



# Cold Shrink Silicone Rubber Termination QT-II

## Instructions

### IEEE Std. No. 48-1990

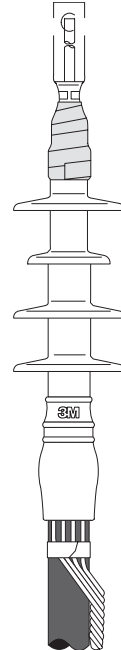
Class 1 Termination

15 Class 110 kV BIL

### Kit Contents:

- 1 Hi-K Silicone Rubber Termination
- 2 Scotch® Silicone Rubber Tape 70 Strips  
(Gray with clear release liners)
- 2 Mastic Seal Strips  
(Black with white release liners, bagged)
- 1 Pack of Silicone Grease  
(Clear 5cc tube with green letters)
- 1 Instruction Sheet

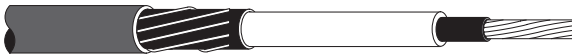
*Note: Do not use knives to open plastic bags.*



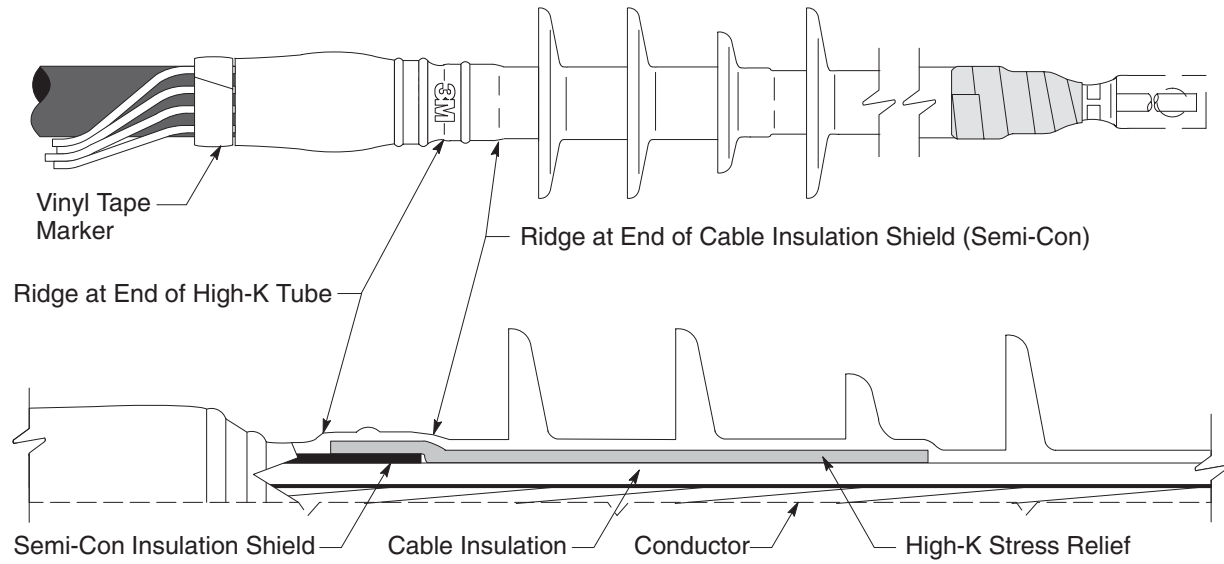
### Kit Selection Table

3M™ Kit Number	Primary Insulation O.D. Range	Jacket O.D. Range	Conductor Size Range AWG & kcmil
			15 kV
5641	0.637–1.12" (16–28 mm)	0.93–1.35" (24–34 mm)	#2–2/0
5642	0.84–1.38" (21–35 mm)	1.19–1.72" (30–44 mm)	3/0–350
5643	1.08–1.80" (27–46 mm)	1.37–2.02" (35–51 mm)	400–700
5644	1.31–2.10" (33–53 mm)	1.62–2.55" (41–65 mm)	750–1500

