

UNDERGROUND ARRESTERS

200 AMP 15/25/28/35 kV

Experience & Reliability



UNDERGROUND ARRESTERS

RATINGS & SPECIFICATIONS

Design Tests

High Current, Short Duration	2 discharges of 65 kA Crest
Low Current, Long Duration	20 Surges of 75 A for 2,000 μ sec. duration
Operating Duty Cycle	22 Operations of 5 kA Crest 8 x 20 μ 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

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 15/25/28/35 kV underground systems. The arresters limit over-voltages to acceptable levels, protecting equipment and extending service life.

The critical values for parkingstand and elbow lightning 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 parkingstand and elbow lightning 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 parkingstand and elbow lightning arresters are designed to mate with 200 amp loadbreak interfaces that conform to IEEE Std. 386. The parkingstand lightning arrester contains a defined interface, while the elbow lightning arrester mates with a defined 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).

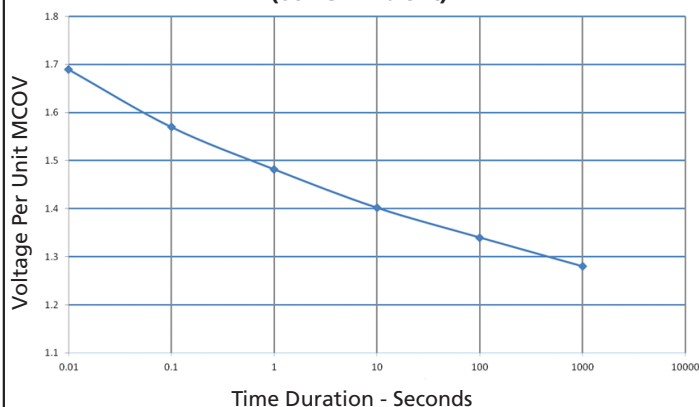
Installation:

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. 386 (Separable Insulated Connector Systems for Power Distribution Systems Above 600v) and IEEE Std. C62.11 (Metal Oxide Surge Arresters for Alternating Current Power Circuits) with test levels chosen that represent typical underground distribution systems.

60 Hz Temporary Overvoltage Capability with Prior Duty
(60° C Ambient)



UNDERGROUND ARRESTERS

COMMON TERMS:

Discharge Voltage: The voltage the arrester develops while discharging a surge to ground. The lower the voltage, the better the protection

MCOV: Maximum Continuous Operating Voltage

MOV: Metal Oxide Varistors

TOV: Temporary Over-Voltage

Thermal Runaway: Arrester fails due to excess heat causing the arrester to conduct too much current

PRODUCT FEATURES:

Pulling Eye provides positive hotstick operation. The pulling eye strength exceeds 500 lbs of force.

Insulation consists of peroxide-cured EPDM rubber that offers proven, uncompromised reliability and dimensional stability.

Molded Shield of conductive peroxide-cured EPDM rubber meets all requirements of IEEE Std. 592 for exposed semi-conducting shields.

Drain Wire Tab provides a contact point to attach a #14 ground wire to ensure the shield is at ground potential and maintains deadfront construction.

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.



ARRESTER SELECTION

Normally Recommended MCOV for Various System Voltages

Hubbell Elbow/Parkingstand Lightning 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., 7.65kV on a 12.47kV 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.

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
20.78	22.00	12.70	22.00
22.86	24.20	15.30	24.40
23.00	24.34	15.30	24.40
24.94	26.20	15.30	---
27.00	28.00	17.00	---
34.50	36.20	22.00	---

Protective Characteristics

Catalog Number	MCOV kV	Rating kV	0.5 μ sec 5 kA Max IR-kV	Maximum Discharge Voltage (kV Crest)				
				1.5 kA	3.0 kA	5.0 kA	10 kA	20 kA
2__LA03	2.55	3	12.5	9.8	10.3	11.0	12.3	14.3
2__LA06	5.1	6	25.0	19.5	20.5	22.0	24.5	28.5
2__LA09	7.65	9	33.5	26.8	28.0	30.0	33.0	39.0
2__LA10	8.4	10	36.0	27.0	29.5	31.5	36.0	41.5
2__LA12	10.2	12	50.0	39.0	41.0	44.0	49.0	57.0
2__LA15	12.7	15	58.5	45.5	48.5	52.0	57.5	67.5
2__LA18	15.3	18	67.0	52.0	56.0	60.0	66.0	78.0
2__LA21	17.0	21	73.0	55.0	60.0	64.0	73.0	84.0
2__LA24	19.5	24	92.0	71.5	76.5	82.0	90.5	106.5
2__LA27	22.0	27	100.5	78.0	84.0	90.0	99.0	117.0
2__LA30	24.4	30	108.0	81.0	88.5	94.5	108.0	131.5



