3M™ Cold Shrink Silicone Rubber 3/C Cabinet-Mount Inverted Termination Kit QT-III 7600-S-INV-3RJS Series

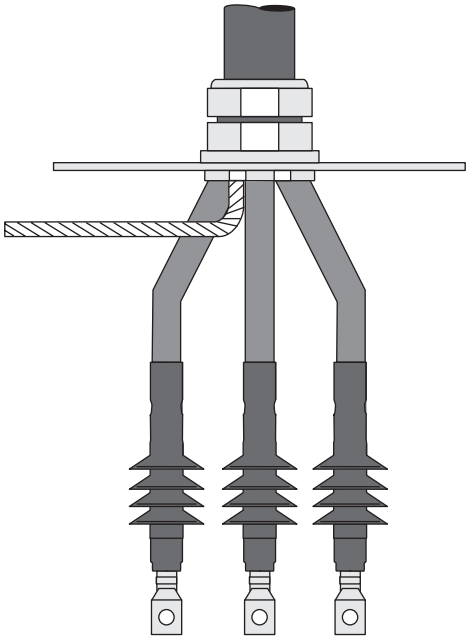
For 3-Conductor Copper Tape Shield Cables with or without Ground Wires

Instructions

IEEE Std. No. 48
Class 1 Termination

⚠CAUTION

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



August 2008
78-8124-4348-5-B

3M

Kit Contents

3 Silicone Rubber Phase Re-jacketing Sleeve Assembly
3 Cold Shrink Silicone Rubber Tubular Termination Assembly
3 Cold Shrink Silicone Rubber Skirted Insulator Assembly
1 Roll Tinned Copper Ground Braid
3 Constant-Force Springs
1 Roll Vinyl Tape
1 Cable Preparation Kit
1 Installation Instructions
3 Copper Foil Tape, 1/2" x 10"

Termination Application Ranges

(Final determining factor is cable insulation diameter. Listed insulation ranges allow +2.54 mm (0.10") for shielding.)

Kit Number	Cable Insulation Range [inch (mm)]	3.3 kV (mm^2) IEC	3.3 kV (mm^2) JIS	5.0 kV (AWG) AEIC	6.6 kV (mm^2) JIS	6.6 kV (mm^2) IEC	8.7 kV (AWG) AEIC	10 kV (mm^2) IEC	15 kV (mm^2) IEC	15 kV (AWG) AEIC	20 kV (mm^2) IEC	25/28 kV (AWG) AEIC
7693-S4-INV-3RJS	0.92-1.18 (23.4-30.0)	240–300	200–250	500–750	150–250	185–300	400–600	185–300	120–185	250–450	95–185	2/0–250
7695-S4-INV-3RJS	1.18-1.52 (30.0-38.6)	—	300–325	800–1000	300–325	—	750–1000	—	200–325	500–750	240–300	300–500

Table 1

1.0 Prepare Cable

1.1 Determine phase (core) length required for correct phase spacing and bolted terminal lug connections (A + B Figure 1, according to the longest phase to be connected). Allow for dimension C as needed.

Note: Individual phase length and separation dimensions vary according to specific installation and equipment design requirements. They must, therefore, be determined by the installer and must conform to accepted engineering practices.

1.2 Strip back cable jacket and armor according to equipment entrance bushing and cabinet configuration requirements.

1.3 Remove bedding (inner sheath), if present, and any remaining core fillers. Secure each copper tape shield end with a temporary band of vinyl tape (① *Figure 1*).

