3M™ Cold Shrink QS-III Splice Kit 5797A-MT

Three-Conductor Splice Kit for use on Armor and Non-Armor Cables

Instructions

IEEE Std. 404
35 kV Class
250 kV BIL

Cable Range Requirements

Kit Number	Cable Insulation O.D. Range	Conductor Size Range
5797A-MT	1.07" to 1.70" (27,2 mm to 43,2 mm)	1/0 AWG - 350 kcmil* (60 - 185 mm^2)

* Splices (including size transitions) can be made to smaller or larger conductors, provided both cables are within the Insulation O.D. Range and the connector meets the dimensional requirements shown below.

Connector Dimensional Requirements

	Minimum inches (mm)	Maximum inches (mm)
Outside Diameter	0.51" (13,0 mm)	1.70" (43,2 mm)
Length Aluminum (Al/Cu)	------	6.00" (152 mm)
Length Copper (Cu)	------	6.50" (165 mm)

3M™ Cold Shrink
QS-III Splicing Kit
5797A-MT

78-8126-0432-6-D

⚠CAUTION

Working around energized high-voltage systems may cause serious injury or death. Installation should be performed by personnel familiar with good safety practice in handling high-voltage electrical equipment. De-energize and ground all electrical systems before installing product.

Contents

1.0 Kit Contents:

1.1 Kit Contents are as follows:

3 .....3M™ Cold Shrink QS-III Silicone Splice 5467A Bodies
6 .....Tubes, 3M™ Red Compound P55/R
3 .....Metallic Shield Sleeves
6 .....Constant Force Spring Shield Connectors (1.31" I.D.)
2 .....Constant Force Spring Shield Connectors (1.54" I.D.)
1 .....Armor to Armor Continuity Braid
2 .....Cold Shrink Jacket Tubes
1 .....3M™ Cable Preparation Kit CC-2
1 .....Roll, Scotch® Super 33+ Vinyl Electrical Tape (3/4" x 76')
5 .....Rolls, Scotch® Vinyl Electrical Tape Super 88 (1 1/2" x 44')
4 .....Rolls, Scotch-Seal™ 2229 Mastic Tape (3 3/4" x 10')
1 .....Roll, Scotch® 24 Electrical Shielding Tape (1" x 15')
1 .....Roll, 3M™ Scotch® Rubber Mastic Tape 2228 (2" x 10')
6 .....Rolls, 3M™ Sheath Wrap (4" x 15')
6 .....Cold Shrink Adapter Tubes (3 white core and 3 red core)
1 .....Instruction Sheet
6 .....Copper Foil Tape (1/2" x 10")
12 .....Gloves

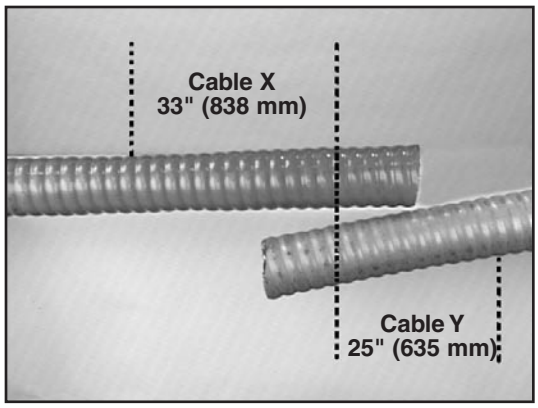
2.0 Prepare Cable

2.1 Prepare the cable according to your company's standard procedures. Allow cable ends to overlap as much as 10" (254 mm).

Remove 33" (838 mm) of cable jacket, plus half of the overlap from **Cable X**.

Remove 25" (635 mm) of cable jacket, plus half of the overlap from **Cable Y**.

Keep a 22" (559 mm) piece of cable jacket removed from **Cable X** and a 14" (356 mm) piece of jacket from **Cable Y** for use later in these instructions.

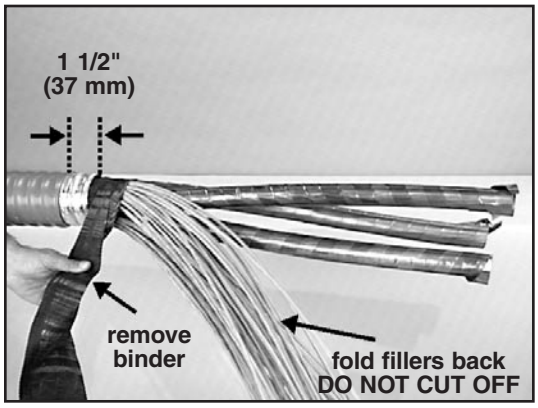


2.2 If cable is armored, remove cable armor leaving 1 1/2" (37 mm) armor exposed beyond jacket end.

Remove cable binder , if present, at the end of the jacket or armor and discard.

Fold cable fillers and ground wire(s) back over cable jacket end. Do not cut off.

