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

With High-K Stress Relief

For Tape Shield, Wire Shield and UniShield® Cable

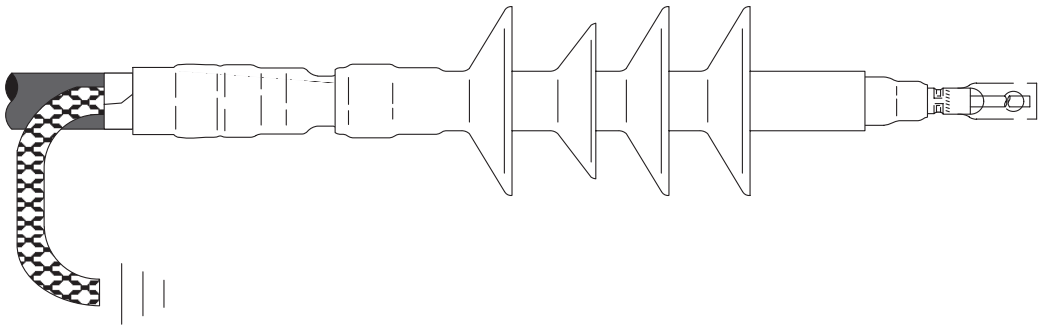
7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4(L), 7696-S-INV-4, 7695-T-150 (S), 7696-T-150 (S)

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.



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3M

1.0Kit Contents

3 High–K, Tracking Resistant, Silicone Rubber Terminations

3 Tracking Resistant Silicone Rubber Skirt Assemblies

3 Preformed Ground Braids

3 Constant Force Springs

3 3M EMI Copper Foil Shielding Tape 1181 Strips, 1/2" x 10"

6 Strips Scotch® Mastic Strip 2230 (black with white release liners, bagged)

1 3M Cable Cleaning Preparation Kit CC-2

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
7693-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^2)	2-4/0 (35-120 mm^2)	2-2/0 (35-70 mm^2)
7695-S-INV-4	1.05"-1.80" (26,7-45,7 mm)	1.39"-2.40" (35,2-61,0 mm)	700-1500 ---	600-1250 ---	350-1000 (185-500 mm^2)	250-800 (150-400 mm^2)	3/0-600 (95-325 mm^2)
7696-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^2)	900-1750 (500-800 mm^2)	700-1500 (400-725 mm^2)
7695-T-150(S)	1.59"-2.20" (40,4-55,9 mm)	N/A	-------	-------	1250-1750 (625-800 mm^2)	900-1750 (500-800 mm^2)	700-1500 (400-725 mm^2)
7696-T-150(S)	1.81"-2.55" (46,0-64,8 mm)	N/A	-------	-------	1750-3000 (800-1500 mm^2)	1500-2500 (800-1250 mm^2)	1000-2000 (500-1000 mm^2)

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	
7693-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^2)	2 - 4/0 (35 - 120 mm^2)	1/0 - 2/0 (60 mm^2)	QL2-A-2-250
7695-S-INV-4	1.05" - 1.80" (26,7 - 45,7 mm)	1.39" - 2.40" (35,3 - 61,0 mm)	500 (240 mm^2)	250 - 500 (150 - 240 mm^2)	4/0 - 600 (120 - 325 mm^2)	QL2-A-4/0-600
7695-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^2)	350 - 750 (185 - 325 mm^2)	350 - 500 (185 - 240 mm^2)	QL2-A-350-750
7695-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^2)	500 - 750 (240 - 325 mm^2)	------	QL2-A-500-1000
7696-S-INV-4	1.53" - 2.32" (38,9 - 58,9 mm)	1.84" - 2.80" (46,7 - 71,1 mm)	------	------	750 (400 mm^2)	QL2-A-350-750
7696-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^2)	QL2-A-500-1000
7696-S-INV-4	1.53" - 2.32" (38,9 - 58,9 mm)	1.84" - 2.80" (46,7 - 71,1 mm)	1250 (625 mm^2)	1000 - 1250 (600 - 625 mm^2)	1000 - 1250 (600 - 625 mm^2)	QL2-A-1000-1250
7695-T-150 (S)	1.59" 2.20" (40,4 - 55,9 mm)	------	------	------	750 - 1000 (400 - 500 mm^2)	QL2-A-500-1000
7695-T-150 (S)	1.59" 2.20" (40,4 - 55,9 mm)	------	1250 (625 mm^2)	1000 - 1250 (600 - 625 mm^2)	1000 - 1250 (600 - 625 mm^2)	QL2-A-1000-1250
7696-T-150 (S)	1.81" 2.55" (46,0 - 64,8 mm)	------	------	------	1000 - 1250 (600 - 625 mm^2)	QL2-A-1000-1250

Table 2

Instructions for Tape Shielded Cable

2.0Prepare Cable

2.1 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).

2.2 Prepare cable using dimensions shown in Figure 1. **BE SURE TO ALLOW FOR DEPTH OF TERMINAL LUG.** If necessary to prevent tape shield from unrolling, hold down edge with a single wrap of 3M EMI Copper Foil Shielding Tape 1181.

2.3 a. 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 concerning Aluminum Lug and Connector growth allowances, in order to calculate the Insulation Removal Length. Table 6 (located in the final pages of this Instruction document) can used to assist in calculating the total Jacket Removal Length when using a compression lug or connector.

b. If using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Mechanical Shearbolt Connector QCI Series, proceed to Step 2.4.

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

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.

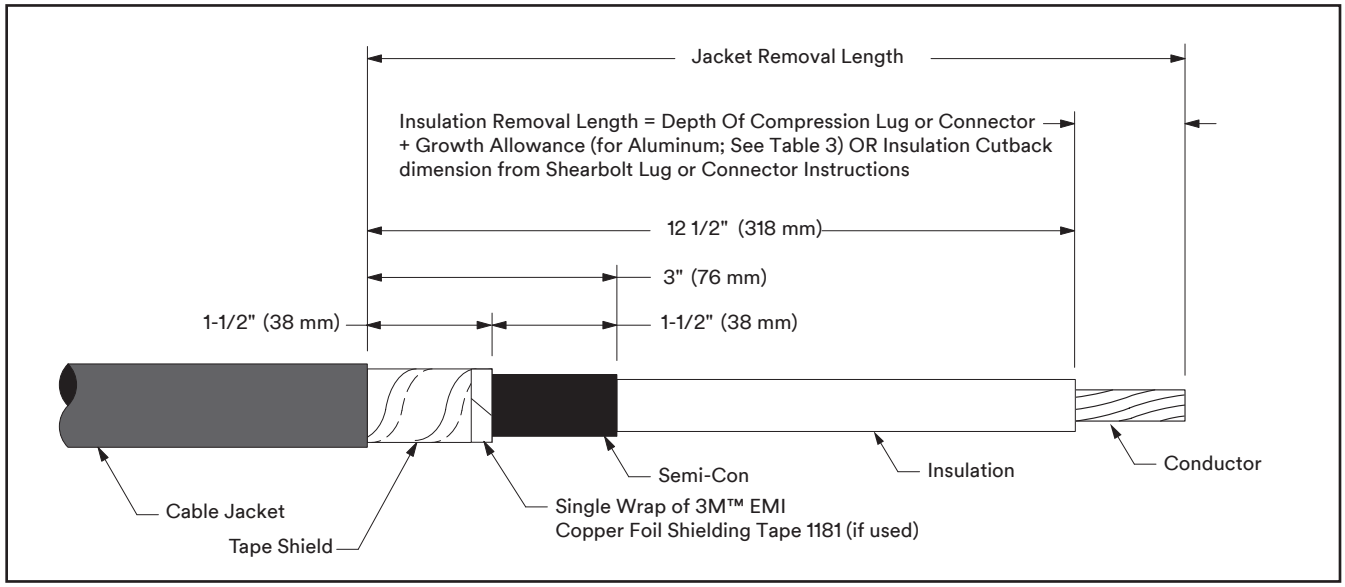


Figure 1

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 7 (located in the final pages of this Instruction document) can 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.

3.0Install Ground Braid

3.1 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.

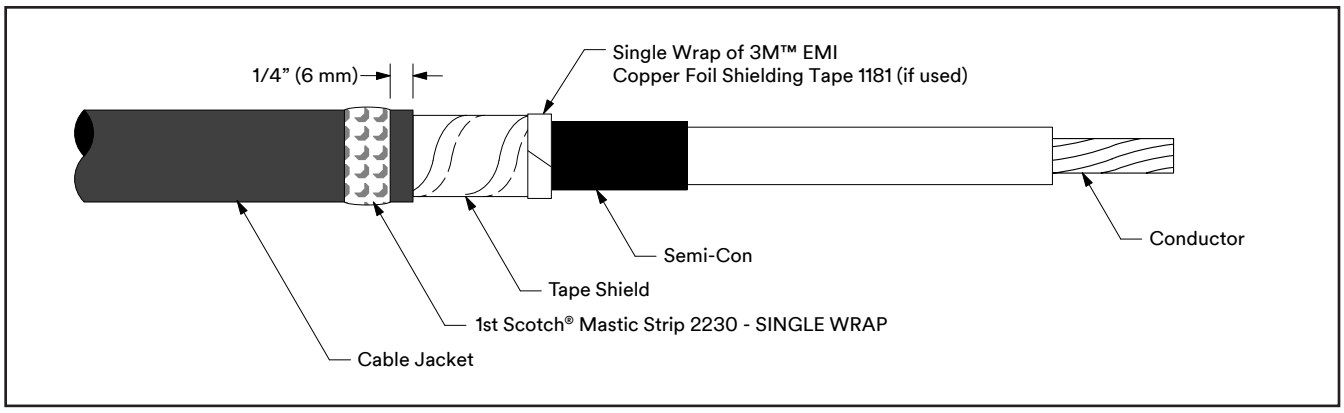


Figure 2

3.2 Position pre-formed ground braid with short tail over tape shield directly adjacent to cable jacket cut edge. PLEASE NOTE: The ground braid needs to make full contact with the metallic tape shield. Position long tail of ground braid, extending over cable jacket with solder block over mastic strip (Figure 3). Secure ground braid 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.

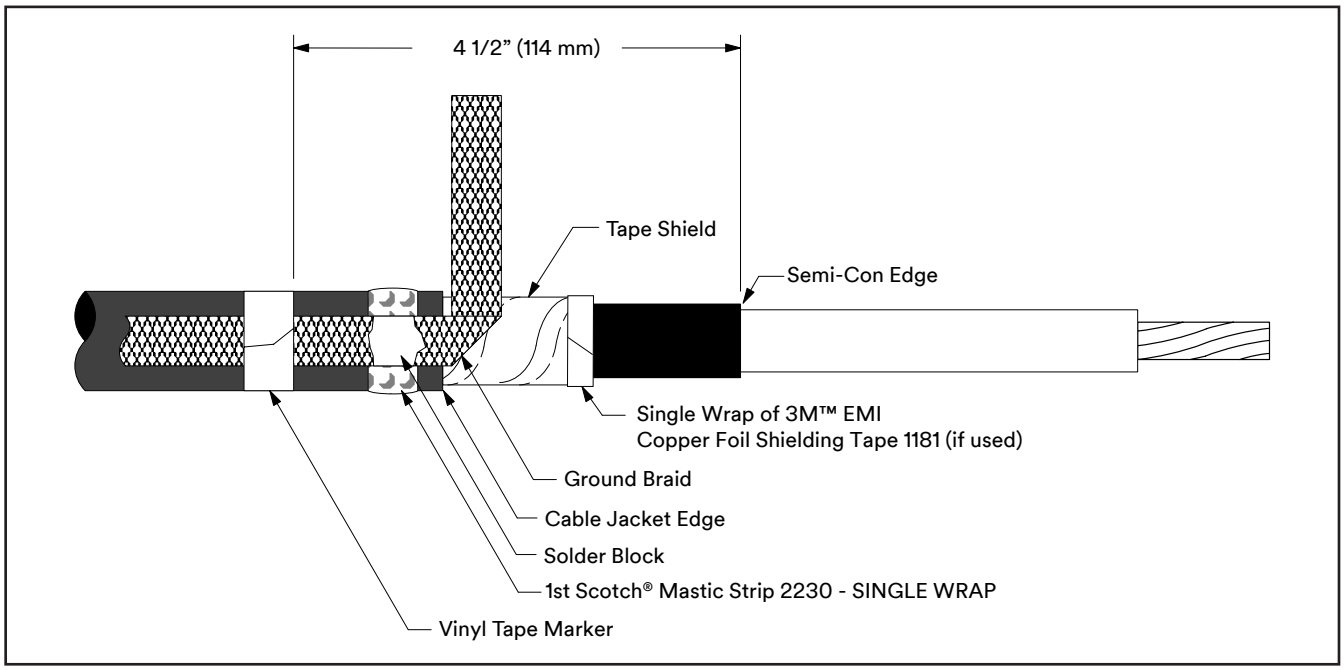


Figure 3

3.3 Wrap ground braid around cable tape shield one complete wrap, trim excess at approximately a 45 degree angle, and line up with the pre-bent 45 degree angle already on the ground braid, to prevent overlap. Secure in place with constant force spring. Wrap spring in same direction as ground braid (Figure 4). Cinch (tighten) the spring after wrapping the final winding.

