



## High voltage porcelain surge arresters



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# Bowthorpe EMP high voltge station class surge arrester range

## Generic technical data

		MAA	MCA	MDA	MEAX
Voltage rating	kV	up to 198	up to 360	up to 420	up to 640
For system voltages up to	kV	245	420	525	800
Rated discharge current	kA	10	10	20	20
High current impulse (4/10 $\mu$ s)	kA	100	100	100	100
Classification		2	3	4	5
Energy Capability at Ur	kJ/kV	4.5	8.75	11	13
Short circuit rating	kA	40	65	65	65
Mechanical strength*					
Safe long-term load (SLL)	kNm	5	5	5	5.6
Safe short-term load (SSL)	kNm	12.5	12.5	12.5	14

\* As defined in IEC60094-4, Edition2.2, 2009-05

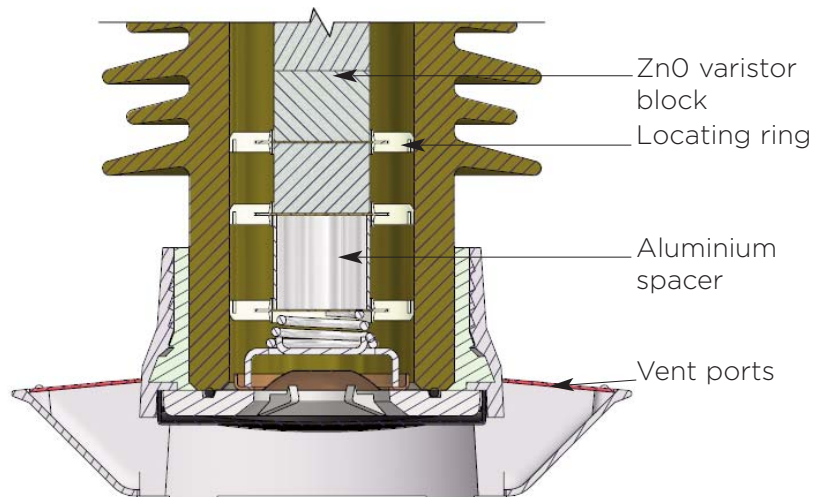
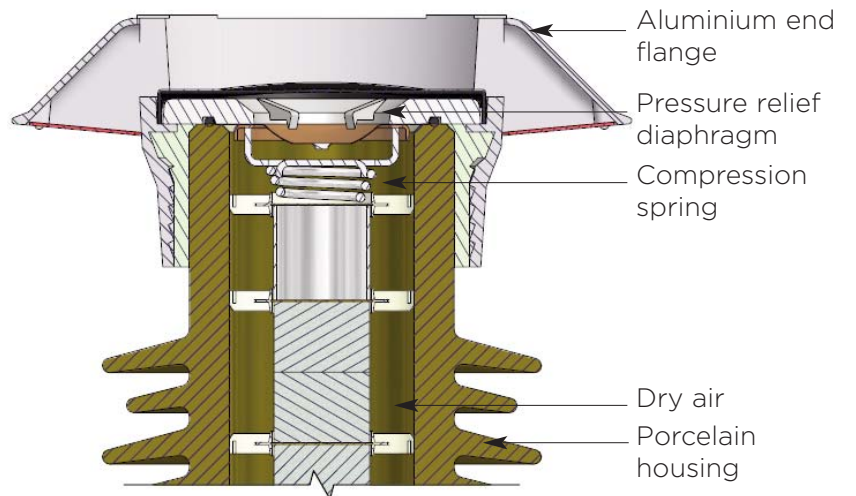
## Typical Installations



220 kV Surge Arresters - Norway



300kV Surge Arresters - Kuwait



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## Electrical performance

System Voltage  (kV)	Rated Voltage  (kV)	Line Discharge Class	Long Duration Current 2000 $\mu$ s  (A)	Nominal Discharge Current (4/10 $\mu$ s)  (kA)	Rated Short Circuit Current  (kA)	Energy Capability at Ur acc. to IEC 60099-4  (kJ/kV)	Type
12	9 - 15	2	500	10	40	4.5	MAA
	9 - 15	3	1020	10	65	8.75	MCA
24	18 - 30	2	500	10	40	4.5	MAA
	18 - 30	3	1020	10	65	8.75	MCA
36	27 - 42	2	500	10	40	4.5	MAA
	27 - 42	3	1020	10	65	8.75	MCA
72.5	54 - 75	2	500	10	40	4.5	MAA
	54 - 75	3	1020	10	65	8.75	MCA
	54 - 75	4	1280	20	65	11	MDA
123	84 - 120	2	500	10	40	4.5	MAA
	84 - 120	3	1020	10	65	8.75	MCA
	84 - 120	4	1280	20	65	11	MDA
145	108 - 144	2	500	10	40	4.5	MAA
	108 - 144	3	1020	10	65	8.75	MCA
	108 - 144	4	1280	20	65	11	MDA
170	138 - 168	2	500	10	40	4.5	MAA
	138 - 168	3	1020	10	65	8.75	MCA
	138 - 168	4	1280	20	65	11	MDA
245	180 - 198	2	500	10	40	4.5	MAA
	180 - 216	3	1020	10	65	8.75	MCA
	180 - 216	4	1280	20	65	11	MDA
	180 - 216	5	1475	20	65	13	MEAX
362	240 - 300	3	1020	10	65	8.75	MCA
	240 - 300	4	1280	20	65	11	MDA
	240 - 300	5	1475	20	65	13	MEAX
420	336 - 396	3	1020	10	65	8.75	MCA
	336 - 396	4	1280	20	65	11	MDA
	336 - 396	5	1475	20	65	13	MEAX
550	396 - 468	5	1475	20	65	13	MEAX
800	600 - 640	5	1475	20	65	13	MEAX

