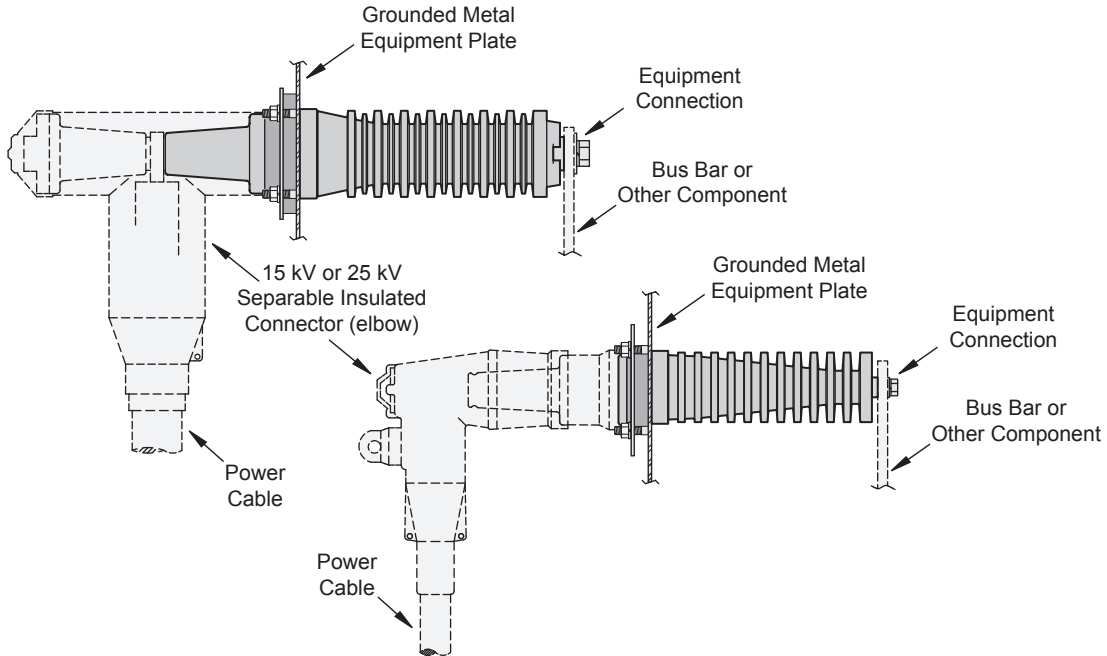


25-kV Apparatus Bushings

"A" Series (clamp-in) for Elbow to Air-Insulated Service
200 Amp and 600 Amp



For 15-kV and 25-kV Connectors (Elbows)

Elliott "A" Series (clamp-in) apparatus bushings are used to construct air-insulated equipment that connects to the utility's underground shielded cable system with IEEE Standard separable insulated connectors (i.e. elbows). Integral shielding prevents "edge-of-hole" corona discharge. The live side of the bushing is provided with unique square-edge skirts to resist flashover when contaminated and wet. The large diameter live end terminal pad (with female threads) provides for direct contact of current-carrying parts and eliminates exposed sharp threads, which could induce destructive corona discharge. In addition to IEEE Standard 386 design tests, Elliott bushings are design tested for thermal cycle withstand from +200° to -200° F to assure long field life. Every bushing is production tested "in-air" mounted in a grounded steel plate with an insulated protective plug (or cap) installed on the interface to accurately simulate operating conditions.

ELRIM Cycloaliphatic Epoxy Provides:

- Nontracking, self-scouring, nonweathering performance
- Superior dielectric strength, dielectric loss and power factor
- Choice of shapes allows design innovation
- Mechanical and thermal toughness
- Shatter-free arc flashover performance
- Oil resistant

Elliott Design Provides:

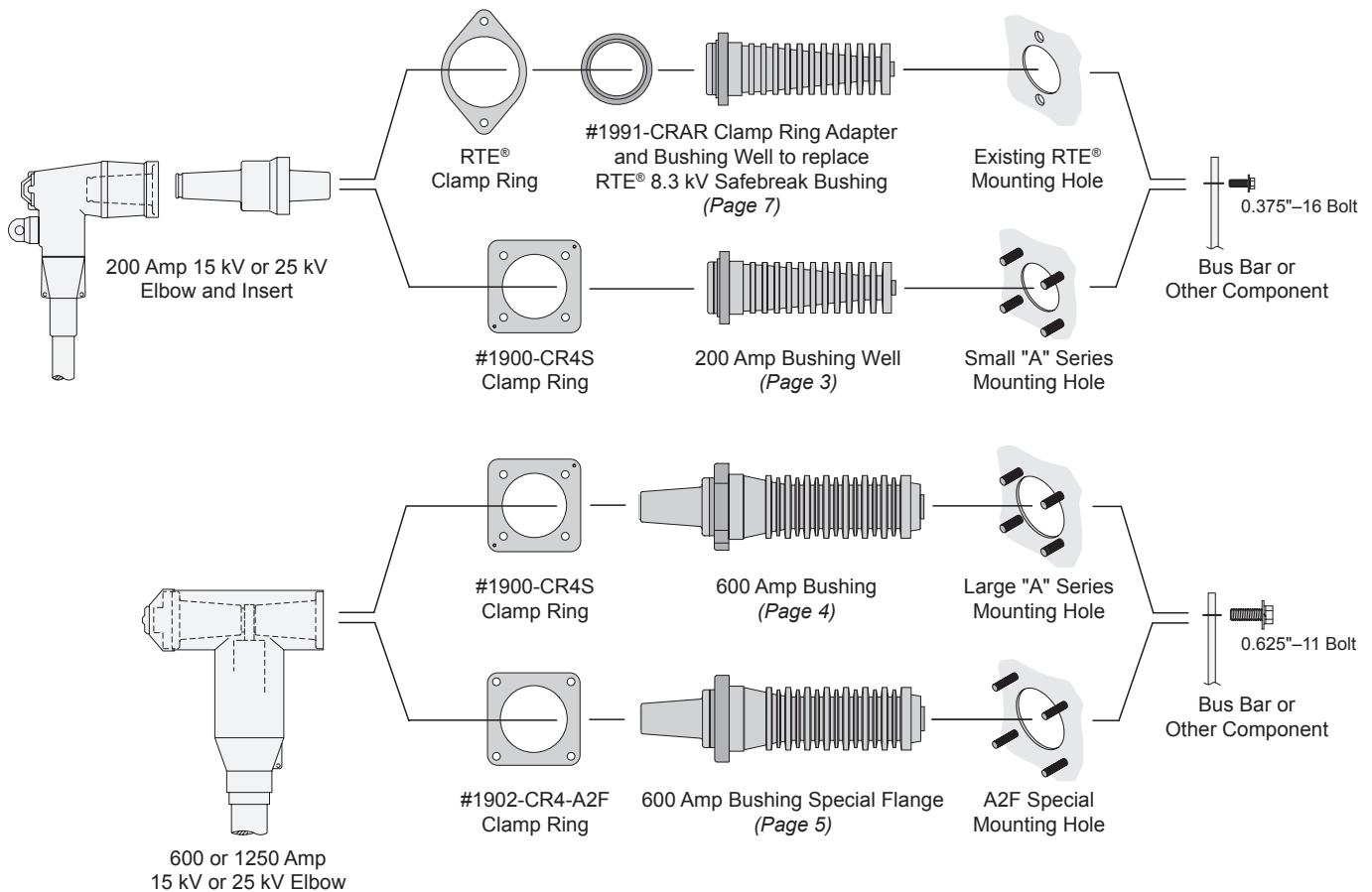
- Precision molded interfaces per IEEE Standard 386
- Integral shielding to prevent destructive corona discharge
- Square-edge skirts resist contamination - wet or dry
- Generous dry arcing (strike) distance
- Large diameter live end terminal pad with female threads for direct contact of current-carrying parts and improved corona performance
- Thermal cycle withstand from +200° to -200° F for long life
- High Strength - field proven performance since 1975

Ratings and Dimensions of Bushing Wells & Bushings

Catalog Number	Voltage Class kV	Continuous Current Amps	Withstand Test Voltage Kilovolts			Minimum Leakage Inches	Minimum Strike Inches
			Impulse 1.2 x 50	One Min. Dry	10 Sec. Dew		
1101-225A2 Bushing Well	25	200	125	40	26	17	8.5
1201-625A2 Bushing	25	600	125	40	26	21	10
1201-625A2F Bushing	25	600	125	40	26	21	10

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Elliott "A2" Bushings are advanced design clamp-in bushings typically used to construct air-insulated pad-mounted switchgear. Elliott "A2" bushings fit older-style equipment constructed with clamp-in bushings and may be used to upgrade or replace failed bushings on existing equipment in the field. For new switchgear designs, we suggest our higher performance "B" series bushings, which offer superior electrical performance, higher mechanical strength and numerous design advantages.

200 Amp Bushing Well - The #1101-225A2 bushing well is a small-shank design that can be used to replace older Elliott (and other manufacturer's) clamp-in bushings using the existing mounting hole and clamp ring. The #1101-225A2 bushing well can also be used to replace the discontinued RTE® porcelain Safebreak Bushing when used with the Elliott #1991-CRAR clamp ring adapter.