15 kV CATALOG NUMBER ORDERING INFORMATION

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

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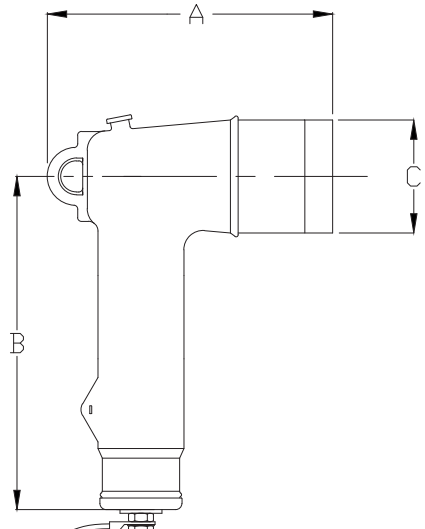
A

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



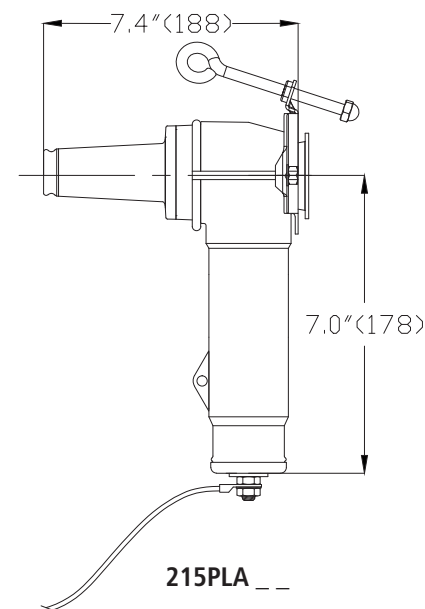
215ELA _ _

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					
215ELA15		12.7	15		10.2			
215ELA18		15.3	18		(259)		5.2	2.4

PLA Reference Data:

Catalog Number	IEEE Std. 386 Interface	MCOV (kV)	Rated Voltage (kV)	Weight	
				Lbs	(kg)
215PLA03	15 kV Class Fig. 5	2.55	3	4.6	(2.09)
215PLA06		5.1	6		
215PLA09		7.65	9		
215PLA10		8.4	10		
215PLA12		10.2	12		



25 kV CATALOG NUMBER ORDERING INFORMATION

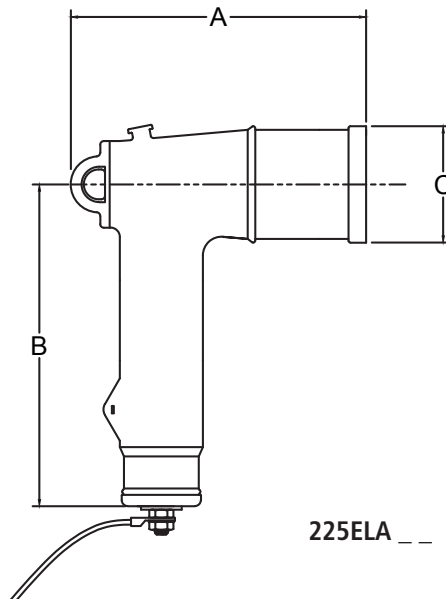
Example: Elbow arrester for use on a 23.0 kV L-L system is: 225ELA18



