

## Scotchcast™

# Flexible Power Cable Jointing Kits

## 82-F and 82-BF Series

### Product Description

3M™ Scotchcast 82-F and 82-BF Series Flexible Power Cable Jointing Kits are a series of flexible inline and branch joints for use on non-armoured portable power cable and cords. They are designed to be used on single and multiple conductor cables and cords rates up to 5kV. The joints will accommodate single-conductor cable sized up to 120mm<sup>2</sup> for inline jointing and up to 50mm<sup>2</sup> for branch jointing. Multi-conductor sizing is based on a cable diameter range of up to 30mm for inline jointing and up to 21mm for branch jointing. The joint kits are based on Scotchcast 2131 Compound for toughness, flexibility, moisture sealing and flame retardancy. They are permanent joints as assigned by the Mine Safety and Health Administration (P-142-5 MSHA). The completed joints are designed for use in weather-exposed, direct burial or submerged locations.

### Kit Contents

Each kit contains sufficient quantities of the following materials to make one joint or cable repair (connectors are not included in kit):

- One-piece removable mould
- Scotchcast 2131 Compound in "Unipak" container
- Scotch™ 23 Tape, for sealing mould ends
- Abrasive cloth (80J grit)
- Comprehensive instructions showing proper installation techniques for jointing non-armoured portable power cables and cords.

### Joint Features

The joint features are:

- Factory quality "permanent" joint; MSHA accepted equal to shop or factory vulcanizing
- Flexible compound allows joint to bend with cable; for installation, handling, reeling, etc
- Scotchcast 2131 Compound is self-curing; a cold cure requiring no torch, no heated mould and no cooling time
- Scotchcast 2131 Compound bonds to common jacket materials; neoprene, hypalon, PVC, nitrile/PVC, EPR, urethane, 2131 (itself)Scotchcast 2131 Compound forms a joint or repair that is abrasion resistant and flame retardant
- Smooth tapered joint profile eliminates cable hang-ups and joint end-lifting.

### Applications

To join or re jacket non-armoured portable power cable and portable cords:

- For inline single-conductor cables rated up to 5kV
- For branch single-conductor cables rated up to 1000V
- For inline and branch multi-conductor cables rated up to 1000V
- For mine portable cable rated 600/2000V (P-145-5 MSHA)
- For use with compression inline connectors (82-F) and compression "C" branch connectors (82-BF)
- For indoor and outdoor applications:
  - Weather exposed
  - Direct burial
  - Submerged
  - Cable reels
- For jacket repairs.

### Typical Data/Physical & Electrical Properties

Scotchcast 82-F and 82-BF Series Jointing Kits can be used on non-armoured power cables with a rated operating temperature of 90°C and an emergency rating of 130°C. The joint series is rated at 5kV for single-conductor inline jointing, and 1000V for multi-conductor and branch jointing. The joints are assigned P-142-5 MSHA by the Mine Safety and Health Administration.

### Specifications

#### Product

The non-armoured portable power cable and portable cord joints shall be rated for continuous operation at 1000 Volts or 600/2000 Volts (mine portable cable rating) for inline or branch, single or multi-conductor applications and shall be rated at 5kV for inline single-conductor applications. The joints must be capable of jointing single-conductor cables sized up to 120mm<sup>2</sup> for inline connections and up to 50mm<sup>2</sup> for branch connections, and multi-conductor cables sized up to 30mm in diameter for inline and up to 21mm in diameter for branch connections.

#### Engineering/Architectural

Jointing of all portable power cable and portable cords, listed as follows, shall be performed in accordance with the instructions included with the Scotchcast Flexible Power Cable Jointing Kit 81-F1, 82-F2 or 82-BF1: single conductor cable rated up to 5kV and sized up to 120mm<sup>2</sup> for inline jointing; single-conductor cable rated up to 1000V or 600/2000V and sized up to 50mm<sup>2</sup> for tap jointing; multi-conductor cable rated up to 1000V or 600/2000V and sized up to 30mm diameter for inline jointing and 21mm diameter for branch jointing.

## Issue 5

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Joint Selection Table

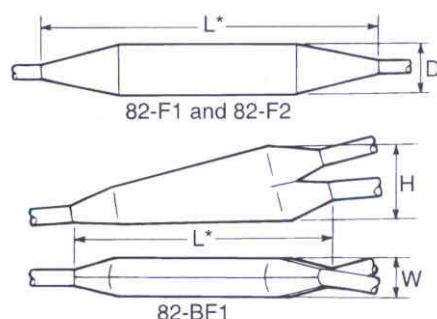
Kit No.	Cable O.D. Range mm (inches)	Connector Type	No. of Conductors	Connection Max. O.D. mm (inches)	Voltage Rating (Max. V)	Conductor Size Range (AWG)
82-F1	6 – 20 (0.25 – 0.80)	Compression Inline	1	16 (0.62) Connector	5000	6 – 1/0
			Multi	23 (0.90) Connector bundle	1000*	**
82-F2	20 – 30 (0.80 – 1.20)	Compression Inline	1	21 (0.82) connector	5000	2/0 – 4/0
			Multi	33 (1.30) connector bundle	1000*	**
82-BF1	6 – 20 (0.25 – 0.80)	Compression “C” Tap	1 Multi	- -	1000* 1000*	Up to 1/0 **

\* Mine portable cable rating of 600/2000V.