Table 1

 <p>Reduced Wall Jacketed Concentric Neutral (JCN) C</p>	<p>3M™ Cold Shrink Silicone Rubber Skirted Termination Kit QT-II for Jacketed Concentric Neutral (JCN) Cable 5641, 5642, 5643, 5644</p>
	<p>78-8096-4406-1-B</p>
	<p><b>⚠ CAUTION</b></p> <p>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.</p>

## Correct Installation of Termination



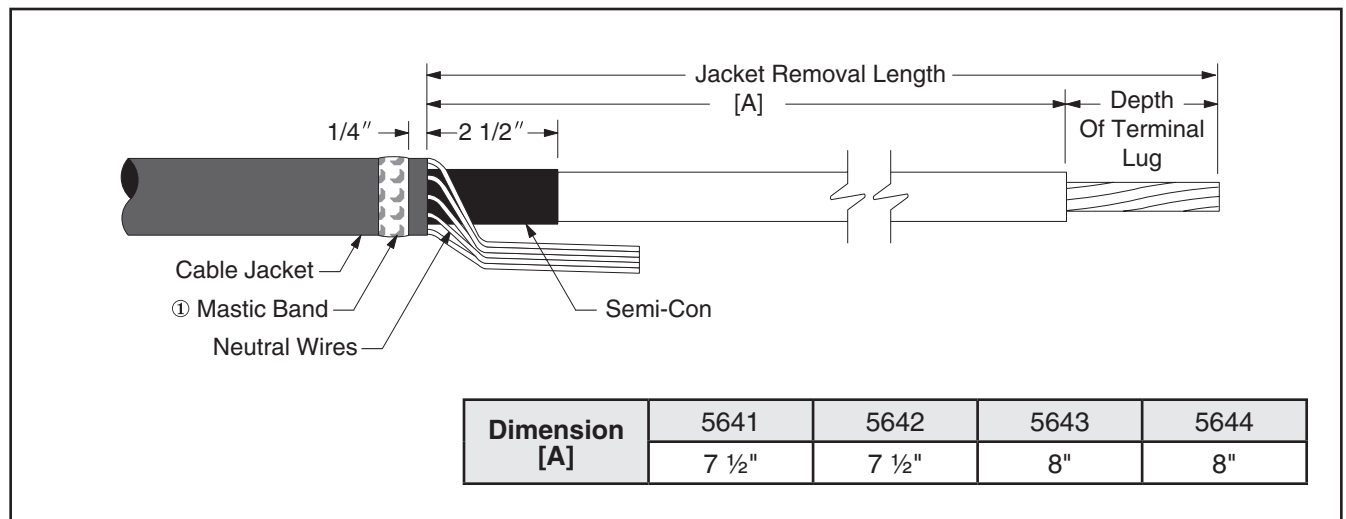
# 1.0 Prepare Cable

- 1.1 Check to be sure the cable fits within the kit ranges as shown in Table 1.
- 1.2 Train cable into position and cut to length required for installation. Allow sufficient neutral wire length for grounding connection.
- 1.3 Prepare cable using dimensions shown in Figure 1. **Be sure to allow for depth of terminal lug.**

*Note: Provide additional exposed conductor to allow for growth of aluminum lugs or connectors during crimping.*

<b>Conductor Size</b>	2/0–350	400–650	750–1000	1100–2000
<b>Growth Allowance</b>	0.25" (6 mm)	0.5" (13 mm)	0.75" (19 mm)	Field Determined

**Table 2**



**Figure 1**

- 1.4 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 1/4" (6 mm) from cut edge ① (Figure 1). Cut off excess.
- 1.5 Bend neutral wires back over applied sealing mastic and secure to cable jacket 2 1/2" (64 mm) below cut edge using vinyl tape or binding wire ② (Figure 2).
- 1.6 Select second mastic strip from kit and remove white release liners. Apply a second mastic band over the neutral wires and previously applied mastic ③ (Figure 2). Cut off excess
- 1.7 Compress neutral wires into mastic by over-wrapping seal strip with two highly stretched layers electrical grade vinyl tape ④ (Figure 2).

