



Modular Splicing System

600 A

5, 8, 15 and 25 kV Class

5815 Series

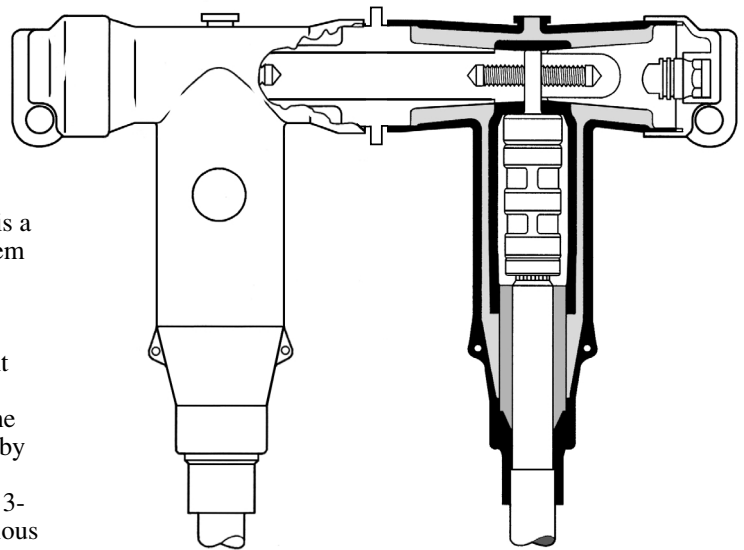
Data Sheet

1.0 Product Description

1.1 General

The 3M™ 5815 Series Modular Splicing System is a fully shielded 600 Amp separable connector system which meets the requirements of ANSI/IEEE Standard 386 – "Separable Insulated Connector Systems." These modular kits are available for splicing, dead-ending and connecting to deadfront apparatus such as transformers, switches and switchgear equipped with 600 Amp bushings. The system has the capability for future modification by simply adding or removing modular components. By combining kits, the system can accommodate 3-way, 4-way, parallel feed, etc. connections in various tap splicing configurations.

The modular kits are designed for use on 5, 8, 15 and 25 kV rated industrial shielded power cables. Kit instructions describe installations for tape shield, wire shield, UniShield®, and jacketed concentric neutral types of solid dielectric cables with extruded semi-conductive insulation shields. A capacitive test point on the insulating plug provides a safe means of testing the circuit without disturbing the bolted connection. The completed installation is fully shielded to provide a complete deadfront connection which is suitable for operation in submerged or direct burial locations.



5815-S (2-way splice)

1.2 Kit Contents

A complete modular splice installation requires one or more splicing kits (base kits) along with an adapter kit for each cable being connected. Each base kit contains the following materials, including silicone lubricant.

Table 1
Base Kit Contents

Kit No.	Tee Module	Connecting Plug	Dead End Plug	Connecting Stud	Kit Instructions
5815-S	2	1	2	2	1
5815-T	1	1	-	1	1
5815-D	1	-	2	1	1
5815-E	1	-	1	1	1

5815-B Series Adapter Kits adapt the splicing kit tee modules to specific cable sizes. The adapter kits include silicone lubricant.

**Table 2
Adapter Kit Contents**

Kit No.	Kit Contents
5815-B Series Adapter Kit	1 Cable Adapter
	1 Aluminum Compression Connector
	1 Cold Shrink Jacketing Tube
	1 Constant Force Spring
	1 Ground Braid Assembly
	2 Mastic Sealing Strips
	2 Silicone Lubricants
	1 CC-3 Cable Cleaning Pad Kit
	1 Instruction Sheet

A T-Wrench accessory tool is available for use with kits containing Connecting Plug(s), such as the 5815-S and 5815-T Modular Splicing Kits.

**Table 3
Accessory**

Part No.	Part Name	Description
5815-TW	T-Wrench	T-handled 5/16 inch hex wrench used to install a Connecting Plug into a Tee Module.

