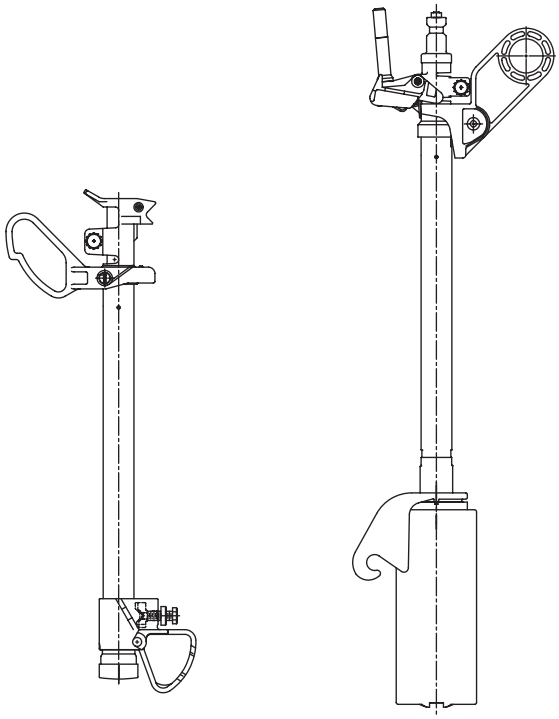
CMU Medium voltage power fuse installation instructions



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Contents

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.

NOTICE

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

⚠ CAUTION

Eaton's Cooper Power series CMU Expulsion Power Fuse is designed to be installed in accordance with normal safe operating procedures. These instructions are not intended to supersede or replace existing safety and operating procedures. READ ALL THE INSTRUCTIONS BEFORE INSTALLING THE CMU fuse. The CMU fuse should be installed and serviced only by personnel familiar with good safety practice and the handling of high-voltage electrical equipment.

Product information

Introduction

Eaton's Cooper Power series CMU Power Fuse is a Boric Acid, expulsion-style fuse unit that is suitable for both indoor and outdoor applications. In comparison to the conventional distribution cutout that uses the fiber tube and fuse link design for fault interruption, the CMU far exceeds the cutout in interrupting rating, and considerably reduces the hazards and noise of the violent exhaust common to cutouts under fault interrupting conditions.

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.

⚠ WARNING

CMU Expulsion Power Fuses are designed with maximum operating voltage and interrupting ratings. Operations that exceed the fuse rating may cause the fuse to fail, resulting in death, bodily injury and/or property damage. Refer to catalog section 240-94 for rated operating voltage and maximum interrupting capability.

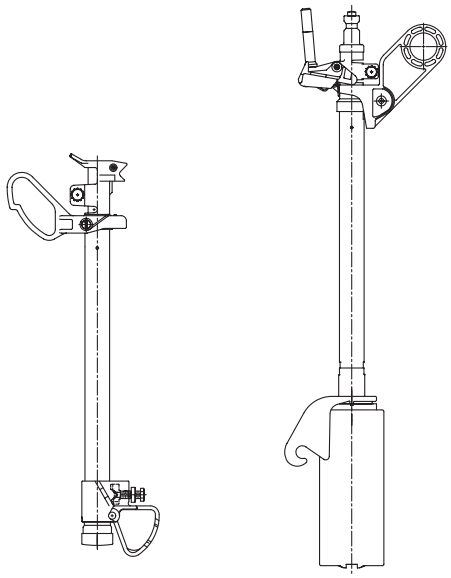

Figure 1. CMU fuse in indoor and outdoor fittings

Acceptance and initial inspection

Each fuse is completely assembled, inspected and tested at the factory. It is in good condition when accepted by the carrier for shipment. Upon receipt of a 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 fuse is to be stored for an appreciable time before installation, provide a clean, dry storage area. Locate the fuse so as to minimize the possibility of physical damage.

Quality Standards

ISO 9001 Certified Quality Management System

Precautions

These instructions cover the safe installation, replacement and maintenance of Eaton's Cooper Power series CMU fuses with approved indoor or outdoor distribution fuse holders.

Appropriate end fittings must be correctly attached to the fuse before it can be installed in a fuse holder. CMU fuses can be installed in any approved fuse holder as long as the correct end fittings for the particular type of fuse holder are used. There are three different types of end fittings for use in various types of fuse holder.

The fuses described in this installation instruction are designed and tested to operate within their nameplate ratings.

