

Product Data

3M Heat Shrinkable Splice Jacket Kits HSJ Series For JCN (Jacketed Concentric Neutral) Cable Splices



1. Product Description

3M Heat Shrinkable HSJ Jacketing Sleeves are designed to jacket power cable splices installed on jacketed concentric neutral cable. The sleeves physically cover the cable neutral wires to environmentally protect the cable at the splice location. Fabricated from medium wall cross-linked polyolefin, the sleeves are flexible, highly split resistant and fast shrinking to provide rapid installation. The sleeves come with a factory applied adhesive/sealant. Sleeves are supplied in black only.

Product Features:

- Complete environmental protection
- Resists puncture and abrasion damage
- Fast and easy installation
- Versatile, three sizes cover the entire range of application
- Shrink ratios as high as 3:1
- Resists acids and alkalis
- Bonds to a wide variety of substrates
- Reliable and proven
- U.V. Resistant

2. Applications

- Moisture sealing cables at splice location
- Corrosion protection for neutral wires
- Above ground, direct buried or submersible

3. Data: Physical and Electrical Properties

The HSJ Series kits can be used on cables with a rated operating temperature of 90°C and an emergency overload rating of 130°C. Kit selection is determined by the cable O.D. and the splice O.D.

A. HSJ Kit Selection Guide

Kit No.	Min. Cable Jacket Dia.	Max. Splice Dia.	Max. Cable Jacket Opening
HSJ-1	.85 inches (21.6 mm)	1.9 inches (48.3 mm)	22 inches (559 mm)
HSJ-2	1.0 inches (25.4 mm)	2.6 inches (66.0 mm)	28 inches (711 mm)
HSJ-3	1.5 inches (38.1 mm)	3.4 inches (86.4 mm)	28 inches (711 mm)

B. HSJ Kit with 3M Brand Quick Splice Kit Selection Guide

Kit No.	3M Splice 15 KV	3M Splice 25 KV	3M Splice 35 KV
HSJ-1	5411-5412	—	—
HSJ-2	5403-5406	5420-5422 5451-5452	5432 5461
HSJ-3	5407-5409	5423-5426	5433

C. Typical Dimensions

Kit No.	Dimensions Inches (mm)	
	A	B (I.D.)
HSJ-1	33" (838)	2.5" (63.5)
HSJ-2	40" (1016)	3.0" (76.2)
HSJ-3	40" (1016)	4.3" (109.2)

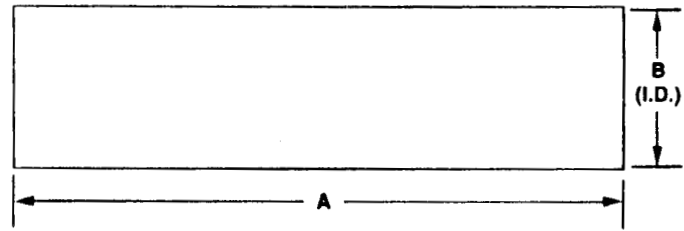


Figure 1

D. Typical Physical and Electrical Properties:

Physical Properties

Test Method	Typical Value
• Color	Black
• Ultimate Tensile Strength (ASTM D-412)	2350 psi (16 MPa)
• Ultimate Elongation (ASTM D-412)	525%
• Shore D Hardness (ASTM D-2240)	42
• Specific Gravity (ASTM D-792 Method A-1)	1.28
• 2% Secant Modulus (ASTM D-882 Method A)	14,150 psi (98 MPa)
• Water Absorption (ASTM D-570 Method 6.1)	0.05%
• Fungus Resistance (ASTM G-21)	Non-nutrient
• Corrosivity (Mil-1-23053/15)	Non-corrosive
• Heat Shock 4 hours @ 225°C (437°F)	No cracking, flowing or dripping
• Air Oven Aging 7 days @ 175°C (347°F)	
—Tensile Strength	2680 psi (18 MPa)
—Elongation	375%
• Low Temperature Flexibility 4 hours @ -55°C (-67°F)	No cracking

Electrical Properties

Test Method	Typical Value*
• Dielectric Strength (60 mils) (ASTM D-149)	450 v/mil (17.7 MV/m)
• Volume Resistivity (ASTM D-257)	1 x 10 ¹⁴ ohm cm

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

4. Specifications

Product

The heat shrinkable splice jacket sleeve must be a chemically crosslinked, thermally stabilized polyolefin, capable of operation at cable emergency overload temperatures of 130°C. The splice jacket sleeve must have factory applied adhesive on the inner surface.

