

15, 25, and 35 kV Class Standard M.O.V.E. and POSI-BREAK™ M.O.V.E. Elbow Arrester Installation Instructions



Powering Business Worldwide

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Safety for life



Eaton's Cooper Power series 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 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

⚠ CAUTION:

High Voltage. Eaton's Cooper Power series M.O.V.E. Arrester 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 M.O.V.E. Arrester should be installed and serviced only by personnel familiar with good safety practices and the handling of high-voltage electrical equipment. It may be installed or removed from an energized system according to approved utility practices for removal of loadbreak terminators.

⚠ CAUTION:

High Voltage. The full capability of reducing partial vacuum flashovers will not be realized unless the POSI-BREAK housing is used in conjunction with the POSI-BREAK probe. Failure to comply may result in minor or moderate injury.

Product information

Introduction

Eaton's Cooper Power series Standard M.O.V.E. and POSI-BREAK™ M.O.V.E. Elbow Arresters provide overvoltage protection to underground systems. They protect both the equipment and the cable from surge damage.

⚠ 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, contact your Eaton representative.

Acceptance and initial inspection

Each M.O.V.E. Elbow Arrester 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 M.O.V.E. Elbow Arrester, inspect it 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 M.O.V.E. Elbow Arrester is to be stored for an appreciable time before installation, provide a clean, dry storage area.

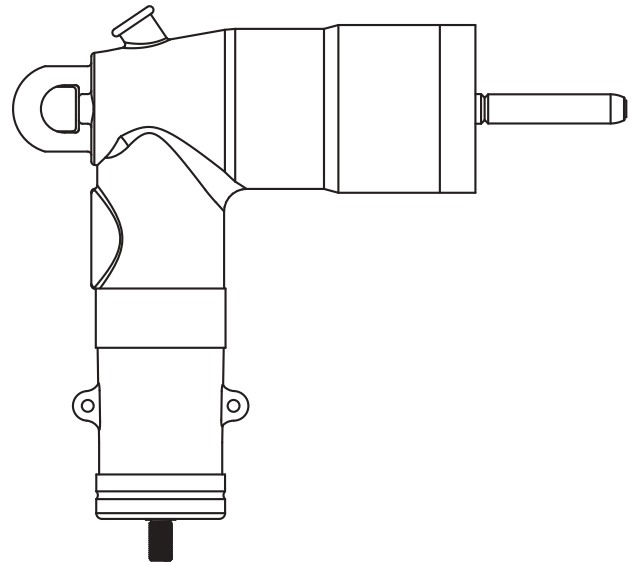


Figure 1. Line illustration of 200 A 25 kV POSI-BREAK elbow arrester.

Quality standards

ISO 9001 Certified Quality Management System

Installation procedure

Application

The M.O.V.E. Elbow Arrester should be installed only on systems where the power frequency voltage at the arrester does not exceed the maximum continuous operating voltage (MCOV) values published. See Table 2.

All Eaton's Cooper Power series M.O.V.E. Elbow Arresters must be installed or removed from an energized bushing with a clampstick.

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CAUTION:

High Voltage. Do not install an arrester if the voltage or MCOV data listed on the arrester label are not exactly the same as that listed on the carton label. Do not install the arrester if the system line-to-ground voltage exceeds the MCOV rating on the arrester. Failure to comply may result in minor or moderate injury.

Table 1. Electrical Apparatus Specifiers Catalog Section Number Reference

M.O.V.E. Arrester Design	Catalog Section
Standard M.O.V.E.	CA235025EN
POSI-BREAK M.O.V.E.	CA235028EN

Note: Because the M.O.V.E. Elbow Arrester has a completely grounded case, it may be installed anywhere within the apparatus primary compartment. Determine the space requirements of the M.O.V.E. Elbow Arrester and ground lead before installation so that they do not restrict the installation, operation, or removal of other devices.

Installation on an energized or de-energized system

WARNING

High Voltage. All associated apparatus must be de-energized during hands-on installation or maintenance. Failure to comply may result in death or serious personal injury.

Note: Verify the M.O.V.E. Elbow Arrester has the proper interface and voltage rating for the application.

Note: When the M.O.V.E. Elbow Arrester is installed on an energized system, it must be positioned so that its grounded end points downward or at the adjacent ground plane. A clampstick should be utilized when installing a M.O.V.E. Elbow Arrester on an energized system.