3.4 Select second Scotch® Mastic Strip 2230 from kit and remove white release liners. Apply a second **SINGLE WRAP** of mastic over solder block on ground braid and previously applied mastic (Figure 4). Cut off excess.

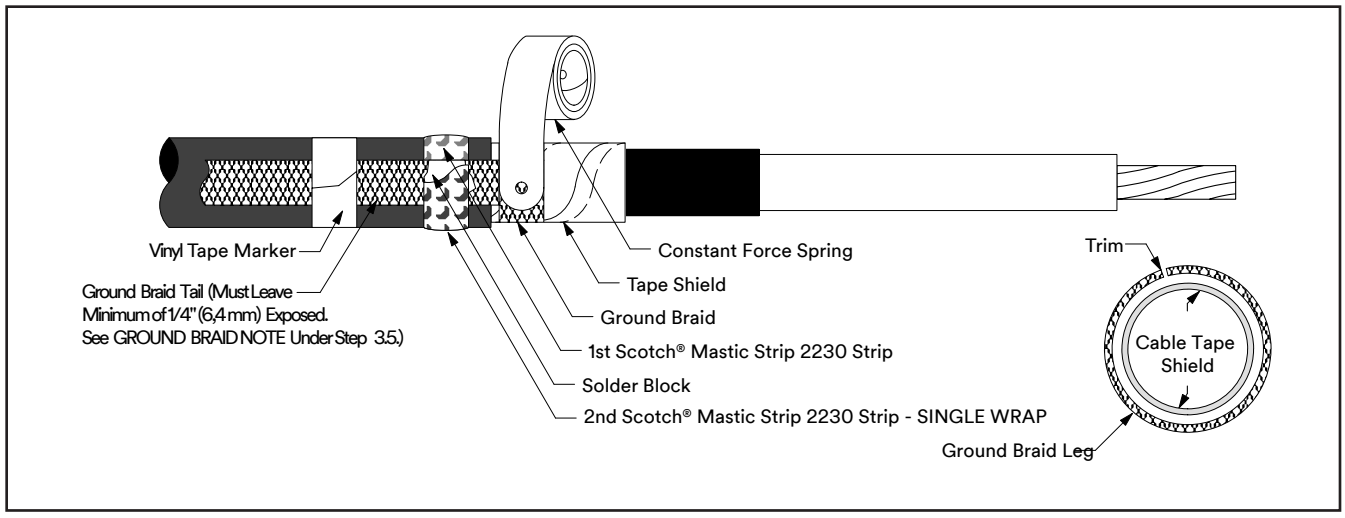


Figure 4

3.5 Wrap two highly stretched half-lapped layers of electrical grade vinyl tape around mastic seal, constant force spring and exposed tape shield (Figure 5). **Be sure to cover all exposed mastic AND TO READ THE GROUND BRAID NOTE BELOW CONCERNING APPLICATION OF THE TWO HIGHLY STRETCHED LAYERS OF ELECTRICAL GRADE VINYL TAPE**.

NOTE: Take care not to cover exposed semi-con insulation shield. A minimum of 1" (25 mm) must be exposed.

GROUND BRAID NOTE: DO NOT completely cover the ground braid tail with electrical grade vinyl tape when applying over the Scotch® Mastic Strip 2230 per Step 3.5. LEAVE A MINIMUM OF 1/4" (6,4 mm) OF EXPOSED GROUND BRAID TAIL between the Vinyl Tape Marker applied in step 3.2 and the start of the two half-lapped layers of electrical grade vinyl tape covering the Scotch® Mastic Strip 2230 applied in Step 3.5.

SPECIAL NOTE FOR CLOTH OR PAPER SEMI-CON INSULATION SHIELD
In cables with cloth or paper semi-conductive shields it is recommended the shield be over wrapped with one half-lapped layer of highly stretched semi-conductive rubber tape such as Scotch® Electrical Semi-Conducting Tape 13.

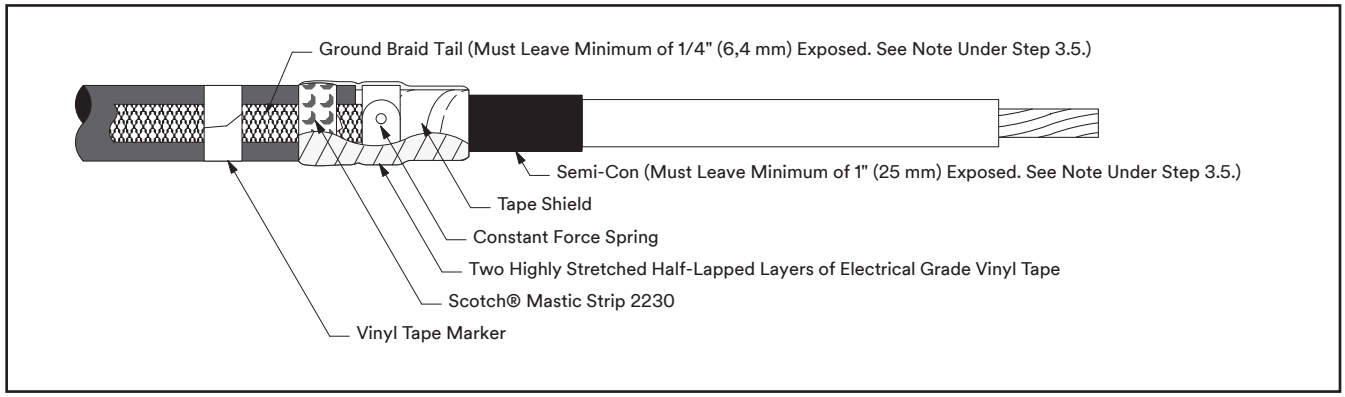


Figure 5

4.0 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.

4.1 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 6) will not fit through the termination core, clean the insulation (per Step 5.0) and slide termination on cable before installing lug or connector. **DO NOT REMOVE CORE AT THIS TIME.**

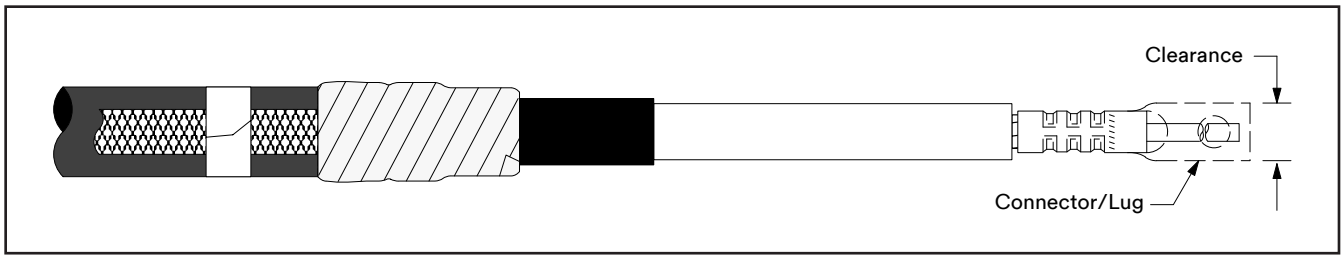


Figure 6

4.2 For 3M Compression Lugs and 3M Stem Connectors:
a. Refer to the final pages of this Instruction document for 3M Connector and Lug crimping information.
b. 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 head rotation between consecutive crimps is RECOMMENDED.

c. Position connector or lug and crimp according to manufacturer's directions. Remove excess oxide inhibitor and sharp crimp flashings following crimping.

4.3 For 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole or 3M Mechanical Shearbolt Connector QCI Series:
a. Refer to the Instructions that are packed with the Shearbolt product for the installation procedures.

5.0 Clean Cable Insulation and Lug or Connector Barrel Using Standard Practice

5.1 If abrasive must be used:
a. Use on insulation only. **DO NOT USE ABRASIVE ON SEMI-CON INSULATION SHIELD!**
b. Use **ONLY Aluminum Oxide abrasive**, 120 grit, or finer. A strip of Aluminum Oxide abrasive is included in the 3M Cable Cleaning Preparation Kit CC-2. If additional 120 grit abrasive is needed, make certain that it is Aluminum Oxide abrasive.
c. Be careful not to reduce the cable insulation diameter below that allowed by the kit.

5.2 Wipe the cable insulation with one of the solvent saturated pads from the 3M Cable Cleaning Preparation Kit CC-2, or other approved cable cleaner/solvent, **AND ALLOW IT TO DRY BEFORE INSTALLING TERMINATION. A clean lint-free cloth, or inexpensive paper towel, 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!**

6.0 Install Termination and Skirted Insulator Assembly

6.1 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 in Step 3.2 (Figure 7). Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 7). 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.

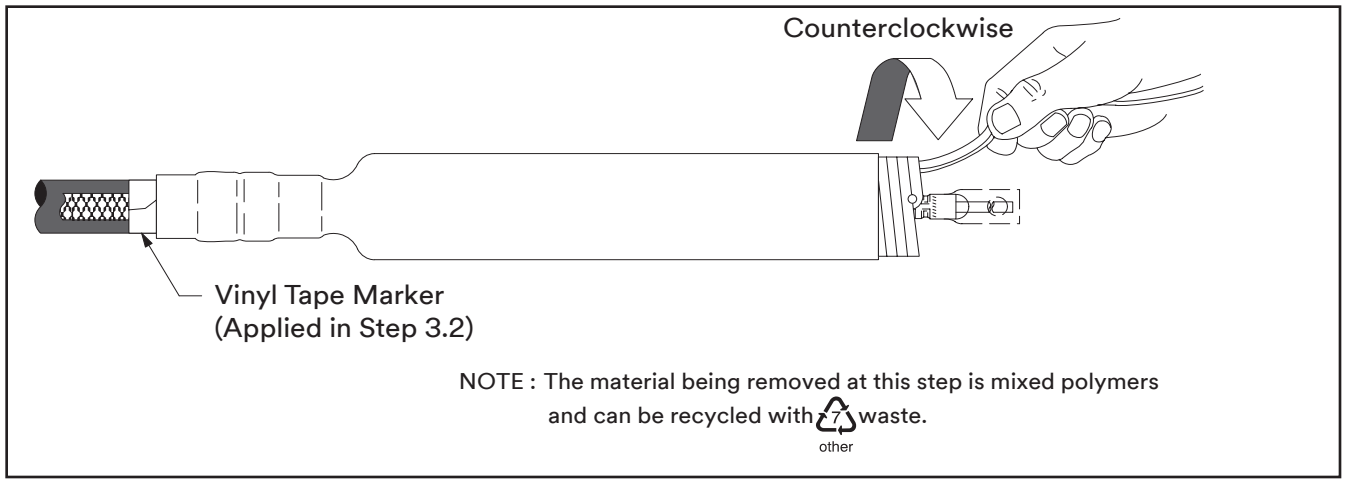


Figure 7

6.2 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 3.2) and remove core. Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 8). 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 8).

