

Main technical characteristics

Parameter	Value	
Rated voltage, kV	110	
Maximum operating voltage, kV	126	
Rated current, A	2000, 3150	
Rated breaking current, kA	40	
Normed percentage of direct component, % no more	45	
Normed parameters of making current, kA:		
- maximum peak	102	
- initial acting value of periodic component	40	
Normed parameters of short-circuit through current, kA:		
- maximum peak (dynamic stability current), kA	102	
- current rms value at its duration time, kA	40	
- short-circuit current duration time, s	3	
Normed breaking current of unloaded overhead circuit, A	31,5	
Normed breaking current of capacitors battery, A	320	
Normed breaking current of shunt reactor, A	-*	
Own time of opening under rated voltage on control elements, ms, no more	38	
Full time of opening, under rated voltage on control elements, no more	55	
Own time of closing under rated voltage on control elements, ms, no more	60	
Normalized no-current pause at APV, s	0,3	
Diversity of poles c contacts closing and opening, no more		
- under closing	0,0018	
- under opening	0,0015	
Creepage distance, cm/kV	2,5	
Admissible level of gas leakage per year, % no more	0,5	
Gas pressure (SF6) of version U1 or mixed gas (SF6+CF4) version UKHL1* brought to plus 20°C, MPa, redundant:	SF6	SF6+CF4
- rated (filling)	0,4	0,6
- nonurgent alarm actuation	0,35	0,52
- control interlocking (or automatic opening with control interlocking)	0,32	0,5
Rated voltage of closing and opening coils, V, constant	220/110	
Rated supply voltage of electric motor of drive, V, variable		
- three-phase	400 или 230	
- single-phase	230	
- constant	220	
Closing and opening coils current under rated voltage, A, no more	3/5	
Rated supply voltage of heating devices, V, variable	230	
Pairs number of switching contacts for external circuits:		
- normally opened	12	
- normally closed	12	
Heating devices switching temperature, °C	5±2	
Weight, kg	1570	

* Circuit-breakers are not intended for switching currents of shunt reactor. Circuit-breakers conform to the requirements of GOST R 52565-2006.

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SF6 column circuit-breaker VGT 110

Intended use

Circuit breaker VGT-110 is intended for switching electric circuits under normal and emergency modes and operation in cycles of autoreclosing in three-phase alternating current networks for frequency 50Hz with rated voltage 110kV as well.

Operating conditions

Circuit breakers climatic version is U and UKHL*, arrangement category is 1 as per GOST 15150, at that:

-  Environment - not containing reactive and hazardous additives which can lead to explosion (II type atmosphere under GOST 15150);
-  Operating range of ambient air temperature:
 - upper - plus 40°C,
 - lower - minus 45°C;
-  Relative humidity under temperature 20°C - 80% (upper operating value - 100% under 25°C);
-  Wire stress:
 - in horizontal plane - no more 1250 N,
 - vertically down - no more 1000 N;
-  Altitude is no more 1000 m;
-  Circuit breakers survive under glaze-clear ice with ice crust thickness up to 20mm and wind speed up to 15m/s, and in the absence of glaze-clear ice - under wind speed up to 40m/s;
-  Seismicity at MSK-64 scale is up to 9 points;
-  Insulation level as per GOST 1516.3 - normal;
-  Degree of insulation pollution is III and IV as per GOST 9920.

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Constructive features

- ⚡ Circuit-breakers consist of three-pole (columns) installed on common frame and controlled by one spring drive PPrM.
- ⚡ Construction is of explosion-proof version.
- ⚡ Reduced efforts of circuit breaker operation. Energy necessary for short-circuit currents extinction is partially used from the arc itself due to special construction of gas flow control units, that essentially decreases drive operation and increases reliability..
- ⚡ Application of four sealings steps together with "hydraulic valve" in shaft sealing assembly of rotation gear ensures the steady low level of leakages – not more than 0,5% per year..
- ⚡ Up-to-date technological and constructive solutions in the range of material application and processing, application of reliable component parts, including high-quality housings of leading foreign companies..
- ⚡ Circuit-breaker steel parts and support metal structures have corrosionresistant coatings..
- ⚡ Circuit-breakers basic performance without support pillars. Circuit-breakers can be supplied by request with shortened factory support pillars, as well as with high support pillars or without them. At that setting and connecting dimensions are interchangeable with low-oil-content circuit-breakers of VMT series.
- ⚡ Maintenance of circuit-breaker insulating strength under voltage 84 kV in case of the loss of gas overpressure in circuit-breaker.
- ⚡ Capacitive currents opening without repeated disruption, low overvoltage.
- ⚡ Low level of sound noises at response (conforms to environmental requirements).
- ⚡ Low dynamic loads to foundation supports.
- ⚡ The presence of automatic control of two heating stages in drive (anticondensate and basic) of drive cubicle and its running order control.
- ⚡ Componentry (devices) is purchased from leading, having proved themselves, domestic and foreign manufactures.
- ⚡ Circuit-breaker building block construction allows delivering the products to Customer in suitable minimal volumes package under minimal transport expenses, providing convenient and operative assembling and commissioning as well. Assembling and commissioning are performed under engineer control.

Indexes of reliability

- ⚡ circuit-breaker life time till the first repair to mechanical stability – 1000 cycles "closing - arbitrary pause – opening";
- ⚡ to switching stability – 20 closings of normed short-circuit currents (40kA) for each pole;
- ⚡ under operating currents equal to rated current:
 - 3150 A – 4200 operations "closing - arbitrary pause – opening";
 - 2000 A – 10000 operations "closing - arbitrary pause – opening";
- ⚡ life time till the first repair – not less than 25 years, if resources to mechanical or switching stability are not exhausted before that period;
- ⚡ life time – 40 years;
- ⚡ warranty period – 5 years.

Overall, setting and connecting dimensions