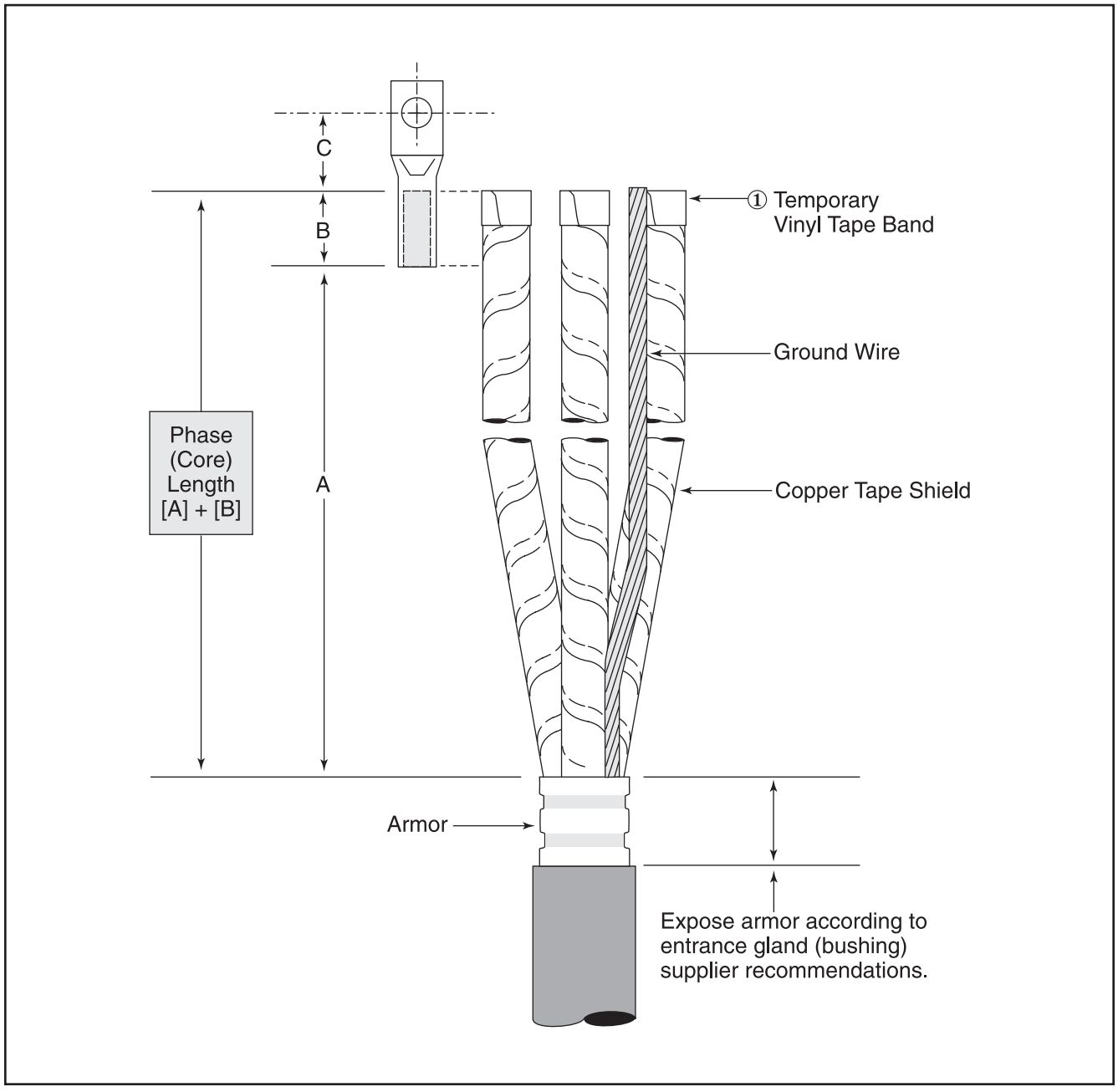


Figure 1

2.0 Attach Metallic Shield Grounding Braids

2.1 Cut supplied tinned copper grounding braid into three equal 2’ (610 mm) lengths. Expand each braid end for a distance of 2" (51 mm) (② *Figure 2*).

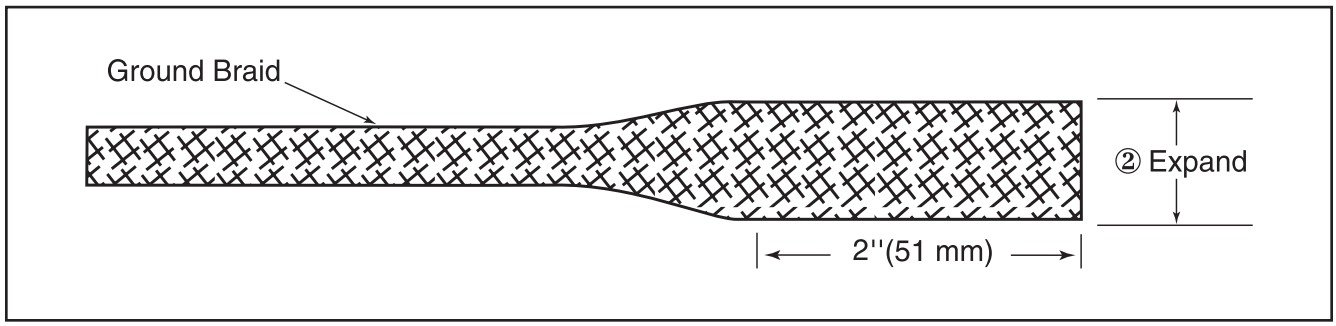


Figure 2

2.2 Attach shield ground braids:

A. Position each expanded ground braid end over phase shielding as shown in Figure 3.

B. Using vinyl tape bands, secure upper braid end to copper tape shielding 8" (203 mm) beyond cable breakout point.

C. Connect expanded ground braid ends to copper tape shields using supplied constant-force springs. Following application, cinch (twist with hand) each spring to tighten.

