



Bulletin Selection Guide Cycloaliphatic Epoxy Insulators

Descriptive
Bulletin
2003-100
Page 1 2018

Elliott Apparatus and Station Post Insulators are components used to construct Air-Insulated Switchgear, Metering Stations, Capacitor Stations, Dry-Type Transformers, Transformer Stations and other electrical distribution products. Elliott Apparatus and Station Post Insulators are constructed of cycloaliphatic epoxy with metal inserts threaded to accept standard stainless steel and plated steel bolts (inserts do not accept hot-dip galvanized bolts). Inserts should be partially filled with No-Oxide Compound (or similar material) to prevent moisture accumulation in the inserts when insulators are to be installed outdoors.

Elliott Cycloaliphatic Epoxy

Elliott experience with cycloaliphatic epoxy dates back to 1975 when cycloaliphatic epoxy bushing wells and insulators were utilized in 35 kV elbow-terminated pad-mounted switchgear. Successful field operating experience soon led to greatly expanded use of cycloaliphatic epoxy components.

Elliott insulators are manufactured with a liquid resin cycloaliphatic epoxy compound which includes silica. This compound is pressure injected into a preheated, controlled temperature, precision shaped mold. Low viscosity and pressure injection allow the manufacture of insulators with multiple square-edge skirts and greater leakage distance for superior performance in contaminated environments.

Cast-in-place threaded and knurled brass inserts eliminate the need for metal end caps and provide greater strike distance when compared to insulators with cemented steel end caps.

Elliott cycloaliphatic epoxy insulators are homogeneous so if one is chipped by rough handling or vandalism, the exposed surface will provide the same performance characteristics of the unchipped surface.

Electrical Characteristics

Nontracking, self-scouring, and nonweathering performance is characteristic of Elliott cycloaliphatic epoxy insulators. Pyrolysis of cycloaliphatic epoxy bushings produces gaseous by-products such as water vapor and carbon dioxide that leave a virtually residue-free nontracking surface. A high temperature arc decomposes minute amounts of cycloaliphatic epoxy liberating water as steam that scours the surface of the bushing in the path of the arc. The insulators are resistant to ultraviolet radiation and do not react with water or contaminants due to the nonweathering qualities.

Test and Field Experience

Elliott cycloaliphatic epoxy insulators have been tested to confirm impulse withstand ratings, low frequency withstand dry, and low frequency withstand wet. Mechanical testing confirms cantilever strength, tensile strength, torsion strength, and compression strength. Thermal withstand cycling tests from +200 degrees F to -200 degrees F assure trouble-free field service for cycling loads in the most severe climatic conditions. In addition to the in-house testing, various utilities have tested Elliott apparatus insulators and line post insulators in their most severe outdoor test facilities to substantiate the superior performance of cycloaliphatic epoxy. Various utilities have selected cycloaliphatic epoxy insulators for severe-duty applications where porcelain or another material has not been satisfactory and the cycloaliphatic epoxy has provided superior performance.

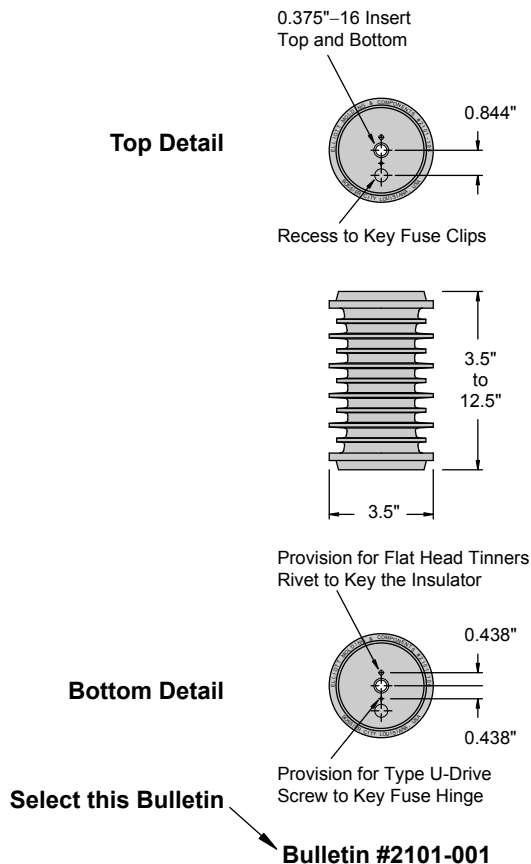
The Elliott Solution

As the characteristics, design advantages and superior field performance of cycloaliphatic epoxy become known to users worldwide, we see more specifications written to permit or require insulators which are cycloaliphatic epoxy. As equipment manufacturers learn of these advantages, their engineers are selecting insulators and bushings that are cycloaliphatic epoxy to improve their designs and enhance quality. At Elliott Industries, Inc., we will continue to develop new insulators to expand our product line and provide special components to electrical utilities and other manufacturers.

A wide choice of Insulators

We provide a wide choice of Elliott Apparatus Insulators for Air-Insulated Switchgear. The following drawings provide a quick way to select the proper Bulletin to see insulator details.

