

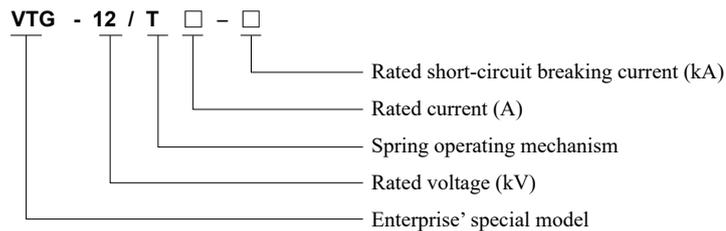
VTG-12 Solid-Sealed Indoor High-Voltage AC Vacuum Circuit Breaker



1 Product overview

- 1.1 Suitable for switching various loads with different properties and frequent operations in three-phase AC 50Hz, 10kV power system.
- 1.2 For protection and control of electrical equipment used in industrial and mining, enterprises, power plant, and substation.
- 1.3 With central handcart type switch cabinet and XGN fixed switch cabinet provided for KYN28A-12(GZS1).
- 1.4 Available standards
 - GB/T 1984-2014 High-voltage alternating-current circuit-breakers
 - GB/T 11022-2011 Common specifications for high-voltage switchgear and controlgear standards
 - DL/T 402-2016 High-voltage alternating-current circuit-breakers

2 Type designation



3 Product parameters



No.	Name	Unit	Value			
1	Rated voltage		12			
2	Rated power frequency withstand voltage (1 minute)	kV	42			
3	Rated lightning impulse withstand voltage (peak)		75			
4	Rated frequency	Hz	50			
5	Rated current	A	630 1250	630 1250 1600 2000 2500 3150	1250 1600 2000 2500 3150 4000	
6	Rated circuit-breaker breaking current	kA	20、25	31.5	40	
7	Rated short-circuit making current (peak)		50、63	80	100	
8	Rated short-time withstand current		20、25	31.5	40	
9	Rated peak withstand current		50、63	80	100	
10	Rated short-circuit duration	S	4			
11	Rated operating sequence		O—0.3s—CO—180s—CO		O—180s—CO—180s—CO	
12	Rated short-circuit breaking current ON/OFF times	Times	30 (50 customized)			
13	Mechanical life		10000 (20000 customized)			
14	Rated operating voltage	V	AC/DC220、 AC/DC110			
15	Allowable accumulative wear thickness of dynamic and static contacts	mm	3			

Note: A forced air-cooled is required for 4000A and above rated current.

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4 Working environment conditions

- 4.1 The ambient air temperature does not exceed 40°C, the average measured within 24h does not exceed 35°C, and the minimum ambient air temperature is -15°C;
- 4.2 Altitude: Not higher than 1000m;
- 4.3 The surrounding air is not polluted obviously by dust, smoke, corrosive or flammable gas, steam, and salt mist;
- 4.4 Humidity conditions: daily mean value is not greater than 95%; monthly mean value is not greater than 90%; the average of water vapor pressure is not greater than 2.2kPa; the average of the monthly water steam pressure is not greater than 1.8KPa;
- 4.5 Vibration or ground movement from the outside of switchgear or control equipment can be negligible;
- 4.6 The amplitude of the conducted electromagnetic interference in the secondary system cannot exceed 1.6kV;
- 4.7 Special use conditions
If the altitude at the installation site exceeds 1000m, or the ambient air temperature exceeds the limit specified in the normal working conditions or the installation site is highly humid to easily cause condensation, please contact our company for customization.