Hubbell Product Prefix

E = Elbow Arrester
P = Parkingstand

Rating	MCOV
09	7.65
10	8.4
12	10.2
15	12.7
18	15.3
21	17.0



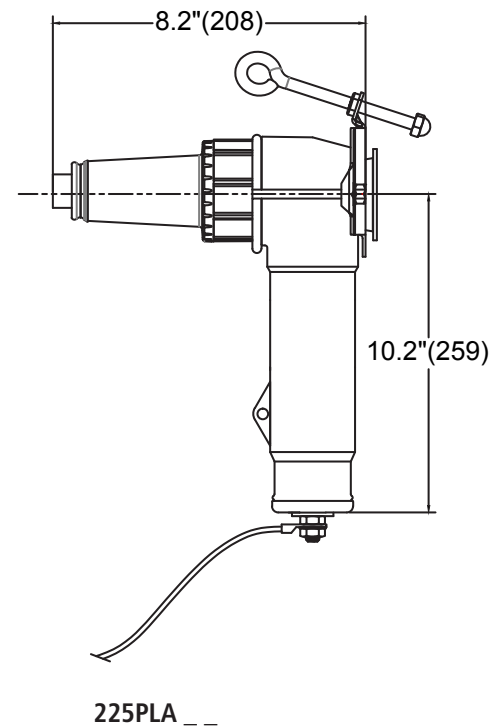
225ELA __

ELA Reference Data:

Catalog Number	IEEE Std. 386 Interface	MCOV (kV)	Rated Voltage (kV)	Dimensions Inch (mm)			Shipping Weight	
				A	B	C	Lbs	(kg)
225ELA09	25 kV Class Fig. 7	7.65	9	7.9 (201)	6.6 (168)	3.1 (79)	3.7	1.7
225ELA10		8.4	10					
225ELA12		10.2	12					
225ELA15		12.7	15					
225ELA18		15.3	18				5.2	2.4
225ELA21		17	21					

PLA Reference Data:

Catalog Number	IEEE Std. 386 Interface	MCOV (kV)	Rated Voltage (kV)	Weight	
				Lbs	(kg)
225PLA09	25 kV Class Fig. 7	7.65	9	4.6	2.09
225PLA10		8.4	10		
225PLA12		10.2	12		
225PLA15		12.7	15		
225PLA18		15.3	18		
225PLA21		17	21		



225PLA __



35 kV CATALOG NUMBER ORDERING INFORMATION

Example: Elbow arrester for use on a 34.5 kV L-L system is: 235ELA27

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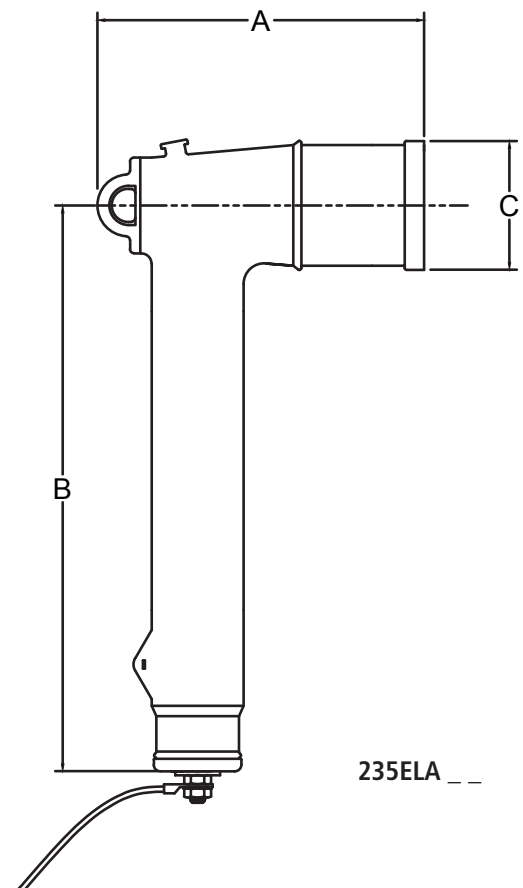
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Hubbell Product Prefix

Rating	MCOV
24	19.5
27	22
30	24.4



235ELA _ _

ELA Reference Data:

Catalog Number	IEEE Std. 386 Interface	MCOV (kV)	Rated Voltage (kV)	Dimensions Inch (mm)			Shipping Weight	
				A	B	C	Lbs	(kg)
235ELA24	35 kV Class Fig. 7	19.5	24	7.9 (201)	10.2 (168)	3.1 (79)	5.2	2.4
235ELA27		22	27		13.7 (348)		6.5	2.9
235ELA30		24.4	30					

Caution

This product is only compatible with a 35 kV small interface, Fig. 7 of IEEE Std 386. It is not compatible with a 35 kV large interface, Fig. 8 of IEEE Std 386.

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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