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2020

Susol Super Solution

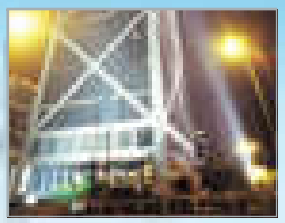
Vacuum Circuit Breakers

LS ELECTRIC

Susol Super Solution

VCB

Vacuum Circuit Breakers



Susol VCB is full line-up new VCB which has the high interrupting capacity, large current(~50kA, ~4000A), and maximized compatibility with existing products through the dual phases and compact sized models.

Contents

Susol Series

Susol VCB

Vacuum Circuit Breaker, VCB is installed in the medium voltage distribution lines to protect life and load equipment. In case of accidents such as over current, short circuit and ground fault current, VCB works by interrupting the circuit through the inner Vacuum Interrupter which is acted by signal from the outside separate relay.

LS ELECTRIC' Super Solution, Susol VCB responds.

- customer needs for the breakers with high interrupting capacity and large current due to the integration and increase of the load capacity.
- worldwide trend of diversification in the medium voltage distribution lines.
- increase of the reliability for the temperature characteristics of circuit breakers.

Premium-type products to improve convenience and reliability of medium voltage switchgear configuration.

- full line-up modeling to the high interrupting capacity and large current.
- main structure with high reliability application.
- a variety of accessories and ability to maximize.

Suitable for use as the main circuit breaker to protect key installations in the places such as device industry, power plants, high-rise buildings, large ships.

▶ Strengthening of the high interrupting capacity and large current models and full line-up new VCB models to high/middle/low.

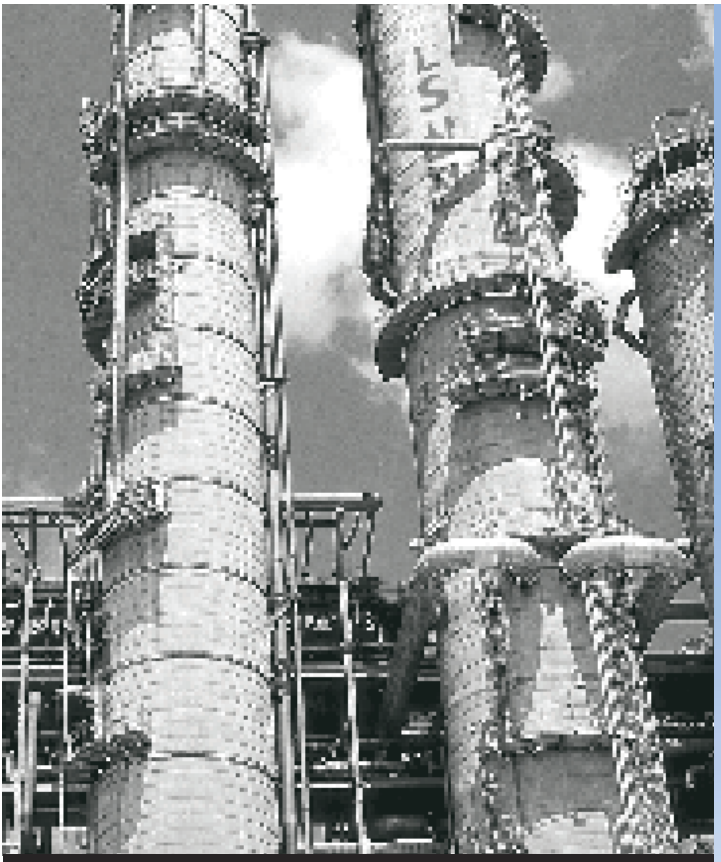
Voltage	Interrupting current	Rated current
7.2kV	8/12.5/20/25/31.5/40/50kA	400/630/1250/2000/3150/4000A
12kV	20/25/31.5/40/50kA	630/1000/1250/2000/2500/3150/4000/5000A
17.5kV	20/25/31.5/40/50kA	630/1000/1250/2000/2500/3150/4000A
24kV	12.5/25/31.5/40kA	630/1250/2000/2500/3150A
25.8kV	12.5/16/25/31.5/40kA	630/1250/2000/3150A
36kV	25/31.5/40kA	1250/2000/3150A

▶ Main circuit structure with high reliability.

- Maximizing the durability and reliability of the main circuit contactors (Stego Tulip contactor).
- Strong structure for the temperature rise (Natural cooling system).

▶ Convenience of switchgear configuration and a variety of accessories.

- CB compartment structure: Metal isolation structures to prevent the accident spread and ensure safety. And the convenience of switchgear building is extended by its module style.
- A variety of accessories: UVT, Locking Magnet, Plug Interlock, Key lock, Temperature Sensor, MOC, TOC, Earthing S/W.
- Maximizing compatibility with existing products through the dualistic deployment of phases and compact models.



Susol VCB Family

Susol VCB series are premium-type products featuring main structure with high reliability application and a variety of accessories and ability to maximize to be suitable for use as the main circuit breaker to protect key installations in the places such as device industry, power plants, high-rise buildings, large ships

7.2kV (VL-06)

- Rated short-time (for withstand current): 3sec.
- Rated operating sequence: O-0.3s-CO-15s-CO
- Type test level: M2, E2 (List1), C2
- 100% Compatibility
  - with existing fixed type breakers
  - with existing drawout type breakers
- Various cradle: E, F and G type
- A variety of control power
  - DC 24~30V, DC 48~60V, DC 110V, DC 125V, DC 220V
  - AC 48V, AC 100~130V, AC 220~250V
- A variety of accessories
  - Charge switch, UVT, Secondary trip Coil, Current trip coil, Position S/W
  - Key-lock, Button lock, Button cover, Padlock, UVT, Time Delay Controller, CTD
- Anti Pumping Device
- TEST/SERVICE Automatic Position Indicator
- Standards and certification
  - IEC62271-100 (2012) [M2, C2, E2 (List1)]
  - Tested in enclosure
  - KERI type tested, V-check (KESCO) certification

Ur (kV)	Isc (kA)	Ir (A)
7.2	8	400
	12.5	630

Full line-up & Compact

Full line-up new VCB models to the high interrupting capacity and large current (~ 50kA, ~ 5000A) featuring maximization of compatibility with existing products through the dualistic deployment of phases and compact models

7.2/12/17.5/24/25.8/36kV (VL-06/12/17/20/25/36)

- Rated short-time (to withstand current): 3sec. 4sec*
- Rated operating sequence: O-0.3s-CO-15s-CO
- Type test level: M2, E2 (List3), C2
- Compatibility with existing Pro-MEC breakers
- Various cradle: E, F, G, Fs, Gs and H type
- CB Compartment for MCSG available
- A variety of control power
  - DC 24~30V, DC 48~60V, DC 110V, DC 125V, DC 220V
  - AC 48V, AC 100~130V, AC 220~250V
- A variety of accessories
  - VCB part: Charge switch, UVT, Secondary trip coil, Position switch, Locking magnet, Plug interlock, Key lock, Button cover, Button padlock, Padlock (H type Door interlock), MOC
  - Cradle part: MOC (Mechanical Operated Cell switch), TOC (Truck Operated Cell switch), Temperature sensor, Earthing switch & Accessories, Door, Door interlock, Door emergency button
  - Others: Racking in/out handle, UVT Time delay controller, CTD (Condensor Trip Device), Temperature module
- Anti Pumping Device
- TEST/SERVICE Automatic Position Indicator
- Standards and certification
  - IEC62271-100 (2012) [M2, C2, E2 (List3)]
  - KEMA, KERI type tested, V-check (KESCO) certification

Note) * Please contact us

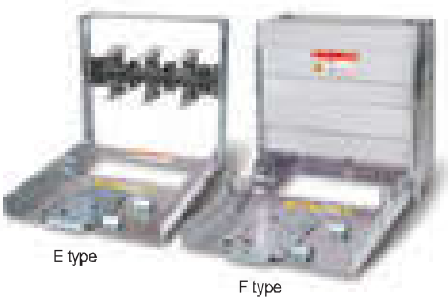
Ur (kV)	Isc (kA)	Ir (A)
7.2	20	630
		1250
		2000
	25	630
		1250
		2000
	31.5	630
		1250
		2000
12	20	630
		1000
		1250
		2000
	25	630
		1000
		1250
		2000
	31.5	630
		1250
		2000
		2500
17.5	20	630
		1250
		2000
	25	630
		1250
		2000
	31.5	630
		1250
		2000
		2500
24, 25.8	12.5	630
		1250
	16	630
		1250
	25	630
		1250
		2000
		2500
36	25	630
		1250
		2000
		2500

7.2/12/17.5/24/25.8/36kV (VH-06/12/17/20/25/36)

- Rated short-time (to withstand current): 3sec. 4sec *
- Rated operating sequence: O-0.3s-CO-15s-CO, (O-0.3s-CO-3min-CO **)
- Type test level: M2, E2 (List3), C2
- Electrical and mechanical life: 20,000 operations
- Various cradle: K, Fs, Gs and H type
- CB Compartment for MCSG available
- A variety of control power
  - DC 48V, DC 110V, DC 125V, DC 220V
  - AC 48V, AC 110V, AC 220V
- A variety of accessories
  - VCB part: UVT, Secondary trip coil, Latch checking switch, Position switch, Locking magnet, Plug interlock, Key lock, Button cover, Button padlock, Padlock (H type Door interlock), MOC
  - Cradle part: MOC (Mechanical Operated Cell switch), TOC (Truck Operated Cell switch), Temperature sensor, Earthing switch & Accessories, Door, Door interlock, Door emergency button
  - Others: Racking in/out handle, Lifting hook, UVT Time delay controller, CTD (Condensor Trip Device), Temperature module
- Anti Pumping Device
- Standards and certification
  - IEC62271-100 (2012) [M2, C2, E2 (List3)]
  - KEMA, KERI type tested, V-check (KESCO) certification

Note) * Please contact us
** Please refer to ratings

Ur (kV)	Isc (kA)	Ir (A)
7.2 12	31.5	1250
		2000
		3150
	40	1250
		2000
		3150
		4000
	50	1250
		2000
		2500
		3150
		4000
17.5	31.5	3150
		1250
	40	2000
		3150
	50	1250
		2000
		2500
		3150
24 25.8	25	2500
	31.5	1250
		2000
		3150
	40	1250
		2000
		3150
36	25	1250
		2000
		3150
	31.5	1250
		2000
		3150
	40	1250
		2000
		3150



E type

F type

H type

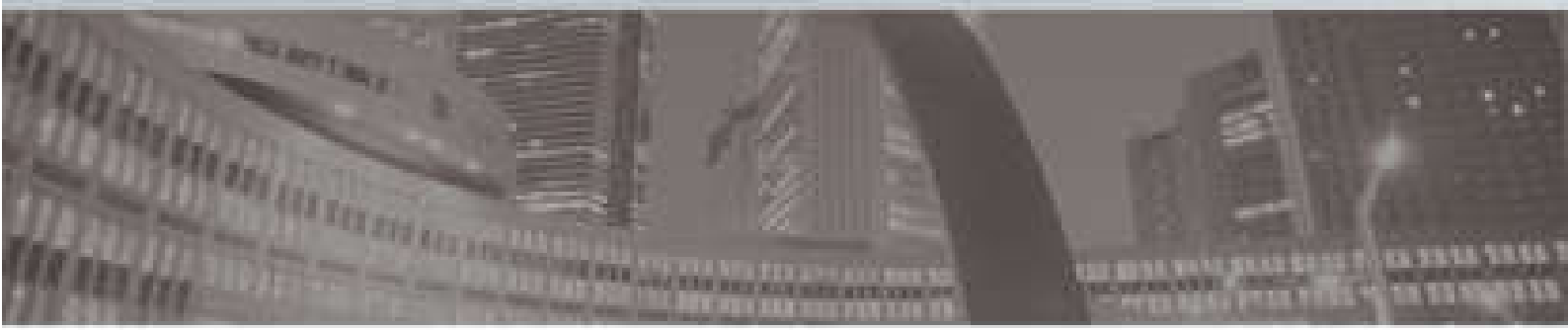
VCB Cradle type

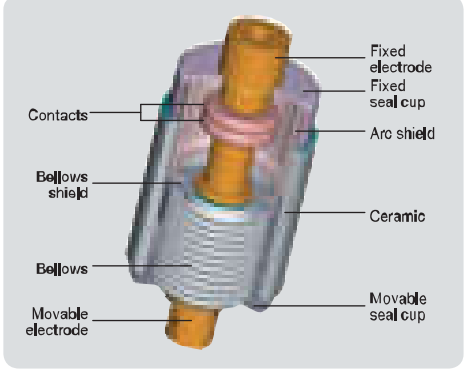
Main circuit structure with high reliability

Susol VCB

Breaker

1. Insulation rod
2. Lower terminal
3. Shunt
4. Vacuum interrupter
5. Upper terminal
6. Tulip contactor





Vacuum Interrupter, VI

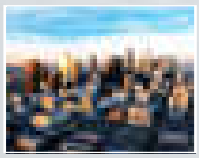
The vacuum rate within the VI is very high (approximately $5x10^{-5}$ Torr) and the spacing between fixed contact and movable contact is about 6~20mm, depending on the voltage.

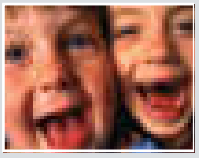
The contacts are in a structure that arc can easily be extinguished and the surfaces of the contacts are made of special alloy (copper-chromium) and the interior is completely sealed to prevent loss of vacuum.

Therefore the wearing of the contacts can be minimized in the event of short-circuit and the arc energy by overvoltage or switching can be reduced effectively.

Convenience and Variety

- Maximizing the durability and reliability of the main circuit contactors (Stego Tulip contactor)
- Strong structure for the temperature rise (Natural cooling system)

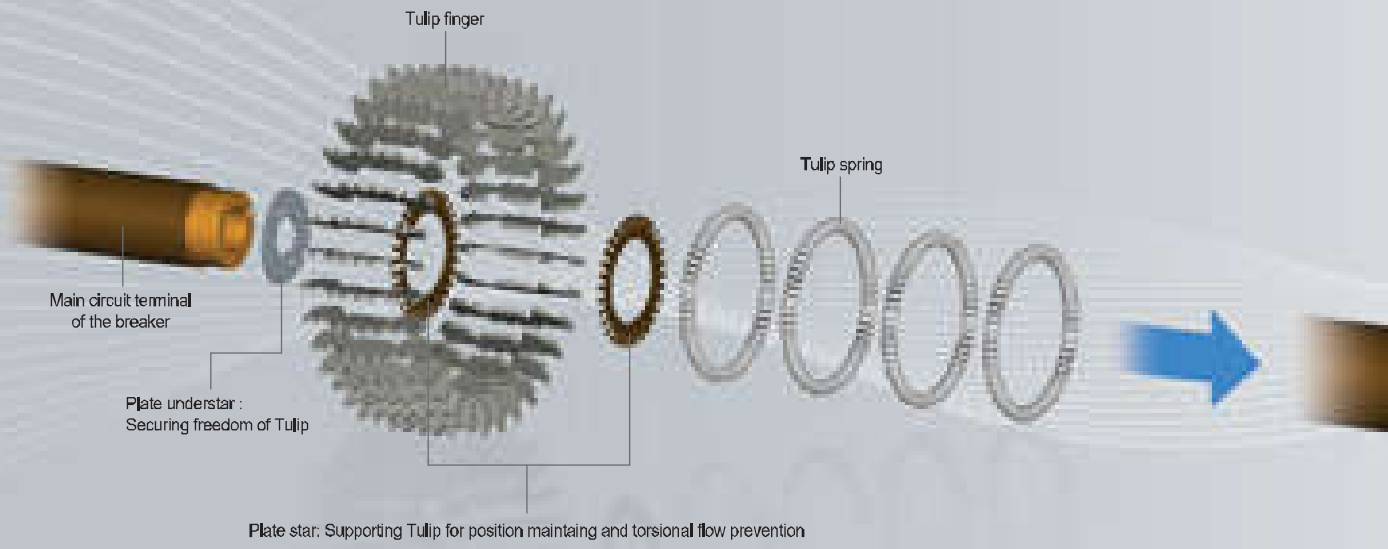




Stego Tulip

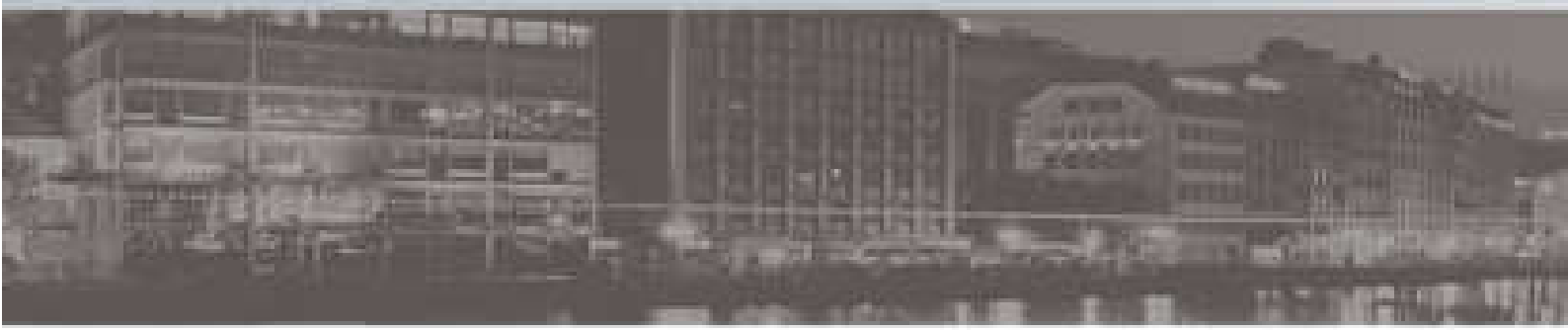
Main circuit structure with high reliability

- Maximizing the durability and reliability of the main circuit contactors (Stego Tulip contactor)
- Strong structure for the temperature rise (Natural cooling system)



Structure of Stego Tulip Terminal

- Maintaining the connection between breaker and cradle for the optimum current path through securing freedom of Tulip.
- Increasing the heat dissipation area of the contactors and minimizing aging.



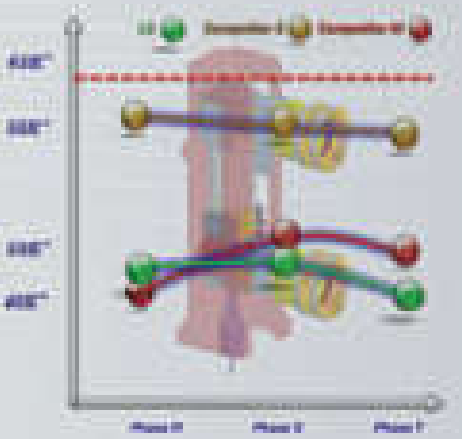
Major supply records

- S Electro-Mechanics, Busan plant: 12kV 40kA 4000A VCB
- P Combined cogeneration power plant: 7.2kV 50kA 4000A VCB
- K Petrochemical, Ulsan plant: 7.2kV 40kA 4000A VCB
- P Steel plant, Gwangyang: 7.2kV 50kA 4000A VCB
- P Steel plant, Pohang: 7.2kV 50kA 4000A VCB
- L Chem, Cheongju plant: 7.2kV 40kA 4000A VCB
- S Electronics, Tangjeong plant: 7.2kV 40kA 4000A VCB

7.2/12/17.5/24/25.8/36kV...

(VH-06/12/17/20/25/36)

- Drawout / natural cooling system
- Improved temperature characteristics and ensured high reliability



VL type Tulip contactor

VH type Tulip contactor

36kV Tulip contactor

CB Compartment

Convenience in building switchgears

- CB compartment structure: H type cradle
- Metal isolation structure to prevent the accident spread and ensure safety
- Convenience of switchgear building

7.2/12/17.5/24/25.8/36kV 20/25/31.5/40/50kA

- Metal isolation structure to prevent the accident spread and ensure safety
- Convenience of operation by Truck
  - Drawable in the closed position of the switchgear door
  - Racking-in/out positions indicated mechanically
- Equipped with safety devices and accessories
  - Control power connected Interlock
  - Earthing S/W and interlock, MOC/TOC (ANSI)
- Convenience in building switchgears
  - Module assembly with CB compartment

Accessories of CB compartment (H type cradle)

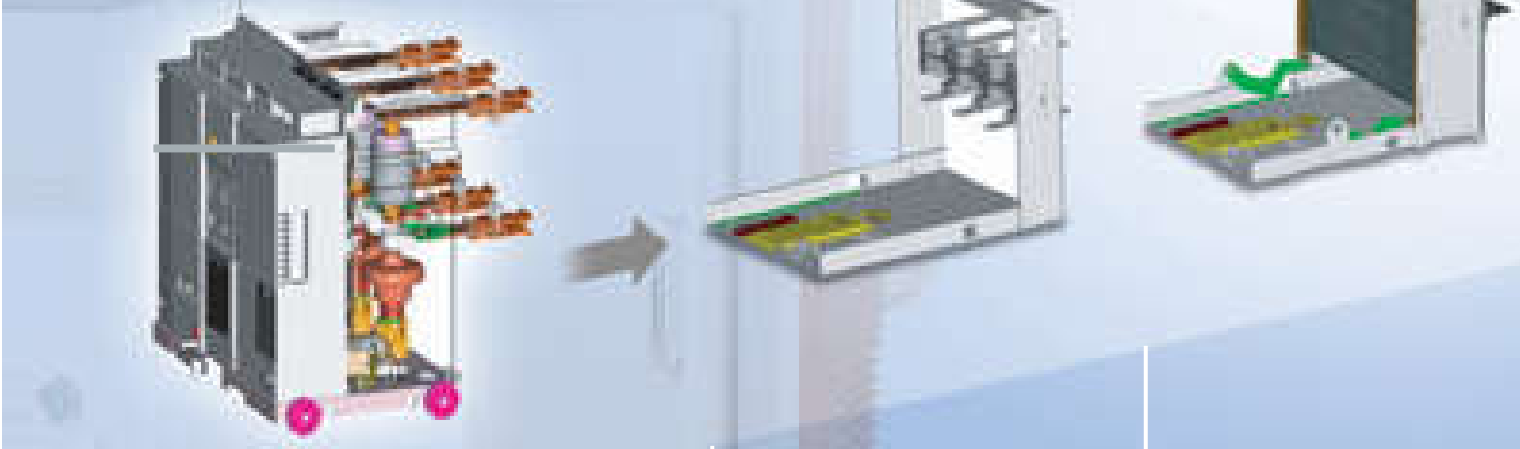
- MOC (Mechanism Operated Cell S/W)
- TOC (Truck Operated Cell S/W)
- Shutter Padlock
- Temperature Sensor
- Door Emergency ON/OFF Button
- Earthing switch & Accessories
  Key lock for Earthing S/W
  Locking Magnet for Earthing S/W
  Position S/W for Earthing S/W
- TM (Temperature Monitoring Unit)

Cradles

E, F, G, K and H type... Variety of the Cradles

F type

E type



E type

- Economic style cradle with the basic structure
- No safety shutter and bushing
- For MESG
- Applies VL type VCB

F type

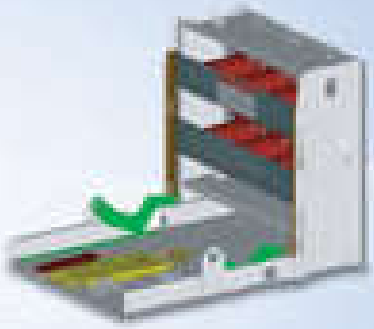
- Safety shutter has been added to the cradle of type E
- No bushing
- For MESG
- Applies VL type VCB

E type

F type

H type

G type



G type

- Premium style cradle with safety shutter and bushings
- For MESG
- Applies VL type VCB

K type

K type

- Premium style cradle with metal safety shutter and bushings
- Metal isolated structure: To prevent spreading accident and secure safety
- More convenient by withdrawable Truck
- For MCSG
- Applied to medium capacity/ high capacity VCB

H type

H type

- Metal isolation structure to prevent the accident spread and ensure safety
- Convenience of operation by Truck
  - Drawable in the closed position of the switchgear door
  - Racking-in/out positions indicated mechanically
  - Control power connected Interlock
- Convenience in building switchgears
  - Module assembly with CB compartment
  - Assembly with CT/PT integrated compartment
- Applies VL/VH type VCB

Ha type

Hb type

VH type

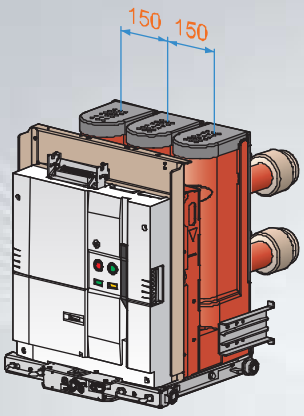
Convenience

Convenience in building switchgears

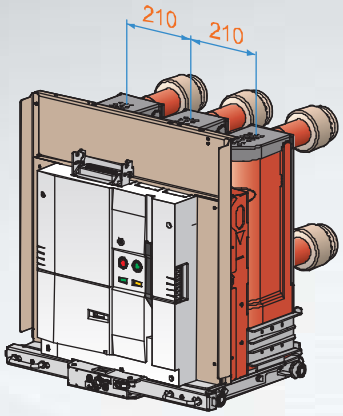
- Maximizing compatibility with existing products through the dualistic deployment of phases and compact models.