600 Amp Bushing - The #1201-625A2 bushing is a large-shank design that uses the same mounting bolt

pattern and clamp ring as the small-shank bushing, but requires a larger mounting hole. The #1201-625A2F is the same bushing, with a special flange that allows the use of a sealing gasket for in-oil application. It uses the same size mounting hole as the #1201-625A2, but requires a different mounting bolt pattern and clamp ring.

Index Slots - Elliott "A2" bushings feature a keying hole or slots on the live end. Fuse clips and hinge kits are available that bolt directly to the bushing conductor and key in the slots to prevent rotation.

Conductor Connection - Female threads in the live end of the conductor allow the attachment of live parts of almost any thickness. The bolted connection of current-carrying parts does not depend on current transfer through the fastener's thread-to-thread contact. Additional advantages of the bolted connection are higher clamping pressure and elimination of exposed sharp threads that could initiate corona.

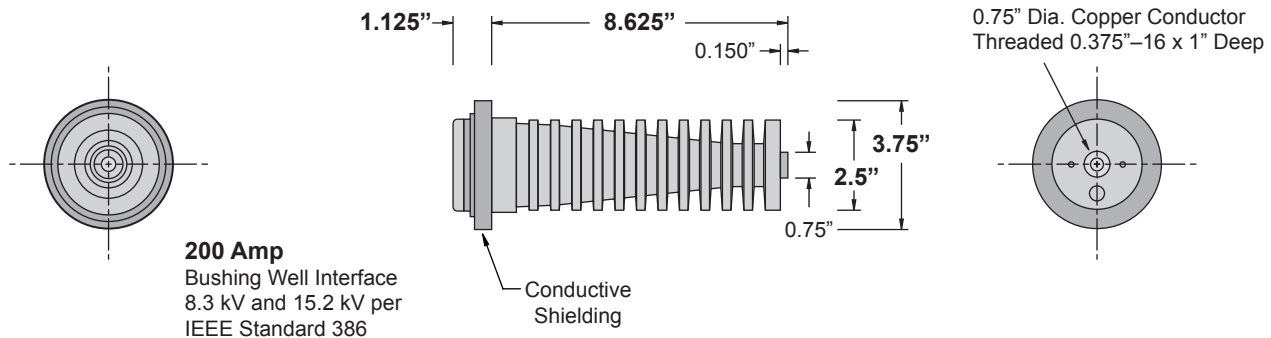


25-kV Apparatus Bushings

“A” Series (clamp-in) for Elbow to Air-Insulated Service
200 Amp and 600 Amp

Descriptive
Bulletin
1125-200
Page 3 2015

200 Amp Bushing Well #1101-225A2



Voltage Class.....	25 kV
Phase-to-Ground Voltage	15.2 kV
BIL	125 kV
AC Withstand - 1 Min. Dry	40 kV
10 Sec. Dew	26 kV
DC Withstand - 15 Min. Dry	78 kV
Corona Extinction Level - Minimum	19 kV
Continuous Current	200 Amps
Momentary - RMS, Sym., 0.17 sec.....	10,000 Amps
RMS, Sym., 3 sec	3,500 Amps

Leakage Distance, Inches.....	17
Dry Arcing Distance, Inches.....	8.5
Mechanical - Strength Rating, Pounds	
Cantilever, Ultimate 2.5 inches past end.....	>250
Tensile, Pounds.....	>2,500
Torsion, Inches-Pounds (bolt breaks)	>700
Compression, Pounds.....	20,000
Conductor (live end) Thread Size	0.375"-16 x 1"
Net Weight, Pounds (kg)	2.94 (1.34)

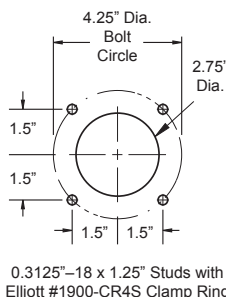
The #1101-225A2 bushing well is a small-shank design that can be used to replace older Elliott (and other manufacturer's) clamp-in bushing wells using the existing mounting hole and clamp ring. The #1101-225A2 bushing well can also be used to replace the discontinued RTE® porcelain Safebreak Bushing when used with the #1991-CRAR clamp ring adapter (page 7).

