CHARDON GROUP

15-LEA/25-LEA/35-LEA

Chardon 15 kV, 25kV and 35 kV Elbow Arresters



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APPLICATION

The Chardon Elbow Arrester combines metal oxide varistor module in a rubber elbow to provide overvoltage system protection. The Chardon Elbow Arrester housing design meets IEEE 386 standard. It is molded with high quality peroxide-cured insulating and semi-conducting rubber and is fully interchangeable with competitors' products that also meet IEEE standard 386.

Chardon Elbow Arresters are used on underground systems in pad-mounted transformer and entry cabinets, vaults switching devices and other insulations to provide shielded deadfront arrester protection. Installing Chardon Elbow Arrester at both ends of an open point on a loop system and the end of a radial system protect equipment and extend cable life.

PRODUCTION TEST OF ELBOW ARRESTER

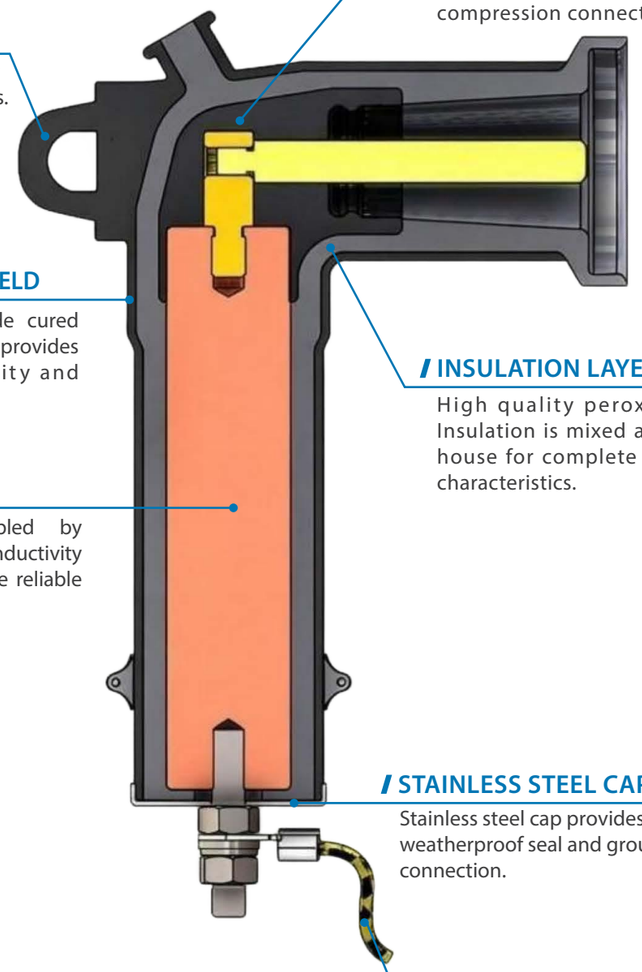
- Partial Discharge Test
- Voltage at 1mA
- Leakage Current
- Physical Inspection
- Periodic Dissection
- Periodic X-ray Analysis

PRODUCTION TEST OF MOV MODULE

- Partial Discharge Test
- Voltage at 1mA
- Leakage Current
- Batch High-current, Short-duration test
- Batch Thermal Stability test
- Batch Aging test
- Physical Inspection

• Revision date: 112626

DETAILED COMPOSITION OF THE CHARDON ELBOW ARRESTERS



SEMICONDUCING INSERT

Precision molded peroxide cured semiconducting insert provides corona-free electrostatic shielding of the compression connector.

PULLING EYE

Stainless steel pulling eye for hotstick switching operations.

SEMICONDUCTING SHIELD

Precision molded peroxide cured semiconducting shield provides ground shield continuity and meets IEEE standard 592.

INSULATION LAYER

High quality peroxide cured EPDM Insulation is mixed and formulated in-house for complete control of rubber characteristics.

MOV MODULE

MOV module is assembled by multi-MOV disk, with high conductivity silver-loaded epoxy to ensure reliable connection between blocks.

STAINLESS STEEL CAP

Stainless steel cap provides a tight, weatherproof seal and ground lead connection.

GROUND LEAD

#4AWG flexible copper stranded woven ground lead reliably carries current to ground during voltage surges.

Table 1

Electrical Characteristics							
Duty Cycle Voltage Rating (kV)	MCOV (kV)	Equivalent Front of Wave (kV Crest)	Maximum Discharge Voltage (kV Crest) 8/20µs Current Wave				
			1.5kA	3kA	5kA	10kA	20kA
3	2.55	11.0	9.0	9.7	10.4	11.4	13.0
6	5.1	22.0	18.0	19.4	20.8	22.7	26.0
9	7.65	31.7	26.0	28.0	30.0	32.8	37.4
10	8.4	33.0	27.0	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	49.0	53.6	61.1
18	15.3	62.2	50.9	54.9	58.8	64.3	73.4
21	17.0	66.0	54.0	58.2	62.4	68.2	77.9
24	19.5	77.0	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
36	29.0	116.0	95.3	103.0	110.0	120.0	137.0

