

Product Update



Subject: 38kV Trans-Guard™ OS Shorty Backup Current-Limiting Fuses

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The 38kV Trans-Guard™ OS Shorty is a backup type current-limiting fuse specifically designed for use in 26.4-34.5kV distribution and wind farm transformers that have a primary or secondary delta connection or that feed more than 50% delta connected load. Its ability to significantly reduce fault energy and its very high interrupting capability provide state-of-the-art protection against today's ever-increasing available fault currents.

As a back-up type current-limiting fuse (refer to ANSI C37.40 for fuse definitions), the 38kV Trans-Guard™ OS Shorty must always be applied in series with a properly-sized low current protective device. The device typically used with this fuse is a 34.5kV under-oil weak link expulsion fuse. The expulsion fuse and the current-limiting fuse are each selected to provide fault protection over a certain range of currents. The expulsion fuse is chosen to clear the low magnitude currents such as those caused by faults that occur external to the transformer and high impedance faults within the transformer. Such currents are generally below the minimum interrupting current rating of the current-limiting fuse. The back-up type current-limiting fuse is selected so as to clear all other currents. In addition to interrupting the fault currents resulting from low impedance faults within the transformer, the back-up current-limiting fuse serves the very important function of limiting the amount of energy that is let through to the source of the fault to a value below the withstand capability of the transformer tank. By doing this, the current-limiting fuse minimizes the likelihood of disruptive equipment failures (i.e. transformer tank ruptures, accessories being damaged or broken loose from their mountings, etc.). No other protective device is available to similarly reduce the risk of disruptive transformer failures.

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Features	Benefits
<ul style="list-style-type: none"> L-L voltage rating 	Allows smaller backup fuses to be used in order to substantially reduce arcing time and energy let-through during a fault. This provides increased transformer protection and greatly improves upstream coordination.
<ul style="list-style-type: none"> Broad range of ratings 	Makes it possible to provide current-limiting protection for transformers as large as 2850KVA at 26.4kV, 3000KVA at 27.6kV, and 3800KVA at 34.5kV.
<ul style="list-style-type: none"> Rigorous testing to meet ANSI/IEEE standards 	Internal quality requirements including 100% physical inspection, resistance measurement, and helium mass spectrometer leak testing
<ul style="list-style-type: none"> Durable design 	For long life including machined brass end caps, filament wound high temperature epoxy tubular bodies, sand filler and hermetic sealing system
<ul style="list-style-type: none"> High fault current interrupting capability 	25,000 amperes symmetrical

ELECTRICAL CHARACTERISTICS:

Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number	Rated Maximum Voltage (kV)	Peak Arc Voltage (kV) (2)	Minimum I/C (Amps)	Minimum Melt I ² T (A ² Sec)	Maximum Total I ² T (A ² Sec)
38.0	65	HTSS372065	38.0	104	450	2,600	11,600
	80	HTSS372080			570	5,600	23,500
	100	HTSS372100			720	9,500	36,100
	125	HTSS372125			950	19,300	68,000
	165	HTSS372165		102	1,200	43,500	155,000

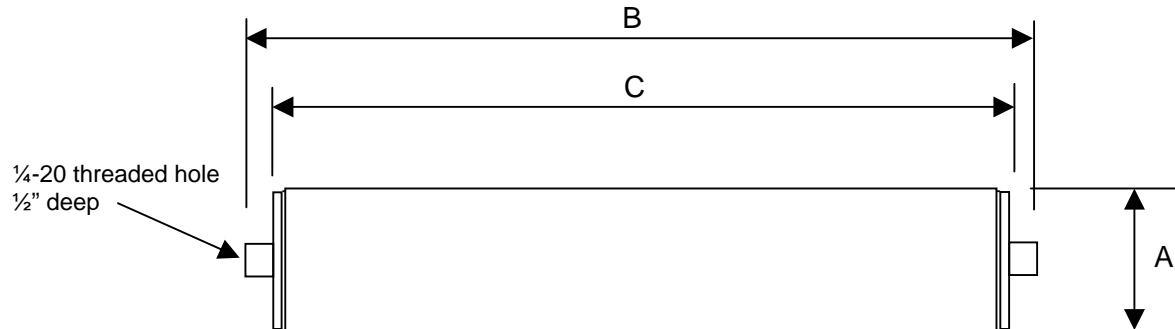
Notes:

- All fuses have a rated maximum interrupting current of 25,000 A rms symmetrical.
- Peak arc voltages quoted are for 25,000 A currents at the rated maximum voltage listed. Reduced voltages and currents will reduce the peak arc voltage. Consult the factory for information.

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DIMENSIONAL INFORMATION:



Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number	Overall Diameter (A)	Overall Length (B)	Body Length (C)	Fuse Weight
38.0	65	HTSS372065	3.25-3.32" (82.5-84.3mm)	19.29-19.41" (490.0-493.0mm)	18.29-18.37" (464.6-466.6mm)	12.0lb 5.44kg
	80	HTSS372080				
	100	HTSS372100				
	125	HTSS372125				
	165	HTSS372165				13.5lb 6.12kg

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FUSE SELECTION

For a detailed explanation on selecting the appropriate backup current limiting fuse for a given application, please refer to Hi-Tech Fuses Application Bulletin FS-10. For a quicker method of selecting the proper 38kV Trans-Guard™ OS Shorty fuse for applications involving coordination with ABB 34.5kV under-oil weak link expulsion fuses please refer to the following table.

ABB 34.5kV Protective Links (345B995G__) & 38kV Trans-Guard OS Shorty Fuses

KVA	Assumed Impedance	TRANSFORMER VOLTAGE (kV) L-L					
		26.4		27.6		34.5	
		Link	Shorty	Link	Shorty	Link	Shorty
75	1.6	2	65	2	65	2	65
112.5	1.8	3	65	3	65	2	65
150	2.0	3A	65	3A	65	3	65
225	3.0	4	65	4	65	3A	65
300	3.5	5A	65	5	65	4	65
500	4.0	6	65	6	65	5A	65
750	5.75	7	65	7	65	7	65
1000	5.75	8	80	8	80	7	65
1100	5.75	8	100	8	80	7A	80
1250	5.75	9	125	9	125	7A	80
1500	5.75	9	125	9	125	8	100
1750	5.75	9	125	9	125	9	125
1850	5.75	10	165	9	125	9	125
2000	5.75	10	165	10	165	9	125
2250	5.75	10	165	10	165	9	125
2500-2850	5.75	10	165	10	165	10	165
3000	5.75			10	165	10	165
3250-3800	5.75					10	165

Note:

Backup fuses are selected to melt only on internal transformer faults, where transformer impedance is equal to, or greater than, the value given. For transformers having lower impedances, consult the factory.