

# 3M™ Cold Shrink QT-III Silicone Rubber Inverted Termination Kit

With High-K Stress Relief

For Jacketed Concentric Neutral (JCN) Cable and Concentric Neutral (CN) Cable

7653-S-INV-4, 7655-S-INV-4, 7655-S-INV-4(L),  
7656-S-INV-4

## Instructions

### IEEE Std. No. 48

Class 1 Termination

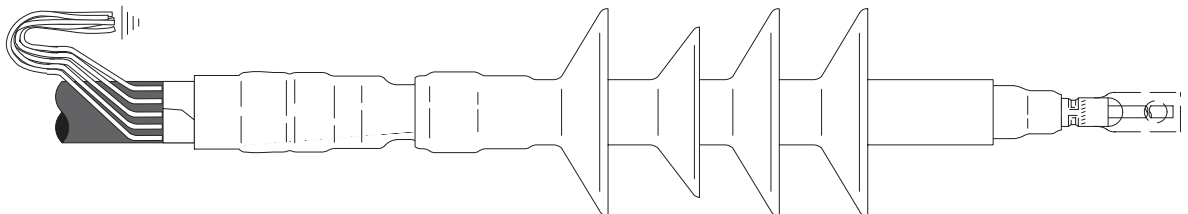
25/28 kV Class

35 kV Class

200 kV BIL

### CAUTION

Working around energized 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.



# 1.0 Kit Contents

- 1 High-K, Tracking Resistant, Silicone Rubber Termination
- 1 Tracking Resistant Silicone Rubber Skirt Assembly
- 2 Strips Scotch® Mastic Strip 2230 (black with white release liners, bagged)
- 1 Instruction Sheet

*Note: Do not use knives to open plastic bags.*

## Kit Selection Tables

*NOTE: Final Determination Factor is cable insulation diameter.*

For Use With Compression Lugs or Connectors							
Kit Number	Primary Insulation O.D. Range	Jacket O.D. Range	Conductor Size Range (AWG & kcmil)				
			5 kV	8 kV	15 kV	25/28 kV	35 kV
7653-S-INV-4	0.72" – 1.29" (18,3 – 32,8 mm)	1.04" – 1.60" (26,4 – 40,6 mm)	300–500 —	250–500 —	2/0 – 300 (70 – 150 mm <sup>2</sup> )	2 – 4/0 (35 – 120 mm <sup>2</sup> )	2 – 2/0 (35 – 70 mm <sup>2</sup> )
7655-S-INV-4	1.05" – 1.80" (26,7 – 45,7 mm)	1.39" – 2.40" (35,3 – 61,0 mm)	700–1500 —	600–1250 —	500 – 1000 (240 – 500 mm <sup>2</sup> )	250 – 800 (150 – 400 mm <sup>2</sup> )	3/0 – 600 (95 – 325 mm <sup>2</sup> )
7656-S-INV-4	1.53" – 2.32" (38,9 – 58,9 mm)	1.84" – 2.80" (46,7 – 71,1 mm)	1750–2000 —	1500–2000 —	1250 – 2000 (625 – 1000 mm <sup>2</sup> )	900 – 1750 (500 – 800 mm <sup>2</sup> )	700 – 1500 (400 – 725 mm <sup>2</sup> )

Table 1

For Use With 3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole						
Kit Number	Primary Insulation O.D. Range	Jacket O.D. Range	Conductor Size Range (AWG & kcmil)			3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole Part Number
			15 kV	25/28 kV	35 kV	
7653-S-INV-4	0.72" – 1.29" (18,3 – 32,8 mm)	1.04" – 1.60" (26,4 – 40,6 mm)	2/0 – 250 (70 – 150 mm <sup>2</sup> )	2 – 4/0 (35 – 120 mm <sup>2</sup> )	1/0 – 2/0 (60 mm <sup>2</sup> )	QL2-A-2-250
7655-S-INV-4	1.05" – 1.80" (26,7 – 45,7 mm)	1.39" – 2.40" (35,3 – 61,0 mm)	500 (240 mm <sup>2</sup> )	250 – 500 (150 – 240 mm <sup>2</sup> )	4/0 – 600 (120 – 325 mm <sup>2</sup> )	QL2-A-4/0-600
7655-S-INV-4	1.05" – 1.80" (26,7 – 45,7 mm)	1.39" – 2.40" (35,3 – 61,0 mm)	500 – 750 (240 – 325 mm <sup>2</sup> )	350 – 750 (185 – 325 mm <sup>2</sup> )	350 – 500 (185 – 240 mm <sup>2</sup> )	QL2-A-350-750
7655-S-INV-4(L)	1.15" – 1.90" (29,2 – 48,3 mm)	1.39" – 2.40" (35,3 – 61,0 mm)	750 – 1000 (400 – 500 mm <sup>2</sup> )	500 – 750 (240 – 325 mm <sup>2</sup> )	—	QL2-A-500-1000
7656-S-INV-4	1.53" – 2.32" (38,9 – 58,9 mm)	1.84" – 2.80" (46,7 – 71,1 mm)	—	—	750 (325 mm <sup>2</sup> )	QL2-A-350-750
7656-S-INV-4	1.53" – 2.32" (38,9 – 58,9 mm)	1.84" – 2.80" (46,7 – 71,1 mm)	—	—	750 – 1000 (400 – 500 mm <sup>2</sup> )	QL2-A-500-1000
7656-S-INV-4	1.53" – 2.32" (38,9 – 58,9 mm)	1.84" – 2.80" (46,7 – 71,1 mm)	1250 (625 mm <sup>2</sup> )	1000 – 1250 (600 – 625 mm <sup>2</sup> )	1000 – 1250 (600 – 625 mm <sup>2</sup> )	QL2-A-1000-1250

Table 2

# Instructions for Jacketed Concentric Neutral (JCN) Cable

## 2.0 Prepare Cable

- 2.1 Check to be sure cable size fits within kit size range as shown in Table 1 (For Use With Compression Lugs or Connectors), or Table 2 (For Use With 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole).
- 2.2 Train cable into position and cut to length required for installation. Allow sufficient neutral wire length for grounding connection.
- 2.3 Prepare cable using dimensions shown in Figure 1. **BE SURE TO ALLOW FOR DEPTH OF TERMINAL LUG OR CONNECTOR.** If using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Mechanical Shearbolt Connector QCI Series, proceed to Step 2.4. If using a Crimp Type (Compression) lug, measure the depth of the barrel, or if using a Crimp Type (Compression) connector, measure to the barrel center stop/midpoint, and see the NOTE below, in order to calculate the Insulation Removal Length. Table 4 can be used to assist in calculating the total Jacket Removal Length when using a compression lug or connector.

**NOTE: Provide additional exposed conductor distance to account for growth during crimping of ALUMINUM lugs or connectors as follows:**

Aluminum Lug and Connector Growth Allowance	2 - 350 1/4" (6 mm)	400 - 650 1/2" (13 mm)	750 - 1000 3/4" (19 mm)	1250 - 2000 Field Determined
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Table 3

**NOTE: It is imperative to remove all remnants of the semi-con layer, even if the semi-con layer comes off as one layer. There should not be any remaining black areas, or particles, on the cable insulation layer.**

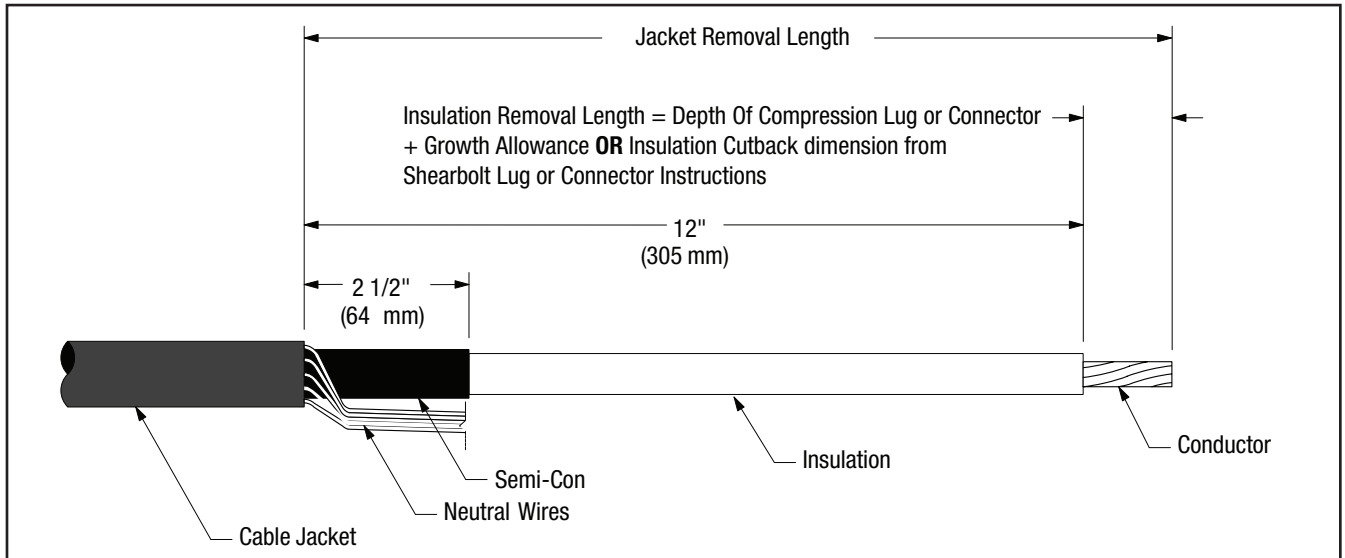


Figure 1

3M™ Cold Shrink QT-III Silicone Rubber Inverted Termination Kit With High-K Stress Relief

