

CONSTRUCTION GUIDELINE

TERMINATION, 200 kV BIL, COLD SHRINK



1. Scope

This construction guideline identifies the material required to install a 200 kV BIL, Class 1, cold shrink termination on the end of a piece of primary cable.

The material list includes all the parts necessary to complete an installation. The material list has been organized to be cable specific.

The material needed to trifurcate 3/C type cable and seal the exposed tape shield from the trifurcation point to the T-body metallic shield adapter/jacket sealing kit is outside the scope of this guideline. Refer to NSP-110 for this information.

Paper-insulated-lead-covered (PILC) cable and sector cable are outside the scope of this guideline.

For cable technical data, refer to E6-1.0/NGE-70.

For general cable preparation procedures, refer to U5-2.81/NSP-290.

For cutback lengths and termination installation procedures, refer to the specific instructions that were provided with the item.

For termination test and classification information, refer to IEEE 48.

Cold shrink terminations are a subcategory of live front cable accessories.

2. Application

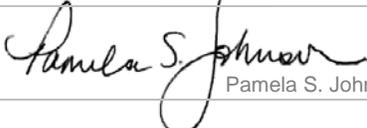
Class 1, high-voltage cable terminations provide electric stress control for the cable insulation shield terminus, complete external leakage insulation between the cable conductor(s) and ground, and a seal to the end of the cable against the entrance of the external environment. Product may be installed indoors or outdoors on cable systems rated 5 kV to 35 kV.

A cable termination by itself cannot be assigned a design or nominal current or ampacity rating since this parameter is completely dependent upon the type and material of the cable conductor, the thickness and type of cable insulation, and the anticipated maximum ambient temperature of the medium surrounding the cable termination.

This guideline may be used by engineers to create bills of material or by field crews when performing actual installations.

3. Cable Termination Technical Description

nominal insulation class (ph-ph)	35 kV RMS
common names	cable termination
	terminator
SCL Material Standard	6865.1
technology	cold shrink
manufacturer	3M
BIL	200 kV crest
continuous current rating	dependent on the type of cable and ambient conditions
IEEE 48 termination class	1A

standards coordinator	standards supervisor	unit director
 John Shipek	 John Shipek	 Pamela S. Johnson

4. General Example

Termination installed on tape shielded cable.

figure 4



5. Material List

Table 5.1 Legend:

na Not a stock item or not available from any source

Table 5.1 Notes:

Except where noted, kits contain material for one cable end.

- a. Termination kit Stock Number 686532 contains a silicone rubber termination, two sealing mastic strips, and an instruction sheet.
- b. Termination kits Stock Numbers 012125, 012126, 686531, and 686534 contain a silicone rubber termination, a high-ampacity ground braid, a constant force spring, two sealing mastic strips, and an instruction sheet.
- c. Termination kit Stock, Number 012125, contains material for **one** cable end. Termination kit, Stock Number 686534, is the exact same as 012125, except it contains material for **three** cable ends.

The following figures are provided for general identification.

Termination kit, cold shrink, for jacketed or bare concentric neutral cable (silicone rubber termination, two sealing mastic strips, and an instruction sheet).

figure 5.1

Stock No. **686532**



Termination kit, cold shrink, for tape, drain wire, or flat strap shielded cable (silicone rubber termination, a high-ampacity ground braid, a constant force spring, two sealing mastic strips, and an instruction sheet).

figure 5.2

Stock No. **012125**



Compression connector, pigtail, for 750 kcmil compact conductor

figure 5.3

Stock No. **686075**



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5. Material List, Table 5.1, continued