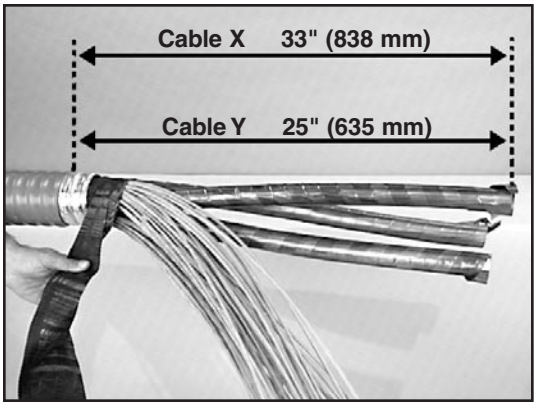
Temporarily hold the fillers and ground wire(s) back by banding them to the cable jacket using Scotch® Super 33+ Vinyl Tape.



2.3 Cut the phase cores to the appropriate length.

Cores of **Cable X** should be 33" (838 mm) when measured from the cable jacket end or 31 1/2" (800 mm) when measured from end of the armor.

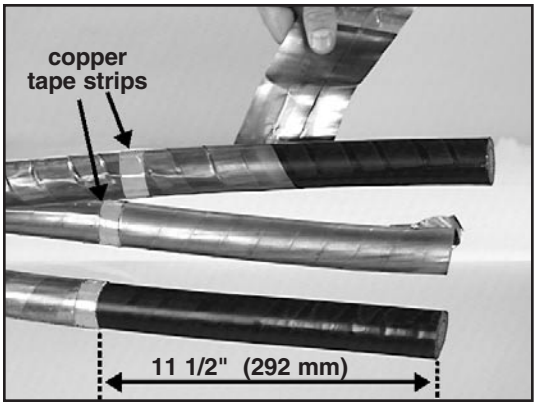
Cores of **Cable Y** should be 25" (635 mm) when measured from the cable jacket end or 23 1/2" (597 mm) when measured from end of the armor.



2.4 Bind the metallic shields of both **Cable X** and **Cable Y** cores with a copper tape strip at a point 11 1/2" (292 mm) from the end of each conductor.

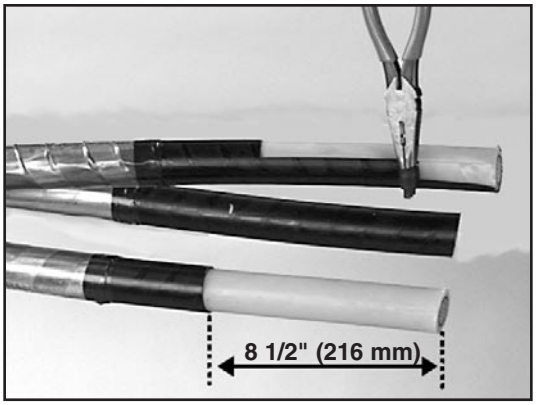
Remove the metallic shields to the copper tape binding.

If the phase cores are individually jacketed, remove the individual jackets a distance of 15" (381 mm) from the end of each conductor.



2.5 Remove cable semi-conductive insulation screen from cores of both **Cable X** and **Cable Y** for a distance of 8 1/2" (216 mm) from the end of each conductor.

Note: ***Cables must be within Insulation O.D. range of the splice kit.***



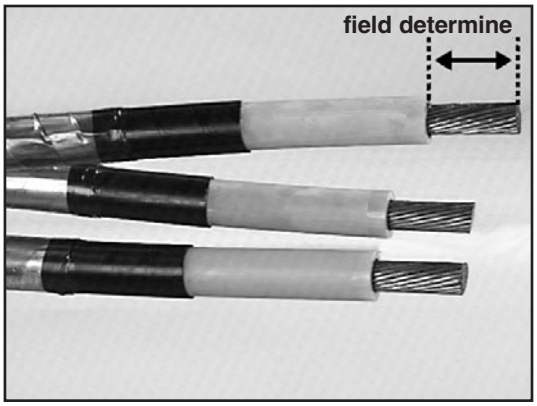
2.6 Remove cable insulation from conductors ends of both **Cable X** and **Cable Y**.

Remove cable insulation for 1/2 connector length plus an allowance * for increases in connector length due to crimping. Insulation removal length shall not exceed 3 1/4" (83 mm) from conductor end.

Do not install connectors now.