Jacket Removal Calculation Table - Jacketed Concentric Neutral (JCN) Cable - Crimp Type (Compression) Lugs / Connectors - 7653-S-INV-4, 7655-S-INV-4, 7655-S-INV-4(L), 7656-S-INV-4			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12"	305 mm	Value from Figure 1
Insulation Removal Length = Depth of Crimp Type (Compression) Terminal Lug or Connector Barrel (See NOTES column.)	+	+	Measure full depth of bore for lugs and to the center stop for connectors.
Growth Allowance (Aluminum Only) for Crimp Type (Compression) Lug / Connector (See NOTES column.)	+	+	See Table 3 for correct growth allowance.  <b>This measurement applies only to Aluminum lugs / connectors.</b>
TOTAL JACKET REMOVAL LENGTH	=	=	

Table 4

- 2.4 If using 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole, or 3M Mechanical Shearbolt Connector QCI Series, refer to the Instructions that are packed with the Shearbolt product for the Insulation Cutback length for the specific Shearbolt Lug or Connector being used. Table 5 can be used to assist in calculating the total Jacket Removal Length when using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Shearbolt Connector QCI Series.
- 2.5 Select a Scotch® Mastic Strip 2230 from kit and remove white release liners. Using light tension, apply a **SINGLE WRAP** of mastic around the cable jacket 1/4" (6 mm) from cut edge (Figure 2). Cut off excess.

Jacket Removal Calculation Table - Jacketed Concentric Neutral (JCN) Cable - 3M™ Mechanical Shearbolt Lugs QL2 Series / 3M™ Mechanical Shearbolt Connector QCI Series - 7653-S-INV-4, 7655-S-INV-4, 7655-S-INV-4(L), 7656-S-INV-4			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12"	305 mm	Value from Figure 1
Insulation Removal Length = Depth of Mechanical Shearbolt QL2 Series Terminal Lug or QCI Series Connector Barrel (See NOTES column.)	+	+	Obtain Insulation Removal Length: For Mechanical Shearbolt Lugs see 3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole Instructions.  For Mechanical Shearbolt Connectors see 3M™ Mechanical Shearbolt Connectors QCI Series Instructions.
TOTAL JACKET REMOVAL LENGTH	=	=	

Table 5

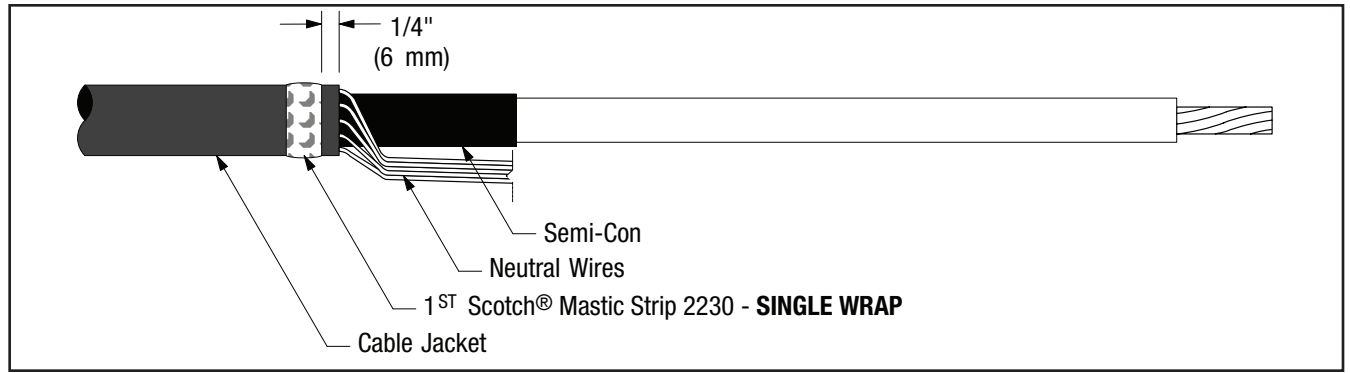


Figure 2

- 2.6 Bend neutral wires back over applied sealing mastic and secure to cable jacket **4 1/2" (114 mm) from cable semi-con edge using vinyl tape (see NOTE and Figure 3).**

**NOTE: Position vinyl tape with care, it also serves as a marker for positioning the termination.**

- 2.7 Select second Scotch® Mastic Strip 2230 from kit and remove white release liners. Apply a second **SINGLE WRAP** of mastic over the neutral wires and previously applied mastic (Figure 3). Cut off excess.
- 2.8 Compress neutral wires into Scotch® Mastic Strip 2230 by over-wrapping seal strips with two highly stretched layers of electrical grade vinyl tape (Figure 3). **Be sure to cover all exposed mastic AND TO READ THE CONCENTRIC NEUTRAL WIRES NOTE, OR THE SPECIAL FLAT STRAP NEUTRAL WIRES NOTE, BELOW CONCERNING APPLICATION OF THE TWO HIGHLY STRETCHED LAYERS OF ELECTRICAL GRADE VINYL TAPE.**

**CONCENTRIC NEUTRAL WIRES NOTE: DO NOT completely cover the concentric neutral wires with electrical grade vinyl tape when applying over the Scotch® Mastic Strip 2230 per Step 2.8. LEAVE AT LEAST 1" (25 MM) OF EXPOSED CONCENTRIC NEUTRAL WIRES between the Vinyl Tape Marker applied in step 2.6 and the start of the two half-lapped layers of electrical grade vinyl tape covering the Scotch® Mastic Strip 2230 applied in Step 2.8.**

**SPECIAL FLAT STRAP NEUTRAL WIRES NOTE: If using flat strap neutral cable, completely cover the flat strap neutral wires starting at the Vinyl Tape Marker (that was applied in Step 2.6) and proceed towards the edge of the semi-con layer where the flat strap neutrals are bent back onto the cable jacket, using two half-lapped layers of electrical grade vinyl tape. The vinyl tape can extend onto the semi-con layer up to 1/4" (6 mm).**

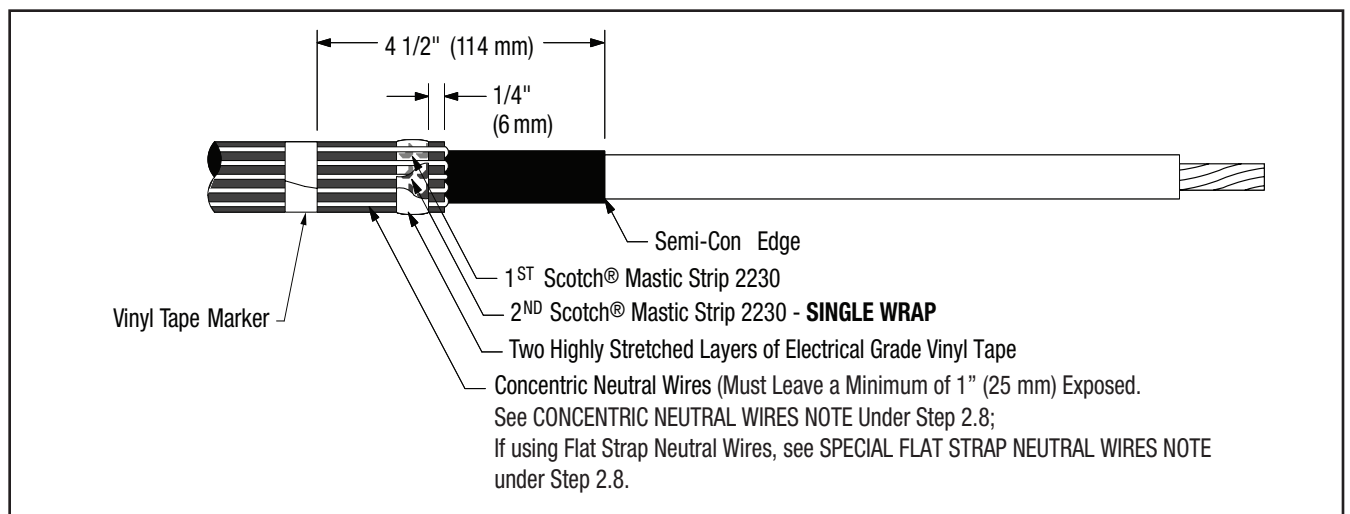


Figure 3

## 3.0 Install Lug or Connector

### Important Packaging Notice

In order to make sure that you receive an undamaged termination, this 3M Cold Shrink QT-III Silicone Rubber Termination is packed with a RED SHIPPING CORE inside of the white core. Please remove the red shipping core BEFORE you install the termination. This shipping core can be recycled with other polypropylene waste.

