

Underground surge arresters

Eaton provides shielded deadfront arrester protection with its Cooper Power series metal oxide varistor elbow (M.O.V.E.) and parking stand arresters used in pad-mounted transformer and entry cabinets, vaults, switching enclosures and other installations. These arresters are designed for use with 200 A loadbreak interfaces to limit overvoltages to acceptable levels, protect equipment and extend cable life.

POSI-BREAK M.O.V.E. elbow arrester

The POSI-BREAK M.O.V.E. arrester provides the same safety benefits of the POSI-BREAK connector system with over-voltage protection. Eaton is the only manufacturer to offer a solution to the partial vacuum flashover in elbow arresters.

The POSI-BREAK M.O.V.E. arrester is available for 9-21 kV for 25 kV class interfaces.

M.O.V.E. DirectConnect elbow arrester

M.O.V.E. DirectConnect elbow arresters are used on underground systems in pad-mounted transformer and entry cabinets, vaults, switching enclosures and other installations to provide shielded deadfront arrester protection. They are designed for use with 600 A, 35 kV Class deadbreak interfaces that conform to IEEE Std 386™ standard to limit overvoltages to acceptable levels, protect equipment and extend cable life.



M.O.V.E. DirectConnect elbow arrester specification information

Design Tests

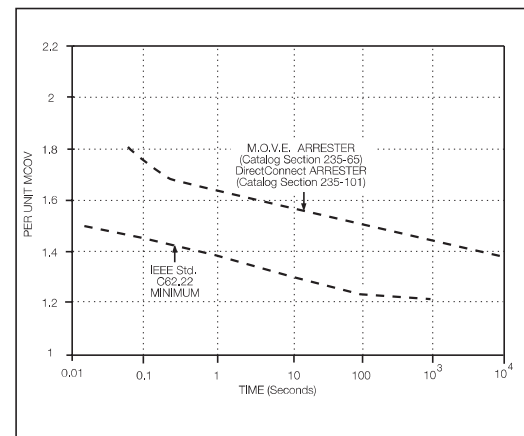
- IEEE Std 386™ standard, Separable Insulated Connector Systems
- IEEE Std C62.11 standard, Metal Oxide Surge Arresters for AC Power Circuits



DirectConnect elbow arrester.

TABLE 1
Commonly Applied Voltage Ratings of M.O.V.E. and Parking Stand Arresters

System Voltage (V rms)		Commonly Applied Arrester Duty-cycle (MCOV) Voltage Rating (kV rms) on Distribution Systems		
Nominal Voltage	Maximum Voltage	4-Wire Multigrounded Neutral Wye	3-Wire Low Impedance Grounded	Delta and 3-Wire High Impedance Grounded
2400	2540	–	–	3 (2.55)
4160 Y/2400	4400 Y/2540	3 (2.55)	6 (5.1)	6 (5.1)
4260	4400	–	–	6 (5.1)
4800	5080	–	–	6 (5.1)
6900	7260	–	–	9 (7.65)
8320 Y/4800	8800 Y/5080	6 (5.1)	9 (7.65)	–
12000 Y/6930	12700 Y/7330	9 (7.65)	12 (10.2)	–
12470 Y/7200	13200 Y/7620	9 (7.65) or 10 (8.4)	15 (12.7)	–
13200 Y/7620	13970 Y/8070	10 (8.4)	15 (12.7)	–
13800 Y/7970	14520 Y/8388	10 (8.4) and 12 (10.2)	15 (12.7)	–
13800	14520	–	–	18 (15.3)
20780 Y/12000	22000 Y/12700	15 (12.7)	21 (17.0)	–
22860 Y/12000	22000 Y/12700	15 (12.7)	21 (17.0)	–
24940 Y/14400	26400 Y/15240	18 (15.3)	27 (22.0)	–
27600 Y/15935	29255 Y/16890	21 (17.0)	–	–
34500 Y/19920	36510 Y/21080	27 (22.0) or 30 (24.4)	–	–
46000 Y/26600	48300 Y/28000	36 (29.0)	–	–



Temporary overvoltage curve. No prior duty at 85° C ambient.

The following notes apply to all part numbers on this page.

■ Digits 9 & 10 designate duty cycle voltage rating. For other protective characteristics, refer to Table 2 for M.O.V.E. and Parking Stand Arresters and Table 3 for DirectConnect elbow arresters.

