

# LOADBREAK PRODUCTS

200 AMP 15 kV

Experience & Reliability



Cable  
Accessories







# cable accessories

CATALOG C1





## 200 AMP 15 kV Loadbreak Products

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# 15 kV LOADBREAK PRODUCTS

## RATINGS & SPECIFICATIONS

### GENERAL INFORMATION

Hubbell 15 kV, 200 Amp Separable Connectors are fully shielded, insulated, and submersible products that provide a means to mate or disconnect cable to switchgear, transformers, or sectionalizing equipment on power distribution systems. They are designed for pad-mounted or subsurface applications, where the components may be exposed to direct sunlight or continuously submerged in water up to 6 feet (2m).

All 15 kV loadbreak products and accessories are designed and tested to meet or exceed all applicable requirements of IEEE, ANSI, and other industry standards including the following:  
IEEE Std 386 for Separable Connectors (Figure 5)  
IEEE Std. 592 for Exposed Semi-conducting Shields  
IEEE Std. C62.11 for Metal Oxide Surge Arresters  
ANSI C119.4 Std. for Conductor Connectors  
AEIC & ICEA for Insulated Cables

These devices are suitable for energized loadmake / loadbreak operations when using an 8' shotgun-type hot stick on grounded WYE systems(1). They are also fully interchangeable with other manufacturer's products that conform to the electrical requirements of IEEE Std. 386.

Hubbell 15 kV products are designed for use in ambient temperatures between -40°C and +65°C and can be operated energized between -20°C and +65°C. Loadbreak devices should not be operated at elevations over 6,000 feet.

All rubber components are manufactured using peroxide-cured insulating and conductive compounds.

(1) Contact the factory for recommendations for use on ungrounded, resistance grounded, or delta systems.

### RATINGS

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

### SHORT-TIME CURRENT RATINGS

0.17 seconds duration .....	10,000 amps rms symmetrical
3.00 seconds duration .....	3,500 amps rms symmetrical

### INSULATION WITHSTAND VOLTAGES

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

### 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 70-80% lagging 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 (34 kV for 60 seconds) or impulse (BIL) (95 kV 1.2 x 50 µsec. wave).

# Performance





# UNDERGROUND DISTRIBUTION CLASS ARRESTERS

## RATINGS & SPECIFICATIONS

### GENERAL INFORMATION

Hubbell elbow and parkingstand lightning arresters are gapless, metal oxide varistor (MOV) type surge arresters. They are designed to provide shielded, dead-front arrester protection for 15 kV underground systems. The arresters limit over-voltages to acceptable levels, protecting equipment and extending service life.

The critical values for elbow arresters are the discharge voltage (IR) and the IEEE Std. 386 interface class. In general, the lower the discharge voltage, the better the protection margin. Hubbell elbow arresters are non-fragmenting.

Hubbell underground arresters fully conform to the safe-failure mode per IEEE Std. C62.11. The standard requires that should the arrester blocks fail, they will not be ejected through the body or side wall of the housing. The MOV blocks should exit out the bottom, down and away from equipment and personnel.

### Application:

Hubbell elbow arresters are designed to mate with 200 amp loadbreak interfaces that conform to IEEE Std. 386 Figure 5. The parkingstand lightning arrester contains a Figure 5 interface.

A Hubbell arrester installed at the end of a radial system or at both ends of an open point in a loop circuit will provide excellent protection against high voltage surges resulting from lightning or switching. When combined with an Ohio Brass PVR (Riser Pole) arrester, optimum protection can be achieved.

Hubbell arresters are fully shielded and submersible, either continuously or intermittently, to a depth of 6 feet (2m).

### Installation:

The Hubbell arrester should be installed utilizing an 8' shotgun type hotstick.

