

200 A Fused Loadbreak Elbow Connector Replacement Fuse Installation Instructions



Powering Business Worldwide

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200 A Fused Loadbreak Elbow Connector Replacement Fuse



Safety for life



Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. 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 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 arc 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 an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

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

CAUTION

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

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may 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.

G122.2

⚠ WARNING

Capacitive Test Point Operating Instructions: Use only voltage indicating instruments specifically designed for test points. Use of conventional voltage sensing devices may provide false "No Voltage" indications.

The test point must be dry and free of contaminants when checking for voltage. After indication is taken: clean, dry, and lubricate the test point cap with silicone grease and assemble to the test point.

Always consider the termination to be energized until the test point "No Voltage" indication is confirmed by other means. Failure to comply could result in death or severe personal injury.

⚠ WARNING

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

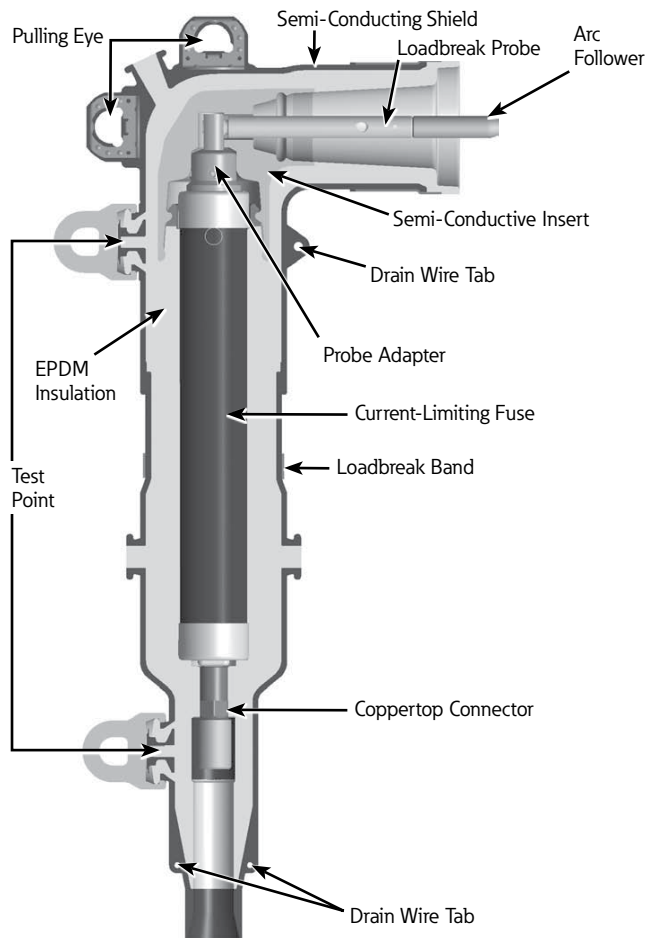


Figure 1. Line illustration of 200 A 25 kV Fused Elbow.

Product Information

Introduction

The 200 A, 15 and 25 kV Class Fused Loadbreak Elbow Connectors from Eaton combines a fully-shielded and insulated plug-in termination with fullrange current-limiting fuse protection. The Fused Loadbreak Elbow Connector provides a convenient and cost effective means to adding fused protection to underground distribution systems, for connecting underground cables to transformers, switching cabinets and junctions equipped with loadbreak bushings.

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. When additional information is desired to satisfy a problem not covered sufficiently for the user's purpose, please contact your Eaton representative.

Acceptance and Initial Inspection

Each current-limiting replacement fuse is completely inspected and tested at the factory. It is in good condition when accepted by the carrier for shipment. Upon receipt of the current-limiting replacement fuse, inspect the connector thoroughly for damage and loss of parts incurred during shipment. If damage or loss is discovered, file a claim with the carrier immediately.

Handling and Storage

If the current-limiting replacement fuse is to be stored for an appreciable time before installation, provide a clean, dry storage area. Locate the replacement fuse so as to minimize the possibility of physical damage.

Quality Standards

ISO 9001 Certified Quality Management System.

Fuse Replacement Procedures

Complete current-limiting replacement fuse includes:

- Current-Limiting Fuse
- Two (2) Spare Set Screws
- Bleeder Strap
- Two (2) Probe Installation Tools
- One (1) 1/8" Hex Wrench
- Two (2) 3/16" Hex Wrenches
- Silicone Lubricant
- Installation Instruction Sheet

 **DANGER**

Hazardous Voltage. Both sides of the fused loadbreak elbow must be disconnected and grounded prior to any hands-on installation or maintenance. Failure to comply will result in death or severe personal injury and equipment damage.

 **WARNING**

The operator should always use personal protective equipment (insulated gloves, clampstick and eye protection) whenever operating the fused loadbreak 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 could result in death or serious injury.

 **WARNING**

Capacitive Test Point Operating Instructions: Use only voltage indicating instruments specifically designed for test points. Use of conventional voltage sensing devices may provide false "No Voltage" indications.

The test point must be dry and free of contaminants when checking for voltage. After indication is taken: clean, dry, and lubricate the test point cap with silicone grease and assemble to the test point.

Always consider the termination to be energized until the test point "No Voltage" indication is confirmed by other means. Failure to comply could result in death or severe personal injury.

Step 1

Voltage Test Operation

The Fused Loadbreak Elbow Connector is equipped with two integral capacitive test points that can be used to establish whether or not the fuse has interrupted the tap circuit. The test point on the source side of an open fuse will indicate a voltage while the test point on the tap side of the fuse will indicate no voltage. Both test points will indicate a voltage if the fuse has not operated.

