

Type POLIM-S Surge Arresters  
Maximum System Voltage 2.52 to 245 kV

# POLIM-S Metal Oxide Gapless Surge Arresters

POLIM-S Surge Arresters are used for the protection of switchgear, transformers and other equipment in high voltage systems against atmospheric and switching overvoltages. For use when requirements of lightning intensity, energy capability and pollution are moderate.

Superior design where low weight, reduced clearances, flexible mounting, and shatter-proof housing is required.

## Application

The POLIM-S Surge Arrester has been verified to meet Station Class requirements of IEEE C62.11 (IEEE Standard for Metal-Oxide Surge Arresters for AC Power Circuits) and Line Discharge Class 3 requirements of IEC 60099-4 (IEC Standard for Metal-Oxide Surge Arresters without gaps for AC Systems). The POLIM-S Surge Arrester is designed to meet the following performance data:

## Performance data

Maximum system voltages ( $V_m$ )	2.52 - 245 kV <sub>rms</sub>
Duty cycle rated voltages ( $V_r$ )	3 - 198 kV <sub>rms</sub>
Classifying current (IEEE)	10 kA <sub>peak</sub>
Discharge current withstand strength:	
High current 4 / 10 $\mu$ s	100 kA <sub>peak</sub>
Low current 2000 $\mu$ s	900 A <sub>peak</sub>
Energy capability:	
2 impulses, (IEC Cl. 7.5.5)	9.8 kJ / kV of MCOV
Fulfills requirements of IEEE transmission-line discharge test for 24 kV systems	
Short-circuit / pressure relief capability	63 kA <sub>rms sym</sub> 80 kA <sub>rms sym</sub> <sup>1</sup>
Maximum cantilever strength <sup>2</sup>	20000 in - lbs / 2260 Nm
Service conditions:	
Ambient temperature	-50 °C to + 60 °C
Design altitude <sup>3</sup>	6000 ft / 1830 m
Frequency	15 - 62 Hz

Type tested to the following standards:

IEEE standard C62.11a (2008)

IEC standard 60099-4 Ed 2.1 (2006)

## Notes:

1 The POLIM-S has demonstrated values of 80 kA<sub>rms sym</sub> short circuit to IEEE C62-11 (1993) Standard.

2 Higher strength designs available on request

3 Higher altitude designs available on request



## Benefits

### Direct-molded construction

ABB's POLIM-S Surge Arrester consists of high performance metal oxide disks molded in a shatter-proof polymer housing. The POLIM-S Surge Arrester now has a new construction to enhance overall lifetime performance.

The metal oxide disks are enclosed in a support assembly consisting of reinforced epoxy/fiberglass loops connecting the upper and lower aluminum end pieces. The silicone polymer material is then molded directly to the metal oxide loop assembly eliminating any air pockets which could cause moisture ingress over time.

Each arrester is furnished with a mounting base for an 8.75 in / 222 mm to 10.0 in / 254 mm diameter bolt circle along with 4-hole NEMA pad, and line and ground terminals for electrical connections.

### 100% silicone based housing

The silicone rubber housing features high tracking and arc resistance, excellent hydrophobic properties, and resistance to weathering, UV radiation and pollution.

### Reduced electrical clearance

Polymer construction has resulted in much smaller housing dimensions in comparison with porcelain units of the same voltage rating. This size reduction enables efficient use of space for switchgear enclosures, mobile substations and other applications where space restrictions are present.

### Lightweight

The POLIM-S Surge Arrester is less than 50 percent the weight of its porcelain counterpart, which results in easier handling and installation.

### Damage resistant

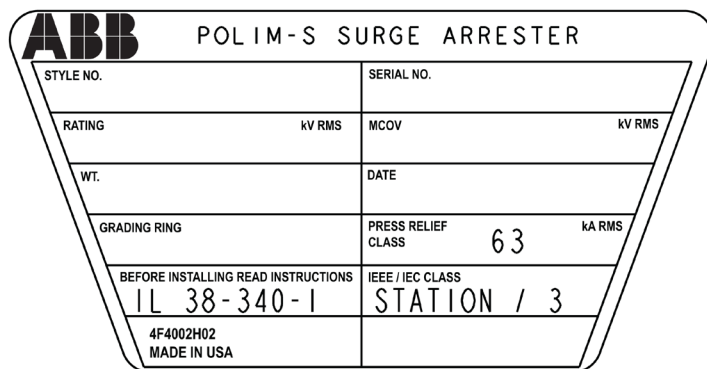
Polymer construction reduces possible shipping and handling damage, as well as, damage due to vandalism.

### Safety

Shatter-resistant construction provides greater protection for personnel, as well as, nearby equipment.

