



200 AMP 15 kV LOADBREAK PRODUCTS



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<http://www.hubbellpowersystems.com>

NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.



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15 kV LOADBREAK PRODUCTS RATINGS & SPECIFICATIONS

GENERAL INFORMATION

Hubbell 8.3/14.4 kV Underground Connectors provide utilities with products having high reliability and low maintenance expense.

These connectors provide:

- 10,000-amp fault-closing capability
- Piston-operated fault-close action
- Standard elbow and bushing insert loadbreak principle
- 1/8" thick molded shields
- Peroxide-cured EPDM compounds
- Full compliance with IEEE Standard 386

Hubbell Separable Connector bushing inserts and elbows are designed for use with single-conductor, concentric neutral power cable having extruded insulation shielding. With shield adapter products, the elbow can be used with cables having a metallic tape shield, wire shield, or lead sheath with tape or extruded insulation shielding.

All insulating and conducting rubber components are made of a special formulation of an EPDM elastomer using a peroxide curing process. The material and curing process provides superior elastomer stress relaxation characteristics under high ambient temperatures and contributes to reliable, long-time operation in either above-ground or subsurface installations.

Elbow connector/bushing insert combinations are suitable for energized loadmake/loadbreak operations by a qualified lineman using an 8' shotgun-type hot stick.

All elbow/bushing insert combinations are designed for use with subsurface (submersible to 6 feet of water) or pad-mounted installations.

Where to Use

Hubbell 15 kV Loadbreak products are designed for operation on and connection to 15 kV class, 95 kV BIL systems where the voltage ratings listed on this page are not exceeded.

RATINGS

Max. continuous voltage.....	8.3 kV phase-to-ground 14.4 kV phase-to-phase
Continuous current.....	200 amp rms

SHORT-TIME CURRENT RATINGS

0.17-second duration.....	10,000 amp rms symmetrical
3.00 second duration	3500 amps rms symmetrical

INSULATION WITHSTAND VOLTAGES

Basic Impulse Level	95 kV crest (1.2 x 50 microsec. wave)
60 Hertz (one minute).....	34 kV rms
DC (15 minutes).....	53 kV
Corona Extinction Voltage.....	11 kV rms (3 picocoulombs)

SWITCHING

1-phase and 3-phase circuits 8.3 kV phase-to-ground, 14.4 kV maximum across the open contacts.	10 loadmake/loadbreak operations at 200 amps with 90% parallel and 10% series resistance — reactance load at 0.8 power factor.
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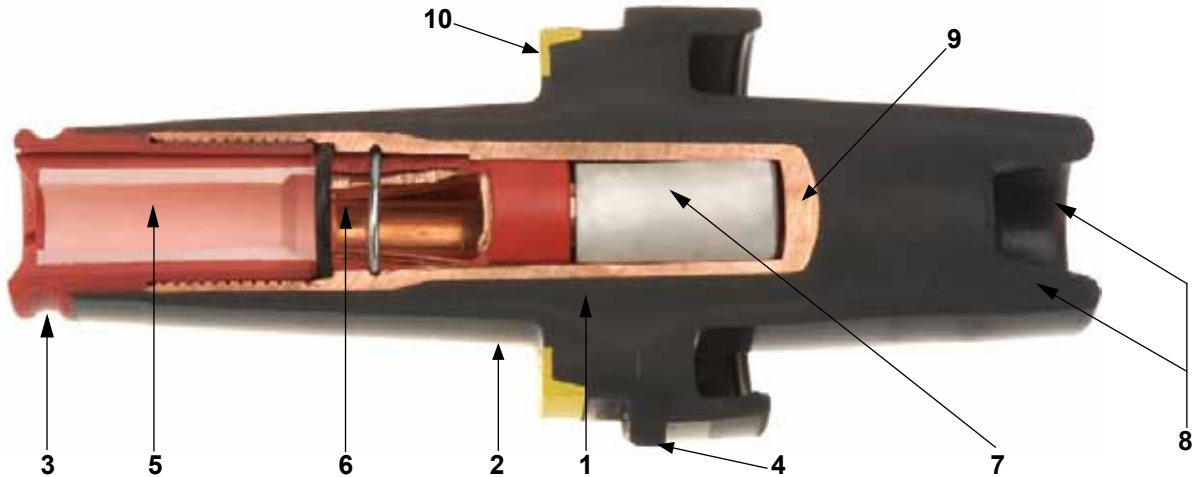
FAULT CLOSURE

One fault-close operation at 8.3 kV phase-to-ground, or 14.4 kV phase-to-phase; 10,000 amps rms symmetrical, 10 cycles, (0.17 seconds).