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System Voltage  kV	U <sub>r</sub> *  kV	U <sub>c</sub> **  kV	Line Discharge Class	Max. U <sub>res</sub> tested with current wave										Steep Current (1/20 μs)	
				Switching surge (30/60 μs)					Lightning Current (8/20 μs)					10 kA kV	20 kA kV
				125 A kV	250 A kV	500 A kV	1000 A kV	2000 A kV	5 kA kV	10 kA kV	20 kA kV	40 kA kV			
12	9	7.2	2	19.5	20.1	20.8	21.6	22.6	24.6	26.5	29.2	33.2	28.4	31.4	
	12	9.6	2	24.4	25.1	25.9	27.0	28.3	30.8	33.1	36.5	41.5	35.5	39.3	
	15	12	2	29.3	30.1	31.1	32.4	33.9	37.0	39.7	43.8	49.8	42.6	47.1	
	9	7.2	3	21.1	21.7	22.3	23.1	24.2	26.6	28.6	31.4	35.5	30.7	33.7	
	12	9.6	3	31.6	32.6	33.4	34.6	36.2	39.9	42.9	47.1	53.3	46.0	50.5	
	15	12	3	37.7	38.8	39.9	41.2	43.2	47.5	51.2	56.2	63.5	54.8	60.2	
24	18	14	2	36.6	37.6	38.9	40.5	42.4	46.2	49.7	54.7	62.3	53.3	58.9	
	21	17	2	41.5	42.7	44.1	45.9	48.1	52.4	56.3	62.0	70.6	60.4	66.8	
	24	19	2	48.8	50.2	51.9	54.0	56.6	61.6	66.2	73.0	83.0	71.1	78.5	
	27	22	2	53.7	55.2	57.1	59.3	62.2	67.8	72.8	80.3	91.3	78.2	86.4	
	30	24	2	58.6	60.2	62.3	64.7	67.9	73.9	79.4	87.6	99.6	85.3	94.3	
	18	14	3	42.2	43.4	44.6	46.1	48.3	53.1	57.2	62.8	71.1	61.4	67.3	
	21	17	3	48.6	50.0	51.4	53.2	55.7	61.3	66.0	72.4	81.9	70.7	77.6	
	24	19	3	54.8	56.4	57.9	59.9	62.8	69.0	74.3	81.6	92.3	79.7	87.5	
	27	22	3	60.1	61.9	63.6	65.8	68.9	75.8	81.6	89.6	101	87.5	96.0	
30	24	3	66.0	67.9	69.8	72.2	75.6	83.1	89.5	98.3	111	96.0	105		
36	30	24	2	58.6	60.2	62.3	64.7	67.9	73.9	79.4	87.6	99.6	85.3	94.3	
	36	29	2	70.8	72.8	75.2	78.2	82.0	89.3	96.0	106	120	103	114	
	42	34	2	83.0	85.3	88.2	91.7	96.2	105	113	124	141	121	134	
	30	24	3	66.0	67.9	69.8	72.2	75.6	83.1	89.5	98.3	111	96.0	105	
	36	29	3	77.8	80.1	82.3	85.1	89.2	98.0	106	116	131	113	124	
	42	34	3	87.5	90.1	92.5	95.7	100	110	119	130	148	127	140	
	48	38	3	100	103	105	110	115	126	136	149	169	146	160	
72.5	54	43	2	107	110	114	119	124	136	146	161	183	156	173	
	60	48	2	117	120	125	129	136	148	159	175	199	171	189	
	72	58	2	142	146	150	156	164	179	192	212	241	206	228	
	75	60	2	147	151	156	162	170	185	199	219	249	213	236	
	54	43	3	110	113	117	121	126	139	150	164	186	160	176	
	60	48	3	124	127	131	135	142	156	168	184	209	180	198	
	72	58	3	146	150	154	160	167	184	198	218	246	212	233	
	75	60	3	151	155	159	165	173	190	205	225	254	219	241	
123	84	67.2	2	166	171	176	183	192	209	225	248	282	242	267	
	90	72	2	178	183	189	197	206	225	242	266	303	259	287	
	96	77	2	188	193	200	208	218	237	255	281	320	274	302	
	108	86	2	212	218	226	235	246	268	288	317	361	309	342	
	120	96	2	234	241	249	259	272	296	318	350	399	341	377	
	84	67	3	165	170	175	181	189	208	224	246	279	240	264	
	90	72	3	180	186	191	197	207	227	245	269	304	262	288	
	96	77	3	192	197	203	210	220	242	260	286	323	279	306	
	108	86	3	214	220	226	234	245	270	290	319	361	311	342	
	120	96	3	237	244	251	260	272	299	322	354	400	345	379	

\* U<sub>r</sub> - Rated voltage  
 \*\* U<sub>c</sub> - Continuous operating voltage  
 \*\*\* "TOV" curves are given in technical data for selected Surge Arrester (on request)

Surge Arresters with other characteristics are available on request

## Bowthorpe EMP high voltge station class surge arrester range

Temporary Overvoltage capability for 1 sec***	Creepage length	Overall height	Minimun distance between phase centers	Minimun distance between phase to earth	Cantilever load		Weight	Drawing Reference	Product code
					Safe short-term load (SSL)	Safe long-term load (SLL)			
kV	mm	mm	mm	mm	kNm	kNm	Kg		
10	540	496	446	60	12.5	5	24	BOW-14-001	MAA0-9
14	540	496	476	90	12.5	5	24	BOW-14-001	MAA0-12
17	540	496	476	90	12.5	5	24	BOW-14-001	MAA0-15
11	540	496	446	60	12.5	5	26	BOW-14-008	MCA0-9
14	540	496	476	90	12.5	5	26	BOW-14-008	MCA0-12
18	540	496	506	120	12.5	5	26	BOW-14-008	MCA0-15
21	540	496	506	120	12.5	5	24	BOW-14-001	MAA0-18
24	540	496	506	120	12.5	5	24	BOW-14-001	MAA0-21
27	1150	666	546	160	12.5	5	39	BOW-14-002	MAA1-24
31	1150	666	546	160	12.5	5	39	BOW-14-002	MAA1-27
34	1150	666	606	220	12.5	5	39	BOW-14-002	MAA1-30
21	1150	666	506	120	12.5	5	42	BOW-14-009	MCA1-18
25	1150	666	546	160	12.5	5	42	BOW-14-009	MCA1-21
28	1150	666	606	220	12.5	5	42	BOW-14-009	MCA1-24
32	1150	666	606	220	12.5	5	42	BOW-14-009	MCA1-27
35	1150	666	606	220	12.5	5	42	BOW-14-009	MCA1-30
34	1150	666	606	220	12.5	5	39	BOW-14-002	MAA1-30
41	1150	666	606	220	12.5	5	39	BOW-14-002	MAA1-36
48	2390	1036	706	320	12.5	5	48	BOW-14-003	MAA2-42
35	1150	666	606	220	12.5	5	42	BOW-14-009	MCA1-30
42	1150	666	656	270	12.5	5	42	BOW-14-009	MCA1-36
49	2390	1036	706	320	12.5	5	55	BOW-14-010	MCA2-42
56	2390	1036	866	480	12.5	5	55	BOW-14-010	MCA2-48
62	2390	1036	866	480	12.5	5	48	BOW-14-003	MAA2-54
68	2390	1036	866	480	12.5	5	48	BOW-14-003	MAA2-60
82	2390	1036	866	480	12.5	5	48	BOW-14-003	MAA2-72
86	2390	1036	1016	630	12.5	5	48	BOW-14-003	MAA2-75
63	2390	1036	866	480	12.5	5	55	BOW-14-010	MCA2-54
70	2390	1036	866	480	12.5	5	55	BOW-14-010	MCA2-60
84	2390	1036	1016	630	12.5	5	55	BOW-14-010	MCA2-72
88	2390	1036	1016	630	12.5	5	55	BOW-14-010	MCA2-75
96	3820	1384	1016	630	12.5	5	80	BOW-14-004	MAA3-84
103	3820	1384	1016	630	12.5	5	80	BOW-14-004	MAA3-90
109	3820	1384	1286	900	12.5	5	80	BOW-14-004	MAA3-96
123	3820	1384	1286	900	12.5	5	80	BOW-14-004	MAA3-108
137	3820	1384	1286	900	12.5	5	80	BOW-14-004	MAA3-120
98	3820	1384	1016	630	12.5	5	90	BOW-14-011	MCA3-84
105	3820	1384	1016	630	12.5	5	90	BOW-14-011	MCA3-90
112	3820	1384	1286	900	12.5	5	90	BOW-14-011	MCA3-96
126	3820	1384	1286	900	12.5	5	90	BOW-14-011	MCA3-108
140	3820	1384	1286	900	12.5	5	90	BOW-14-011	MCA3-120

