standard splice (Stk. #17–55–285) is for 4/0 stranded aluminum cables (Stk. #18–07–240 and Stk. #18–07–239). If any cables other than the standard 4/0 stranded aluminum cables are to be spliced together, the compression sleeve in the standard splice must be discarded and replaced by the transition sleeve shown in the materials list.

DO NOT CHANGE THE CABLE PREPARATION DIMENSIONS SHOWN FOR EACH APPROVED SUPPLIER'S SPLICE WHEN SUBSTITUTING A COMPRESSION SLEEVE FOR THE STANDARD 4/0 COMPRESSION SLEEVE. THIS IS ESPECIALLY IMPORTANT WHEN SUBSTITUTING A 2" LONG COMPRESSION SLEEVE FOR THE 3" LONG COMPRESSION SLEEVE IN THE ELASTIMOLD SPLICE. IF THE DIMENSIONAL REQUIREMENTS SHOWN ARE NOT MAINTAINED – THE SPLICE WILL FAIL.

Ground Connection for Splices Installed in Manholes

(Dist. Standards 41 34 35 08 & 09)

1. Prior to installing the cold shrink sleeves, wrap 6 layers of shielding
2. Attach a ground braid and a constant force spring over the shielding braid on Cable A. Install the ground braid and spring per Dist. Std. **59 40 93 44**. Wrap two layers of plastic tape over the spring connector (no sealer is needed as shown in the standard). Position the tails of the ground braid away from the splice body.
3. Apply two mastic strips from the cold shrink jacket kit at the end of the cable jacket cutoffs on each cable. Wrap one layer of mastic at each cutoff. Apply the mastic over the ground braid on Cable A.
4. Slide the first cold shrink sleeve over the splice with the end of the sleeve overlapping the opposite cable jacket cutoff (or mastic strip) by two inches. Shrink the sleeve down.
5. Wrap one layer of mastic at the inner end of the shrunken sleeve.
6. Slide the second sleeve over the splice and overlap the first cold shrink sleeve by ½ inch minimum. Shrink the second sleeve down.
7. Attach the ground braid tails to a piece of #2 CU bond wire using a two bolt clamp (17–54–140). Seal the two bolt connector, the bond wire, and the ground braid connections using sealer compound (31–53–055) and two layers of plastic tape (25–53–055)wrapped over the outside. Connect the #2 CU bond wire to the 4/0 CU bond wire in the manhole (system ground) using a two bolt clamp.

	Stnd. / Stk. No.	**Description 41 34 35 ****	**03**	**05**	**06**	**07**	**08**	**09**
			3∅	**1∅**	**3∅**	**1∅**	**3∅**	**1∅**
A	17 55 285	Splice, Straight, 4/0 Al., 15 kV	1	1	1	1	1	1
B	17 63 127	Sleeve, Compression, # 2 Copper		3		3		3
C	17 60 103	Sleeve, Compression, # 4 Copper	2		2		2	
D	17 55 443	Sleeve, Cold Shrinkable	1	1	1	1	1	1
E	17 60 720	Sleeve, Transition, 3/0 to 4/0 Al.			1	1		
F	17 54 306	Connector – Cable Ground w/ Constant Force Spring					1	1
G	18 66 101	Braid – Copper, 1” x 15’					1	1
H	17 54 140	Connector – Wire, #8–4/0 Cu, 2 Bolt					2	2
		Operation Code 415	1	1	1	1	1	1

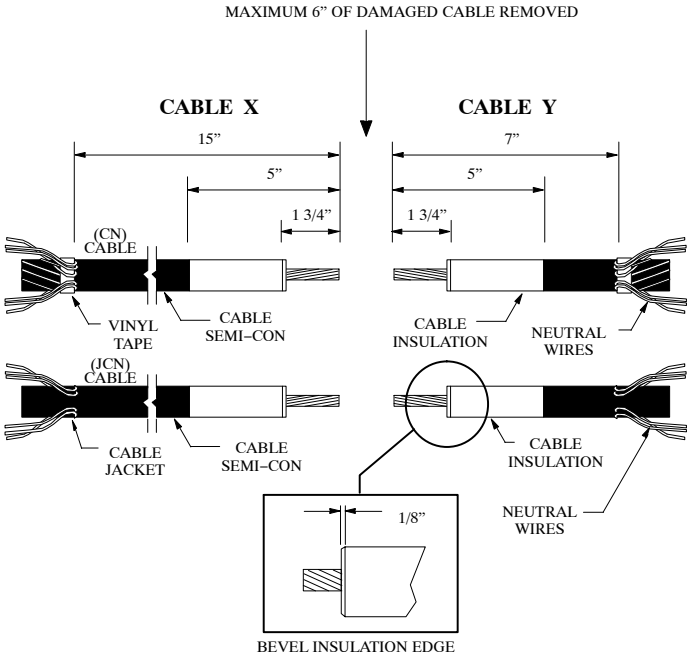


FIGURE 1

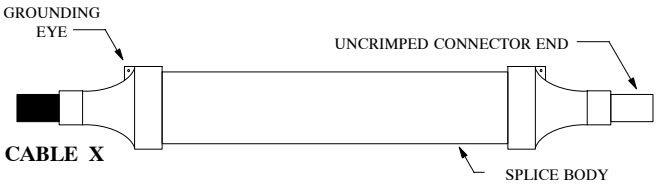


FIGURE 2

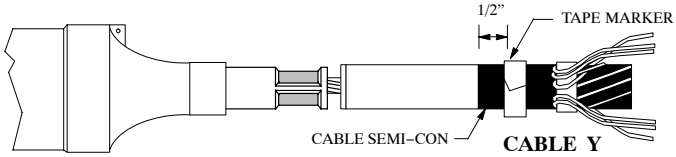


FIGURE 3

NOTE:

BARE CONCENTRIC SHOWN ON CABLE "Y" COULD HAVE BEEN JACKETED CABLE.

1. Cut out the damaged section of cable, but do not exceed 6". Retain the neutral wires from the damaged section. Use a hacksaw to get a clean square cut.

2. Prepare the cables as shown in Figure 1. If the cable is non–jacketed, bind the neutrals with wire or vinyl tape at the jacket cut back dimensions shown in Figure 1. Check the dimensions using templates provided.

3. Prior to installing the connector, clean the exposed conductor with a stainless steel wire brush. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes.

4. Install the connector onto the "X" cable only,– using the Y–35 tool and U249 die. Make one crimp, wipe off excess inhibitor and file sharp flashing.

5. Lubricate the connector, cable "X", and both ends of splice body with the silicone grease provided or Stk # 31 51 050.

6. Slide the splice body onto connector and cable "X" until the uncrimped connector end is exposed. See Figure 2.

7. If jacketed cable is being repaired, store the cold–shrinkable sleeves on the cables at this time.

8. Connect the exposed connector end to cable "Y" using the Y–35 tool and U249 or U28ART die. Make one crimp, wipe off excess inhibitor and file sharp flashing.

9. Place a tape marker on cable "Y" semi–con, 1/2" from the end of the cable semi–con. See Figure 3.

10. Lubricate the exposed connector and cable "Y" with silicone grease.

11. Center splice body over the connector so that the leading edge aligns with the marker tape. Remove the marker tape.

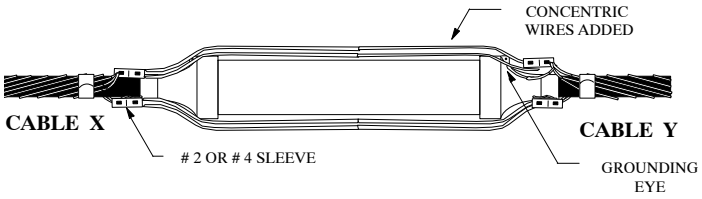


FIGURE 4

NOTE:

BARE CONCENTRIC CABLES SHOWN. COULD BE JACKETED OR A COMBINATION OF JACKETED AND NON–JACKETED.

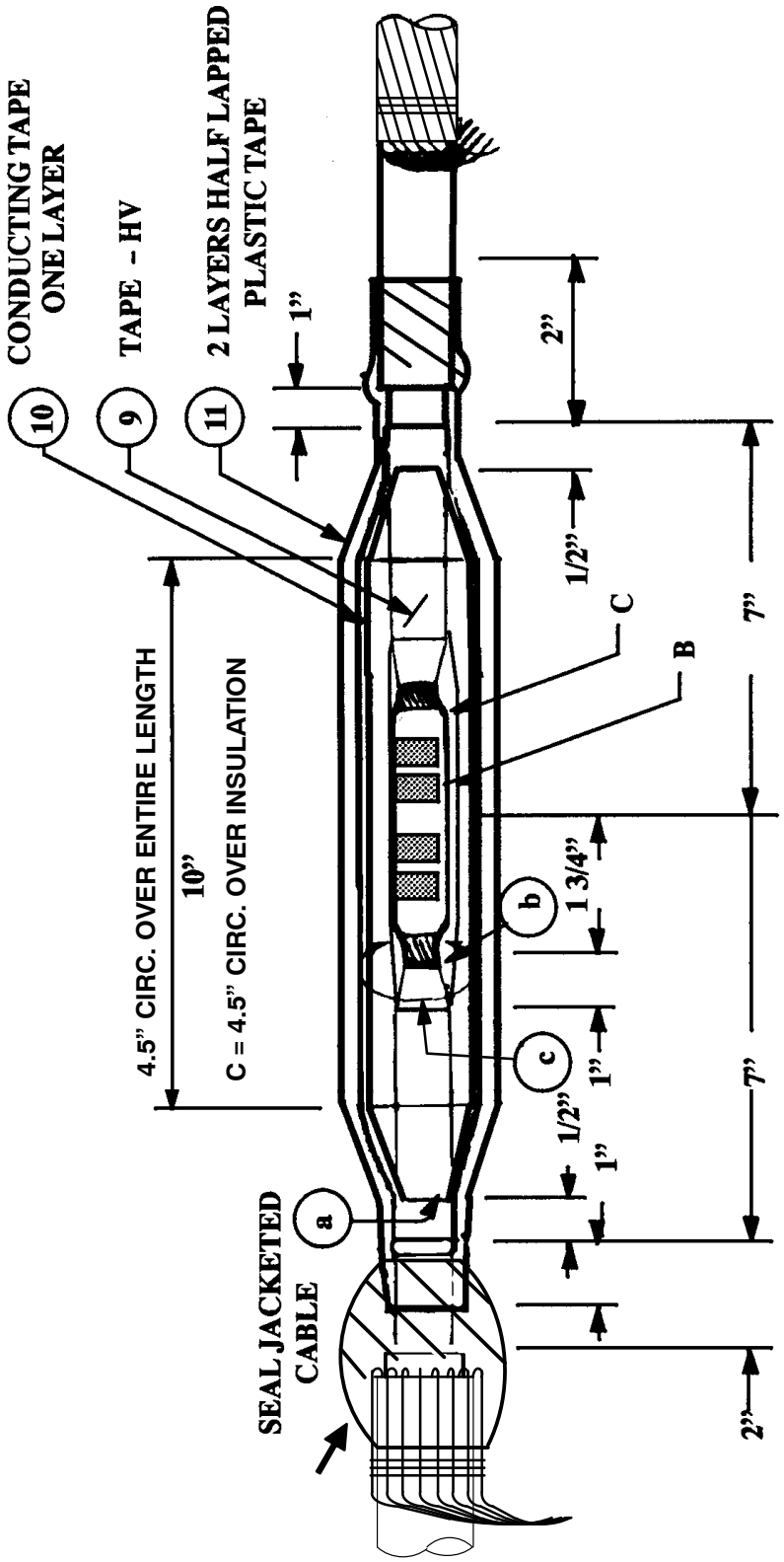
12. Connect the concentric neutral wires back over the cable and splice body as follows: 4/0 cable with 11 #14 AWG concentric wires (3 ph) make two bundles of wires (one with 5 wires and one with 6 wires) and place them into the #4 copper sleeves. Crimp the sleeves using the “P” or ”J” groove of the XPJ tool as shown on sleeve. 4/0 cable with 20 #12 AWG concentric wires, (1 ph), make three bundles of wires (two with 7 wires and one with 6 wires), and place them into the #2 copper sleeves. Crimp the sleeves using the “P” or ”J” groove of the XPJ tool as shown on sleeve. It may be necessary to add concentric wires in order to jumper across the splice. See Figure 4. Make sure that the neutral wires are against the splice body.

    NOTE: Connect one concentric wire on each side to its respective grounding eye and return it back to the wire bundle.

13. If cold shrinkable covers are used, place a layer of mastic around the end of each cable jacket. Slide the first cold shrink sleeve over the splice with the end of the sleeve overlapping the opposite cable jacket cut off (or mastic strip) by two inches. Shrink the sleeve down. Wrap one layer of mastic at the inner end of the shrunken sleeve. Slide the second sleeve over the splice and overlap the first sleeve by at least 2 inches. Shrink the second sleeve down.

14. When splicing a non–jacketed cable to a jacketed cable or whenever jacketed cables are joined and shrinkable covers are not used, the jackets must be sealed per Dist. Std. **59 40 90 14**.

			1 PH	3 PH
	Stnd. / Stk. No.	**Description 41 34 36 ****	**03**	**04**
	17 55 298	Splice – Long Repair Unit, 4/0 Al. 15 kV	1	1
	17 63 127	Sleeve – #2 Copper	6	
	17 60 103	Sleeve – #4 Copper		4
@	17 55 443	Sleeve – Cold – Shrinkable	1	1
	415	Operation Code	1	1


CONDUCTING TAPE
ONE LAYER
TAPE - HV
2 LAYERS HALF LAPPED
PLASTIC TAPE
10
9
11
1"
2"
1/2"
C
B
7"
4.5" CIRC. OVER ENTIRE LENGTH
10"
C = 4.5" CIRC. OVER INSULATION
b
1 3/4"
c
1"
1/2"
1"
7"
a
SEAL JACKETED
CABLE
2"

NOTES:

Train cables into position (unwind concentrics to reach across splice) cut cable.

1. Strip 9” of jacket and 7” of semi–conducting shield.
2. Remove 1–3/4 inches of insulation off both sides of cable.
3. Pencil shoulder with pencilling tool.
4. Prior to installing the connector, clean the exposed conductor with a stainless steel wire brush. Use one of the stocked stainless steel wire brushes. Crimp connector – using 5/8 tool or U–die.
5. Tape one half lapped layer of conducting tape to cover connector and exposed conductor.
6. Tape over connector with high voltage tape to fill in connector area level over the stripped area level with factory insulation.
7. Begin taping across splice with H.V. tape beginning 1/2 inch short of the conducting factory shield.
8. Tape over splice running 1/2 lapped layers side to side maintaining full circumference over mid splice to well over the factor insulation – then begin to taper to the cable insulation.
9. Apply one half lapped layer of conducting tape over insulation to cover one inch of factory shield on each side of splice.
10. Cover splice with two or more layers of plastic tape half lapped.
11. Seal concentrics onto jacketed cable where cable is jacketed See U.E. Standard **59–40–90–14**.
12. Connect concentrics across splice.

	Stnd. / Stk. No.	**Materials/ Splice 41 34 39 04**	**Qty.**
A	17 54 145	Connector Two Bolt	1 Each
B	25 53 076	Tape, Conducting Rubber	2 Rolls
C	25 53 070	Tape, Rubber High Voltage	3 Rolls
D	25 53 055	Tape, Plastic	2 Rolls
E	31 53 055	Sealer, Compound	As Req’d.
G	17 60 344	Sleeve HV #2 to 1/0 AWG	1 Each
	718	Operation Code	1 Each

CONCENTRIC NEUTRAL WIRES OR FLAT STRAPS SHIELDED CABLES

XIII. Positioning the Cables:

a. Straighten and train the cable ends.

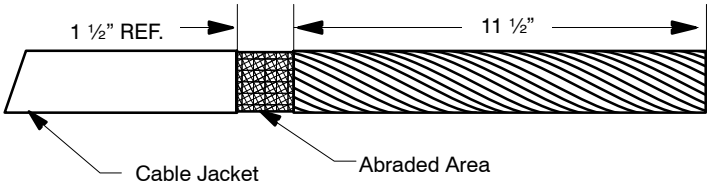
b. Cut the cables with 15" between them to allow space for the bus.

c. Clean the cable jacket up to 36" from the end of the cable.

XIV. Exposing the Metallic Shield:

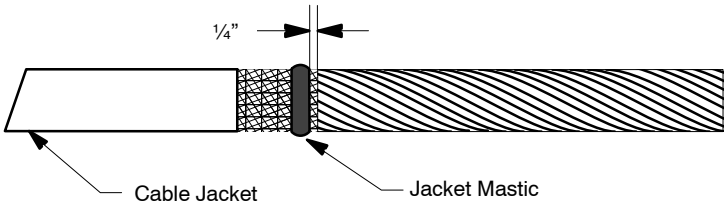
a. Remove the cable jacket 11 ½" as shown below.

b. Abrade the area as shown.



XV. Applying the Jacket Mastic:

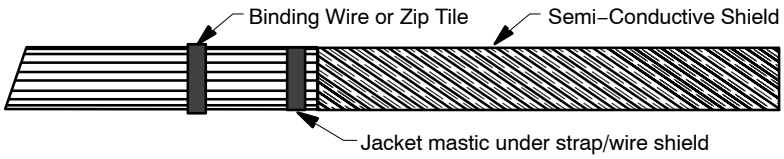
a. Apply one piece of jacket mastic at the position shown below by stretching and wrapping with light tension fully around the outer jacket.



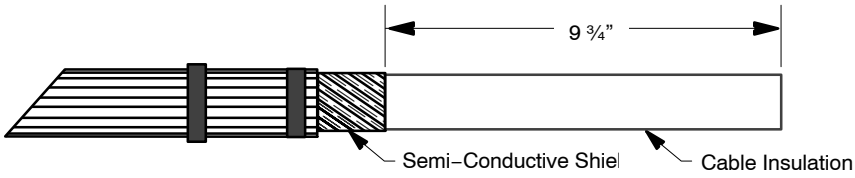
XVI. Exposing the Cable Semi–Conductive Shield:

a. Fold back the wire / flat strap shields and press firmly into the jacket mastic.

b. Secure the wires / flat straps 3" back from the jacket mastic with a binding wire or zip tie as shown below.

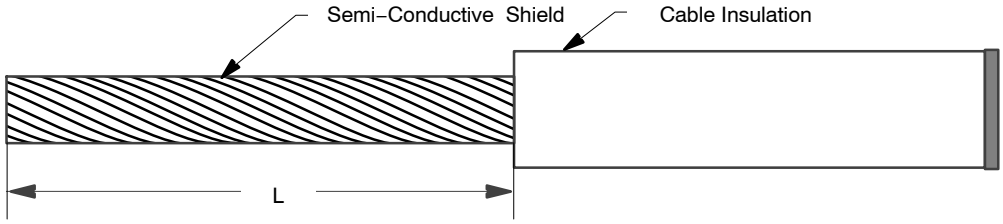


XVII. **Remove the semi–conductive shield 9 ¾" as shown below.** (do not nick or cut the cable insulation).



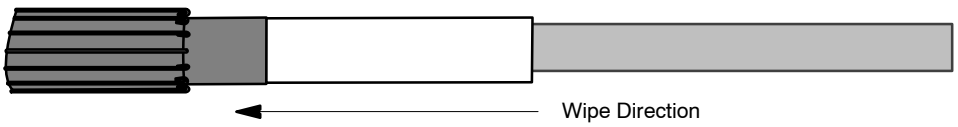
XVIII. Remove the cable insulation for the length (L) in inches per each dis–con kit as shown below:

Kit Stock #	Length (L) in Inches
17–05–522	2
17–05–525	2 3/4
17–05–523	2 3/4
17–05–524	3 3/8



XIX. Repeat Steps I to VI for the other cable(s).

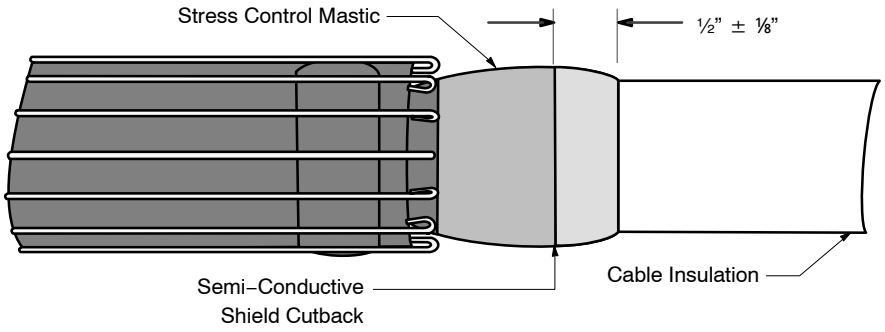
XX. Clean the insulation with the cleaning wipes by wiping from the lug to the shielding.



XXI. Applying the Stress Control Mastic

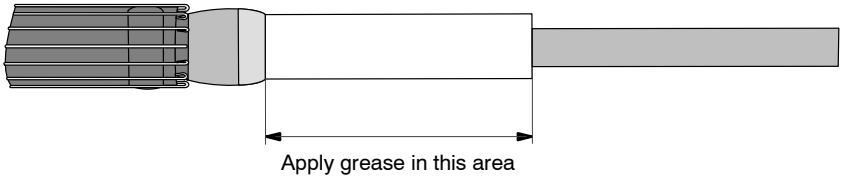
a. Apply the stress control mastic on top of the exposed semi–con shield cut back and overlapping the cable insulation by ½" as shown below. Apply the mastic with light tension so that it slightly stretches and completely wraps the cable.

Applying Stress Control Mastic



XXII. Applying Grease

a. Apply grease over the cable insulation as shown below. Use only the grease supplied in the kit. Avoid applying any grease on the stress control mastic as it may prevent adhesion to the sealing mastic applied later on.



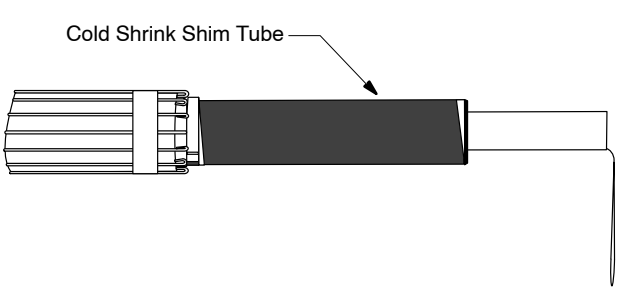
XXIII. NOTE: FOR STOCK # 17–05–522 (15kV #2 AWG DIS–CON Kit) ONLY:

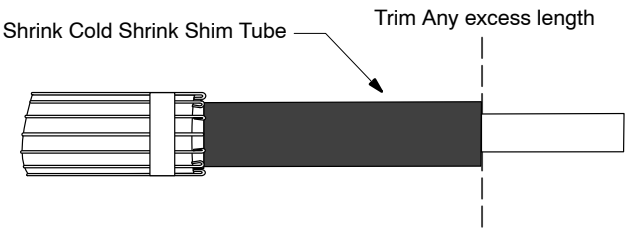
Installing the Shim Tube

a. Align the cold shrink shim tube over the cable end so that the tube will land over the applied stress control mastic, butted up to the concentric wire / flat strap fold back.

b. Unwind the spiral holdout to shrink the sleeve in place.

c. Trim the extra length of the tube so that it is even with the cable insulation cut back.





XXIV. Installing the Lug

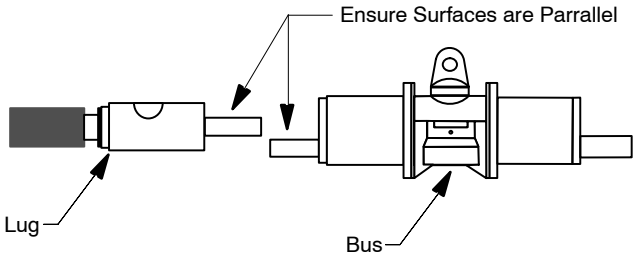
a. Clean the conductor. For aluminum conductor, wire brush and immediately insert the lug onto the conductor. Slide the lug until the conductor is fully seated within the lug barrel.

b. Rotate the lug so that the spade is parallel to the contact face of the bus as shown.

c. Snug all of the bolts starting with the bolt closest to the cable insulation and moving towards the lug pad.

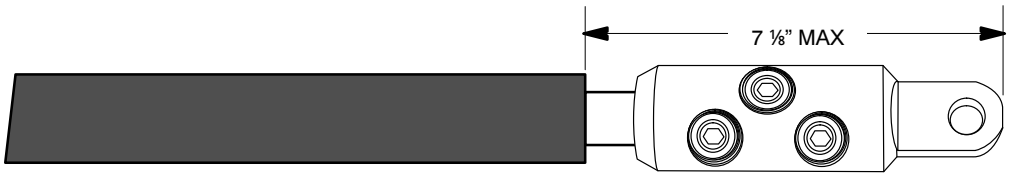
d. Shear off all of the bolts in the same order.

e. The 1/0–350 kcmil lugs have shear bolts that take a 6mm Allen hex socket (stk. #86–44–455). The #2 lug (stk. # 17–55–842) and the #2 dis–con kit (stk. # 17–05–522) shear bolts take a 5 mm Allen hex socket (stk. 86–44–454). The 750 kcmil lug (stk. # 17–55–844) and the 750 kcmil dis–con kit (stk. # 17–05–524) shear bolts take an 8 mm Allen hex socket (stk. # 85–32–776).



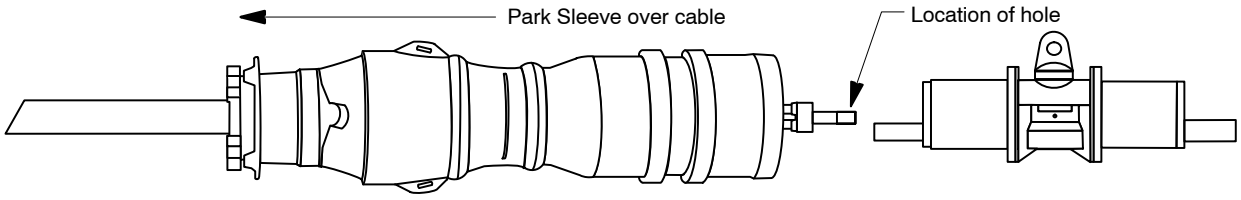
XXV. Checking the Lug

a. Confirm that the distance after installing the lug does not exceed the 7 ⅛" dimension shown below.



XXVI. Parking the Sleeve

a. Slide the sleeve body over the cable so that the hole in the lug is visible as shown below.



XXVII. Installing the Sleeve

a. Position the Belleville washer and the flat washer as shown.

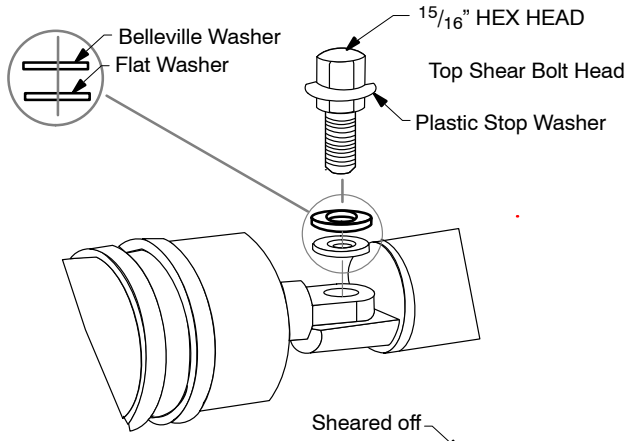
b. Insert the bolt through the lug and hand–tighten the bolt to ensure that all of the cables fit on the bus.

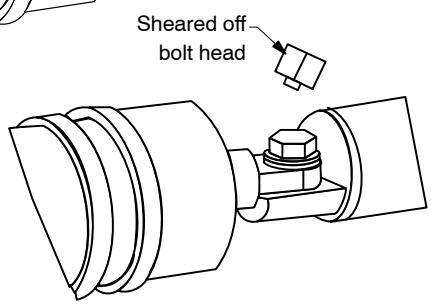
c. Tighten the top $^{15}/_{16}$" shear bolt head until it shears off.

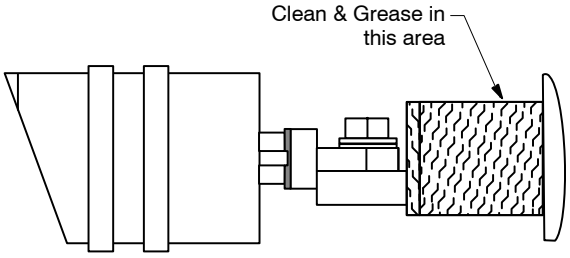
d. Clean the splice interface as shown.

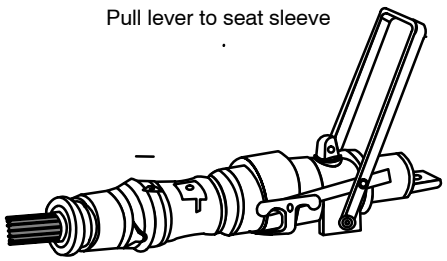
e. Apply grease over the bus interface as shown. Use only the grease supplied in the kit.

f. Slide the sleeve body over the lug and push it onto the bus. This can be accomplished by hand or by use of an installation tool as shown below.

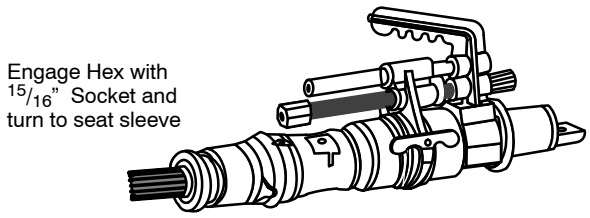








Installation/Removal tool (optional)



Installation/Removal tool (optional)

XXVIII. Repeat Steps VIII to XV for the other cables.

XXIX. Sleeve Restraints

a. Apply sleeve restraints in the sleeve housing channels.

b. The hose clamp can be tightened with a $^{15}/_{16}$" hex or flat headed screwdriver. Fully tighten the hose clamp on the hose clamp on the sleeve restraint until the screw "clicks". It is designed to click when fully tightened and cannot be over–tightened.

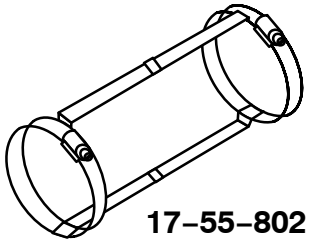
c. Apply the sleeve restraints as follows:

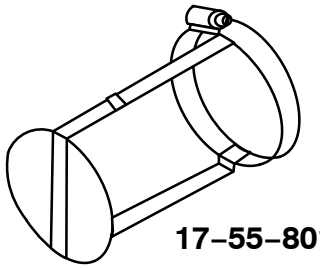
i. I Splice: one stock # 17–55–802 double end.

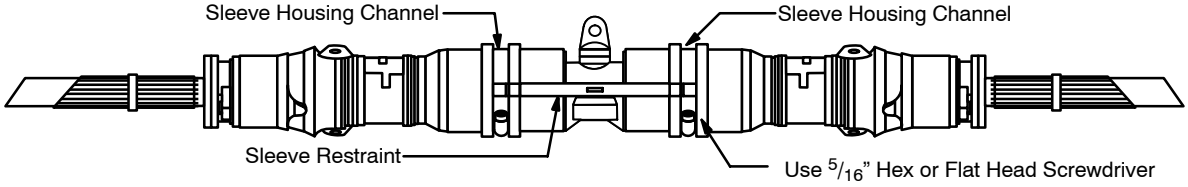
ii. Y Splice: one stock # 17–55–802 double end and one # 17–55–801 single end.

iii. H Splice: two stock # 17–55–802 double ends.

Note: If sleeves are not fully seated onto the splice, the sleeve restraints cannot be installed.



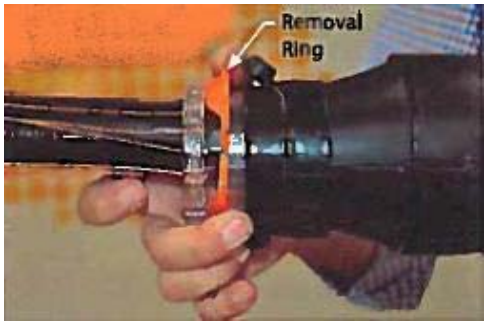




XXX. Removing the Core From the Sleeve

a. Grasp the removal ring. Push the ring against the core flange and twist so that the cutting teeth break the tape on both sides. Check that the tape is broken.

b. Completely remove the core from the rubber housing by hand. DO NOT twist the core while removing it.



XXXI. Applying the Sealing Mastic

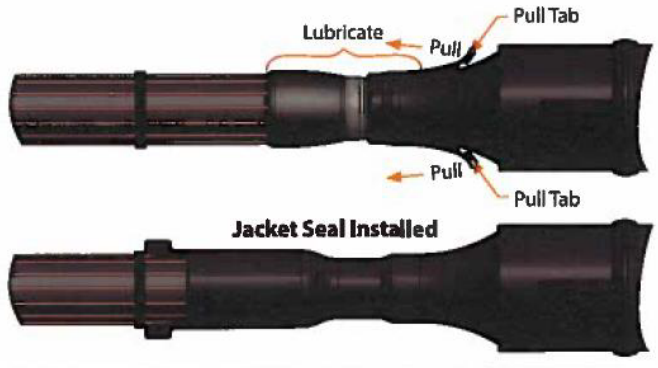
a. Apply sealing mastic to overlap th stress control mastic and completely overlap the jacket mastic as shown below.

b. Compress the sealing mastic to create a smooth transition to the stress control mastic. This will assist during jacket seal application.

XXXII. Applying the Jacket Seal

a. Apply grease over the area as shown. Only use the silicone grease supplied with the kit.

b. Hold onto both of the tabs and pull out to completely cover the sealing mastic as shown below.
NOTE: Ensure that the sealing mastic is not dislodged when unfolding the seal.



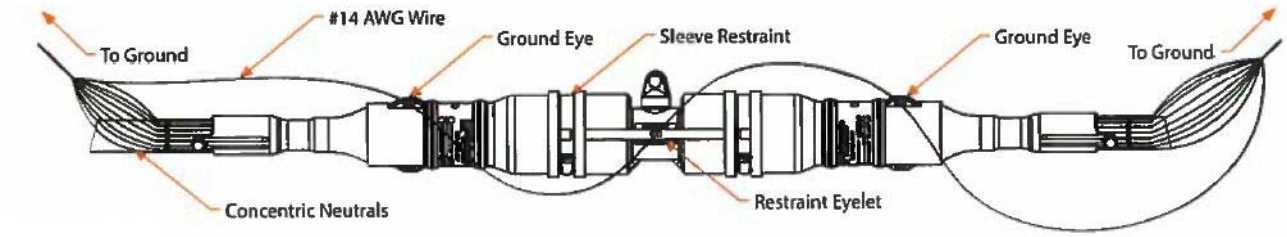
XXXIII. Repeat Steps XVII to XX for the other cable(s)

XXXIV. Connecting the Splice To Ground

a. For each cable, insert one end of a #14 wire through the restraint eyelet and twist to make a small loop.

b. Wrap the other end through the sleeve eyelet and connect to the shield wires with two bolt clamps.

c. Connect the neutral wires to ground wiring 600 V #2 AWG copper covered wire.



XXXV. THE INSTALLATION IS COMPLETE.

LC SHIELDED CABLES

I. Positioning the Cables:

a. Straighten and train the cable ends.