PRODUCTION TESTS

100% factory test for partial discharge and either AC Hi-Pot (34kV for 60 seconds) or impulse (BIL) (95kV 1.2 x 50μ sec.).

15 kV LOADBREAK BUSHING INSERT



The Hubbell Loadbreak Bushing Insert meets all requirements of IEEE Standard 386. It is designed for installation on transformers or other equipment having a bushing well that meets the requirements of IEEE Standard 386, Fig. 3.

PRODUCT FEATURES

- 1. EPDM insulation -** peroxide cured process. Provides superior dielectric strength.
- 2. Interface -** conforms to IEEE Standard 386, Figure 5. When a suitable elbow is installed, provides proper creep distance and watertight joint.
- 3. Locking groove -** conforms to IEEE Standard 386. Mates with elbow locking ring. Red color for 15kV identification.
- 4. Molded shield -** 1/8 inch thick peroxide cured EPDM conductive jacket. Three molded tabs provide convenient points for external grounding of the shield.
- 5. Loadbreak assembly -** includes ARC MATE™ ablative material, provides reliable switch loadbreak and loadmake operations.
- 6. Pinch-finger contacts -** are part of loadbreak assembly which has an all copper current path.
- 7. Piston assembly -** Piston movement assists operator under fault-close conditions.
- 8. Interface -** designed to mate with IEEE Standard 386, Figure 3, bushing-well interface.
- 9. Hex Broach -** accepts 5/16 hexwrench to properly torque insert into bushing well.
- 10. Seating Indicator -** molded into insert. Provides positive seating indication.

SELECTION AND ORDERING*

215BI	Bushing Insert
215LEwxTBI	Bushing Insert and Elbow with Capacitance Test Point
215LEwxBI	Bushing Insert and Elbow without Capacitance Test Point

*For the digits that will replace the "w" and "x" of the catalog number, please refer to Table w and Table x on page C1-5.



15 kV LOADBREAK ELBOW

Hubbell Loadbreak Elbows are designed and tested to meet or exceed all applicable requirements of IEEE Std. 386 and allow a means to mate or disconnect cable and equipment on power distribution systems. They are suitable for energized loadmake / loadbreak operations using a shotgun-type hot stick.

The optional integral seal elbow eliminates the need for a separate sealing kit. The boot seals the end of the cable jacket and prevents moisture ingress. The integral jacket seal kit is supplied with mastic strips to form a barrier around the concentric neutrals, ensuring a proper seal.



PRODUCT FEATURES

- 1. Molded external shield** – 1/8-inch thick, peroxide-cured EPDM conductive jacket is abrasive resistant and is an integral component of the deadfront design.
- 2. EPDM insulation** – peroxide-cured provides superior stress-relaxation characteristics and assures long life under high-ambient temperatures. Compatible with all solid dielectric cable insulations and shields.
- 3. Molded Conductive insert** – controls electrical stress and shields the compression connector.
- 4. Operating Eye** – permits energized loadmake / load-break operations with suitable hot-stick tool. Designed and tested to withstand 500-pound static pull and 10 ft-lb torsion forces.
- 5. Compression Lug** – meets all requirements of ANSI C119.4 for Class A connectors.
- 6. Test Point** – optional capacitive test point allows for the installation of faulted circuit indicators and will indicate the presence of voltage when interrogated with a high-impedance device.
- 7. Cable Entrance** – the semi-conductive rubber continues the cable's insulation shield and helps control internal stress. The interference fit along the cable insulation surface provides proper creep distance and dielectric strength.
- 8. Grounding Tabs** – provides a means to connect a drain wire to ensure deadfront construction.
- 9. White-Black-White ID Band** – identifies elbow as having a 3Ø rating for switching and fault-close.
- 10. Operating Interface** – Designed to mate with any component manufactured to the requirements of IEEE Std. 386, Figure 5.
- 11. Locking Ring** – Secures the elbow to mating product. Initial pull-off force required to unseat from mating groove in bushing insert produces fast break necessary for loadbreak switching.
- 12. Loadbreak Probe** – tin-plated copper body with mates with ArcMate™ ablative material follower tip. Provides current path and reliable loadmake/loadbreak switching operations.