*Note: Do not extend vinyl tape wrapping more than 1/4" (6 mm) beyond mastic strip.*

1.8 Place a marker tape 1 1/2" (38 mm) back from the jacket cut edge ⑤ (Figure 2).

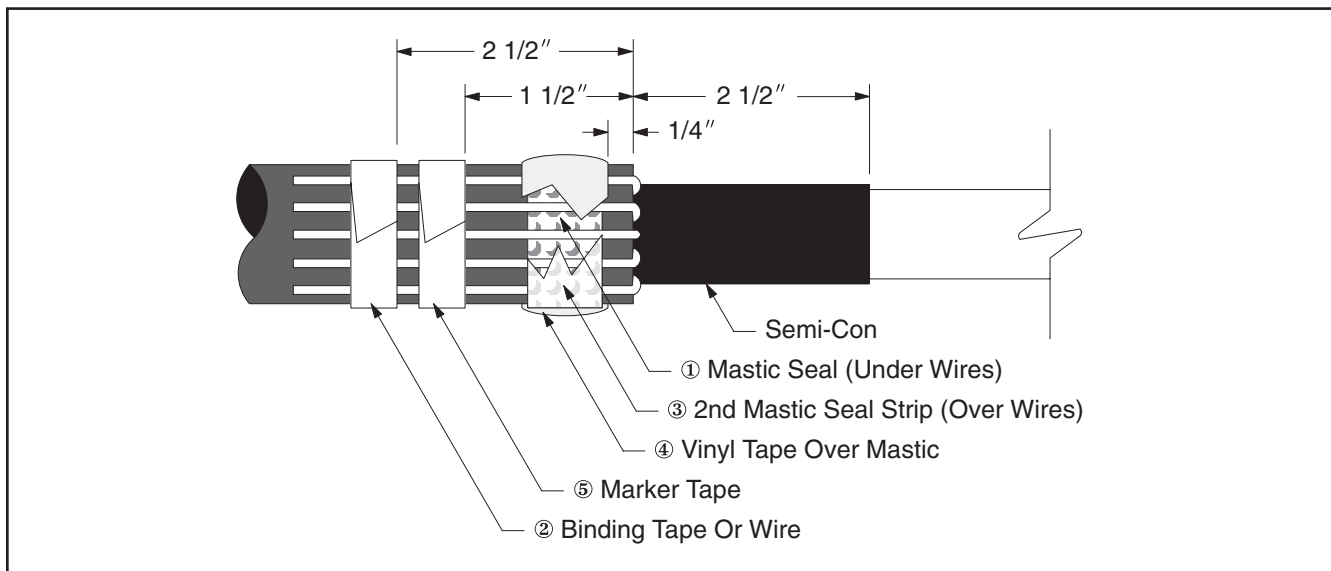


Figure 2

## 2.0 Install Lug or Connector

2.1 1. The termination assemblies are designed to fit over 3M™ Scotchlok™ Copper and Aluminum Lugs. If other lugs ① (Figure 3) will not fit through the termination core, clean the insulation (per Step C.) and slide termination on cable before installing lug. **Do not remove core at this time.**

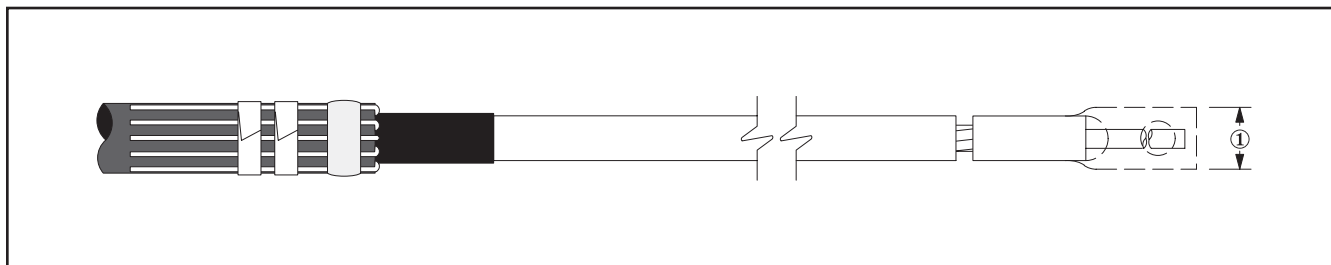


Figure 3

*Note: Refer to pages 7–9 for 3M Connector crimping information.*

2.2 Position lug/connector and crimp according to manufacturer's directions. Remove excess oxide inhibitor and sharp crimp flashing following crimping.