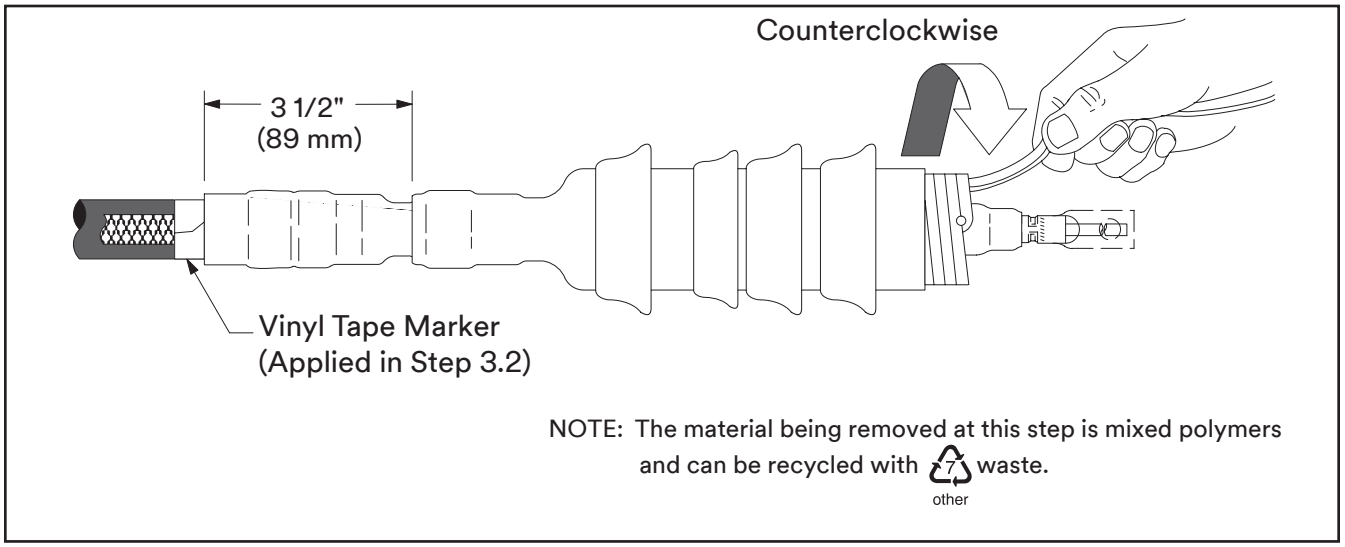
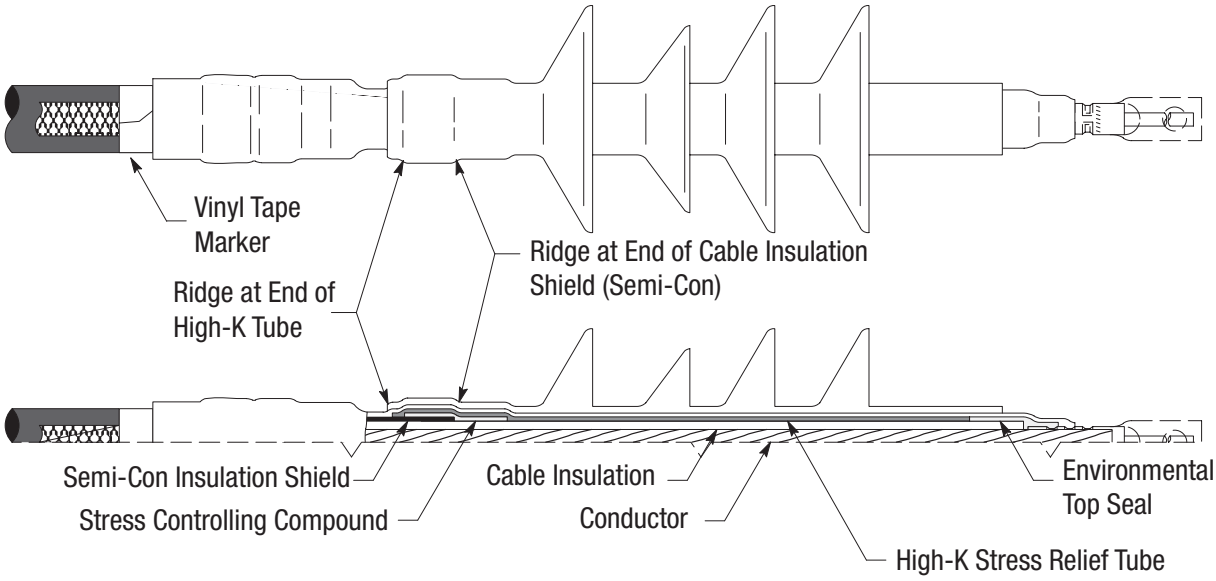


Figure 8

6.3 Connect ground braid to system ground according to standard practice.

Correct Installation of Termination on Tape Shielded Cable



NOTE: Conventional upright operation. The skirted insulator assembly may be installed in the conventional upright position. See pages 21 and 22 for installation instructions.

Instructions for Wire Shielded Cable

7.0 Prepare Cable

7.1 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).

7.2 Prepare cable using dimensions shown in Figure 9. **BE SURE TO ALLOW FOR DEPTH OF TERMINAL LUG.**

7.3 a. 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 concerning Aluminum Lug and Connector growth allowances, in order to calculate the Insulation Removal Length. Table 8 (located in the final pages of this Instruction document) can used to assist in calculating the total Jacket Removal Length when using a compression lug or connector.
b. If using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Mechanical Shearbolt Connector QCI Series, proceed to Step 7.4.

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

Table 4

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.

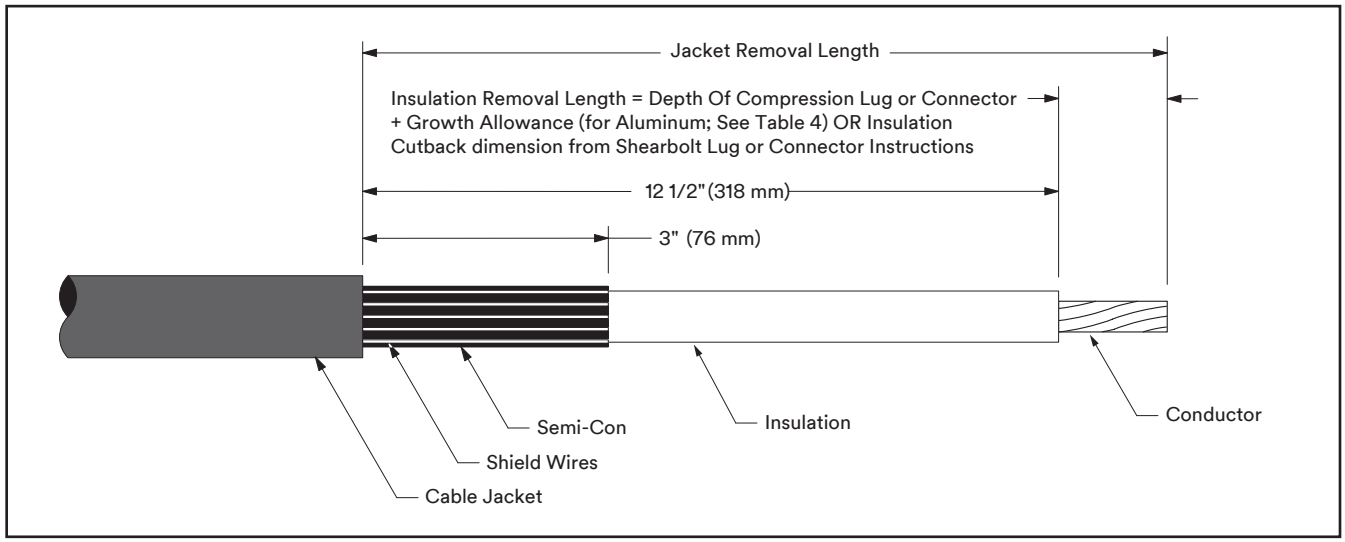


Figure 9

7.4 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 9 (located in the final pages of this Instruction document) can 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.

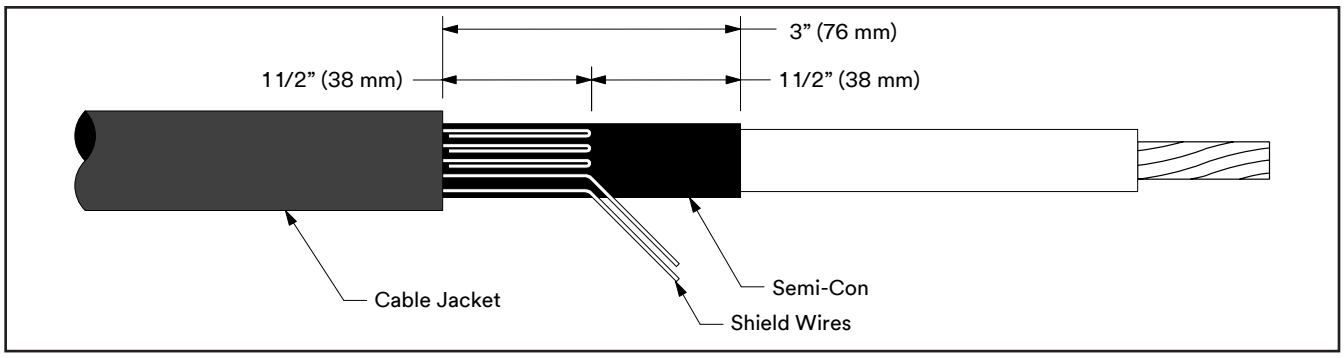


Figure 10

7.5 Bend leading 1 1/2" (38 mm) of exposed shield wires back upon themselves to jacket edge (Figure 10).

8.0 Install Ground Braid

8.1 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 11). Cut off excess.

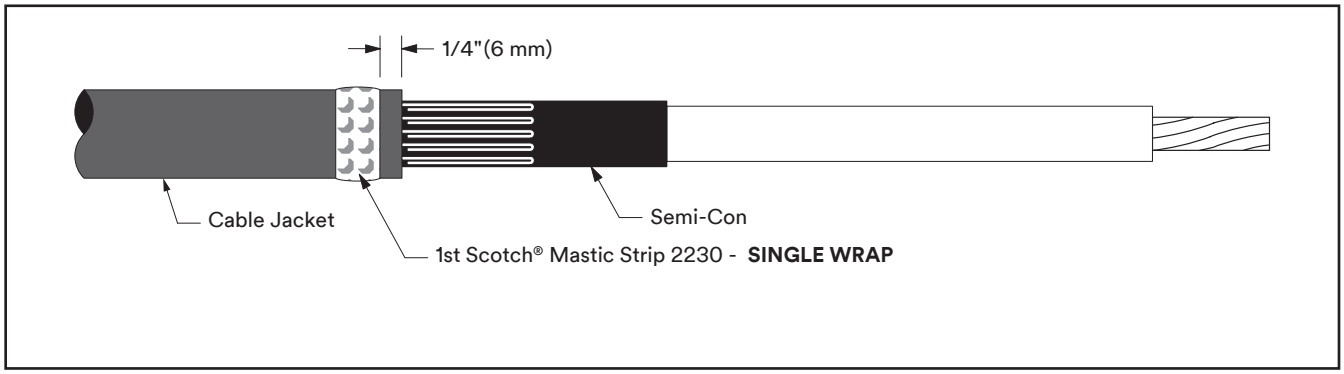


Figure 11

8.2 Position pre-formed ground braid with short tail over wire shield directly adjacent to cable jacket cut edge. PLEASE NOTE: The ground braid needs to make full contact with the shield wires. Position long tail of ground braid, extending over cable jacket with solder block over mastic strip (Figure 12).

Secure ground braid to cable jacket **4 1/2" (114 mm) from cable semi-con edge using vinyl tape (see NOTE and Figure 12)**.