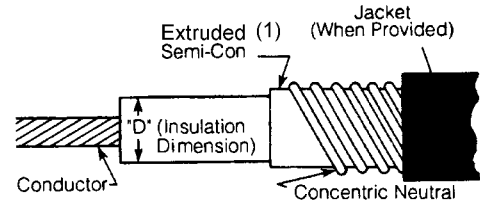
15 kV LOADBREAK ELBOW

SELECTION AND ORDERING CONSTRUCTION

Step 1: Determine the cable's insulation diameter either by measuring it (Do not measure over the insulation shield) or from the cable manufacturer's catalog. Select an elbow size from table "w" so that the insulation falls within the elbow's range.

Step 2: Select a connector code from table "x" that identifies the conductor size and stranding. Standard compression lug is a long, bi-metal connector.

Step 3: If the elbow is to be supplied with a capacitance test point add a "T" to the end of the part number.



Cable Dimension Reference

(1) If insulation shield is not extruded, an adapter must be used to accommodate elbow.

Table w		
Insulation Min / Max		
Elbow Size	Inches	mm
3	0.495" – 0.730"	12,5 – 18,5
4	0.635" – 0.905"	16,1 – 23,0
5	0.760" – 1.135"	19,3 – 28,8

Table x (AL or CU Conductor)		
Connector Code	Stranded or Compressed	Compact or Solid
1	#6	#4
2	#3 or #4	#2 or #3
3	#2	#1
4	#1	1/0
5	1/0	2/0
6	2/0	3/0
7	3/0	4/0
8	4/0	250

Example, the part number for a 15kV loadbreak elbow with test point for 1/0 stranded, 175mil insulation with an OD over insulation of 0.785" would be: 215LE45T.

To specify this same elbow kit but with a ProbeLok® connector, add a "P" after the connector code, i.e. 215LE45PT.

To order a loadbreak elbow with an integral seal add a "J" after the "LE" in the part number. For an example: 215LEJ45T.

To order an elbow kit without a compression connector use part number: 215LE40T.

If the kit is to be supplied with a separate, cold-shrink seal kit for use on concentric neutral cables, add a "J" to the end of the part number. For example: 215LE45TJ.

If a cold-shrink, shield adapter is to be included in the kit, add an "S" to the end of the part number: 215LE45TS.

To order a replacement probe, use part number 215LBP.

To order a replacement compression connector, use part number 200LUGBx. See page C1-11.



15 kV LOADBREAK JUNCTIONS

JUNCTION DESCRIPTION

Hubbell Junctions are used to sectionalize cables or as feed-thrus for making lateral taps.



They are available in two, three and four tap units and, when connected with loadbreak elbows, have ratings as shown on the 15 kV Loadbreak Product Ratings & Specifications sheet.

Each tap works independently of the others contained on the same unit. Adjacent taps are 3.24 inches center to center, providing improved ease of operation.



Junctions with the corrosion-resistant stainless steel mounting bracket allow back plate mounting angles of 30, 45, or 60 degrees. This bracket can also be adjusted for horizontal mounting to a flat surface. Junctions can also be ordered with only U-straps for horizontal mounting.

Feed-thrus are equipped with a bracket for mounting on the apparatus stand-off brackets. They can be mounted by use of a hot stick, and provide a means to test, ground, or park the elbow connector, or to by-pass a transformer.

