

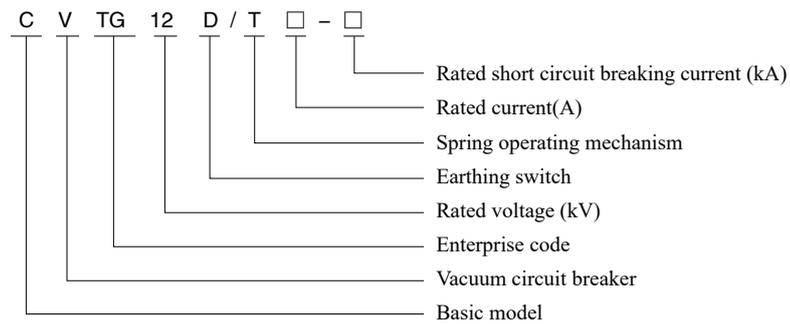
CVTG-12D Indoor High Voltage Three-Position Vacuum Circuit Breaker



1 Overview

CVTG-12D indoor high voltage three-position vacuum circuit breaker (hereinafter referred to as circuit breaker) is used in indoor places with three-phase AC 50Hz and rated voltage 12kV. The product features with excellent electrical and mechanical properties, reliable and stable mechanism, and long life. With strong environmental adaptability and good insulation reliability, it is used as the protection and control of the electrical facilities in the industrial mining, enterprises, power plants, and substations, suitable for various loads of different nature, frequent operation, and multiple ON/OFF operations of short circuit current. The product has a complete mechanical and electrical interlock device and features with high operating stability and reliability, suitable for miniature fixed cabinet, ring main unit or box-type substation.

2 Type Designation



3 Product Parameters

3.1 Main technical parameters

Table 1

Name	Unit	Parameter
Rated voltage	kV	12
Rated lightning impulse withstand voltage (peak)	kV	Gap 85, between the phases and to earth 75
Rated power frequency withstand voltage (1min)	kV	Gap 48, between the phases and to earth 42
Secondary circuit power frequency withstand voltage (1min)	kV	2
Rated frequency	Hz	50
Rated current	A	630、1250
Rated short circuit breaking current	kA	20、25、31.5
Rated short time withstand current	kA	20、25、31.5
Rated peak withstand current	kA	50、63、80
Rated short circuit closing current (peak)	kA	50、63、80
Rated operation sequence		O-0.3s-CO-180s-CO
Rated short circuit duration time	s	4
Rated single/back-to-back capacitor bank breaking current	A	630/400
Rated capacitor bank ON	kA	12.2 (frequency not greater than 1000Hz)
Mechanical life	Circuit breaker	10000
	Switch disconnector, earthing switch	3000

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Table 1, continued

Name	Unit	Parameter
Rated number of short circuit current breaks	次	30
Accumulate thickness of allowable wears of moving and stationary contacts	mm	3
* Rated closing and opening operating voltage	V	C220/110、DC220/110
* Contact opening distance, overtravel	mm	Distance 9±1 Overtravel
Rated operating voltage: ON/OFF time	ms	ON 30~70 OFF 20~50
Contact closing bounce time	ms	≤2
Three-phase ON/OFF synchronization	ms	≤2
* Average opening speed (contact steel 6mm)	m/s	1.19±0.2
* Average closing speed	m/s	0.89±0.3
Main circuit resistance	μΩ	≤130
Closing contact contact pressure	N	20kA、25kA:2400±150 31.5kA:3200±200 40kA:4500±300
Note: "*" indicates that there will be differences between different types of configurations, please refer to the factory report.		

4 Working Environment Conditions

- 4.1 Ambient temperature: Max. temperature is +40°C, and Min. temperature is -15°C (-30°C is allowed during storage and transportation).
- 4.2 Ambient humidity: Daily mean relative humidity ≤ 95%, monthly mean relative humidity ≤ 90%; daily mean vapor pressure ≤ 2.2*10⁻³MPa, monthly mean vapor pressure ≤ 1.8*10⁻³MPa;
- 4.3 Altitude: not greater than 1000m;
- 4.5 The seismic intensity does not exceed 8 degrees;
- 4.6 There is no water drops, no flammable materials and explosion hazard, no chemical corrosion gas and no severe vibration at the installation site.

