

# Current Limiting Fuses, CEF-S & CEF-S-TCU

Rated voltage: 12, 24 and 30/40,5 kV  
Rated current: 6.3 – 63 A

The CEF-S/ CEF-S-TCU fuses are applicable in medium voltage systems, especially for protection of distribution transformers, where superior performance of fuses is requested for low fault currents within 100 ms.

Additionally, thanks to last modification of striker pin functionality that release can be now temperature dependent – Temperature Control Unit (TCU) – increase application safety for gas insulated panels.

## Main features

- very good protection against faults in the low voltage side of distribution transformers, according to the general Swedish requirements,
- low minimum breaking current,
- low power losses, specially suitable in compact switchgear and ring main units,
- high breaking capacity,
- high current limitation,
- type tested acc. to IEC 60282-1,
- versions CEF-S-TCU equipped with Temperature Control Unit, which protects against high temperature in enclosed compartments,
- equipped with medium type striker, which is activated immediately when the fuse-elements melt.



## Available fuses ratings and dimensions

$U_n$ [kV]	$I_n$ [A]	e [mm]	D [mm]	$I_t$ [kA]	$I_s$ [A]	$I_{0,1s}$ [A]	$R_0$ [mΩ]	$P_n$ [W]
12	10	292	65	50	55	48	187	27
	16	292	65	50	55	80	108,5	38
	20	292	65	50	72	120	72,3	39
	25	292	65	50	72	160	46,5	45
	40	292	65	50	100	240	24,5	54
	50	292	65	50	190	330	18,8	70
24	10	442	65	25	55	48	373,2	54
	16	442	65	25	55	80	186,6	67
	20	442	65	25	72	120	124,4	69
	25	442	65	25	72	160	93,3	70
	40	442	65	25	110	240	48,8	122
30/40,5	6,3	537	65	20	50	43	927	47
	10	537	65	20	66	54	615	100
	16	537	65	20	52	87	313	121
	20	537	65	20	77	122	207	134
	25	537	65	20	134	118	175	162
	31,5	537	65	20	265	202	89,56	132
	40	537	87	20	172	324	60,3	126
	50	537	87	20	251	500	39,76	132
	63	537	87	20	334	655	29,7	164

\*Fuses with higher rating current are available on request.

Legend:  $U_n$  – rated voltage,  $I_n$  – rated current, e – fuse length, D – fuse diameter,  $I_t$  – maximum tested breaking current,  $I_s$  – minimum breaking current,  $I_{0,1s}$  – lowest current which gives maximum breaking time smaller or equal to 100ms,  $R_0$  – fuse resistance at 20°C,  $P_n$  – power loss at rated current.

## Selection table for CEF-S

Transformer rated voltage [kV]	Transformer rating [kVA]																				Fuse rated voltage [kV]
	25	50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3000		
	Fuse-link I <sub>n</sub> [A]																				
3	16	25	40	50																	12
5	10	20	25	40	40	50															
6	10	16	20	25	40	40	50														
10	10*	10	16	20	20	25	40	40	50												
11	10*	10	16	20	20	25	40	40	40	50											
12	10*	10	16	16	20	20	25	40	40	50											24
15	10*	10*	10	16	16	20	20	25	40	40											
20	10*	10*	10*	10	16	16	20	20	25	40	40										
22	10*	10*	10*	10	16	16	20	20	20	40	40	40									
24	10*	10*	10*	10	16	16	16	20	20	25	40	40									
30	6,3*	6,3*	6,3*	6,3*	6,3	10	16	16	20	40	40	40	40	40	40	50	63	63			30/40,5
36	6,3*	6,3*	6,3*	6,3*	6,3	6,3	10	16	16	20	40	40	40	40	40	50	50	63	63		
38,5	6,3*	6,3*	6,3*	6,3*	6,3*	6,3	10	16	16	20	20	40	40	40	40	40	50	50	63		
40,5	6,3*	6,3*	6,3*	6,3*	6,3*	6,3	10	16	16	20	20	40	40	40	40	40	50	50	63		
Recommended max. size of LV gG fuse-link [A]	40	80	125	160	160	200	250	250	300	400	400	800	1000	1000	1000	1000	1250	1250	1250		

Fuse link selected according to above table meets the following requirements:

- rated current of the fuse link  $> 1,1 \times$  transformers rated current ( $I_n$ ),
- the maximum breaking time is 100 ms or less for overload currents bigger than or equal to  $I_{0,1s}$ ,
- ABB LV fuse-links gG 500V type OFAF\_H\_,
- recommendation based on selection rules described in IEC 60787 – complete coordination between HV and LV fuse-links.

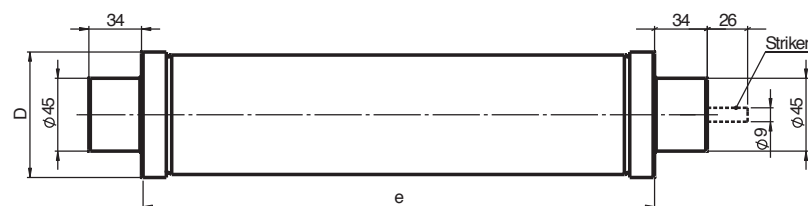
For different criteria fuse selection must be recalculated. The table indicates the correct fuse-link rated current for a given transformer rating.

The CEF-S fuses are specially designed to achieve the lowest possible breaking current value at 100 ms. However, this results in a reduced margin, which for standard CEF fuses, prevents fuse-link operation due to inrush currents developed when an unloaded power transformer is energized.

### Accessories

- fuse clips,
- fuse extension adaptor,
- fuse base type UCE,
- fuse base type BPS with fuse presence/blown indication,
- test fuse link for striker system adjustment,
- operating tong for fuse replacement.

### Dimensional drawing



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