

# DT1-145g-63

## SF<sub>6</sub>-free Dead Tank Circuit Breaker 145 kV, 63 kA, 4,000 A

Grid Solutions, a GE Vernova Company, has more than 100 years of experience in the design, material selection, development, engineering, manufacturing and servicing of circuit breakers.

### As compact as a SF<sub>6</sub> Breaker, just with reduced carbon footprint

Based on this expertise, we have developed a SF<sub>6</sub>-free dead tank circuit breaker (DTCB) that is very similar to its SF<sub>6</sub> predecessor, the DT1-145-63. Using our g<sup>3</sup> insulating and switching SF<sub>6</sub>-free technology, the new DT1-145g-63 remains compact with the same footprint. Performance and life-cycle costs remain similar while offering a significant decrease in carbon footprint. The SF<sub>6</sub>-free gas mixture used in the new DT1-145g-63 works on the same well-known principle for insulation and breaking purposes as that of SF<sub>6</sub> gas. Thus, the operational and maintenance procedures are similar to SF<sub>6</sub> dead tank circuit breakers.

The g<sup>3</sup> gas is a mixture of carbon dioxide (CO<sub>2</sub>) with oxygen (O<sub>2</sub>) and an additive, which is a Fluoronitrile (C<sub>4</sub>F<sub>7</sub>N)\*. Its contribution to global warming is significantly lower than that of SF<sub>6</sub> gas: reduced by roughly 99% on average.

### Reliable Performance

The DT1-145g-63 is suitable for application up to nameplate ratings, including definite-purpose switching. It meets the challenges of networks up to 145 kV for power generation, transmission and energy-intensive industry applications.

Our spring-spring-operated mechanism and extensive mechanical design testing to 10,000 operations and class M2 certification ensure trouble-free operation for the lifetime of the circuit breaker.

### Certified Quality

We design, manufacture, test and deliver our dead tank circuit breakers in accordance with the latest IEEE/ANSI and IEC Standards, maintaining a quality assurance system according to ISO-9001 and ISO 14001 certifications.



### The path to Decarbonization

- DT1-145g dead tank circuit breakers are part of GRIDEA portfolio of solutions designed to accelerate the decarbonization of the grid.
- SF<sub>6</sub>-free circuit breakers
- Lower carbon footprint over a 40-year substation life cycle compared to other SF<sub>6</sub> alternatives
- The gas contribution to global warming is reduced by about 99% using g<sup>3</sup> gas instead of SF<sub>6</sub>
- Similar weight and dimensions as the SF<sub>6</sub> circuit breaker, thus no need to increase the overall size of the substation
- Fitted with digital gas monitoring

### Main Characteristics

- Advanced self-blast interrupters
- Shares many components with the DT1-145-63 SF<sub>6</sub> circuit breaker
- Durable low-energy spring/spring operated mechanisms
- More than 100,000 circuit breakers with self-blast interrupters and FK spring-operated mechanisms in service since 1989
- 2 μs chopped wave 838 kV
- Zero bar withstand capability

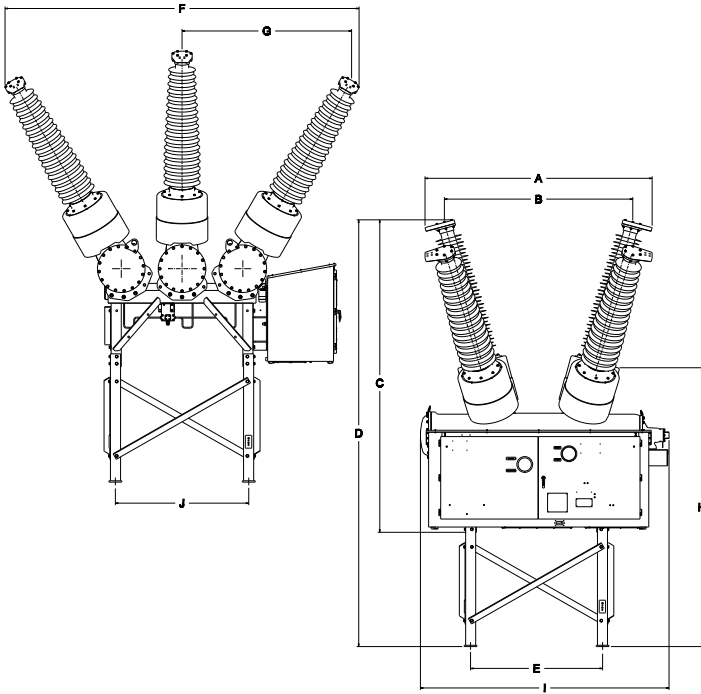
### Easy System Integration

- Breakers are completely factory-assembled, wired and tested before shipment
- Similar operational and maintenance procedures as with SF<sub>6</sub> circuit breakers
- Compact design that's common to all substation applications, including extension of existing substations

\* The fluorinated nitrile (C<sub>4</sub>F<sub>7</sub>N) component of g<sup>3</sup> is a type of PFAS. This component's physical properties are essential to g<sup>3</sup>. C<sub>4</sub>F<sub>7</sub>N is not one of the PFAS currently restricted under United States federal or state PFAS laws.



## Dimensions



<b>RATED MAX. VOLTAGE</b>	145 kV
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<b>A (in/mm)</b>	89.2/2264
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<b>B (in/mm)</b>	73.85/1876
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<b>C (in/mm)</b>	122.9/3120
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<b>D (in/mm)</b>	167.5/4254
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<b>E (in/mm)</b>	51.83/1316
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<b>F (in/mm)</b>	137.4/3490
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<b>G (in/mm)</b>	65.9/1674
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<b>H (in/mm)</b>	107.85/2739.5
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<b>I (in/mm)</b>	97.5/2476
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<b>J (in/mm)</b>	51.83/1316
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## Technical Data

	VALUE	UNITS
Ambient temperature range*	-30° to +40° -22° to +104°	Celsius/ Fahrenheit
High seismic capability in accordance with IEEE 693-2018		
Weight (without current transformers) *Optional values available on request	4,413/2,006	lb/kg

## Ratings\*

IEEE/ANSI	IEC	VALUE	UNITS
Rated maximum voltage	Rated voltage	145	kV
Rated power frequency	Rated frequency	60	Hz
Rated dielectric withstand capability	Rated insulation level		
• dry withstand	• at power frequency, dry	315	kV
• wet withstand	• at power frequency, wet	315	kV
Rated lightning impulse withstand voltage	• at lightning impulse	650	kV
Rated chopped wave impulse voltage 2 $\mu$ s		838	kV
Rated continuous current	Rated normal current	4000	A
Rated short-circuit current	Rated short-circuit breaking current	63	kA
Rated short-time current (1s)		63	kA
Rated peak withstand current		164	kA
Rated capacitance switching		Class C2	
Rated interrupting time		3	cycles
	Rated break time	50	ms
Rated standard operating duty	Rated operating sequence	O-CO-15s-CO / O-0.3s-CO-180s-CO	

(\*) Standard values: further data is available on request.



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