■ Refer to page 17 for dimensional information or referenced catalog section.

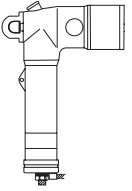
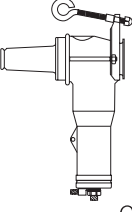

Catalog Section	Description	kV Class	Base Part Number	MCOV (kV)		
	Metal Oxide Elbow (M.O.V.E.) Arrester	15 kV	3238018C03M	2.55		
			3238018C06M	5.1		
			3238018C09M	7.65		
			3238018C10M	8.4		
			3238018C12M	10.2		
			3238018C15M	12.7		
		25 kV	3238018C18M	15.3		
			3238019C09M	7.65		
			3238019C10M	8.4		
			3238019C12M	10.2		
			3238019C15M	12.7		
			3238019C18M	15.3		
		25 kV POSI-BREAK Elbow Arrester	3238019C21M	17.0		
			PLEA225N03	2.55		
			PLEA225N06	5.1		
			PLEA225N09	7.65		
			PLEA225N10	8.4		
			PLEA225N12	10.2		
35 kV (Interface 1A Large Interface per IEEE Std 386™ -2006 standard)	PLEA225N15	12.7				
	PLEA225N18	15.3				
	PLEA225N21	17.0				
	3238020C18M	15.3				
	3238020C21M	17.0				
	3238020C24M	19.5				
CA235025EN	3238020C27M	22.0				
	3238020C30M	24.4				
	3238020C33M	27				
	3238020C36M	29				
		Metal Oxide (MOV) Parking Stand Arrester	15 kV	3237686C03M	2.55	
				3237686C06M	5.1	
3237686C09M				7.65		
3237686C10M				8.4		
3237686C12M				10.2		
3237686C15M				12.7		
25 kV			3237686C18M	15.3		
			3237758C09M	7.65		
			3237758C10M	8.4		
			3237758C12M	10.2		
			3237758C15M	12.7		
			3237758C18M	15.3		
CA235027EN	3237758C21M	17.0				
	M.O.V.E. DirectConnect Elbow Arrester	35 kV	DCEA635M27	22.0		
			DCEA635M30	24.4		
			DCEA635M33	27.0		
DCEA635M36			29.0			
CA235026EN				35 kV		

TABLE 2
M.O.V.E. and Parking Stand Arrester Protective Characteristics

Duty Cycle Voltage Rating (kV)	MCOV (kV)	Equivalent Front-of-Wave (kV crest)*	Maximum Discharge Voltage (kV crest) 8/20 μs Current Wave				
			1.5 kA	3 kA	5 kA	10 kA	20 kA
3	2.55	11	9	9.7	10.7	11.4	13
6	5.1	22	18.0	19.4	20.8	22.7	26
9	7.65	31.7	26	28	30	32.8	37.4
10	8.4	33	27	29.1	31.2	34.1	38.9
12	10.2	41.5	33.9	36.6	39.2	42.9	48.9
15	12.7	51.8	42.4	45.7	49	53.6	61.1
18	15.3	62.2	50.9	54.9	58.8	64.3	73.4
21	17.0	66	54.0	58.2	62.4	68.2	77.9
24	19.5	77	63.0	67.9	72.8	79.6	90.8
27	22.0	87.2	71.4	76.9	82.4	90.1	103
30	24.4	97.1	79.5	85.7	91.8	100.0	115.0
33	27	108	87.8	95.1	102	112	127
36	29	116	95.3	103	110	120	137

* Equivalent front-of-wave voltage is the expected discharge voltage of the arrester when tested with a 5 kA current surge cresting in 0.5 μs.

TABLE 3
M.O.V.E. DirectConnect Elbow Arrester Electrical Ratings and Characteristics

Duty Cycle Voltage Rating (kV)	MCOV (kV)	Front-of-Wave Protective Level* (kV crest)	Maximum Discharge Voltage 8/20 μs Current Wave (kV crest)				
			1.5 kA	3 kA	5 kA	10 kA	20 kA
27	22.0	105.0	75.0	82.0	87.4	96.2	110.0
30	24.4	112.0	79.5	85.7	91.8	100.0	115.0
33	27	108	87.8	95.1	102	112	127
36	29	116	95.3	103	110	120	137

* Equivalent front-of-wave voltage is the expected discharge voltage of the arrester when tested with a 5 kV current surge cresting in 0.5 μs.