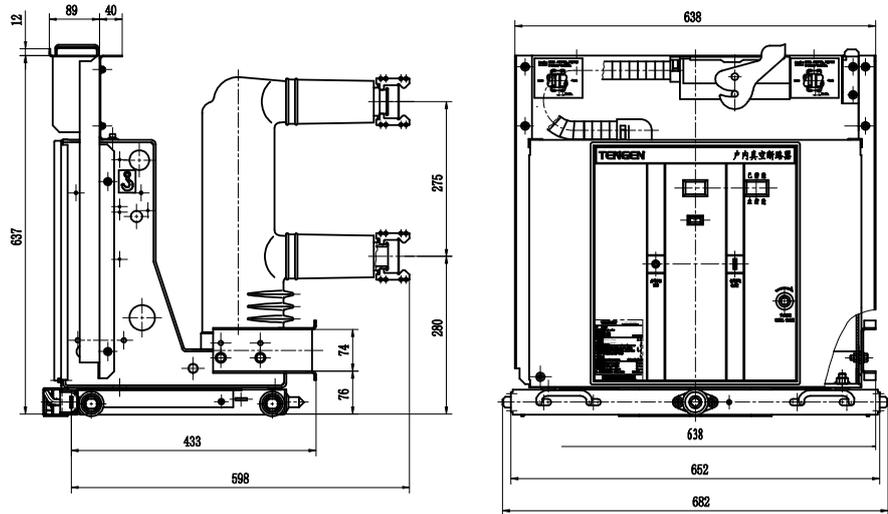
5 Technical features of product

- 5.1 Excellent overall performance of circuit breaker
 - 5.1.1 The solid-sealed pole and operating mechanism of circuit breaker are configured at front and rear, and are connected into a whole through the transmission mechanism.
 - 5.1.2 The optimized spring operating mechanism is used with long mechanical life and stable performance.
- 5.2 The advanced vacuum arc extinguish chamber uses copper-chromium alloy contact and longitudinal magnetic field contact structure.
- 5.3 The integrally cast solid-sealed poles
 - 5.3.1 The solid-sealed pole is formed with new APG process.
 - 5.3.2 The vacuum arc extinguish chamber device is solid-sealed in the pole to efficiently prevent damage and surface contamination due to foreign matters while shortening the overall size of circuit breaker obviously.
- 5.4 Flexible and simple operating mechanism
 - 5.4.1 The operating mechanism is of the spring energy-storage type with electric and manual energy storage functions.
 - 5.4.2 When the circuit breaker is working, the energy from the energy-storage spring will be transferred to the link mechanism through the output cam and then to the dynamic contact through the link mechanism.
 - 5.4.3 With advanced and reasonable damping device, the break-brake rebound is small.
 - 5.4.4 No adjustment is required with very little maintenance.

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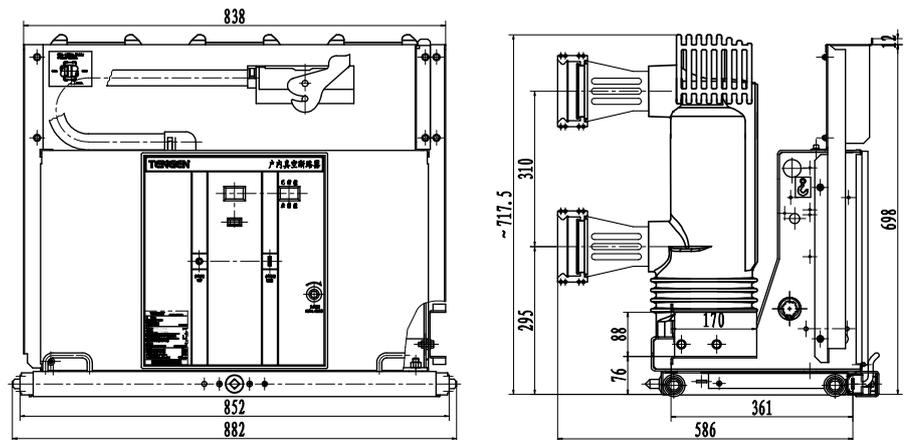
6 Outline and installation dimensions

6.1 Outline and installation dimensions of VTG-12 handcart type circuit breaker



Rated current (A)	630	1250	1600
Rated short-circuit breaking current (kA)	20/25/31.5	25/31.5/40	31.5/40
Size of matched static contact (mm)	Φ35	Φ49	Φ55
Phase distancing (mm)	210±1.5		

Note: The meshing size of dynamic and static contacts is not less than 15mm.



