



200 AMP 15kV, 25kV, 35kV DISTRIBUTION CLASS ELBOW ARRESTERS



IEEE C62.11 TESTED

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



RATINGS & SPECIFICATIONS

GENERAL INFORMATION

Hubbell elbow arresters are gapless, metal oxide varistor (MOV) type surge arresters. They are designed to provide shielded, dead-front arrester protection for underground systems up through 35kV. Hubbell elbow arresters limit over-voltages to acceptable levels, protecting equipment and extending 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 elbow 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 Fig 5 (15kV) or Fig 7 (25 / 35kV).

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

Installation:

The Hubbell elbow arrester should be installed utilizing a shotgun type hotstick.

Performance Characteristics:

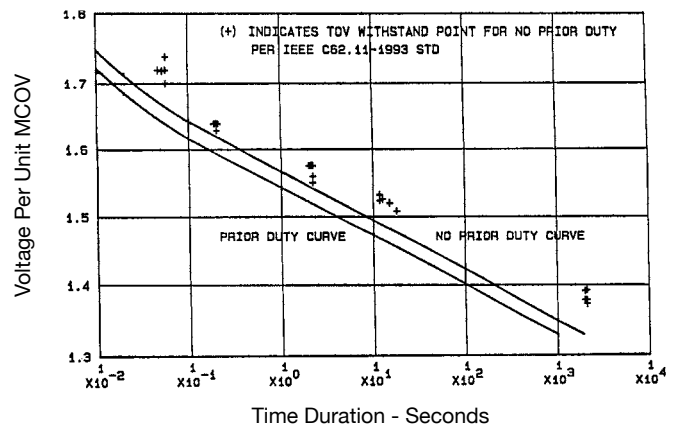
Tests were performed in accordance with applicable sections of IEEE Std. C62.11 (Metal Oxide Surge Arresters for Alternating Current Power Circuits) with test levels chosen that represent typical underground distribution systems.

Design Tests	
High Current, Short Duration	2 discharges of 65kA Crest
Low Current, Long Duration	20 Surges of 75kA for 2,000 µsec duration
Operating Duty Cycle	22 Operations of 5kA Crest 8 x 20 µsec
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

60 Hz Temporary Overvoltage Capability With and Without Prior Duty (60°)



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.



Hubbell Elbow 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.

**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
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	---

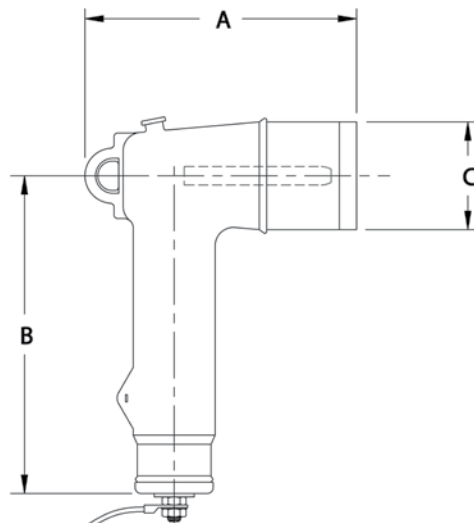


Protective Characteristics

Catalog Number	MCOV kV	Rating kV	0.5 μ sec 5 kA Max IR-kV	Maximum Discharge Voltage (kV Crest) 8x20 μ sec Current Wave				
				1.5kA	3.0kA	5.0kA	10kA	20kA
2__ELA03	2.55	3	12.5	9.8	10.3	11.0	12.3	14.3
2__ELA06	5.1	6	25.0	19.5	20.5	22.0	24.5	28.5
2__ELA09	7.65	9	33.5	26.0	28.0	30.0	33.0	39.0
2__ELA10	8.4	10	36.0	27.0	29.5	31.5	36.0	41.5
2__ELA12	10.2	12	50.0	39.0	41.0	44.0	49.0	57.0
2__ELA15	12.7	15	58.5	45.5	48.5	52.0	57.5	67.5
2__ELA18	15.3	18	67.0	52.0	56.0	60.0	66.0	78.0
2__ELA21	17.0	21	73.0	55.0	60.0	64.0	73.0	84.0
2__ELA24	19.5	24	92.0	71.5	76.5	82.0	90.5	106.5
2__ELA27	22.0	27	100.5	78.0	84.0	90.0	99.0	117.0
2__ELA30	24.4	30	108.0	81.0	88.5	94.5	108.0	124.5

Catalog Number Ordering Information

2	—	E	L	A	
System Voltage		MCOV	RATING		
15kV Class = 15	}	2.55	= 03	}	
25kV Class = 25		5.1	= 06		
35kV Class = 35		7.65	= 09		
		8.4	= 10		
Select Voltage Code and MCOV		10.2	= 12		
		12.7	= 15		
		15.3	= 18		
		17.0	= 21		
		19.5	= 24		
		22.0	= 27		
		24.4	= 30		



Example: 15kV, 8.4kV MCOV arrester would be: 215ELA10

Catalog Number	IEEE Std. 386 Interface	MCOV (kV)	Rated voltage (kV)	Dimensions inch (mm)			Shipping Weight	
				A	B	C	lbs	Kilos
215ELA03	15kV 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					
215ELA18		15.3	18					
225ELA09	25kV 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					
225ELA21		17	21					
235ELA24*	35kV Class Fig. 7	19.5	24		13.7 348		6.5	2.9
235ELA27*		22	27					
235ELA30*		24.4	30					

*Small interface 35kV Design only