Engineering/Architectural

The heat shrinkable splice jacket sleeve must be usable both indoors and outdoors, in overhead, direct buried, or submerged applications on cables/splices rated up to 35 kV. It must not be adversely affected by moisture, mild acids and alkalis, fuels, oils, ozone, or ultraviolet light. It must be compatible with and adhere to cable jackets. They must meet REA requirements for submersible splice cover applications.

5. Performance Tests

A. Water Seal Test

The HSJ sleeves met the requirements of the 3M Cyclic Water Tightness Test.

3M Cyclic Water Tightness Test Method

1. Prepare cable sample with HSJ sleeve on minimum diameter cable.
2. Cap cable ends and place sample in a 90°C (194°F) water/fluorescein sodium bath solution.
3. Draw a vacuum on cable, equivalent to 27 inches Hg for a duration of one hour.
4. Remove sample from bath solution and subject it to a minimum of one hour air environment at -18°C (-.40°F)
5. Continue cycling the sample between the hot bath solution and the cold air environment for a minimum of 5 cycles.
6. After the cycles are completed the HSJ sleeve is cut open and the inside is examined under an ultraviolet lamp. The sample meets the test requirement if no fluorescein dye is detectable.

B. Chemical Resistance

Samples of sleeving were immersed in the following fluids for 24 hours at room temperature and physical and electrical characteristics were measured:

Fluid	Tensile Strength	Dielectric Strength (volts/mil)
Hydraulic Fluid (Mil-H-5606)	2040 psi (14 MPa)	829 @ 35 mils (32.6 MV/m)
Lube Oil (Mil-L-7808)	2320 psi (16 MPa)	697 @ 33 mils (27.4 MV/m)
5% Salt Solution	2310 psi (16 MPa)	443 @ 35 Mil (17.4 MV/m)

6. Installation Techniques

Exact installation instructions are included in each HSJ Heat Shrinkable Splice Jacketing Kit. The following is a summary of the instructions:

- a. Thoroughly clean the cable.
- b. Slide the HSJ jacketing sleeve onto cable.
- c. Install splice and connect cable neutral wires.
- d. Center jacketing sleeve over cable jacket opening. Figure 2.
- e. Shrink sleeve with a torch, starting at the sleeve center. Figure 3.
- f. Heat until sleeve is completely shrunk and adhesive/sealant is squeezed from ends. Figure 4.

7. Maintenance

The HSJ sleeves are not impaired by freezing or overheating due to ambient temperatures found in storage or shipping. Normal storage and stock — rotation are recommended.

8. Availability

3M HSJ-1 and HSJ-2 Heat Shrinkable Splice Jacketing Kits are packaged one kit (sleeve) per plastic bag and 10 kits per carton. HSJ-3 one kit per bag, 5 kits per carton. They are available from your local authorized 3M electrical distributor.

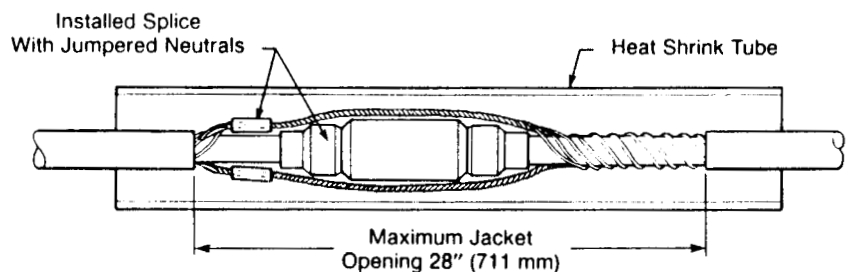


Figure 2

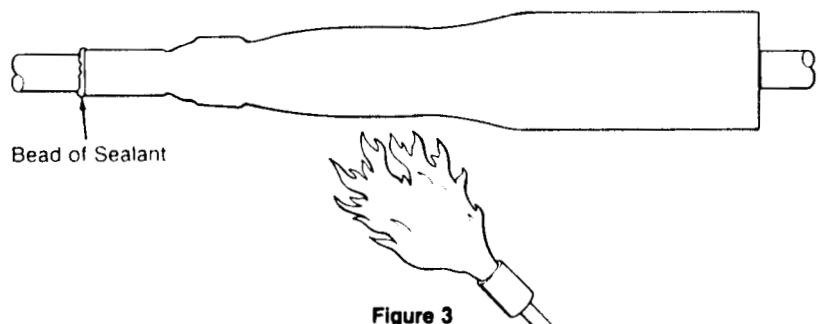


Figure 3



Figure 4

Important Notice: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, expressed or implied: Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

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