***Note:** This assumes that the installer has determined the increased length of an aluminum connector crimped with a specific tool and die.*

Aluminum Connector Size	Typical Growth allowance per end
1/0 AWG	1/8" (3 mm)
2/0 AWG	1/8" (3 mm)
3/0 AWG	1/8" (3 mm)
4/0 AWG	1/4" (6 mm)
250 kcmil	1/4" (6 mm)
350 kcmil	1/4" (6 mm)

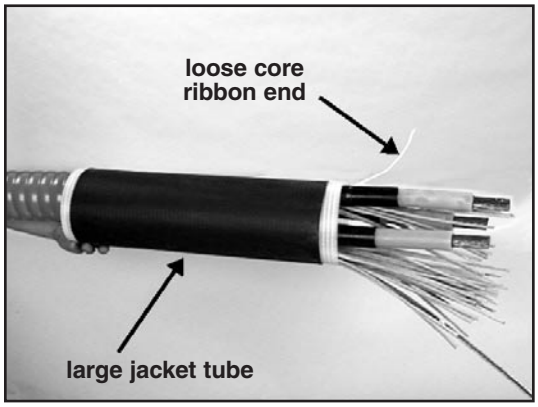


Notes: ***1. Copper connectors do not require a length change allowance.***

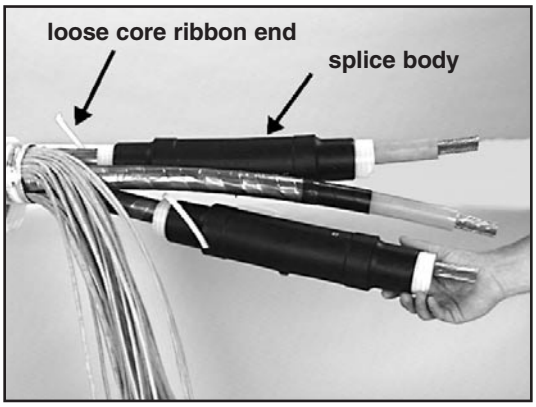
2. Maximum aluminum connector crimped length allowed is 6.50" (165 mm).

3.0 Place Components on Cable

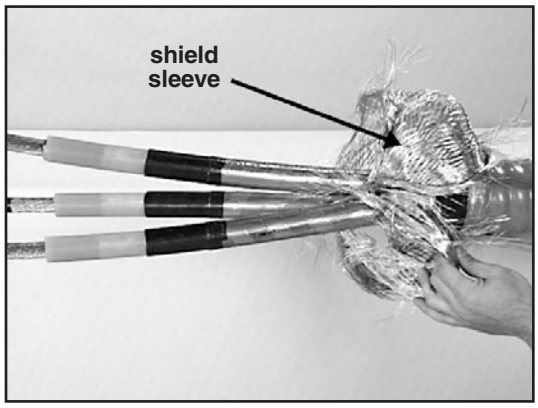
3.1 Slide one large cold shrink jacket tube onto **Cable X** and one onto **Cable Y** with the loose core ribbon ends going on the cable last, extending toward the cable ends.



3.2 Slide a 3M™ cold shrink splice body onto each core of **Cable X** with the loose core ribbon end going on the cable first, away from cable end.

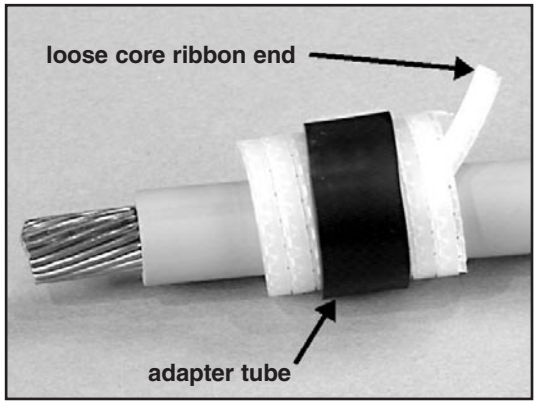


3.3 Expand metallic shield sleeves and slide one onto each core of **Cable Y**. Compress the ends of each shield sleeve together next to the cable armor or jacket, away from the prepared conductor ends.



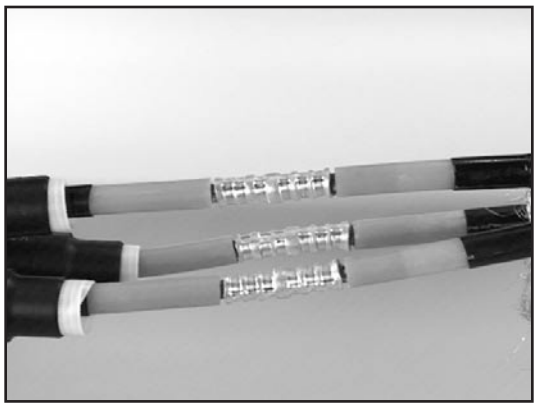
3.4 **For 1/0 through 3/0 AWG connectors, or connectors with an O.D. between 0.51–0.76" (13,0–19,3 mm):** Slide the cold shrink adapter tube with the **WHITE CORE** onto the insulation with the loose core ribbon end going on first, away from the cable end.

For 4/0 AWG through 350 kcmil connectors or connectors with an O.D. between 0.68–1.07" (17,3–27,2 mm): Slide the cold shrink adapter tube with the **RED CORE** onto the insulation with the loose core ribbon end going on first, away from the cable end.

