

# HHBO-B

## High Voltage Fuses to British Standards

### Application Range Types

#### Fuses for protection of oil insulated transformer mains

Medium voltage SIBA fuses HHBO-B according to British Standard are current-limiting "Back-Up" fuses for the protection of substations up to 24kV. The fuses in this section comply with the following national standards;

- IEC 60282-1
- BS 2692 -1
- ESI 12-8

Design and construction of these fuses follow well proven concepts of all SIBA high voltage fuses. For pressure resistant encapsulation a high grade ceramic is used. Contact materials consist of high conductivity copper with silver plating. The melting elements are of pure silver with appropriate notching to tight tolerances to ensure low deviation in the time-current curves and low let through currents. The arc quenching material is quartz sand that is subjected to a particular specification regarding its composition, grain size and humidity level.

#### Fuses for oil insulated switchgear

The backup fuses comply with the requirements for tightness for use under oil and for use in oil filled switchgear. The fuses are fitted with a striker and are very useful in Fuse/Switch combinations that comply with the requirements of IEC 62271 part 105. These fuses are available for the following rated voltage ranges; 7.2kV, 12kV, 15.5kV and 24kV.



## Selection Guide

### HHBO-B, Current-Limiting, Back-Up

Current ratings [A]; 6.3, 10, 16, 20, 25, 31.5, 40, 50, 63, 80, 90,100, 112, 125, 145

L=254mm	Page	L=359mm	Page				
<b>7.2kV</b>							
3013236.6.3 - 112	146	3023436.125 -145	146				Clip
<b>12kV</b>							
3014436.6.3 - 100	148	3023736.6.3 - 125	148				Clip
<b>15.5kV</b>							
3029336.6.3 - 63	150	3029436.6.3 - 80	150				Clip
<b>24kV</b>							
		3015636.6.3 - 80	152				Clip



HHBO-B

High Voltage Current-Limiting Fuses  
with 50N striker for use in  
oil-insulated switchgear  
Class  
Back-Up



Standard(s)  
IEC 60282-1  
ESI 12-8  
BS 2692-1



### HHBO-B

### High Voltage Current-Limiting Fuses

Standard(s)

7.2kV - Rated Voltage

with 50N striker for use in  
oil-insulated switchgear



IEC 60282-1

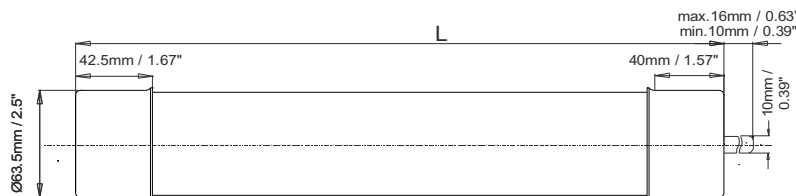
ESI 12-8

BS 2692-1

Size L=254mm(FO1)/359mm(FO2)

