



3-Conductor Inline Splicing Kits

5761 and 5762



Data Sheet

1. Product Description

3M™ 5760 Series 3-Conductor Inline Splicing Kits are designed for splicing 3-conductor armor and non-armored shielded power cables. Two kits cover a range of 5, 8.7 and 15 kV rated cables with conductor sizes up to 750 kcmil copper and 500 kcmil aluminum. The kits are designed to be used with Scotchlok™ 10,000 and 20,000 Series Connectors, or other UL listed inline compression connectors that fit within the dimension limits listed in the Splice Selection Table.

The splices utilize several technologies to accommodate the various functions of a 3-conductor shielded power cable: 3M Cold Shrink™ Insulators for electrical insulation; Scotch™ tapes for electrical shielding; Constant Force Springs for connecting ground braid jumpers; Scotchcast™ 2130 Resin for replacing cable armor and/or jacket. The completed splices are designed for use in cable tray, weather exposed or direct burial locations.

Kit Contents:

5761	5762	
3	3	Cold Shrink™ Insulators
7	18	Scotchcast™ 2130 Resin Unipak™ Containers, Size C
1	1	Wrap-Around Removable Mold
3	6	Spacer Web Strips
2	3	F-10 Funnels
2	3	Funnel Supports
2	3	Mold Straps
2	2	Constant Force Springs
2	3	Rolls of Scotch™ 13 Tape
4	6	Rolls of Scotch™ 24 Tape
1	1	Strip of Scotch™ 25 Ground Braid
1	2	Rolls of Scotch™ Super 33+ Tape
1	2	Rolls of Scotch™ 130C Tape
1	1	Scotch™ C-2 Cable Preparation Kit
1	1	Abrasive Cloth (80J grit)
1	1	Instruction Sheet

Features:

Complete kit: Everything included to make one 3-conductor splice (except connectors).

Cold Shrink™ Insulators factory formed EPDM insulation installs quickly.

Flexible jacketing resin allows splice to bend with cable, good for cable tray bends.

Scotchcast™ 2130 Resin is self-curing, requiring no torch or other external heat source.

Scotchcast™ 2130 Resin bonds to all modern cable jacket and armor materials: PVC, EPR, nitrile/PVC, hypalon, neoprene, urethane, steel, aluminum and copper.

Scotchcast™ 2130 Resin forms a thick, tough replacement for cable armor and/or jacket that is abrasion resistant, moisture resistant and flame retardant.

Solderless ground braid (constant force springs – no soldering required).

No special tools required for installation.

2. Applications

3M 5760 Series Splices can be used on cables with rated operating temperature of 90°C and an emergency overload rating of 130°C. The splices meet the applicable requirements of IEEE 404 “Standard for Power Cable Joints” for a 15 kV voltage rating.

To splice 3-conductor shielded power cables:

For inline splicing.

For armored and non-armored cables.

For cables rated 5, 8.7 and 15 kV.

For cable conductor size range of 2 AWG to 750 kcmil copper and 500 kcmil aluminum.

For use with solid dielectric cables; XLP, EPR, HMPE, PVC and etc.

For indoor and outdoor applications:

- Cable tray.
- Cable rack.
- Cable hangers.
- Junction Box.
- Aerial.
- Wet or dry locations.

A. Typical Physical and Electrical Properties

Cold Shrink™ Insulator EPDM Rubber

Physical Properties

Test Method	Typical Value*
• Color	Black
• 300% Modulus (ASTM D 412–87)	480 psi (3,3 MPa)
• Ultimate Tensile (ASTM D 412–87) Original	1400 psi (9,6 MPa)
• Ultimate Elongation (ASTM D 412–87) Original	750%
• Die C Tear (ASTM D 624C–73) Original	150 pli (29 KN/m)

Electrical Properties

Test Method	Typical Value*
• Dielectric Strength (ASTM D–149) Original	365 V/mil (14,3 kV/mm)
7 days in H ₂ O 90°C (194°F)	282 V/mil (11,1 kV/mm)