Step 2

Establish visible break and visible ground

Using a clampstick, isolate fuse by disconnecting the Fused Loadbreak Elbow Connector from the apparatus bushing and parking the Fused Loadbreak Elbow Connector on an appropriate feedthru device. Install an insulated protective cap on the apparatus bushing. Isolate the Fused Loadbreak Elbow Connector on the tap-end of the fuse by disconnecting and placing the tap-end cable termination on an appropriate feedthru device. Install an insulated protective cap on the tap-end apparatus bushing. Then create a visibly traceable ground on both sides of the fuse.

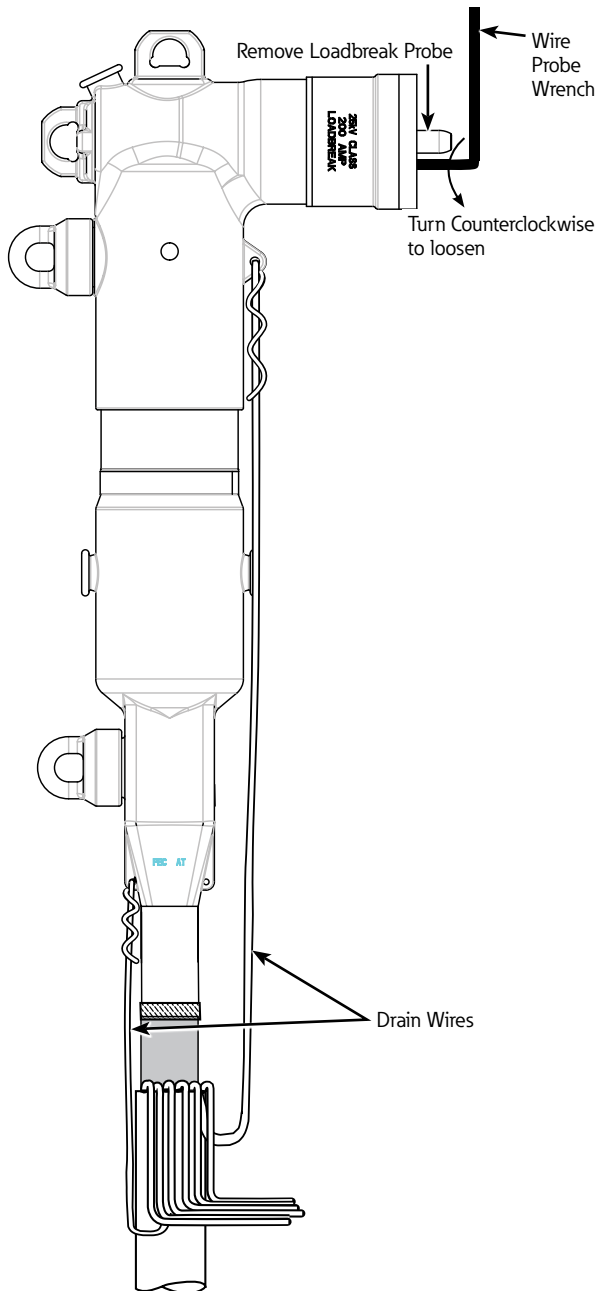
Probe and Elbow Housing Disassembly

Step 3

After a visible ground is achieved on both sides of the fuse, remove the Fused Loadbreak Elbow Connector from feedthru device.

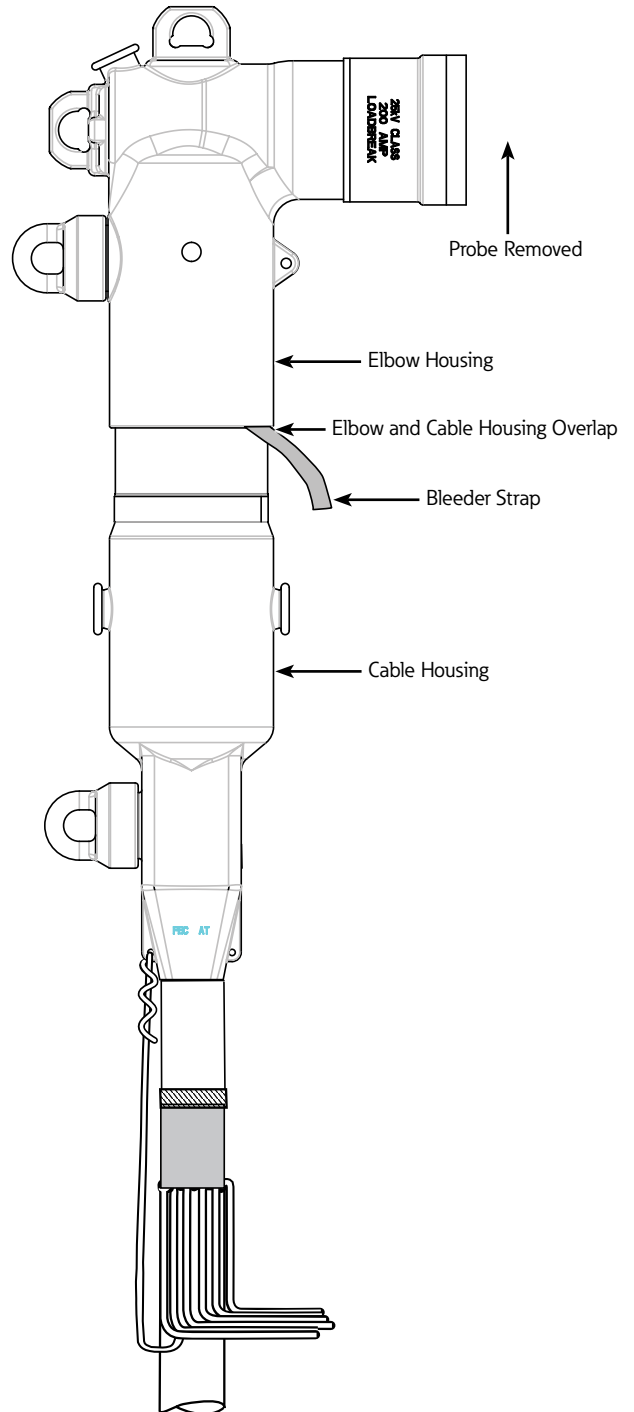
Step 4

Install supplied wire probe wrench into wrench hole of loadbreak probe. Turning counterclockwise, unthread and remove loadbreak probe from fused loadbreak elbow.



