



## Protect your investment and increase your distribution reliability with the ELF fuse

Eaton's Cooper Power™ series ELF™ fuse is a full range, current-limiting dropout fuse with a self-contained design that eliminates noise and expulsive showers associated with expulsion fuse operation, making it suitable for use in areas where a high fire hazard exists. The ELF-LR fuse has been granted permanent exemption by the California Department of Forestry and Fire Protection (CAL FIRE) from pole clearance requirements when the fuse is installed in the field according to manufacturer's specifications.

Eaton's Cooper Power series ELF-LR fuse meets the exemption requirements listed specifically in the California Code of Regulations, Title 14, Section 1255 (10).

**This assures:**

- Silent interruption—no gas, sparks or debris emitted
- Significant fire risk reduction—perfect for preventing wildfires in dry or drought-stricken areas
- Significant vegetation maintenance reduction—eliminates the need to maintain the required radius of mowed grasses beneath every distribution pole
- Increased safety to line personnel during circuit re-energizing operation

Expulsion fuses in fuseholders vent either out the bottom of single-venting fuseholders, or out both the top and bottom of double-venting fuseholders. When clearing occurs, exhaust gases, molten metal and fuse link fragments are expelled from the vent end of the fuseholder. This venting/clearing operation is also extremely loud. These are obvious safety concerns for both personnel and property in the immediate area.

The ELF fuse eliminates these concerns. Its operation for clearing both low current and high current faults is totally self-contained within the fuse housing. Upon experiencing a fault current, arcing across the internal spark gap melts the trigger wire and releases the dropout actuator. This causes the ELF fuse to fall open in the cutout, providing a visible indication of fuse operation. Compared to the violent expulsion fuse operation, the ELF fuse operates silently, without any expulsive byproducts.

**Expulsion fuse**



**ELF fuse**



**Test parameters:** 6400 A rms symmetrical.

**Test results:** ELF current-limiting fuses reduce energy let-through over expulsion fuses.



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## Low maintenance

Eaton's Cooper Power series ELF fuse reduces field service time:

- Drop-open design indicates operation and simplifies fault location
- Once operated, line personnel simply use a clampstick to remove the suspended ELF fuse
- Universal fit design makes the ELF fuse an easy retrofit in industry standard interchangeable cutouts
- One-piece construction reduces re-fusing complexity, inventory and lineman time in the field
- Out-of-the-box unit; no assembly is required
- Light weight—approximately 2.4 lb for 95 kV BIL cutout mountings through 40 A ratings
- Easy installation from the ground with a clampstick

The ELF fuse can also be used in a test equipment function. Many utilities utilize the ELF fuse to test for the existence of a high-current fault, even after the cutout has operated, to ensure line personnel safety before inserting the replacement fuse.

## Reliable operation of overloads and fault currents

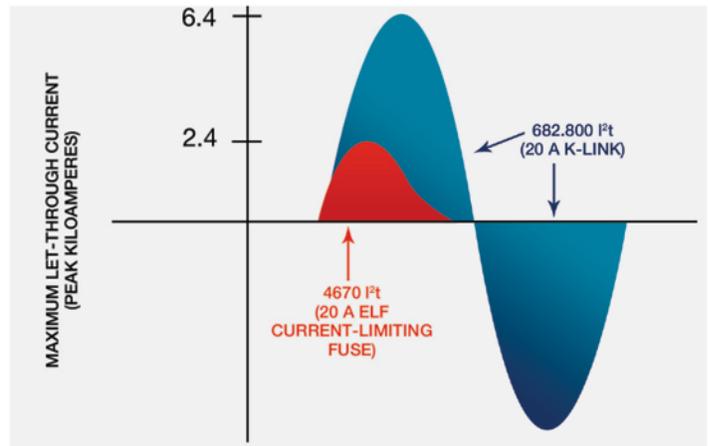
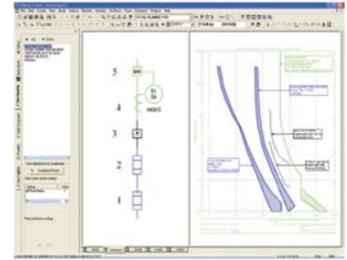
With its full range, current-limiting characteristics tested to ANSI/IEEE® requirements C37.40, C37.41 and C37.47, the ELF fuse operates to clear both low- and high-fault currents quickly. The element construction, with separate low-current and high-current sections, controls peak arc voltage levels, and limits current and energy ( $I^2t$ ) let-through levels during the clearing operation.

- Minimizes system disturbances and prevents damage of apparatus and fusing upstream
- Multiple ampere ratings using different high-current elements allow for proper coordination up-and-down the distribution line to protect pole-mounted transformers, single- and three-phase laterals, and line tap fusing used in series
- Increases protection of lateral taps to a 31 kA interruption capacity at 8.3 kV
- Reduces the  $I^2t$  let-through levels to safe levels in pole-mounted transformers
- Aids in reducing cable failures and extend cable life in underground taps

## Coordination expertise

Utilize Eaton's apparatus, protective device and software expertise. Eaton designs and manufactures the fuse as well as all the distribution apparatus the fuse is meant to protect. Plus, Eaton can provide a protective device coordination study with CYME™ CYMTCC power engineering software. The program comes with an extensive database of more than 15,000 protective devices that are easily utilized to produce a one-line diagram, and the time-current curve plots and device settings reports.

It also features a unique coordination wizard to suggest protective device settings/adjustments.



Single-barrel ELF

Double-barrel ELF

Triple-barrel ELF

**ELF fuse voltage ratings range from 8.3 kV to 24 kV while single-, double-, and triple-barrel fuse designs expand amperage ratings from 6 A to 80 A for easy coordination.**

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