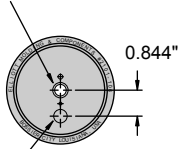
Data Illustration for Pages 2, 3, & 4



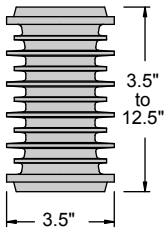
Bulletin Selection Guide

Cycloaliphatic Epoxy Insulators

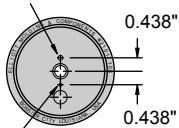
0.375"-16 Insert
Top and Bottom



Recess to Key Fuse Clips



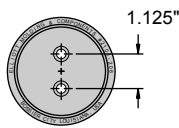
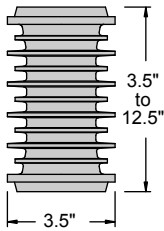
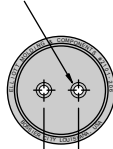
Provision for Flat Head Tinners
Rivet to Key the Insulator



Provision for Type U-Drive
Screw to Key Fuse Hinge

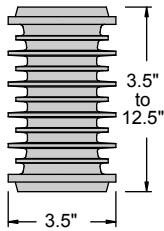
Bulletin #2101-001

0.3125"-18 Inserts
Top and Bottom



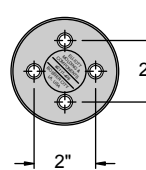
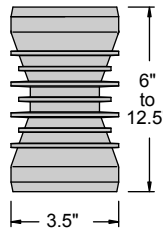
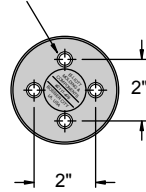
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0.5"-13 Insert
Top and Bottom



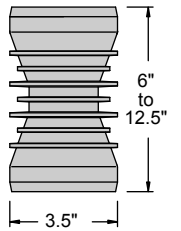
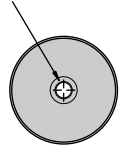
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0.375"-16 Inserts
Top and Bottom

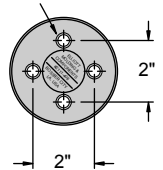


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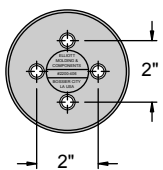
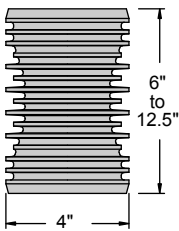
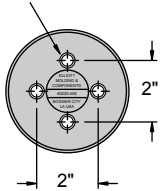


0.375"-16 Inserts



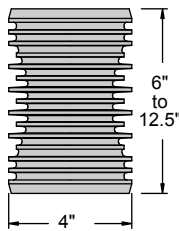
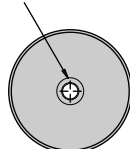
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0.375"-16 Inserts
Top and Bottom

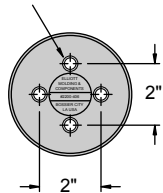


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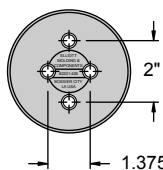
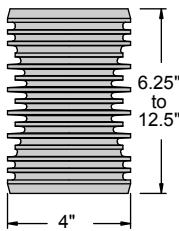
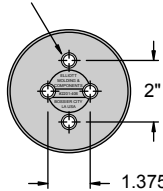


0.375"-16 Inserts



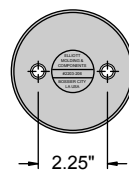
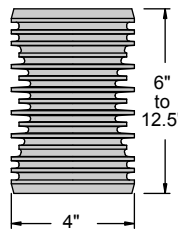
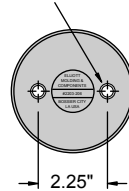
Bulletin #2200-010

0.375"-16 Inserts
S&C Bolt Pattern



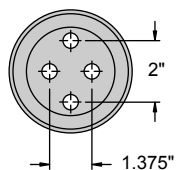
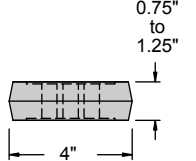
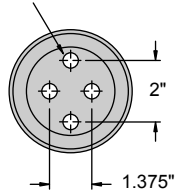
Bulletin #2201-001

0.375"-16 Inserts
Top and Bottom



Bulletin #2203-001

0.5" Dia. Holes
S&C Bolt Pattern

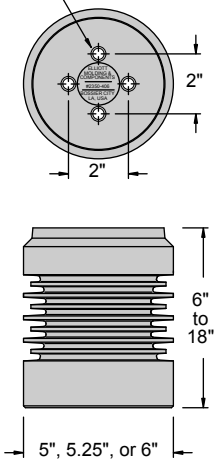


Bulletin #2209

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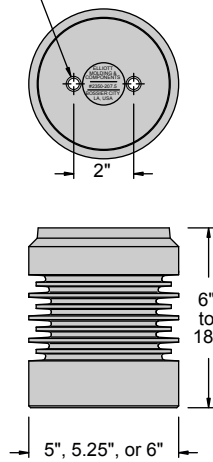
Cycloaliphatic Epoxy Insulators