## Bowthorpe EMP high voltge station class surge arrester range

System Voltage kV	U <sub>r</sub> * kV	U <sub>c</sub> ** kV	Line Discharge Class	Max. U <sub>res</sub> tested with current wave										Steep Current (1/20 μs)	
				Switching surge (30/60 μs)					Lightning Current (8/20 μs)					10 kA kV	20 kA kV
				125 A kV	250 A kV	500 A kV	1000 A kV	2000 A kV	5 kA kV	10 kA kV	20 kA kV	40 kA kV			
145	108	86	2	212	218	226	235	246	268	288	317	361	309	342	
	120	96	2	234	241	249	259	272	296	318	350	399	341	377	
	132	106	2	259	266	275	286	300	327	351	387	440	377	416	
	108	86	3	211	217	223	231	242	266	286	314	355	307	337	
	120	96	3	236	243	249	258	270	297	320	351	397	343	376	
	132	106	3	258	266	273	282	296	325	350	384	435	375	412	
	108	86	4	205	210	215	224	233	254	270	293	327	287	294	
	120	96	4	227	232	239	247	258	281	299	324	362	318	326	
	132	106	4	249	254	261	271	283	308	328	356	396	349	357	
	138	110	4	259	265	272	283	294	321	341	371	413	363	372	
	144	115	4	270	276	283	294	306	334	355	385	430	378	387	
170	138	110	2	274	281	291	302	317	345	371	409	465	398	440	
	144	115	2	283	291	301	313	328	357	384	423	482	412	456	
	150	120	2	293	301	311	324	339	370	397	438	498	426	471	
	168	134	2	330	339	350	364	382	416	447	493	560	480	530	
	138	110	3	268	276	284	293	308	338	364	400	452	390	428	
	144	115	3	281	289	297	307	322	354	381	418	473	408	448	
	150	120	3	292	301	309	320	335	368	396	435	493	425	467	
	168	134	3	329	338	348	359	377	414	445	490	554	478	525	
	138	110	4	259	365	272	283	294	321	341	371	413	363	372	
		144	115	4	270	276	283	294	306	334	355	385	430	378	387
	150	120	4	280	286	294	305	318	346	369	400	446	392	402	
245	180	144	2	354	364	376	391	410	447	480	529	602	515	569	
	192	154	2	376	386	399	415	436	474	510	562	639	547	605	
	198	158	2	388	399	412	429	450	490	526	580	660	565	624	
	180	144	3	349	359	369	381	400	439	473	519	588	507	557	
	192	154	3	374	385	396	409	429	472	508	557	631	544	598	
	198	158	3	383	395	405	419	439	483	520	571	646	558	612	
	216	173	3	420	432	444	459	481	529	570	625	708	611	671	
	180	144	4	332	340	349	362	377	411	437	475	529	465	477	
	192	154	4	357	365	375	389	405	442	470	510	569	500	512	
	198	158	4	366	374	385	399	416	453	482	523	583	513	525	
	216	173	4	400	409	421	436	454	495	527	572	638	561	574	
	180	144	5	350		366	379	394	419	442	475	524		529	
	192	154	5	372		390	403	419	446	470	506	557		563	
	198	158	5	383		402	415	432	459	484	521	574		580	
216	173	5	417		437	452	469	499	527	567	625		631		

- \* U<sub>r</sub> - Rated voltage
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- \*\*\* "TOV" curves are given in technical data for selected Surge Arrester (on request)