Class  
Back-Up

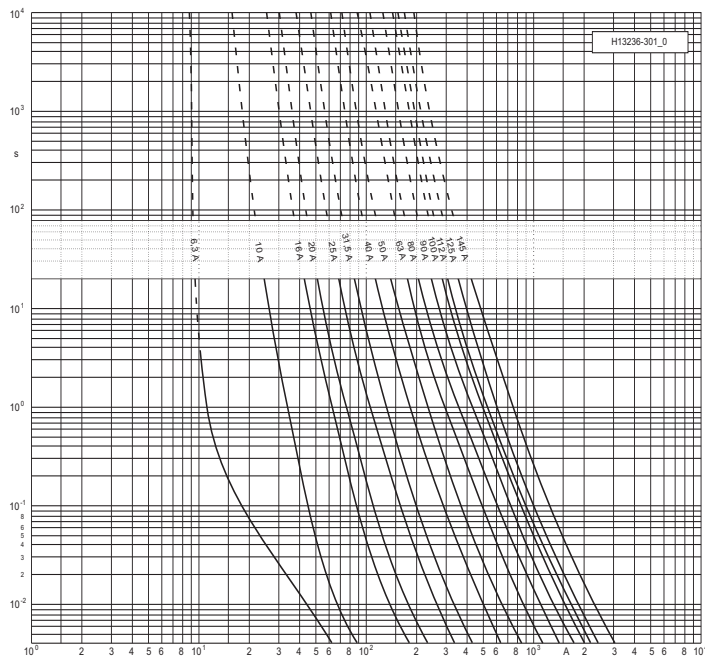
Rated Current $I_n$ [A]	Article Number	Diameter <b>D</b>	Weight [kg/1]	Rated Breaking Current $I_1$ [kA]	Minimum Breaking Current $I_3$ [A]	Pre-arcing $I^2t$ [A <sup>2</sup> s]	Total $I^2t$ @		Power Loss [W]	Cold Resistance [mΩ]
		[in/mm]					0.87U <sub>n</sub> (Min) [A <sup>2</sup> s]	0.87U <sub>n</sub> (Max) [A <sup>2</sup> s]		
<b>Size L=254mm(FO1)</b>										
6.3	3013236.6.3	2.50 / 63.5	1.8	40	—	14	80	140	—	—
10	3013236.10	2.50 / 63.5	1.8	40	—	50	270	450	—	—
16	3013236.16	2.50 / 63.5	1.8	40	—	190	1 070	1 800	—	—
20	3013236.20	2.50 / 63.5	1.8	40	—	290	1 680	2 900	—	—
25	3013236.25	2.50 / 63.5	1.8	40	—	600	3 670	6 100	—	—
31.5	3013236.31.5	2.50 / 63.5	1.8	40	—	1 000	6 000	10 000	—	—
40	3013236.40	2.50 / 63.5	1.8	40	—	2 300	13 400	23 300	—	—
50	3013236.50	2.50 / 63.5	1.8	40	—	2 800	21 600	36 000	—	—
63	3013236.63	2.50 / 63.5	1.8	40	—	6 500	38 200	66 500	—	—
80	3013236.80	2.50 / 63.5	1.8	40	—	9 900	56 500	100 000	—	—
90	3013236.90	2.50 / 63.5	1.8	40	—	15 500	91 400	157 000	—	—
100	3013236.100	2.50 / 63.5	1.8	40	—	22 200	127 200	218 000	—	—
112	3013236.112	2.50 / 63.5	1.8	40	—	28 300	166 700	278 000	—	—
<b>Size L=359mm(FO2)</b>										
125	3023436.125	2.50 / 63.5	2.5	40	—	37 100	218 500	364 000	—	—
145	3023436.145	2.50 / 63.5	2.5	40	—	50 100	286 400	507 000	—	—



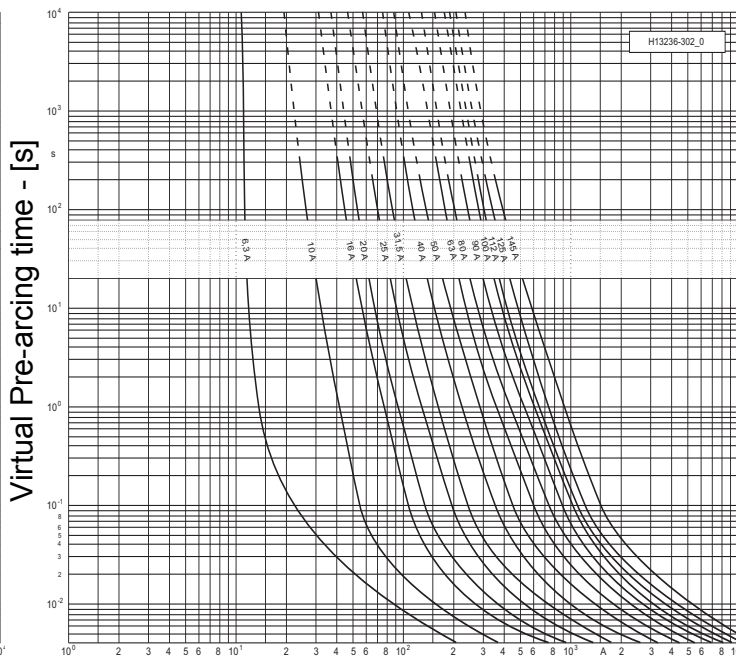
**HHBO-B Time-Current Characteristics - Minimum Melting and Total Clearing Cut-Off Current Diagram**  
Current-Limiting, Back-Up, 7.2kV, L = 254/359mm (6.3A - 145A)