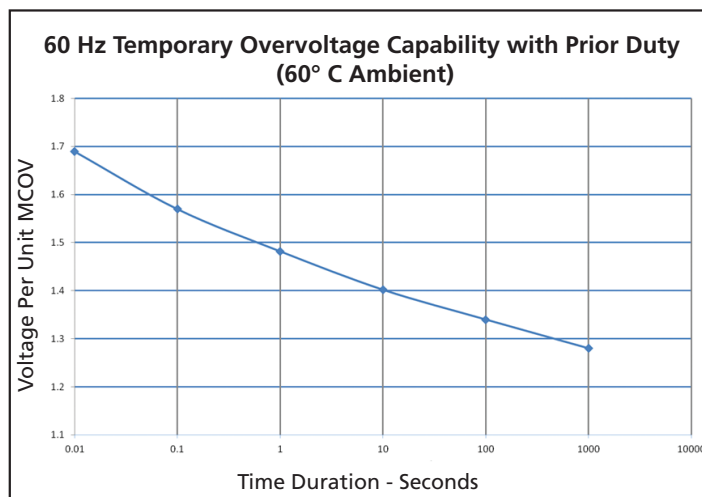
### Performance Characteristics:

Tests were performed in accordance with applicable sections of IEEE Std. C62.11 (Metal Oxide Surge Arresters for Alternating Current Power Circuits) with test levels chosen that represent typical underground distribution systems.

Design Tests	
High Current, Short Duration	2 discharges of 65 kA Crest
Low Current, Long Duration	20 Surges of 75 A for 2,000 $\mu$ sec. duration
Operating Duty Cycle	22 Operations of 5 kA Crest 8 x 20 $\mu$ sec.
Safe Failure Mode	Verify blocks do not breach sidewall

Production Tests Polymer Housing Only per IEEE Std. 386	
Partial Discharge Voltage Level (3pC sensitivity)	
AC 60 Hz, 1 minute withstand or BIL impulse lightning withstand	
Periodic Fluoroscope Analysis	

Production Tests Complete Unit per IEEE Std. C62.11	
Partial Discharge Voltage Level (10pC sensitivity)	
Reference Voltage	
Power Frequency	



# 15 kV LOADBREAK ELBOWS

HUBBELL 15 kV Loadbreak Elbows are designed and tested to meet all requirements of IEEE Std. 386. The operating interface will mate with any product that conforms to IEEE Std. 386, Figure 5.

Elbows can be supplied with a capacitive test point that allows for the installation of faulted circuit indicators and will indicate the presence of voltage when interrogated with a high-impedance meter.

Bi-metal compression lug meets all requirements of ANSI Std. C119.4 for Class A connectors.

The integral seal elbow eliminates the need for a separate sealing kit. The integral seal elbow is supplied with mastic strips to form a barrier around the neutral wires. External grip hooks on integral seal elbow boot for easier installation.

Optional ground strap accessories can be supplied for use on tape shielded cables.



## SELECTION & ORDERING INFORMATION

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

Select a connector code that identifies the conductor size and stranding.

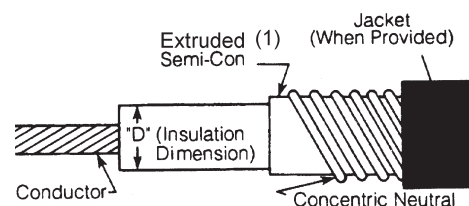
The standard long, bi-metal connector can be replaced with a ProbeLok connector.

Decide if a capacitive test point is required.

The elbow can be supplied with a separate, cold-shrink seal kit for jacketed concentric neutral cable, or it can be furnished with a separate adapter kit for copper tape shield cables.

The standard elbow housing can be supplied as an integral elbow seal housing.

Cable Dimension Reference



## Components:

To order a replacement probe complete with pin wrench, order 215LBP.

For a standard, long bi-metal lug, order: 200LUGBx.

For a ProbeLok lug, order: 200LUGPx.