## Nameplates

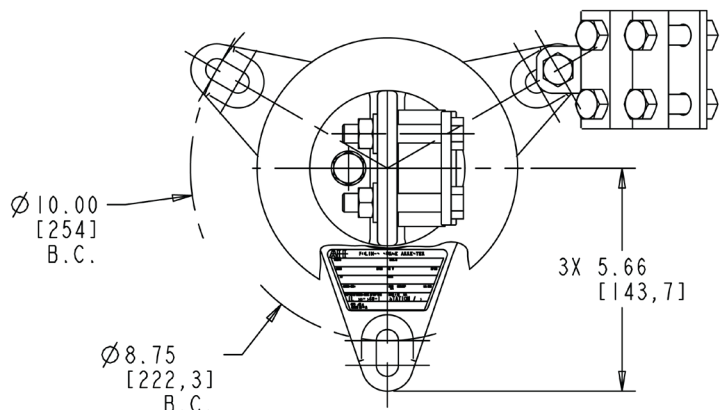
Standard (Mylar)



Stainless steel nameplates available. To select, add 'SN' to the end of the style number.

(Example: Q015SA012ASN)

## Drilling plan



# Quick selection guide

	System Voltage		Surge Arrester ANSI/IEEE Ratings			
	Maximum $V_m$ (kV <sub>rms</sub> )	Nominal Three-Wire $V_n$ (kV <sub>rms</sub> )	Four-Wire $V_n$ (kV <sub>rms</sub> )	Three-Wire $V_r / V_{MCOV}$ (kV <sub>rms</sub> )	Four-Wire Grounded $V_r / V_{MCOV}$ (kV <sub>rms</sub> )	Four-Wire Grounded High Impedance $V_r / V_{MCOV}$ (kV <sub>rms</sub> )
Medium Voltage	2.52	2.4		3 / 2.55		
	4.37Y / 2.52		4.16Y / 2.4		3 / 2.55	5 / 4.25
	4.37	4.16		5 / 4.25		
	5.04	4.8		6 / 5.1		
	7.24	6.9		9 / 7.65		
	8.73Y / 5.04		8.32Y / 4.8		6 / 5.1	12 / 10.2
	12.6Y / 7.27		12.0Y / 6.93		9 / 7.65	15 / 12.7
	13.09Y / 7.56		12.47Y / 7.2		9 / 7.65	18 / 15.3
	13.86Y / 8.0		13.2Y / 7.62		10 / 8.4	18 / 15.3
	14.49Y / 8.37		13.8Y / 7.97		10 / 8.4	18 / 15.3
	14.49	13.8		18 / 15.3		
	21.82Y / 12.6		20.78Y / 12.0		15 / 12.7	27 / 22
	24.0Y / 13.86		22.86Y / 13.2		18 / 15.3	30 / 24.4
	24.15	23.0		30 / 24.4		
	26.19Y / 15.12		24.94Y / 14.4		21 / 17	33 / 27
36.23Y / 20.92		34.5Y / 19.92		27 / 22	42 / 34	
36.23	34.5					
High Voltage	48.30	46		36 / 29		
	72.50	69		60 / 48		
	123	115		96 / 76		
	145	138		120 / 98		
	170	161		144 / 115		
	245	230		192 / 152		

## Key

$V_n$	Nominal System Voltage per NEMA C84.1
$V_m$	Maximum System Voltage per NEMA C84.1
$V_r$	Duty Cycle Rated Voltage per IEEE C62.11
MCOV	Maximum Continuous Operating Voltage per IEEE C62.11
TOV	Temporary Overvoltage
SPL	Switching Protective Level
	500 A    3-132 $V_r$ (kV <sub>rms</sub> )
	1000 A    144-198 $V_r$ (kV <sub>rms</sub> )
LPL	Lightning Protective Level
FOW	Front of Wave