VCB rating

Ur (kV)	Isc (kA)	Ir (A)
12	20/25	630
	31.5	1000
		1250
17.5	20/25	630
	31.5	1250



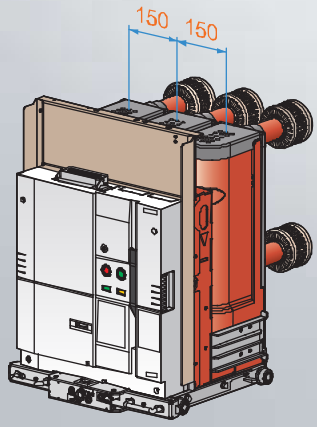
P150
(distance between phases: 150mm)



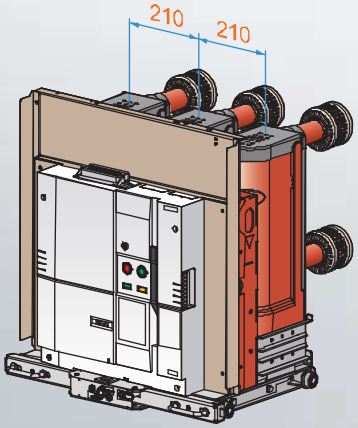
P210
(distance between phases: 210mm)

VCB rating

Ur (kV)	Isc (kA)	Ir (A)
12	20/25	2000
17.5	20/25	2000



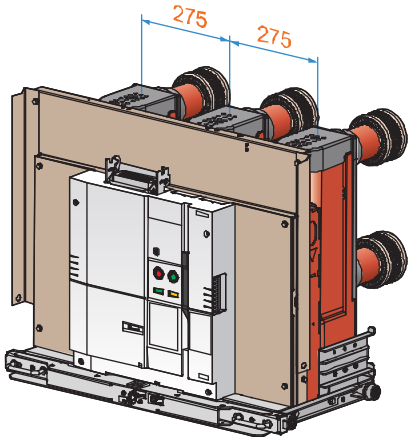
P150
(distance between phases: 150mm)



P210
(distance between phases: 210mm)

VCB rating

Ur (kV)	Isc (kA)	Ir (A)
12 17.5	31.5	2500

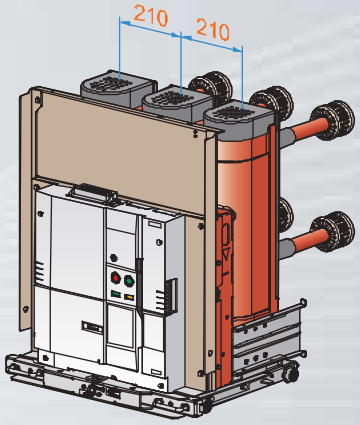


P275
(distance between phases: 275mm)

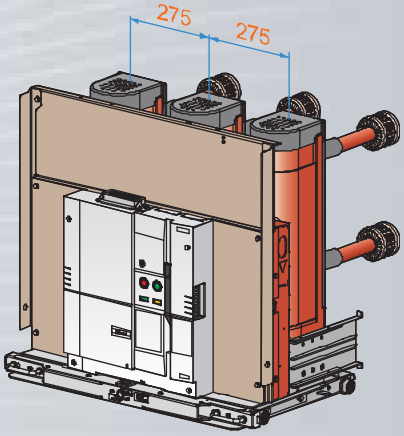
VCB rating

Ur (kV)	Isc (kA)	Ir (A)
24	12.5	630
		1250
	16/25	630
		1250
	25	2000
		2500 *
25.8	12.5	630
		1250
	16/25	630
		1250
	25	2000
		2500 *

* 2500A: phases distance 275mm only



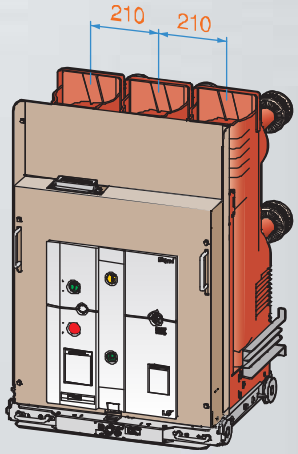
P210
(distance between phases: 210mm)



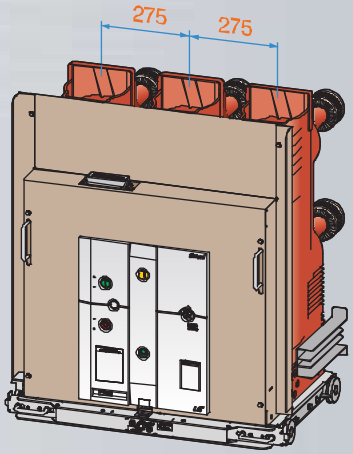
P275
(distance between phases: 275mm)

VCB rating

Ur (kV)	Isc (kA)	Ir (A)
24	31.5/40	2000
25.8	31.5/40	2000



P210
(distance between phases: 210mm)

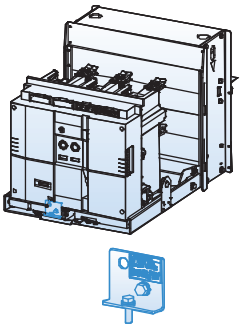


P275
(distance between phases: 275mm)

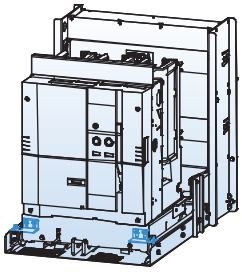
Function to locking a breaker during transport of a switchgear

- Fixed bracket must be dismantled first to rack in a breaker - interlocking system

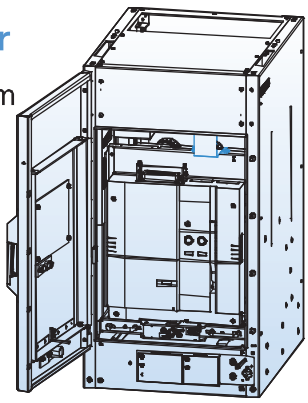
Fix braket easily visible from the front of the breaker



VL type VCB (VL-06)
(E/F/G type)



VL type VCB (VL-06/12/17)
(E/F/G type)

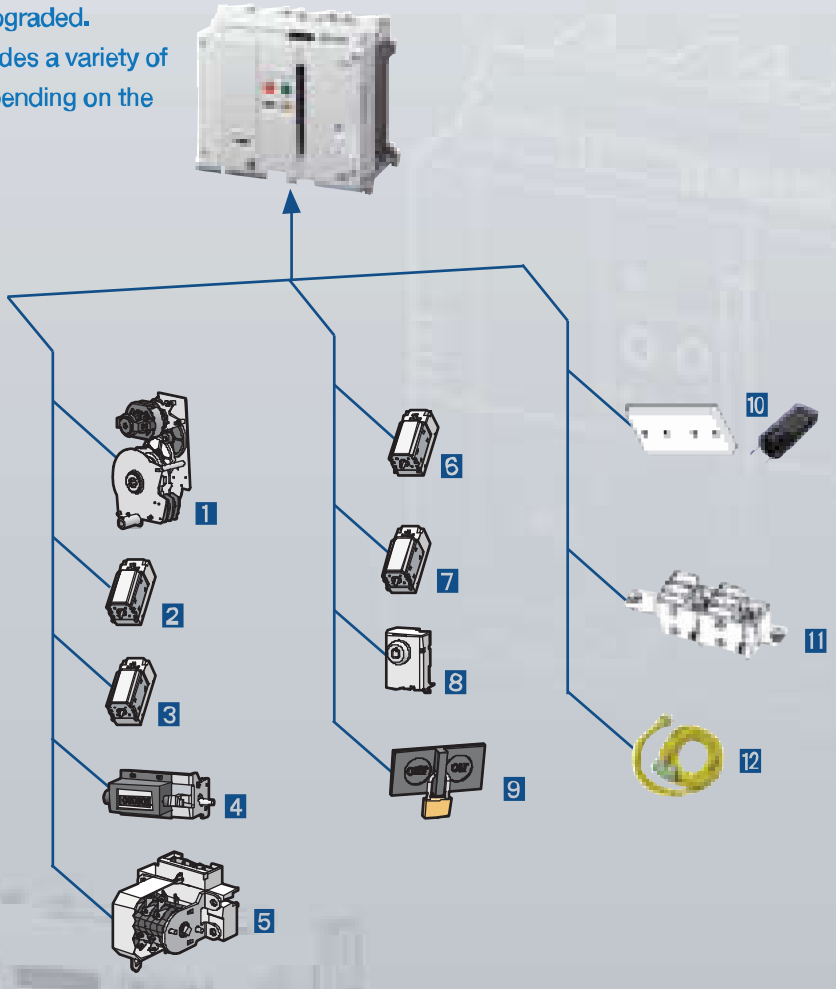


VL/VH type VCB
(H type CB compartment)

Accessories

A variety of accessories for VL-06

If accessories are attached to the breaker, the function of the breaker is upgraded. Susol VCB provides a variety of accessories depending on the purpose.



Breaker

1 Motor
2 Closing coil
3 Trip coil
4 Counter
5 Auxiliary contacts
6 UVT coil
7 Current trip coil
8 Key lock
9 Button padlock
10 Button cover
11 Position switch
12 Lead wire

A variety of accessories for VCL-06

If accessories are attached to the cradle, the function of the breaker is upgraded. Susol VCB provides a variety of accessories depending on the purpose.

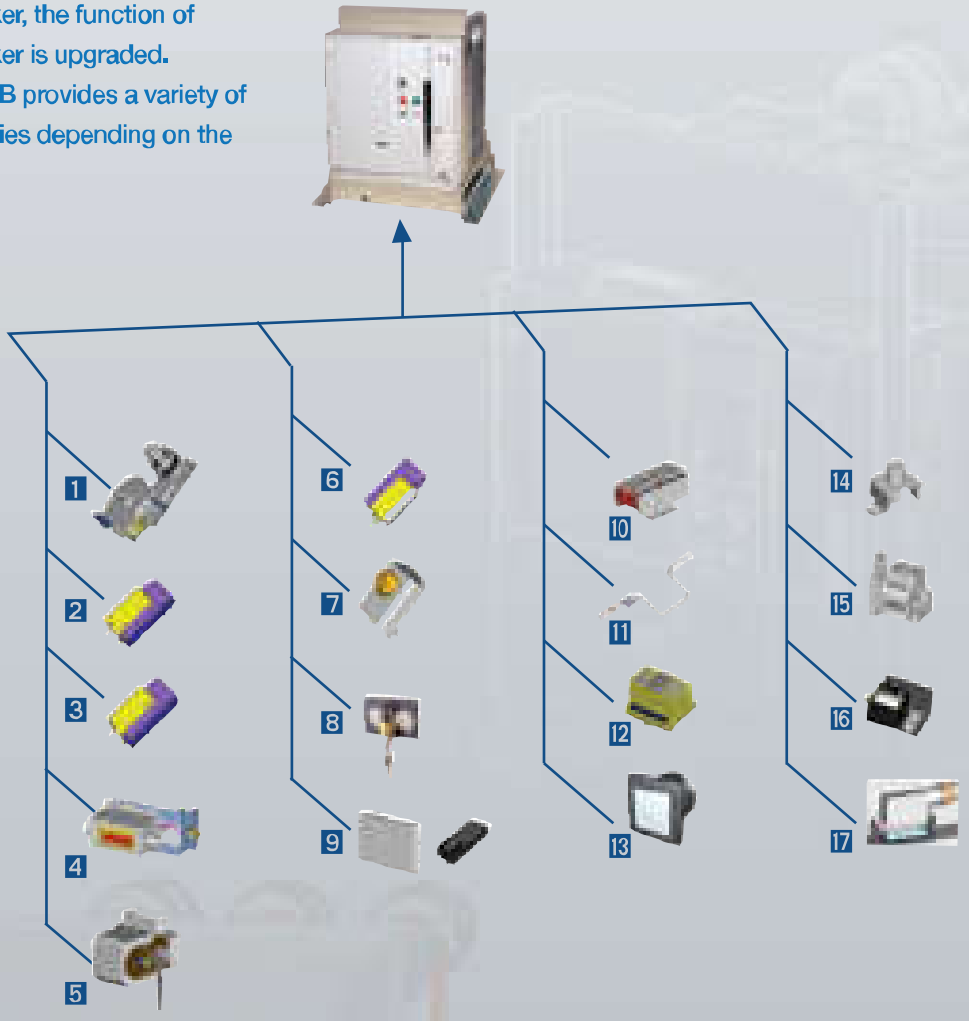
Cradle

1 Handle for Racking-in and out
2 UVT time delay controller
3 Condenser trip device

Accessories

A variety of accessories for VL-06/12/17/20/25/36

If accessories are attached to the breaker, the function of the breaker is upgraded. Susol VCB provides a variety of accessories depending on the purpose.

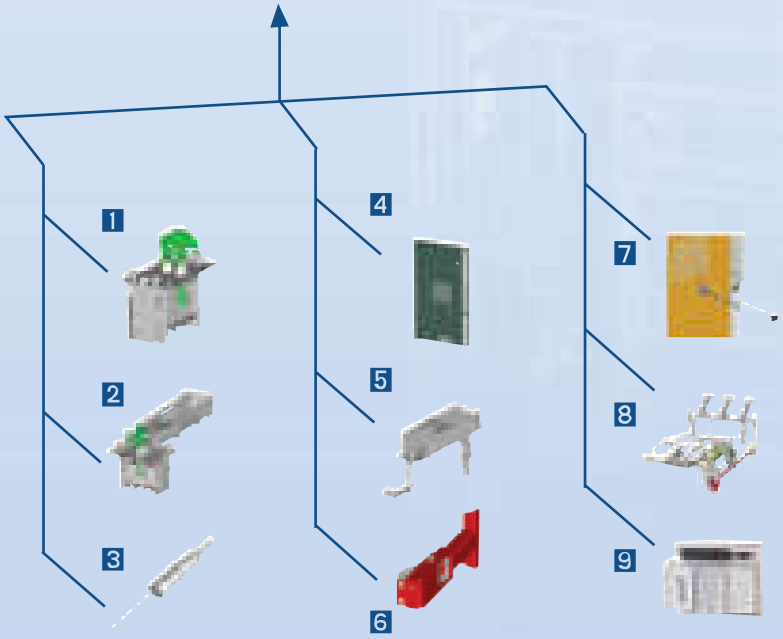


Breaker

1 Motor
2 Closing coil
3 Trip coil
4 Counter
5 Auxiliary contacts
6 UVT coil
7 Key lock
8 Button padlock
9 Button cover
10 Position switch
11 Handle for Racking-in/out
12 UVT time delay controller
13 CTD (Condenser trip device)
14 MOC (Mechanism operated cell switch)
15 Padlock (H type Door Interlock)
16 Locking magnet
17 Plug Interlock

A variety of accessories for VL-06/12/17/20/25/36

If accessories are attached to the cradle, the function of the breaker is upgraded. Susol VCB provides a variety of accessories depending on the purpose.



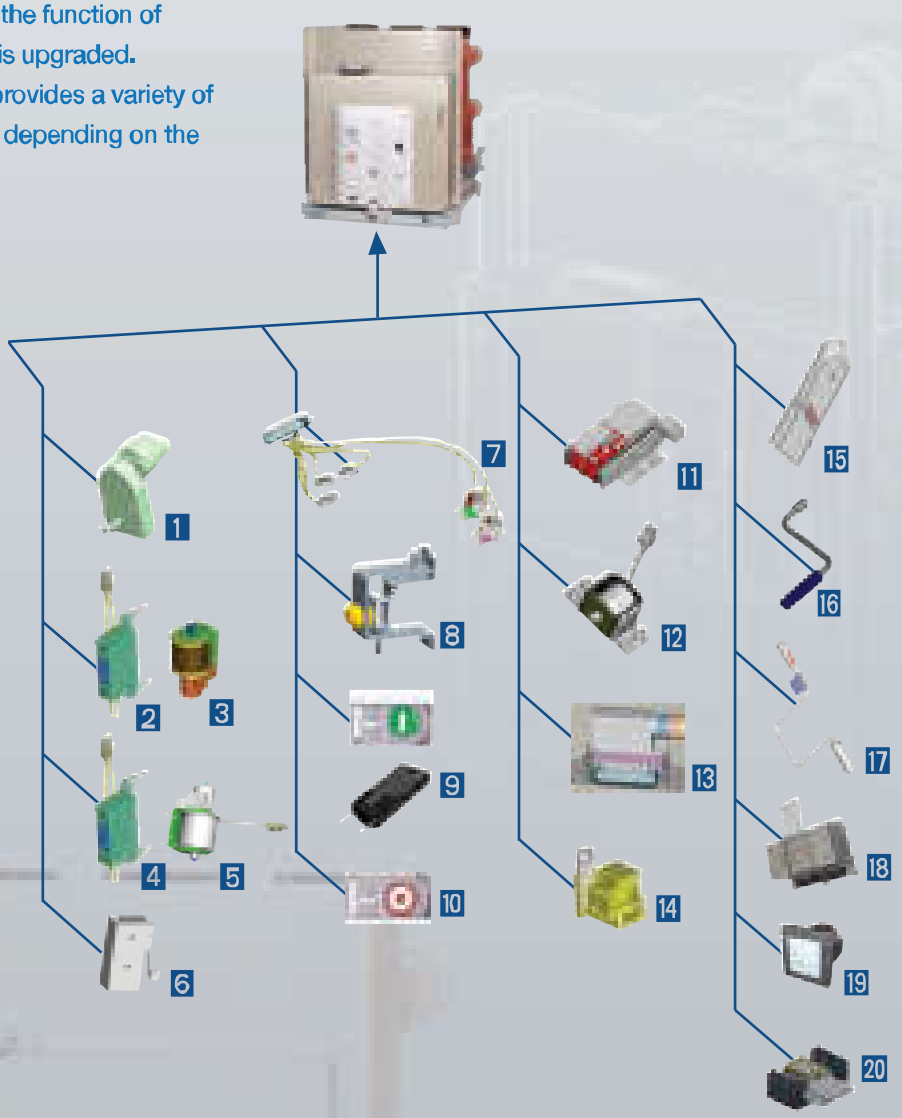
Cradle (H type)

1 TOC (Truck operated cell s/w)
2 MOC (Mechanical operated cell s/w)
3 Temperature sensor
4 Door
5 Door interlock
6 Shutter padlock
7 Emergency ON/OFF button
8 Earthing switch & Accessory
8-1 Key lock for Earthing switch
8-2 Locking Magnet for Earthing switch
8-3 Position s/w for Earthing switch
9 TM (Temperature monitoring unit)

Accessories

A variety of accessories for VH-06/12/17/20/25/36

If accessories are attached to the breaker, the function of the breaker is upgraded. Susol VCB provides a variety of accessories depending on the purpose.

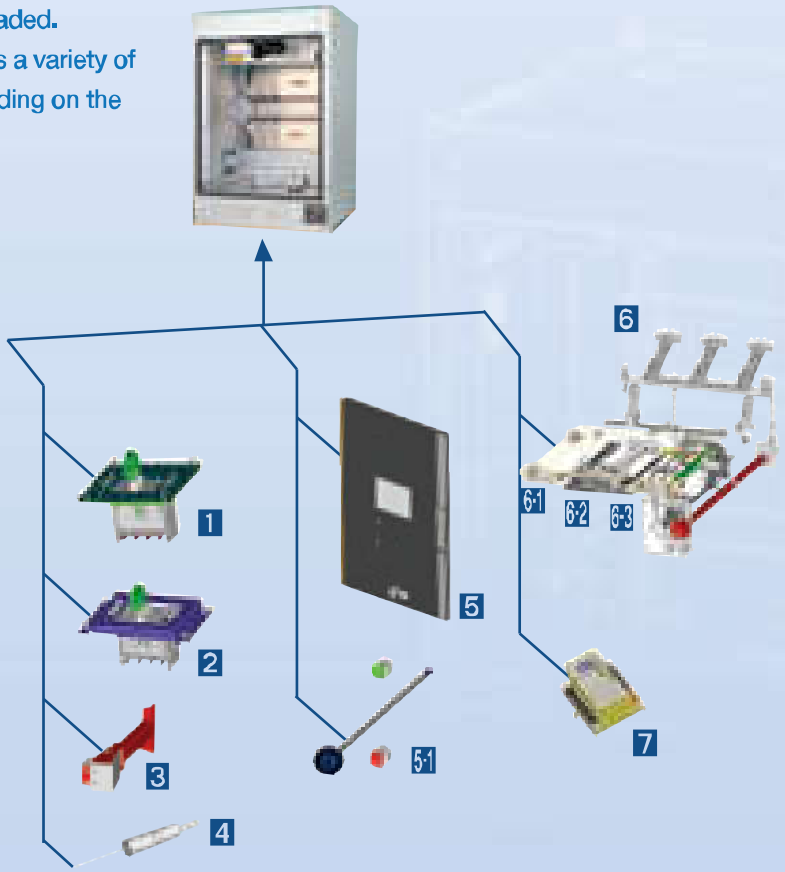


Breaker

1 Motor
2 AC/DC coil rectifier
3 Trip coil/Closing coil
Secondary trip coil
4 AC/DC UVT coil rectifier
5 UVT coil
6 Latch checking switch
7 Auxiliary contact wire
8 Key lock
9 Button cover/Push bar
10 Button padlock
11 Position switch
12 Locking magnet
13 Plug interlock
14 Door Interlock for withdrawable type
15 Lifting hook
16 Charge handle
17 Racking in/out handle
18 UVT Time delay controller
19 CTD (Condenser trip device)
20 Wireless Temp. monitoring sensor

A variety of accessories for VH-06/12/17/20/25/36

If accessories are attached to the cradle, the function of the breaker is upgraded. Susol VCB provides a variety of accessories depending on the purpose.



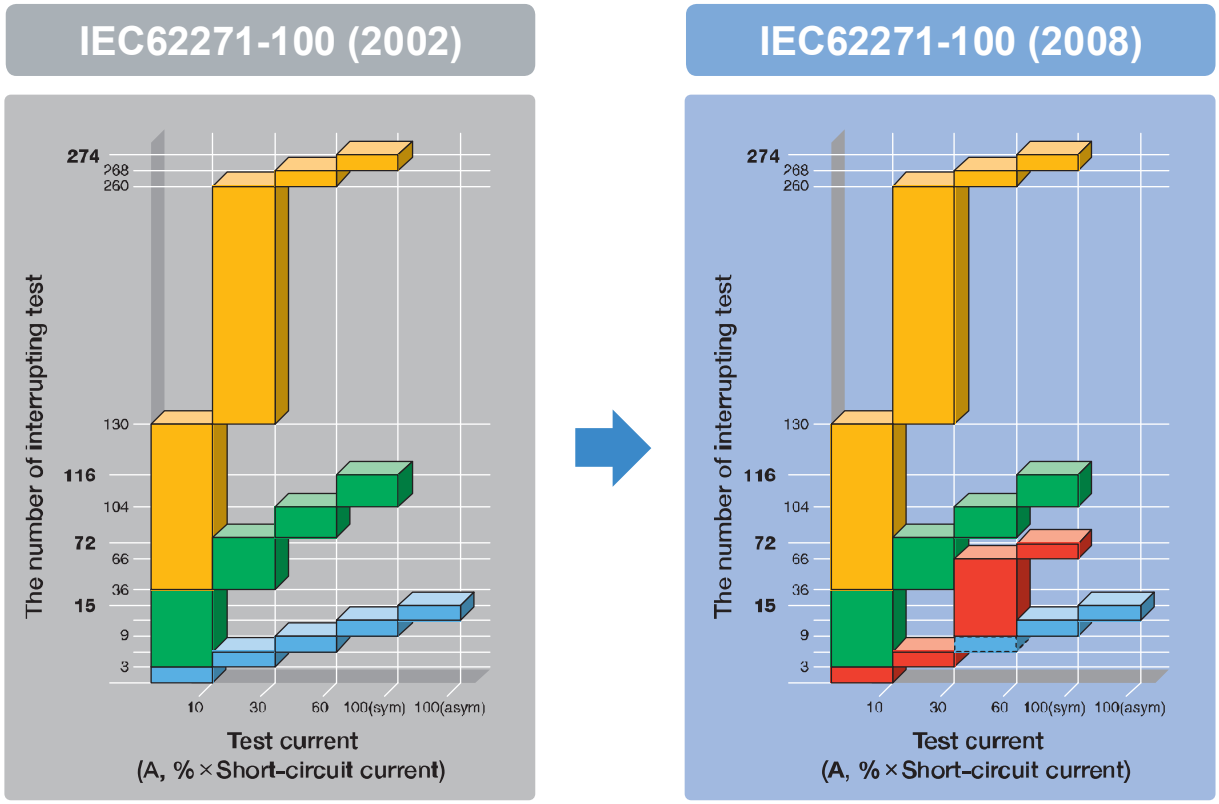
Cradle (H type)

- 1 MOC (Mechanism operated cell switch)
- 2 TOC (Truck operated cell switch)
- 3 Shutter padlock
- 4 Temperature sensor
- 5 Door
- 5-1 Emergency ON/OFF button
- 6 Earthing switch & Accessories
- 6-1 Key lock for Earthing switch
- 6-2 Locking magnet for Earthing switch
- 6-3 Position switch for Earthing switch
- 7 TM (Temperature monitoring unit)

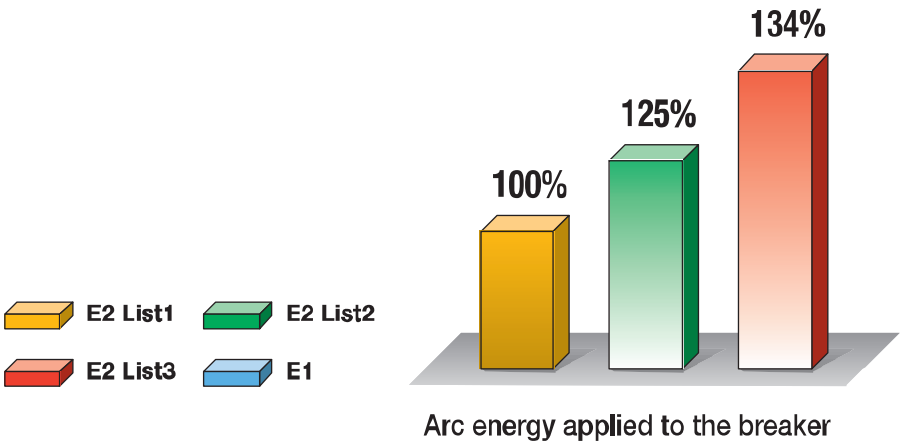
Standards and certifications

E2 (List 1 or List3)

E2 (List3) is first proposed in the IEC 62271-100(2008) to improve the efficiency of the interrupting test. According to it the number of interrupting test T60 is increased instead of fewer number of T10 and T30 compared to the existing List1. List3 compared with the List1 maintains the equivalent of the test but has severe test conditions because 34% higher arc energy applied to the breaker. List3 is applied to Susol VCB series.



Arc Energy: List 1 (100%) < List 2 (125%) < List 3 (134%)



M2, C2

IEC standards to verify the relibilty of the product allows to select the quality level for the product to be tested according to its real performance and practical usage. The highest quality level of M2, C2 has been applied to Susol VCB.

M1 and M2: Test to determine the mechanical durability grade

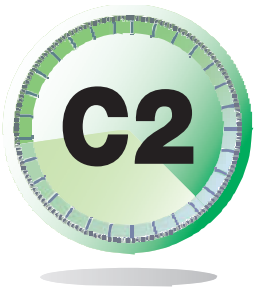
2000 operation test		
Sequence	Control Voltage	Number of operations
C-O	85%	500
C-O	100%	500
C-O	110%	500
O-CO-C	100%	250

- Pre-test (characteristics, isolation, and temperature)
- Confirmative tests after the completion of 2000 operations (Characteristics, isolation, temperature)

- Pre-test (characteristics, isolation, and temperature)
- Confirmative tests after every 2000 operation
- Confirmative tests after the completion of 10,000 operations (Characteristics, isolation, temperature)

C1, C2: Capacitive current breaking test is to verify the probability of restriking and C2 class is secured for all Susol VCB.

2 restrikes are allowed during "O" 24 operations and "CO" 24 operations

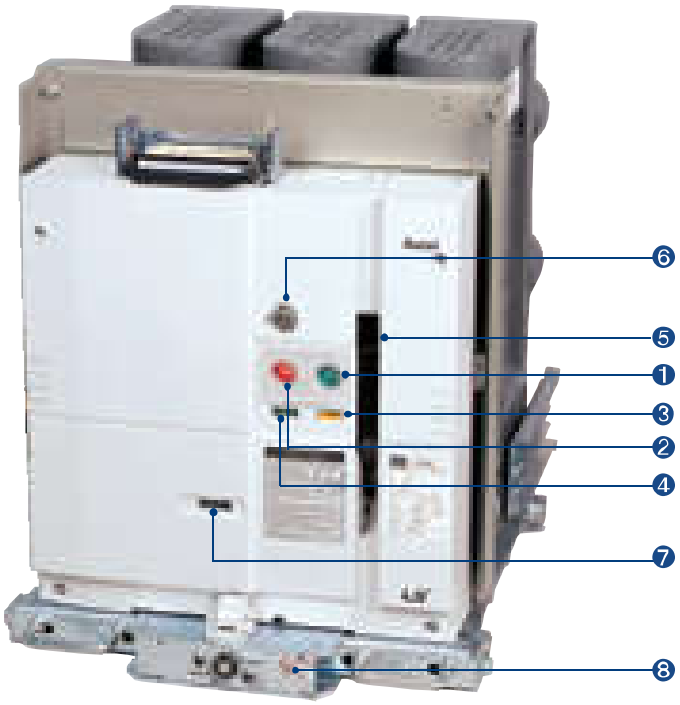


Restrike is not allowed during "O" 24 operations and "CO" 24 operations

External structure of VCB

Susol

Breaker ... VL type



Name of each part

❶ Push ON Button

❷ Push OFF Button

❸ Charge/Discharge Indicator

❹ ON/OFF Indicator

❺ Manual Charging Handle

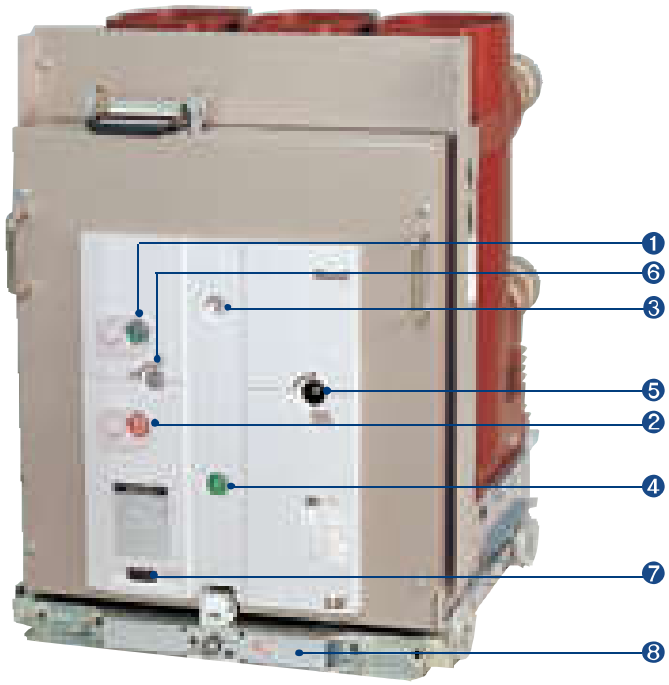
❻ Key Lock

❼ Operation Counter

❽ TEST/SERVICE
Position Indicator

Back side

Breaker ... VH type



Name of each part

1. Push ON Button
2. Push OFF Button
3. Charge/Discharge Indicator
4. ON/OFF Indicator
5. Manual Charging Handle
6. Key Lock
7. Operation Counter
8. TEST/SERVICE Position Indicator

Back side

Basic functions

Manual operation

① **Manual Charge**

a) VL type: operate the charge handle 7-8 times as a fully stroke.
b) VH type: Insert the charge handle into the handle slot first. Rotate the handle clockwise 40 times more and then charge will be complete with a click sound.
- When the closing spring is charged fully "CHARGED" is displayed at the charge indicator.

② **Manual closing**

a) Pressing the ON button the breaker is closed.
b) With the closing of the breaker "ON" is displayed at Close/Trip indicator and "DISCHARGED" at the charge indicator.

