



## **VSM-12 Series Indoor High Voltage Vacuum Circuit Breaker**



**GHORIT ELECTRICAL CO., LTD.**

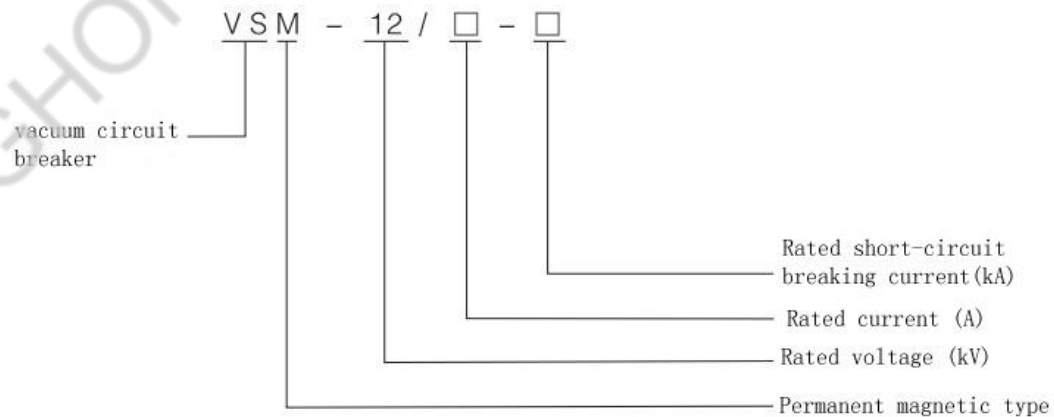
## 1. Outline

VSM-12 series permanent magnet-type indoor high voltage vacuum circuit breaker is a three-phase AC 50Hz, rated voltage of 12kV indoor switch equipment. Installed with permanent magnetic mechanism of our company own research and development for industrial and mining enterprises, power generation and substation facilities as electrical control and protection purposes. The product with high reliability and long life characteristics, especially apply to places with serious conditions, such as frequent operation, repeated short-circuit breaking current.

## 2. Environmental Conditions

- ◆ Ambient temperature:  $-25^{\circ}\text{C}\sim+40^{\circ}\text{C}$ ;
- ◆ Altitude:  $\leq 1000\text{m}$ , plateau type  $\leq 3000\text{m}$ ;
- ◆ Relative humidity: daily average  $\leq 95\%$ , monthly average  $\leq 90\%$ , saturated vapor pressure daily average  $\leq 2.2 \times 10 \text{ MPa}$ , monthly average  $\leq 1.8 \times 10 \text{ MPa}$ . When temperature drops rapidly during high temperature period, it may occur condensation.
- ◆ Earthquake intensity:  $\leq 8$  level;
- ◆ Places without fire, explosion hazard, serious filthy, chemical corrosion, as well as intense vibration.

## 3. Type Description



## 4. Main Technical Parameters

### ◆ Vacuum circuit breaker main technical parameters

No	Item		Units	Parameters			
1	Rated voltage		kV	12			
2	Rated insulation level	1min power frequency withstand voltage		75			
		Rated lightning impulse withstand voltage		42			
3	Rated current		A	630~1250	1250~3150	1250~4000*	
4	Rated short-circuit breaking current		kA	20	31.5	40	50
5	Rated short-circuit closing current(peak)			50	80	100	125
6	Rated dynamic stability current(peak)			50	80	100	125
7	Rated thermal stability current (RMS)			20	31.5	40	50
8	Rated short-circuit breaking current breaking number		Times	30	30	20	20
9	Rated thermal stability time		S	4			
10	Rated operating sequence			O-0.3s-CO-180s-CO			
11	Mechanical life		Times	≥30000			
12	Mechanical life of permanent magnetic mechanism and transmission part		Times	≥100000			
13	Rated single capacitor bank breaking current		A	630~1250			
14	Rated back-to-back capacitor breaking current			400			
15	Rated out of step breaking current		kA	12.6	16		

\*When rated current >3150A, there should be ventilation measures.

\*\*There are differences due to different vacuum interrupters.