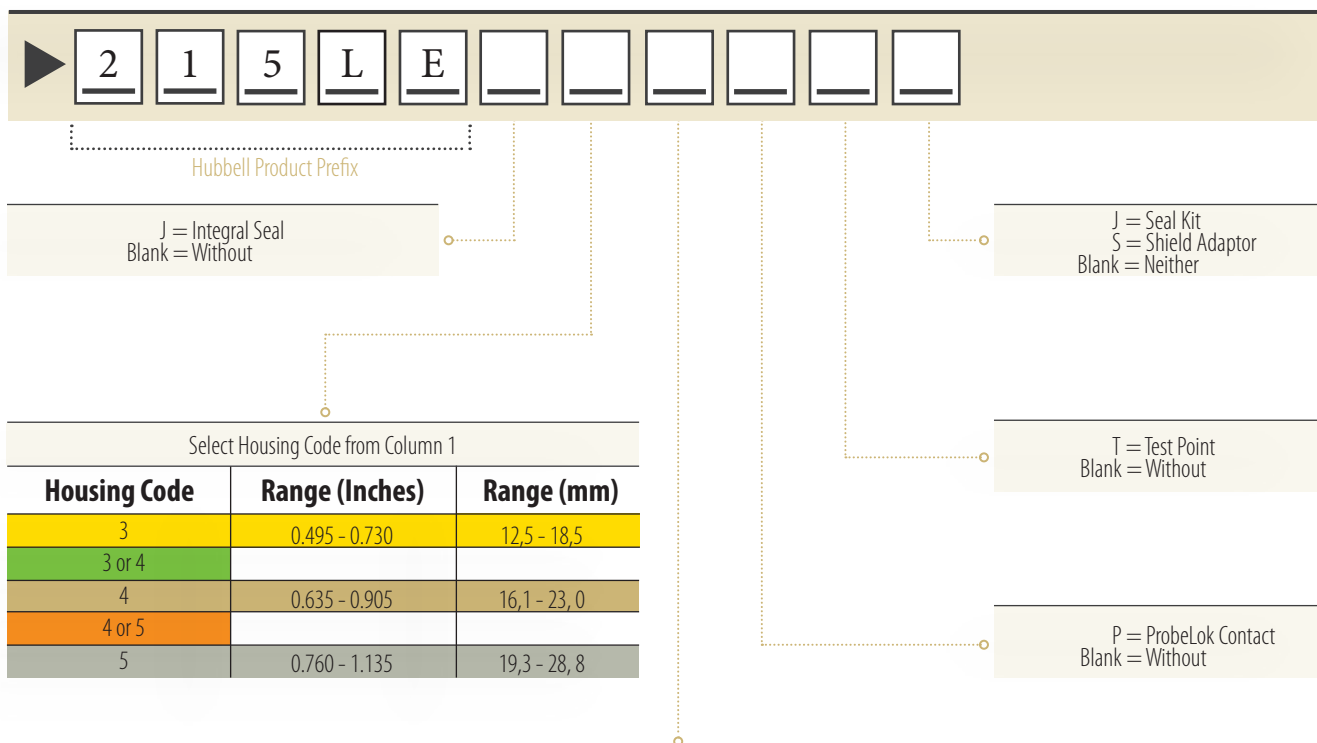
To have a loadbreak insert packaged with the elbow, add "BI" to the end of the part number: 215LEJ45BI.

625SK52 Cold Shrink Cable Seal Kit for JCN cable with an overall diameter of 0.95" to 1.94"  
625SK60 Tape Shield Adapter Kit for cable with an overall diameter of 0.83" to 1.64"



# CATALOG NUMBER ORDERING INFORMATION

**Example:** Integral seal elbow for 1/0 stranded, 175 mil cable with a test point is: 215LEJ45T



Select Connector Code from Column 1, or 0 for without Connector					
Connector Code	AWG or kcmil	Stranding	15 kV - 175mil (Inches)	15 kV - 220mil (Inches)	25 kV - 260mil (Inches)
1	#6	Stranded & Compressed	0.527 - 0.622	0.617 - 0.717	
	#4	Compact & Solid	0.557 - 0.652	0.647 - 0.747	
2	#4	Stranded & Compressed	0.575 - 0.670	0.665 - 0.765	
	#3	Compact & Solid	0.579 - 0.671	0.671 - 0.769	
	#3	Stranded & Compressed	0.604 - 0.698	0.694 - 0.793	
	#2	Compact & Solid	0.610 - 0.705	0.700 - 0.800	0.780 - 0.880
3	#2	Stranded & Compressed	0.635 - 0.730	0.725 - 0.825	0.805 - 0.905
	#1	Compact & Solid	0.645 - 0.735	0.735 - 0.830	0.805 - 0.905
4	#1	Stranded & Compressed	0.675 - 0.770	0.765 - 0.855	0.835 - 0.935
	1/0	Compact & Solid	0.680 - 0.775	0.770 - 0.865	0.835 - 0.940
5	1/0	Stranded & Compressed	0.715 - 0.810	0.805 - 0.905	0.875 - 0.980
	2/0	Compact & Solid	0.715 - 0.815	0.805 - 0.905	0.875 - 0.980
6	2/0	Stranded & Compressed	0.760 - 0.855	0.850 - 0.950	0.920 - 1.025
	3/0	Compact & Solid	0.765 - 0.860	0.855 - 0.955	0.925 - 1.030
7	3/0	Stranded & Compressed	0.810 - 0.905	0.900 - 1.000	0.970 - 1.075
	4/0	Compact & Solid	0.815 - 0.910	0.905 - 1.005	0.975 - 1.080
8	4/0	Stranded & Compressed	0.865 - 0.965	0.955 - 1.060	1.025 - 1.135
	250	Compact	0.880 - 0.965	0.970 - 1.060	1.040 - 1.135

