

Transmission & Distribution

SB6-2Y - 245-420 kV - SF6 circuit-breaker

SF6 circuit breaker with gas-dynamic and closed cycle operating mechanism and twin breaking chambers

Simplicity

SB6-

Easy coupling at site between twin interrupting chambers assembly and column without opening or mechanical adjustments.

Only electric plug-in connectors from operating mechanisms.

Reliability

- Protected operating mechanism.
- Only static SF6-air seals.

• 40 years experience since the installation of the first puffer-type circuit breaker.

Safety

All moving parts housed.

A design combining simplicity, reliability and safety

■ Only one technic provides insulation, contact interruption and current interruption.

■ The breaking chambers and the operating mechanism are totally enclosed, assembled and factory tested, for an optimised maintenance.

■ Static interfaces between SF6 and atmosphere : no dynamic revolving and sliding joints. Routine maintenance is unnecessary and environment is protected.

■ Safety is improved as there are no accessible moving parts.

■ No mechanical assembly on site related to the operating mechanism (no pipes, no ganging, no setting).

Application

■ Step-up and transmission AIS substations

Line, power transformer, reactor and capacitor switch.

■ Standards: IEC 62271-100 and CEI 17-1.

Gas dynamic operating mechanism

The energy for actuating the main contacts is provided by SF6 pressure gas differential between: the volume formed by the interrupting chamber and the insulation column,

the volume of the operating mechanism enclosure.

Opening

Figure 1 : The interrupting mechanism (1) is under rated SF6 gas pressure for insulation and interruption. The mechanism (2) is low pressure rated. Figure 2 : On control signal, the valve group (3) directs the gas in front of the piston (4) to open the contact. At the end of the operation the driving gas inside the cylinder is released to expansion volume.

Figure 3 :

A sealed compressor (5) situated in the expansion enclosure (2) restores the pressure in the upper chamber.

Closing

Figure 4 : On control signal, the valve group (3) directs the gas behind the piston (4) which closes the contact. At the end of the operation the driving gas inside the cylinder is released to expansion volume.

Figure 5 :

The sealed compressor (5) restores the pressure in the upper chamber.













Main characteristics

Rated voltage	kV rms	245	300	362	420	
Interrupting chamber		2	2	2	2	
(each pole)						
Туре		245 SB6-2Y	300 SB6-2Y	362 SB6-2Y	420 SB6-2Y	
Insulation level	kV rms power frequency - 1 min	460	380	450	520	
	kV p 1,2/50 μs	1050	1050	1175	1425	
	kV p 250/2500 μs	-	850	950	1175	
Rated frequency			50 - 60 Hz			
Rated current	(A)		2000 - 3150			
Symmetrical breaking capacity	kA rms		up to 50			
Making capacity	kA p		up to 125 (50 Hz) - 130 (60 Hz)			
Short time current	kA rms/s		up to 50/up to 3			
Rated duty cycle		0-0,3 s-CO-3 r	0-0,3 s-CO-3 min-CO or O-0,3 s-CO-1 min-CO or CO-15 s-CO			
Rated break time	ms		<50			
Rated closing time	ms		70			
Minimum creepage distance	mm/kV	acco	according to pollution level of IEC 60815			
to earth						
Service conditions	°C		- 25 to + 55			

Other characteristics



Installation and set-up

- Extremely simple civil works.
- Easy erection: plug and bolt together the transport unit, pole by pole (twin chambers assembly and column + mechanism assembly).
- No adjustments or dismantling or reassembling required.
- After completing the SF6 filling, the only function to perform is the connection of the prefabricated electrical cables between each pole and the local control cubicle.
- Time to complete the installation is about a day.

Operator and environmental safety

■ There are no accessible moving mechanical parts.

The main contacts position indicator is connected directly to the insulating drive rod in each pole.

- Impact of site works reduced to the minimum.
- Control panel with IP20 protection degree (open door).
- Very low noise during switching operations.

■ Leakage rate far less than 0.5% per year due to static seals only.

What to check during the service life of the circuit-breaker

- Only routine visual inspections.
- No greasing needed.
- Internal inspection on the pole after:
- □ 20 years of service or,

□ minimum 2000 interruptions at rated current or, □ cumulative 800 kA at full breaking capacity.

■ mechanical endurance 10 000 CO.

Industrial process - Quality

- The factory is certified to ISO 9001 standards.
- FMECA method is used for design and choice of industrial process.
- On line tests are integrated throughout the circuit-breaker manufacturing process according to the established Quality Control Plan.
- At the end of the manufacturing process, each pole undergoes complete routine test according to standards and/or customer's requirement.



Design, data, dimensions are indicative and subject to change without notice

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