

UltraSIL[®] polymer-insulated and porcelain Types L and LB open
distribution cutout installation instructions



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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.

G122.3

Product information

Introduction

Eaton's Cooper Power™ series UltraSIL™ Polymer-insulated and Porcelain Types L and LB interchangeable cutout will accept expulsion fuseholders and disconnect blades (refer to Figure 1). The cutout's primary function is to interrupt fault or overload current within its rating on a distribution line to protect the electric circuit and/or connected 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 representative.

Acceptance and initial inspection

Each cutout is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the cutout 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 fuse cutout combination to minimize the possibility of damage. If the cutout 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

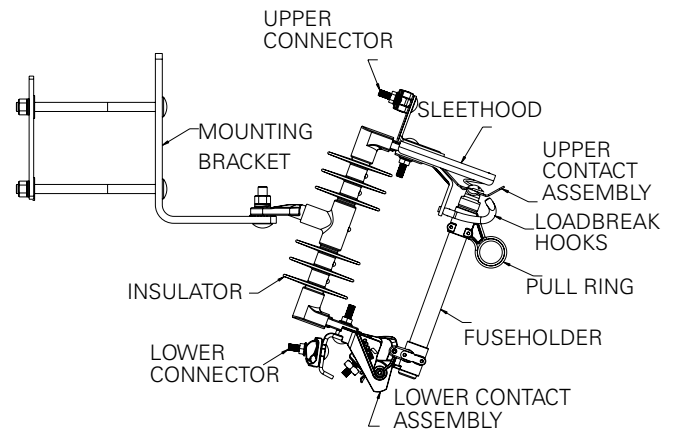


Figure 1. UltraSIL Polymer-Insulated Type L interchangeable cutout assembly.

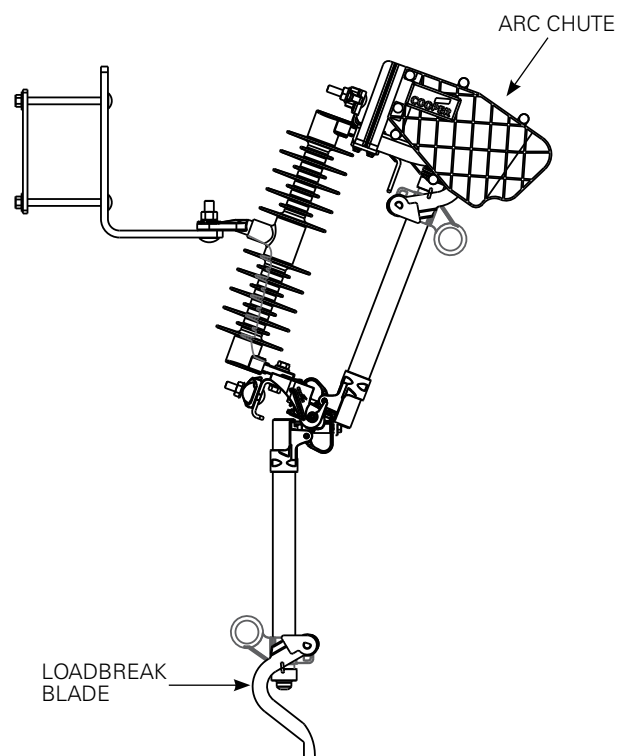


Figure 2. UltraSIL Polymer-Insulated loadbreak cutout assembly.

Installation procedure

The Type L cutout must be properly selected for each installation with consideration to recovery voltage, continuous current, basic impulse insulation level (BIL), and fault interrupting rating.

Mounting the cutout

1. **Securely attach the mounting bracket**, if supplied with the cutout, to the crossarm or pole per standard procedure.

WARNING

Do not mount this cutout in vaults or other enclosed areas because of the expulsion emitted during fault interruption when using a fuseholder. The result could be equipment damage to the cutout and other equipment in the vicinity.

WARNING

Do not mount this cutout above vegetation or other combustible materials because of the expulsion emitted during fault current interruption. This could result in a fire hazard.

2. **Mount the cutout on the mounting bracket** making sure the external-tooth lockwasher is placed between the mounting bracket and the cutout bushing support pin (See Figure 3). Tighten the nut by hand.
3. **Rotate the cutout and the mounting bracket** to provide maximum clearance for the operator and maximum ease of operation.