③ **Manual trip**

a) Pressing the OFF button the breaker is opened.
b) "OFF" is displayed at Close/Trip indicator.

Electric operation

① **Electric charge**

The breaker is remotely closing with charging of closing spring.
If the breaker closing the closing spring is automatically charged by gear motors.

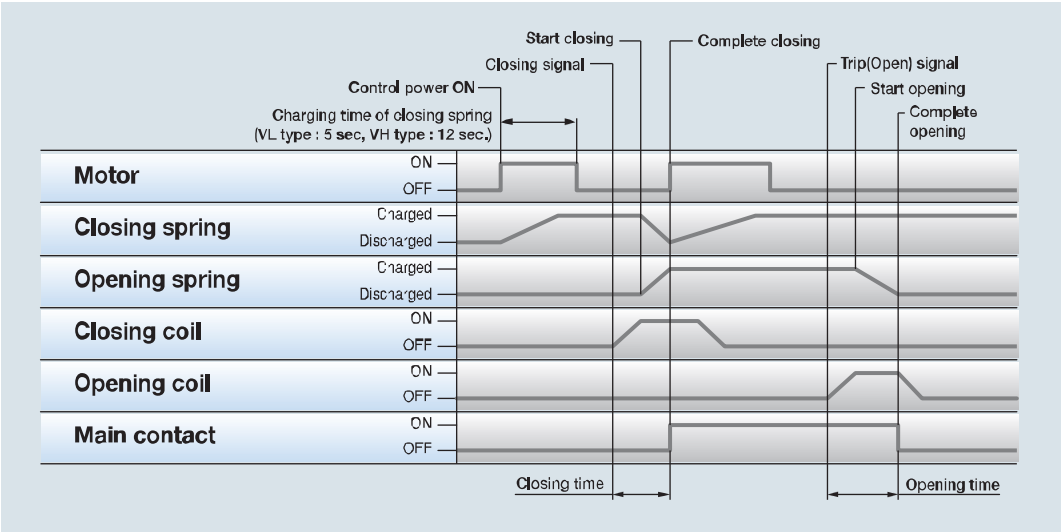
② **Electric closing**

Remote closing is operated by the closing coil.

③ **Electric trip**

Remote trip can be operated by the trip coil or UVT coil.

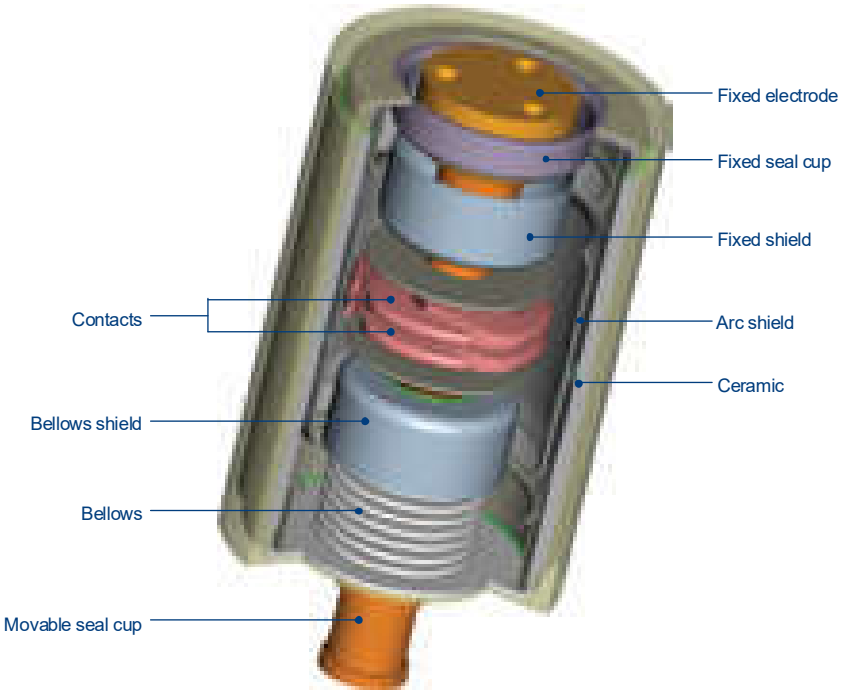
Main contacts are operated by the energy of the spring mechanism and closing spring is charged by the motor in the mechanism.
Breaker is closed by closing coil and tripped by trip coil.
These operations are repeated in VCB as shown in the below sequence chart.

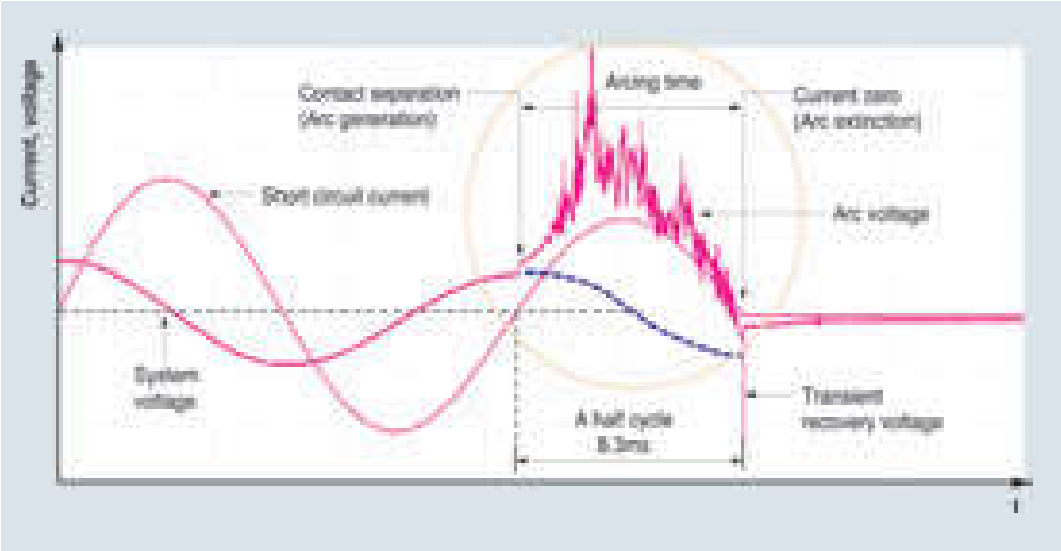


Sequence of the switching mechanism

The interruption of vacuum interrupters

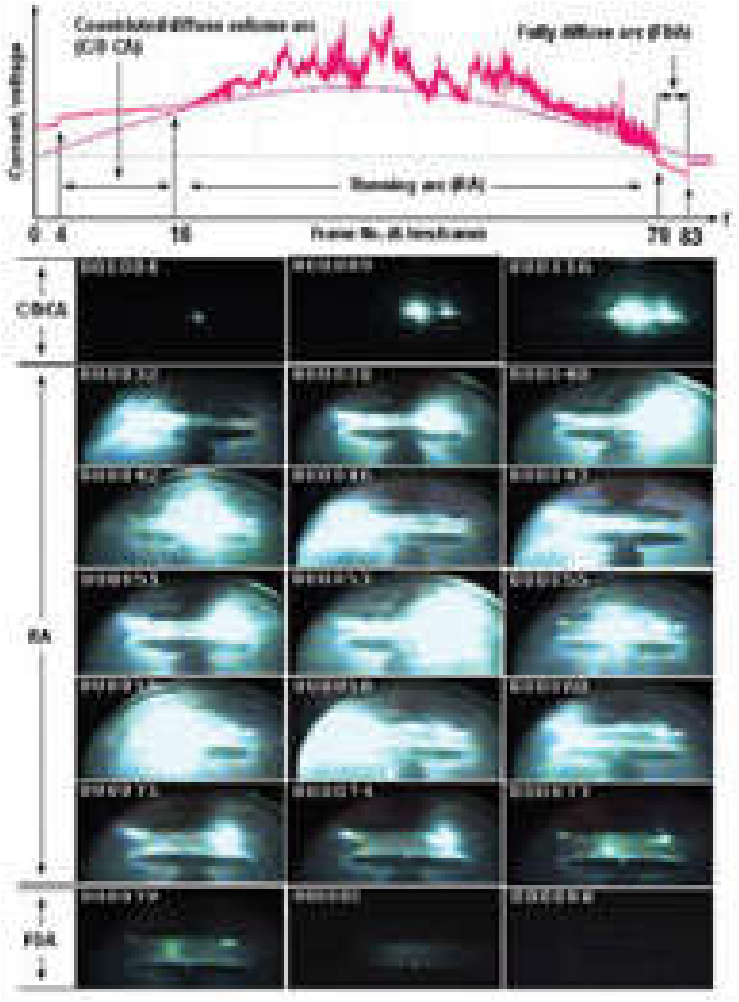
The interruption of VCB is carried out by the vacuum interrupters.
Interrupter contacts as a key part made of copper - chromium (CuCr) material with spiral shape have low contact wear characteristics and withstand voltage is excellent.
Spiral contacts make the arc generated between the surfaces of contacts rotated around the surface of contact by the induced magnetic field generated due to the spiral contact structure, which results in preventing local heating, thereby corruption and interrupting instantaneously.





An example of oscillogram obtained through the interrupting test using LC resonant circuit

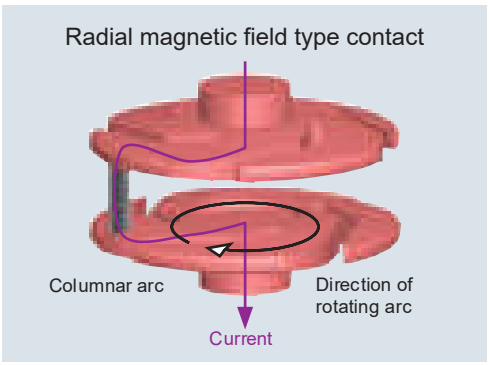
The interruption of vacuum interrupters



Arc voltage waveforms and arc image captured during arcing time

In case of using the flat contact any of the designs do not reflect on when contacts are opening the arc with high temperature is contracted and fixed in the center of the contacts,Which is called pinch effect.
To prevent the effect two kinds of contact shapes are designed.
One is Axial magnetic field which spreads the arc before its contraction, and the other is Radial magnetic field which permits the contraction of the arc but makes it rotated to disperse the energy.
Because contracted arc is shaped like a cylinder it is called Contracted arc or columnar arc.

Spiral contact structure (Radial magnetic field), using the force (F = j ×B) generated by the interaction of the radial magnetic field caused by the current flowing through the arc between two contacts, disperse the arc energy evenly on the surface of contact by rotating the arc that is contracted by the pinch effect so as to minimize contact damage.
The images show arc behavior during the arcing time of about 8ms by shooting with high-speed camera capable of shooting 10,000 frames per sec. (10000FPS) by focusing on parts of the arcing time on the above graph and simultaneously measured arc voltage also represented to show arc state by section.



Arc driving principle in the contacts of Radial magnetic field

Standards and certification

Susol

Susol VCB has been type tested and obtained certifications according to the latest IEC standard at international testing laboratory and can be installed and applied at the environment and conditions in accordance with the standard.

● **Standard**

- IEC 62271-1 (2007.10)
  High-voltage switchgear and controlgear - Part 1: Common specifications.
- IEC 62271-100 (2008.04)
  High-voltage switchgear and controlgear - Part 2: Alternating-current circuit breakers.

● **Test and certification**

- Test report (KERI)
- Test report (KEMA)

Types and ordering information

Susol

7.2kV (VL-06)

Breaker

VL — 06 P 08 A 04

Basic model name	
VL	Susol VCB

Rated voltage (kV)	
06	7.2

Version	
P	Fixed
E	E type drawout
F	F type drawout
G	G type drawout

Rated short time current (kA)	
08	8
13	12.5

Phase distance/Compatibility	
A	Standard
B	Compatible with existing breaker Note6)

Rated current (A)	
04	400
06	630

VL-06E08A04 — M1 C1 T1 SA1 U1 — A 147

Motor control voltage	
M1	DC 110V
M2	DC 220V~250V
M3	DC 125V
M4	DC 24V~30V
M5	DC 48V~60V
M6	AC 48V
M7	AC 100V~130V
M8	AC 200V~250V

Trip coil voltage	
T1	DC 110V
T2	DC 220V~250V
T3	DC 125V
T4	DC 24V~30V
T5	DC 48V~60V
T6	AC 48V
T7	AC 100V~130V
T8	AC 200V~250V
T9	Current trip coil

UVT Note5)	
U0	Without UVT
U1	DC 110V
U2	DC 220V~250V
U3	DC 125V
U4	DC 24V~30V
U5	DC 48V~60V
U6	AC 48V
U7	AC 100V~130V
U8	AC 200V~250V

Closing coil voltage	
C1	DC 110V
C2	DC 220V~250V
C3	DC 125V
C4	DC 24V~30V
C5	DC 48V~60V
C6	AC 48V
C7	AC 100V~130V
C8	AC 200V~250V

Connector and wire		
SA1	Standard	A type connector, 2a2b
SA2		A type connector, 4a4b
SA3		A type connector, 6a6b Note5)
SA5	Flame retardant	A type connector, 2a2b
SA6		A type connector, 4a4b
SA7		A type connector, 6a6b Note5)

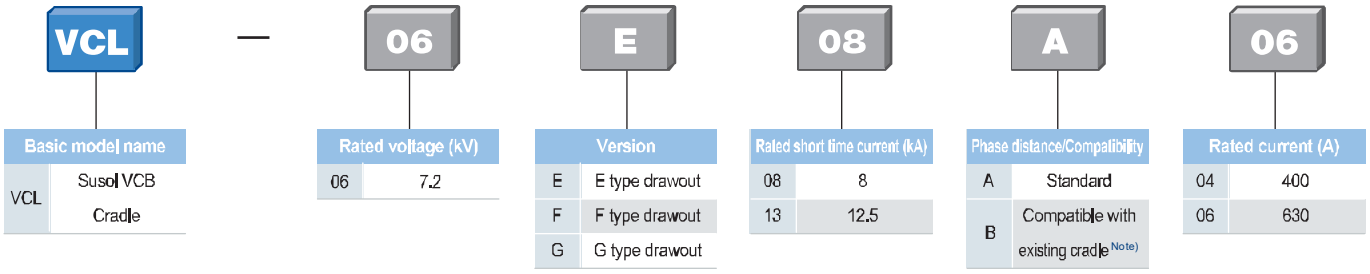
Optional	
LH	Lifting Hook
CTD1	Condenser Trip Device (AC 110V)
CTD2	Condenser Trip Device (AC 220V)
UDC1	UVT Time Delay Controller (AC/DC 110V)
UDC2	UVT Time Delay Controller (AC/DC 220V)
UDC3	UVT Time Delay Controller (AC/DC 48V)
CTU	Coil Test Unit

Other accessories Note)	
1	Secondary Trip coil Note5)
3	Position S/W (Test: 1a1b, Service: 2b)
4	Position S/W (Test: 2a, Service: 2a)
5	Position S/W (Test: 1a1b, Service: 1a1b)
7	Key lock
8	Button Padlock
9	Button cover
A	Lead wire
B	User Plug (Part)
O	Lead Wire special color (Blue)

Note) A is written only once in case of more than one.

Note)
1. In the case of selecting accessories such as A1(Secondary trip coil), A4(Position S/W 2a2a)and A7(Key lock), A147 is type name in the ordering.
2. Unable to select A1(Secondary Trip coil), U1~U8(UVT)and T9(Current trip coil) simultaneously.
3. A4(Position S/W 2a2a) and A5(Position S/W 2a2b) can not be selected simultaneously.
4. A8 (Button Padlock) and A9 (Button Cover) can not be selected simultaneously.
5. Maximum number of Auxiliary Contacts available are 5a5b, 5a6b in the case of selecting A1(Secondary trip coil), U1~U8(UVT).
6. In case of using the existing old type cradle and replacing breaker only please order type B (Compatible with existing breaker). Compatibille busbars are required for fixed version.
7. If T9(CTC) is selected, in case of adding Secondary trip coil, CTC is also added.

Cradle



Basic model name	
VCL	Susol VCB Cradle

Rated voltage (kV)	
06	7.2

Version	
E	E type drawout
F	F type drawout
G	G type drawout

Rated short time current (kA)	
08	8
13	12.5

Phase distance/Compatibility	
A	Standard
B	Compatible with existing cradle Note)

Rated current (A)	
04	400
06	630

Note) In case of replacing the existing old type VCB with Susol VCB please order type B for cradle and A for breaker.

Types and ordering information

Susol

7.2/12/17.5kV (VL-06/12/17)

Breaker

VL — **06** **H** **20** **A** **06**

Basic model name	
VL	Susol VCB

Rated voltage (kV)	
06	7.2
12	12
17	17.5

Version	
P	Fixed
E	E type drawout (for MESG)
F	F type drawout (for MESG)
Fs	Fs type drawout (Screw Type)
G	G type drawout (for MESG)
Gs	Gs type drawout (Screw Type)
K	K type drawout (for MCSG compatible with Pro-MEC type)
H	H type drawout (for MCSG)

Note) 1. Breaking current 31.5kA: E/F/Fs/G type can be used only with 7.2kV
2. Gs/K type: Usable only 7.2 12kV
K type Compatible with Pro-MEC G/T(T)
(for withdrawable type for MCSG)

Rated short time current (kA)	
20	20
25	25
32	31.5

Phase distance/Compatibility	
A	150mm
B	210mm
D	275mm
F	Compatible with existing products
K	compatible with K Pro-MEC G/T(T)

Rated current (A)	
06	630
13	1250
20	2000
25	2500

Note) 1. In case of 7.2kV
1) Phase distance 150mm only
2) 20 25kA: only 630/1250/2000A available (E F G)
3) 31.5kA: only 1250/2000A available (E/F/G)
2. K type: phase distance 150mm only
3. In case of 12/17.5kV
1) H type: phase distance 150/210/275 all available
2) P type 630/1250A: phase distance 150 210 all available
3) In case of 20/25kA: 12 17.5kV E/F type phase distance 210 available
4) K type: compatible with Pro-MEC G/T(T) (phase distance 150mm)
5) F type (compatible with existing products): Available only to 20/25kA and 630 1250A (phase distance 210mm)
4. Rated current 2500A: only available 31.5kA P/H type (phase distance 210/275mm)

VL-06H20A06 — **M1** **C1** **T1** **SB1** **U1** — **A** **147**

Motor control voltage	
M1	DC 110V
M2	DC 220V~250V
M3	DC 125V
M4	DC 24V~30V
M5	DC 48V~60V
M6	AC 48V
M7	AC 100V~130V
M8	AC 200V~250V

Trip coil voltage	
T1	DC 110V
T2	DC 220V~250V
T3	DC 125V
T4	DC 24V~30V
T5	DC 48V~60V
T6	AC 48V
T7	AC 100V~130V
T8	AC 200V~250V
T9	Current trip coil

UVT	
U0	Without UVT
U1	DC 110V
U2	DC 220V~250V
U3	DC 125V
U4	DC 24V~30V
U5	DC 48V~60V
U6	AC 48V
U7	AC 100V~130V
U8	AC 200V~250V

Closing coil voltage	
C1	DC 110V
C2	DC 220V~250V
C3	DC 125V
C4	DC 24V~30V
C5	DC 48V~60V
C6	AC 48V
C7	AC 100V~130V
C8	AC 200V~250V

Connector and wire		
SA2	Standard	A type connector, 4a4b
SA4		A type connector, 10a10b
SB2		B type connector, 4a4b
SB4		B type connector, 10a10b
SA6	Flame retardant	A type connector, 4a4b
SA8		A type connector, 10a10b
SB6		B type connector, 4a4b

Other accessories Note)	
1	Secondary Trip coil
2	Secondary Trip Coil with TCM Contact
3	Position S/W (Test : 1a1b, Service : 2b)
4	Position S/W (Test : 2a, Service : 2a)
5	Position S/W (Test : 1a1b, Service : 1a1b)
7	Key lock
8	Button Padlock
9	Button Cover
A	Lead Wire
B	User Plug (Part)
C	Plug Interlock
D	Padlock (H type Door Interlock)
E	MOC (Mechanical Operating Cell S/W)
F	Locking Magnet
G	Keylock(Same key-One key for 3EA VCB)
I	Mecha Shaft Interlock Lever
J	Door Interlock
O	Lead Wire special color (Blue)
V	CT operated coil 1A
W	CT operated coil 5A

Note) A is written only once in case of more than one.

Optional	
CTD1	Condenser Trip Device (AC 110V)
CTD2	Condenser Trip Device (AC 220V)
UDC1	UVT Time Delay Controller (AC/DC 110V)
UDC2	UVT Time Delay Controller (AC/DC 220V)
UDC3	UVT Time Delay Controller (AC/DC 48V)
CTU	Coil Test Unit

Note)
1. If A2 (UVT), A4 (Position S/W 2a2b) and A7 (Keylock) are selected, A147 is the type name in the ordering.
2. Unable to select A1(Secondary trip coil), U1~U8(UVT) simultaneously.
3. A3(Position S/W 1a3b), A4(Position S/W 2a2a), A5(Position S/W 2a2b)can not be selected simultaneously.
4. A8 (Button Padlock) and A9 (Button Cover) can not be selected simultaneously.
5. When A1 (Secondary Trip coil) is selected the maximum available auxiliary contacts are 9a9b.
6. When A2(Secondary trip coil with TCM Contact) is selected the maximum available auxiliary contacts are 4a3b, 9a8b.
7. AC (Plug interlock), AD (H type Door interlock), AE (MOC) and AF (Locking magnet) are available only for H type.
8. In case of B-type connector the flame retardant wire is applicable to auxiliary contacts 4a4b, not to 10a10b.
9. A/B-type connector is applicable to P/E/F/G/K type and B-type connector to H type.
10. Lead wire special color (blue) is applicable to A-type connector.
11. When the position switch is selected from accessories, auxiliary contacts and wiring ass'y can be selected as option A/B-type (P/E/F/G/K-type) or B-type(H-type) connector
12. Locking magnet of H type breaker use the same control power supply as motor.
13. Flame retardant type blue wire is not available.
14. When current Trip Coil AV(CTC 1A) or AW(CTC 5A) is selected, A1(Secondary Trip Coil), U1~U8(UVT) cannot be selected simultaneously and the maximum auxiliary contact is 4a4b.
15. AI(Mecha Shaft Interlock Lever) is available only for 12kV, P type.

Cradle

VCL — 06 H 20 A 06 — A 157

Basic model name	
VCL	Susol VCB Cradle

Rated voltage (kV)	
06	7.2
12	12
17	17.5

Rated short time current (kA)	
20	20
25	25
32	31.5

Rated current (A)	
06	630
13	1250
20	2000
25	2500

Version	
P	Fixed
E	E type drawout (for MESG)
F	F type drawout (for MESG)
Fs	Fs type drawout (Screw Type)
G	G type drawout (for MESG)
Gs	Gs type drawout (Screw Type)
K	K type drawout (for MCSG compatible with Pro-MEC type)
H	H type drawout (for MCSG)

Note) 1. Breaking current 31.5kA: E/F/Fs G type can be used only with 7.2kV
2. Gs/K type: Usable only 7.2/12kV
K type Compatible with Pro-MEC G/T(T) (for withdrawable type for MCSG)

Phase distance/Compatibility	
A	150mm
B	210mm
D	275mm
F	Compatible with existing products
K	compatible with K Pro-MEC G/T(T)

Note) 1. In case of 7.2kV
1) Phase distance 150mm only
2) 20/25kA: only 630/1250/2000A available (E/F G)
3) 31.5kA: only 1250/2000A available (E F G)
2. K type: phase distance 150mm only
3. In case of 12/17.5kV
1) F type: phase distance 150/210/275 all available
2) P type 630 1250A: phase distance 150/210 all available
3) In case of 20/25kA: 12/17.5kV E/F type phase distance 210 available
4) K type: compatible with Pro-MEC G/T(T) (phase distance 150mm)
5) F type (compatible with existing products): Available only to 20/25kA and 630/1250A (phase distance 210mm)
4. Rated current: 2500A: only available 31.5kA P/H type (phase distance 210/275mm)

Other accessories	
1	ES (Standard earthing Switch) without option
2	ES with position S/W (2a2b)
4	ES with position S/W (6a6b)
5	Key lock for ES
6	Locking magnet for ES: DC 110V
7	Locking magnet for ES: DC 220V
8	Locking magnet for ES: DC 125V
9	Locking magnet for ES: DC 24V
A	Locking magnet for ES: DC 48V
B	Locking magnet for ES: AC 48V
C	Locking magnet for ES: AC 110V
D	Locking magnet for ES: AC 220V
E	Shutter padlock
F	TOC (Truck Operating Cell S/W)
G	MOC (Mechanical Operating Cell S/W)
H	Door
J	Door Interlock
K	Door Emergency Push Button
L	Temperature Monitoring Sensor
M	H type Lead wire 4a4b (Flame retardant wire)
N	H type Lead wire 10a10b (Flame retardant wire)
O	H type Lead wire 4a4b (Rated short time current)

Optional	
IM	Temperature Monitoring

Note) A is written only once in case of more than one.

Note) 1. These accessories for cradle and TM can be applied only to H type. (When ordering TM, AL option must be selected)
2. AJ and AK can not be selected without door (AH).
3. H type lead wire - one of AM, AN or AO is required for cradle in case of H type breaker.
4. Unable to select AK at the cradle in the case of selecting A8(Button Padlock), A9(Button Cover) for body of H-type.
5. When Keylock(A5) is selected, Earthing Switch is included as standard.
6. Please contact us if you need IAC (Internal arc classification) of H type CB compartment.

Types and ordering information

Susol

24/25.8/36kV (VL-20/25/36)

Breaker

VL – 20 H 13 B 06

Basic model name	
VL	Susol VCB

Rated voltage (kV)	
20	24
25	25.8
36	36

Version	
P	Fixed
E	E type drawout (for MESG)
F	F type drawout (for MESG)
G	G type drawout (for MESG)
K	K type drawout ("or MCSG compatible with Pro-MEC type)
H	H type drawout (for MCSG)

Rated short time current (kA)	
13	12.5
16	16
25	25

Phase distance/Compatibility	
B	210mm
F	265mm
D	275mm
G	Enclosed type, Tulip Contact

Rated current (A)	
06	630
13	1250
20	2000
25	2500

Note) - P, E, F type : phase distance 265mm only
- G-type: 630A and 1250A – 210mm and 265mm
2000A - phase distance 210mm only
- K-type: 630A and 1250A - , 210mm and 265mm
2000A - phase distance 265mm only
- H-type: All ratings - dual phase distance,
210mm and 275mm dual
(2500A - phase distance 275mm only)
- E, F-type: phase distance and appearance are distinguished with F and G

VL-20H13B06 – M1 C1 T1 SB1 U1 – A 147

Motor control voltage	
M1	DC 110V
M2	DC 220V~250V
M3	DC 125V
M4	DC 24V~30V
M5	DC 48V~60V
M6	AC 48V
M7	AC 100V~130V
M8	AC 200V~250V

Trip coil voltage	
T1	DC 110V
T2	DC 220V~250V
T3	DC 125V
T4	DC 24V~30V
T5	DC 48V~60V
T6	AC 48V
T7	AC 100V~130V
T8	AC 200V~250V
T9	Current trip coil

UVT	
U0	Without UVT
U1	DC 110V
U2	DC 220V~250V
U3	DC 125V
U4	DC 24V~30V
U5	DC 48V~60V
U6	AC 48V
U7	AC 100V~130V
U8	AC 200V~250V

Closing coil voltage	
C1	DC 110V
C2	DC 220V~250V
C3	DC 125V
C4	DC 24V~30V
C5	DC 48V~60V
C6	AC 48V
C7	AC 100V~130V
C8	AC 200V~250V

Connector and wire		
SA2	Standard	A type connector, 4a4b
SA4		A type connector, 10a10b
SB2		B type connector, 4a4b
SB4		B type connector, 10a10b
SA6	Flame retardant	A type connector, 4a4b
SA8		A type connector, 10a10b
SB6		B type connector, 4a4b

Optional	
CTD1	Condenser Trip Device (AC 110V)
CTD2	Condenser Trip Device (AC 220V)
UDC1	UVT Time Delay Controller (AC/DC 110V)
UDC2	UVT Time Delay Controller (AC/DC 220V)
UDC3	UVT Time Delay Controller (AC/DC 48V)
CTU	Coil Test Unit

Other accessories Note)	
1	Secondary Trip coil
2	Secondary Trip Coil with TCM Contact
3	Position S/W (Test : 1a1b, Service : 2b)
4	Position S/W (Test : 2a, Service : 2a)
5	Position S/W (Test : 1a1b, Service : 1a1b)
7	Key lock
8	Button Padlock
9	Button Cover
A	Lead Wire
B	User Plug (Part)
C	Plug Interlock
D	Padlock (H type Door Interlock)
E	MOC (Mechanical Operating Cell S/W)
F	Locking Magnet
J	Door Interlock
O	Lead Wire special color (Blue)
V	CT operated coil 1A
W	CT operated coil 5A

Note) A is written only once in case of more than one.

