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# VHZ4

## Vacuum circuit breaker

12-17.5KV

630-4000A

25-40KA

Vacuum interrupter

Modular operating mechanism



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# VHZ4

## Vacuum circuit breaker

### Overview

Vacuum interrupter's Integral pouring and Hi-Rel modularized operating mechanism technologies , are used on the VHZ4 Vacuum Circuit Breaker. The concise and simple design concept and digital manufacturing process makes features of high reliability and interchangeability , plus easy operation and maintenance come true.

Valuable circuit breaker, complete equipment of switch solution for engineering project, is now provide by VHZ4 vaccum circuit breakers. It apply to withdrawable or fixed switchgear, as well as reconstruction project.Suitable for circuit breaker applications such as transformers, motors, cables, overhead lines, generators, capacitor banks, medium voltage power electronic equipment, inductive equipment and other electrical equipment.



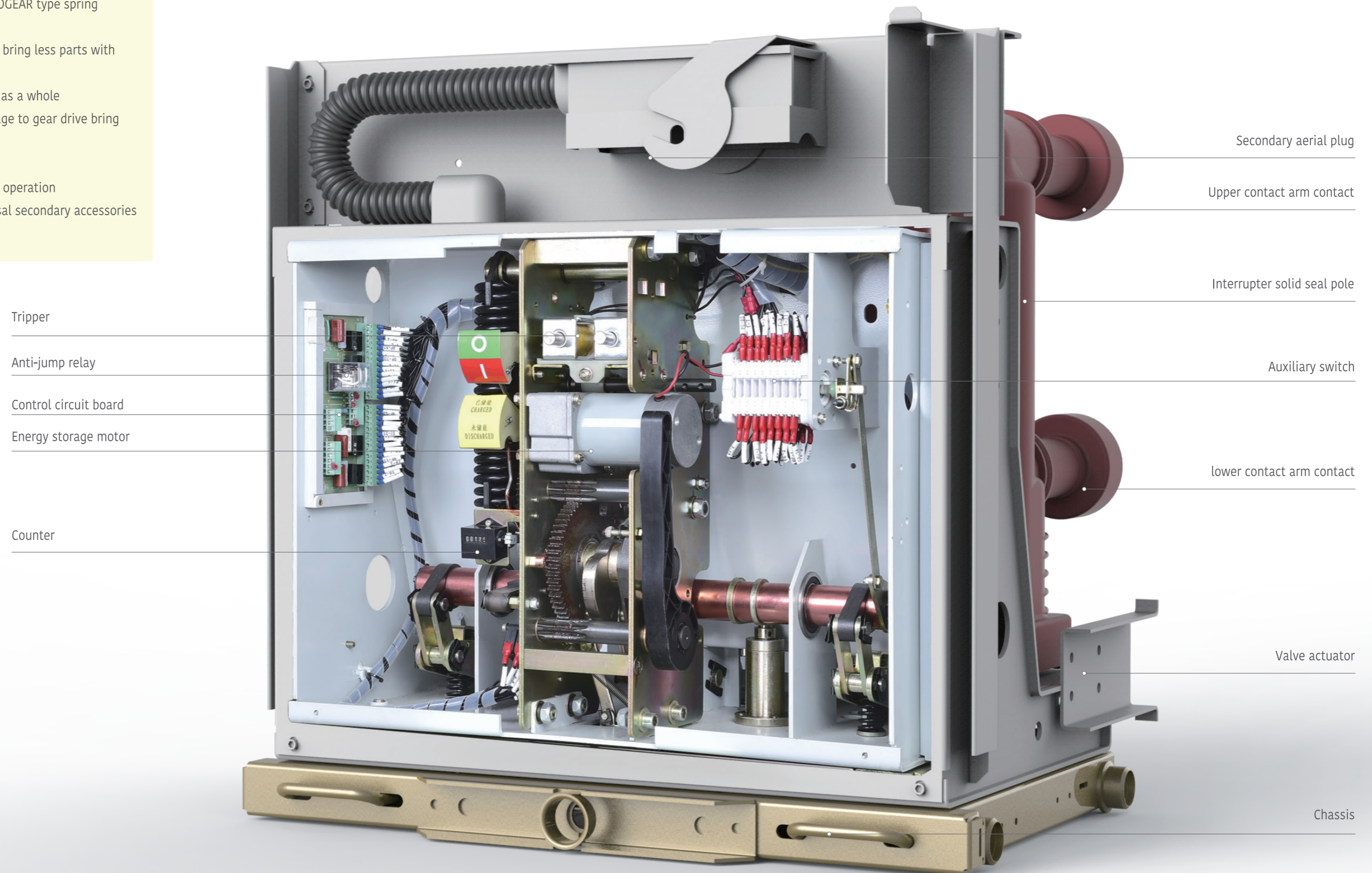
VHZ4 suits for NXSAFE (KYN) withdrawable switchgear, or other fixed switchgears



