TECHNICAL DATA SHEET

elastimold® Shielded surge arresters

Fully shielded, fully submersible surge protection

— 01 — 02 — 03 — 04

Underground MV applications: Three different styles for cost-efficient solutions.

— 01 PSA
— 02 BSA
— 03 ESA 200 A
— 04 ESA 600 A

Features:

- The arrester housing is molded of EPDM rubber, fully shielded and fully submersible for a variety of applications.
- Elastimold arresters use high-strength, silver epoxy-bonded MOV blocks and shunted spring connections for the best circuit connection.
- IEEE 386 interfaces provide convenient energized connection with other 200/600 A components at 15, 25 and 35 kV.
- Three styles: elbow (ESA), parking (PSA) and bushing (BSA) permit direct connection, eliminating the need for additional accessories in a cost-efficient solution.
- Compliant to IEEE C62.11-2012 standard for metal-oxide surge arresters for AC power circuits (>1 kV) and IEEE 386 standard for separable insulated connector systems for power distribution systems above 600 V.
- Elastimold shielded surge arresters fully conform to the safe-failure mode per IEEE C62.11-2012 standard.
- Ground lead design attached to the housing controls the end plug when ejected, preventing uncontrolled trajectory, and maintains the housing shield ground connection after failure.
- The #4 AWG flexible copper ground lead tethered to the jacket withstands 10,000 A for 10 cycles without fusing.

Applications:

- Lightning and switching surges are the most common causes of electrical failure of distribution transformers. Surges also lead to the progressive weakening of the cable insulation and potential failure when an overvoltage exceeds the cable BIL.
- Voltage surges that exceed the BIL rating of the distribution system components will cause damage to the installed equipment. To protect against these surges, overhead surge arresters are widely used.
- Overhead lines and equipment can be directly affected by voltage surges (e.g. lightning), and the use of overhead arresters alone will not guarantee proper protection of the insulation in the underground portion of an electrical distribution system. The let-through surge from the riser pole arresters into the underground systems could be enough to cause damage to aging equipment and cable insulation. A properly designed system with the use of shielded surge arresters can help prevent this damage from occurring.

Ratings

High current short duration	All MOV withstand two discharges of 40 kA crest
Low current, long duration	All MOV withstand 20 surges of 75 A/2,000 µs
Duty cycle test	All MOV withstand 22 operations of 5 kA crest at 8X20 duration while energized at rated voltage for the initial 20 µs operations and at maximum continuous operating voltage (MCOV) for the final two operations

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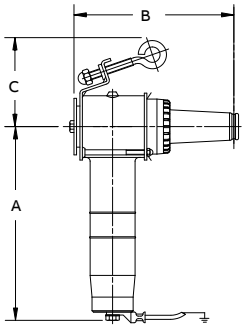
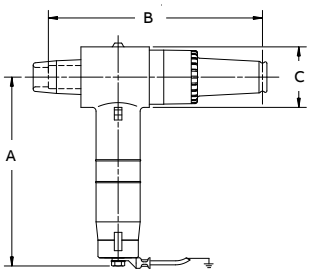
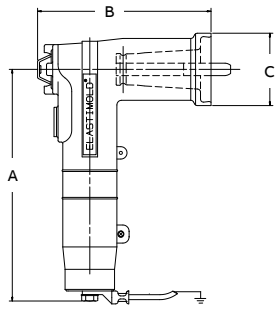
Product selection and dimensions