Note)
1. If A2 (UVT), A4 (Position S/W 2a2b) and A7 (Keylock) are selected, A147 is the type name in the ordering.
2. Unable to select A1(Secondary trip coil), U1~U8(UVT) simultaneously.
3. A3(Position S/W 1a3b), A4(Position S/W 2a2a), A5(Position S/W 2a2b)can not be selected simultaneously.
4. A8 (Button Padlock) and A9 (Button Cover) can not be selected simultaneously.
5. When A1 (Secondary Trip coil) is selected the maximum available auxiliary contacts are 9a9b.
6. When A2(Secondary trip coil with TCM Contact) is selected the maximum available auxiliary contacts are 4a3b, 9a8b.
7. AC (Plug interlock), AD (H type Door interlock), AE (MOC) and AF (Locking magnet) are available only for H type.
8. In case of B-type connector the flame retardant wire is applicable to auxiliary contacts 4a4b, not to 10a10b.
9. A/B-type connector is applicable to P/E/F/G type and B-type connector to H type.
10. Lead wire special color (blue) is applicable to A-type connector.
11. When the position switch is selected from accessories, auxiliary contacts and wiring ass'y can be selected as option A/B-type (P/E/F/G/K-type) or B-type(H-type) connector
12. Locking magnet of H type breaker use the same control power supply as motor.
13. Flame retardant type blue wire is not available.
14. When current Trip Coil AV(CTC 1A) or AW(CTC 5A) is selected, A1(Secondary Trip Coil). U1~U8(UVT) cannot be selected simultaneously and the maximum auxiliary contact is 4a4b.

Cradle

VCL — 20 H 13 B 06 — A 157

Basic model name	
VCL	Susol VCB Cradle

Rated voltage (kV)	
20	24
25	25.8
36	36

Rated short time current (kA)	
13	12.5
16	16
25	25

Rated current (A)	
06	630
13	1250
20	2000
25	2500

Version	
E	E type drawout
F	F type drawout
G	G type drawout
K	K type drawout (for MCSG compatible with Pro-MEC type)
H	H type drawout (for MCSG)

Note) K-type(compatible with Pro-MEC G/T(T)) cradle for MCSG is for below product - LCL-20G-13D/T,15D/T, 25D/T

Phase distance/Compatibility	
B	210mm
F	265mm
D	275mm
G	Enclosed type, Tulip Contact

Note) - P, E, F type: phase distance 265mm only
- G-type: 630A and 1250A—210mm and 265mm
2000A—phase distance 210mm only
- K-type: 630A and 1250A, 210mm and 265mm
2000A - phase distance 265mm only
- H-type: All ratings - dual phase distance, 210mm and 275mm dual
(2500A - phase distance 275mm only)
- E, F-type: phase distance and appearance are distinguished with F and G

Other accessories (H type)	
1	ES (Standard earthing Switch) without option
2	ES with position S/W (2a2b)
4	ES with position S/W (6a6b)
5	Key lock for ES
6	Locking magnet for ES: DC 110V
7	Locking magnet for ES: DC 220V
8	Locking magnet for ES: DC 125V
9	Locking magnet for ES: DC 24V
A	Locking magnet for ES: DC 48V
B	Locking magnet for ES: AC 48V
C	Locking magnet for ES: AC 110V
D	Locking magnet for ES: AC 220V
E	Shutter padlock
F	TOC (Truck Operating Cell S/W)
G	MOC (Mechanical Operating Cell S/W)
H	Door
J	Door Interlock
K	Door Emergency Push Button
L	Temperature Monitoring Sensor
M	H type Lead wire 4a4b (Flame retardant wire)
N	H type Lead wire 10a10b (Flame retardant wire)
O	H type Lead wire 4a4b (Rated short time current)

Optional	
TM	Temperature Monitoring

Note) A is written only once in case of more than one.

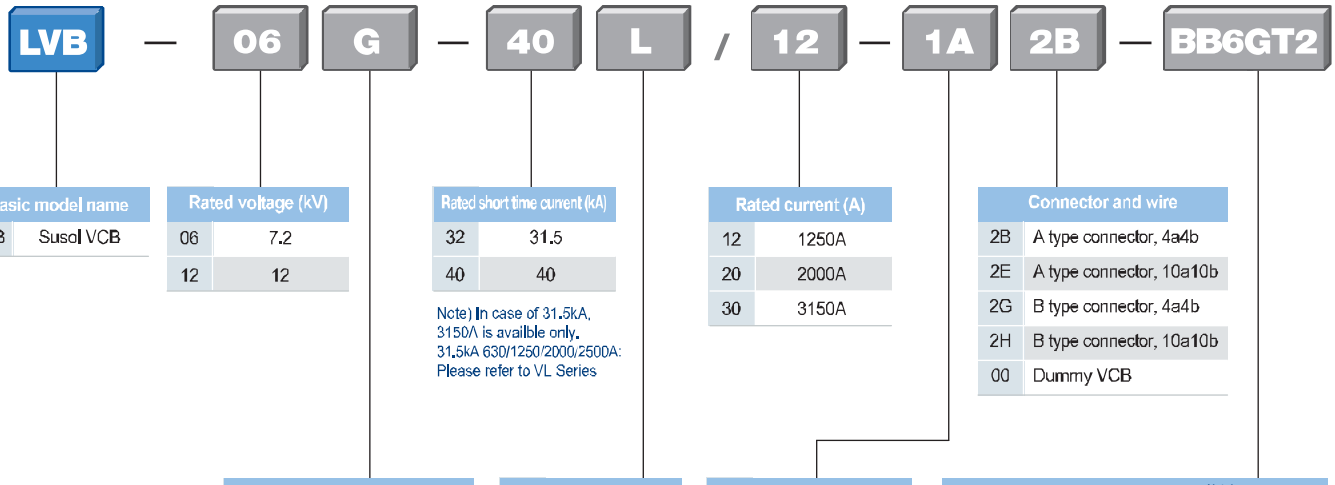
Note) 1. These accessories for cradle and TM can be applied only to H type.
2. AJ and AK can not be selected without door (AH).
3. TM (Temperature Monitoring) should be used with AL (Temperature Sensor).
4. H type lead wire - one of AM, AN or AO is required for cradle in case of H type breaker.
5. Accessary A2~AQ is available to H-type. Exceptionally K-type is available to A1.
(Position S/W 4a4b is basic option of A1)
6. Unable to select AK at the cradle in the case of selecting A8(Button Padlock), A9(Button Cover) for body of H-type.
7. When Keylock(A5) is selected, Earthing Switch is included as standard.
8. Please contact us if you need IAC (Internal arc classification) of H type CB compartment.

Types and ordering information

Susol

7.2/12kV (LVB-06/12)

Breaker



Basic model name	
LVB	Susol VCB

Rated voltage (kV)	
06	7.2
12	12

Rated short time current (kA)	
32	31.5
40	40

Note) In case of 31.5kA, 3150A is availble only.
31.5kA 630/1250/2000/2500A: Please refer to VL Series

Rated current (A)	
12	1250A
20	2000A
30	3150A

Connector and wire	
2B	A type connector, 4a4b
2E	A type connector, 10a10b
2G	B type connector, 4a4b
2H	B type connector, 10a10b
00	Dummy VCB

Version	
P	Fixed
E	E type drawout
F	F type drawout
G	G type drawout
G	G/T type drawout (for MESG)+T2

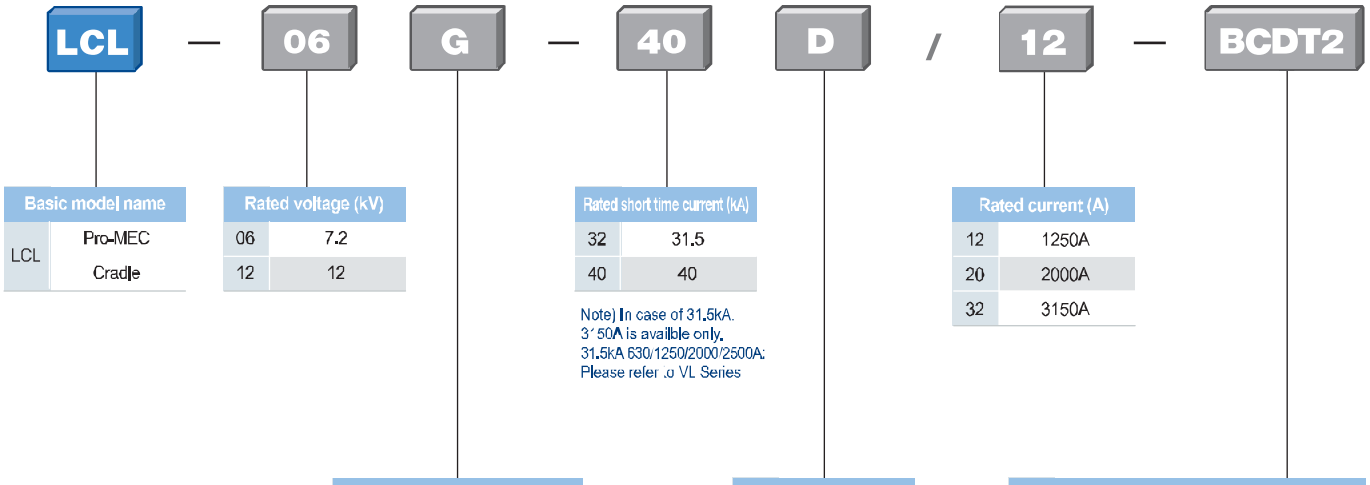
Model version	
L	Susol

Control voltage	
1A	DC 110V
1B	DC 220V~250V
1C	DC 48V
1E	DC 125V
1L	AC 220V
1M	AC 110V
1N	AC 48V
00	Dummy VCB

Other accessories Note)	
B	Position S/W(Test : 2a, Service : 2a)
B1	Position S/W(Test : 1a1b, Service : 1a1b)
B2	Position S/W(Test : 1a1b, Service : 2b)
B6	User's Plug(Part)
C1	Button Padlock(ON)
C2	Button Padlock(OFF)
C3	Button Padlock(ON,OFF)
D1	Button Cover(ON)
D2	Button Cover(OFF)
D3	Button Cover(ON OFF)
E	Button Padlock(ON) + Button Cover(OFF)
F	Button Padlock(OFF) + Button Cover(ON)
G	Keylock
H	Secondary Trip coil
J	Flame retardant wire
K	Latch checking S/W
P1	Dummy VCB(A type connector)
P2	Dummy VCB(B type connector)
S	Padlock
T	Tulip contact, Closed type
T2	T + Earthing S/W Interlock change
V	UVT

Note)
1. H(Secondary trip coil) and V(UVT) can not be selected simultaneously.
2. B(Position S/W 2a2a), B1(Position S/W 2a2b) and B2(Position S/W 1a3b) can not be selected simultaneously.
   However, only B(Position S/W 2a2a) is available for G/T type(MCSG drawable type)
3. If V(UVT) is selected , additional K(Latch checking S/W) is not allowed.
   (Because if UVT is slected a latch checking S/W is included as standard for electrical interlocking)
4. One out of T and T2 should be selected for G/T type(MCSG drawable type).
   T2 is the standard and T (Product before Earthing S/W interlock change) is suitable for compatibility with existing products.
5. In case of T(Tulip contact, closed type) 3150A is available only for open type housing .
6. Only G/T type is available for 12kV.

Cradle



Basic model name	
LCL	Pro-MEC Cradle

Rated voltage (kV)	
06	7.2
12	12

Rated short time current (kA)	
32	31.5
40	40

Note) In case of 31.5kA. 3`50A is availble only. 31.5kA 630/1250/2000/2500A: Please refer .o VL Series

Rated current (A)	
12	1250A
20	2000A
32	3150A

Version	
P	Fixed
E	E type drawout
F	F type drawout
G	G type drawout
G	G/T type drawout (for MESG)+T2

Model version	
D	Pro-MEC

Other accessories Note)	
B	Earthing Switch Note2)
C	Earthing Switch Position S/W(ON/OFF)
D	Earthing Switch Locking coil
T	Tulip contact, Closed type Note1)
T2	T + Earthing S/W Interlock change Note1)
T3	T2 +Earthing S/W without Conductor ass'y Note1)
U1	Reduced height type Note2)

Note) 1. One out of T, T2 and T3 should be selected for G/T type(MCSG drawable type).
T2 is the standard and T (Product before Earthing S/W interlock change) is suitable for compatibility with existing products.
T3 is available only for 1250/2000A.
2. U1(Reduced height type) and B(Earthing S/W) can not be selected simultaneously.

Types and ordering information

Susol

7.2/12/17.5/24/25.8/36kV (VH-06/12/17/20/25/36)

Breaker

VH — **06** **H** **25** **B** **13**

Basic model name	
VH	Susol VCB

Rated voltage (kV)	
06	7.2
12	12
17	17.5
20	24
25	25.8
36	36

Version	
P	Fixed
E	E type drawout (for MESG)
F	F type drawout (for MESG)
Fs	Fs type drawout (Screw Type)
G	G type drawout (for MESG)
Gs	Gs type drawout (Screw Type)
K	K type drawout (for MCSG compatible with Pro-MEC type)
H	H type drawout (for MCSG)

Rated short time current (kA)	
25	25
32	31.5
40	40
50	50

Note)
1. 25kA is for 24/36kV
2. 31.5/40kA is for 7.2/12/17.5/24/36kV
3. 50kA is for 7.2/12/17.5kV

Phase distance/Compatibility	
A	150mm
B	210mm
D	275mm
E	300mm
K	Compatible with K Pro-MEC G/T(T)
L	320mm

Note) K can be selected for Pro-MEC G/T(T) compatible models ONLY and the phase distance is 150mm.

Rated current (A)	
12	1200A
13	1250A
20	2000A
25	2500A
32	3150A
40	4000A
50	5000A

Note) Refer to the rating table for selecting rated current.

VH-06H25B13 — **M1** **C1** **T1** **SB2** **U1** — **A** **147**

Motor control voltage	
M1	DC 110V
M2	DC 220V~250V
M3	DC 125V
M5	DC 48V
M6	AC 48V
M7	AC 110V
M8	AC 220V

Trip coil voltage	
T1	DC 110V
T2	DC 220V~250V
T3	DC 125V
T5	DC 48V
T6	AC 48V
T7	AC 110V
T8	AC 220V

UVT	
U0	Without UVT
U1	DC 110V
U2	DC 220V~250V
U3	DC 125V
U5	DC 48V
U6	AC 48V
U7	AC 110V
U8	AC 220V

Closing coil voltage	
C1	DC 110V
C2	DC 220V~250V
C3	DC 125V
C5	DC 48V
C6	AC 48V
C7	AC 110V
C8	AC 220V

Connector and wire		
SA2	Standard	A type connector, 4a4b
SA4		A type connector, 10a10b
SB2		B type connector, 4a4b
SB4		B type connector, 10a10b
SA6	Flame retardant	A type connector, 4a4b
SA8		A type connector, 10a10b
SB6		B type connector, 4a4b

Other accessories Note)	
1	Secondary Trip coil
2	Secondary Trip Coil with TCM Contact
3	Position S/W(Test: 1a1b, Service: 2a)
4	Position S/W(Test: 2a, Service: 2a)
5	Position S/W(Test: 1a1b, Service: 1a1b)
6	Latch checking S/W
7	Keylock
8	Button Padlock
9	Button Cover
A	Lead Wire
B	User Plug(Part)
C	Plug Interlock
D	Padlock(H type Door Interlock)
E	MOC(Mechanical Operating Cell S/W)
F	Locking Magnet
G	ANSI type Charge interlock
O	Lead wire special color(Blue)
X	Wireless Temperature monitoring sensor

Note) A is written only once in case of more than one.

Optional	
CTD1	Condenser Trip Device(AC 110V)
CTD2	Condenser Trip Device(AC 220V)
UDC1	UVT Time Delay Controller(AC/DC 110V)
UDC2	UVT Time Delay Controller(AC/DC 220V)
UDC3	UVT Time Delay Controller(AC/DC 48V)
CTU	Coil Test Unit

Note)
1. If A1(Secondary trip coil), A4(Position S/W 2a2a), A7(Keylock)are selected, A147 is the type name in the ordering.
2. A1(Secondary trip coil), U1~U8(UVT) can not be selected simultaneously.
3. A3(Position S/W 1a3b), A4(Position S/W 2a2a), A5(Position S/W 2a2b) can not be selected simultaneously.
4. A8 (Button Padlock) and A9 (Button Cover) can not be selected simultaneously.
5. AC (Plug interlock), AD (H type Door interlock), AE (MOC) and AF (Locking magnet) are available only for H type.
6. In case of B-type connector the flame retardant wire is applicable to auxiliary contacts 4a4b, not to 10a10b.
7. A/B-type connector is applicable to P/E/F/G/K type and B-type connector to H type.
8. Lead Wire Special Color(blue) is available only for A type connector and the flame retardant is not applicable to it.
9. Locking magnet can be applied only to H type VCB - breaker and cradle.
10. Locking magnet of H type breaker use the same control power supply as motor.
11. In case of selecting UVT A6 (Latch checking S/W) is not allowed. A6 (Latch checking S/W) is installed by default to make electrical interlock with UVT.
12. Lead wire is enclosed in the breaker in case of ordering fixed type or H type breaker without cradle, installed of cradle in case of ordering the breaker with cradle. If user plug is selected it will be enclosed in the breaker.
13. When A1(Secondary trip coil) is selected the maximum available auxiliary contacts are 10a10b.
14. When A2(Secondary Trip coil with TCM Contact) is selected the maximum available auxiliary contacts are 4a3b, 10a9b.

Cradle

VCH — 06 H 25 B 13 — A 1 5 7

Basic model name	
VCH	Susol VCB Cradle

Rated voltage (kV)	
06	7.2
12	12
17	17.5
20	24
25	25.8
36	36

Rated short time current (kA)	
25	25
32	31.5
40	40
50	50

Rated current (A)	
12	1200A
13	1250A
20	2000A
25	2500A
32	3150A
40	4000A
50	5000A

Version	
P	Fixed
E	E type drawout (for MESG)
F	F type drawout (for MESG)
Fs	Fs type drawout (Screw Type)
G	G type drawout (for MESG)
Gs	Gs type drawout (Screw Type)
K	K type drawout (for MCSG compat ble with Pro-MEC type)
H	H type drawout (for MCSG)
Ha	MCSG Cradle type
Hb	MCSG drawout + PT lower chamber

* Only K-type cradle is available for 4000A.
* E/F/Fs/Gs/K-type (open type cradle)
* H-type (box type cradle)

Phase distance/Compatibility	
A	150mm
B	210mm
D	275mm
E	300mm
J	Rotated bushing type (210mm)
L	320mm

Other accessories (H type)	
1	ES (Standard earthing Switch) without option
2	ES with Position S/W (2a2b)
4	ES with Position S/W (6a6b)
5	Key lock for ES
6	Locking magnet for ES: DC 110V
7	Locking magnet for ES: DC 220V
8	Locking magnet for ES: DC 125V
A	Locking magnet for ES: DC 48V
B	Locking magnet for ES: AC 48V
C	Locking magnet for ES: AC 110V
D	Locking magnet for ES: AC 220V
E	Shutter padlock
F	TOC (Truck Operating Cell S/W)
G	MOC (Mechanical Operating Cell S/W)
H	Door
J	Door Interlock
K	Door Emergency Push Button
L	Temperature Sensor
M	H type Lead wire 4a4b (Flame retardant wire)
N	H type Lead wire 10a10b (Flame retardant wire)
O	H type Lead wire 4a4b (Rated short time current)
Q	ANSI type Charge interlock
T3	Earthing S/W without conductor ass'y
LC	Earthing S/W Locking coil
U1	Earthing S/W Locking coil

Note) T3, LC, U1 are options for K type cradle ONLY(Compatible with previous Pro-MEC models)

Optional	
TM	Temperature Monitoring

Note) A is written only once in case of more than one.

Note) 1. Cradle accessories and the option TM are available only for H type(MCSG drawable type) and Locking magnet is available in DC110V, DC125V for those three types. K, Ha, Hb types can only be applied to A1.
2. AJ and AK can not be selected without door (AH).
3. H type lead wire - one of AM, AN or AO is required for cradle in case of H type breaker.
4. If the H type breaker options A8(Button Padlock) and A9(Button Cover) are slected, the cradle option AK(Door Emergency Push Button) is not available.
5. When Keylock(A5) is selected, Earthing Switch is included as standard.
6. T3/SM/LC/U/U1 can be selected for K type ONLY.
7. When A1 is selected for 4000A, 5000A cradle, ES Position S/W with 4a4b is applied as default.
8. If TOC/MOC option is selected, cradle's height is increased (E/S equipped structure, Hb ONLY).
9. Ha type is open-type MCSG Cradle with NO door related options included.
10. Please contact us if you need IAC (Internal arc classification) of H type CB compartment.

Type of circuit breakers

Susol

7.2/12/17.5/24/25.8/36kV (VL-06/12/17/20/25/36)

Ur [kV]	Isc [kA]	Ir[A]					VCB		CRADLE		Connector
		p=130	p=150	p=210	p=265	p=275	Type	Version	Type	Version	
7.2	8	400					VL-06_-08A04	P,E,F,G	VCL-06I 08A04	E,F,G	A
									VCL-06⊓08B04	E,F,G	A
							VL-06L_08B04	P,E,F,G			A
	12.5	630					VL-06¯13A06	P,E,F,G	VCL-06L_13A06	E,F,G	A
									VCL-06⊓13B06	E,F,G	A
							VL-06⊏13B06	P,E,F,G			A
	20		630				VL-06⊔20A(K)06	P,E,F,G,H	VCL-06_⊔20A(K)06	E,F,G,K,H	P,E,F,G,K:A/B, H:B
			1250				VL-06I I20A(K)13	P,E,F,G,H	VCL-06 I20A(K)13	E,F,G,K,H	P,E,F,G,K:A/B, H:B
			2000				VL-06¯20A20	P,E,F,G,H	VCL-06⊓20A20	E,F,G,H	P,E,F,G:A/B, H:B
	25		630				VL-06⊐25A(K)06	P,E,F,G,K,H	VCL-06⊏25A06	E,F,G,K,H	P,E,F,G,K:A/B, H:B
			1250				VL-06_⊔25A(K)13	P,E,F,G,K,H	VCL-06L_25A13	E,F,G,K,H	P,E,F,G,K:A/B, H:B
			2000				VL-06 I25A(K)20	P,E,F,G,K,H	VCL-06I 25A20	E,F,G,K,H	P,E,F,G,K:A/B, H:B
	31.5		630				VL-06¯32A06	P,H	VCL-06H32A06	H	B
			1250				VL-06⊐32A(K)13	P,E,F,Fs,G,Gs,K,H	VCL-06⊏32A13	E,F,Fs,G,Gs,K,H	P,E,F,Fs,G,Gs,K:A/B,H:B
			2000				VL-06_⊔32A(K)20	P,E,F,Fs,G,Gs,K,H	VCL-06L_32A20	E,F,Fs,G,Gs,K,H	P,E,F,Fs,G,Gs,K:A/B,H:B
12	20		630				VL-12⊓20A(K)06	P,K,H	VCL-12⊓20A06	K,H	K:A/B, H:B
			1250				VL-12⊓20A(K)13	P,K,H	VCL-12⊓20A13	K,H	K:A/B, H:B
			2000				VL-12H20A20	H	VCL-12H20A20	H	B
				630			VL-12L_20B06	P,E,F,H	VCL-12⊔20B06	E,F,H	P,E,F:A/B, H:B
				1250			VL-12⊓20B13	P,E,F,H	VCL-12⊓20B13	E,F,H	P,E,F:A/B, H:B
				2000			VL-12⊏20B20	P,E,F,H	VCL-12□20B20	E,F,H	P,E,F:A/B, H:B
				630			VL-12⊔20F06	E,F	VCL-12_⊔20F06	E,F	A/B
				1250			VL-12I I20F13	E,F	VCL-12 I20F13	E,F	A/B
	25		630				VL-12⊐25A(K)06	P,K,H	VCL-12⊏25A06	K,H	K:A/B, H:B
			1250				VL-12⊐25A(K)13	P,K,H	VCL-12⊏25A13	K,H	K:A/B, H:B
			2000				VL-12_⊔25A(K)20	K,H	VCL-12L_25A20	K,H	K:A/B, H:B
				630			VL-12I 25B06	P,E,F,H	VCL-12I I25B06	E,F,H	P,E,F:A/B, H:B
				1250			VL-12⊓25B13	P,E,F,H	VCL-12⊓25B13	E,F,H	P,E,F:A/B, H:B
				2000			VL-12⊏25B20	P,E,F,H	VCL-12□25B20	E,F,H	P,E,F:A/B, H:B
				630			VL-12_⊔25F06	E,F	VCL-12_⊔25F06	E,F	A/B
				1250			VL-12¯25F13	E,F	VCL-12¯25F13	E,F	A/B
	31.5		630				VL-12¯32A06	P,H	VCL-12H32A06	H	B
			1250				VL-12_⊔32A(K)13	P,Gs,K,H	VCL-12L_32A13	Gs,K,H	Gs,K:A/B, H:B
			2000				VL-12_⊔32A(K)20	Gs,K,H	VCL-12L_32A20	Gs,K,H	Gs,K:A/B, H:B
				630			VL-12⊓32B06	P,H	VCL-12H32B06	H	B
				1250			VL-12⊓32B13	P,H	VCL-12H32B13	H	B
				2000			VL-12L_32B20	P,H	VCL-12H32B20	H	B
				2500			VL-12I 32B25	P,H	VCL-12H32B25	H	B
						2500	VL-12⊓32D25	P,H	VCL-12H32D25	H	B
17.5	20		630				VL-17H20A06	H	VCL-17H20A06	H	B
			1250				VL-17H20A13	H	VCL-17H20A13	H	B
			2000				VL-17H20A20	H	VCL-17H20A20	H	B
				630			VL-17⊓20B06	P,E,F,H	VCL-17⊓20B06	E,F,H	P,E,F:A/B, H:B
				1250			VL-17L_20B13	P,E,F,H	VCL-17⊔20B13	E,F,H	P,E,F:A/B, H:B
				2000			VL-17L_20B20	P,E,F,H	VCL-17⊔20B20	E,F,H	P,E,F:A/B, H:B
				630			VL-17⊓20F06	E,F	VCL-17¯20F06	E,F	A/B
				1250			VL-17⊓20F13	E,F	VCL-17¯20F13	E,F	A/B
	25		630				VL-17H25A06	H	VCL-17H25A06	H	B
			1250				VL-17H25A13	H	VCL-17H25A13	H	B
			2000				VL-17H25A20	H	VCL-17H25A20	H	B
				630			VL-17⊏25B06	P,E,F,H	VCL-17⊏25B06	E,F,H	P,E,F:A/B, H:B
				1250			VL-17L_25B13	P,E,F,H	VCL-17L_25B13	E,F,H	P,E,F:A/B, H:B
				2000			VL-17I 25B20	P,E,F,H	VCL-17I 25B20	E,F,H	P,E,F:A/B, H:B
				630			VL-17⊓25F06	E,F	VCL-17¯25F06	E,F	A/B
				1250			VL-17□25F13	E,F	VCL-17_⊐25F13	E,F	A/B
	31.5		630				VL-17_32A06	P,H	VCL-17H32A06	H	B
			1250				VL-17 32A13	P,H	VCL-17H32A13	H	B
			2000				VL-17¯32A20	H	VCL-17H32A20	H	B
				630			VL-17L_32B06	P,H	VCL-17H32B06	H	B
				1250			VL-17L_32B13	P,H	VCL-17H32B13	H	B
				2000			VL-17⊓32B20	P,H	VCL-17H32B20	H	B
				2500			VL-17⊓32B25	P,H	VCL-17H32B25	H	B
						2500	VL-17L_32D25	P,H	VCL-17H32D25	H	B