## Cogear modular mechanism

### Mechanical Feature

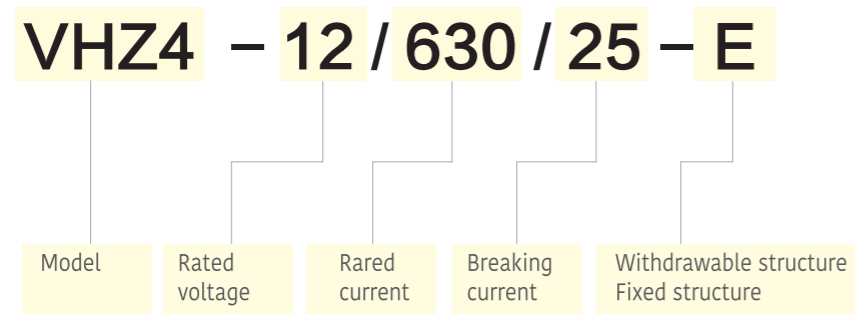
VHZ4 vacuum circuit breaker has COGEAR type spring operating mechanism  
Concise and simple design concept bring less parts with high reliability  
Modular design make it removable as a whole  
Combine single spring energy storage to gear drive bring low noise and long mechanical life  
Mechanical anti-jump device  
Lockout mechanism with anti-error operation  
Easy installation and AC/DC universal secondary accessories  
Built-in energy storage handle



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Medium voltage vacuum circuit breaker

## Design Notes

Product model naming rules



## Standards

VHZ4 series vacuum circuit breakers follow standards as  
IEC62271-100  
GB1984-2003  
DL/T402

## Application

Rated short circuit breaking current and not full load current  
Breaking asymmetric current  
Automatic reclosing  
ON/OFF no-load cable and no-load overhead lines  
Out-of-phase breaking

ON/OFF no-load transformer  
Breaking out of phase grounding fault current  
Breaking TRV or short-circuit current starts with a steep-gradient  
ON/OFF motor and inductor with adjustable air gap

## Environmental conditions & weather resistance

Temperature	-5 C~40 C
Altitude	1000m Above 1000m, insulation parts of circuit breakers and switchgear shall be modified according to the principle of GB / T11022 and IEC60694, and the model with high altitude test shall be used.
Seismic performance	General mechanical vibration does not affect the use of circuit breakers. In ships and oil offshore platforms, the model be certified by the classification society should be used.
Humid tropical environment	Tolerant UNI3564-65 / C ambience Meet IEC60721-2-1 test Meet IEC60068-2-2 test Meet IEC60068-2-30 test

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## Panel / Vacuum interrupter / overall pouring pole

VHZ4 Panel operation



- 1 ON/OFF indicator
- 2 Manual ON button
- 3 Manual OFF button
- 4 Spring stored energy indicator
- 5 Nameplate
- 6 counter
- 7 Manual stored energy handle handle
- 8 Outer box and outer box panel