Step 5

Detach drain-wire lead from the drain-wire eye of the elbow housing. At the overlap of elbow housing and cable housing, insert supplied bleeder strap approx. 1/2" (13 mm) under lip of elbow housing. Slide strap around the entire circumference of fused loadbreak elbow to vent the interfaces. Leave the bleeder strap inserted between housings.



200 A Fused Loadbreak Elbow Connector Replacement Fuse

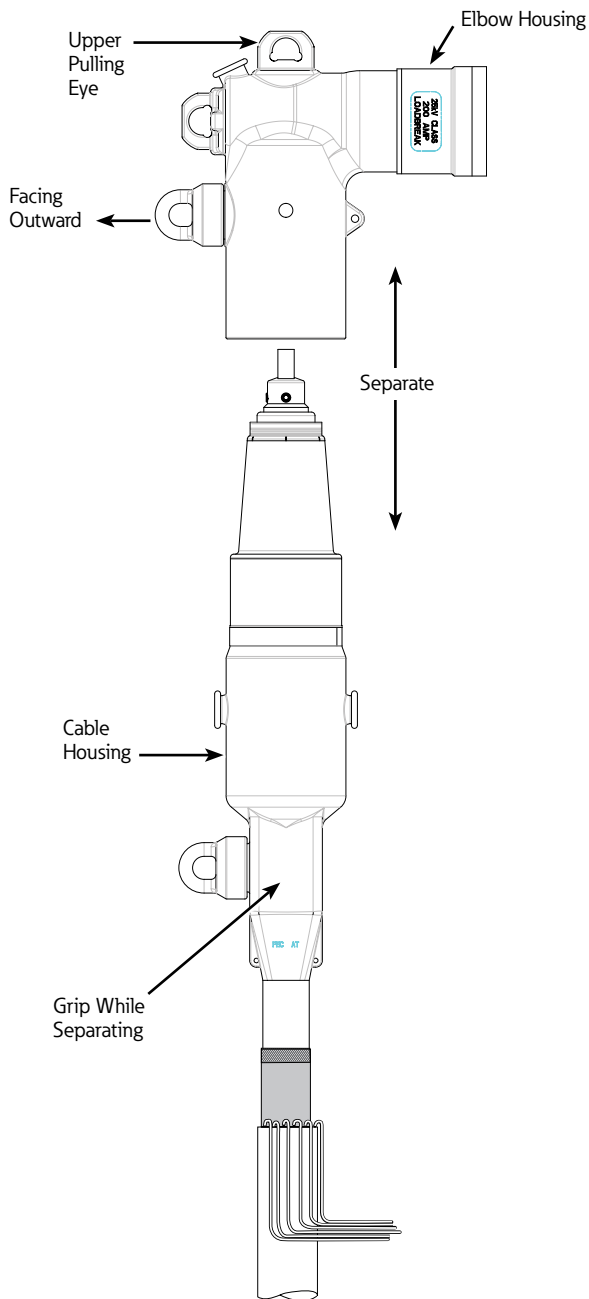
Fuse Disassembly

Step 6

Gripping the square portion of the cable housing, and keeping the cable housing stationary, apply a twist-and-pull motion to the elbow housing to separate it from the cable housing.

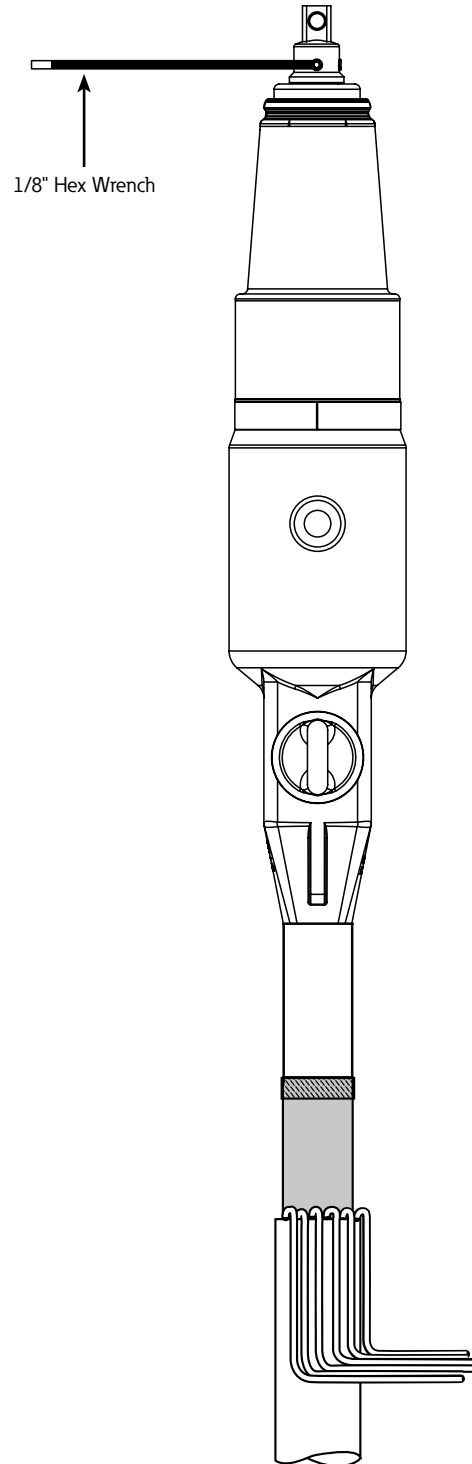
Note: A screwdriver through the pulling eye on top of the elbow will aid in twisting and pulling to separate.