Ur [kV]	Isc [kA]	Ir[A]					VCB		CRADLE		Connector
		p=130	p=150	p=210	p=265	p=275	Type	Version	Type	Version	
24	12.5			630			VL-20L_13B06	G,K,H	VCL-20L13B06	G,K,H	G,K:A/B, H:B
				1250			VL-20L_13B13	G,K,H	VCL-20L13B13	G,K,H	G,K:A/B, H:B
					630		VL-20H13F06	P,E,F,G,K	VCL-20H13F06	E,F,G,K	A/B
					630		VL-20H13G06	E,F	VCL-20H13G06	E,F	A/B
					1250		VL-20L13F13	P,E,F,G,K	VCL-20L13F13	E,F,G,K	A/B
					1250		VL-20H13G13	E,F	VCL-20H13G13	E,F	A/B
						630	VL-20H13D06	H	VCL-20H13D06	H	B
						1250	VL-20H13D13	H	VCL-20H13D13	H	B
	16			630			VL-20L16B06	G,K,H	VCL-20L16B06	G,K,H	G,K:A/B, H:B
				1250			VL-20H16B13	G,K,H	VCL-20H16B13	G,K,H	G,K:A/B, H:B
					630		VL-20L16F06	P,E,F,G,K	VCL-20L16F06	E,F,G,K	A/B
					630		VL-20L16G06	E,F	VCL-20L16G06	E,F	A/B
					1250		VL-20H16F13	P,E,F,G,K	VCL-20H16F13	E,F,G,K	A/B
					1250		VL-20L16G13	E,F	VCL-20L16G13	E,F	A/B
						630	VL-20H16D06	H	VCL-20H16D06	H	B
						1250	VL-20H16D13	H	VCL-20H16D13	H	B
	25			630			VL-20L25B06	G,K,H	VCL-20L25B06	G,K,H	G,K:A/B, H:B
				1250			VL-20L25B13	G,K,H	VCL-20L25B13	G,K,H	G,K:A/B, H:B
				2000			VL-20H25B20	G,H	VCL-20H25B20	G,H	G:A/B, H:B
					630		VL-20H25F06	P,E,F,G,K	VCL-20H25F06	E,F,G,K	A/B
					630		VL-20L25G06	E,F	VCL-20L25G06	E,F	A/B
					1250		VL-20L25F13	P,E,F,G,K	VCL-20L25F13	E,F,G,K	A/B
					1250		VL-20H25G13	E,F	VCL-20H25G13	E,F	A/B
					2000		VL-20L25F20	P,E,F,K	VCL-20L25F20	E,F,K	A/B
					2000		VL-20L25G20	E,F	VCL-20L25G20	E,F	A/B
						630	VL-20H25D06	H	VCL-20H25D06	H	B
						1250	VL-20H25D13	H	VCL-20H25D13	H	B
						2000	VL-20H25D20	H	VCL-20H25D20	H	B
						2500	VL-20H25D25	H	VCL-20H25D25-AS	H	B
25.8	12.5			630			VL-25H13B06	G,K,H	VCL-25H13B06	G,K,H	G,K:A/B, H:B
				1250			VL-25L_13B13	G,K,H	VCL-25L_13B13	G,K,H	G,K:A/B, H:B
					630		VL-25L13F06	P,E,F,G,K	VCL-25L13F06	E,F,G,K	A/B
					630		VL-25H13G06	E,F	VCL-25H13G06	E,F	A/B
					1250		VL-25L13F13	P,E,F,G,K	VCL-25L13F13	E,F,G,K	A/B
					1250		VL-25H13G13	E,F	VCL-25H13G13	E,F	A/B
						630	VL-25H13D06	H	VCL-25H13D06	H	B
						1250	VL-25H13D13	H	VCL-25H13D13	H	B
	16			630			VL-25L_16B06	G,K,H	VCL-25L_16B06	G,K,H	G,K:A/B, H:B
				1250			VL-25H16B13	G,K,H	VCL-25H16B13	G,K,H	G,K:A/B, H:B
					630		VL-25H16F06	P,E,F,G,K	VCL-25H16F06	E,F,G,K	A/B
					630		VL-25L16G06	E,F	VCL-25L16G06	E,F	A/B
					1250		VL-25L16F13	P,E,F,G,K	VCL-25L16F13	E,F,G,K	A/B
					1250		VL-25H16G13	E,F	VCL-25H16G13	E,F	A/B
						630	VL-25H16D06	H	VCL-25H16D06	H	B
						1250	VL-25H16D13	H	VCL-25H16D13	H	B
	25			630			VL-25H25B06	G,K,H	VCL-25H25B06	G,K,H	G,K:A/B, H:B
				1250			VL-25L25B13	G,K,H	VCL-25L25B13	G,K,H	G,K:A/B, H:B
				2000			VL-25L_25B20	G,H	VCL-25L25B20	G,H	G:A/B, H:B
					630		VL-25L25F06	P,E,F,G,K	VCL-25L25F06	E,F,G,K	A/B
					630		VL-25H25G06	E,F	VCL-25H25G06	E,F	A/B
					1250		VL-25L25F13	P,E,F,G,K	VCL-25L25F13	E,F,G,K	A/B
					1250		VL-25H25G13	E,F	VCL-25H25G13	E,F	A/B
					2000		VL-25H25F20	P,E,F,K	VCL-25H25F20	E,F,K	A/B
					2000		VL-25L25G20	E,F	VCL-20L25G20	E,F	A/B
						630	VL-25H25D06	H	VCL-25H25D06	H	B
						1250	VL-25H25D13	H	VCL-25H25D13	H	B
						2000	VL-25H25D20	H	VCL-25H25D20	H	B
						2500	VL-25H25D25	H	VCL-25H25D25-AS	H	B
36	25					630	VL-36H25D06	P,H	VCL-36H25D06	H	P:A/B, H:B
						1250	VL-36H25D13	P,H	VCL-36H25D13	H	P:A/B, H:B
						2000	VL-36L_25D20	P,H	VCL-36L25D20	H	P:A/B, H:B
						2500	VL-36L25D25	P,H	VCL-36L25D25	H	P:A/B, H:B

Note) 1. Ur = Rated voltage
2. Isc = Rated short-circuit current
3. Ir = Rated normal current
4. p = Phase distance
5. E,F and G types are cradles for MESG(Metal Enclosed Switchgear) and H type for MCSG(Metal Clad Switchgear)
6. For the partial replacement of 7.2kV 8/12.5kA VCB, in case of using the existing old type cradle and replacing breaker only, please order type B (Compatible with existing breaker). Compatibille busbars are required for fixed version. To replace VCB fully(breaker and cradle) please order type A for breaker and compatible cradle B.

Type of circuit breakers

Susol

7.2/12/17.5/24/25.8/36kV (VH-06/12/17/20/25/36)

Ur [kV]	Isc [kA]	Ir[A]					VCB		CRADLE		Connector
		p=150	p=210	p=254	p=275	p=320	Type	Version	Type	Version	
7.2	31.5	1250					LVB-06┌-32L/12	P,E,F,G,G/T	LCL-06⁻-32D/12	E,F,G,G/T	A/B
		2000					LVB-06┌-32L/20	P,E,F,G,G/T	LCL-06⁻-32D/20	E,F,G,G/T	A/B
			3150				VH-06┌32B32	Fs,Gs,K,H	VCH-06⁻32B32	Fs,Gs,K,H	K:A/B, Fs,Gs,H:B
							LVB-06┌-32L/30	P,E,F,G/T	LCL-06⁻-32D/30	E,F,G,G/T	
	40	1250	1250				VH-06⁻40A13	P,E,F,Fs,G,Gs,K,H	VCH-06⁻40A13	E,F,Fs,G,Gs,K,H	P,E,F,Fs,G, Gs,K:A/B,H:B
							LVB-06┌-40L/12	P,E,F,G,G/T	LCL-06⁻-40D/12	E,F,G,G/T	
		2000	2000				VH-06⁻40A20	P,E,F,Fs,G,Gs,K,H	VCH-06⁻40A20	E,F,Fs,G,Gs,K,H	P,E,F,Fs,G, Gs,K:A/B,H:B
							LVB-06┌-40L/20	P,E,F,G,G/T	LCL-06⁻-40D/20	E,F,G,G/T	
			3150				VH-06┌40B32	Fs,Gs,K,H	VCH-06⁻40B32	Fs,Gs,K,H	K:A/B, Fs,Gs,H:B
							LVB-06┌-40L/30	P,E,F,G/T	LCL-06⁻-40D/30	E,F,G,G/T	
					3150		VH-06┌40D32	K,H	VCH-06⁻40D32	K,H	K:A/B, H:B
					4000		VH-06┌40D40	P,K,H	VCH-06⁻40D40	K,Ha,Hb	B
						5000	VH-06H40L50	H	VCH-06Ha40L50	Ha	B
	50		1250				VH-06⁻50B13	P,H	VCH-06H50B13	H	B
			2000				VH-06⁻50B20	P,H	VCH-06H50B20	H	B
					2500		VH-06┌50D25	P,H	VCH-06H50D25	H	B
					3150		VH-06┌50D32	P,H	VCH-06H50D32	H	B
					4000		VH-06I 50D40	P,K,H	VCH-06 50D40	K,Ha,Hb	B
						5000	VH-06H50L50	H	VCH-06Ha50L50	Ha	B
12	31.5	1250	1250				LVB-12G-32L/12-T2	G/T	LCL-12G-32D/12-T2	G/T	A/B
		2000					LVB-12G-32L/20-T2	G/T	LCL-12G-32D/20-T2	G/T	A/B
			3150				VH-12 32B32	Gs,K,H	VCH-12 32B32	Gs,K,H	K:A/B, Gs,H:B
							LVB-12G-32L/30-T2	G/T	LCL-12G-32D/30-T2	G/T	A/B
	40	1250	1250				VH-12I I40A(K)13	Gs,K,H	VCH-12I 40A(K)13	Gs,K,H	Gs,K:A/B, H:B
							LVB-12G-40L/12-T2	G/T	LCL-12G-40D/12-T2	G/T	A/B
		2000	2000				VH-12I I40A(K)20	Gs,K,H	VCH-12I 40A(K)20	Gs,K,H	K:A/B, Gs, H:B
							LVB-12G-40L/20-T2	G/T	LCL-12G-40D/20-T2	G/T	A/B
			1250				VH-12I 40B13	K,H	VCH-12 40B13	K,H	B
			2000				VH-12I 40B20	K,H	VCH-12 40B20	K,H	B
			3150				VH-12I 40B32	Gs,K,H	VCH-12 40B32	Gs,K,H	K:A/B, Gs,H:B
							LVB-12G-40L/30-T2	G/T	LCL-12G-40D/30-T2	G/T	A/B
					3150		VH-12H40D32	H	VCH-12H40D32	H	B
					4000		VH-12L_40D40	P,K,H	VCH-12_40D40	K,Ha,Hb	B
						5000	VH-12H40L50	H	VCH-12Ha40L50	Ha	B
	50		1250				VH-12L_50B13	P,H	VCH-12H50B13	H	B
			2000				VH-12L_50B20	P,H	VCH-12H50B20	H	B
					2500		VH-12L_50D25	P,H	VCH-12H50D25	H	B
					3150		VH-12L_50D32	P,H	VCH-12H50D32	H	B
					4000		VH-12L_50D40	P,K,H	VCH-12_50D40	K,Ha,Hb	B
						5000	VH-12H50L50	H	VCH-12Ha50L50	Ha	B
17.5	31.5		3150				VH-17H32B32	H	VCH-17H32B32	H	B
					3150		VH-17H32D32	H	VCH-17H32D32	H	B
	40		1250				VH-17L_40B13	K,H	VCH-17_40B13	K,H	K:A/B, H:B
			2000				VH-17L_40B20	K,H	VCH-17_40B20	K,H	K:A/B, H:B
			3150				VH-17H40B32	H	VCH-17H40B32	H	B
				3150			VH-17K40C32	K	VCH-17K40C32	K	A/B
					3150		VH-17H40D32	H	VCH-17H40D32	H	B
					4000		VH-17L_40D40	P,K,H	VCH-17_40D40	Ha,Hb	B

Ur [kV]	Isc [kA]	Ir[A]				VCB		CRADLE		Connector
		p=150	p=210	p=275	p=300	Type	Version	Type	Version	
17.5	50		1250			VH-17L_50B13	P,H	VCH-17H50B13	H	B
			2000			VH-17⌐50B20	P,H	VCH-17H50B20	H	B
				2500		VH-17L_50D25	P,H	VCH-17H50D25	H	B
				3150		VH-17I 50D32	P,H	VCH-17H50D32	H	B
				4000		VH-17⌐50D40	P,H	VCH-17⊓50D40	Ha,Hb	B
24	25			2500		VH-20L_25D25	P,H	VCH-20H25D25	H	B
	31.5		1250			VH-20⌐32B13	P,H	VCH-20H32B13	H	B
								VCH-20H32F13	H	B
			2000			VH-20I 32B20	P,H	VCH-20H32B20	H	B
								VCH-20H32F20	H	B
				1250		VH-20L_32D13	P,H	VCH-20H32D13	H	B
				2000		VH-20I 32D20	P,H	VCH-20H32D20	H	B
				3150		VH-20⌐32D32	P,H	VCH-20H32D32	H	B
	40		1250			VH-20L_40B13	P,H	VCH-20H40B13	H	B
								VCH-20H40F13	H	B
			2000			VH-20L_40B20	P,H	VCH-20H40B20	H	B
								VCH-20H40F20	H	B
				1250		VH-20⌐40D13	P,H	VCH-20H40D13	H	B
				2000		VH-20⊏40D20	P,H	VCH-20H40D20	H	B
				3150		VH-20L_40D32	P,H	VCH-20H40D32	H	B
25.8	25			2500		VH-25⌐25D25	P,H	VCH-25H25D25	H	B
	31.5		1250			VH-25L_32B13	P,H	VCH-25H32B13	H	B
								VCH-25H32F13	H	B
			2000			VH-25⊏32B20	P,H	VCH-25H32B20	H	B
								VCH-25H32F20	H	B
				1250		VH-25I I32D13	P,H	VCH-25H32D13	H	B
				2000		VH-25⊓32D20	P,H	VCH-25H32D20	H	B
				3150		VH-25⊔32D32	P,H	VCH-25H32D32	H	B
	40		1250			VH-25⌐40B13	P,H	VCH-25H40B13	H	B
								VCH-25H40F13	H	B
			2000			VH-25I 40B20	P,H	VCH-25H40B20	H	B
								VCH-25H40F20	H	B
				1250		VH-25⊔40D13	P,H	VCH-25H40D13	H	B
				2000		VH-25I I40D20	P,H	VCH-25H40D20	H	B
				3150		VH-25⊓40D32	P,H	VCH-25H40D32	H	B
36	25				1250	VH-36_25E13	P,H	VCH-36H25E13	H	B
					2000	VH-36 25E20	P,H	VCH-36H25E20	H	B
					3150	VH-36⌒25E32	P,H	VCH-36H25E32	H	B
	31.5				1250	VH-36_32E13	P,H	VCH-36H32E13	H	B
					2000	VH-36⌒32E20	P,H	VCH-36H32E20	H	B
					3150	VH-36⌒32E32	P,H	VCH-36H32E32	H	B
	40				1250	VH-36_40E13	P,H	VCH-36H40E13	H	B
					2000	VH-36⌒40E20	P,H	VCH-36H40E20	H	B
					3150	VH-36_40E32	P,H	VCH-36H40E32	H	B

Note) 1. Ur = Rated voltage
2. Isc = Rated short-circuit current
3. Ir = Rated normal current
4. p = Phase distance
5. H type is MCSG style drawable type with a box type cradle for CB compartment construction.
6. G/T types are MCSG style drawable types with a cradle for builting in the switchgear , not a box type. (K of VCL type name indicates 4000A)
   Example of G/T type : LVB-06G-32L/12-T2, LCL-06G-32D/12-T2
7. G/T types use LVB and LCL names.
8. E, F and G types provide cradles for MESG(Metal Enclosed Switchgear) and H, G/T types for MCSG(Metal Clad Switchgear).
9. In case of 7.2/12kV, 31.5kA/40kA H type: Please contact us.

Ratings - 7.2kV 8/12.5kA 400/630A

Susol

VL-06

Item			VL-06□08□04	VL-06□13□06
Rated voltage		Ur (kV)	7.2	
Rated normal current		Ir (A)	400	630
Rated frequency		fr (Hz)	50/60	
Rated short-circuit current		Isc (kA)	8	12.5
Rated short-time withstand current		Ik/tk (kA/s)	8/3	12.5/3
Rated short-circuit breaking capacity		(MVA)	100	160
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)	
Rated breaking time		(cycle)	3	
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20	
	Impulse (1.2×50μs)	Up (kV)	60	
Rated operating sequence			O-0.3s-CO-15s-CO	
Control voltage	Closing coil	(V)	AC/DC 100~130, AC/DC 200~250, DC 125, DC 24~30, DC 48~60, AC 48	
	Trip coil	(V)	AC/DC 100~130, AC/DC 200~250, DC 125, DC 24~30, DC 48~60, AC 48	
Auxiliary contacts			2a2b, 4a4b, 6a6b	
Rated opening time		(sec)	≤ 0.04	
No-load closing time		(sec)	≤ 0.06	
Type test class	Mechanical		M2	
	Electrical		E2 (List1)	
	Capacitive current switching		C2	
Installation version	Fixed		P type	
	Drawout		E, F, G type (for MESG)	
Phase distance		(mm)	130	
Weight	Breaker (E, F, G type)	(kg)	37	37
	Cradle (E, F, G type)	(kg)	18, 25, 32	19, 26, 33
Dimensions	Breaker (E, F, G type)		Page 97~98	
	Cradle (E, F, G type)		Page 98~99	
Standards			IEC 62271-100, JEC 2300/JIS C 4603, V-check (KESCO)	

Ratings - 7.2/12/17.5kV 20/25kA 630/1250/2000A

Susol

VL-06/12/17

Item			VL-06□20/25□06/13/20			VL-12□20/25□06/13/20			VL-17□20/25□06/13/20		
Rated voltage		Ur (kV)	7.2			12			17.5		
Rated normal current		Ir (A)	630	1250	2000	630	1250	2000	630	1250	2000
Rated frequency		fr (Hz)	50/60								
Rated short-circuit current		Isc (kA)	20, 25								
Rated short-time withstand current		Ik/tk (kA/s)	20/3, 25/3								
Rated short-circuit breaking capacity		(MVA)	250/310			410/520			600/750		
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)								
Rated breaking time		(cycle)	3								
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20			28			38		
	Impulse (1.2×50μs)	Up (kV)	60			75			95		
Rated operating sequence			O-0.3s-CO-15s-CO								
Control voltage	Closing coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220~250, AC 48, AC 100~130, AC 220~250								
	Trip coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220~250, AC 48, AC 100~130, AC 220~250								
Auxiliary contacts			4a4b, 10a10b								
Rated opening time		(sec)	≤ 0.04								
No-load closing time		(sec)	≤ 0.06								
Type test class	Mechanical		M2								
	Electrical		E2 (List3)								
	Capacitive current switching		C2								
Installation version *	Fixed		P type								
	Drawout		E, F, G type (for MESG), H type (for MCSG)			E, F type (for MESG), H type (for MCSG)					
Phase distance **		(mm)	150			150 (210)			150 (210)		
Weight	Breaker (E, F, G, K type)	(kg)	100	100	130	115 (120)	115 (120)	130 (140)	115 (120)	115 (120)	130 (140)
	Cradle (E, F, G, K type)	(kg)	170	170	180	170 (200)	170 (200)	180 (200)	170 (200)	170 (200)	180 (200)
Dimensions	Breaker (P, E, F, G, K, H type)		Page 100~111			Page 100~111			Page 100~111		
	Cradle (E, F, G, K type)		Page 100~111			Page 100~111			Page 100~111		
	Cradle (K, H type)		Page 100~111			Page 100~111			Page 100~111		
Standards			IEC 62271-100, KERI/KEMA, V-check (KESCO)								

* H type is a box type cradle with CB compartment style structure.
** ( ) displays option of phase distance.

Ratings - 7.2/12/17.5kV 31.5kA 630/1250/2000/2500A

Susol

VL-06/12/17

Item			VL-06□32□06/13/20			VL-12□32□06/13/20/25				VL-17□32□06/13/20/25			
Rated voltage		Ur (kV)	7.2			12				17.5			
Rated normal current		Ir (A)	630	1250	2000	630	1250	2000	2500	630	1250	2000	2500
Rated frequency		fr (Hz)	50/60										
Rated short-circuit current		Isc (kA)	31.5										
Rated short-time withstand current		Ik/tk (kA/s)	31.5/3 (4 Note1))										
Rated short-circuit breaking capacity		(MVA)	393			655				955			
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)										
Rated breaking time		(cycle)	3										
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20			28				38			
	Impulse (1.2×50μs)	Up (kV)	60			75				95			
Rated operating sequence			O-0.3s-CO-15s-CO										
Control voltage	Closing coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220~250, AC 48, AC 100~130, AC 220~250										
	Trip coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220~250, AC 48, AC 100~130, AC 220~250										
Auxiliary contacts			4a4b, 10a10b										
Rated opening time		(sec)	≤ 0.04										
No-load closing time		(sec)	≤ 0.06										
Type test class	Mechanical		M2										
	Electrical		E2 (List 3)										
	Capacitive current switching		C2										
Installation version *	Fixed		P type										
	Drawout		H type (for MCSG)	E, F, Fs, G, Gs, K type (for MESG) H type (for MCSG)		H type (for MCSG)	Gs, K type (for MESG) H type (for MCSG)		H type (for MCSG)	H type (for MCSG)			
Phase distance **		(mm)	150			150 (210)			210 (275)	150 (210)			210 (275)
Weight	Breaker (H type)	(kg)	100	100	130	115/120	115/120	130/140	160/175	115/120	115/120	130/140	165/175
	Cradle (H type)	(kg)	170	170	200	170/200	170/200	170/200	260/290	170/200	170/200	170/200	260/290
	Breaker (P, E, F, G, K type)	(kg)	85	85	100	85/100	85/100	100/115	120/135	85/100	85/100	100/115	120/135
Dimensions	Breaker (P, E, F, Fs, G, Gs, K, H type)		Page 112~128			Page 129~161							
	Cradle (E, F, Fs, G, Gs, K, H type)		Page 112~128			Page 129~161							
Standards			IEC 62271-100, KERI, V-check (KESCO)										

* H type is a box type cradle with CB compartment style structure.
** ( ) displays option of phase distance.
Note1) For Icw 4s, please contact us.

Ratings - 24/25.8kV 12.5/16/25kA 630/1250/2000/2500A

Susol

VL-20/25

Item			VL-20,25□13□06/13		VL-20,25□16□06/13		VL-20,25□25□06/13/20/25			
Rated voltage		Ur (kV)	24/25.8							
Rated normal current		Ir (A)	630	1250	630	1250	630	1250	2000	2500
Rated frequency		fr (Hz)	50/60 Note1)							
Rated short-circuit current		Isc (kA)	12.5		16		25			
Rated short-time withstand current		Ik/tk (kA/s)	12.5/3 Note2)		16/3 Note2)		25/3 Note2)			
Rated short-circuit breaking capacity		(MVA)	520/560		665/715		1040/1120			
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)							
Rated breaking time		(cycle)	3							
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	50/60							
	Impulse (1.2×50㎲)	Up (kV)	125							
Rated operating sequence			O-0.3s-CO-15s-CO							
Control voltage	Closing coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220~250, AC 48, AC 100~130, AC 220~250							
	Trip coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220~250, AC 48, AC 100~130, AC 220~250							
Auxiliary contacts			4a4b, 10a10b							
Rated opening time		(sec)	≤ 0.04							
No-load closing time		(sec)	≤ 0.06							
Type test class	Mechanical		M2							
	Electrical		E2 (List 3)							
	Capacitive current switching		C2							
Installation version *	Fixed		P type							-
	Drawout		E,F,G type (for MESG) / K, H type (for MCSG)							H type (for MCSG)
Phase distance **		(mm)	210/265/275							275
Weight	Breaker (H type)	(kg)	120 (130)		130 (140)		150 (160)			
	Cradle (H type)	(kg)	200 (220)		200 (220)		200 (220)			
	Breaker (P, E, F, G, K type)	(kg)	110	115	120		135			-
Dimensions	Breaker (P, E, F, G, K, H type)		Page 162~171		Page 172~178		Page 178~182			
	Cradle (E, F, G, K type)		Page 183~185		Page 183~185		Page 183~185			
	Cradle (H type)		Page 186~190		Page 186~190		Page 186~190			
Standards			IEC 62271-100, KERI, V-check (KESCO)							

* H type is a box type cradle with CB compartment style structure.
** ( ) displays option of phase distance.
Note1) 24/25.8kV 25kA 2000A(Phase distance 210mm): 60Hz available only
2) For Icw 4s, please contact us.

Ratings - 36kV 25kA 630/1250/2000/2500A

Susol

VL-36

Item			VL-36□25□06	VL-36□25□13	VL-36□25□20	VL-36□25□25
Rated voltage		Ur (kV)	36			
Rated normal current		Ir (A)	630	1250	2000	2500
Rated frequency		fr (Hz)	50/60			
Rated short-circuit current		Isc (kA)	25			
Rated short-time withstand current		Ik/tk (kA/s)	25/3(4 Note1))			
Rated short-circuit breaking capacity		(MVA)	1560			
Rated short-circuit making current		Ip (kA)	62.5/65			
Rated breaking time		(Cycle)	3			
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	70			
	Impulse (1.2×50μs)	Up (kV)	170			
Rated operating sequence			O-0.3s-CO-15s-CO			
Control voltage	Closing coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220, AC 48, AC 100~130, AC 220~250			
	Trip coil	(V)	DC 24~30, DC 48~60, DC 110, DC 125, DC 220, AC 48, AC 100~130, AC 220~250			
Auxiliary contacts			4a4b, 10a10b			
Rated opening time		(sec)	≤ 0.04			
No-load closing time		(sec)	≤ 0.07			
Type test class	Mechanical		M2			
	Electrical		E2 (List 3)			
	Capacitive current switching		C2			
Installation version	Fixed		P type			
	Drawout		H type (for MCSG)			
Phase distance		(mm)	275			
Weight	Breaker (H type)	(kg)	260	260	280	300
	Cradle (H type)	(kg)	440	440	450	460
Dimensions	Breaker (H type)		Page 191~196			
	Cradle (H type)		Page 191~196			
Standards			IEC 62271-100			

Note1) For Icw 4s, please contact us.

