Instructions

Quick Term II

Silicone Rubber Termination

IEEE Std. No. 48–1990

Class 1 Termination
46 kV Class
250 kV BIL

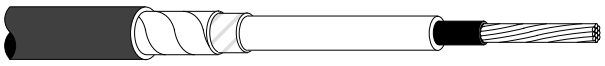
Kit Contents

1 High-K, 8–Skirted Silicone Rubber Termination
1 4–Skirt Silicone Rubber Insulator
1 Silicone Rubber Jacket-Seal PST Assembly
1 Pack Silicone Grease
(Clear 5cc tube with green letters)
2 Preformed Ground Braids
1 Constant–Force Spring
2 Mastic Seal Strips
(Black with white release liners, bagged)
1 Roll Scotch™ No. 13 Semiconducting Tape
1 Roll Scotch™ No. 70 Silicone Rubber Tape
1 Instruction Sheet

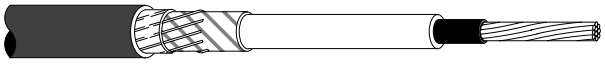
46 kV Kit Selection Chart
NOTE: Final determining factor is cable insulation diameter

Kit Number	Cable Insulation O.D. Range	Conductor Size Range (AWG or kcm)
4604	1.31 – 2.10 in. (33 mm – 53 mm)	4/0 – 600
4605	1.80 – 2.60 in. (46 mm – 66 mm)	600 – 1500

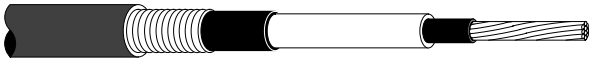
Table 1



Tape Shield



Wire Shield



Longitudinally Corrugated (LC) Shield Cable

Quick Term II

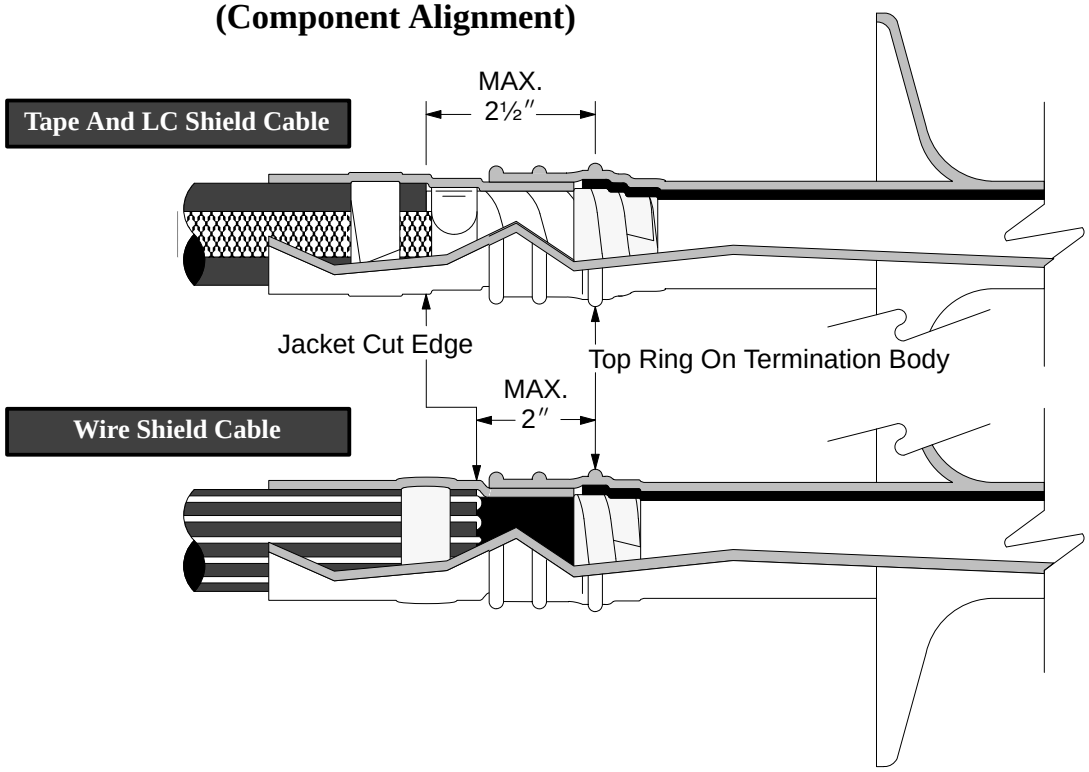
Silicone Rubber Termination Kit
for Single Conductor Tape Shield, Wire Shield and LC Shield Cables

4604 **4605**

2047MT–74

ISSUE DATE: 1/27/93	SCALE: Not to scale
	ISSUE:

Correct Installation of Termination (Component Alignment)



A. Prepare Cable

1. Check to be sure cable size fits within kit range as shown in *Table 1* (cover page).
2. Prepare cable by following directions suited to specific shielding type.

   NOTE: <u>All Shield Types</u> – After stripping back cable jacket and shield layers, clean cable insulation with an approved solvent. USE ON INSULATION ONLY. DO NOT ALLOW SOLVENT CONTACT WITH CABLE SHIELD SYSTEM.

   If abrasive is required, use only 120 grit aluminum oxide.

