

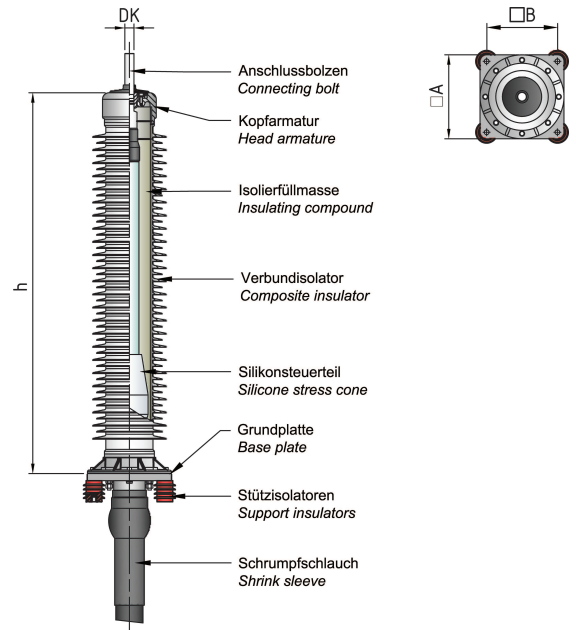
Outdoor terminations type FR

Fluid filled with composite insulator For polymeric cables up to 550 kV

Brugg offers a complete range of solutions for voltage systems up to 550 kV and cross-sections up to 2500 mm². Based on the outstanding properties of the prefabricated and electrically tested one-piece slip on stress cones, the reliable modular construction of the FR termination allow its application to all types of polymeric insulated cables independently of the cable manufacturer. The composite insulator offers excellent resistance to ultra violet radiation as well as tracking and erosion proven in numerous climate zones with outstanding results. Due to the inherent hydrophobic properties of the silicone rubber, washing periods of the insulator can be extended thus allowing a considerable maintenance cost reduction. The insulators creepage distances are conceived for pollution severity class E according to IEC 60815-1. In addition all insulators design were conceived according to IEC 60815-3 regulations.

Product main features

- Light weight and easy to handle
- Outstanding UV, tracking and erosion resistance
- Excellent hydrophobic properties
- For all types of polymeric insulated cables
- Configurable base plate and bolt dimensions
- Factory tested silicone stress cone
- Self supported type
- Cold pouring silicone oil
- Cable screen connection without plumbing



Dimensions

Type	h mm	Creepage distance mm	A / B mm	DK mm
FR 1.72-11	865	2400	320 / 270, 420 / 345	30 / 35 / 38 / 50
FR 1.145-11	1480	4790	320 / 270, 420 / 345	30 / 35 / 38 / 50
FR 1.145-12	1730	5750	320 / 270, 420 / 345	50 / 60
FR 1.145-13	2130	7250	320 / 270, 420 / 345	30 / 35 / 38 / 50 / 60
FR 1.170-11	1730	5750	320 / 270, 420 / 345	30 / 35 / 38 / 50 / 60
FR 1.170-12	2130	7250	320 / 270, 420 / 345	30 / 35 / 38 / 50 / 60
FR 1.245-11	2464	7820	620 / 560	30 / 35 / 38 / 50 / 60
FR 1.245-12	2966	12500	620 / 560	30 / 35 / 38 / 50 / 60
FR 1.300-01	3045	9800	620 / 560	50 / 60
FR 1.420-11	4553	15917	620 / 560	50 / 60
FR 1.550-11	5273	18815	620 / 560	50 / 60

Fluid filled Outdoor Terminations

Technical data

Type	Drawing	Max. operating voltage U_m kV	Range of diameter over prepared cable insulation, min. - max. mm	Equivalent cable cross-section (Cu/Al) ¹ mm ²	Max. cable diameter mm	Creepage distance mm
FR 1.72-11	S1923-4	72.5	35 - 80	240 - 2000	115	2400
FR 1.145-11	S1924-4	145.0	45 - 80	240 - 1200	115	4790
FR 1.145-12	S1925-4	145.0	80 - 115	1000 - 2500	150	5750
FR 1.145-13	S1997	145.0	45- 115	240 - 2500	150	7250
FR 1.170-11	S1926-4	170.0	57 - 115	240 - 2500	150	5750
FR 1.170-12	S1998	170.0	57 - 115	240 - 2500	150	7250
FR 1.245-11	S1946-4	245.0	58 - 115	240 - 2500	150	7820
FR 1.245-12	S1999	245.0	58 - 115	240 - 2500	150	12500
FR 1.300-01	S1394-4	300.0	76 - 115	400 - 2500	150	9800
FR 1.420-11	S2033	420.0	76 - 129	400 - 2500	190	15917
FR 1.550-11	S2032	550.0	76 - 129	400 - 2500	190	18815

¹ Values for reference only. The exact application depend on the diameter over the prepared cable insulation.

Note: for installations > 45° oil expansion tanks type ET-2 or ET-12 are required.