Scotchcast™ 2130 Flame Retardant Resin

Physical Properties

Test Method	Typical Value*
• Color	Black
• Shore A Hardness (ASTM D–412)	80
• Tensile Strength (ASTM D–412)	840 psi (59,4 Kg/cm ²)
• Elongation (ASTM D–412)	175%
• Glass Transition Avg. deg. C. by DTA (3M Test Method)	–80°C (–112°F)
• Maximum Exotherm 100g. sample (3M Test Method)	62°C (144°F)
• Moisture Absorption wt. gain, 168 hrs. @ 100°C (3M Test Method)	2.6%

• Adhesion Peel Test (3M Test Method) Jacket Materials:	
Neoprene	45 psi (3,2 Kg/cm ²)
Hypalon	45 psi (3,2 Kg/cm ²)
Nitrile/PVC	40 psi (2,8 Kg/cm ²)
PVC	40 psi (2,8 Kg/cm ²)
EPDM	10 psi (0,7 Kg/cm ²)
Urethane	45 psi (3,2 Kg/cm ²)
Metals:	
Steel	35 psi (2,5 Kg/cm ²)
Aluminum	35 psi (2,5 Kg/cm ²)
Copper	35 psi (2,5 Kg/cm ²)

Electrical Properties

Test Method	Typical Value*
• Dielectric Strength (ASTM D–149)	450 V/mil (177 kV/mm)
• Dielectric Constant 60 Hz (ASTM D–150)	
23°C (73°F)	4.6
60°C (140°F)	4.9
90°C (194°F)	5.4
• Dissipation Factor 60 Hz (ASTM D–150)	
23°C (73°F)	3.8%
60°C (140°F)	4.9%
90°C (194°F)	7.5%

Curing Times

To test for cure, the compound in the splice mold funnels is checked for tack. When it is no longer tacky, the splice is considered ready to de-mold. This occurs when the compound is at approximately 50% of full cure. Full strength and bond are attained at 100% cure.

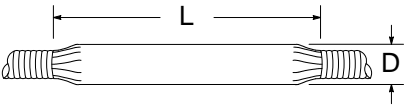
Ambient Temperature	Typical Minimum Times (hours)	
	De-mold	Cure
21°C (70°F)	1 1/2 – 2	16 – 24
10°C (50°F)	3 1/2 – 4	24 – 30
0°C (32°F)	6 – 8	36
Below 0°C (32°F)	Not Recommended	

Table 1

* All values are averages and are not intended for specification purposes.

NOTE: Data for Scotch™ 13, 24, 25, Super 33+ and 130C Tapes that are included in the kits are available in separate "Product Data" sheets available from 3M Company.

B. Typical Typical Dimensions



Kit No.	Dimensions inches (mm)	
	L	D
5761	29 (737)	3 – 4 (76 – 102)
5762	44 (1118)	4 – 6 (102 – 152)

Table 2

C. Splice Selection Table

Kit Number	Voltage (kV)	Conductor Size (AWG or kcmil)		Maximum Connector O.D.	Maximum Connector Length
		Copper	Aluminum		
5761	5, 8.7 & 15	2 – 3/0	2 – 3/0	0.80" (20,3 mm)	2.75" (70 mm)
5762	5, 8.7 & 15	4/0 – 750	4/0 – 500	1.40" (35,5 mm)	5.00" (127 mm)


Table 3

3. Maintenance

Components within this kit are stable under normal storage conditions. Normal stock rotation practices are recommended.

The tapes, Cold Shrink™ Insulators and Scotchcast™ 2130 Resin are not impaired by freezing. However the 2130 should be warmed to at least 0°C (32°F) before being mixed and poured. After installation, the 5760 Series Splices can be

checked periodically by visual inspection and by normal cable testing procedures.

These splices can be tested according to the instructions given in IEEE Standard 400, “Guide for Making High Direct Voltage Tests in the Field”. 3M Cold Shrink™ removable core material is polypropylene and recyclable with other  waste.

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