# Guaranteed performance data

Electrical characteristics											
Ratings (kV <sub>rms</sub> )		TOV (kV <sub>rms</sub> )		Maximum residual voltage with current wave, (kV <sub>peak</sub> )							
Voltage V <sub>r</sub>	MCOV V <sub>MCOV</sub>	with prior energy single impulse of 4.5 kJ/kV <sub>r</sub>		SPL (SIPL) 30/60 μS	LPL (LIPL) 8/20 μs						FWO 0.5 μs
		1 sec	10 sec	500 A	1.5 kA	3 kA	5 kA	10 kA	20 kA	40 kA	10 kA
3.0	2.55	5.15	4.93	9.77	10.5	10.9	11.2	11.3	12.9	14.4	12.8
4.0	3.40	5.15	4.93	10.0	10.8	11.2	11.5	11.6	13.3	14.8	13.1
5.0	4.25	6.87	6.57	12.3	13.2	13.7	14.2	14.4	16.3	18.2	16.1
6.0	5.10	6.87	6.57	12.8	13.8	14.3	14.8	15.0	17.0	19.0	16.8
7.0	5.95	10.3	9.86	17.7	19.1	19.8	20.5	21.0	23.6	26.3	23.3
8.0	6.80	10.3	9.86	18.5	20.0	20.7	21.4	22.0	24.7	27.6	24.4
9.0	7.65	10.3	9.86	19.0	20.5	21.3	22.0	22.6	25.4	28.3	25.0
10	8.40	11.5	11.0	21.0	22.6	23.5	24.3	25.0	28.0	31.3	27.6
12	10.2	13.7	13.1	25.1	27.1	28.1	29.0	30.0	33.5	37.4	33.1
15	12.7	17.2	16.4	31.3	33.7	35.0	36.1	37.5	41.8	46.6	41.2
18	15.3	20.6	19.7	37.4	40.3	41.9	43.3	45.0	50.0	55.9	49.3
21	17.0	24.0	23.0	41.8	45.1	46.9	48.4	50.4	55.9	62.5	55.2
24	19.5	27.5	26.3	47.7	51.5	53.5	55.2	57.6	63.9	71.3	63.0
27	22.0	30.9	29.6	53.6	57.8	60.1	62.1	64.8	71.8	80.2	70.8
30	24.4	34.4	32.9	59.5	64.2	66.7	68.9	72.0	79.7	89.1	78.6
33	27.0	37.8	36.1	65.4	70.6	73.4	75.7	79.2	87.6	97.9	86.4
36	29.0	41.2	39.4	71.3	77.0	80.0	82.6	86.4	95.5	107	94.2
39	31.5	44.7	42.7	77.3	83.3	86.6	89.4	93.6	103	116	102
42	34.0	48.1	46.0	83.3	89.9	93.4	96.5	101	112	125	110
45	36.5	51.5	49.3	89.1	96.1	99.9	103	108	119	133	118
48	39	55.0	52.6	95.6	103	107	111	116	128	143	126
51	41	58.4	55.8	101	109	114	117	123	136	152	134
54	42	61.8	59.1	107	116	120	124	130	144	160	142
55	44	63.0	60.2	109	117	122	126	132	146	163	144
60	48	68.7	65.7	119	128	133	137	144	159	178	157
66	53	75.6	72.3	131	141	147	152	159	175	196	173
72	57	82.4	78.8	142	153	159	165	173	191	213	188
75	60	85.9	82.1	148	160	166	172	180	199	222	196
78	63	89.3	85.4	155	167	173	179	188	207	232	204
81	65	92.7	88.7	160	173	180	186	195	215	240	212
84	68	96.2	92.0	166	179	186	192	202	223	249	220
90	70	103	98.6	178	192	199	206	216	238	266	235
94	73	108	103	186	201	208	215	226	249	278	246
96	76	110	105	190	205	213	220	231	255	285	251
102	82	117	112	201	217	226	233	245	270	302	266
108	84	124	118	214	231	240	248	260	287	320	283
108	88	124	118	214	231	240	248	260	287	320	283
114	92	131	125	225	243	253	261	274	302	338	298
120	98	137	131	237	255	265	274	288	317	355	313
129	104	148	141	255	275	286	295	310	342	382	337
132	106	151	145	260	281	292	302	317	349	390	344
138	111	158	151	273	294	306	316	332	366	409	361
144	115	165	158	284	307	319	329	346	381	426	376
150	121	172	164	296	319	332	343	360	397	443	391
168	131	192	184	332	358	372	384	404	445	497	439
172	140	197	188	339	366	380	393	413	455	508	448
180	144	206	197	355	383	398	411	432	476	532	469
192	152	220	210	379	408	425	438	461	508	568	501
198	160	227	217	391	422	438	453	476	524	586	517

# Style numbers and technical data for housings

## Vertical mounting styles with standard creepage distance

Surge Arrester IEEE Ratings $V_r / V_{MCOV}$ (kV)	Style Number	Creepage Distance inches (mm)	Strike Distance inches (mm)	BIL 1.2/50 $\mu$ s dry kV <sub>peak</sub>	Weight (Mass) lbs (kg)	A max inches (mm)	Fig
3.0 / 2.55	Q003SA002A	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
4.0 / 3.40	Q004SA003A	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
5.0 / 4.25	Q005SA004A	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
6.0 / 5.10	Q006SA005A	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
7.0 / 5.95	Q007SA006A	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
8.0 / 6.80	Q008SA007A	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
9.0 / 7.65	Q009SA008B	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
10 / 8.40	Q010SA008B	11.2 (284)	7.7 (197)	120	18 (8.2)	14.42 (367)	1
12 / 10.2	Q012SA010A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
15 / 12.7	Q015SA012A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
18 / 15.3	Q018SA015A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
21 / 17.0	Q021SA017B	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
24 / 19.5	Q024SA019A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
27 / 22.0	Q027SA022A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
30 / 24.4	Q030SA024A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
33 / 27.0	Q033SA027A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
36 / 29.0	Q036SA029A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
39 / 31.5	Q039SA031B	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
42 / 34.0	Q042SA034B	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
45 / 36.5	Q045SA037A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
48 / 39.0	Q048SA039A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
51 / 41.0	Q051SA041A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
54 / 42.0	Q054SA042A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
55 / 44.0	Q055SA044A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
60 / 48.0	Q060SA048A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
66 / 53.0	Q066SA053A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
72 / 57.0	Q072SA057A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
75 / 60.0	Q075SA060A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
78 / 63.0	Q078SA063A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
81 / 65.0	Q081SA065A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
84 / 68.0	Q084SA068A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
90 / 70.0	Q090SA070A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
94 / 73.0	Q094SA073A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
96 / 76.0	Q096SA076B	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
102 / 82.0	Q102SA082B	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
108 / 84.0	Q108SA084D	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
108 / 88.0	Q108SA088B	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
114 / 92.0	Q114SA092B	133.4 (3398)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
120 / 98.0	Q120SA098D	133.4 (3398)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
129 / 104	Q129SA104B	133.4 (3398)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
132 / 106	Q132SA106D <sup>1</sup>	133.4 (3398)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
132 / 106	Q132SA106E	133.4 (3398)	39.7 (1009)	700	94 (43)	58.62 (1489)	3
138 / 111	Q138SA111B	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
144 / 115	Q144SA115C	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
150 / 121	Q150SA121B	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
168 / 131	Q168SA131C	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
172 / 140	Q172SA140C	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
180 / 144	Q180SA144B	200.1 (5082)	65.7 (1669)	1050	137 (63)	84.61 (2149)	4
192 / 152	Q192SA152C	200.1 (5082)	65.7 (1669)	1050	137 (63)	84.61 (2149)	4
198 / 160	Q198SA160B	200.1 (5082)	65.7 (1669)	1050	137 (63)	84.61 (2149)	4