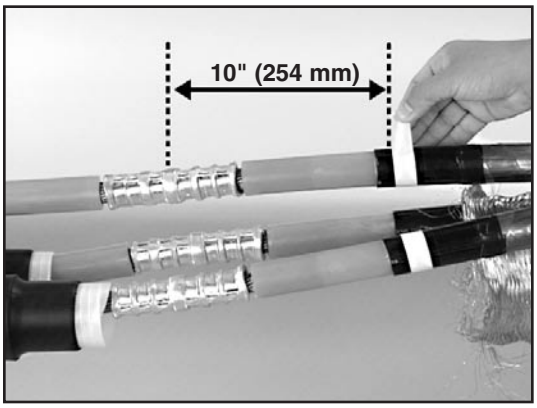


4.0 Install Splice

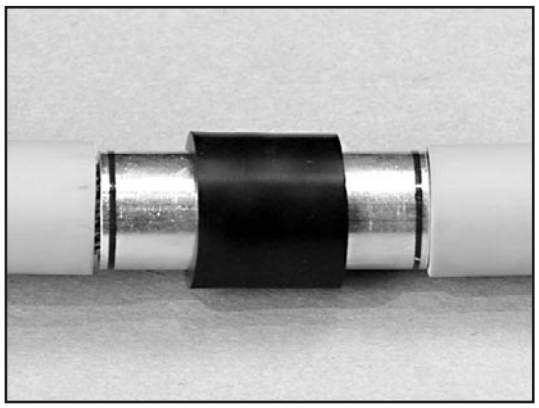
4.1 Install connectors. See Table on front cover of this instruction for proper connector dimensions. Crimp connectors per recommendations from connector manufacturer. For standard 3M™ Connectors, refer to the table at the end of this instruction for crimping information.



4.2 Apply a tape marker to core semi-con insulation screens of **Cable Y** (cable side which does not contain splice body) **at a distance of 10" (254 mm) measured from the CENTER of connectors.**



4.3 Position cold shrink copper connector adapter **over CENTER of connector.** Shrink the adapter near center of connector by pulling and unwinding the loose core ribbon end in a counter-clockwise direction.

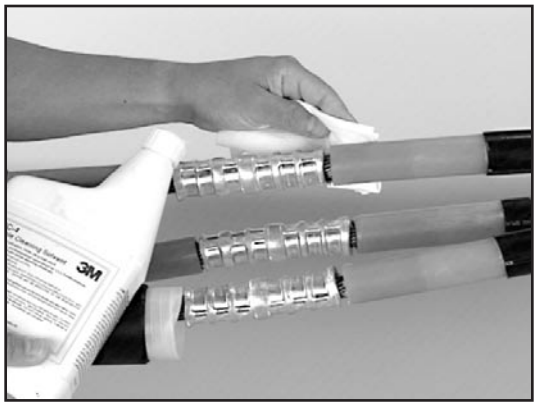


4.4 Remove any excess oxidation inhibitor from connector ends if aluminum connectors are used.

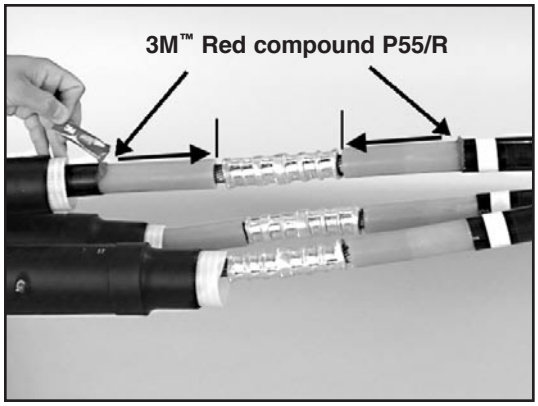
Clean cable using standard practice:

a. Do not use solvent or abrasive on cable semi-conductive insulation shield.

b. If abrasive is used on cable insulation, do not reduce diameter below the 1.07" (27,2 mm) minimum specified for the splice.



4.5 Apply red compund on cable insulation, making certain to fill in edges of cable semi-cons.

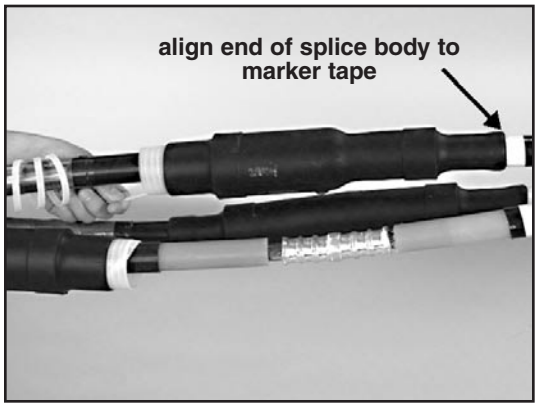


Note: DO NOT use silicone grease.