- 3.1 Check to insure 3M Cold Shrink QT-III Silicone Rubber Termination assembly fits over the selected lug or connector BEFORE installing the lug or connector.** If lug or connector (Figure 4) will not fit through the termination core, clean the insulation (per Step 4.0) and slide termination on cable before installing lug or connector. **DO NOT REMOVE CORE AT THIS TIME.**

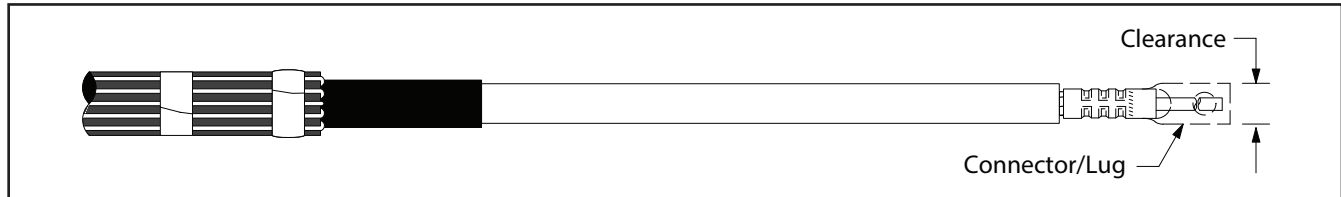


Figure 4

- 3.2** For 3M Compression Lugs and 3M Stem Connectors:
- Refer to pages 14 - 16 for 3M Connector and Lug crimping information.
  - For Aluminum Conductors - Thoroughly wire brush conductor strands to remove aluminum oxide layer. Insert conductor into lug or connector and then remove conductor. This will transfer some of the antioxidant paste onto the conductor. Wire brush the antioxidant paste into the strands. Immediately insert conductor into lug or connector barrel as far as it will go.

*Note: Die/crimper rotation between consecutive crimps is RECOMMENDED.*

- Position connector or lug and crimp according to manufacturer's directions. Remove excess oxide inhibitor and sharp crimp flashings following crimping.
- 3.3** For 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole or 3M Mechanical Shearbolt Connector QCI Series:
- Refer to the Instructions that are packed with the Shearbolt product for the installation procedures.

## 4.0 Clean Cable Insulation and Lug or Connector Barrel Using Standard Practice

- 4.1** If abrasive must be used:
- Use on insulation only. **DO NOT USE ABRASIVE ON SEMI-CON INSULATION SHIELD!**
  - Use **ONLY aluminum oxide abrasive**; grit 120 or finer.
  - Be careful not to reduce the cable insulation diameter below that allowed by the kit.
- 4.2** Wipe the cable insulation, and lug or connector, with an approved cable cleaner/solvent (such as 3M Cable Cleaning Solvent CC Series) **AND ALLOW IT TO DRY BEFORE INSTALLING TERMINATION. A clean lint-free cloth, inexpensive paper towel or 3M Cable Cleaning Pads CC-DRY (not supplied with kit) can be used to dry the insulation surface if air drying time is of concern. DO NOT ALLOW SOLVENT TO TOUCH SEMI-CON INSULATION SHIELD!**

## 5.0 Install Termination and Skirted Insulator Assembly

- 5.1** Slide the termination body onto the cable and remove core. Make sure the termination body (not the core) is butted up to the edge of the vinyl tape marker previously applied (Figure 5). Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 5). Be sure to alternate the pulling and unwinding actions (pull-unwind-pull-unwind-etc.) to help prevent the core material from binding up as the core is being removed.

**NOTE: Once the tubular termination body makes contact over the mastic seal area, there is no need to continue supporting the assembly. DO NOT PUSH OR PULL ON THE TERMINATION ASSEMBLY WHILE UNWINDING THE CORE.**

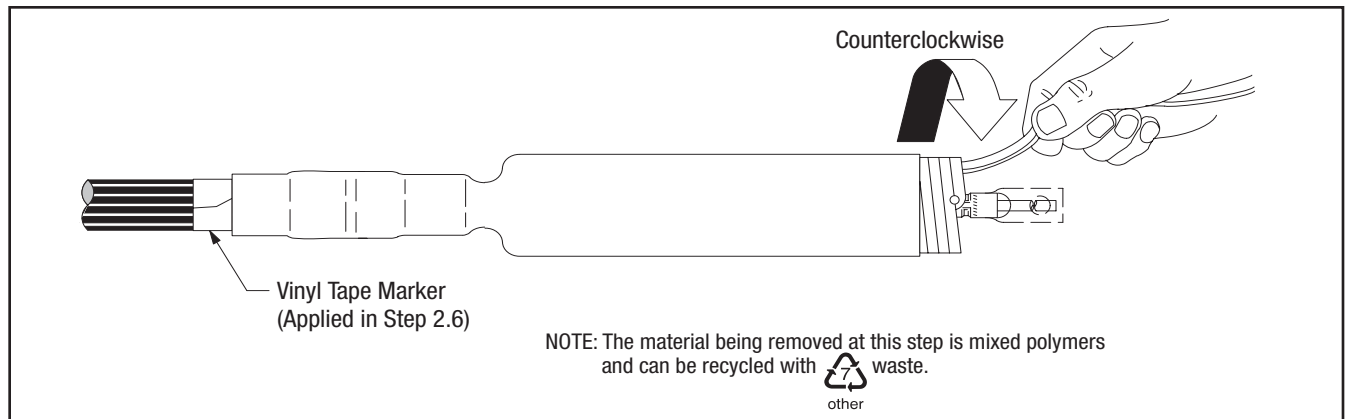


Figure 5

5.2 Slide the skirted insulator assembly over the previously applied tubular termination assembly. Position the skirted insulator assembly 3 1/2" (89 mm) from the marker tape (applied in Step 2.6) and remove core. Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 6). Be sure to alternate the pulling and unwinding actions (pull-unwind-pull-unwind-etc.) to help prevent the core material from binding up as the core is being removed. Make sure that the skirted insulator (not the core) is 3 1/2" (89 mm) from the marker tape (Figure 6).

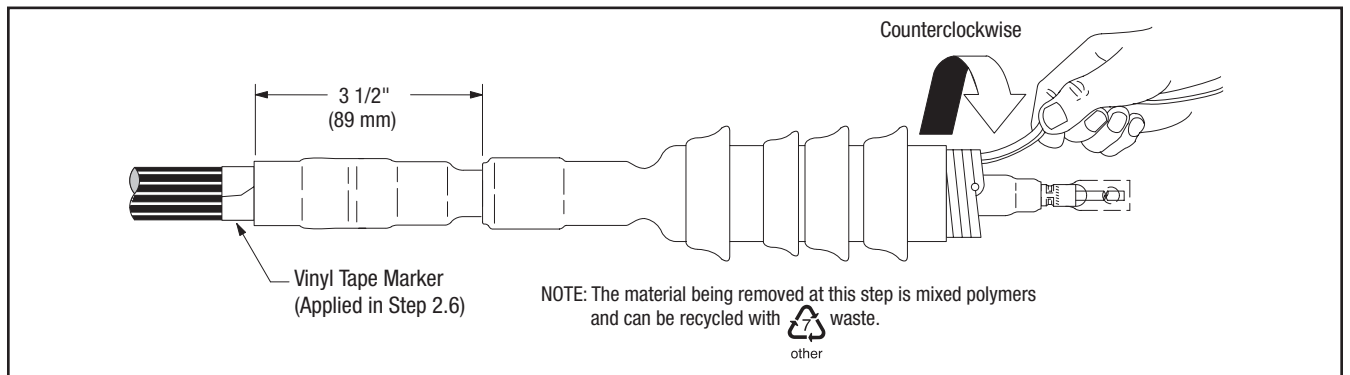
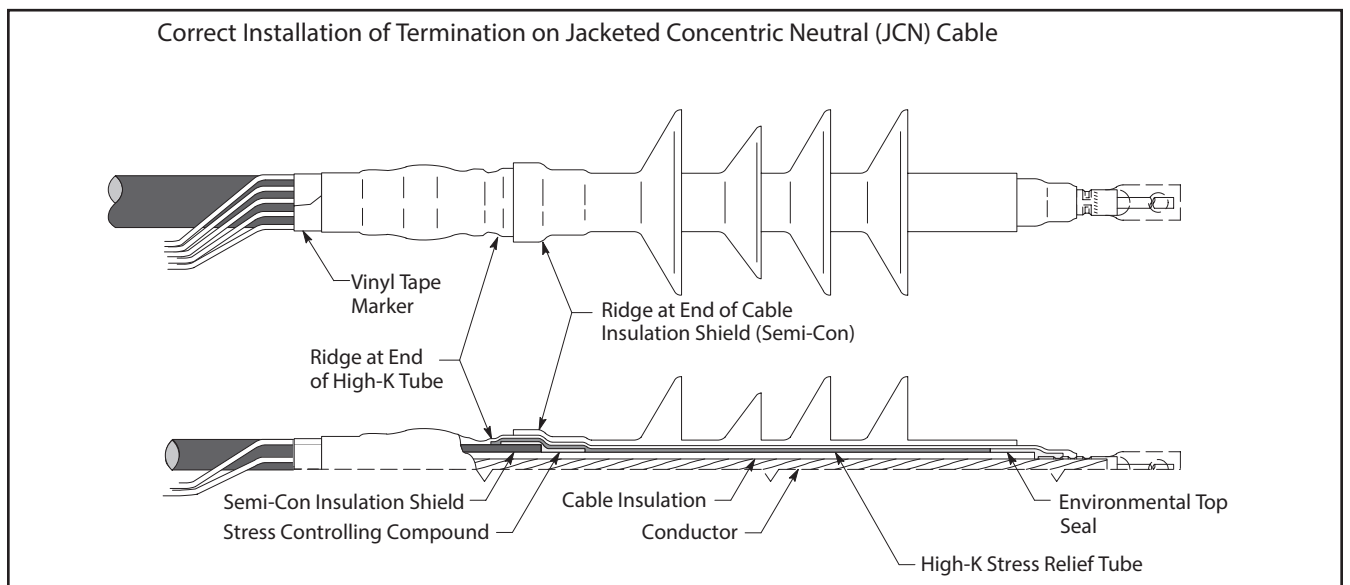