Surge Arresters with other characteristics are available on request



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Temporary Overvoltage capability for 1 sec***	Creepage length	Overall height	Minimun distance between phase centers	Minimun distance between phase to earth	Cantilever load		Weight	Drawing Reference	Product code
					Safe short-term load (SSL)	Safe long-term load (SLL)			
kV	mm	mm	mm	mm	kNm	kNm	Kg		
123	3820	1384	1286	900	12.5	5	80	BOW-14-004	MAA3-108
137	3820	1384	1286	900	12.5	5	80	BOW-14-004	MAA3-120
150	5000	1736	1810	1100	12.5	5	100	BOW-14-005	MAA4-132
126	3820	1384	1286	900	12.5	5	90	BOW-14-011	MCA3-108
140	3820	1384	1286	900	12.5	5	90	BOW-14-011	MCA3-120
154	5000	1736	1810	1100	12.5	5	115	BOW-14-012	MCA4-132
118	3820	1384	1286	900	12.5	5	90	BOW-14-018	MDA3-108
131	3820	1384	1286	900	12.5	5	90	BOW-14-018	MDA3-120
144	5000	1736	1810	1100	12.5	5	115	BOW-14-019	MDA4-132
150	5000	1736	1810	1100	12.5	5	115	BOW-14-019	MDA4-138
157	5000	1736	1810	1100	12.5	5	115	BOW-14-019	MDA4-144
157	5000	1736	1810	1100	12.5	5	100	BOW-14-005	MAA4-138
164	5000	1736	1810	1100	12.5	5	100	BOW-14-005	MAA4-144
171	5000	1736	1810	1100	12.5	5	100	BOW-14-005	MAA4-150
192	5540	2237	2010	1300	12.5	5	124	BOW-14-006	MAA4.0-168
161	5000	1736	1810	1100	12.5	5	115	BOW-14-012	MCA4-138
168	5000	1736	1810	1100	12.5	5	115	BOW-14-012	MCA4-144
176	5000	1736	1810	1100	12.5	5	115	BOW-14-012	MCA4-150
197	5540	2237	2010	1300	12.5	5	141	BOW-14-013	MCA4.0-168
150	5000	1736	1810	1100	12.5	5	115	BOW-14-019	MDA4-138
157	5000	1736	1810	1100	12.5	5	115	BOW-14-019	MDA4-144
164	5000	1736	1810	1100	12.5	5	115	BOW-14-019	MDA4-150
205	5540	2237	2010	1310	12.5	5	124	BOW-14-006	MAA4.0-180
219	7390	2777	2415	1500	12.5	5	148	BOW-14-006	MAA4.2-192
226	7390	2777	2415	1500	12.5	5	148	BOW-14-006	MAA4.2-198
211	5540	2237	2010	1300	12.5	5	141	BOW-14-013	MCA4.0-180
225	8820	3125	2700	1500	12.5	5	205	BOW-14-013	MCA4.2-192
232	8820	3125	2700	1500	12.5	5	205	BOW-14-013	MCA4.2-198
253	7390	2777	2415	1500	12.5	5	205	BOW-14-013	MCA4.2-216
196	5540	2237	2010	1300	12.5	5	141	BOW-14-020	MDA4.0-180
225	8820	3125	2700	1500	12.5	5	203	BOW-14-020	MDA4.3-192
232	8820	3125	2700	1500	12.5	5	203	BOW-14-020	MDA4.3-198
253	8820	3125	2700	1500	12.5	5	203	BOW-14-020	MDA4.3-216
225	8900	2794	2215	1300	14	5.6	255	BOW-27-006	MEA4.2X-180
240	8900	2794	2415	1500	14	5.6	255	BOW-27-006	MEA4.2X-192
248	8900	2794	2415	1500	14	5.6	255	BOW-27-006	MEA4.2X-198
270	8900	2794	2415	1500	14	5.6	255	BOW-27-006	MEA4.2X-216

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				Switching surge (30/60 μs)					Lightning Current (8/20 μs)				10 kA kV	20 kA kV
				125 A kV	250 A kV	500 A kV	1000 A kV	2000 A kV	5 kA kV	10 kA kV	20 kA kV	40 kA kV		
362	240	192	3	465	479	492	509	533	587	632	693	785	677	743
	264	211	3	511	526	541	559	586	644	693	761	862	744	816
	288	230	3	557	573	589	609	638	702	755	829	938	810	889
	300	240	3	578	595	611	632	662	728	784	861	974	841	923
	240	192	4	444	455	467	485	505	550	585	635	708	623	638
	264	211	4	488	499	513	532	554	604	642	698	778	684	700
	288	230	4	531	543	558	579	603	657	699	759	846	744	762
	300	240	4	550	562	577	599	624	680	723	785	876	770	789
	240	192	5	462		484	500	520	553	584	628	692		699
	264	211	5	507		531	549	571	607	640	689	759		767
	288	230	5	552		578	598	621	661	697	750	826		835
	300	240	5	574		602	622	646	688	725	780	860		869
420	336	269	3	648	667	685	709	743	817	879	965	1092	943	1035
	360	288	3	694	714	734	759	795	874	941	1033	1169	1009	1108
	396	317	3	758	781	802	830	869	956	1029	1130	1278	1103	1211
	336	269	4	615	629	646	671	698	761	809	879	980	862	882
	360	288	4	662	677	696	722	752	819	871	946	1055	928	950
	396	432	4	710	726	746	774	807	879	935	1015	1132	995	1019
	336	269	5	648		679	702	729	776	819	881	970		981
	360	288	5	693		726	751	780	830	875	942	1038		1049
	396	317	5	760		797	824	856	911	961	1033	1139		1150
550	396	317	5	760		797	824	856	911	961	1033	1139		1150
	420	336	5	805		844	872	906	964	1017	1095	1206		1218
	444	355	5	850		891	921	957	1018	1074	1155	1273		1286
	468	374	5	895		938	970	1008	1072	1131	1216	1340		1354

- \* U<sub>r</sub> - Rated voltage
- \*\* U<sub>c</sub> - Continuous operating voltage
- \*\*\* "TOV" curves are given in technical data for selected Surge Arrester (on request)
- \*\*\*\* Calculated using IEC60099-4