## 3.0 Clean Cable Insulation and Lug Barrel Using Standard Practice

3.1 Wipe the cable insulation with an approved solvent. **Do not allow solvent to touch semi-con insulation shield!**

3.2 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.

## 4.0 Install Termination

- 4.1 **IMPORTANT:** If a 3M-designed stem connector is not used, a track resistant moisture seal must be made between termination insulator and lug/connector using gray Scotch® No. Silicone Rubber Electrical Tape 70 strip (contained in kit). After removing the two clear release liners, wrap a band of silicone tape around the base of the terminal lug ① (Figure 4).

**NOTE: (IMPORTANT)**

- a. If barrel diameter is equal to or greater than cable primary insulation, the tape band should not exceed 2 layers.
  - b. If barrel diameter is smaller than the cable primary insulation, use one full tape strip to form the tape band.
- 4.2 Cover the edge of the semi-con insulation shield with a liberal coating of Silicone Grease ② (Figure 4). **On this product the Silicone Grease does not serve as a lubricant. It must be used to fill the step at the semi-con cutoff.**

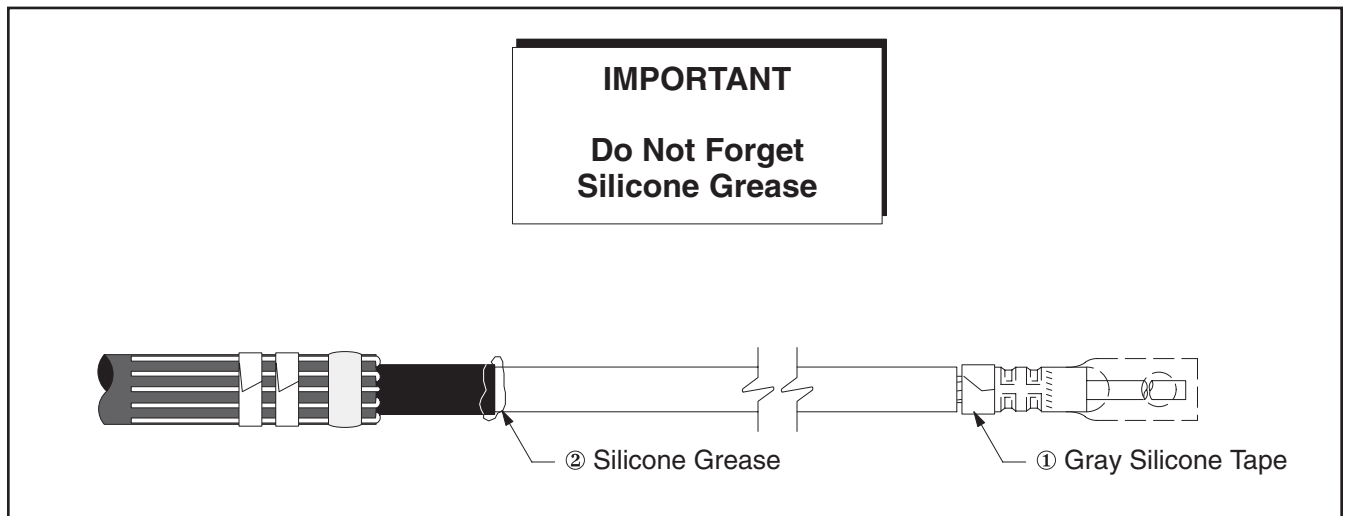


Figure 4

- 4.3 Slide the termination body onto the cable and remove core. Pull while unwinding, counter-clockwise, starting with the loose end ③ (Figure 5). Make sure the termination body (not the core) is butted up to the edge of the marker tape ④ (Figure 5).