## Vacuum interrupter

Vacuum interrupting technology of vacuum interrupter  
Breaking capacity of 25-40KA  
Contact oxidation and pollution  
Compact  
Environmentally friendly  
Long life



## Integral pouring pole

Pole Integral pouring technology  
Protect the interrupter from mechanical impact and moisture, dust, etc  
Integral pouring, full sealed, strong weatherability  
High insulation properties



## Accessories

### Tripper

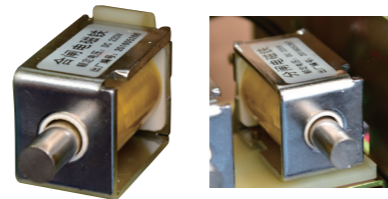
#### Auxiliary tripper Y3、Y2/Y10

The auxiliary tripper coil is driven by an auxiliary power supply. The coil is only designed for short-term work, so its circuit needs to connect the auxiliary switch ganded the switch spindle, in order to disconnect the current loop after circuit breaker finish the operation.

#### Overcurrent tripper Y7、Y8、Y9

(for mutual inductor type overcurrent tripper) In the case of a short circuit or overcurrent, the overcurrent tripper can make the circuit breaker trip itself. When the protection device is activated, the transformer current actuates the tripper, so that the switch opens.

The tripper have 0.5A, 1A, and 5A specifications.



### Auxiliary switch

#### Switch position auxiliary switch QF

The auxiliary switch is directly connected by the middle of the circuit breaker spindle through the middle bar. Its position is always consistent with the main contact's. Indicating opening or closing status of the circuit breaker. Wiring, interlocking auxiliary tripper, prevent misoperation

#### Energy storage position auxiliary switch S1

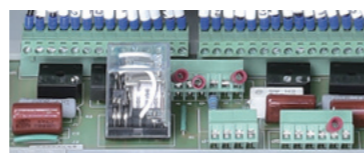
The auxiliary switch is mainly used to detect and indicate the energy storage status, and linkage with the energy storage mechanism to ensure that the drive mechanism to complete the closing operation, also automatic storage of energy. After the completion of energy storage, disconnect the electric energy storage circuit.



### Anti-jump relay

#### Anti-jump relay K0

If the circuit breaker is continuously issued with the closing and opening commands, the circuit breaker returns to the opening position after its closing and remains until the new closing command is issued. In this way, it can prevent continuous ON /OFF (ie "anti-jump").



## Accessories

### Counter

#### Counter

A counter is installed on the operator interface to record the number of times the circuit breaker is operated.



### Energy storage motor

#### Energy storage motor M

It performs the electric energy storage operation for the operation of the circuit breaker and prepares the operation for the next closing of the circuit breaker.



### Lockout electromagnet

#### Closing lockout electromagnet Y1

The circuit breaker can not normally close switch on (including the manual operation) when the secondary control power is lost.



## Technical parameters

### VHZ4-12kV vacuum circuit breaker

Model	Phase spacing	Rated voltage	Rated insulation level		Rated operating frequency	Rated current	Rated peak withstand current (50 / 60Hz)	Rated short-time withstand current (4s)	Rated short circuit breaking current		No-load cable breaking current
			Short time power frequency withstand voltage	lightning impulse withstand voltage					Rated short circuit breaking current	DC component percentage	
	mm	kV	kV	kV	Hz	A	kA	kA	kA	%	A
VHZ4-12-630-25	210/275	12	42	75	50	63	25	25	45	25	
VHZ4-12-1250-25	210/275										
VHZ4-12-1600-25	210/275										
VHZ4-12-2000-25	210/275										
VHZ4-12-2500-25	275										
VHZ4-12-3150-25	275										
VHZ4-12-4000-25	275										
VHZ4-12-630-31.5	210/275	12	42	75	50	630	80	31.5	31.5	45	25
VHZ4-12-1250-31.5	210/275					1250					
VHZ4-12-1600-31.5	210/275					1600					
VHZ4-12-2000-31.5	210/275					2000					
VHZ4-12-2500-31.5	275					2500					
VHZ4-12-3150-31.5	275					3150					
VHZ4-12-4000-31.5	275					4000*					
VHZ4-12-1250-40	210/275	12	42	75	50	1250	110	40	40	45	25
VHZ4-12-1600-40	210/275					1600					
VHZ4-12-2000-40	210/275					2000					
VHZ4-12-2500-40	275					2500					
VHZ4-12-3150-40	275					3150					
VHZ4-12-4000-40	275					4000*					