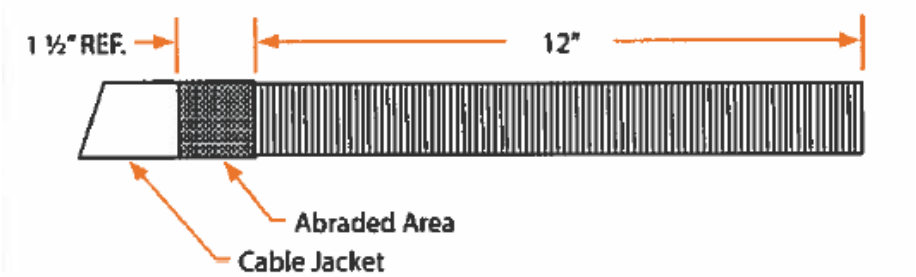
b. Cut the cables with 15" between them to allow space for the bus.

c. Clean the Cable jacket up to 36" from the end of the cable.

II. Exposing the Metallic Sheath

a. Remove the cable jacket to the dimensions shown belos

b. Abrade the area as shown below.

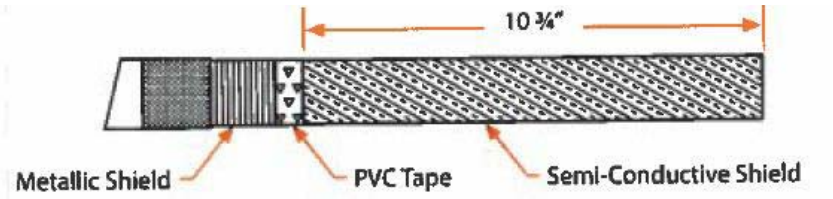


III. NOTE: The Jacket Mastic Will Be Applied in Step XIII.

IV. Exposing the Semi–Conductive Shield.

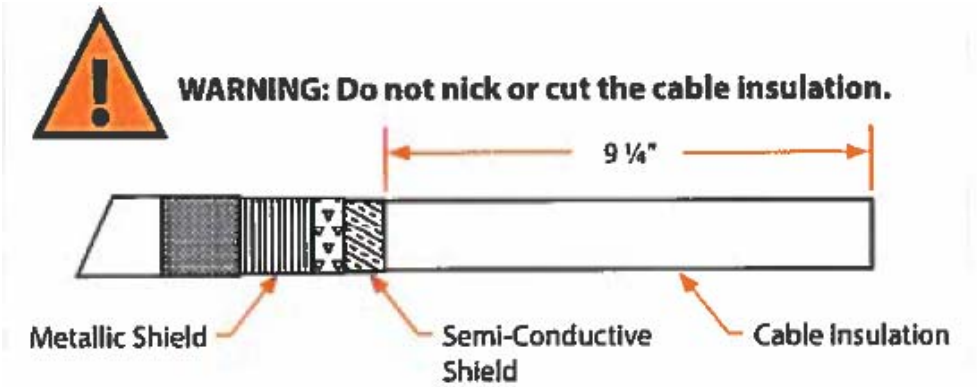
a. Wrap two layers of plastic tape at the dimension shown below to secure the metallic shield.

b. Remove the metallic shield up to the plastic tape as shown below.



V. Exposing the Cable Insulation

a. Remove the semi–conductive shield to the dimension shown below.



VI. Exposing the Conductor

a. Remove the cable insulation based on the cable kit stock number shown in Step VI for the wire shielded cable.

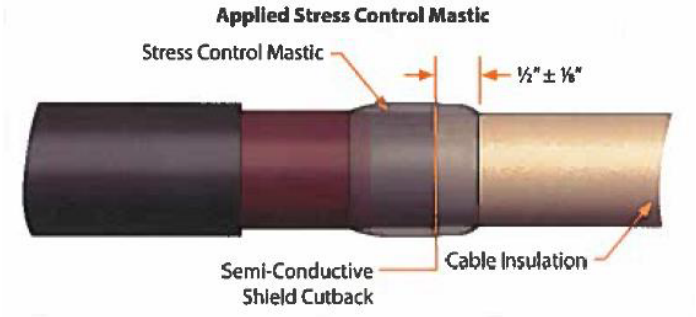
b. Do not cut or nick the cable strands.

VII. Repeat Steps I through VI for the other cable(s)

VIII. Applying the Stress Control Mastic

a. Remove the plastic tape from Step VI.

b. Apply the stress control mastic on tip of the exposed semi–con shield cutback and overlapping the cable insulation by ½" as shown below. Allow the mastic with light tension so that it sightly stretches and completely wraps the cable.



IX. Applying Grease

a. Apply grease over the exposed cable insulation as shown. Use only the grease supplied in the kit. Avoid applying any grease on the stress control mastic as it may prevent adhesion to the sealing mastic applied later on.

X. Install and check the Lug Dimension and Park and Install the Sleeves in the Same Manner as the Wire Shielded Cable. Repeat Steps VIII through X for the Other Cable(s).

XI. Add Sleeve Restraints to all Cables. See Instructions for Wire Shielded Cables.

XII. Remove the Core on Each Cable. See the Instructions for Wire Shielded Cable.

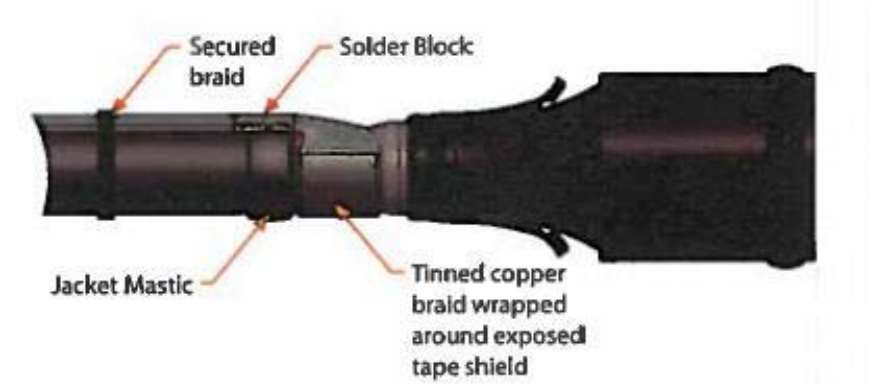
XIII. Preparing the Metallic Shield

a. Install the jacket seal mastic on the cable jacket aligned with the jacket cutback.

b. Wrap tinned copper braid around the exposed LC shield.

c. Align the edge of the solder block with the jacket cutback.

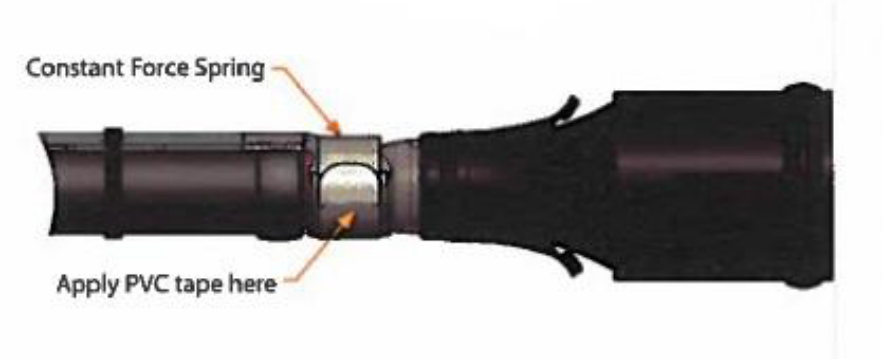
d. Secure the copper braid 3" back from the end of the jacket mastic with zip tie or binding wire.



e. Install the constant force spring over the wrapped copper braid.

f. Wrap two layers of plastic tape over the constant force spring.

g Press the solder block into the jacket mastic.



XIV. Applying the Sealing Mastic

a. Align the sealing mastic to completely overlap the jacket mastic as shown below.

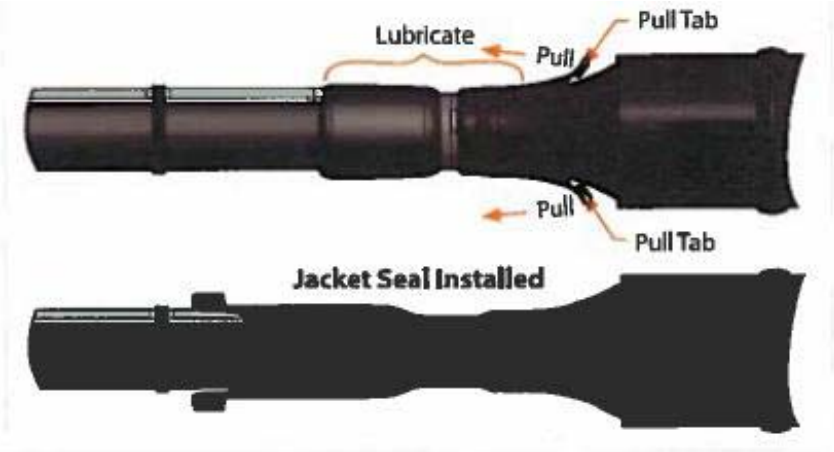
B. Compress the sealing mastic to create a smooth transition to the stress control mastic; this will assist during the jacket application.

XV. Applying the Jacket Seal

a. Apply grease over the area shown below. Only use grease supplied with the kit.

b. Hold onto both tabs and pull out to completely cover the sealing mastics as shown below.

Note: Ensure that the sealing mastic is not dislodged when unfolding the seal.



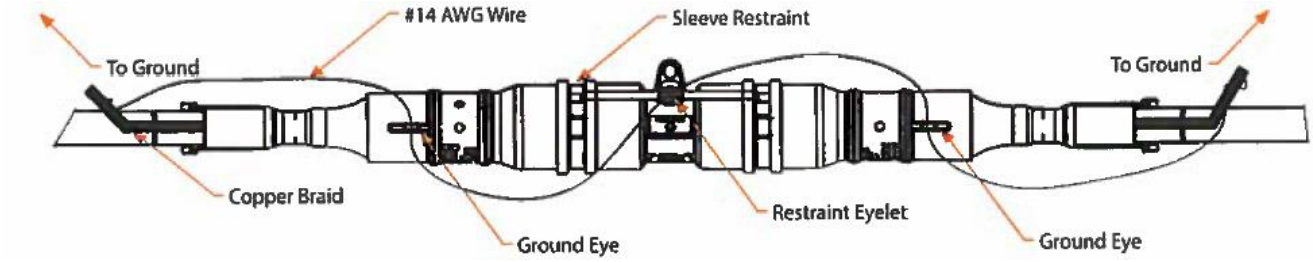
XVI. Repeat Steps XII to XV for the other cables.

XVII. Connecting the Splice to Ground

a. For each cable insert one end of a #14 wire through the restraint eyelet and twist to make a small loop.

b. Wrap the other end through the sleeve eyelet and connect to the copper braids with two bolt clamps.

c Connect the copper braids to ground using 600 V #2 AWG copper covered wire.



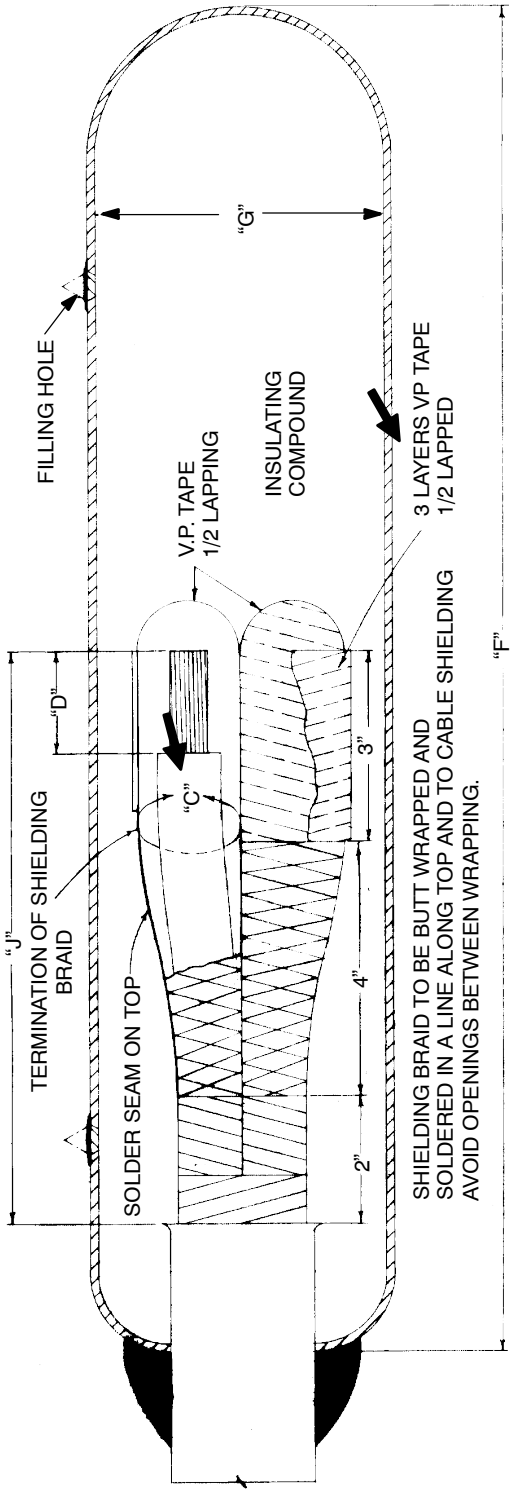
XVIII. THE INSTALLATION IS COMPLETE

		Dist. Stnd. /Stk. No.	Description 41 35 31 **	01	02	03
	A	17 05 530	Bus Bar, I Splice, 15/35 kV	1		
		17 05 372	Bus Bar, Y Splice, 15/35 kV		1	
		17 05 529	Bus Bar, H Splice, 15/35 kV			1
@	B	17 05 522	Dis–con Kit, #2 AWG 15 kV Only			
		17 05 525	Dis–con Kit, 1/0 – 350 KCMIL RW 15 kV			
		17 05 523	Dis–con Kit 350 kcmil 15 kV & 1/0 – 350 kcmil 35 kV			
		17 05 524	Dis–con Kit 750 kcmil 5 / 15 / 35 kV			
	C	18 54 027	Wire – #2 Copper, 600 V Cov.	12	12	20
	D	18 52 018	Wire – #14 Copper, Binding, Bare	5	8	10
@	E	17 54 306	Connector Cable Grounding, 15–35kV			
@	F	17 05 315	Cap – Insulating End			
	G	17 55 801	Restraint – Splice, Single Housing End		1	
	H	17 55 802	Restraint – Splice, Double Housing End	1	1	2
5 @	I	17 05 526	Sleeve Only, #2 – 350 kcmil RW 15kV, with Shim Tube			
5 @	J	17 05 527	Sleeve Only, 350 kcmil RW 15kV, and 1/0 350 kcmil 35kV			
5 @	K	17 05 528	Sleeve only, 750 kcmil 5 / 15 / 35 kV			
6 @	L	17 55 842	Lug Only, #2 AWG 15 kV, AL / CU			
6 @	M	17 55 843	Lug Only, 1/0 –500 kcmil, AL / CU			
6 @	N	17 55 844	Lug Only, 350 –750 kcmil, AL / CU			
	O	17 54 140	Connector – Wire, #8–4/0 CU, 2 Bolt	2	2	2

Cable Size	**Dis–con Kit Stock#**
750 NSR, 5 kV	17–05–524
#2 AL, CNR, P, 15 kV	17–05–522
4/0 AL, CNR, P, 15 kV	17–05–525
350 FSR, P, RW, 15 kV	17–05–525
350 CNR, P, 15 kV	17–05–523
750 AL, CNR, P, 15 kV	17–05–524
750 CNR, P, 15 kV	17–05–524
750 FSR, P, RW, 15 kV	17–05–524
1/0 AL, CNR, P, 35 kV	17–05–523
350 CNR, P, 35 kV	17–05–523
750 FSR, P, 35 kV	17–05–524

NOTES:

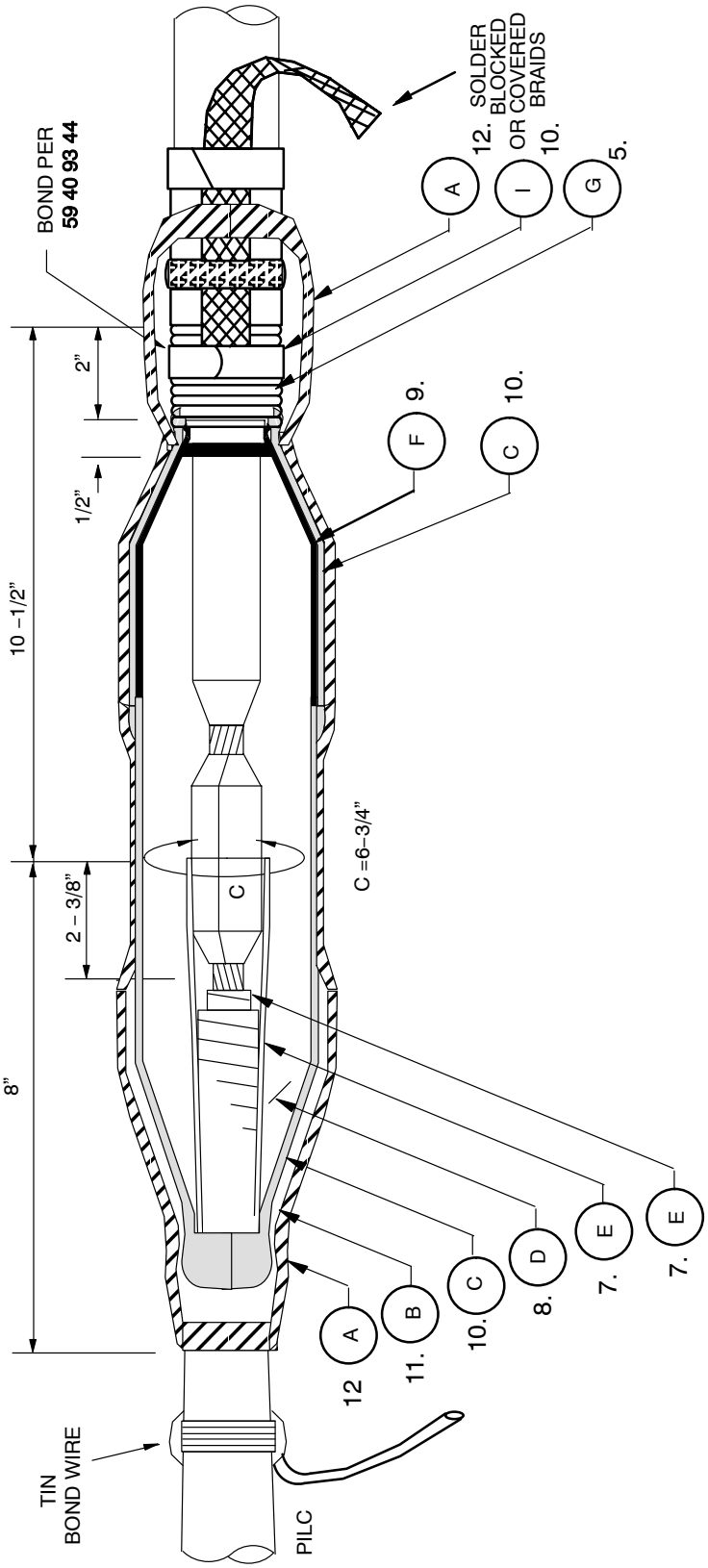
1) For each "I" Splice (Item A) choose a combination of two Dis–con kits (Item B) or a Dis–con kit and an End Cap (Item F).
2) For each "Y" Splice (Item A) choose a combination of three Dis–con kits (Item B) or Dis–con kits(s) and End Cap(s) (Item F).
3) For each "H" Splice (Item A) choose a combination of four Dis–con kits(Item B) or Dis–con kits(s) and End Cap(s) (Item F).
4) For a three phase cable splice installation the selected bus, Dis–con kits and grounding materials should be multiplied by three.
5) When reconnecting cables to the splice, use the Sleeve Only Items (I,J, and K).
6) When replacing a shear bolt lug, use the Lug Only Items (L, M, and N).
7) A Test Point Indicator (Stk.# 17–05–483) may be applied to the bus to show that the splice is energized. However, a non–indication of the Test Point indicator should not be used to prove that the splice is de–energized.
8) A Test Box (Stk. # 85–36–355) can be used to verify proper operation of the Test Point Indicator.



NOTES:

1. Shielded joint shown for belted joint, omit shielding braid.
2. See Dist. Std. **41 30 00 00** for materials and operation code.

Dist. Std. No.	Size of Cable	Circumference Over Insulation "C"		Length of Bare Copper "D"	Lead Sleeve		Length Lead Removed "J"	
		5000V	15000V		Length "F"	I.D. "G"	5kV	15kV
41 36 11 01	1/0	3"	3–7/8"	1–3/8"	20"	3–1/2"	9"	11"
41 36 11 02	4/0	3–5/8"	4–5/8"	1–5/8"	21"	4"	9"	11"
41 36 11 03	300 kcmil	4–1/4"	5"	1–5/8"	22"	4–1/2"	9"	11"
41 36 11 04	350 kcmil	4–3/8"	5–1/4"	1–5/8"	22"	4–1/2"	9"	11"
41 36 11 05	500 kcmil	5–1/4"		2"	22"	4–1/2"	9"	
41 36 11 06	800 kcmil	5–7/8"		2–5/8"	24"	5"	10"	
41 36 11 07	800 kcmil		6–7/8"	2–5/8"	24"	5–1/2"		13"



NOTE: THIS SPLICE MUST BE PLACED ABOVE THE WATER LINE WHEN INSTALLED IN MANHOLE .

NOTE:

1. Train cables into their final position, mark the center of the splice and cut the cables with a hacksaw.
2. Clean the cables. Strip as shown in the figure. Strip the extruded cable first.
3. Remove any black or metalized paper tapes on the PILC insulating surface all the way back to the lead sheath. Protect the paper insulation with a covering while preparing the extruded cable.
4. Taper the insulation on the extruded cable side with a pencilling tool. Do not use solvents on the cable unless absolutely necessary. If solvents are used, they must be dried off with the aid of a clean dry cloth.
5. Install the L.C. grounding connector per Dist. Std. **59 40 93 44**, Sheet 2.
6. Cover both of the insulations while tinning the connector. Tin the connector and finish using standard sanding and smoothing techniques.
7. Tape to the height of the connector shoulder with V.P. tape on the PILC side of the connector. Tape two layers half lapped V.P. tape over the paper insulation to the middle of the soldered connector.
8. Insulate the splice with high voltage rubber tape stopping just short of the sheath on the lead side to just short of the extruded insulation shield on the extruded cable side. Tape to a 6–3/4" circumference.
9. Tape one layer of conducting tape to cover the extruded insulation and the extruded cable's insulation shield.
10. Cover the joint with shielding braid to 1/2" over the metal on both sides. Seal the L.C. grounding connector with sealing compound.
11. Waterproof the paper side by applying a layer of moisture proofing tape over the lead cable, as shown.
12. Tape three layers of PVC tape over the entire joint.
13. Apply the bond to the lead sheath. Connect this lead to the L.C. grounding connector leads and to the bonding system.

		Stnd. / Stk. No.	**Description** **41 37 21 11**	
	A	25 53 055	Tape, Plastic	2
	B	25 53 053	Tape, Moisture Proof	1
	C	18 66 101	Braid, CopperTinned	2
	D	25 53 070	Tape, High Volt. Rubber	3
	E	25 53 022	Tape, Varnished Polyester	2
	F	25 53 076	Tape, Rubber, Conducting	1
--▶	G	17 54 306	Connector, Cable Grounding	1
	H	17 60 054	Connector, 750 Kcmil	1
--▶	I	31 53 055	Compound, Sealer, Poly	1
			Operation Code 721	1

		JOINT STANDARD NUMBERS					
Std. No.	**Description** **41 41 ** OPERATION CODE**	**11 01**	**11 02**	**12 01**	**12 02**	**12 03**	**13 02**
		732				**733**	**739**
17 60 138	Sleeve–Copper, 7” x 36”	1	1	1	1	1	
17 60 139	Sleeve–Copper, 7” x 36”						1
17 60 045	Connector–Copper, 350 kcmil	3			3		
17 60 052	Connector–Copper, 500 kcmil		3	3			
17 60 069	Connector–Copper, 800 kcmil					3	3
22 02 282	Solder–Wiping (Lb.)	12	12	12	12	12	12
22 02 273	Solder–50–50	3	3	3	3	3	3
22 02 276	Solder–String, 1/4”	1	1	1	1	1	1
22 02 255	Solder–Paste	1	1	1	1	1	1
25 53 063	Tape–V.P., 1” x 4 Yd., Rl. (Cn)	1	1	1	1	1	1
19 11 094	Bushing–1/8” x 1/2”	2	2	2	2	2	2
19 11 015	Plug–Pipe, 1/8”	2	2	2	2	2	2
18 66 101	Braid–Copper Mesh Rl.	3	4	4	3	4	4
31 53 028	Compound–Insul. Oil Insol. (Cn.)						2
31 51 003	Compound–Insul. Oil (GE219)						
31 51 020	Oil–Insul. (GE5314) (Gal.)						
31 51 062	Petrolatum – 3 Lb. Pkg. (Pk.)	5	5	5	5	5	
28 03 061	Wedge–Lead (Ft.)					2	2
31 53 007	Stearine (Ea.)	1	1	1	1	1	1
25 53 103	Tape–4” Plastic x 160’ Rl.	1	1	1	1	1	1
22 05 213	Cloth–Sanding, 1–1/2” W(Ft.)	2	2	2	2	2	2

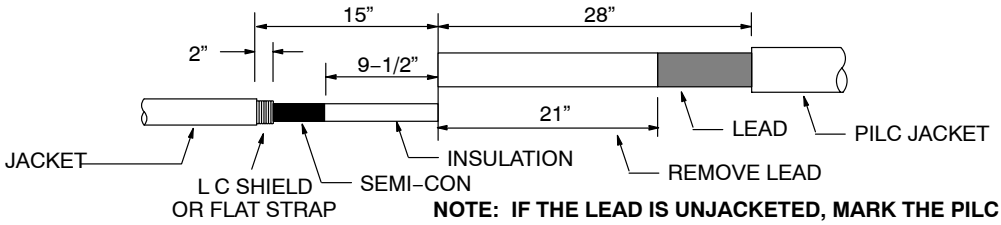
		JOINT STANDARD NUMBERS			
Std. No.	**Description** **OPERATION CODE**	**41 42 11 01**	**41 42 11 02**	**41 43 11 01**	**41 43 11 02**
		734	**735**	**738**	
12 53 025	Sleeve–Lead, 6” x 34”			1	1
12 53 028	Sleeve–Lead, 9” x 40”	1	1		
17 60 045	Connector–Copper, 350 kcmil	3			3
17 60 052	Connector–Copper, 500 kcmil			3	
17 60 054	Connector–Copper, 750 kcmil	3			
17 60 069	Connector–Copper, 800 kcmil		3		
22 02 282	Solder–Wiping (Lb.)	12	12	12	12
22 02 273	Solder–50–50	3	3	3	3
22 02 276	Solder–String, 1/4”	1	1	1	1
22 02 255	Solder–Paste	1	1	1	1
25 53 063	Tape–V.P., 1” x 4 Yd., Rl. (Cn)	1	1	1	1
19 11 094	Bushing–1/8” x 1/2”	2	2	2	2
19 11 015	Plug–Pipe, 1/8”	2	2	2	2
18 66 101	Braid–Copper Mesh Rl.	3	4	4	3
31 53 028	Compound–Insul. Oil Insol. (Cn.)			2	2
31 51 003	Compound–Insul. Oil (GE219)				
31 51 020	Oil–Insul. (GE5314) (Gal.)	8	8		
31 51 062	Petrolatum – 3 Lb. Pkg. (Pk.)	1	1		
28 03 061	Wedge–Lead (Ft.)		2		
31 53 007	Stearine (Ea.)	1	1	1	1
25 53 103	Tape–4” Plastic x 160’ Rl.	1	1	1	1
22 05 213	Cloth–Sanding, 1–1/2” W(Ft.)	2	2	2	2

		JOINT STANDARD NUMBERS			
Std. No.	**Description** **OPERATION CODE**	**41 44 11 01**	**41 44 11 02**	**41 46 11 01**	**41 46 11 02**
		730		**731**	
12 53 056	Sleeve–Lead, 3–1/2" x 28"	1			
12 53 053	Sleeve–Lead, 4–1/2" x 28"		1		
12 53 025	Sleeve–Lead, 6" x 34"			1	1
12 53 055	Sleeve–Lead, Insul., 4–1/2" x 28"				
17 60 045	Connector–Copper, 350 kcmil	1			
17 60 054	Connector–Copper, 750 kcmil		1		
22 02 282	Solder–Wiping (Lb.)	6	6	12	12
22 02 273	Solder–50–50	2	2	3	3
22 02 276	Solder–String, 1/4"	1	1	1	1
22 02 255	Solder–Paste	1	1	1	1
25 53 063	Tape–V.P., 1" x 4 Yd., Rl. (Cn)	1	1	1	1
19 11 094	Bushing–1/8" x 1/2"			2	2
19 11 015	Plug–Pipe, 1/8"			2	2
18 66 101	Braid–Copper Mesh Rl.	3	4	3	3
31 53 028	Compound–Insul. Oil Insol. (Cn.)				
31 51 003	Compound–Insul. Oil (GE219)			4	4
31 51 020	Oil–Insul. (GE5314) (Gal.)				
31 51 062	Petrolatum – 3 Lb. Pkg. (Pk.)	1	1		
25 52 055	Tube–Fiber, 3/4" I.D. x 9"			3	
25 52 056	Tube–Fiber, 1" I.D. x 9"				3
31 53 007	Stearine (Ea.)	1	1	1	1
25 53 103	Tape–4" Plastic x 160' Rl.	1	1	1	1
22 05 213	Cloth–Sanding, 1–1/2" W(Ft.)	2	2	2	2

I GENERAL INSTRUCTIONS

1. Adjust the flame so that it is an overall 12–inch bushy flame.
2. Apply outer 3– to 4– inch tip of the flame to heat–shrinkable material with a rapid brushing motion.
3. Unless otherwise instructed start shrinking tubes at the center working the flame around all sides of the tubes to apply uniform heat.
4. Concentrate on heating the back of the tubes as well as the front of the tubes.
5. If it is necessary to interrupt the shrinking process and the tubes cool, you must reheat prior to shrinking the next tube.
6. Inspect all installed tubes. Reheat any flat spots or wrinkles, paying particular attention to the back of the splice.

II PREPARE CABLES

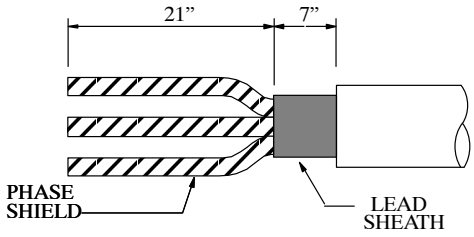


NOTE: IF THE LEAD IS UNJACKETED, MARK THE PILC CABLE AS SHOWN

SECURE END OF FLAT STRAP OR LC SHIELD WITH A LENGTH OF COPPER FOIL TAPE OR MINIMAL WIDTH WRAP OF PLASTIC TAPE.

III PREPARE AND REMOVE LEAD SHEATH

Remove lead oxide from the lead sheath and clean with an approved solvent. Remove the lead sheath as shown.



NOTE: FOR PHASE HOLDING

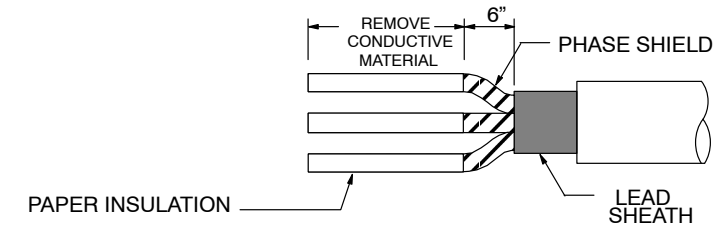
If an existing 3/C PILC cable is being cut and spliced to three new single conductor cables, “Phase Holding” may be required. After opening the lead sheath to expose the shielded phase conductors, place several wraps of colored tape around each phase before cutting the conductors. Use “white” to signify the “Held Phase A”, blue to signify the “Held Phase B” and “red” to signify the “Held Phase C”. The phase colors do not identify the actual phases but they represent the “Held Phase” of the system.

Due to the covering of the phases during the preparation of the splice, it will be necessary to move the markers several times throughout the splicing process. Each time the “Phase Holding” tape is to be moved to a new location, “Phase Holding” will be noted in the installation instructions.

If “Phase Holding” is not a requirement for this splice, then the “Phase Holding” comments should be ignored.

IV REMOVE SHIELD

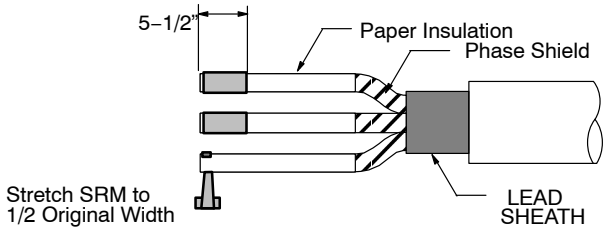
1. Cut back any bedding and/or shield tapes over all three phases to the lead sheath cutback.
2. Cut back phase shields and remove any conductive material from paper insulation as shown.



NOTE: TAPE PHASE SHIELDS AT EDGE TO PREVENT UNWRAPPING. DO NOT USE STRING.
USE ONE WRAP OF COLORED "PHASE HOLDING" TAPE OR PLASTIC TAPE.

V. APPLY STRESS RELIEF MATERIAL (SRM)

1. Mark the insulation 5–1/2" from the end of the PILC cable.
2. Remove the backing strip from one side of a long strip of SRM.
3. Roll up the SRM and remaining backing strip into a convenient size.
4. Removing the remaining backing strip, tightly wrap one, half–lapped layer of SRM around each phase from the cable end to the mark. Wrap the SRM in the same direction as the insulating papers on the cable.

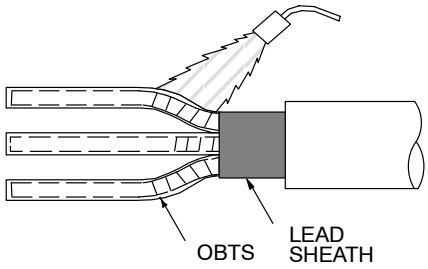


VI POSITION AND SHRINK OIL BARRIER TUBES (OBT)

1. Place an oil barrier tube over each phase, butted to the lead sheath cutback.
2. Shrink the OBT's in the crotch area first. After the crotch is done, shrink one tube at a time.
3. Inspect the installed OBT's. The OBT's should have a smooth, wrinkle–free surface after shrinking. Reheat to smooth any wrinkled areas.

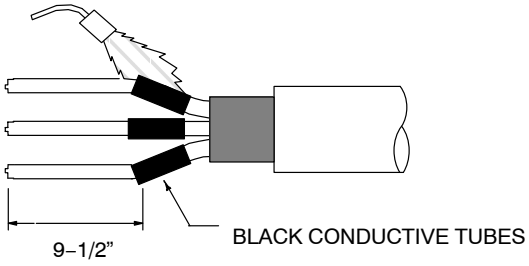
NOTES: (A) OBT MAY SHRINK 1/4 – 1/2" AWAY FROM LEAD SHEATH CUTBACK. THIS IS OK.