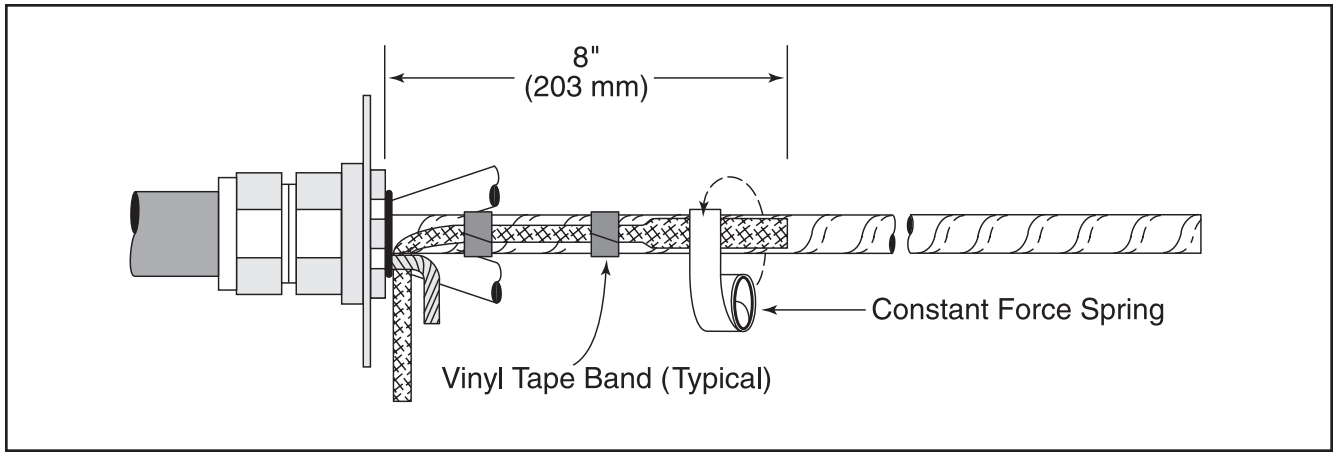


Figure 3

2.3 2.3 Apply two half-lapped layers vinyl tape over constant force springs and ground strap ends (③ *Figure 4*).

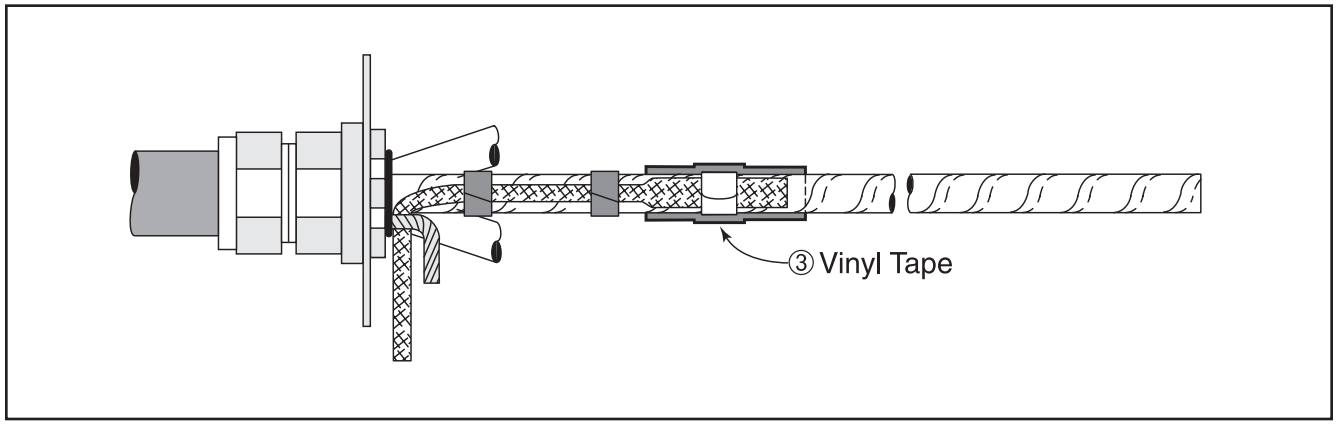


Figure 4

3.0 Install Silicone Rubber Re-jacketing Sleeves

3.1 Place a vinyl tape marker on each cable phase leg at dimension X (① *Figure 5*).

Note: X = 12.5" (318 mm) + B (Lug barrel depth). Allow for crimp growth when using aluminum lugs.

