

200 A, 15 and 25 kV class loadbreak bushing insert installation instructions



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Safety for life



Eaton's Cooper Power Systems products meet or exceed all applicable industry standards relating to product safety. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton's Cooper Power Systems employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high voltage lines and equipment, and support our "Safety For Life" mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

CAUTION: Indicates a hazardous situation which, if not avoided, could result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

DANGER

Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.

G103.3

WARNING

Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.

G101.0

WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury and equipment damage.

G102.1

WARNING

Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.

G122.3

Product information

Introduction

Eaton's Cooper Power Systems loadbreak bushing insert threads into a universal bushing well to provide the same function as an integral loadbreak bushing. Using bushing inserts makes field installation and replacement possible and efficient. Bushing inserts and elbow connectors comprise the essential components of all loadbreak connections.

The bushing insert meets all the requirements of IEEE Std 386™ standard and is completely interchangeable with mating products that also meet IEEE Std 386™ standard. When mated with a comparably rated component, the bushing insert provides a fully shielded and submersible connection for loadbreak operation.

WARNING

All associated apparatus must be de-energized during any hands-on installation or maintenance. Failure to comply may result in death, severe personal injury, and equipment damage.

CAUTION

The 200 A loadbreak bushing insert is designed to be operated in accordance with normal safe operating procedures. These instructions are not intended to supersede or replace existing safety and operating procedures. The elbow connector should be installed and serviced only by personnel familiar with good safety practices and the handling of high-voltage electrical equipment.

Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Additional information

These instructions cannot cover all details or variations in the equipment, procedures, or process described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, contact your Eaton's Cooper Power Systems Representative.

Acceptance and initial inspection

Each loadbreak bushing insert is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the loadbreak bushing insert and inspect it thoroughly for damage incurred during shipment. If damage is discovered, file a claim with the carrier immediately.

Handling and storage

Be careful during handling and storage of the loadbreak bushing insert to minimize the possibility of damage. If the loadbreak bushing insert is to be stored for any length of time prior to installation, provide a clean, dry storage area.

Standards

ISO 9001 Certified Quality Management System

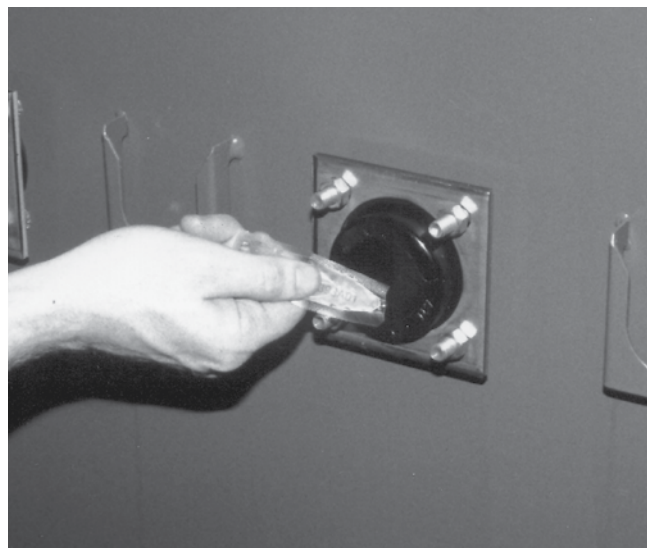


Figure 1. Clean and lubricate interfaces of bushing well.

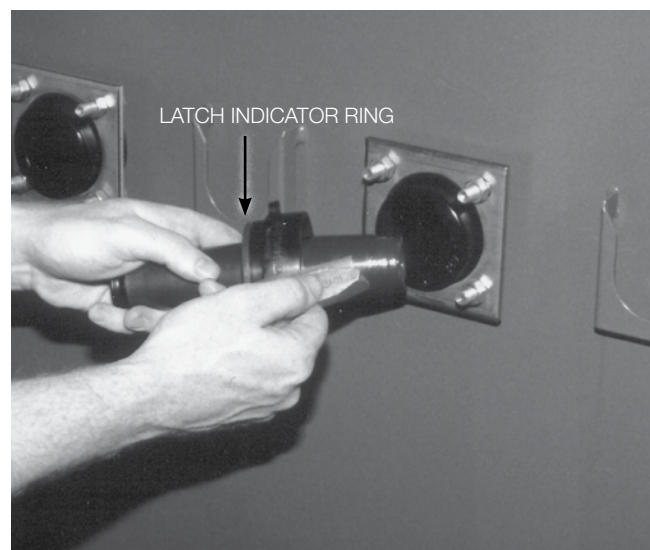


Figure 2. Clean and lubricate interface of bushing insert (15 kV version shown).