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

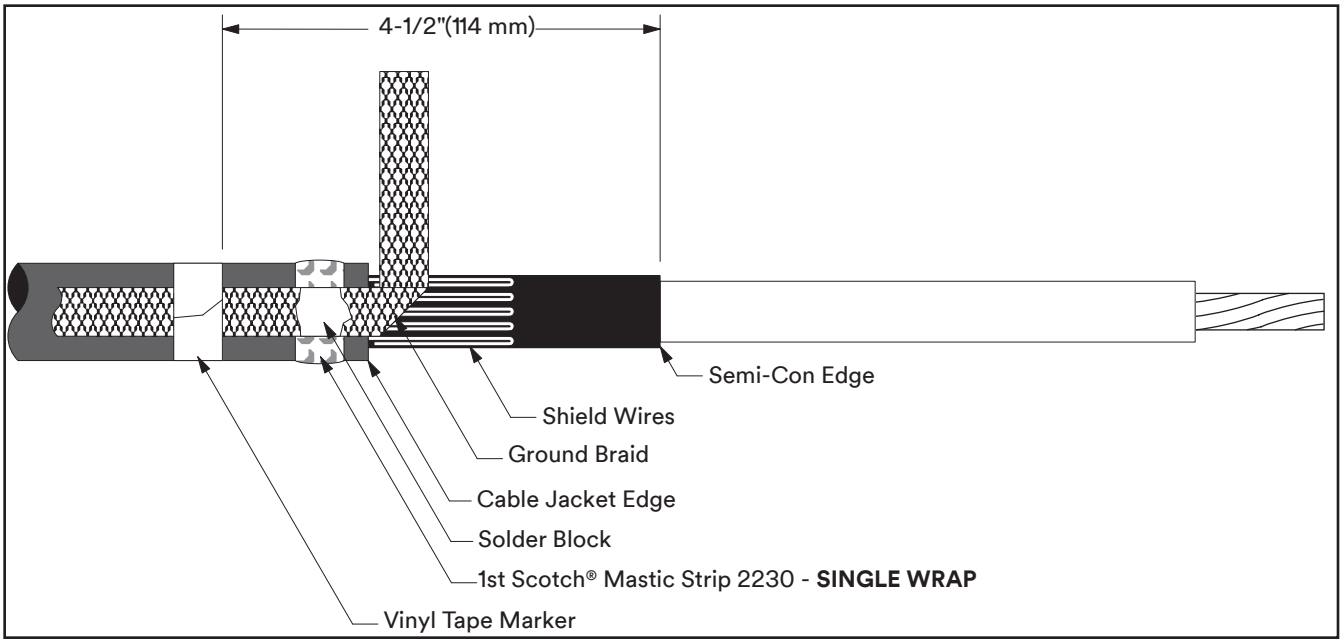


Figure 12

8.3 Wrap ground braid around cable shield wires one complete wrap, trim excess at approximately a 45 degree angle, and line up with the pre-bent 45 degree angle already on the ground braid, to prevent overlap. Secure in place with constant force spring. Wrap spring in same direction as ground braid (Figure 13). Cinch (tighten) the spring after wrapping the final winding.

8.4 Select second Scotch® Mastic Strip 2230 from kit and remove white release liners. Apply a second **SINGLE WRAP** of mastic over solder block on ground braid and previously applied mastic (Figure 13). Cut off excess.

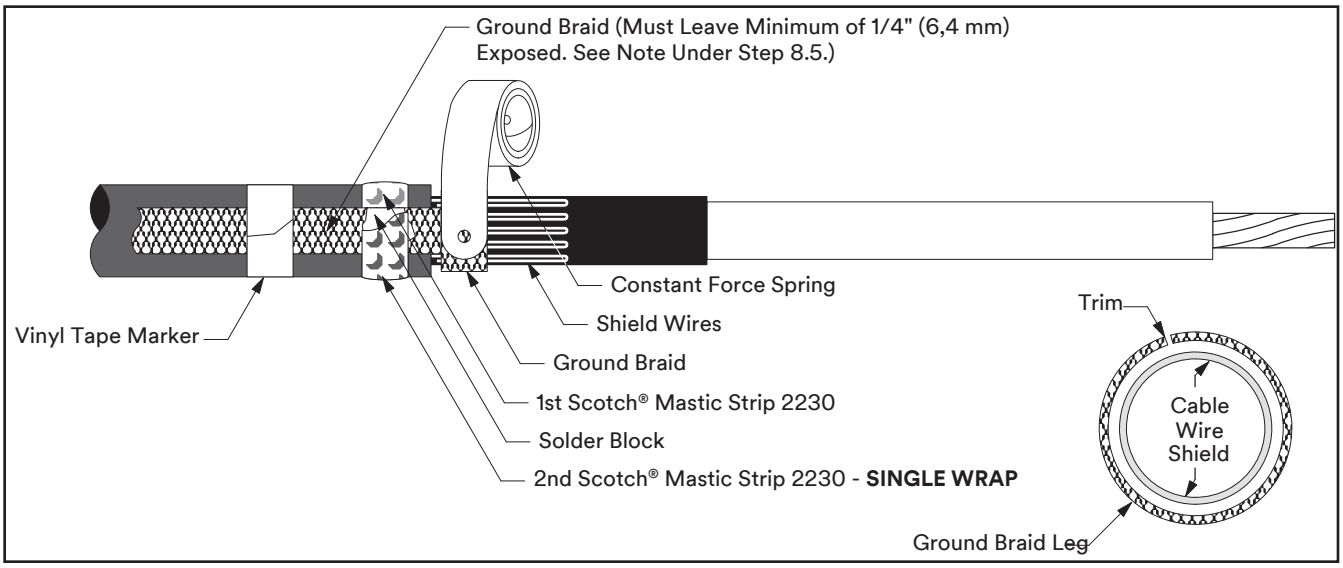


Figure 13

8.5 Wrap two highly stretched half-lapped layers of electrical grade vinyl tape around mastic seal, constant force spring and exposed shield wires (Figure 14). Be sure to cover all exposed mastic

AND TO READ THE GROUND BRAID NOTE BELOW CONCERNING APPLICATION OF THE TWO HIGHLY STRETCHED LAYERS OF ELECTRICAL GRADE VINYL TAPE.

NOTE: Take care not to cover exposed semi-con insulation shield. A minimum of 1" (25 mm) must be exposed.

GROUND BRAID NOTE: DO NOT completely cover the ground braid tail with electrical grade vinyl tape when applying over the Scotch® Mastic Strip 2230 per Step 8.5. LEAVE A MINIMUM OF 1/4" (6,4 mm) OF EXPOSED GROUND BRAID TAIL between the Vinyl Tape Marker applied in step 8.2 and the start of the two half-lapped layers of electrical grade vinyl tape covering the Scotch® Mastic Strip 2230 applied in Step 8.5.

SPECIAL NOTE FOR CLOTH OR SEMI-CON INSULATED SHIELD: In cables with cloth or paper semi-conductive shields it is recommended the shield be over wrapped with one half-lapped layer of highly stretched semi-conductive rubber tape such as Scotch® Electrical Semi-Conducting Tape 13.

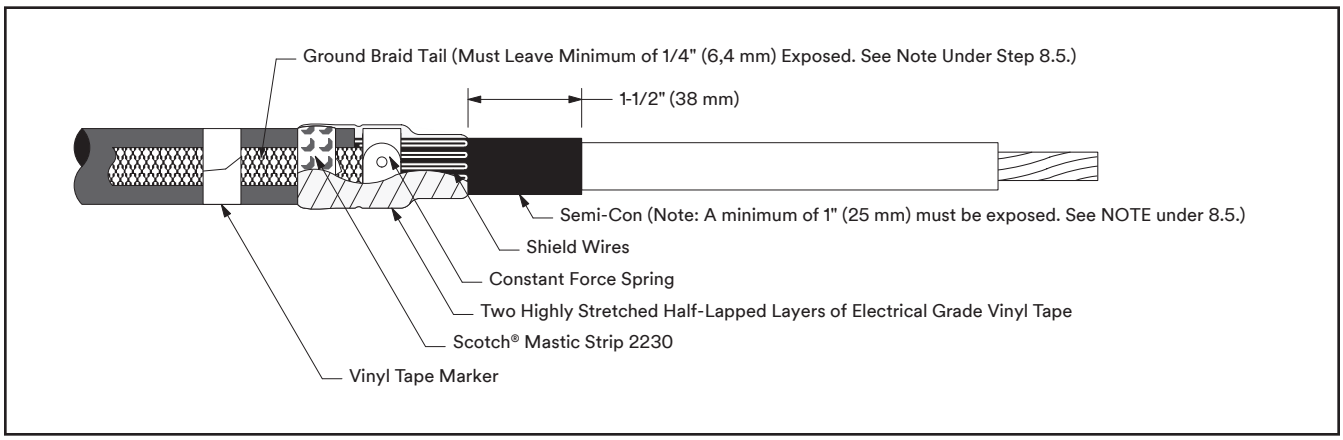


Figure 14

9.0Install 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.

9.1 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 15) will not fit through the termination core, clean the insulation (per Step 10.0) and slide termination on cable before installing lug. **DO NOT REMOVE CORE AT THIS TIME.**

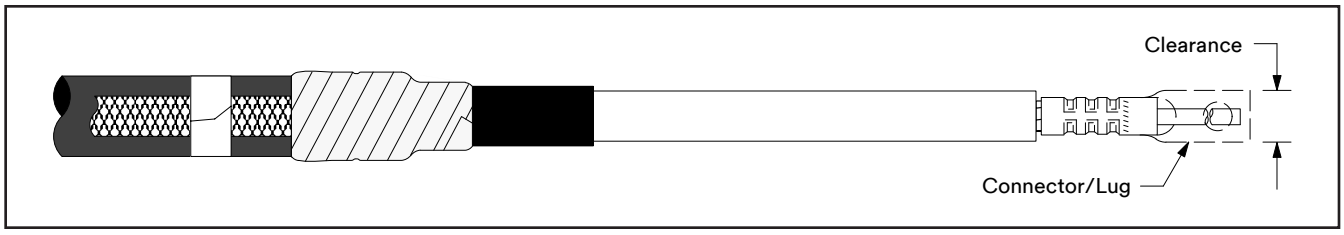


Figure 15

9.2 For 3M Compression Lugs and 3M Stem Connectors:
a. Refer to the final pages of this Instruction document for 3M Connector and Lug crimping information.
b. 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 head rotation between consecutive crimps is RECOMMENDED.

c. Position connector or lug and crimp according to manufacturer's directions. Remove excess oxide inhibitor and sharp crimp flashings following crimping.

9.3 For 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole or 3M Mechanical Shearbolt Connector QCI Series:
a. Refer to the Instructions that are packed with the Shearbolt product for the installation procedures.

10.0 Clean Cable Insulation and Lug Barrel Using Standard Practice

10.1 If abrasive must be used:
a. Use on insulation only. **DO NOT USE ABRASIVE ON SEMI-CON INSULATION SHIELD!**
b. Use **ONLY Aluminum Oxide abrasive**, 120 grit, or finer. A strip of Aluminum Oxide abrasive is included in the 3M Cable Cleaning Preparation Kit CC-2. If additional 120 grit abrasive is needed, make certain that it is Aluminum Oxide abrasive.
c. Be careful not to reduce the cable insulation diameter below that allowed by the kit.

10.2 Wipe the cable insulation with one of the solvent saturated pads from the 3M Cable Cleaning Preparation Kit CC-2, or other approved cable cleaner/solvent, **AND ALLOW IT TO DRY BEFORE INSTALLING TERMINATION. A clean lint-free cloth, or inexpensive paper towel, 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!**

11.0 Install Termination and Skirted Insulator Assembly

11.1 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 in Step 8.2 (Figure 16). Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 16). 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.

