

FEDERAL PACIFIC EPOXY INSULATORS AND BUSHINGS

Federal Pacific switch and bus insulators, bushings, and bushing wells made from the highest quality cycloaliphatic epoxy resins and selected fillers to achieve an optimum balance of electrical and mechanical characteristics. Standard color is skytone gray.

Shown below are minimum test values for Federal Pacific insulators, bushings, and bushing wells, obtained during independent electrical and mechanical testing in accordance with the applicable test methods specified by the latest edition of ANSI C29.1 and ANSI 386.

INSULATORS

Federal Pacific EEpoxy™ insulators are made to the exacting requirements of ANSI C29.1 and are recommended for switch and bus applications which require superior arc and track resistance, excellent mechanical strength, exceptionally high leakage (creep) distance for contamination resistance and self-scouring, non-weathering performance.

Each Federal Pacific EEpoxy™ Class A insulator is equipped with eight aluminum 3/8" - 16 full-threaded inserts 3/4" deep, four on each end, in the standard 2" bolt circle. Standard color is Skytone Gray.

BUSHING WELLS AND BUSHINGS

Federal Pacific bushings and bushing wells meet all the design criteria in ANSI 386. By meeting this standard, all Federal Pacific bushings and bushing wells will interface with matching load-break and non-loadbreak inserts and elbows. The XL bushings and bushing wells feature a removable stud and include four aluminum inserts in a 3-inch square pattern on the interface end and two inserts in a 2-inch bolt circle centered on the 1/2-inch diameter tapped conductor rod on the bus end. The XM bushings and bushing wells are similar except the interface end, clamped to the mounting surface in a 3-bolt pattern using stainless steel plate and hardware.

Mechanical and Electrical Ratings

Components →	Insulators				200A Bushing Wells					600A Bushings			
Description →	EEpoxy 44-2701	EEpoxy 0054-3-02714	EEpoxy 0054-3-02723*	EEpoxy 0054-3-02716	EEpoxy 0028-4-02719	EEpoxy 0028-4-02720	XL 44-0271	XM 44-03201 ◆	XM 44-3202 ◆	XL 44-0264	XL 44-0276	XM 44-3203 ◆	XM 44-3204 ◆
Design Parameter ↓													
Voltage													
Nominal, kV	15	25	25	35	8.3	15.2	15	15	25	15	25	15	25
Max Design, kV	17	27	27	38	-	-	17	17	27	17	27	17	27
BIL, kV	95	125	135	150	95	125	95	95	125	95	125	95	125
Dimensions													
Leakage Distance, Inches	13.65	18.3	21.0	27.5	15.4	20.9	19	16-19/92	23-11/16	19	28-3/4	16-19/32	23-11/16
Height, Inches, Dim. "L"	6	7.56	8.25	10.23	7.5	9.0	6-1/4	6-3/8	8-5/8	6-1/4	8-1/2	6-3/8	8-5/8
Mechanical Ratings													
Cantilever, Ultimate 2.5" above top, Pounds	1,250	1,100	1,100	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Tensile, Pounds	3,000	3,000	3,000	3,000	2,500 †	2,500 †	3,000 †	3,000 †	3,000 †	3,000	3,000	3,000	3,000
Torsion, Inch Pounds	3,500	3,500	3,500	3,500	540 †	540 †	540 †	540 †	540 †	2,000	2,000	540	540
Compression, Pounds	20,000	20,000	20,000	20,000	N/A	N/A	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Net Weight, Pounds (Approx.)	3.5	4.3	4.5	5.5	4.3	5.3	7	3	3.5	11	13.5	5	5.5

* Available when creepage distance more than 18.3" is required.

† Tensile and torsion force applied to bushing-well conductor (core) and its internal threads, respectively. The tensile and torsion requirements for the bushing well stud are significantly lower (refer to IEEE Std 386™-2016).

◆ Catalog number applies to bushing well or bushing only. For clamp ring and mounting hardware, add suffix "-01" to catalog number.

Disclaimer and Limitation of Liability: The information contained in this data sheet is accurate to the best of our knowledge. All data and recommendations are based on tests we believe to be reliable. All products are designed strictly for specific applications. It is the sole responsibility of the buyer to determine the suitability of the products for any other contemplated use. If the products are used for any application other than those specified, Federal Pacific will not be liable for any injury or damage arising from their use.

FP Cyclo-Aliphatic Epoxy

Federal Pacific insulators manufactured from cycloaliphatic epoxy resins in the Federal Pacific switchgear plant by the automatic pressure gelation (APG) process; developed in Switzerland over fifty years ago, and widely used globally. It has developed to a technologically advanced state used in the manufacture of a broad range of indoor and outdoor high-voltage electrical components.