Figure 6

5.3 Connect all the concentric neutral wires to system ground according to standard practice.



**NOTE: Conventional upright operation. The skirted insulator assembly may be installed in the conventional upright position. See pages 12 and 13 for installation instructions.**

# Instructions for Concentric Neutral (CN) Cable

## 6.0 Prepare Cable

- 6.1 Check to be sure cable size fits within kit range as shown in Table 1 (For Use With Compression Lugs or Connectors), or Table 2 (For Use With 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole).
- 6.2 Train cable into position and cut to length required for installation. Allow sufficient neutral wire length for grounding connection.
- 6.3 Prepare cable using dimensions shown in Figure 7. **BE SURE TO ALLOW FOR DEPTH OF TERMINAL LUG OR CONNECTOR.** If using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Mechanical Shearbolt Connector QCI Series, proceed to Step 6.4. If using a Crimp Type (Compression) lug, measure the depth of the barrel. If using a Crimp Type (Compression) connector, measure to the barrel center stop/midpoint, and see the NOTE below in order to calculate the Insulation Removal Length. Table 7 can be used to assist in calculating the total Jacket Removal Length when using a compression lug or connector.

**NOTE: Provide additional exposed conductor distance to account for growth during crimping of ALUMINUM lugs or connectors as follows:**

Aluminum Lug and Connector Growth Allowance	2 - 350	400 - 650	750-1000	1250-2000
	1/4" (6 mm)	1/2" (13 mm)	3/4" (19 mm)	Field Determined

Table 6

**NOTE: It is imperative to remove all remnants of the semi-con layer, even if the semi-con layer comes off as one layer. There should not be any remaining black areas, or particles, on the cable insulation layer.**

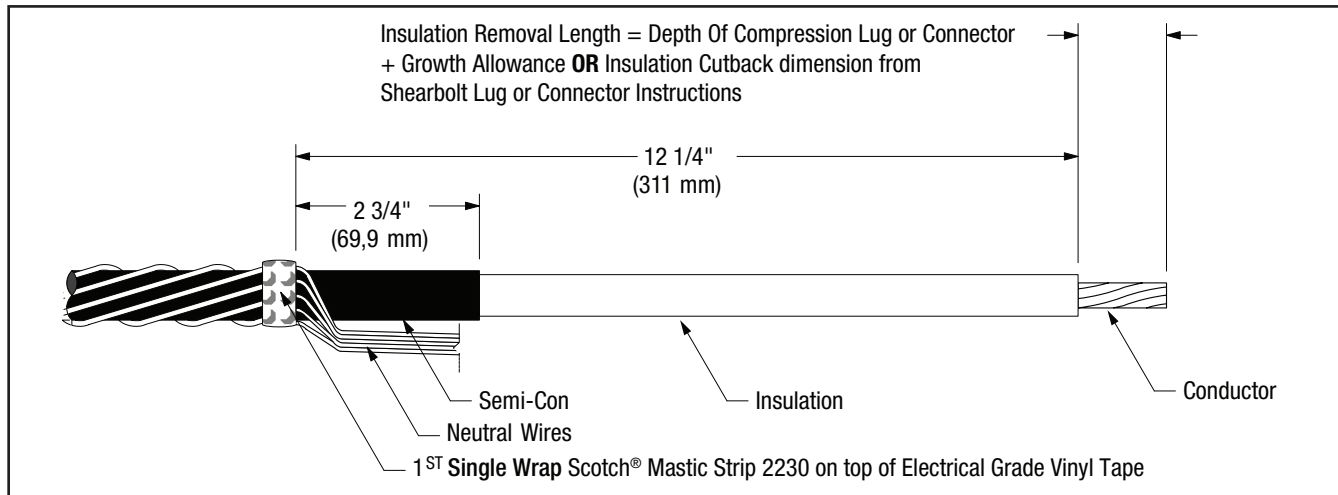


Figure 7

- 6.4 If using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Shearbolt Connector QCI Series, refer to the Instructions that are packed with the Shearbolt product for the Insulation Cutback length for the specific Shearbolt Lug or Connector being used. Table 8 can be used to assist in calculating the total Jacket Removal Length when using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Shearbolt Connector QCI Series.
- 6.5 Secure neutral wires to cable with several highly stretched layers of electrical grade vinyl tape around the cable and neutral wires 2 3/4" (69,9 mm) from cut edge of cable semi-con (Figure 7).
- 6.6 Select a Scotch® Mastic Strip 2230 from kit and remove white release liners. Using light tension, apply a **SINGLE WRAP** of mastic around the cable and neutral wires 2 3/4" (69,9 mm) from cut edge of cable semi-con, directly on top of vinyl tape (Figure 7). Cut off excess.



Jacket Removal Calculation Table - Concentric Neutral (CN) Cable - Crimp Type (Compression) Lugs / Connectors- 7653-S-INV-4, 7655-S-INV-4, 7655-S-INV-4(L), 7656-S-INV-4			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12.25"	311 mm	Value from Figure 7
Insulation Removal Length = Depth of Crimp Type (Compression) Terminal Lug or Connector Barrel (See NOTES column.)	+	+	Measure full depth of bore for lugs and to the center stop for connectors.
Growth Allowance (Aluminum Only) for Crimp Type (Compression) Lug / Connector (See NOTES column.)	+	+	See Table 6 for correct growth allowance.  <b>This measurement applies only to Aluminum lugs / connectors.</b>
TOTAL JACKET REMOVAL LENGTH	=	=	

Table 7

Jacket Removal Calculation Table - Concentric Neutral (CN) Cable - 3M™ Mechanical Shearbolt Lugs QL2 Series / 3M™ Mechanical Shearbolt Connector QCI Series - 7653-S-INV-4, 7655-S-INV-4, 7655-S-INV-4(L), 7656-S-INV-4			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12.25"	311 mm	Value from Figure 7
Insulation Removal Length = Depth of Mechanical Shearbolt QL2 Series Terminal Lug or QCI Series Connector Barrel (See NOTES column.)	+	+	Obtain Insulation Removal Length:  For Mechanical Shearbolt Lugs see 3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole Instructions.  For Mechanical Shearbolt Connectors see 3M™ Mechanical Shearbolt Connectors QCI Series Instructions.
TOTAL JACKET REMOVAL LENGTH	=	=	

Table 8

6.7 Bend neutral wires back over applied sealing mastic and secure to cable 4 1/2" (114 mm) from cable semi-con edge using vinyl tape (see NOTE and Figure 8).

**NOTE: Position vinyl tape with care, it also serves as a marker for positioning the termination.**

6.8 Select second Scotch® Mastic Strip 2230 from kit and remove white release liners. Apply a second **SINGLE WRAP** of mastic over the neutral wires and previously applied mastic (Figure 8). Cut off excess.