Stock Number	Rated Circuit Voltage, kV	Type	Size, AWG/kcmil	Shape	Shield Type	required	required	Table 5.1 Notes
						Termination Kit Stock No.	Pigtail Connector Stock No.	
1	2	3	4	5	6	7	8	9
613212	5	1/C	#6	compressed	tape	na	na	
613222	5	1/C	350	compressed	tape	686531	650578	b
601025	5	1/C	500	class B	DW	na	650579	
613522	15	3/C	#1	compressed	tape	na	na	
613523	15	3/C	#1	compressed	tape	na	na	
613520	15	3/C	2/0	compressed	tape	na	na	
613521	15	3/C	3/0	compressed	tape	na	na	
613526	15	3/C	3/0	compressed	tape	na	na	
613530	15	3/C	350	compact	tape	na	na	
613531	15	3/C	500	sector	tape	na	na	
010128	15	3/C	500	compact	tape	na	na	
613532	15	3/C	500	compact	tape	na	na	
623640	15	1/C	500	compact	tape	012125	650579	b c
012735	15	3-1/C	500	compressed	FS	012125	650579	b c
613533	15	3/C	750	sector	tape	na	na	
613534	15	3/C	750	compact	tape	na	na	
623670	15	3-1/C	1000	compressed	FS	012125	010320	b c
623650	27	3-1/C+2N	#8	compressed	tape	686531	686076	b
602027	28	1/C	#1	class B	RW/CN	686532	686056	a
613540	28	3/C+3G	#1	compressed	Tape	na	na	
602025	28	1/C+1N	1/0	solid	RW/CN	686532	686056	a
012098	28	1/C+1N	1/0	solid	RW/CN	686532	686056	a
602044	28	1/C	350	class B	RW/CN	686532	650578	a
012099	28	1/C	350	compact	FS	012125	650578	b c
613613	28	1/C	350	compact	DW	012125	650578	b c
613543	28	3/C+3G	350	compact	tape	na	na	
012100	28	1/C	500	compact	FS	012125	650579	b c
613615	28	1/C	500	compact	DW	012125	650579	b c
613645	28	1/C	500	compressed	FS	012125	650579	b c
602119	28	1/C	750	compact	DW	012125	686075	b c
613618	28	1/C	750	compact	DW	012125	686075	b c
974050	28	3/C	750	sector	tape	na	na	
012101	28	1/C	750	compact	FS	012125	686075	b c
012102	28	1/C	1000	compact	FS	012126	010320	b
613619	28	1/C	1000	compact	DW	012126	010320	b
613655	28	1/C	1000	compressed	FS	012126	010320	b
none	35	1/C	350	compressed	tape	na	686078	
623660	35	1/C	750	compact	DW	012126	010320	b
623655	35	1/C	1000	compact	tape	012126	010320	b

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6. Tools

Information relating to tool type, die number, and number of crimps is provided with the connector.

7. References

48-1996; "Standard Test Procedures and Requirement for Alternating-Current Cable Terminations 2.5 kV through 765 kV"; IEEE

6772.00; "Connectors, Compression, Pigtail Adapter"; *Material Standards*; SCL

6865.10; "Terminators – High Voltage Cable"; *Material Standards*; SCL

E6-1.0/NGE-70; "Properties of Medium Voltage Cables"; *Construction Guidelines*; SCL

NSP-110; "Trifurcation of Three Conductor Polyethylene Cable, 13 and 28 kV With and Without Neutral/Ground Wires"; *Network Construction Guidelines*; SCL

"QT-III Cold Shrink Silicon Rubber Termination (with High Ampacity Ground Connection) Instruction Sheet, 78-8119-6020-8 (B) 1997"; 3M; 1997

"QT-III Cold Shrink Silicon Rubber Termination (with High Ampacity Ground Connection) Instruction Sheet, 78-8119-6022-4 (B) 1997"; 3M; 1997

"QT-III Cold Shrink Silicon Rubber Termination (with High Ampacity Ground Connection) Instruction Sheet, 78-8119-6027-3 (B) 1997"; 3M; 1997

"QT-III Cold Shrink Silicon Rubber Termination (with High-K Stress Relief), Instruction Sheet, 78-8119-6024-0 2004"; 3M; 2004

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U5-2.81/NSP-290; "Primary Cable Preparation, General"; *Construction Guidelines*; SCL