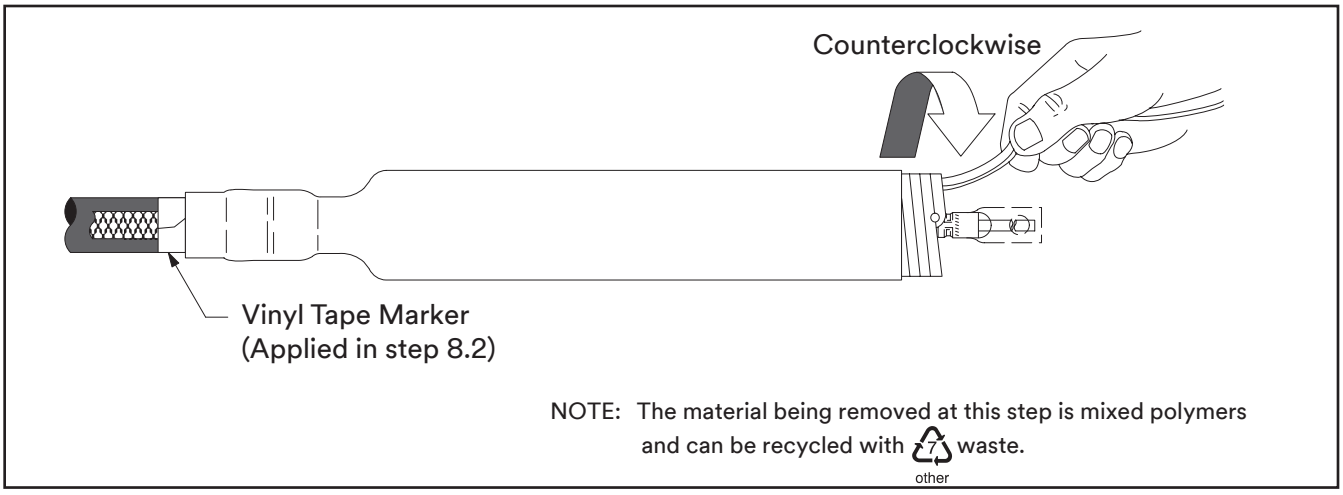


Figure 16

11.2 Slide the skirted insulator assembly, if applicable, over the previously applied tubular termination assembly. Position the skirted insulator assembly 3 1/2" (89 mm) from the marker tape (applied in Step 8.2) and remove core. Pull while unwinding, counterclockwise, starting with the loose end. Make sure the skirted insulator (not the core) is 3 1/2" (89 mm) from the marker tape (Figure 17).

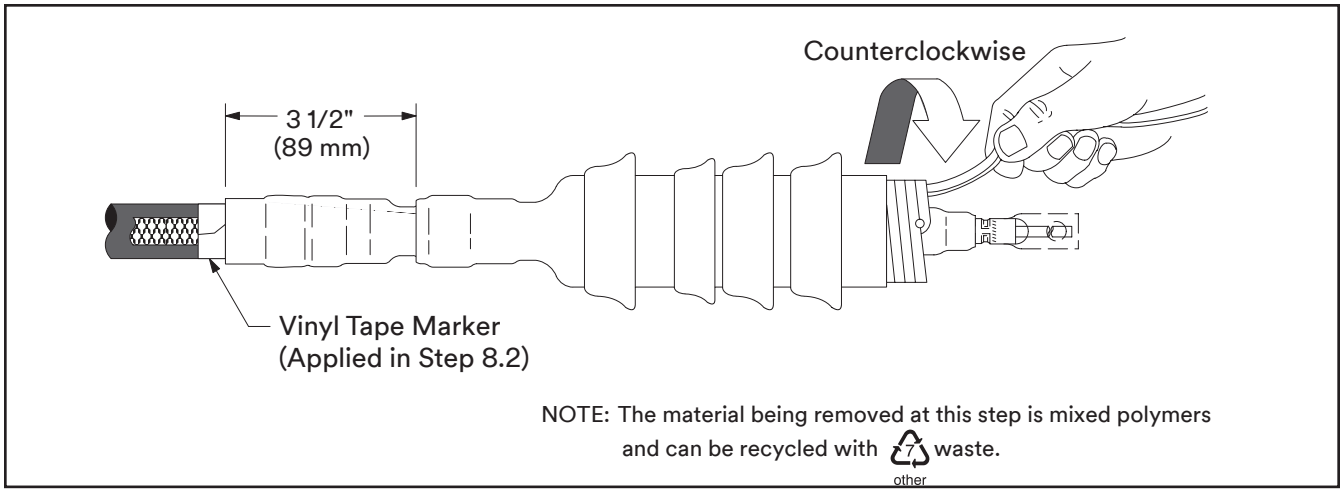
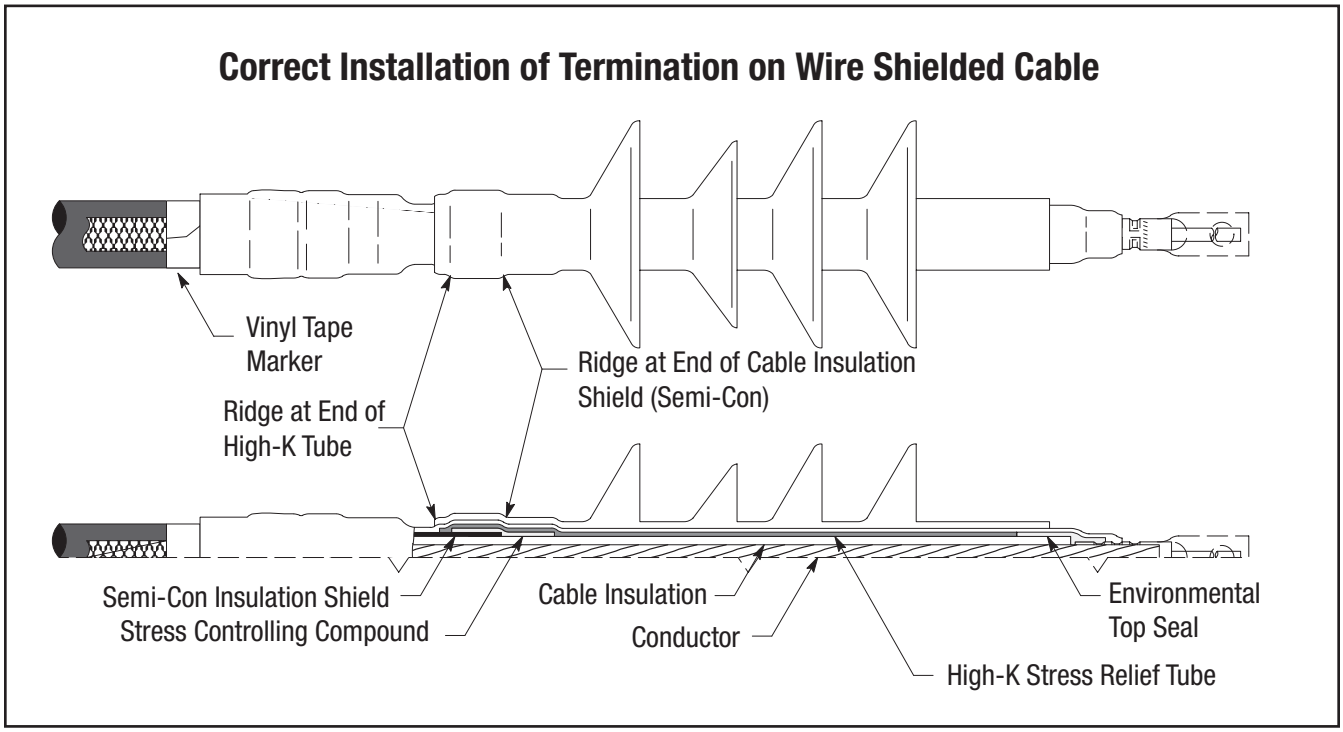


Figure 17

11.3 Connect ground braid 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 21 and 22 for installation instructions.

Instructions for UniShield® Shielded Cable

12.0 Prepare Cable

12.1 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).

12.2 Prepare cable using dimensions shown in Figures 18, 19 and 20. **BE SURE TO ALLOW FOR DEPTH OF TERMINAL LUG.**

12.3 a. 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 concerning Aluminum Lug and Connector growth allowances, in order to calculate the Insulation

Removal Length. Table 10 (located in the final pages of this Instruction document) can used to assist in calculating the total Jacket Removal Length when using a compression lug or connector.

b. If using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Mechanical Shearbolt Connector QCI Series, proceed to Step 12.4.

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

Table 5

12.4 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 11 (located in the final pages of this Instruction document) can used to assist in calculating the total Semi-Conductive Jacket Removal Length when using 3M Shearbolt Lugs QL2 Series: Two Hole, or 3M Shearbolt Connector QCI Series.

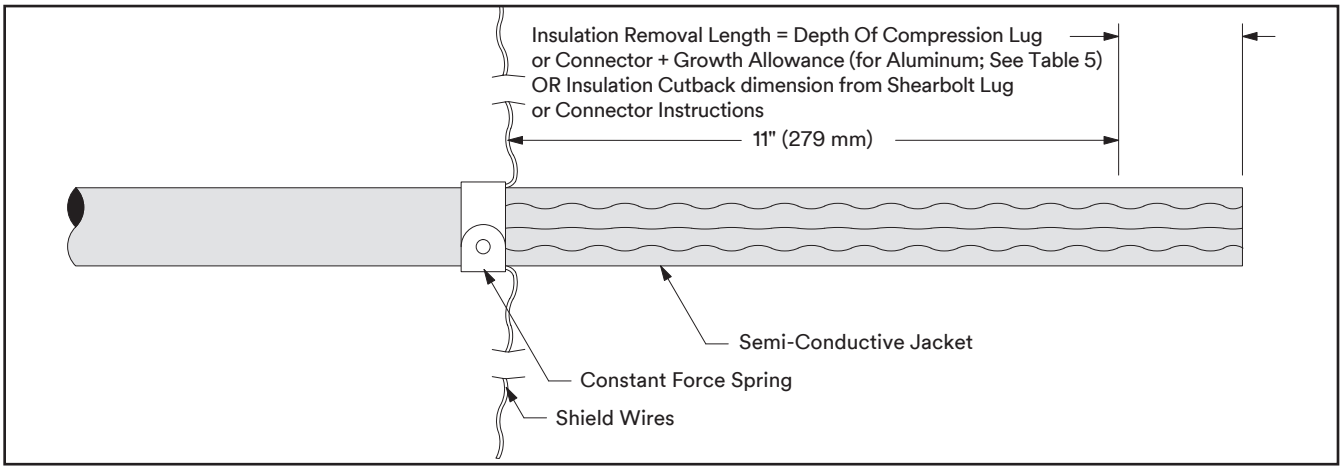


Figure 18

12.5 Install constant force spring as shown in Figure 18. Pull shield wires through semi-conductive jacket to leading edge of constant force spring (Figure 18).

12.6 Remove constant force spring. Bend shield wires back upon semi-conductive jacket 1 1/2" (38 mm). Cut excess shield wire and discard (Figure 19).

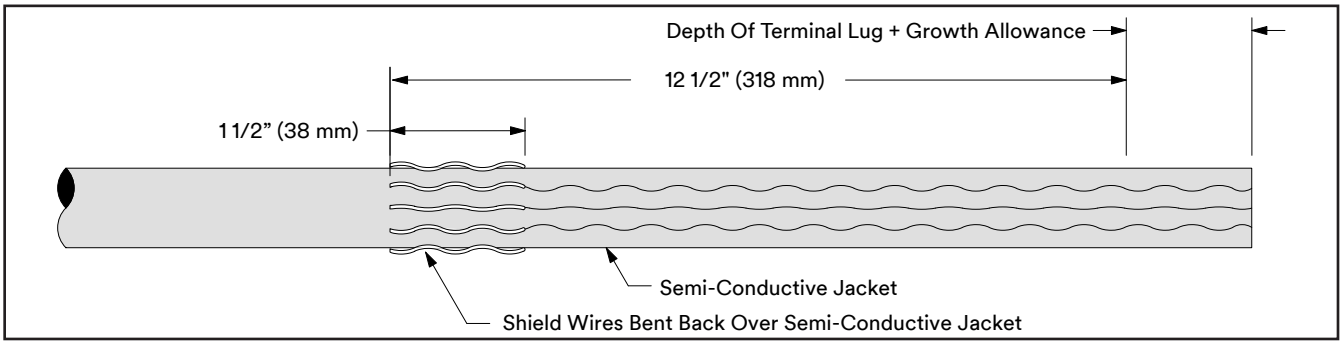


Figure 19

12.7 Remove semi-conductive jacket to dimension shown in Figure 20.

NOTE: To ease jacket removal, install constant force spring as shown in Figure 20 and ring cut 80% through jacket. Remove jacket sections by pulling against constant force spring. DO NOT BELL SEMI-CONDUCTIVE JACKET. Remove constant force spring.

