

The **Trans-Guard™ OS** is a **back-up type current-limiting fuse** designed for application within distribution transformers. Its ability to significantly reduce fault energy and its very high interrupting capability (50,000 amperes symmetrical) provide state-of-the-art protection against today's ever increasing available fault currents.

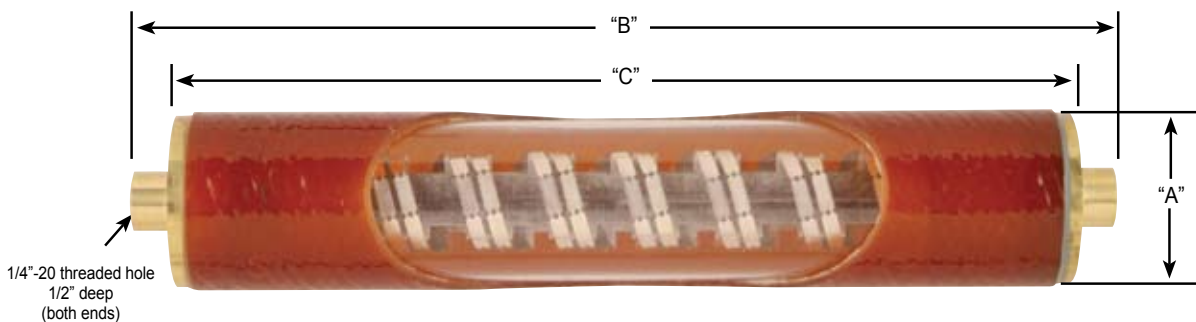
The newer **OS Shorty fuses** were specifically designed to be more compact in size and allow for easier installation in smaller distribution transformers.

As a back-up type current-limiting fuse (refer to ANSI C37.40 for fuse definitions), the Trans-Guard™ OS must always be applied in series with a properly-sized low current protective device. This device is typically an under-oil expulsion fuse (i.e. Bay-O-Net fault or load sensing link, terminal board weak link, etc.). 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, high impedance faults within the transformer, and in the case of load sensing links, transformer overloads. 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.

FEATURE	BENEFIT/DESCRIPTION
Highest current ratings available in a single fuse body	Minimizes the costs and physical space associated with paralleling two fuses to achieve the desired current rating
Smaller physical size	Achieved particularly within line of OS Shorty fuse designs
Rigorous testing to meet ANSI/IEEE standards	Internal quality requirements including 100% physical inspection, resistance measurement, and helium mass spectrometer leak testing
Durable design	For long life including machined brass end caps, filament-wound high temperature epoxy tubular bodies, sand filler and hermetic sealing system
High fault current interrupting capability	50,000 amperes symmetrical for most ratings
Broad range of fuse ratings	Available with our Standard OS and OS Shorty lines (30 amps – 400 amps)
Elevated rated maximum voltages designs	10kV, 17.2kV, and 25.5kV for many of the OS Shorty designs



