Fusing Equipment

COOPER Power Systems

Electrical Apparatus

240-75

ELST Full Range Current-Limiting Tandem Fuse Assembly

GENERAL

The RTE® ELST full range current-limiting tandem fuse assembly is designed for use in padmount switchgear filled with transformer oil or approved equivalent. It may also be used in large padmount transformers.

The fuse's highly efficient current-limiting section reduces the effects of high fault current stresses on upstream and downstream apparatus because it limits energy let-through during high current fault clearing. The expulsion section protects the current-limiting fuse from system voltage following a high current fault on the system.

The ELST fuse assembly is mechanically interchangeable with the K-MATE™ SL assembly and with other manufacturers' current-limiting tandem fuse assemblies. NOTE: Only components of identical manufacture and ratings should be assembled together and installed in three-phase applications.

The "E" rated fuse has time-current characteristics that are easier to coordinate with existing protective devices, such as boric acid fuses, reclosers and power fuses.

K-MATE is a trademark of A.B. Chance.

INSTALLATION

No special tools are required. The ELST fuse assembly is lowered into the wet well of de-energized apparatus using a shotgun stick. Refer to Service Section S240-75-1 for details.

PRODUCTION TESTS

Tests are conducted on 100 percent of production in accordance with RTE requirements.

- Physical Inspection
- I^2t Testing
- Resistance Testing
- Helium Mass Spectrometer Leak Testing

Figure 1.
ELST Full Range Current-Limiting Tandem Fuse Assembly with current-limiting and expulsion sections for high and low fault current protection.

TABLE 1
Electrical Characteristics

Fuse Type	General Purpose (Full Range), "E" Rated
Voltage Rating	
Single-Phase maximum	8.3 kV
Three-Phase nominal	15 kV
Maximum Interrupting Current	30,000 A rms symmetrical

TABLE 2
Electrical Ratings

"E" Rating (A)	Continuous Current Rating (A)*	Minimum Melt I^2t ($A^2 \cdot s$)	Maximum Clear I^2t ($A^2 \cdot s$)	Current-Limiting Fuse Resistance (Ω)
20	20	5,820	35,000	0.0146
30	30	5,820	35,000	0.0146
50	50	9,100	54,000	0.0120
75	80	13,120	80,000	0.0101
100	110	26,000	115,000	0.0081
150	160	58,000	257,000	0.0051
200	210	110,000	575,000	0.0036

*In 60°C oil environment.

