Grid Solutions

GL309c, GL310c, GL311c, GL312c

SF_6-free Live Tank Circuit Breakers From 72.5 kV to 145 kV down to -50 °C

A SF_6-free solution to reduce carbon footprint

More and more electrical grid operators are taking action against climate change and are setting ambitious goals to cut their greenhouse gas emissions. As one of the major grid original equipment manufacturers, GE Vernova's Grid Solutions business is in the best position to support them in moving a step closer to reaching their carbon reduction targets by building the transmission infrastructure necessary to connect and transport renewable energy, while avoiding the addition of tons of CO_2 equivalent to their grid. Benefiting from more than 50 years of expertise in SF_6 and ten years in SF_6-free technology, we innovate in developing a range of SF_6-free products suitable for all climates, including temperatures down to -50°C.

GL309c, GL310c, GL311c and GL312c belong to our SF_6-free live tank circuit-breaker portfolio for applications within networks at 72.5 kV, 100 kV, 123 kV and 145 kV rated voltages. They are designed for outdoor installation. They have the same dimensions as SF_6 solutions, which means that they can be installed in place of SF_6 circuit breakers. Their composite insulators allow higher dielectric withstand under pollution and provide higher safety for employees at substation. GL309c, GL310c, GL311c and GL312c feature the latest double-motion interrupting technology and tri-pole or single-pole spring-operated mechanisms while benefiting from our latest development in SF_6 and SF_6-free circuit breakers. Moreover, the same monitoring solutions are provided as for SF_6 circuit breakers.

The Right Choice for Temperatures down to -50°C

Even under extreme conditions and climates or in highly active seismic areas, customers can rely on our live tank circuit breakers. GL309c, GL310c, GL311c and GL312c live tank circuit breakers are designed for temperatures down to -50°C and up to 40°C.

Quality and Testing

Our live tank circuit breakers meet the latest versions of national and international standards, such as IEC 62271-100.

The entire development and production procedures are fully compliant with the latest ISO 9001, ISO 14001 and OHSAS 18001 quality standards.

GE VERNOVA

Decarbonization through innovation

- GL SF_6-free Live Tank circuit breakers are part of our GRiDEA portfolio of solutions designed to accelerate the decarbonization of the grid
- SF_6-free products enable considerable reduction in carbon footprint over the complete life cycle compared to the equivalent SF_6 range

High Safety Level

- Pressure relief device prevents injuries and damage in case of over-pressure within the circuit breaker
- Support frame design ensures personnel cannot be injured by motion of parts
- Dedicated tools available to assemble and disassemble circuit breaker parts in safe condition
- Unlike vacuum switching technology, no X-Ray emissions in open position

Easy Installation and Light Maintenance

- Transportation and handling as easy as SF_6 circuit breakers
- Spring-operated mechanism preset at factory - no adjustments necessary during installation and commissioning
- Circuit breaker pre-filled at factory before shipping
- Fill-in and top-up procedures same as for SF_6 circuit-breaker
- Specific fill-in valve design to avoid mis-operations
- Two-stage transducer densimeters are within easy reach, on the front side of the circuit breaker, for periodic/ regular check

Specifications

BREAKER TYPE	GL309C, GL310C GL311C, GL312C
Switching and insulating medium	CO_2-O_2
Rated voltage	72.5 kV to 145 kV
Rated frequency	50 Hz
Rated normal current	up to 3,150 A
Rated short-circuit breaking current	up to 40 kA
Rated short-circuit making current	104 kA
Rated duration of short-circuit	3 s
First pole to clear factor	1.3 - 1.5
Opening time	27 - 33 ms
Break time	60 ms
Closing time	<100 ms
Average ambient temperature	-50 °C up to +40 °C
Pollution level*	25-31 mm/kV
Design altitude*	1,000 m.a.s.l.

*Standard values according to IEC; Higher design altiudes available on request

Components

- Interrupter chamber with self-blast system and reliable double motion technology
- Reliable spring-operated mechanism with position indicator clearly visible from outside
- Pressure relief system for passive protection of substation and personnel
- Field-proven, temperature-compensated density monitor with two-stage transducer and three-color dial
- Easy access to the filling connection
- Non-return (check) valve on each pole column
- Opening and closing spring in drive
- Steel support frame design prevents corrosion issues and provides high safety for employees and high protection against environmental ingress (e.g. ice)
- Optimum designed kinematics between mechanism and interrupting chamber to increase mechanical energy efficiency and mechanical moving parts reliability

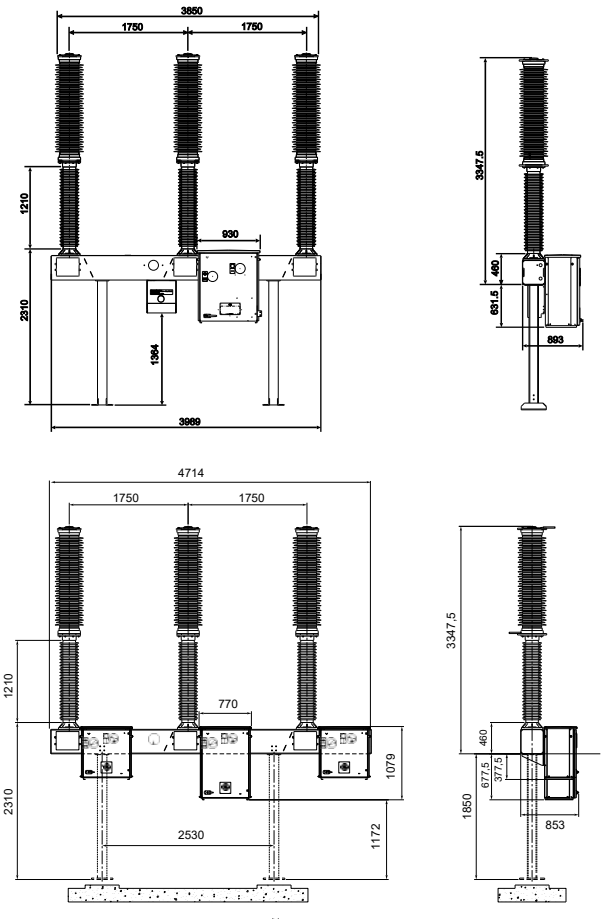
Technical Characteristics

- **Spring-operated mechanism / degree of protection:** One FK 3-2 mechanism/ IP 55 or three FK3-1 mechanisms / IP55
- **Rated operating sequence:** O-0.3s-CO-3min-CO resp. CO-15s-CO
- **Rated supply voltage:** From 24 V up to 250 V dc/ac

Product Options

- CBWatch monitoring system

Dimensions



Dimensions (mm)	GL309c	GL310c	GL311c	GL312c
Voltage Level	72.5 kV	100 kV	123 kV	145 kV
Phase Distance	1050/1300	1300/1750	1300/1750	1750*
1750*	710	1210	1210	1210

* Other distances available on request

For more information visit gevernova.com/grid-solutions

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