(B) TO ACHIEVE A SMOOTH, WRINKLE–FREE INSTALLATION, USE A REDUCED FLAME TO INSTALL THE THIN–WALLED OBT'S.



Phase Holding: Wrap a layer of "Phase Holding" tape to the connection end of the OBT before positioning and shrinking the Black Conductive Tubes.

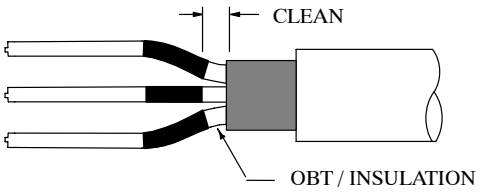
VII POSITION AND SHRINK BLACK CONDUCTIVE TUBES

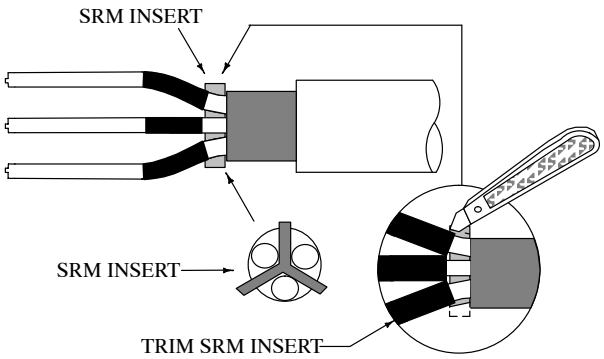


1. Place a black conductive tube over each phase and position as shown.
2. Shrink the tubes in place starting at the end nearest to the center of the splice.

VIII CLEAN OBTS AND INSTALL SRM INSERT

1. Using an approved solvent, clean the OBT/insulation, as shown.



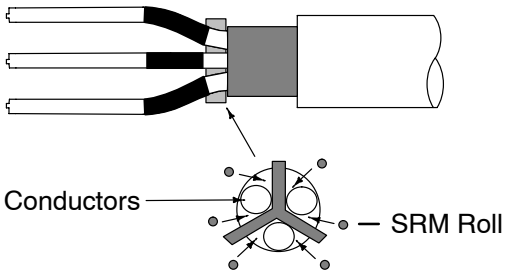


NOTE: THE SRM INSERT IS PACKAGED INSIDE THE CONDUCTIVE BREAKOUT.

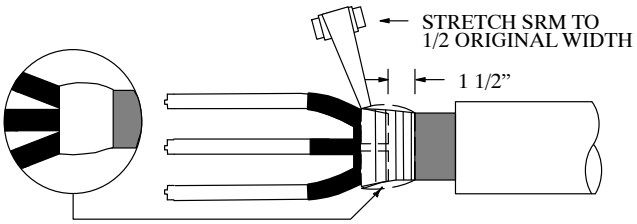
2. Assemble SRM insert per box instructions.
3. Spread the phases and position the SRM insert as shown
4. Trim SRM insert to extend 1/8” beyond each phase.
5. Reclean the lead sheath using an approved solvent.

IX FILL GAPS BETWEEN SRM INSERT AND CONDUCTORS

1. Cut a 6” piece of SRM into 6–1” strips.
2. Remove the backings and rollup each 1” piece.
3. Place two of the SRM rolls on each side of the SRM insert to fill the gaps between the insert and the conductors as shown.



X INSTALL OIL SEAL

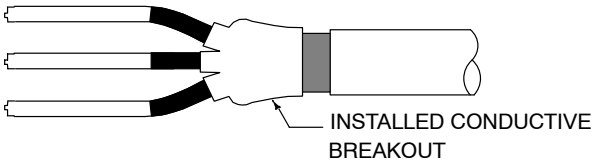


NOTES: (A) **THE SRM WILL STICK BETTER IF THE LEAD SHEATH IS PRE–HEATED.**

(B) **DO NOT OVER APPLY SRM, THE FINISHED DIAMETER MUST NOT EXCEED THAT OF THE BREAKOUT BOOT.**

1. Mark the lead sheath 1–1/2” from the end.
2. Remove the backing from one side of a long strip of SRM. Roll the SRM and remaining backing strip into a convenient size.
3. While removing the remaining backing strip, tightly wrap the SRM from the mark on the lead sheath to the outer edge of the SRM insert.
4. Four to six strips of SRM should be used to build the SRM to the shape shown.

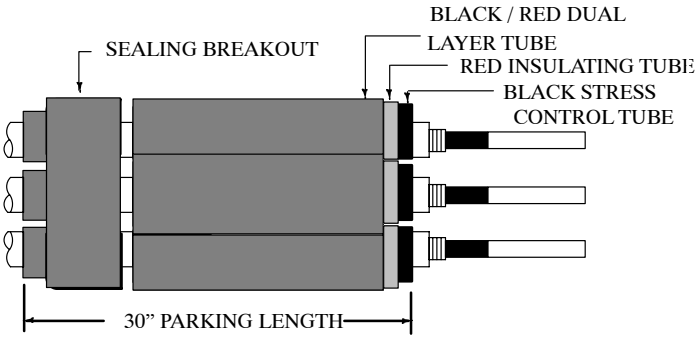
XI POSITION AND SHRINK CONDUCTIVE BREAKOUT



1. Position the conductive breakout over the SRM so that the inside butts up hard against the SRM.
2. Shrink the conductive breakout in place starting at the fingers and working toward the other end.
3. After the breakout has shrunk continue to apply heat until the breakout has a smooth, uniform surface.

Phase Holding: After breakout is cool, apply “Phase Holding” tape to the fingers of the cable breakout (last and final location for ”Phase Holding” tape).

XII POSITION SPLICE COMPONENTS ON SOLID DIELECTRIC CABLES

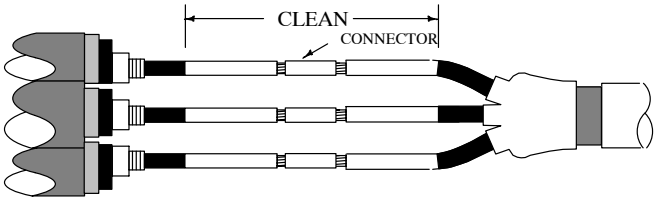


1. Clean 30” of cable jacket.
2. Place sealing breakout over the cables with the fingers pointing away from the splice center.
3. Place one set of nested tubes over each clean cable.

XIII REMOVE INSULATION AND INSTALL CONNECTORS

1. Determine the insert depth of the connector.
2. The insulation cutback should equal the connector insert depth plus 1/4”.

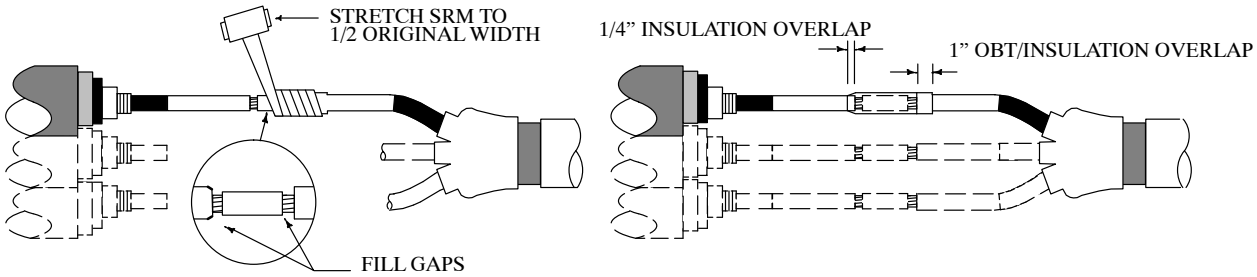
3. Chamfer or cut the sharp edge off of the EPR insulation for 1/4".
4. Install the connectors. Protect the OBTS, if using soldered connector by wrapping them with cotton or glass fiber tape.
5. Make sure connections are smooth.
6. Using an approved solvent, clean the insulation as shown. Pay particular attention to the OBT/insulation surface.



XIV APPLY SRM OVER CONNECTOR

NOTE: Complete Steps XIV and XV working on one phase at a time.

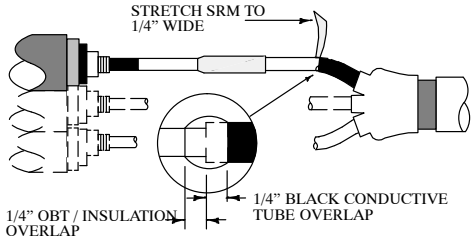
1. Remove backing from one side of a long strip of SRM, roll the SRM and remaining backing strip into a convenient size.
2. While removing the remaining backing strip, tightly wrap the SRM around the connector and exposed conductor. Be sure to fill the gaps and low spots around the connector.
3. Continue to wrap the SRM onto the insulation as shown.



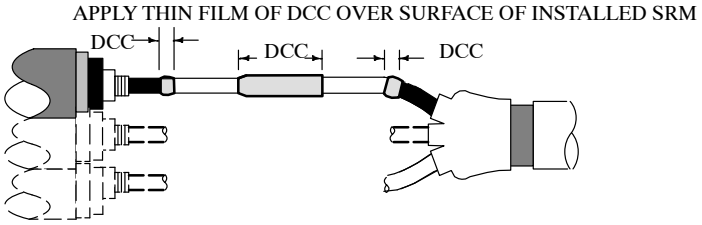
NOTE: IF THE CONNECTOR DIAMETER IS LARGER THAN THE INSULATION DIAMETER, APPLY TWO HALF–LAPPED LAYERS OF SRM OVER THE ENTIRE CONNECTION.

XV APPLY SRM AT BLACK CONDUCTIVE TUBE AND SEMI–CON STEPS, APPLY DISCHARGE CONTROL COMPOUND, AND THEN POSITION BLACK STRESS CONTROL TUBE

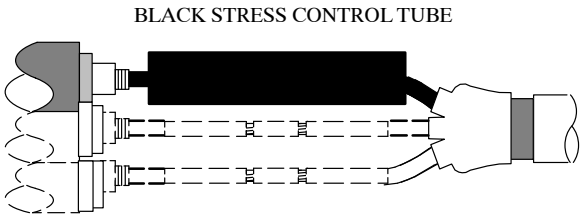
1. Remove the backing from the short angle–cut piece of SRM. Place the tip of SRM at the black conductive tube step and tightly wrap to fill the step. Overlap black conductive tube and OBT/insulation and taper as shown.
2. Repeat the above procedure for the semi–con step.



3. Snip open the end of the DCC tube and apply a thin film of compound on the SRM over the connector and semi–con steps.



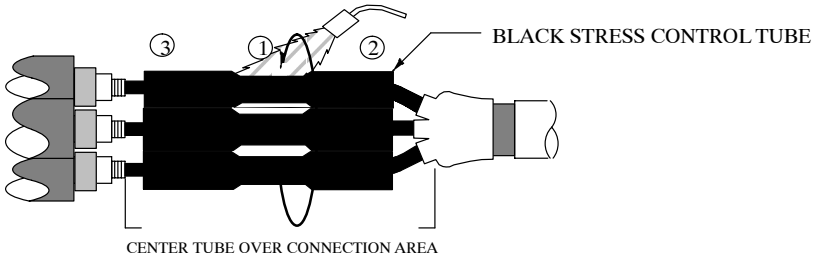
4. Center the black stress control tube over the completed connector area. Be sure to equally overlap the semi–con and the black conductive tube.



COMPLETE STEPS XII AND XIII FOR THE REMAINING TWO PHASES BEFORE PROCEEDING TO STEP XIV.

XVI SHRINK BLACK STRESS CONTROL TUBES

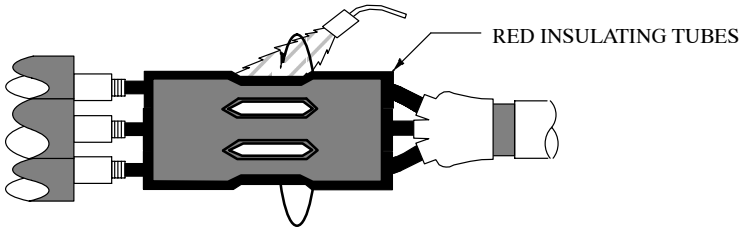
1. Make sure that each tube is centered over the connection area, equally overlapping the semi–con and black conductive tube.
2. Shrink all three tubes in place at the same time.
3. Begin shrinking at center of tubes (1), working torch with a smooth brushing motion around the tubes.
4. After center portions shrink, work torch toward one end (2), then to opposite end (3). Post heat all tubes.
5. Apply sufficient heat to ensure softening of the SRM, indicated by a smooth surface profile.



XVII POSITION AND SHRINK RED INSULATING TUBES

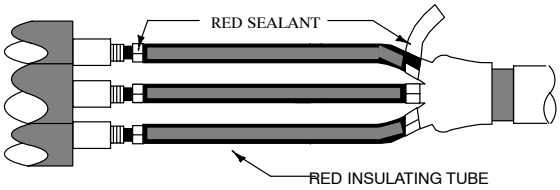
1. Center red insulating tubes over the black stress control tubes.
2. Shrink in place using the same method as XVI.

NOTE: Do not allow the red insulating tubes to cool before applying red sealant and installing the black/red dual layer tubes.



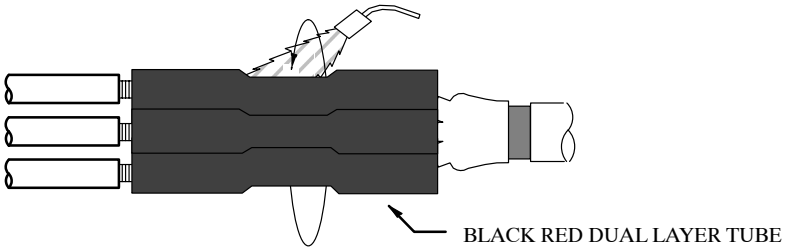
XVIII APPLY RED SEALANT

1. Remove backing from red sealant.
2. Using light tension, wrap sealant over the cable and butt against the red insulating tube as shown.
3. Build the sealant to the level of the red insulating tube.

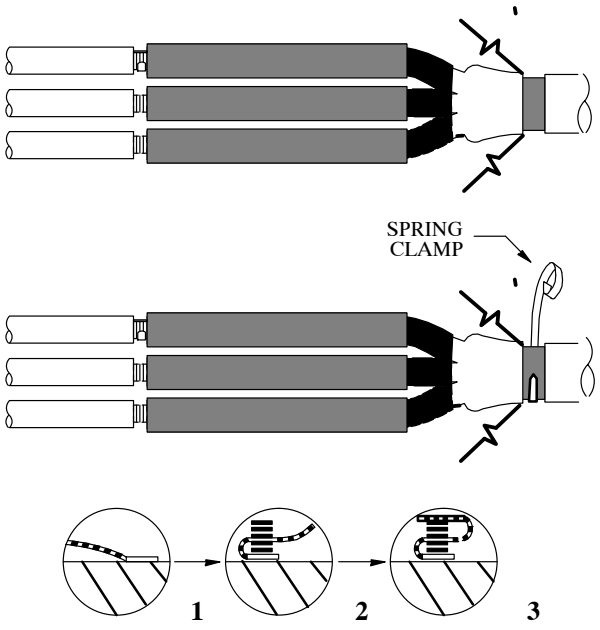


XIX POSITION AND SHRINK BLACK/RED DUAL LAYER TUBES

1. Center the tubes over the red insulating tubes.
2. Shrink in place using the method described in XVI except stop shrinking 4” from each end. Then shrink each end.
3. After initial shrinking, heat the entire tubes for approximately 1 minute. The raised ridges should disappear. Absence of ridges can be observed by visual inspection and by feeling the surface with a gloved hand.



XX INSTALL GROUND LEADS TO PILC CABLE

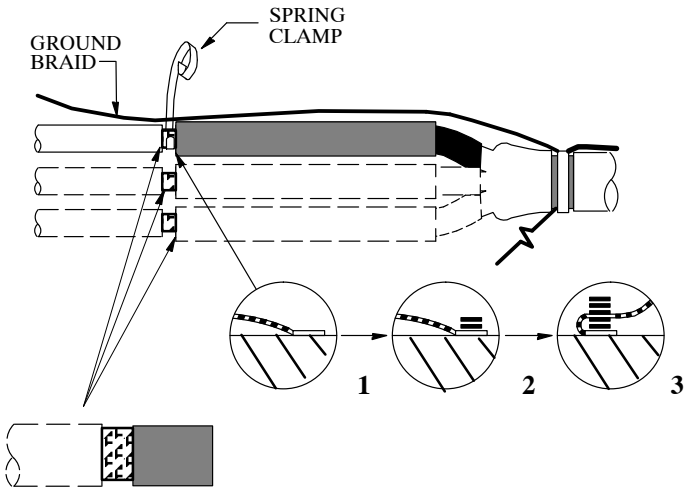


NOTE:

There are three (3) long braids provided with this kit. One end of the braid has a short length of heat shrink tube installed next to a 2" wide solder block. This is the end of the braid which will be positioned over the jacket for external grounding.

1. Wrap three layers of 2" wide copper mesh around the cleaned lead sheath on the 3/C PILC side of the joint. Tie off with a half hitch or equivalent knot.
2. Lay the three (3) braids across the joint evenly spaced around the joint circumference so that the braids overlap the mesh and the solder block is positioned over the jacket and aligned with the cable jacket cutback. Temporarily tape the braids into position.
3. (1) Wrap two turns of the LARGE spring clamp OVER the three (3) braids and mesh. (2) Fold the long end of the braid back over the spring clamp and wrap two additional turns. (3) Fold long end one more time over the spring clamp and complete wrapping the spring clamp over the braid. (The long end of the braid should be going across the splice at this time.)

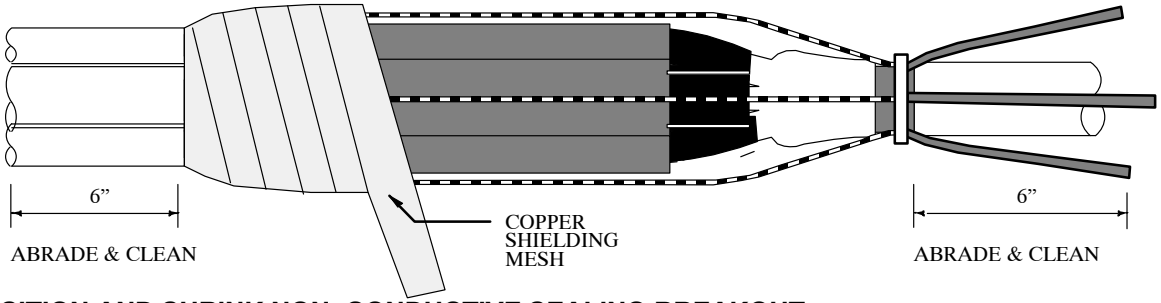
XXI INSTALL GROUND LEADS TO METALLIC SHIELDS



1. Wrap three layers of 2" wide copper mesh around the metallic shields of the solid dielectric cable and tie off with a half hitch or equivalent knot. (Wrap around flat strap, concentric wires or LC Shield.)
2. (1) Lay braid directly over the mesh. (2) Wrap two turns of the SMALL spring clamp OVER the braid and mesh. (3) Fold back the braid over the spring clamp and complete wrapping the spring clamp over the braid. (Excess braid should be going across the splice at this time.) Excess braid may be cut off or left over the splice.
3. Repeat this step for remaining phases until all three phases are completed.

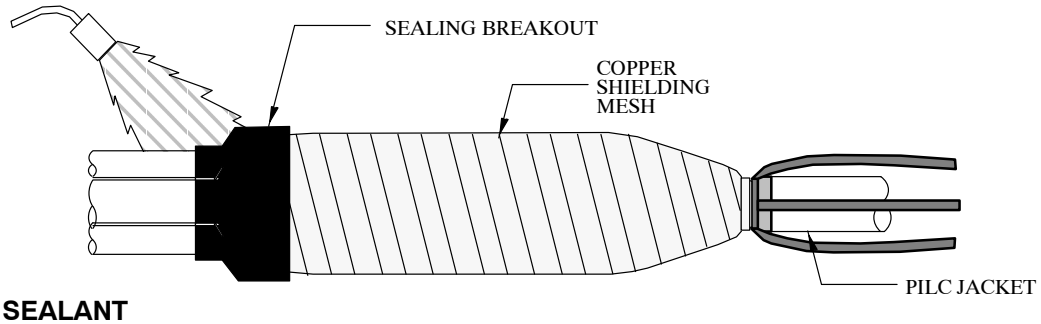
XXII APPLY SHIELDING MESH

1. Starting over the ground connections on the extruded solid dielectric cable side of the splice, wrap one half–lapped layer of 2" wide shielding mesh across the splice and tie off to the PILC cable lead sheath.
2. Abrade and solvent clean the cable jackets (or lead sheath) as shown.



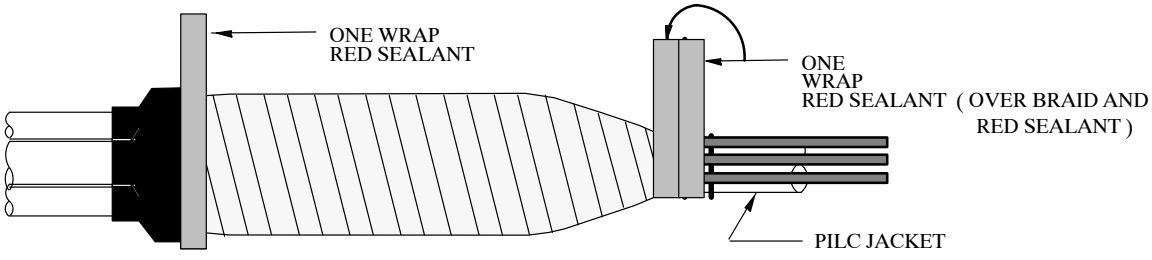
XXIII POSITION AND SHRINK NON–CONDUCTIVE SEALING BREAKOUT

1. Slide the breakout into position. Make sure that the full length of the fingers of the breakout are over the cable jackets and the body is extending over the splice.
2. Shrink in place starting at the fingers and working toward the splice center.



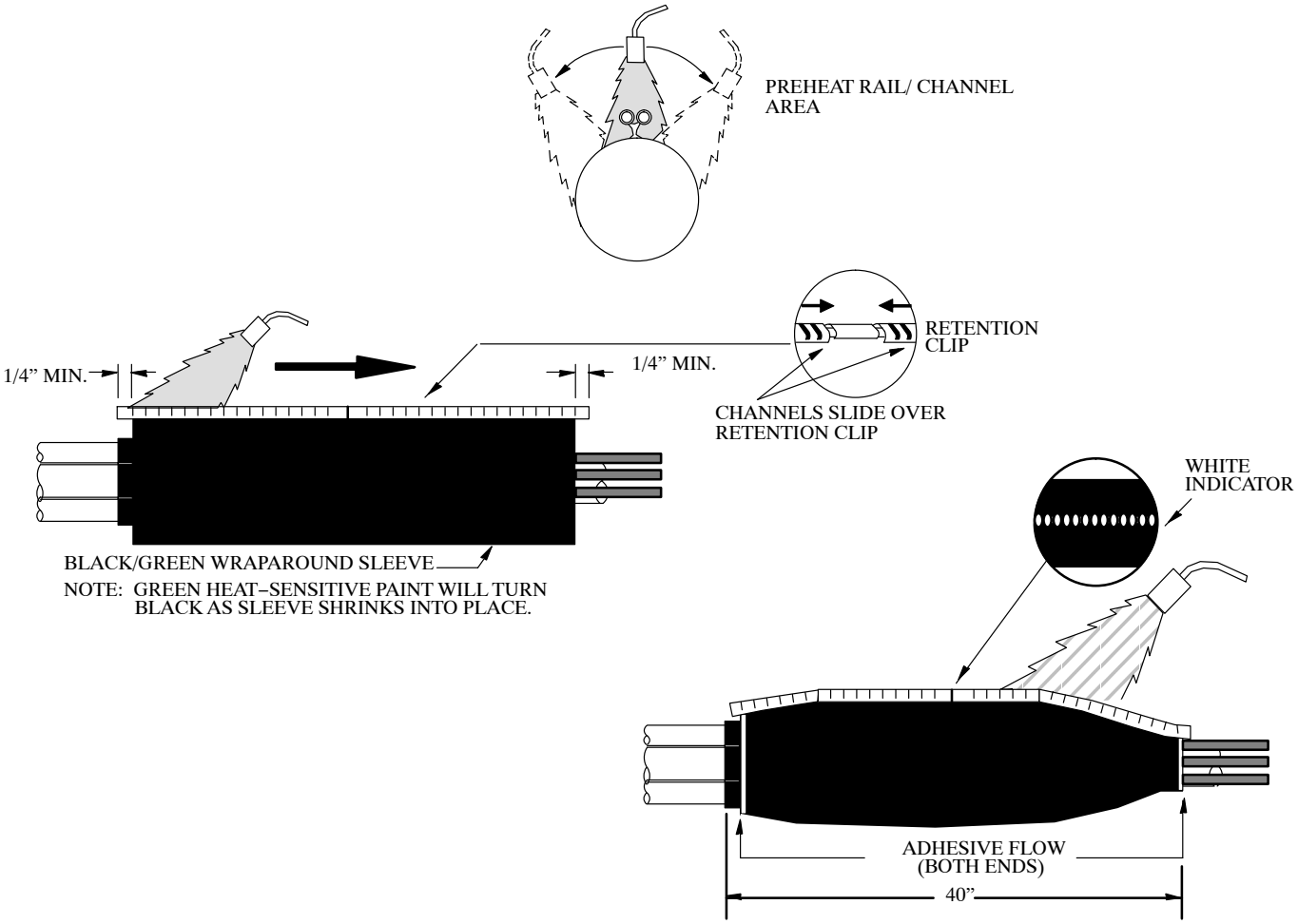
XXIV APPLY RED SEALANT

1. Allow the breakout to cool sufficiently to touch before proceeding.
2. Apply two single wraps of red sealant under the ground braids on the PILC cable side. Wraps should be side by side and butted up to the cable jacket cutback.
3. Lay the braids down and press the solder blocked portion and the end of the heat shrink tubing into the red sealant.
4. Apply two additional single wraps of red sealant over the braids and the first layers of red sealant.
5. Apply one wrap of red sealant over the body of the breakout as shown.



XXV POSITION AND SHRINK WRAPAROUND SLEEVE

1. Remove or tape over all sharp points to prevent puncture of wraparound sleeve.
2. Remove the backing from the wraparound sleeve and center sleeve over splice.
3. Slide the metal retention clip onto the butted rails. Connect the channels by overlapping the retention clip as shown below.
4. Channel(s) must overlap sleeve edges by 1/4" minimum.
5. Preheat evenly along both sides of the rail/channel area until this area begins to shrink. (Critical Step)
6. Begin shrinking at the center of the sleeve and work all the way around the sleeve and toward each end.
7. Apply heat until the sleeve is completely shrunk and the green paint is completely converted to black.
8. Post heat the entire length, concentrating on the metal channel area. The post heat should be for 30 seconds after the sleeve is completely shrunk. A white line should be visible in the channel gaps indicating sufficient heating.
9. Look for adhesive flow at both ends of the sleeve.
10. The sleeve to cool before moving or placing in service.



THE SPLICE IS NOW COMPLETE

	Stnd. / Stk. No.	Description 41 43 22 **	01	02
A	17 05 317	Splice–Cond., Trif., H.S., 350 kcmil & 750–800 kcmil	1	1
B	17 60 359	Sleeve–Cmpsn., 350 kcmil Cu.	3	
	17 60 504	Sleeve–Cmpsn., 800 kcmil to 750 kcmil Cu.		3
C	25 53 055	Tape–Plastic (RL)	1	1
		Operation Code 745	1	1

HEAT SHRINK SPLICE STANDARDS
FOR COMMON CABLE SPLICES

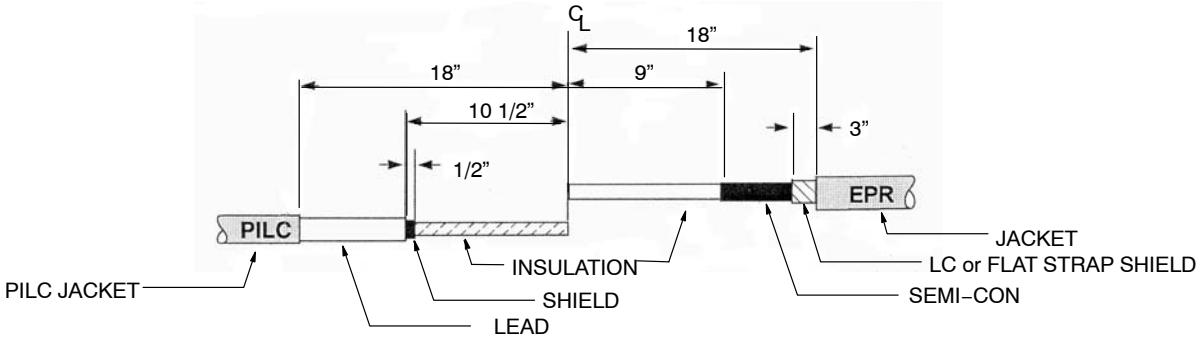
PILC CABLE	TO	SOLID DIELECTRIC CABLE	STANDARD
350^3		3–350 LCRP	41 43 22 01
800^3		3–750 FSRP	41 43 22 02

CABLE JOINT
35 kV – 1C PILC To Extruded Solid Dielectric Raychem Heat–Shrinkable

I GENERAL INSTRUCTIONS

1. Adjust the flame so that it is an overall 12–inch bushy flame.
2. Apply outer 3– to 4– inch tip of the flame to heat–shrinkable material with a rapid brushing motion.
3. Unless otherwise instructed start shrinking tubes at the center working the flame around all sides of the tubes to apply uniform heat.
4. Concentrate on heating the back of the tubes as well as the front of the tubes.
5. If it is necessary to interrupt the shrinking process and the tubes cool, you must reheat prior to shrinking the next tube.
6. Inspect all installed tubes. Reheat any flat spots or wrinkles, paying particular attention to the back of the splice.

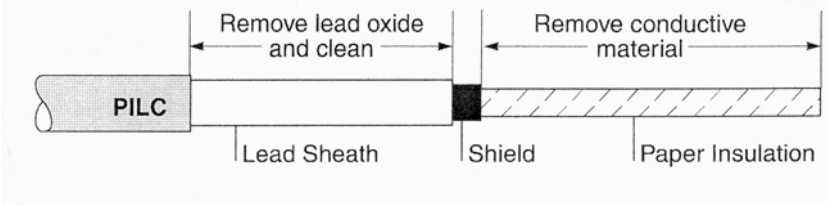
II PREPARE CABLES



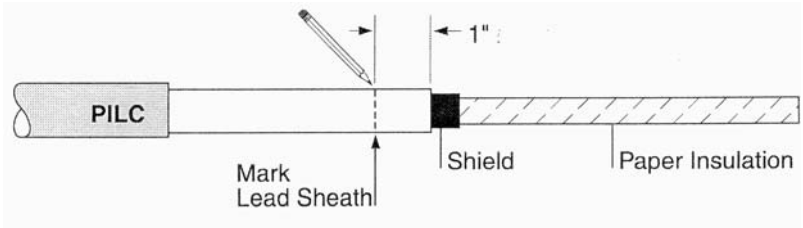
III PREPARE LEAD SHEATH AND PAPER INSULATION

1. Remove lead oxide from the lead sheath and clean with oil–free solvent.
2. Remove conductive material from the paper insulation.

Remove lead oxide from the lead sheath and clean with an approved solvent. Remove the lead sheath as shown.



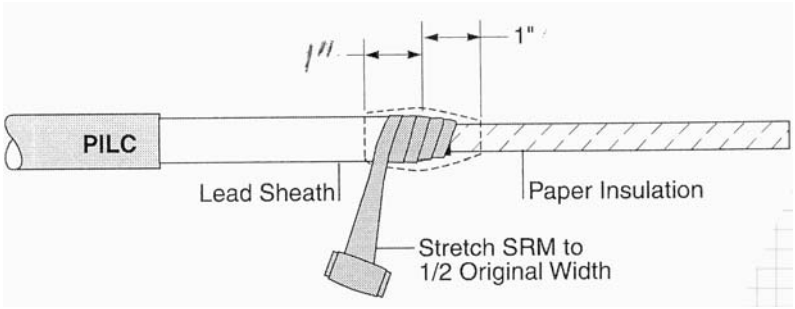
IV MARK LEAD SHEATH



V. APPLY STRESS RELIEF MATERIAL (SRM) AT LEAD SHEATH CUTBACK

1. Remove backing from one side of a long strip of SRM. Roll the SRM and remaining backing strip into a convient size.
2. Remove the remaining backing strip and tightly wrap SRM around the shield. Continue wrapping to the mark on the lead sheath, then back across the shield onto the paper insulation as shown.

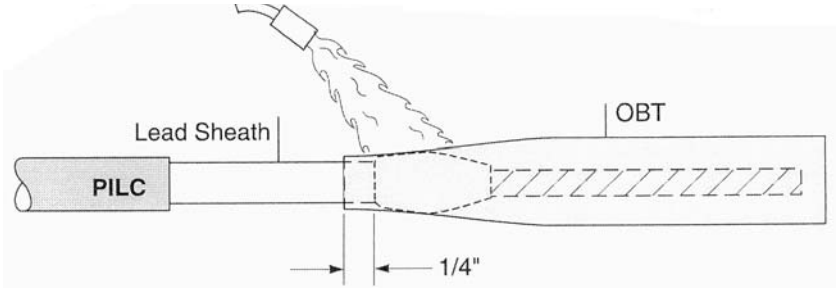
Note: Apply a maximun thickness of 1/8" of SRM over the lead sheath to prevent excessive diameter build–up. Save the remaining SRM.



VI POSITION AND SHRINK OIL BARRIER TUBES (OBT)

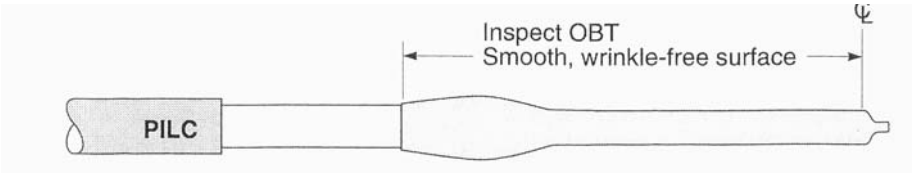
1. Place the OBT over the PILC cable as shown.
2. Shrink in place starting at the SRM. Work around the tube with a smooth brushing motion.

Note: To achieve a smooth wrinkle–free installation, use a reduced flame to install the thin–walled OBT.



VII INSPECT THE OBT

1. The OBT should have a smooth, wrinkle–free surface after shrinking.
2. Reheat to smooth out any wrinkle areas.
3. Discard the second OBT.

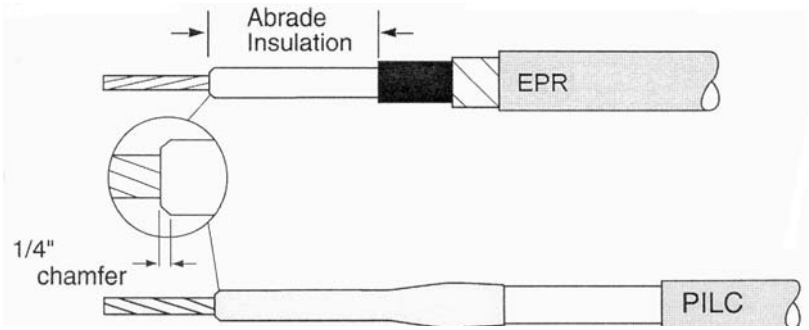


VIII REMOVE INSULATION FROM PILC AND EPR CABLES

1. Mark the insulation 1/2 the length of the connector plus 1/2" from the end of each cable.
2. Cut off the insulation to the mark on each cable.