3013236.6.3 - 112, 3023436.125 - 145

Minimum Melting

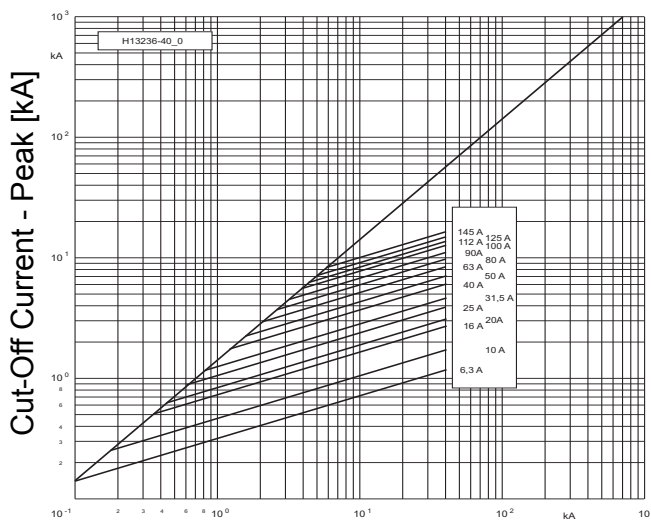


Total Clearing



R.M.S. Prospective Current [A]

Cut-Off Current



Prospective Short Circuit Current [kA] - (Symmetrical r.m.s.)

**HHBO-B**  
12kV - Rated Voltage

### High Voltage Current-Limiting Fuses

with 50N striker for use in  
oil-insulated switchgear

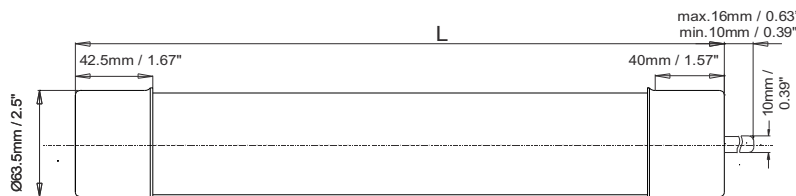


Standard(s)  
IEC 60282-1  
ESI 12-8  
BS 2692-1

Size L=254mm(FO1)  
Size L=359mm(FO2)