1.3 Product Features

The modular Splicing System features include:

- **Modular Design** - allows custom tailoring for various splicing functions and configurations, such as multiple taps, sectionalizing, dead-ending, adding-on, etc.
- **Bolt-together Components** - allows dead-break disconnecting and reuse of the connecting components (connecting plug, dead-end plug, connecting stud, etc.).
- **Molded Conductive Outer Jacket** - provides for a fully shielded dead-front connection which meets the requirements of IEEE Standard 592 – "Exposed Semi-conducting Shields on High-Voltage Cable Joints and Separable Insulated Connectors."
- **Kit Packaging** - designed for industrial use, the kits simplify the selection, ordering and stocking of appropriate system components.
- **Shield Adapter Kits** - cold shrink design for simple shield re-jacketing. Kits provide all of the components necessary for adapting the separable connector to specific cable sizes and shielding types of common industrial power cables.
- **Voltage Test Point** - the dead-end plug provides a high impedance test point for safely checking the de-energized status of the circuit.

2.0 Applications

For connecting 5, 8, 15 and 25 kV shielded power cables to 600 Amp dead-front, dead break installations:

- For splicing – 2-way, 3-way and multiple taps
- For adding-on
- For dead-ending
- For 600 Amp equipment (apparatus) connections
- For shielded solid dielectric (e.g. EPR and XLPE) cables with extruded semi-conductive insulation shield
- For power cable locations: Manhole, Vault, Cabinet, Junction Box, Cable Tray, Direct Burial
- For submerged locations
- For sectionalizing cable systems

3.0 Installation

A torque wrench and one-inch socket is used to tighten the insulating plug through the compression connector within the tee-module body, onto a de-energized 600 A bushing interface. A 3M™ 5815-TW T-wrench is used for installing a connecting plug into a Tee Module, for kits containing a connecting plug (e.g. the 5815-S and 5815-T). Refer to the 5815 Series kit instructions for details.

3.1 Interchangeability

All 3M 5815 Series 600 A Deadbreak Connectors conform to the electrical, mechanical and dimensional requirements of ANSI/IEEE Standard 386. The connectors can be used on any comparably rated bushing interface that also meets the requirements of this standard. In addition, all connecting plugs, dead-end plugs, compression connectors and connecting studs are designed to be interchangeable with those available from other major manufacturers.

4.0 Data

The 3M 5815 Series Modular Splicing System can be used on shielded power cables with a rated operating temperature of 90° C. and an emergency overload rating of 130° C. Connections made with these kits are rated for Voltages up to 25 kV and meet the requirements of ANSI/IEEE 386 for 600 Amp dead-break interfaces.

4.1 Production tests

Test are conducted in accordance with ANSI/IEEE Standard 386:

- Ac 60 Hz 1 Minute Withstand - 40 kV
- Minimum Corona Voltage Level - 19 kV

Tests conducted in accordance with manufacturer's requirements:

- Physical Inspection
- Periodic Dissection
- Periodic Fluoroscopic Analysis

4.2 Grounding

Grounding of the Tee Module and cable metallic shield is performed using the Ground Braid Assembly provided with each 5815-B Series Adapter Kit. The assembly is an integrated design which incorporates both a ground braid for grounding the cable metallic shielding and a ground lead (bleeder wire) for connecting to the Tee Module grounding tabs. A solderless connection is made to the cable metallic shield using a constant force spring.

- Ground Braid: 21,600 circular mils, tinned copper (7 AWG copper equivalent)
- Ground Lead (bleeder wire): 14 AWG solid, tinned copper

The typical fault current performance for the 21,600 circular mils Ground Braid can be plotted as follows:

