

SURGE ARRESTERS

Product Selection Guide



IEC Line Discharge
Classes 3, 4 and 5 Porcelain Housings

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Warranty

Buyer must notify the Company promptly of any claim under this warranty.

The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B.

factory, at the Company's option, of any product defective under the warranty which is returned to the Company within one year from the date of shipment.

NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY COOPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH THE COMPANY'S PRODUCTS OR ANY SALE OR USE THEREOF.

The Company shall in no event be liable for any loss of profits or any consequential or special damages incurred by Buyer.

The company's warranty shall run only to the first Buyer of a product from the Company, from the Company's distributor, or from an original equipment manufacturer reselling the Company's product, and is non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer.

This warranty applies only to the use of the product as intended by

Caller and does not cover any misapplication or misuse of said product.

NOTE: Because has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.

Warranty – Application

This applies regardless of whether a charge is made for the recommendation, or if it is provided free of charge.

Responsibility for selection of the proper product or application rests solely with the purchaser.

In the event of errors or inaccuracies determined to be caused by, its liability will be limited to the re-performance of any such analysis or study.

Introduction

These arresters meet or exceed all requirements of the most current IEC standard and can be selected to match a range of contamination and energy requirements.

Table 1 illustrates IEC offerings.

This catalog focuses on porcelain arresters.

Table 1: Catalog Offerings*

ARRESTER TYPE*	LINE DISCHARGE CLASS	HOUSING MATERIAL
9L12PP	2	EDPM/Silicone
9L11XP	3	EDPM/Silicone
9L11CMA, CHA, CVA: S3	3	Silicone
9L11CMA, CHA, CVA: S4	4	Silicone
9L11ZMA, ZHA, ZVA: S3	3	Porcelain
9L11ZMA, ZHA, ZVA: S4	4	Porcelain
9L11ZMA, ZHA, ZVA: S5	5	Porcelain

* The **M**, **H**, and **V** in catalog number indicates the pollution level of Medium (≥ 20 mm per kV Um) Heavy (≥ 25 mm per kV Um) and Very heavy (≥ 31 mm per kV Um).

Dedication to Quality

Quality Management System complies with ISO 9001:2008 and maintains stringent testing controls in accordance with IEC 60099-4 to ensure that the customer receives high quality with every product. Quality Assurance tests are performed on every batch of Metal-Oxide Varistor (MOV) blocks.

Our commitment to quality and continuous improvement is what the industry expects of its leader.

MOV Block Routine Tests

Physical Inspection – Visual inspections are performed at several steps of the block manufacturing process.

Rated Energy Test – This procedure confirms the energy capability of each zinc oxide disc element.

Residual Voltage Test – Every block undergoes an 8/20 current wave impulse to verify its V-I characteristics.

Watts Loss Test – This test measures the AC watts loss and capacitive current characteristics of the disc.

MOV Block Batch QA Tests

Square Wave Energy Test – Performed on a 5 disc sample from each batch, this test is performed to quantify the batch energy capacity.

High Current Test – Each 5 disc sample is subjected to two high current discharges of the same polarity to ensure current characteristics.

A/C Life Test – The discs are placed under test conditions for a minimum of 250 hours to verify performance.



Arrester Routine Tests

Physical Inspection – Every molded rubber part, block, wrap module, brackets and completed unit is visually examined to reject defective products.

Reference Voltage Test – This test measures the voltage once a predetermined maximum peak current is reached.

Partial Discharge Test – This test ensures that the partial discharge level of the arrester does not exceed a level of 10 pC.

Residual Voltage – Tested on individual discs.

Arrester Type Tests

Testing Compliant with IEC 60099-4 Including:

- Insulation withstand tests on housing
- Residual voltage tests
- Long-duration current impulse withstand
- Operating duty tests
- Short circuit tests
- Internal partial discharge tests

General Arrester Information

General Arrester Information for Product Selection

Table 1: Energy and Strength Capability

TYPE	IEC CLASS	NOMINAL DISCHARGE CURRENT kA	PRESSURE RELIEF RATING kA	ENERGY CAPABILITY SINGLE (4ms IMPULSE) kJ/kV - Uc	ENERGY CAPABILITY SINGLE (4ms IMPULSE) kJ/kV - Ur	ENERGY CAPABILITY 2-SHOT (1 MINUTE THERMAL) kJ/kV - Uc	ENERGY CAPABILITY 2-SHOT (1 MINUTE THERMAL) kJ/kV - Ur	CANTILEVER STRENGTH (N.m)	CANTILEVER STRENGTH
EDPM/Si	2	10	40	3.4	2.8	6.4	5.1	180	MPSL
EDPM/Si	3	10	63	4.9	4.0	9.0	7.2	2,260	MPSL
Porcelain S3	3	10	63	5.1	4.1	9.2	7.3	8,000	SSL
Silicone S3	3	10	63	5.1	4.1	8.5	6.8	8,000	SSL
Porcelain S4	4	20	63	9.2	7.4	13.3	10.6	17,000	SSL
Silicone S4	4	20	63	9.2	7.4	12.9	10.3	8,000	SSL
Porcelain S5	5	20	63	16.6	13.0	19.8	15.8	31,000	SSL

All IEC arresters exceed the pressure relief requirements of IEC 60295-4.
 2-shot Energy Capability based on minimum values in IEC Operating Duty test.
 Actual values are typically higher.

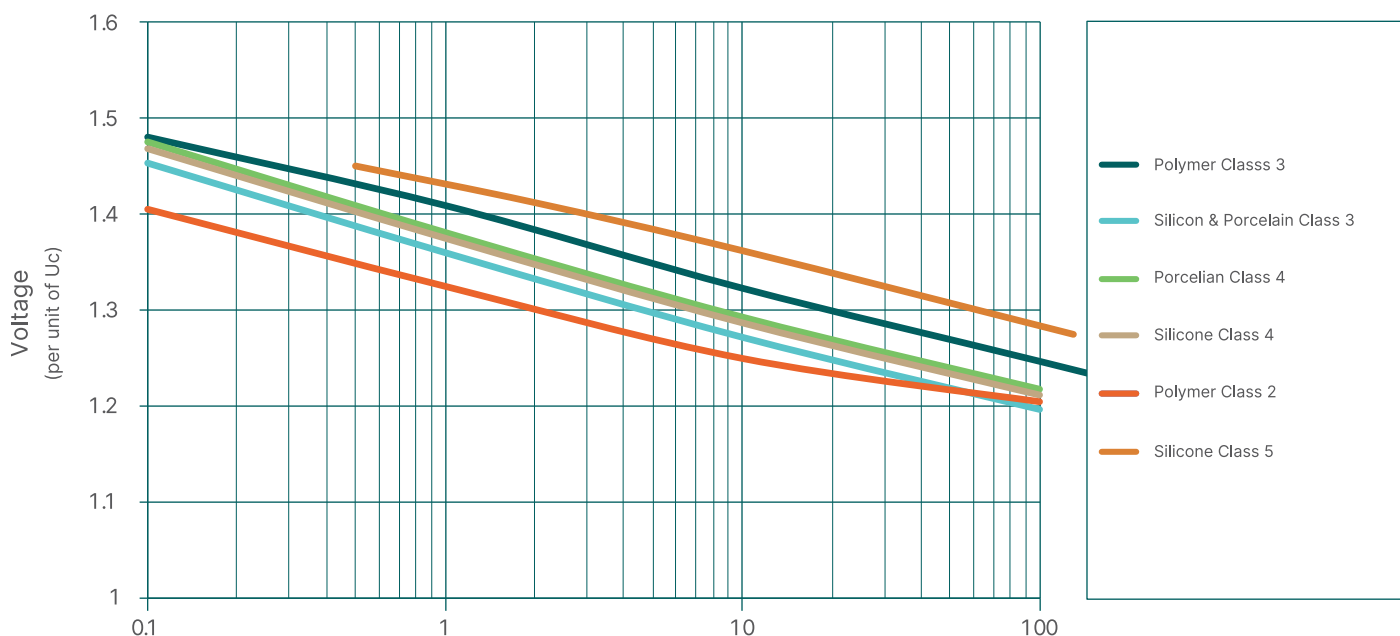
Temporary Over-Voltage Capability

The blocks can withstand a significant power frequency overvoltage for a limited time, depending on the magnitude of any immediately preceding surge duty.