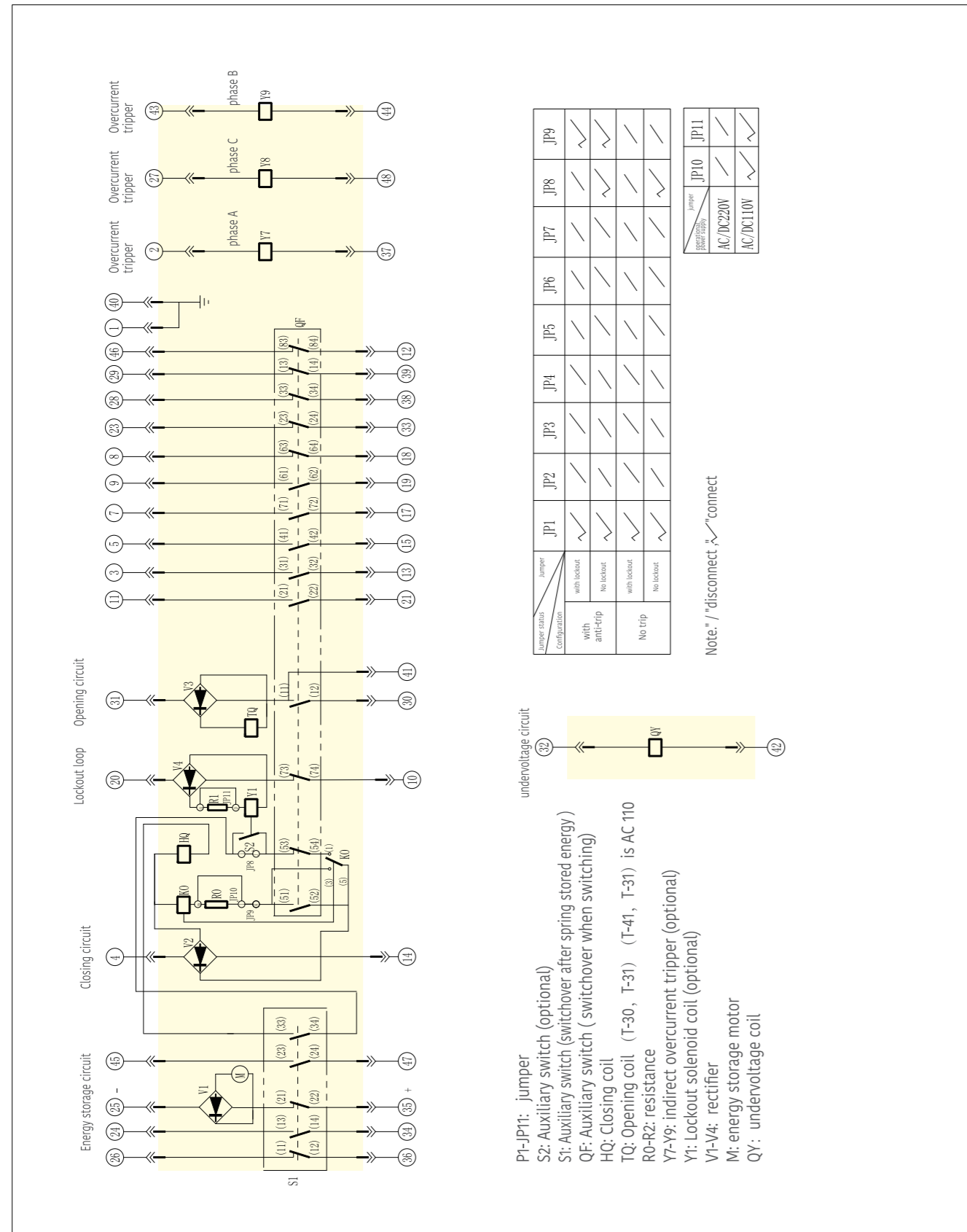
Note:  
 \* Need forced air cooling as rated current up to 4000A  
 2) \*\* Product net weight is for reference only.  
 3) Special requirements should consult the manufacturer.  
 4) Equipped with KYN type cabinet.