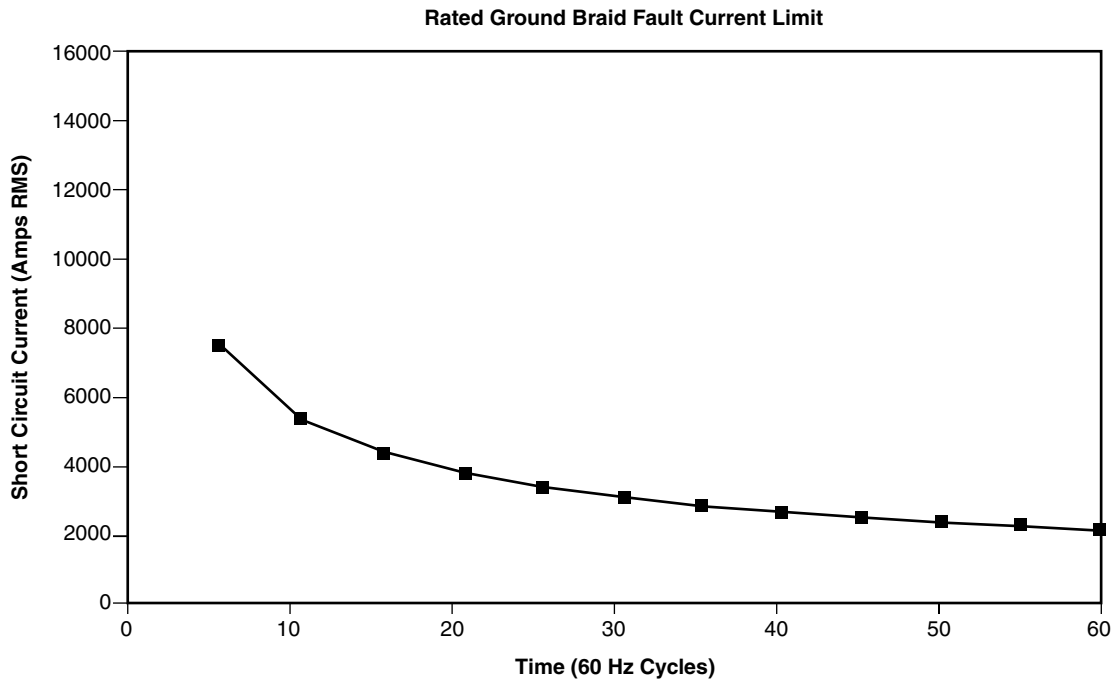


Table 4
Voltage Ratings and Characteristics

Description	kV
Standard Voltage Class	25
Maximum Rating Phase-to-Ground	15.2
ac 60 Hz 1 Minute Withstand	40
dc 15 Minute Withstand	78
BIL and Full Wave Crest	125
Minimum Corona Voltage Level	19

Voltage ratings and characteristics are in accordance with ANSI/IEEE Standard 386.

Table 5
Current Ratings and Characteristics

Description (600 A Interface)	Amperes
Continuous	600 A rms
24 Hour Overload	1000 A rms
Short Time	40,000 A rms symmetrical for 0.20 s 27,000 A rms symmetrical for 4.0 s

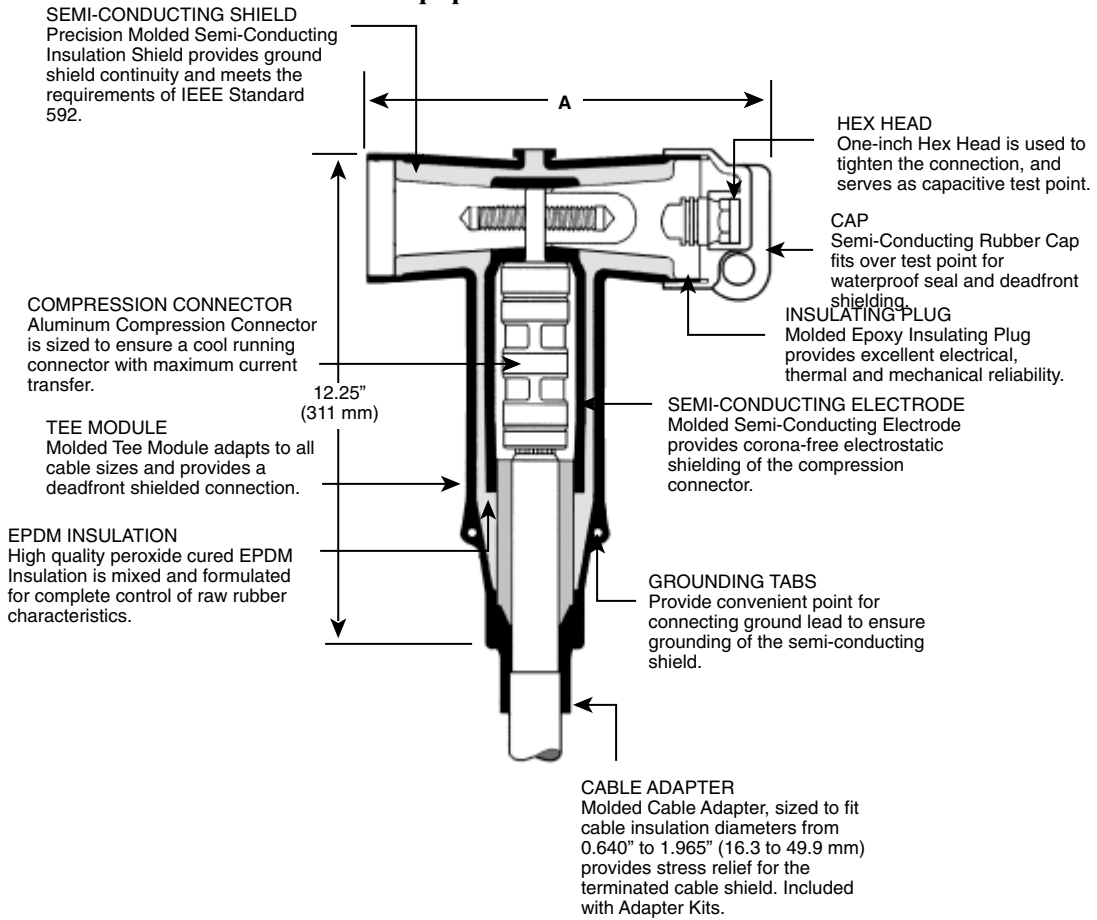
Current ratings and characteristics are in accordance with ANSI/IEEE Standard 386.

