

LF circuit breaker

SF6 breaking up to 17.5 kV

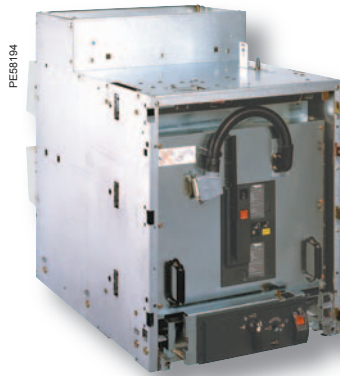
LF circuit breaker is used to protect and control MV public or industrial distribution network.

LF is an indoor switchgear

- Rated voltage from 7.2 to 17.5 kV
- Rated short-circuit breaking current up to 50 kA
- Rated normal current from 630 to 3150 A.

LF is available in 2 versions:

- **Withdrawable** with MC cassette
- **Fixed:** can be completed by kits and delivered in separate components.



Conformity with standards

- IEC 62 271-1: common specifications for high voltage switchgear and controlgear standards
- IEC 62 271-100: high voltage alternating current circuit breaker
- IEC 62 271-200 (previously IEC 60298): AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV.

Certification

- By independent laboratories in accordance with ISO/IEC 17025 and EN 45011 standards
- Our factories implement a quality system certified to ISO 9001 : 2000 and ISO 14000 standards by IQNET.

Installation

- Fixed
- Designed for retrofit
- MC cassette can be delivered separately.

Operation

- The operating mechanism is identical to that of the Schneider Electric SF6 MV circuit breaker SF ranges
- Metal protection shutter on cassette
- Racking in/out operation possible in the cubicle with the door closed.

A full range of accessories and auxiliaries factory-mounted or delivered separately

- Electric motor (M)
- Undervoltage release (YM)
- Shunt opening releases (YO1, YO2)
- Low energy release (MITOP)
- Shunt closing release (YF)
- Auxiliary contacts
- Operations counter
- Locking by padlocks and/or keylocks/sealing.

PE57191



Electrical characteristics according to IEC 62271-100

LF fixed				LF1			
Rated voltage	Ur	kV 50/60 Hz		7.2		12	
Insulation level							
- power frequency withstand	Ud	kV 50 Hz 1min (*)		20		28	
- lightning impulse withstand	Up	kV peak		60		75	
Rated current	Ir	A	630	■	■	■	■
			1250	■	■	■	■
			2000	–	–	–	–
			2500	–	–	–	–
			3150	–	–	–	–
Short circuit current	Isc	kA		25	31.5	25	31.5
Short time withstand current	Ik/tk	kA/3 s		25	31.5	25	31.5
Short-circuit making current	Ip	Peak kA	50 Hz	63	79	63	79
			60 Hz	65	82	65	82
Rated switching sequence	O-3 min-CO-3 min-CO			■	■	■	■
	O-0.3 s-CO-3 min-CO			■	■	■	■
	O-0.3 s-CO-15 s-CO			■	■	■	■

PE57194



LF withdrawable (circuit breaker/cassette)

LF withdrawable (circuit breaker/cassette)				LF1/MC1			
Rated voltage	Ur	kV 50/60 Hz		7.2		12	
Insulation level							
- power frequency withstand	Ud	kV 50 Hz 1min (*)		20		28	
- lightning impulse withstand	Up	kV peak		60		75	
Rated current	Ir	A	630	■	■	■	■
			1250	■	■	■	■
			1600	–	–	–	–
			2500	–	–	–	–
			3150	–	–	–	–
Short circuit current	Isc	kA	3150	–	–	–	–
Short time withstand current	Ik/tk	kA/3 s, kA/1 s		25	31.5	25	31.5
Short-circuit making current	Ip	Peak kA	50 Hz	63	79	63	79
			60 Hz	65	82	65	82
Rated switching sequence	O-3 min-CO-3 min-CO		60 Hz	65	82	65	82
	O-0.3 s-CO-3 min-CO			■	■	■	■
	O-0.3 s-CO-15 s-CO			■	■	■	■
	O-0.3 s-CO-15 s-CO			■	■	■	■

Common characteristics

Operating times	Opening	ms	< 54
	Breaking	ms	< 70
	Closing	ms	< 72
Service temperature	T	°C	– 25 to + 40
Mechanical endurance	Class		M2
	Number of switching operations		10,000
Electrical endurance	Class		E2
Capacitive current breaking capacity	Class		C2

(*) Ud 42 kV 50 Hz, 1 min possible

(**) Rated short-circuit breaking duration (tk): 1 s

■ Available

– Not available.

