

Oil Immersed Current Sensing Weak Link Cartridge

GENERAL

The RTE® Oil-immersed current sensing weak link cartridge fuse is an internal, "weak link" expulsion fuse. It is designed for use in transformer oil or approved equivalent on the high voltage or primary side of distribution transformers.

This cartridge fuse provides an economical means of fusing because it protects distribution systems from failed transformers, and also protects transformers from excessive overloads and fault conditions.

Current sensing cartridge fuses can be used alone or combined in a two fuse protection system where high fault currents may be encountered. In a two-fuse system, the cartridge fuse is connected in series and coordinated with the primary current-limiting fuse. This arrangement allows low current faults and overloads to be cleared by the internal cartridge fuse, while high current faults are cleared by the current-limiting fuse.

INSTALLATION

No special tools are required. The cartridge fuse is either bushing or terminal board-mounted inside the transformer tank with the fuse lead end downward at least 2.0 inches (51 mm) beneath the level of the dielectric fluid. The minimum required distance from ground is:

- 8.3 kV 2.0 in. (51 mm)
- 15.5 kV 3.5 in. (89 mm)

Refer to Service Literature S240-31-1 for installation instructions.

PRODUCTION TESTS

Tests are conducted in accordance with Cooper Power Systems requirements.

- Physical Inspection
- Periodic Dissection



Figure 1. Current Sensing Cartridge Fuse.

TABLE 1
Electrical Ratings and Characteristics

Maximum Rated Voltage (kV)	Continuous Current Ratings (A)	Maximum Single-Phase Interrupting Ratings (A Symmetrical) (A)
8.3	10-140	2000
15.5	10-140	1000

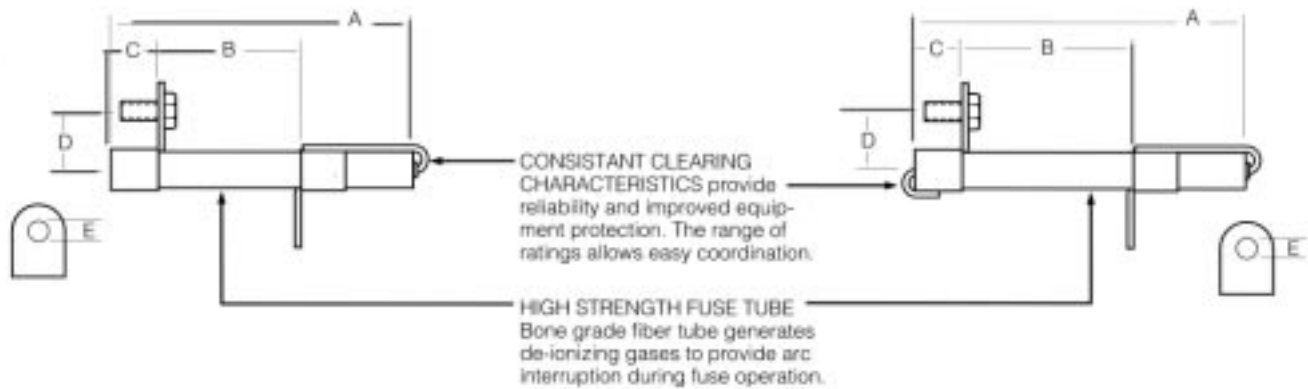


Figure 2.
(3437718C_M; 8.3 kV, 2000 A Interrupt)

Figure 3.
(3437719C_M; 15.5 kV, 2000 A Interrupt)

TABLE 2
Dimensional Information

Figure	Dimensions in./(mm)					
	A	B	C	D	E	Dia.
2	5.18 (131.6)	3.12 (79.2)	0.87 (22.1)	0.87 (22.1)	0.24 (6.1)	0.50 (12.7)
3	6.37 (161.8)	4.06 (103.1)	0.87 (22.1)	0.87 (22.1)	0.24 (6.1)	0.50 (12.7)

NOTE: Thread size is 1/4 in. x 20-0.75 in.

ORDERING INFORMATION

To order an RTE current sensing weak link cartridge fuse, determine the amperage and voltage requirements of the application and specify the fuse required from Table 3.