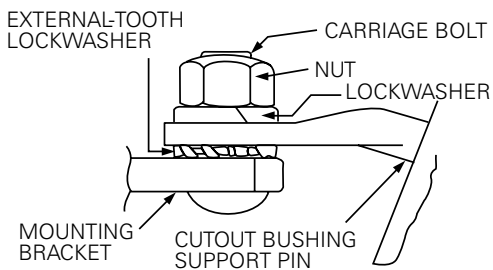


Figure 3. Mounting the cutout to the mounting bracket.

4. **Securely tighten** the carriage bolt nut with a 3/4" wrench.

Connecting electrical leads

1. **Loosen upper and lower connectors** (See Figure 1).
2. **When using aluminum conductors, wire brush conductors and apply a coating of oxidation inhibitor** before inserting conductor into connector.
3. **Tighten upper and lower connectors** to a maximum 20 ft-lbs.

Table 1. Cutouts with Parallel Groove Connectors

Connector	Groove Size	Parallel Groove Connector Cable
Upper	Smaller	#8 (0.128) to #2 (0.332)
	Larger	#4 (0.204) to 250 MCM (0.575)
Lower	Smaller	#16 (0.050) to #2 (0.332)
	Larger	#6 (0.162) to 250 MCM (0.575)

Installing an expulsion fuse link in fuseholder

1. **Remove the cap** from the upper ferrule of the fuseholder assembly (See Figure 3).

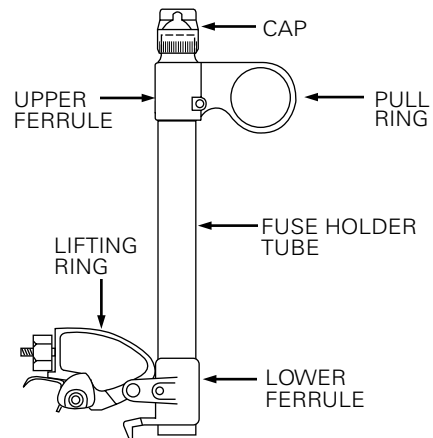


Figure 4. Type L fuseholder, non-loadbreak shown.

2. **If there is a removable button head on the fuse link, make sure the button is tight. Then, insert the fuse link**, cable end first, into the top of the fuseholder and pull out at the lower end or in accordance with the fuse link manufacturer's instructions.

CAUTION

Do not remove or damage the small tube of the fuse link. It is an integral part of the fuse link and removal or damage may result in the cutout's failure to interrupt.

3. **Replace the cap** on the upper fuseholder ferrule and tighten with a wrench.

4. Holding the lower end of the fuseholder, rotate the flipper fully about its pivot until it reaches its stop. Hold the flipper in this position and feed the fuse link cable through the flipper channel and feed the cable around the fuse link clamping bolt in a clockwise direction. Make only one turn with the cable. **DO NOT OVERLAP.** This will prevent strand breakage when the clamping nut is tightened (See Figure 5).
5. While maintaining tension of the fuse link cable, tighten the fuse link clamping bolt head with a 9/16" wrench.
6. Cut excess fuse link cable to within 1/2" (13 mm) of the clamping bolt head and discard.

⚠ CAUTION

Never insert the excess leader into the cutout fuseholder tube. Doing so may cause improper operation of the fused cutout. This can result in failure of the cutout and damage property in the vicinity of the installation.

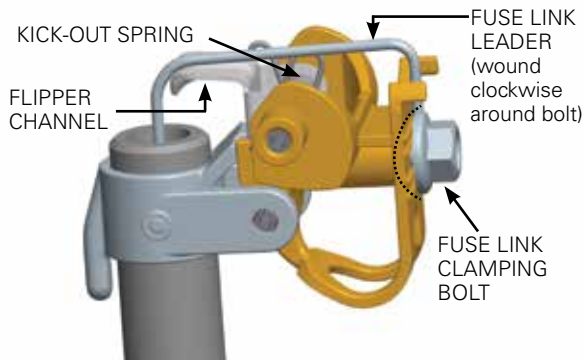


Figure 5. Installation of a fuse link into a fuseholder.

⚠ CAUTION

Do not use 100 A or smaller fuse links in 200 A fuseholders by using washers or other means. This could result in failure to interrupt.