**TABLE 1 – DIMENSIONAL INFORMATION FOR TRANS-GUARD™ OS FUSES**

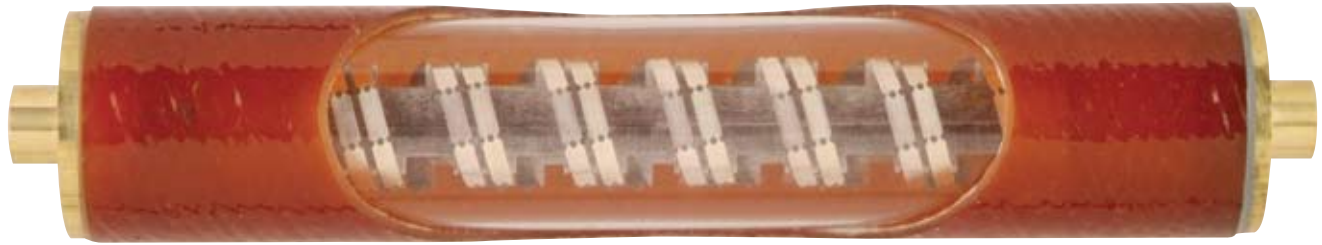
Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number	Overall Diameter (A)	Overall Length (B)	Body Length (C)	Fuse Weight
8.3	35	HTDS232035	2.18-2.22" (55.4-56.4mm)	7.09-7.21" (180.0-183.1mm)	6.05-6.13" (153.7-155.7mm)	2.25lb. 1.02kg
	40	HTDS232040		10.89-11.01" (276.6-279.7mm)	9.85-9.93" (250.2-252.2mm)	3.25lb. 1.47kg
	50	HTDS232050				
	65	HTDS232065				
	80	HTDS232080				
	100	HTDS232100				
	125	HTDS332125	3.25-3.32" (82.5-84.3mm)	9.89-9.97" (251.2-253.2mm)	7.25lb. 3.29kg	
	150	HTDS332150				
	165	HTDS332165				
200	HTDS332200					
15.5	35	HTDS242035	2.18-2.22" (55.4-56.4mm)	10.89-11.01" (276.6-279.7mm)	9.85-9.93" (250.2-252.2mm)	3.25lb. 1.47kg
	45	HTDS242045		16.49-16.61" (418.8-421.9mm)	15.45-15.53" (392.4-394.5mm)	4.75lb. 2.155kg
	40	HTDS242040				
	50	HTDS242050				
	65	HTDS242065				
	80	HTDS242080				
	100	HTDS242100	3.25-3.32" (82.5-84.3mm)	15.49-15.57" (393.4-395.5mm)	10.75lb. 4.87kg	
	125	HTDS342125				
	150	HTDS242150				
	165	HTDS342165				
	200	HTDS342200				
23.0	40	HTDS252040	2.18-2.22" (55.4-56.4mm)	16.49-16.61" (418.8-421.9mm)	15.45-15.53" (392.4-394.5mm)	4.75lb. 2.155kg
	50	HTDS252050	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
	65	HTDS252065				
	100	HTDS352100				
	125	HTDS352125				
	150	HTDS352150				
	175	HTDS352175				

NOTE: Other hardware is available, consult the factory.

**TABLE 2 – DIMENSIONAL INFORMATION FOR TRANS-GUARD™ OS SHORTY FUSES**

Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number	Overall Diameter (A)	Overall Length (B)	Body Length (C)	Fuse Weight			
8.3	40	HTSS232040	2.18-2.22" (55.4-56.4mm)	7.09-7.21" (180.0-183.1mm)	6.05-6.13" (153.7-155.7mm)	2.25lb. 1.02kg			
	50	HTSS232050		7.68-7.80" (195.1-198.1mm)	6.64-6.72" (168.7-170.7mm)	2.5lb. 1.13kg			
	65	HTSS232065							
	80	HTSS232080		10.89-11.01" (276.6-279.7mm)	9.85-9.93" (250.2-252.2mm)	3.25lb. 1.45kg			
	100	HTSS232100							
	125	HTSS232125							
	150	HTSS232150							
	17.2	165		HTSS232165	2.18-2.22" (55.4-56.4mm)	9.17-9.29" (232.9-236.0mm)	8.13-8.21" (206.5-208.5mm)	2.75lb. 1.25kg	
200		HTSS232200							
30		HTSS240030	12.01-12.13" (305.1-308.1mm)	10.97-11.05" (278.6-280.7mm)					3.75lb. 1.70kg
40		HTSS240040							
50		HTSS240050							
65		HTSS242065							
80		HTSS242080							
100	HTSS242100								
15.5	125	HTSS242125	16.49-16.61" (418.8-421.9mm)	15.45-15.53" (392.4-394.4mm)	4.75lb. 2.15kg				
	150	HTSS242150							
23.0	165	HTSS242165	2.18-2.22" (55.4-56.4mm)	12.68-12.80" (322.1-325.1mm)	11.64-11.72" (295.7-297.7mm)	3.75lb. 1.70kg			
	30	HTSS252030							
	40	HTSS252040							
	50	HTSS252050					16.29-16.41" (413.8-416.8mm)	15.25-15.33" (387.4-389.4mm)	4.75lb. 2.15kg
	65	HTSS252065							
	80	HTSS252080							
100	HTSS252100								

NOTE: Other hardware is available, consult the factory.