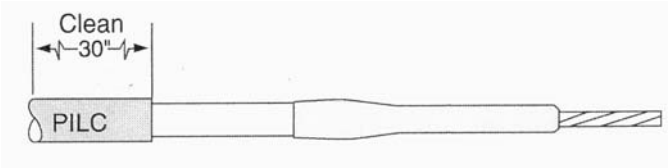
IX ABRADE THE EPR INSULATION

1. Chamfer the insulations for 1/4".
2. Clean the EPR insulation.



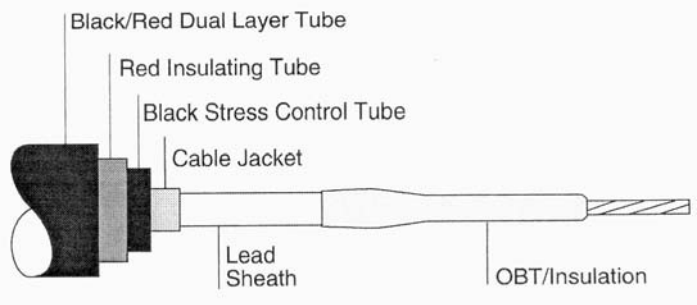
X CLEAN THE PILC CABLE

1. Clean the PILC cable for the length of the nested tubes.



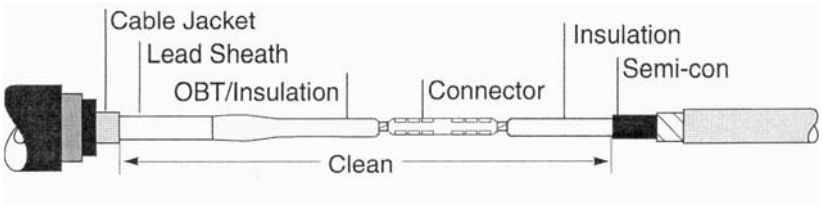
XI PLACE THE NESTED TUBES OVER THE PILC CABLE

1. Place nested tubes over PILC cables as shown.
2. Protect tubes from end of conductor as they are placed over cable end.



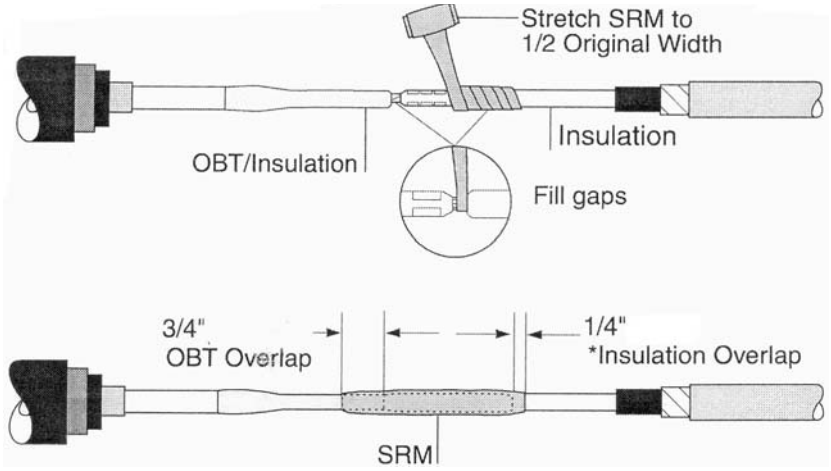
XII INSTALL THE CONNECTOR

1. Slide the cables into the connector and crimp the connector.
2. Make sure that the crimps are smooth. Deburr the connector if necessary.
3. Clean the insulation and OBT's.



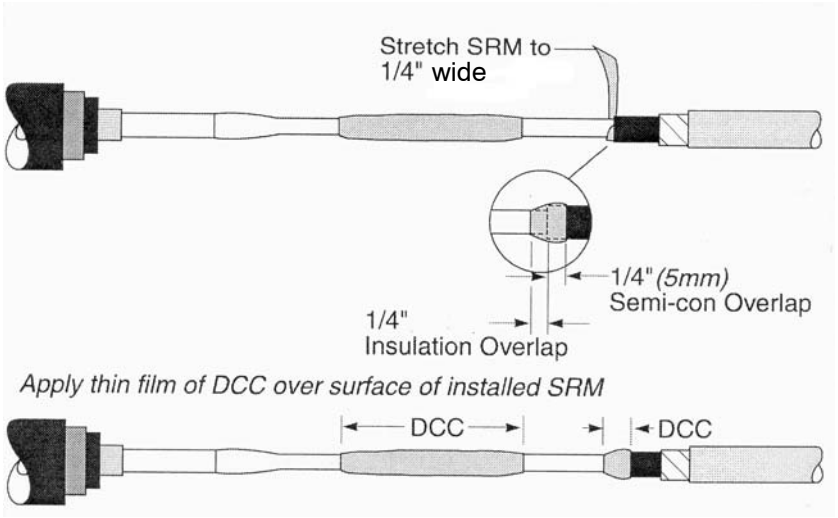
XIII APPLY SRM OVER CONNECTOR

1. Remove backing from one side of a long strip of SRM, roll the SRM and remaining backing strip into a convenient size.
2. While removing the remaining backing strip, tightley wrap the SRM around the connector and exposed conductor. Be sure to fill the gaps and low spots around the connector.
3. Continue to wrap the SRM onto the insulation as shown.



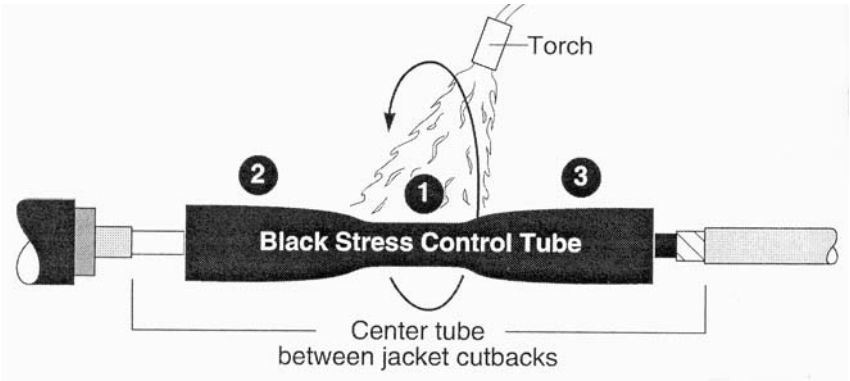
XIV APPLY SRM AND DISCHARGE CONTROL COMPOUND (DCC) AT SEMI–CON CUTBACK

1. Remove the backing from the short angle–cut piece of SRM.
2. Place the tip of the SRM at the semi–con cutback and tightly wrap to fill the semi–con step.
3. Overlap the semi–con and the insulation as shown. Taper the SRM down to meet the insulation.
4. Snip open the end of the DCC ampule and apply a thin film of compound on the SRM over the connector and the semi–con step.



XV POSITION AND SHRINK THE BLACK STRESS CONTROL TUBE

1. Center the tube over the splice.
2. Begin shrinking at the center (1) of the tube, working the torch around all sides of the tube.
3. After the center portion shrinks, work towards one end (2) and then to the opposite end (3).
4. Do not point the flame at the cable semi–con.
5. The rings of the SRM wraps may be visible as the tubing is shrunk.
6. Post heat the connector area until the tube surface is smooth.



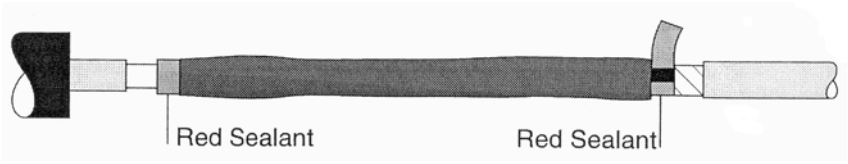
XVI POSITION AND SHRINK THE RED INSULATING TUBE

1. Center red insulating tube over black stress control tube.
2. Shrink in place using the same method as XV.

Note: Do not allow the red insulating tube to cool before applying red sealant and installing the black/red dual layer tube.

XVII APPLY RED SEALANT

1. Remove backing from sealant.
2. Using light tension, wrap sealant over the cable and butt against the red insulating tube as shown.
3. Build the sealant to the level of the red insulating tube.

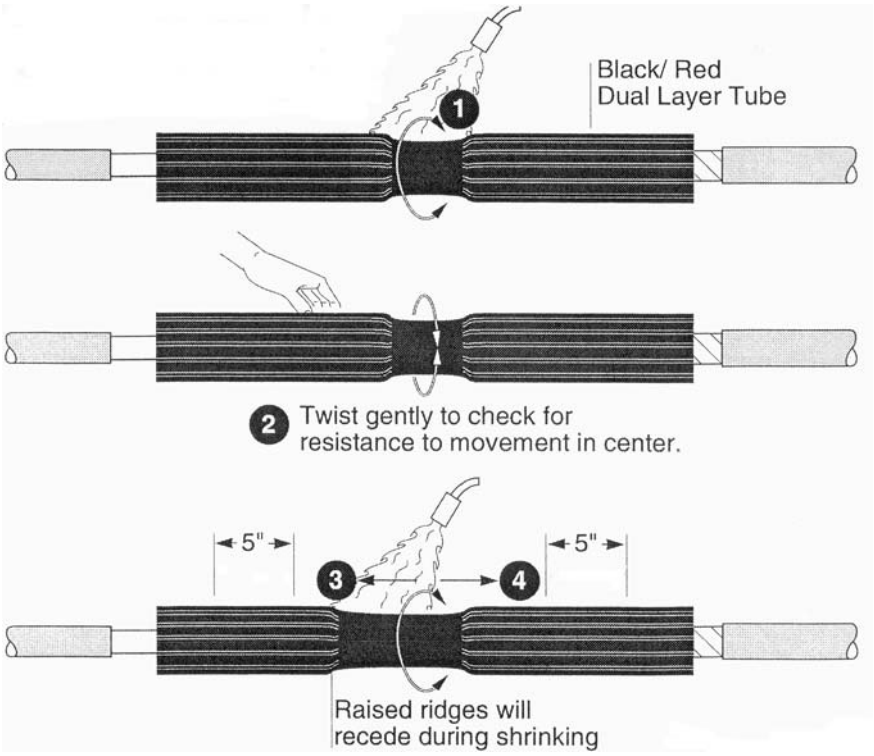


XVIII POSITION AND SHRINK THE BLACK/RED DUAL LAYER TUBE

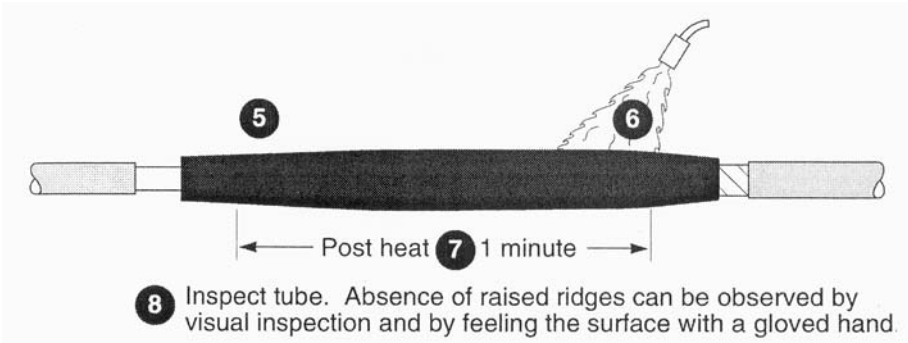
CENTER TUBE OVER JOINT

1. Begin shrinking in center of tube, working torch around all sides of the tube. *Pay particular attention to the back and underside of the tube.*
2. Before continuing, gently twist the unshrunk end of the tube to feel for resistance to movement in center indicating the center is shrunk.

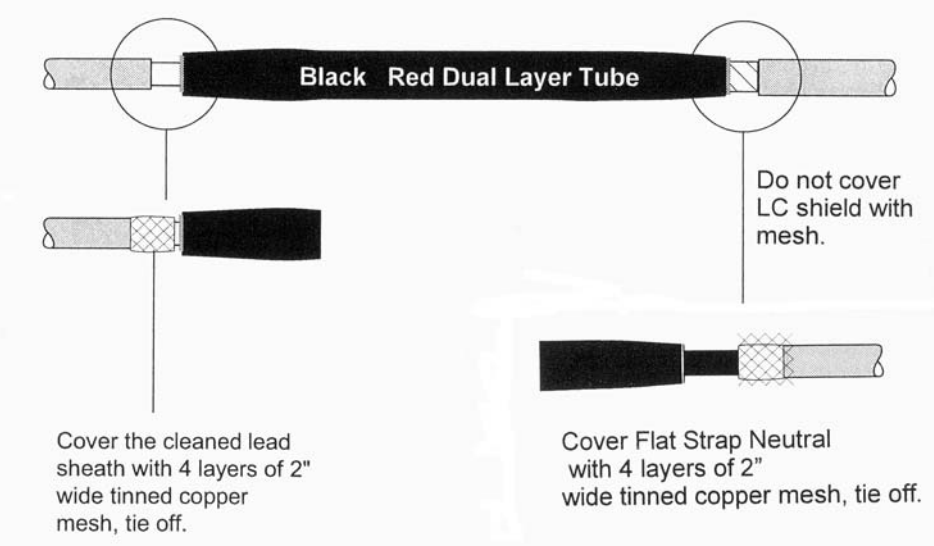
3. Shrink from the center toward one end and stop about 5” from the end of the tube.
4. Return to the center and shrink toward the other end, again stopping about 5” from the tube end.



5. Go back to first end and shrink the remaining 5” of tube.
6. Go back to second end and shrink the remaining 5” of tube.
7. After completing these steps, heat the entire tube for approximately 1 minute.
8. When completely shrunk down, the raised ridges should disappear.

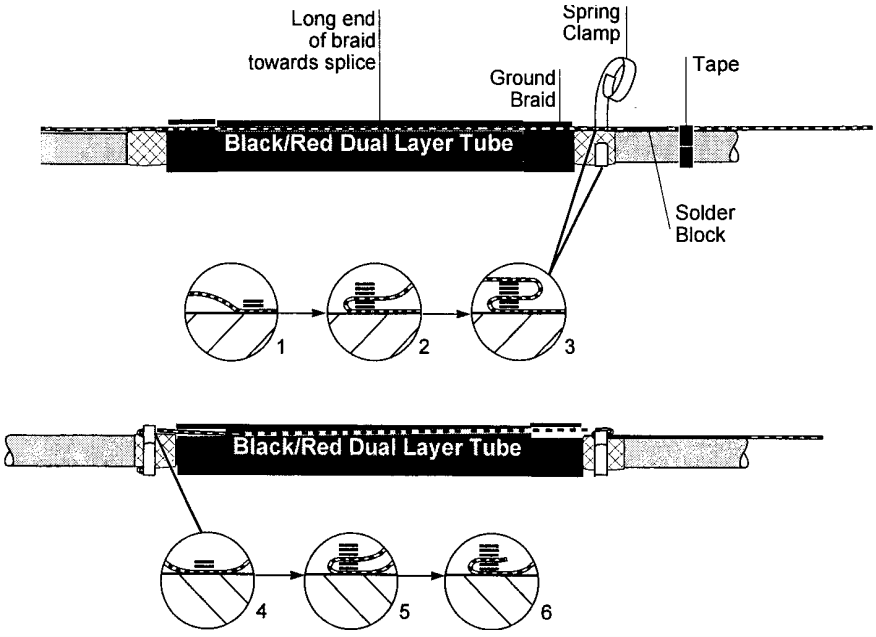


XIX INSTALL MESH ON THE CABLES



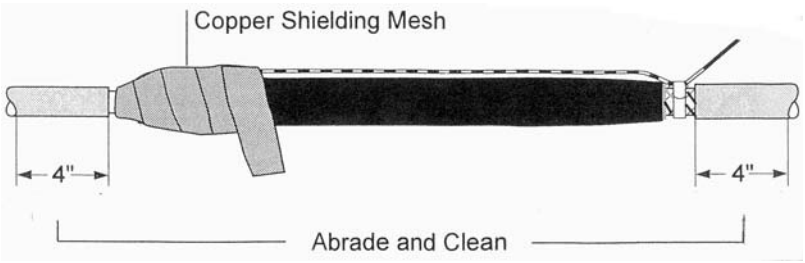
XX INSTALL THE GROUND BRAID AND THE GROUND SPRINGS

1. Lay the braid across the splice with the inner edge of the solder block aligned with the cable jacket cutback.
2. The shortest length of braid from the solder block should extend away from the splice. Tape the braid to the cable jacket to temporarily keep it in place.
3. Starting at the solder–blocked end, wrap two turns of the spring clamp over the braid and mesh or metallic shield.
4. Fold the long side of the braid back over the spring clamp and wrap the remainder of the clamp over the braid.
5. Fold the braid back over the clamp and route across the splice.
6. Wrap two turns of the second spring clamp over the braid and the mesh covered lead sheath.
7. Fold the braid back over the clamp and wrap the remainder of the clamp over the braid.
8. If no external ground connection, cut off the short length of braid at the solder block.
9. Remove the temporary tape.



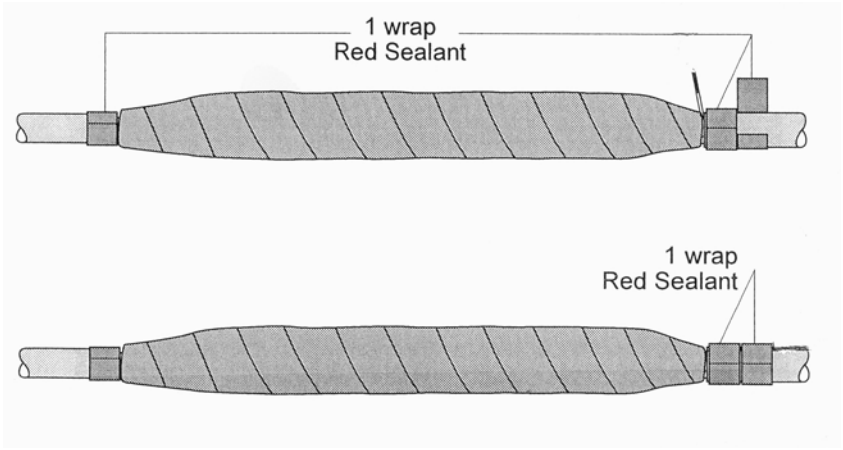
XXI INSTALL THE SHIELDING MESH

1. Wrap a half–lapped layer of the copper mesh across the entire splice from the PILC cable lead sheath to the opposite cable jacket and tie off.
2. Abrade and solvent clean the cable jacket and lead sheath to provide an oil–free surface.



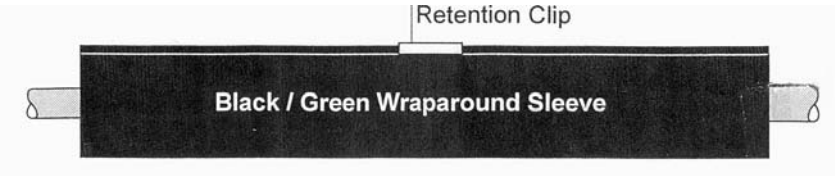
XXII APPLY THE RED SEALANT

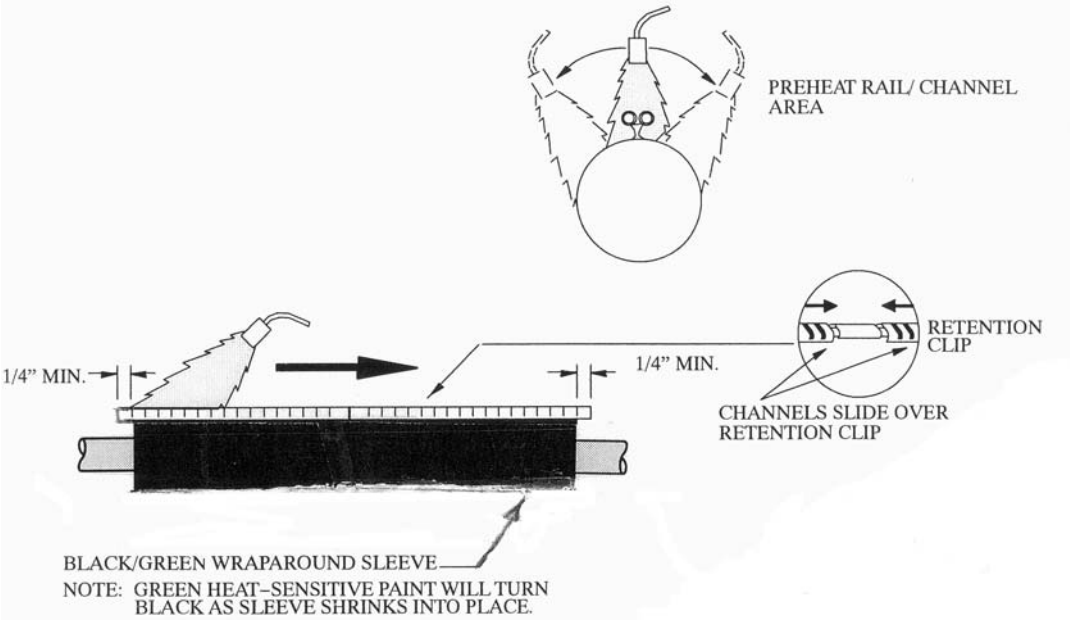
1. Apply 1 layer of red sealant on the PILC cable at the jacket cutback.
2. Lift the solder–block braid end and make two single wraps of sealant, side by side, butted up to the EPR cable jacket cutback
3. Lay the solder–block braid end down and press it into the red sealant.
4. Apply two single wraps of sealant, side by side, over the solder–blocked braid end and directly over the first layer of red sealant.

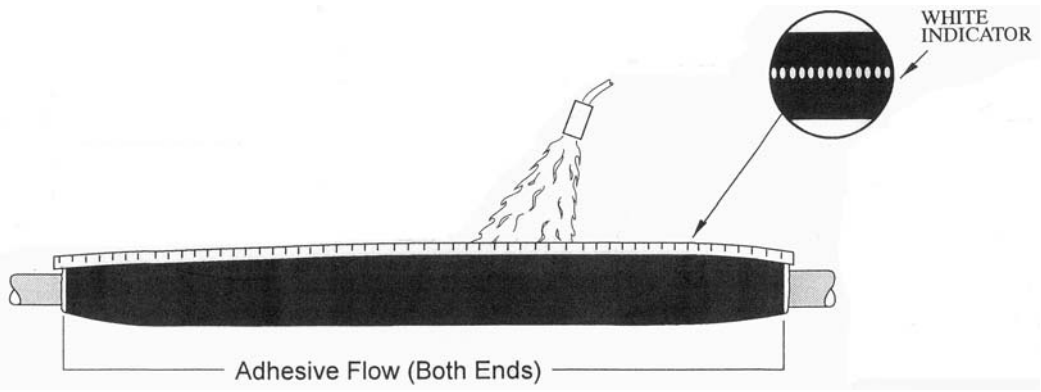


XXIII POSITION AND SHRINK WRAPAROUND SLEEVE

1. Remove or tape over all sharp points to prevent puncture of wraparound sleeve.
2. Remove the backing from the wraparound sleeve and center sleeve over splice.
3. Slide the metal retention clip onto the butted rails. Connect the channels by overlapping the retention clip as shown below.
4. Channel(s) must overlap sleeve edges by 1/4" minimum.
5. Preheat evenly along both sides of the rail/channel area until this area begins to shrink. (Critical Step)
6. Begin shrinking at the center of the sleeve and work all the way around the sleeve and toward each end.
7. Apply heat until the sleeve is completely shrunk and the green paint is completely converted to black.
8. Post heat the entire length, concentrating on the metal channel area. The post heat should be for 30 seconds after the sleeve is completely shrunk. A white line should be visible in the channel gaps indicating sufficient heating.
9. Look for adhesive flow at both ends of the sleeve.
10. Allow the sleeve to cool before moving or placing in service.







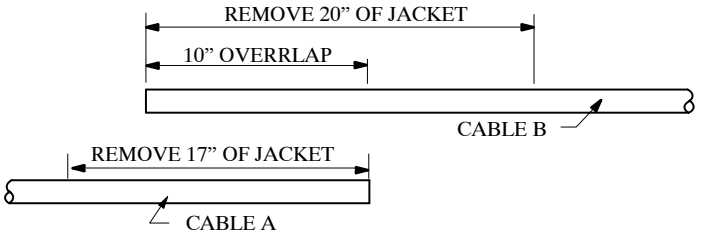
THE SPLICE IS NOW COMPLETE

		Stnd. / Stk. No.	Description 41 44 21 **	01	02
	A	17 05 481	Splice–Cond., CIC., H.S., 350 kcmil & 750–800 kcmil	1	1
	B	17 60 359	Sleeve–Cmpsn., 350 kcmil Cu.	1	
		17 60 360	Sleeve–Cmpsn., 750 kcmil Cu.		1
	C	25 53 055	Tape–Plastic (RL)	1	1
			Operation Code 425	1	1

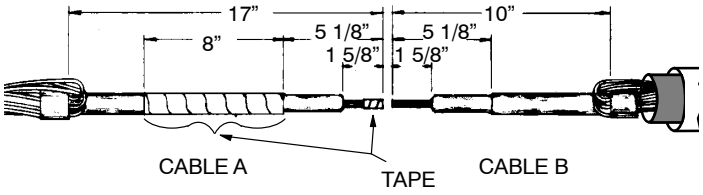
HEAT SHRINK SPLICE STANDARDS
FOR COMMON CABLE SPLICES

PILC CABLE	TO	SOLID DIELECTRIC CABLE	STANDARD
350[1]		1–350 LCRP	41 44 21 01
750[1]		1–750 FSRP	41 44 21 02

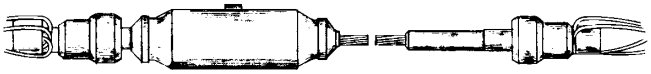
3M CABLE JOINT



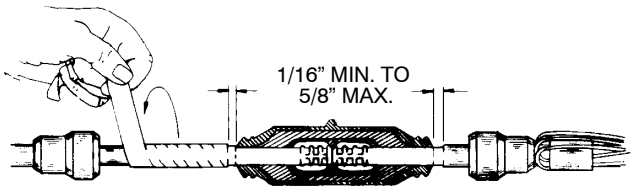
STEP 1



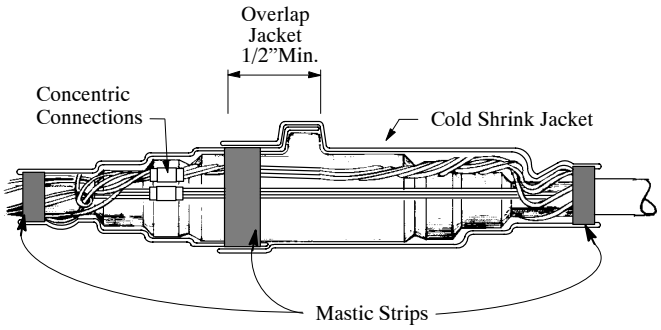
STEP 2–4



STEP 5–6



STEP 7–11



STEP 12–15

NOTE: Keep the cable clean at all times, but do not use solvent on the semi–conductive jacket.

1. There must be a 10 inch overlap of the cables. Wipe the cable clean 2 feet on each side.
2. Saw cut and prepare both cables according to the dimensions shown. Bevel the edge of the cable insulation at 45º angle. Do not exceed 1/8". NOTE: Cable "A" dimensions are different from cable "B" dimensions.
3. If both cables are jacketed, slide the cold shrink sleeve(s) over one of the cables.
4. Apply one–half lapped layer of brightly colored vinyl tape for the distance shown over the semi–conductive jacket of cable A. Begin tape 1/4" on the insulation of the cable. Apply 2 layers of brightly colored vinyl tape on the end of the conductor of cable A.
5. Apply silicone grease over the cable insulation and vinyl tape.
6. Slide the splice end caps onto each cable until butted against the concentric neutral wires.
7. Slide the splice body onto cable A. Do not slide past the end of the vinyl tape.
8. Remove the previously applied vinyl tape from the end of conductor of cable A.
9. Prior to installing the connector, clean the exposed conductor with a stainless steel wire brush. Some splice kits may contain a small disposable stainless steel wire brush, if so, it should be used. If there is no wire brush in the kit use one of the stocked stainless steel wire brushes. Crimp the connector onto the cable using the 12–ton press and the U26ART die. The connector should have three crimps per end.
10. Slide the splice body into final position over connector. NOTE: A small area of insulation should be left exposed at the ends of splice body as shown.
11. Remove the remaining vinyl tape from cable A.
12. Slide end caps onto the splice body. Two locking grooves exist on the splice body. NOTE: Insure that end caps are fully seated. There should be no visible gap between the cap and splice body.
13. Connect the concentrics with three #4 sleeves on cable "A" side. Place 5 and 6 wire bundles into separate sleeves. Snug the sleeves and wires tightly against the splice and the cable. NOTE: In manholes, bring the remaining concentric neutral strands outside of the splice cover. Attach a #2 copper bond wire to the neutral

wires using a two bolt clamp (17–54–140). Attach the other end of the bond wire to the system ground.

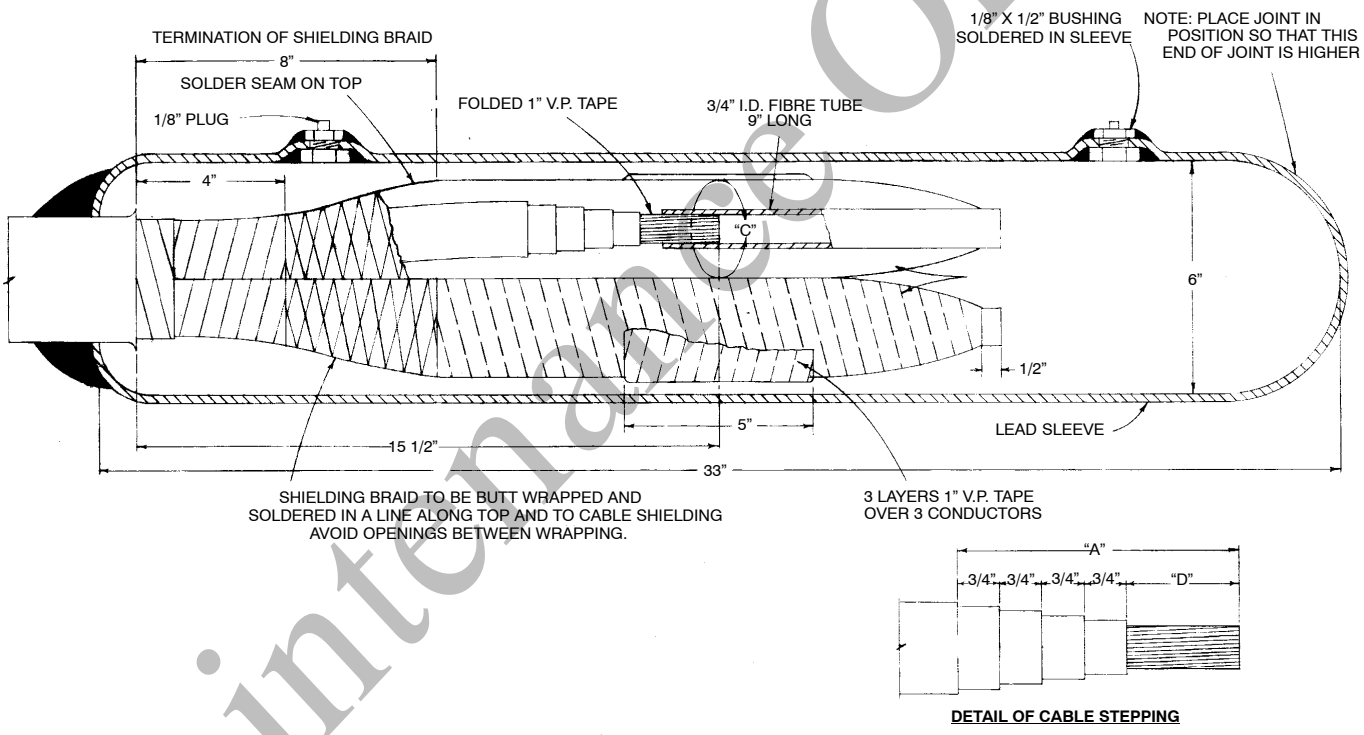
14. For jacketed cable(s), wrap a layer of mastic at the end of each cable jacket. Slide the first cold shrink sleeve over the splice with the end of the sleeve overlapping the opposite cable jacket cut off (or mastic strip) by two inches. Shrink the sleeve down.
15. Wrap one layer of mastic at the inner end of the shrunken sleeve. Slide the second sleeve over the splice and overlap the first sleeve by 1/2 inch minimum. Shrink the second sleeve down.

	Stnd. / Stk. No	**Description 41 44 30 03**	
	17 05 230	Joint – Unit, 1/0 Al. 35 kV	1 Ea.
	17 60 103	Sleeve–Compression, #4 Copper	3 Ea.
@	17 55 443	Sleeve–Cold Shrink, Sealing, 2 Pieces	1 Ea.

CABLE – JOINT

35kV Hot Test Cap

350 kcmil or 500 kcmil 3 Cond. Lead Cable (Belted or Shielded)



DETAIL OF CABLE STEPPING

NOTE:

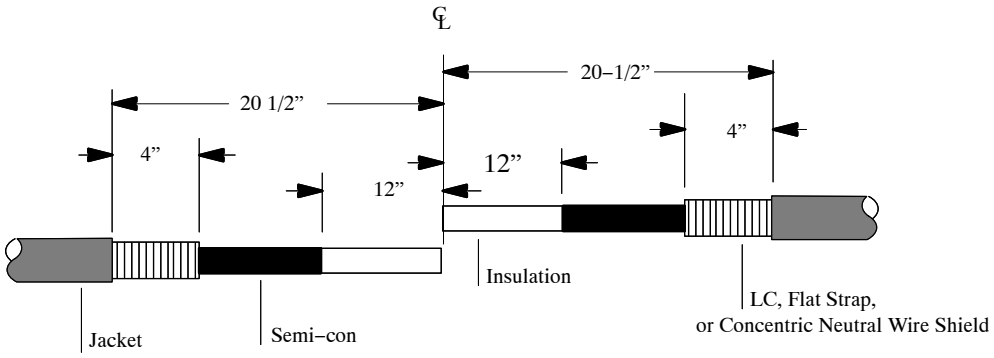
1. Shielding joint shown. For belted joint, omit shielding braid.
2. See Dist. Std. **41 40 00 00** for materials and operation codes.