Table 2

System Voltage (kV rms)		Commonly Applied Arrester Duty-cycle(MCOV) Voltage Rating (kV rms) on Distribution System		
Nominal Voltage	Maximum Voltage Range B	4-Wire Multigrounded Neutral Wye	3-Wire Low Impedance Grounded	Delta and 3-wire High Impedance Grounded
2.4	2.54	-	-	3(2.55)
4.16 Y/2.40	4.40 Y/2.54	3(2.55)	6(5.1)	6(5.1)
4.26	4.40	-	-	6(5.1)
4.80	5.08	-	-	6(5.1)
6.90	7.26	-	-	9(7.65)
8.32 Y/4.80	8.80 Y/5.08	6(5.1)	9(7.65)	-
12.00 Y/6.93	12.7 Y/7.33	9(7.65)	12(10.2)	-
12.47 Y/7.20	13.20 Y/7.62	9(7.65) or 10(8.4)	15 (12.7)	-
13.20 Y/7.62	13.97 Y/8.07	10(8.4)	15 (12.7)	-
13.80 Y/7.97	14.52 Y/8.388	10(8.4) and 12(10.2)	15 (12.7)	-
13.80	14.52	-	-	18(15.3)
20.76 Y/12.00	22.00 Y/12.70	15 (12.7)	-	--
22.86 Y/12.00	22.00 Y/12.70	15 (12.7)	-	
24.94 Y/14.40	26.40 Y/15.24	18 (15.3)	-	-
27.60 Y/15.935	29.255 Y/1689	21 (17.0)	-	-

DETAILED COMPOSITION OF THE CHARDON ELBOW ARRESTERS

PROTECTIVE CHARACTERISTICS

The protective characteristics of the elbow arrester are shown in Table 1.

GENERAL APPLICATION RECOMMENDATION

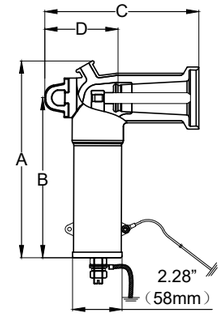
The rating of an arrester is the maximum power frequency line-to-ground voltage at which the arrester is designed to pass an operating duty-cycle test. Table 2 provides a general application guide for the selection of the proper arrester rating for a given system voltage and system grounding configuration as outlined in the IEEE Std C62.22 standard application guide.

To ensure that the arrester ratings will not be exceeded, CHARDON GROUP application engineers are available to make recommendations.

PERFORMANCE TEST CHARACTERISTICS

The Elbow Arrester consistently withstands the following design test:

- Duty Cycle Test
- High-current, Short-duration Discharge test
- Low-Current, Long-Duration Discharge test

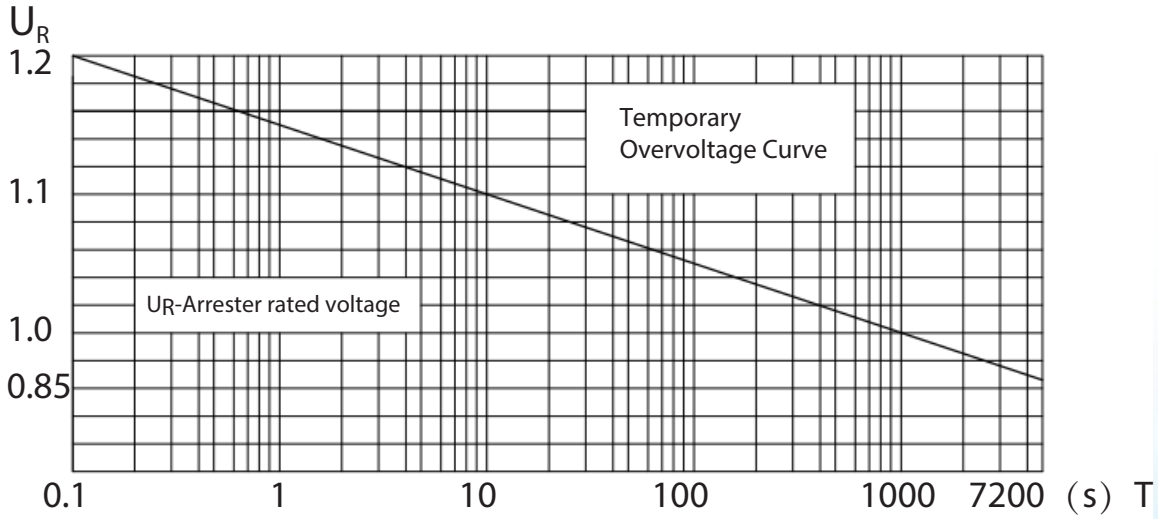


ORDERING INFORMATION

IEEE Std 386 Standard Interface	Duty Cycle (kV)	MCOV Rating (kV)	A (mm)	B (mm)	C (mm)	D (mm)	Catalog Number
15kV	3	2.55	232	189	181	88	15-LEA3
	6	5.1	232	189	181	88	15-LEA6
	9	7.65	232	189	181	88	15-LEA9
	10	8.4	232	189	181	88	15-LEA10
	12	10.2	232	189	181	88	15-LEA12
	15	12.7	232	189	181	88	15-LEA15
	18	15.3	232	189	181	88	15-LEA18
25kV	10	8.4	232	189	195	100	25-LEA10
	12	10.2	232	189	195	100	25-LEA12
	15	12.7	232	189	195	100	25-LEA15
	18	15.3	232	189	195	100	25-LEA18
	21	17.0	308	264	195	100	25-LEA21
35kV (Small Interface)	10	8.4	232	189	195	100	35-LEA10
	18	15.3	232	189	195	100	35-LEA18
	21	17.0	308	264	195	100	35-LEA21
	24	19.5	308	264	195	100	35-LEA24
	27	22.0	308	264	195	100	35-LEA27
	30	24.4	348	306	195	100	35-LEA30
	36	29.0	348	306	195	100	35-LEA36

Temporary overvoltage (TOV) capability

The Temporary Overvoltage (TOV) capability of the surge arrester is shown as below



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