Industrial Loadbreak Elbow

200 A
5, 8 and 15 kV Class

5810 Series
Data Sheet

1.0 Product Description

1.1 General

The 3M™ Industrial Loadbreak Elbow connector is a fully-shielded and insulated plug-in termination for connecting underground cable to transformers, switching cabinets and junctions equipped with loadbreak bushings. The elbow connector and bushing insert comprise the essential components of all loadbreak connections. The 5810 Series kits are designed for use on tape shield, wire shield, UniShield® and jacketed concentric neutral types of power cables.

The loadbreak elbows are molded using high quality peroxide-cured EPDM insulation. Standard features include a coppertop connector, tin plated copper loadbreak probe with an ablative arc-follower tip, stainless steel reinforced pulling-eye and a capacitive test point.

Wide cable ranges are sized to accept cables insulated at either 100% or 133% insulation levels within a given conductor size. The wider cable ranges increase installation flexibility.

The coppertop compression connector is a standard item to transition from the cable to the loadbreak probe. An aluminum crimp barrel is inertia-welded to a copper lug. The aluminum barrel makes the connector easy to crimp and the copper lug ensures a reliable, tight, cool operating connection with the loadbreak probe.

1.2 Installation

Cable stripping and scoring tools, available from various tool manufacturers, are recommended for use when installing loadbreak elbows. After preparing the cable and installing shield adapter, the elbow housing is pushed onto the cable. The loadbreak probe is threaded into the coppertop connector using the supplied installation tool or an approved equivalent. Use a shotgun stick to perform loadmake and loadbreak operations. See installation instructions for details.

Figure 1.
Loadbreak Elbow Connector with test point.

1.3 Production Tests

Tests conducted in accordance with ANSI/IEEE Standard 386:

- ac 60 Hz 1 Minute Withstand 34 kV
- Minimum Corona Voltage Level 11 kV
- Test Point Voltage Test

Tests conducted in accordance with manufacturer's requirements:

- Physical Inspection
- Periodic Dissection
- Periodic Fluoroscopic Analysis

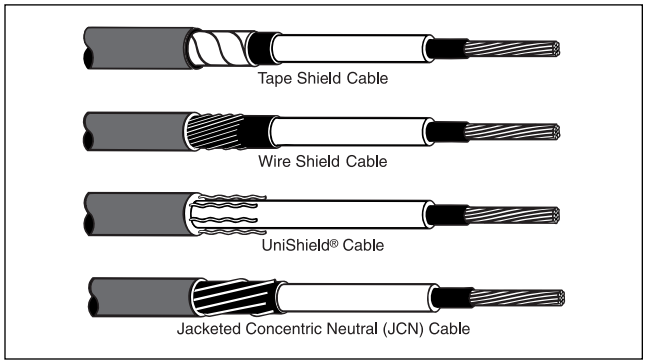

Table 1
Voltage Ratings and Characteristics

Description	kV
Standard Voltage Class	15
Maximum Rating Phase-to-Phase	14.4
Maximum Rating Phase-to-Ground	8.3
ac 60 Hz 1 Minute Withstand	34
dc 15 Minute Withstand	53
BIL and Full Wave Crest	95
Minimum Corona Voltage Level	11

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

Table 2
Current Ratings and Characteristics

Description	Amperes
Continuous	200 A rms
Switching	10 operations at 200 A rms at 14.4 kV
Fault Closure	10,000 A rms symmetrical at 14.4 kV after 10 switching operations for 0.17 s
Short Time	10,000 A rms symmetrical for 0.17 s 3,500 A rms symmetrical for 3.0 s