◆ Mechanical properties parameters after adjustment

No	Item	Units	Parameters		
1	Clearance distance between open contacts	mm	11±1*		
2	Contact travel		3.5±0.5		
3	Three phase opening synchronism	ms	≤2		
4	Closing contact bounce time		≤2	≤3(40kA)	
5	Inter-phase center distance	mm	210, 275		
6	Closing contact pressure	N	20kA 2000±200	31.5kA 3100±200	40kA 4500±300
7	Main conductive circuit resistance	μΩ	60	45	30
8	Average opening speed	m/s	1.1±0.2		
9	Average closing speed		0.7±0.2	0.8±0.2	
10	Opening time	ms	30~60		
11	Closing time		50~100		
12	Dynamic and fixed contact cumulative allowed wear thickness	mm	3		

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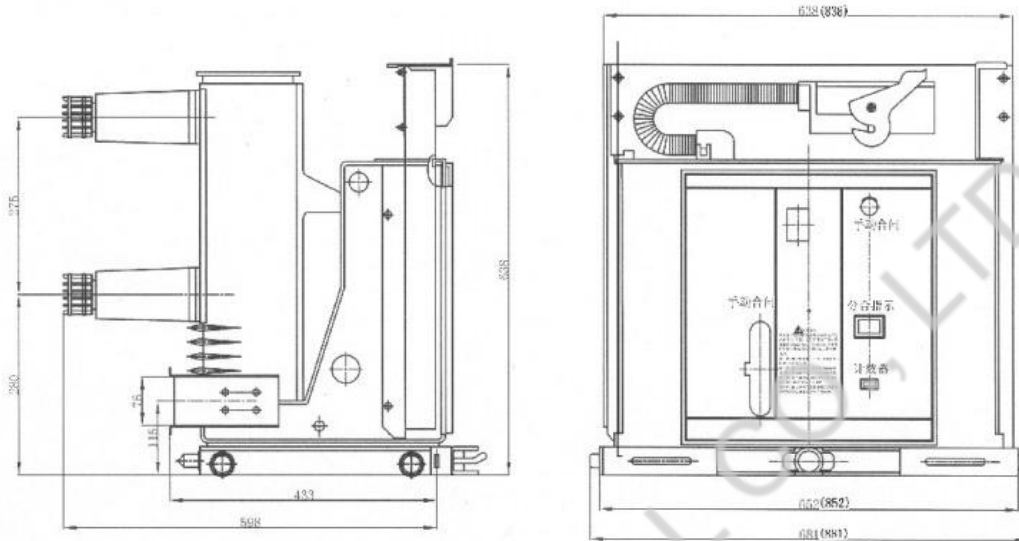
◆ Permanent magnetic mechanism technical parameters

Name	Voltage	Item	Unit	I		II	III	
				20kA	25kA	31.5kA	40kA	50kA
Closing coil	DC220V	working current (peak)	A	52			88	
		Resistance	Ω	4.2±0.18			2.5±0.18	
Opening coil	DC220V	working current (peak)	A	2			3.5	
		Resistance	Ω	120±15			600±0.5	
Closing coil	AC220V	Input current	A	≤2				
Opening coil	AC220V	working current (peak)	A	2			3.5	
		Resistance	Ω	120±15			60±5	

Note: if have any special requirements of power supply, please specify when ordering.

## 5. General Structure Drawing (unit: mm)

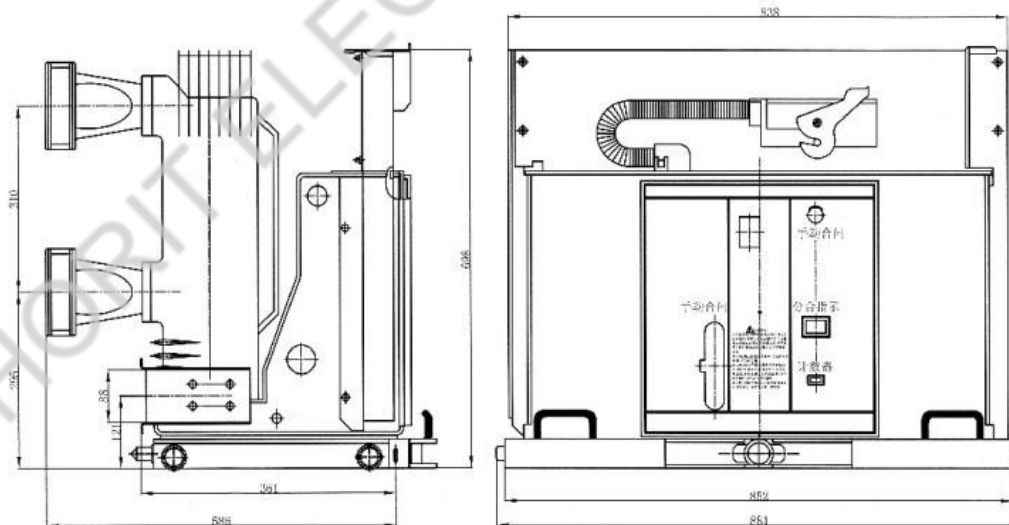
- ◆ Withdrawable type (normal pole) (cabinet width 800 or 1000mm)