Table 6
Typical Splice Dimensions

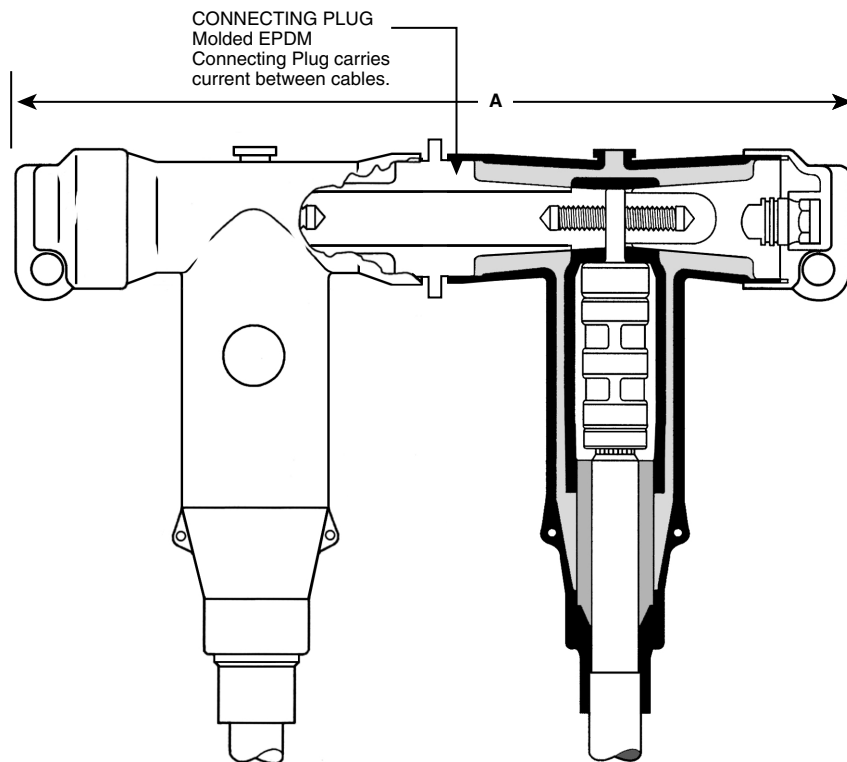
Splice Assembly	Dimension "A" (inches/mm)
Dead End	11.10 (282)
2-way Splice	19.80 (503)
3-way Splice	28.10 (714)
4-way Splice	36.30 (922)
Equipment Connection	9.75 (248)

Examples:

Equipment Connection



2-Way Splice



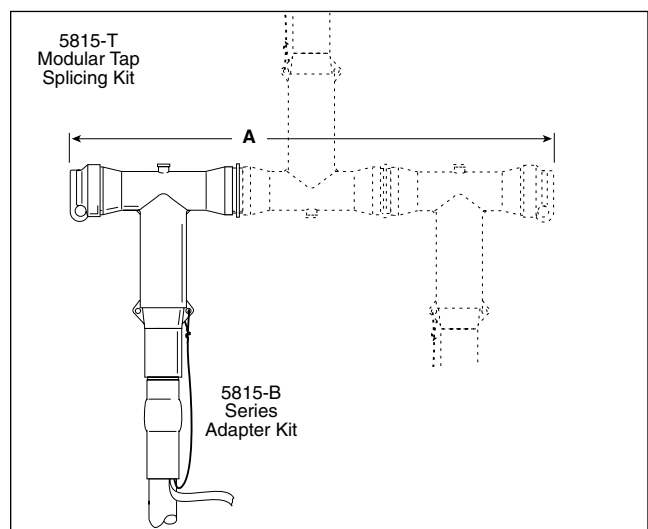
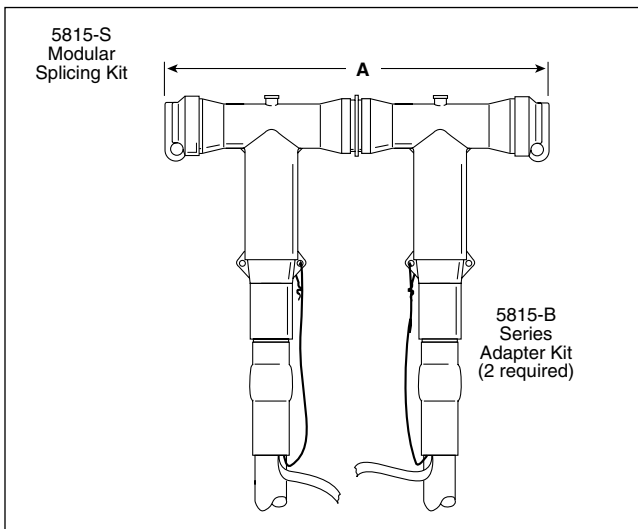
5.0 Ordering Information

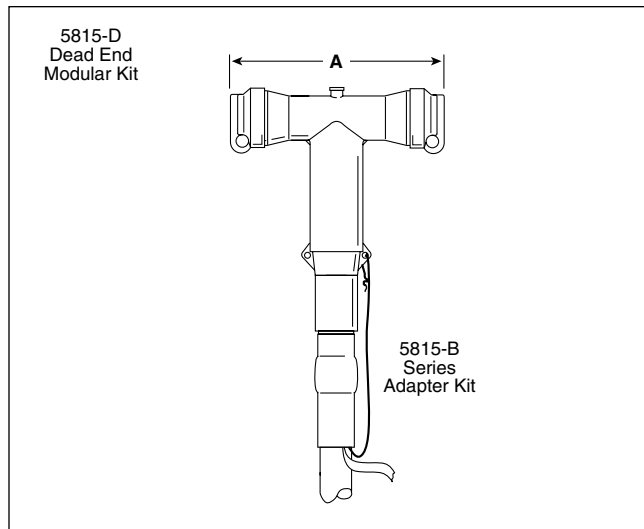
Table 7
Base Kit Selection Chart

Kit No.	Application	No. of Adapter Kits Required
5815-S	2-way Splice	2
5815-T	Tap Kit (add-on, for adding to 5815-S for 3-way splicing, or for adding another cable to existing installation.)	1
5815-D	Dead End Splice (with future add-on capability)	1
5815-E	Equipment Connection (for future 600 Amp apparatus bushing)	1