	Dist. Std. No.	Cable Size	L Joint to Stepping A	Circumference Over Insulation "C"	Length of Bare Copper D
	41 46 11 01	350 kcmil	4–3/4"	7–1/2"	1–3/4"
	41 46 11 02	500 kcmil	5"	8"	2"

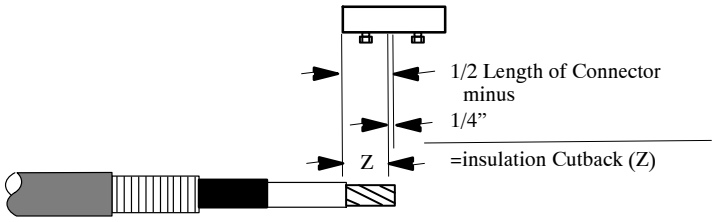
I. GENERAL INSTRUCTIONS

1. Adjust the flame so that it is an overall 12–inch bushy flame.
2. Apply outer 3– to 4–inch tip of the flame to heat–shrinkable material with a rapid brushing motion.
3. Unless otherwise instructed, start shrinking tubes at the center, working the flame around all sides of the tubes to apply uniform heat.
4. Concentrate on heating the back of the tubes as well as the front of the tubes.
5. If it is necessary to interrupt the shrinking process and the tubes cool, you must reheat prior to shrinking the next tube.
6. Inspect all installed tubes. Reheat any flat spots or wrinkles, paying particular attention to the back of the splice.
7. A 2 inch diameter torch head (Stk. #85 36 326) is recommended to properly shrink the splice.

II. PREPARE CABLES

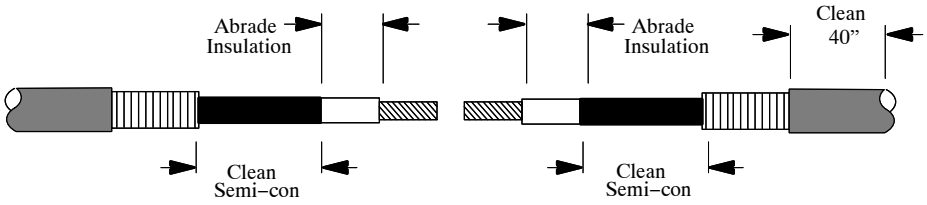


1. Make sure that the cables to be joined are straight and level.
2. Overlap the two cables 8" and cut at the centerline.
3. Remove the cable jacket and metallic shield as shown above.
4. Secure end of metallic shield with copper foil tape provided.
5. Remove semi–con as shown above.
   - Carefully score the semi–con with a straight, fixed blade. Do not nick or cut the insulation!
   - Apply heat to the semi–con while removing strips with a pliers. Keep the semi–con hot for a clean separation between the semi–con and the insulation.
   - Use a round file to smooth out the semi–con cut off.



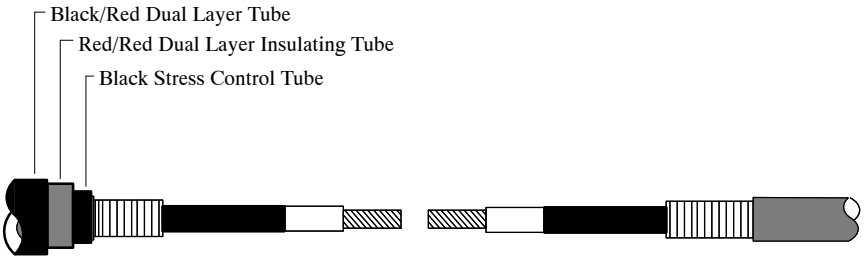
6. Remove insulation as shown above. The insulation cut backs should equal 1/2 the connector length minus 1/4".

III. ABRADE THE INSULATION AND CLEAN THE CABLES



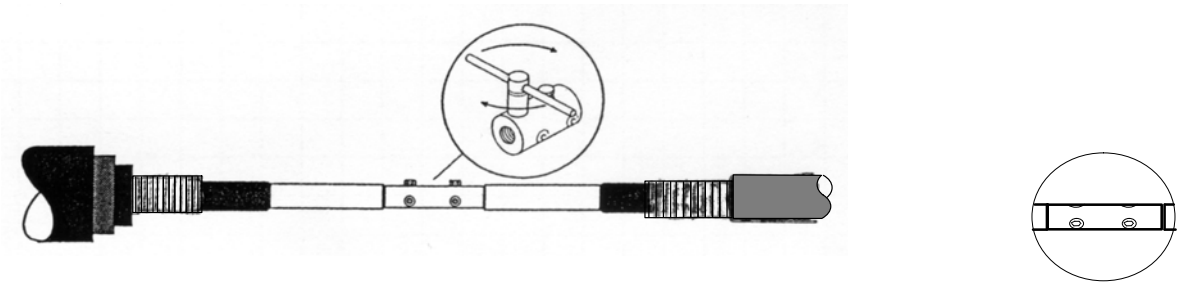
1. Abrade and clean insulation (120 Grit non–conductive sanding tape works well) to remove imbedded semi–con and smooth out the surface.
2. Clean cable jacket as shown.
3. It is very important that the cable insulation is clean, smooth, and free of nicks and cuts. Damaged or dirty insulation will cause the splice to fail!

IV. PLACE NESTED TUBES OVER THE CABLE



1. Protect the tubes from the end of the conductor by placing a plastic tube storage bag over one of the cable ends.
2. Slide the tubes over the plastic bag.

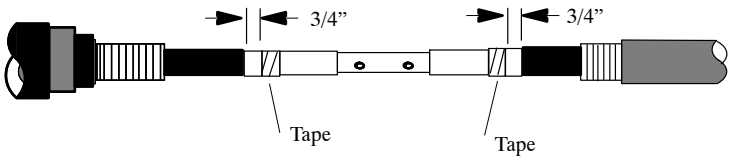
V. INSTALL CONNECTOR & APPLY FILLER

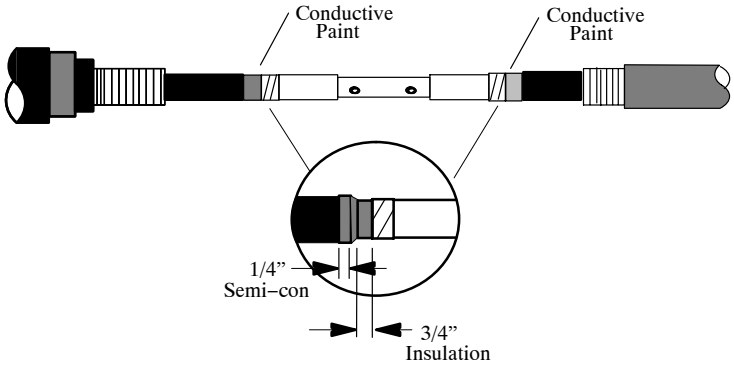


1. Fit conductors into connector so that connector ends line up with the insulation.
2. Make sure that no gaps are left between the connector and insulation.
3. “Hand tighten” each bolt. Then, using a wrench, tighten each bolt an additional 1/2 turn.
4. Continue to tighten each bolt until the head shears off.
5. Apply filler over the sheared bolts to obtain a smooth finish.

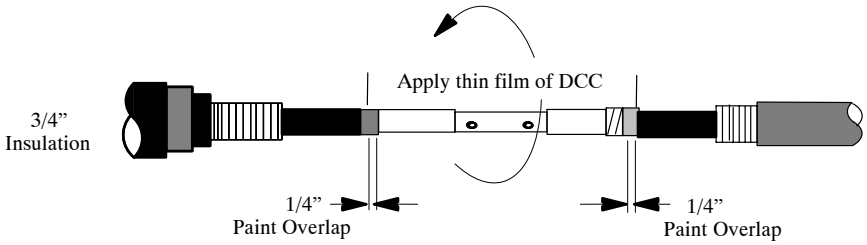
VI. APPLY TAPE AND CONDUCTIVE PAINT

1. Apply tape (adhesive side up) on the insulation 3/4" from the semi–con cutback. Repeat on the other cable.
2. Shake the conductive paint bottle for 30 seconds. Apply the paint onto the 3/4" of insulation and overlap the semi–con shied by 1/4". Repeat on the other cable.



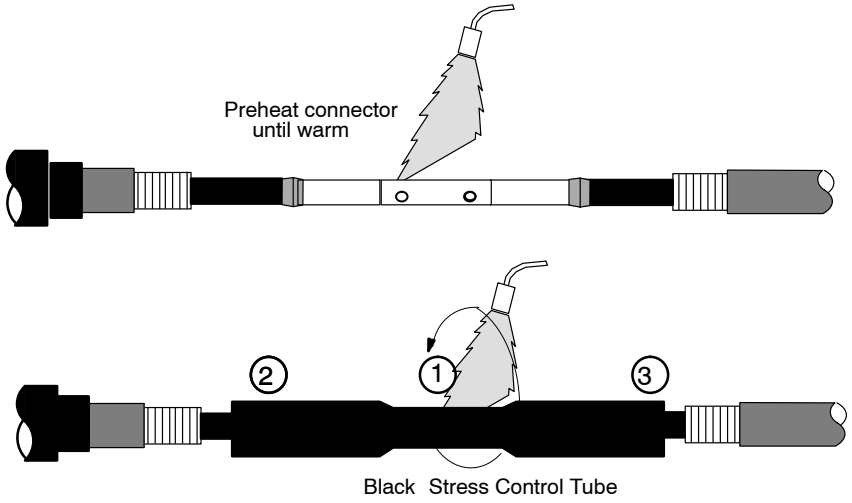


VII. APPLY THE DISCHARGE CONTROL COMPOUND (DCC)



1. Apply a thin layer of DCC to the surface of the insulation and the connector. Overlap the conductive paint by 1/4".

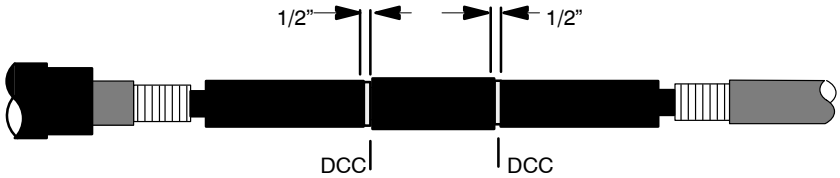
VIII. PREHEAT CONNECTOR; POSITION AND SHRINK BLACK STRESS CONTROL TUBE



1. Preheat the connector for approximately 1 minute or until warm.
2. Center the black stress control tube over the splice.
3. Begin shrinking at the center of the tube (1). Work the torch with a smooth brushing motion around the tube.
4. After the center portion shrinks, work the torch toward one end (2) and then to the other end (3). Apply sufficient heat to ensure complete shrinkage as indicated by a smooth profile.

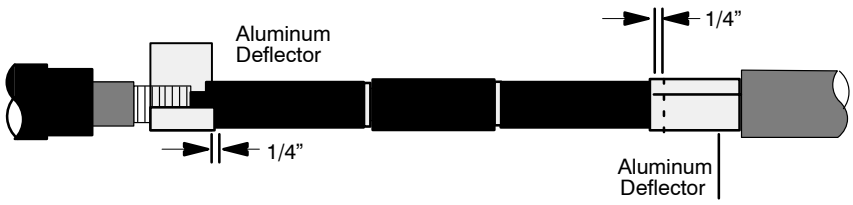
   Note: Do not point the flame directly at the semi–con layer.

IX. APPLY DCC TO MATTE SURFACE



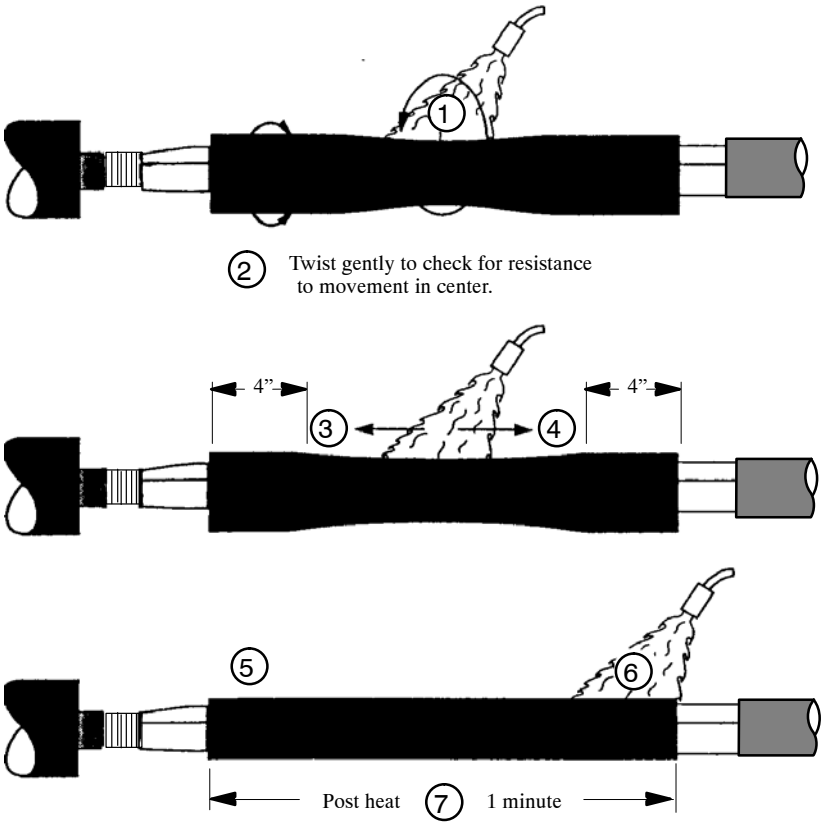
1. Apply a thin film of DCC approximately 1/2" width around the edges of the matte surface in the center of the stress control tube.

X. INSTALL ALUMINUM DEFLECTORS



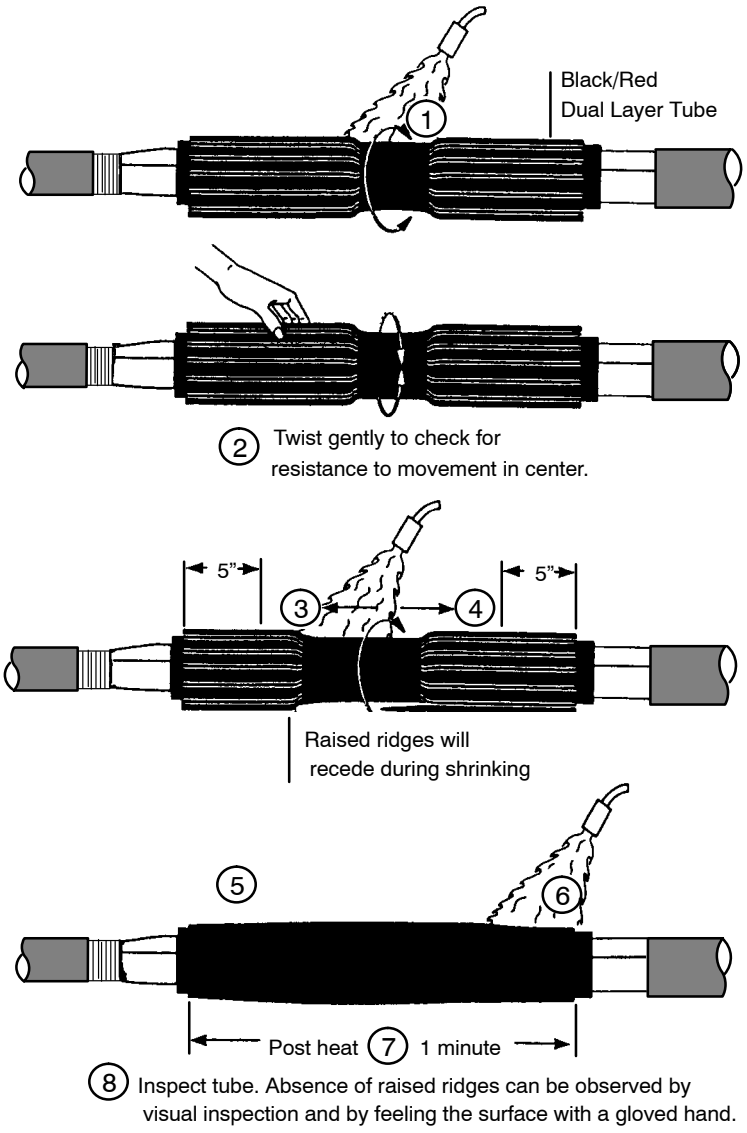
1. Remove the backing and wrap the aluminum deflectors 1/4" onto the black stress control tube and over the shielding as shown.

XI. POSITION THE RED/RED DUAL LAYER INSULATING TUBE AND SHRINK IN PLACE



1. Center the tube over the joint. Begin shrinking in the center of the tube. Work the torch around all sides particularly the back and underside of the tube.
2. Before continuing, gently twist the unshrunk end of the tube. Feel for resistance to movement in the center which would indicate that the center is shrunk.
3. Shrink from the center toward one end and stop about 4" from the end of the tube.
4. Return to the center and shrink toward the other end of the tube stopping 4" from the end.
5. Go back to the first end and shrink the remaining 4" of tube.
6. Go back to the second end and shrink the remaining 4" of tube.
7. After completion of these steps, heat the entire tube for 1 minute.
8. Inspect the tube. Look for absence of raised ridges. A gloved hand may also be used to feel the surface of the tube for raised ridges. Absence of these ridges indicates a complete shrink down.

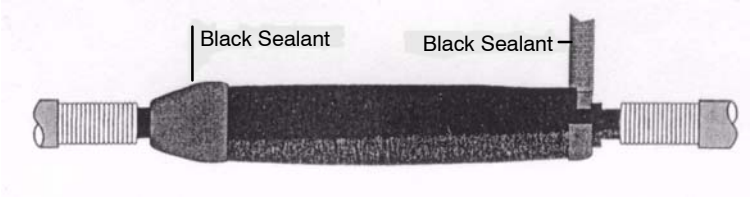
XII. POSITION THE BLACK/RED DUAL LAYER TUBE AND SHRINK IN PLACE



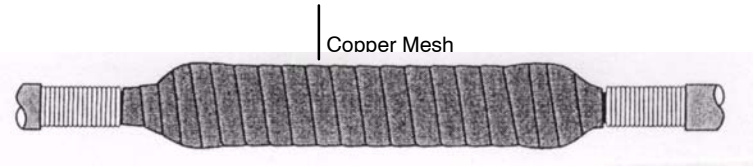
Note: The dual layer insulating/shielding tube takes longer to shrink than previous tubes.

1. Center tube over joint. Begin shrinking in the center of the tube, working the torch around all sides of the tube. Pay particular attention to the back and underside of the tube.
2. Before continuing, gently twist the unshrunk end of the tube to feel for resistance to movement in the center indicating that the center is shrunk.
3. Shrink from the center toward one end and stop about 3" from the end of the tube.
4. Return to the center and shrink toward the other end, once again stopping about 3" from the tube end.
5. Go back to the first end and shrink the remaining 3" of the tube.
6. Go back to the second end and shrink the remaining 3" of the tube.
7. After completing these steps, heat the entire tube for about 1 minute.
8. Inspect the tube. Look for the absence of raised ridges. A gloved hand may also be used to feel the surface of the tube for raised ridges. Absence of these ridges indicates a complete shrink down.
9. Remove the aluminum deflectors from the cables.

XIII. INSTALL SEALANT AND MESH



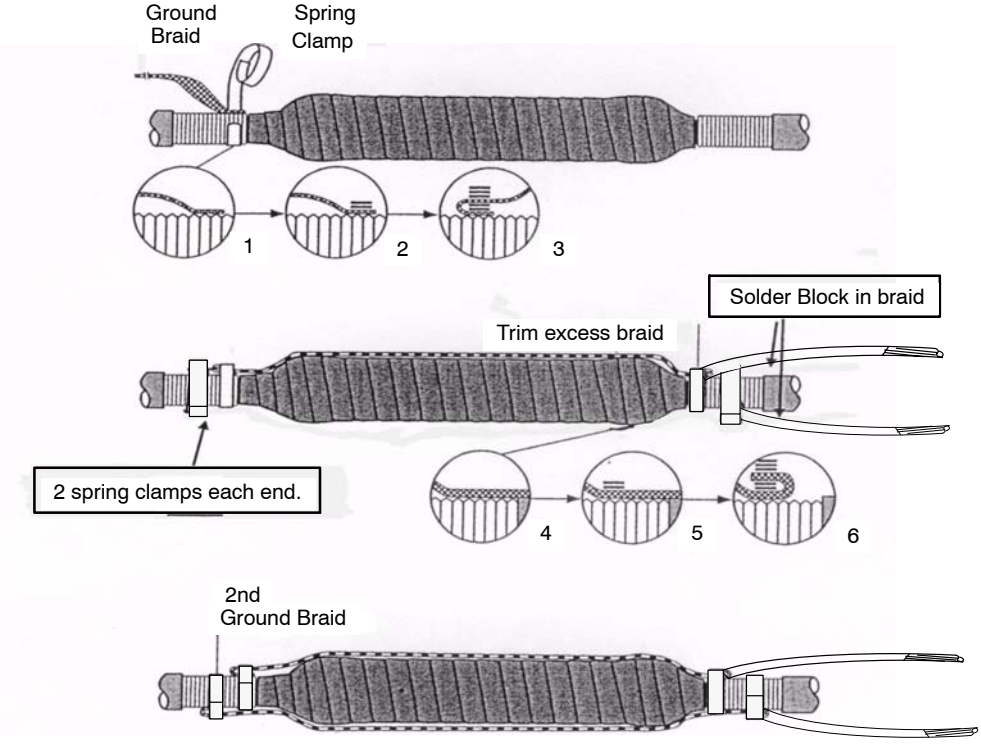
1. Remove the backing strips from the black sealant.
2. Apply the sealant to smooth out the steps at the sleeve ends as shown above.
3. Apply the sealant onto the semi–con being careful not to overlap onto the metallic shields.



4. Wrap a half–lapped layer of copper mesh across the splice butted up to the metallic shield on both sides and tie off.

XIV. INSTALL AND CONNECT GROUNDING

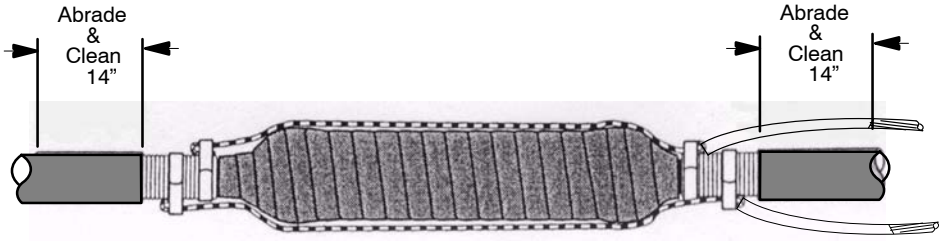
(External Grounding with 2–#2 AWG Solder Blocked Braids, Without Shield Break)



1. Position the solder blocked portion of the braid at the end of the jacket on either side of the splice with the short covered portion positioned away from the splice. Repeat with the second braid. Use tape to hold the braids in place.

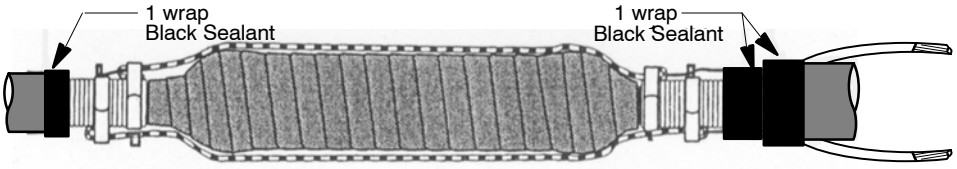
2. Use the heavy duty constant tension clamps to attach the 2 braids to the metallic shield. Make two wraps of spring clamp over the braid.
3. Fold the braids back over the spring clamps. Continue to wrap the remaining clamp over the braid. Tighten the clamp by twisting it in the direction it is wrapped and secure with copper foil tape.
4. Lay the braids across the splice tube and onto the metal shield on the other side of the splice.
5. For each braid, make two wraps of each clamp over the braid.
6. Fold the braids back toward the splice and finish wrapping the clamp. Tighten and secure each braid. Cut off excess braid. The second ground braid should be placed opposite the first ground braid and the second set of spring clamps installed outside of the first set of spring clamps and over the metallic shield.

XV. CLEAN AND ABRADE CABLE JACKETS



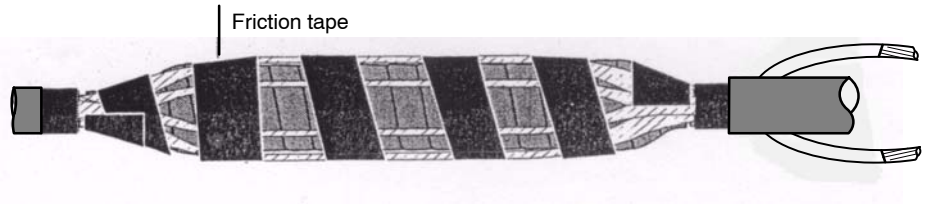
1. Abrade the cable jackets and clean with an approved solvent.

XVI. APPLY THE BLACK SEALANT



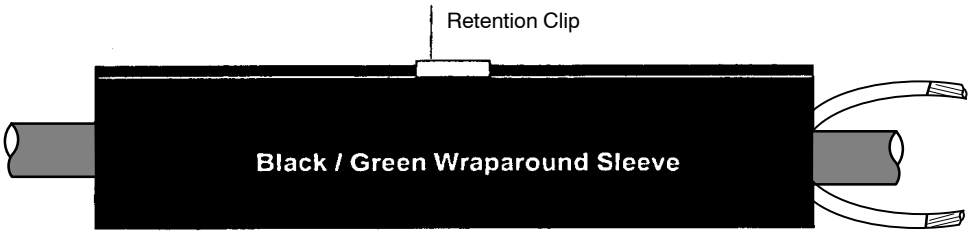
1. Apply one wrap of black sealant starting at the jacket cutbacks around both cable jackets.
2. On the external braid end apply a second one wrap layer of sealant next to the first one on the cable jacket. Push the solder blocks and covered braid ends into the sealant.
3. Wrap one more layer of black sealant over the top of the first two layers to encapsulate the solder blocks and the covered external braid ends.

XVII. APPLY FRICTION TAPE



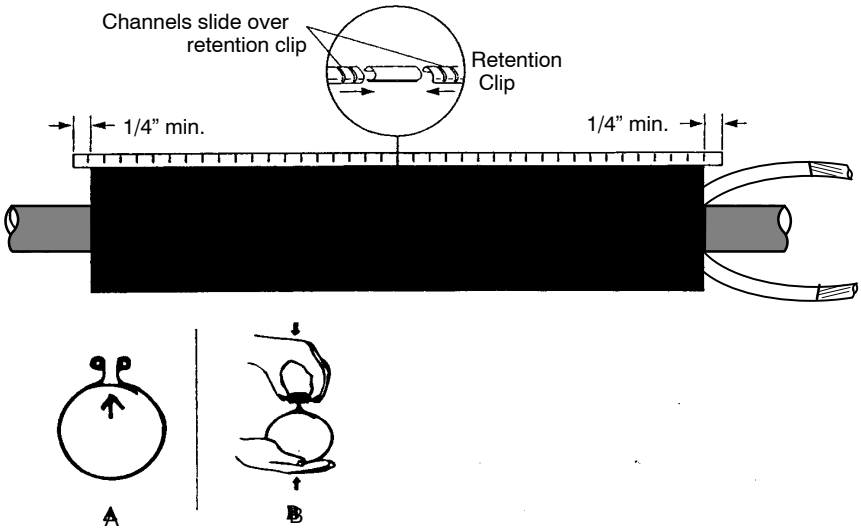
1. Apply a wrap of friction tape to hold the ground braids in position.
2. Tape down external braid ends.
3. Tape over all sharp points.

XVIII. POSITION OUTER WRAP AROUND SLEEVE



1. Remove the backing from the wrap around sealing sleeve and center the sleeve over the splice.
2. Slide the metal retention clip onto the butted rails and position in the center of the sleeve.

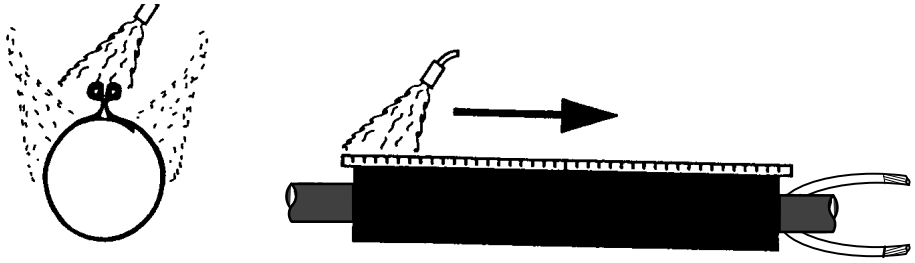
XIX. INSTALL THE CHANNELS



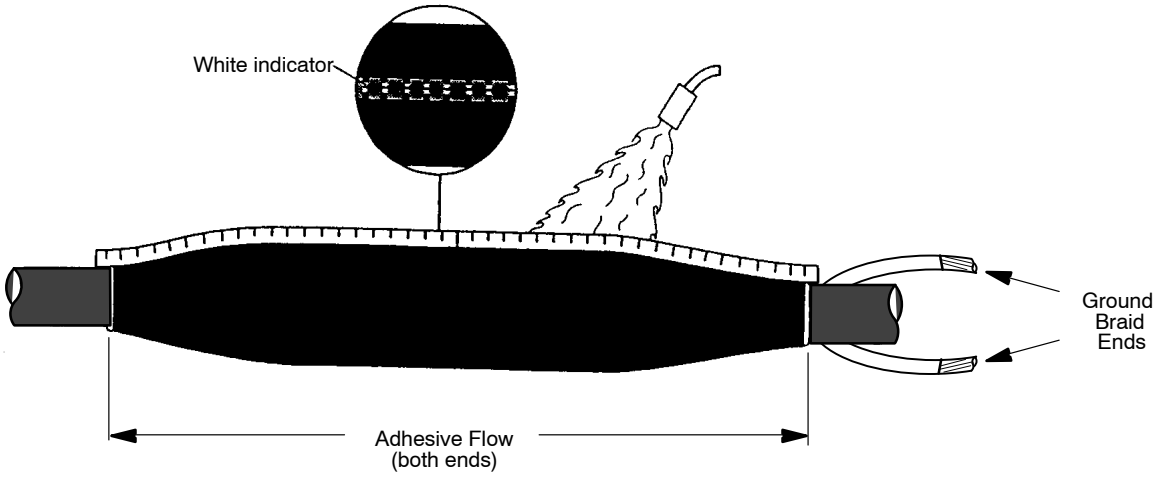
1. Slide the channels onto the rail.
2. Connect the channels by having them overlap the retention clip as shown. (Channels must overlap the edge of the wrap around sleeve by 1/4" minimum.)

3. If the channels fit tight make sure that the sleeve flap is not pinched between the rails (A).
4. Push the sleeve up from the bottom and down from the top while sliding the channels onto the sleeve (B). This keeps the channels from binding.

XX. SHRINK THE WRAP AROUND SLEEVE



A B



1. Preheat evenly along both sides of the rail/channel area until this area begins to shrink.
2. In order to achieve a uniform heating, move the flame back and forth from one side of the channel to the other (A) while also moving the flame along the entire length of the channel (B) until the sleeve starts to shrink.
3. Begin shrinking at the center of the sleeve and work toward each end.
4. Apply heat until the sleeve is fully shrunk and the heat sensitive green paint is completely converted to black.
5. Continue heating the rail/channel area for another 5 seconds per foot. A white line should be visible in the channel gaps indicating sufficient heating.
6. This completes the splice.
7. Connect external ground braid ends into ground rods or ground bond wire using ground clamps or two bolt clamps and covering the connections with plastic tape.
8. Allow the splice to cool before moving it or placing it in service.

		Stnd. / Stk. No.	Description 41 54 30	01	02	03
	A	17 05 313	Splice – 500 – 750 kcmil, 69kV	1	1	
		17 05 538	Splice – 1000 kcmil, 69 kV			1
	B	17 54 378	Connector – Cable, Shearing Screw, 750 kcmil AL	1		
		17 54 379	Connector – Cable, Shearing Screw, 500 kcmil AL		1	
		17 54 971	Connector – Cable, Shearing Screw, 1000 kcmil CU			1
@	C	17 54 140	Connector – Two bolt	2	2	2
@	D	17 52 032	Clamp–Ground Rod, Cast Bronze	2	2	2
@	E	18 54 027	Wire – #2 Cu.	As Req'd	As Req'd	As Req'd
	F	25 53 055	Tape – Plastic (RL)	1	1	1
	G	25 53 027	Tape – Friction, 1–1/2" Wide (RL)	2	2	2

41 54 30 01 **750 kcmil, AL, 69kV Cable**
41 54 30 02 **500 kcmil, AL, 69kV Cable**
→ **41 54 30 03** **1000 kcmil, CU, 69kV Cable**

1. Prepare the Cables and Apply the Copper Mesh as Shown in Figure 1.

The copper mesh installation requirements, for each jacketed cable type, are shown in Figure 1. If bare concentric neutral cable must be spliced, go to Step1A for cable preparation instructions.

Wrap the copper mesh around the cable so that it is located in the 1–1/2" metallic shield area as shown. The copper mesh should be pulled tight around the cable and tied off. After tying off the copper mesh, cut it so that only a very short tail remains.

Use Stock #22–05–213 or the aluminum oxide strip included in the splice kit to abrade/scuff the cable jacket, see Figure 1.

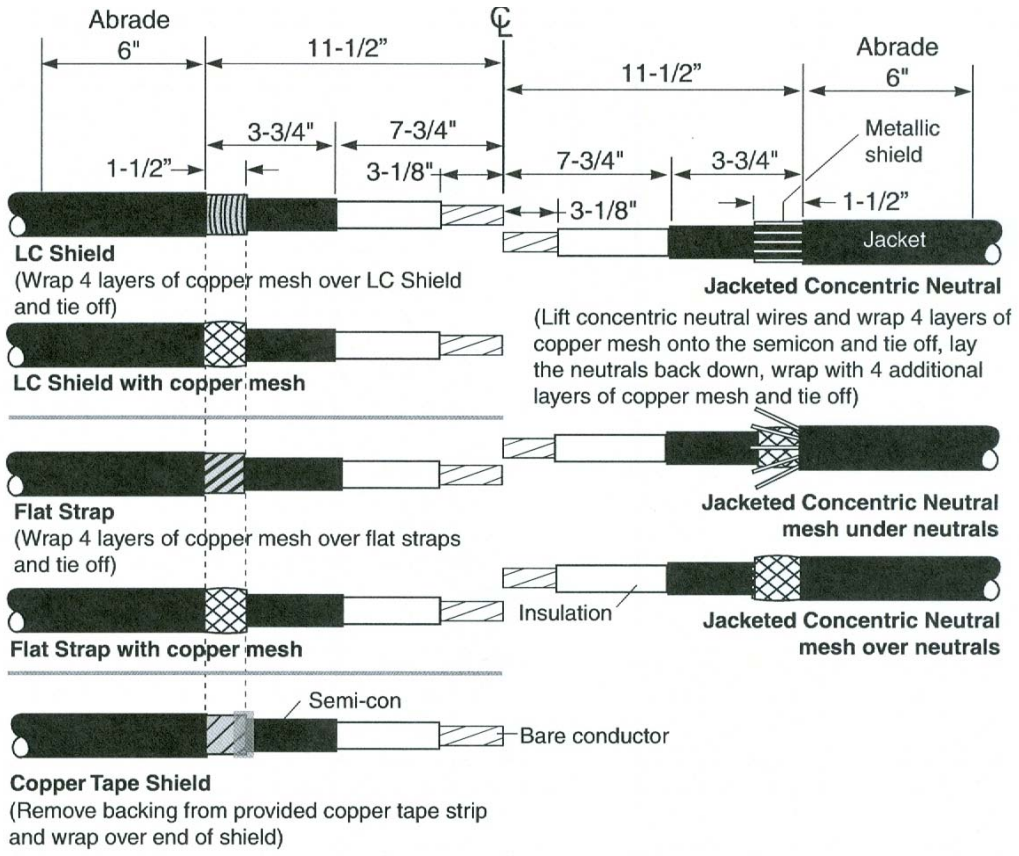


Figure 1

Initial when Step 1 is complete. _____

1A. Prepare Bare Concentric Neutral Cables

Bare concentric neutral cable will be prepared using the dimensions shown in Figure 2.