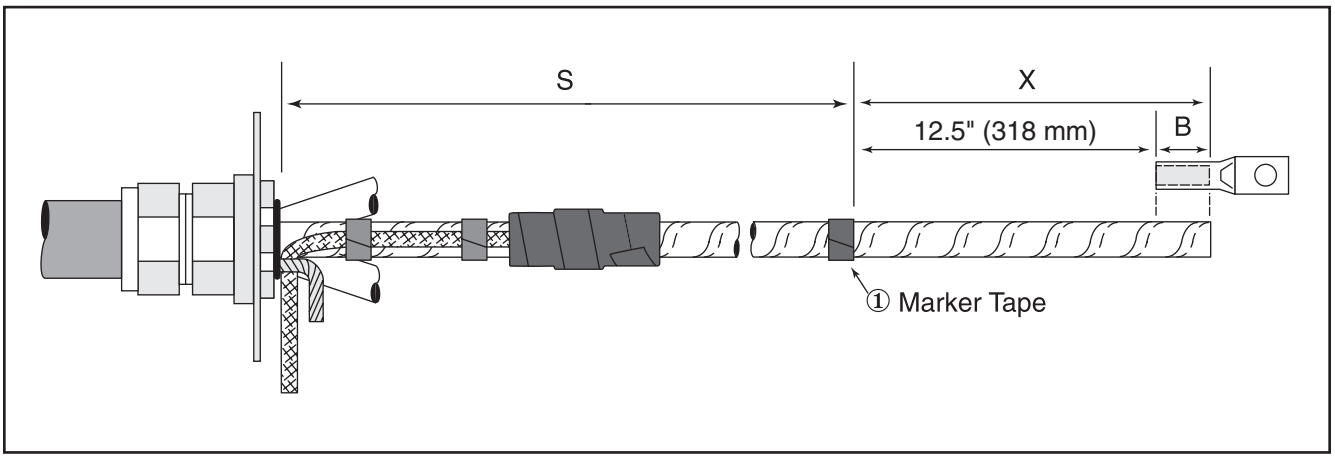


Figure 5

3.2 Determine required phase re-jacketing sleeve length (Distance "S" *Figure 5*).

3.3 Using scissors, trim re-jacketing sleeve assembly to length required (Distance "S" *Figure 6*). Cut tubing and inner braid together.

Note: Inner polyester braid should extend approximately 3" (75 mm) beyond re-jacketing tube end before cutting. There is no need for termination-end braid exposure.

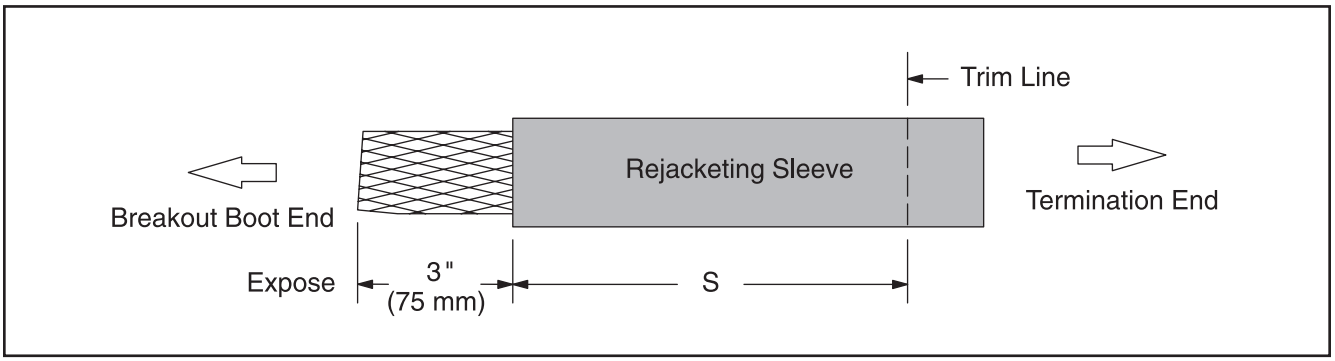


Figure 6

3.4 Guide one re-jacketing sleeve assembly over each cable phase leg (*Figure 7*).

Push sleeve assembly from above. Continuously guide the free end maintaining sleeve-to-cable-core alignment.

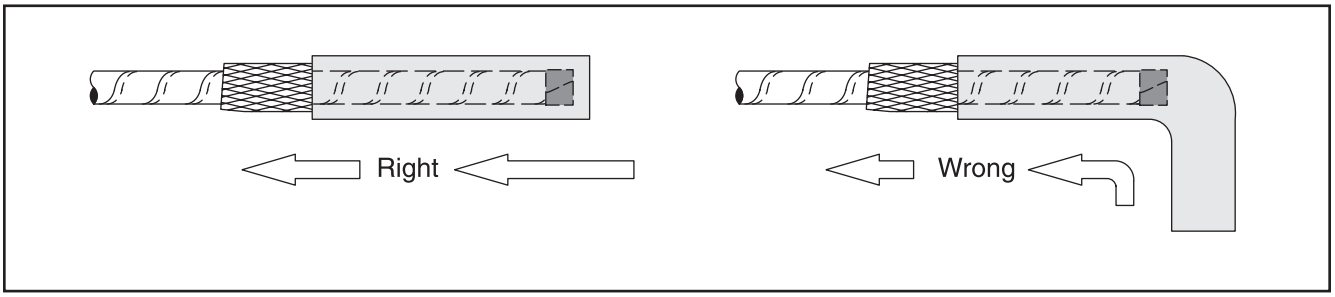


Figure 7

3.5 Slide re-jacketing sleeve until inner polyester braid is within 2" (51 mm) of desired final location (near cable entrance gland).