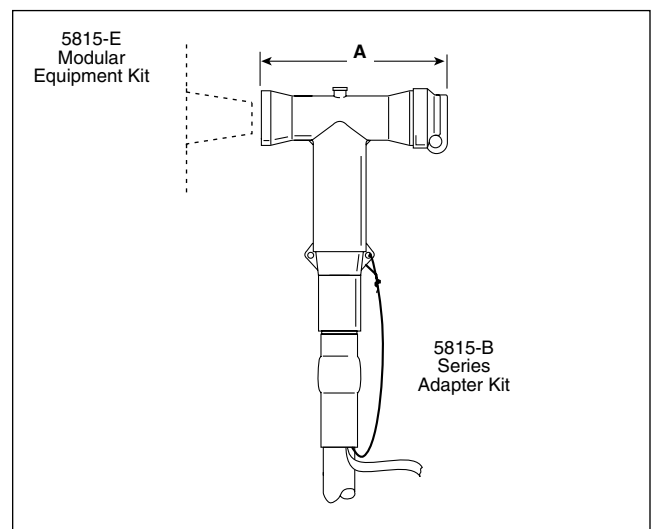
Table 8
Example: Ordering a Tap or Multi-Tap Splice

Kit No.	Application	No. of Adapter Kits Required
5815-S + 5815-T	3-way Splice (tee, wye, etc.)	3
5815-S + 5815-T + 5815-T	4-way Splice	4





For Dead ending shielded power cable. For future add-on capability with 3M Modular Splicing System



For connecting to 600 Amp apparatus bushing

Adapter Kit Selection Charts (one kit required for each cable being connected)

Table 9
5 & 8 KV Class

NOTE: Final Kit selection is based on CABLE INSULATION DIAMETER.

KIT NO.	INSUL. DIA. RANGE Inches (mm)	5 kV (AWG/kcmil)				8 kV (AWG/kcmil)			
		100% (90 mils)		133% (115 mils)		100% (115 mils)		133% (140 mils)	
		Stranded	Compact /Solid	Stranded	Compact /Solid	Stranded	Compact /Solid	Stranded	Compact /Solid
5815-B1	0.640 – 0.760 (16.3 – 19.3)			2/0	3/0	2/0	3/0		
5815-B2		3/0	4/0						
5815-B5	0.720 – 0.845 (18.3 – 21.5)							2/0	
5815-B6				3/0	4/0	3/0	4/0	3/0	4/0
5815-B7		4/0		4/0	250*	4/0	250*		
5815-B10		250	250						
5815-B12	0.785 – 0.970 (19.9 – 24.6)							4/0	250
5815-B15				250		250		250	
5815-B17		350							
5815-B23	0.910 – 1.065 (23.1 – 27.1)			350		350		350	
5815-B29	0.980 – 1.140 (24.9 – 29.0)	500		500		500			
5815-B35	1.080 – 1.280 (27.4 – 32.5)							500	
5815-B40		750							
5815-B43	1.220 – 1.420 (31.0 – 36.1)			750		750		750	
5815-B45		1000 Al							
5815-B46	1.360 – 1.560 (34.5 – 39.6)			1000 Al		1000 Al		1000 Al	

**NOTE: Check ACTUAL CABLE INSULATION DIAMETER to verify correct kit selection.*

Table 10
15 KV Class

NOTE: Final Kit selection is based on CABLE INSULATION DIAMETER.

KIT NO.	INSUL. DIA. RANGE Inches (mm)	15 kV (AWG/kcmil)			
		100% (175 mils)		133% (220 mils)	
		Stranded	Compact /Solid	Stranded	Compact /Solid
5815-B3	0.640 – 0.760 (16.3 – 19.3)	2	1		
5815-B4		1	1/0*		
5815-B5	0.720 – 0.845 (18.3 – 21.5)	2/0	3/0*		
5815-B8		1/0	2/0		
5815-B9				2	1
5815-B11	0.785 – 0.970 (19.9 – 24.6)			1	1/0
5815-B13				1/0	2/0
5815-B16		3/0	4/0		
5815-B18		4/0	250		
5815-B19				2/0	3/0
5815-B22	0.910 – 1.065 (23.1 – 27.1)			3/0	4/0
5815-B24		250			
5815-B26				4/0	250
5815-B32	0.980 – 1.140 (24.9 – 29.0)			250	
5815-B33		350			
5815-B35	1.080 – 1.280 (27.4 – 32.5)	500			
5815-B38				350	
5815-B44	1.220 – 1.420 (31.0 – 36.1)			500	
5815-B48	1.360 – 1.560 (34.5 – 39.6)	750		750	
5815-B49	1.480 – 1.700 (37.6 – 43.2)	1000 Al		1000 Al	

**NOTE: Check ACTUAL CABLE INSULATION DIAMETER to verify correct kit selection.*

Table 11
25 KV Class

NOTE: Final Kit selection is based on CABLE INSULATION DIAMETER.