Note: Cutouts using an arc shortening rod require the use of removable buttonhead fuse links. To attach the fuse link to the arc shortening rod:

- A. Remove the screw-type buttonhead (and washer if equipped) from the fuse link.
- B. Screw the arc shortening rod (attached to cap) onto the fuse link and tighten firmly (See Figure 6).
- C. Follow the same procedure as outlined in steps 2 through 6 under "Installing an Expulsion Fuse Link in Fuseholder".

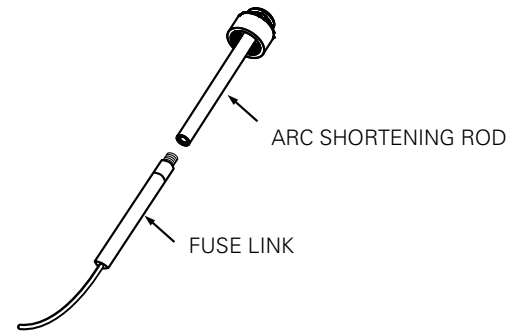


Figure 6. Installation of fuse link with an arc shortening rod.

Installing a fuseholder in a non-loadbreak cutout

Once the fuse link has been installed in the fuseholder:

1. Insert the hook stick into the fuseholder's lifting ring.
2. Place the fuseholder into the hinge of the cutout (See Figure 7).
3. Remove the hook stick.

⚠ WARNING

When closing a fuseholder in the cutout, hot gasses and high velocity particles can be expelled from the bottom of the fuseholder if a fault is present. This expulsion could cause serious injury.

4. After positioning himself/herself well clear of the vented end and exhaust path of the cutout, the operator should place the hook stick in the pull ring on the upper ferrule of the fuseholder.
5. Rotate the fuseholder to an intermediate position as in Figure 8.
6. While looking away from the cutout, quickly and firmly drive the fuseholder into the closed position.

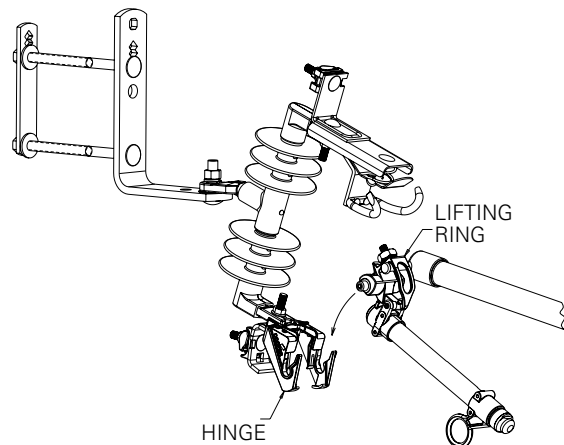


Figure 7. Inserting the fuseholder into the UltraSIL Polymer-Insulated or Porcelain Type L cutout.

- Remove the hook stick from the pull ring carefully to avoid opening the fuseholder.

⚠ WARNING

Do not attempt to interrupt load current by pulling on the fuseholder pull ring to open the cutout. An arc started by opening a cutout under load in this manner could cause injury or damage to equipment.

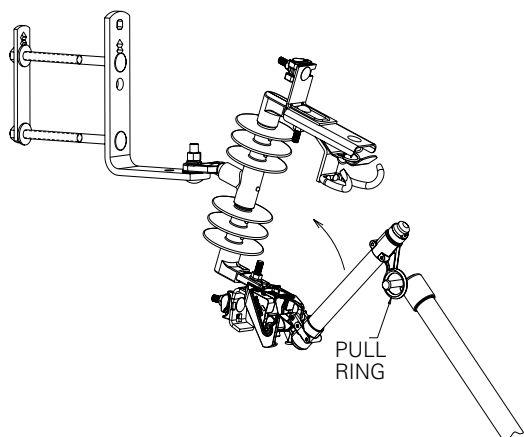


Figure 8. Closing the fuseholder into the UltraSIL Polymer-Insulated or Porcelain Type L cutout.

Note: The non-loadbreak Type L cutouts are equipped with hooks for use with a loadbreak tool. To open the fuseholder from the cutout, use ONLY an approved loadbreak tool designed for use with cutouts and follow the instructions provided with such tool.

Installing the fuseholder in a loadbreak cutout

Follow the same procedure as the non-loadbreak cutout in steps 1 through 7.