**TABLE 3 – ELECTRICAL CHARACTERISTICS OF TRANS-GUARD™ OS FUSES (SINGLE FUSES)**

Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number	Rated Maximum Voltage (kV)	Peak Arc Voltage (kV) (3)	Minimum I/C (Amps)	Minimum Melt I <sup>2</sup> t (AMP <sup>2</sup> SEC)	Maximum Total I <sup>2</sup> t (AMP <sup>2</sup> SEC) (2)
8.3	35	HTDS232035	8.3	26	415	3,140	10,000
	40	HTDS232040			260	3,200	10,500
	50	HTDS232050			320	5,000	16,000
	65	HTDS232065			430	11,000	34,000
	80	HTDS232080			600	17,000	45,000
	100	HTDS232100		850	39,000	120,000	
	125	HTDS332125		22	450	29,000	90,000
	150	HTDS332150			535	45,000	160,000
	165	HTDS332165			1,250	67,300	230,000
	200	HTDS332200			1,700	156,000	580,000
15.5	35	HTDS242035	15.5		49	380	3,140
	40	HTDS242040		46	270	3,200	9,500
	45	HTDS242045		49	450	4,340	14,500
	50	HTDS242050		46	330	5,000	16,000
	65	HTDS242065		46	450	11,000	34,000
	80	HTDS242080		49	700	17,000	45,000
	100	HTDS242100		49	1,000	39,000	120,000
	125	HTDS342125		44	500	29,000	90,000
	150	HTDS342150			600	45,000	160,000
	165	HTDS342165			1,200	67,300	230,000
	200	HTDS342200			1,530	156,000	580,000
	23	40			HTDS252040	23	64
50		HTDS252050	65	340	5,000		17,000
65		HTDS252065	66	465	11,000		38,000
100		HTDS352100	69	600	20,100		70,000
125		HTDS352125	67	1,000	31,400		105,000
150		HTDS352150	65	1,300	66,900		220,000
175		HTDS352175	63	1,530	108,600		360,000

**NOTES:**

1. All fuses have a rated maximum interrupting current of 50,000 A rms symmetrical.
2. Maximum total I<sup>2</sup>t values are reduced for currents below 50,000 A. For example, at 10,000 A, maximum total I<sup>2</sup>t values are approximately 15% less than the published values.
3. Peak arc voltages quoted are for 50,000 A currents at the rated maximum voltage listed. Reduced voltages and currents will reduce the peak arc voltage. Consult the factory for information.

**TABLE 4 – ELECTRICAL CHARACTERISTICS OF TRANS-GUARD™ OS SHORTY FUSES (SINGLE FUSES)**

Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number	Rated Maximum Voltage (kV)	Peak Arc Voltage (kV) (4)	Minimum I/C (Amps)	Minimum Melt I <sup>2</sup> t (AMP <sup>2</sup> SEC)	Maximum Total I <sup>2</sup> t (AMP <sup>2</sup> SEC) (2) (3)	
8.3	40	HTSS232040	8.3	26	415	3,140	10,000	
	50	HTSS232050	10.0	25	300	2,500	14,000	
	65	HTSS232065			350	3,700	18,000	
	80	HTSS232080			430	6,300	31,000	
	100	HTSS232100	8.3	24	570	12,800	66,000	
	125	HTSS232125			26	850	39,000	120,000
	150	HTSS232150			24.5	900	23,000	110,000
	165	HTSS232165			1,020	39,500	175,000	
	200	HTSS232200			1,120	54,500	225,000	
17.2	30	HTSS240030	17.2	49	240	1,260	6,800	
	40	HTSS240040			330	2,680	12,000	
	50	HTSS240050			440	4,440	17,000	
	65	HTSS242065			360	3,700	22,000	
	80	HTSS242080			440	6,300	36,000	
	100	HTSS242100			580	12,800	76,000	
	125 <sup>(1)</sup>	HTSS242125			540	14,800	66,000	
	150 <sup>(1)</sup>	HTSS242150			700	34,800	137,000	
15.5	165 <sup>(1)</sup>	HTSS242165	15.5	48	780	51,200	195,000	
23.0	30	HTSS252030	25.5	71	300	920	4,250	
	40	HTSS252040			390	1,580	9,750	
	50	HTSS252050			570	3,200	20,000	
	65	HTSS252065		70	360	3,700	17,000	
	80	HTSS252080			440	6,300	28,000	
	100	HTSS252100			575	12,800	70,000	

**NOTES:**

- (1) These fuses have only been tested at a rated maximum interrupting current of 44,000 A rms symmetrical. All other fuses have a rated maximum interrupting current of 50,000 A rms symmetrical.
- (2) Tabulated maximum total I<sup>2</sup>t values are at the nominal voltage of the fuse. Values for 17.2kV fuses at 15.5kV are reduced by approximately 12%, while values for 8.3kV and 23kV fuses at 10kV and 25.5kV are increased by approximately 30% and 13% respectively.
- (3) Maximum total I<sup>2</sup>t values are reduced for currents below 50,000 A. For example, at 10,000 A, maximum total I<sup>2</sup>t values are approximately 15% less than the published values.
- (4) Peak arc voltages quoted are for 50,000 A currents at the rated maximum voltage listed. Reduced voltages and currents will reduce the peak arc voltage. Consult the factory for information.