Discard bleeder strap after housings are separated.



Step 7

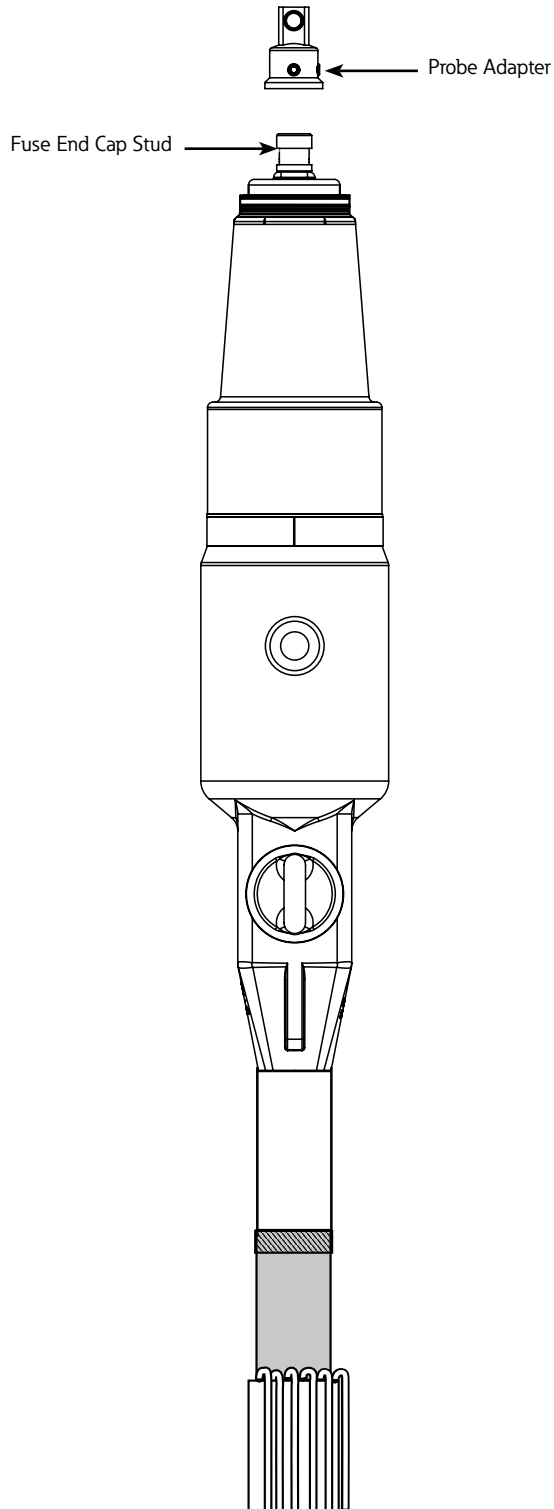
Using the supplied 1/8" hex wrench, unthread the two set screws from the probe adapter.



200 A Fused Loadbreak Elbow Connector Replacement Fuse

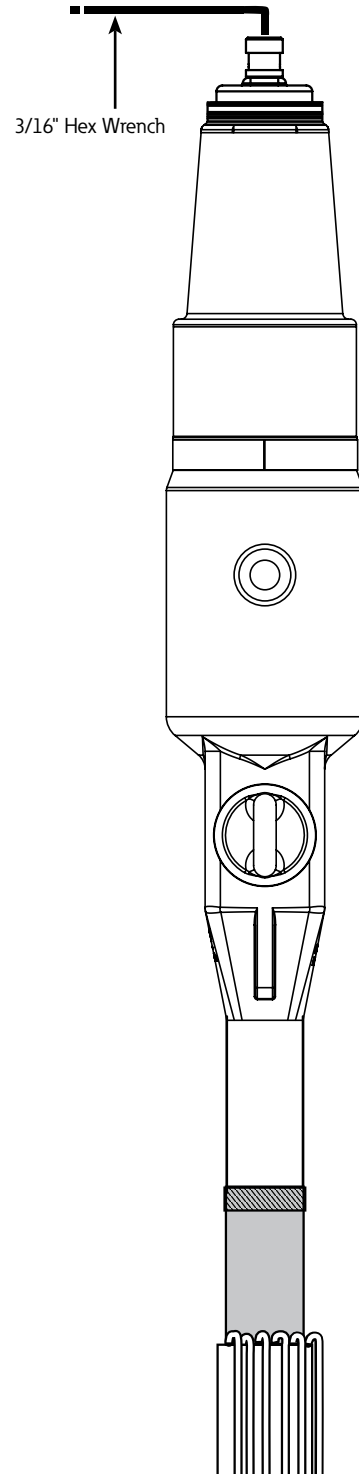
Step 8

Remove probe adapter from fuse end cap stud on top of fuse.



Step 9

Gripping the square portion of the cable housing, use the supplied 3/16" hex wrench to loosen and unthread fuse from cable housing.