Note: The loadbreak cutout is designed to break load. Refer to Table 2 for specific ratings.

Table 2. 15 and 27 kV Polymer and Porcelain Loadbreak Type LB Interchangeable Cutout Specifications

Base Catalog Number*		Maximum Voltage Rating (kV)	BIL (kV)	Continuous Current (A)	Loadbreak (A)
Polymer	Porcelain				
YS4B1	YL4B1	15.5	110	100	300
YS4BA**	YL4BA**	15.5	110	100	300
YS4B2**	YL4B2**	15.5	110	200	300
YS9C1	YL9C1	27	125	100	50
YS9CA**	YL9CA**	27	125	100	50
YS9C2**	YL9C2**	27	125	200	50

* Base catalog number for standard polymer-insulated and porcelain Type LB unit.

** These units include an arc shortening rod and must be used with removable buttonhead fuse links.

Operation

When the fuseholder clears a fault, the dropout mechanism should allow it to drop open in the cutout.

⚠ CAUTION

Only qualified personnel should operate a cutout. Such personnel should always wear appropriate protective equipment such as rubber gloves, hard hats, safety glasses, etc., in accordance with established utility and safety practices.

Removal of a fuseholder

- Insert a hook stick into the lifting ring of the fuseholder and remove it from the lower contact assembly of the cutout.
- Remove the fuse link from the fuseholder and follow steps under "Installing an Expulsion Fuse Link in Fuseholder" and "Installing a Fuseholder in Cutout".

Maintenance

Refer to IEEE Std C37.48™ standard as a general guide for maintenance of the cutout.

- Periodically inspect the fuse link at the lower open end of the fuseholder for evidence of corrosion.
- Replace fuse links which show signs of deterioration (broken strands, heavy corrosion, etc).
- Replace broken or cracked porcelain and clean or replace if heavily contaminated.
- Inspect contacts for excessive pitting or burning and replace as necessary.
- Check the fuseholder polymer liner for cracking or excessive erosion. If cracked or if the I.D. is larger than .650" and .860" on the 100 A and 200 A fuseholders respectively, then replace the fuseholders.
- If the fuseholder shows any signs of electrical tracking or flashover it should be replaced.

Dimensional information

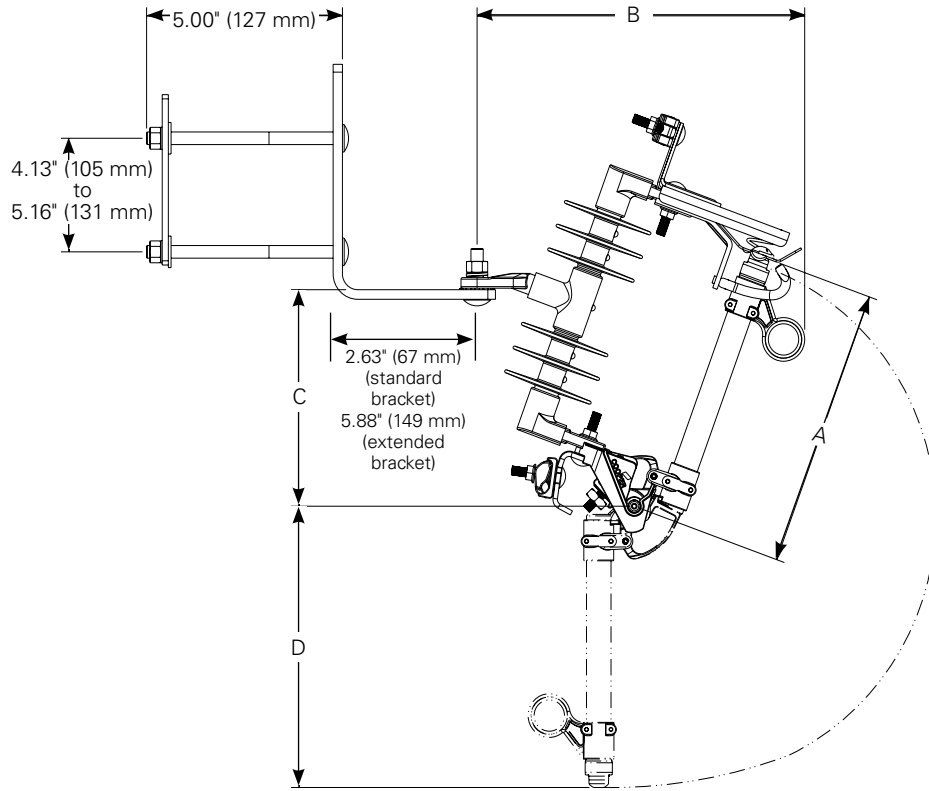


Figure 9. UltraSIL polymer-insulated Type L cutout assembly shown. Dimensions apply to both UltraSIL polymer-insulated and porcelain Type L cutouts.