Surge Arresters with other characteristics are available on request

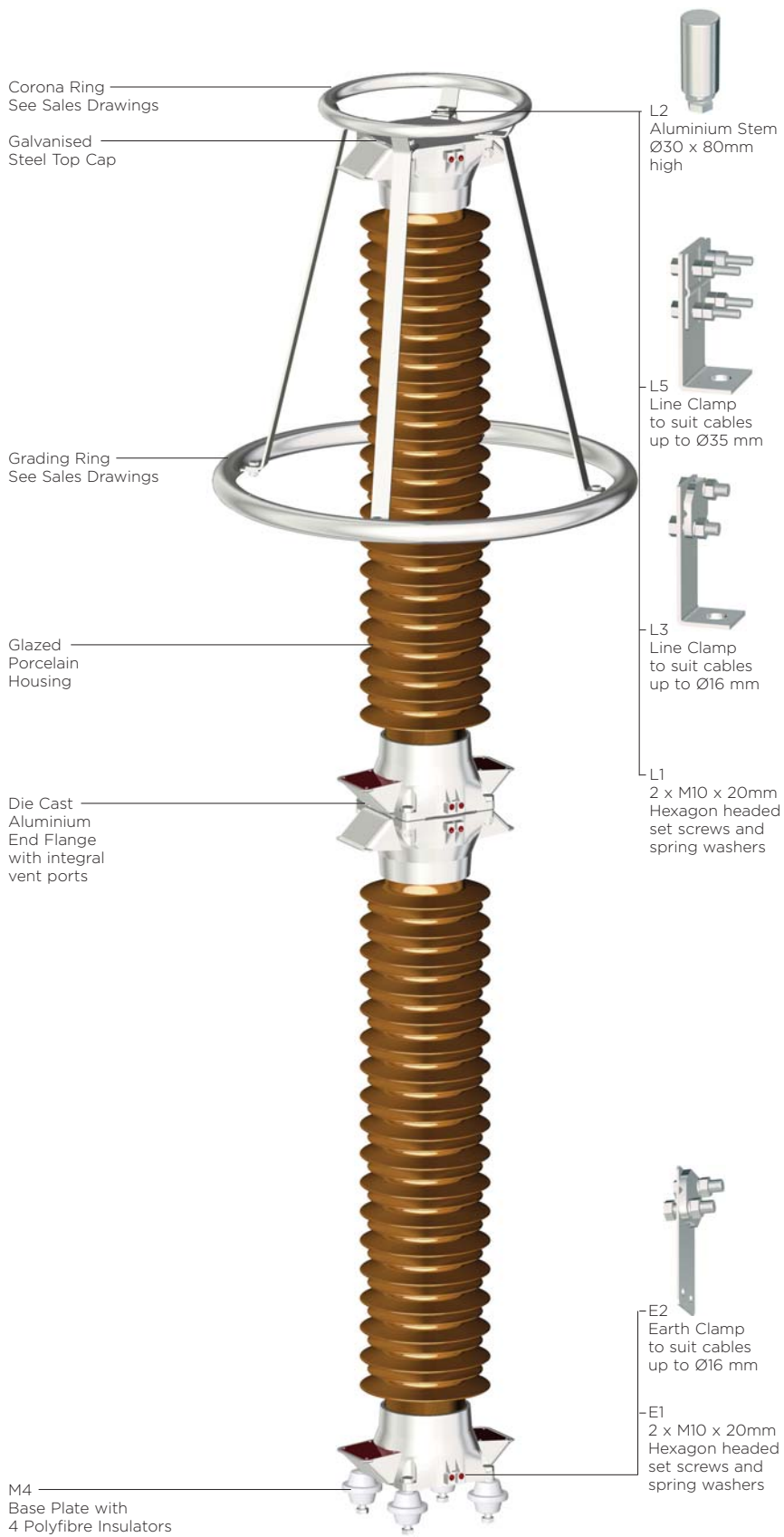


## Bowthorpe EMP high voltge station class surge arrester range

Temporary Overvoltage capability for 1 sec***	Creepage length	Overall height	Minimun distance between phase centers****	Minimun distance between phase to earth****	Cantilever load		Weight	Drawing Reference	Product code
					Safe short-term load (SSL)	Safe long-term load (SLL)			
kV	mm	mm	mm	mm	kNm	kNm	Kg		
281	7640	2773	2615	1700	12.5	5	180	BOW-14-013	MCA3.3-240
309	8820	3125	3100	1900	12.5	5	205	BOW-14-013	MCA4.3-264
337	10000	3477	4100	2100	12.5	5	230	BOW-14-013	MCA4.4-288
351	10000	3477	4400	2100	12.5	5	230	BOW-14-013	MCA4.4-300
262	7640	2773	2615	1700	12.5	5	180	BOW-14-020	MDA3.3-240
288	8820	3125	3100	1900	12.5	5	205	BOW-14-020	MDA4.3-264
314	10000	3477	4100	2100	12.5	5	230	BOW-14-020	MDA4.4-288
327	10000	3477	4700	2100	12.5	5	230	BOW-14-020	MDA4.4-300
300	10500	3142	2900	1700	14	5.6	280	BOW-27-006	MEA4.3X-240
330	10500	3142	3100	1900	14	5.6	280	BOW-27-006	MEA4.3X-264
360	12000	3494	4100	2100	14	5.6	320	BOW-27-006	MEA4.4X-288
375	12000	3494	4100	2100	14	5.6	320	BOW-27-006	MEA4.4X-300
393	11460	4162	5200	2350	12.5	5	270	BOW-14-014	MCA3.3.3-336
421	11460	4162	5200	2600	12.5	5	270	BOW-14-014	MCA3.3.3-360
463	12640	4514	5400	2850	12.5	5	260	BOW-14-014	MCA4.3.3-396
366	11490	4162	5200	2350	12.5	5	270	BOW-14-021	MDA3.3.3-336
392	11490	4162	5200	2600	12.5	5	270	BOW-14-021	MDA3.3.3-360
432	12640	4514	5400	2850	12.5	5	250	BOW-14-021	MDA4.3.3-396
420	13500	4188	5200	2350	14	5.6	360	BOW-27-007	MEA3.3.3X-336
450	13500	4188	5400	2600	14	5.6	360	BOW-27-007	MEA3.3.3X-360
495	15000	4540	5700	2850	14	5.6	400	BOW-27-007	MEA4.3.3X-396
495	15000	4540	5700	2850	14	5.6	400	BOW-27-007	MEA4.3.3X-396
525	16500	4880	6000	2850	14	5.6	440	BOW-27-007	MEA4.4.3X-420
555	16500	4880	7900	3100	14	5.6	440	BOW-27-007	MEA4.4.3X-444
585	22500	6648	7900	3350	14	5.6	600	BOW-27-007	MEA4.4.4.3X-468