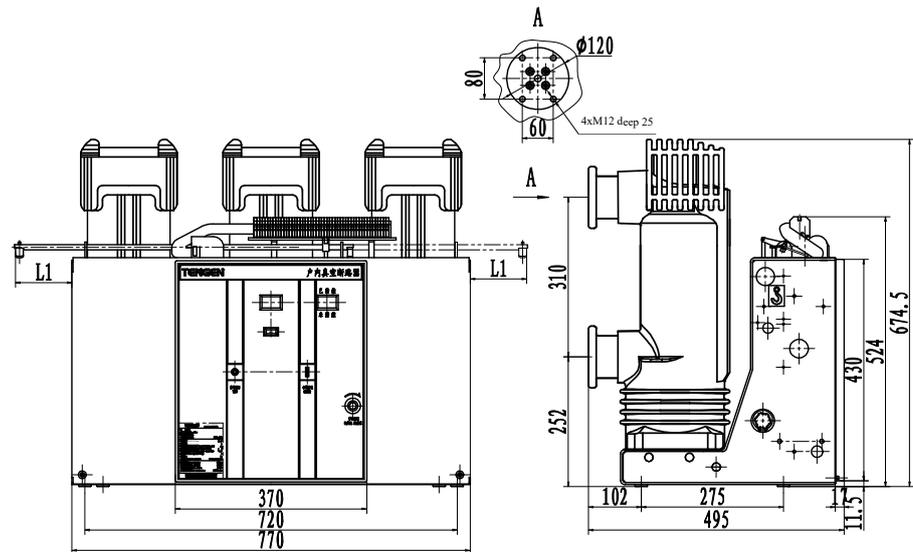
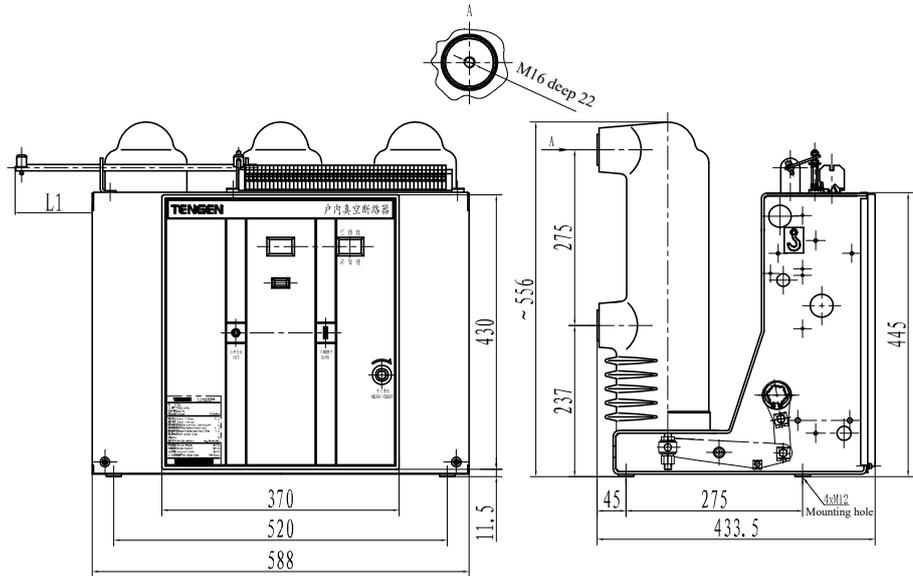
Rated current (A)	1600	2000	2500-4000
Rated short-circuit breaking current (kA)	31.5/40		31.5/40
Size of matched static contact (mm)	Φ79		Φ109
Phase distancing (mm)	275±1.5		

Notes:

1. The meshing size of dynamic and static contacts is not less than 15mm.
2. A forced air-cooled is required for 4000A rated current;
3. No cooling rack is provided at the top for 2000A and below rated current.