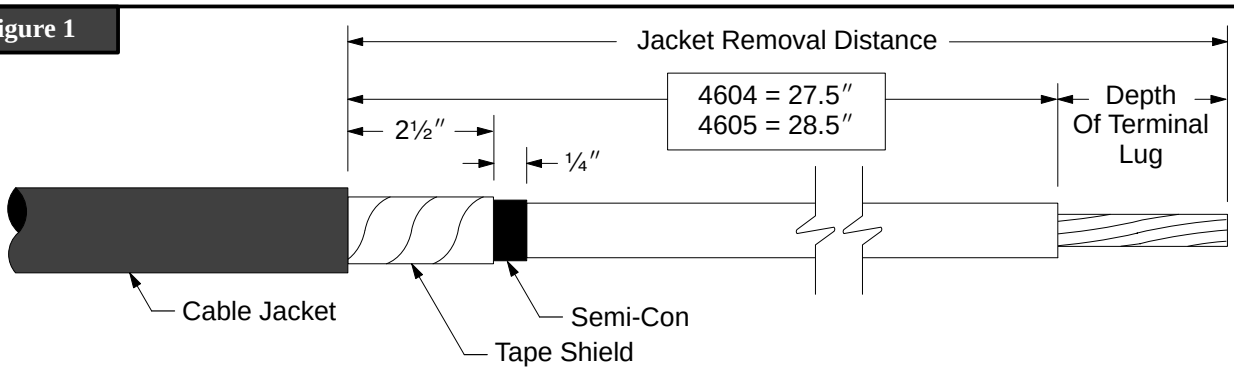
Tape Shield

1. Prepare cable using dimensions shown in *(Figure 1)*. **Be sure to allow for depth of terminal lug.**

   NOTE: Provide additional exposed conductor distance to account for growth during crimping of Aluminum Lugs/Connectors as follows.

Lug/Connector Depth Plus:	2/0 – 350 ¼″	400 – 650 ½″	750 – 1000 ¾″	1250 – 2000 Field Determine

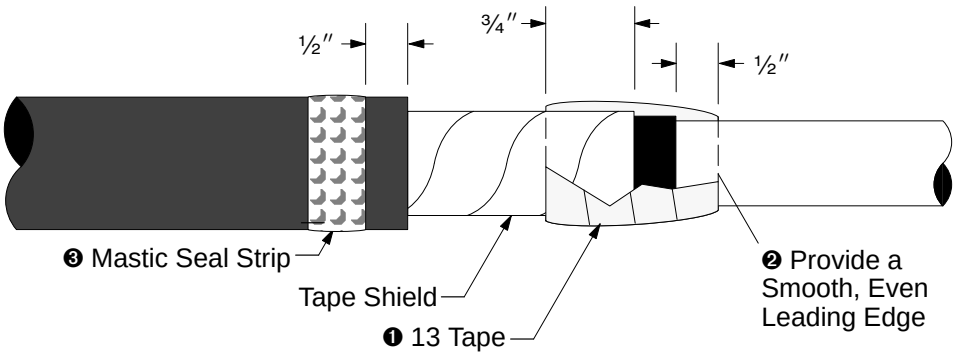
Figure 1



Tape Shield (continued)

2. Wrap 2 highly stretched half-lapped layers of Scotch™ 13 Semi-Conducting Tape ❶ *(Figure 2)* over the tape shield and semi-con extending ½″ (13 mm) onto cable insulation. Start and end taping ¾″ (19 mm) onto tape shield. Provide a smooth, even leading edge over cable insulation as shown ❷ *Figure 2*.

Figure 2



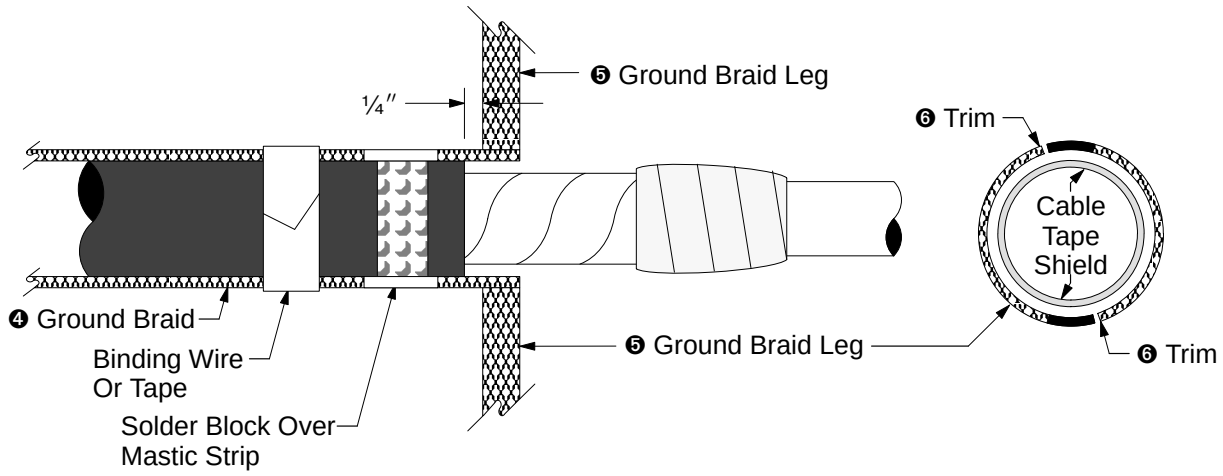
3. Select one of two Mastic Seal Strips, provided in kit and remove white liners. Using light tension, wrap a band of mastic around the cable jacket ½″ (13 mm) from cut edge ❸ *Figure 2*. Cut off excess.