0.375"-16 Inserts
Top and Bottom



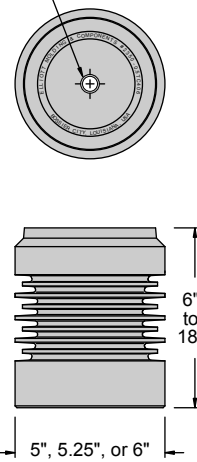
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0.375"-16 Inserts
Top and Bottom



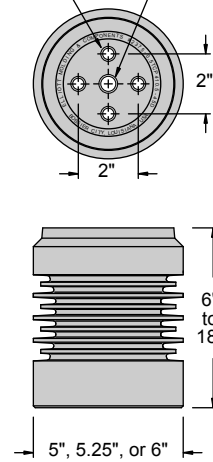
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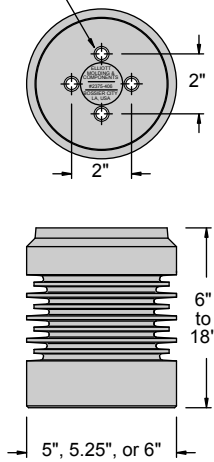
Bulletin #2350-010

0.375"-16 Inserts
0.5"-13 Insert



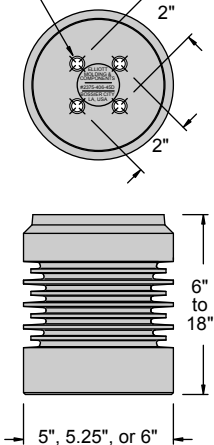
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0.375"-16 Inserts



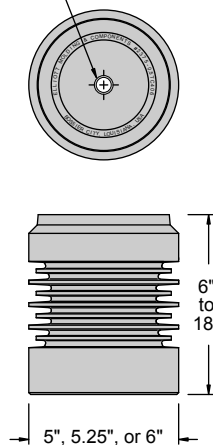
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0.375"-16 Inserts



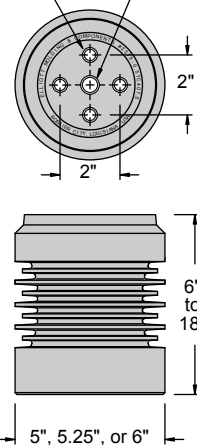
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0.5"-13 Insert



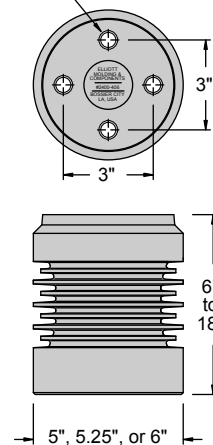
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0.375"-16 Inserts
0.5"-13 Insert



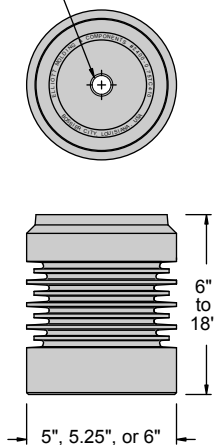
Bulletin #2375-015

0.5"-13 Inserts
Top and Bottom



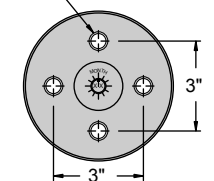
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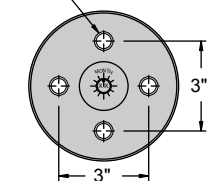


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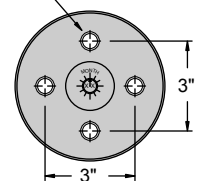
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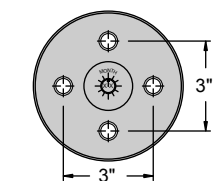
0.5"-13 Inserts



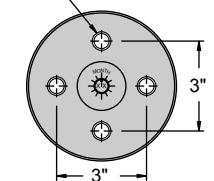
0.5"-13 Inserts



0.5"-13 Inserts



0.5"-13 Inserts





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Cycloaliphatic Epoxy Insulators

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Typical Insulator Specifications

The bus, switch and/or fuse mounting insulators shall be molded of a cycloaliphatic epoxy resin system with the following characteristics:

- 1) A minimum of ten years field operating experience.
- 2) Increased leakage distance established by in-house testing and field operating experience.
- 3) Adequate cantilever, tension, torsion and compression strength established by test.
- 4) Adequate thermal cycle withstand to assure trouble free field service in the most severe climatic conditions established by in-house testing and field operating experience.
- 5) Cycloaliphatic epoxy resin homogeneity throughout every insulator shall provide maximum resistance to power arcs. Ablation caused by high temperature power arcs shall continuously expose material of the same composition and properties so that only a minor change in electrical or mechanical characteristics occurs due to arc induced ablation.
- 6) Surface damage to insulators shall expose material of the same composition and characteristics so insulators with minor surface damage will not require replacement.
- 7) Meet or exceed applicable ANSI/IEEE Standards.