**TABLE 5 – ELECTRICAL CHARACTERISTICS OF TRANS-GUARD™ OS FUSES (FUSES TESTED FOR USE IN PARALLEL)**

Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number (Order Two Fuses)	Rated Maximum Voltage (kV)	Peak Arc Voltage (kV) (5)	Minimum I/C (Amps)	Minimum Melt I <sup>2</sup> t (AMP <sup>2</sup> SEC)	Maximum Total I <sup>2</sup> t (AMP <sup>2</sup> SEC) (3) (4)
8.3	250	HTDS332125	8.3	22	850	116,000	350,000
	300	HTDS332150			1,000	180,000	650,000
15.5	250	HTDS342125	15.5	44	850	116,000	350,000
	300	HTDS342150			1,000	180,000	650,000

**TABLE 6 – ELECTRICAL CHARACTERISTICS OF TRANS-GUARD™ OS SHORTY FUSES (FUSES TESTED FOR USE IN PARALLEL)**

Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number (Order Two Fuses)	Rated Maximum Voltage (kV)	Peak Arc Voltage (kV) (5)	Minimum I/C (Amps)	Minimum Melt I <sup>2</sup> t (AMP <sup>2</sup> SEC)	Maximum Total I <sup>2</sup> t (AMP <sup>2</sup> SEC) (3) (4)
8.3	130	HTSS232065	8.3	25	420	14,800	65,000
	160	HTSS232080			500	25,200	114,000
	200	HTSS232100			630	51,200	240,000
	300	HTSS232150		24.5	1,900	92,000	425,000
	330	HTSS232165		24	2,150	158,000	675,000
	400	HTSS232200		23.5	2,380	218,000	850,000
17.2	130	HTSS242065	17.2	47	420	14,800	92,000
	160	HTSS242080			500	25,200	162,000
	200	HTSS242100			630	51,200	310,000
	250 <sup>(1)</sup>	HTSS242125		49	1,130	59,200	265,000
15.5	300 <sup>(1)</sup>	HTSS242150	15.5	49	1,500	139,200	515,000
	330	HTSS242165		46	1,670	204,800	733,000
23.0	130	HTSS252065	23.0	69	360	14,800	68,000
	160	HTSS252080			450	25,200	115,000
	200	HTSS252100			560	51,200	280,000

**NOTES FOR TABLES 5 AND 6:**

- (1) These fuses have only been tested at a rated maximum interrupting current of 44,000 A rms symmetrical due to test station limitations. All other fuses have a rated maximum interrupting current of 50,000 A rms symmetrical.
- (2)  Current ratings shown above are achieved by using a parallel combination of two fuses (order two fuses). To facilitate equal sharing of the interrupting duty, the two fuses should be resistance matched (±2%) and be mounted such that current paths to and from each fuses are symmetrical.
- (3) Tabulated maximum total I<sup>2</sup>t values are at the nominal voltage of the fuse. Values for 17.2kV fuses at 15.5kV are reduced by approximately 12%, while values for 23kV fuses at 25.5kV are increased by approximately 13%.
- (4) Maximum total I<sup>2</sup>t values are reduced for currents below 50,000 A. For example, at 10,000 A, maximum total I<sup>2</sup>t values are approximately 15% less than the published values.
- (5) Peak arc voltages quoted are for 50,000 A currents at the rated maximum voltage listed. Reduced voltages and currents will reduce the peak arc voltage. Consult the factory for information.

**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 Trans-Guard™ OS or OS Shorty fuse for applications involving coordination with Bay-O-Net expulsion fuses and transformers having impedances equal to, or higher, than those listed in Table 7, please refer to fuse coordination Tables 8-11. These tables include columns that specify both OS and OS Shorty fuses for each application. More comprehensive tables listing fusing alternatives for transformers having any impedance can be found at [www.tnb.com/utility](http://www.tnb.com/utility).