<sup>1</sup> For 145 kV maximum systems only

Vertical mounting styles with extra creepage distance

Surge Arrester IEEE Ratings $V_r / V_{MCOV}$ (kV)	Style Number	Creepage Distance inches (mm)	Strike Distance inches (mm)	BIL 1.2/50 $\mu$ s dry kV <sub>peak</sub>	Weight (Mass) lbs (kg)	A max inches (mm)	Fig
3.0 / 2.55	Q003SB002A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
4.0 / 3.40	Q004SB003A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
5.0 / 4.25	Q005SB004A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
6.0 / 5.10	Q006SB005A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
7.0 / 5.95	Q007SB006A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
8.0 / 6.80	Q008SB007A	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
9.0 / 7.65	Q009SB008B	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
10 / 8.40	Q010SB008B	23.6 (599)	11.6 (297)	175	22 (10)	18.36 (466)	1
12 / 10.2	Q012SB010A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
15 / 12.7	Q015SB012A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
18 / 15.3	Q018SB015A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
21 / 17.0	Q021SB017B	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
24 / 19.5	Q024SB019A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
27 / 22.0	Q027SB022A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
30 / 24.4	Q030SB024A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
33 / 27.0	Q033SB027A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
36 / 29.0	Q036SB029A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
39 / 31.5	Q039SB031B	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
42 / 34.0	Q042SB034B	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
45 / 36.5	Q045SB037A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
48 / 39.0	Q048SB039A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
51 / 41.0	Q051SB041A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
54 / 42.0	Q054SB042A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
55 / 44.0	Q055SB044A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
60 / 48.0	Q060SB048A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
66 / 53.0	Q066SB053A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
72 / 57.0	Q072SB057A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
75 / 60.0	Q075SB060A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
78 / 63.0	Q078SB063A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
81 / 65.0	Q081SB065A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
84 / 68.0	Q084SB068A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
90 / 70.0	Q090SB070A	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
94 / 73.0	Q094SB073A	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
96 / 76.0	Q096SB076B	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
102 / 82.0	Q102SB082B	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
108 / 84.0	Q108SB084D	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
108 / 88.0	Q108SB088B	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
114 / 92.0	Q114SB092B	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
120 / 98.0	Q120SB098D	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
129 / 104	Q129SB104B	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
132 / 106	Q132SB106D	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
138 / 111	Q138SB111B	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
144 / 115	Q144SB115C	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
150 / 121	Q150SB121B	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
168 / 131	Q168SB131C	200.1 (5082)	65.7 (1669)	1050	137 (63)	84.61 (2149)	4
172 / 140	Q172SB140C	200.1 (5082)	65.7 (1669)	1050	137 (63)	84.61 (2149)	4

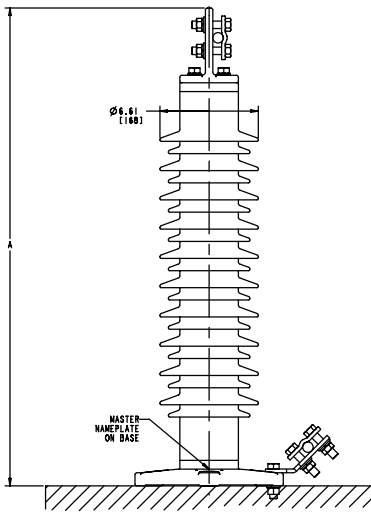
Vertical mounting styles with extra extra creepage distance