Feed-thru SELECTION AND ORDERING

Feed-thru	Horizontal	Vertical
		
Catalog Number	215FT	215FTV

JUNCTION SELECTION AND ORDERING

Junction	With Bracket	With U-straps
		
2-Position	215J2B	215J2U
3-Position	215J3B	215J3U
4-Position	215J4B	215J4U

BRACKET COMPONENT PARTS

215J2BRKT
215J3BRKT
215J4BRKT
200BRKTMF
215US1

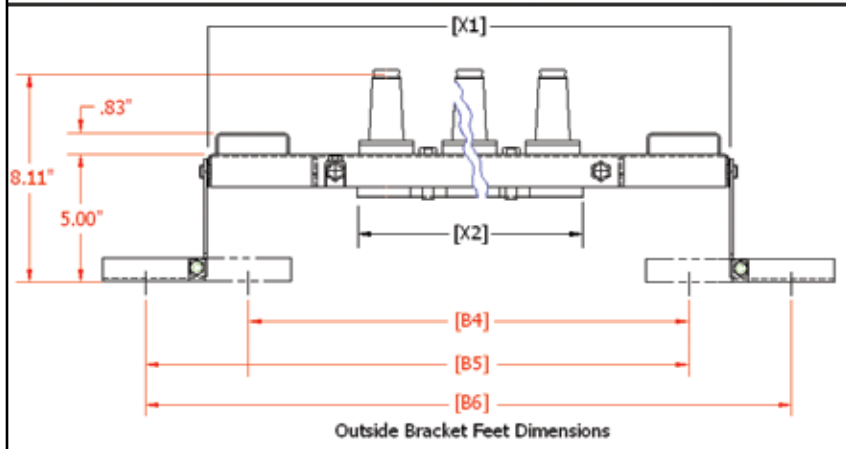
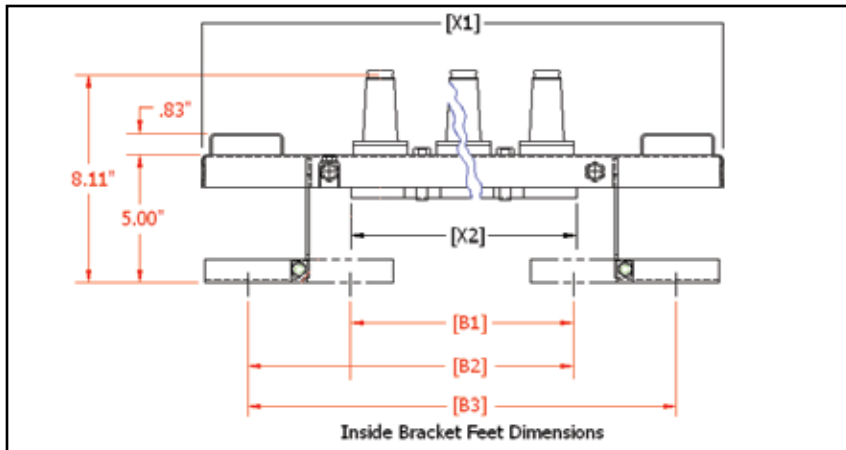
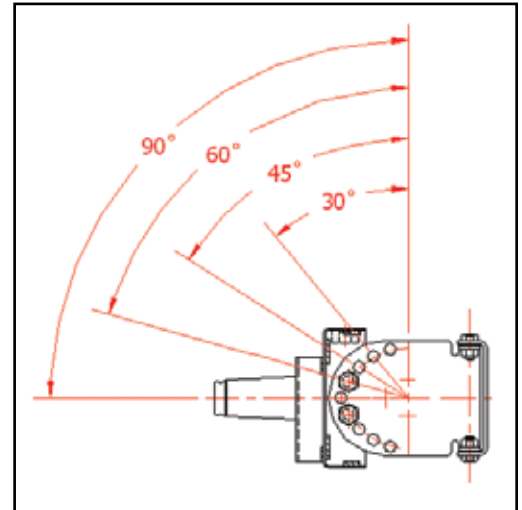
Junction Bracket, Stainless Steel w/Adjustable Feet, 2 Position
Junction Bracket, Stainless Steel w/Adjustable Feet, 3 Position
Junction Bracket, Stainless Steel w/Adjustable Feet, 4 Position
Junction Adjustable Mounting Feet Only, Stainless Steel (1 Pair)
Junction U-strap, Stainless Steel w/hardware