Inter-phase distance 210mm (275mm)

Rated current (A)	630	1250	1600
Rated short-circuit breaking current (kA)	20, 25, 31.5	20, 25, 31.5, 40	31.5, 40
Matched fixed contact size (mm)	Φ35	Φ49	Φ55

- ◆ Withdrawable type (normal pole) (cabinet width 1000mm)

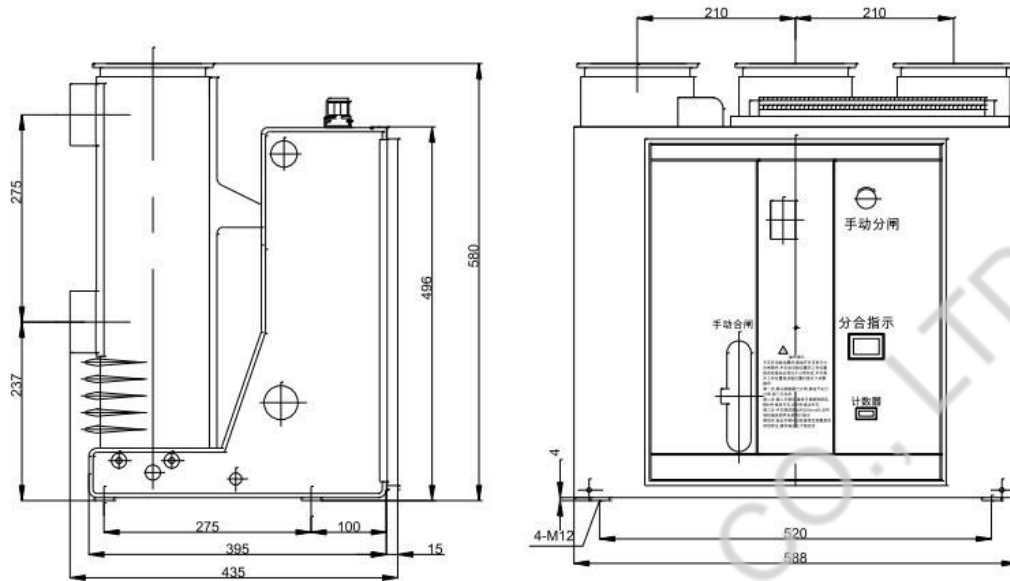


Inter-phase distance 275mm

Rated current (A)	1600	2000	2500	3150	4000*
Rated short-circuit breaking current (kA)	31.5	40	40	40, 50	40, 50
Matched fixed contact size (mm)	Φ79	Φ109	Φ109	Φ109	Φ109

\*If rated current >3150A, need forced air cooling.