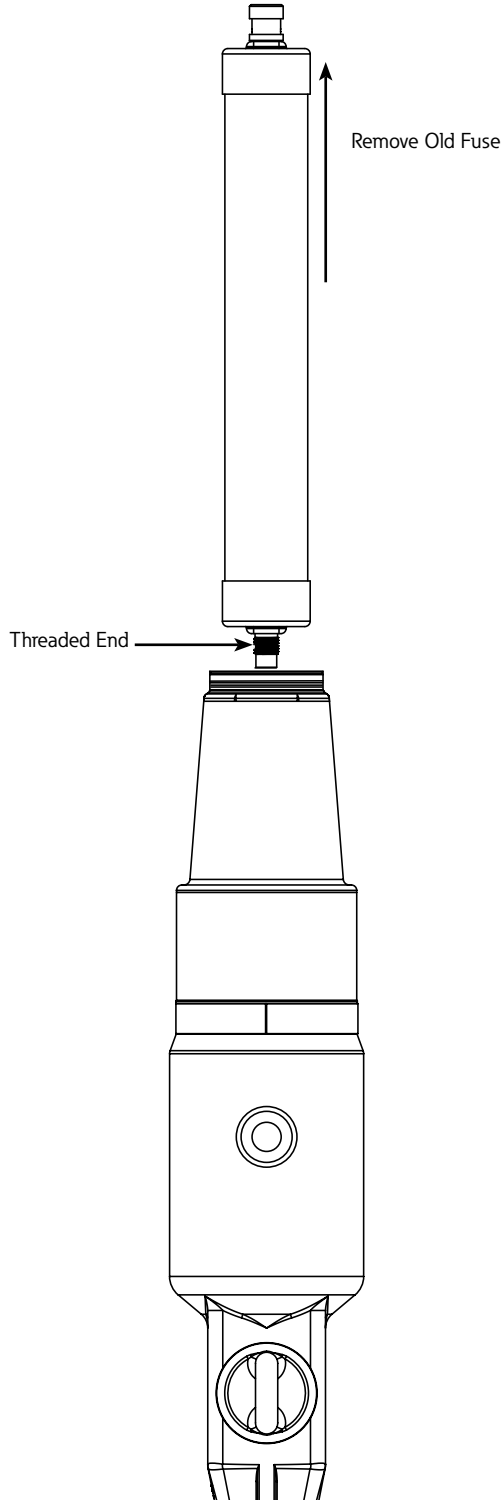


200 A Fused Loadbreak Elbow Connector Replacement Fuse

Replacement Fuse Installation

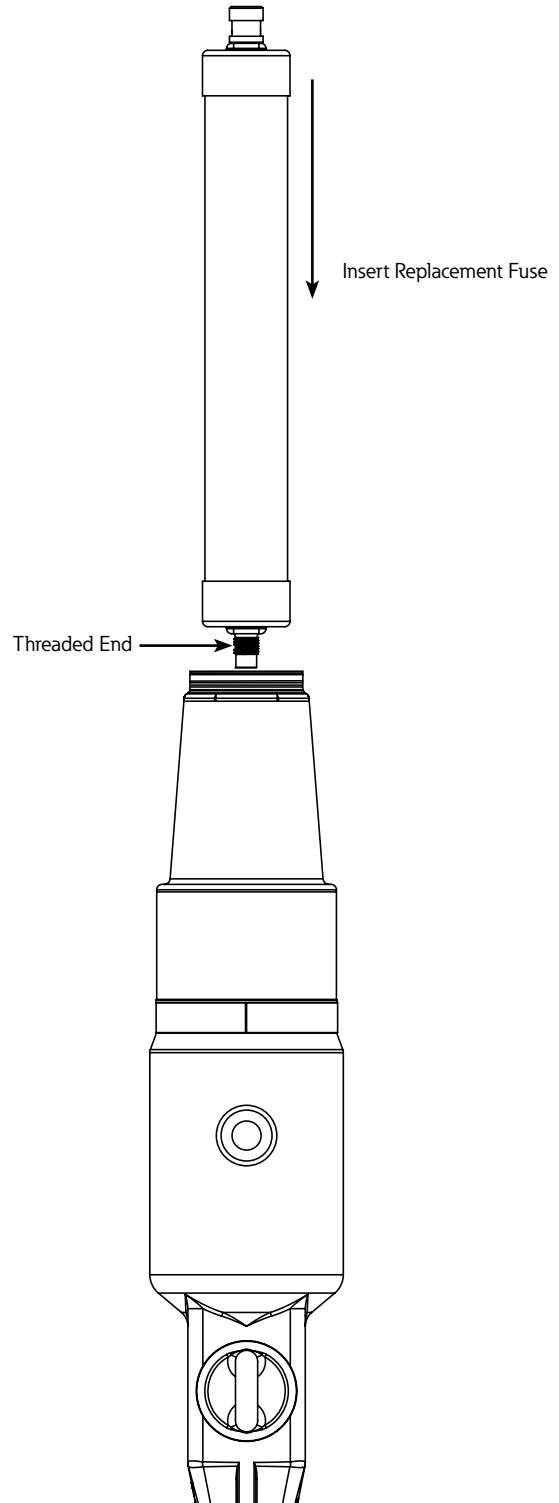
Step 10

Remove old fuse from cable housing.



Step 11

Thread fuse clockwise by hand and start threads into the connector in bottom of the cable housing until hand-tight.