4.6 Position each splice body over the connector and align the leading end of the rubber part with the center of the marker tape.

Slowly begin to remove the inner support core by pulling, while unwinding, the loose ribbon end in a counterclockwise direction. Allow only 1/4" (6 mm) of the splice to shrink onto the marker tape.

Carefully slide the splice body off the marker tape until its leading edge is aligned with the marker tape edge. Continue removing the core to complete splice body installation.

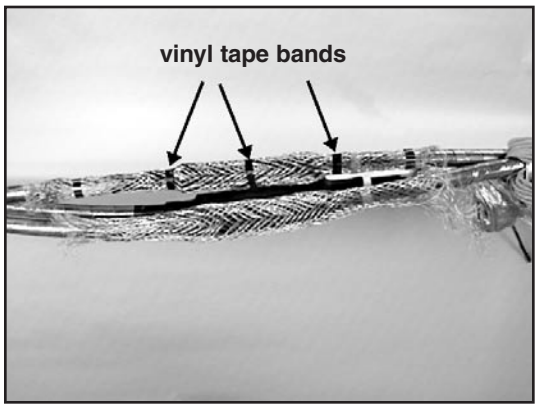


Note: The splice body ends must overlap onto the semi-conducting layer of each cable by at least 1/2" (12,7 mm).

Note: DO NOT push the splice body towards the tape marker, as this may cause the end to roll under. If the end does roll under, DO NOT use sharp edged tools to pull it out as this could cut and damage the splice.

4.7 Apply copper shield sleeves:

a) Center one shield sleeve over each splice body.
b) Starting at center, form sleeves to splice bodies using vinyl tape bands.

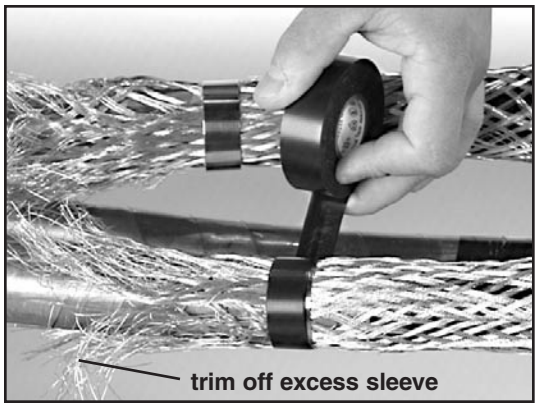


4.8 Connect sleeve ends to the cable metallic shield with constant force springs.

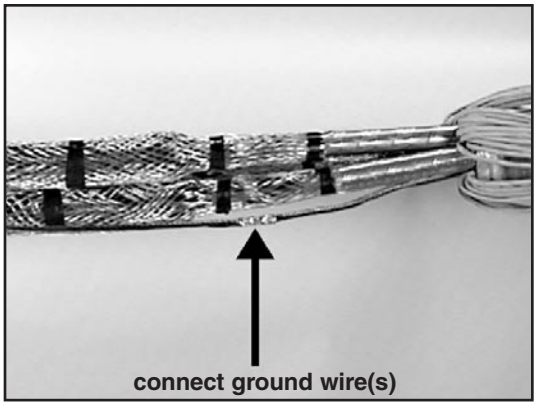
Install each spring by unwrapping and rewrapping the spring around itself over the shield sleeve end and cable metallic shield.

Trim off excess shield sleeve braid material.

Cover springs and trimmed shield sleeve ends with one half-lapped layer of vinyl tape.



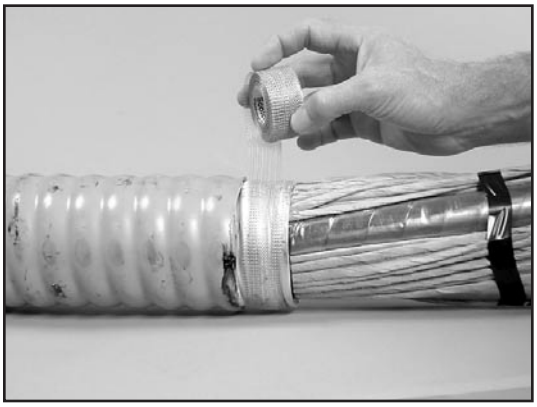
4.9 Connect the ground wire(s) from **Cable X** to the ground wire(s) from **Cable Y**. Make the connection away from the splice bodies.



4.10 Unfold the cable fillers and reestablish their lay between the cable phase cores. Hold the fillers in place with a band of Scotch® Super 33+ Vinyl Tape.

5.0 Install Armor Continuity (If Cable is Armored)

5.1 Apply multiple wraps of Scotch® Electrical Shielding Tape 24 around the exposed armor on both **Cable X** and **Cable Y** to fill a valley in the corrugated armor. Half hitch to tie off.