**TABLE 7 – ASSUMED TRANSFORMER IMPEDANCES USED FOR FUSES COORDINATION (TABLES 8-11)**

Transformer Size (kVA)	1 Impedances (%)	3 Impedances (%)
5	1.90	–
10	1.90	–
15	1.90	–
25	1.90	–
37.5	1.90	–
45	–	1.60
50	1.90	–
75	1.90	1.60
100	2.00	–
112.5	–	1.80
150	–	2.00
167	2.60	–
225	–	3.00
250	4.00	–
300	–	3.50
333	5.00	–
500	5.00	4.00
750 and up	5.75	5.75

**TABLE 8 – 1ϕ TRANSFORMER COORDINATION TABLE FOR EXPULSION & TRANS-GUARD™ OS/OS SHORTY FUSES**

Trans-Guard™ OS/OS Shorty Fuse Voltage Rating (kV)																						
Fuse Voltage		8.3kV									15.5/17.2kV									23kV		
kVA	Transformer Voltage Rating (kV) Phase-to-Ground																					
	2.4			4.16 - 4.8			7.2 - 7.96			12 - 12.47			13.2 - 14.4			16			19.9			
	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	
<b>Dual Sensing Bay-O-Net (4000358___)<sup>a,c</sup> and OS/OS Shorty Fuse Coordinations</b>																						
5	C03	35	40	C03	35	40	C03	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
10	C05	35	40	C05	35	40	C03	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
15	C08	50	65	C05	35	40	C03	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
25	C10	100	100	C08	50	65	C05	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
37.5	C12	165	150	C10	80	100	C08	50	50	C05	35	30	C05	35	30	C03	-	30	C03	40	30	
50	C12	200	165	C10	100	125	C08	65	65	C05	35	30	C05	35	30	C05	-	30	C05	40	30	
75	C14	-	300	C12	165	150	C10	100	100	C08	50	65	C08	50	50	C08	-	50	C05	40	30	
100	C14	-	330	C12	200	165	C10	100	125	C08	65	80	C08	65	65	C08	-	65	C05	40	40	
167	-	-	-	C14	-	300	C12	165	150	C10	100	100	C10	100	100	C10	-	100	C08	50	65	
250	-	-	-	C18	-	330	C14	250	200	C12	125	125	C12	125	125	C10	-	100	C10	65	80	
333	-	-	-	C18	-	330	C14	250	200	C12	125	125	C12	125	125	C12	-	125	C10	100	80	
500	-	-	-	-	-	-	C18	-	330	C14	250	165	C14	250	165	C12	-	125	C12	100	130	
<b>Current Sensing Bay-O-Net (4000353___)<sup>a,b</sup> and OS/OS Shorty Fuse Coordinations</b>																						
5	C04	35	40	C04	35	40	C04	35	40	C04	35	30	C04	35	30	C04	-	30	C04	40	30	
10	C06	35	40	C04	35	40	C04	35	40	C04	35	30	C04	35	30	C04	-	30	C04	40	30	
15	C08	35	40	C06	35	40	C04	35	40	C04	35	30	C04	35	30	C04	-	30	C04	40	30	
25	C10	65	80	C08	35	40	C06	35	40	C04	35	30	C04	35	30	C04	-	30	C04	40	30	
37.5	C10	80	100	C08	50	65	C06	35	40	C06	35	30	C06	35	30	C04	-	30	C04	40	30	
50	C12	100	125	C10	80	100	C08	35	40	C06	35	30	C06	35	30	C06	-	30	C04	40	30	
75	C14	165	165	C12	100	125	C10	65	80	C08	35	40	C08	35	40	C06	-	30	C06	40	30	
100	C14	200	200	C12	150	150	C10	80	100	C08	35	50	C08	35	40	C08	-	40	C06	40	30	
167	C17	-	300	C14	165	165	C12	100	125	C10	65	80	C10	65	80	C10	-	65	C08	40	40	
250	-	-	-	C16	200	200	C14	150	150	C12	100	100	C12	80	100	C10	-	65	C10	50	65	
333	-	-	-	C17	300	300	C16	200	200	C14	150	150	C12	80	100	C12	-	100	C12	100	80	
500	-	-	-	-	-	-	C17	300	300	C14	150	150	C14	150	150	C14	-	150	C12	100	100	
<b>Dual Element Bay-O-Net (4038108___)<sup>a,c</sup> and OS/OS Shorty Fuse Coordinations</b>																						
5	C03	35	40	C03	35	40	C03	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
10	C05	35	40	C04	35	40	C03	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
15	C07	50	50	C05	35	40	C03	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
25	C09	80	100	C06	35	40	C04	35	40	C03	35	30	C03	35	30	C03	-	30	C03	40	30	
37.5	C11	100	125	C09	65	80	C06	35	40	C05	35	30	C04	35	30	C03	-	30	C03	40	30	
50	C12	100	125	C09	80	100	C07	50	50	C06	35	40	C05	35	30	C04	-	30	C03	40	30	
75	-	-	-	C12	100	125	C09	80	100	C07	45	50	C06	35	40	C06	-	40	C05	40	30	
100	-	-	-	C12	100	125	C09	80	100	C09	65	80	C07	50	65	C07	-	50	C06	40	40	
167	-	-	-	-	-	-	C12	100	125	C11	80	100	C09	65	80	C07	-	65	C07	50	50	
250	-	-	-	-	-	-	-	-	-	C12	80	100	C11	80	100	C09	-	80	-	-	-	
333	-	-	-	-	-	-	-	-	-	C12	100	100	C12	80	100	C12	-	100	-	-	-	

**NOTES:**

Bay-O-Net fuse selection is based on Cooper Power Systems recommendations.