**Note: Once the termination insulator has made 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 removing the core material.**

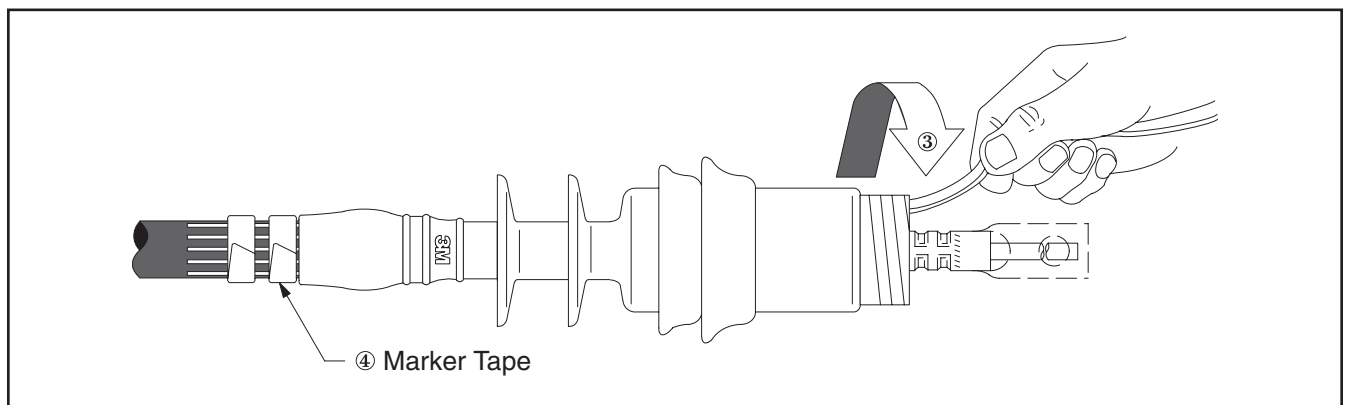
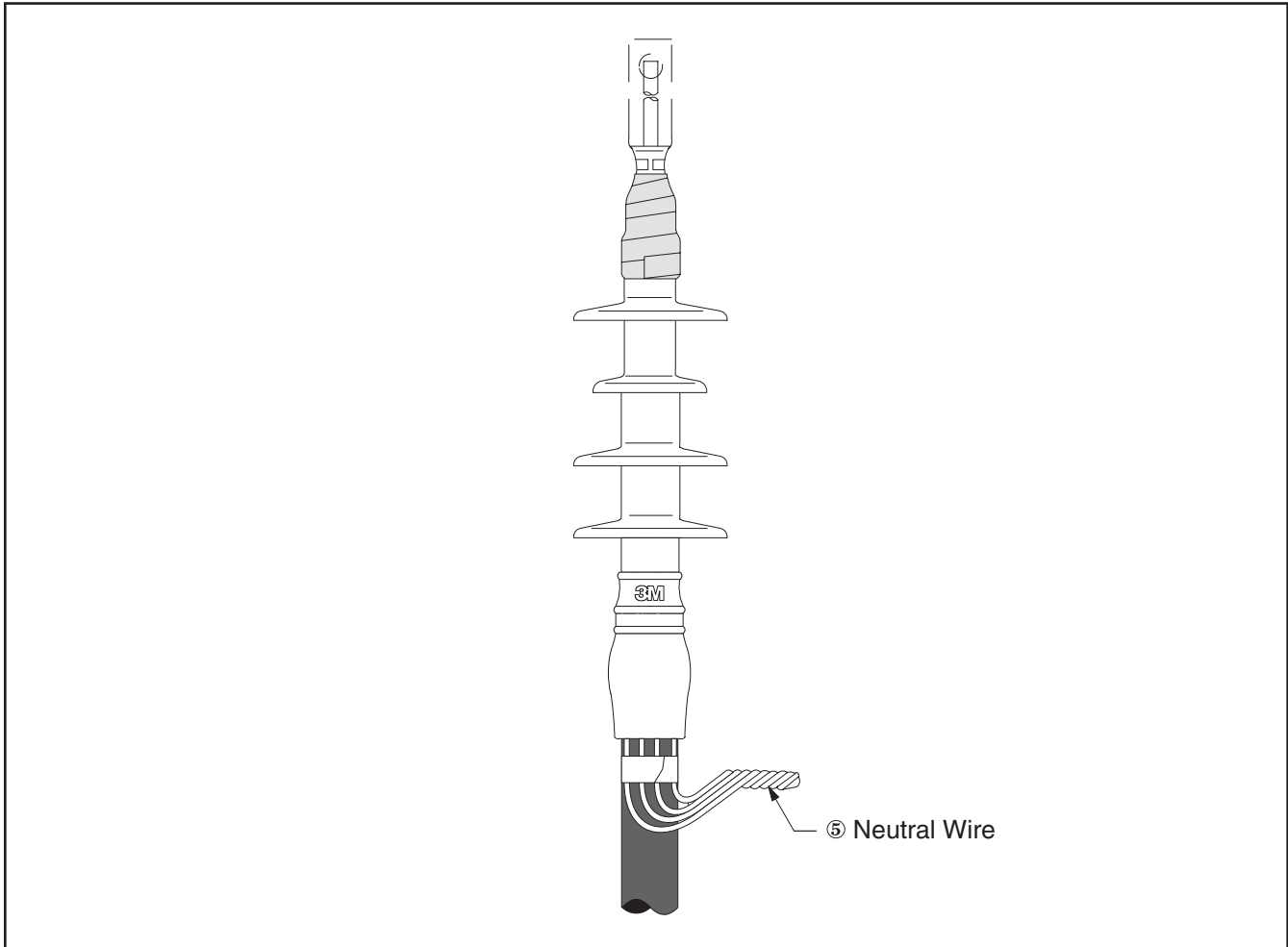