6.9 Compress neutral wires into mastic by over-wrapping seal strips with two highly stretched layers of electrical grade vinyl tape (Figure 8). **Be sure to cover all exposed mastic.**

**NOTE: DO NOT completely cover the neutral wires with electrical grade vinyl tape when applying over the Scotch® Mastic Strip 2230 per Step 6.9. LEAVE AT LEAST 1" (25 MM) OF EXPOSED NEUTRAL WIRES between the Vinyl Tape Marker applied in step 6.7 and the start of the two half-lapped layers of electrical grade vinyl tape covering the Scotch® Mastic Strip 2230 applied in Step 6.9.**

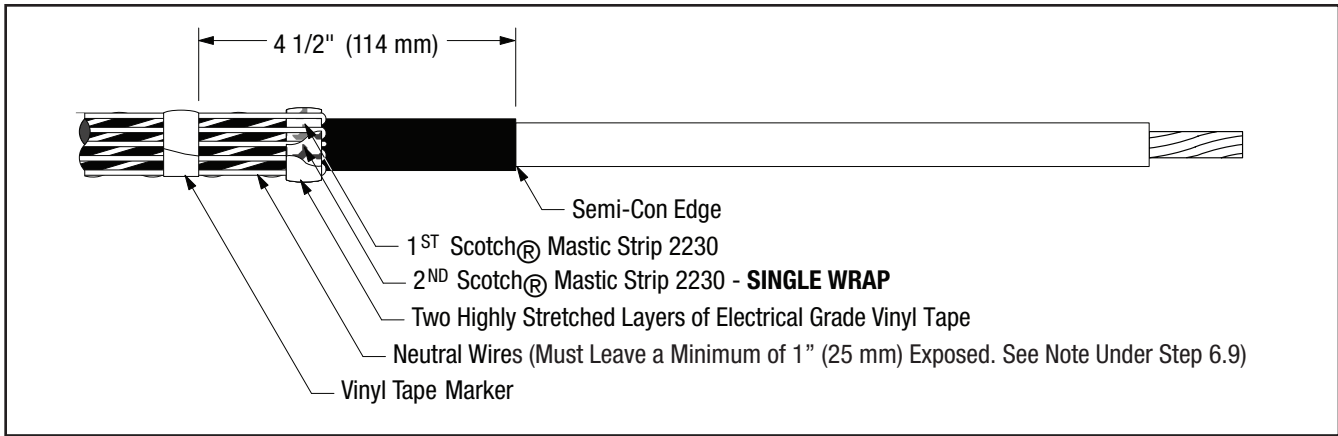


Figure 8

## 7.0 Install Lug or Connector

### Important Packaging Notice

In order to make sure that you receive an undamaged termination, this 3M Cold Shrink QT-III Silicone Rubber Termination is packed with a RED SHIPPING CORE inside of the white core. Please remove the red shipping core BEFORE you install the termination. This shipping core can be recycled with other polypropylene waste.

- 7.1 Check to insure 3M Cold Shrink QT-III Silicone Rubber Termination assembly fits over the selected lug or connector BEFORE installing the lug or connector.** If lug or connector (Figure 9) will not fit through the termination core, clean the insulation (per Step 8.0) and slide termination on cable before installing lug or connector. **DO NOT REMOVE CORE AT THIS TIME**

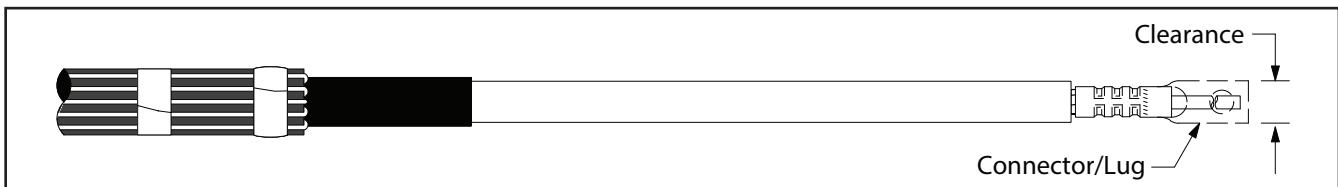


Figure 9

- 7.2** For 3M Compression Lugs and 3M Stem Connectors:
- Refer to pages 14 - 16 for 3M Connector and Lug crimping information.
  - For Aluminum Conductors - Thoroughly wire brush conductor strands to remove aluminum oxide layer. Insert conductor into lug or connector and then remove conductor. This will transfer some of the antioxidant paste onto the conductor. Wire brush the antioxidant paste into the strands. Immediately insert conductor into lug or connector barrel as far as it will go.

**Note: Die/crimper rotation between consecutive crimps is RECOMMENDED.**

- Position connector or lug and crimp according to manufacturer's directions. Remove excess oxide inhibitor and sharp crimp flashings following crimping.
- 7.3** For 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole or 3M Mechanical Shearbolt Connector QCI Series:
- Refer to the Instructions that are packed with the Shearbolt product for the installation procedures.

## 8.0 Clean Cable Insulation and Lug or Connector Barrel Using Standard Practice

- 8.1** If abrasive must be used:
- Use on insulation only. **DO NOT USE ABRASIVE ON SEMI-CON INSULATION SHIELD!**
  - Use **ONLY aluminum oxide abrasive**; grit 120 or finer.
  - Be careful not to reduce the cable insulation diameter below that allowed by the kit.
- 8.2** Wipe the cable insulation, and lug or connector, with an approved cable cleaner/solvent (such as 3M Cable Cleaning Solvent CC Series) **AND ALLOW IT TO DRY BEFORE INSTALLING TERMINATION. A clean lint-free cloth, inexpensive paper towel or 3M Cable Cleaning Pads CC-DRY (not supplied with kit) can be used to dry the insulation surface if air drying time is of concern. DO NOT ALLOW SOLVENT TO TOUCH SEMI-CON INSULATION SHIELD!**

## 9.0 Install Termination and Skirted Insulator Assembly

- 9.1 Slide the termination body onto the cable and remove core. Make sure the termination body (not the core) is butted up to the edge of the vinyl tape marker previously applied (Figure 10). Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 10). Be sure to alternate the pulling and unwinding actions (pull-unwind-pull-unwind-etc.) to help prevent the core material from binding up as the core is being removed.

**NOTE:** Once the tubular termination body makes contact over the mastic seal area, there is no need to continue supporting the assembly. **DO NOT PUSH OR PULL ON THE TERMINATION ASSEMBLY WHILE UNWINDING THE CORE.**

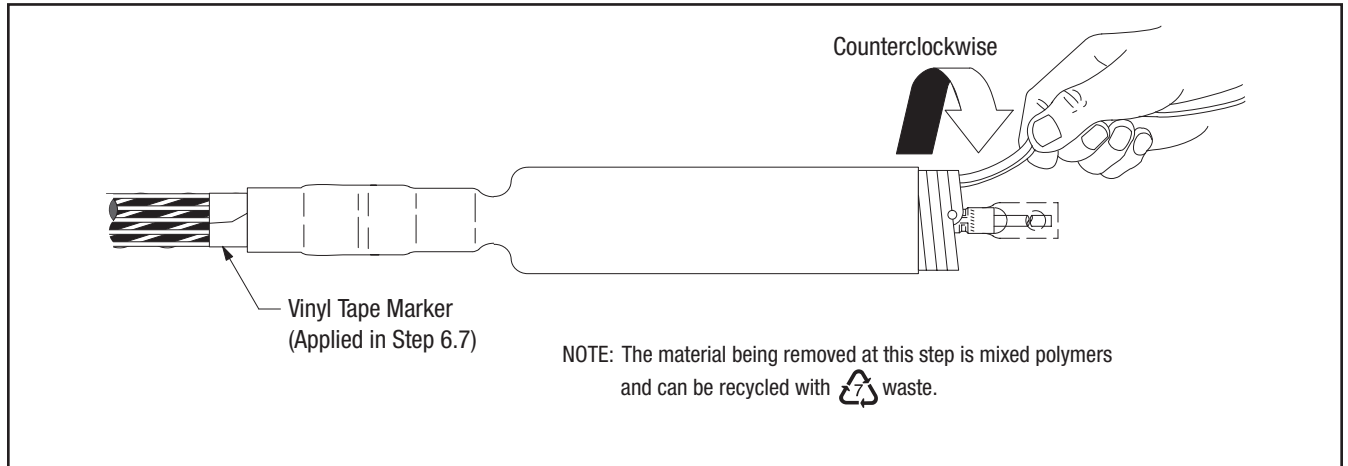


Figure 10

- 9.2 Slide the skirted insulator assembly over the previously applied tubular termination assembly. Position the skirted insulator assembly 3 1/2" (89 mm) from the marker tape (applied in Step 6.7) and remove core. Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 11). Be sure to alternate the pulling and unwinding actions (pull-unwind-pull-unwind-etc.) to help prevent the core material from binding up as the core is being removed. Make sure that the skirted insulator (not the core) is 3 1/2" (89 mm) from the marker tape (Figure 11).

