ELSG Full-Range Current-Limiting Fuse Re-Fusing Instructions

Powering Business Worldwide

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY

The information, recommendations, descriptions and safety notations in this document are based on Eaton Corporation's ("Eaton") experience and judgment and may not cover all contingencies. If further information is required, an Eaton sales office should be consulted. Sale of the product shown in this literature is subject to the terms and conditions outlined in appropriate Eaton selling policies or other contractual agreement between Eaton and the purchaser.

THERE ARE NO UNDERSTANDINGS, AGREEMENTS, WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, OTHER THAN THOSE SPECIFICALLY SET OUT IN ANY EXISTING CONTRACT BETWEEN THE PARTIES. ANY SUCH CONTRACT STATES THE ENTIRE OBLIGATION OF EATON. THE CONTENTS OF THIS DOCUMENT SHALL NOT BECOME PART OF OR MODIFY ANY CONTRACT BETWEEN THE PARTIES.

In no event will Eaton be responsible to the purchaser or user in contract, in tort (including negligence), strict liability or otherwise for any special, indirect, incidental or consequential damage or loss whatsoever, including but not limited to damage or loss of use of equipment, plant or power system, cost of capital, loss of power, additional expenses in the use of existing power facilities, or claims against the purchaser or user by its customers resulting from the use of the information, recommendations and descriptions contained herein. The information contained in this manual is subject to change without notice.

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.

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

⚠ CAUTION

Eaton's Cooper Power series ELSG Full-Range Current-Limiting Fuse 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. READ ALL INSTRUCTIONS BEFORE RE-FUSING AN ELSG FUSE.

The fuse should be installed and serviced only by personnel familiar with good safety practice and the handling of high-voltage electrical equipment.

Product Information

⚠ CAUTION

Remove and park all load side separable connectors and install insulated protective caps on tap bushing before installing or removing fuse. Fuse IS NOT a loadbreak device.

Introduction

The ELSG fuse is designed for use in padmount switchgear filled with mineral oil or approved equivalent. (Refer to Figure 2.) It may also be used to protect power transformers, feeders and other equipment that can benefit from its energy-limiting properties. The fuse provides consistent clearing of low currents as well as reliable high speed interruption of high magnitude short circuit currents. Its current-limiting capability limits both peak current magnitude and fault duration, thus limiting the let-through energy. The ELSG fuse is installed into the wetwell holder assembly of de-energized apparatus using a shotgun stick.

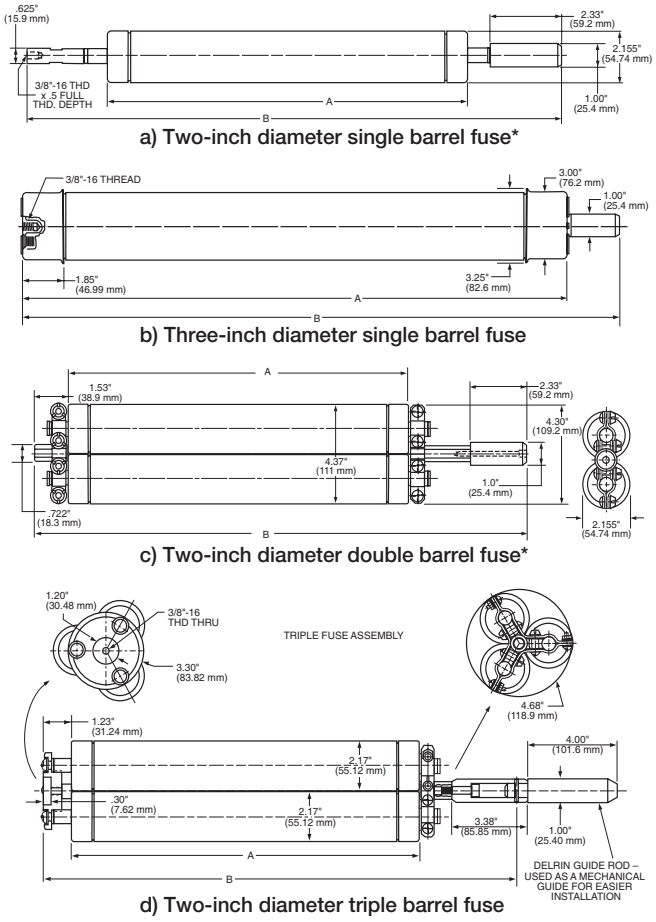

Figure 1. Line illustration of ELSG Full Range Current-Limiting Fuses.