Though Eaton's Cooper Power series CMU fuses are sealed, we recommend that the fuse not be allowed to hang inverted in the open position. There is a remote possibility of seal damage that could cause moisture ingress into the fuse while in this position, which could adversely affect the performance of the boric acid arc-quenching solid filler. Store the fuses in the original shipping package with the internal packaging intact in an area free from excessive moisture.

Installation for new applications

⚠ CAUTION

Any and all applicable safety regulations must be strictly adhered to concerning the closure or possible closure of CMU fuses onto "live" circuits.

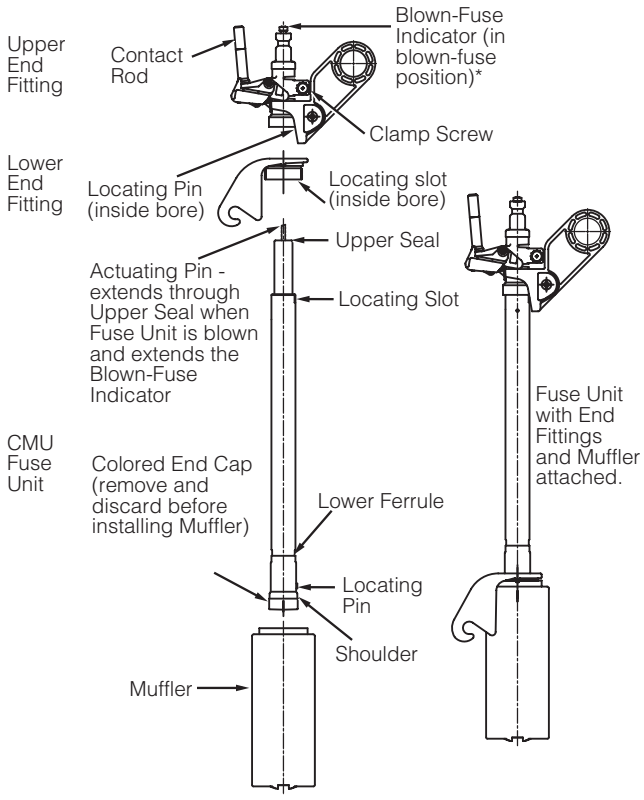

Figure 2. Indoor CMU fuse fittings

End fittings should only be attached immediately prior to installation.

Handle fuses with care – do not drop them or throw them! Do not place hand over upper seal of fuse unit when handling. [There is a remote possibility that the current-responsive section of the fuse unit may have been weakened in shipping or handling. As a result, the spring-loaded latch-tripping pin may be unpredictably released and driven forcibly through the upper seal.]

Do not remove or loosen the red lower seal, unless the fuse unit is to be used with an exhaust control device. In this case, remove the red cap immediately prior to installing the device.

Installation (fusing) in pad-mount/indoor applications with exhaust control device

Attach fuse end fittings (Figure 2) as follows:

1. The lower end fitting must be attached first. Remove and discard the red cap located on the lower end of the fuse. Next, slip the lower end fitting over the upper end of the fuse and slide it down until the locating slot is seated on the locating pin on the lower ferrule. Then thread the muffler on to the lower end fitting and tighten it firmly. The final fractional turn should be made with a bar or a wrench handle.
2. Slip the upper end fitting over the fuse. Align the locating pin (inside the upper end fitting) with the locating slot in the fuse and seat the upper end fitting firmly against the upper end of the fuse. Tighten the clamp screw firmly.

Storage and re-use of end fittings

Unused fuse end fittings

A coating of oxidation-inhibiting grease was applied to the contact rod at the factory. Verify the presence of this oxidation-inhibiting grease, and that it is still free from contaminants. If necessary, clean the contact rod with a non-toxic, nonflammable solvent and apply a coating of oxidation-inhibiting grease. End fittings should be stored in the original shipping package (if possible) in an area free from excessive moisture. End fittings should only be attached to fuse immediately before installation.

Re-use of fuse end fittings

Remove the existing coating of oxidation-inhibiting grease and dirt from the contact rod using a nontoxic, nonflammable solvent. Inspect the contact rod for evidence of pitting. If pitting has occurred, file down any projections, abrade the surface until smooth with an abrasive cloth or scratch brush, and wipe clean. Apply a new coating of oxidation-inhibiting grease to the contact rod. If the contact has been burned, the contact and its mating part should be replaced.