Typical Specifications - 200 Amp 15-kV and 25-kV Bushing Wells

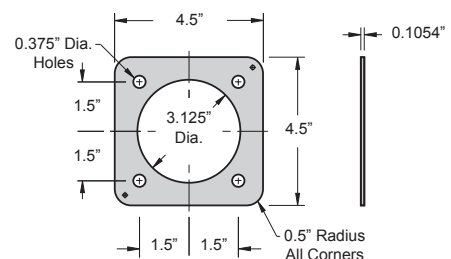
Bushings shall be Elliott #1101-225A2, 25 kV Class (15.2 kV to ground) Air-Insulated Bushing Wells, 125 kV BIL, per IEEE Standard 386 Fig. 3 (200 A Bushing Well Interface 8.3 kV, 15.2 kV, and 21.1 kV) *for use with either 8.3/14.4 kV or 15.2/26.3 kV separable insulated connectors* (Elastimold®, Eaton's Cooper Power Systems or other approved equal). The bushing wells shall be pressure-molded cycloaliphatic epoxy with a 0.75-inch diameter copper conductor on the "air-insulated" side that is drilled and tapped 0.375-inch-16UNC x 1-inch deep to provide direct connection of the bus and/or live parts. Integral shielding shall be provided to eliminate partial discharge caused by off-center mounting and mounting holes that may have sharp edges or burrs. Bushing wells shall mount in a 2.75-inch diameter opening and bolt or clamp in place

to allow field replacement with standard tools. To assure adequate strength for apparatus support, the bushing well shall withstand a minimum cantilever loading of 150 pounds for five minutes without damage. The bushing well interface shall be free of all voids, holes and heat sinks to assure proper mating with separable insulated connectors. Each bushing well shall be tested in free air, mounted in a grounded steel plate not less than 10 inches x 10 inches and with a bushing well plug (Eaton's Cooper Power Systems #IBWP225 or equal) installed in the well interface to accurately simulate operating conditions (*gas or liquid dielectric in the interface shall not be acceptable for this test*). Each bushing shall meet the requirements for 25 kV devices in accordance with IEEE Standard 386 (latest revision), including 100 percent production testing.

Mounting Hole for #1101-225A2



Clamp Ring #1900-CR4S



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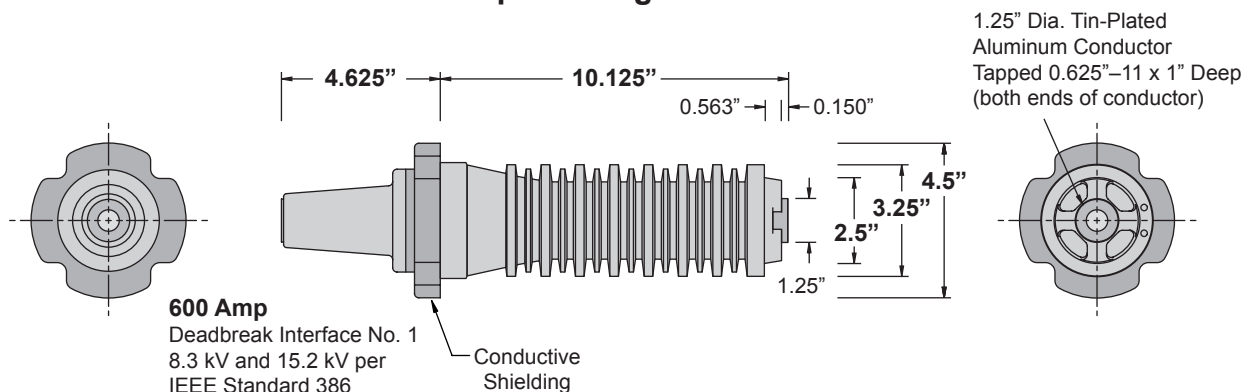


25-kV Apparatus Bushings

“A” Series (clamp-in) for Elbow to Air-Insulated Service
200 Amp and 600 Amp

Descriptive
Bulletin
1125-200
Page 4 2015

600 Amp Bushing #1201-625A2



1.25" Dia. Tin-Plated Aluminum Conductor
Tapped 0.625"–11 x 1" Deep
(both ends of conductor)

Voltage Class.....	25 kV
Phase-to-Ground Voltage.....	15.2 kV
BIL.....	125 kV
AC Withstand - 1 Min. Dry.....	40 kV
DC Withstand- 15 Min. Dry.....	78 kV
10 Sec. Dew.....	26 kV
Corona Extinction Level - Minimum.....	19 kV
Continuous Current.....	600 Amps
Momentary - RMS, Sym., 0.17 sec.....	25,000 Amps
RMS, Sym., 3 sec.....	10,000 Amps

Leakage Distance, Inches.....	21
Dry Arcing Distance, Inches.....	10
Mechanical - Strength Rating, Pounds	
Cantilever, Ultimate 2.5 inches past end.....	>350
Tensile, Pounds.....	>2,500
Torsion, Inches-Pounds (bolt breaks).....	>3,500
Compression, Pounds.....	20,000
Conductor (live end) Thread Size.....	0.625"–11 x 1"
Net Weight, Pounds (kg).....	6.01 (2.73)