Ratings - 7.2/12kV 31.5/40kA 1250/2000/3150A

Susol

LVB-06/12

Item			LVB-06□-32□32	LVB-06□-40□12, 20, 32			LVB-12□-32□32	LVB-12□-40□12, 20, 32		
Rated voltage		Ur (kV)	7.2	7.2			12	12		
Rated normal current		Ir (A)	3150 *	1250	2000	3150 *	3150 *	1250	2000	3150 *
Rated frequency		fr (Hz)	50/60							
Rated short-circuit current		Isc (kA)	31.5	40			31.5	40		
Rated short-time withstand current		Ik/tk (kA/s)	31.5/3	40/3			31.5/3	40/3		
Rated short-circuit breaking capacity		(MVA)	393	499			655	831		
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)							
Rated breaking time		(Cycle)	3							
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20				28			
	Impulse (1.2×50㎲)	Up (kV)	60				75			
Rated operating sequence			O-0.3s-CO-3min-CO							
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220							
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220							
Auxiliary contacts			4a4b, 10a10b							
Rated opening time		(sec)	≤ 0.04							
No-load closing time		(sec)	≤ 0.06							
Type test class	Mechanical		M2							
	Electrical		E2 (List1)							
	Capacitive current switching		C2							
Installation version	Fixed		P type				-			
	Drawout *		E,F,G type (for MESG), MCSG Cradle				MCSG Cradle			
Phase distance		(mm)	210	150		210	210	150		210
Weight	Breaker (MESG, MCSG)	(kg)	210, 220	135, 160	135, 160	210, 220	220	164	165	220
	Cradle (MESG, MCSG)	(kg)	135, 155	55, 110	63, 117	135, 155	155	110	117	155
Dimensions	Breaker (MESG, MCSG)		Page 201~202	Page 197~198		Page 201~202	Page 201~202	Page 197~198		Page 201~202
	Cradle (MESG, MCSG)		Page 203~204	Page 199~200		Page 203~204	Page 203~205	Page 199~200		Page 203~205
Standards			IEC 62271-100, KERI/KEMA, V-check(KESCO)							

* MCSG style drawable type provide a cradle for builting in the switchgear, not a box type for CB compartment. Ordering type is LVB.
Note 1) H type that is a box type cradle for enabling a CB compartment in MCSG is under development. Consult us for ordering.
2) Some LVB is the ordering name of the switchboard for export

Ratings - 7.2/12/17.5kV 40kA 1250/2000A

Susol

VH-06/12/17

Item			VH-06/12□40□13/20				VH-06/12/17□40□13/20					
Rated voltage		Ur (kV)	7.2		12		7.2		12		17.5	
Rated normal current		Ir (A)	1250	2000	1250	2000	1250	2000	1250	2000	1250	2000
Rated frequency		fr (Hz)	50/60									
Rated short-circuit current		Isc (kA)	40									
Rated short-time withstand current		Ik/tk (kA/s)	40/4									
Rated short-circuit breaking capacity		(MVA)	499		831		499		831		1212	
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)									
Rated breaking time		(cycle)	3									
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20		28 (42)		20		28 (42)		38	
	Impulse (1.2×50㎲)	Up (kV)	60		75		60		75		95	
Rated operating sequence			O-0.3s-CO-3min-CO				O-0.3s-CO-15s-CO					
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220									
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220									
Auxiliary contacts			4a4b, 10a10b									
Rated opening time		(sec)	≤ 0.04									
No-load closing time		(sec)	≤ 0.06									
Type test class	Mechanical		M2									
	Electrical		E2 (List 3)									
	Capacitive current switching		C2									
Installation version	Drawout		Fs, Gs, K, H type				K, H type					
Phase distance		(mm)	150				210					
Weight	Breaker (H type)	(kg)	165				215					
	Cradle (H type)	(kg)	205				226					
Dimensions	Breaker (Fs, Gs, K, H type)		Page 208~223				Page 208~223					
	Cradle (Fs, Gs, K, H type)		Page 208~223				Page 208~223					
Standards			IEC 62271-100									

Ratings - 7.2/12/17.5kV 31.5/40kA 3150A

Susol

VH-06/12/17

Item			VH-06/12/17□32/40□32				
Rated voltage		Ur (kV)	7.2	12	17.5		
Rated normal current		Ir (A)	3150				
Rated frequency		fr (Hz)	50/60				
Rated short-circuit current		Isc (kA)	31.5/40				
Rated short-time withstand current		Ik/tk (kA/s)	40/4				
Rated short-circuit breaking capacity		(MVA)	393/499	655/831	955/1212		
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)				
Rated breaking time		(cycle)	3				
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20	28 (42)	38		
	Impulse (1.2×50μs)	Up (kV)	60	75	95		
Rated operating sequence			O-0.3s-CO-15s-CO				
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220				
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220				
Auxiliary contacts			4a4b, 10a10b				
Rated opening time		(sec)	≤ 0.04				
No-load closing time		(sec)	≤ 0.06				
Type test class	Mechanical		M2				
	Electrical		E2 (List 3)				
	Capacitive current switching		C2				
Installation version	Drawout		Fs, Gs, K, H type	Gs, K, H type	K, H type	K type	H type
Phase distance		(mm)	210	210	210	254	275
Weight	Breaker (H type)	(kg)	240	240	240	280	280
	Cradle (H type)	(kg)	235	235	235	250	250
Dimensions	Breaker (Fs, Gs, K, H type)		Page 208~223				
	Cradle (Fs, Gs, K, H type)		Page 208~223				
Standards			IEC 62271-100				

Ratings - 7.2/12/17.5kV 50kA 1250/2000/2500/3150A

Susol

VH-06/12/17

Item			VH-06□50□13/20/25/32				VH-12□50□13/20/25/32				VH-17□50□13/20/25/32			
Rated voltage		Ur (kV)	7.2				12				17.5			
Rated normal current		Ir (A)	1250	2000	2500	3150	1250	2000	2500	3150	1250	2000	2500	3150
Rated frequency		fr (Hz)	50/60											
Rated short-circuit current		Isc (kA)	50											
Rated short-time withstand current		Ik/tk (kA/s)	50/3											
Rated short-circuit breaking capacity		(MVA)	623				1039				1515			
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)											
Rated breaking time		(cycle)	3											
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20				28 (42) Note1)				38			
	Impulse (1.2×50μs)	Up (kV)	60				75 (82) Note1)				95			
Rated operating sequence			O-0.3s-CO-15s-CO / O-0.3s-CO-3min-CO											
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220											
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220											
Auxiliary contacts			4a4b, 10a10b											
Rated opening time		(sec)	≤ 0.04											
No-load closing time		(sec)	≤ 0.06											
Type test class	Mechanical		M2											
	Electrical		E2 (List3)											
	Capacitive current switching		C2											
Installation version *	Fixed		P type											
	Drawout		H type (for MCSG)											
Phase distance		(mm)	210		275		210		275		210		275	
Weight	Breaker (H type)	(kg)	230		287	290	230		287	290	230		287	290
	Cradle (H type)	(kg)	175		320	320	175		320	320	175		320	320
Dimensions	Breaker (H type)		Page 224		Page 226		Page 224		Page 226		Page 224		Page 226	
	Cradle (H type)		Page 225		Page 227		Page 225		Page 227		Page 225		Page 227	
Standards			IEC 62271-100, KERI/KEMA, V-check(KESCO)											

* H type is a box type cradle with CB compartment style structure.
Note1) Contact us.

Ratings - 7.2/12/17kV 40/50kA 4000A

Susol

VH-06/12/17

Item			VH-06/12/17□40□40			VH-06/12/17□50□40		
Rated voltage		Ur (kV)	7.2	12	17.5	7.2	12	17.5
Rated normal current		Ir (A)	4000					
Rated frequency		fr (Hz)	50/60					
Rated short-circuit current		Isc (kA)	40			50		
Rated short-time withstand current		Ik/tk (kA/s)	40/4			50/4		
Rated short-circuit breaking capacity		(MVA)	499	831	1212	624	1040	1515
Rated short-circuit making current		Ip (kA)	104			130		
Rated breaking time		(cycle)	3					
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20	28(42)	38	20	28(42)	38
	Impulse (1.2×50μs)	Up (kV)	60	75	95	60	75	95
Rated operating sequence			O-0.3s-CO-15s-CO					
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220					
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220					
Auxiliary contacts			4a4b, 10a10b					
Rated opening time		(sec)	≤ 0.04					
No-load closing time		(sec)	≤ 0.06					
Type test class	Mechanical		M2					
	Electrical		E2 (List3)					
	Capacitive current switching		C2					
Installation version	Fixed		-	-	P type	-	-	P type
	Drawout		H type	H type	H type	H type	H type	H type
Phase distance		(mm)	275					
Weight	Breaker (H type)	(kg)	395					
	Cradle (Ha, Hb type)	(kg)	200					
Dimensions	Breaker (P, H type)		Page 228~233					
	Cradle (Ha, Hb type)		Page 228~233					
Standards			IEC 62271-100					

Ratings - 7.2/12kV 40/50kA 5000A

Susol

VH-06/12

Item			VH-06H40,50L50	VH-12H40,50L50
Rated voltage		Ur (kV)	7.2	12
Rated normal current		Ir (A)	5000	
Rated frequency		fr (Hz)	50/60	
Rated short-circuit current		Isc (kA)	40/50	
Rated short-time withstand current		Ik /tk (kA/s)	50/4	
Rated short-circuit breaking capacity		(MVA)	624	1040
Rated short-circuit making current		Ip (kA)	130	
Rated breaking time		(Cycle)	3	
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	20	20
	Impulse (1.2×50㎲)	Up (kV)	60	75
Rated operating sequence			O-0.3s-CO-15s-CO	
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220~250	
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220~250	
Auxiliary contacts			4a4b, 10a10b	
Rated opening time		(sec)	≤ 0.04	
No-load closing time		(sec)	≤ 0.06	
Type test class	Mechanical		M2	
	Electrical		E2 (List 3)	
	Capacitive current switching		C2	
Installation version	Drawout		H type (for MCSG)	
Phase distance		(mm)	320	
Weight	Breaker (H type)	(kg)	430	
	Cradle (Ha type)	(kg)	200	
Dimensions	Breaker (H type)		Page 232~233	
	Cradle (Ha type)		Page 232~233	
Standards			IEC 62271-100	

Ratings - 24/25.8kV 25/31.5/40kA 1250/2000/2500/3150A

Susol

VH-20/25

Item			VH-20,25□25□25	VH-20,25□32□13/20/32			VH-20,25□40□13/20/32		
Rated voltage		Ur (kV)	24/25.8						
Rated normal current		Ir (A)	2500	1250	2000	3150	1250	2000	3150
Rated frequency ***		fr (Hz)	50/60	60			50/60		
Rated short-circuit current		Isc (kA)	25	31.5			40		
Rated short-time withstand current		Ik/tk (kA/s)	25/3	31.5/3			40/3		
Rated short-circuit breaking capacity		(MVA)	1039/1117	1309/1407			1662/1787		
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)	2.6×Isc (60Hz)			2.5×Isc (50Hz)/2.6×Isc (60Hz)		
Rated breaking time		(cycle)	3						
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	50 (65) Note1)						
	Impulse (1.2×50㎲)	Up (kV)	125						
Rated operating sequence ****			O-0.3s-CO-15s-CO / O-0.3s-CO-3min-CO						
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220						
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220						
Auxiliary contacts			4a4b, 10a10b						
Rated opening time		(sec)	≤ 0.04						
No-load closing time		(sec)	≤ 0.06						
Type test class	Mechanical		M2						
	Electrical		E2 (List3)						
	Capacitive current switching		C2						
Installation version *	Fixed		P type						
	Drawout		H type (for MCSG)						
Phase distance **		(mm)	275	210 (275)	210 (275)	275	210 (275)	210 (275)	275
Weight	Breaker (H type)	(kg)	295	256 (273)	256 (273)	318	256 (273)	256 (273)	318
	Cradle (H type)	(kg)	316	257 (284)	257 (284)	316	257 (284)	257 (284)	316
Dimensions	Breaker (H type)		Page 234	Page 236~239		Page 241	Page 236~239		Page 241
	Cradle (H type)		Page 235	Page 237, 240		Page 242	Page 237, 240		Page 242
Standards			IEC 62271-100, KERI/KEMA, V-check (KESCO)						

* H type is a box type cradle with CB compartment style structure.
** ( ) displays option of phase distance.
*** Rated frequency(fr) 50Hz is certified only to 24kV.
**** Rated operating sequence O-0.3s-CO-15s-CO is certified only to 24kV 40kA.
Note1) Contact us.

Ratings - 36kV 25/31.5/40kA 1250/2000/3150A

Susol

VH-36

Item			VH-36□25□13/20/32			VH-36□32□13/20/32			VH-36□40□13/20/32		
Rated voltage		Ur (kV)	36								
Rated normal current		Ir (A)	1250	2000	3150	1250	2000	3150	1250	2000	3150
Rated frequency		fr (Hz)	50/60								
Rated short-circuit current		Isc (kA)	25			31.5			40		
Rated short-time withstand current		Ik/tk (kA/s)	25/3			31.5/3			40/3		
Rated short-circuit breaking capacity		(MVA)	1559			1964			2494		
Rated short-circuit making current		Ip (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)								
Rated breaking time		(cycle)	3								
Rated withstand voltage	Power frequency (1 min)	Ud (kV)	70 (95) Note1)								
	Impulse (1.2×50μs)	Up (kV)	170								
Rated operating sequence			O-0.3s-CO-3min-CO								
Control voltage	Closing coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220								
	Trip coil	(V)	DC 48, DC 110, DC 125, DC 220~250, AC 48, AC 110, AC 220								
Auxiliary contacts			4a4b, 10a10b								
Rated opening time		(sec)	≤ 0.04								
No-load closing time		(sec)	≤ 0.06								
Type test class	Mechanical		M2								
	Electrical		E2 (List3)								
	Capacitive current switching		C2								
Installation version *	Fixed		P type								
	Drawout		H type (for MCSG)								
Phase distance		(mm)	300								
Weight	Breaker (H type)	(kg)	400		490	400		490	400		490
	Cradle (H type)	(kg)	700		750	700		750	700		750
Dimensions	Breaker (H type)		Page 243		Page 245	Page 243		Page 245	Page 243		Page 245
	Cradle (H type)		Page 244		Page 246	Page 244		Page 246	Page 244		Page 246
Standards			IEC 62271-100, KERI/KEMA, V-check (KESCO)								

* H type is a box type cradle with CB compartment style structure.
Note1) Contact us.

Mounting Position	Type	Accessory	Supplied as			Remarks	page
			VL: 7.2kV 8/12.5kA	VL: 20/25kA	VH		
Breaker (Internal)	M	Motor	●	●	●	Attached at the factory	61
	CC	Closing Coil	●	●	●	Attached at the factory	62
	TC	Trip Coil	●	●	●	Attached at the factory	63
	A1	Secondary Trip Coil	Option	Option	Option	Attached at the factory	64
	A2	Secondary Trip Coil with TCM Contact	-	Option	Option	Attached at the factory	64, 80
	T9	Current Trip Coil	Option	Option	-	Attached at the factory	65
	SA (SB)	Auxiliary Contact 2a2b	●	-	-	Attached at the factory	66
		Auxiliary Contact 4a4b	Option	●	●		
		Auxiliary Contact 6a6b	Option	-	-		
		Auxiliary Contact 10a10b	-	Option	Option		
	U	Under Voltage Trip Coil	Option	Option	Option	Attached at the factory	67
	A3	Position S/W(Test: 1a1b, Service: 2b)	Option	Option	Option	Attached at the factory	68
	A4	Position S/W(Test: 2a, Service: 2a)	Option	Option	Option	Attached at the factory	68
	A5	Position S/W(Test: 1a1b, Service: 1a1b)	Option	Option	Option	Attached at the factory	68
	A6	Latch Checking Switch	-	-	Option	Attached at the factory	69
	C	Counter	●	●	●	Attached at the factory	69
	A7	Keylock	Option	Option	Option	Attached at the factory	70
	A8	Button Padlock	Option	Option	Option	Attached at the factory	71
	A9	Button cover	Option	Option	Option	Attached at the factory	72
	AA	Lead Wire: A/B type connector	Option	Option	Option	Attached at the factory	73
	AB	Plug/Terminal for Lead Wire	Option	Option	Option	Attached at the factory	73
	AC	Plug Interlock	-	Option	Option	Attached at the factory	77
	AD	Padlock (H type)	-	Option	Option	Attached at the factory	77
	AE	MOC(Mechanical Operated Cell Switch	-	Option	Option	Attached at the factory	78
	AF	Locking Magnet	-	Option	Option	Attached at the factory	79
	AJ	Door Interlock	-	Option	Option	Attached at the factory	89
	AO	Lead Wire: A type connector (Special Color: Blue)	Option	Option	-	Attached at the factory	91
		Trip Coil Monitoring Contact	●	●	●	Attached at the factory	80
Breaker (External)	CTD1	Condenser Trip Device(AC110V)	Option	Option	Option	-	82
	CTD2	Condenser Trip Device(AC220V)	Option	Option	Option	-	82
	UDC1	UVT Time Delay Controller(AD110V)	Option	Option	Option	-	83
	UDC2	UVT Time Delay Controller(AD220V)	Option	Option	Option	-	83
	UDC3	UVT Time Delay Controller(AD48V)	Option	Option	Option	-	83
	CTU	Coil Test Unit	Option	Option	Option	-	81
	TM	Temperature Monitoring	-	Option	Option	-	84

* ●: Basic Installation

Accessory

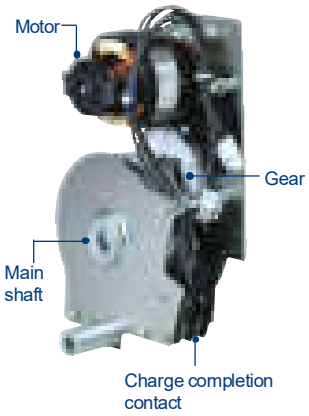
Susol

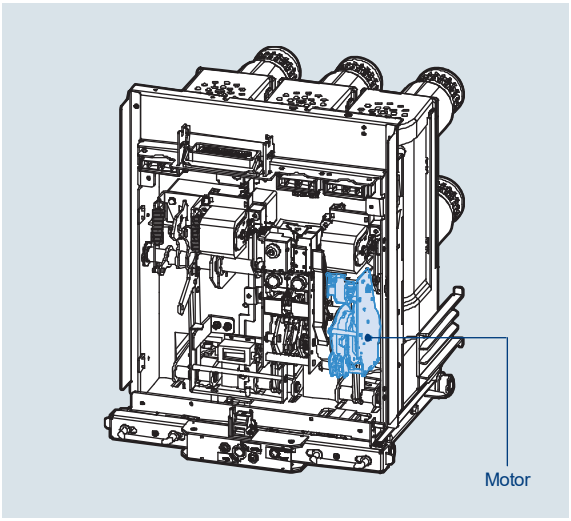
Mounting Position	Type	Accessory	Supplied as			Remarks	page
			VL: 7.2kV 8/12.5kA	VL: 20/25kA	VH		
Cradle	A1	ES(Earthing Switch)\ without Option	-	Option	Option	Attached at the factory	85
	A2	ES(Earthing Switch) with Position Switch(2a2b)	-	Option	Option	Attached at the factory	85
	A4	ES(Earthing Switch) with Position Switch(6a6b)	-	Option	Option	Attached at the factory	85
	A5	Keylock for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	A6	Locking magnet(DC110V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	A7	Locking magnet(DC220V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	A8	Locking magnet(DC125V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	A9	Locking magnet(DC24V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	AA	Locking magnet(DC48V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	AB	Locking magnet(AC48V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	AC	Locking magnet(AC110V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	AD	Locking magnet(AC220V) for ES(Earthing Switch)	-	Option	Option	Attached at the factory	86
	AE	Shutter padlock	-	Option	Option	Attached at the factory	87
	AF	TOC(Truck Operated Cell Switch)	-	Option	Option	Attached at the factory	87
	AG	MOC(Mechanical Operated Cell Switch)	-	Option	Option	Attached at the factory	86
	AH	Door	-	Option	Option	Attached at the factory	88
	AJ	Door Interlock	-	Option	Option	Attached at the factory	89
	AK	Door Emergency Push Button	-	Option	Option	Attached at the factory	89
	AL	Temperature Sensor	-	Option	Option	Attached at the factory	90
	AM	Type H Lead Wire 4a4b (Normal cable)	-	Option	Option	Attached at the factory	91
	AN	Type H Lead Wire 10a10b (Normal cable)	-	Option	Option	Attached at the factory	91
	AO	Type H Lead Wire 4a4b) (Flame retardant cable)	-	Option	Option	Attached at the factory	91
		Door padlock	-	Option	Option	Attached at the factory	91

Motor: M

Installed inside of a breaker as standard

VL type





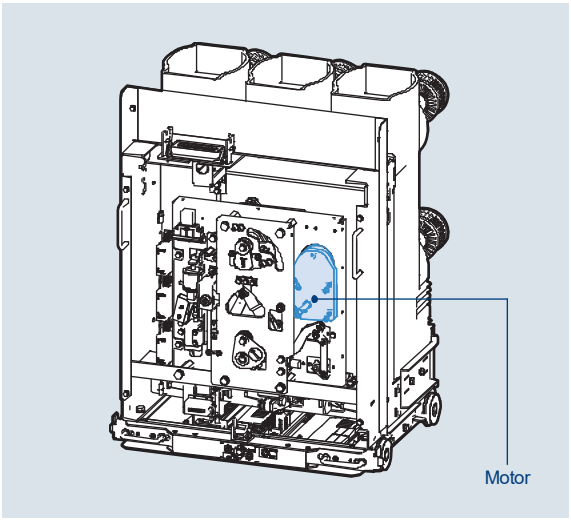
- Charge the closing spring of a circuit breaker by the external power source. When the charging is complete, control power of the motor will be "OFF" by the built-in Limit S/W. Without the external power source, charge manually.

  Operating voltage range (IEC 60947)
  85%~110%Vn

	VL type							
Input voltage (Vn)	DC 24~30V	DC 48~60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~130	AC 200~250V
Load current (A)	≤ 5	≤ 3	≤ 1	≤ 1	≤ 0.5	≤ 3	≤ 1	≤ 0.5
Starting current (A)	5 times of load current							
Charge time	Within 5 sec.							

Note) Rated operation and control voltage range, see page 65.

VH type



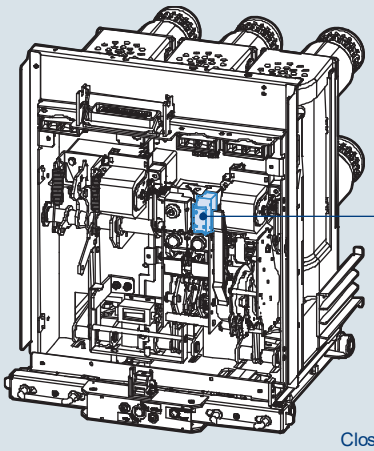
	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Load current (A)	≤ 6	≤ 3	≤ 3	≤ 2.6	≤ 6	≤ 3	≤ 2.6
Starting current (A)	≤ 30	≤ 20	≤ 20	≤ 17	≤ 30	≤ 20	≤ 17
Charge time	Within 12 sec.						

Note) Rated operation and control voltage range, see page 65.

Closing Coil: C

Installed inside of a breaker as standard

VL type

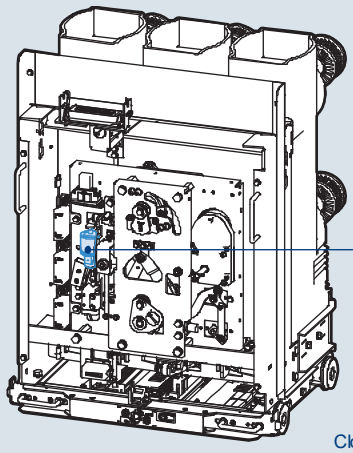


- It is a control device which closes a circuit breaker, when applying voltage continuously or instantaneously over 200ms to the coil control terminals.

	VL type							
Input voltage (Vn)	DC 24~ 30V	DC 48~ 60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~ 130	AC 200~ 250V
Power consumption (inrush, W)	200							
Power consumption (steady, W)	≤ 5							

Note) Rated operation and control voltage range, see page 65.

VH type



- It is a control device which closes a circuit breaker, when applying voltage continuously about 45ms to the coil control terminals. Electrical pumping preventing circuit is built in.

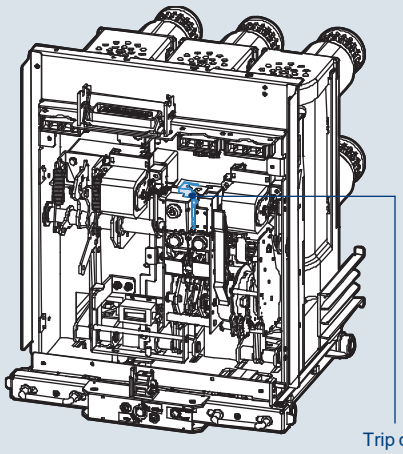
	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Rated current (A)	≤ 8	≤ 3	≤ 3	≤ 2.5	≤ 8	≤ 3	≤ 2.5

Note) Rated operation and control voltage range, see page 65.

Trip Coil: T

Installed inside of a breaker as standard

VL type

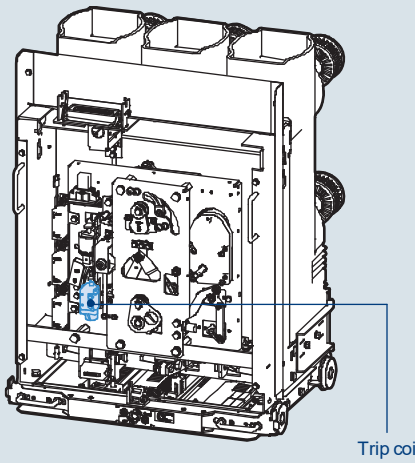


- It is a control device which trips a circuit breaker from remote place, when applying voltage continuously or instantaneously over 35ms to coil control terminals.
- When UVT coil is installed, its location is changed.

	VL type							
Input voltage (Vn)	DC 24~ 30V	DC 48~ 60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~ 130	AC 200~ 250V
Power consumption (inrush, W)	200							
Power consumption (steady, W)	≤ 5							

Note) Rated operation and control voltage range, see page 65.

VH type



- It is a control device which trips a circuit breaker, when applying voltage continuously or instantaneously over 35ms to the coil control terminals.

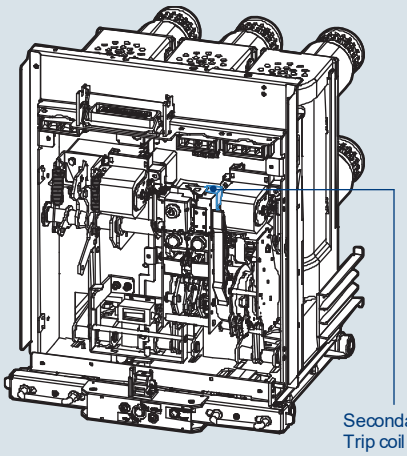
	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Rated current (A)	≤ 8	≤ 3	≤ 3	≤ 2.5	≤ 8	≤ 3	≤ 2.5

Note) Rated operation and control voltage range, see page 66.

Secondary Trip Coil: A1
Secondary Trip Coil with TCM Contact : A2

Installed inside of a breaker as an option

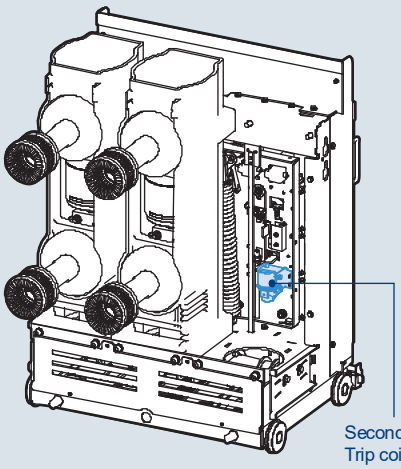
VL type



- It is a control device which trips a circuit breaker doubly from the outside. If the trip coil (T) fails, it can trip a circuit breaker safely.
- Trip coil: Install it at existing location.
- Secondary trip coil: Install it on the right side of the trip coil.
- It is not available with UVT coil when installing secondary trip coil.

	VL type							
Input voltage (Vn)	DC 24~ 30V	DC 48~ 60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~ 130	AC 200~ 250V
Power consumption (inrush, W)	200							
Power consumption (steady, W)	≤ 5							

VH type



- It is a control device which trips a circuit breaker doubly from the outside. If the trip coil (T) fails, it can trip a circuit breaker safely.
- It is not available with UVT coil when installing secondary trip coil.

	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Rated current (A)	≤ 8	≤ 3	≤ 3	≤ 2.5	≤ 8	≤ 3	≤ 2.5

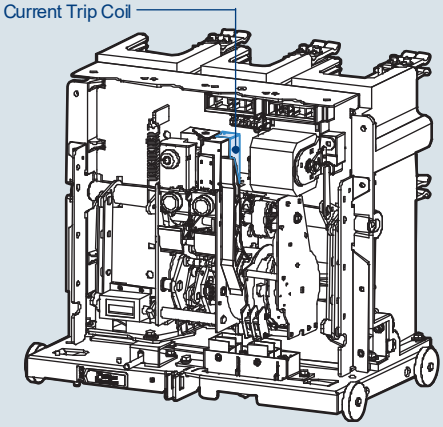
Rated operation and control voltage range

Item		Susol VCB			Remarks
		VL: 7.2kV 8/12.5kA	VL: 20/25kA	VH	
Motor	AC	85~110%	85~110%	85~110%	
	DC	75~110%	85~110%	85~110%	
Closing	AC	85~110%	85~110%	85~110%	
	DC	75~125%	85~110%	85~110%	
Trip	AC	60~125%	85~110%	85~110%	
	DC	60~125%	70~110%	70~110%	
Applied standards		IEC62271-100 (2008) KSC4611	IEC62271-100 (2008)	IEC62271-100 (2008)	

Current Trip Coil

Installed inside of a breaker as an option

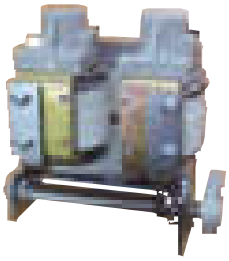
VL type : T9

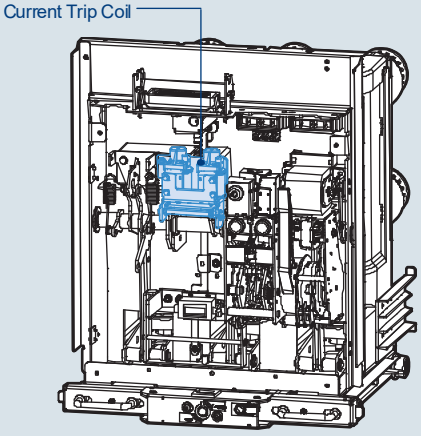


- This trip coil uses the output of the CT as its control power source and is used with over current relay in combination. Two current trip coils are supplied.
- Coil burden is 90VA.(T9)
- Coil impedance(Z) is like below
  - 3A: 10Ω or less, Operating current AC 3A (T9)
  - 1A: 160Ω or less, Operating current AC 1A (AV)
  - 5A: 6Ω or less, Operating current is AC 5A (AW)
- CT must be installed at load side.
  If it is installed at bus side there is the danger of malfunction or damage to CT.
- Don't disconnect the control power connector on main power is live condition at service position. Otherwise there is the danger of malfunction or damage to CT.

* CT is recommended to use 15VA 5P10 and more.