Install Ground Straps (Tape Shield Cables Only)

1. Position pre-formed Ground Braids ❹ along opposite sides of cable jacket and secure in place with binding wire or vinyl tape as shown *(Figure 3)*. Ground Braid Legs ❺ over cable tape shield should be position ¼″ from jacket cut edge.

NOTE: Ground Braid Solder-Block sections are slightly curved to conform to the cable jacket. Match the curved shape to the cable jacket during initial positioning.

Figure 3

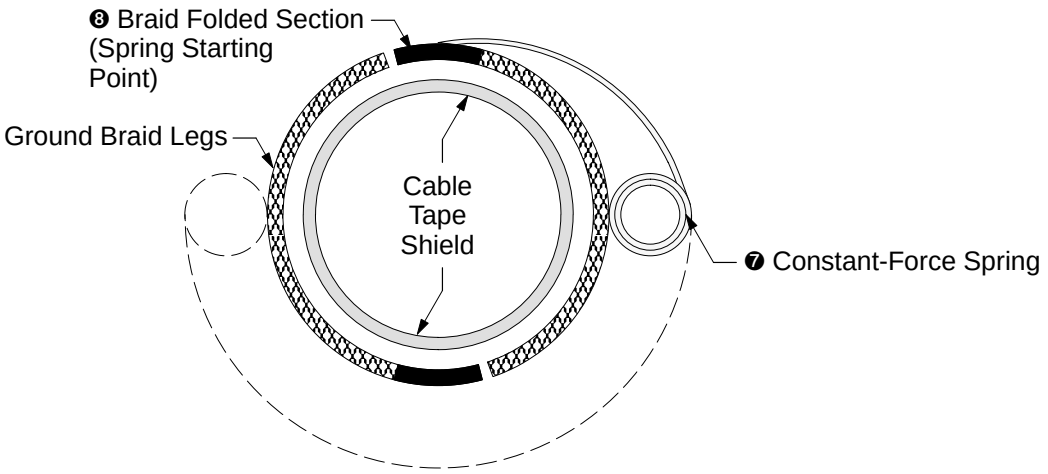


2. Lay each Ground Braid Leg ❺ around the cable shield and trim its length to prevent overlap as needed ❻ *Figure 3*.

3. Secure Ground Braid Legs to cable shield using supplied Constant-Force Spring ❼ *Figure 4*. Start the spring on one braid folded section ❽ *(Figure 4)* and wrap Ground Braid Legs and spring together in a common direction (clock-wise, viewed from cable end). Capture both Ground Braid Legs while wrapping and cinch (tighten) the spring after wrapping the final winding.

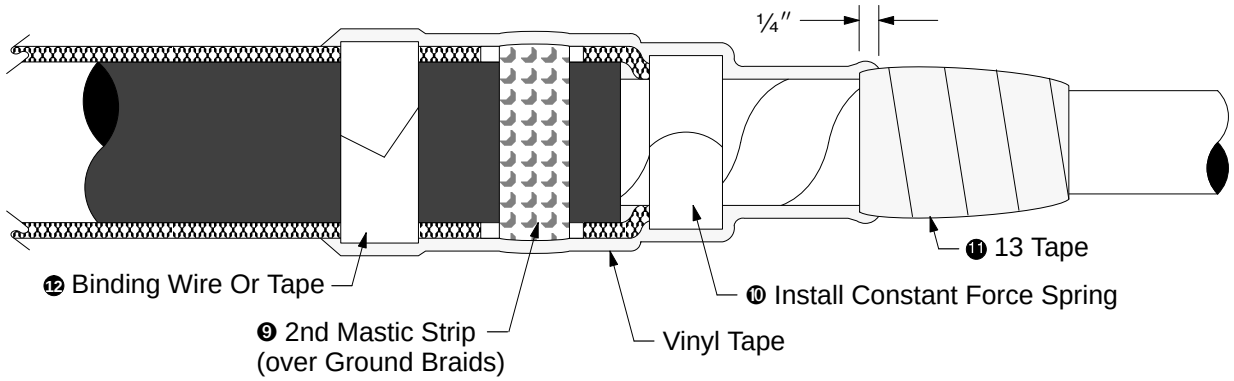
Tape Shield (continued)

Figure 4



4. Select second Mastic Seal Strip from kit and remove white liners. Using light tension, wrap a band of mastic over the Ground Braids covering the Solder-Blocks and the previously installed mastic strip ❾ *Figure 5*.