Installation (fusing) in outdoor mountings

Attach the fuse end fittings (Refer to **Figure 3)** as follows:

1. The lower end fitting must be attached first. Slip the lower end fitting over the upper end of the fuse and slide it down until the locating slot seats on the locating pin on the lower ferrule of the fuse. Next, back off the locknut on the clamp screw and tighten the clamp screw firmly; secure it with the locknut.
1. Slip the upper end fitting over the fuse. Align the locating pin (inside the upper end fitting) with the locating slot in the fuse and seat the upper end fitting firmly against the upper end of the fuse. Tighten the clamp screw firmly. **Do not remove the red outer cap from the bottom of the fuse.**

Replacement for existing applications

Replacement (re-fusing) in pad-mount/indoor applications with exhaust control devices

⚠ CAUTION

A Non-Loadbreak fuse holder does not incorporate live switching capacity. Therefore, an unblown CMU fuse in such a mounting must not be moved to the 'Open' position without first opening an upstream interrupting and isolating switch or loadbreak device.

1. When the fuse operates, the fuse does not swing open, but the blown fuse indicator moves to the extended position, providing visual evidence that the fuse has operated. Move the fuse to the 'Open' position and then remove it from the mounting.
2. Loosen the upper end fitting clamp screw, and loosen the clamp slightly using a screwdriver. Slide the upper end fitting off the upper end of the fuse. Then unscrew and remove the muffler. Slide the lower end fitting off the upper end of the fuse. (Refer to **Figure 2**)
3. Attach the end fittings and muffler to a new fuse, following the instructions in new installations on page 3. A fuse that has operated cannot be salvaged. Dispose of it properly.
4. To avoid the delay of transferring end fittings, spare sets of end fittings and mufflers may be kept on hand for attachment to new fuses immediately before re-fusing.
5. Unused or re-used end fittings should be handled as indicated in **Storage and re-use of end fittings** above.

⚠ CAUTION

Any and all applicable safety regulations must be strictly adhered to concerning the closure or possible closure of CMU fuses onto "live" circuits.

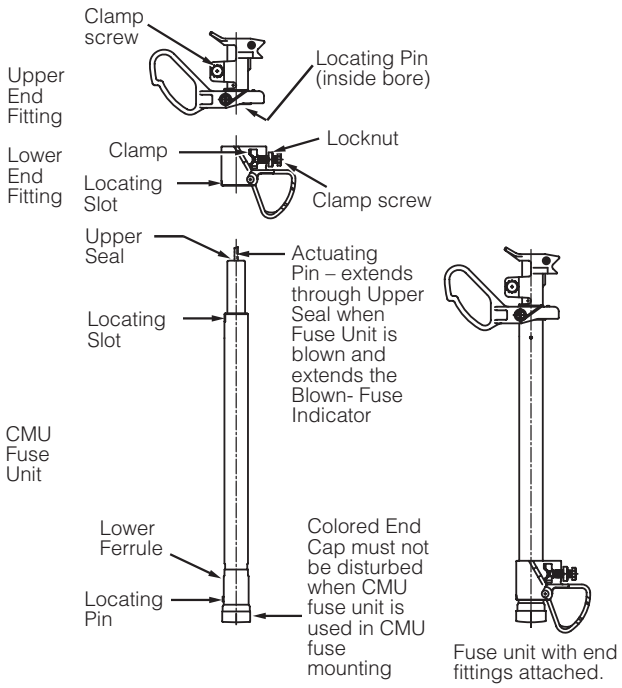

Figure 3. Oudoor CMU fuse fittings

Replacement (re-fusing) in outdoor mountings

1. When the fuse operates, the fuse assembly swings to the 'Open' position. Remove it from the mounting, using a hookstick. Examine the end of the fuse to determine that the actuating pin (Refer to **Figure 3**) extends through the upper seal, indicating that the fuse has operated.
2. Loosen the upper and lower end fitting clamp screws (if necessary, pry the upper end fitting apart slightly with a screwdriver), and slide both end fittings off the upper end of the fuse.
3. Next, attach the end fittings to a new fuse, following the **Installation for new applications**. A fuse unit that has operated cannot be salvaged. Discard it.
4. To avoid the delay of transferring end fittings, spare sets of end fittings may be kept on hand for attachment to new fuses immediately before re-fusing. (See **Storage and re-use of end fittings**)
5. Unused or re-used end fittings should be handled as indicated in **Storage and re-use of end fittings** above.

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