VL type : AV, AW

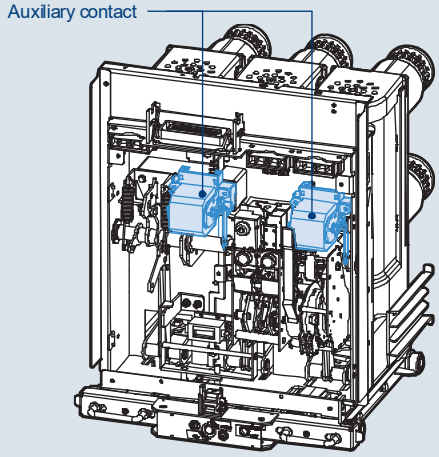




Auxiliary Contact: SA

Installed inside of a breaker as an option

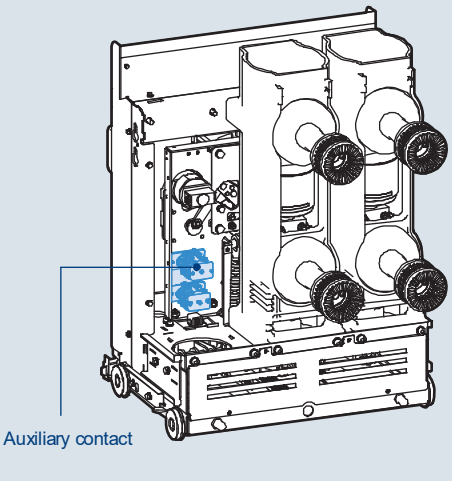
VL type



- It is a contact used to monitor ON/OFF status of a breaker from remote place.
- The auxiliary contacts supplied as standard configuration is 4a4b. 10a10b is also available on request.
- For 7.2kV 8/12.5kA VCB standard configuration is 2a2b. 4a4b and 6a6b are optional.

Item	VL: 7.2kV 8/12.5kA	VL: 20/25kA, VH
Standard	2a2b	4a4b
Optional	4a4b, 6a6b	10a10b

VH type



VL/VH Type					
Item			Resistive load (A)	Inductive load (A)	Remarks
Contact configuration	AC	250V	10	5	For all models
		125V	10	5	
	DC	250V	10	5	
		125V	10	5	
		30V	10	5	

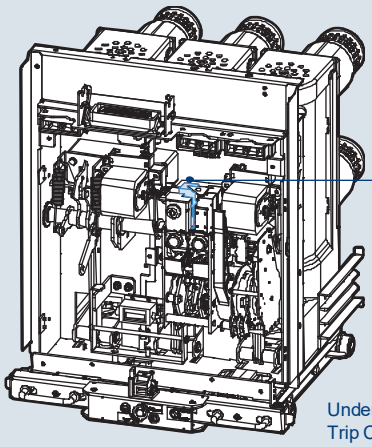
Under Voltage Trip Coil: U

Installed inside of a breaker as an option

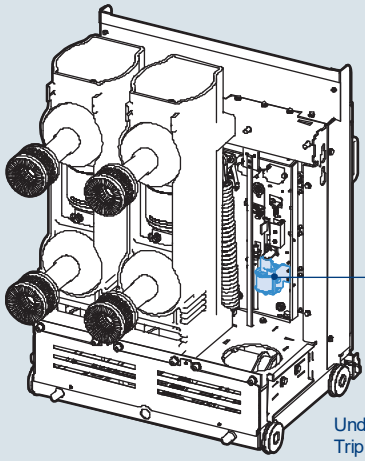
VL type

VH type

VL type



VH type



- It is installed inside of a breaker to trip when the main power or control power voltage drops below certain value. Instantaneous type is only available with UVT coil and Time delay type is available by connecting UVT coil and UVT time delay controller.
- The closing of a circuit breaker is impossible mechanically or electrically if control power is not supplied to UVT. To close the circuit breaker, 65~85% of rated voltage should be applied.
- UVT and secondary trip coil will not be selected together.

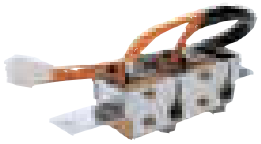
1. UVT rated voltage and characteristic
   - Operating voltage range: Pick up 0.65~0.85Vn, Drop out 0.4~0.6Vn
   - Operating voltage ranges based on the minimum value of each rated voltage (Vn)

	VL type							
Input voltage (Vn)	DC 24~30V	DC 48~60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~130	AC 200~250V
Power consumption (inrush. W)	200							
Power consumption (steady, W)	≤ 5							

	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Power consumption (inrush. W)	350						
Power consumption (steady, W)	≤ 10						

Position Switch: A3, A4, A5

Installed inside of a breaker as an option

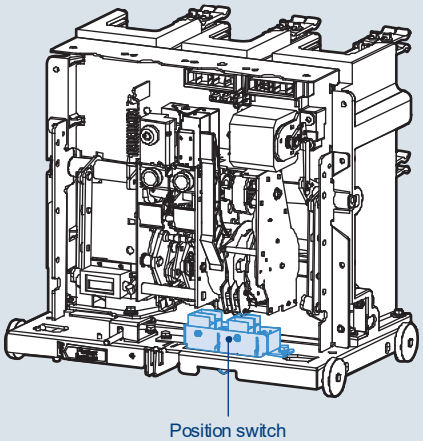


Small VCB (VL)

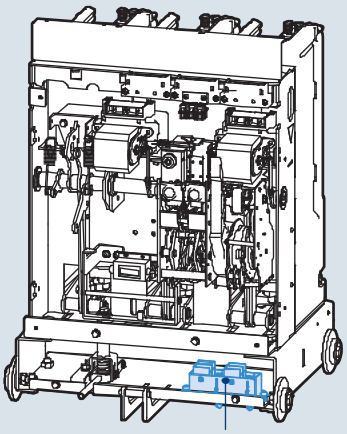
Medium VCB (VL)

VL type - E/F/G Cradle

VL: 7.2kV 8/12.5kA

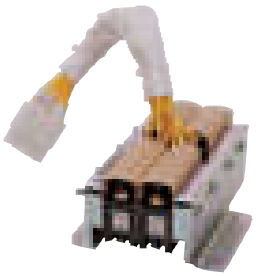


VL: 20/25kA



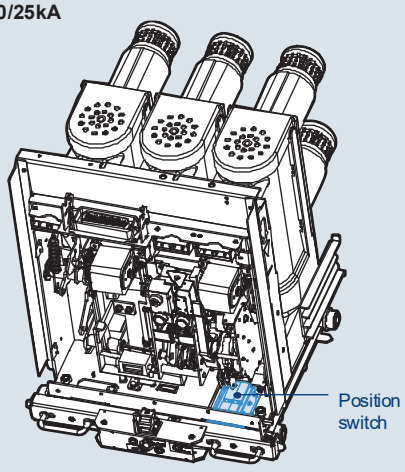
- This switch is used to indicate the breaker position (SERVICE, TEST), and contact configuration is 2a2a or 2a2b.

VL/VH type - H Cradle

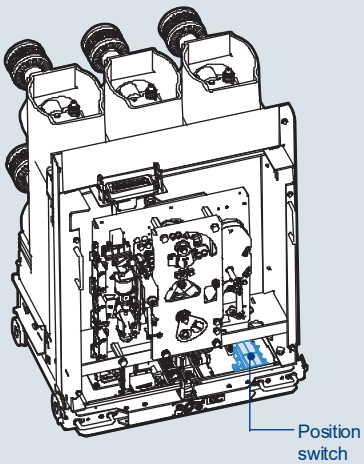


Large model (VH)

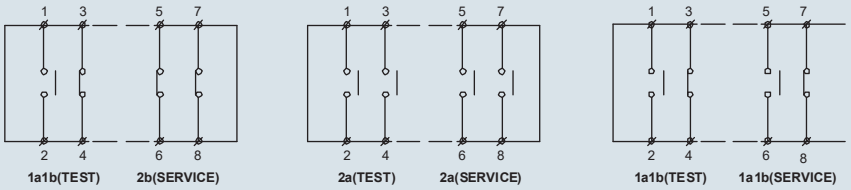
VL: 20/25kA



VH



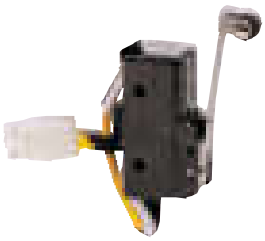
Contact configuration

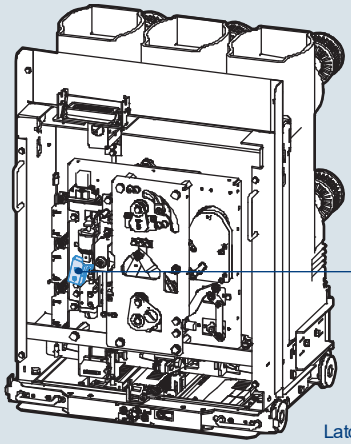


Latch checking switch: A6

Installed inside of a breaker as an option

VH type





- This switch works in conjunction with the mechanism of the breaker. It checks if the breaker is ready to be closed.
- When the mechanism is OFF and the closing spring is at charged status the switch becomes "ON", which means the mechanism is ready to be closed.
- If the latch is not in a proper position the switch prevents the breaker from closing.
  In case of VH type it is connected internally in series with the closing coil.

Counter: C

Installed inside of a breaker as standard

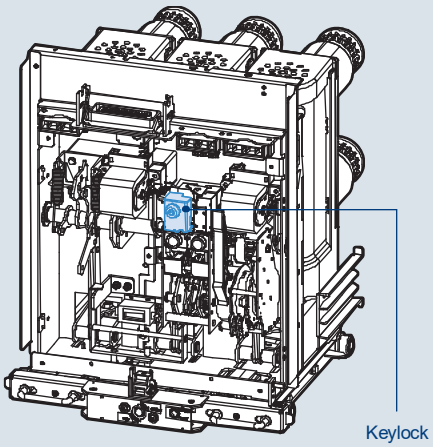
VL/VH type

- It displays the total number of ON/OFF operations of a breaker.

Keylock: A7

Installed inside of a breaker as an option

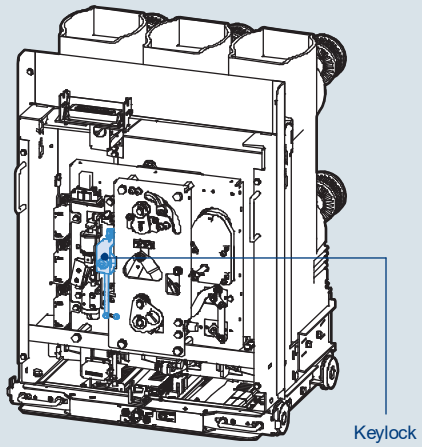
VL type



• The key is to unlock the locking device first to close the breaker electrically and mechanically.

*How to operate
- It is not possible to pull out the key in the unlocked position, possible only in locked status.
- Pushing "OFF" switch of a breaker turn the key counter-clockwise to the locked position and pull it out.
- It is not possible to close the breaker electrically and mechanically in the locked position.
- Insert the key and turn clockwise and then the breaker can be closed electrically and mechanically.

VH type

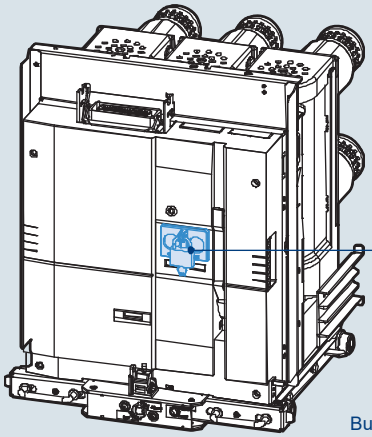


*How to operate
- It is not possible to pull out the key in the unlocked position, possible only in locked status.
- Trip the breaker first and then turn the key counter-clockwise to the locked position and pull it out.
- It is not possible to close the breaker electrically and mechanically in the locked position.

Button Padlock: A8

Installed outside of a breaker as an option

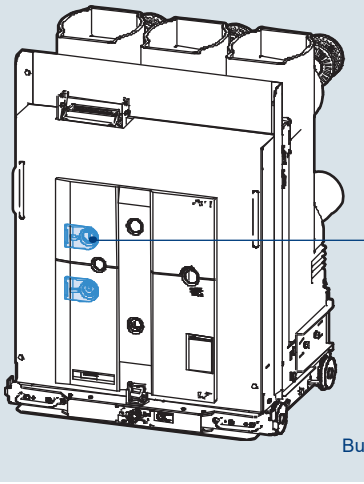
VL type



- It is to prevent manual operation of ON/OFF button due to user's wrong handling.
- It is not possible to handle ON/OFF operation under the "Button lock" status.

* Key lock is not supplied.

VH type

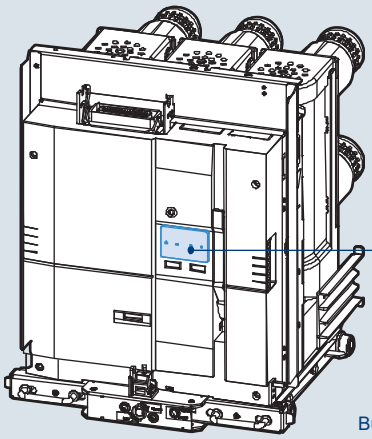


Button Cover: A9

Installed outside of a breaker as an option

VL type

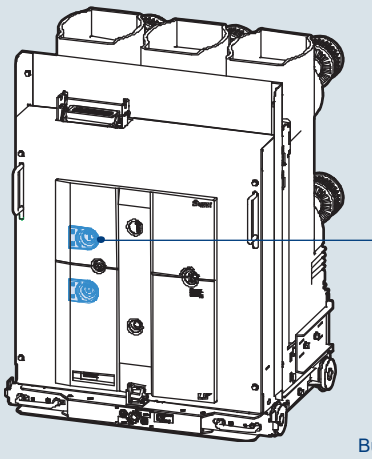
Push Bar



- It is a protection cover to prevent an accident due to unintended operation of ON/OFF button.
- Use the push-bar to operate the ON/OFF button.

VH type

Push Bar



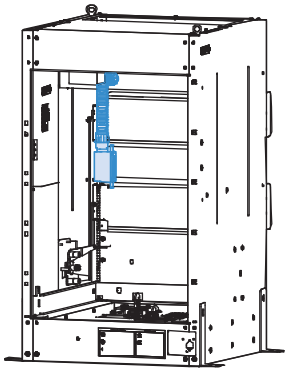
Lead wire

Supplied separately from a breaker as an option

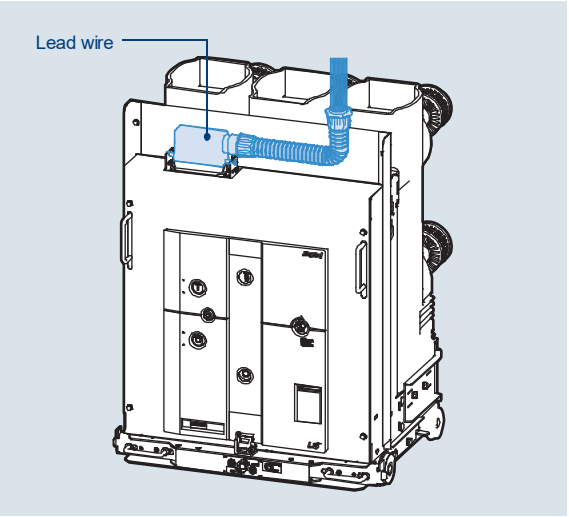
VL/VH type

A type connector

B type connector



Installation of CB Compartment



- The wiring for connecting the control circuit of the circuit breaker from the outside is supplied with 2m of wiring.
- A type connector is supplied for P/E/F/G type of VL VCB.
- B type connector is supplied for P type of VH VCB.
- In case of H type breaker of VL and VH models the Lead wire is installed in the cradle when supplied.

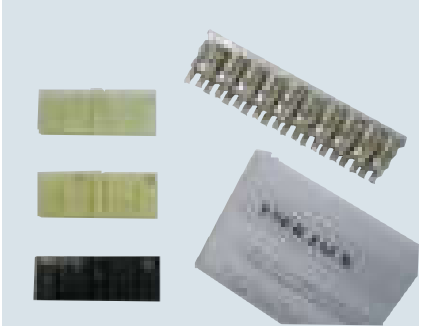
Supply ways of Lead wires by VCB model

VCB model / Cradle type	P	E	F	G	H
VL	Purchase separately (see page 74)				Optional purchase or cradle shipment (optional)
VH	Purchase separately (see page 74)				Optional purchase or cradle shipment (optional)

Plug/Terminal for lead wire

Supplied separately from a breaker as an option

VL/VH type



A type connector

B type connector

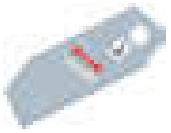
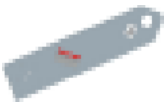
- It is connector to connect with the connector installed in the breaker. (supply connectors and terminal only for lead wire)
- Type of connector is depends on the type of connector installed in the breaker- A or B.

Standard Lead Wire

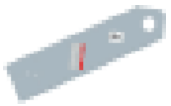
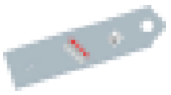
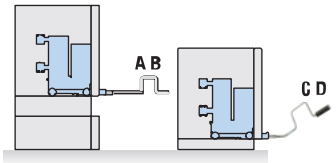
Type	Detailed breaker type	Wiring type	Auxiliary contact connector	Flammability rating	Color	Standard wiring (-)	Optional wiring (A1,A2,A3,A4,A5)
VL-Type	VL-06□08,13□04,06	Lead wire	SA1	HB	yellow	70723171101	70723171102
					blue	70723171107	70723171108
				XHHW	yellow	70723171113	70723171114
					blue	70723171120	70723171121
			SA2	HB	yellow	70723171105	70723171106
					blue	70723171111	70723171112
				XHHW	yellow	70723171117	70723171118
					blue	70723171122	70723171123
			SA3	HB	yellow	70723171103	70723171104
					blue	70723171113	70723171114
				XHHW	yellow	70723171115	70723171116
					blue	70723171124	70723171125
		User plug	SA1 SA2 SA3			77023171003	77023171003
	VL-06,12,17,20,25_20,25,31.5,40_13,20,25,32	Lead wire	SA2	HB	yellow	70723172101	70723172102
					blue	70723172112	70723172113
				XHHW	yellow	70723172116	70723172117
					blue	70723172144	70723172145
			SA4	HB	yellow	70723172103	70723172104
					blue	70723172114	70723172115
				XHHW	yellow	70723172118	70723172119
					blue	70723172146	70723172147
			SB2	HB	yellow	70723172107	70723172107
					blue	70723172149	70723172149
				XHHW	yellow	70723172109	70723172109
					blue	70723172150	70723172150
			SB4	HB	yellow	70723172108	70723172108
					blue	70723172151	70723172151
		User plug	SA2			77023172101	77023172101
			SA4			77023172101	77023172101
			SB2			70723172110	70723172110
			SB4			70723172111	70723172111
VH-Type	VH-06,12,17,20,25,36□32,40,50□13,20,25,32,40,50	Lead wire	SB2	HB	yellow	70723173109	70723173109
					blue	70723173111	70723173111
				XHHW	yellow	70723173119	70723173119
					blue	70723173112	70723173112
			SB4	HB	yellow	70723173110	70723173110
					blue	70723173113	70723173113
		User plug	SA2			70723173105	70723173105
			SA4			70723173106	70723173106
LVB-Type	LVB-06,12□-32,40□/12,20,30 VH-06,12□32,40□12,20,30 (Pro-MEC & Susol PI)	Lead wire	SA2	HB	yellow	70723143117	70723143117
					blue	70713143020	70713143020
				XHHW	yellow	70713143012	70713143012
					blue	70713143030	70713143030
			SA4	HB	yellow	70723143118	70723143118
					blue	70713143021	70713143021
				XHHW	yellow	70713143013	70713143013
					blue	70713143031	70713143031
			SB2	HB	yellow	70713143024	70713143024
					blue	70713143044	70713143044
				XHHW	yellow	70713143049	70713143049
					blue	70713143047	70713143047
			SB4	HB	yellow	70713143025	70713143025
					blue	70713143045	70713143045
				XHHW	yellow	70713143048	70713143048
					blue	70713143046	70713143046
		User plug	SA2			73263143007	73263143007
			SA4			73263143008	73263143008
			SB2			73263143030	73263143030
			SB4			73263143031	73263143031

□ – Please contact us.

Handle & Lifting Hook

Breaker type	Cradle	Racking handle			Spring charge handle		Lifting Hook		
		code		Appearance	code	Appearance	Breaker type	code	Appearance
VL-06□08,13	P	N. A.					VH-06,12, 17□50□13, 20,25,32	75123173131	
	E, F, G	55223171101							
VL-06,12, 17□20,25,31.5 VL-24,25□13, 16,25	P	N. A.						75123173132	
	E, F, G	55213143005							
	H.K	A type	55223172407	 For medium size CB (Short)			VH-20,25□25□25	75123173105	
		B type	55223172403	 For medium size CB (Long)			VH-20,25□32, 40□13,20,32	75123173106	
		C type	55223172405	 With universal joint and plastic grip			VH-36□25,32, 40□13,20,32	75123173165	
		D type	55223172406	 With universal joint				75123173166	

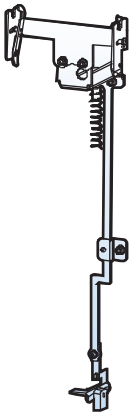
Handle & Lifting Hook

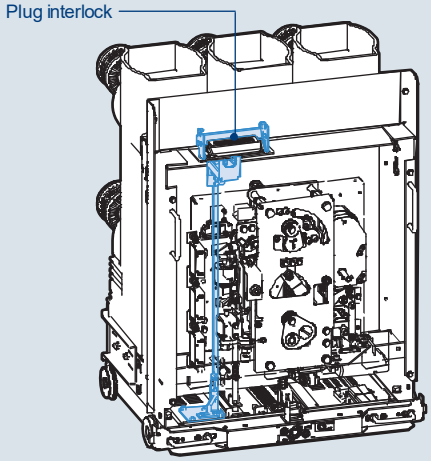
Breaker type	Cradle	Racking handle			Spring charge handle		Lifting Hook		
		code		Appearance	code	Appearance	Breaker type	code	Appearance
VH-06□32, 40(P,E,F,G) LVB-06, 12□32,40L(G/T)	P	N. A.			55213143006		VH-06,12, 17□40,50□40	75123173981	
	E, F, G	55213143005					VH-06,12□40, 50□,50	75123173982	
	G/T	55213143001					Earthing switch operating handle (Common)		
		55213143022					Panel door type	code	Appearance
		55213163003		 With universal joint			Right open (Standard handle)	55223172701	
VH-06, 12,17□50 VH-20,25, 36□25,32,40	P	N. A.					Right open (Standard handle)	55223172703	
	H	A type	55223172407	 For medium size CB [Short]					
		B type	55223172403	 For medium size CB [Long]					
		C type	55223172405	 For lower size CB [Universal, Short]					
		D type	55223172406	 For lower size CB [Universal, Long]					
									

Plug interlock: AC

Installed inside of a breaker as an option

VL/VH type (7.2kV 20/25kA 630A~)



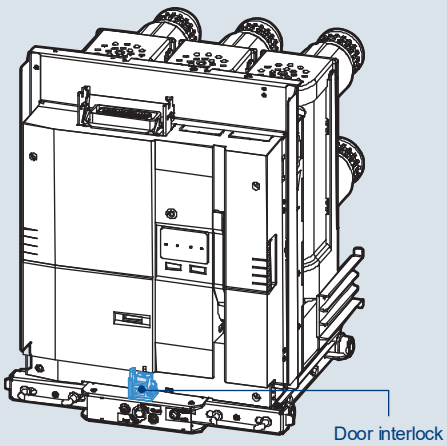


- It checks if the control power connector on the cradle (H type) is connected with the connecting terminal of the breaker before the proceeding of draw-in or out.
- It is not allowed to seperate the control power connector from the breaker in the position of draw-in /out or SERVICE, but TEST position.

Padlock/Door racking interlock: AD

Installed outside of a breaker as an option

VL/VH type (7.2kV 20/25kA 630A~)

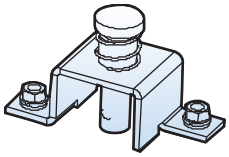


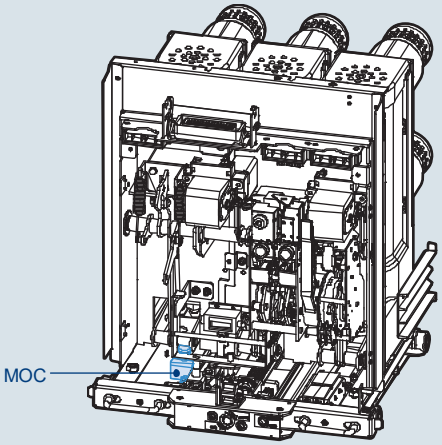
- With this door options for H type cradle draw- in/ out is allowed only when the door is closed.
- If draw-in /out is necessary when the door is open, use the operation lever put in the slot of the breaker handle.
  Insert it into the hole in the bottom of door interlock.
- Padlock is also optional, which can lock to prevents the draw-in/out of the breaker in the position of TEST and SERVICE.

MOC drive device: AE

Installed inside of a breaker as an option

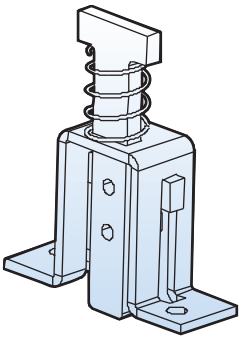
VL type (7.2kV 20/25kA 630A~)

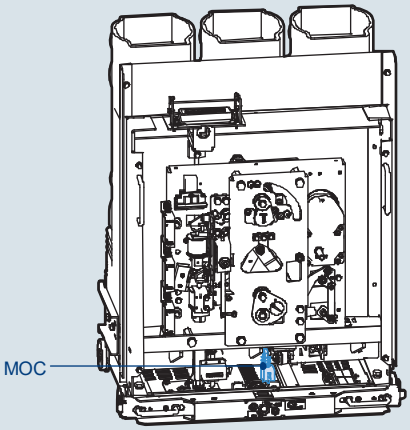




- It must be installed in the breaker to drive the MOC installed in H type cradle.
- MOC, Mechanically operated cell switch is the device to indicates the Closed/Trip status of VCB in 'SERVICE' position only.
- This MOC drive device in the breaker should be installed when MOC in the cradle is used.

VH type

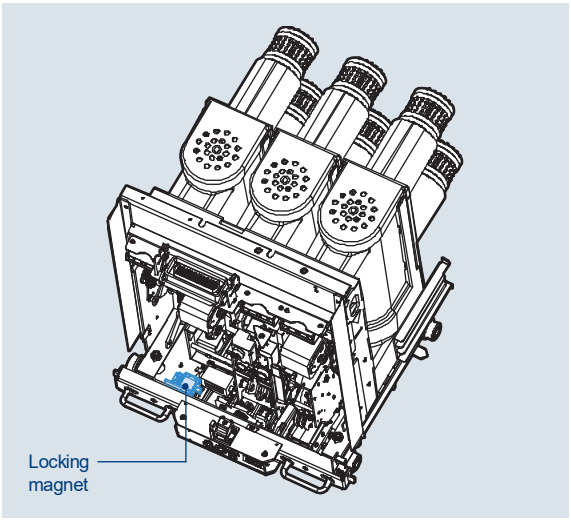




Locking magnet: AF

Installed inside of a breaker as an option

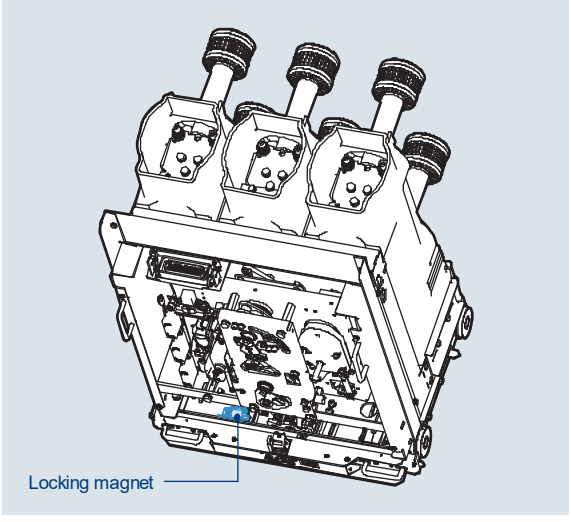
VL type



- It allows the drawing-in of the breaker in the TEST position under the condition that the control power connector on the cradle (H type) is connected with the connecting terminal of the breaker and the power is supplied.
- During the drawing-in or in the SERVICE position draw-in/out is allowed without supplying power.

* Control power rating is the same as that of a motor.