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

2.0 Features and Detailed Description

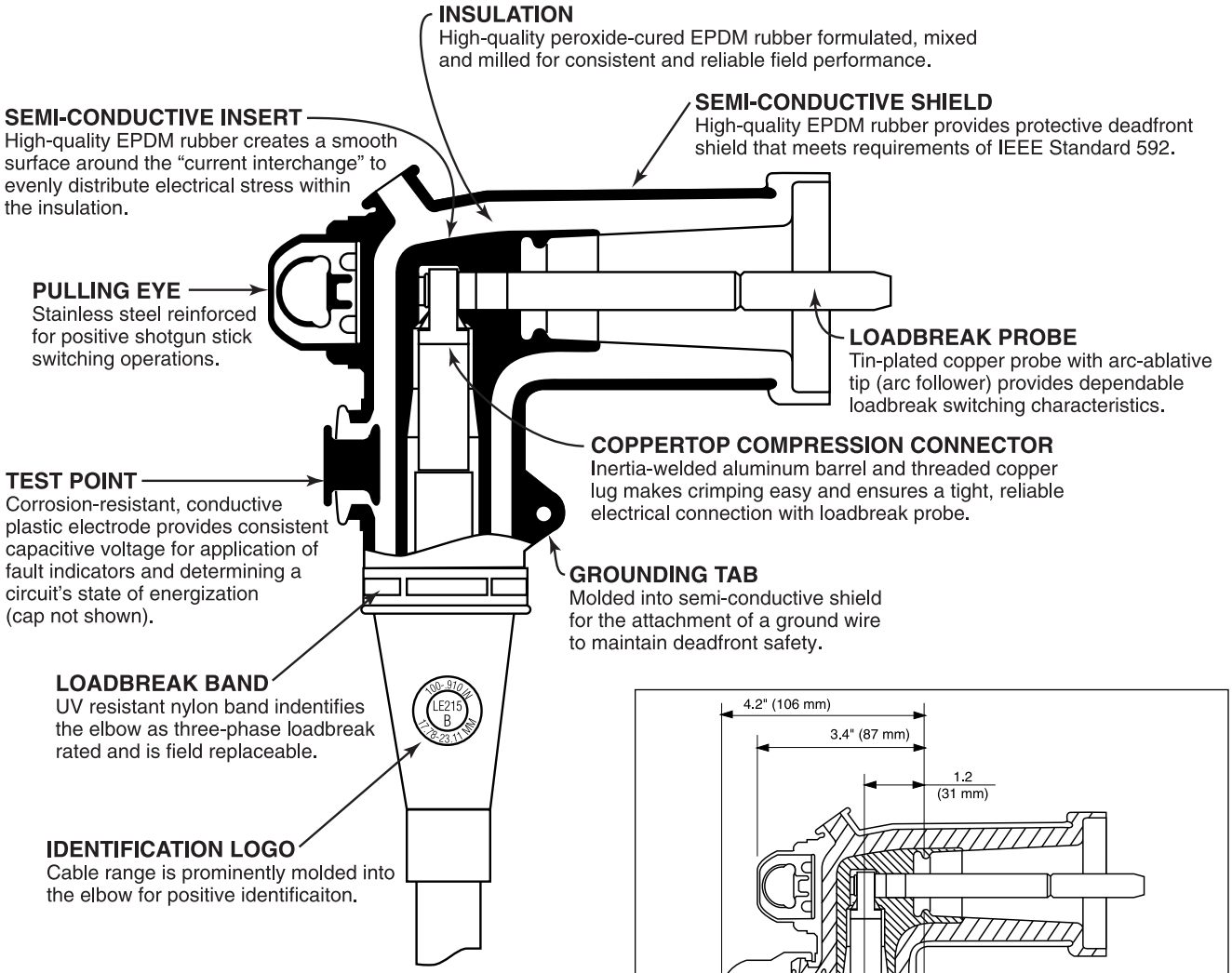

Figure 2.
Elbow cutaway illustrates design integrity.

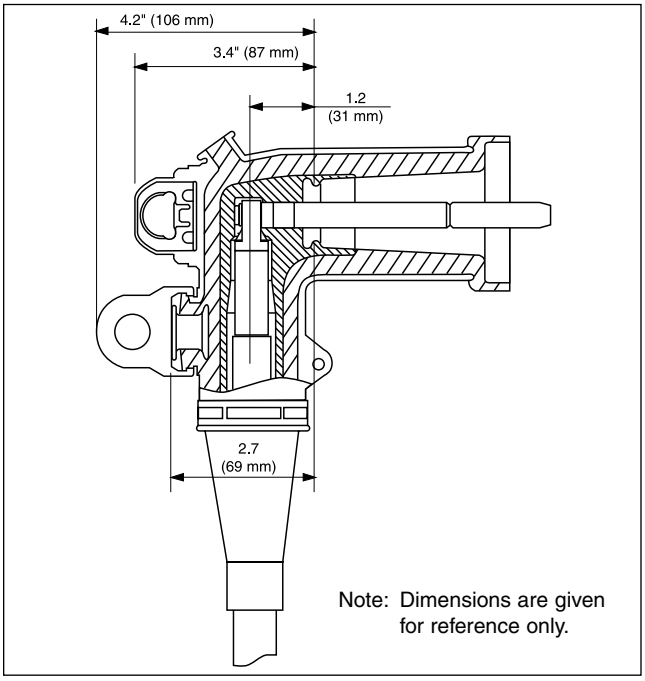

Figure 3.
Elbow profile and stacking dimensions as referenced in ANSI/IEEE Standard 386.