Drawing	Part no.	Voltage class	MCOV* kV RMS	Duty cycle rating kV RMS	Dimensions					
					A (in.)	A (mm)	B (in.)	B (mm)	C (in.)	C (mm)
Parking stand arrester (200 A)										
	167PSA-3	15 kV	2.55	3	6.34	161.04	7.65	194.31	4.19	106.43
	167PSA-6		5.10	6	6.34	161.04	7.65	194.31	4.19	106.43
	167PSA-9		7.60	9	6.34	161.04	7.65	194.31	4.19	106.43
	167PSA-10		8.40	10	6.34	161.04	7.65	194.31	4.19	106.43
	167PSA-12		10.20	12	6.34	161.04	7.65	194.31	4.19	106.43
	167PSA-15		12.70	15	9.36	237.75	7.65	194.31	4.19	106.43
	167PSA-18		15.30	18	9.36	237.75	7.65	194.31	4.19	106.43
	273PSA-10	25 kV	8.40	10	9.29	235.97	8.74	222.00	4.19	106.43
	273PSA-12		10.20	12	9.29	235.97	8.74	222.00	4.19	106.43
	273PSA-15		12.70	15	9.29	235.97	8.74	222.00	4.19	106.43
	273PSA-18		15.30	18	9.29	235.97	8.74	222.00	4.19	106.43
	273PSA-21		17.00	21	9.29	235.97	8.74	222.00	4.19	106.43
	375PSA-24	35 kV	19.50	24	12.10	307.34	8.74	222.00	4.19	106.43
	375PSA-27		22.00	27	12.10	307.34	8.74	222.00	4.19	106.43
	375PSA-30		24.40	30	12.10	307.34	8.74	222.00	4.19	106.43
Bushing surge arrester (200 A)										
	167BSA-3	15 kV	2.55	3	6.34	161.04	9.36	237.75	3.00	76.20
	167BSA-6		5.10	6	6.34	161.04	9.36	237.75	3.00	76.20
	167BSA-9		7.60	9	6.34	161.04	9.36	237.75	3.00	76.20
	167BSA-10		8.40	10	6.34	161.04	9.36	237.75	3.00	76.20
	167BSA-12		10.20	12	6.34	161.04	9.36	237.75	3.00	76.20
	167BSA-15		12.70	15	9.36	237.75	9.36	237.75	3.00	76.20
	167BSA-18		15.30	18	9.36	237.75	9.36	237.75	3.00	76.20
	273BSA-6	25 kV	5.10	6	9.36	237.75	10.60	269.24	3.00	76.20
	273BSA-9		7.60	9	9.36	237.75	10.60	269.24	3.00	76.20
	273BSA-10		8.40	10	9.36	237.75	10.60	269.24	3.00	76.20
	273BSA-12		10.20	12	9.36	237.75	10.60	269.24	3.00	76.20
	273BSA-15		12.70	15	9.36	237.75	10.60	269.24	3.00	76.20
	273BSA-18		15.30	18	9.36	237.75	10.60	269.24	3.00	76.20
	273BSA-21		17.00	21	9.36	237.75	10.60	269.24	3.00	76.20
	375BSA-24	35 kV	19.50	24	12.19	309.63	11.38	289.05	3.00	76.20
	375BSA-27		22.00	27	12.19	309.63	11.38	289.05	3.00	76.20
	375BSA-30		24.40	30	12.19	309.63	11.38	289.05	3.00	76.20
Elbow surge arrester (200 A)										
	167ESA-3	15 kV	2.55	3	5.54	140.72	7.54	191.52	2.88	73.15
	167ESA-6		5.10	6	5.54	140.72	7.54	191.52	2.88	73.15
	167ESA-9		7.60	9	5.54	140.72	7.54	191.52	2.88	73.15
	167ESA-10		8.40	10	5.54	140.72	7.54	191.52	2.88	73.15
	167ESA-12		10.20	12	9.36	237.75	7.00	177.80	2.93	74.42
	167ESA-15		12.70	15	9.36	237.75	7.00	177.80	2.93	74.42
	167ESA-18		15.30	18	9.36	237.75	7.00	177.80	2.93	74.42
	167ESA-21		17.00	21	9.36	237.75	7.00	177.80	2.93	74.42
	273ESA-3	25 kV	2.55	3	5.54	140.72	7.54	191.52	2.88	73.15
	273ESA-6		5.10	6	5.54	140.72	7.54	191.52	2.88	73.15
	273ESA-9		7.60	9	5.54	140.72	7.54	191.52	2.88	73.15
	273ESA-10		8.40	10	5.54	140.72	7.54	191.52	2.88	73.15
	273ESA-12		10.20	12	9.36	237.75	7.00	177.80	2.93	74.42
	273ESA-15		12.70	15	9.36	237.75	7.00	177.80	2.93	74.42
	273ESA-18		15.30	18	9.36	237.75	7.00	177.80	2.93	74.42
	273ESA-21		17.00	21	9.36	237.75	7.00	177.80	2.93	74.42
	375ESA-10	35 kV	8.40	10	6.34	161.04	7.41	188.21	2.93	74.42
	375ESA-18		15.30	18	9.36	237.75	7.41	188.21	2.93	74.42
	375ESA-21		17.00	21	12.68	322.07	7.48	190.00	2.93	74.42
	375ESA-24		19.50	24	12.68	322.07	7.48	190.00	2.93	74.42
	375ESA-27		22.00	27	12.68	322.07	7.48	190.00	2.93	74.42
	375ESA-30		24.40	30	12.68	322.07	7.48	190.00	2.93	74.42
	375ESA-36		29.00	36	12.68	322.07	7.48	190.00	2.93	74.42