This duty can be the result of

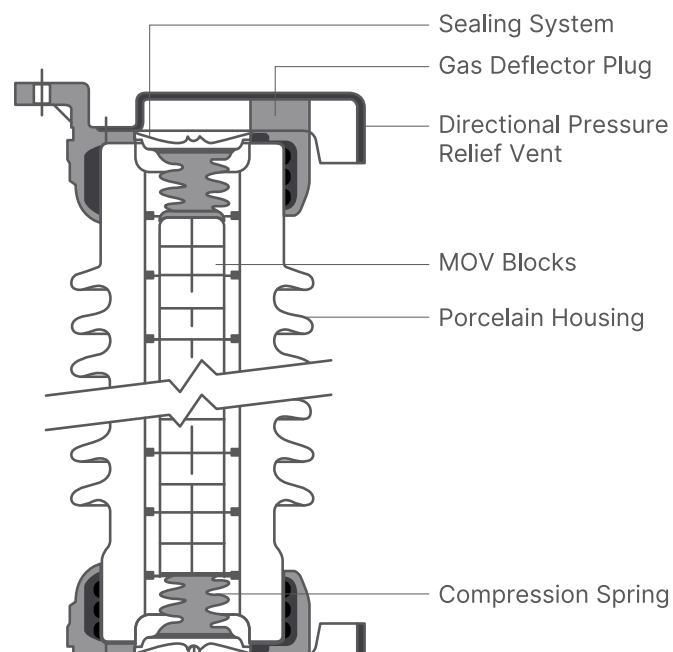
switching surges on higher voltage lines, or from other sources. The temporary overvoltage capability can be determined from the TOV curve. The prior duty curve of this table is based upon absorption of rated energy immediately preceding application of the overvoltage.

IEC (with Prior Duty) Temporary Overvoltage Capability



9L11Z Porcelain Housed IEC Arresters

- Rigid, high strength porcelain housing with a long service history.
- Compression spring ensures a consistent electrical connection between blocks.
- Pressure relief rupture plate ensures the housing will vent out the end of the arrester and through the pressure relief vent.
- Directional Venting: Arc will be directed to the side of the arrester through the pressure relief vent.
- Vacuum Sealed: Arrester goes through double leak test to verify complete seal.
- Porcelain is colored gray. Brown is also available upon request.
- Arrester base has three 14mm holes, 120° apart on 254 mm bolt circle.



Section View of Porcelain Arrester

Table 2: Porcelain Overview

PRODUCT TYPE	HOUSING MATERIAL	LINE DISCHARGE CLASS	VOLTAGE RATING RANGE (kV)	PRESSURE RELIEF (kA)	PHYSICAL STRENGTH (N.m)
9L11ZMA, ZHA, ZVA S3	Porcelain	3	24 – 420	63	8,000
9L11ZMA, ZHA, ZVA S4	Porcelain	4	24 - 420	63	17,000
9L11ZMA, ZHA, ZVA S5	Porcelain	5	550-800	63	31,000

* MPDSL – Maximum Permissible Dynamic Service Load

NOTE: The M, H, and V in catalog number indicates the pollution level of Medium (≥ 20 mm per kV Um) Heavy (≥ 25 mm per kV Um) and Very heavy (≥ 31 mm per kV Um).

Porcelain Class 3

9L11Z Porcelain Class 3 Physical Characteristics

Um	Ur	Uc	CATALOG NUMBER	POLLUTION LEVEL	NOMINAL CREEP (mm)	TOTAL HEIGHT (mm)	STACK HEIGHT WITHOUT CAP (mm)	WEIGHT (kg)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
36	27	21.6	9L11ZVA027S3	ALL	1116	806	663	59	273	230	138
36	30	24.0	9L11ZVA030S3	ALL	1116	806	663	60	273	230	138
36	33	26.4	9L11ZVA033S3	ALL	1116	806	663	60	273	230	138
36	36	28.8	9L11ZVA036S3	ALL	1116	806	663	61	273	230	138
36	39	31.2	9L11ZVA039S3	ALL	1116	806	663	61	273	230	138
52	42	33.6	9L11ZMA042S3	Medium	1116	806	663	61	273	230	138
52	42	33.6	9L11ZVA042S3	Heavy & V Heavy	1905	969	826	74	358	310	186
52	48	38.4	9L11ZMA048S3	Medium	1116	806	663	62	273	230	138
52	48	38.4	9L11ZVA048S3	Heavy & V Heavy	1905	969	826	75	358	310	186
52	51	40.8	9L11ZMA051S3	Medium	1116	806	663	63	273	230	138
52	51	40.8	9L11ZVA051S3	Heavy & V Heavy	1905	969	826	76	358	310	186
52	54	43.2	9L11ZMA054S3	Medium	1116	806	663	63	273	230	138
52	54	43.2	9L11ZVA054S3	Heavy & V Heavy	1905	969	826	76	358	310	186
52	60	48.0	9L11ZMA060S3	Medium	1116	806	663	64	273	230	138
52	60	48.0	9L11ZVA060S3	Heavy & V Heavy	1905	969	826	77	358	310	186
72	54	43.2	9L11ZHA054S3	Medium & Heavy	1905	969	826	76	358	310	186
72	54	43.2	9L11ZVA054S3	Very Heavy	2540	1121	978	88	434	379	227
72	60	48.0	9L11ZHA060S3	Medium & Heavy	1905	969	826	77	358	310	186
72	60	48.0	9L11ZVA060S3	Very Heavy	2540	1121	978	89	434	379	227
72	66	52.8	9L11ZHA066S3	Medium & Heavy	1905	969	826	78	358	310	186
72	66	52.8	9L11ZVA066S3	Very Heavy	2540	1121	978	90	434	379	227
72	72	57.6	9L11ZHA072S3	Medium & Heavy	1905	969	826	78	358	310	186
72	72	57.6	9L11ZVA072S3	Very Heavy	2540	1121	978	90	434	379	227
72	75	60.0	9L11ZHA075S3	Medium & Heavy	1905	969	826	79	358	310	186
72	75	60.0	9L11ZVA075S3	Very Heavy	2540	1121	978	91	434	379	227
72	78	62.4	9L11ZHA078S3	Medium & Heavy	1905	969	826	79	358	310	186
72	78	62.4	9L11ZVA078S3	Very Heavy	2540	1121	978	91	434	379	227
72	81	64.8	9L11ZHA081S3	Medium & Heavy	1905	969	826	80	358	310	186
72	81	64.8	9L11ZVA081S3	Very Heavy	2540	1121	978	92	434	379	227
72	84	67.2	9L11ZHA084S3	ALL	2540	1121	978	92	434	379	227
100	84	67.2	9L11ZHA084S3	Medium & Heavy	2540	1121	978	92	434	379	227
100	84	67.2	9L11ZVA084S3	Very Heavy	3207	1286	1143	106	520	455	273
100	90	72.0	9L11ZMA090S3	Medium & Heavy	2540	1121	978	93	434	379	227
100	90	72.0	9L11ZHA090S3	Very Heavy	3207	1286	1143	107	520	455	273
100	96	76.8	9L11ZMA096S3	Medium & Heavy	2540	1121	978	94	434	379	227
100	96	76.8	9L11ZHA096S3	Heavy & V Heavy	3207	1286	1143	108	520	455	273
123	90	72.0	9L11ZMA090S3	Medium	2540	1121	978	93	434	379	227
123	90	72.0	9L11ZHA090S3	Heavy	3207	1286	1143	107	520	455	273
123	90	72.0	9L11ZVA090S3	Very Heavy	3874	1451	1308	119	600	523	314
123	96	76.8	9L11ZMA096S3	Medium	2540	1121	978	94	434	379	227