Bay-O-Net fuses are selected to meet inrush criteria of 12 times transformer full load current for 0.1 second.

Backup OS / OS Shorty fuses are selected to melt only on internal transformer faults, where transformer impedance is equal to, or greater than, the value given in Table 7. If the impedance is higher, a smaller fuse can often be used.

Shaded areas indicate parallel fuse applications.

a Or equivalent Bay-O-Net link.

b Current Sensing Bay-O-Net fuses are selected to melt with 3 to 4 times transformer full load current at 300 seconds.

c Dual Sensing and Dual Element Bay-O-Net fuses are selected to limit transformer load to approximately 160% for 7 hours and 200% for 2 hours with the transformer initially carrying 75% of load at an ambient temperature of 35°C.

**TABLE 9 – 3Φ TRANSFORMER COORDINATION TABLE FOR EXPULSION & TRANS-GUARD™ OS/OS SHORTY FUSES**

kVA		Trans-Guard™ OS/OS Shorty Fuse Voltage Rating (kV)																																	
		8.3kV									15.5/17.2kV									23kV															
		Transformer Voltage Rating (kV) Phase-to-Phase																																	
		2.4			4.16-4.8			7.2-7.96			12-12.47			13.2-14.4			20.8 <sup>d</sup>			24.9 <sup>d</sup>			23.0			27.6 <sup>d</sup>			34.5 <sup>d</sup>						
LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY
<b>Dual Sensing Bay-O-Net (4000358) <sup>a,c</sup> and OS / OS Shorty Fuse Coordinations</b>																																			
45	C10	100	125	C08	65	65	C05	35	40	C03	35	30	C03	35	30	C03	35	30	C03	35	30	C03	40	30	C03	40	30	C03	40	30	C03	40	30		
75	C12	200	165	C10	100	125	C08	65	65	C05	35	30	C05	35	30	C03	35	30	C03	35	30	C03	40	30	C03	40	30	C03	40	30	C03	40	30		
112.5	C14	-	300	C12	165	150	C08	65	80	C08	50	50	C08	50	50	C05	35	30	C05	35	30	C05	40	30	C05	40	30	C03	40	30	C03	40	30		
150	C14	-	300	C12	200	165	C10	100	125	C08	65	65	C08	50	65	C05	35	30	C05	35	30	C05	40	30	C05	40	30	C05	40	30	C05	40	30		
225	C18	-	400	C14	300	300	C12	125	150	C10	80	100	C10	80	80	C08	40	50	C08	40	50	C08	40	65	C08	40	65	C05	40	30	C05	40	30		
300	C18	-	400	C14	300	300	C12	150	150	C10	80	100	C10	80	100	C08	40	50	C08	40	50	C08	40	65	C08	40	65	C05	40	30	C05	40	30		
500	-	-	-	C18	-	400	C14	250	200	C12	125	125	C12	125	125	C10	80	80	C10	65	80	C10	65	80	C10	65	80	C08	40	30	C08	40	30		
750	-	-	-	C18	-	400	C18	300	330	C14	250	150	C14	150	150	C12	125	125	C12	125	125	C12 <sup>a</sup>	100	130	C10	65	80	C10	65	80	C10	65	80		
1000	-	-	-	-	-	-	C18	-	330	C14	250	165	C14	250	165	C12	125	125	C12	125	125	C12 <sup>a</sup>	100	130	C12	100	130	C10	65	80	C10	65	80		
1500	-	-	-	-	-	-	-	-	-	C18 <sup>a</sup>	-	300	C18 <sup>a</sup>	300	300	C14	250	165	C14	250	150	C14 <sup>a</sup>	-	200	C14	-	200	C12	100	130	C12	100	130		
2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Current Sensing Bay-O-Net (4000353) <sup>a,b</sup> and OS / OS Shorty Fuse Coordinations</b>																																			
45	C10	80	100	C08	35	40	C06	35	40	C04	35	30	C04	35	30	C04	35	30	C04	35	30	C04	40	30	C04	40	30	C04	40	30	C04	40	30		