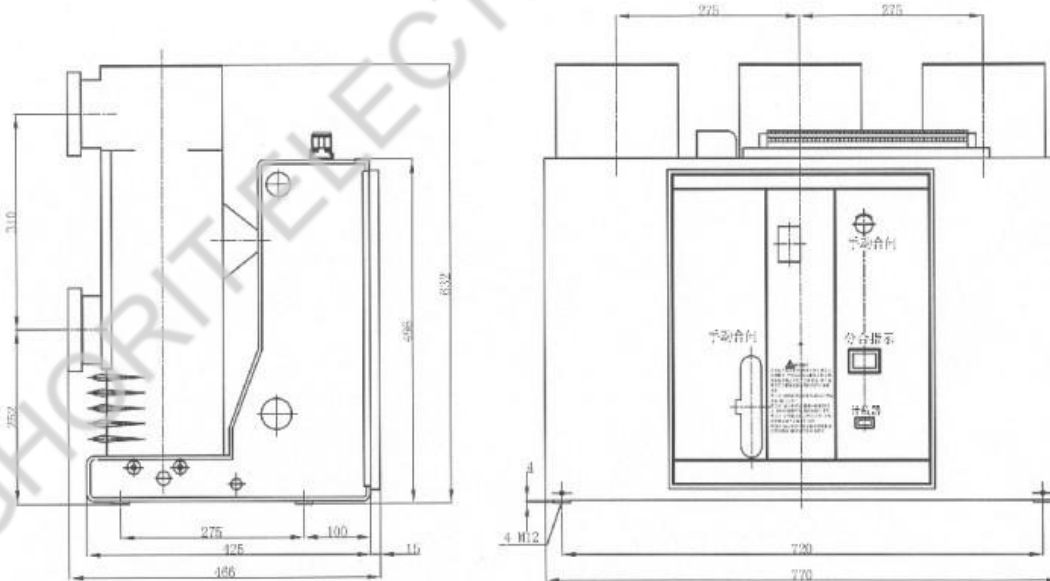
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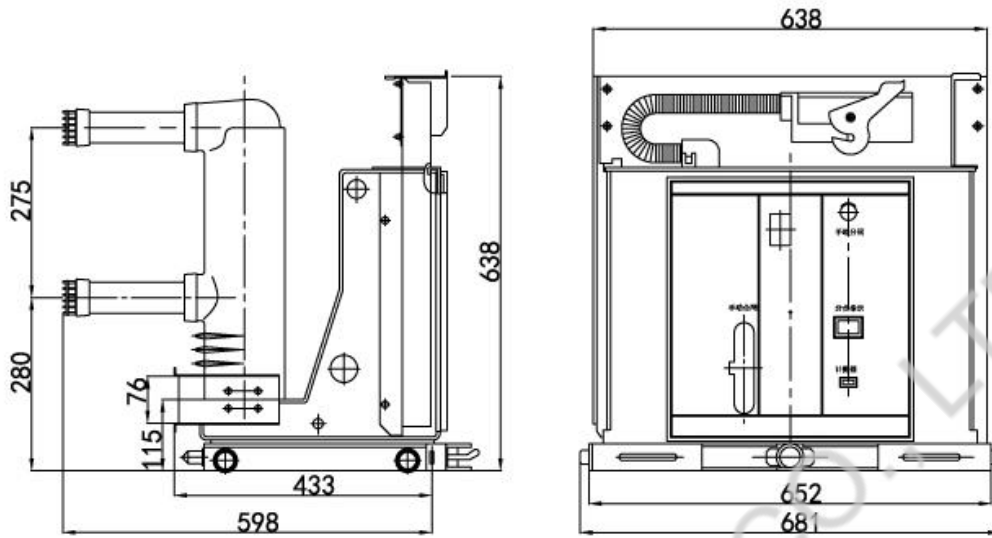
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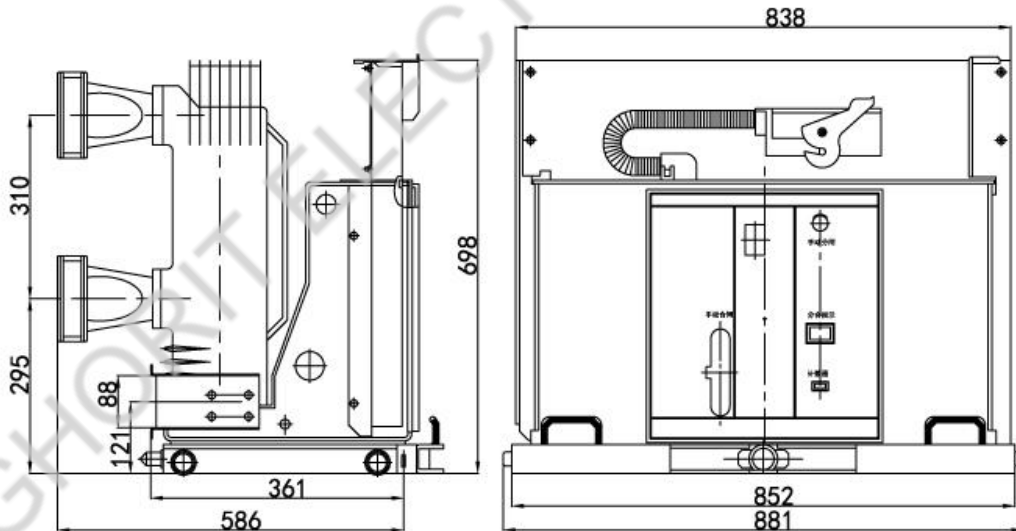
◆ Withdrawable type (embedded pole) (cabinet width 800 or 1000mm)