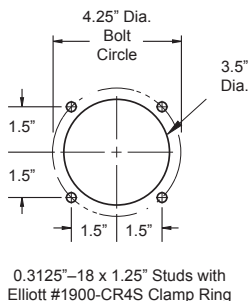
The #1201-625A2 bushing is a large-shank design that uses the same mounting bolt pattern and clamp ring as the small-shank bushing, but requires a larger mounting hole. The #1201-625A2F bushing (page 5) is the same basic design, except it features a special flange to allow the use of a sealing gasket for in-oil application.

Typical Specifications - 600 Amp 15-kV and 25-kV Bushings

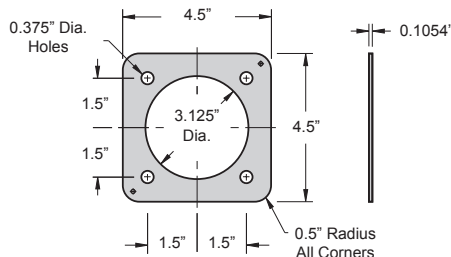
Bushings shall be Elliott #1201-625A2, 25 kV Class (15.2 kV to ground) Air-Insulated Bushings, 125 kV BIL, per IEEE Standard 386 Fig. 11 (600 A Deadbreak Interface No. 1, 8.3 kV and 15.2 kV) *for use with either 8.3/14.4 kV or 15.2/26.3 kV separable insulated connectors* (Elastimold®, Eaton's Cooper Power Systems or other approved equal). The bushings shall be pressure-molded cycloaliphatic epoxy with a 1.25-inch diameter tin-plated aluminum conductor on the "air-insulated" side that is drilled and tapped 0.625-inch–11UNC x 1-inch deep to provide direct connection of the bus and/or live parts. Integral shielding shall be provided to eliminate partial discharge caused by off-center mounting and mounting holes that may have sharp edges or burrs. Bushings shall mount in a 3.5-inch diameter opening and bolt or clamp in place to allow field replacement

with standard tools. To assure adequate strength for apparatus support, the bushing shall withstand a minimum cantilever loading of 200 pounds for five minutes without damage. The bushing interface shall be free of all voids, holes and heat sinks to assure proper mating with separable insulated connectors. Each bushing shall be tested in free air, mounted in a grounded steel plate not less than 10 inches x 10 inches and with an insulated protective cap (Eaton's Cooper Power Systems #DPC625 or equal) installed on the interface to accurately simulate operating conditions (*gas or liquid dielectric on the interface shall not be acceptable for this test*). Each bushing shall meet the requirements for 25 kV devices in accordance with IEEE Standard 386 (latest revision), including 100 percent production testing.

Mounting Hole For #1201-625A2



Clamp Ring #1900-CR4S



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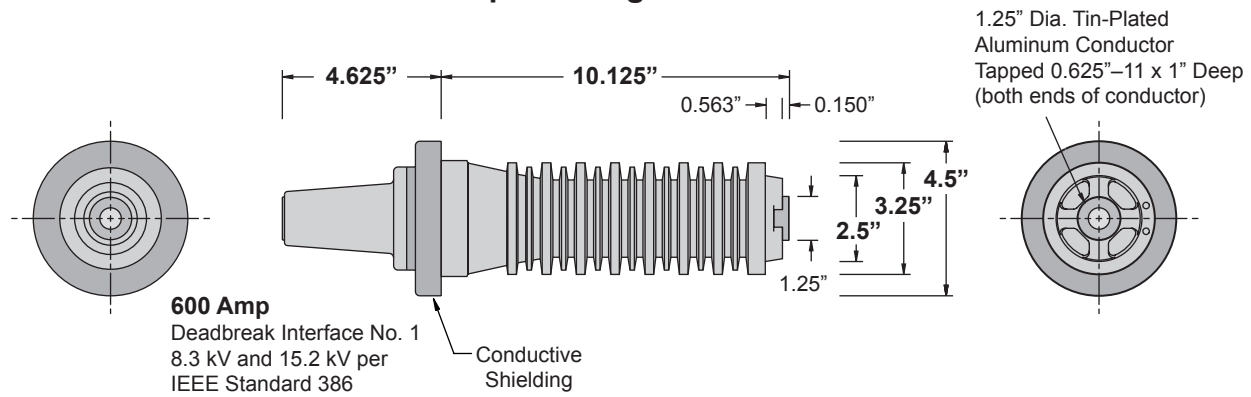