75	C12	100	125	C10	80	100	C06	35	40	C06	35	30	C06	35	30	C04	35	30	C04	35	30	C04	40	30	C04	40	30	C04	40	30	C04	40	30		
112.5	C12	165	165	C10	80	100	C08	50	65	C06	35	40	C06	35	30	C06	35	30	C04	35	30	C04	40	30	C04	40	30	C04	40	30	C04	40	30		
150	C14	165	165	C12	100	125	C10	80	100	C08	35	40	C08	35	40	C06	35	30	C06	35	30	C06	40	30	C06	40	30	C04	40	30	C04	40	30		
225	C16	200	200	C14	150	150	C10	80	100	C10	65	65	C10	50	65	C08	35	40	C08	35	30	C08	40	30	C06	40	30	C06	40	30	C06	40	30		
300	C17	300	300	C14	150	150	C12	100	125	C10	65	80	C10	65	65	C08	35	40	C08	35	30	C08	40	30	C08	40	30	C06	40	30	C06	40	30		
500	-	-	-	C17	300	300	C14	150	150	C12	100	125	C12	100	100	C10	65	65	C10	50	65	C10	50	65	C10	50	65	C08	40	30	C08	40	30		
750	-	-	-	C17	300	300	C16	200	200	C14	150	150	C14	150	150	C12	80	80	C12	80	80	C12	100	80	C10	50	65	C10	40	30	C10	40	30		
1000	-	-	-	-	-	-	C17	300	300	C14	150	150	C14	150	150	C12	80	100	C12	80	100	C12	100	100	C12	100	80	C12	100	80	C12	100	80		
1500	-	-	-	-	-	-	-	-	-	C16	200	250	C16	200	250	C14	150	150	C14	150	150	C14 <sup>a</sup>	125	160	C14	125	160	C12	100	100	C12	100	100		
2000	-	-	-	-	-	-	-	-	-	-	-	-	C17 <sup>a</sup>	300	300	C16	200	250	C16	200	250	C16 <sup>a</sup>	-	200	C14	125	160	C14	125	160	C14	125	160		
2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C17 <sup>a</sup>	300	300	C16	200	250	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Dual Element Bay-O-Net (4038108) <sup>a,c</sup> and OS / OS Shorty Fuse Coordinations</b>																																			
45	C09	80	100	C07	50	65	C04	35	40	C03	35	30	C03	35	30	C03	35	30	C03	35	30	C03	40	30	C03	40	30	C03	40	30	C03	40	30		
75	C12	100	125	C09	80	100	C06	35	40	C04	35	30	C04	35	30	C03	35	30	C03	35	30	C03	40	30	C03	40	30	C03	40	30	C03	40	30		
112.5	-	-	-	C11	100	125	C07	65	65	C06	35	40	C06	35	40	C05	35	30	C04	35	30	C04	40	30	C03	40	30	C03	40	30	C03	40	30		
150	-	-	-	C12	100	125	C09	80	100	C07	50	50	C07	45	50	C06	35	40	C05	35	30	C05	40	30	C04	40	30	C03	40	30	C03	40	30		
225	-	-	-	-	-	-	C11	80	100	C09	65	65	C09	65	65	C07	35	50	C06	35	30	C06	40	40	C06	40	40	C05	40	30	C05	40	30		
300	-	-	-	-	-	-	C12	100	125	C09	65	80	C09	65	80	C09	50	65	C07	35	50	C07	40	50	C07	40	50	C06	40	40	C06	40	40		
500	-	-	-	-	-	-	-	-	-	C12	100	100	C12	80	100	C11	65	80	C09	65	65	-	-	-	-	-	-	-	-	-	-	-	-		
750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C12	80	100	C11	65	80	-	-	-	-	-	-	-	-	-	-	-			
1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C12	80	100	-	-	-	-	-	-	-	-	-	-	-			

**NOTES:**

Bay-O-Net fuse selection is based on Cooper Power Systems recommendations.

Bay-O-Net fuses are selected to meet inrush criteria of 12 times transformer full load current for 0.1 second.

Backup OS / OS Shorty fuses are selected to melt only on internal transformer faults, where transformer impedance is equal to, or greater than, the value given in Table 7. If the impedance is higher, a smaller fuse can often be used.