9L11Z Porcelain Class 3 Physical Characteristics (cont'd)

Um	Ur	Uc	CATALOG NUMBER	POLLUTION LEVEL	NOMINAL CREEP (mm)	TOTAL HEIGHT (mm)	STACK HEIGHT WITHOUT CAP (mm)	WEIGHT (kg)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
123	96	76.8	9L11ZHA096S3	Heavy	3207	1286	1143	108	520	455	273
123	96	76.8	9L11ZVA096S3	Very Heavy	3874	1451	1308	120	600	523	314
123	108	86.4	9L11ZMA108S3	Medium & Heavy	3207	1286	1143	109	520	455	273
123	108	86.4	9L11ZHA108S3	Heavy & V Heavy	3874	1451	1308	121	600	523	314
123	120	96.0	9L11ZMA120S3	Medium & Heavy	3207	1286	1143	111	520	455	273
123	120	96.0	9L11ZHA120S3	Very Heavy	3874	1451	1308	123	600	523	314
123	132	100.8	9L11ZMA132S3	ALL	3874	1451	1308	125	600	523	314
123	138	110.4	9L11ZHA138S3	ALL	3874	1451	1308	125	600	523	314
145	108	86.4	9L11ZMA108S3	Medium	3207	1286	1143	109	520	455	273
145	108	86.4	9L11ZHA108S3	Heavy	3874	1451	1308	121	600	523	314
145	108	86.4	9L11ZVA108S3	Heavy & V Heavy	5080	2099	1956	171	818	700	420
145	120	96.0	9L11ZMA120S3	Medium	3207	1286	1143	111	520	455	273
145	120	96.0	9L11ZHA120S3	Heavy	3874	1451	1308	123	600	523	314
145	120	96.0	9L11ZVA120S3	Very Heavy	5080	2099	1956	173	818	700	420
145	132	105.6	9L11ZHA132S3	Medium & Heavy	3874	1451	1308	125	600	523	314
145	132	105.6	9L11ZVA132S3	Very Heavy	5080	2099	1956	174	818	700	420
145	138	110.4	9L11ZHA138S3	Medium & Heavy	3874	1451	1308	125	600	523	314
145	138	110.4	9L11ZVA138S3	Very Heavy	5080	2099	1956	175	818	700	420
145	144	115.2	9L11ZMA144S3	Medium & Heavy	3874	1451	1308	126	600	523	314
145	144	115.2	9L11ZVA144S3	Very Heavy	5080	2099	1956	176	818	700	420
170	132	105.6	9L11ZMA132S3	Medium	3874	1451	1308	125	600	523	314
170	132	105.6	9L11ZHA132S3	Heavy	4445	1947	1804	162	742	640	384
170	132	105.6	9L11ZXA132S3	Very Heavy	5747	2264	2121	190	904	766	459
170	144	115.2	9L11ZMA144S3	Medium	3874	1451	1308	126	600	523	314
170	144	115.2	9L11ZHA144S3	Heavy	4445	1947	1804	164	742	640	384
170	144	115.2	9L11ZXA144S3	Very Heavy	5747	2264	2121	190	904	766	459
170	162	129.6	9L11ZHA162S3	Medium & Heavy	4445	1947	1804	166	742	640	384
170	162	129.6	9L11ZVA162S3	Very Heavy	5747	2264	2121	192	904	766	459
170	168	134.4	9L11ZHA168S3	Medium & Heavy	4445	1947	1804	167	742	640	384
170	168	134.4	9L11ZVA168S3	Very Heavy	5747	2264	2121	193	904	766	459
245	180	144.0	9L11ZMA180S3	Medium	5080	2099	1956	189	781	671	403
245	180	144.0	9L11ZHA180S3	Heavy	6414	2429	2286	217	944	795	477
245	180	144.0	9L11ZVA180S3	Very Heavy	7748	2759	2616	241	1108	911	547
245	192	153.6	9L11ZMA192S3	Medium	5080	2099	1956	191	781	671	403
245	192	153.6	9L11ZHA192S3	Heavy	6414	2429	2286	219	944	795	477
245	192	153.6	9L11ZVA192S3	Very Heavy	7748	2759	2616	243	1108	911	547
245	198	158.4	9L11ZMA198S3	Medium	5080	2099	1956	191	781	671	403
245	198	158.4	9L11ZHA198S3	Heavy	6414	2429	2286	219	944	795	477
245	198	158.4	9L11ZVA198S3	Very Heavy	7748	2759	2616	243	1108	911	547

Porcelain Class 3

9L11Z Porcelain Class 3 Physical Characteristics (cont'd)