3.6 Fold outer silicone tubing back on itself for 1" (25 mm) and trim off exposed polyester braid (*Figure 8*).

Note: Do not damage silicone tubing while cutting. Sleeve assembly may be rotated to ease trimming. When doing so, rotate in the direction of the cable copper tape shield wrap.

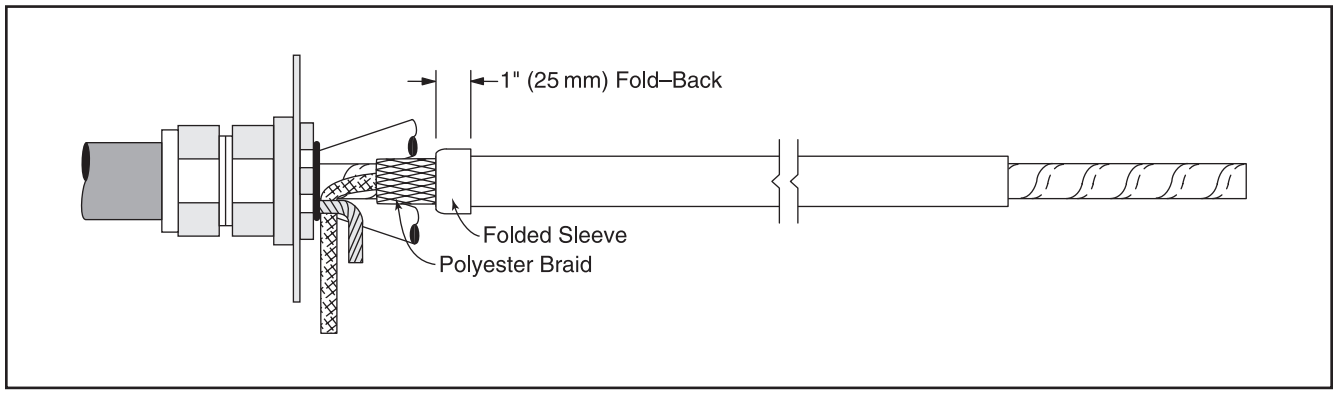


Figure 8

3.7 Slide re-jacketing sleeve assembly into desired final position. Pull folded sleeve section down onto cable phase shielding.

Note: Re-jacketing sleeve upper end should now align with upper edge of previously-installed marker tape (② Figure 9).

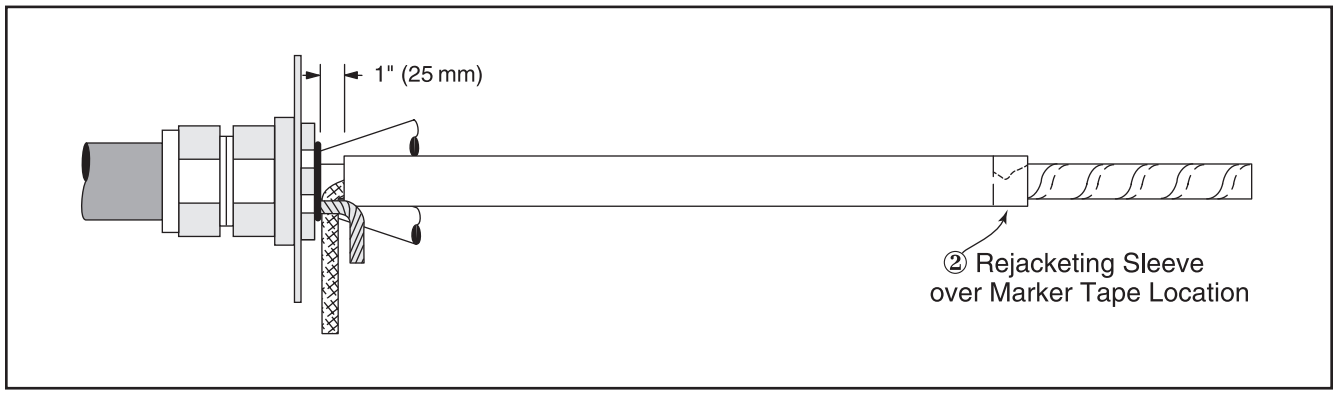


Figure 9

4.0 Install 3M™ Cold Shrink Termination QT-III Assemblies

4.1 Prepare cable phase legs according to dimensions shown (*Figure 10*). “B”=Lug or connector barrel depth. Allow for crimp growth when using aluminum lugs or connectors.