25-kV Apparatus Bushings

“A” Series (clamp-in) for Elbow to Air-Insulated Service
200 Amp and 600 Amp

Descriptive
Bulletin
1125-200
Page 5 2015

600 Amp Bushing #1201-625A2F



Voltage Class.....	25 kV
Phase-to-Ground Voltage.....	15.2 kV
BIL.....	125 kV
AC Withstand - 1 Min. Dry.....	40 kV
10 Sec. Dew.....	26 kV
DC Withstand - 15 Min. Dry.....	78 kV
Corona Extinction Level - Minimum.....	19 kV
Continuous Current.....	600 Amps
Momentary - RMS, Sym., 0.17 sec.....	25,000 Amps
RMS, Sym., 3 sec.....	10,000 Amps

Leakage Distance, Inches.....	21
Dry Arcing Distance, Inches.....	10
Mechanical - Strength Rating, Pounds	
Cantilever, Ultimate 2.5 inches past end.....	>350
Tensile, Pounds.....	>2,500
Torsion, Inches-Pounds (bolt breaks).....	>3,500
Compression, Pounds.....	20,000
Conductor (live end) Thread Size.....	0.625"-11 x 1"
Net Weight, Pounds (kg).....	6.2 (2.82)

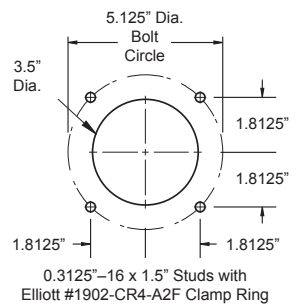
The #1201-625A2F bushing is a large-shank design that is similar to the #1201-625A2 (page 4), except it features a special flange to allow the use of a sealing gasket for in-oil application. The #1201-625A2F bushing uses the same mounting hole as the #1201-625A2, but requires a different mounting bolt pattern and clamp ring.

Typical Specifications - 600 Amp 15-kV and 25-kV Bushings

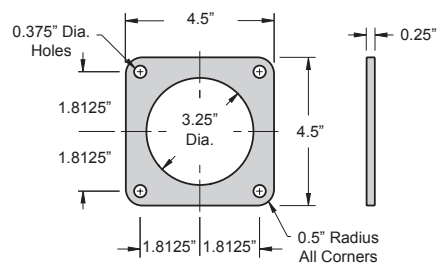
Bushings shall be Elliott #1201-625A2F, 25 kV Class (15.2 kV to ground) Air-Insulated Bushings, 125 kV BIL, per IEEE Standard 386 Fig. 11 (600 A Deadbreak Interface No. 1, 8.3 kV and 15.2 kV) *for use with either 8.3/14.4 kV or 15.2/26.3 kV separable insulated connectors* (Elastimold®, Eaton's Cooper Power Systems or other approved equal). The bushings shall be pressure-molded cycloaliphatic epoxy with a 1.25-inch diameter tin-plated aluminum conductor on the "air-insulated" side that is drilled and tapped 0.625-inch-11UNC x 1-inch deep to provide direct connection of the bus and/or live parts. Integral shielding shall be provided to eliminate partial discharge caused by off-center mounting and mounting holes that may have sharp edges or burrs. Bushings shall mount in a 3.5-inch diameter opening and bolt or clamp in place to allow field replacement

with standard tools. To assure adequate strength for apparatus support, the bushing shall withstand a minimum cantilever loading of 200 pounds for five minutes without damage. The bushing interface shall be free of all voids, holes and heat sinks to assure proper mating with separable insulated connectors. Each bushing shall be tested in free air, mounted in a grounded steel plate not less than 10 inches x 10 inches and with an insulated protective cap (Eaton's Cooper Power Systems #DPC625 or equal) installed on the interface to accurately simulate operating conditions (*gas or liquid dielectric on the interface shall not be acceptable for this test*). Each bushing shall meet the requirements for 25 kV devices in accordance with IEEE Standard 386 (latest revision), including 100 percent production testing.