\*These ranges are taken from the AEIC/ICEA industry cable standards



# 15 kV UNDERGROUND ARRESTERS

## PRODUCT FEATURES:

**Fiberglass Wrap** ensures that the MOV block stack remains in one piece and prevents the blocks from breaching the side wall should the arrester fail.

**ID Band** provides clear visual identification of arrester MCOV and duty cycle ratings.

**Flexible Lead** is #4 AWG copper rope lay conductor 595 strand (7 x 85). Ends are soldered to prevent fraying. Standard length is 36" long. Other lead lengths are available.

**MOV Blocks** are the same ones found in Ohio Brass overhead arresters.



## Protective Characteristics

Catalog Number	MCOV kV	Rating kV	0.5 $\mu$ sec. 5 kA Max IR-kV	Maximum Discharge Voltage (kV Crest) 8x20 $\mu$ sec. Current Wave				
				1.5 kA	3.0 kA	5.0 kA	10 kA	20 kA
215_LA03	2.55	3	12.5	9.8	10.3	11	12.3	14.3
215_LA06	5.1	6	25	19.5	20.5	22	24.5	28.5
215_LA09	7.65	9	33.5	26	28	30	33	39
215_LA10	8.4	10	36	27	29.5	31.5	36	41.5
215_LA12	10.2	12	50	39	41	44	49	57
215_LA15	12.7	15	58.5	45.5	48.5	52.0	57.5	67.5
215_LA18	15.3	18	67.0	52.0	56.0	60.0	66.0	78.0

## Normally Recommended MCOV for Various System Voltages

System L-L Voltage (kV)		Arrester MCOV (kV)	
Nominal	Maximum	Grounded Neutral	Impedance Grounded or Ungrounded
2.40	2.54	2.55	2.55
4.16	4.37	2.55	5.10
4.80	5.04	5.10	5.10
6.90	7.26	5.10	7.65
12.00	12.70	7.65	12.70
12.47	13.20	7.65	15.30
13.20	13.97	8.40	15.30
13.80	14.52	8.40	15.30



## Hubbell URD Arrester Selection

Selection of the arrester size is based upon the maximum continuous operating voltage (MCOV) line-to-ground that is applied across the arrester in service. For arresters on effectively grounded systems, this is normally the maximum line-to-ground voltage – e.g., 7.65 kV on a 12.47 kV multi-grounded system.

For ungrounded or impedance-grounded systems, the MCOV should be at least 90 percent of maximum phase-to-phase voltage. Smaller arresters than shown may be used; contact your Hubbell Power Systems account representative for details.