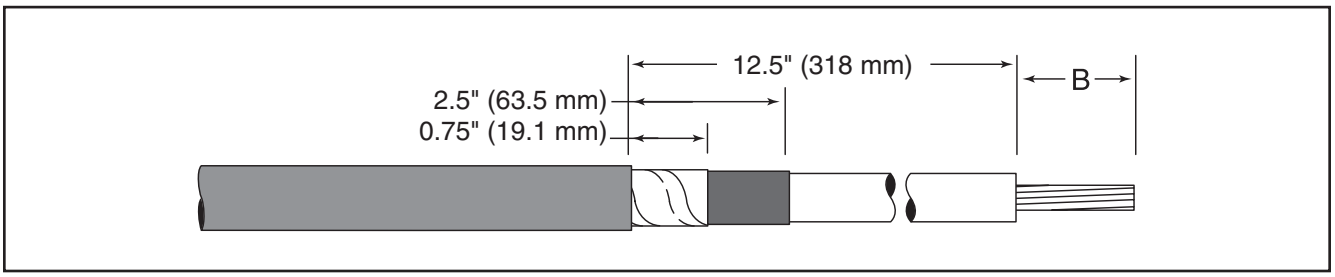


Figure 10

4.2 Secure cable copper tape shield ends with copper foil tape (*Figure 11*).

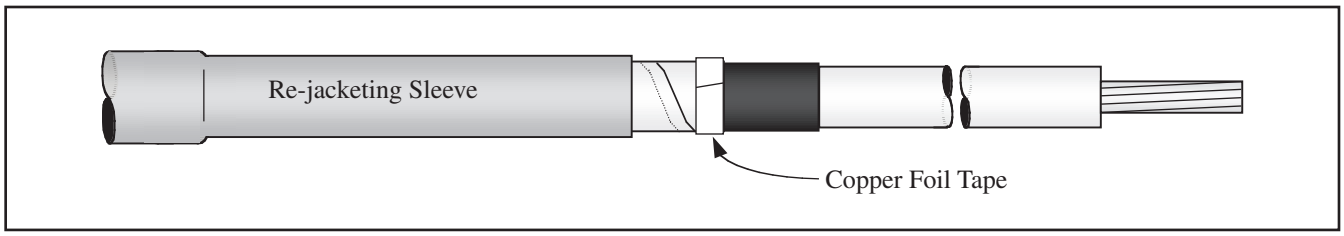


Figure 11

4.3 Secure re-jacketing sleeve with two half-lapped layers of vinyl tape (*Figure 12*). Start taping 0.8" (20 mm) over re-jacketing sleeve, extend 0.2" (5 mm) over cable metallic shield and return to starting point.

Note: Do not cover copper foil tape.