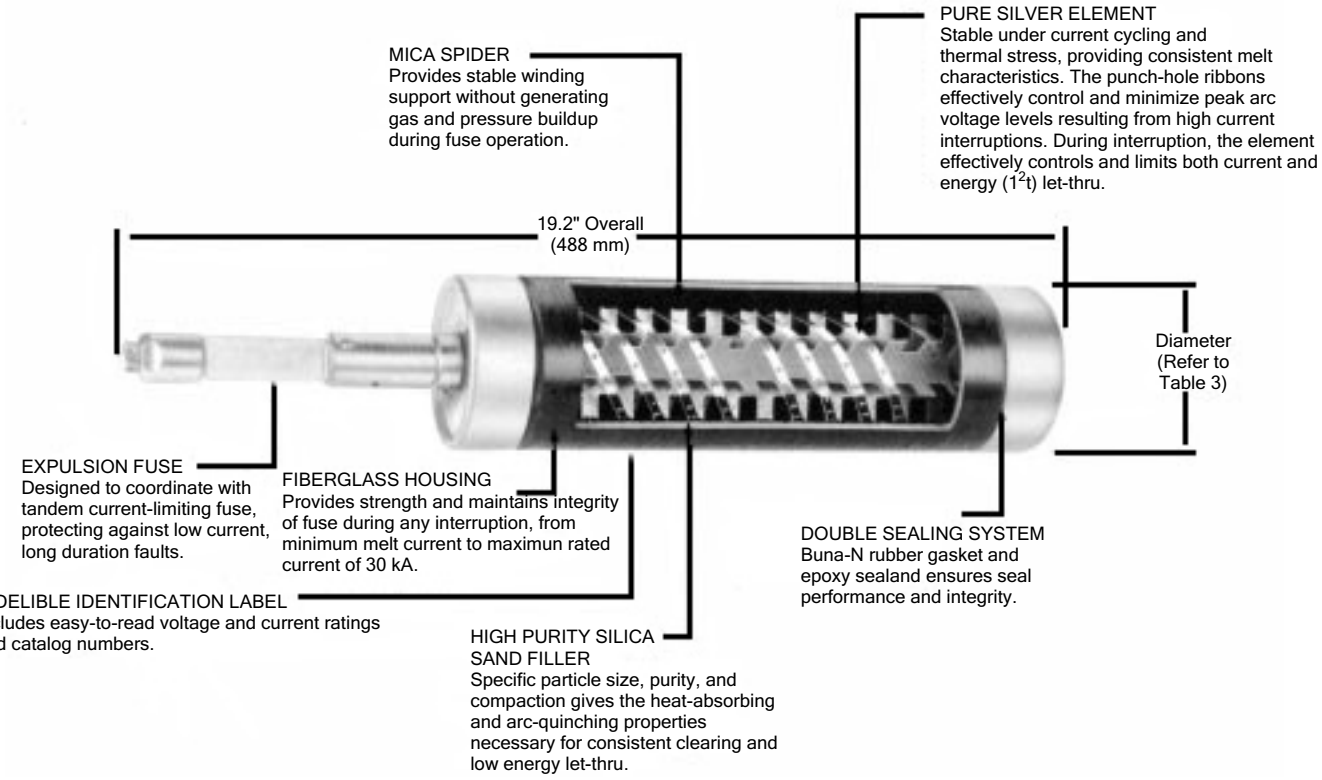

Figure 2.
Cutaway illustration of the fuse assembly shows the integrity of the design characteristics and overall dimensions.

NOTE: Dimensions given are for reference only.

ORDERING INFORMATION

To order an RTE ELST current-limiting fuse assembly, determine the current rating requirements of the application and specify the fuse required from Table 4.

TABLE 3
Dimensional and Weight Information

"E" Rating (A)	Diameter inches/(mm)	Weight (lbs.)
20-75	2.0 (51)	3 5
100-200	3.5 (89)	9.0

The current-limiting fuse section may be re-used following low-current fault clearing, only if precise measurement of the resistance of the current-limiting fuse section is performed and the resistance is checked in accordance with operation Service Section S240-75-1. If the current-limiting section meets this criterion, the low current section may be replaced.

TABLE 4
ELST Fuse Catalog Numbers

"E" Rating (A)	ELST Fuse Assembly Item Number	ELST Fuse Assembly Catalog Number	Replacement Expulsion Fuse Item Number	Replacement Expulsion Fuse Catalog Number
20	83ELST20	3437851B04M	83TEX20	3437850B01M
30	83ELST30	3437851B05M	83TEX30	3437850B02M
50	83ELST50	3437851B06M	83TEX50	3437850B03M
75	83ELST75	3437851B07M	83TEX75	3437850B04M
100	83ELST100	3437851B03M	83TEX100	3437850B05M
150	83ELST150	3437851B02M	83TEX150	3437850B06M
200	83ELST200	3437851B01M	83TEX200	3437850B07M

*In 60°C oil environment.

METHOD A

Correlation Information

Use the following Correlation Table to determine the amperage rating of the ELST fuse required for the application. Then use Table 4 to determine the Catalog Number.

Correlation is based on ANSI/IEEE C57.92 Loading Guide and C57.109 Through-Fault Guide, and the RTE Fusing Application Guide CP7662A. Contact your Cooper Power Systems representative for further information or other applications.

TABLE 5
Recommended Fuse Current Ratings (A)

Three-Phase Transformer kVA	Nominal Three-Phase Voltage (kV) Phase-to-Phase									
	2.4	4.16	4.8	7.2	7.62	8.32	12.0	12.47	13.2	14.4
30	20	–	–	–	–	–	–	–	–	–
45	20	–	–	–	–	–	–	–	–	–
75	30	20	20	–	–	–	–	–	–	–
112.5	50	30	20	20	20	20	–	–	–	–
150	75	50	30	20	20	20	20	20	–	–
225	100	50	50	30	30	30	20	20	20	20
300	150	75	75	50	50	30	30	30	20	20
500	200	150	150	75	75	75	50	50	30	30
750	–	150	150	100	100	100	75	75	50	50
1000	–	200	200	150	150	150	75	75	75	75
1500	–	–	–	200	200	150	150	150	100	100
2000	–		–	–	–	200	150	150	150	150
2500	–	–	–	–	–	–	200	200	200	150

NOTE: Recommended fuse meet inrush current requirements of 25 times apparatus rated current for 0.01 second; 12 times rated current for 0.1 second; and 3 times rated current for 10 seconds. Recommended fuses allow 150% loading.

METHOD B

Using Time Current Curves

To determine or confirm the ELST fuse that will coordinate with upstream and downstream system requirements, use the time-current characteristic curves and specify the fuse indicated from Table 4. For full size TCC curves, contact your Cooper Power Systems representative.

COOPER Power Systems
P.O. Box 1640
Waukesha, WI 53187