† Used as a mechanical guide for easier installation on fuse installed in the 25 and 35 kV wetwell holder.

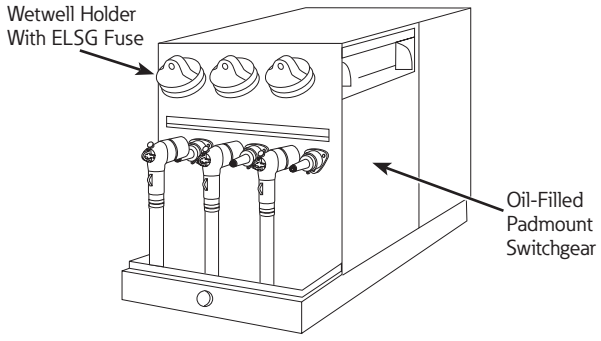

Figure 2. Oil-filled switchgear with ELSG fuse installed in wetwell holder.

Re-fusing instructions

Remove handle assembly with fuse from wetwell holder

- Provide protection for rubber terminations from dripping oil. Install drip pan or cover rubber terminations.
- Operate pressure relief valve with shotgun stick (if applicable).
- To remove the bail assembly as shown in Figure 3, attach shotgun stick to eyebolt, loosen eyebolt and lower bail. (Refer to Figure 4.)

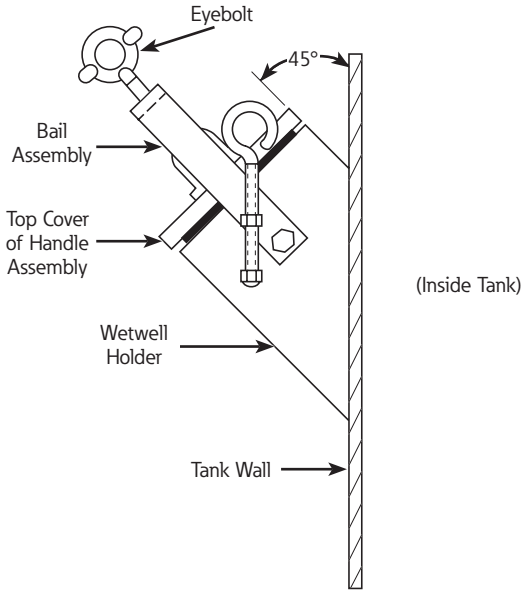

Figure 3. Side view of wetwell holder with bail assemblly installed.

- Place shotgun stick loosely on fuse holder eye.
- Rotate cap clockwise 1/4 turn with shotgun stick to break seal. (Refer to Figure 5.)
- With shotgun stick still loosely attached, slowly lift fuse assembly from wetwell. (Refer to Figure 6.) Remove fuse slowly enough to allow excess oil to drain back into the well. **Fuse should slide smoothly out of holder. If resistance is felt, turn fuse slightly and continue removing**.
- Place fuse assembly in clean drip pan or drip cloth. Wipe off excess oil. (Refer to Figure 7.)

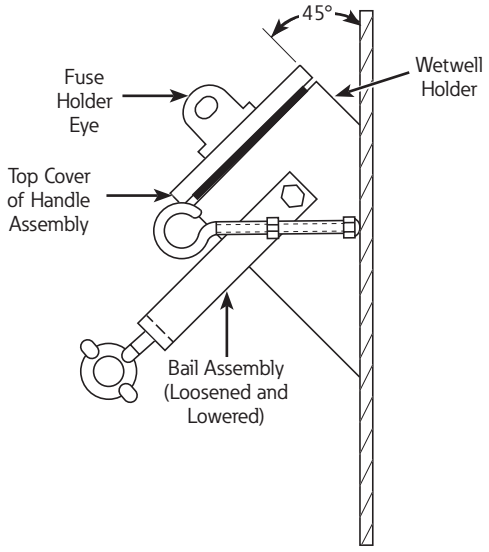

Figure 4. Lowered bail assembly.