Surge Arrester IEEE Ratings $V_r / V_{MCOV}$ (kV)	Style Number	Creepage Distance inches (mm)	Strike Distance inches (mm)	BIL 1.2/50 $\mu$ s dry kV <sub>peak</sub>	Weight (Mass) lbs (kg)	A max inches (mm)	Fig
3.0 / 2.55	Q003SC002A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
4.0 / 3.40	Q004SC003A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
5.0 / 4.25	Q005SC004A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
6.0 / 5.10	Q006SC005A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
7.0 / 5.95	Q007SC006A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
8.0 / 6.80	Q008SC007A	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
9.0 / 7.65	Q009SC008B	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
10 / 8.40	Q010SC008B	42 (1067)	17.6 (447)	250	33 (15)	24.27 (616)	1
12 / 10.2	Q012SC010A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
15 / 12.7	Q015SC012A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
18 / 15.3	Q018SC015A	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
21 / 17.0	Q021SC017B	66.7 (1694)	25.5 (647)	350	47 (22)	32.14 (816)	1
24 / 19.5	Q024SC019A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
27 / 22.0	Q027SC022A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
30 / 24.4	Q030SC024A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
33 / 27.0	Q033SC027A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
36 / 29.0	Q036SC029A	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
39 / 31.5	Q039SC031B	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
42 / 34.0	Q042SC034B	84 (2134)	35.7 (907)	500	62 (29)	42.38 (1076)	2
45 / 36.5	Q045SC037A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
48 / 39.0	Q048SC039A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
51 / 41.0	Q051SC041A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
54 / 42.0	Q054SC042A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
55 / 44.0	Q055SC044A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
60 / 48.0	Q060SC048A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
66 / 53.0	Q066SC053A	108.7 (2761)	43.6 (1107)	600	76 (35)	50.25 (1276)	2
72 / 57.0	Q072SC057A	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
75 / 60.0	Q075SC060A	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
78 / 63.0	Q078SC063A	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
81 / 65.0	Q081SC065A	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
84 / 68.0	Q084SC068A	133.4 (3388)	51.5 (1307)	700	90 (41)	58.12 (1476)	2
90 / 70.0	Q090SC070A	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
94 / 73.0	Q094SC073A	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
96 / 76.0	Q096SC076B	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
102 / 82.0	Q102SC082B	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
108 / 84.0	Q108SC084D	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
108 / 88.0	Q108SC088B	150.7 (3828)	50.0 (1269)	850	109 (50)	68.86 (1749)	4
114 / 92.0	Q114SC092B	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
120 / 98.0	Q120SC098D	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
129 / 104	Q129SC104B	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
132 / 106	Q132SC106D	175.4 (4455)	57.8 (1469)	950	123 (56)	76.73 (1949)	4
138 / 111	Q138SC111B	200.1 (5082)	65.7 (1669)	1050	137 (63)	86.41 (2149)	4
144 / 115	Q144SC115C	200.1 (5082)	65.7 (1669)	1050	137 (63)	86.41 (2149)	4
150 / 121	Q150SC121B	200.1 (5082)	65.7 (1669)	1050	137 (63)	86.41 (2149)	4