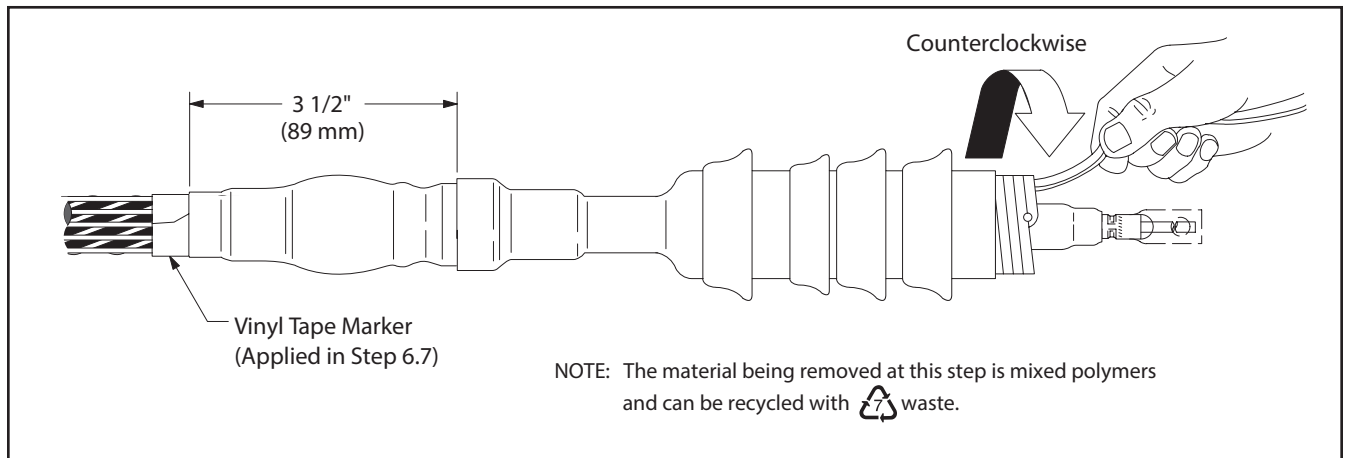
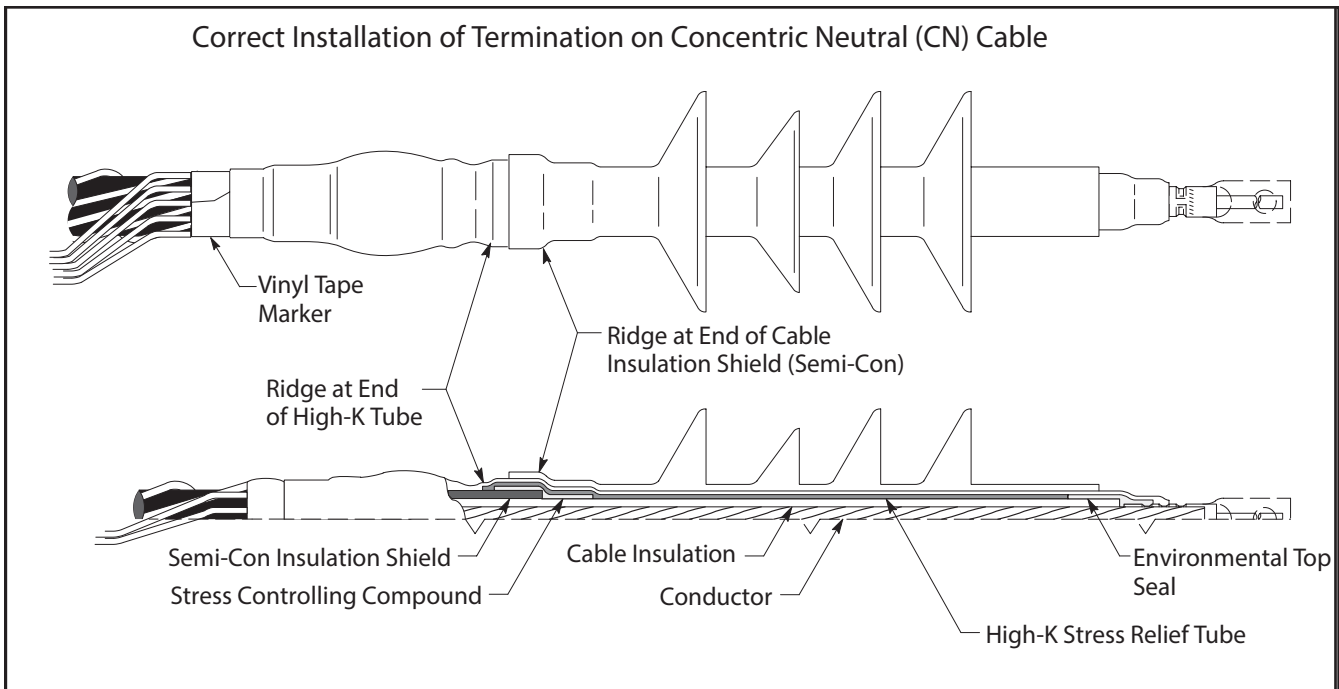


Figure 11

- 9.3 Collect all concentric neutral wires together and connect to system ground according to standard practice.



**NOTE:** Conventional upright operation. The skirted insulator assembly may be installed in the conventional upright position. See pages 12 and 13 for installation instructions.

## Conventional Upright Operation

### 10.0 Conventional Upright Operation

#### Important Packaging Notice

In order to make sure that you receive an undamaged termination, this 3M Cold Shrink QT-III Silicone Rubber Termination is packed with a RED SHIPPING CORE inside of the white core. Please remove the red shipping core BEFORE you install the termination. This shipping core can be recycled with other polypropylene waste.

10.1 Slide the tubular termination body onto the cable and remove core. Make sure the termination body (not the core) is butted up to the edge of the vinyl tape marker previously applied (Figure 12). Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 12). Be sure to alternate the pulling and unwinding actions (pull-unwind-pull-unwind-etc.) to help prevent the core material from binding up as the core is being removed.

**NOTE:** Once the termination body makes contact over the mastic seal area, there is no need to continue supporting the assembly. **DO NOT PUSH OR PULL ON THE TERMINATION ASSEMBLY WHILE UNWINDING THE CORE.**

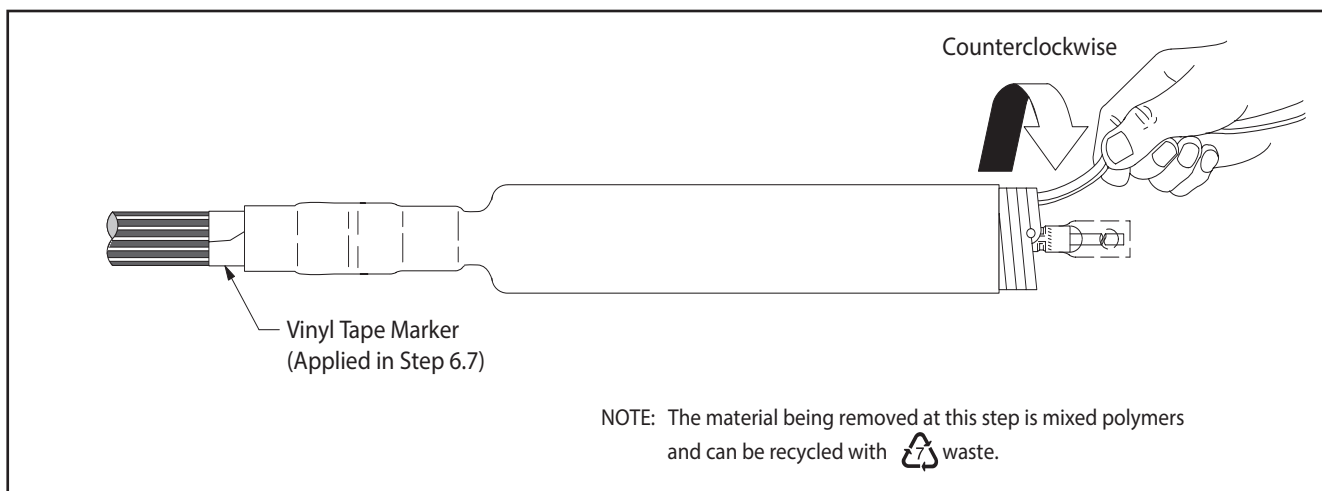


Figure 12

### 3M™ Cold Shrink QT-III Silicone Rubber Inverted Termination Kit With High-K Stress Relief

10.2 Slide the skirted insulator assembly over the previously applied tubular termination assembly. Position the skirted insulator assembly 1/4" (6,4 mm) from the top edge of the tubular termination assembly and remove core. Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 13). Be sure to alternate the pulling and unwinding actions (pull-unwind-pull-unwind-etc.) to help prevent the core material from binding up as the core is being removed. Make sure that the skirted insulator (not the core) is 1/4" (6,4 mm) from the top edge of the tubular assembly (Figure 13).