Note: Excessive force on the ground lead may cause the metal cap to separate from the arrester housing. Never handle the arrester by the attached ground lead.

Note: The nut attaching the ground lead to the threaded stud on the metal cap is factory-installed to the proper torque value. Do not remove or retighten. Over torquing of the ground lead nut may cause the metal cap to separate from the arrester housing.

Table 2. Commonly Applied Voltage Ratings of POSI-BREAK M.O.V.E. Surge Arrester

Nominal Voltage	Maximum Voltage Range B	Four-Wire Multigrounded Neutral Wye	Three-Wire Low Impedance Grounded	Three-Wire High Impedance Grounded
2400	2540	—	—	3 (2.55)
4160 Y/2400	4400 Y/2540	3 (2.55)	6 (5.1)	6 (5.1)
4160	4400	—	—	6 (5.1)
4800	5080	—	—	6 (5.1)
6900	7260	—	—	9 (7.65)
8320 Y/4800	8800 Y/5080	6 (5.1)	9 (7.65)	—
12 000 Y/6930	12 700 Y/7330	9 (7.65)	12 (10.2)	—
12 470 Y/7200	13 200 Y/7620	9 (7.65) or 10 (8.4)	15 (12.7)	—
13 200 Y/7620	13 970 Y/8070	10 (8.4)	15 (12.7)	—
13 800 Y/7970	14 520 Y/8380	10 (8.4) and 12 (10.2)	15 (12.7)	—
13 800	14 520	—	—	18 (15.2)
20 780 Y/12 000	22 000 Y/12 700	15 (12.7)	21 (17.0)	—
22 860 Y/13 200	24 200 Y/13 970	18 (15.3)	—	—
23 000	24 340	—	—	—
24 940 Y/14 400	26 400 Y/15 240	18 (15.3)	—	—
27 600 Y/15 935	29 255 Y/16 890	21 (17.0)	—	—

Table 3. Commonly Applied Voltage Ratings of M.O.V.E. Surge Arrester

Nominal Voltage	Maximum Voltage Range B	Four-Wire Multigrounded Neutral Wye	Three-Wire Low Impedance Grounded	Three-Wire High Impedance Grounded
2400	2540	—	—	3 (2.55)
4160 Y/2400	4400 Y/2540	3 (2.55)	6 (5.1)	6 (5.1)
4160	4400	—	—	6 (5.1)
4800	5080	—	—	6 (5.1)
6900	7260	—	—	9 (7.65)
8320 Y/4800	8800 Y/5080	6 (5.1)	9 (7.65)	—
12 000 Y/6930	12 700 Y/7330	9 (7.65)	12 (10.2)	—
12 470 Y/7200	13 200 Y/7620	9 (7.65) or 10 (8.4)	15 (12.7)	—
13 200 Y/7620	13 970 Y/8070	10 (8.4)	15 (12.7)	—
13 800 Y/7970	14 520 Y/8380	10 (8.4) and 12 (10.2)	15 (12.7)	—
13 800	14 520	—	—	18 (15.3)
20 780 Y/12 000	22 000 Y/12 700	15 (12.7)	21 (17.0)	—
22 860Y/13 200	24 200 Y/13 970	18 (15.3)	24 (19.5)	—
23 000	24 340	—	—	30 (24.4)
24 940 Y/14 400	26 400 Y/15 240	18 (15.3)	27 (22.0)	—
27 600 Y/15 935	29 255 Y/16 890	21 (17.0)	30 (24.4)	—
34 500 Y/19 920	36 510 Y/21 080	27 (22.0)	36 (29.0)	—
46 000 Y/26 600	48 300 Y/28 000	36 (29.0)	—	—

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 could result in death or serious injury.

- Attach the ground lead of the arrester (connected to the base of the arrester) to the system ground using 4 to 8 ft-lbs torque.
- Attach a grounded drain wire to the elbow arrester drain wire tab. This ensures that the arrester is grounded if the end cap is separated during a pressure relief event.
- Lubricate the arrester interface with the lubricant supplied.

- Use a clampstick to remove the mating connector from the apparatus bushing. Install mating connector on a parking stand bushing.
- Verify the ground lead attachment.
- Using a clampstick, firmly grasp and pull the eye of the arrester. Position the tip of the arrester probe just into the nose of the loadbreak bushing. Position the arrester so that its grounded end points downward or at an adjacent ground plane.
- Thrust the arrester firmly onto the bushing.



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