Figure 5



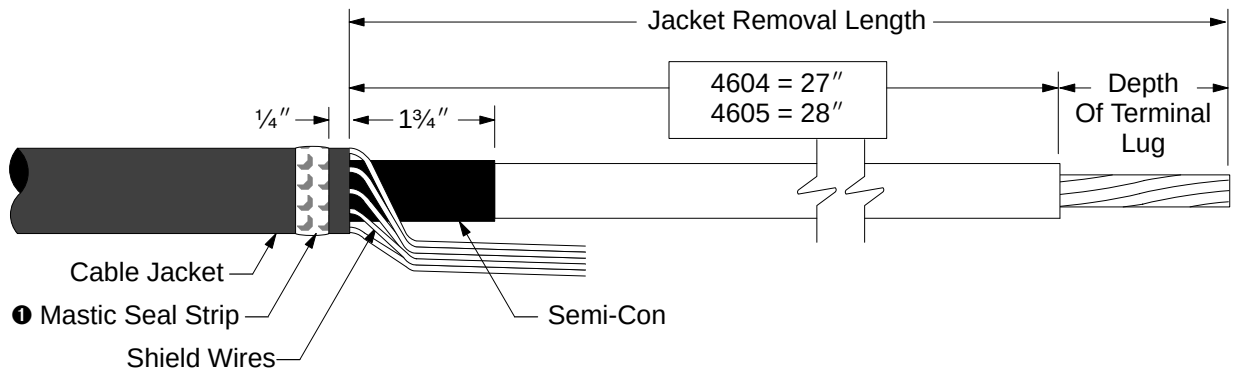
5. Apply one highly-stretched, half-lapped layer vinyl tape (not supplied) over Constant Force Spring ❿ *(Figure 5)* and Mastic Seal Strip ❾. Start taping ¼″ (½″ Max.) over applied 13 Tape ⓫, extend over Mastic Seal Strip and finish by covering binding wire or vinyl tape band ⓬ applied in Step 1 *(page 3)*.

6. Proceed to Section B.

Wire Shield

1. Train cable into position and cut to length required for installation. Allow sufficient shield wire length for grounding connection.
2. Prepare cable using dimensions shown in *(Figure 6)*. **Be sure to allow for depth of terminal lug.**

Figure 6

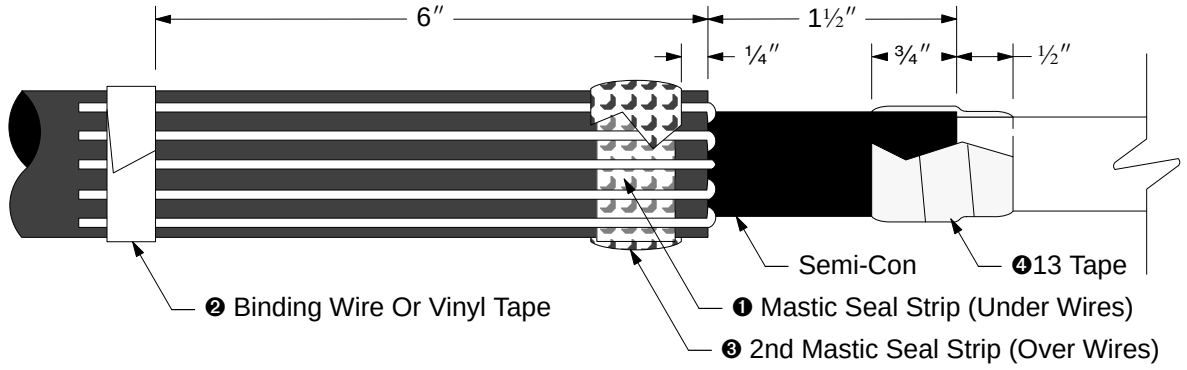


NOTE: Provide additional exposed conductor distance to account for growth during crimping of Aluminum Lugs/Connectors as follows.

Lug/Connector Depth Plus:	2/0 – 350 ¼″	400 – 650 ½″	750 – 1000 ¾″	1250 – 2000 Field Determine

3. Select one of two mastic strips from kit and remove white release liners. Using light tension, wrap a band of mastic around the cable jacket ¼″ (6 mm) from cut edge ❶ *(Figure 6)*. Cut off excess.
4. Bend shield wires back over applied sealing mastic and secure to cable jacket 6″ below cut edge using vinyl tape or binding wire ❷ *Figure 7*.

Figure 7

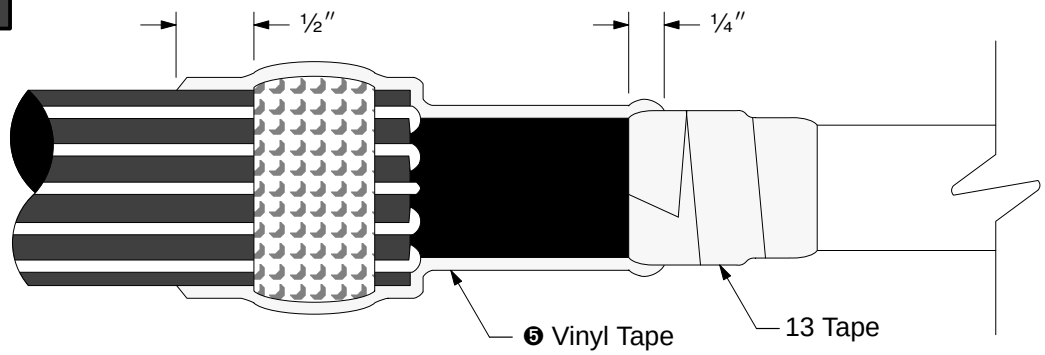


5. Remove white release liners from second mastic strip. Wrap the second mastic strip over shield wires and previously applied mastic ❸ *Figure 7*.
6. Wrap 2 highly stretched half-lapped layers of Scotch™ 13 Semi-Conducting Tape over cable semi-con extending ½″ (19 mm) onto cable insulation. Start and end taping ½″ (19 mm) onto cable semi-con. Provide a smooth, even leading edge over cable insulation as shown ❹ *Figure 7*.

Wire Shield (continued)

7. Apply one highly-stretched, half-lapped layer vinyl tape ❺ *Figure 8* (not supplied) over cable semi-con and mastic seal strip. Start taping ¼″ (¾″ Max.) over applied 13 tape and extend wrapping to ½″ (13 mm) below mastic seal strip *Figure 8*.