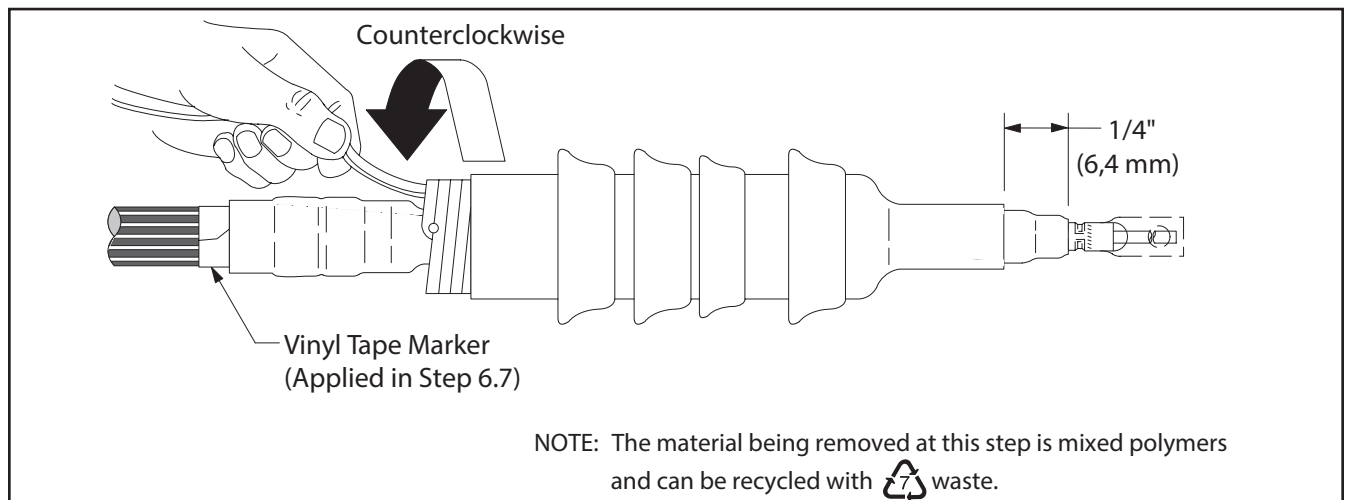
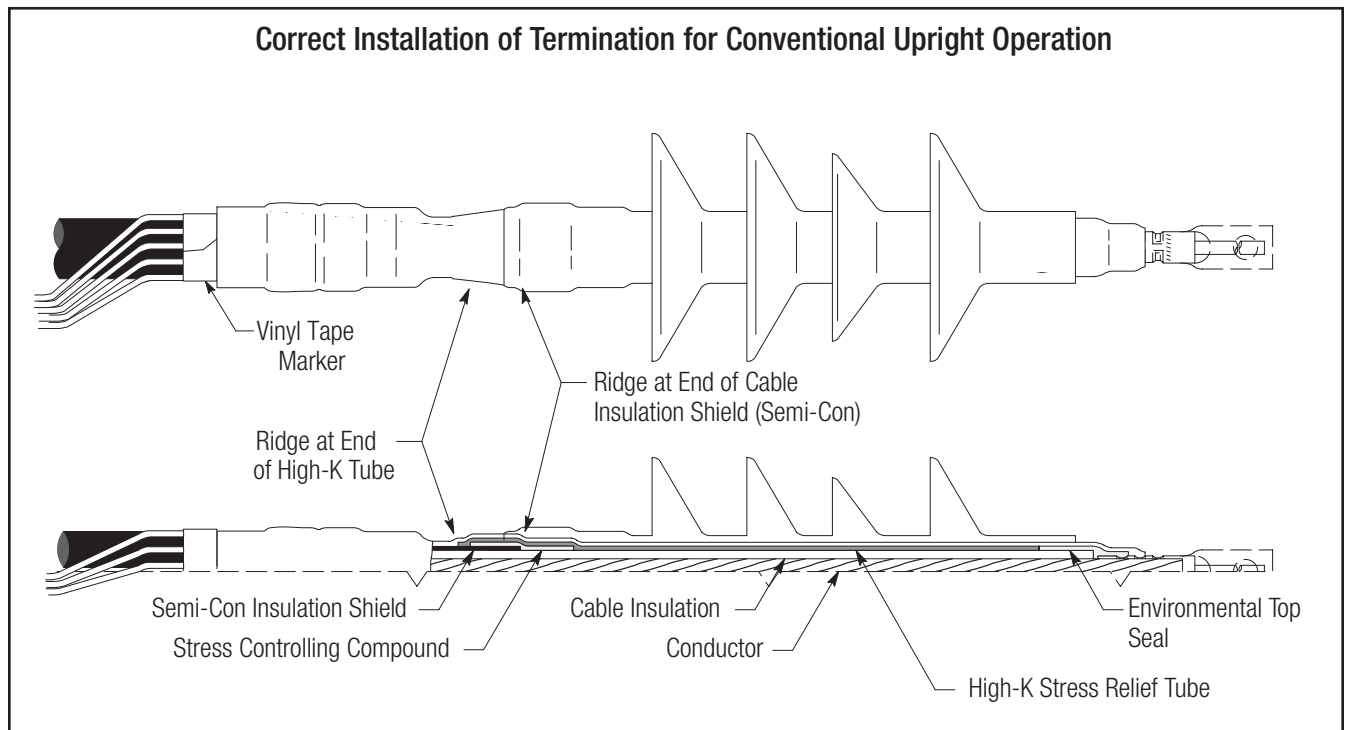
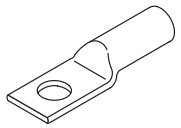
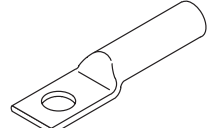
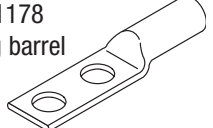


Figure 13

10.3 Collect all concentric neutral wires together and connect to system ground according to standard practice.



# Tooling Index

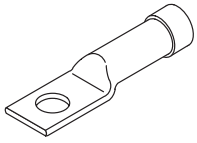
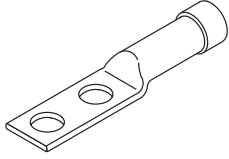
Lug and Crimping Information for 3M™ Scotchlok™ Copper Lugs		
30014 thru 30045 One hole 	31036 thru 31068 One hole-long barrel 	31145 thru 31178 Two hole-long barrel 

Cable Size AWG/ kcmil	Stud Size (in.)	3M™ Scotchlok™ Copper Lug Number	Crimping Tool-Die Sets (Minimum Number Of Crimps)							
			Burdny Corporation				Thomas & Betts Corporation			Square D Co. Anderson Div.
			MD6	MY29	Y34A	Y35, Y39, Y45*, Y46*	TBM 5	TBM 8	TBM 15	VC6-3, VC6-FT**
6	10 1/4 5/16	30014 30015 30016	–	6AWG(1)	–	U5CRT(1)	Blue(1)	Blue(1)	–	(1)
4	10 1/4 3/8	30018 30019 30021	W161(1)	4AWG(1)	A4CR(1)	U4CRT(1)	Grey(1)	Grey(1)	–	(1)
2	1/4 5/16 3/8	30022 30023 30024	W162(2)	2AWG(1)	A2CR(1)	U2CRT(2)	Brown(1)	Brown(1)	33(1)	(2)
1	5/16 3/8	30027 30028	–	1AWG(1)	A1CR(1)	U1CRT(2)	Green(1)	Green(1)	37(1)	(2)
1/0	5/16 3/8	30031 30032	W163(2)	1/0(1)	A25R(1)	U25RT(1)	Pink(2)	Pink(2)	42H(2)	(1)
2/0	3/8 3/8	30036 31036	W241(2) W241(3)	2/0(1) 2/0(2)	A26R(1) A26R(2)	U26RT(2) U26RT(3)	Black(2) Black(3)	Black(2) Black(3)	45(1) 45(2)	(1) (2)
3/0	1/2 1/2	30041 31041	W243(2) W243(3)	3/0(1) 3/0(2)	A27R(1) A27R(2)	U27RT(2) U27RT(3)	Orange(2) Orange(3)	Orange(2) Orange(3)	50(1) 50(2)	(2) (3)
4/0	1/2 1/2 1/2	30045 31045 31145	BG(3) BG(4) BG(4)	4/0(1) 4/0(2) 4/0(2)	A28R(2)	U28RT(2) U28RT(3) U28RT(3)	Purple(2) Purple(3) Purple(3)	Purple(2) Purple(3) Purple(3)	54H(2) 54H(3) 54H(3)	(2) (3) (3)
250	1/2 1/2	31049 31149	W166(4)	250(2)	A29R(2)	U29RT(3)	Yellow(2)	Yellow(2)	62(2)	(2)
300	1/2 1/2	31053 31153	–	–	A30R(2)	U30RT(3)	–	White(3)	66(3)	(3)
350	1/2 1/2	31056 31156	–	–	A31R(2)	U31RT(3)	–	Red(4)	71H(4)	–
400	1/2 1/2	31060 31160	–	–	A32R(2)	U32RT(3)	–	Blue(4)	76H(4)	–
500	1/2 5/8 1/2	31066 31067 31166	–	–	A34R(2)	U34RT(3)	–	Brown(4)	87H(4)	–
600	1/2 1/2	31068 31168	–	–	–	U36RT(3)	–	Green(4)	94H(4)	–
750	1/2	31172	–	–	–	Y39, Y45, Y46 U39RT(5)	–	–	106H(4)	–
1000	1/2	31178	–	–	–	Y45: S44RT(6) Y46: P44RT(6)	–	–	125H(4)	–

\* Y45 and Y46 accept all Y35 dies (“U” series). For Y45 use PT6515 adapter. For Y46 use PUADP adapter.