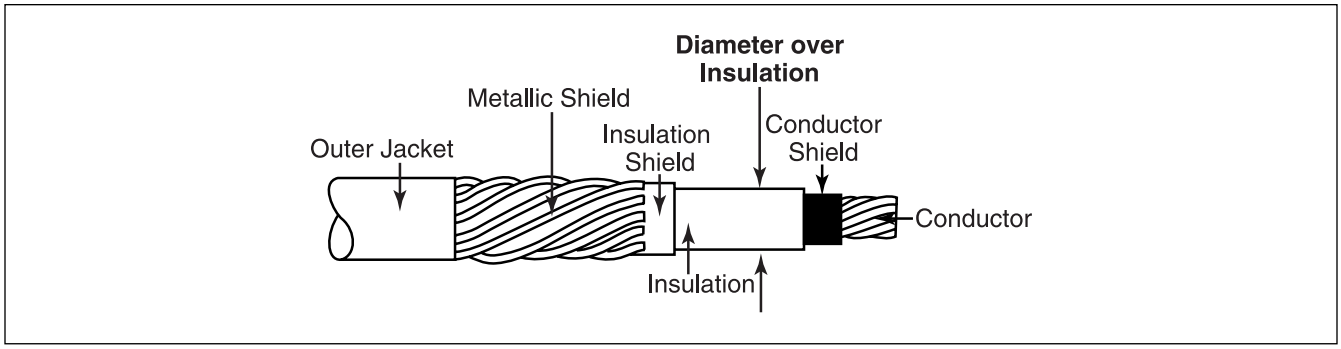

Figure 4.
Illustration showing typical construction of medium voltage underground cable.

3.0 Ordering Information

3.1 Kit Selection Table for 5, 8 and 15 kV Class

Note: *Final kit selection is based on* ***cable insulation diameter.***

Kit No.	Insulation Dia. Range	5 kV (AWG/kcmil)				8 kV (AWG/kcmil)				15 kV (AWG/kcmil)			
		100% (90 mils)		133% (115 mils)		100% (115 mils)		133% (140 mils)		100% (175 mils)		133% (220 mils)	
	Inches (mm)	Stranded	Compact /Solid	Stranded	Compact /Solid	Stranded	Compact /Solid	Stranded	Compact /Solid	Stranded	Compact /Solid	Stranded	Compact /Solid
5810-CA**	0.495–0.585 (12.6–14.9)	2–1*	1–1/0*	2	2–1	2	2–1*						
5810-CA-2		2	1	2*	1	2	1*						
5810-CA-1		1*	1/0*										
5810-CB**	0.575–0.685 (14.6–17.4)	1/0–2/0	2/0	1–1/0	1/0	1-1/0	1/0	2	2–1	4			
5810-CB-4										4			
5810-CB-2								2	1				
5810-CB-1				1	1/0	1	1/0						
5810-CB-1/0		1/0	2/0	1/0		1/0							
5810-CB-2/0		2/0											
5810-A**	0.630–0.820 (16.0–20.8)	3/0–4/0	3/0–250	2/0–3/0	2/0–4/0	2/0–3/0	2/0–4/0	1–2/0	1/0–3/0	2–1	2–1/0	4	2
5810-A-3											2		2
5810-A-2										2	1		
5810-A-1								1	1/0	1	1/0		
5810-A-1/0					2/0		2/0	1/0	2/0				
5810-A-2/0			3/0	2/0	3/0	2/0	3/0	2/0	3/0				
5810-A-3/0		3/0	4/0	3/0	4/0	3/0	4/0						
5810-A-4/0		4/0	250										
5810-B**	0.700–0.910 (17.8–23.1)	250		4/0–250	250	4/0–250	250	3/0–4/0	4/0–250	1/0–2/0	2/0–3/0	2–1/0	1–2/0
5810-B-2												2	1
5810-B-1												1	1/0
5810-B-1/0										1/0	2/0	1/0	2/0
5810-B-2/0										2/0	3/0		
5810-B-3/0								3/0	4/0				
5810-B-4/0				4/0	250	4/0	250	4/0	250				
5810-B-250		250		250		250							
5810-C**	0.850–1.100							250		3/0–250	4/0–250	2/0–4/0	3/0–250
5810-C-2/0												2/0	3/0
5810-C-3/0										3/0	4/0	3/0	4/0
5810-C-4/0										4/0	250	4/0	250
5810-C-250								250		250			
5810-D**	1.040–1.250 (26.4–31.8)											250	
5810-D-250												250	

Notes: ***Check actual* ***cable insulation diameter*** *to verify correct kit selection.*
***Kit without compression connector.*

3.2 Kit Contents:

- Elbow Body
- Coppertop Compression Connector
- Loadbreak Probe
- Probe Installation Tool
- Silicone Lubricant
- Cold Shrink™ Jacketing Tube
- Mastic Strips (3 ea.)
- Ground Braid Assembly
- Constant Force Spring
- CC-3 Cable Cleaning Pads
- Installation Instructions

The 5810-CA and 5810-CB Series kits contain the following additional materials:

- Cable Adapter
- Silicone Lubricant
- Supplemental Installation Instructions

4.0 Availability

The 3M™ 5810 Series Industrial Loadbreak elbow kit is available for connecting 5, 8 and 15 kV shielded power cables to ANSI/IEEE 386 loadbreak bushings. The 200 Amp elbow is designed for use with tape shield, wire shield, UniShield® and concentric neutral cable types. The kits are available from your local authorized 3M electrical destributor.

3M

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