In this process, the cycloaliphatic epoxy resin hardener and various pre-mixed fillers and additives for properties and process control are combined in specially designed, computer-controlled equipment; formulations are developed by supplier engineers through exhaustive testing and field experience. The insulators and bushings are designed to meet precise requirements for a specific application. These formulations are balanced for high-voltage, high strength, non-tracking, self-scouring, non-weathering applications in extremes of high temperature and sub-zero cold.

The mix is thoroughly degassed under high vacuum and transferred to automatic presses. Here it is injected into highly-polished tool steel molds and formed under heat and pressure into compact, high leakage-distance, engineered thermoset contours to enhance the electrical and mechanical characteristics. Firmly imbedded in each end are full-threaded inserts as specified.

The cycloaliphatic epoxy components develop a high degree of polymer cross-linking to give optimum thermal, mechanical and electrical properties. All epoxy components are x-rayed, visually inspected for surface irregularities, color, integrity, and general appearance, and are serialized.

The in-process examination is given using a 110kV real time fluoroscopic x-ray for a 100 percent, 360°, end-to-end inspection. Trained examiners look for any signs of internal voids, cracks, non-bonded inserts or other defect that could cause or lead to problems under voltage, thermal or mechanical stress in future years.

Only after this rigidly controlled manufacturing process, x-ray inspection and any final de-flashing or cleaning which might be required are the insulators stamped "X-ray OK" and logged by serial number in quality assurance records – assurance that the Federal Pacific quality is locked in.

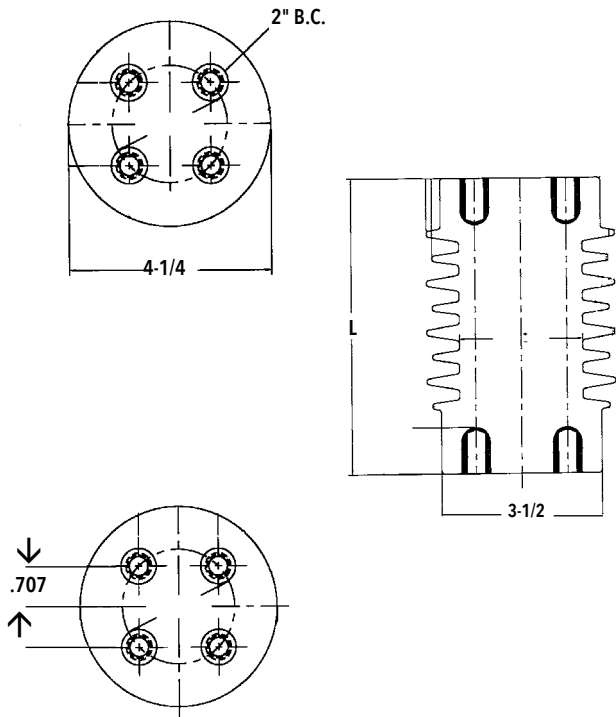


Finished insulators are 100%, 360°, end-to-end fully inspected internally by 100kV real-time fluoroscopic x-ray.

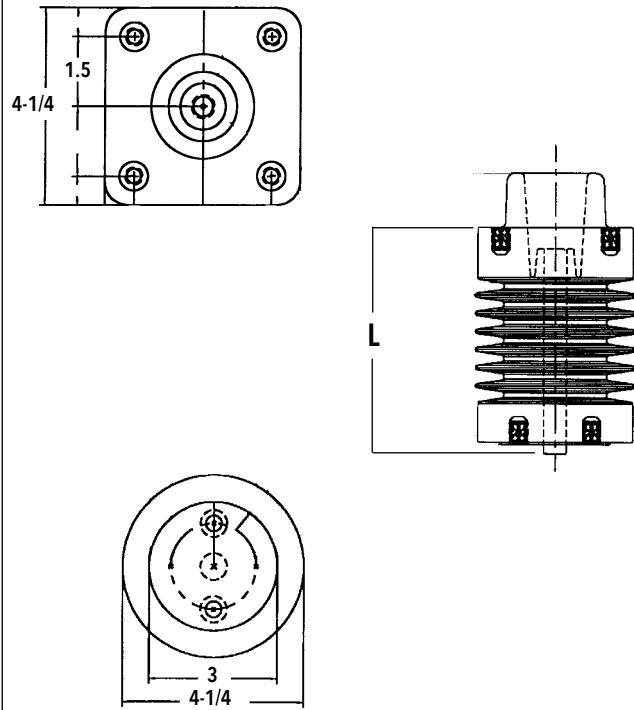


Federal Pacific cycloaliphatic epoxy insulators provide superior performance, serving as bus supports, interrupter housings, bushings and bushing wells on 5kV through 38kV products.