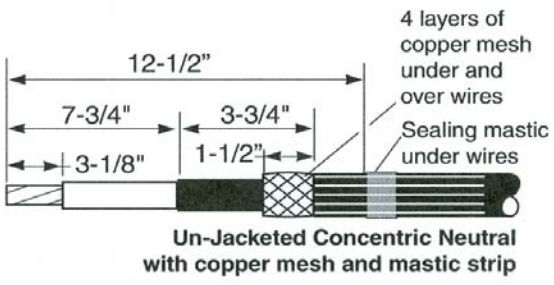


Figure 2

After preparing the BCN cable as shown in Figure 2, carefully lift the bare concentric neutral wires and clean the underlying semi–con.

Wrap a strip of the gray sealing mastic under the concentric neutral wires. Place the mastic strip 12–1/2” from the end of the cable.

While the concentric neutral wires are still lifted, wrap four layers of copper mesh around the cable and tie off the end. The copper mesh wrap must start 10” from the end of the cable and end 11–1/2” from the end of the cable.

Lay the concentric neutral wires back down over the semi–con, making sure the ends of the concentric neutral wires align with the edge of the copper mesh. Press the concentric neutral wires into the sealing mastic.

Apply four additional wraps of copper mesh over the concentric neutral wires and tie off. Verify that the installed copper mesh provides a 1–1/2” connection area at the ends of the concentric neutral wires.

Initial when Step 1A is complete. _____

2. Place Splice Body Over Cleaned Cable

Clean 30" of cable jacket on the cable where the splice body will be placed or stored prior to making the shearbolt connection.

Slide the splice body over the cable end so that the holdout core release strip points toward the cable end.

Figure 3 shows the placement of the splice body on the cable. Also shown in Figure 3 is the optional use of the plastic bag supplied with the splice body to cover the cable to maintain cleanliness.

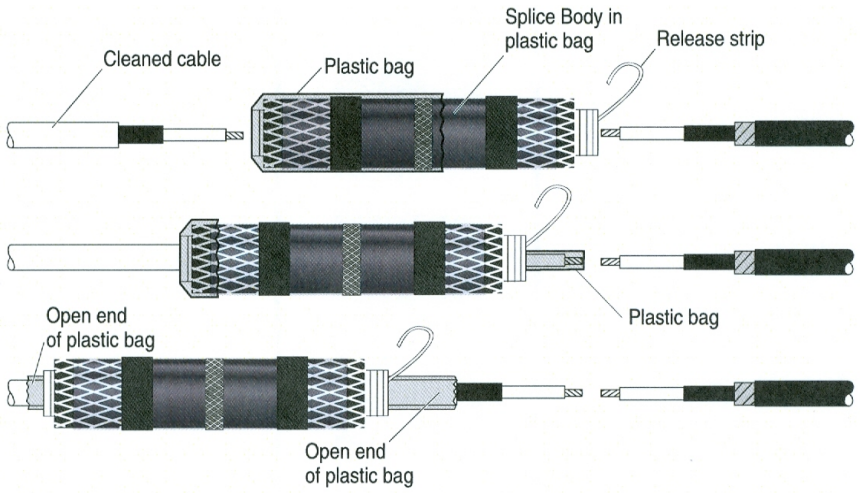


Figure 3

Initial when Step 2 is complete. _____

3. Install Shearbolt Connector

<u>Before shearing bolts, confirm that the dimension between semi–con cutbacks is between 15 ½" and 16 ¼" for proper placement of the splice body. See Figure 4.</u>

<u>Use the small wire brush included in the kit to clean the surface of the aluminum conductor before placing the conductor into the connector.</u>

If the conductor is larger than 600 kcmil, remove the inserts in the connector.

Insert the cable conductor into the connector until it butts up with the center–stop of the connector.

Tighten the shear bolts by hand until they are snug against the conductor. Complete the installation by tightening and shearing the bolts in the sequence shown in Figure 4.

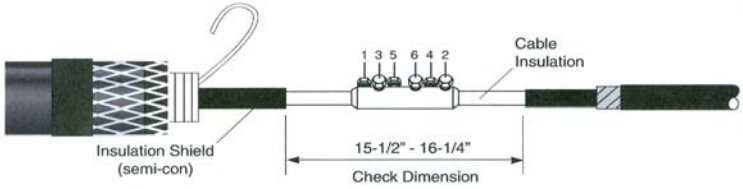


Figure 4

Initial when Step 3 is complete. _____

4. Clean Cable and Install Marking Tape

CLEAN AND DEGREASE THE CONNECTOR AREA (REMOVE ALL EXCESS INHIBITOR).

CLEAN THE CABLE INSULATION. WHEN CLEANING THE INSULATION, ALWAYS WIPE TOWARD THE SEMI–CON.

Install several turns of marking tape onto the cable semi–con 9 ¼" from the center of the connector as shown in Figure 5. This tape will be used as a guide for positioning the splice body. The marking tape is to be installed on the same cable that the splice body is on.

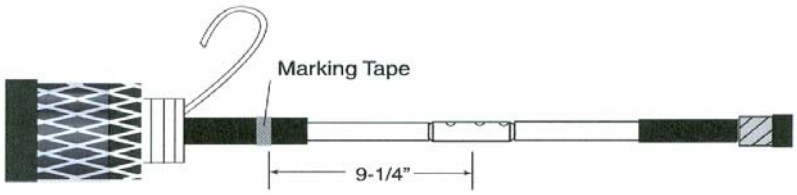


Figure 5

Initial when Step 4 is complete. _____

5. Lubrication

Put on the glove provided in the kit and then use the gloved hand to lubricate the cable insulation up to the semi–con cutback and marking tape with the supplied DISCHARGE CONTROL COMPOUND (DCC). Be sure to use extra DCC to form a bead around the semi–con cutbacks on each cable. See Figure 6 for areas to lubricate.

USE ALL OF THE DCC SUPPLIED IN THE KIT TO HELP FILL VOIDS. DO NOT USE STANDARD SILICONE GREASE.

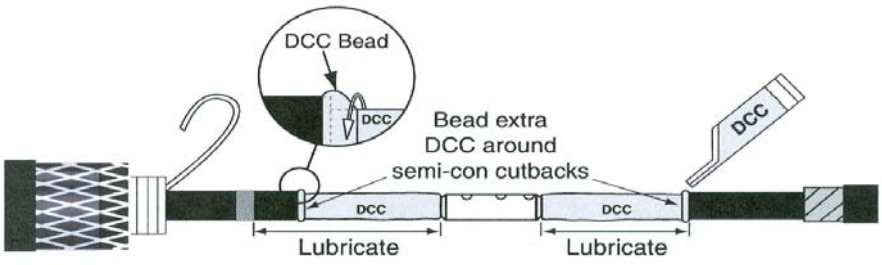


Figure 6

Initial when Step 5 is complete. _____

6. Installation of Splice Body

If the optional plastic bag was used in Step 2 to maintain cleanliness, it should now be removed.

Position the splice body so that the silicone splice body's transparent edge is aligned with the edge of the marking tape. It is important that the splice body remain aligned with the marking tape while the spiral hold-out is removed.

Remove the spiral holdout (core) by pulling the release strip counterclockwise while holding the splice body in place. The spiral holdout cannot be pulled out all at once. Slowly pull the spiral holdout on top of the cable and then pass it around and underneath the cable until the spiral holdout has been completely removed. Once the splice is partially shrunk adjacent to the marking tape, there is no need to hold the splice. Use two hands at this point to remove the remaining spiral holdout.

Remove the marking tape.

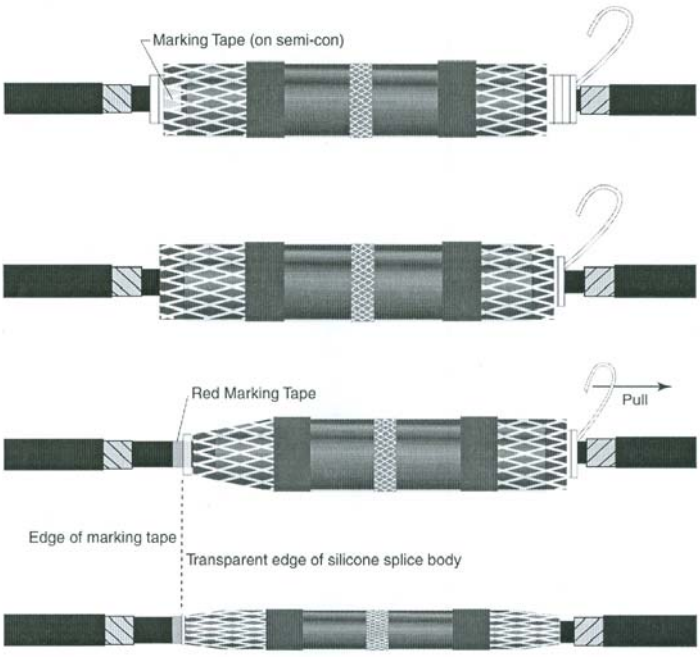


Figure 7

Initial when Step 6 is complete. _____

7. Straighten Out Mesh Sock Wires, Install Spring Clamps & Tape

IF AN EXTERNAL GROUND CONNECTION IS REQUIRED, PROCEED TO STEP 8.

USE THE SMALL SPRING CLAMP "F" FOR 15 KV CABLES UP TO AND INCLUDING 500 KCMIL AND 1/0 35 KV. FOR ALL OTHERS, USE THE LARGE SPRING CLAMP "G".

Remove the black tape holding the ends of the mesh sock wires on the splice body. If a knife is used to cut the tape, take care not to damage the underlying rejacketing material.

Straighten the mesh sock wires out over the previously installed copper mesh tape. Install two turns of the spring clamp over the mesh sock and the mesh tape covering the cable metallic shield. After two turns are installed, fold the mesh sock back over the spring clamp and continue to install the remaining turns on the spring clamp over the mesh sock.

Secure the spring clamp with three wraps of vinyl tape (Stk. # 25–53–055) wrapped in the same direction as the spring clamp. Continue taping over the ends of the mesh to cover all sharp points.

Follow the above steps to complete the other side.

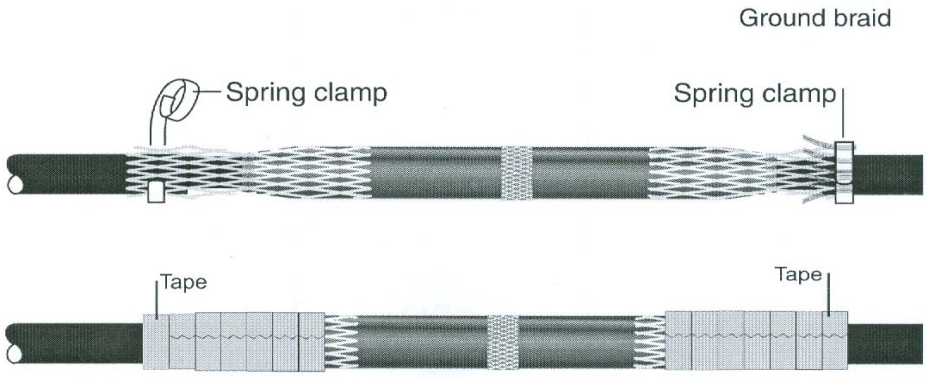


Figure 8

Initial when Step 7 is complete. _____

8. Installation of Wraparound Ground Braid Used for External Ground Connection–Optional

Straighten the mesh sock wires out over the previously installed copper mesh. Fold the edges of the mesh sock back toward the center of the splice end where the ground braid will be installed. If the edges of the mesh sock are very long, they may be secured with vinyl tape.

Select one of the three mastic strips from the grounding kit (Stk. # 17–54–306). Remove liners and wrap the mastic around the cable jacket, ½" from the cut edge. Discard any excess mastic from the piece.

Position the twin pre–formed ground braid over the folded back mesh sock with one tail along the cable jacket. Verify that the ground braid is positioned over the 1 ½" area where the cable metallic shield and copper mesh tape are located. Press one tail of the preformed ground braid into the previously applied mastic and secure the tail to the cable jacket with vinyl tape,1 ½" from the edge of the jacket. Additional wraps of vinyl tape can be used along the length of the tail to hold it into place.

Wrap the braid around the mesh sock and metallic shield of the cable. Secure the ground braid with a spring clamp from the splice kit. **Use the small spring clamp "F" for 15 kV cable up to and including 500 kcmil and 1/0 35 kV. For all others, use the large spring clamp "G".** Wrap the spring in the same direction as the braid and tighten the final lap.

Position the second tail of the preformed ground braid along the cable and secure the tail to the cable with vinyl tape. Press the second tail into the previously applied mastic strip.

Apply a second mastic strip layer over the braid tails. The second mastic strip must be positioned so that it overlays the previously installed mastic strip. Press the two mastic strips together to form a water tight seal around the ground braid tails.

Secure the spring clamp with three wraps of vinyl tape (Stk. # 25–53–055) wrapped in the same direction as the spring clamp. Continue taping over the ends of the mesh to cover all sharp points.

Connect the other end of the mesh sock as detailed in Step 7.

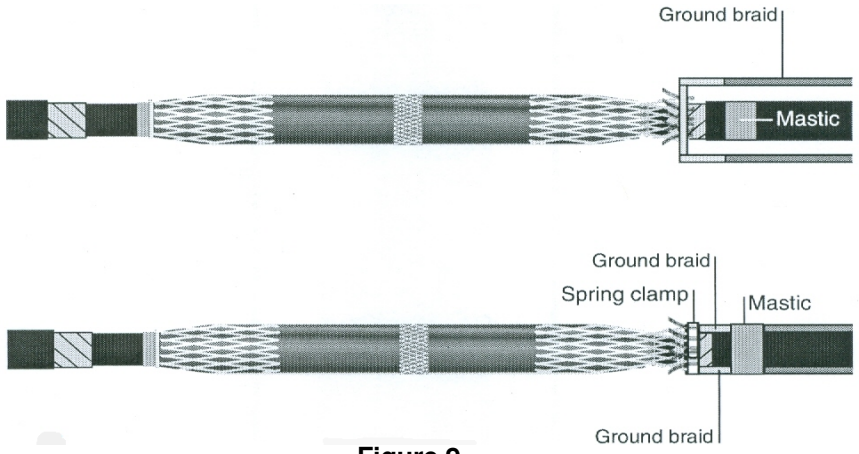


Figure 9

Initial when Step 8 is complete. _____

9. Expand Re–Jacketing Sleeve

Install a strip of gray sealing mastic at each jacket cutback. Be sure that mastic has been applied under and over the tails of the external ground braid if one is installed. If Bare Concentric Neutral cable is being spliced, be sure to apply a strip of gray sealing mastic over the strip that was applied under the concentric neutral wires in Step 1A.

Wipe off the black rejacketing sleeve to allow for a positive grip on the sleeve. Twist the black rejacketing sleeve from side to side to release the lubricating grease. Slide one side of the rejacketing sleeve over the mesh sock and spring clamp connector and onto the cable jacket. Repeat this step on the other side.

Cut off the red mesh sleeve, being careful not to damage the rejacketing sleeve or the splice body.

Using approved solvent, clean the surface to the rejacketing sleeve to remove excess grease.

Wrap four layers of vinyl tape (Stk. # 25–53–055) over each end of the rejacketing sleeve.

Note: The tape is not being applied to seal the rejacketing sleeve. The vinyl tape is being applied to finish the ends of the rejacketing sleeve.

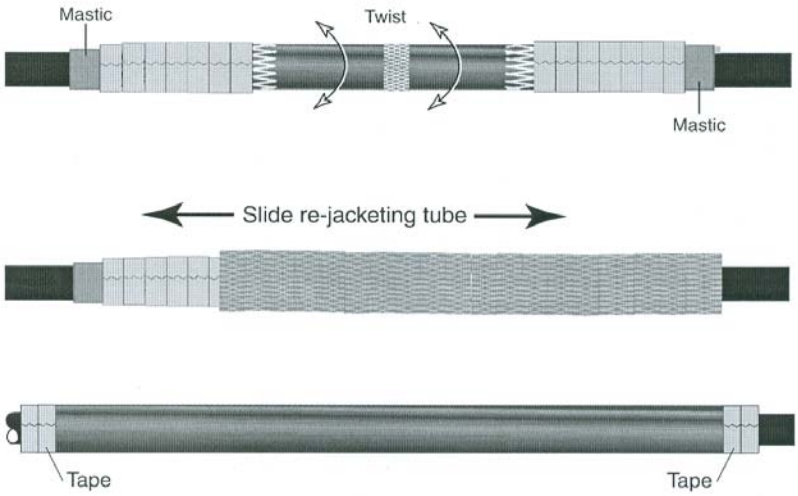


Figure 10

Initial when Step 9 is complete. _____

10. Connect Ground Braid to System Ground (Only if External Ground Braid was Installed in Step 8)

Connect the external ground braid ends to the system ground with a 2–bolt connector(Stk. # 17–54–140) and a #2 copper wire (Stk. # 18–54–027).

Seal the 2–bolt connection with poly sealer (Stk. # 31–53–055). Tape over poly sealer with vinyl tape (Stk. #25–53–055).

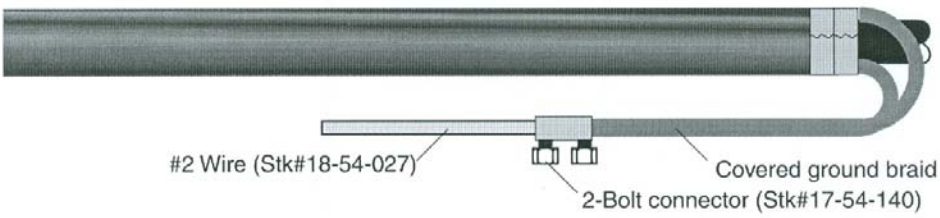
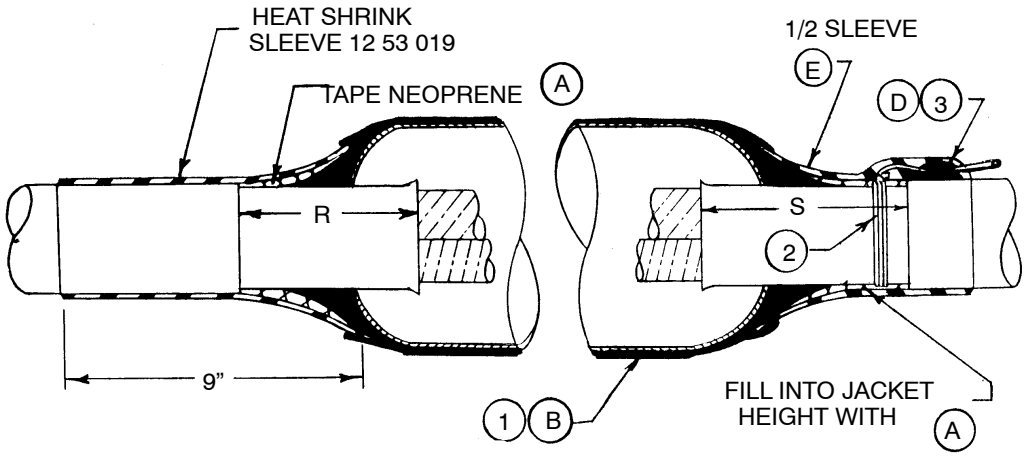


Figure 11

Initial when Step 10 is complete. _____

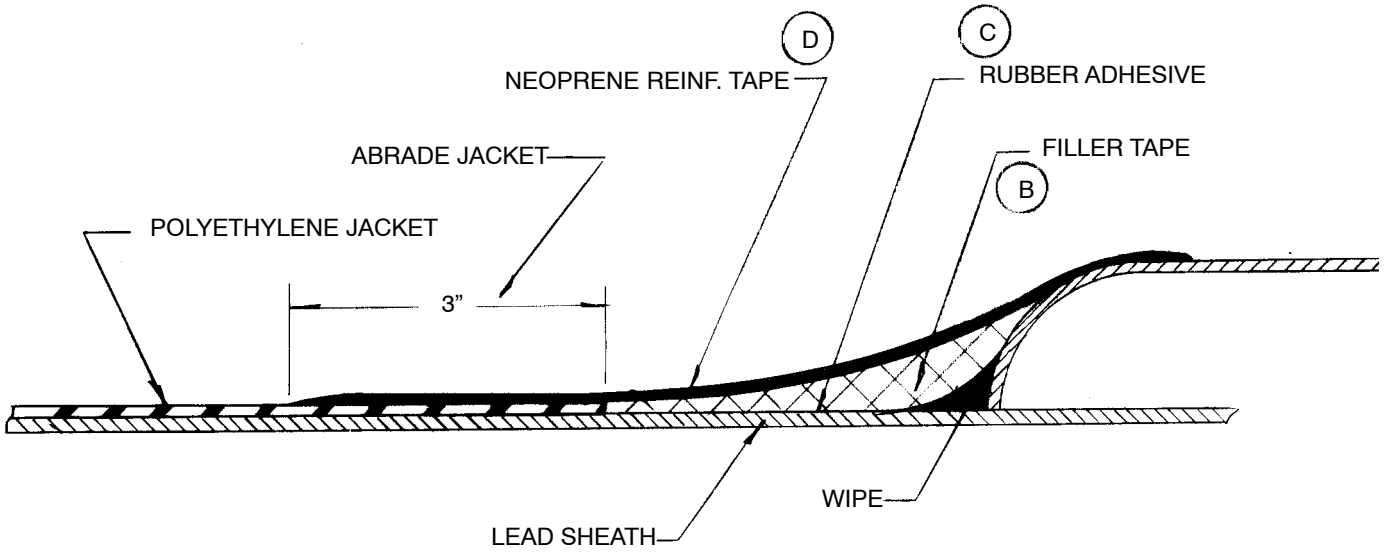
		Stnd. / Stk. No.	Description 41 64 30 00	QTY
		17 05 500	Splice – 350–750 Cu/Al, 15/35kV	1
@		17 54 306	Connector – Cable Ground w/Constant Force Spring	1
		25 53 055	Tape – Vinyl	1
@		17 54 140	Connector – Wire, #8 – 4/0 Cu, 2–Bolt	1
@		31 53 055	Compound – Sealer	1



NOTES:

1. A protective layer of 1–1/2" wide plastic tape shall be applied overall when installed in holes where frequent lengthy submersion occures.
2. Bond per Std. **41 90 91 00**.
3. Fill in around bond wire (Item D) before shrinking Sleeve E.

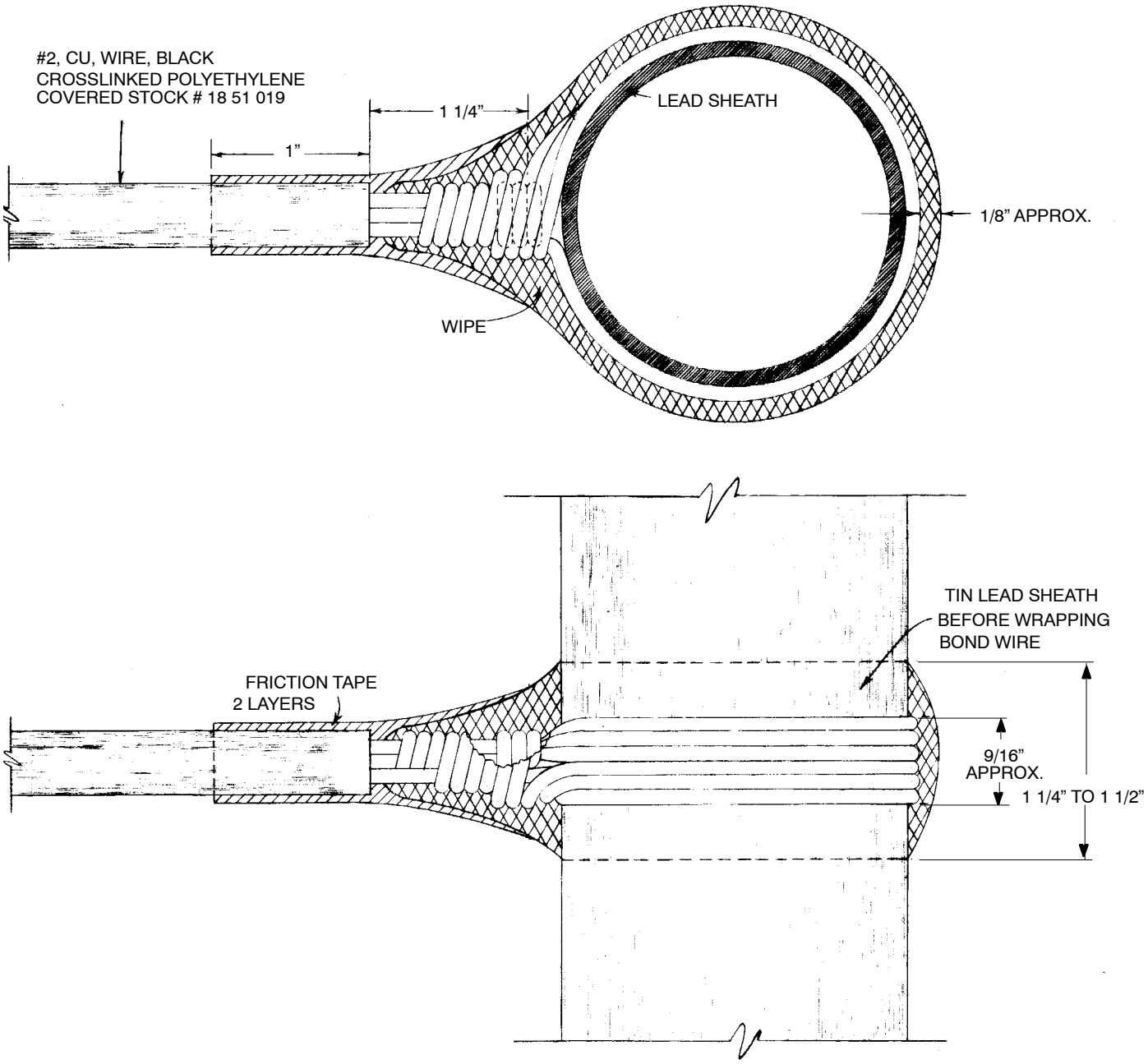
		Stnd. / Stk. No.	**Description** **41 90 02 00**		
@	A	25 53 078	Tape, Neoprene Reinf.	As Req'd	
@	B	25 53 077	Tape, Plastic, 1 1/2"	As Req'd	
	C	**41 90 91 00**	Cable, Bonding	1	
@	D	31 53 055	Compound, Sealer	As Req'd	
	E	12 53 019	Sleeve, Prot. H.S.	1	
				Length to Remove Jacket	
				R	S
	F	41 21 11 00	800 kcmil – 5kV	3–1/2"	4–1/2"
		41 21 12 00	500 kcmil 5kV	4"	5"
		41 31 11 **	800 kcmil – 15kV	3–1/2"	4–1/2"
		41 31 12 **	1/0 – 15kV	3–1/2"	4–1/2"
		41 31 12 **	4/0–300–500 kcmil–15kV	4"	5"
		41 41 12 **	350–500–800 kcmil–35kV	3–7/8"	4–7/8"
		41 41 11 **	350–500 kcmil–35kV	3–7/8"	4–7/8"



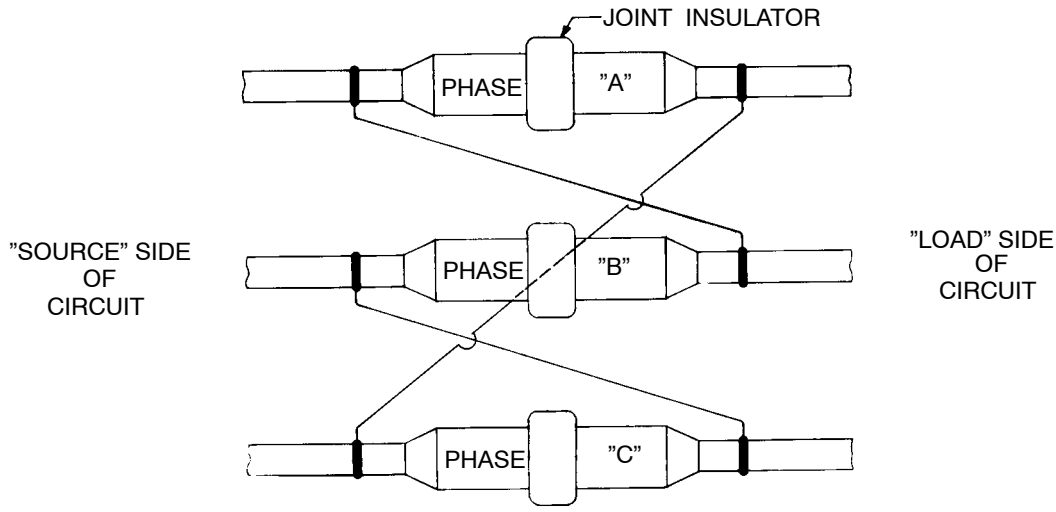
NOTES:

1. Prepare the jacket, lead sheath and wipe by wiping clean, using solvents where necessary.
2. Abrade the jacket by sanding with 1–1/2” wide #60 grit sanding cloth.
3. Paint the jacket, wipe, sheath and joint sleeve with rubber cement.
4. Fill in the sharp contours with neoprene tape, 25–53–053.
5. Tape 3 inches of jacket and continue up over the wipe just onto the lead sleeve with two half–lapped layers of neoprene reinforcing tape.

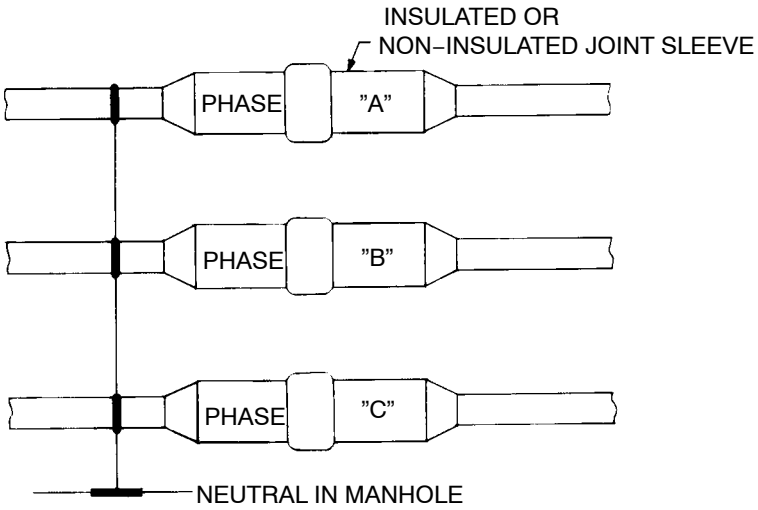
Materials For One Side of 5–1/2” x 28” Sleeve			
	Dist. Std. or Stock No.	**Description**	**Qty.**
A	22 05 213	Cloth – Sanding, 1–1/2” Wide (Ft.)	2
B	25 53 053	Tape – Neoprene (Rl.)	2
C	49 01 066	Cement – Rubber (Cn.)	1
D	25 53 078	Tape – Reinforcing Neoprene (Rl.)	2



1. Wrap 1 strand twice around conductor.
2. Wrap 3 strands of the bonding conductor in one direction around the cable and the other 3 strands in the opposite direction.
3. Move the two sections in the same direction around the bonding conductor without crossing strands.



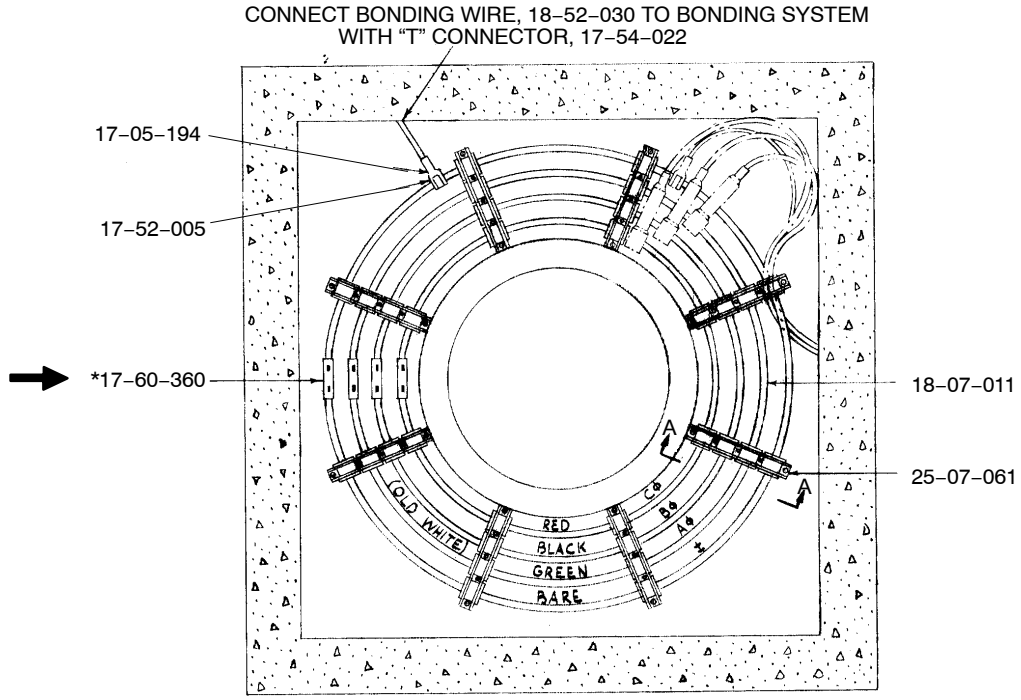
41 90 92 01
CROSS BONDING



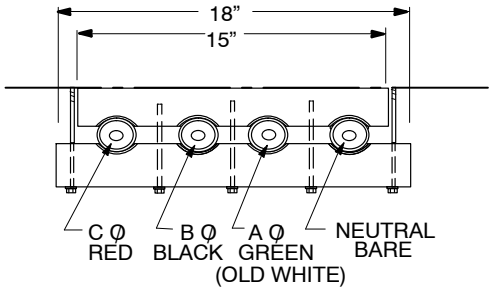
41 90 92 02
GROUND BONDING

NOTES:

1. See Dist. Std. **41 90 91 00** for method of attaching bond to PILC cable.
2. When one of the three cables is trained to the manhole wall opposite the other two, train the bond wire along the cables and cross the manhole near the duct mouth.
3. In applying cross bonding, note the phase markings on the cables and also note the "Source" and the "Load" side of the circuit. Make certain that the cable on the "Source" side of the joint is connected to the cable on the "Load" side of another, such as "Source" side of "A" phase to the "Load" side of "B" phase, etc. (see drawing).