Table 3. UltraSIL Polymer-Insulated and Porcelain Type L Cutouts Dimensional Data (refer to Figure 6)

Voltage Rating kV	BIL kV	Dimensions inches (mm)			
		A	B	C	D
15.5	110	11.32 (288)	13.50 (343)	8.15 (207)	11.50 (292)
27	125	14.74 (374)	14.09 (358)	10.12 (257)	14.92 (379)
27	150	14.74 (374)	14.29 (363)	10.12 (257)	14.92 (379)

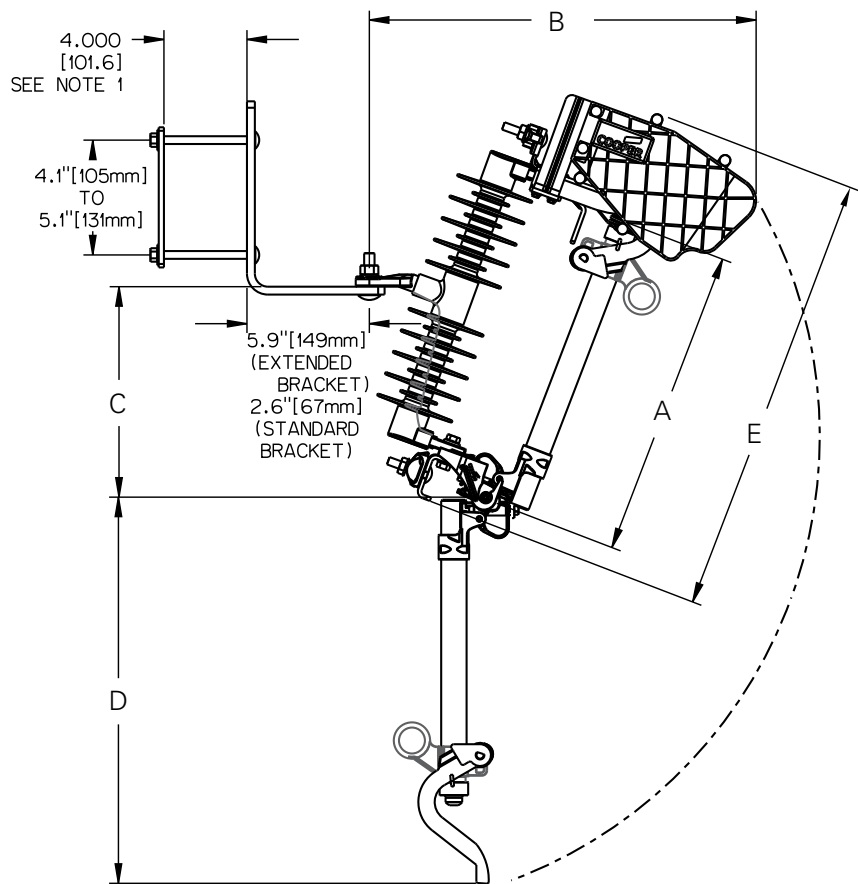


Figure 10. Polymer-insulated Type LB cutout assembly shown. Dimensions apply to both polymer-insulated and porcelain Type LB cutouts.

Table 4. Polymer-Insulated and Porcelain Type LB Cutouts Dimensional Data (refer to Figure 10)

Voltage Rating kV	BIL kV	Dimensions inches (mm)					Creepage Distance inches (mm)	
		A	B	C	D	E	Polymer	Porcelain
15.5	110	11.1 (281)	18.1 (459)	8.5 (216)	15.2 (386)	17.9 (456)	14.2 (362)	8.5 (216)
27	125	14.9 (378)	18.6 (473)	10.1 (257)	18.6 (473)	21.3 (542)	22.3 (566)	17.0 (432)

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