KIT NO.	INSUL. DIA. RANGE Inches (mm)	25 kV (AWG/kcmil)			
		100% (260 mils)		133% (320 mils)	
		Stranded	Compact /Solid	Stranded	Compact /Solid
5815-B11	0.785 – 0.970 (19.9 – 24.6)	1	1/0		
5815-B14		2	1		
5815-B20	0.910 – 1.065 (23.1 – 27.1)	1/0	2/0		
5815-B21		2/0	3/0		
5815-25				2	1
5815-B27				1	1/0
5815-B28			3/0	4/0	
5815-B30	0.980 – 1.140 (24.9 – 29.0)			1/0	2/0
5815-B31				2/0	3/0
5815-B34		4/0	250*		
5815-B36				3/0	4/0
5815-B37	1.080 – 1.280 (27.4 – 32.5)	250			
5815-B39				4/0	250
5815-B41	1.220 – 1.420 (31.0 – 36.1)	350		350	
5815-B42				250	
5815-B47	1.360 – 1.560 (34.5 – 39.6)	500		500	
5815-B50	1.480 – 1.700 (37.6 – 43.2)	750			
5815-B51	1.640 – 1.840 (41.7 – 46.7)			750	
5815-B52		1000 Al			
5815-B53	1.780 – 1.965 (45.2 – 49.9)			1000 Al	

**NOTE: Check ACTUAL CABLE INSULATION DIAMETER to verify correct kit selection.*

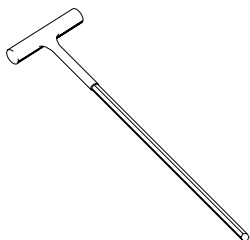


Table 12
Accessory Selection Chart

Part No.	Description
5815-TW	T-Wrench Used to install Connecting Plug into a Tee Module (e.g. with 5815-S and 5815-T Kits)

6.0 Specifications

6.1 Product

Splicing, dead-ending and 600 Amp apparatus connecting of 5, 8, 15 and 25 kV class shielded power cables shall be performed in accordance with the instructions included with the 3M 5815 Series Modular Splicing System Kits. The kit components must be designed according to the specifications of ANSI/IEEE Standard 386 for 600 Amp deadbreak interfaces. The system shall be capable of making dead-end, 2-way, 3-way or multiple tap splices, and of making connections to ANSI/IEEE 386 specified 600 Amp apparatus bushings.

6.2 Engineering/Architectural

The 600 Amp separable insulated connector system shall be rated for continuous operation on single-conductor shielded power cables rated up to 25 kV. The system components shall be designed in accordance with the specifications listed in ANSI/IEEE Standard 386 for 600 Amp deadbreak interfaces. The system shall be made up of specific kits designed for splicing, tapping (adding-on), dead-ending and 600 Amp equipment (apparatus) connecting. Each kit shall contain all of the components necessary for its intended application, except for the connector, cable sizing adapter and shield adapter, which shall be contained in a separate adapter kit. The system shall be capable of making dead-end, 2-way, 3-way or multiple tap splices, and of making connections to ANSI/IEEE 386 specified 600 Amp apparatus bushings.

7.0 Maintenance


The components of the 5815 Series Modular Splicing System are stable under normal storage conditions. Normal storage and stock rotation are recommended. The rubber and molded epoxy components are not impaired by freezing.

8.0 Availability

The 3M 5815 Series Modular Splicing System is available for splicing, tapping (adding-on) and dead-ending of 5, 8, 15 and 25 kV shielded power cables, and for equipment (apparatus) connecting to ANSI/IEEE 386 specified 600 Amp bushings. Separate 5815-B Series Adapter Kits are available to adapt the Modular Splicing Kits to specific cable sizes.

The Modular Splicing Kits are available from your local authorized 3M electrical distributor.

3M is a registered trademark of 3M. UniShield® is a registered trademark of BICC Cables.

Note: The core material being removed from the Cold Shrink Tube is mixed polymers and can be recycled with other waste. 

IMPORTANT NOTICE

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.

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