# CATALOG NUMBER ORDERING INFORMATION

**Example:** Elbow arrester for use on a 13.8 kV L-L system is: 215ELA10

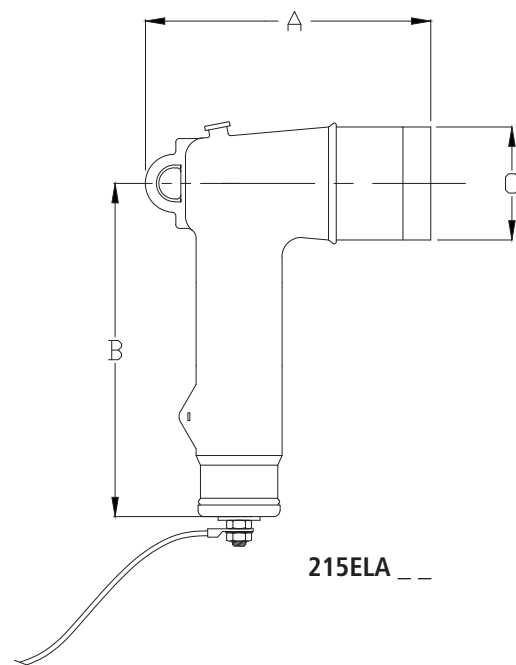


Hubbell Product Prefix

E = Elbow Arrester  
P = Parkingstand

Rating	MCOV
03	2.55
06	5.1
09	7.65
10	8.4
12	10.2
*15	12.7
*18	15.3

\* Not available in Parkingstand Lightning Arrester

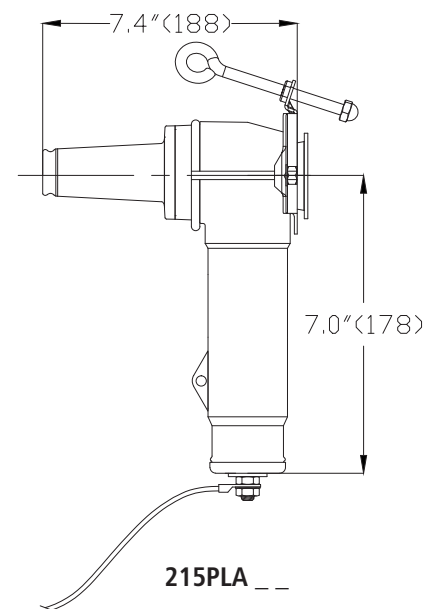


## ELA Reference Data:

Catalog Number	IEEE Std. 386 Interface	MCOV (kV)	Rated Voltage (kV)	Dimensions Inch (mm)			Shipping Weight	
				A	B	C	Lbs	(kg)
215ELA03	15 kV Class Fig. 5	2.55	3	7.4 (188)	6.6 (168)	2.9 (74)	3.7	1.7
215ELA06		5.1	6					
215ELA09		7.65	9					
215ELA10		8.4	10					
215ELA12		10.2	12		10.2 (259)		5.2	2.4
215ELA15		12.7	15					
215ELA18		15.3	18					

## PLA Reference Data:

Catalog Number	IEEE Std. 386 Interface	MCOV (kV)	Rated Voltage (kV)	Weight	
				Lbs	(kg)
215PLA03	15 kV Class	2.55	3	4.6	(2.09)
215PLA06		5.1	6		
215PLA09		7.65	9		
215PLA10		8.4	10		
215PLA12		10.2	12		



# 15 kV LOADBREAK INSERTS

The Hubbell Loadbreak Bushing Insert meets all requirements of IEEE Std. 386. It is designed for installation on transformers, switches or other equipment having a 200 Amp bushing well that meets the requirements of IEEE Std. 386, Figure 3. When mated with a comparably rated elbow or other accessory, the bushing insert provides a fully shielded and submersible connection. The bushing insert contains an all-copper current path from the female contact to the bushing well and internal connection to the switch or transformer.

## 215BI Bushing Insert

Internal hex broach accepts a 5/16" wrench for proper installation torque.

Yellow seating indicator provides a positive indication that the mating product is fully installed.



## 215FTI Feed-thru Insert

Create a tap position in an existing apparatus

Convert a radial-feed transformer to a loop-feed unit.

Supplied with an auxiliary hold-down bail.



# Experience





# 15 kV LOADBREAK ACCESSORIES

## 215ICI Insulating Cap

## 215ICC Insulating Cap with Conductive Cuff

Used as a temporary or permanent cover on an energized operating interface. Standard product has an insulating cuff. An optional conductive cuff is available. Both units are supplied with a 36-inch long braided lead for grounding.

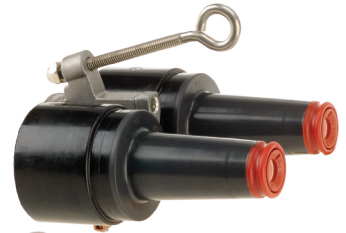


## 215SB Standoff Bushing

Provides a temporary or permanent parking position for energized loadbreak elbows. The bracket permits mounting on the apparatus parking stand.



## 215FT Feed-thru - Horizontal Bracket



## 215FTV Feed-thru - Vertical Bracket

A two-position junction in a bracket that can be installed on the apparatus parking stand. Provides a means to test, phase, ground, or park an energized elbow. They can also be used to by-pass a transformer or to add arrester protection at the open point.