## Technical parameters

Rated operating sequence	Switch operating life cycle				MIN\MAX closing time	MIN\MAX opening time	Closing bounce	Opening bounce	allowable wear-thickness for contact	Energy storage time	Arcing time	Weight		
	mechanical	electrical		fixed type								Withdrawable type		
0-0.3s - CO - 180s - CO	0-180s - CO - 180s - CO	Operation mechanism	Vacuum interrupter	Rated current	Full capacity short circuit current	ms	ms	ms	mm	s	ms	kg	kg	
●	●	30,000	30,000	10,000	100	35/70	25/40	≤2	≤2	3	≤10s	2~15	95/105 120/130	105/110 120/130
													155/175 190/200	155/175 200/210
													195 295	195 295
													195 295	195 295
													195 295	195 295
●	●	30,000	30,000	10,000	100	35/70	25/40	≤2	≤2	3	≤10s	2~15	95/105 120/130	105/110 120/130
													155/175 200/220	155/175 200/220
													195 295	195 295
													195 295	195 295
													195 295	195 295
●	●	20,000	30,000	10,000	100	35/70	25/40	≤2	≤2	3	≤10s	2~15	155/175 200/220	155/175 200/220
													155/175 200/220	155/175 200/220
													195 295	195 295
													195 295	195 295
													195 295	195 295