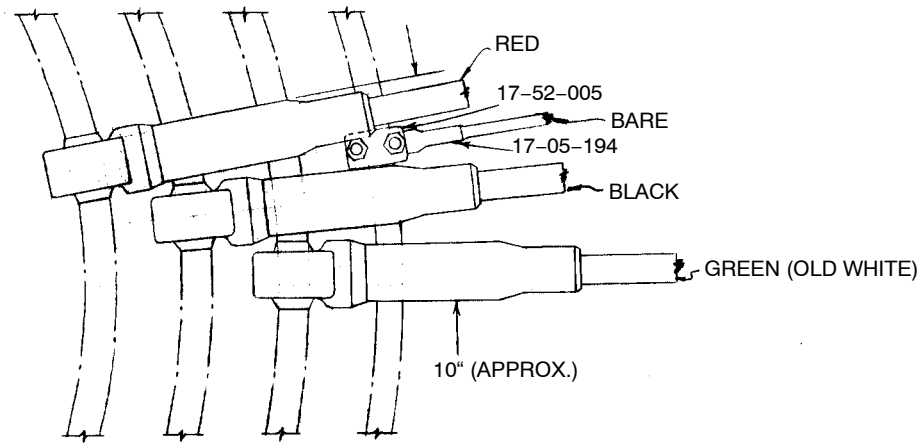
VIEWED FROM MANHOLE FLOOR



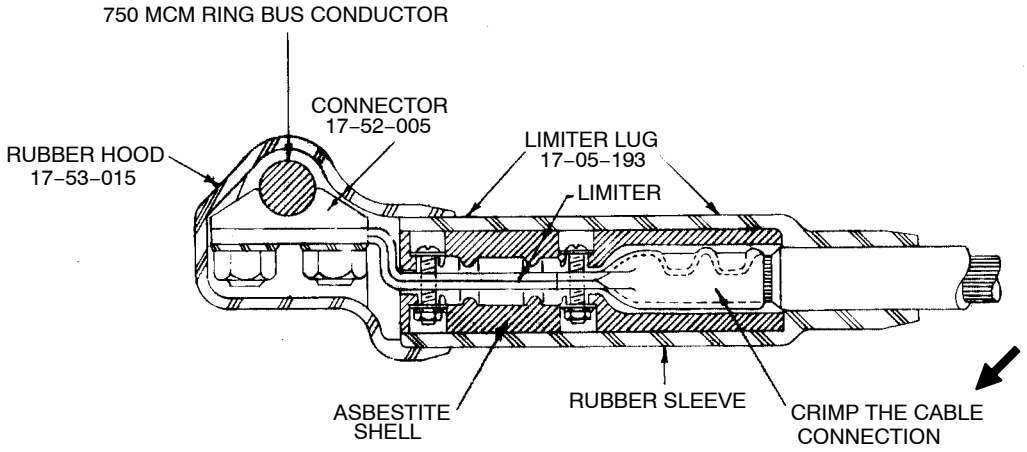
DETAIL OF RING BUS INSULATOR CLAMP
SECTION A–A

NOTE: Length of Cable Req'd.
A∅ 18' Long
B∅ 16' Long
C∅ 14' Long

Stnd. / Stk. No.	Description	Req'd.
25 07 061	Insulator – Ring Bus 4 Cond.	8
17 60 360	Sleeve – Compression, 750 kcmil, Cu	4
18 07 011	Cable – NW 750 kcmil	See Note
18 52 022	Wire – 750 kcmil Bare	20'
17 52 005	Connector – Cable to Lug	1
17 05 194	Lug – Hypress 4/0	1
17 54 022	Connector – T–4/0	1
18 52 030	Wire – 4/0 Tinned Copper	10'
753	Ring Bus	1



VIEWED FROM MANHOLE FLOOR



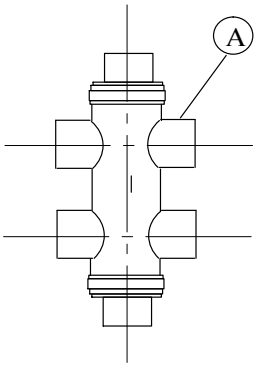
DETAIL OF LIMITER LUG AND CONNECTION TO RING BUS

NOTE: Limiter lug consists of limiter, asbestite shell, and rubber sleeve.

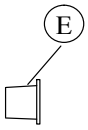
*Use 500 kcmil hypress lug (Stock No. 17–05–195) on direct runs from transformer to ring bus.

	Stock No.	Description	Req'd.
	17 52 005	Connector – Cable to Lug	4
	17 53 015	Hood – Rubber Insulating	3
	17 05 193	Lug – Limiter	3
*	17 05 194	Lug – Hypress 4/0	1

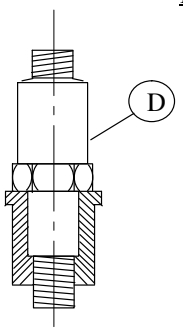
→ AMEREN ILLINOIS ONLY AMEREN ILLINOIS ONLY



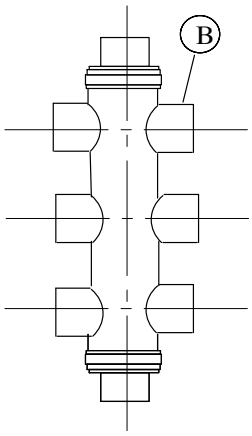
6 WAY
43 16 03 01



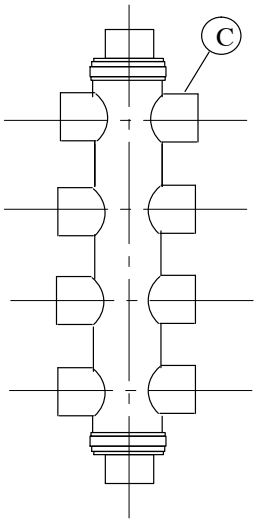
OUTLET PLUG
43 16 03 05



MOLE COUPLER
43 16 03 04



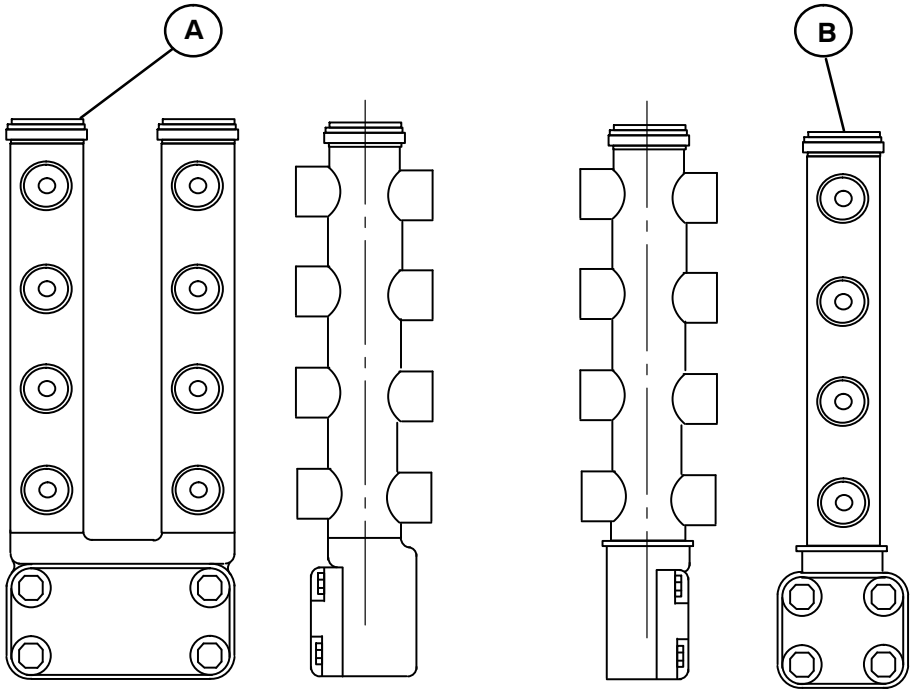
8 WAY
43 16 03 02



10 WAY
43 16 03 03

		Stnd. / Stk. No.	Description	01	02	03	04	05
	A	17 62 207	Connector–Mole, 6 Way, 1500A	1				
	B	17 62 208	Connector–Mole, 8 Way, 1500A		1			
	C	17 62 209	Connector–Mole, 10 Way, 1500A			1		
	D	17 62 213	Coupler – Mole				1	
	E	17 62 182	Plug – Mole, Diatex					1

→ AMEREN ILLINOIS ONLY AMEREN ILLINOIS ONLY



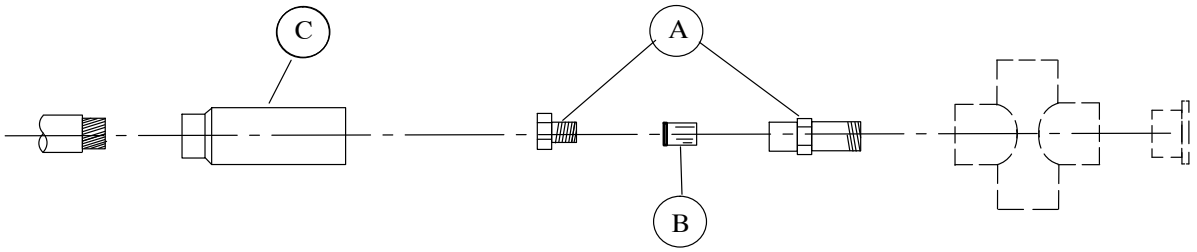
16 WAY – 3000 AMP
43 16 04 01

8 WAY – 2500 AMP
43 16 04 02

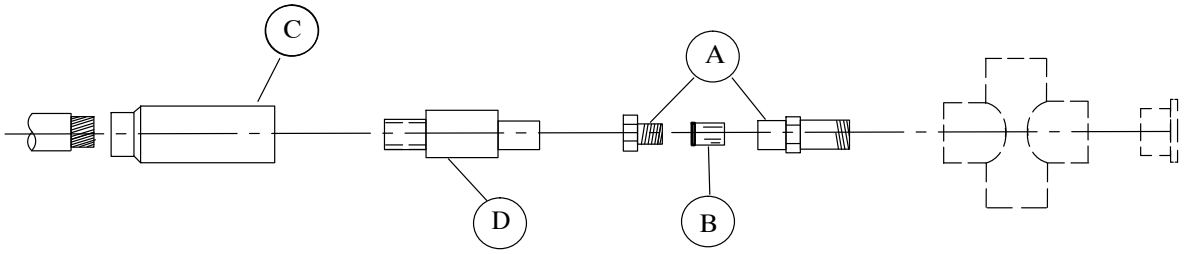
8 WAY – 3000 AMP
43 16 04 03

	Stnd. / Stk. No.	Description	01	02	03
	17 62 212	Connector–Mole, Stud, 16 Way, 3000A	1		
	17 62 210	Connector–Mole, Stud, 8 Way, 2500A		1	
	17 62 211	Connector–Mole, Stud, 8 Way, 3000A			1

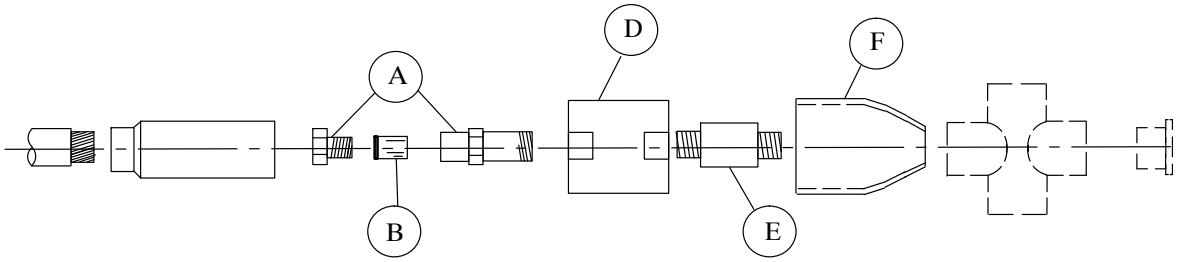
AMEREN ILLINOIS ONLY **AMEREN ILLINOIS ONLY**



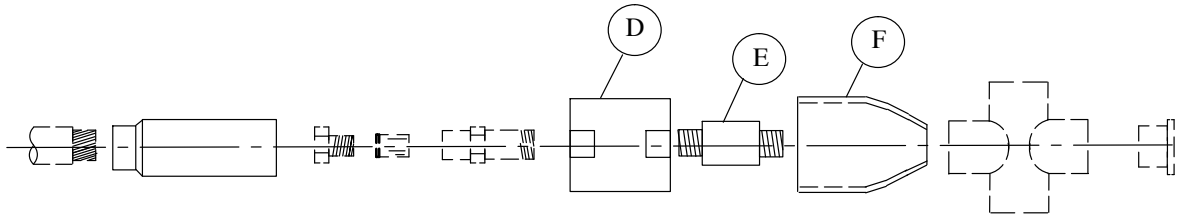
DESCRIPTION	STANDARD #
1/0 CABLE/MOLE CONN.	43 16 05 01
4/0 CABLE/MOLE CONN.	43 16 05 02
300KCMIL CABLE/MOLE CONN.	43 16 05 03
350KCMIL CABLE/MOLE CONN.	43 16 05 04
500KCMIL CABLE/MOLE CONN.	43 16 05 05



DESCRIPTION	STANDARD #
4/0 CABLE/MOLE CONN. WITH LIMITER	43 16 05 06



DESCRIPTION	STANDARD #
500 KCMIL CABLE/MOLE CONN. WITH LIMITER	43 16 05 07



DESCRIPTION	STANDARD #
500 KCMIL LIMITER ADDED TO CABLE	43 16 05 08

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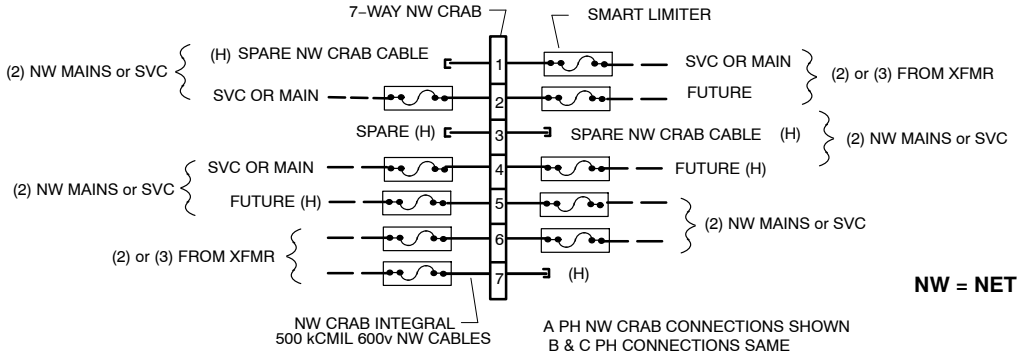
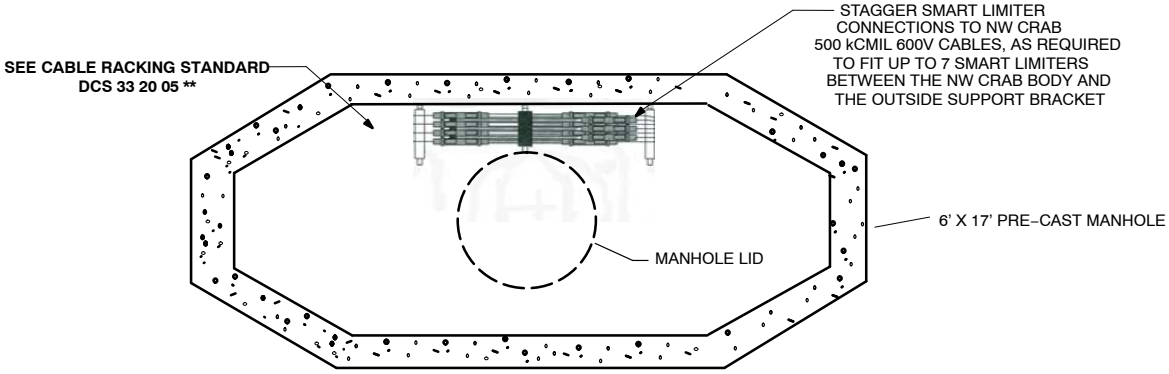
	Stnd. / Stk. No.	Description	01	02	03	04	05	06	07	08
A	17 62 214	Termination – Socket & Nut, 4/0	1	1				1		
	17 62 175	Termination – Socket & Nut, 500 kcmil			1	1	1		1	
B	17 62 205	Connector – Cone, Cmpr., 1/0	1							
	17 62 178	Connector – Cone, Cmpr., 4/0		1				1		
	17 62 206	Connector – Cone, Cmpr., 300 kcmil			1					
	17 62 202	Connector – Cone, Cmpr., 350 kcmil				1				
	17 62 177	Connector – Cone, Cmpr., 500 kcmil					1		1	
C	17 60 618	Sleeve – Insulating, 4/0 Limiter	1	1				1		
	17 62 181	Sleeve – Insulating, 500 kcmil			1	1	1			
D	17 05 327	Fuse – Limiter, 4/0, 480V						1		
	17 05 328	Fuse – Limiter, 500 kcmil, 480V							1	1
E	17 63 230	Coupling – Limiter							1	1
F	17 60 619	Sleeve – Insulating, for Limiter							1	1

MANHOLE – SINGLE CRAB



NW = NETWORK

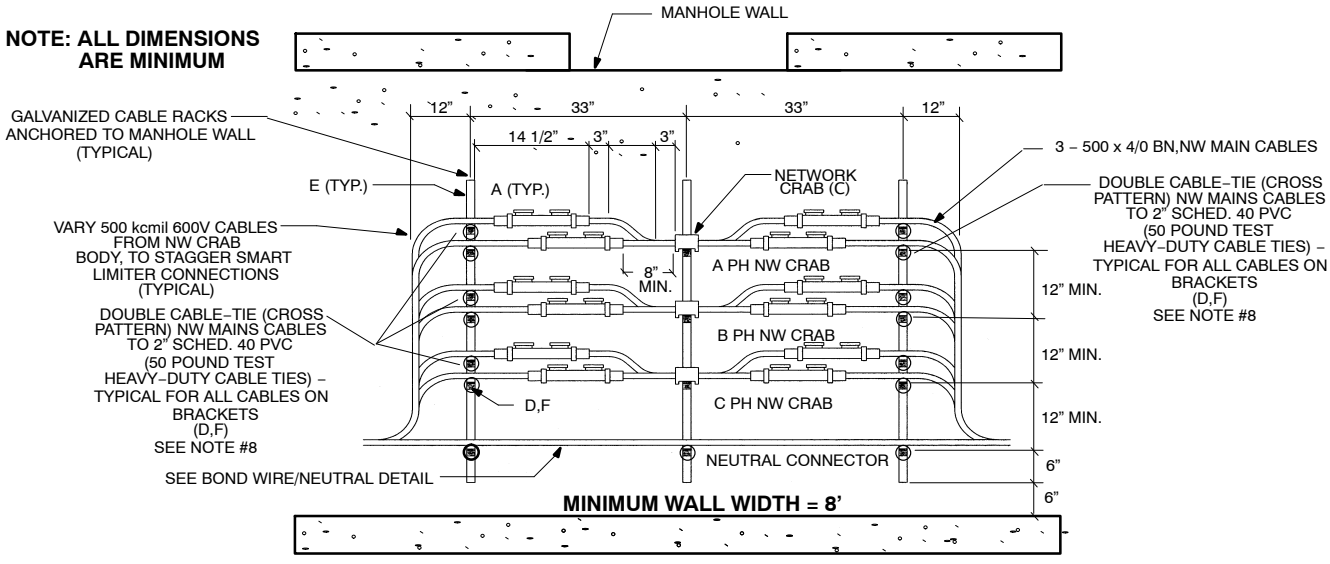
TYPICAL ONE LINE W/7–WAY NW CRAB
(CONSULT UD DIVISION ENGINEERING FOR SPECIFIC NETWORK CONNECTION CONFIGURATION, AS REQUIRED)



TOP VIEW

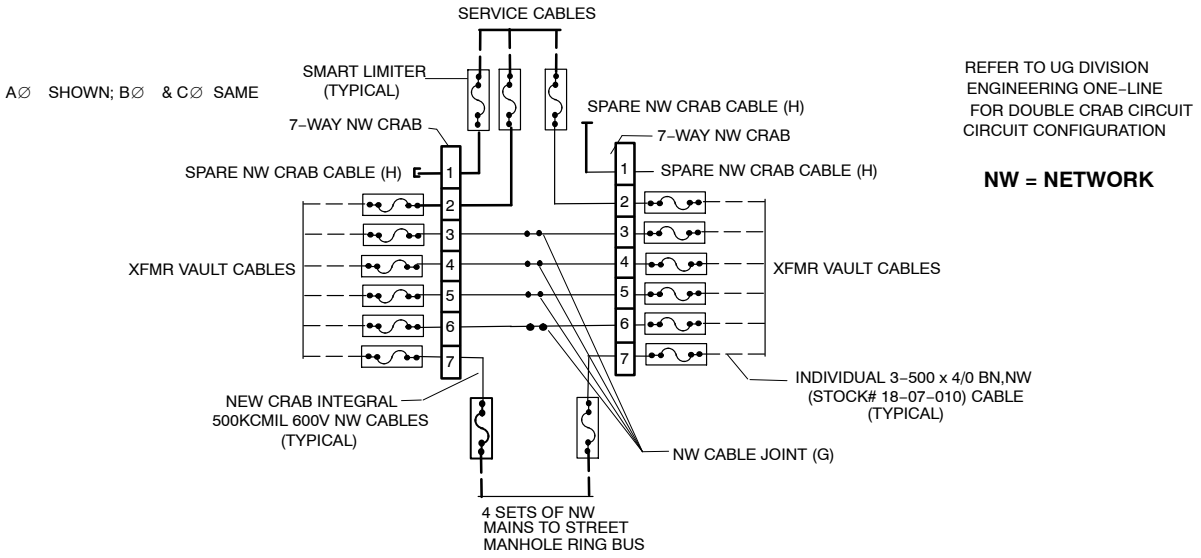
SINGLE NETWORK CRAB CAN BE
INSTALLED WITHIN A MANHOLE, VAULT,
OR SERVICE COMPARTMENT.

NOTE: ALL DIMENSIONS ARE MINIMUM



SIDE VIEW

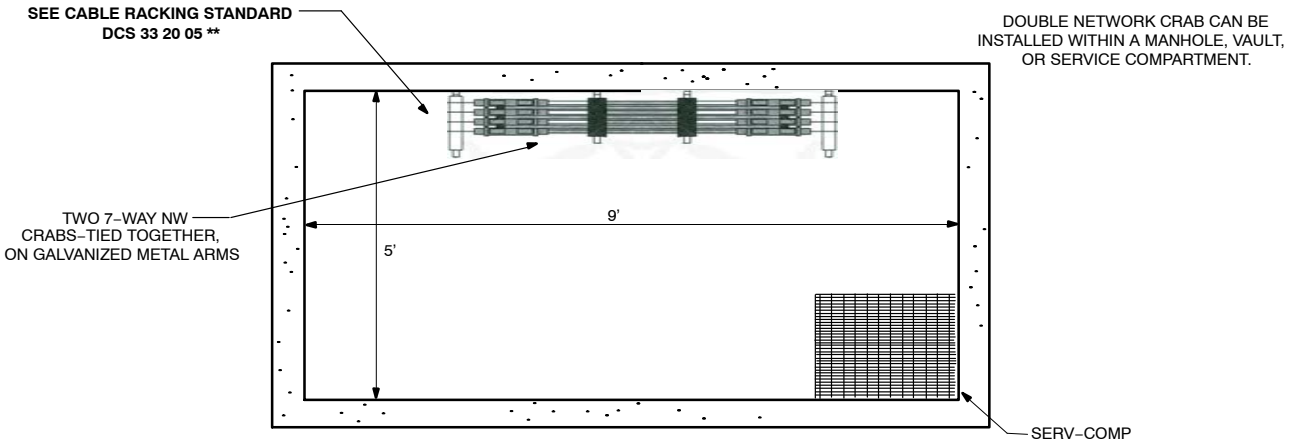
SERVICE COMPARTMENT – DOUBLE CRAB



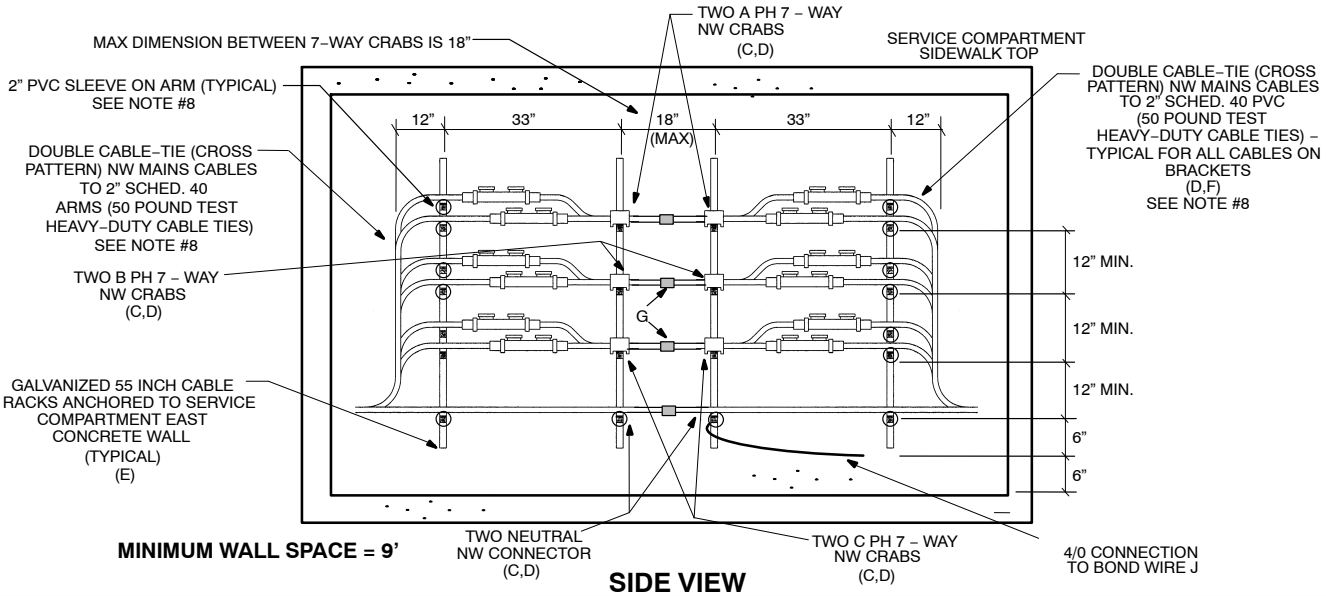
REFER TO UG DIVISION ENGINEERING ONE–LINE FOR DOUBLE CRAB CIRCUIT CIRCUIT CONFIGURATION

NW = NETWORK

TYPICAL ONE LINE W/7–WAY DOUBLE NW CRABS

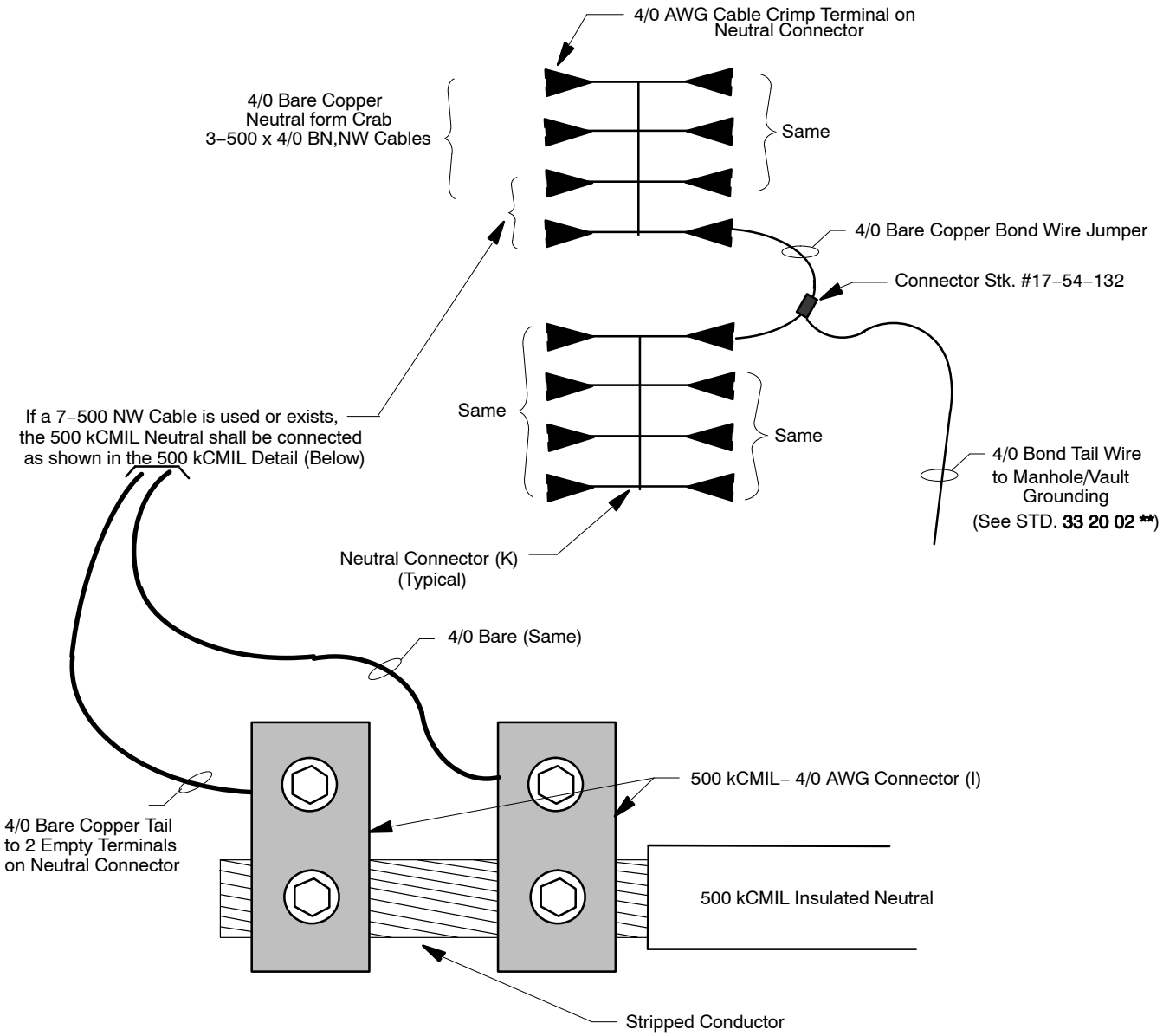


TOP VIEW



SIDE VIEW

NEUTRAL CONNECTOR



DETAIL

NOTES:

1. Add smart limiters as directed by one–line or UG engineering to network main or service to crab connector.
2. Utilize 600V–500kCMIL cable straight splice to join crab connectors.
3. Cable mounting rack is included in new precast manholes. Add rack as necessary to existing network installations.
4. Add approved 600V cable cap to the ends of any spare crab connector cables.
5. Add connectors as necessary to connect neutrals/bond wire to crab connector.
6. For all 4/0 neurtals use the 4/0 bare crab connection. For 500 kCMIL neutrals use the 500 kCMIL crab reducing sleeves (I) as needed for4/0 neutrals. See neutral detail or connector.
7. Neutral connections can be made using either the neutral connector or crab (see item K) based on field conditions. The neutral connector is the preferred connection method as it saves space for cable training.
8. For cable mount arm (14" or "16), when using 2" dia. PVC sleeve, the PVC sleeve shall be anchored to the arm by 50 pound test cable tie–strap prior to installing crabs. The cables shall be cross tie–strapped to the 2" PVC sleeve – to prevent movement.