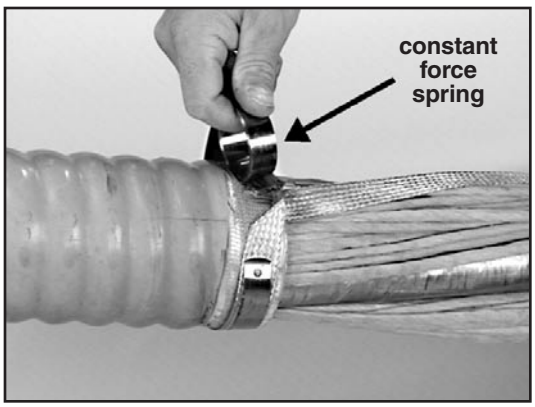
5.2 Wrap an end of the ground continuity braid around exposed armor and applied Scotch® Electrical Shielding Tape 24 on one cable end.

Wrap one wrap only and fold the braid at 90° with the long braid end extending toward splice opening.

Install a large constant force spring around the braid wrapped on the armor. Spiral wrap the braid around the splice opening to the other cable armor.

Fold the braid 90° and wrap braid end around armor. Wrap braid end for one wrap only. Cut off and discard excess braid.

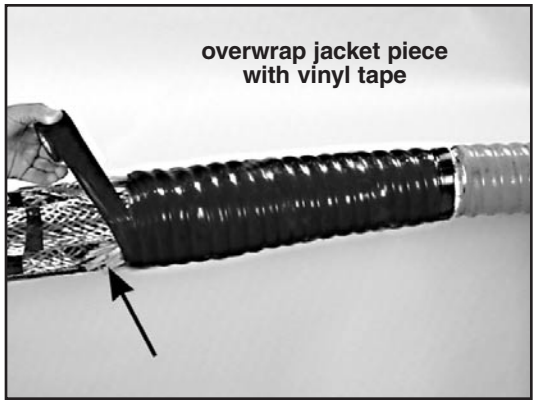
Connect braid by installing other constant force spring. Overwrap each spring with Scotch® Super 33+ Tape.



6.0 Install Splice Jacket

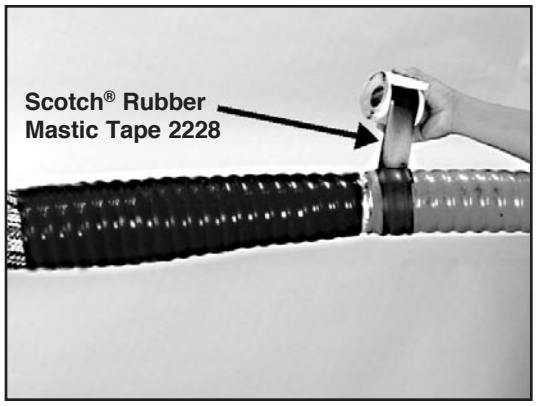
6.1 Over wrap the exposed conductors on each side of splice bodies with jacket pieces saved from step 2.1.

Bind the cable jacket pieces in place with one half-lapped layer of Scotch® Vinyl Electrical Tape Super 88, 1 1/2" wide tape.



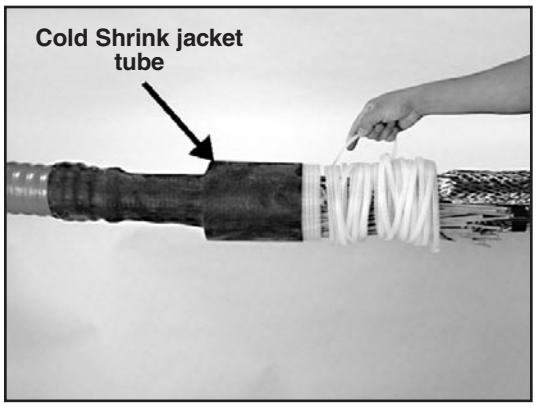
6.2 At both ends of splice, apply four wraps of Scotch® Rubber Mastic Tape 2228 mastic, around the cable jacket 1/2" from jacket ends.

Stretch the rubber mastic to three-fourth original width when applying.

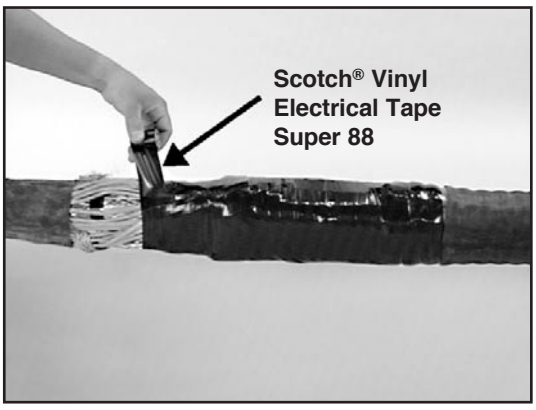


6.3 Install a Cold Shrink jacket tube on each cable with the leading end just covering the Scotch® Rubber Mastic Tape 2228 and the tube extending toward the splice bodies.