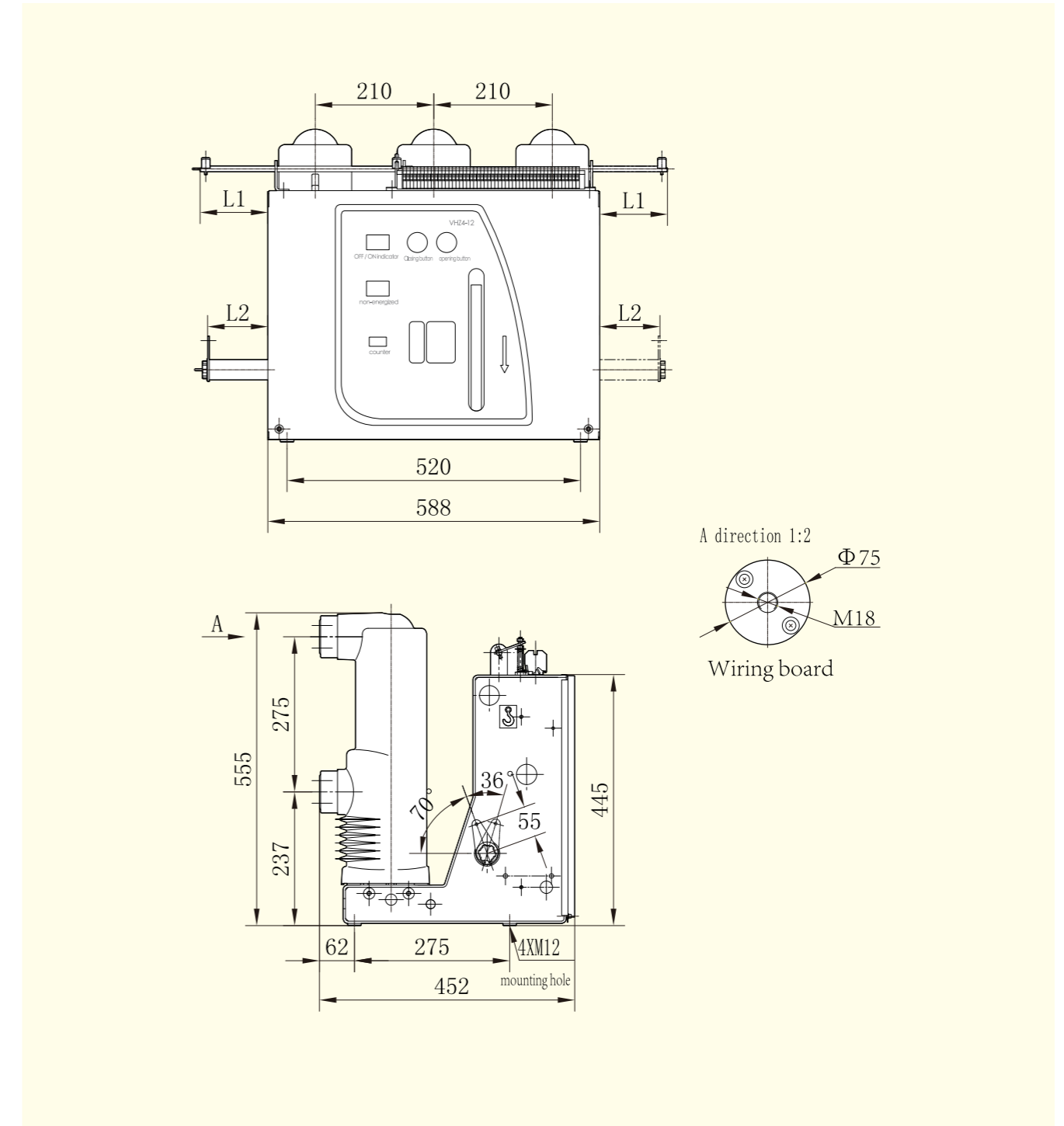


### Secondary diagram for fixed type with undervoltage AC power supply & anti-trip relay



- P1-JP11: jumper
- S2: Auxiliary switch (optional)
- S1: Auxiliary switch (switchover after spring stored energy)
- QF: Auxiliary switch (switchover when switching)
- HQ: Closing coil
- TQ: Opening coil (T-30, T-31) (T-41, T-31) is AC 110
- RO-R2: resistance
- Y7-Y9: indirect overcurrent tripper (optional)
- Y1: Lockout solenoid coil (optional)
- V1-V4: rectifier
- M: energy storage motor
- QY: undervoltage coil