Figure 8

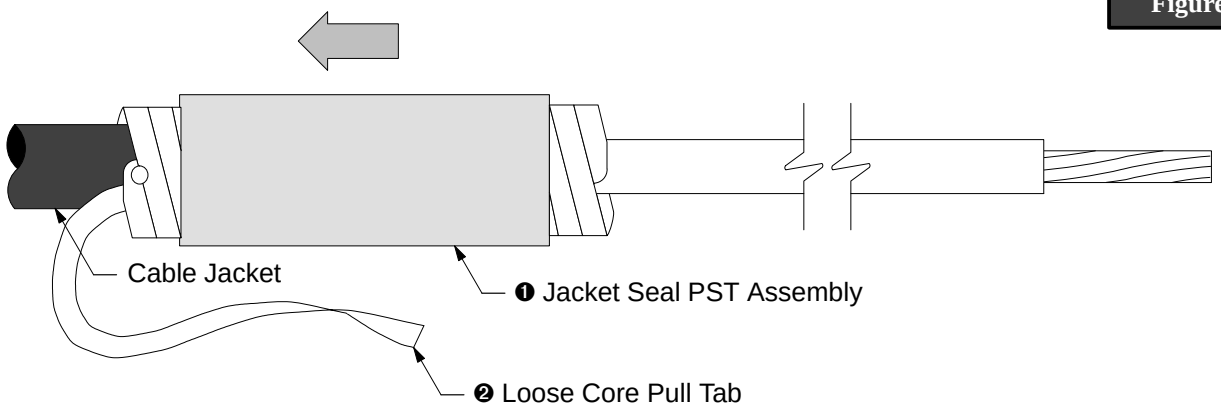


8. Proceed to Section B.

B. Install Termination (Both Shield Types)

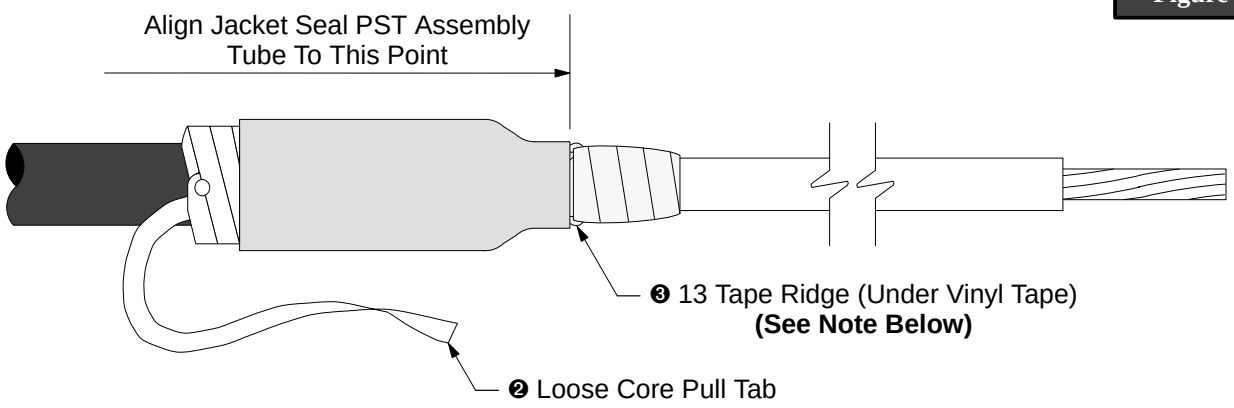
1. Position Jacket Seal PST Assembly ❶ *(Figure 9)* over cable jacket with loose core pull tab ❷ Directed away from prepared cable end.

Figure 9



2. Install Jacket Seal PST by pulling loose core pull tab while unwinding counter-clockwise ❷ *Figure 10*. Silicone rubber tube (not the core) should be align with ridge formed by previously applied 13 tape ❸ *Figure 10*.

Figure 10

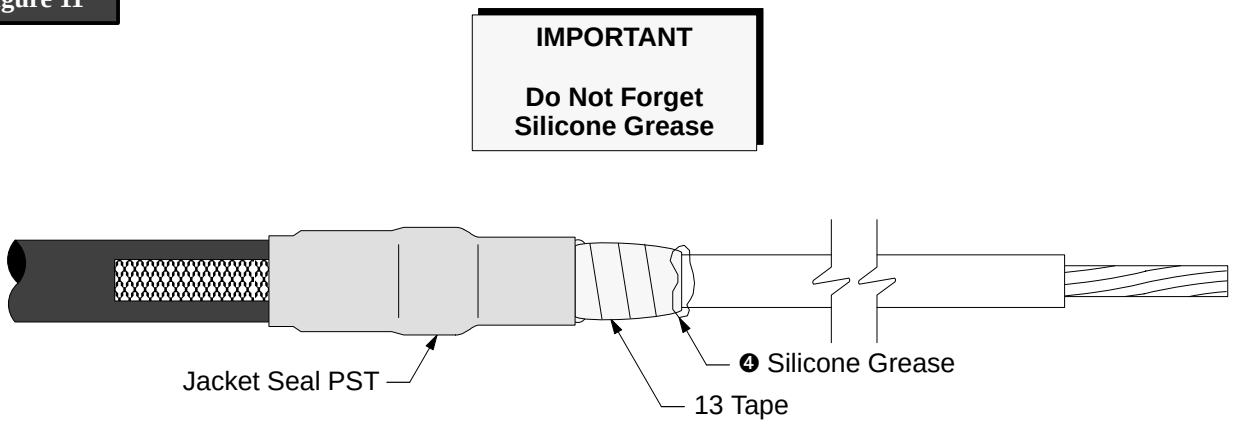


NOTE: Jacket Seal PST alignment point can also be measured from jacket cut edge. Tape Shield Cable = 1¾″ Wire Shield Cable = 1″.