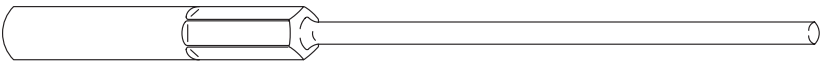
Figure 5

- 4.4 With termination installed, complete the lug area moisture seal using the remaining gray Scotch® Silicone Rubber Electrical Tape 70. Overlap the termination insulator by approximately 1" and extend the tape wrapping over a non-crimped region of the lug/connector barrel.
- 4.5 Collect concentric neutral wires together ⑤ (*Figure 6*) and connect to system ground according to standard practice.
- 4.6 Remove previously installed marker tape ④ (*Figure 5*).

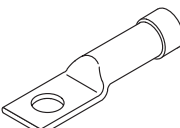
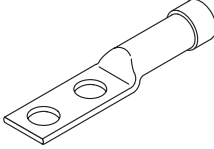


**Figure 6**

# Tooling Index

Crimping Information for 3M™ Stem Connectors Copper/Aluminum						
CRIMPING TABLE FOR 3M STEM TYPE CONNECTOR						
Conductor Size	3M Connector Number	Recommended Crimping Tools				
		Manufacturer	Mech. Tool	Die (No. Crimps)	Hydraulic	Die (No. Crimps)
2 Solid 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	—	—	VC6	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	-	—	VC6	Universal(2)

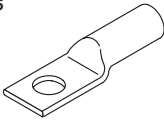
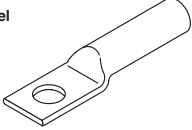
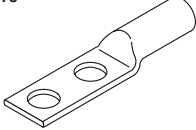
\* Y45 and Y46 accept all Y35 dies ("U" series). For Y45 use PT6515 adapter. For Y46 use PUADP adapter.  
 \*\* Anderson VC6-3, VC6-FT, VC8C and Burndy Y1000 require no die set.