Um	Ur	Uc	CATALOG NUMBER	POLLUTION LEVEL	NOMINAL CREEP (mm)	TOTAL HEIGHT (mm)	STACK HEIGHT WITHOUT CAP (mm)	WEIGHT (kg)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
245	216	172.8	9L11ZMA216S3	Medium	5747	2264	2121	208	862	734	441
245	216	172.8	9L11ZHA216S3	Heavy	6414	2429	2286	225	923	780	468
245	216	172.8	9L11ZVA216S3	Very Heavy	7748	2759	2616	249	1084	895	537
245	228	182.4	9L11ZMA228S3	Medium & Heavy	6414	2429	2286	223	944	795	477
245	228	182.4	9L11ZHA228S3	Very Heavy	7748	2759	2616	247	1108	911	547
300	216	172.8	9L11ZHA216S3	Medium	6414	2429	2286	225	923	780	468
300	216	172.8	9L11ZVA216S3	Heavy	7748	2759	2616	249	1084	895	537
300	216	172.8	9L11ZX216S3	Very Heavy	9621	3572	3429	314	1460	1132	679
300	228	182.4	9L11ZMA228S3	Medium	6414	2429	2286	223	944	795	477
300	228	182.4	9L11ZHA228S3	Heavy	7748	2759	2616	247	1108	911	547
300	228	182.4	9L11ZVA228S3	Very Heavy	9621	#N/A	#N/A	313	#N/A	#N/A	#N/A
300	240	192.0	9L11ZMA240S3	Medium	6414	2429	2286	225	944	795	477
300	240	192.0	9L11ZHA240S3	Heavy	7748	2759	2616	249	1108	911	547
300	240	192.0	9L11ZVA240S3	Very Heavy	9621	#N/A	#N/A	315	#N/A	#N/A	#N/A
300	258	206.4	9L11ZMA258S3	Medium	7081	2594	2451	240	1026	854	513
300	258	206.4	9L11ZHA258S3	Heavy	7748	2759	2616	255	1084	895	537
300	258	206.4	9L11ZVA258S3	Very Heavy	9621	3572	3429	320	1460	1132	679
300	264	211.2	9L11ZMA264S3	Medium	7081	2759	2616	240	1108	911	547
300	264	211.2	9L11ZHA264S3	Heavy	7748	2759	2616	256	1084	895	537
300	264	211.2	9L11ZVA264S3	Very Heavy	9621	3572	3429	321	1460	1132	679
362	258	206.4	9L11ZHA258S3	Medium	7748	2759	2616	255	1084	895	537
362	258	206.4	9L11ZVA258S3	Heavy	9621	3572	3429	320	1460	1132	679
362	258	206.4	9L11ZX258S3	Very Heavy	11622	4067	3924	356	1699	1259	755
362	264	211.2	9L11ZHA264S3	Medium	7748	2759	2616	256	1084	895	537
362	264	211.2	9L11ZVA264S3	Heavy	9621	3572	3429	321	1460	1132	679
362	264	211.2	9L11ZX264S3	Very Heavy	11622	4067	3924	357	1699	1259	755
362	276	220.8	9L11ZMA276S3	Medium	7748	2759	2616	257	1084	895	537
362	276	220.8	9L11ZHA276S3	Heavy	9621	3572	3429	323	1460	1132	679
362	276	220.8	9L11ZVA276S3	Very Heavy	11622	4067	3924	359	1699	1259	755
362	288	230.4	9L11ZMA288S3	Medium	7748	2759	2616	259	1084	895	537
362	288	230.4	9L11ZHA288S3	Heavy	9621	3572	3429	325	1460	1132	679
362	288	230.4	9L11ZVA288S3	Very Heavy	11622	4067	3924	360	1699	1259	755
420	312	249.6	9L11ZMA312S3	Medium	8954	3407	3264	328	1213	981	589
420	312	249.6	9L11ZHA312S3	Heavy	10955	3902	3759	366	1451	1127	676
420	312	249.6	9L11ZVA312S3	Very Heavy	13495	4880	4737	444	1929	1364	818
420	330	264.0	9L11ZMA330S3	Medium	8954	3407	3264	331	1213	981	589
420	330	264.0	9L11ZHA330S3	Heavy	10955	3902	3759	369	1451	1127	676
420	330	264.0	9L11ZVA330S3	Very Heavy	13495	4880	4737	446	1929	1364	818
420	336	268.8	9L11ZMA336S3	Medium	8954	3407	3264	332	1213	981	589
420	336	268.8	9L11ZHA336S3	Heavy	10955	3902	3759	370	1451	1127	676

9L11Z Porcelain Class 3 Physical Characteristics (cont'd)

Um	Ur	Uc	CATALOG NUMBER	POLLUTION LEVEL	NOMINAL CREEP (mm)	TOTAL HEIGHT (mm)	STACK HEIGHT WITHOUT CAP (mm)	WEIGHT (kg)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
420	336	268.8	9L11ZVA336S3	Very Heavy	13495	4880	4737	447	1929	1364	818
420	360	288.0	9L11ZMA360S3	Medium	9621	3572	3429	335	1460	1132	679
420	360	288.0	9L11ZHA360S3	Heavy	10955	3902	3759	358	1619	1218	731
420	360	288.0	9L11ZVA360S3	Very Heavy	13495	4880	4737	436	2010	1397	838
420	372	297.6	9L11ZMA372S3	Medium	10288	3737	3594	348	1540	1176	706
420	372	297.6	9L11ZHA372S3	Heavy	10955	3902	3759	360	1619	1218	731
420	372	297.6	9L11ZVA372S3	Very Heavy	13495	4880	4737	438	2010	1397	838
420	378	302.4	9L11ZMA378S3	Medium	10288	3737	3594	349	1540	1176	706
420	378	302.4	9L11ZHA378S3	Heavy	10955	3902	3759	361	1619	1218	731
420	378	302.4	9L11ZVA378S3	Very Heavy	13495	4880	4737	438	2010	1397	838
420	390	312.0	9L11ZMA390S3	Medium	10955	3902	3759	362	1619	1218	731
420	390	312.0	9L11ZHA390S3	Heavy	10955	3902	3759	362	1619	1218	731
420	390	312.0	9L11ZVA390S3	Very Heavy	13495	4880	4737	440	2010	1397	838
420	396	316.8	9L11ZMA396S3	Medium	10955	3902	3759	363	1619	1218	731
420	396	316.8	9L11ZHA396S3	Heavy	10955	3902	3759	363	1619	1218	731
420	396	316.8	9L11ZVA396S3	Very Heavy	13495	4880	4737	441	2010	1397	838
420	420	336.0	9L11ZMA420S3	Medium	11622	4067	3924	378	1699	1259	755
420	420	336.0	9L11ZHA420S3	Heavy	11622	4067	3924	378	1699	1259	755
420	420	336.0	9L11ZVA420S3	Very Heavy	13495	4880	4737	444	2010	1397	838

* Insulation withstand with non-linear factors included for reference.

Porcelain Class 3

9L11Z Porcelain Class 3 Protective Characteristics

Ur	Uc	IEC Previous Duty TOV (kV rms)			Switching Impulse Residual Voltage (kV)				Maximum 8/20 Residual voltage at indicated current (kV)					
		1s	10s	100s	0.25 kA	0.5 kA	1.0 kA	2.0 kA	1.5 kA	2.5 kA	5 kA	10 kA	20 kA	40 kA
27	21.6	29	27	26	51	52	54	57	56	58	61	65	70	80
30	24.0	33	31	29	57	58	60	63	62	64	67	72	78	89
33	26.4	36	34	32	62	63	66	69	68	70	74	79	85	97
36	28.8	39	37	34	68	69	72	75	74	77	80	86	93	106
39	31.2	42	40	37	74	75	78	82	80	84	88	94	102	116
42	33.6	46	43	40	79	81	84	88	86	90	94	101	109	125
48	38.4	52	49	46	90	92	96	100	98	102	107	115	124	142
51	40.8	55	52	49	96	97	101	106	104	109	114	122	132	150
54	43.2	59	55	52	102	104	108	113	111	116	121	130	141	160
66	52.8	72	67	63	123	126	131	137	135	141	147	158	171	195
72	57.6	78	73	69	135	138	143	150	148	154	161	173	187	213
75	60.0	82	76	72	140	143	149	156	154	160	168	180	195	222
78	62.4	85	79	75	146	149	155	162	160	166	174	187	202	231
81	64.8	88	82	78	151	154	161	168	166	173	181	194	210	239
84	67.2	91	86	80	157	160	167	174	172	179	187	201	217	248
90	72.0	98	92	86	168	172	179	187	185	192	201	216	233	266
108	86.4	118	110	103	202	206	214	225	221	231	241	259	280	319
120	96.0	131	122	115	223	228	238	249	245	255	267	287	310	354
132	100.8	144	134	126	246	251	262	274	270	281	295	316	342	390
132	105.6	144	134	126	246	251	262	274	270	281	295	316	342	390
138	110.4	150	140	132	257	262	273	286	282	294	308	330	357	407
144	115.2	157	147	138	269	274	285	299	295	307	322	345	373	425
162	129.6	176	165	155	302	308	321	336	332	345	362	388	419	478
168	134.4	183	171	161	313	319	333	348	344	358	375	402	435	496
180	144.0	196	183	172	335	342	357	373	369	384	402	431	466	531
192	153.6	209	195	184	358	365	380	398	393	409	429	460	497	567
198	158.4	215	202	190	369	376	392	411	405	422	442	474	512	584
216	172.8	235	220	207	402	410	428	448	442	460	482	517	559	637
228	182.4	248	232	218	425	433	451	473	467	486	509	546	590	673
240	192.0	261	244	230	446	456	475	497	491	511	535	574	620	708
258	206.4	281	263	247	480	490	510	534	528	549	575	617	667	761
264	211.2	287	269	253	492	502	523	547	540	562	589	632	683	779
276	220.8	300	281	264	513	524	546	571	564	587	615	660	713	814
288	230.4	313	293	276	536	547	570	596	589	613	642	689	745	850
312	249.6	339	318	299	580	592	617	646	638	664	695	746	806	920
330	264.0	359	336	316	614	626	652	683	675	702	735	789	853	973
336	268.8	366	342	322	625	638	665	696	687	716	749	804	869	991
360	288.0	392	366	345	669	683	712	745	736	766	802	861	931	1062
372	297.6	405	379	356	692	706	736	770	761	792	829	890	962	1097
378	302.4	411	385	362	703	717	747	782	773	805	843	904	977	1115
390	312.0	424	397	374	725	740	771	808	798	830	870	933	1009	1150
396	316.8	431	403	379	736	751	783	820	810	843	883	947	1024	1168
420	336.0	457	428	402	781	797	831	870	859	894	937	1005	1086	1239