Install Termination (continued)

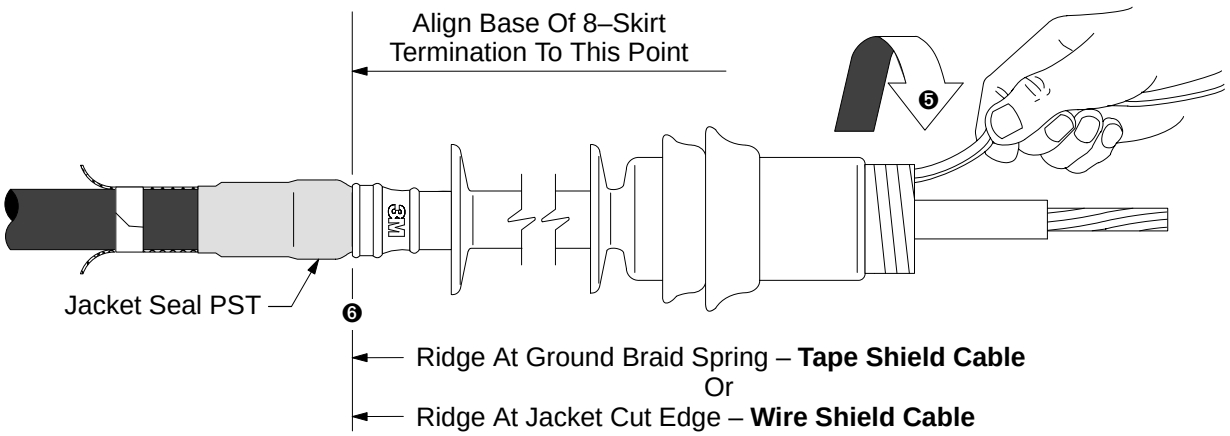
3. Cover the edge of the 13 Tape with a liberal coating of Silicone Grease ❹ *Figure 11*. **On this product the Silicone Grease does not serve as a lubricant. It must be used to fill the step at the 13 tape edge**.

Figure 11



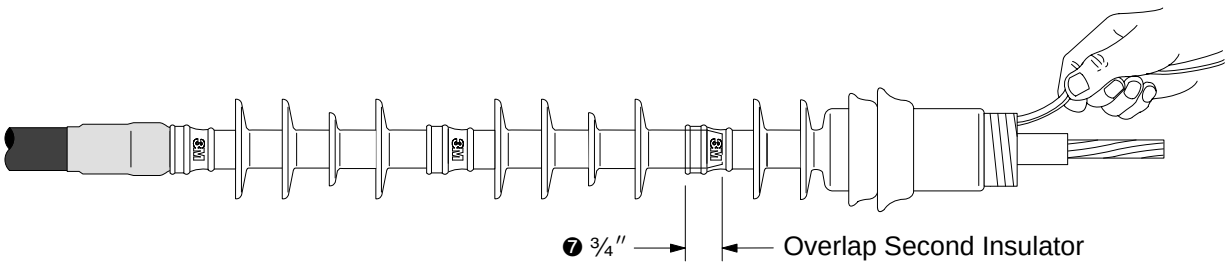
4. Slide 8–Skirt Termination Body onto the cable and remove core. Pull while unwinding, counter-clockwise, ❺ *(Figure 12)* starting with the loose end. Make sure the termination body (not the core) is aligned as shown ❻ *Figure 12*.

Figure 12



5. Position Silicone 4–Skirt Insulator over cable end *(Figure 13)* and install by pulling loose core end while unwinding counter-clockwise. Align 4–Skirt Insulator (not the core) to overlap previously installed 8–Skirt Termination by ¾″ (19 mm) as shown ❼ *Figure 13*.

Figure 13

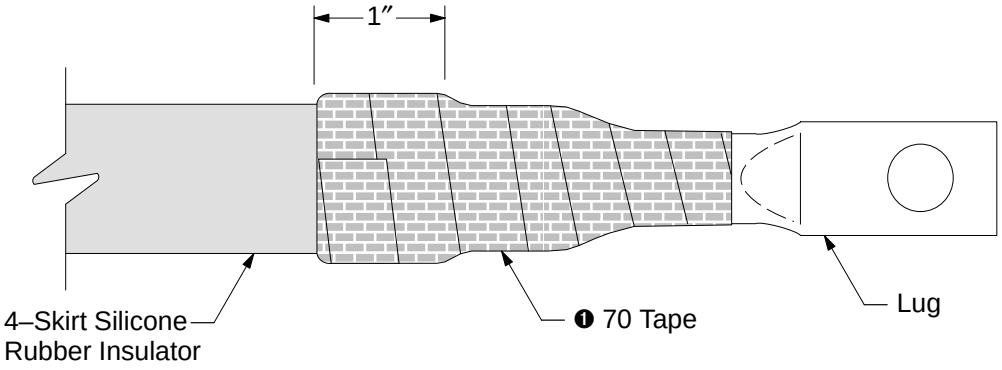


C. Install Terminal Lug

1. Install Terminal Lug per manufacturer's direction. See page 8 or 9 if 3M lugs are used.
2. Wrap 4 half-lapped layers of Scotch™ 70 Silicone Rubber Tape over the lug and onto the insulator for 1″ (25 mm) ❶ *Figure 14*. Start and end taping on the lug barrel.