Class  
Back-Up

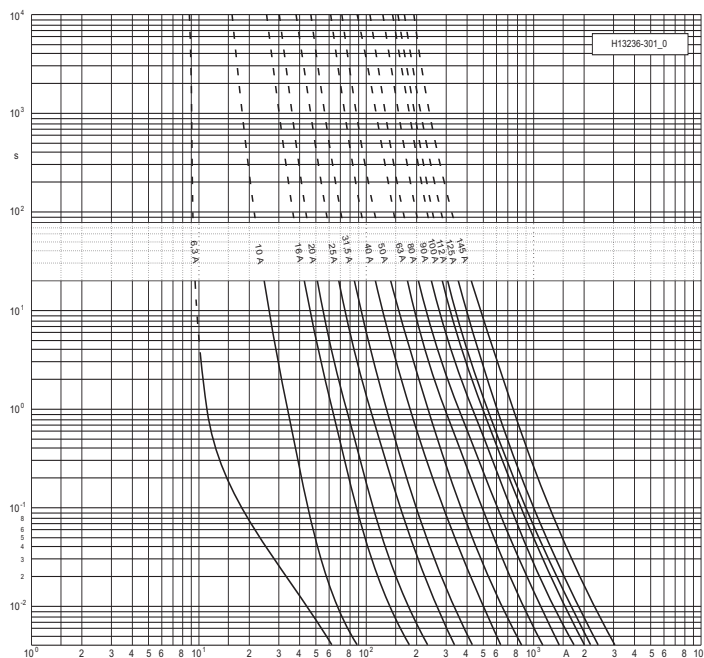
Rated Current $I_n$ [A]	Article Number	Diameter <b>D</b>	Weight [kg/1]	Rated Breaking Current $I_1$ [kA]	Minimum Breaking Current $I_3$ [A]	Pre-arcing $I^2t$ [A <sup>2</sup> s]	Total $I^2t$ @		Power Loss [W]	Cold Resistance [mΩ]
		[in/mm]					0.87U <sub>n</sub> (Min) [A <sup>2</sup> s]	0.87U <sub>n</sub> (Max) [A <sup>2</sup> s]		
<b>L=254mm(FO1)</b>										
6.3	3014436.6.3	2.50 / 63.5	1.8	40	—	14	80	140	—	—
10	3014436.10	2.50 / 63.5	1.8	40	—	50	270	450	—	—
16	3014436.16	2.50 / 63.5	1.8	40	—	190	1 070	1 800	—	—
20	3014436.20	2.50 / 63.5	1.8	40	—	290	1 680	2 900	—	—
25	3014436.25	2.50 / 63.5	1.8	40	—	600	3 670	6 100	—	—
31.5	3014436.31.5	2.50 / 63.5	1.8	40	—	1 000	6 000	10 000	—	—
40	3014436.40	2.50 / 63.5	1.8	40	—	2 300	13 400	23 300	—	—
50	3014436.50	2.50 / 63.5	1.8	40	—	2 800	21 600	36 000	—	—
63	3014436.63	2.50 / 63.5	1.8	40	—	6 500	38 200	65 500	—	—
80	3014436.80	2.50 / 63.5	1.8	40	—	9 900	56 500	100 000	—	—
90	3014436.90	2.50 / 63.5	1.8	40	—	15 500	91 400	157 000	—	—
100	3014436.100	2.50 / 63.5	1.8	40	—	22 200	127 200	218 000	—	—
<b>L=359mm(FO2)</b>										
6.3	3023736.6.3	2.50 / 63.5	2.5	40	—	14	80	140	—	—
10	3023736.10	2.50 / 63.5	2.5	40	—	50	270	450	—	—
16	3023736.16	2.50 / 63.5	2.5	40	—	190	1 070	1 800	—	—
20	3023736.20	2.50 / 63.5	2.5	40	—	290	1 680	2 900	—	—
25	3023736.25	2.50 / 63.5	2.5	40	—	600	3 670	6 100	—	—
31.5	3023736.31.5	2.50 / 63.5	2.5	40	—	1 000	6 000	10 000	—	—
40	3023736.40	2.50 / 63.5	2.5	40	—	2 300	13 400	23 300	—	—
50	302336.50	2.50 / 63.5	2.5	40	—	2 800	21 600	36 000	—	—
63	3023736.63	2.50 / 63.5	2.5	40	—	6 500	38 200	66 500	—	—
80	3023736.80	2.50 / 63.5	2.5	40	—	9 900	56 500	100 000	—	—
90	3023736.90	2.50 / 63.5	2.5	40	—	15 500	91 400	157 000	—	—
100	3023736.100	2.50 / 63.5	2.5	40	—	22 200	127 200	218 000	—	—
112	3023736.112	2.50 / 63.5	2.5	40	—	28 300	166 700	278 000	—	—
125	3023736.125	2.50 / 63.5	2.5	40	—	37 100	218 500	364 000	—	—



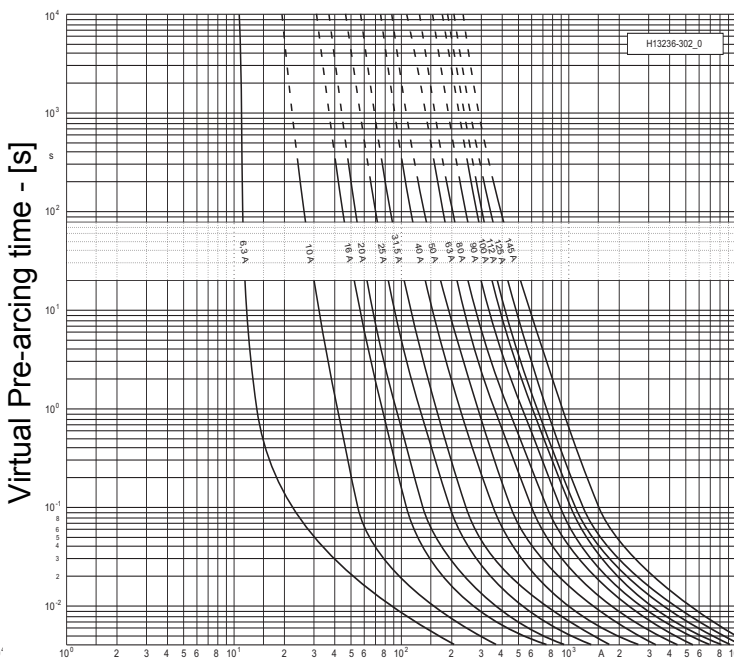
**HHBO-B Time-Current Characteristics - Minimum Melting and Total Clearing  
Cut-Off Current Diagram  
Current-Limiting, Back-Up, 12kV, L = 254/359mm (6.3A - 125A)**