# Bowthorpe EMP high voltge station class surge arrester range

## MAA, MCA & MDA surge arrester accessories

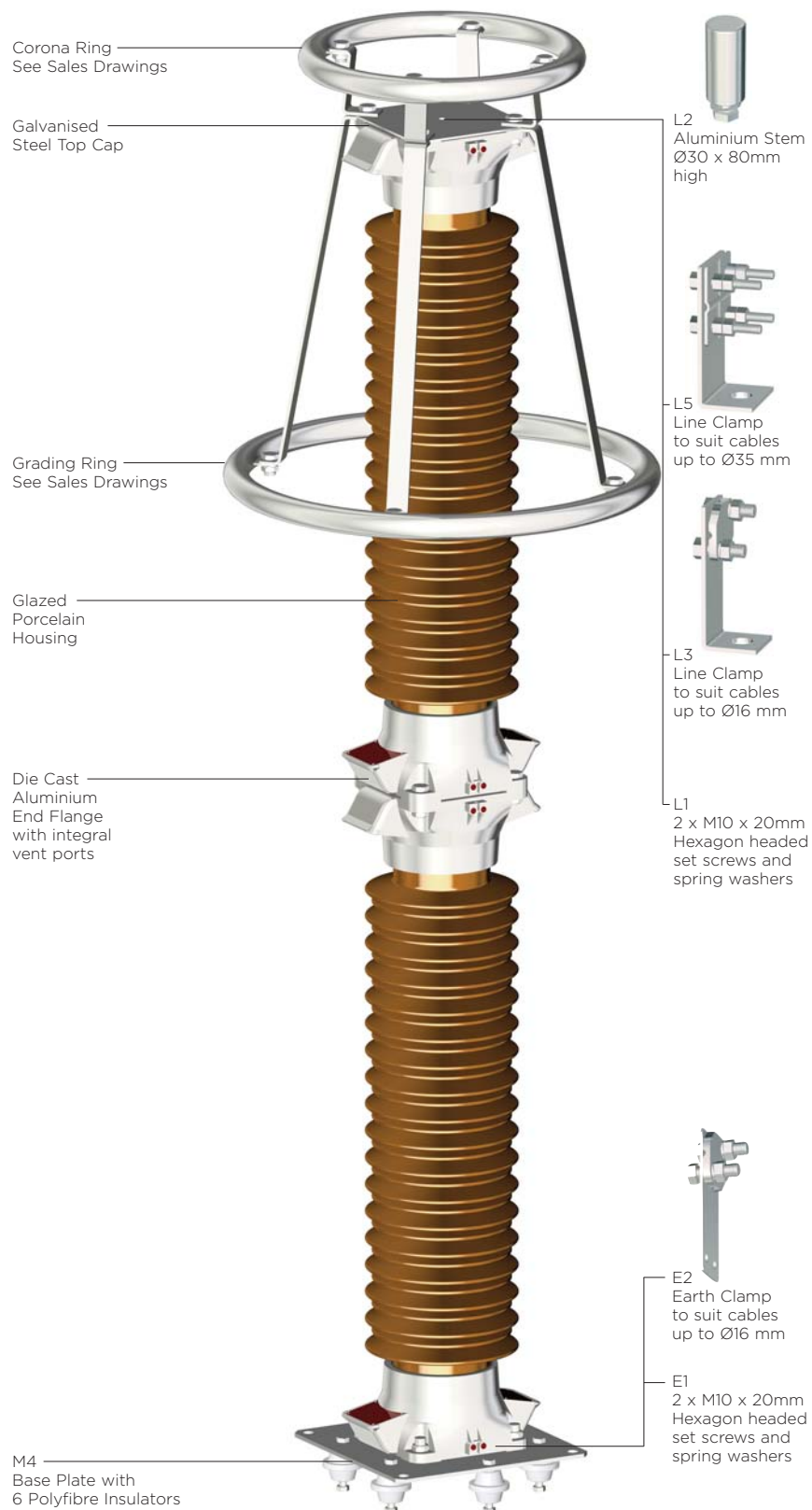


Example: MCA4.4 288 L2 E1 M4

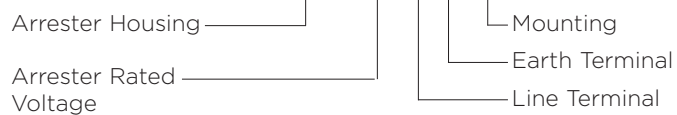
Arrester Housing ————  
Arrester Rated Voltage ————  
Mounting ————  
Earth Terminal ————  
Line Terminal ————

# Bowthorpe EMP high voltge station class surge arrester range

## MEAX surge arrester accessories



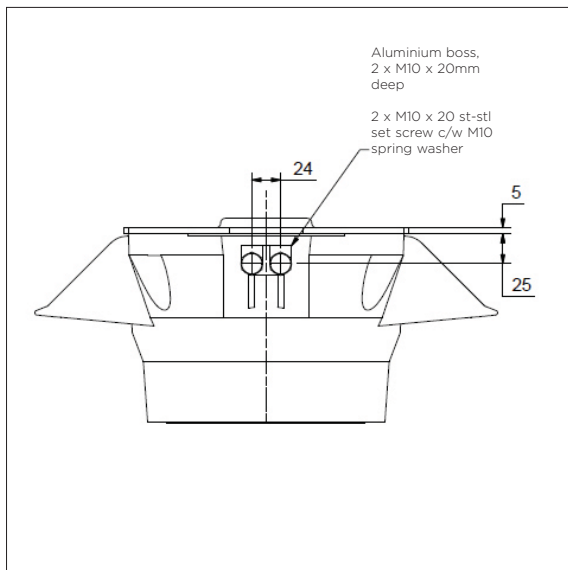
Example: MEA4.4X 288 L2 E1 M4



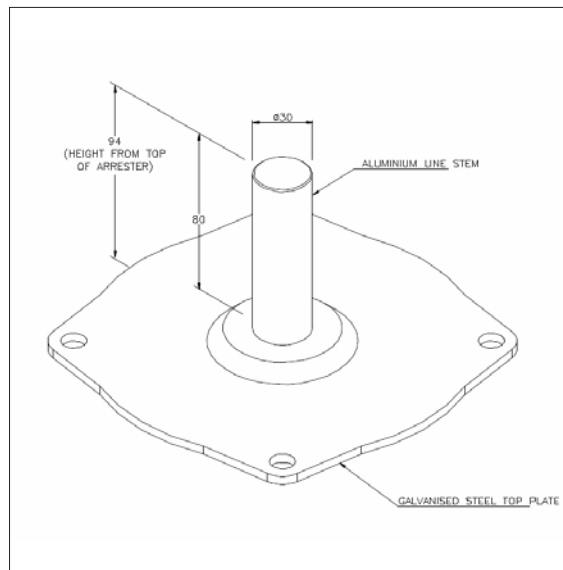
# Bowthorpe EMP high voltage station class surge arrester range

## Line accessories

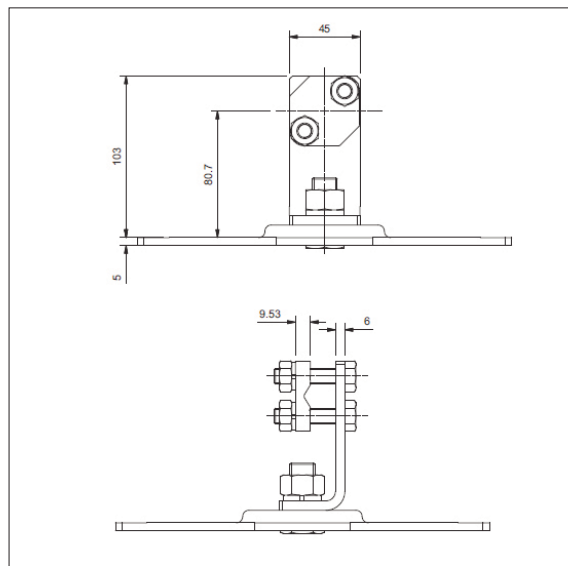
**L1 - 2 x M10 x 20mm Hexagon headed set screws**