   Taping Hint: Apply Scotch™ 70 Silicone Rubber Tape with minimum tension (just enough to avoid folds or wrinkles).
3. If lug is not used, solder block conductor and wrap 4 half-lapped layers of 70 Tape from the solder block to 1″ (25 mm) onto the insulator using "Taping Hint".

Figure 14



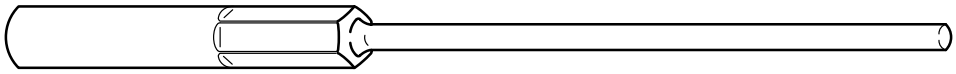
D. Grounding

1. If cable is to be grounded at termination, **use braid or wire appropriately sized for system requirements.**

   Termination combination Ground Strap is copper conductor equivalent of 4 AWG.
2. Scotch™ number 25 grounding braid (number 6 AWG copper equivalent) is suitable for general grounding requirements.
3. For Wire Shield Cable applications, collect drain wires together and connect to system ground using appropriately sized wire or braid.

Tooling Index

Crimping Information for 3M Stem Connectors
Copper/Aluminum

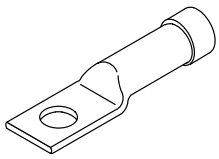


CRIMPING TABLE FOR 3M STEM TYPE CONNECTOR

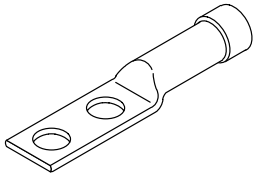
Conductor Size	3M Connector No.	Recommended Crimping Tools				
		Manufacturer	Mech. Tool	Die (No. Crimps)	Hydraulic Tool	Die (No. Crimps)
#2 Sol. #1, #2 1/0	SC0002 SC0001 SC0010	Burndy	MD6	BG(4), W243(4)	Y35, Y39, Y45**	U25ART(2), U243(2)
		Kearny	0–51, 0–52	5/8–1(4)	12, 20, 40, Ton	5/8–1(4)
		T & B	TBM 8	Olive(2)	TBM 15	50*(2)
		Anderson	—	—	VC 6	Universal(2)
2/0 3/0 4/0	SC0020 SC0030 SC0040	Burndy	MD6	W669(0) 840(5)*	Y35, Y39, Y45**	U28ART(2)
		Kearny	0–51, 0–52	840(5)*	WH–1, WH–2	840(2)
		T & B	TBM 8	White(4)	TBM 15	66(3)
		Anderson	—	—	VC 6	Universal(2)

Lug and Crimping Information for Scotchlok™ Copper/Aluminum Lugs

40016 thru 40079
One hole



40132 thru 40178
Two hole



CRIMPING TOOL-DIE SETS (NO. OF CRIMPS)