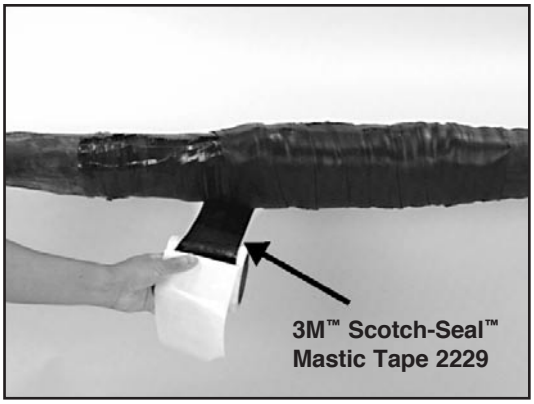
Pull while unwinding the loose core ribbon end in a counterclockwise direction to install jacket tubes.



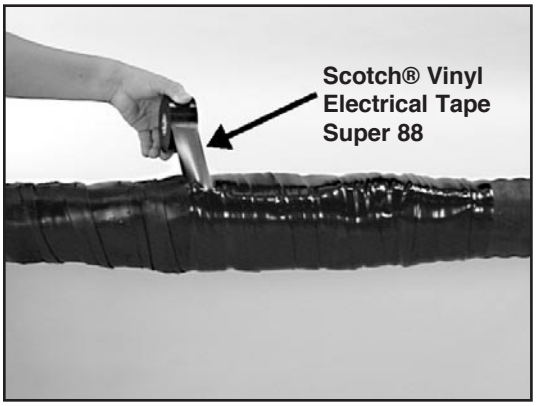
6.4 Apply one half lapped layer of Scotch® Vinyl Electrical Tape Super 88 over the unjacketed area in splice center. Do not overlap the Cold Shrink jacket tubes.



6.5 Apply two half-lapped layers of 4" wide 3M™ Scotch-Seal™ Mastic Tape 2229 over applied vinyl tape in splice center. Overlap ends of Cold Shrink jacket tubes 2" (51 mm).



6.6 Cover the applied 3M™ Scotch-Seal™ Mastic Tape 2229 with two half lapped layers of Scotch® Vinyl Electrical Tape Super 88.



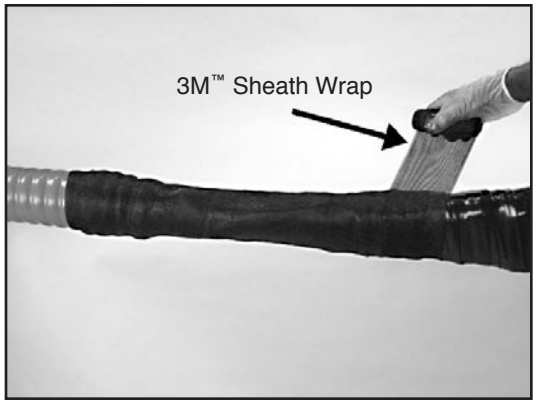
6.7 Overwrap the entire splice with a minimum of two half lapped layers of 3M™ Sheath Wrap.
Tear open the top end of the foil 3M™ Sheath Wrap container and fill foil container half full with water.

Squeeze the container four or five times allowing the water to penetrate the roll. Pour out water, remove roll from foil container and immediately apply to splice area.

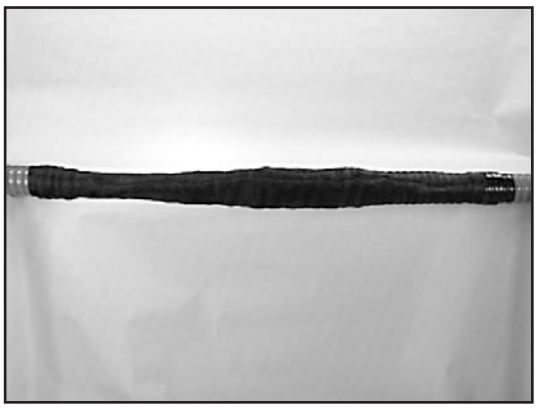
Bind the final wrap in place with vinyl tape.

Note: ***Wear rubber gloves provided when handling 3M™ Sheath Wrap. The resin contains a black die that will stain human skin.***

3M™ Sheath Wrap can be applied first and then sprayed with water to activate the curing system It will also cure from moisture in the air in humid conditions.