TABLE 3
Oil-Immersed Current Sensing Weak Link Cartridge Fuses

Continuous Current Rating (A)	Catalog Number
8.3 kV, 2000 A Interrupting	
10	3437718C05M
15	3437718C07M
25	3437718C10M
40	3437718C12M
65	3437718C16M
140	3437718C18M
15.5 kV, 1000 A Interrupting	
10	3437719C05M
15	3437719C07M
25	3437719C10M
40	3437719C12M
65	3437719C16M
140	3437719C18M

METHOD A**Using the Correlation Tables**

To order an RTE oil-immersed current sensing weak link cartridge fuse for transformer primary voltages up to 8.32 kV, complete catalog number 3437718_M using Table 4.

To order a fuse for transformer primary voltages from 12.0 kV and up consult the shaded portion of the chart and complete catalog number 3437719_M.

Correlation is based on ANSI/IEEE C57.92 Loading Guide and C57.109 Through-Fault Guide, and Application Guide CP7662A.

DUAL VOLTAGE**TRANSFORMER APPLICATION**

Current sensing internal cartridge fuses may also be applied in single-phase dual voltage transformers of the following transformer primary voltage configurations:

2.4/4.8	4.8/7.62
2.4/7.2	4.8/14.4
2.4/7.62	7.2/14.4
2.4/7.96	7.2/19.9
2.4/19.9	7.62/19.9

Specify two fuses for each application using Table 4.

METHOD B**Using Time Current Curves**

To determine or confirm the cartridge fuse that will coordinate with upstream and downstream systems requirements, use time-current curves and specify the fuse indicated from Table 3.

For full size time-current curves contact your local Cooper Power Systems representative.

TABLE 4
Internal Current Sensing Cartridge Fuses

Transformer kVA	Transformer Primary Voltage (kV)							
	2.4	4.16	4.8	7.2, 7.62 7.96	8.32	12.0, 12.47	13.2, 13.8	14.4
Single-Phase Transformers (Phase-to -Ground)								
10	C05	C05*	C05*	C05*	C05*	C05*	C05*	C05*
15	C07	C05	C05*	C05*	C05*	C05*	C05*	C05*
25	C10	C07	C07	C05 ^a	C05*	C05*	C05*	C05*
37.5	C12	C10	C10*	C07	C05	C05*	C05*	C05*
50	C16*	C10	C10	C07	C07	C05	C05	C05
75	C16	C12	C12	C10	C10	C07	C07	C07
100	C18*	C16*	C16*	C12	C10	C10	C07	C07
167	—	C18*	C16	C16*	C16*	C12	C12*	C10
250	—	C18	C18	C16	C16	C16*	C12	C12
333	—	—	C18	C18*	C18*	C16	C16 ^b	C16*
500	—	—	—	—	C18	C18*	C18*	C16
Transformer kVA	2.4	4.16	4.8	7.2, 7.62 7.96	8.32	12.0, 12.47	13.2,	13.8 14.4
Three-Phase Transformers (Phase-to -Phase)								
30	C07	C05	C05	C05*	C05*	C05*	C05*	C05*
45	C10	C07	C07	C05	C05	C05*	C05*	C05*
75	C12	C10	C10	C07	C07	C05*	C05*	C05*
112.5	C16	C12	C12	C10	C07	C07	C05*	C05*
150	C16*	C16*	C12	C10	C10	C07	C05	C05
225	C18	C16	C16	C12	C12	C10	C10	C10
300	C18	C18*	C16	C12	C12	C12	C12	C10
500	—	C18	C18	C18	C16	C16*	C16*	C12
750	—	—	—	C18	C18	C16	C16	C16
1000	—	—	—	—	—	C18	C18	C18
1500	—	—	—	—	—	C18	C18	C18

NOTE: Recommendations are based on fuse melting at 3 to 4 times transformer rated current at 5 minutes. Recommended fuses meet inrush current requirement of 12 times transformer rated current for 00.1 second. Recommendations are based on conventional transformers. For completely self-protected (CSP) transformers, refer to CP7903.

*Recommended fuses provide more than 6 times transformer rated current for 5 minutes.

a. 4 to 6 times rated current for 7.2 kV; 6 times for 7.62 kV.

b. 4 to 6 times rated current for 13.2 kV; 6 times for 13.8 kV.

c. Recommended fuse is limited to gnd Y/gnd transformer with no more than 25% delta connected secondary load with neutral internally grounded.

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