## 225TR Test Rod

Fits into loadbreak bushings, junctions, and other products that contain a loadbreak interface and is used with test meters to determine if the circuit is energized or not.



## SL150 Silicone Lubricant

Silicone lubricant for all Separable Connectors. Supplied in a 5.3 oz. (150 g.) tube. Sold in cartons of 24 tubes.



# 15 kV LOADBREAK GROUNDING ACCESSORIES

## 215GB

### Grounded Bushing

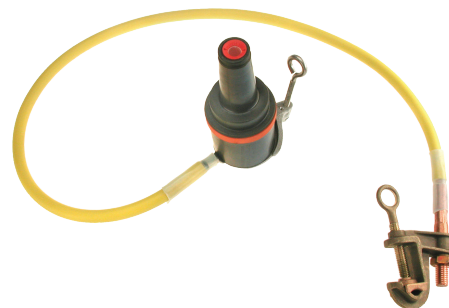
Provides a temporary ground. Contains a fully functioning loadbreak mechanism and is designed to handle one fault-close of up to 10,000 amps for 10 cycles. Can be installed with a hotstick.



## T6003091

### Grounded Bushing

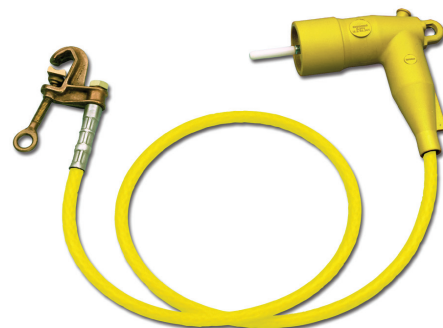
This set includes a loadbreak bushing and bronze ground clamp T6000466 connected by a 4-ft. yellow 1/0 cable. A tin-plated copper connector joins the cable to the bushing. A threaded copper ferrule connects the cable to the clamp.



## T6000729

### Grounding Elbow

Each set includes a yellow 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.



## C6003102

### 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



## Grounding Component Parts:

200GB6LUG	1-hole copper Lug for 1/0 grounding cable (grounding bushing component)
215GBHSG	200 Amp 15 kV Grounding Bushing Housing
215GEHSG	200 Amp 15 kV Grounding Elbow Housing
215LBP	200 Amp 15 kV Loadbreak Probe
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



# 15 kV LOADBREAK JUNCTIONS

## JUNCTION SELECTION AND ORDERING

Example: 4-point junction, supplied with a SS bracket is: 215J4B



## 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.

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

## Junction Component Parts:

200BRKTMF	Junction Adjustable Mounting Feet Only, Stainless Steel (1 Pair)
215J2BRKT	Junction Bracket, Stainless Steel w/Adjustable Feet, 2 Position
215J3BRKT	Junction Bracket, Stainless Steel w/Adjustable Feet, 3 Position
215J4BRKT	Junction Bracket, Stainless Steel w/Adjustable Feet, 4 Position
215US1	Junction U-strap, Stainless Steel w/hardware

# Performance



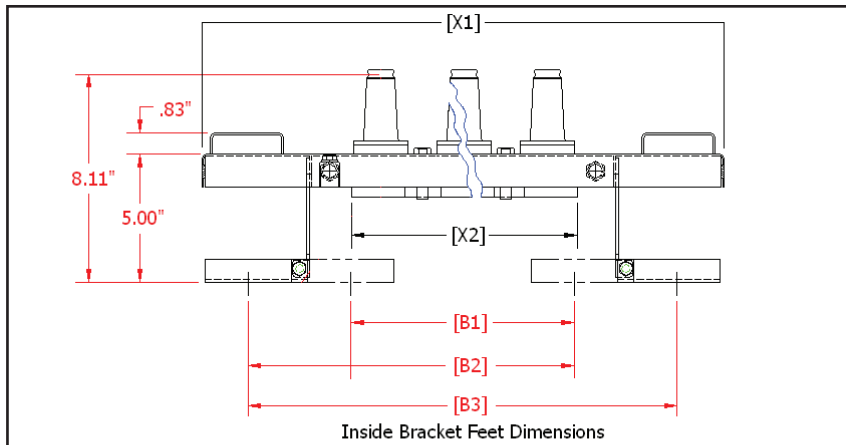
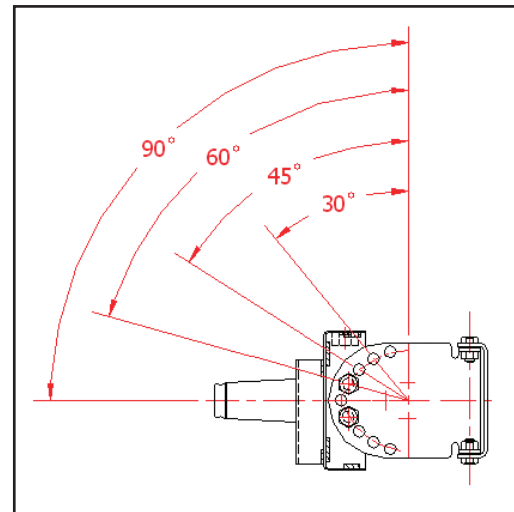
# 15 kV LOADBREAK JUNCTIONS