3014436.6.3 - 100, 3023736.6.3 - 125

Minimum Melting

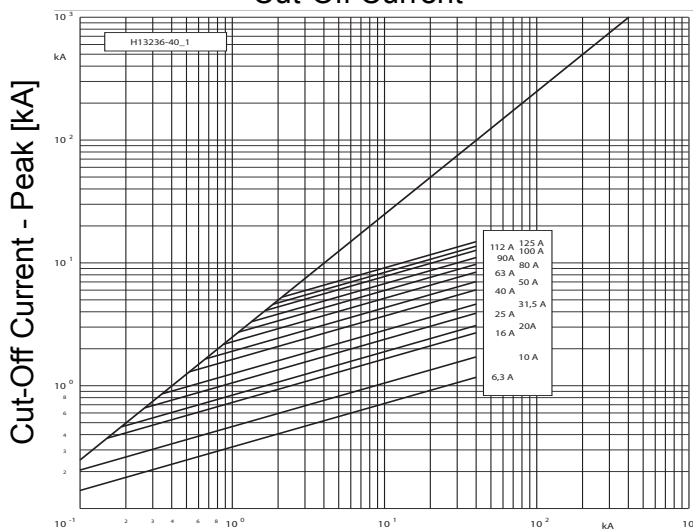


Total Clearing



R.M.S. Prospective Current [A]

Cut-Off Current



Prospective Short Circuit Current [kA] - (Symmetrical r.m.s.)

**HHBO-B**  
15.5kV - Rated Voltage

### High Voltage Current-Limiting Fuses

with 50N striker for use in  
oil-insulated switchgear

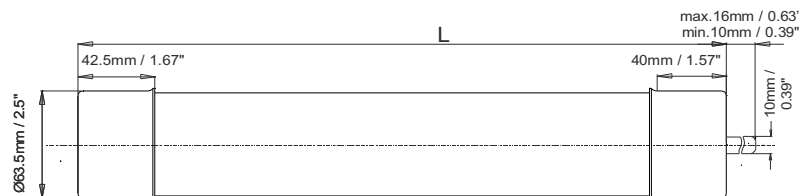


Standard(s)  
IEC 60282-1  
ESI 12-8  
BS 2692-1

Size L=254mm(FO1)  
Size L=359mm(FO2)

Class  
Back-Up

Rated Current $I_n$ [A]	Article Number	Diameter <b>D</b>	Weight [kg/1]	Rated Breaking Current $I_1$ [kA]	Minimum Breaking Current $I_3$ [A]	Pre-arcing $I^2t$ [A <sup>2</sup> s]	Total $I^2t$ @		Power Loss [W]	Cold Resistance [mΩ]
		[in/mm]					0.87U <sub>n</sub> (Min) [A <sup>2</sup> s]	0.87U <sub>n</sub> (Max) [A <sup>2</sup> s]		
<b>L=254mm(FO1)</b>										
6.3	3029336.6.3	2.50 / 63.5	1.8	40	—	14	80	140	—	—
10	3029336.10	2.50 / 63.5	1.8	40	—	50	270	450	—	—
16	3029336.16	2.50 / 63.5	1.8	40	—	190	1 070	1 800	—	—
20	3029336.20	2.50 / 63.5	1.8	40	—	290	1 680	2 900	—	—
25	3029336.25	2.50 / 63.5	1.8	40	—	600	3 670	6 100	—	—
31.5	3029336.31.5	2.50 / 63.5	1.8	40	—	1 000	6 000	10 000	—	—
40	3029336.40	2.50 / 63.5	1.8	40	—	2 300	13 400	23 300	—	—
50	3029336.50	2.50 / 63.5	1.8	40	—	2 800	21 600	36 000	—	—
63	3029336.63	2.50 / 63.5	1.8	40	30	6 500	38 200	65 500	—	—
<b>L=359mm(FO2)</b>										
6.3	3029436.6.3	2.50 / 63.5	2.5	40	—	14	80	140	—	—
10	3029436.10	2.50 / 63.5	2.5	40	—	50	270	450	—	—
16	3029436.16	2.50 / 63.5	2.5	40	—	190	1 070	1 800	—	—
20	3029436.20	2.50 / 63.5	2.5	40	—	290	1 680	2 900	—	—
25	3029436.25	2.50 / 63.5	2.5	40	—	600	3 670	6 100	—	—
31.5	3029436.31.5	2.50 / 63.5	2.5	40	—	1 000	6 000	10 000	—	—
40	3029436.40	2.50 / 63.5	2.5	40	—	2 300	13 400	23 300	—	—
50	3029436.50	2.50 / 63.5	2.5	40	—	2 800	21 600	36 000	—	—
63	3029436.63	2.50 / 63.5	2.5	40	—	6 500	38 200	65 500	—	—
80	3029436.80	2.50 / 63.5	2.5	40	—	9 900	56 500	100 000	—	—

