GE
Grid Solutions

# GE TRANQUELL Surge Arresters

## Product Selection Guide

## IEC Line Discharge
## Classes 3, 4 and 5 Porcelain Housings

## GE Surge Protection

The performance and reliability of today's electric power systems can be enhanced with the unique characteristics of GE Tranquell™ arrester products. Since introducing the world's first metal oxide arrester in 1976, offering new concepts in surge arrester design and application, GE has developed and applied metal oxide technology for a variety of traditional and special applications. GE offers one of the most comprehensive range of surge arrester products in the world today; from distribution class to EHV arresters up to 612kV ratings as well as high energy varistors for series compensation applications.

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# Introduction

GE has been producing high voltage surge arresters since the 1950's and offers a wide variety of Tranquell metal oxide gapless arresters designed to protect transformers, switchgear, and other equipment from switching and lightning surges. 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 GE IEC offerings. This catalog focuses on porcelain arresters.

## Table 1: GE 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

GE's 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. The routine and design tests listed below, in addition to highly controlled manufacturing processes, ensure that GE products demonstrate a superior level of quality.

## 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

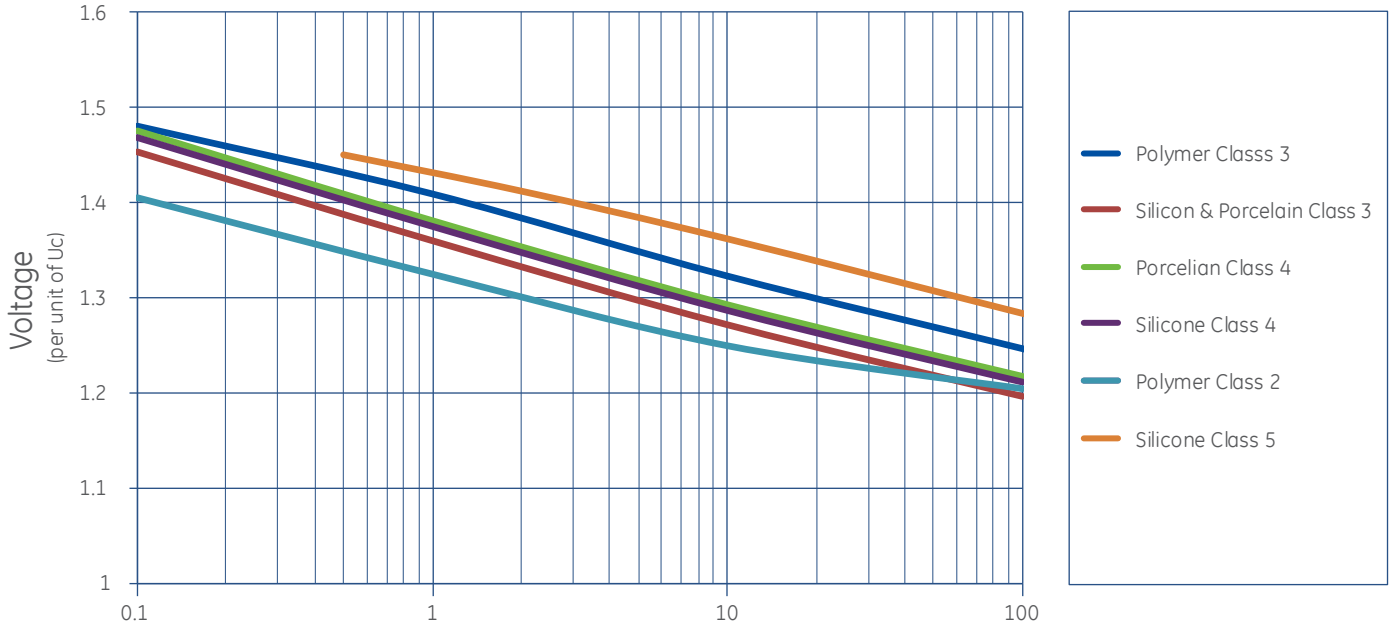
| Type | IEC Class | Nominal Discharge Current kA | Pressure Relief Rating kA | Energy Capability Single (4ms Impulse) kJ/ kV - Uc | Energy Capability Single (4ms Impulse) kJ/ kV - Ur | Energy Capability 2-Shot (1 Minute Thermal) kJ/ kV - Uc | Energy Capability 2-Shot (1 Minute Thermal) kJ/ kV - Ur | 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 GE IEC arresters exceed the pressure relief requirements of IEC 60099-4. 2-shot Energy Capability based on minimum values in IEC Operating Duty test. Actual values are typically higher.

## Temporary Over-Voltage Capability

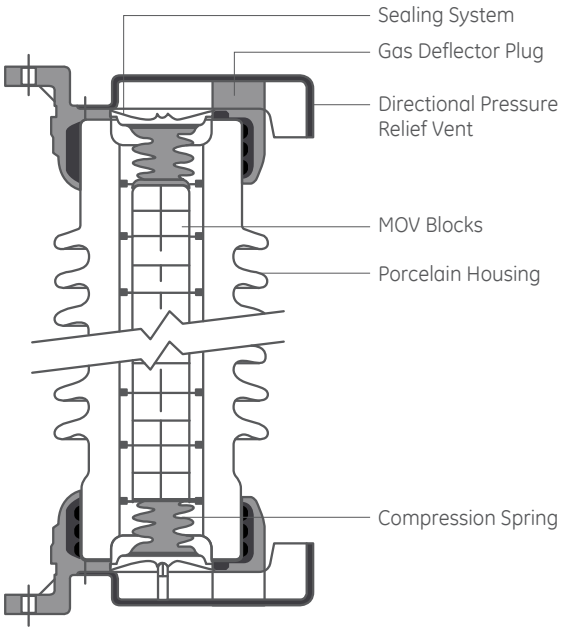
GE Tranquell arresters are gapless and consist of a column of metal-oxide blocks connected between line and ground. The blocks can withstand a significant power frequency overvoltage for a limited time, depending on the magnitude of any immediately preceding surge duty. This duty can be the result of 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 (con't)

| 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

| 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 | 9L11ZXA216S3 | 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 | 9L11ZXA258S3 | 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 | 9L11ZXA264S3 | 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 (con't)

| 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 | 0.25kA | 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 |