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6.2 Outline and installation dimensions of VTG-12 fixed type circuit breaker



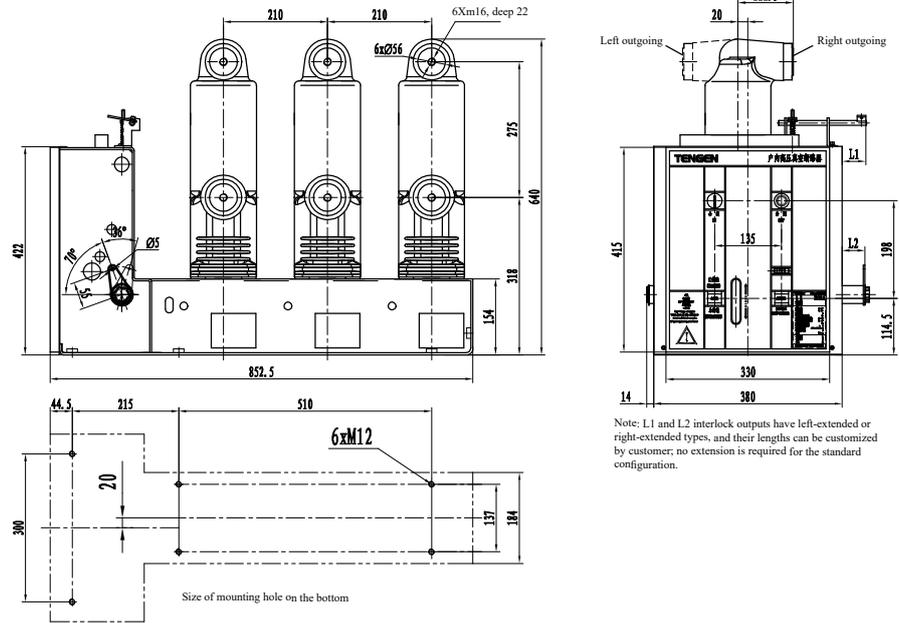
Rated current (A)	1600	2000	2500	3150
Rated short-circuit breaking current (kA)	31.5/40			
Phase distancing (mm)	275±1.5			
Top interlock of mechanism, L1 (mm)	50, 100, 150, 200 (there are left and right extended interlocks, and the length can be customized according to the customer requirements)			

Notes:

1. A forced air-cooled is required for 4000A rated current;
2. No cooling rack is required on the top for 2000A and below rated current.

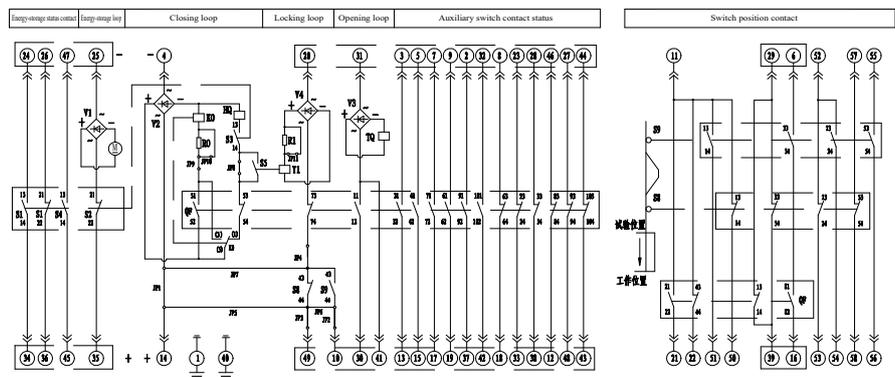
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6.3 Outline and installation dimensions of VTG-12 side-mounted fixed circuit breaker



7 Secondary scheme schematic diagram

7.1 Handcart type scheme



Option wiring configuration:	ab	bg	ef	od	af	ag	bc	ij	lk
Jumper size	JP1	JP2	JP3	JP4	JP5	JP6	JP7	JP8	JP9
Configuration	With lock	✓	✓	✓	✓	✓	✓	✓	✓
Without lock	✓	✓	✓	✓	✓	✓	✓	✓	✓
With wire jumper	✓	✓	✓	✓	✓	✓	✓	✓	✓
Without wire jumper	✓	✓	✓	✓	✓	✓	✓	✓	✓

Selection of operating power supply:	km	qp
Jumper cable	JP10	JP11
AC/DC220V	✓	✓
AC/DC110V	✓	✓

T (1-58)	58-core aviation plug
K0	Internal anti-jump relay (optional)
VI-V4	Rectifier
Y1	Locked electromagnet coil (optional)
M	Energy-storage motor
R0-R1	Resistance
HQ	Closing trip coil