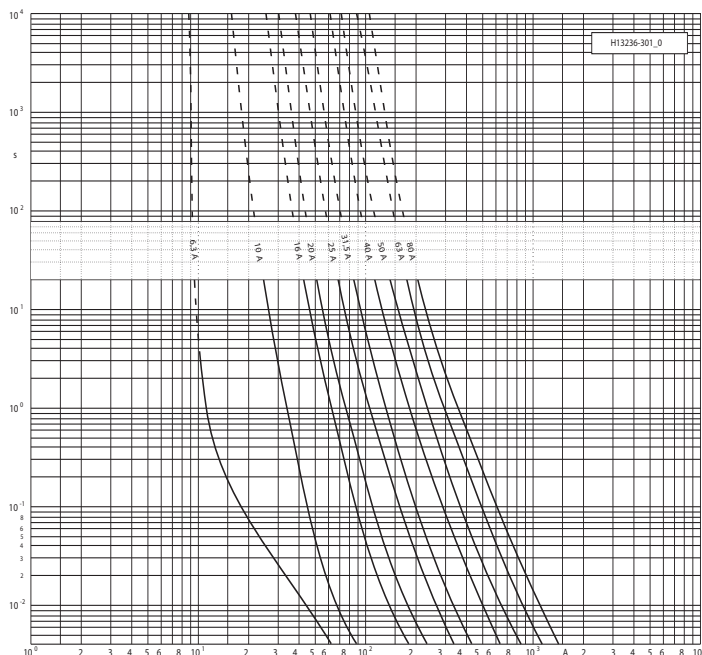




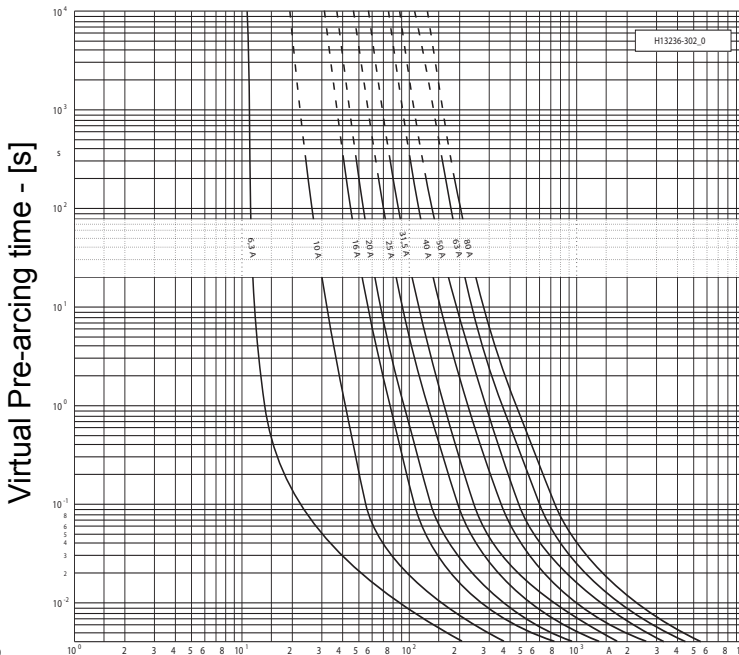
**HHBO-B Time-Current Characteristics - Minimum Melting and Total Clearing**  
**Cut-Off Current Diagram**  
**Current-Limiting, Back-Up, 15.5kV, L = 254/359mm (6.3A - 80A)**