LF2																		LF3																							
7.2						12						17.5						7.2						12						17.5											
20						28						38						20						28						38											
60						75						95						60						75						95											
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100	125	100	63	79	63	79	100	125	63	79	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100
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LF2/MC2																		LF3/MC3																							
7.2						12						17.5						7.2						12						17.5											
20						28						38						20						28						38											
60						75						95						60						75						95											
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25	31.5	40	50	25	31.5	40	25	31.5	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	
25	31.5	40	50(**)	25	31.5	40	25	31.5	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	25	31.5	40	50	
63	79	100	125	63	79	100	63	79	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	63	79	100	125	
65	82	104	130	65	82	104	65	82	65	82	104	130	65	82	104	130	65	82	104	130	65	82	104	130	65	82	104	130	65	82	104	130	65	82	104	130	65	82	104	130	
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Specific applications

Protection of generators and power station auxiliaries

All circuit breakers in the LF range break short circuit currents with an asymmetry of at least 30%.

In cases where the network constant X/R is greater than 45 ms, the asymmetry to be broken is higher; this is often the case of circuit breakers protecting nuclear or thermal power station auxiliaries or circuit breakers that are close to generator sets or large transformers.

Specific tests have been carried out:

Circuit breakers	kV	kA	Asymmetry
LF2	7.2	43.5	50%
LF3	7.2	43.5	50%
	12	40	50%
	17.5	25	100%

Switching and protection of capacitor banks

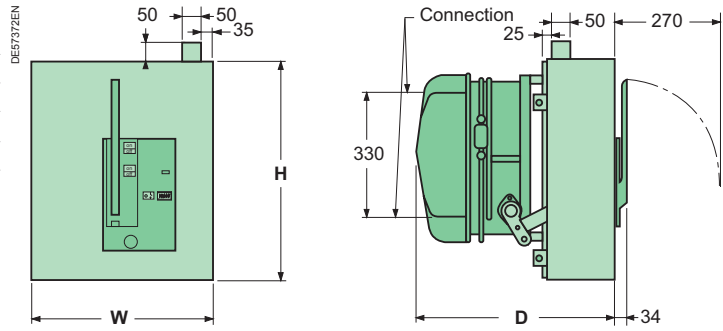
LF range circuit breakers are particularly well suited to switching and protection of capacitor banks; they are classed C2 according to standard IEC 62271-100. Tests carried out according to the standard for breaking at 400 A with making and breaking cycles in case of a capacitor bank with a making current of 20 kA. Additional tests have been carried out: please consult us.

Dimensions and weights

Device

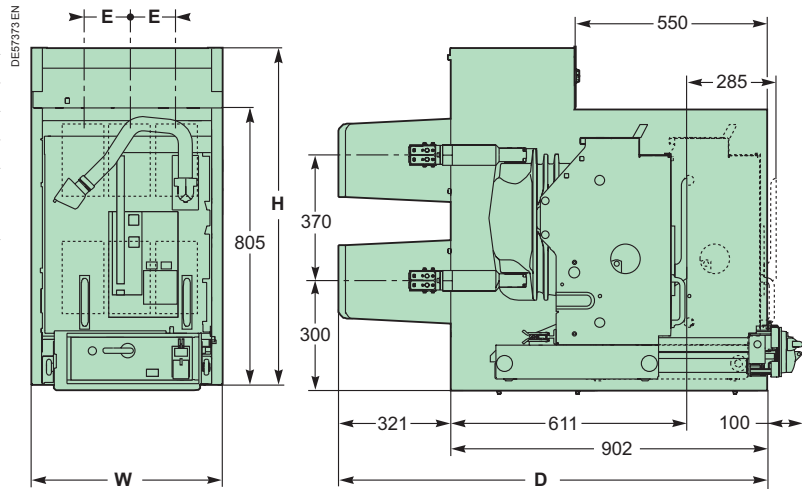
Basic fixed

Circuit breaker	LF1	LF2	LF3
Dimensions (mm)			
W	493	554	728
H	590	590	590
D	536	536	536
Weight (kg)	106	128	149.5



Basic withdrawable

C.B./Cassette	LF1/MC1	LF2/MC2	LF3/MC3	
Phase to phase (mm)	E	145	185	240
Dimensions (mm)				
W	556	686	886	
H	980	980	980	
D	1223	1223	1223	
Weight (kg)	245	285	325 (1250 A) 365 (2500 A) 435 (3150 A)	

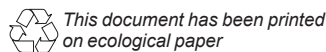


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