\*\* Base multi-conductor selection on cable O.D. range.

Typical Dimensions

Kit No.	Dimension mm (inches)			
	L*	D	H	W
82-F1	203 (8.0)	29 (1.1)	-	-
82-F2	292 (11.5)	40 (1.6)	-	-
82-BF1	211 (8.3)	-	56 (2.2)	28 (1.1)



\* “L” based on length of untrimmed mould. Trimming of mould ends to fit cable diameter reduces this dimension accordingly.

## Typical Physical and Electrical Properties

Scotchcast 2131 Flame Retardant Compound

## Physical Properties

Test Method	Typical Value*
Colour	Black
Hardness (EN ISO 868) Shore A	80

Tensile Strength (EN ISO 527)	5.5 MPa
Elongation (EN ISO 527)	150%
Glass Transition Temperature	-80°C
Maximum Exotherm (3M Test Method, 100g sample)	62°C (144°F)
Moisture Absorption (wt. Gain, 168hrs @ 100°C)	3%
Adhesion (3M Test Method, Peel Test)	
Jacket Materials:	
Neoprene	45 psi (0.31 MPa)
Hypalon	45 psi (0.31 MPa)
Nitrile/PVC	40 psi (0.28 MPa)
PVC	40 psi (0.28 MPa)
EPR	10 psi (0.07 MPa)
Urethane (itself)	45 psi (0.31 MPa)
Metals:	
Steel	35 psi (0.24 MPa)
Aluminium	35 psi (0.24 MPa)
Copper	35 psi (0.24 MPa)
Physical Properties	
Dielectric Strength (ASTM D-149)	350 V/mil
Dielectric Constant (ASTM D-150) (60 Hz) 23°C (73°F) 60°C (140°F) 90°C (194°F)	3.8% 4.9% 7.5%

## Curing Times

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

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Ambient Temp.	Typical Minimum Times	
	Demould	Cure
21°C (70°F)	1½-2hrs	16-24hrs
10°C (50°F)	3½-4hrs	24-30hrs
0°C (3°F)	6-8hrs	36hrs
Below 0°C (32°F)	- Not recommended	

\*All values are average, based on several determinations and are not intended for specification purposes.

#### Installation Techniques

Detailed instruction sheets are included in each kit to provide the installer with the information required to properly install the appropriate Scotchcast Jointing Kit. A brief summary of the installation steps for the 82-F Series and 82-BF Series Jointing Kits are outlined as follows:

**PREPARE CABLE** – using standard industry procedures.

**CONNECT CABLES** – use compression inline connectors for 82-F Series Kits and compression “C” tap connectors for 82-BF1 Kits.

**INSULATE CONNECTION(S)** with vinyl electrical tape (not required if insulated butt connectors are used).

**INSTALL MOULD** – trim ends to fit cable, Figure 1, centre over joint and tape ends to hold in place.

**POUR COMPOUND** – mix Scotchcast 2131 in “Unipak” and pour in to mould. Figure 2.

**DEMOULD** – when compound in filler spout is no longer tacky; trim off excess compound from filler spout.

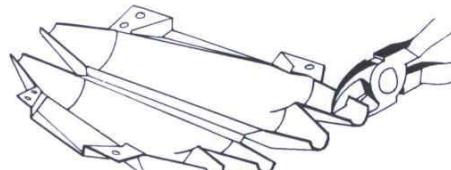


Figure 1. 82-BF1

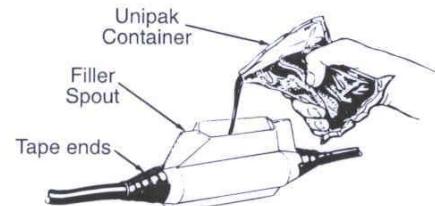


Figure 2. 82-F Series

#### Maintenance

Components within this kit are stable under normal storage conditions. Normal stock rotation practices are recommended. Scotchcast 2131 is not impaired by freezing, however, it should be warmed to at least 0°C (32°F) before being mixed and poured. After installation, 82-F and 82-BF Series joints can be checked periodically by visual inspection or by normal cable testing procedures.

#### Availability

Scotchcast 82-F and 82-BF Series Flexible Power Cable Jointing Kits are available as kits for jointing portable power cable and cord for inline and branch jointing. They are available from your local authorised 3M electrical distributor.

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