3029336.6.3 - 63, 3029436.6.3 - 80

Minimum Melting

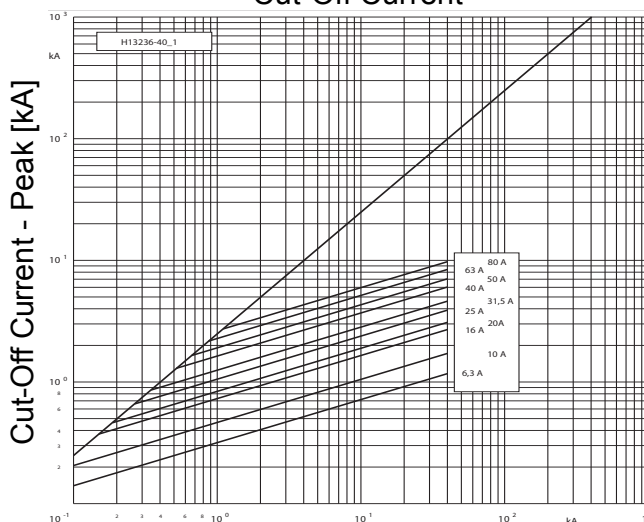


Total Clearing



R.M.S. Prospective Current [A]

Cut-Off Current



Prospective Short Circuit Current [kA] - (Symmetrical r.m.s.)

**HHBO-B**  
24kV - Rated Voltage

### High Voltage Current-Limiting Fuses

with 50N striker for use in  
oil-insulated switchgear

Class

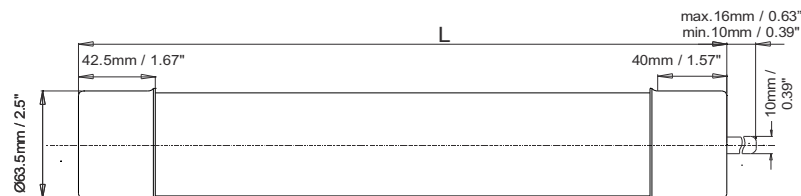
Standard(s)  
IEC 60282-1  
ESI 12-8  
BS 2692-1



Size L=359mm(FO2)

Back-Up

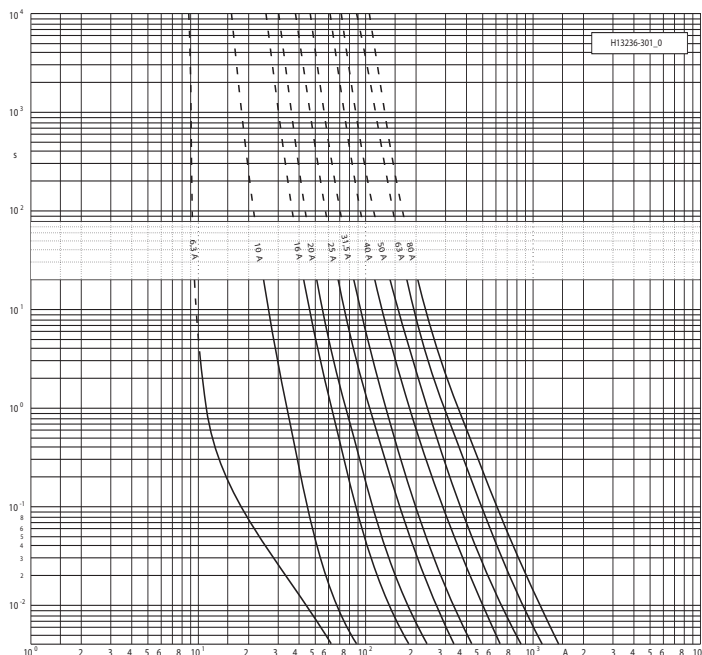
Rated Current $I_n$ [A]	Article Number	Diameter <b>D</b>	Weight [kg/1]	Rated Breaking Current $I_1$ [kA]	Minimum Breaking Current $I_3$ [A]	Pre-arcing $I^2t$ [A <sup>2</sup> s]	Total $I^2t$ @		Power Loss [W]	Cold Resistance [mΩ]
		[in/mm]					0.87U <sub>n</sub> (Min) [A <sup>2</sup> s]	0.87U <sub>n</sub> (Max) [A <sup>2</sup> s]		
6.3	3015636.6.3	2.50 / 63.5	2.5	40	—	14	80	140	—	—
10	3015636.10	2.50 / 63.5	2.5	40	—	50	270	450	—	—
16	3015636.16	2.50 / 63.5	2.5	40	—	190	1 070	1 800	—	—
20	3015636.20	2.50 / 63.5	2.5	40	—	290	1 680	2 900	—	—
25	3015636.25	2.50 / 63.5	2.5	40	—	600	3 670	6 100	—	—
31.5	3015636.31.5	2.50 / 63.5	2.5	40	—	1 000	6 000	10 000	—	—
40	3015636.40	2.50 / 63.5	2.5	40	—	2 300	13 400	23 300	—	—
50	3015636.50	2.50 / 63.5	2.5	40	—	2 800	21 600	36 000	—	—
63	3015636.63	2.50 / 63.5	2.5	40	—	6 500	38 200	66 500	—	—
80	3015636.80	2.50 / 63.5	2.5	40	—	9 900	56 500	100 000	—	—