\*\* Anderson VC6-3 and VC6-FT require no die set.

# Tooling Index

Lug and Crimping Information for 3M™ Scotchlok™ Copper/Aluminum Lugs															
40016 thru 40079 One hole								40132 thru 40178 Two hole							
Cable Size AWG/ kcmil	Stud Size (in.)	3M™ Scotchlok™ Lug Number	Crimping Tool-Die Sets (Minimum Number Of Crimps)												
			Burdny Corporation					Thomas & Betts Corporation				Square D Co. Anderson Div.		ITT Blackburn Co.	Kearny Nat'l Div.
			MD6	MY29	Y34A	Y35, Y39, Y45*, Y46*	Y1000**	TBM 5	TBM 8	TBM 12	TBM 15	VC6-3** VC6-FT**	VC8C**	OD58	TYPE 0
6	5/16	40016	W161(1)	6AWG(1)	A6CAB(1)	U6CABT(1)	(1)	Grey(1)	Grey(1)	-	29(1)	(1)	-	BY19(3)	J(3)
4	5/16	40020	W162(3)	4AWG(1)	A4CAB(1)	U4CABT(1)	(1)	Green(2)	Green(2)	-	37(1)	(1)	-	BY53(3)	P(3)
2	3/8	40024	W163(3)	2AWG(1)	A2CAB(1)	U2CABT(1)	(1)	Pink(2)	Pink(2)	-	42H(2)	(1)	-	BY23(3)	1/2(3)
	1/2	40025	W163(3)	2AWG(1)	A2CAB(1)	U2CABT(1)	(1)	Pink(2)	Pink(2)	-	42H(2)	(1)	-	BY23(3)	1/2(3)
1	3/8	40028	W163(3)	1AWG(1)	A1CAR(1)	U1CART(1)	(1)	Gold(2)	Gold(2)	-	45(1)	(1)	-	BY23(3)	1/2(3)
	1/2	40029	W163(3)	1AWG(1)	A1CAR(1)	U1CART(1)	(1)	Gold(2)	Gold(2)	-	45(1)	(1)	-	BY23(3)	1/2(3)
1/0	3/8	40032	W241(3)	1/0(1)	A25AR(1)	U25ART(1)	(1)	Tan(2)	Tan(2)	-	50(1)	(1)	-	BY25(3)	5/8-1(3)
	1/2	40033	W241(3)	1/0(1)	A25AR(1)	U25ART(1)	(1)	Tan(2)	Tan(2)	-	50(1)	(1)	-	BY25(3)	5/8-1(3)
	3/8	40132	W241(3)	1/0(1)	A25AR(1)	U25ART(1)	(1)	Tan(2)	Tan(2)	-	50(1)	(1)	-	BY25(3)	5/8-1(3)
2/0	1/2	40037	BG(4)	2/0(1)	A26AR(2)	U26ART(2)	(1)	Olive(2)	Olive(2)	-	54H(2)	(2)	-	BY31C(3)	5/8-1(3)
	1/2	40137	BG(4)	2/0(1)	A26AR(2)	U26ART(2)	(1)	Olive(2)	Olive(2)	-	54H(2)	(2)	-	BY31C(3)	5/8-1(3)
3/0	1/2	40041	W166(4)	3/0(1)	A27AR(2)	U27ART(2)	(1)	Ruby(2)	Ruby(2)	-	60(2)	(2)	-	-	737(3)
	1/2	40141	W166(4)	3/0(1)	A27AR(2)	U27ART(2)	(1)	Ruby(2)	Ruby(2)	-	60(2)	(2)	-	-	737(3)
4/0	1/2	40045	W660(4)	4/0 (2)	A28AR(2)	U28ART(2)	(1)	-	White(4)	-	66(4)	(2)	-	BY35C(4)	840(4)
	5/8	40046	W660(4)	4/0 (2)	A28AR(2)	U28ART(2)	(1)	-	White(4)	-	66(4)	(2)	-	BY35C(4)	840(4)
	1/2	40145	W660(4)	4/0 (2)	A28AR(2)	U28ART(2)	(1)	-	White(4)	-	66(4)	(2)	-	BY35C(4)	840(4)
250	1/2	40049	W249(3)	-	A29AR(2)	U29ART(2)	(1)	-	-	71H(4)	71H(2)	(3)	-	-	-
	5/8	40050	W249(3)	-	A29AR(2)	U29ART(2)	(1)	-	-	71H(4)	71H(2)	(3)	-	-	-
	1/2	40149	W249(3)	-	A29AR(2)	U29ART(2)	(1)	-	-	71H(4)	71H(2)	(3)	-	-	-
300	1/2	40053	-	-	A30AR(2)	U30ART(2)	(1)	-	-	76H(4)	76H(2)	(3)	-	-	-
	1/2	40153	-	-	A30AR(2)	U30ART(2)	(1)	-	-	76H(4)	76H(2)	(3)	-	-	-
350	1/2	40056	-	-	-	U31ART(2)	(1)	-	-	87H(4)	87H(3)	(3)	-	-	-
	5/8	40057	-	-	-	U31ART(2)	(1)	-	-	87H(4)	87H(3)	(3)	-	-	-
	1/2	40156	-	-	-	U31ART(2)	(1)	-	-	87H(4)	87H(3)	(3)	-	-	-
400	1/2	40160	-	-	-	U32ART(4)	(1)	-	-	94H(4)	94H(4)	-	(2)	-	-
500	5/8	40067	-	-	-	U34ART(4)	(1)	-	-	106H(4)	106H(3)	-	(2)	-	-
	1/2	40166	-	-	-	U34ART(4)	(1)	-	-	106H(4)	106H(3)	-	(2)	-	-
600	1/2	40170	-	-	-	U36ART(4)	(1)	-	-	-	115H(3)	-	(3)	-	-
750	5/8	40073	-	-	-	U39ART(4)	(1)	-	-	-	125H(4)	-	(3)	-	-
	1/2	40172	-	-	-	U39ART(4)	(1)	-	-	-	125H(4)	-	(3)	-	-
1000	5/8	40079	-	-	-	S44ART(4)	(1)	-	-	-	140H(4)	-	(3)	-	-
	1/2	40178	-	-	-	S44ART(4)	(1)	-	-	-	140H(4)	-	(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, VC8C and Burndy Y1000 require no die set.

## Tooling Index

Conductor Size AWG & kcmil		3M™ Connector Number	Crimping Table For 3M™ Stem Type Connector				
Stranded	Solid		Recommended Crimping Tools				
			Manufacturer	Mech. Tool	Die (Minimum No. Crimps)	Hydraulic	Die (Minimum No. Crimps)
2, 1 4 1/0	1, 1/0 2 2/0	SC0001 SC0002 SC0010	Burndy	MD6	BG(4), W241(3)	Y35, Y39, Y45*, Y46*	U25ART(2), U243(2)
			Kearny	0-51, 0-52	5/8-1 (4)	WH-1, WH-2	5/8-1(4)
			T & B	TBM 5	Tan(2)	-	-
			T & B	TBM 8	Olive(2), Tan(2)	TBM 15	50(2)
			Anderson	-	-	VC6**	(2)
2/0 3/0 4/0	3/0 4/0 -	SC0020 SC0030 SC0040	Burndy	MD6	W249(3)	Y35, Y39, Y45*, Y46*	U28ART(2)
			Kearny	0-51, 0-52	840(5)	WH-1, WH-2	840(2)
			T & B	TBM 8	Red(4)	TBM 15	71H(3)
			Anderson	-	-	VC6**	(2)

\* Y45 and Y46 accept all Y35 dies ("U" series). For Y45 use PT6515 adapter. For Y46 use PUADP adapter.

\*\* Anderson VC6 is dieless and does not require a die set.

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