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

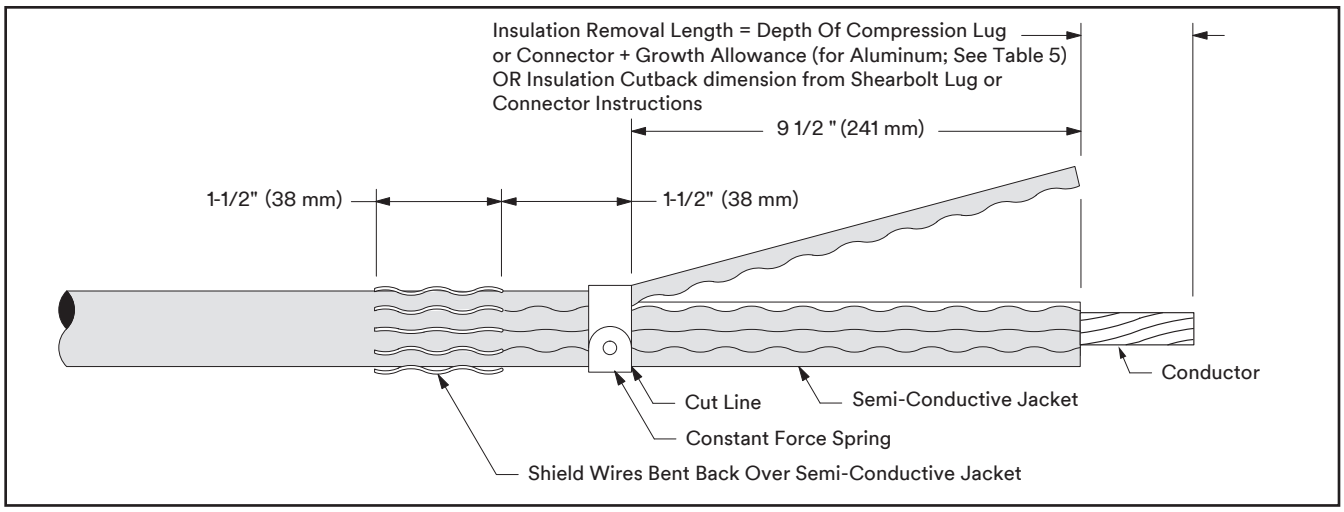


Figure 20

13.0 Install Ground Braid

13.1 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 semi-conductive jacket 1/4" (6 mm) from shield wires (Figure 21). Cut off excess.

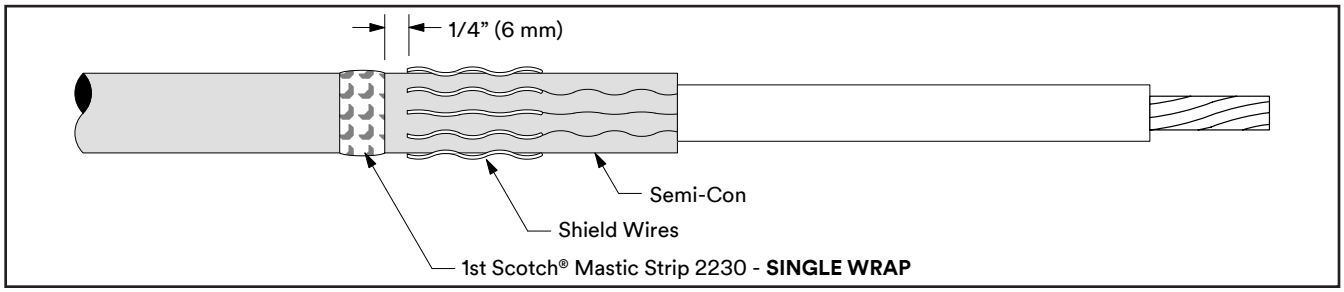


Figure 21

13.2 Position pre-formed ground braid with short tail directly over cut edge of folded back shield wires. PLEASE NOTE: The ground braid needs to make full contact with the shield wires. Position long tail of ground braid, extending over cable semi-conductive jacket with solder block over mastic strip (Figure 22). Secure ground braid to cable semi-conductive jacket **4 1/2" (114 mm) from cable Semi-Conductive Jacket edge using vinyl tape (See NOTE and Figure 22)**.

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

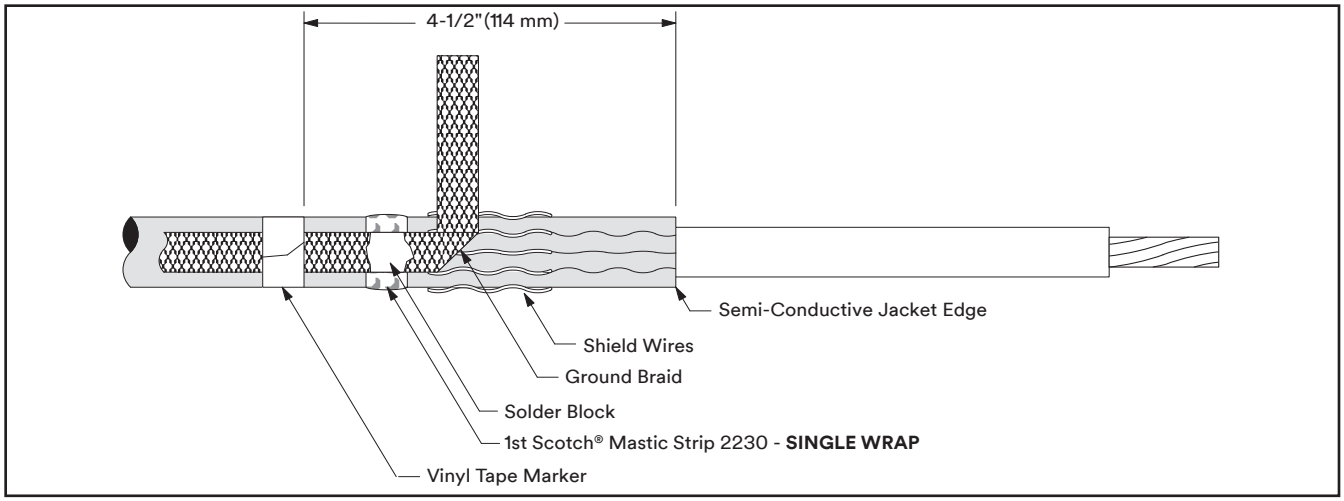


Figure 22

13.3 Wrap ground braid around cable shield wires one complete wrap, trim excess at approximately a 45 degree angle, and line up with the pre-bent 45 degree angle already on the ground braid, to prevent overlap. Secure in place with constant force spring. Wrap spring in same direction as ground braid (Figure 23). Cinch (tighten) the spring after wrapping the final winding.

13.4 Select second Scotch® Mastic Strip 2230 from kit and remove white release liners. Apply a second **SINGLE WRAP** of mastic over solder block on ground braid and previously applied mastic (Figure 23). Cut off excess.

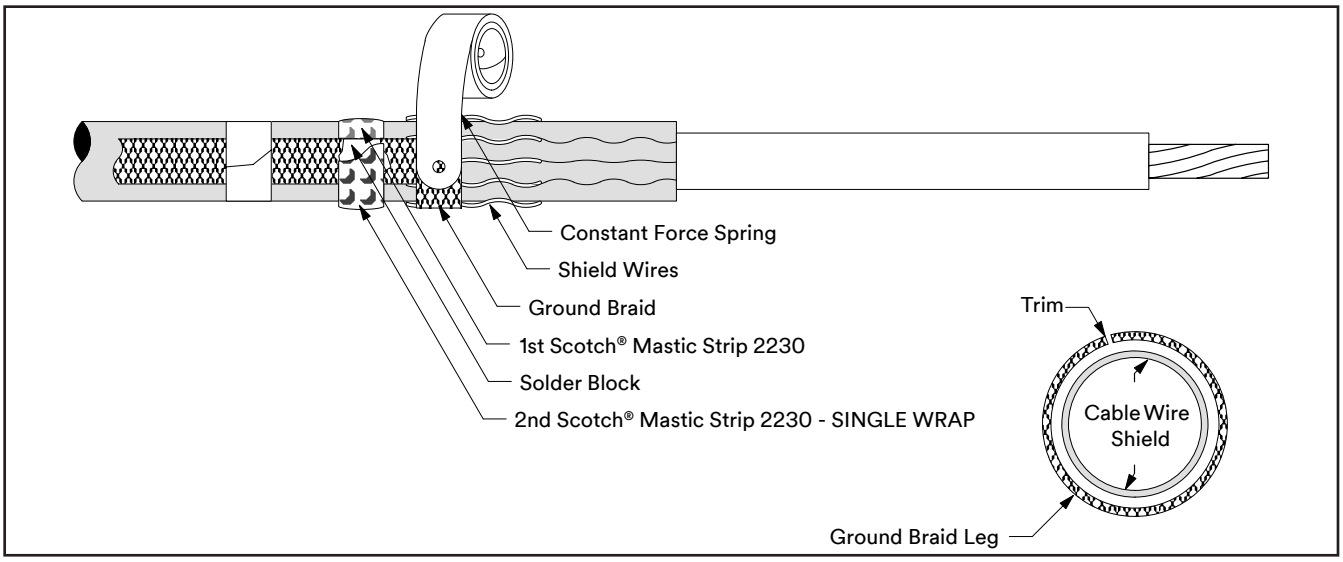


Figure 23

13.5 Wrap two highly stretched half-lapped layers of electrical grade vinyl tape around mastic seal, constant force spring and exposed shield wires (Figure 24). Be sure to cover all exposed mastic **AND TO READ THE GROUND BRAID NOTE BELOW CONCERNING APPLICATION OF THE TWO HIGHLY STRETCHED LAYERS OF ELECTRICAL GRADE VINYL TAPE.**

NOTE: Take care not to cover exposed Semi-Conductive Jacket. A minimum of 1" (25 mm) must be exposed.

GROUND BRAID NOTE: DO NOT completely cover the ground braid tail with electrical grade vinyl tape when applying over the Scotch® Mastic Strip 2230 per Step 13.5. LEAVE A MINIMUM OF 1/4" (6,4 mm) OF EXPOSED GROUND BRAID TAIL between the Vinyl Tape Marker applied in step 13.2 and the start of the two half-lapped layers of electrical grade vinyl tape covering the Scotch® Mastic Strip 2230 applied in Step 13.5.

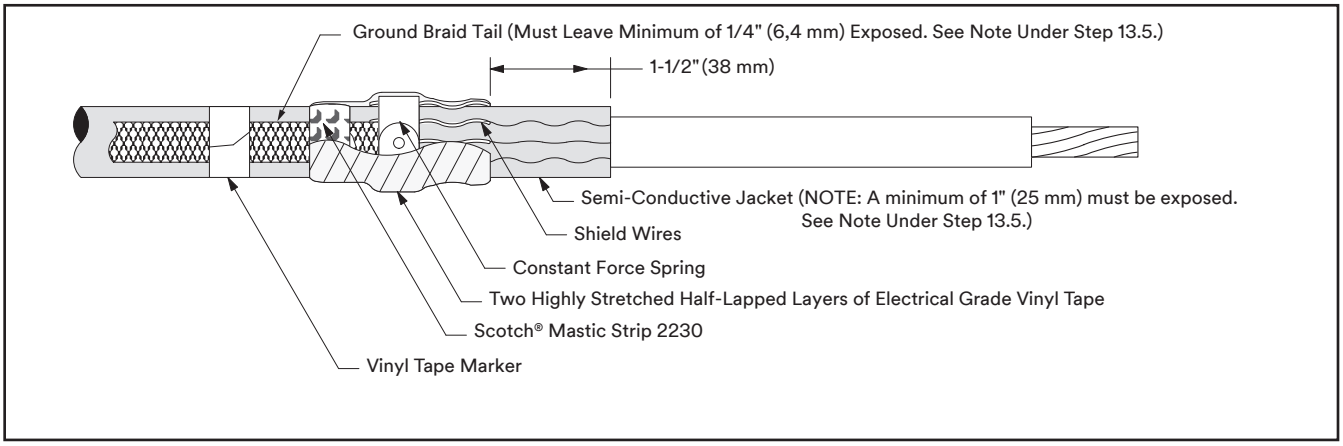


Figure 24

14.0 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.