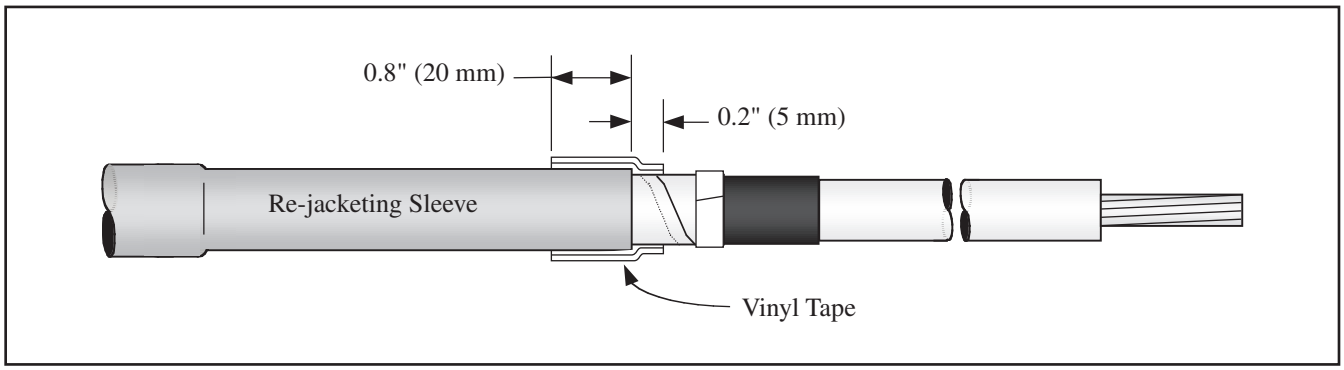


Figure 12

4.4 Place a termination installation marker tape 5" (127 mm) from the semi-con edge as shown (*Figure 13*).

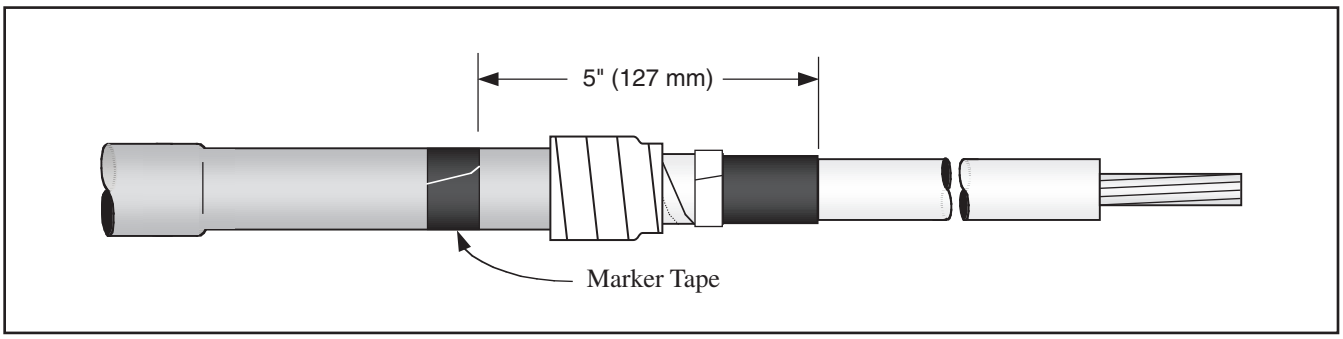


Figure 13

4.5 Install terminal lugs.

Note: Special Case – When lug spade dimension is larger than inside diameter of white plastic termination core, position termination assemblies over cable phase legs prior to installing lugs.

Remove inner red shipping core from each termination assembly by pulling and unwinding the loose red core ribbon. Position one termination over each cable phase leg. Each termination assembly must be positioned with its loose white core ribbon end directed toward the open (cut) end of the cable. Continue with lug installations.

(a.) For Aluminum Conductors - Thoroughly wire brush conductor strands to remove aluminum oxide layer. Immediately insert conductor into terminal lug barrel as far as it will go.

(b.) Ensure that each lug face is parallel to equipment bushing or lug connection interface (*Figure 14*).

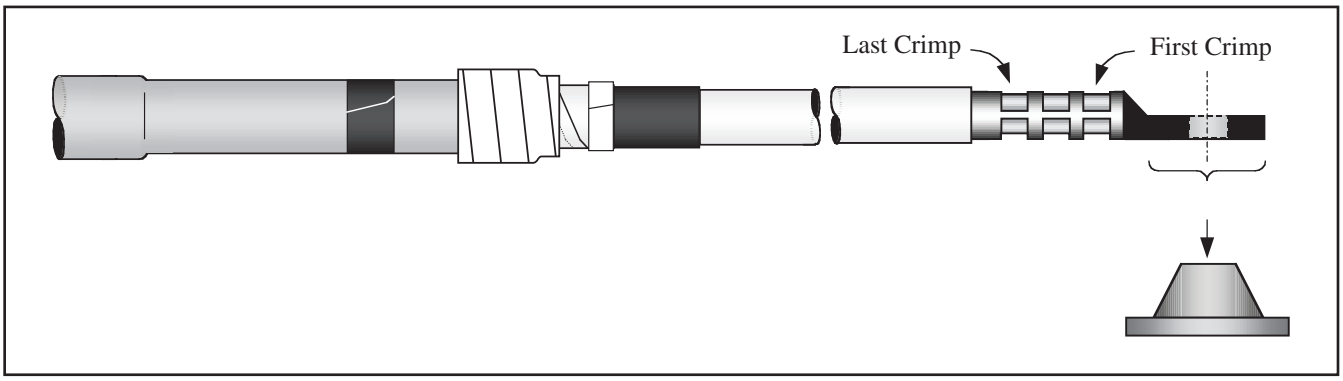


Figure 14

(c.) Crimp terminal lug according to manufacturer recommendations. Start at the upper end as shown (*Figure 14*). Remove all traces of oxide inhibitor that may have come out of lug barrel during crimping.

(d.) Thoroughly clean primary insulation and lug barrel area using solvent wipe from supplied cable preparation kit.

Note: Avoid solvent contact with cable semi-conductive screen.

4.6 Install 3M™ Cold Shrink Termination QT-III assemblies.

(a.) Remove the inner red shipping core from the termination assembly by pulling and unwinding the loose red core end.

(b.) Position the termination assembly with the loose white core ribbon directed toward the terminal lug.

(c.) Align the base of the termination (not the plastic core) with the installation marker tape as shown (*Figure 15*).

(d.) Grasp the loose white core ribbon. Pull and unwind counter clock-wise around cable end (*Figure 15*).

Note: After the silicone rubber termination makes adequate contact (approximately 1.0"), release the assembly and continue unwinding the core. Do not pull or push on the assembly while unwinding.

(e.) Remove the installation marker tape.