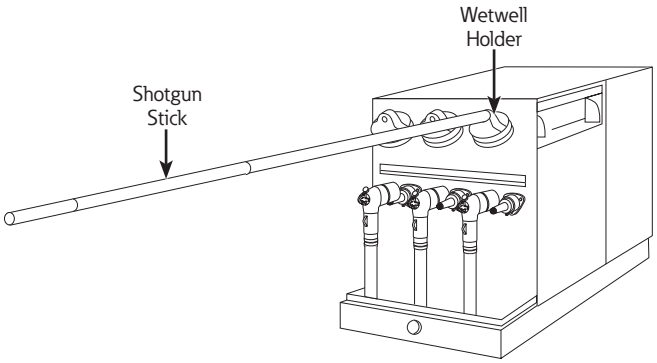

Figure 5. Rotate cap of wetwell holder to break the seal.

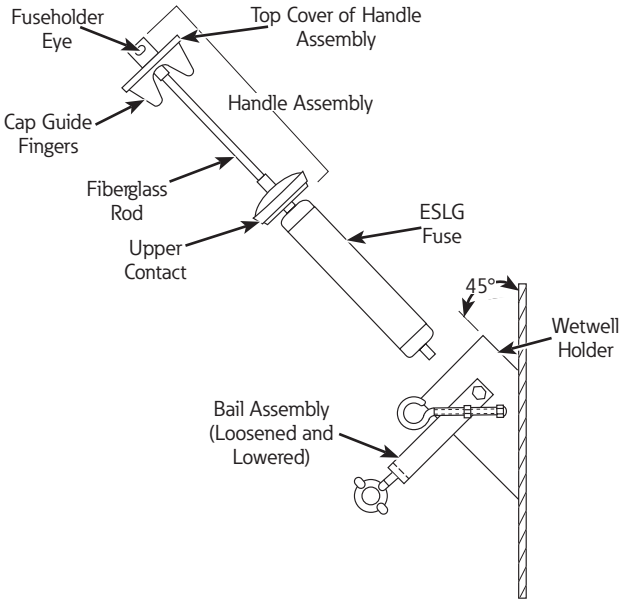

Figure 6. Removal of handle assembly with fuse from wetwell.

Replace ELSG fuse on handle assembly

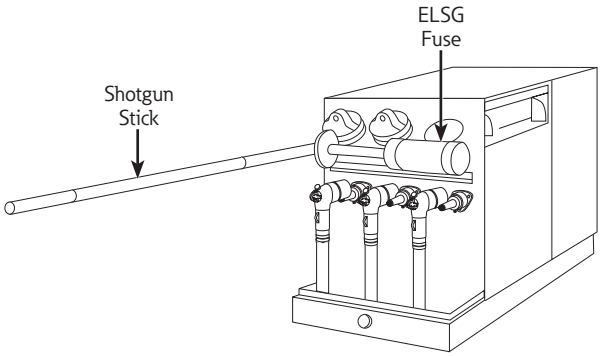

Figure 7. Place fuse assembly in clean drip pan.

- The ELSG fuse is mounted to the handle assembly as shown in Figure 6. Remove the ELSG fuse from the operating handle assembly.
- Attach a new ELSG fuse to the operating handle. Tighten to 15 foot-pounds torque using 5/8" wrench flats on the side of holder eye on handle assembly.

Note: For 2-inch diameter triple barrel ELSG fuse as shown in Figure 1, observe top adapter plate decal with insertion instructions.

- In addition, 15.5 kV and 23 kV rated fuses with 2-inch diameter single-barrel or double barrel use guide brackets (supplied with fuse) on the handle assembly. (See following steps for proper installation of handle assembly guide brackets.)