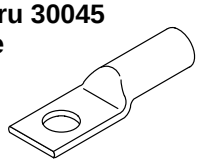
Cable Size AWG/ kcmil	Stud Size (in.)	Scotchlok™ Lug Number	Burndy Corporation					Thomas & Betts Corporation				Square D Co. Anderson Div.		ITT Black-burn Co.	Kearne Nat'l Div.
			MD6	MY29	Y34A	Y35, 39, 45*, 46*	** Y1000	TBM 5	TBM 8	TBM 12	TBM 15	VC6–3** VC6–FT**	VC8C**	OD58	TYPE 0
6	5/16	40016	W161(1)	6 AWG(1)	A6CAB(1)	U6CABT(1)	(1)	Grey(1)	Grey(1)	—	29(1)	(1)	—	BY19(3)	J(3)
4	5/16	40020	W162(3)	4 AWG(1)	A4CAB(1)	U4CABT(1)	(1)	Green(2)	Green(2)	—	37(1)	(1)	—	BY53(3)	P(3)
2	3/8 1/2	40024 40025	W163(3) W163(3)	2 AWG(1) 2 AWG(1)	A2CAB(1) A2CAB(1)	U2CABT(1) U2CABT(1)	(1) (1)	Pink(2) Pink(2)	Pink(2) Pink(2)	— —	42H(2) 42H(2)	(1) (1)	— —	BY23(3) BY23(3)	1/2(3) 1/2(3)
1	3/8 1/2	40028 40029	W163(3) W163(3)	1 AWG(1) 1 AWG(1)	A1CAR(1) A1CAR(1)	U1CART(1) U1CART(1)	(1) (1)	Gold(2) Gold(2)	Gold(2) Gold(2)	— —	45(1) 45(1)	(1) (1)	— —	BY23(3) BY23(3)	1/2(3) 1/2(3)
1/0	3/8 1/2 3/8	40032 40033 40132	W241(3) W241(3) W241(3)	1/0 (1) 1/0 (1) 1/0 (1)	A25AR(1) A25AR(1) A25AR(1)	U25ART(1) U25ART(1) U25ART(1)	(1) (1) (1)	Tan(2) Tan(2) Tan(2)	Tan(2) Tan(2) Tan(2)	— — —	50(1) 50(1) 50(1)	(1) (1) (1)	— — —	BY25(3) BY25(3) BY25(3)	5/8–1(3) 5/8–1(3) 5/8–1(3)
2/0	1/2 1/2	40037 40137	BG(4) BG(4)	2/0(1) 2/0(1)	A26AR(2) A26AR(2)	U26ART(2) U26ART(2)	(1) (1)	Olive(2) Olive(2)	Olive(2) Olive(2)	— —	54H(2) 54H(2)	(2) (2)	— —	BY31C(3) BY31C(3)	5/8–1(3) 5/8–1(3)
3/0	1/2 1/2	40041 40141	W166(4) W166(4)	3/0(1) 3/0(1)	A27AR(2) A27AR(2)	U27ART(2) U27ART(2)	(1) (1)	Ruby(2) Ruby(2)	Ruby(2) Ruby(2)	— —	60(2) 60(2)	(2) (2)	— —	— —	737(3) 737(3)
4/0	1/2 5/8 1/2	40045 40046 40145	W660(4) W660(4) W660(4)	4/0(2) 4/0(2) 4/0(2)	A28AR(2) A28AR(2) A28AR(2)	U28ART(2) U28ART(2) U28ART(2)	(1) (1) (1)	— — —	White(4) White(4) White(4)	— — —	66(4) 66(4) 66(4)	(2) (2) (2)	— — —	BY35C(4) BY35C(4) BY35C(4)	840(4) 840(4) 840(4)
250	1/2 5/8 1/2	40049 40050 40149	W249(3) W249(3) W249(3)	— — —	A29AR(2) A29AR(2) A29AR(2)	U29ART(2) U29ART(2) U29ART(2)	(1) (1) (1)	— — —	— — —	71H(4) 71H(4) 71H(4)	71H(2) 71H(2) 71H(2)	(3) (3) (3)	— — —	— — —	— — —
300	1/2 1/2	40053 40153	— —	— —	A30AR(2) A30AR(2)	U30ART(2) U30ART(2)	(1) (1)	— —	— —	76H(4) 76H(4)	76(2) 76(2)	(3) (3)	— —	— —	— —
350	1/2 5/8 1/2	40056 40057 40156	— — —	— — —	— — —	U31ART(2) U31ART(2) U31ART(2)	(1) (1) (1)	— — —	— — —	87H(4) 87H(4) 87H(4)	87H(3) 87H(3) 87H(3)	(3) (3) (3)	— — —	— — —	— — —
400	1/2	40160	—	—	—	U32ART(4)	(1)	—	—	94H(4)	94H(4)	—	(2)	—	—
500	5/8 1/2	40067 40166	— —	— —	— —	U34ART(4) U34ART(4)	(1) (1)	— —	— —	106H(4) 106H(4)	106H(3) 106H(3)	— —	(2) (2)	— —	— —
600	1/2	40170	—	—	—	U36ART(4)	(1)	—	—	—	115H(3)	—	(3)	—	—
750	5/8 1/2	40073 40172	— —	— —	— —	U39ART(4) U39ART(4)	(1) (1)	— —	— —	— —	125H(5) 125H(5)	— —	(3) (3)	— —	— —
1000	5/8 1/2	40079 40178	— —	— —	— —	S44ART(4) S44ART(4)	(1) (1)	— —	— —	— —	140H(4) 140H(4)	— —	(3) (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.

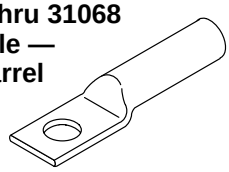
Tooling Index

Lug and Crimping Information for Scotchlok™ Copper Lugs

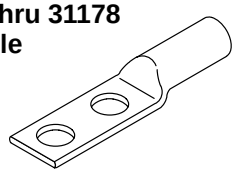
30014 thru 30045
One hole



31036 thru 31068
One hole — long barrel



31145 thru 31178
Two hole



Cable Size AWG/ kcmil	Stud Size (in.)	Scotchlok™ Copper Lug Number	CRIMPING TOOL-DIE SETS (NO. 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	—	6 AWG(1)	—	U5CRT(1)	Blue(1)	Blue(1)	—	Universal(1)
4	10 1/4 3/8	30018 30019 30021	W161(1)	4 AWG(1)	A4CR(1)	U4CRT(1)	Grey(1)	Grey(1)	—	Universal(1)
2	1/4 5/16 3/8	30022 30023 30024	W162(2)	2 AWG(1)	A2CR(1)	U2CRT(2)	Brown(1)	Brown(1)	33(1)	Universal(2)
1	5/16 3/8	30027 30028	—	1 AWG(1)	A1CR(1)	U1CRT(2)	Green(1)	Green(1)	37(1)	Universal(2)
1/0	5/16 3/8	30031 30032	W163(2)	1/0(1)	A25R(1)	U25RT(1)	Pink(2)	Pink(2)	42H(2)	Universal(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)	Universal(1) Universal(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)	Universal(2) Universal(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)	Universal(2) Universal(3) Universal(3)
250	1/2 1/2	31049 31149	W166(4)	250(2)	A29R(2)	U29RT(3)	Yellow(2)	Yellow(2)	62(2)	Universal(2)
300	1/2 1/2	31053 31153	—	—	A30R(2)	U30RT(3)	—	White(3)	66(3)	Universal(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)	—

NOTES:

We value your experience and opinions. Please enter any ideas or recommendations, associated with this product and submit to your local 3M representative

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6801 River Place Blvd.
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