Mounting Hole For #1201-625A2F



Clamp Ring #1902-CR4-A2F

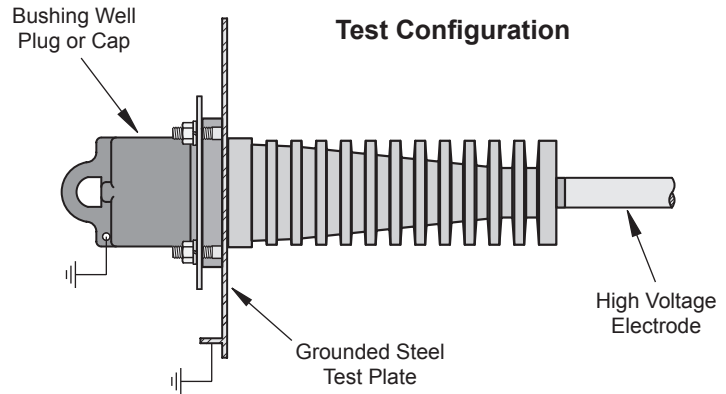


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Production Tests

Every bushing is production tested in free air, mounted in an 11-gauge grounded steel plate not less than 10 inches x 10 inches, with an insulating protective plug (or cap) installed on the interface to accurately simulate operating conditions. Each bushing must meet or exceed the requirements for 15.2/26.3 kV devices in accordance with the test values of IEEE Standard 386 (latest revision) for partial discharge (corona) and AC voltage withstand when tested in this manner.



Installation Instructions

Elliott "A" Series Apparatus Bushings clamp in place utilizing the mounting hole and hardware shown below. All mounting hardware is located on the elbow side of the equipment mounting plate to eliminate the possibility of reduced phase-to-ground clearance.

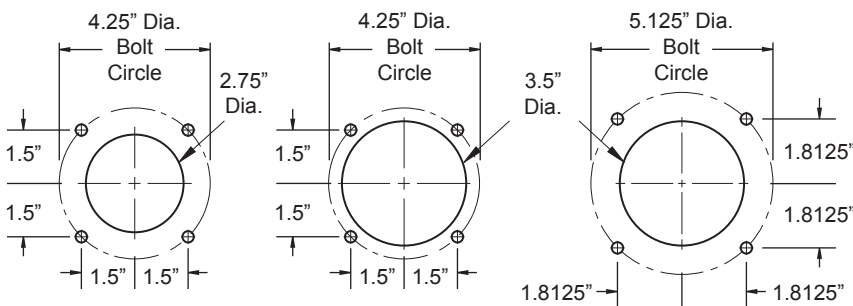
Every Elliott Bushing is tested at the factory, mounted in a grounded steel plate. A greased bushing well plug (or insulating protective cap) is installed on the interface to accurately simulate operating conditions. To prevent contamination of the silicone grease, it is important to keep the shipping cap in place until you are ready to install the bushing insert (or elbow). Should the grease become contaminated, thoroughly clean the interface and reapply silicone grease before installing the bushing insert (or elbow).

NOTE: *The shipping cap on the bushing well (or bushing) should be left in place to prevent contamination of the interface.*

1. The bushing installs from the elbow side.
2. A clamp ring is placed on the bushing.
3. Lock washers and lock nuts are installed on the studs (or bolts). The nuts should be tightened in a uniform manner (rather than one-by-one in a random sequence). Do not apply more than 90 inch-pounds torque to each nut. The studs should be left unpainted to provide a connection from the shielding to the grounded mounting plate. If the bushing is mounted on an ungrounded or insulated plate (such as fiberglass), a ground strap should be attached to one of the mounting studs.

IMPORTANT:

Do not energize this bushing with only the shipping cap in place. To do so would lead to failure of the bushing and create a hazard to operating personnel. *This product is designed to be used only when it is mated with an appropriate 15 kV or 25 kV Class bushing insert (and/or elbow) conforming to the latest revision of IEEE Standard 386.* The bushing insert (and/or elbow) should be installed in accordance with the instructions supplied by the connector manufacturer.



Mounting Hole For #1101-225A2

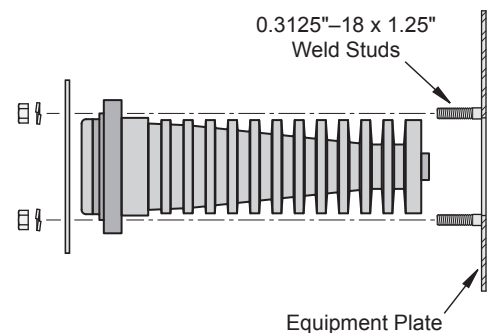
0.3125"-18 x 1.25" Studs with Elliott #1900-CR4S Clamp Ring