Porcelain Class 4

9L11Z Porcelain Class 4 Physical Characteristics

Um	Ur	Uc	POLLUTION LEVEL	CATALOG NUMBER	NOMINAL CREEP (mm)	WEIGHT (kg)	TOTAL HEIGHT WITH CAP (mm)	STACK HEIGHT WITHOUT CAP (mm)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
36	27	21.6	ALL	9L11ZVA027S4	1116	61	806	663	273	230	138
36	30	24.0	ALL	9L11ZVA030S4	1116	62	806	663	273	230	138
36	33	26.4	ALL	9L11ZVA033S4	1116	63	806	663	273	230	138
36	36	28.8	Very Heavy	9L11ZVA036S4	1116	63	806	663	273	230	138
36	39	31.2	Very Heavy	9L11ZVA039S4	1116	64	806	663	273	230	138
52	42	33.6	Medium	9L11ZMA042S4	1116	64	806	663	273	230	138
52	42	33.6	Heavy & V Heavy	9L11ZVA042S4	1905	77	969	826	358	310	186
52	48	38.4	Medium	9L11ZMA048S4	1116	65	806	663	273	230	138
52	48	38.4	Heavy & V Heavy	9L11ZVA048S4	1905	78	969	826	358	310	186
52	51	40.8	Medium	9L11ZMA051S4	1116	66	806	663	273	230	138
52	51	40.8	Heavy & V Heavy	9L11ZVA051S4	1905	79	969	826	358	310	186
52	54	43.2	Medium	9L11ZMA054S4	1116	67	806	663	273	230	138
52	54	43.2	Heavy & V Heavy	9L11ZHA054S4	1905	80	969	826	358	310	186
52	60	48.0	Medium	9L11ZMA060S4	1116	68	806	663	273	230	138
52	60	48.0	Heavy & V Heavy	9L11ZHA060S4	1905	81	969	826	358	310	186
72	54	43.2	Medium & Heavy	9L11ZHA054S4	1905	80	969	826	358	310	186
72	54	43.2	Very Heavy	9L11ZVA054S4	2540	92	1121	978	434	379	227
72	60	48.0	Medium & Heavy	9L11ZHA060S4	1905	81	969	826	358	310	186
72	60	48.0	Very Heavy	9L11ZVA060S4	2540	93	1121	978	434	379	227
72	66	52.8	Medium & Heavy	9L11ZHA066S4	1905	82	969	826	358	310	186
72	66	52.8	Very Heavy	9L11ZVA066S4	2540	94	1121	978	434	379	227
72	72	57.6	Medium & Heavy	9L11ZHA072S4	1905	84	969	826	358	310	186
72	72	57.6	Very Heavy	9L11ZVA072S4	2540	96	1121	978	434	379	227
72	75	60.0	Medium & Heavy	9L11ZHA075S4	1905	84	969	826	358	310	186
72	75	60.0	Very Heavy	9L11ZVA075S4	2540	96	1121	978	434	379	227
72	78	62.4	Medium & Heavy	9L11ZHA078S4	1905	85	969	826	358	310	186
72	78	62.4	Very Heavy	9L11ZVA078S4	2540	97	1121	978	434	379	227
72	81	64.8	Medium & Heavy	9L11ZHA081S4	1905	86	969	826	358	310	186
72	81	64.8	Very Heavy	9L11ZVA081S4	2540	98	1121	978	434	379	227
72	84	67.2	ALL	9L11ZHA084S4	2540	98	1121	978	434	379	227
100	84	67.2	Medium & Heavy	9L11ZHA084S4	2540	98	1121	978	434	379	227
100	84	67.2	Very Heavy	9L11ZVA084S4	3207	112	1286	1143	520	455	273
100	90	72.0	Medium & Heavy	9L11ZMA090S4	2540	99	1121	978	434	379	227
100	90	72.0	Very Heavy	9L11ZHA090S4	3207	113	1286	1143	520	455	273
100	96	76.8	Medium & Heavy	9L11ZMA096S4	2540	100	1121	978	434	379	227
100	96	76.8	Very Heavy	9L11ZHA096S4	3207	100	1121	978	434	379	227
123	90	72.0	Medium	9L11ZMA090S4	2540	99	1121	978	434	379	227
123	90	72.0	Heavy	9L11ZHA090S4	3207	113	1286	1143	520	455	273
123	90	72.0	Very Heavy	9L11ZVA090S4	3874	125	1451	1308	600	523	314
123	96	76.8	Medium	9L11ZMA096S4	2540	100	1121	978	434	379	227
123	96	76.8	Heavy	9L11ZHA096S4	3207	114	1286	1143	520	455	273
123	96	76.8	Very Heavy	9L11ZVA096S4	3874	126	1451	1308	600	523	314

9L11Z Porcelain Class 4 Physical Characteristics (cont'd)