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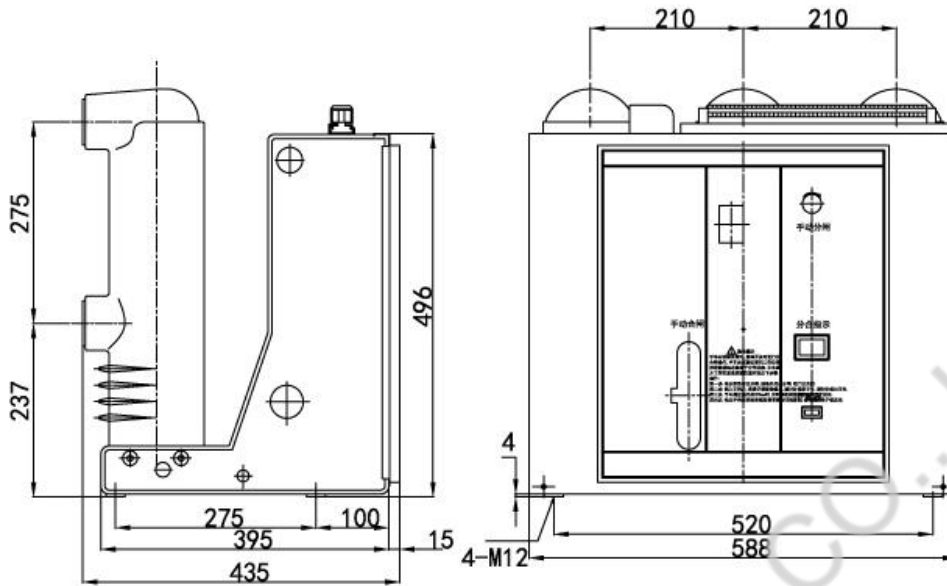


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to match fixed contact size (mm)	Φ79		Φ109		

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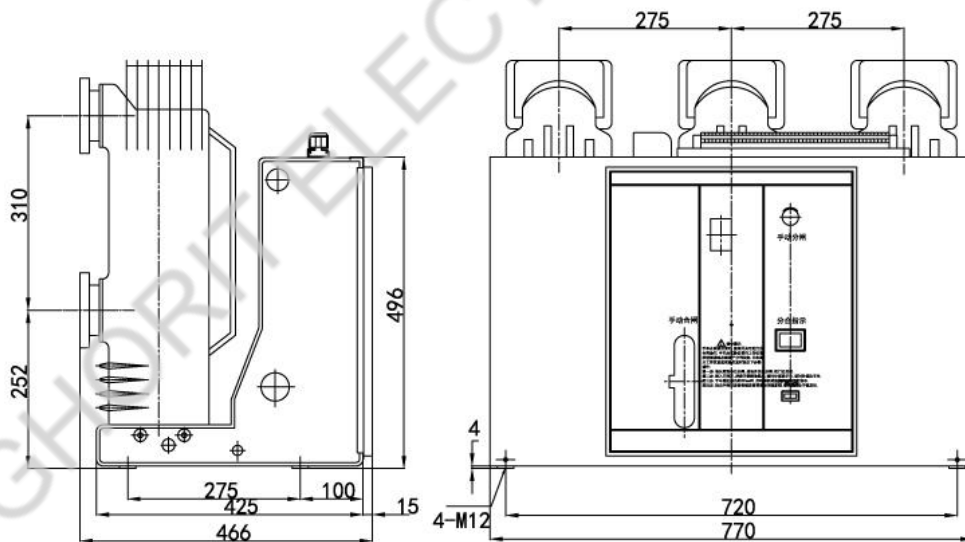
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