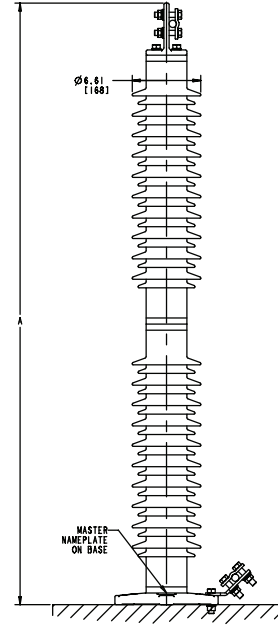


# Figures

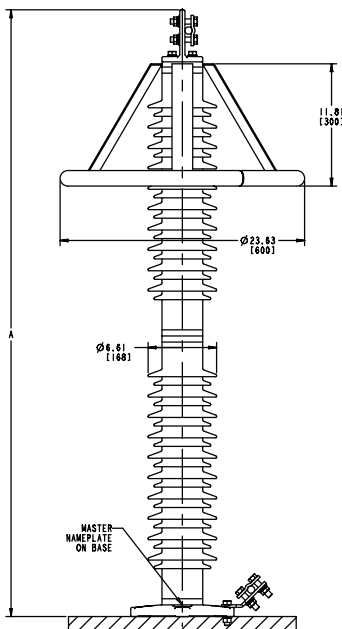
1 Single housing



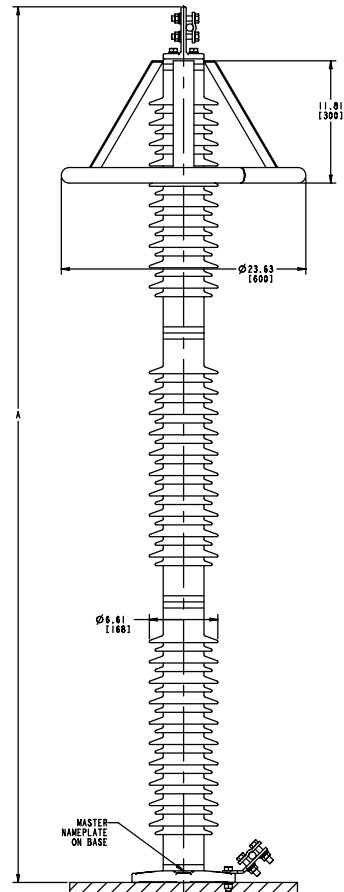
2 Double housing



3 Double housing with ring



4 Triple housing with ring



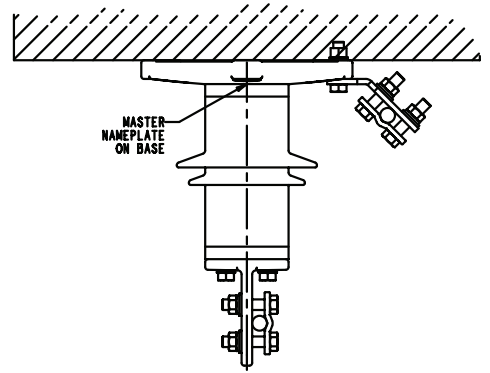
# Optional mountings

## Under-hung mounted styles

Available for all ratings. To select, add 'UH' to the end of the style number.

(Example: 5 kV Q015SA012AUH)

## Single housing under-hung

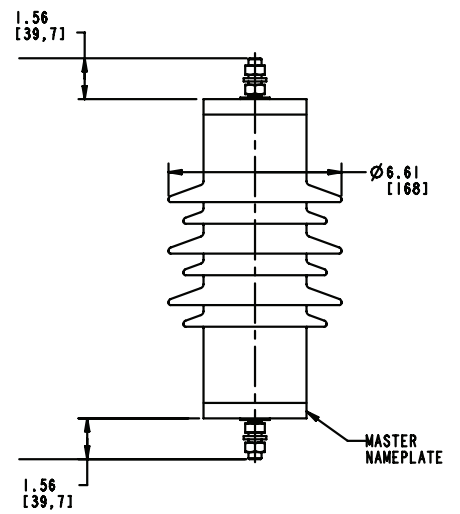


## Cubical mounted styles

Available for rating 3 to 66 kV. To select, add 'SAA6' to the end of the style number.

(Example: 15 kV Q015SA012ASAA6)

## Single housing cubical



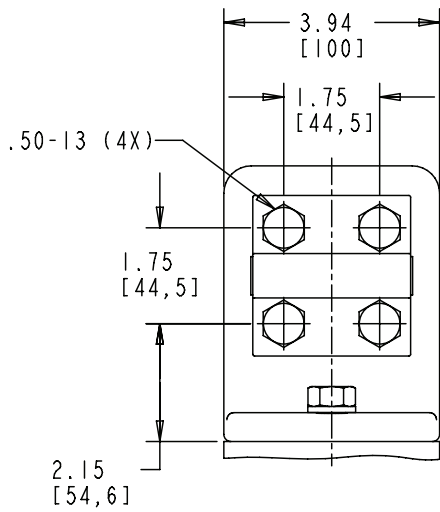
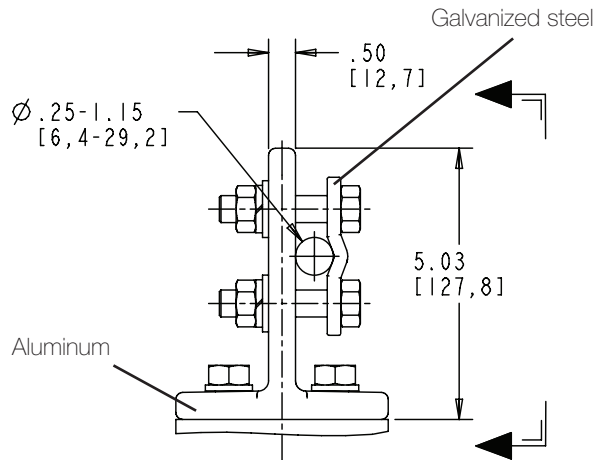
<b>ABB</b>		DATE	<b>POLIM-S</b>		U.S.A.
STYLE NO.			SERIAL NO.		
WEIGHT	MCOV	kV	RATING	kV	

Nameplate for cubical mounted styles only.

# Standard hardware

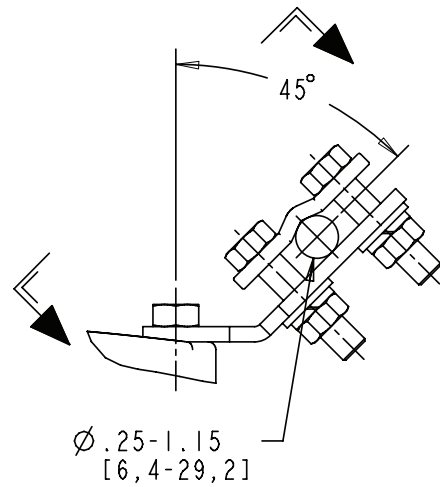
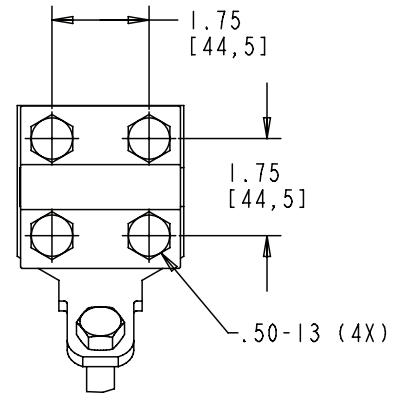
## Line terminal

Aluminum / galvanized steel



## Ground terminal

Galvanized steel



**Note:** Line and ground terminals can accommodate copper or aluminum cable size Number 2 to 1000 MCM / 0.25 to 1.15 in. diameter. Ground terminal can be located on any lug.