### Dimension for Fixed type vacuum circuit breaker



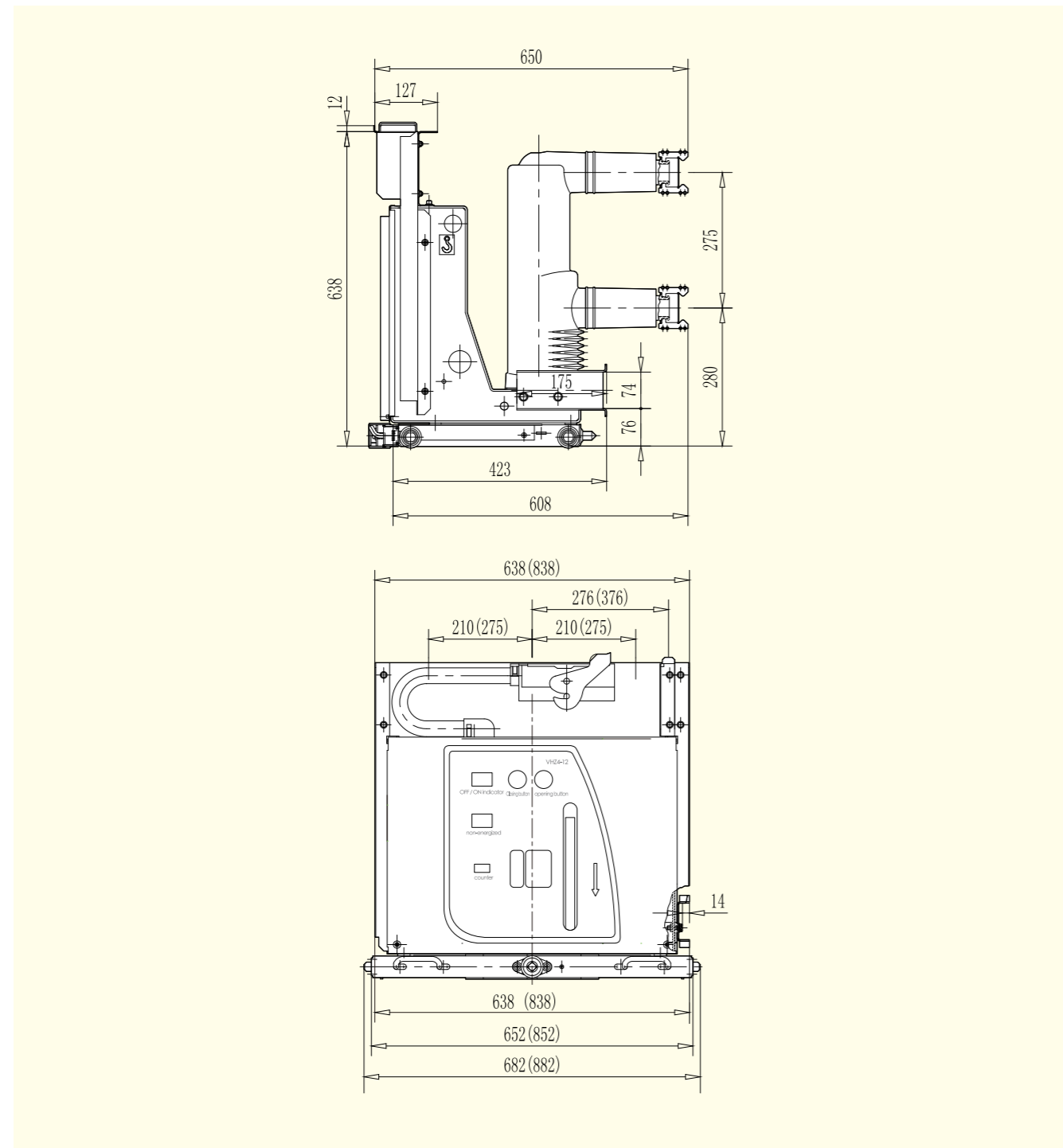
Rated current (A)  
Rated short-circuit breaking current (kA)  
phase spacing (mm)  
top of the mechanism interlock L1 (mm)  
body Spindle Interlock L2 (mm)

630	1250	1600
20, 25, 31.5	25, 31.5, 40	31.5, 40
	210±1.5	
50, 120, 150, 200 (Interlock left or right out, the length can be customized according to customer requirements)		
36, 106, 136, 186 (Interlock left or right out, the length can be customized according to customer requirements)		



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Medium voltage vacuum circuit breaker