		Stnd. / Stk. No.	**Description** **43 16 06 ** **	**01**	**02**	**03**	**04**	**05**	**06**
1@	A	17 05 486	Limiter – 500 kCMIL, 120V, Fused	–	–	–	–	–	–
	C	17 05 488	Crab – 500 kCMIL, 600V, NW, 3–Way	3			6		
		17 05 485	Crab – 500 kCMIL, 600V, NW, 5–Way		3			6	
		17 05 484	Crab – 500 kCMIL, 600V, NW, 7–Way			3			6
	D	12 56 113	Arm – Cable Mounting, 14"	9			12		
		12 56 112	Arm – Cable Mounting, 18"		9	9		12	12
3@	E	12 56 116	Rack – Cable Mounting, 55", 37 Holes	3	3	3	4	4	4
		12 56 115	Rack – Cable Mounting, 30", 18 Holes	3	3	3	4	4	4
	F	40 59 715	Tie – Cable, Black, 10" Dia.	48	80	112	64	112	160
2@	G	**41 14 36 11**	Splice – 600V, 500 kCMIL, Str				6	9	12
4@	H	40 59 166	Cap–Cable End – 500 kCMIL NW. (600V)	–	–	–	–	–	–
5@	I	17 54 141	Connector – Wire, 2–500 kCMIL, CU (Neut.)	–	–	–	–	–	–
	J	18 52 024	Wire – 4/0 AWG, Cu, Bare Soft Drawn (ft)	10	10	10	10	10	10
6@	K	17 05 501	Neutral Connection – 4/0 AWG, 600V, NW, 4–Way, Bare Crimp (Neut.) (8 total connections–4 per side)	1	2	2	3	3	3
		17 05 485	Crab – 500 kCMIL, 600V, NW, 5–Way (Neut.)	1	1	1	1	1	1

43 16 06 01 **3–Way Single NW Crab**

43 16 06 02 **5–Way Single NW Crab**

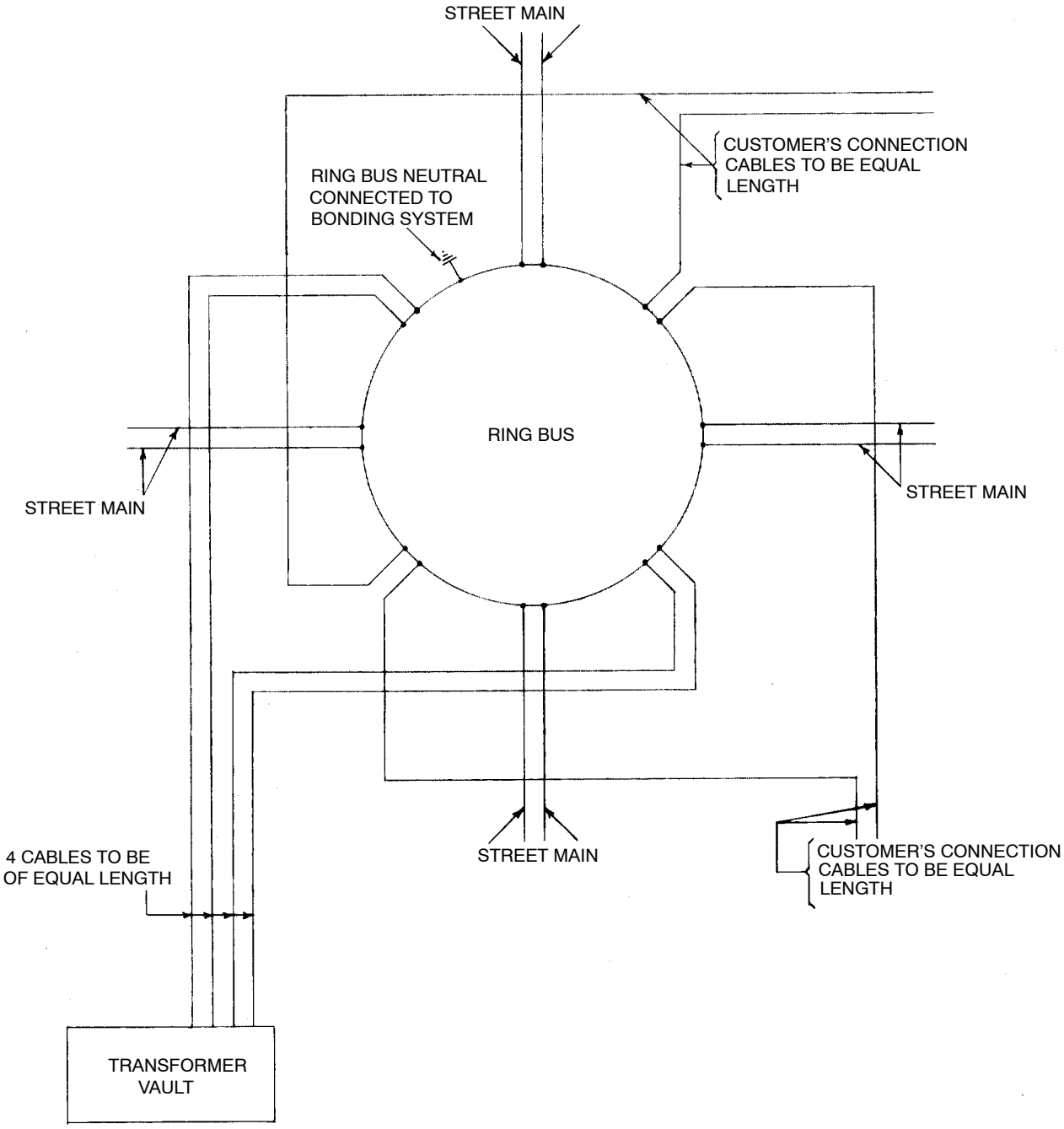
43 16 06 03 **7–Way Single NW Crab**

43 16 06 04 **3–Way Double NW Crab**

43 16 06 05 **5–Way Double NW Crab**

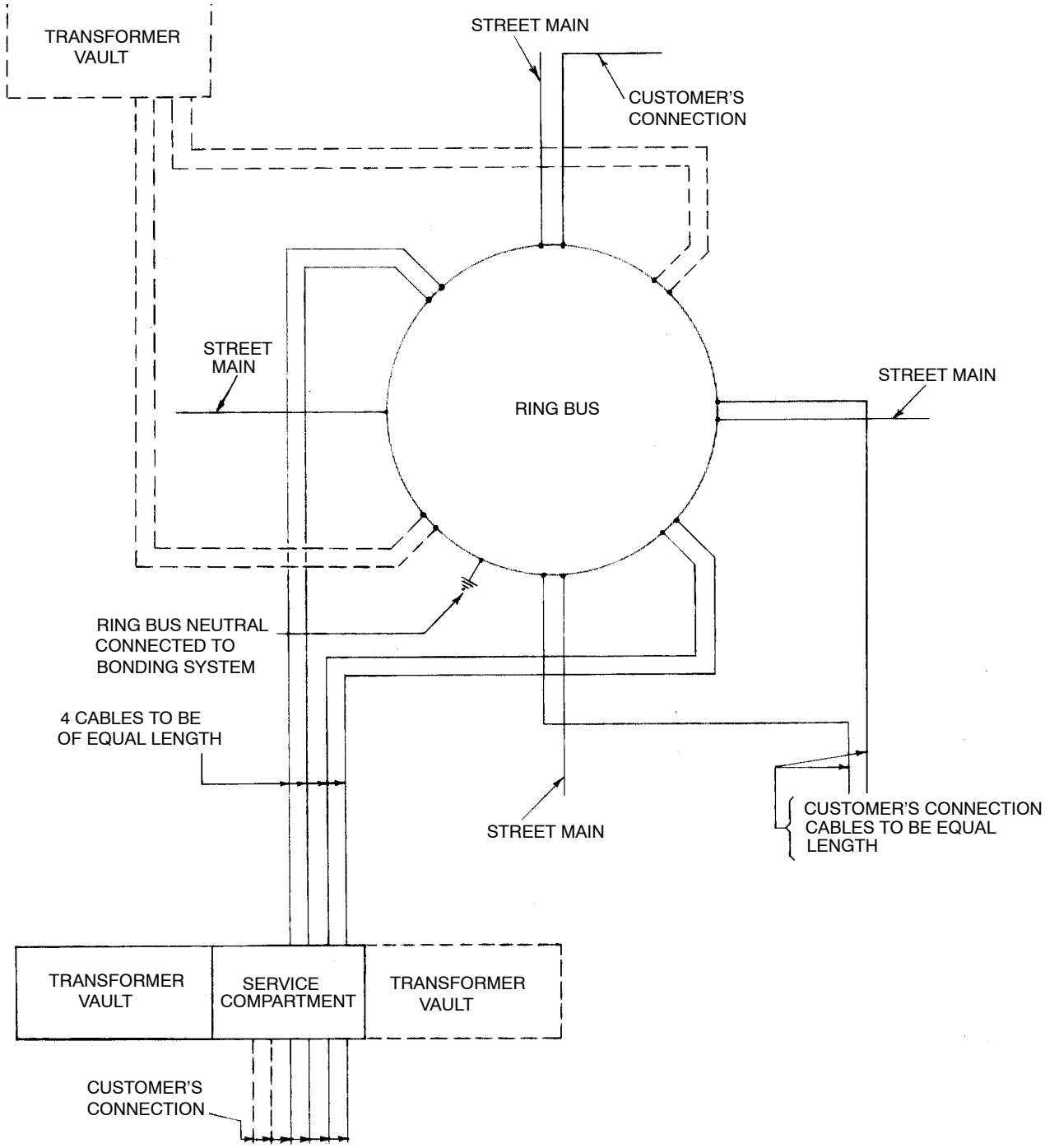
43 16 06 06 **7–Way Double NW Crab**

IMPORTANT: The cable insulation cut back dimension of 2 ½" is critical for maintaining a water seal and for proper operation of the smart limiters.



NOTE:

Connections to ring bus shall be arranged to maintain balanced loading of the ring bus under various operating conditions. Variations in this arrangement of connections may be made as required to meet specific conditions. The number of street mains and customers' connections depends on requirements at each location.



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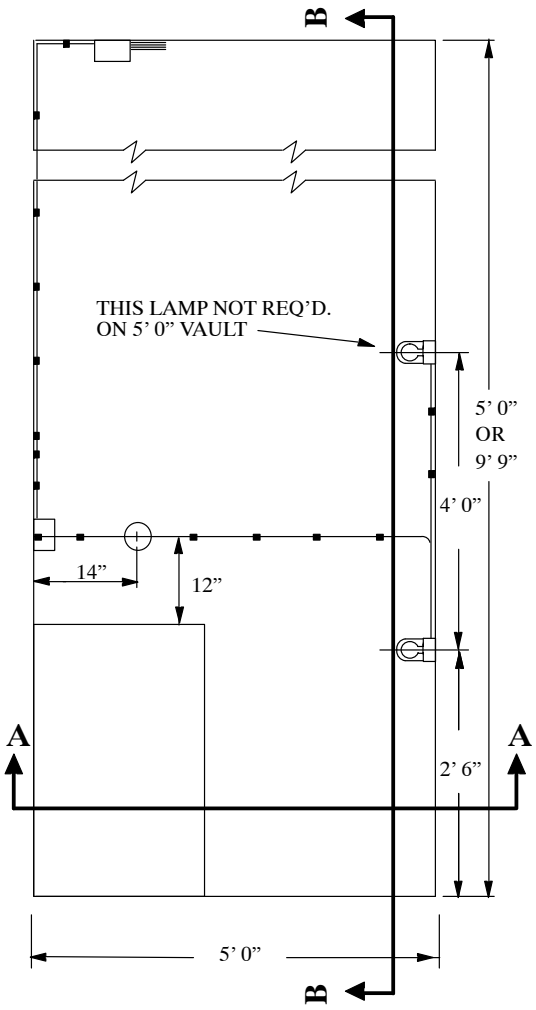
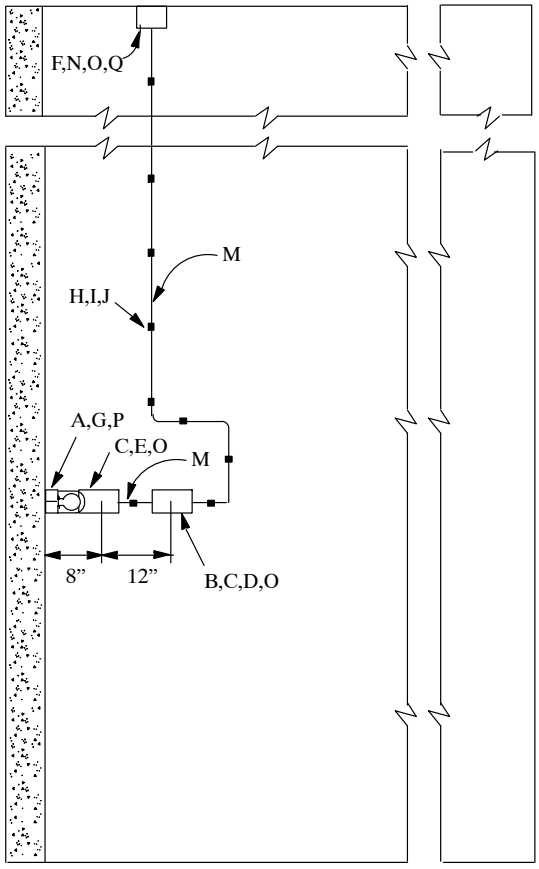
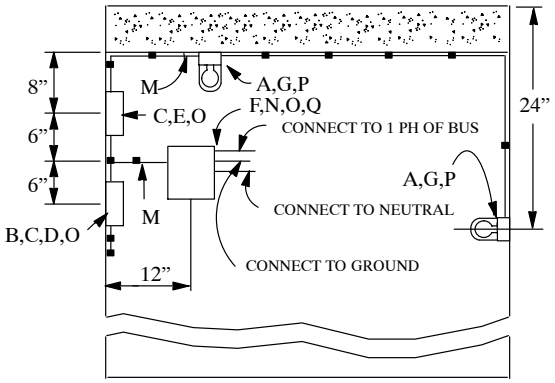


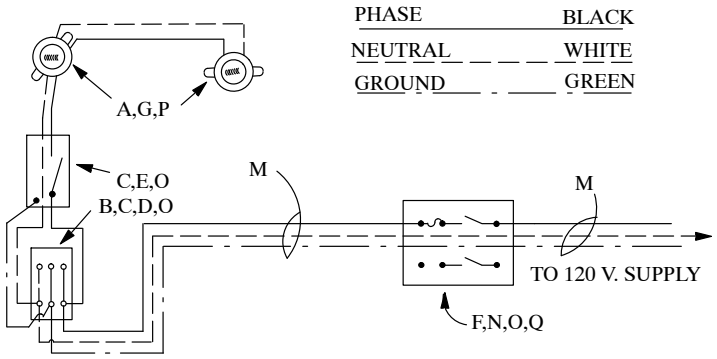
PLAN VIEW



SECTION B B



SECTION A A

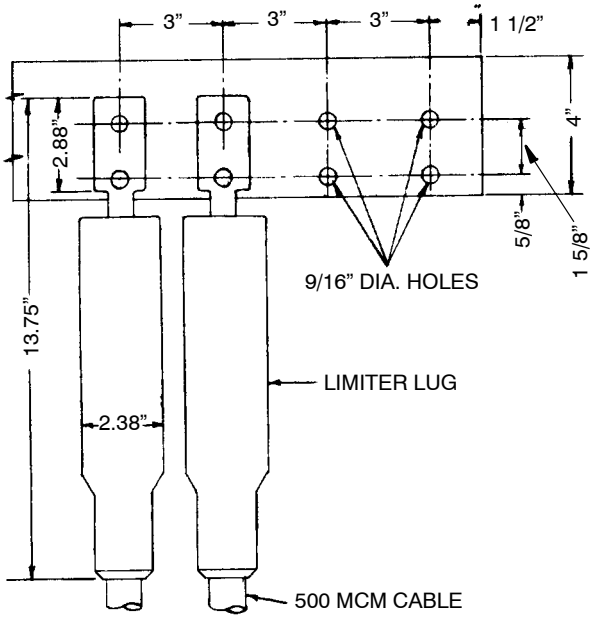


WIRING DIAGRAM

NOTE:

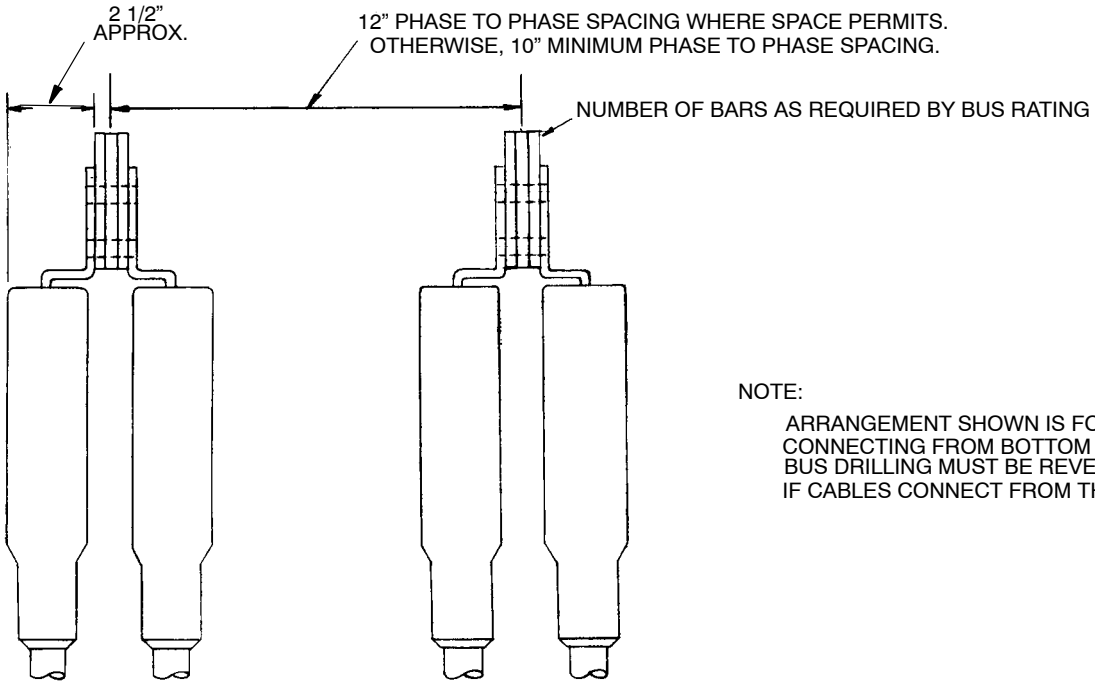
For extra lamp req'd on 9'–9" service compartment vault, requisition one receptacle #40–55–925 and one lamp #26–03–012.

		Dist. Std. Or Stk. No.	Description	
	A	40 55 925	Fixture – Incandescent Lighting 150W with Globe	2
	B	40 56 505	Receptacle – Duplex,GFI, 15A	1
	C	40 01 105	Box – Surface Wiring, Outdoor	2
	D	40 56 506	Plate Receptacle Cover, Outdoor	1
	E	40 58 509	Switch – Toggle Outdoor, 10A, with Cover	1
	F	20 52 041	Fuse–15A., Cartridge, Type FRN	1
	G	26 03 012	Lamp – General Purpose, 60 W Med. Screw Base	2
	H	21 51 001	Anchor – Expansion 8–32	24
	I	21 68 036	Screw – Rd. Hd. Brass 8–32 3/4” Long	24
	J	23 67 128	Cleat – Cable, Plastic	24
	M	18 61 113	Cord–Electrical, 600V, #14–3, Wet Rated	55’
	N	40 08 226	Switch–Safety, 30A Fusible, Outdoor	1
	O	40 52 053	Connector–Cord, 3/4” Hub	6
	P	40 52 065	Connector–Cord, 1/2” Hub	2
	Q	40 53 189	Nut– Conduit Lock, 3/4”	2
	R	21 51 005	Anchor – Expansion 1/4”–20	12
	S	21 68 034	Screw – Rd. Hd. Brass 1/4”–20 1” Long	12
		1399	Lighting, Vault & Ser. Comp.	2



DRILLING PLAN FOR CABLE LIMITER LUGS

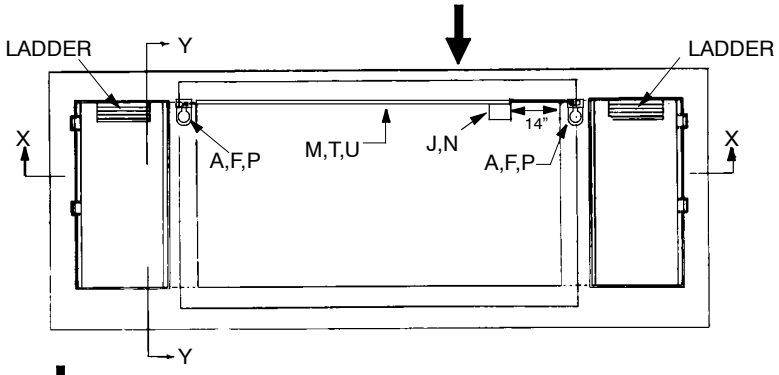
2000 AMP BUS	4 LUGS PER PHASE
3000 AMP BUS	6 LUGS PER PHASE
4000 AMP BUS	8 LUGS PER PHASE



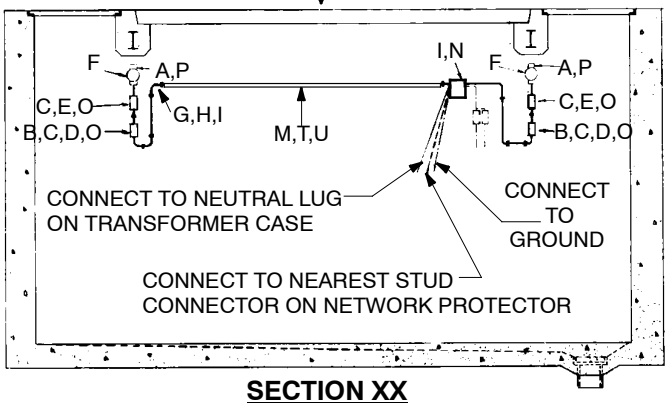
END VIEW SHOWING SPACING

NOTE:

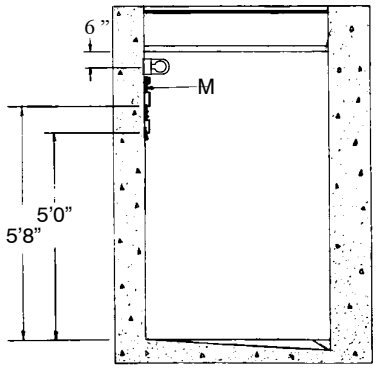
ARRANGEMENT SHOWN IS FOR CABLES CONNECTING FROM BOTTOM OF BUS
BUS DRILLING MUST BE REVERSED IF CABLES CONNECT FROM THE TOP



PLAN VIEW

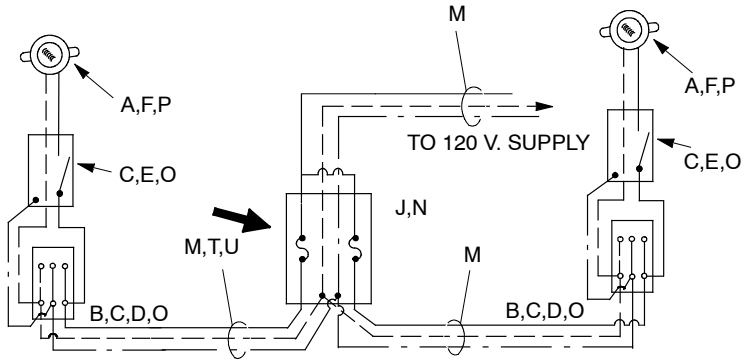


SECTION XX



SECTION 3"x 3"

PHASE	BLACK
NEUTRAL	WHITE
GROUND	GREEN



CONNECTIONS FOR SUMP PUMP AND
AUTOMATIC WATER SPRAY SYSTEM
TO BE INSTALLED ONLY WHEN REQUIRED.

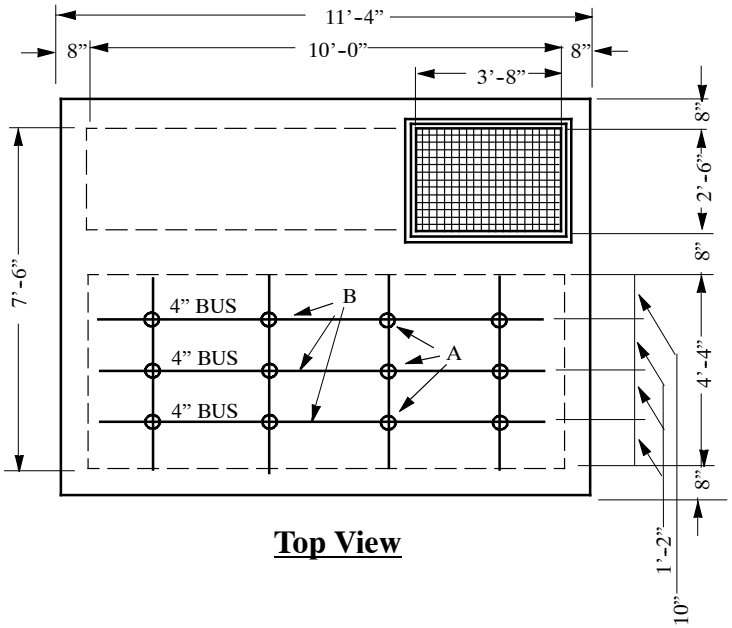
WIRING DIAGRAM

	Dist. Std. / Stk. No.	Description 43 18 01 **	01	02
A	40 55 925	Fixture – Lighting, 150W, w/ Globe	2	2
B	40 56 505	Receptacle – Duplex, GFI, 15A	2	2
C	40 51 653	Box – Surface Wiring, PVC, Outdoor	4	4
D	40 56 687	Cover – Receptacle– Outdoor	2	2
E	40 58 509	Switch – Toggle, Outdoor, 10A, w/ Cover	2	2
F	26 06 856	Lamp – LED, 120V, 8.5W (60 W Eq.), Medium Base	2	2
G	21 51 001	Anchor – Expansion 8–32	24	24
H	21 68 036	Screw – Round Head Brass 8–32, ¾" Long	24	24
I	23 67 128	Cleat – Cable, Plastic	24	24
J	20 52 041	Fuse – 15 A, 600V, Cartridge, Type CC	2	2
M	18 61 130	Cord – Electrical, 600V, #12–3, Wet Rated	55'	55'
N	40 51 644	Box – Fuse, 600V, 30A, 10" Wide x 8" High X 4" Deep	1	
	40 51 652	Box – Fuse, 600V, 30A, 6" Wide x 6" High X 4" Deep		1
O	40 52 053	Connector – Cord, ¾" Hub	8	8
P	40 52 065	Connector – Cord, ½" Hub	2	2
R	21 51 005	Anchor – Expansion ¼"–20	24	24
S	21 68 034	Screw – Round Head, Brass ¼"–20, 1" Long	24	24
T	12 51 197	Conduit – PVC, 5ch. 40, 1" x 10'	1	1
U	40 52 455	Clamp – Conduit, 1", PVC	4	4
	1399	Lighting, Vault & Service Compartment	2	2

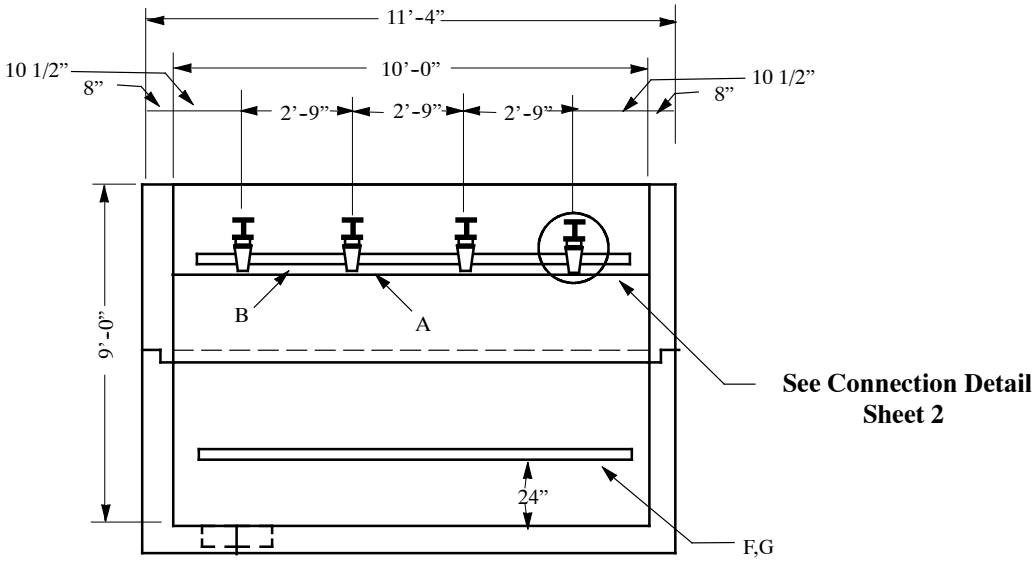
NOTES:

1. Installation of the large fuse box (Std. 43 18 01 01) is preferred in vaults where space allows.
2. A fuse puller tool Stock # 85–29–163 is available to remove the fuse from the carriage.

Precast Network Service Compartment

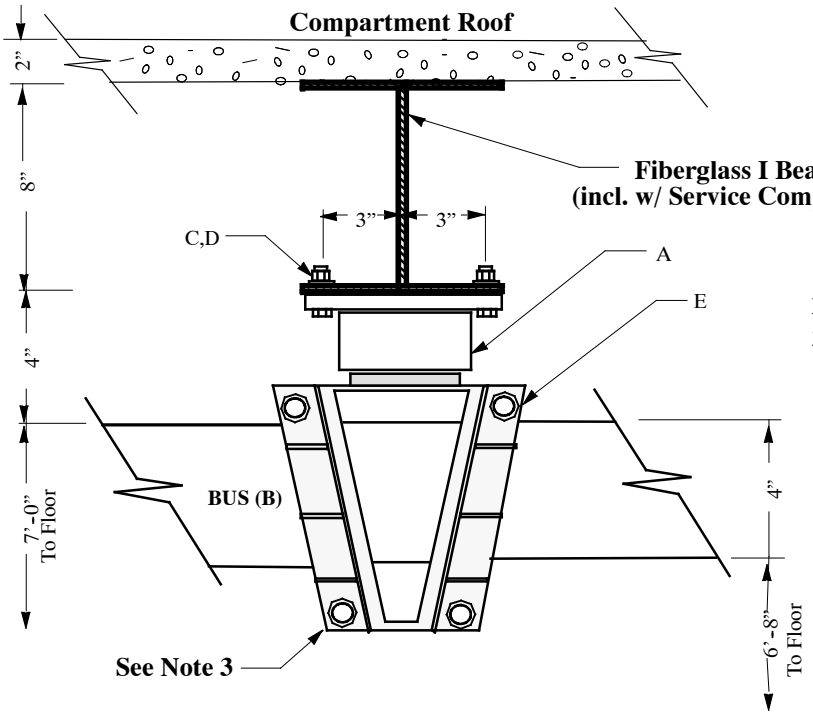


Top View



Side View

This standard covers new pre-cast network service compartment installations, custom scratch built service compartments, and rebuilt existing service compartments. Consult the project one-line and drawings for additional connection and circuit information. All other standard requirements are contained herein.



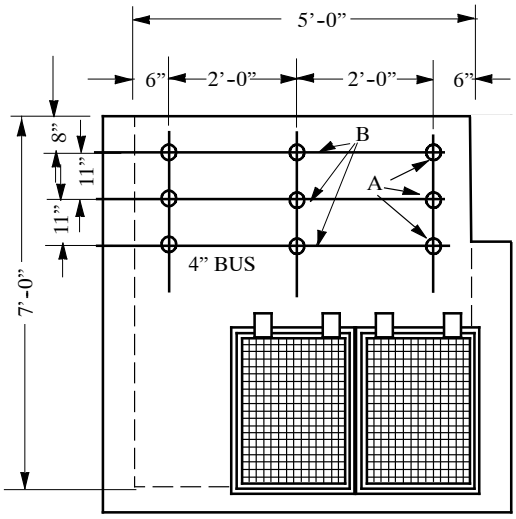
Buss Ampacity

1000 Amps Std. 43 19 01 01
2000 Amps Std. 43 19 01 02
3000 Amps Std. 43 19 01 03

Detail of Bus Bar Connection

		Dist. Std. Or Stk. No.	Description 43 19 01	01	02	03
	A	25 07 024	Support-Network Bus, Vertical, Heavy Duty	12	12	12
	B	18 12 126	Bar-Bus, Copper, ¼" x 4" x 9', Predrilled	3	6	9
	C	21 56 078	Bolt-Machine, SS, ½" x 2", Hex Head w/Hex Nut	24	24	24
	D	23 66 005	Washer-Lock, Galv. Steel, ½"	24	24	24
1	E	17 55 810	Spacer, Bus Support, ¼" x 4" x 4", Copper		12	24
	F	18-12-125	Bar-Bus, Neutral/Ground Kit, ¼" x 4" x 9', w/Mounts	1	1	1
	G	21-53-049	Bolt-Machine, Everdur, ⅜" x 6", Hex Head w/Nut	8	8	8

Small Network Service Compartment - Top View



Buss Ampacity

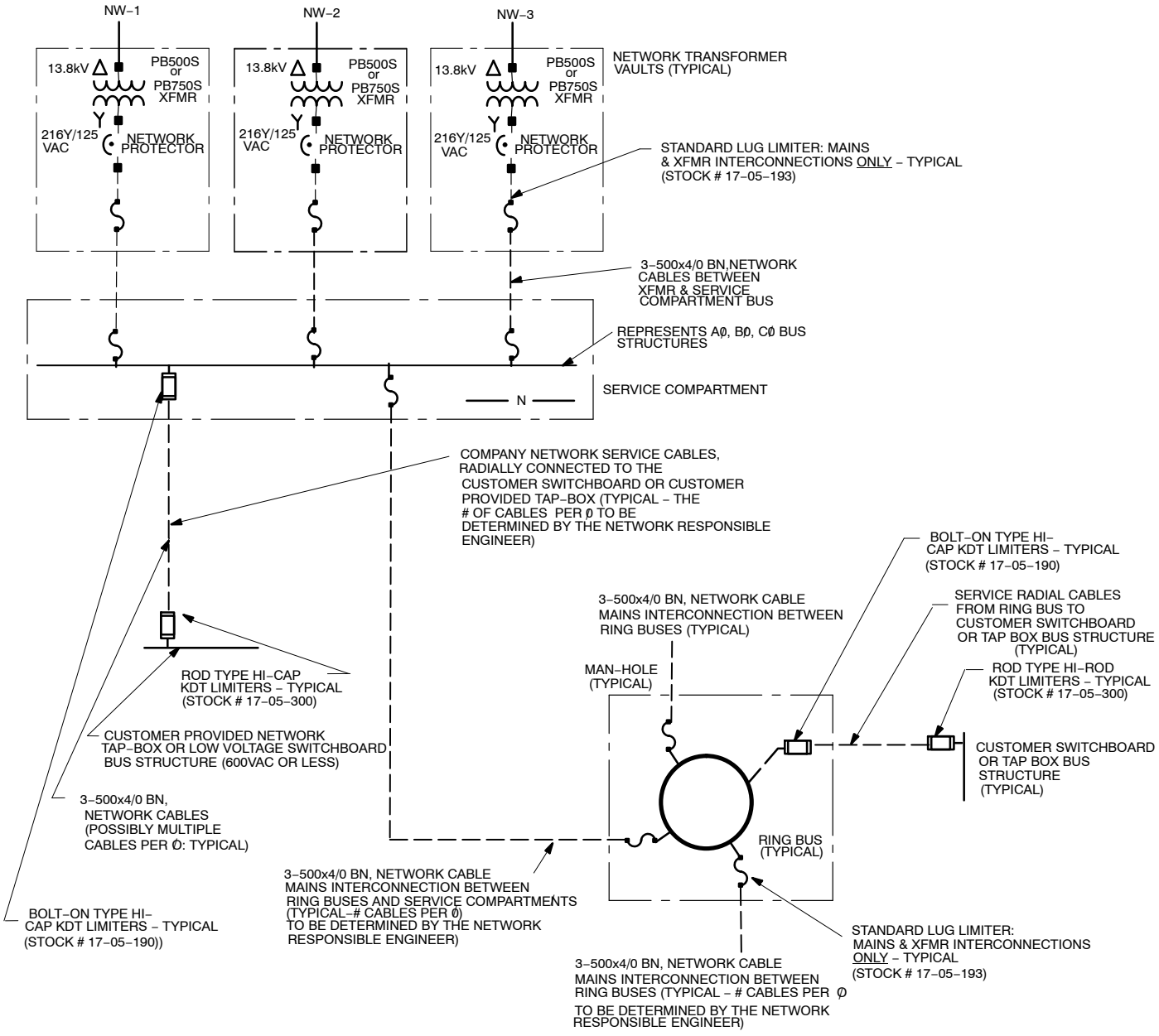
1000 Amps Std. 43 19 01 04
2000 Amps Std. 43 19 01 05
3000 Amps Std. 43 19 01 06

		Dist. Std. Or Stk. No.	Description 43 19 01	04	05	06
1	A	25 07 024	Support-Network Bus, Vertical, Heavy Duty	9	9	9
	B	18 12 124	Bar-Bus, Copper, ¼" x 4" x 53", Predrilled	3	6	9
	C	21 56 078	Bolt-Machine, SS, ½" x 2", Hex Head w/Hex Nut	18	18	18
	D	23 66 005	Washer-Lock, Galv. Steel, ½"	18	18	18
	E	17 55 810	Spacer, Bus Support, ¼" x 4" x 4", Copper		9	18
	F	18-12-127	Bar-Bus, Neutral/Ground Kit, ¼" x 4" x 4', w/Mounts	1	1	1
	G	21-53-049	Bolt-Machine, Everdur, ⅜" x 6", Hex Head w/Nut	6	6	6

NOTES:

1. Insert the copper spacers (E) between the bus bars (A) at each network bus support (B) as necessary.
2. Attach the Neutral/Ground Bus to the bond wire using 4/0 copper wire (18-52-024) and a two bolt connector (17-54-132) and a copper lug (17-05-194).
3. For all bus bar connections tighten bolts to a torque value of 20 ft-lbs.

AMEREN MISSOURI ONLY



NOTES:

1. Hi–cap KDT limiters shall be used only on 480Y/277V spot network connections and for 216Y/125V radial secondary network taps to customer equipment from a ring bus or service compartment.
2. The hi–cap KDT limiter's interrupting rating is 200,000 amps, symmetrical, and the standard lug limiter's interrupting rating is 14,000 amperes, symmetrical.
3. Neutral connections not shown on this drawing (limiters not used on neutral conductors).
4. PB500S transformer interconnections: (4) 3–500x4/0 BN,Network Cable
   PB 750S transformer interconnections: (6) 3–500x4/0 BN,Network Cable
5. Unless otherwise noted, all devices exist in all three phases.
6. This standard is complimentary to STD **43–16–96–00** & **43–16–97–00**.