# 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 (con't)

| 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 |

# 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.25kA | 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 |

# Porcelain Class 4

## 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 | 0.25kA | 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

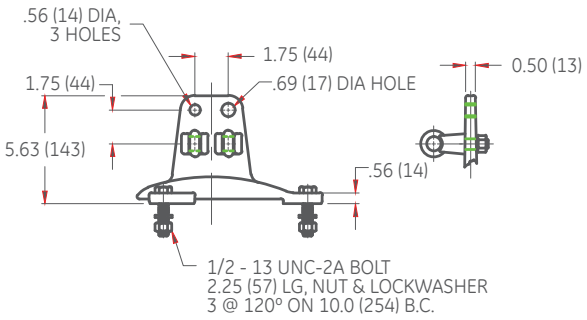
| Um | Ur | Uc | Pollution Level | Catalog Number | Nominal Creep (mm) | Weight (kg) | Total Height With Cap (mm) | Grading Ring Diameter (mm) |
|---|---|---|---|---|---|---|---|---|
| 550 | 396 | 316.8 | Medium | 9L11ZMA396S5 | 11001 | 1064 | 4864 | 1530 |
| 550 | 420 | 336 | Medium | 9L11ZMA420S5 | 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 |

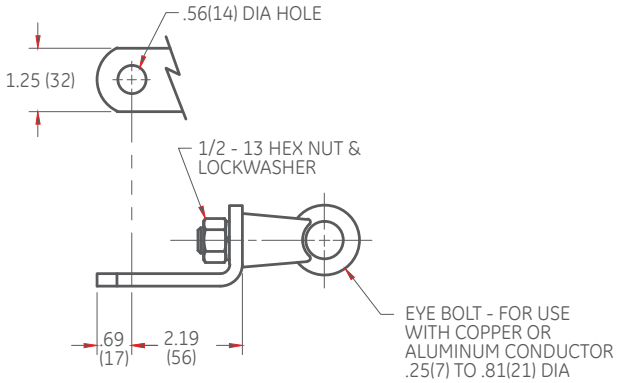
## 9L11Z Porcelain Class 5 Protective Characteristics

| 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



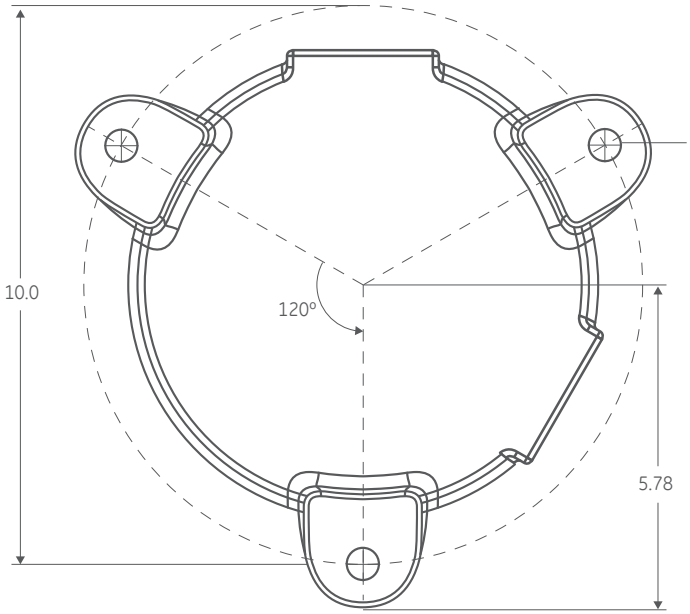



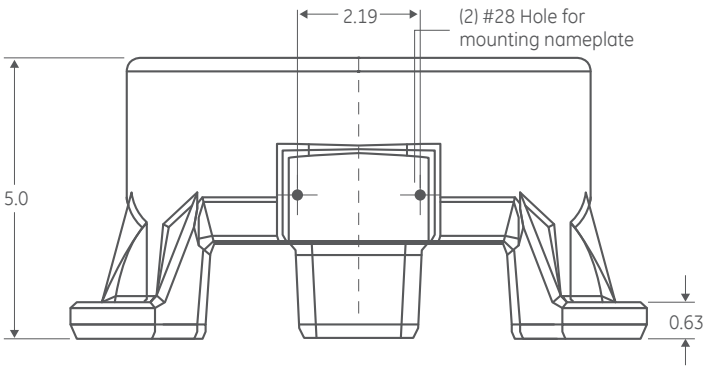

**Note:**

1. Dimensions subject to ±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

Material: steel, hot dipped galvanized

## 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 GE arrester type. Insulating bases are installed on the arrester to ensure the surge is diverted through the counter.

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GEGridSolutions.com



GEA-31947(E)
English
151216