Um	Ur	Uc	POLLUTION LEVEL	CATALOG NUMBER	NOMINAL CREEP (mm)	WEIGHT (kg)	TOTAL HEIGHT WITH CAP (mm)	STACK HEIGHT WITHOUT CAP (mm)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
123	108	86.4	Medium & Heavy	9L11ZMA108S4	3207	117	1286	1143	520	455	273
123	108	86.4	Very Heavy	9L11ZHA108S4	3874	129	1451	1308	600	523	314
123	120	96.0	Medium & Heavy	9L11ZMA120S4	3207	119	1286	1143	520	455	273
123	120	96.0	Very Heavy	9L11ZHA120S4	3874	131	1451	1308	600	523	314
123	132	100.8	ALL	9L11ZMA132S4	3874	134	1451	1308	600	523	314
123	138	110.4	ALL	9L11ZHA138S4	3874	135	1451	1308	600	523	314
145	108	86.4	Medium	9L11ZMA108S4	3207	117	1286	1143	520	455	273
145	108	86.4	Heavy	9L11ZHA108S4	3874	129	1451	1308	600	523	314
145	108	86.4	Very Heavy	9L11ZVA108S4	5080	178	2099	1956	818	700	420
145	120	96.0	Medium	9L11ZMA120S4	3207	119	1286	1143	520	455	273
145	120	96.0	Heavy	9L11ZHA120S4	3874	131	1451	1308	600	523	314
145	120	96.0	Very Heavy	9L11ZVA120S4	5080	181	2099	1956	818	700	420
145	132	105.6	Medium & Heavy	9L11ZMA132S4	3874	183	2099	1956	818	700	420
145	132	105.6	Very Heavy	9L11ZVA132S4	5080	183	2099	1956	818	700	420
145	138	110.4	Medium & Heavy	9L11ZHA138S4	3874	135	1451	1308	600	523	314
145	138	110.4	Very Heavy	9L11ZVA138S4	5080	185	2099	1956	818	700	420
145	144	115.2	Medium & Heavy	9L11ZMA144S4	3874	137	1451	1308	600	523	314
145	144	115.2	Very Heavy	9L11ZVA144S4	5080	186	2099	1956	818	700	420
170	132	105.6	Medium	9L11ZMA132S4	3874	134	1451	1308	600	523	314
170	132	105.6	Heavy	9L11ZHA132S4	4445	171	1947	1804	742	640	384
170	132	105.6	Very Heavy	9L11ZXA132S4	5747	197	2264	2121	904	766	459
170	144	115.2	Medium	9L11ZMA144S4	3874	137	1451	1308	600	523	314
170	144	115.2	Heavy	9L11ZHA144S4	4445	174	1947	1804	742	640	384
170	144	115.2	Very Heavy	9L11ZXA144S4	5747	200	2264	2121	904	766	459
170	162	129.6	Medium & Heavy	9L11ZHA162S4	4445	178	1947	1804	742	640	384
170	162	129.6	Very Heavy	9L11ZVA162S4	5747	204	2264	2121	904	766	459
170	168	134.4	Medium & Heavy	9L11ZHA168S4	4445	179	1947	1804	742	640	384
170	168	134.4	Very Heavy	9L11ZVA168S4	5747	205	2264	2121	904	766	459
245	180	144.0	Medium	9L11ZMA180S4	5080	202	2099	1956	781	671	403
245	180	144.0	Heavy	9L11ZHA180S4	6414	229	2429	2286	944	795	477
245	180	144.0	Very Heavy	9L11ZVA180S4	7748	253	2759	2616	1108	911	547
245	192	153.6	Medium	9L11ZMA192S4	5080	204	2099	1956	781	671	403
245	192	153.6	Heavy	9L11ZHA192S4	6414	232	2429	2286	944	795	477
245	192	153.6	Very Heavy	9L11ZVA192S4	7748	256	2759	2616	1108	911	547
245	198	158.4	Medium	9L11ZMA198S4	5080	205	2099	1956	781	671	403
245	198	158.4	Heavy	9L11ZHA198S4	6414	233	2429	2286	944	795	477
245	198	158.4	Very Heavy	9L11ZVA198S4	7748	257	2759	2616	1108	911	547
245	216	172.8	Medium	9L11ZMA216S4	5747	223	2264	2121	862	734	441
245	216	172.8	Heavy	9L11ZHA216S4	6414	240	2429	2286	923	780	468
245	216	172.8	Very Heavy	9L11ZVA216S4	7748	264	2759	2616	1084	895	537
245	228	182.4	Medium & Heavy	9L11ZMA228S4	6414	239	2429	2286	944	795	477
245	228	182.4	Very Heavy	9L11ZHA228S4	7748	263	2759	2616	1108	911	547

9L11Z Porcelain Class 4 Physical Characteristics (cont'd)

Um	Ur	Uc	POLLUTION LEVEL	CATALOG NUMBER	NOMINAL CREEP (mm)	WEIGHT (kg)	TOTAL HEIGHT WITH CAP (mm)	STACK HEIGHT WITHOUT CAP (mm)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
300	216	172.8	Medium	9L11ZHA216S4	6414	240	2429	2286	923	780	468
300	216	172.8	Heavy	9L11ZVA216S4	7748	264	2759	2616	1084	895	537
300	216	172.8	Very Heavy	9L11ZXA216S4	9621	330	3572	3429	1460	1132	679
300	228	182.4	Medium	9L11ZMA228S4	6414	239	2429	2286	944	795	477
300	228	182.4	Heavy	9L11ZHA228S4	7748	263	2759	2616	1108	911	547
300	228	182.4	Very Heavy	9L11ZVA228S4	9621	329	#N/A	#N/A	#N/A	#N/A	#N/A
300	240	192.0	Medium	9L11ZMA240S4	6414	242	2429	2286	944	795	477
300	240	192.0	Heavy	9L11ZHA240S4	7748	266	2759	2616	1108	911	547
300	240	192.0	Very Heavy	9L11ZVA240S4	9621	331	#N/A	#N/A	#N/A	#N/A	#N/A
300	258	206.4	Medium	9L11ZMA258S4	7081	258	2594	2451	1026	854	513
300	258	206.4	Heavy	9L11ZHA258S4	7748	273	2759	2616	1084	895	537
300	258	206.4	Very Heavy	9L11ZVA258S4	9621	338	3572	3429	1460	1132	679
300	264	211.2	Medium	9L11ZMA264S4	7081	259	2594	2451	1026	854	513
300	264	211.2	Heavy	9L11ZHA264S4	7748	274	2759	2616	1084	895	537
300	264	211.2	Very Heavy	9L11ZVA264S4	9621	339	3572	3429	1460	1132	679
362	258	206.4	Medium	9L11ZHA258S4	7748	273	2759	2616	1084	895	537
362	258	206.4	Heavy	9L11ZVA258S4	9621	338	3572	3429	1460	1132	679
362	258	206.4	Very Heavy	9L11ZXA258S4	11622	375	4067	3924	1699	1259	755
362	264	211.2	Medium	9L11ZHA264S4	7748	274	2759	2616	1084	895	537
362	264	211.2	Heavy	9L11ZVA264S4	9621	339	3572	3429	1460	1132	679
362	264	211.2	Very Heavy	9L11ZXA264S4	11622	376	4067	3924	1699	1259	755
362	276	220.8	Medium	9L11ZMA276S4	7748	277	2759	2616	1084	895	537
362	276	220.8	Heavy	9L11ZHA276S4	9621	342	3572	3429	1460	1132	679
362	276	220.8	Very Heavy	9L11ZVA276S4	11622	379	4067	3924	1699	1259	755
362	288	230.4	Medium	9L11ZMA288S4	7748	280	2759	2616	1084	895	537
362	288	230.4	Heavy	9L11ZHA288S4	9621	345	3572	3429	1460	1132	679
362	288	230.4	Very Heavy	9L11ZVA288S4	11622	381	4067	3924	1699	1259	755
420	312	249.6	Medium	9L11ZMA312S4	8954	350	3407	3264	1213	981	589
420	312	249.6	Heavy	9L11ZHA312S4	10955	388	3902	3759	1451	1127	676
420	312	249.6	Very Heavy	9L11ZVA312S4	13495	466	4880	4737	1929	1364	818
420	330	264.0	Medium	9L11ZMA330S4	8954	354	3407	3264	1213	981	589
420	330	264.0	Heavy	9L11ZHA330S4	10955	392	3902	3759	1451	1127	676
420	330	264.0	Very Heavy	9L11ZVA330S4	13495	470	4880	4737	1929	1364	818
420	336	268.8	Medium	9L11ZMA336S4	9621	369	3572	3429	1292	1032	619
420	336	268.8	Heavy	9L11ZHA336S4	10955	393	3902	3759	1451	1127	676
420	336	268.8	Very Heavy	9L11ZVA336S4	13495	471	4880	4737	1929	1364	818
420	360	288.0	Medium	9L11ZMA360S4	9621	359	3572	3429	1460	1132	679
420	360	288.0	Heavy	9L11ZHA360S4	10955	384	3902	3759	1619	1218	731
420	360	288.0	Very Heavy	9L11ZVA360S4	13495	461	4880	4737	2010	1397	838
420	372	297.6	Medium	9L11ZMA372S4	10288	374	3737	3594	1540	1176	706
420	372	297.6	Heavy	9L11ZHA372S4	10955	386	3902	3759	1619	1218	731
420	372	297.6	Very Heavy	9L11ZVA372S4	13495	464	4880	4737	2010	1397	838