14.1 Check to insure 3M Cold Shrink QT -III Silicone Rubber Termination fits over the selected lug or connector BEFORE installing the lug or connector. If lug or connector (Figure 25) will not fit through the termination core, clean the insulation (per Step 15.0) and slide termination on cable before installing lug or connector. **DO NOT REMOVE CORE AT THIS TIME**.

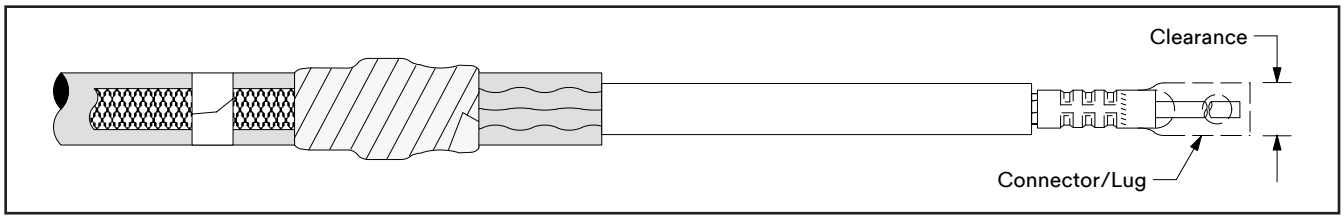


Figure 25

14.2 For 3M Compression Lugs and 3M Stem Connectors:
a. Refer to the final pages of this Instruction document for 3M Connector and Lug crimping information.
b. 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 head rotation between consecutive crimps is RECOMMENDED.

c. Position connector or lug and crimp according to manufacturer's directions. Remove excess oxide inhibitor and sharp crimp flashings following crimping.

14.3 For 3M Mechanical Shearbolt Lugs QL2 Series: Two Hole or 3M Mechanical Shearbolt Connector QCI Series:
a. Refer to the Instructions that are packed with the Shearbolt product for the installation procedures.

15.0 Clean Cable Insulation and Lug or Connector Barrel Using Standard Practice

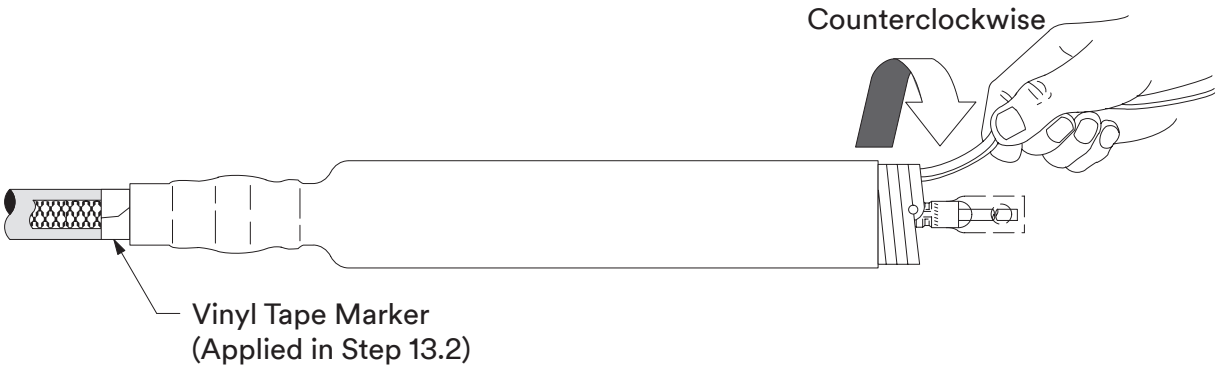
15.1 If abrasive must be used:
a. Use on insulation only. **DO NOT USE ABRASIVE ON SEMI-CON INSULATION SHIELD!**
b. Use **ONLY Aluminum Oxide abrasive**, 120 grit, or finer. A strip of Aluminum Oxide abrasive is included in the 3M Cable Cleaning Preparation Kit CC-2. If additional 120 grit abrasive is needed, make certain that it is Aluminum Oxide abrasive.
c. Be careful not to reduce the cable insulation diameter below that allowed by the kit.

15.2 Wipe the cable insulation with one of the solvent saturated pads from the 3M Cable Cleaning Preparation Kit CC-2, or other approved cable cleaner/solvent, **AND ALLOW IT TO DRY BEFORE INSTALLING TERMINATION. A clean lint-free cloth, or inexpensive paper towel, 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!**

16.0 Install Termination and Skirted Insulator Assembly

16.1 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 in Step 13.2 (Figure 26). Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 26). 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.

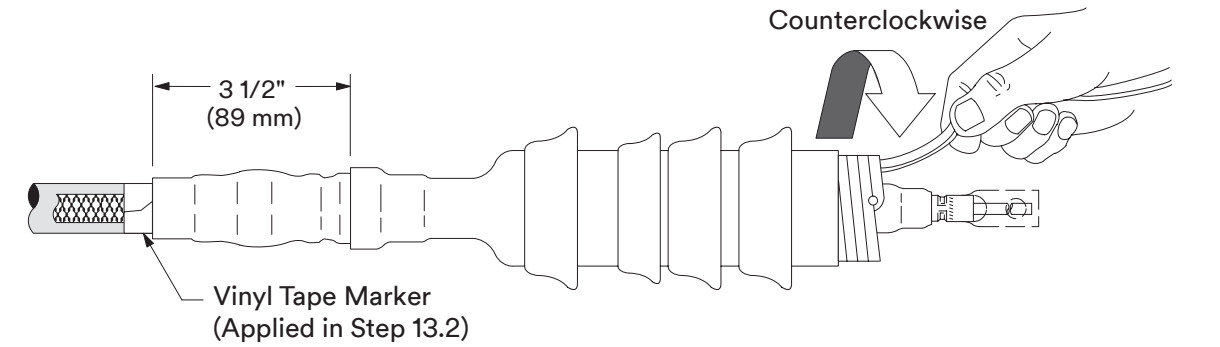
NOTE: Once the termination body makes contact over the mastic seal area, there is no need to continue supporting the assembly. DO NOT PUSH OR PULL ON THE TERMINATION ASSEMBLY WHILE UNWINDING THE CORE.



NOTE: The material being removed at this step is mixed polymers and can be recycled with 7 waste.

Figure 26

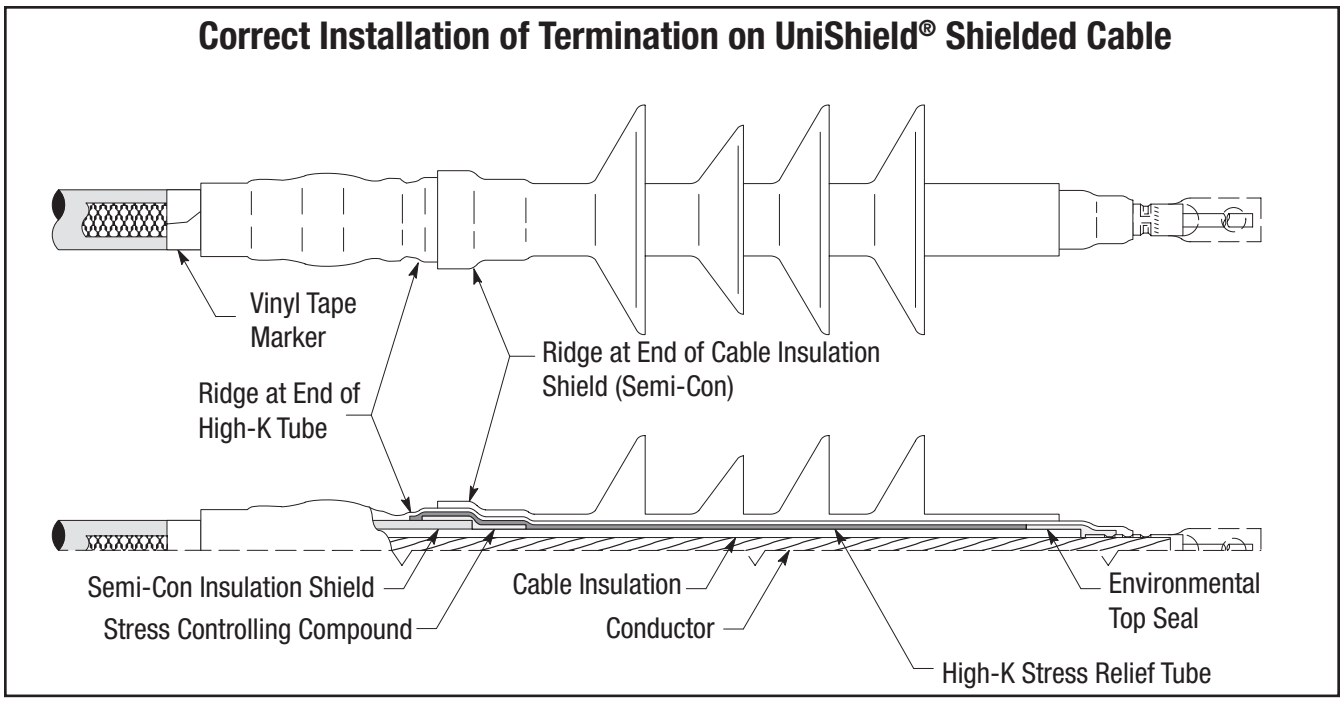
16.2 Slide the skirted insulator assembly over the previously applied tubular termination assembly. Position the skirted insulator assembly 3 1/2" (89 mm) from the marker tape (applied in Step 13.2) and remove core. Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 27). 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 27).



NOTE: The material being removed at this step is mixed polymers and can be recycled with 7 other waste.

Figure 27

16.3 Connect ground braid 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 21 and 22 for installation instructions.

17.0 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.

17.1 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 28). Pull the core while unwinding, counterclockwise, starting with the loose end (Figure 28). 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.

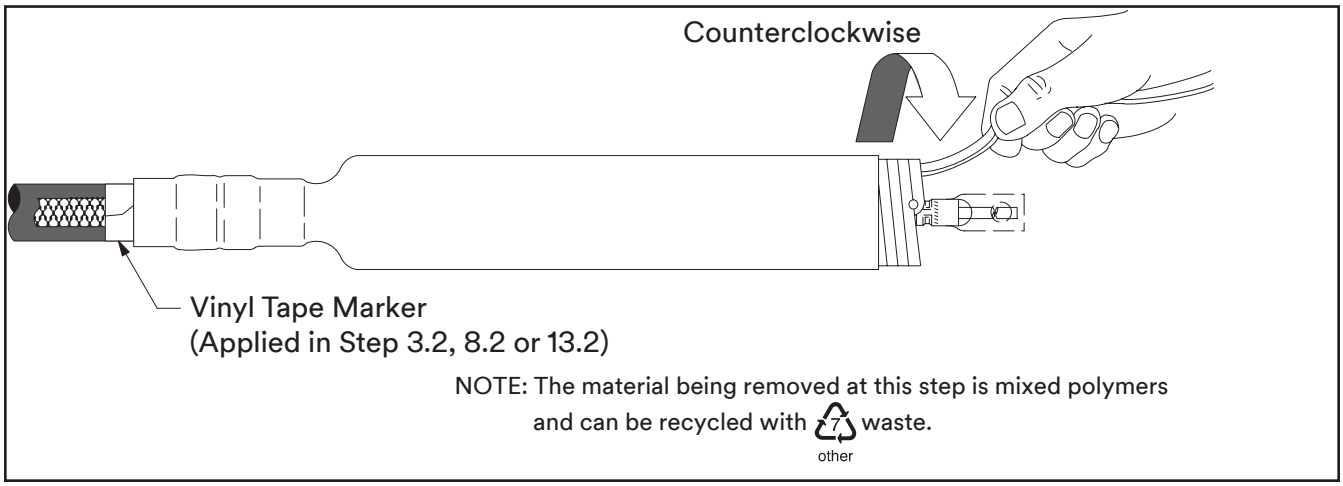


Figure 28

17.2 Slide the skirted insulator assembly over the previously applied tubular termination assembly. Position the skirted insulator assembly 3" (76 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 29). 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" (76 mm) from the top edge of the tubular termination assembly (Figure 29).