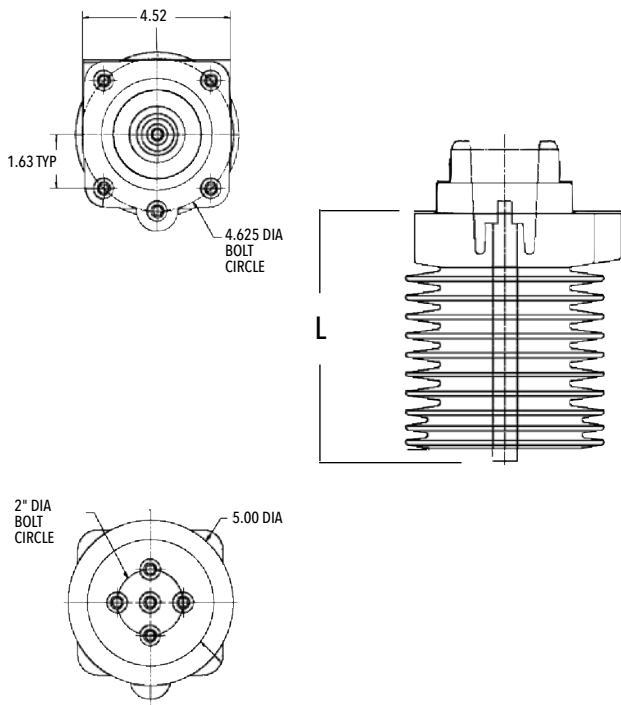
EEpoxy Insulators



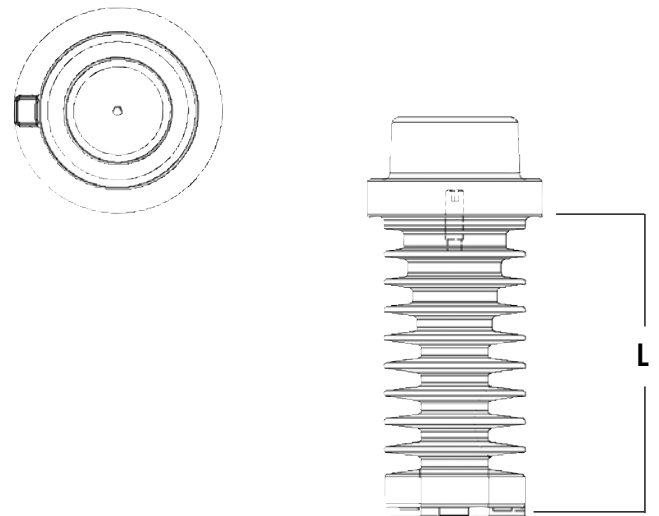
EEpoxy Bushing Wells



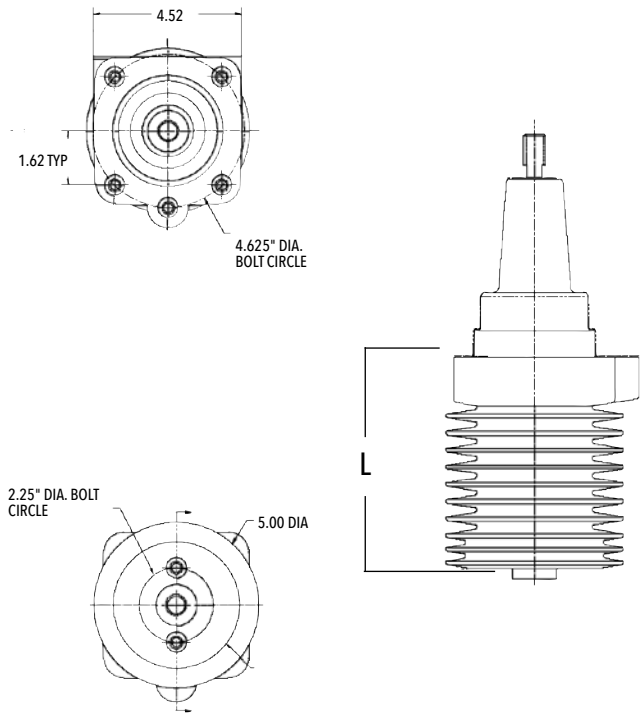
XL Bushing Wells



XM Bushing Wells



XL Bushings



XM Bushings