# Phase-to-ground clearance

The phase-to-ground clearance in substations is usually based on the selected standard rated lightning and switching impulse withstand voltages. International standards, e.g. IEC 60071-2, recommend minimum clearances.

In general, the clearance between a grounded object and a surge arrester should be the same as the phase-to-ground clearance selected for other high voltage equipment in a substation. If it is not possible to use the normal phase-to-ground clearance in special applications of POLIM-S Surge Arresters, a smaller clearance may be chosen, considering the protective characteristics of the arrester. At system voltages 24 kV and below, the margin between the rated withstand voltage of the substation and the protective level of the surge arrester is large. Furthermore, distance effects by fast transients do not exist in the immediate vicinity of the surge arrester.

Thus, the recommended minimum phase-to-ground clearance for POLIM-S Surge Arresters, with regard to lightning and switching overvoltages are presented in Figure 1. These clearances are based on IEC 60071-2, Table VI, and on the protective characteristics of the surge arrester. They include safety margins and altitude correction.

The *Adjusted Protective Level* to be used in Figure 1, is defined as:

- For lightning impulse:

$$L_{pl} \times 1.15 \times e^{H/8150}$$

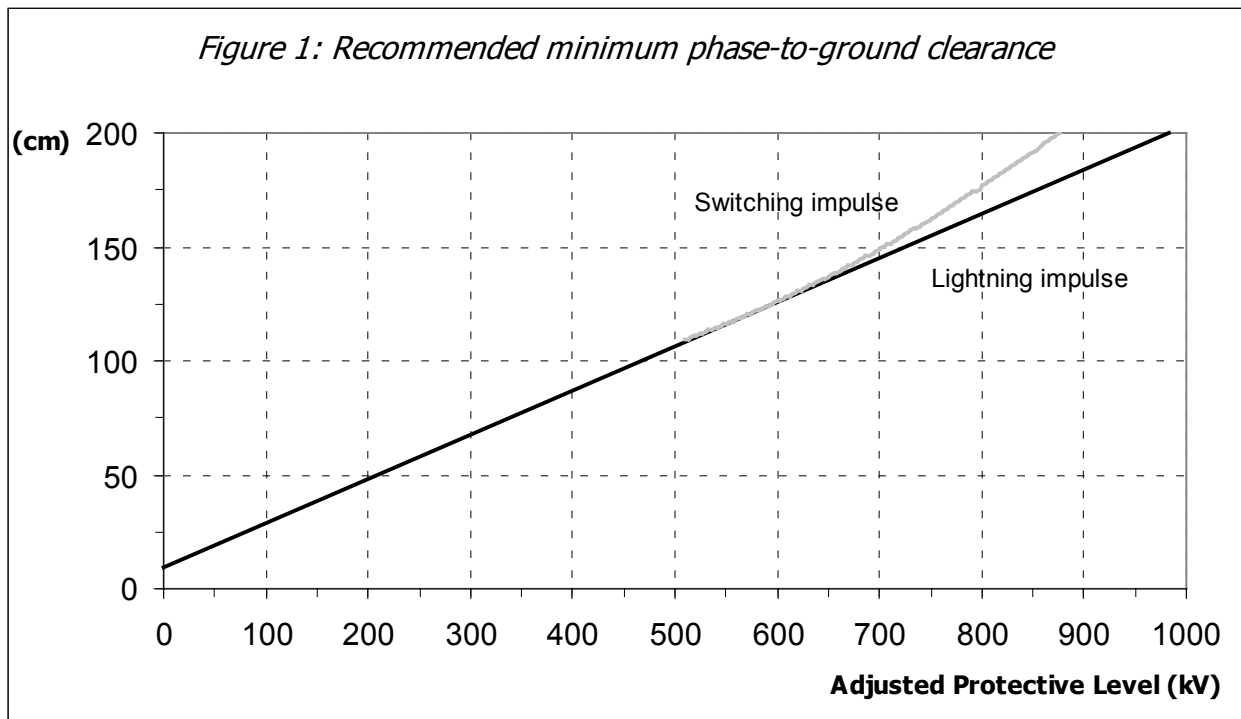
- For switching impulse:

$$S_{pl} \times 1.10 \times e^{H/8150}$$

H is the altitude in meters above sea level.