15 kV LOADBREAK JUNCTIONS Bracket & U-strap Dimensions

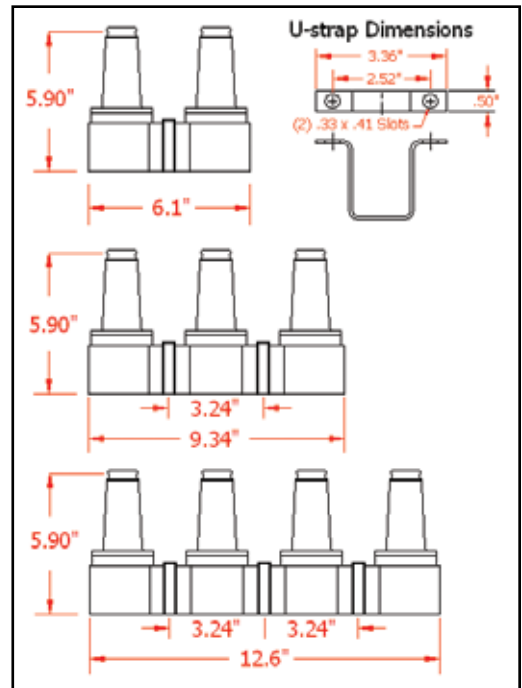
Dimension	Junction Part Number		
	215J2B	215J3B	215J4B
X1	20.40	20.40	23.70
X2	6.10	9.30	12.60
B1	5.35 to 9.23	5.35 to 9.23	8.59 to 12.47
B2	10.03 to 13.91	10.03 to 13.91	13.27 to 17.15
B3	14.70 to 18.58	14.70 to 18.58	17.94 to 21.82
B4	13.61 to 17.49	13.61 to 17.49	16.85 to 20.73
B5	18.28 to 22.16	18.28 to 22.16	21.52 to 25.40
B6	22.95 to 26.83	22.95 to 26.83	26.19 to 30.07

Note: Dimensions in Inches

Bracket Mounting Angles



U-Strap Dimensions





15 kV LOADBREAK ACCESSORIES

Insulating Cap

For installation on 8.3/14.4 kV loadbreak bushing interfaces designed to Fig. 5 of IEEE Standard 386. It can be used as a temporary or a permanent cover on an energized circuit. To avoid low-energy discharge from the outer conductive shield, the 36-inch long braided lead should be grounded.

Insulated Cuff w/ground lead – 215ICI

Conductive Cuff w/ground lead – 215ICC



215ICI

215ICC

Insulated Parking Bushing

Provides a temporary or permanent parking position for energized 8.3/14.4 kV loadbreak elbows designed to requirements of Fig. 5 of IEEE Standard 386. The bracket permits mounting on the apparatus parking stands.

Insulated Parking Bushing – 215SB



Feed-thru Insert

This device provides the capability to create a tap position in an existing apparatus installation and convert a radial-feed transformer into a loop-feed unit. Its two loadbreak interfaces, when mated with appropriate products, provide a fully shielded, submersible, separable insulated connection designed for energized operation. It is designed for use on apparatus having a 200-amp bushing well interface meeting the requirements of IEEE Standard 386.

Feed-thru Insert – 215FTI

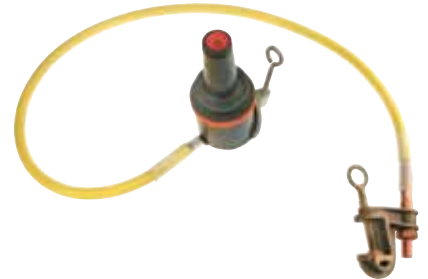




15 kV LOADBREAK GROUNDING ACCESSORIES

Grounded Parking Bushing

This set includes a loadbreak bushing and bronze ground clamp T6000466 connected by a 4-ft. yellow 1/0 cable. A tin-plated copper connector joins the cable to the bushing. A threaded copper ferrule connects the cable to the clamp. Fault current rating for each set: 10,000 amps for 10 cycles
Order Chance T6003091



Grounding Elbow

Each set includes an orange-jacketed elbow, 6 feet of 1/0 copper grounding cable with yellow jacket, and bronze ground clamp T6000466. Fault current rating for each set: 10,000 amps for 10 cycles
Order Chance C6000729



Test Rod

Fits into switch modules, multi-taps or other loadbreak bushings and is used with test devices such as staiscope to provide indication of energized or deenergized condition of cable.
Order Test Rod 225TR