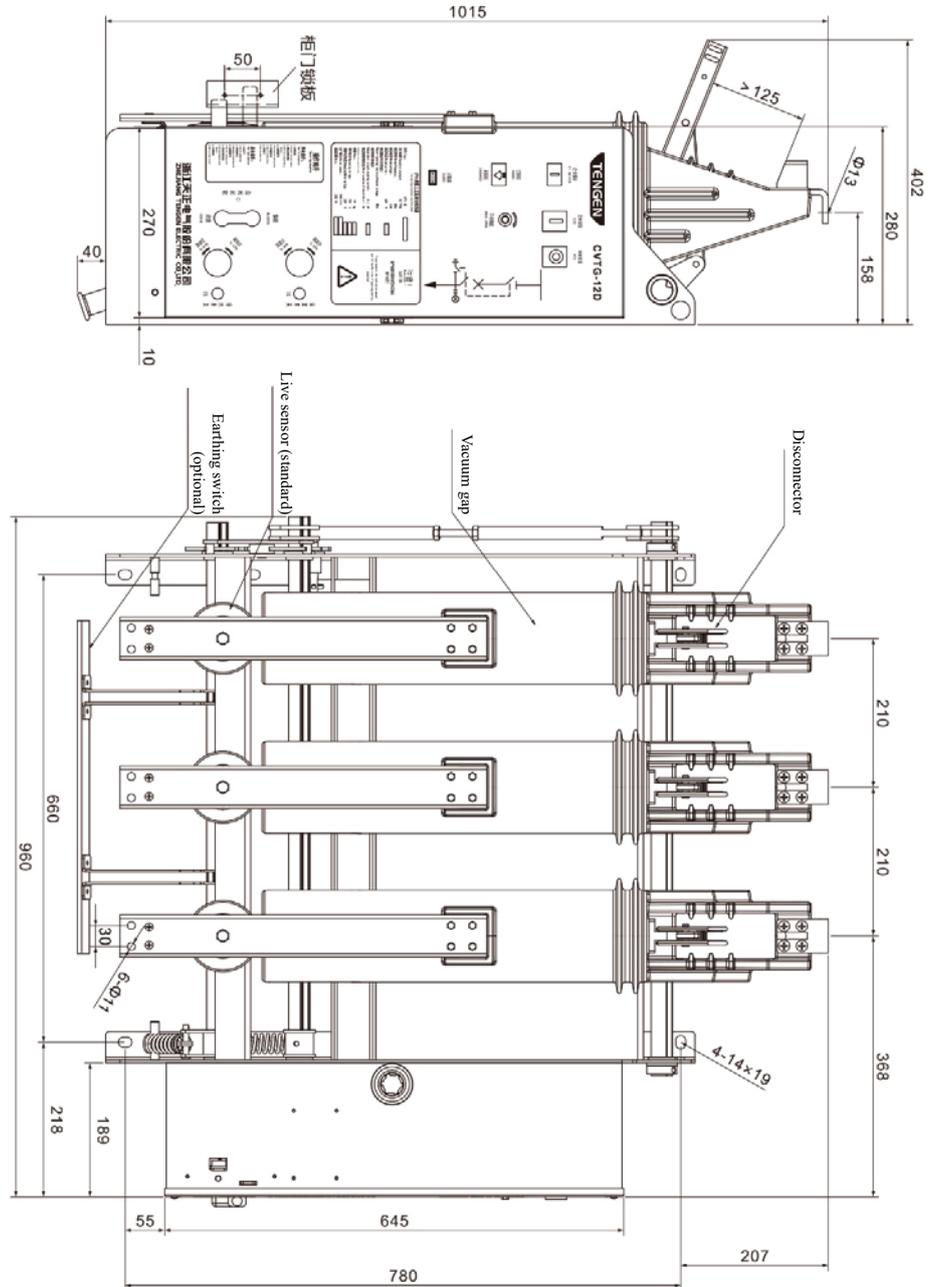
Note: When the working environment conditions are different from the above application environment, please contact the manufacturer.

5 Product Features

- 5.1 Small size, high integration: With frame structure, it is a high-performance miniaturized high-voltage electrical product integrating with switch disconnector, vacuum circuit breaker, earthing switch, sensor, interlock mechanism, and operating mechanism.
- 5.2 Humanized, five-proof interlock: The circuit breaker provides a perfect anti-misoperation function to effectively prevent misoperation and ensure the safety of personnel.
- 5.3 Safe and excellent solid sealing pole: High reliability, stable insulation performance, solid structure, miniaturization, maintenance-free, environmental protection, and high mechanical performance.

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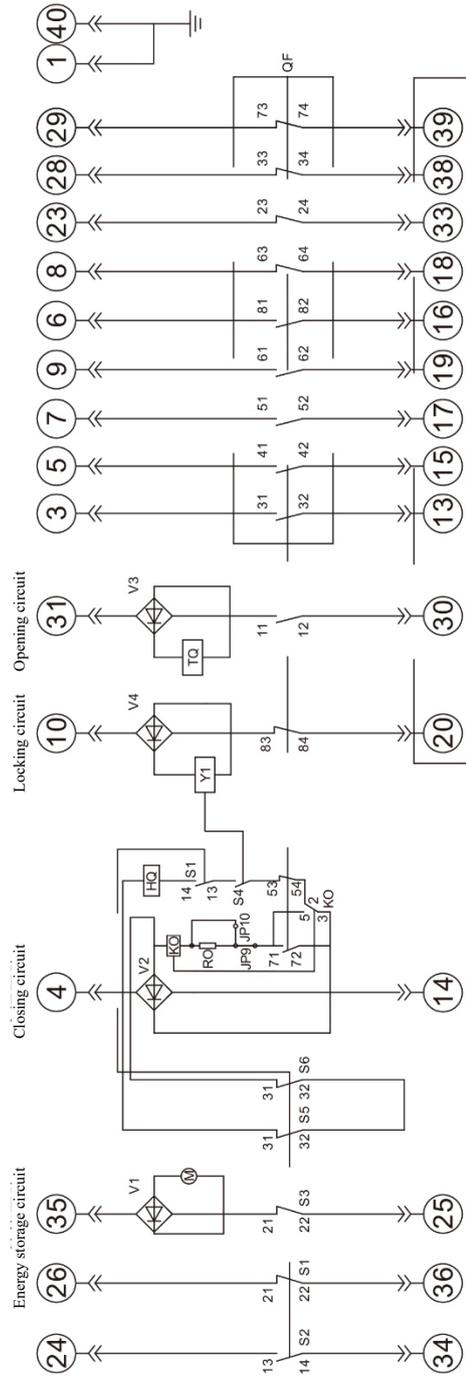
6 Structure Design and Outline Dimensions