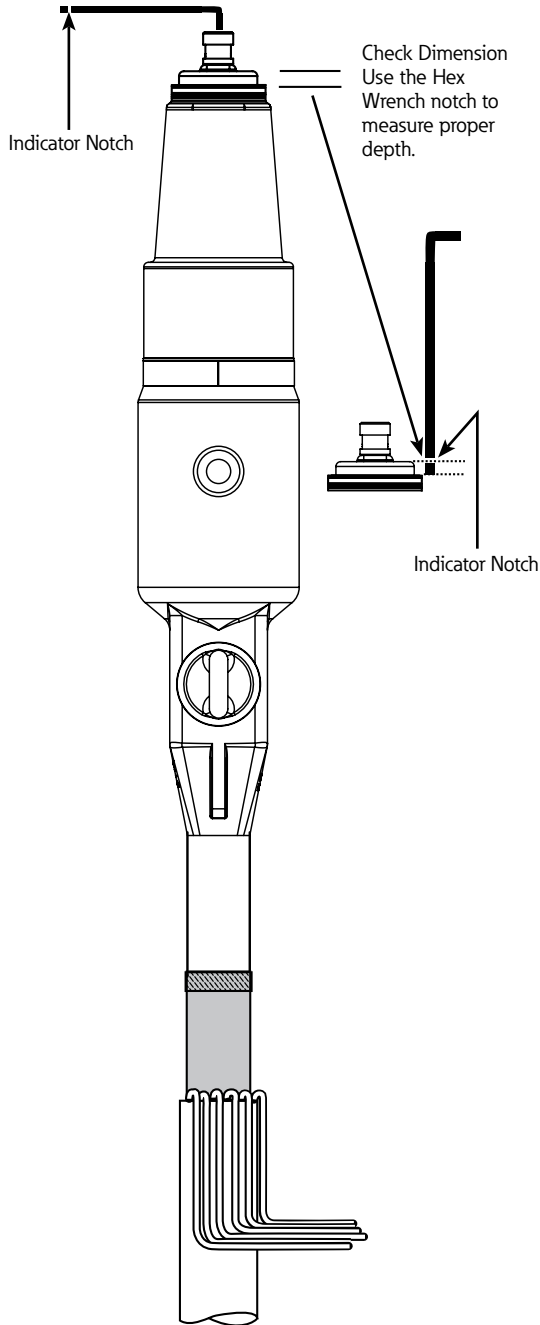


Probe Adapter Reassembly

Step 12

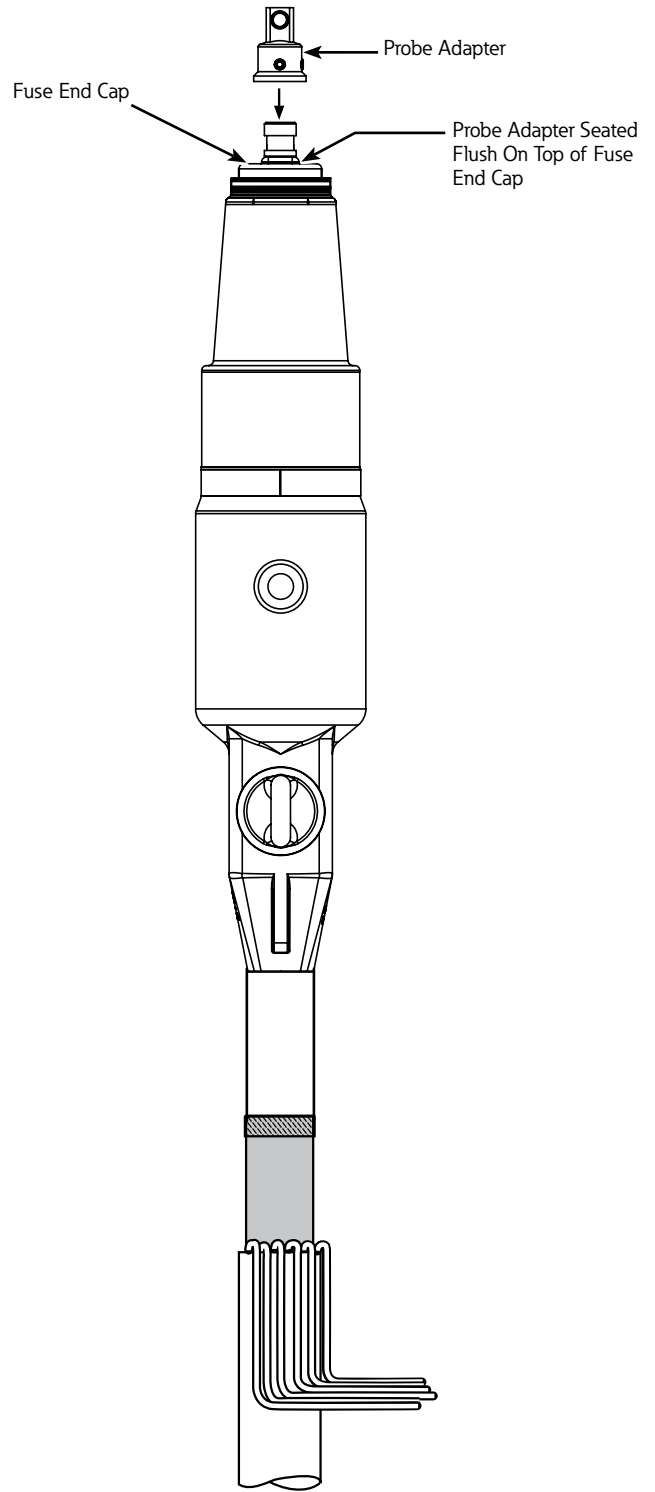
Holding the square portion of the cable housing, complete fuse assembly using the supplied 3/16" hex wrench. Tighten until fuse bottoms and the hex wrench twists.

Confirm check dimension shown in illustration above. Position the long end of the hex wrench on the cable housing nosepiece, verify that the top of the fuse end cap is equal to or below indicator notch on the hex wrench.



Step 13

Install probe adapter on unthreaded stud. Probe adapter should rest flush on top of fuse end cap.