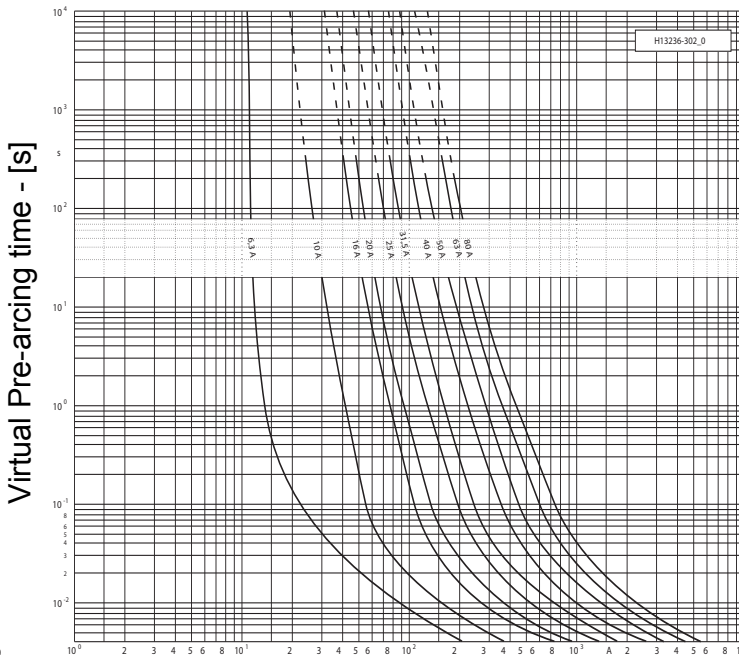
**HHBO-B Time-Current Characteristics - Minimum Melting and Total Clearing  
Cut-Off Current Diagram  
Current-Limiting, Back-Up, 24kV, L = 359mm (6.3A - 80A)**

3015636.6.3 - 80

Minimum Melting

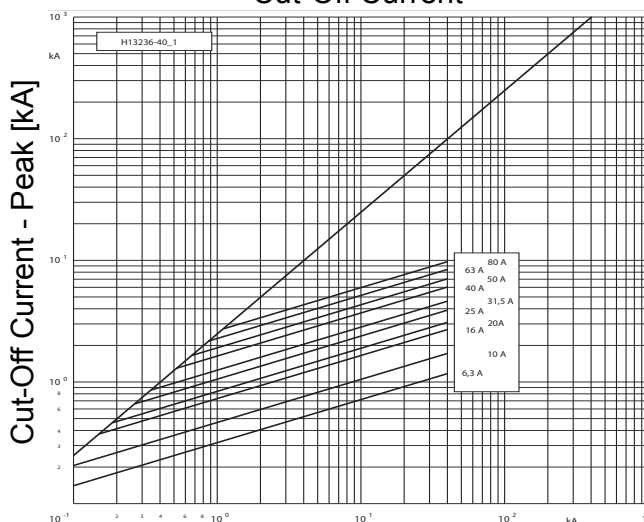


Total Clearing



R.M.S. Prospective Current [A]

Cut-Off Current



Prospective Short Circuit Current [kA] - (Symmetrical r.m.s.)