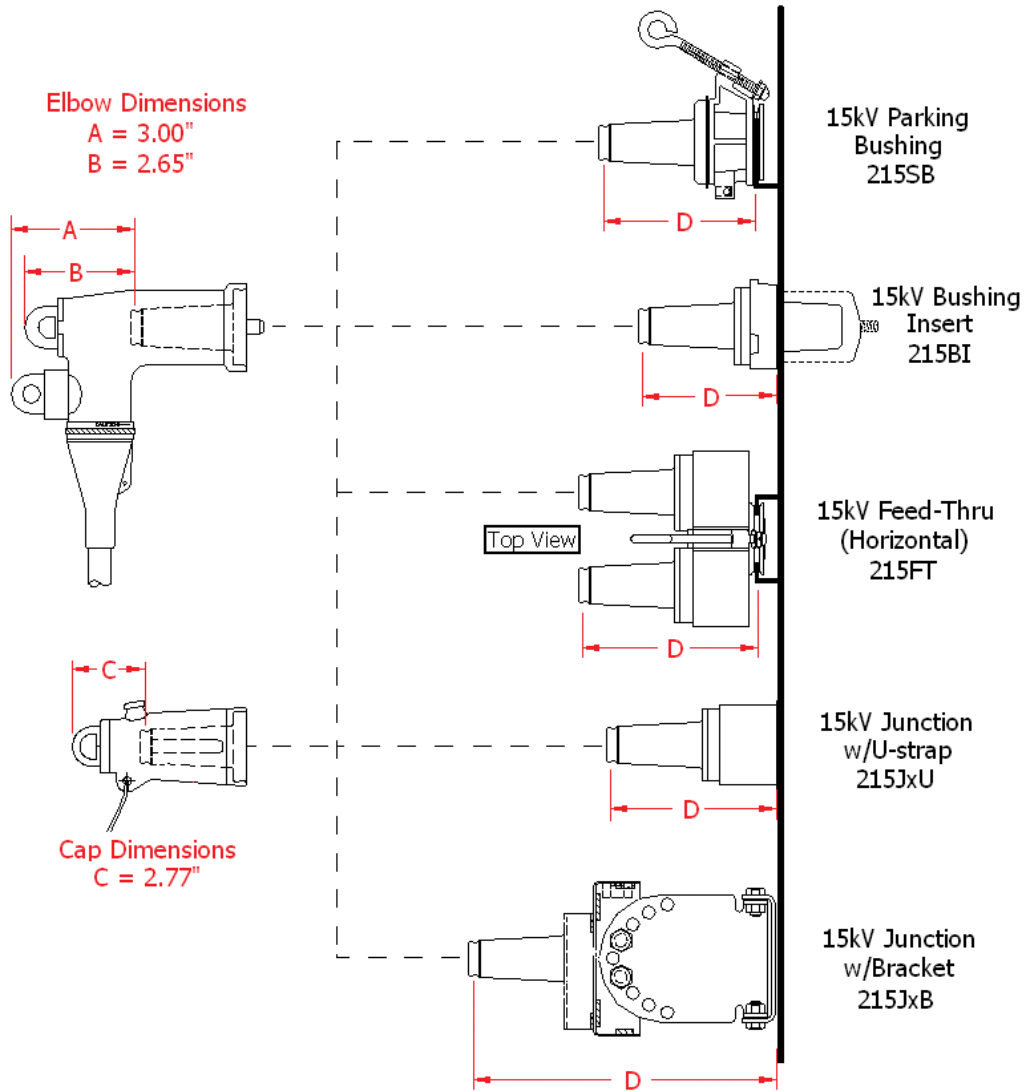
Three-Phase Grounding Elbow Sets for Switches & Transformers

Each of these sets consists of a three-way terminal block assembly, three 6-ft. lengths of 1/0 copper ground cable with yellow jacket, a bronze ground clamp T6000466 and three elbows.
Fault current rating for each set: 10,000 amps for 10 cycles
Order Chance C6003102