## Bracket & U-strap Dimensions

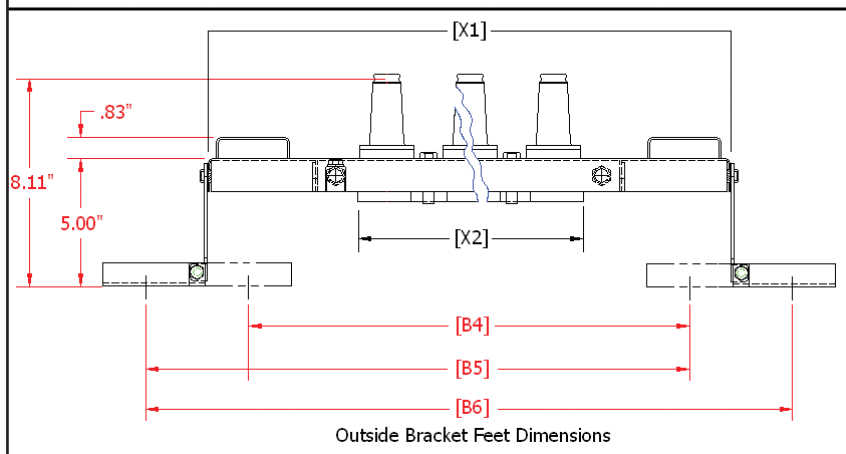
Dimension	Junction Part Number		
	215J2B	215J3B	215J4B
X1	20.40	20.40	23.70
X2	6.10	9.30	12.60
B1	5.35 to 9.23	5.35 to 9.23	8.59 to 12.47
B2	10.03 to 13.91	10.03 to 13.91	13.27 to 17.15
B3	14.70 to 18.58	14.70 to 18.58	17.94 to 21.82
B4	13.61 to 17.49	13.61 to 17.49	16.85 to 20.73
B5	18.28 to 22.16	18.28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