9L11Z Porcelain Class 4 Physical Characteristics (cont'd)

Um	Ur	Uc	POLLUTION LEVEL	CATALOG NUMBER	NOMINAL CREEP (mm)	WEIGHT (kg)	TOTAL HEIGHT WITH CAP (mm)	STACK HEIGHT WITHOUT CAP (mm)	LIGHTNING IMPULSE* (kV)	SWITCHING IMPULSE* (kV)	60Hz PF, WET* (kV)
420	378	302.4	Medium	9L11ZMA378S4	10288	375	3737	3594	1540	1176	706
420	378	302.4	Heavy	9L11ZHA378S4	10955	387	3902	3759	1619	1218	731
420	378	302.4	Very Heavy	9L11ZVA378S4	13495	465	4880	4737	2010	1397	838
420	390	312.0	Medium & Heavy	9L11ZHA390S4	10955	390	3902	3759	1619	1218	731
420	390	312.0	Very Heavy	9L11ZVA390S4	13495	468	4880	4737	2010	1397	838
420	396	316.8	Medium & Heavy	9L11ZMA396S4	10955	392	3902	3759	1619	1218	731
420	396	316.8	Very Heavy	9L11ZVA396S4	13495	470	4880	4737	2010	1397	838
420	420	336.0	Medium & Heavy	9L11ZHA420S4	11622	408	4067	3924	1699	1259	755
420	420	336.0	Very Heavy	9L11ZVA420S4	13495	474	4880	4737	2010	1397	838

* Insulation withstand with non-linear factors included for reference.

9L11Z Porcelain Class 4 Protective Characteristics

Ur	Uc	IEC Previous Duty TOV (kV)			Switching Impulse Residual Voltage (kV)				Maximum 8/20 Residual voltage at indicated current (kV)					
		1s	10s	100s	0.25 kA	0.5 kA	1.0 kA	2.0 kA	1.5 kA	2.5 kA	5 kA	10 kA	20 kA	40 kA
27	21.6	30	28	26	53	55	56	58	57	59	61	64	68	75
30	24.0	33	31	29	59	61	63	64	63	65	68	71	76	84
33	26.4	36	34	32	65	67	69	70	69	72	74	78	83	92
36	28.8	40	37	35	71	73	75	77	75	78	81	85	91	100
39	31.2	43	40	38	76	79	81	83	81	85	88	92	98	108
42	33.6	46	43	41	83	85	88	90	88	92	95	99	106	117
48	38.4	53	50	47	94	97	100	102	101	104	108	113	121	134
51	40.8	56	53	50	100	103	106	109	107	111	115	120	129	142
54	43.2	60	56	53	106	109	112	115	113	117	121	127	136	150
60	48.0	66	62	59	118	121	125	128	125	130	135	141	151	167
54	43.2	60	56	53	106	109	112	115	113	117	121	127	136	150
60	48.0	66	62	59	118	121	125	128	125	130	135	141	151	167
66	52.8	73	68	64	129	133	137	140	138	143	148	155	166	183
72	57.6	80	75	70	141	145	149	153	150	156	161	169	181	200
75	60.0	83	78	73	147	151	156	159	156	162	168	176	189	208
78	62.4	86	81	76	152	157	162	166	162	169	175	183	196	216
81	64.8	90	84	79	159	164	169	173	170	176	182	191	205	225
84	67.2	93	87	82	165	170	175	179	176	183	189	198	212	234
90	72.0	99	93	88	176	182	187	192	188	196	202	212	227	250
96	76.8	106	99	94	188	194	200	204	201	208	216	226	242	267
90	72.0	99	93	88	176	182	187	192	188	196	202	212	227	250
96	76.8	106	99	94	188	194	200	204	201	208	216	226	242	267
108	86.4	119	112	105	211	217	224	230	225	234	242	254	272	300
120	96.0	133	124	117	235	241	249	255	250	260	269	282	302	333
132	100.8	146	137	129	258	265	274	280	275	286	296	310	332	366
138	110.4	152	143	135	269	277	286	293	287	299	309	324	347	382
132	105.6	146	137	129	258	265	274	280	275	286	296	310	332	366
138	110.4	152	143	135	269	277	286	293	287	299	309	324	347	382
144	115.2	159	149	140	281	289	298	305	300	311	322	338	362	399
132	105.6	146	137	129	258	265	274	280	275	286	296	310	332	366
144	115.2	159	149	140	281	289	298	305	300	311	322	338	362	399
162	129.6	179	168	158	317	326	336	344	338	351	363	381	408	449
168	134.4	186	174	164	328	338	348	357	350	364	377	395	423	466
180	144.0	199	186	176	352	362	373	382	375	390	403	423	453	499
192	153.6	212	199	187	375	386	398	407	400	415	430	451	483	532
198	158.4	219	205	193	386	398	410	420	412	428	443	465	498	548
216	172.8	239	224	211	421	433	447	458	449	467	483	507	543	598

9L11Z Porcelain Class 4 Protective Characteristics (cont'd)

Ur	Uc	IEC Previous Duty TOV (kV)			Switching Impulse Residual Voltage (kV)				Maximum 8/20 Residual voltage at indicated current (kV)					
		1s	10s	100s	0.25kA	0.5 kA	1.0 kA	2.0 kA	1.5 kA	2.5 kA	5 kA	10 kA	20 kA	40 kA
228	182.4	252	236	222	445	457	472	483	474	493	510	535	573	631
240	192.0	265	248	234	469	482	497	509	500	519	537	564	604	665
258	206.4	285	267	252	503	518	534	547	537	558	577	606	649	714
264	211.2	292	273	257	515	530	547	560	549	571	591	620	664	731
276	220.8	305	286	269	538	554	571	585	574	597	617	648	694	764
288	230.4	318	298	281	562	578	596	610	599	622	644	676	724	797
312	249.6	345	323	304	608	626	645	661	648	674	697	732	784	863
330	264.0	365	342	322	644	662	683	700	686	713	738	775	830	913
336	268.8	371	348	328	655	674	696	712	699	726	752	789	845	930
360	288.0	398	373	351	702	722	745	763	748	778	805	845	905	996
372	297.6	411	385	363	725	746	770	788	773	804	832	873	935	1029
378	302.4	418	391	369	737	758	782	801	785	817	845	887	950	1045
390	312.0	431	404	380	760	782	807	826	810	842	872	915	980	1078
396	316.8	438	410	386	772	795	820	839	824	856	886	930	996	1096
420	336.0	464	435	410	819	843	869	890	873	908	939	986	1056	1162