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 (NUMBER OF CRIMPS)												
			Burndy Corporation					Thomas & Betts Corporation				Square D Co. Anderson Div.		ITT Black-burn 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 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 1/2	40024 40025	W163(3)	2AWG(1)	A2CAB(1)	U2CABT(1)	(1)	Pink(2)	Pink(2)	—	42H(2)	(1)	—	BY23(3)	1/2(3)
			W163(3)	2AWG(1)	A2CAB(1)	U2CABT(1)	(1)	Pink(2)	Pink(2)	—	42H(2)	(1)	—	BY23(3)	1/2(3)
1	3/8 1/2	40028 40029	W163(3)	1AWG(1)	A1CAR(1)	U1CART(1)	(1)	Gold(2)	Gold(2)	—	45(1)	(1)	—	BY23(3)	1/2(3)
			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 1/2 3/8	40032 40033 40132	W241(3)	1/0(1)	A25AR(1)	U25ART(1)	(1)	Tan(2)	Tan(2)	—	50(1)	(1)	—	BY25(3)	5/8-1(3)
			W241(3)	1/0(1)	A25AR(1)	U25ART(1)	(1)	Tan(2)	Tan(2)	—	50(1)	(1)	—	BY25(3)	5/8-1(3)
			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 1/2	40037 40137	BG(4)	2/0(1)	A26AR(2)	U26ART(2)	(1)	Olive(2)	Olive(2)	—	54H(2)	(2)	—	BY31C(3)	5/8-1(3)
			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 1/2	40041 40141	W166(4)	3/0(1)	A27AR(2)	U27ART(2)	(1)	Ruby(2)	Ruby(2)	—	60(2)	(2)	—	—	737(3)
			W166(4)	3/0(1)	A27AR(2)	U27ART(2)	(1)	Ruby(2)	Ruby(2)	—	60(2)	(2)	—	—	737(3)
4/0	1/2 5/8 1/2	40045 40046 40145	W660(4)	4/0 (2)	A28AR(2)	U28ART(2)	(1)	—	White(4)	—	66(4)	(2)	—	BY35C(4)	840(4)
			W660(4)	4/0 (2)	A28AR(2)	U28ART(2)	(1)	—	White(4)	—	66(4)	(2)	—	BY35C(4)	840(4)
			W660(4)	4/0 (2)	A28AR(2)	U28ART(2)	(1)	—	White(4)	—	66(4)	(2)	—	BY35C(4)	840(4)
250	1/2 5/8 1/2	40049 40050 40149	W249(3)	—	A29AR(2)	U29ART(2)	(1)	—	—	71H(4)	71H(2)	(3)	—	—	—
			W249(3)	—	A29AR(2)	U29ART(2)	(1)	—	—	71H(4)	71H(2)	(3)	—	—	—
			W249(3)	—	A29AR(2)	U29ART(2)	(1)	—	—	71H(4)	71H(2)	(3)	—	—	—
300	1/2 1/2	40053 40153	—	—	A30AR(2)	U30ART(2)	(1)	—	—	76H(4)	76H(2)	(3)	—	—	—
			—	—	A30AR(2)	U30ART(2)	(1)	—	—	76H(4)	76H(2)	(3)	—	—	—
350	1/2 5/8 1/2	40056 40057 40156	—	—	—	U31ART(2)	(1)	—	—	87H(4)	87H(3)	(3)	—	—	—
			—	—	—	U31ART(2)	(1)	—	—	87H(4)	87H(3)	(3)	—	—	—
			—	—	—	U31ART(2)	(1)	—	—	87H(4)	87H(3)	(3)	—	—	—
400	1/2	40160	—	—	—	U32ART(4)	(1)	—	—	94H(4)	94H(4)	—	(2)	—	—
500	5/8 1/2	40067 40166	—	—	—	U34ART(4)	(1)	—	—	106H(4)	106H(3)	—	(2)	—	—
			—	—	—	U34ART(4)	(1)	—	—	106H(4)	106H(3)	—	(2)	—	—
600	1/2	40170	—	—	—	U36ART(4)	(1)	—	—	—	115H(3)	—	(3)	—	—
750	5/8 1/2	40073 40172	—	—	—	U39ART(4)	(1)	—	—	—	125H(5)	—	(3)	—	—
			—	—	—	U39ART(4)	(1)	—	—	—	125H(5)	—	(3)	—	—
1000	5/8 1/2	40079 40178	—	—	—	S44ART(4)	(1)	—	—	—	140H(4)	—	(3)	—	—
			—	—	—	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