$L_{pl}$  and  $S_{pl}$  are the lightning and switching impulse protective levels for the selected POLIM-S Surge Arresters at the respective coordinating currents.

The minimum clearance is determined either by lightning or switching impulse withstand, whichever renders a larger value.



# Phase-to-phase clearance

The phase-to-phase clearance for high voltage equipment in a substation is normally based on the selected standard rated lightning and switching impulse phase-to-phase withstand voltages. International standards, e.g. IEC 60071-3 recommend minimum phase-to-phase clearances. Note that the normal election of surge arrester protective levels does not directly protect the phase-to-phase insulation.

In general, the clearance between surge arresters in adjacent phases should be the same as the phase-to-phase clearance selected for other high voltage equipment in the substation. If it is not possible to use the normal phase-to-phase clearance in a special application of POLIM-S Surge Arresters, the minimum clearance with regard to lightning overvoltages can be derived from Figure 2.

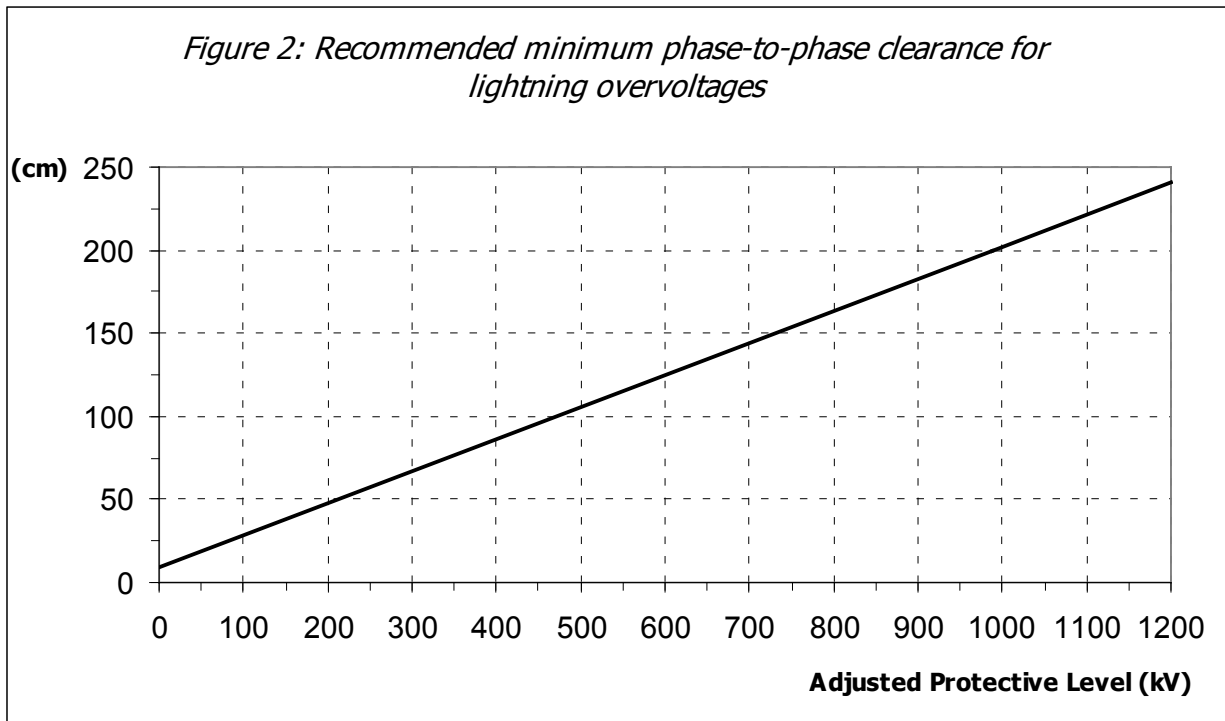
The clearances shown in Figure 2 are based on the assumption that one phase is subjected to a lightning overvoltage, while the voltage on the adjacent phase is at the peak of the maximum power frequency operating voltage (opposite polarity). Obviously, these clearances will also cover the case of lightning overvoltages of the same polarity appearing simultaneously on two or three phases.

The *Adjusted Protective Level* shown in Figure 2 is based on the lightning protective characteristics of the selected POLIM-S Surge Arresters. It includes safety margin and altitude correction factors and is defined as:

$$L_{pl} \times 1.15 \times e^{H/8150} + V_m \times \sqrt{2} / \sqrt{3}$$

- $V_m$  is the highest voltage for equipment according to IEC 60071-1, which is usually equal to the highest system voltage.
- $L_{pl}$  is the lightning impulse protective level for the selected POLIM-S Surge Arrester.

The minimum phase-to-phase clearance for arresters with respect to switching overvoltages should always be based on the selected standard rated switching impulse phase-to-phase withstand voltage for the substation. Consequently, the clearances specified in IEC 60071-3, Table VI, are valid for most applications of arresters. If a special application requires a minimized phase spacing, the favorable electrode configuration established by the grading rings on POLIM-S Surge Arresters may permit a further reduction of the phase-to-phase clearance.



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