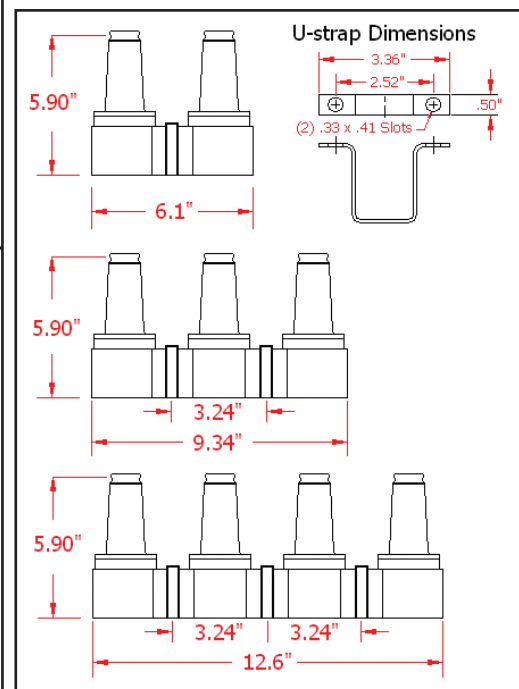


Inside Bracket Feet Dimensions



Outside Bracket Feet Dimensions

### U-Strap Dimensions



# 15 kV STACKING DIMENSIONS

**15 kV Elbow**  
215LExx

**15 kV Elbow Arrester**  
215ELAxx

**15 kV Insulating Cap**  
215ICI

**15 kV Standoff Bushing**  
215SB

**15 kV Bushing Insert**  
215BI

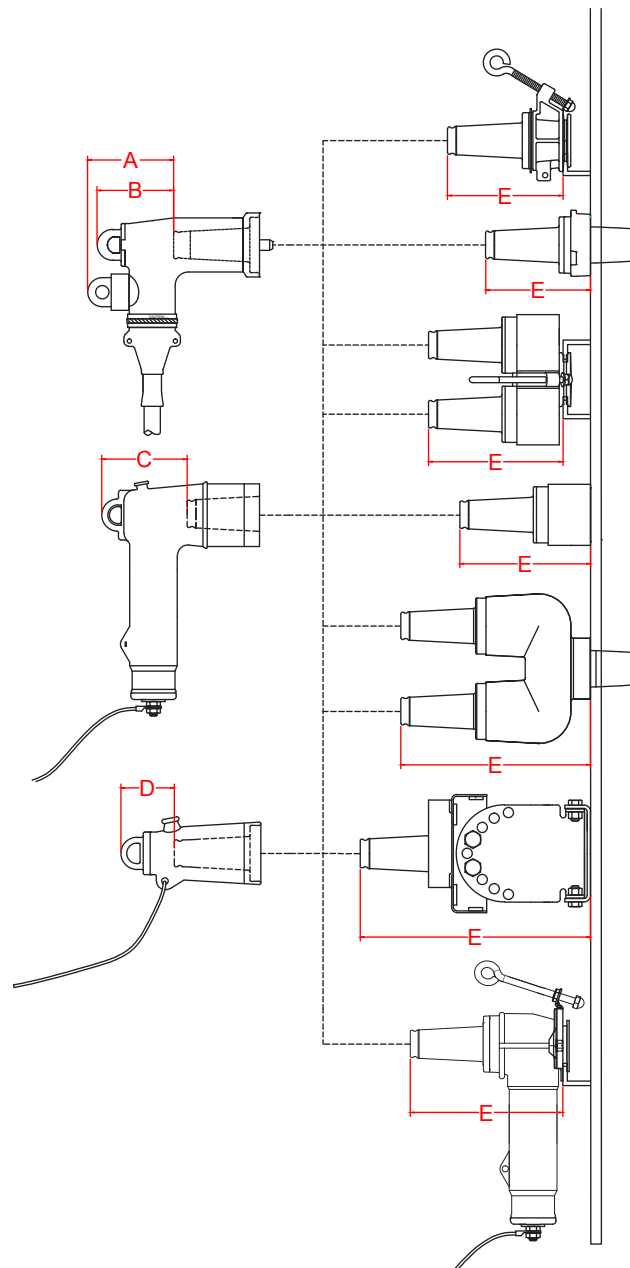
**15 kV Feed-Thru**  
215FTx

**15 kV Junction w/ U-Strap**  
215JxU

**15 kV Feed-Thru Insert**  
215FTI

**15 kV Junction w/ Bracket**  
215JxB

**15 kV Parkingstand Lightning Arrester**  
215PLAxx



**Overall 15 kV Product Stacking Dimensions**

Product	Product (E)	Elbow + Product (A + E)	Elbow + Product (B + E)	Arrester + Product (C + E)	Cap + Product (D + E)
215SB - 15 kV Parking Bushing	5.34"	9.54"	9.18"	9.02"	8.11"
215BI - 15 kV Bushing Insert	4.69"	8.89"	8.53"	8.57"	7.46"
215FTx - 15 kV Feed-Thru	6.24"	10.44"	10.08"	9.92"	9.01"
215PLAxx - 15kV Parkingstand Lightning Arrester	7.18"	11.38"	11.02"	N/A	9.95"
215JxU - 15 kV Junction w/U-strap	5.90"	10.10"	9.74"	9.58"	8.67"
215JxB - 15 kV Junction w/Bracket	8.11"	12.31"	11.95"	11.79"	10.88"
215FTI - 15 kV Feed-Thru Insert	8.95"	13.15"	12.79"	12.63"	11.72"

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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