6.8 Splice is complete.



Crimping Tool - Die Sets (number of crimps/end)

3M™ Connector Number	Conductor Size (AWG or kcmil)	Burndy					Thomas & Betts Corp				Square D Co. Anderson Div.	Kearney
		MD6	MY29	Y34A	Y35, Y39 Y45*, Y46*	Y1000**	TBM 5	TBM 8	TBM 12	TBM 15	VC6-3** VC6-FT**	Type O
10005 (Cu)	1/0	W163 (2)	1/0 (1)	A25R (1)	U25RT (1)	—	Pink (2)	Pink (2)	—	42 (2)	(1)	—
20005 (Al/Cu)	1/0	W241 (2)	1/0 (1)	A25AR (1)	U25ART (1)	(1)	Tan (2)	Tan (2)	—	50 (1)	(1)	5/8-1 (3)
CI-1/0 (Al/Cu)	1/0	BG (3)	—	U243 (1)	U25ART (1)	—	—	Olive (2)	—	50 (1)	(1)	5/8-1 (3)
10006 (Cu)	2/0	W241 (2)	2/0 (1)	A26R (1)	U26RT (2)	—	Black (2)	Black (2)	—	45 (1)	(1)	—
20006 (Al/Cu)	2/0	BG (4)	2/0 (1)	A26AR (2)	U26ART (2)	(1)	Olive (2)	Olive (2)	—	54H (2)	(2)	5/8-1 (3)
11006 (Cu)	2/0	W241 (3)	2/0 (2)	A26R (2)	U26RT (2)	—	Black (3)	Black (3)	—	45 (2)	(2)	—
CI-2/0 (Al/Cu)	2/0	W249 (3)	—	—	U28ART (2)	—	—	Blue (4)	—	76 (2)	(2)	840 (4)
10007 (Cu)	3/0	W243 (2)	3/0 (1)	A27R (1)	U27RT (2)	—	Orange (2)	Orange (2)	—	50 (1)	(1)	—
20007 (Al/Cu)	3/0	W166 (4)	3/0 (1)	—	U27ART (2)	(1)	Ruby (2)	Ruby (2)	—	60 (2)	(2)	737 (3)
11007 (Cu)	3/0	W243 (3)	3/0 (2)	A27R (2)	U27RT (3)	—	Orange (3)	Orange (3)	—	50 (2)	(2)	—
CI-3/0 (Al/Cu)	3/0	W249 (3)	—	—	U28ART (2)	—	—	Blue (4)	—	76 (2)	(2)	840 (4)
10008 (Cu)	4/0	BG (3)	4/0 (1)	A28R (2)	U28RT (2)	—	Purple (2)	Purple (2)	—	54H (2)	(2)	
20008 (Al/Cu)	4/0	W660 (4)	4/0 (2)	A28AR (2)	U28ART (2)	(1)	—	White (4)	—	66 (4)	(2)	840 (4)
11008 (Cu)	4/0	BG (4)	4/0 (2)	A28R (3)	U28RT (3)	—	Purple (3)	Purple (3)	—	54H (3)	(3)	—
CI-4/0 (Al/Cu)	4/0	W249 (3)	—	—	U28ART (2)	—	—	Blue (4)	—	76 (2)	(2)	840 (4)
10009 (Cu)	250	W166 (3)	250 (1)	A29R (2)	U29RT (2)	—	Yellow (2)	Yellow (2)	—	62 (2)	(2)	—
20009 (Al/Cu)	250	W249 (3)	—	A29AR (2)	U29ART (2)	(1)	—	—	71H (2)	71H (2)	(3)	—
11009 (Cu)	250	W166 (4)	250 (2)	A29R (3)	U29RT (3)	—	Yellow (3)	Yellow (3)	—	62 (3)	(3)	—
CI-250 (Al/Cu)	250	—	—	—	U31ART (2)	—	—	—	87H (2)	87H (2)	(2)	—
10010 (Cu)	300	—	—	A30R (3)	U30RT (2)	—	—	White (2)	—	66 (2)	(2)	—
20010 (Al/Cu)	300	—	—	A30AR (2)	U30ART (2)	(1)	—	—	76H (3)	76 (1)	(2)	—
11010 (Cu)	300	—	—	A30R (3)	U30RT (3)	—	—	White (3)	—	66 (3)	(3)	—
CI-300 (Al/Cu)	300	—	—	—	U31ART (2)	—	—	—	87H (2)	87H (2)	(2)	—
10011 (Cu)	350	—	—	A31R (2)	U31RT (2)	—	—	Red (3)	—	71H (3)	(2)	—
20011 (Al/Cu)	350	—	—	—	U31ART (2)	(1)	—	—	87H (3)	87H (3)	(2)	—
11011 (Cu)	350	—	—	A31R (3)	U31RT (3)	—	—	Red (4)	—	71H (4)	(3)	—
CI-350 (Al/Cu)	350	—	—	—	U31ART (2)	—	—	—	87H (2)	87H (2)	(3)	—

*Y45 and Y46 accept all Y35 dies (“U Series”). For Y45, use PT6515 adapter. For Y46, use PUADP adapter.
**Anderson VC6-3, VC6-FT and Burndy Y1000 require no die set.

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Electrical Markets Division
13011 McCallen Pass, Bldg. C
Austin, TX 78735
800-245-3573
Fax 800-245-0329
www.3M.com/electrical

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