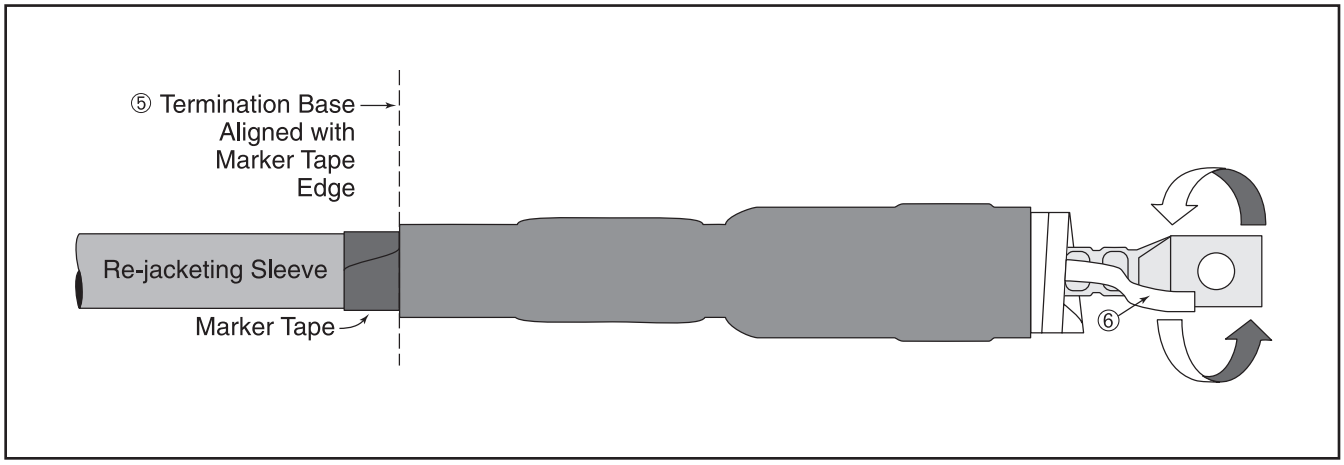


Figure 15

4.7 Install cold shrink skirted insulators.

A. Position skirted insulator over previously installed tubular termination as shown (*Figure 15*).

B. Align skirted insulator body (not the core) to install 3.5" (89 mm) from base of tubular termination (⑦ *Figure 15*).

C. Grasp the loose white core ribbon (⑧ *Figure 15*). Pull and unwind, counter clock-wise, around cable phase end.

Note: After skirted insulator makes adequate contact (approximately 1.0" or 25 mm), release the assembly and continue unwinding the core. Do not pull or push on the assembly while unwinding.

4.8 Connect shield braid tail and cable ground wire to system ground (earth) according to normal practice.

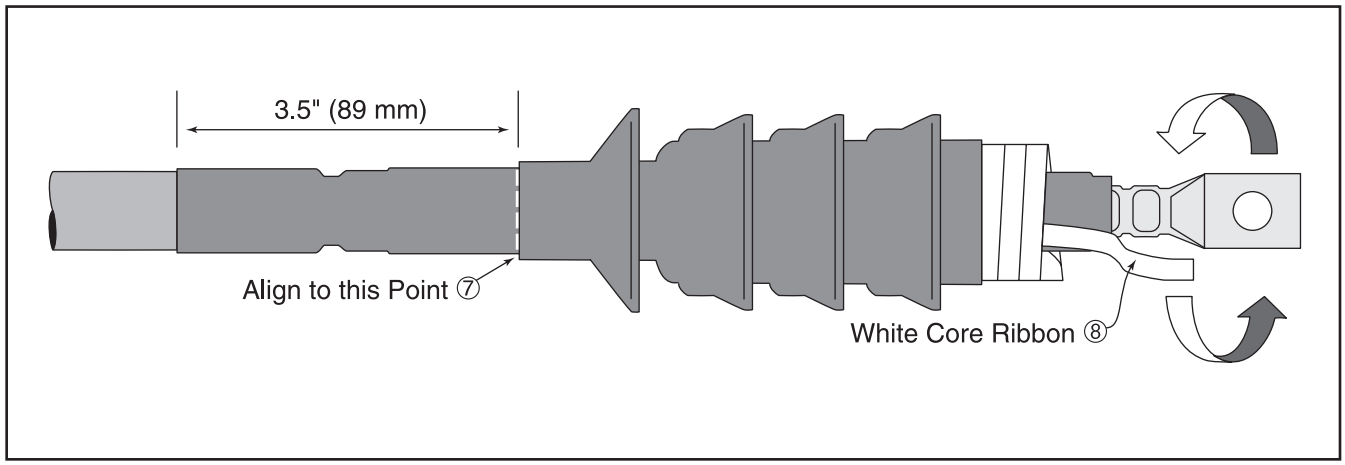


Figure 16

3M

Electrical Markets Division

6801 River Place Blvd.
Austin, TX 78726-9000
800-245-3573
Fax 800-245-0329
www.3M.com/electrical

78-8124-4348-5-B