Porcelain Class 5

9L11Z Porcelain Class 5 Physical Characteristics

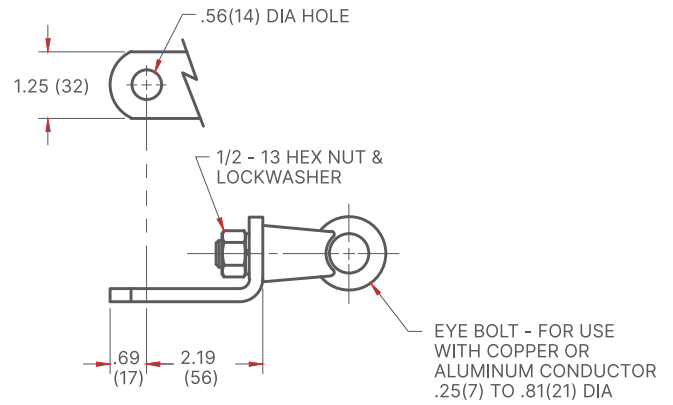
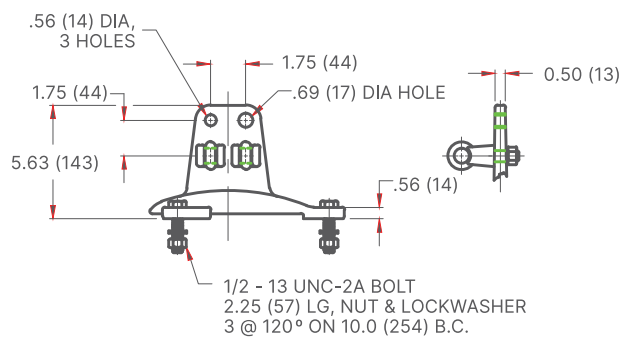
Um	Ur	Uc	POLLUTION LEVEL	CATALOG NUMBER	NOMINAL CREEP (mm)	WEIGHT (kg)	TOTAL HEIGHT WITH CAP (mm)	GRADING RING DIAMETER (mm)
550	396	316.8	Medium	9L11ZMA396S5	11001	1064	4864	1530
550	420	336	Medium	9L11ZMA420S5	11001	1070	4864	1530
550	444	355.2	Medium	9L11ZMA444S5	11001	1075	4864	1530
800	588	470.4	Medium	9L11ZMA588S5	16716	1695	7503	2286
800	612	489.6	Medium	9L11ZMA612S5	16716	1701	7503	2286
420	396	316.8	Medium & Heavy	9L11ZMA396S4	10955	392	3902	3759
420	396	316.8	Very Heavy	9L11ZVA396S4	13495	470	4880	4737
420	420	336.0	Medium & Heavy	9L11ZHA420S4	11622	408	4067	3924
420	420	336.0	Very Heavy	9L11ZVA420S4	13495	474	4880	4737

9L11Z Porcelain Class 5 Protective Characteristics

Um	Ur	Uc	POLLUTION LEVEL	CATALOG NUMBER	NOMINAL CREEP (mm)	WEIGHT (kg)	TOTAL HEIGHT WITH CAP (mm)	GRADING RING DIAMETER (mm)
550	396	316.8	Medium	9L11ZMA396S5	11001	1064	4864	1530
550	420	336	Medium	9L11ZMA420S5	11001	1070	4864	1530
550	444	355.2	Medium	9L11ZMA444S5	11001	1075	4864	1530
800	588	470.4	Medium	9L11ZMA588S5	16716	1695	7503	2286
800	612	489.6	Medium	9L11ZMA612S5	16716	1701	7503	2286
420	396	316.8	Medium & Heavy	9L11ZMA396S4	10955	392	3902	3759
420	396	316.8	Very Heavy	9L11ZVA396S4	13495	470	4880	4737
420	420	336.0	Medium & Heavy	9L11ZHA420S4	11622	408	4067	3924
420	420	336.0	Very Heavy	9L11ZVA420S4	13495	474	4880	4737

Hardware Description

Suspension Cap

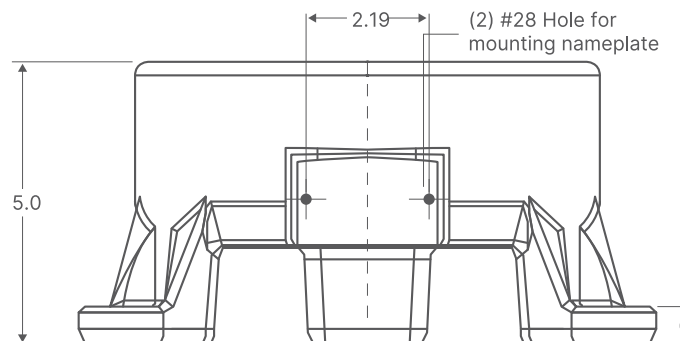
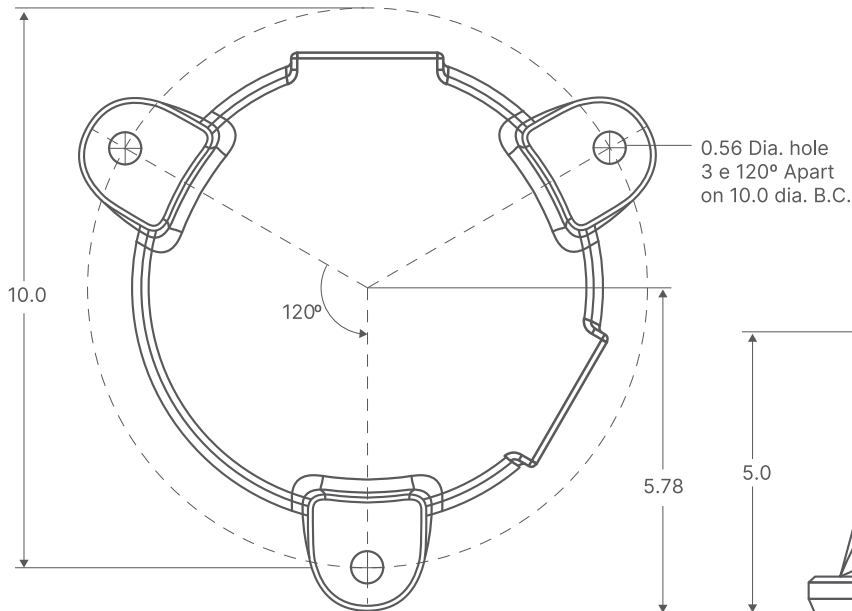


Material: steel, hot dipped galvanized

Notes:

1. Dimensions subject to $\pm 3\%$ tolerance
2. Dimensions in parenthesis are in millimeters
3. Clamp type terminals suitable for copper or aluminum conductors 7 to 21 mm
4. Larger clamp type terminals for 11 to 25 mm are available

Mounting Base



Surge Counters

Table 3: Surge Counter Information

COUNTER CATALOG NUMBER	CURRENT METER	RANGE OF MA READING	MAX NO. COUNTS	MIN COUNT CURRENT	MAX HIGH CURRENT WITHSTAND	NOMINAL RESIDUAL VOLTAGE
9L26FBE012E	Yes	0 – 30	999,999	200A (8/20µs wave)	100 kA (4/10µs wave)	5kV Peak (4/10µs wave) @ 100 kA
9L26FBE005E	No	N/A	999,999	200A (8/20µs wave)	100 kA (4/10µs wave)	5kV Peak (4/10µs wave) @ 100 kA

Note:

Minimum of #6 AWG insulated ground wire required for connection.

Table 4 displays surge counter options that can be supplied with or without the meter.

Table 4: Insulating Base Information

DESCRIPTION - 3 INCLUDED, 1 FOR EACH FOOT OF THE ARRESTER	WEIGHT (kg)	CATALOG NUMBER
Insulating Base for arresters 3-54kV	2.27	9L11LGW804S
Insulating Base for polymer class 3	27	9L11LGW805S
Insulating Base for porcelain class 3 & 4 arresters (54-360 kV rated voltage)	21.4	9L11LGW807S
Insulating bases for porcelain arresters (>360kV)	21.4	9L16AAW110S

Table shows the insulating bases for each arrester type. Insulating bases are installed on the arresters across the surge is diverted through the counter.

For more information, visit
/arid-solutions

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