# Tooling Index

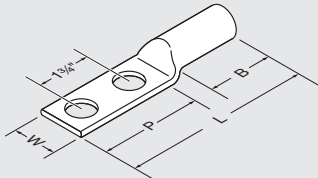
Lug and Crimping Information for 3M™ Scotchlok™ Copper Lugs										
30014 thru 30045 One hole 			31036 thru 31068 One hole — long barrel 				31145 thru 31178 Two hole 			
Cable Size AWG/ kcmil	Stud Size (in.)	3M™ Scotchlok™ Copper Lug Number	CRIMPING TOOL-DIE SETS (NUMBER OF CRIMPS)							
			Burdny Corporation				Thomas & Betts Corporation			Square D Co. An- derson 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)	—	Universal(1)
4	10 1/4 3/8	30018 30019 30021	W161(1)	4AWG(1)	A4CR(1)	U4CRT(1)	Grey(1)	Grey(1)	—	Universal(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)	Universal(2)
1	5/16 3/8	30027 30028	—	1AWG(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)	—

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

\*\* Anderson VC6-3, VC6-FT



## Homac "AL-N" Series Straight Lugs, Two Hole NEMA

Wire Size	Straight Lug Cat. No.	Installing Dies				
			B	L	P	W
6	SA6NTN	52, BG 243, 5/8	1-1/2	5-1/4	3-1/4	7/8
4	SA4NTN					
2-1	SA2NTN					
1/0	AL1/0-NTN					
2/0	AL2/0-NTN	58, 297, 245, 5/8-1	2	6	3-11/32	15/16
3/0	AL3/0-NTN	66, 167, 247, 737				1-1/16
4/0	AL4/0-NTN	840, 298, TX	2-1/4	6-9/16	3-9/16	1-3/16
250	AL250-NTN	840, 324, TX				1-1/4
300	AL300-NTN	87H, 470, 251, 1	3	7-5/16	3-5/8	1-11/32
350	AL350-NTN	96, 299, 655, 1-1/8				1-1/2
400	AL400-NTN	96, 472, 705, 1-1/8	3-5/16	8-1/4	3-3/4	1-5/8
500	AL500-NTN	106A, 300, 426, 1-5/16				1-3/4**
600	AL600-NTN	115H, 473, 786, 1-5/16	4-11/16	9-11/16	3-5/8	2-15/32
700-750	AL750-NTN	140H, 301, 342, 1-1/2				
800	AL800-NTN	140H, 474, 724, 1-5/8	4-9/16	9-7/8	3-7/8	2-23/32
1000	AL1000-NTN	161, 302, 727, 1-3/4				
1000	AL1000-SSN*		1-7/8, 727	5-9/16	10-7/8	3-3/16
1250	AL1250-NTN	478				
1500	AL1500-NTN					

\*Feature NEMA-spaced slots to permit side-by-side mounting on NEMA 4-hole spades.

\*\*Trimmed to 1-3/4" max. to fit side-by-side on NEMA spades.

Also available without tin plating. Delete suffix 'TN' from catalog numbers.

Straight lugs are available with tapered ends for high-voltage use. Please consult the factory.

3M and Scotchlok are trademarks of 3M Company. Scotch is a registered trademark of 3M Company. All other trademarks used herein are the property of their respective owners.

**Important Notice**

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

**Warranty; Limited Remedy; Limited Liability.**

This product will be free from defects in material and manufacture for a period of one (1) year from the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.**



**Electrical Markets Division**

6801 River Place Blvd.  
Austin, TX 78726-9000  
800-626-8381  
Fax 800-828-9329  
[www.3M.com/electrical](http://www.3M.com/electrical)

Please Recycle. Printed in USA.  
© 3M 2007. All Rights Reserved.  
78-8096-4406-1-B