200 A Fused Loadbreak Elbow Connector Replacement Fuse

Elbow Housing and Probe Reassembly

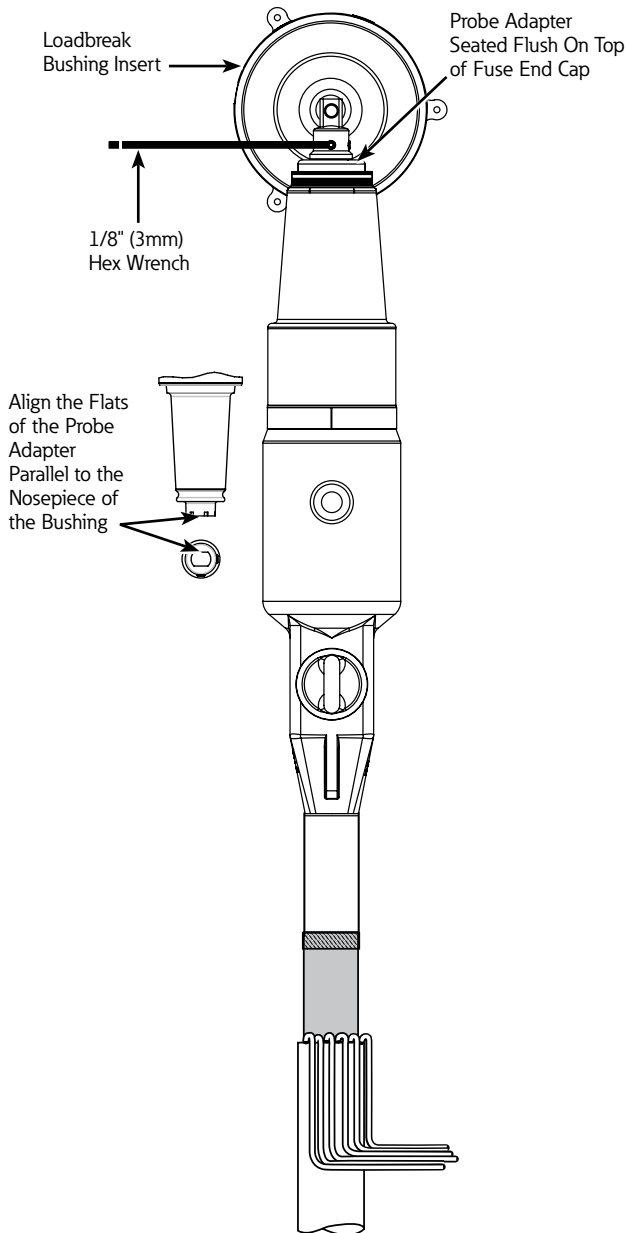
Step 14

IMPORTANT

Align the flats of the probe adapter parallel to the nosepiece of the bushing.

Assemble set screws into the probe adapter.

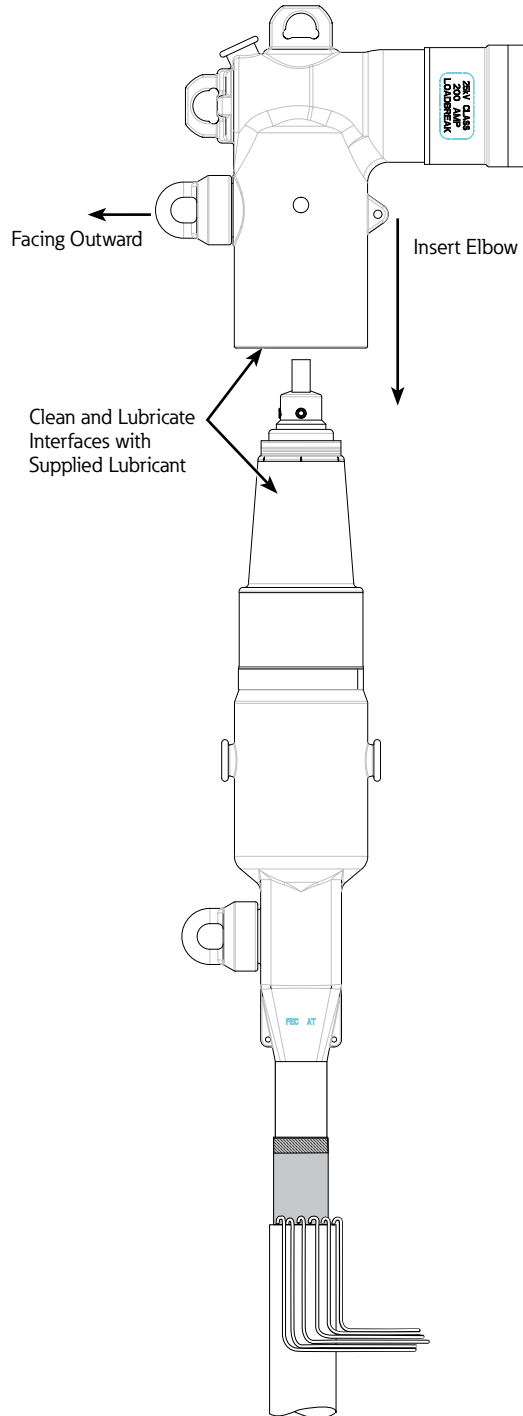
Using supplied 1/8" (3 mm) hex wrench, thread the two set screws until they bottom out on the end post of the fuse, then tighten each set screw an additional 1/8 - 1/4 turn until tight.



Step 15

Using supplied lubricant, clean and lubricate elbow and cable interfaces.

Assemble elbow housing onto the cable housing. Make sure the test point is facing outward away from the front plate of the apparatus.



Step 16

Push down and twist elbow housing to align the probe adapter. The threaded hole in the probe adapter should be centered with respect to the hole in the elbow housing and perpendicular to the probe axis. By hand, insert loadbreak probe into the elbow housing along the center axis of the interface and thread the probe into the probe adapter. A thin layer of silicone lubricant applied to the last 1/4" (6 mm) of the probe body (not on the threads) can aid in installation.

After at least three turns or when the probe is seated (5-1/2 turns) onto the probe adapter, use provided installation tool to properly torque the loadbreak probe. Proper torque is applied when the tool twists at least 180° (1/2 turn).

Note: If a different installation tool is used it must apply a torque of 100 to 120 lbf-in (11.0 – 13.5 N-m).

Re-attach drain wire lead to the drain wire eye of the elbow housing.

Clean and lubricate bushing and elbow housing interfaces areas with a thin, uniform coating of the silicone provided.

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.

Step 17

After the fuse has been replaced, using a clampstick, install the Fused Loadbreak Elbow Connector back onto the grounded feedthru device.