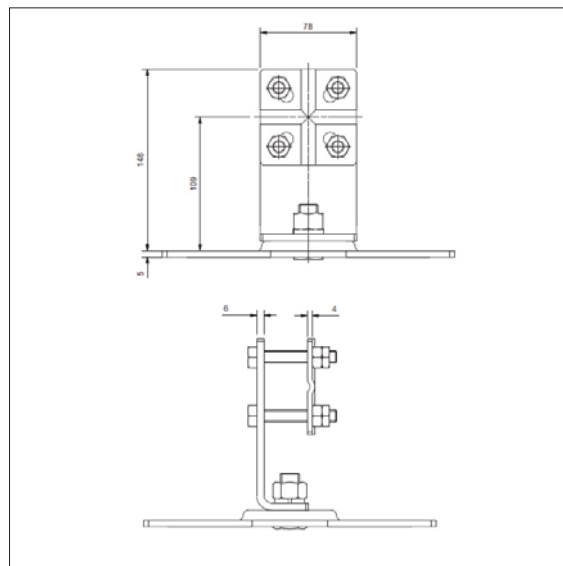
**L2 - Aluminium Stem Ø30 x 80mm high**



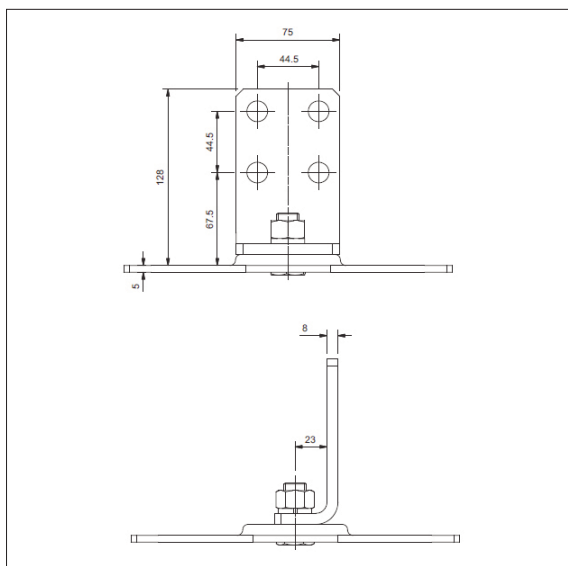
**L3 - Line Clamp to suit cables up to Ø16 mm**



**L5 - Line Clamp to suit cables up to Ø35 mm**



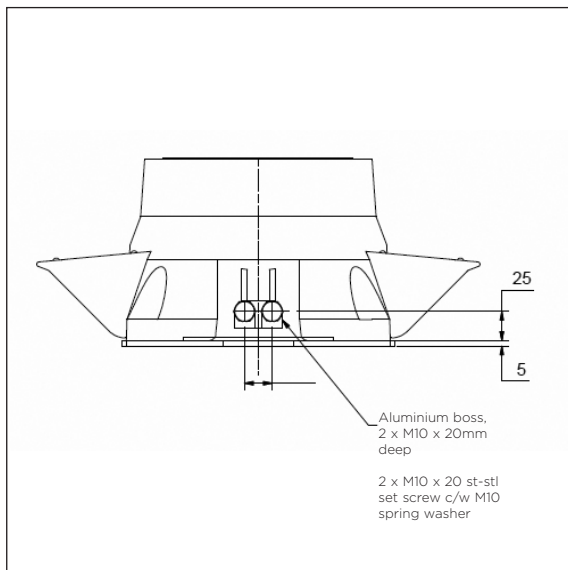
**L6 - 4 Hole NEMA Pad**



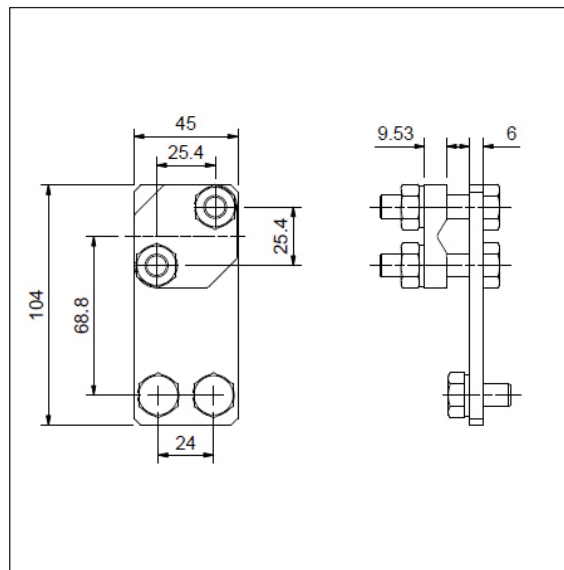
# Bowthorpe EMP high voltage station class surge arrester range

## Earthing accessories

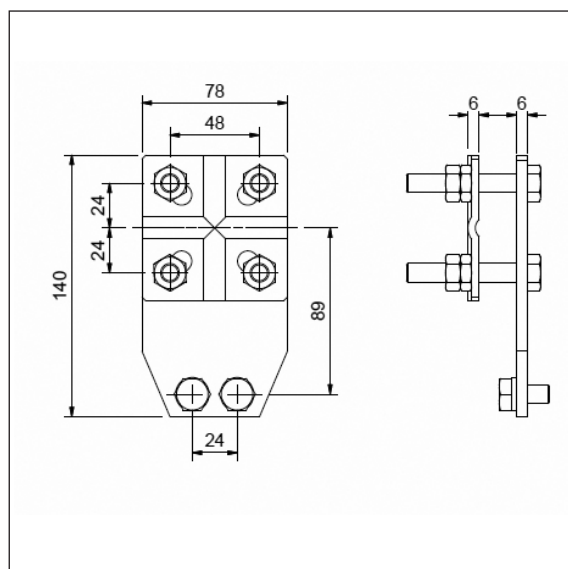
**E1 - 2 x M10 x 20mm Hexagon headed set screws**



**E2 - Earth Clamp to suit cables up to Ø16 mm**



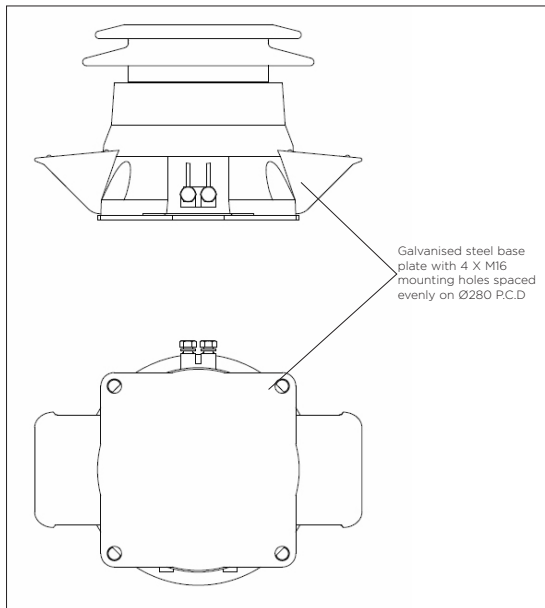
**E5 - Earth Clamp to suit cables up to Ø35 mm**