Hubbell 15 kV Cable Accessories Stacking Dimensions



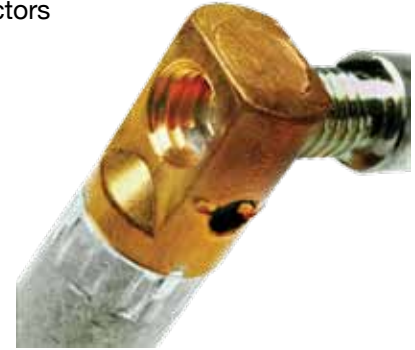
Overall 15kV Product Stacking Dimensions			
Product	Product (D)	Elbow + Product (A + D)	Cap + Product (C + D)
215SB - 15kV Parking Bushing	5.34"	8.34"	8.11"
215BI - 15kV Bushing Insert	4.69"	7.69"	7.46"
215FT - 15kV Feed-Thru (Horizontal)	6.24"	9.24"	9.01"
215JxU - 15kV Junction w/U-strap	5.90"	8.90"	8.67"
215JxB - 15kV Junction w/Bracket	8.11"	11.11"	10.88"
Note: Parking Stand Dimension – 0.75" from apparatus			

15 kV Replacement Parts

Crimp Connectors:

For re-use or re-cabling of loadbreak elbows, long Bimetal or ProbeLok® connectors may be ordered as replacement parts.

Conductor Size Copper or Aluminum		Model Number	
Stranded or Compressed	Solid or Compacted	Bimetal Long	PROBELOK® Long
6	4	200LUGB1	200LUGP1
4	2	200LUGB2	200LUGP2
2	1	200LUGB3	200LUGP3
1	1/0	200LUGB4	200LUGP4
1/0	2/0	200LUGB5	200LUGP5
2/0	3/0	200LUGB6	200LUGP6
3/0	4/0	200LUGB7	200LUGP7
4/0	250	200LUGB8	200LUGP8



PROBELOK® Long Connector

Note: Nominal overall length for standard Bimetal or ProbeLok connector is 2.88”.

Loadbreak Probe

Provides connection between crimp connector (cable) and bushing insert (apparatus).

Order 215LBP

Grounding Accessories:

215GEHSG	200A 15kV Grounding Elbow Housing
235LUGC6	2/0 all copper Lug for use with 1/0 grounding cable
235LUGC7	3/0 all copper Lug for use with 2/0 grounding cable
200GB6LUG	1-hole copper Lug for 1/0 grounding cable (grounding bushing component)

Operating Accessories:

625SK52	Cold Shrink Cable Seal kit for cable with an overall diameter of 0.95” to 1.94”
625SK59	Tape Shield Adapter Kit for cable with an overall diameter of 0.59” to 1.05”
625SK60	Tape Shield Adapter Kit for cable with an overall diameter of 0.83” to 1.64”
SL150	Silicone Lubricant for underground separable connectors 5.3 oz. (150 grams)

Hubbell Cable Accessories Order Notes



PROBELOK® Connector Prevent Elbow from Overheating

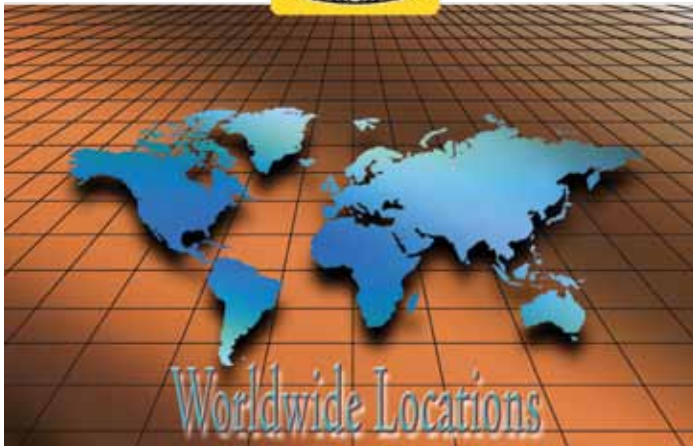


Applications

PROBELOK® Connectors prevent elbows from overheating in 15, 25 and 35kV applications. A special insert in the connection holds the threaded connection tight, even if flexing causes it to turn. A conventional elbow uses a simple threaded connection between the cable connector and probe. When a lineman twists an elbow to put it on or pull it off, the connection loosens. Even a slight quarter turn can cause the connection to wobble slightly. The wobble creates hot spots that can cause elbow overheating and failure. PROBELOK® Connectors help stop the problem and unnecessary service calls that can cost hundreds of dollars to repair overheating elbows.

Ordering Information

Modify the standard 15, 25 and 35 kV elbow catalog number by adding a "P" to the number. For example, Catalog Number 215LE45T is ordered as a PROBELOK® Connector by inserting a "P" in the number, 215LE45PT.



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