Mounting Hole For #1201-625A2

0.3125"-18 x 1.25" Studs with Elliott #1900-CR4S Clamp Ring

Mounting Hole For #1201-625A2F

0.3125"-16 x 1.5" Studs with Elliott #1902-CR4-A2F Clamp Ring

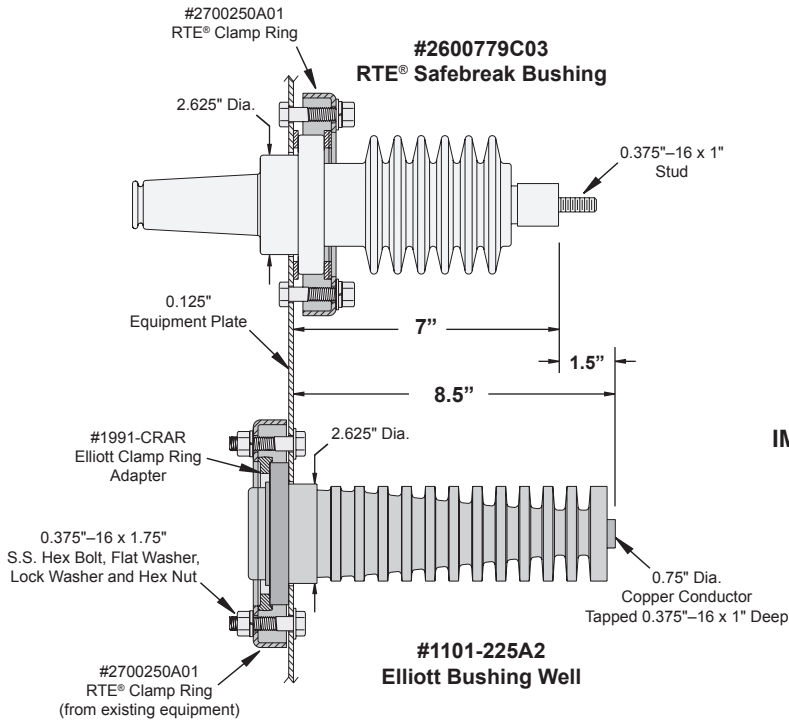


Equipment Plate

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Replace existing RTE® 8.3-kV Safebreak Bushing with an Elliott Bushing Well and #1991-CRAR Clamp Ring Adapter



The #1991-CRAR Clamp Ring Adapter permits a #1101-225A2 Elliott Bushing Well to be mounted, with an RTE® Clamp Ring, in equipment originally equipped with the discontinued RTE® 8.3 kV porcelain Safebreak Bushing. The clamp ring is located on the elbow side of the equipment mounting plate to eliminate the possibility of reduced phase-to-ground clearance. The #1991-CRAR Clamp Ring Adapter comes complete with the bolts, nuts and washers shown below.

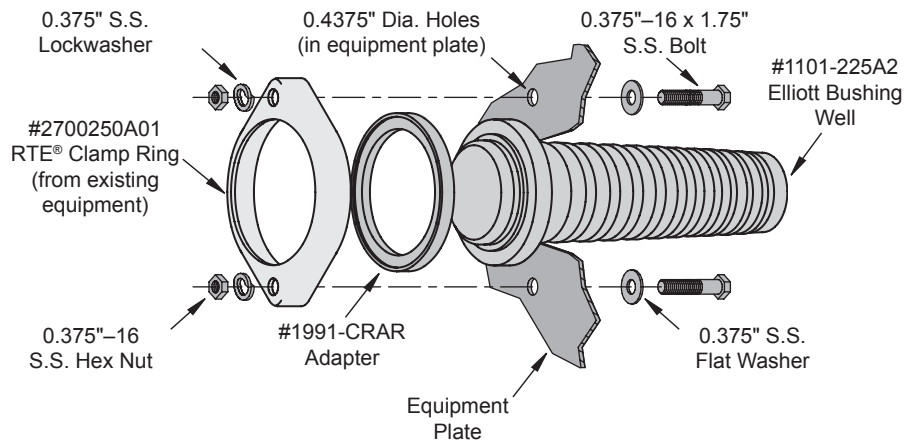
IMPORTANT:

Do not energize this bushing with only the shipping cap in place. To do so would lead to failure of the bushing and create a hazard to operating personnel. *This product is designed to be used only when it is mated with an appropriate 15 kV or 25 kV Class bushing insert conforming to the latest revision of IEEE Standard 386.* The bushing insert should be installed in accordance with the instructions supplied by the connector manufacturer.

Replacement Instructions

NOTE: The shipping cap on the bushing well should be left in place to prevent contamination of the interface.

1. The existing RTE® bushing is removed, keeping the RTE® clamp ring for re-use.
2. The bushing well installs from the elbow side for easy installation.
3. The clamp ring adapter and RTE® clamp ring are placed on the bushing.
4. Flat washers, lock washers and nuts are installed on the bolts. The nuts should be tightened in a uniform manner rather than one-by-one in a random sequence. Do not apply more than 90 inch-pounds torque to each nut.





25-kV Apparatus Bushings
"A" Series (clamp-in) for Elbow to Air-Insulated Service
200 Amp and 600 Amp

Descriptive
Bulletin
1125-200
Page 8 2015

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you need
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