■ Shaded areas indicate parallel fuse applications.

a Or equivalent bayonet link.

b Current Sensing Bay-O-Net fuses are selected to melt with 3 to 4 times transformer full load current at 300 seconds

c Dual Sensing and Dual Element Bay-O-Net fuses are selected to limit transformer load to approximately 160% for 7 hours and 200% for 2 hours with the transformer initially carrying 75% of load at ambient temperature of 35°C.

d Applications are limited to gnd Y-gnd Y connected transformers with no more than 50% delta connected secondary load. Phase-to-ground rated fuses are frequently recommended for gnd Y-gnd Y connected transformers.

e Bay-O-Net assembly may be subjected to damage during fault clearing at currents above the Bay-O-Net's Maximum I/C.

**TABLE 10 – 1φ TRANSFORMER COORDINATION TABLE FOR COOPER HIGH AMPERE OVERLOAD BAY-O-NET (4038361\_CB) & TRANS-GUARD™ OS/OS SHORTY FUSES**

FuseVoltage	Trans-Guard™ OS/OS Shorty Fuse Voltage Rating (kV)														
	8.3kV									15.5/17.2kV					
	Transformer Voltage (kV) Phase-to-Ground														
kVA	2.4			4.16-4.8			7.2-7.96			12-12.47			13.2-14.4		
	Link	OS	Shorty	Link	OS	Shorty	Link	OS	Shorty	Link	OS	Shorty	Link	OS	Shorty
75	C03	200	165	-	-	-	-	-	-	-	-	-	-	-	-
100	C03	200	200	-	-	-	-	-	-	-	-	-	-	-	-
167	C04	200	300	C03	165	165	-	-	-	-	-	-	-	-	-
250	C05	300	300	C04	200	165	-	-	-	-	-	-	-	-	-
333	-	-	-	C05	200	300	C03	150	150	-	-	-	-	-	-
500	-	-	-	C05	300	300	C04	200	165	C03	125	125	C03	125	125
833	-	-	-	-	-	-	C05	300	300	C04	165	165	C04	165	150

**TABLE 11 – 3φ TRANSFORMER COORDINATION TABLE FOR COOPER HIGH AMPERE OVERLOAD BAY-O-NET (4038361\_CB) & TRANS-GUARD™ OS/OS SHORTY FUSES**

FuseVoltage	Trans-Guard™ OS/OS Shorty Fuse Voltage Rating (kV)																				
	8.3kV									15.5/17.2kV											
	Transformer Voltage Rating (kV) Phase-to-Phase																				
kVA	2.4			4.16 - 4.8			7.2 - 7.62			12 - 12.47			13.2 - 14.4			20.8 <sup>a</sup>			24.9 <sup>a</sup>		
	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY	LINK	OS	SHORTY
112.5	C03	165	165	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150	C03	165	165	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
225	C04	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300	C04	200	300	C03	150	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500	C05	-	300	C04	200	200	C03	150	150	-	-	-	-	-	-	-	-	-	-	-	-
750	-	-	-	C05	200	300	C04	165	150	C03	125	125	-	-	-	-	-	-	-	-	-
1000	-	-	-	-	-	-	C05	200	200	C04	165	150	C03	125	125	-	-	-	-	-	-
1500	-	-	-	-	-	-	C05	300	300	C04	200	165	C04	165	165	C03	125	125	C03	125	125
2000	-	-	-	-	-	-	-	-	-	C05	200	250	C05	200	250	C04	165	150	C04	165	150
2500	-	-	-	-	-	-	-	-	-	C05 <sup>b</sup>	300	300	C05 <sup>b</sup>	300	300	C04	165	165	C04	165	150

**NOTES:**

Bay-O-Net fuse selection is based on Cooper Power Systems recommendations.

Bay-O-Net fuses are selected to meet inrush criteria of 12 times transformer full load current for 0.1 second.

Backup OS Shorty & OS fuses are selected to melt only on internal transformer faults, where transformer impedance is equal to, or greater than, the value given in Table 7. If the impedance is higher, a smaller fuse can often be used.

Shaded areas indicate parallel fuse applications.

High Ampere Overload Bay-O-Net fuses are selected to limit transformer load to approximately 160% for 7 hours and 200% for 2 hours with the transformer initially carrying 75% of load at ambient temperature of 35°C.

- a Applications are limited to gnd Y-gnd Y connected transformers with no more than 50% delta connected secondary load. Phase-to-ground rated fuses are frequently recommended for gnd Y-gnd Y connected transformers.
- b Bay-O-Net assembly may be subjected to damage during fault clearing at currents above the Bay-O-Net's maximum I/C.