Rated current (A)	630	1250
Rated short circuit breaking current (kA)	20、25、31.5	20、25、31.5
Phase spacing (mm)	210±1.5	

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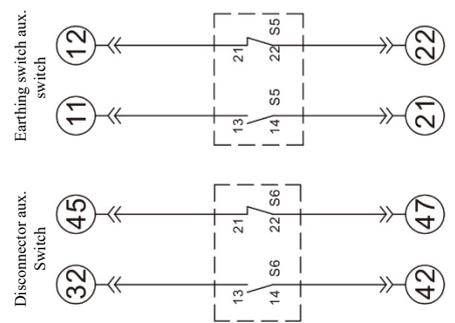
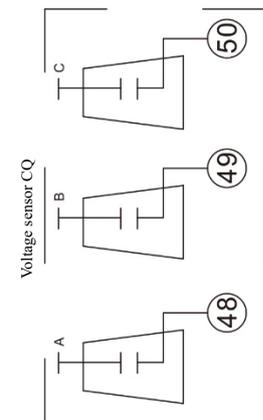
7 Secondary Plan Schematic Diagram



Wiring configuration for options: 3-4 1-2

Jumper state Configuration	Jumper	JP9	JP10
With antibouncer	220V	√	/
Without antibouncer	110V	√	√
	220V	/	/
	110V	/	√

Note: "/" means OFF; "√" means connection



- Notes:
- Figure shows that the circuit breaker is in the Test position, and energy not-stored and OFF state;
 - Disconnector shown in figure is in the ON state;
 - Earthing knife shown in figure is in the OFF state.

- S1-S3: Micro switch (switched after energy storage)
- HO: Closing coil
- KO: Antibounce relay (optional)
- QF: Aux. switch (switched when OFF/ON operation)
- V1-V4: Bridge rectifier (optional)
- Y1: Locking coil (optional)
- Y7-Y9: Overcurrent release coil (optional)
- S4: Locking solenoid micro switch
- RO-R1: Resistance
- S5, S6: Switch disconnector / Earthing switch aux.
- TQ: Opening coil
- M: Energy storage motor (optional)

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8 Order Technical Confirmation Table

CVTG-12D indoor high voltage three-position vacuum circuit breaker order technical confirmation table

Please confirm your requirements according to the items listed in table below:

Product structure	<input type="checkbox"/> Insulating cylinder type (standard) <input type="checkbox"/> Solid sealing pole type	
Order Qty. (unit)		
Rated current (A)	<input type="checkbox"/> 630 <input type="checkbox"/> 1250	
Rated short circuit breaking current (kA)	<input type="checkbox"/> 20 <input type="checkbox"/> 25 <input type="checkbox"/> 31.5	
Installation method	<input type="checkbox"/> Normal installation and left operation <input type="checkbox"/> Inverted installation and left operation	
Earthing switch	<input type="checkbox"/> Without earthing switch <input type="checkbox"/> With earthing switch	
Voltage sensor	<input type="checkbox"/> With sensor (standard) <input type="checkbox"/> Without sensor	
Operating voltage (V)	OFF, ON: <input type="checkbox"/> AC220 <input type="checkbox"/> DC220 <input type="checkbox"/> Others _____ Storage energy: <input type="checkbox"/> AC220 <input type="checkbox"/> DC220 <input type="checkbox"/> Others _____	
Antibounce devcie	<input type="checkbox"/> No antibounce (standard) <input type="checkbox"/> With antibounce	
Closing lock devcie	<input type="checkbox"/> No lock (standard) <input type="checkbox"/> With lock, voltage ____ V Note: Locking handle, electric closing	
Secondary wiring plan	<input type="checkbox"/> Tengen standard plan (see catalog) <input type="checkbox"/> Non-standard plan (with attached figure, confirmed)	
Standard accessories	One operating handle, one energy storage handle, and one door interlock	
Other special requirements		Ordering unit (seal) Signature: _____ Confirm date: _____ Tel: _____

Note: If no option is selected, the product is manufactured according to the standard Tengen requirements by default!