Installation instructions

Step 1.

Clean and lubricate

- Remove red shipping cap. Do not energize bushing with shipping cap installed.
- Clean bushing well and apply a thin uniform coating of silicone lubricant. (See Figure 1.)
- Clean mating interface of bushing insert and apply a thin, uniform coating of silicone lubricant. (See Figure 2.)

Step 2A.

Install using installation torque tool (LBITOOL)

- Insert torque tool (LBITOOL) into bushing insert, turning tool slightly to engage hex-broach.
- Place threaded end of bushing insert into bushing well.
- Turn clockwise until torque tool makes an audible “click”. The torque tool tightens the bushing insert to approximately 15 ft-lbs. (See Figure 3.)

Step 2B.

Install without using installation torque tool (LBITOOL)

- Place threaded end of bushing insert into bushing well.
- If installing using a torque tool other than the LBITOOL, the torque setting should be set for 15 ft-lbs.
- If installing without a torque tool, turn the insert clockwise until it bottoms on the bushing well stand (approximately 7-7 1/2 turns).

Step 3.

Ground

- Attach one end of a #14 AWG copper wire to one of the ground tabs of the bushing insert.
- Attach other end of wire to ground. (See Figure 4.)

Step 4.

Cover interface

- Do not leave bushing interface exposed.
- Cover with an appropriate mating product using the instructions supplied. **DO NOT USE SHIPPING CAP.**

ATTENTION: This bushing is equipped with Eaton's Cooper Power Systems exclusive latch indicator ring, that serves as a visual indicator to verify that the mating component is properly seated on the bushing insert.

Once the mating component has been properly installed on the bushing, the yellow ring should be completely covered. **If any yellow is visible, the elbow or protective cap must be completely installed or “latched” before energizing to assure a quality connection.**



Figure 3. Insert torque tool and tighten to bushing well (15 kV version shown).



Figure 4. Attach ground lead (15 kV version shown).

Removal instructions

- De-energize apparatus and verify apparatus is de-energized.
- Remove mating products and place in stand-off device or in a clean, dry location.
- Remove ground wire.
- Use either a 5/16" hex drive tool, torque tool or a strap wrench to remove.
 - If a hex-drive tool is used, insert drive into insert, turning tool slightly to engage hex-broach. Turn counter-clockwise to remove.
 - If a strap wrench is used, wrap around the collar of the bushing insert. Turn counter-clockwise to remove. Take care not to damage bushing interface during this procedure.

Fault close

1. It is not recommended that operations be made on known faults.
2. If a fault is experienced, both the elbow connector and the bushing must be replaced.

Loadbreak operation

1. Securely fasten a clampstick to the pulling eye of the mating loadbreak elbow.
2. Without exerting any pulling force, slightly rotate the elbow clockwise to break surface friction between the elbow and bushing.
3. Withdraw the elbow from the bushing with a fast, firm, straight motion, being careful not to place the connector near a ground plane.
4. Place the elbow on an appropriate accessory device, following the operating instructions for that accessory.
5. Place an insulated protective cap with drain wire attached to system ground on any exposed energized bushing using a clampstick.

WARNING

The operator should always use personal protective equipment (insulated gloves, clampstick and eye protection) whenever operating the elbow. The operator should always be in the best possible operating position, providing firm footing and enabling a secure grasp of the clampstick, while maintaining positive control of the elbow before, during and immediately after operation. If there is any question regarding the operator's operating position, de-energize the elbow before operation. The operator should not be looking directly at the connector during the moment of circuit interruption or connection. Failure to comply may result in death, personal injury and equipment damage.

Operating instructions

Do not connect two different phases of a multiple-phase system. Before closing a single-phase loop, make certain both ends of the loop are the same phase.

Loadmake operation

1. Area must be clear of obstructions or contaminants that would interfere with the operation of the loadbreak elbow.
2. Securely fasten a clampstick to the pulling eye.
3. Place the loadbreak elbow over the bushing, inserting the white arc follower of the probe into the bushing approximately 2 1/2" until a slight resistance is felt.
4. Immediately thrust the elbow onto the bushing with a fast, firm, straight motion, with sufficient force to latch the elbow to the bushing.
5. Push again on the elbow with the clampstick, and then pull gently to make sure that it is secure.



Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

**Eaton's Cooper Power Systems
Business**
2300 Badger Drive
Waukesha, WI 53188
United states
Cooperpower.com

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