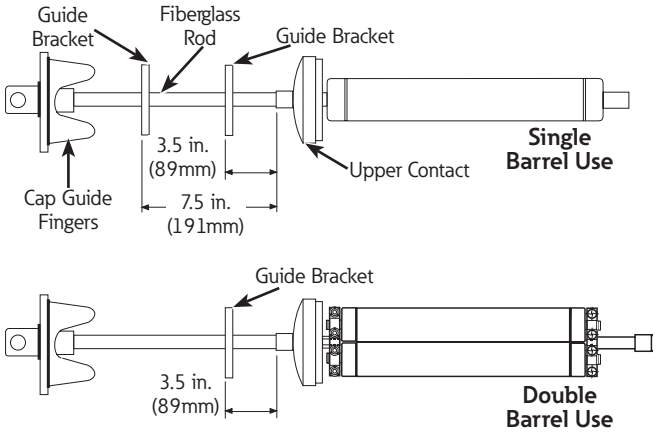

Figure 8. Fuse assembly consists of handle assembly plus ELSG fuse. (Plus guides, where applicable.)
* 15.5 kV and 23 kV rated fuses use guide bracket (catalog no. 3439216B02).

Note: Wetwell holder of fuse being replaced is deenergized. Other holders and, thus leads within the switchgear, may be energized.

- The guide(s) is to be installed on the fiberglass rod of the handle assembly as shown in Figure 8 to guide the fuse straight into the wetwell holder.
  - One guide is included for the 15.5 kV and 23 kV 2-inch diameter double barrel fuse.
  - Two guides are included for the 15.5 kV and 23 kV 2-inch diameter single barrel fuse.

The spacing of the guides as shown in Figure 8 are critical to within ± 1/2 inch.

⚠ CAUTION

Failure to use the guide(s) on the handle assembly as shown may allow the fuse to contact an energized lead and operate during installation or removal.

- Position and securely tighten the guide(s) to the fiberglass rod of the handle assembly, as illustrated for the appropriately rated fuse. When two guides are used for the single barrel fuse, rotate the upper guide 60° out from the position of the lower guide as shown in Figure 9.

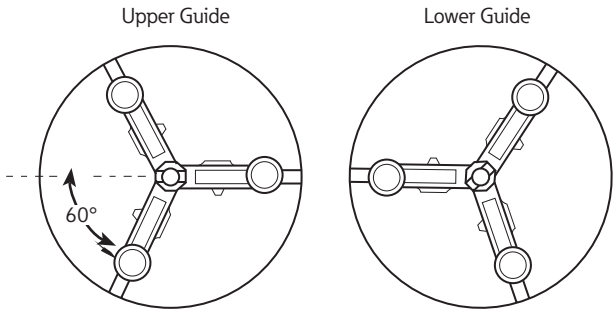

Figure 9. Orientation of two guides on handle assembly.

Replace fuse assembly into wetwell

- Attach shotgun stick loosely to fuse holder eye.
- Lift fuse assembly with shotgun stick and slowly insert assembly into wetwell holder.

Note: For 2-inch diameter triple barrel fuse as shown in Figure 1, insert assembly with arrow on top adapter plate facing up (12 o'clock position).

- Center guide fingers of cap into wetwell until contact resistance is felt (Refer to Figure 10). Push fuse assembly into wetwell until cap seats.
- Replace bail assembly. Tighten eyebolt to seat cap gasket.

⚠ CAUTION

Do not ram or force fuse closed. A firm push with a slight twist is all that is required.

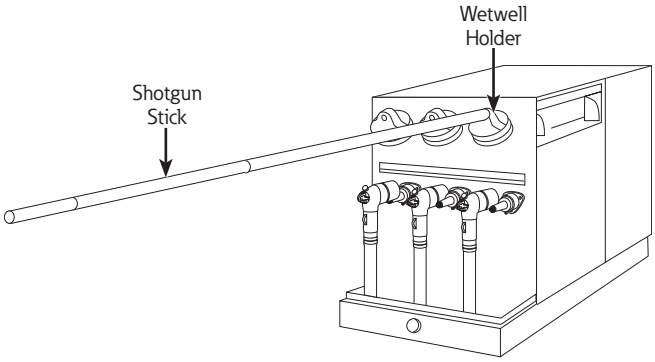

Figure 10. Guide fuse assembly into wetwell holder.

SAFETY FOR LIFE

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

Eaton's Power Systems Division
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

Printed in USA
Publication No. MN132017EN Rev. 0
November 2016

For Eaton's Cooper Power series product information call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.

Powering Business Worldwide