

Fuses, 15.5 kV, Back-Up Fault Current Limiter, Type K



1. Scope

This standard covers the requirements for 15.5 kV back-up fault current limiter (FCL), type K fuses.

This standard applies to the following Seattle City Light (SCL) stock numbers:

<u>Stock No.</u>	<u>Type</u>
684920	12K
014417	25K
014418	50K
014419	65K

2. Application

FCL fuses are designed to prevent disruptive failures by limiting let-through current and energy released into the faulted equipment. They are always connected in series with an expulsion fuse.

At Seattle City Light (SCL), FCLs are used to protect distribution transformers rated less than 3 MVA as well as lateral feeders in a 27/15.5 kV grounded wye system. Fuses will always be connected line-to-ground.

See SCL 1065.17 for detailed information on fuse link and transformer sizes associated with each type of FCL fuse.

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3. Industry Standards

Fuses and accessories shall meet the applicable requirements of the following industry standards:

IEEE C37.41-2016; IEEE Standard Design Tests for High-Voltage (>1000V) Fuses

IEEE 37.302-2015; IEEE Guide for Fault Current Limiter (FCL) Testing of FCLs Rated above 1000 V

IEEE C37.42-2016; IEEE Standard Specifications for High-Voltage (>1000V) Fuses and Accessories

IEEE C37.47-2011; IEEE Standard Specifications for High-Voltage (>1000V) Distribution Class Current-Limiting Type Fuses and Fuse Disconnecting Switches

4. Requirements

FCL fuses shall meet the requirements shown in Table 4a.

Table 4a. Requirements

Class per IEEE C37.42	A
Overall design	Suitable for outdoor use
Terminal, top	Eyebolt end that accepts #8 AWG–2/0 copper conductors
Terminal, bottom	<ul style="list-style-type: none">▪ Spline stud, 2-in long with a diameter of 0.26–0.38 inches▪ Stud terminal designed to support the limiter in a vertical or horizontal position
Fuse type	Non-expulsion
Rated maximum voltage, kV	15.5
Minimum interrupting current, rms, symmetrical (A)	40
Fuse tube material	Reinforced fiberglass or equivalent, UV resistant
Tube color	Gray

FCL fuses shall have current ratings as shown in Table 4b.

Table 4b. Fuse Current Ratings

Type	Continuous Current Rating	Minimum Interrupting Current, rms, Symmetrical (A)	Maximum Let-Through (I ² T)
12K	12 A	450	15,000
25K	25 A	475	40,000
50K	50 A	900	160,000
65K	65 A	950	200,000

5. Testing

Data that establishes compliance with the requirements of IEEE C37.302, IEEE C37.41, IEEE C37.42, IEEE C37.47 and this standard shall be provided upon request.

6. Marking

Fuse units shall be marked according to the requirements of IEEE C37.42, Section 10.2, which includes:

- Manufacturer name or symbol
- Manufacturer type or identification
- Rated current
- Rated maximum voltage
- Rated minimum interrupting current
- Rated maximum interrupting current
- Rated frequency
- Identifying date code (month and year)

7. Packaging

Each fuse shall be packaged assembled with connectors.

Fuses shall be packaged individually to prevent damage during shipping, handling, and storage.

Shipping containers shall be legibly marked with the SCL purchase order number.

8. Issuance

Stock Unit: EA

9. Approved Manufacturers

Stock No.	Type	Cooper Power Systems Part No.	ABB Part No.
684920	12K	FAH17KV12KBGR1	HTDE248012
014417	25K	FAH17KV25KBGR1	HTDE248025
014418	50K	155K050E1	HTDE248040
014419	65K	155K065E1	HTDE34E065

Note: The ABB HTDE248040 is labeled 40K, but it is equivalent to that of the 50K Cooper Power Systems fuse in terms of operation, and coordinates with a 40K fuse link and a 1000 kVA transformer.

10. References

SCL Work Practice 1065.17; "Fusing Schedule"

11. Sources

Elastimold & Hi-Tech Fuse Products; "Hi-Tech EXT Back-Up Current-Limiting Fuses," October 2015

Fusing Equipment Catalog Data CA132021EN; "Companion II back-up current-limiting fuse," Cooper Power Series, March 2016

Fusing Equipment Catalog Data CA132059EN; "K-Limiter high ampere Companion II fuse," Cooper Power Series, February 2016

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S&C Instruction Sheet 529-1; "S&C Fault Limiters, Type FL-1 –Outdoor," S&C Electric Company, November 4, 1974 SCL Material Standard 6820.95; "27 kV Cutout, Open Type, Polymer"

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