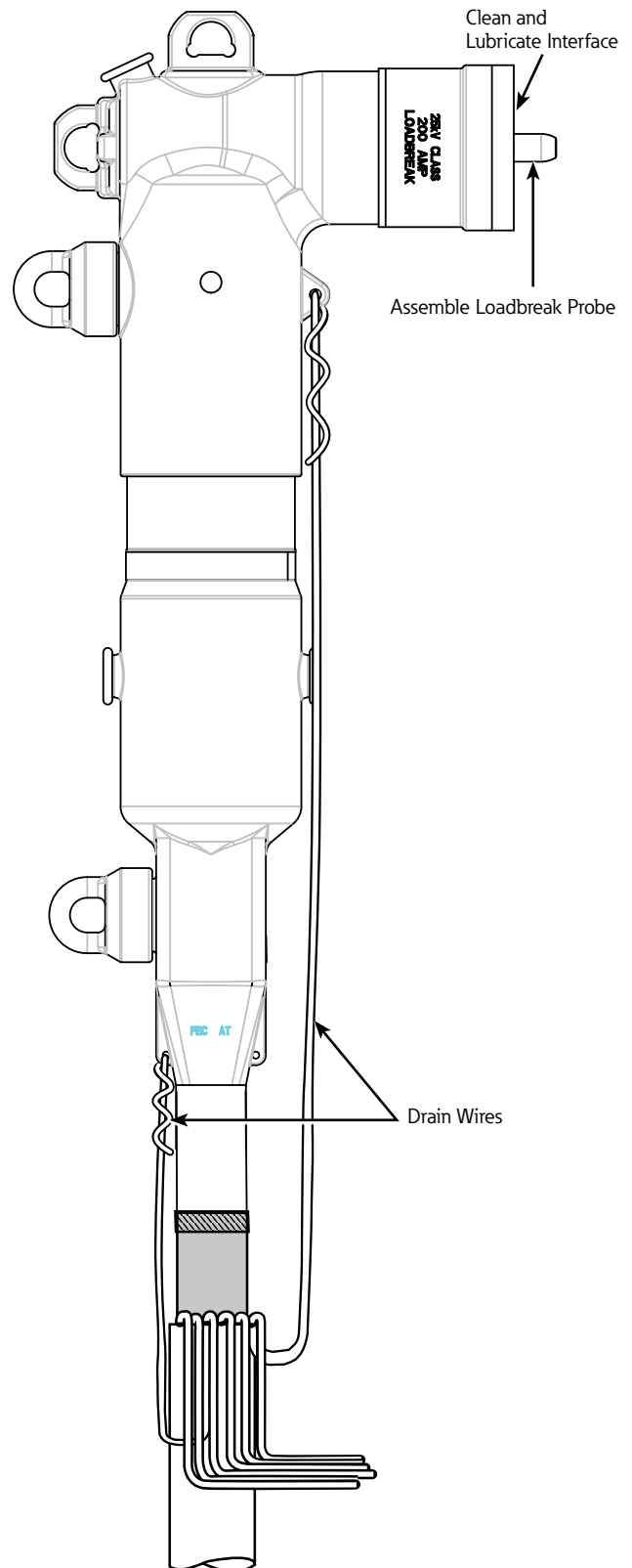
Step 18

Using a clampstick, remove the insulated protective cap from the tap end apparatus bushing. Install the tap end cable termination onto the tap end bushing using the appropriate procedure for the tap end cable termination.

Step 19

Using a clampstick, remove the insulated protective cap from the apparatus bushing and the Fused Loadbreak Elbow Connector from the feedthru device. Install the Fused Loadbreak Elbow Connector onto the apparatus bushing using the standard loadmake operating procedures described in Step 20.

Note: Before installing the Fused Loadbreak Elbow Connector back onto the apparatus bushing, the cause for the fuse operation should be remedied.



200 A Fused Loadbreak Elbow Connector Replacement Fuse

Step 20

Operating Procedures

Loadmake Operation

- Area must be clear of obstructions or contaminants that would interfere with the operation of the fused loadbreak elbow.
- Securely fasten a clampstick to the pulling eye of the fused loadbreak elbow.
- Place the fused loadbreak elbow over the bushing, inserting the white arc follower of the probe into the bushing approximately 2 1/2" (65 mm) until a slight resistance is felt. This will align and stabilize the fused loadbreak elbow.
- Turn your back to the bushing and grasp the clampstick securely and obtain good footing. Slam the fused loadbreak elbow onto the bushing with one quick and continuous motion.
- Turn around and apply a force to the clampstick to push the fused loadbreak elbow onto the bushing. A popping or snapping sound is often heard when this operation is performed.
- To check that the fused loadbreak elbow is properly latched apply a gentle pull force to the clampstick. When latched properly the fused loadbreak elbow will not slide back off of the bushing.
- As a last operation, push on the clampstick to seat the fused loadbreak elbow all the way onto the bushing again. This insures that the fused loadbreak elbow is latched and was not dislodged during the latching check in previous step above.

Fault Close

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

Loadbreak Operation

- Area must be clear of obstructions or contaminants that would interfere with this operation.
- Use clampstick to secure standoff insulator or portable feedthru in bracket. Ground devices to system ground per appropriate Installation Instructions. All associated apparatus must also be grounded.
- Secure fused loadbreak elbow eye firmly onto clampstick and lock.
- Twist clampstick clockwise until the fused loadbreak elbow rotates slightly on bushing — about 1/4" (6 mm). This action will break any surface friction between outer surface of bushing and inner surface of fused loadbreak elbow.
- Withdraw fused loadbreak elbow from bushing with a fast, firm, straight motion. Minimum amount of travel of fused loadbreak elbow to break load is 9" (230 mm).
- Use clampstick to place fused loadbreak elbow on lubricated standoff insulator or portable feedthru. (Follow loadmake instructions.)
- Place an insulated protective cap with ground wire attached to system ground on any exposed energized bushing using clampstick. Follow the same operating procedures as for the fused loadbreak elbow as outlined above under Loadmake Operation.

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