TQ	Opening trip coil
S9	Auxiliary switch (switched at work position)
S8	Auxiliary switch (switched at test position)
JP4-JP11	Jumper cable
S5	Locked electromagnet micro switch (optional)
S1-S4	Limit switch (switched after energy storage of the closing spring)
QF	Auxiliary switch (0-ONs and 10-OFFs (switched at the ON/OFF state)

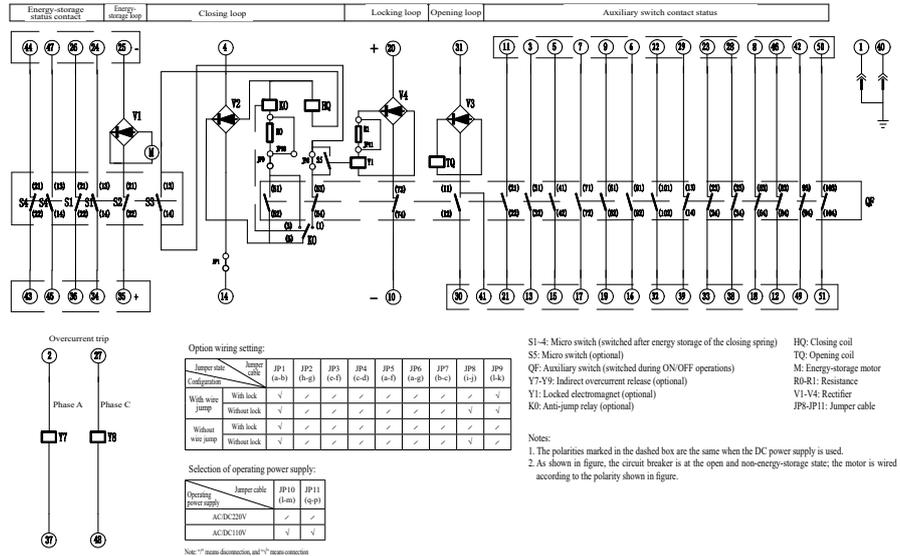
Note: "✓" means disconnection, and "✓" means connection

Notes:

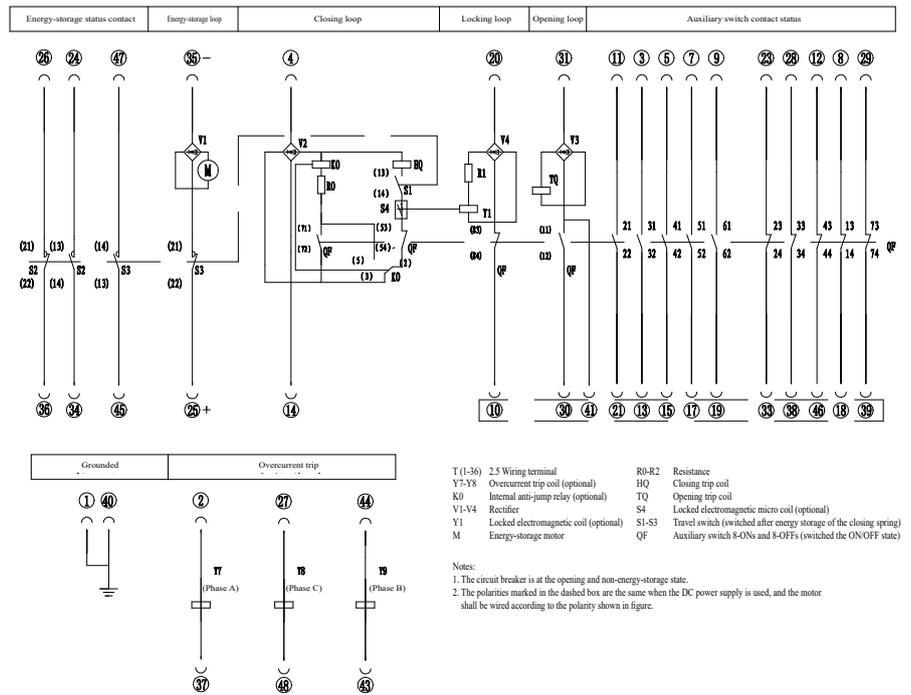
- The circuit breaker is at the test position, is opened and at the non-energy-storage state.
- The polarities marked in the dashed box shall be the same during the DC power operation, and the motor shall be wired according to the polarity shown in figure.