Note: Product must be installed in accordance with applicable national and local electrical codes.
*MCOV: Maximum continuous operating voltage

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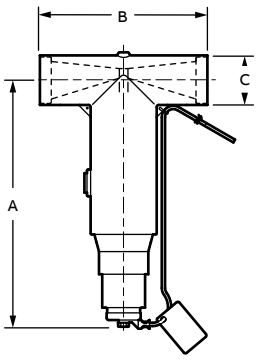
Product selection and dimensions

Drawing	Part no.	Voltage class	MCOV* kV RMS	Dimensions A (in.)	A (mm)	B (in.)	B (mm)	C (in.)	C (mm)
Elbow surge arrester (600 A)									
	K655ESA-10	15/25 kV	8.40	12.24	310.89	8.34	211.84	3.125	79.38
	K655ESA-12		10.20	12.24	310.89	8.34	211.84	3.125	79.38
	K655ESA-15		12.70	12.24	310.89	8.34	211.84	3.125	79.38
	K655ESA-18		15.30	12.24	310.89	8.34	211.84	3.125	79.38
	K655ESA-21		17.00	12.24	310.89	8.34	211.84	3.125	79.38
	K655ESA-27		22.00	12.24	310.89	8.34	211.84	3.125	79.38
	K655ESA-30		24.40	12.24	310.89	8.34	211.84	3.125	79.38
	755ESA-18	35 kV	15.30	14.99	380.75	10.16	258.07	3.00	76.20
	755ESA-24		19.50	14.99	380.75	10.16	258.07	3.00	76.20
	755ESA-27		22.00	14.99	380.75	10.16	258.07	3.00	76.20
	755ESA-30		24.40	14.99	380.75	10.16	258.07	3.00	76.20
	755ESA-33		26.80	14.99	380.75	10.16	258.07	3.00	76.20
	755ESA-36		29.00	14.99	380.75	10.16	258.07	3.00	76.20
	755ESA-40.5		32.50	14.99	380.75	10.16	258.07	3.00	76.20

Note: Product must be installed in accordance with applicable national and local electrical codes.
*MCOV: Maximum continuous operating voltage

Protective characteristics are determined to protect the equipment/cable BIL. Elastimold arresters are suitable for application on systems whose line-to-ground voltage under normal conditions does not exceed the arrester's MCOV (maximum continuous operating voltage).