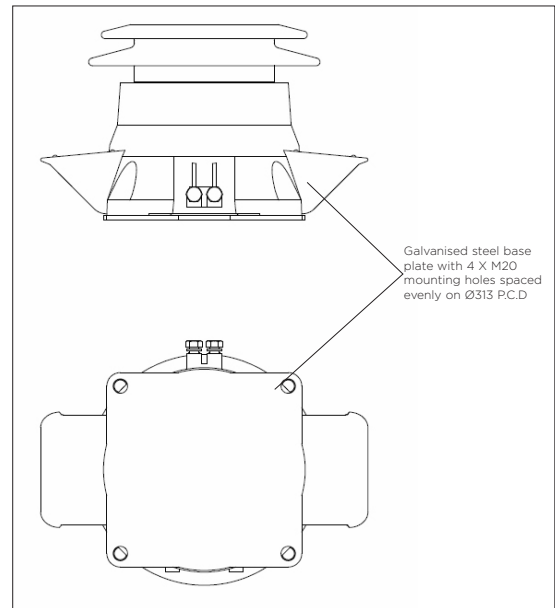
Other line and earth accessories available on request.

# Bowthorpe EMP high voltge station class surge arrester range

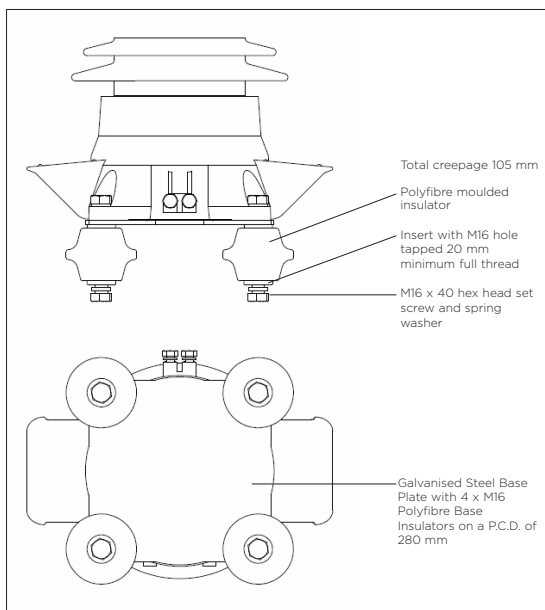
## MAA, MCA & MDA M2



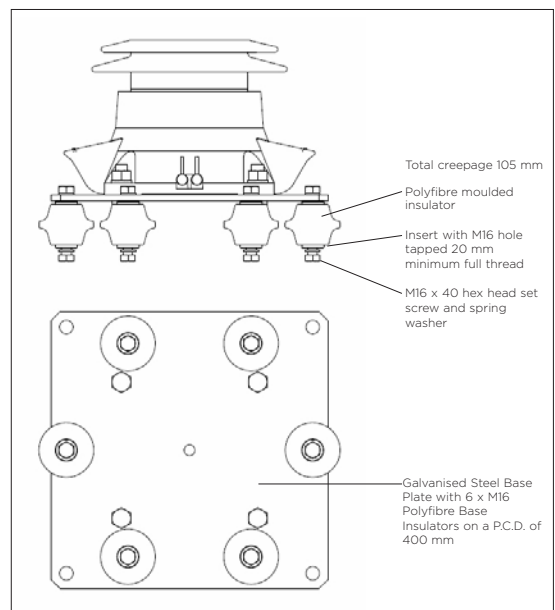
## MEA M2



## MAA, MCA & MDA M4



## MEA M4



## Bowthorpe EMP high voltage station class surge arrester range



**SC12**



**SC13**



**SC14 / SC15**



**PAC-G**



**Temperature and Humidity sensor**

The Tyco Electronics range of surge counters and monitoring instruments are fully tested for use with any manufacturers' ZnO surge arrester.

- The surge counters, are designed for installation in the earth connections of a single phase surge arrester.
- Fully weatherproofed and sealed for life they are housed in a one piece gravity die cast aluminum case, epoxy power coated to enhance its already high degree of resistance to surface corrosion.
- The glass viewing window (SC12 and SC13) is sealed in place, using a silicon rubber adhesive, and a desiccator is enclosed to ensure any residual moisture trapped during sealing is absorbed for the service life of the counter.
- Mounting is effected by means of an integrally cast lug at the rear of the case providing a single clearance hole for the galvanized steel M12 bolt supplied.

Available options:

### **SC12**

The SC12 gives a visual indication of the quantity of surges the arrester has received; this is via an integrated 6 digit cyclometer.

The SC12 can be supplied with an auxiliary volt free contact rated at 1A - 250V for connection to remote signaling equipment.

### **SC13**

The SC 13 provides the additional measurement of total leakage current. The analogue instrument provides a means of monitoring the leakage current through the surge arrester and over the surface of the surge arrester housing. Significant changes after installation may indicate deterioration in the surge arrester or a build up of surface contamination.

The SC13 can be supplied with an auxiliary volt free contact rated at 1A- 250V for connection to remote signaling equipment.

### **SC14 with PAC-G**

The SC14 is the next generation in surge arrester monitoring, which enables the surge data to be recorded and transmitted wirelessly to a PAC-G (Programmable Access Device -Gateway) via an integrated Zigbee data link. This is then uploaded via a GPRS data link to a web server.

### **SC15 with PAC-G & Temperature / Humidity sensor**

The SC15 intelligent surge counter monitoring system takes the design of the SC14 one step further, by allowing total leakage current, temperature and humidity conditions in addition to surge activity to be transferred. When installed with earth guard the data allows utilities to record lightning & switching surge and leakage current trends of each arrester being monitored.



## About TE Connectivity

TE Connectivity is a global, \$12.1 billion company that designs and manufactures over 500,000 products that connect and protect the flow of power and data inside the products that touch every aspect of our lives. Our nearly 100,000 employees partner with customers in virtually every industry – from consumer electronics, energy and healthcare, to automotive, aerospace and communication networks – enabling smarter, faster, better technologies to connect products to possibilities.

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**TE Energy – innovative and economical solutions for the electrical power industry: cable accessories, connectors & fittings, insulators & insulation, surge arresters, switching equipment, street lighting, power measurement and control.**

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