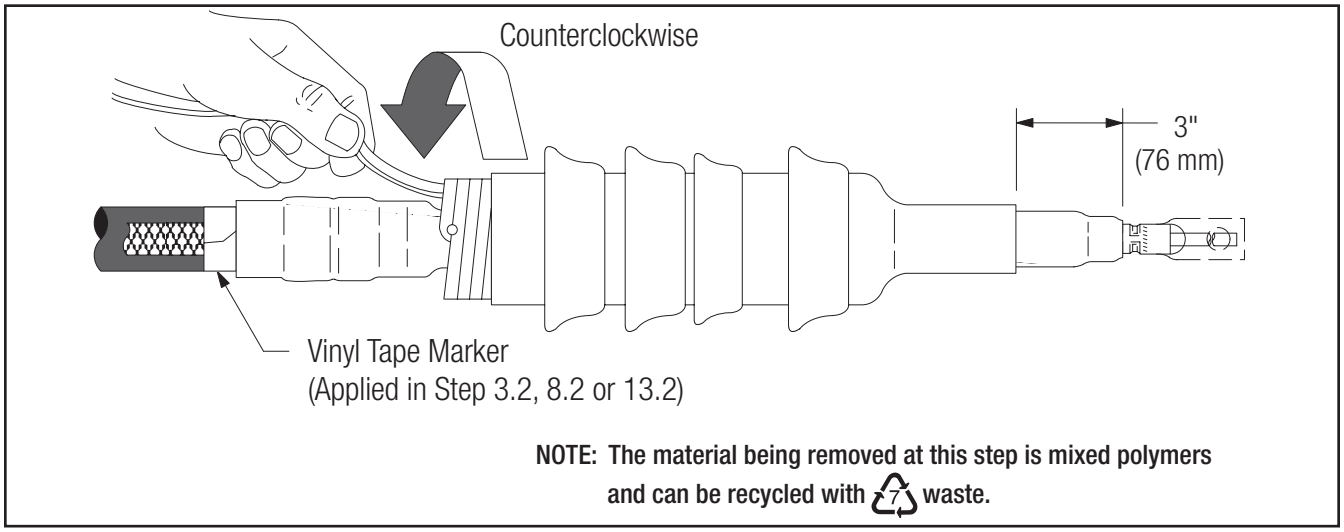
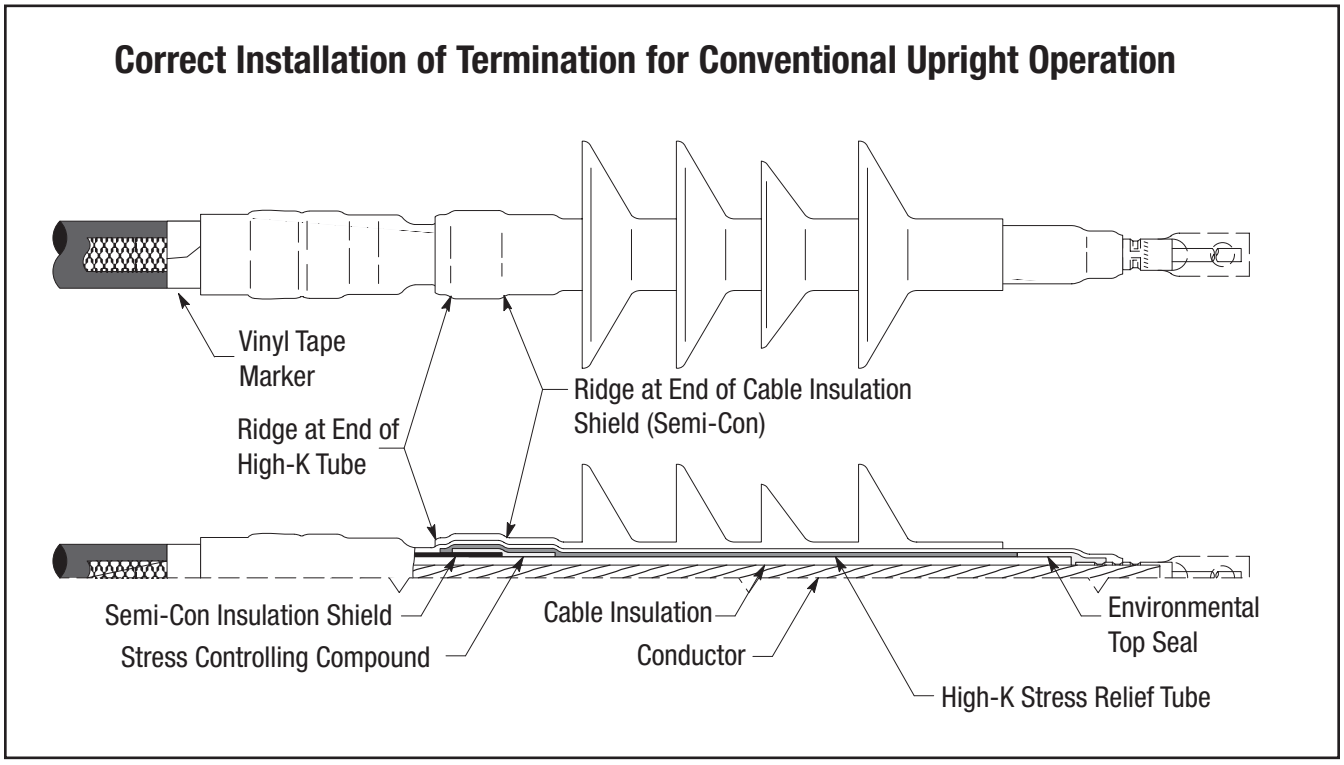


Figure 29

Connect ground braid to system ground according to system practice.



Jacket Removal Calculation Table - Tape Shield Cable - Crimp Type (Compression) Lugs / Connectors - 7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4(L), 7696-S-INV-4, 7695-T-150(S), 7696-T-150(S)			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12.5"	318 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. **This measurement applies only to Aluminum lugs / connectors.**
TOTAL JACKET REMOVAL LENGTH	=	=	

Table 6

Jacket Removal Calculation Table - Tape Shield Cable - 3M™ Mechanical Shearbolt Lugs QL2 Series / 3M™ Mechanical Shearbolt Connectors QCI Series - 7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4(L), 7696-S-INV-, 7696-S-INV-4, 7695-T-150(S), 7696-T-150(S)			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12.5"	318 mm	Value from Figure 1
Insulation Removal Length = Depth of 3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole Barrel or 3M™ Mechanical Shearbolt Connectors QCI Series 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 7

Jacket Removal Calculation Table - Wire Shield Cable - Crimp Type (Compression) Lugs / Connectors - 7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4(L), 7696-S-INV-4, 7695-T-150(S), 7696-T-150(S)			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12.5"	318 mm	Value from Figure 9
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 4 for correct growth allowance. **This measurement applies only to Aluminum lugs / connectors**.
TOTAL JACKET REMOVAL LENGTH	=	=	

Table 8

Jacket Removal Calculation Table - Wire Shield Cable - 3M™ Mechanical Shearbolt Lugs QL2 Series / 3M™ Mechanical Shearbolt Connector QCI Series - 7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4(L), 7696-S-INV-4, 7695-T-150(S), 7696-T-150(S)			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Insulation Length	12.5"	318 mm	Value from Figure 9
Insulation Removal Length = Depth of 3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole Barrel or 3M™ Mechanical Shearbolt Connectors QCI Series 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 SEMI-CON JACKET REMOVAL LENGTH	=	=	

Table 9

Semi- Conductive Jacket Preparation Calculation Table - UniShield® Cable - Crimp Type (Compression) Lugs / Connectors - 7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4(L), 7696-S-INV-4, 7695-T-150(S), 7696-T-150(S)			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Semi-Conductive Jacket Length	11"	279 mm	Value from Figure 18
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 5 for correct growth allowance. **This measurement applies only to Aluminum lugs / connectors.**
TOTAL SEMI- CONDUCTIVE JACKET PREPARATION LENGTH	=	=	

Table 10

Semi- Conductive Jacket Preparation Calculation Table - UniShield® Cable - 3M™ Mechanical Shearbolt Lugs QL2 Series / 3M™ Mechanical Shearbolt Connector QCI Series - 7693-S-INV-4, 7695-S-INV-4, 7695-S-INV-4(L), 7696-S-INV-4, 7695-T-150(S), 7696-T-150(S)			
CABLE PREPARATION ITEM	Inches -Add this column-	mm -Add this column-	NOTES
Semi-Conductive Jacket Length	11"	279 mm	Value from Figure 18
Insulation Removal Length = Depth of 3M™ Mechanical Shearbolt Lugs QL2 Series: Two Hole Barrel or 3M™ Mechanical Shearbolt Connectors QCI Series 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 SEMI- CONDUCTIVE JACKET PREPARATION LENGTH	=	=	

Table 11

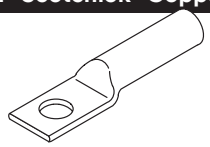
Tooling Index

Lug and Crimping Information for 3M™ Scotchlok™ Copper Lugs

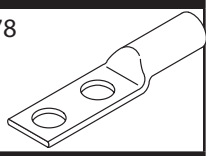
30014 thru 30045 One hole



31036 thru 31068 One hole-long barrel



31145 thru 31178 Two hole-long barrel



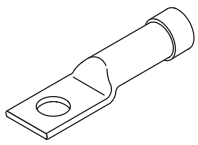
Cable Size AWG/ kcmil	Stud Size (in.)	3M™ Scotchlok™ Copper Lug Number	Crimping Tool-Die Sets (Minimum Number Of Crimps)							
			Burndy Corporation				Thomas & Betts Corporation			Square D Co. Anderson Div.
			MD6	MY29	Y34A	Y35, Y39, Y45*, Y46*	TBM 5	TBM 8	TBM 15	VC6–3, VC6–FT**
6	10 1/4 5/16	30014 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.

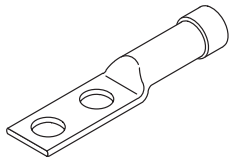
Tooling Index

Lug and Crimping Information for 3M™ Scotchlok™ Copper/Aluminum Lugs

40016 thru 40079
One hole



40132 thru 40178
Two hole



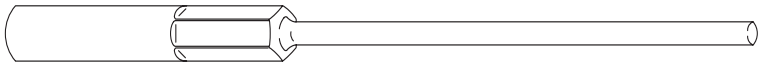
Cable Size AWG/ kcmil	Stud Size (in.)	3M™Scotchlok™ Lug Number	Crimping Tool-Die Sets (Minimum Number Of Crimps)												
			Burndy Corporation					Thomas & Betts Corporation				Square D Co. Anderson Div.		ITT Black-burn Co.	Ke-arny Nat'l Div.
			MD6	MY29	Y34A	Y35, Y39, Y45*, Y46*	Y1000 **	TBM 5	TBM 8	TBM 12	TBM 15	VC6–3** VC6–FT**	VC8C **	OD58	TYPE O
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

Crimping Information for
3M™ Stem Connectors
Copper/Aluminum



Conductor Size AWG & kcmil		3M™ Connector Number	Crimping Table For 3M™ Stem Type Connector				
			Recommended Crimping Tools				
Stranded	Solid		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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