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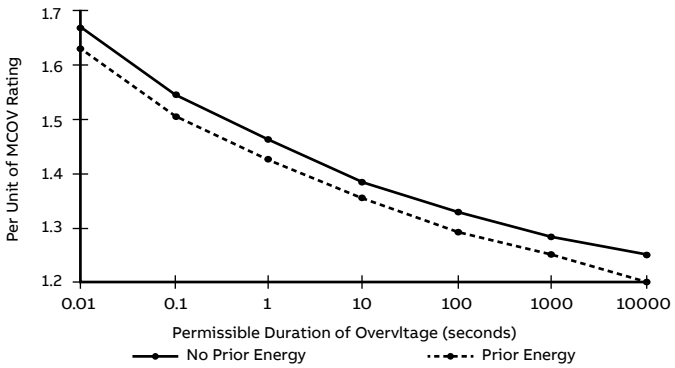
Protective characteristics

Voltage rating	MCOV* kV RMS	Duty cycle rating kV RMS	Maximum discharge voltage (kV Crest) 8x20 µs current wave 1.5 kA	3 kA	5 kA	10 kA	20 kA
15 kV	2.55	3	9.06	8.48	8.74	9.36	10.40
	5.10	6	16.12	16.95	17.47	18.72	20.80
	8.40	10	28.21	29.66	30.57	32.76	36.40
	10.20	12	32.24	33.90	34.94	37.44	41.60
	12.70	15	40.30	42.38	43.68	46.80	52.00
	15.30	18	48.36	50.85	52.41	56.16	62.40
25 kV	8.40	10	28.21	29.66	30.57	32.76	36.40
	10.20	12	32.24	33.90	34.94	37.44	41.60
	12.70	15	40.30	42.38	43.68	46.80	52.00
	15.30	18	48.36	50.85	52.41	56.16	62.40
	17.00	21	56.42	59.32	61.14	65.52	72.80
38 kV	19.50	24	64.48	67.80	69.88	74.88	83.20
	22.00	27	72.54	76.28	78.62	84.24	93.60
	24.40	30	80.60	84.75	87.62	93.60	104.00
	29.00	36	96.72	101.70	104.82	112.32	124.80
	32.50	40.5	109.35	114.98	118.97	126.97	141.10

Note: Product must be installed in accordance with applicable national and local electrical codes.
*MCOV: Maximum continuous operating voltage

Temporary over-voltage capability (TOV)
Metal-oxide surge arresters are capable of operating for brief periods of time at power-frequency voltages above their MCOV rating.

Performance temporary overvoltage (TOV) test
The purpose of the TOV test is to demonstrate the TOV capability of the arrester. In this test, the TOV is strictly a power-frequency overvoltage for time periods from 0.01 s to 10 000 s.



Product application

Voltage class	System line-to-line voltage kV RMS		MCOV* kV RMS	
	Minimum	Maximum	Solidly grounded neutral circuits	3-Wire undergrounded circuits
15 kV	2.40	2.54	2.55	2.55
	4.16	4.40	2.55	5.10
	4.80	5.08	5.10	5.10
	6.90	7.26	5.10	8.40
	8.32	8.80	5.10	8.40
	12.47	13.20	8.40	15.30
	13.20	13.97	8.40	15.30
	13.80	14.50	8.40**	15.30
	13.80	14.50	10.20	15.30
25 kV	6.90	7.26	5.10	8.40
	8.32	8.80	5.10	8.40
	12.47	13.20	8.40	15.30
	13.20	13.97	8.40	15.30
	13.80	14.50	8.40**	15.30
	13.80	14.50	10.20	15.30
	20.78	22.00	12.70	–
	20.78	22.00	15.30**	–
	23.00	24.34	15.30	–
	24.94	26.40	15.30	–
	24.94	26.40	17.00**	–
	28.00	29.80	17.00	–
35 kV	23.00	24.34	–	22.00
	34.50	36.51	22.00**	–
	34.50	36.51	24.40	29.00

Note: Product must be installed in accordance with applicable national and local electrical codes.
*MCOV: Maximum continuous operating voltage
** Preferred arrester MCOV for given voltage

The MCOV rating of a metal-oxide arrester is the maximum designated RMS value of power-frequency voltage (at maximum temperature levels as indicated in IEEE Std C62.11-2005) that may be applied continuously between the terminals of the arrester.

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