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7.2 Fixed scheme



7.3 Side-mounted fixed scheme



High Voltage Apparatus

VTG-12 Solid-Sealed Indoor High-Voltage AC Vacuum Circuit Breaker

8 Order technology confirmation form

Order Technology Confirmation Form for VTG-12 Solid-Sealed Indoor High-Voltage AC Vacuum Circuit Breaker

Determine your requirements according to the items listed in table below:

Product structure	<input type="checkbox"/> Common type (conventional) <input type="checkbox"/> Excellent type (customized)	
	<input type="checkbox"/> Handcart type <input type="checkbox"/> Fixed type <input type="checkbox"/> Side-mounted fixed type (left outgoing Right outgoing)	
Order quantity (pcs)		Primary structure: solid-sealed pole type
Rated current (A)	<input type="checkbox"/> 630 <input type="checkbox"/> 1250 <input type="checkbox"/> Others_____	
Rated short-circuit breaking current (kA)	<input type="checkbox"/> 20 <input type="checkbox"/> 25 <input type="checkbox"/> 31.5 <input type="checkbox"/> 40	
Phase distancing (mm)	<input type="checkbox"/> 150 <input type="checkbox"/> 210 <input type="checkbox"/> 275 Note: Phase distancing refers to the center distance between the Phases A and B or between the Phases B and C.	
Pole distancing (mm)	<input type="checkbox"/> 205 <input type="checkbox"/> 275 <input type="checkbox"/> 310 Note: Pole distancing refers to the center distance between the upper and lower outgoing terminals.	
Operating voltage (V)	<input type="checkbox"/> AC/DC220 (Standard configuration) <input type="checkbox"/> Others_____	
Wire jump preventer	<input type="checkbox"/> Without wire jump (standard configuration) <input type="checkbox"/> With wire jump	
Locking device	Closing lock: <input type="checkbox"/> No lock (standard configuration) <input type="checkbox"/> With lock, operating voltage____V Handcart lock: <input type="checkbox"/> No lock (standard configuration) <input type="checkbox"/> With lock, operating voltage 压____V	
Overcurrent device	<input type="checkbox"/> No overcurrent (standard configuration) <input type="checkbox"/> Overcurrent of Phases A and C <input type="checkbox"/> Overcurrent of Phases A, B, and C Note: The action current of the standard overcurrent coil is 5A	
Handcart type chassis cart option (This item is not available for fixed type)	Grounded: <input type="checkbox"/> Bottom friction grounded (standard configuration) <input type="checkbox"/> Rails grounded at both sides <input type="checkbox"/> Contact grounded Program lock: <input type="checkbox"/> No (standard configuration) <input type="checkbox"/> Locking mechanism <input type="checkbox"/> With chassis cart locked <input type="checkbox"/> With circuit breaker baffle locked Cabinet door interlock: <input type="checkbox"/> No (standard configuration) <input type="checkbox"/> With door closing interlock function	
Fixed circuit interlock output (mm) (This item is not available for handcart type)	Top opening interlock extended: <input type="checkbox"/> Left (standard configuration 100)___ <input type="checkbox"/> Right___ <input type="checkbox"/> No Spindle extended: <input type="checkbox"/> No (standard configuration) <input type="checkbox"/> Left___ <input type="checkbox"/> Right___	
Secondary wiring scheme	<input type="checkbox"/> TENGEN's standard scheme (see catalog) <input type="checkbox"/> No-standard scheme(scheme should be provided)	
Outline dimensions	<input type="checkbox"/> TENGEN's standard scheme (see catalog) <input type="checkbox"/> No-standard scheme (scheme should be provided)	
Other special requirements		Ordering unit (seal) Sign: Confirmation date: Tel:

Note: If not ticked, all options shall be manufactured according to the TENGEN's standard configurations.