Dimension for withdrawabe type  
vacuum circuit breaker

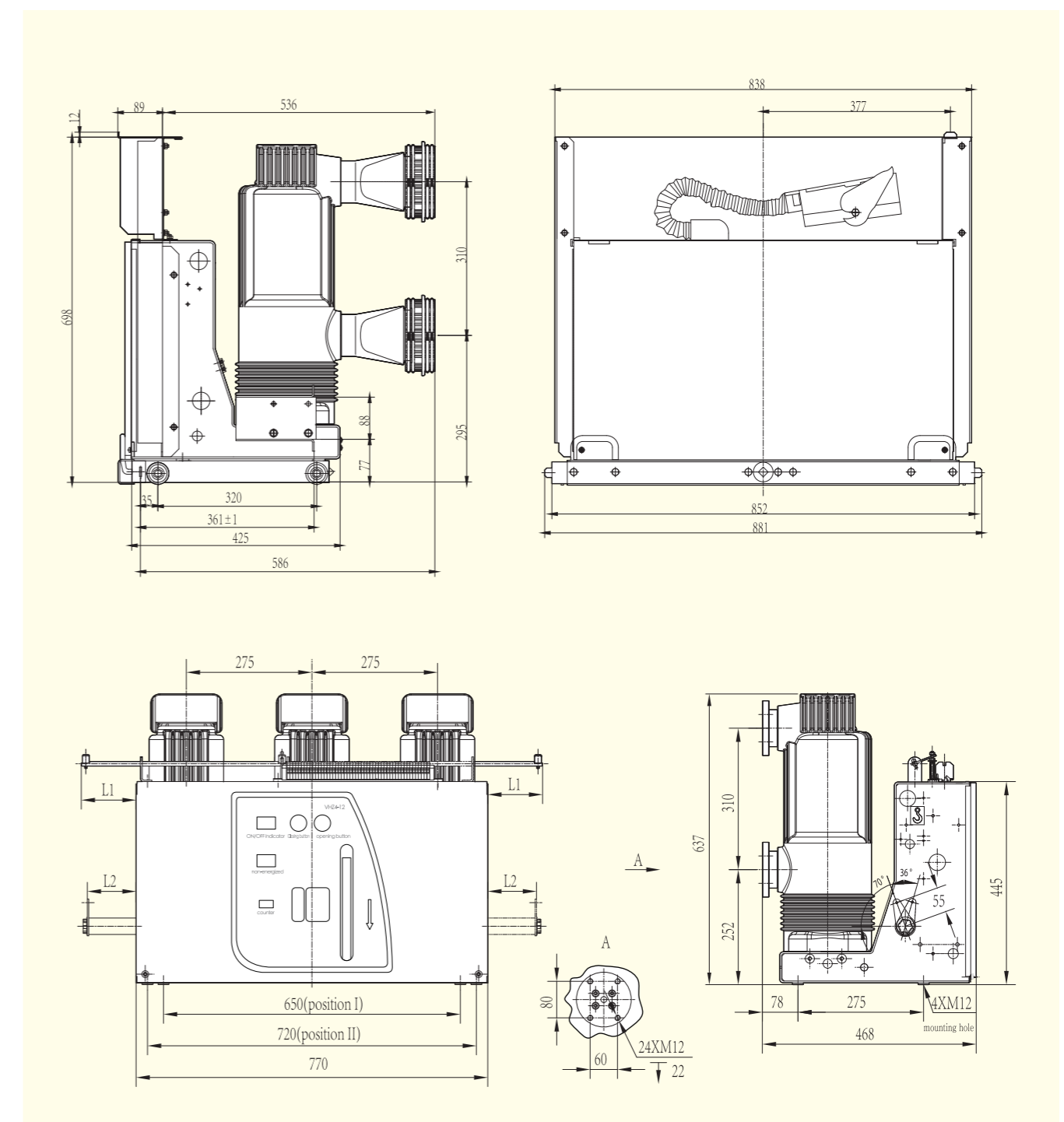


Rated current (A)	630	1250	1600
Rated short-circuit breaking current (kA)	20, 25, 31.5	25, 31.5, 40	31.5, 40
Match static contact size (mm)	A35	A49	A55
Phase spacing (mm)		210±1.5	

(the dimensions in brackets are suitable for drawings with a small current of 1,000mm cabinet and 275mm phase spacing)

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Dimension for vacuum circuit  
breaker with large current



Rated current (A)	1600	2000	2500	3150	4000
Rated short-circuit breaking current (kA)	31.5, 40	31.5, 40	31.5, 40	31.5, 40	40
Phase spacing (mm)			275±1.5		
Top of the mechanism interlock L1 (mm)	50, 120, 150, 200 (Interlock left or right out, the length can be customized according to customer requirements)				
Body Spindle Interlock L2 (mm)	36, 106, 136, 186 (Interlock left or right out, the length can be customized according to customer requirements)				