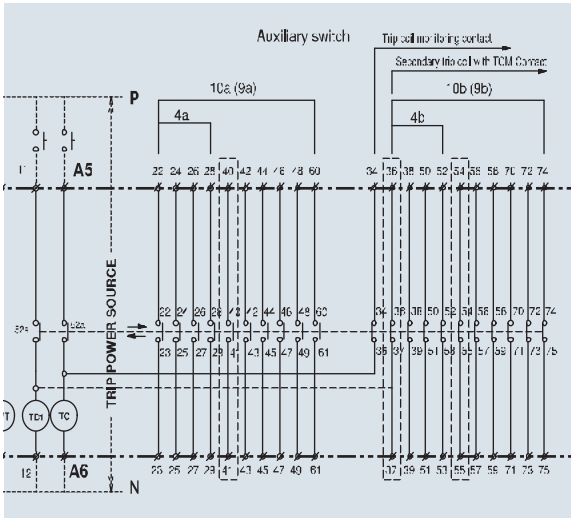
VH type



Trip coil monitoring contact

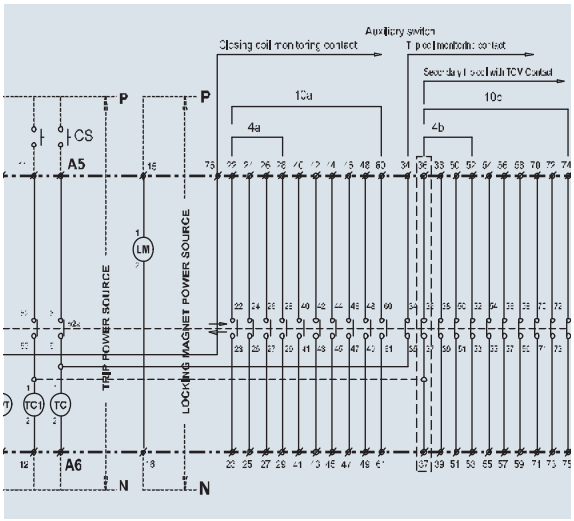
Installed inside of a breaker as standard

VL type



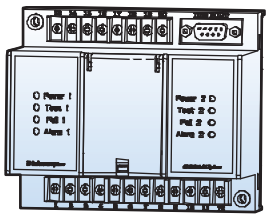
- Device for monitoring the functions of the trip coils.
- To monitor the trip coils connect its terminals with the trip coil monitoring relay as shown on the circuit diagram.
  - If the trip coil is normal: closed-circuit consisting
  - If the trip coil is damaged: open circuit
  1) Terminal A5 and A6 monitor the trip coils(TC) in Closed position of the breaker
  2) Terminal A6 and auxiliary contact terminal 34 monitor the trip coils(TC) in trip position of the breaker
  3) Terminal 11 and 12 monitor the secondary trip coils(TC1) in Closed position of the breaker
  4) Terminal 12 and auxiliary contact terminal 36 monitor the secondary trip coils(TC1) in trip position of the breaker
- Coil Test Unit is opional, which enable monitoring the coils by connecting in parallel with the trip coil operation switch.
- In case Secondary Trip Coil Monitoring contact for VH Type, Every Trip Coil is available.
  (VL Type : Trip Coil **T1**,T2,T3,**T4**,T5 are available)

VH type



Coil Test Unit: CTU

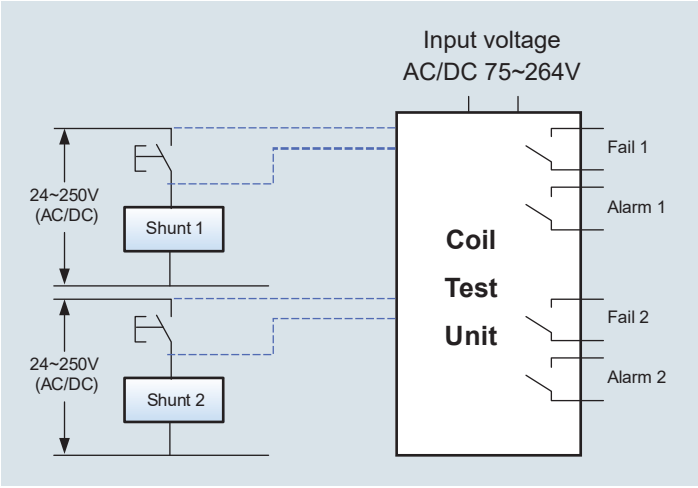
Installed outside of a breaker as an option

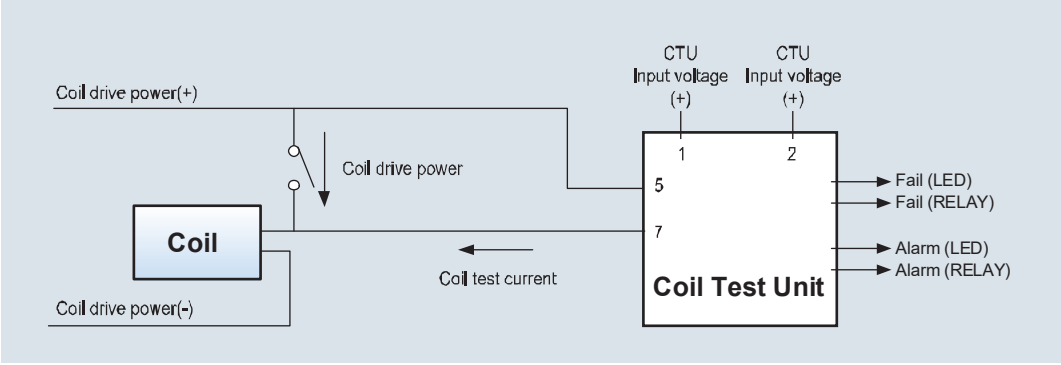


- When no current flows through the coil it gives the test current which does not cause the coil to operate to check whether the coil is disconnected or not.
  - If the test current flows normally: coil normal
  - If the test current does not flow through: coil disconnected

※ **As it is connected in parallel with the control part of the coil the normal operation of the coil is not affected.**
※ **Monitoring of the running coils is not possible.**
※ **One test unit can monitor up to two coils.**

1. Input voltage: AC/DC 75V~264V
2. Contact output
   1) 2×a contacts for Fail indication and 2×a contacts for Alarm
   2) 250Vac/10A Resistive, 30Vdc/10A Resistive
3. Disconnection test cycle is 12 seconds (Test LED blinks)
4. The default operation
   If Fail happens (coil disconnected), Fail LED turns on and the Fail contacts become short state.
   If Fail happens three times in series, Alarm LED turns on and the Alarm contacts become short state.
   In order to clear the Alarm status push up DIP switch on the front and then push down it (Off → On → Off)





Condenser trip device: CTD

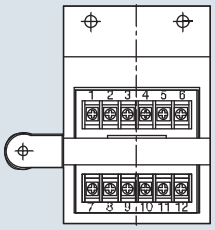
Installed outside of a breaker as an option

Ratings

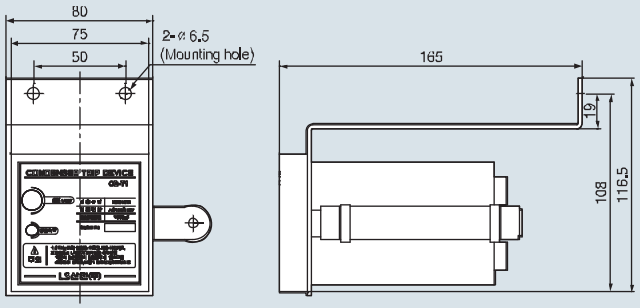
Ratings	Specification	
Model	CB-T1	CB-T2
Rated input voltage (V)	AC 100/110	AC 200/220
Frequency (Hz)	50/60	50/60
Rated charge voltage (V)	140/155	280/310
Charging time	Within 10sec.	Within 10sec.
Trip possible time	Within 30sec.	Within 30sec.
Range of Input voltage	85%~110%	85%~110%
Condenser capacity (μF)	1,000	560

- It gets a circuit breaker tripped electrically within regular time when control power supply is broken down and is used with Shunt coil, SHT. In case there is no DC power, It can be used as the rectifier which supplies DC power to a circuit breaker by rectifying AC power.
- Tripping within 30 seconds on the power failure is possible. However after that automatic trip circuit must be configured separately in the switchgear.

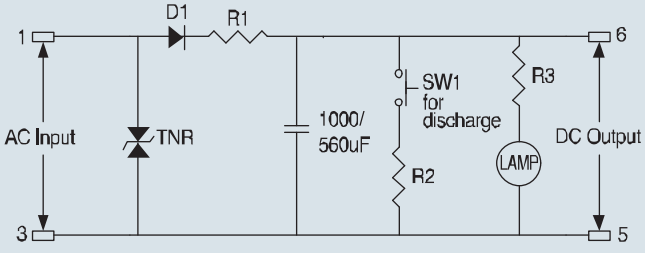
Terminal arrangement



External dimension



Circuit diagram



UVT Time delay: UDC

Installed outside of a breaker as an option

- UVT time delay, UDC is to delay the trip signal from UVT.
- Without UDC the breaker will be tripped instantaneously by the trip signal from UVT installed inside of the breaker even in the the momentary power failure.
- UDC can delay the trip time to avoid this unintended instantaneous trip in the event of such power failure.
- It can be installed on the cradle or inside of the switchgear.
- UDC provides output contacts for indication of trip status due to the UVT coil inside of the breaker. b contact is closed at normal state and a contact is closed at trip.

1. Characteristics

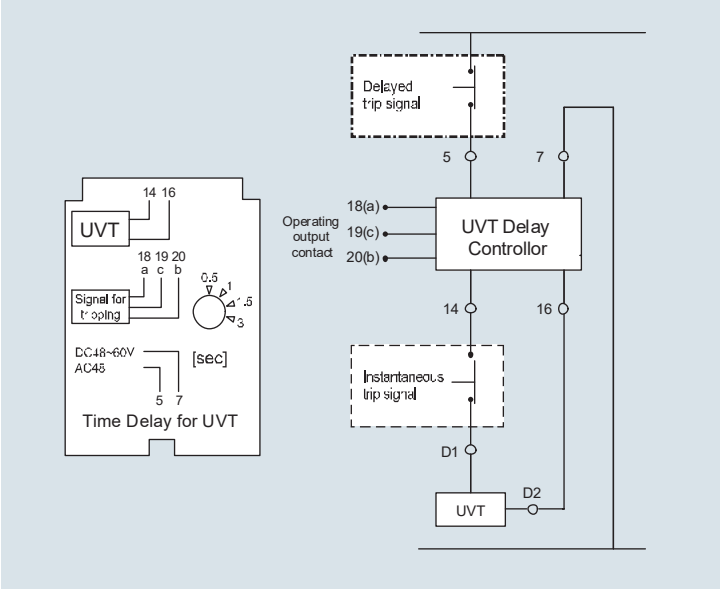
Rated voltage (Vn)		Opration voltage range (V)		Consumption (VA or W)		Time delay (ms)
DC (V)	AC (V)	Pick up	Drop out	Inrush	Steady - state	
48~60	48	0.65~0.85 Vn	0.4~0.65 Vn	200	≤ 5	0.5, 1, 1.5, 3
100~130	100~130					
200~250	200~250					

- Operating voltage ranges are based on the minimum value of each rated voltage (Vn)

2. Ratings of output contacts

Rated voltage (V)	Rated current (A), Resistive load	Max. switching voltage (A)	Max. switching current (A)
24V DC	≤ 12	110V DC 250V AC	15
120V AC	≤ 12		
250V AC	≤ 10		

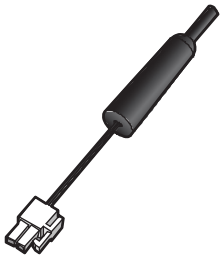
3. Wiring diagram

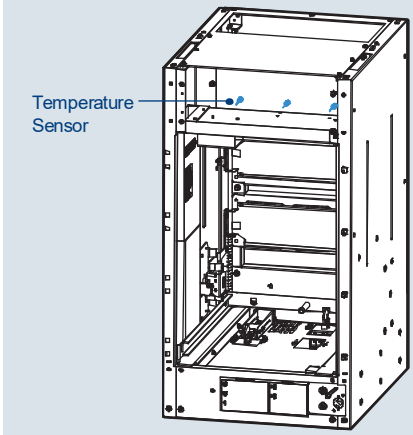


Temperature sensor and monitoring unit: TM

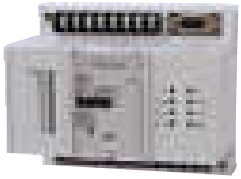
Installed outside of a breaker as an option

VL/VH type (7.2kV 20/25kA 630A~)

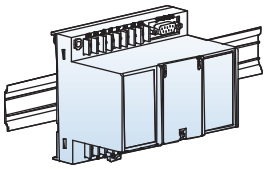


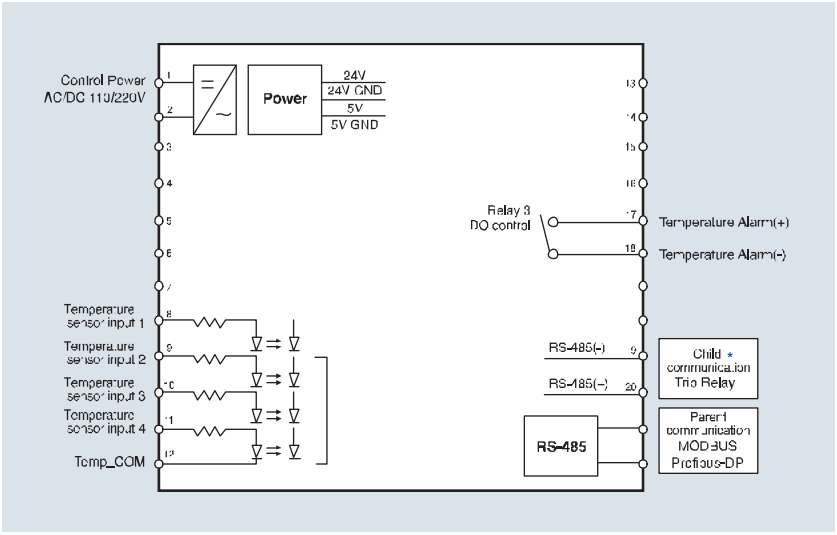


- Temperature Alarm Unit displays the input temperature detected through the temperature sensor installed in H-type cradle.
- Temperature sensor can be installed up to three (R, S, T phase).
- Temperature Alarm Unit converts the temperatures detected from the senser in the cradle and displays the maximum value and can transmit it throug communication.
- If the input temperature is above standard it may cause alarm.
  Temperature Alarm Unit supports Modbus/ RS-485 communication and contact us Profibus-DP communication.

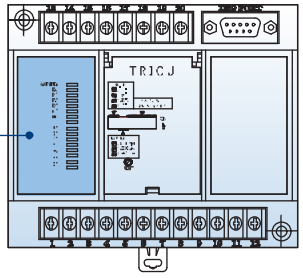


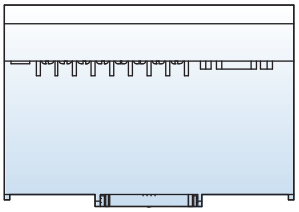
Temperature sensor and monitoring unit





LED temperature display (℃): 10 ~150℃,
Warning
Display maximum value of temperatures

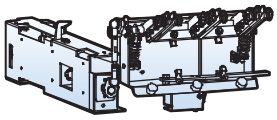


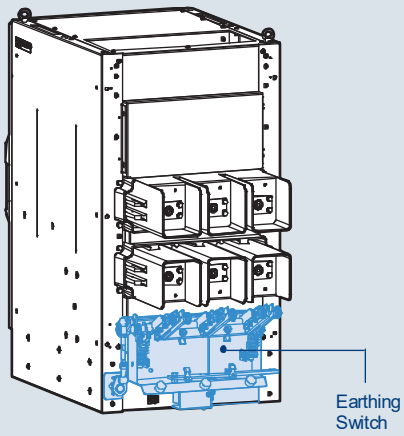


Earthing Switch: A1

Built-in a cradle as an option

VL/VH type (7.2kV 20/25kA 630A~)





- For the safety during the maintenance of switchgear in the position of TEST/Drawout discharge the charging current in the load side of a VCB with this earthing switch.
  It is available onlt for H type drawout breaker.

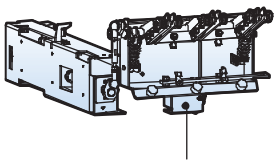
* Regarding the operations of earthing switch and related accessories see the instruction manual.
* Applicable Standards: IEC 62271-102

Position switch for Earthing Switch : A2, A4

Built-in a cradle as an option

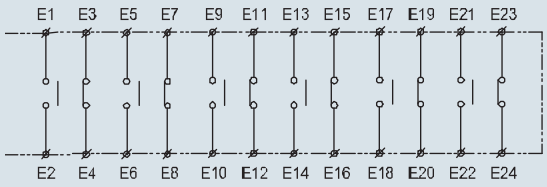
- In case of using earthing switch it can be added to indicate the ON / OFF status of the earthing switch.

** Contact configuration: 2a2b, 6a6b



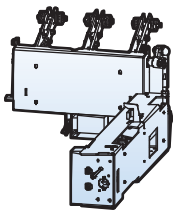
Position switch for E/S

Circuit diagram



Keylock for Earthing Switch: A5

Built-in a cradle as an option



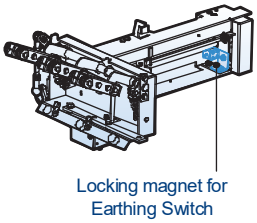
- In case of using earthing switch it can be added for two types of interlocking.

  1) Interlock to keep opening

  2) Interlock to keep earthing

Locking magnet for Earthing Switch : A6~AD

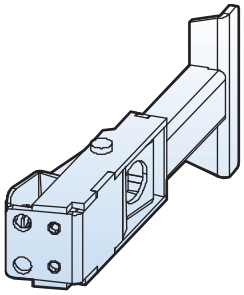
Built-in a cradle as an option



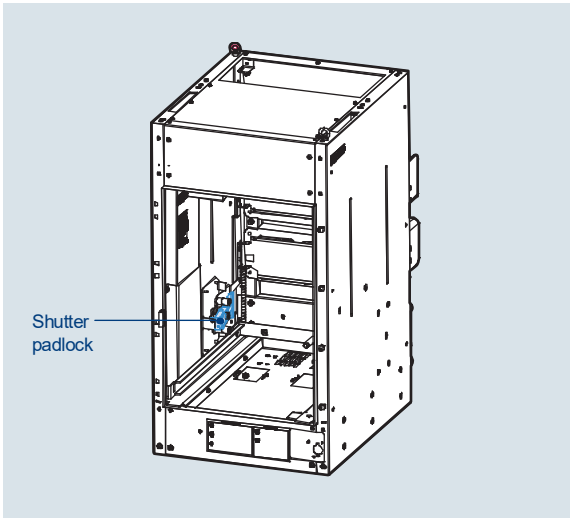
- In case of using earthing switch it can be added to prevent the earthing switch from opening or earthing before it is energized.
- Verify if the locking magnet is energized before opening or earthing the earthing switch.
- Control voltage
  - DC 24V / DC 48V / DC 110V / DC 125V / DC 220V
  - AC 48V / AC 110V / AC 220V

Shutter padlock: AE

Built-in a cradle as an option



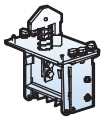
VL/VH type (7.2kV 20/25kA 630A~)



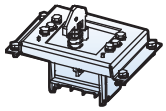
- It is the locking device to lock the primary and secondary shutter in closed state for safety while the breaker is drawn out for maintenance.
- When the breaker is drawn in, the shutter is automatically opened.
- There is a hole for padlock to lock the shutter.
- It can be applied only to H type cradle.

Truck operated cell switch (TOC: AF)

Built-in a cradle as an option

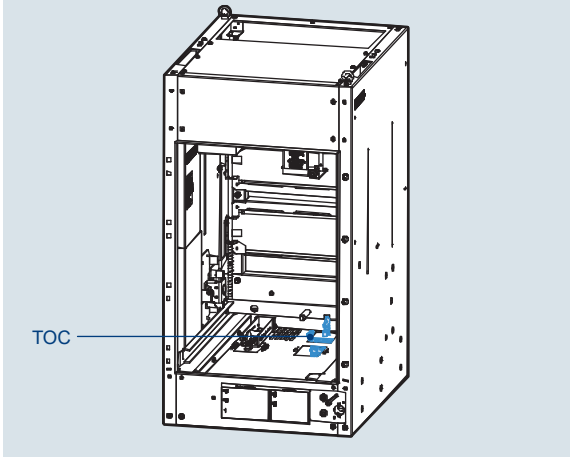


VL type



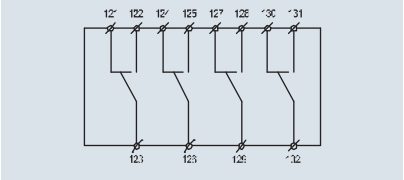
VH Type

VL/VH type (7.2kV 20/25kA 630A~)



- This auxiliary switch is used to indicate the 'SERVICE' position of VCB. It is installed in the bottom of a H type cradle and operated by the frame of a breaker.
- TOC is consisted of 4 cell switches with changeover contacts as below diagram.

Circuit diagram

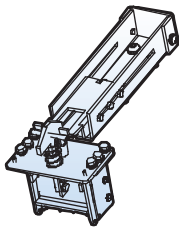


a Contact: 122-123, 125-126, 128-129, 131-132,
b Contact: 121-123, 124-126, 127-129, 130-132

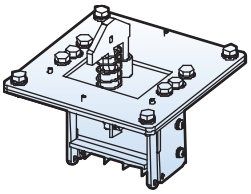
Mechanical Operated Cell Switch (MOC: AG)

Built-in a cradle as an option

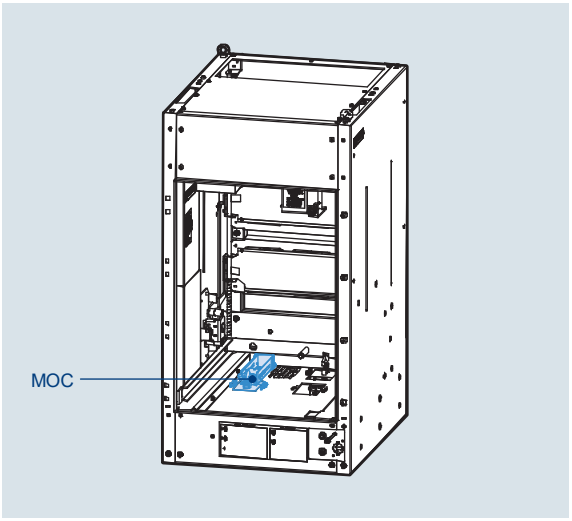
VL/VH type (7.2kV 20/25kA 630A~)



VL type

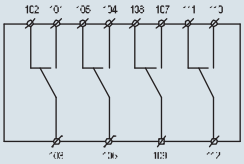


VH Type



- This auxiliary switch is used to indicate the Close/Trip of VCB. It is operated mechanically at the SERVICE position and installed in the bottom of a H type cradle and operated by the frame of a breaker.
- MOC is consisted of 4 cell switches with changeover contacts as below diagram.

Circuit diagram

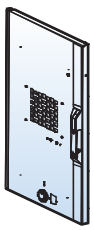


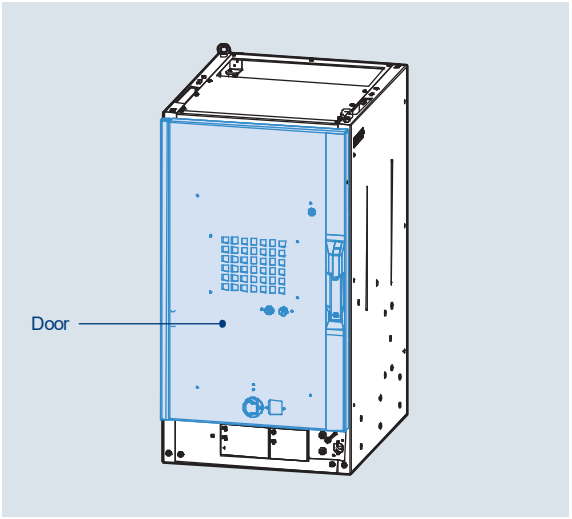
a Contact: 101-103, 104-106, 107-109, 110-112,
b Contact: 102-103, 105-106, 108-109, 111-112

Door: AH

Built-in a cradle as an option

VL/VH type (7.2kV 20/25kA 630A~)



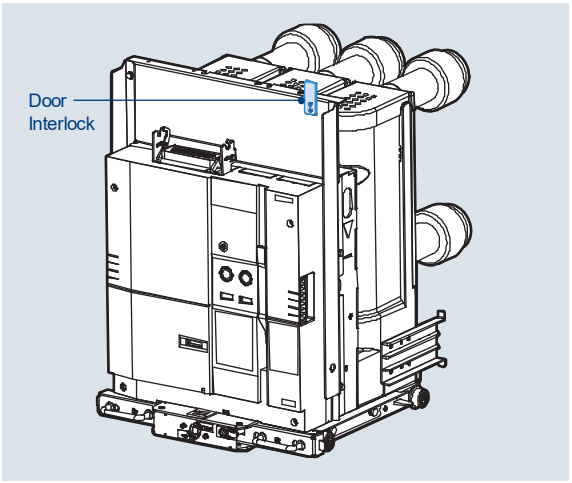


- It is outside door for H type cradle.
- Accessories are available for the door.

Door Interlock: AJ

Built-in a cradle as an option

VL/VH type (7.2kV 20/25kA 630A~)

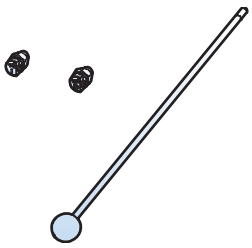


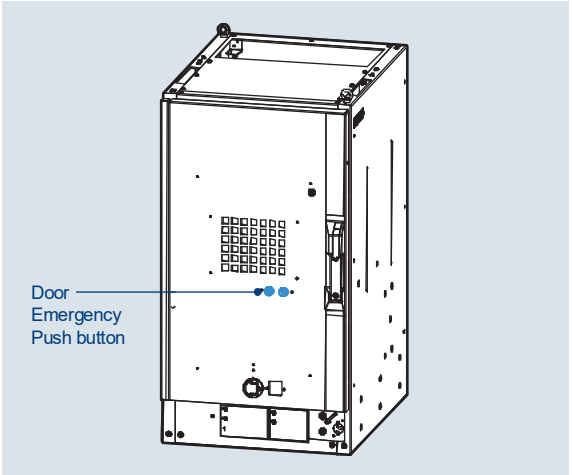
- When the Door is installed to H type cradle, this door interlock prevents opening it at SERVICE position.

Door Emergency Push button: AK

Built-in a cradle as an option

VL/VH type (7.2kV 20/25kA 630A~)



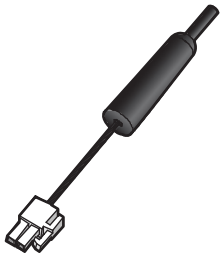


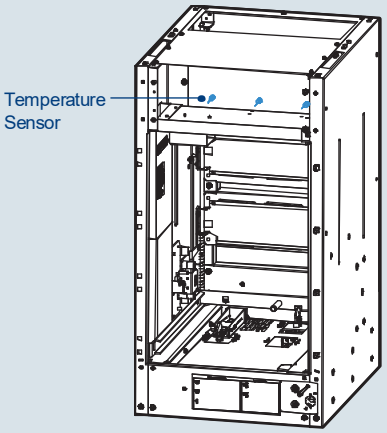
- It is used to enable the Close/Trip of the breaker manually from outside of the door installed to H type cradle during an emergency.
- Push the ON/OFF button by ON/OFF handle supplied seperately.

Temperature Sensor: AC

Built-in a cradle as an option

VL/VH type (7.2kV 20/25kA 630A~)

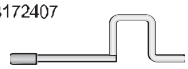




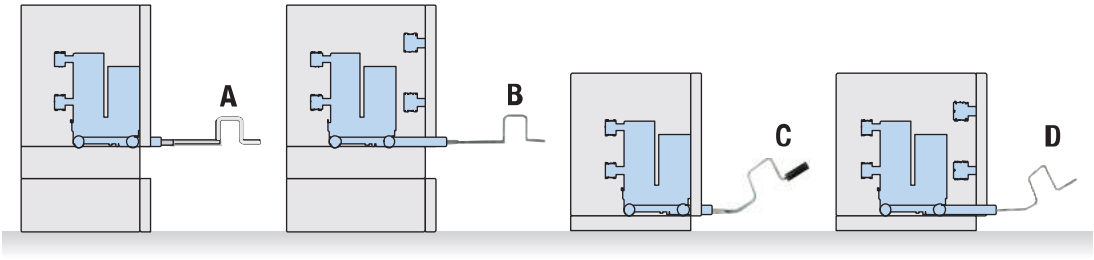
- This sensor is used to detect the temperature in H-type cradle combined with Temperature monitoring unit.
- It can be installed up to three (R, S, T phase).

Racking In/Out handle

Susol VCB offers various kinds of handle suitable for each use of types and models. The order can be proceeded with the code below and ordering quantity is flexibly adjustable.

Type	Cradle		Racking in/out handle	Charging handle	Operating handle for earthing S/W
VL-06 ~ 08,13	E F G		55223171101 	Not required	-
VL-06 ~ 20,25	E F G		55213143005 	Not required	-
VL-06 ~ 20,25	H K	A	55223172407 	Not required	
		B	55223172403 		
VH-06,12,17, 24,35,36 ~		C	55223172405 	55213143006 	
		D	55223172406 		

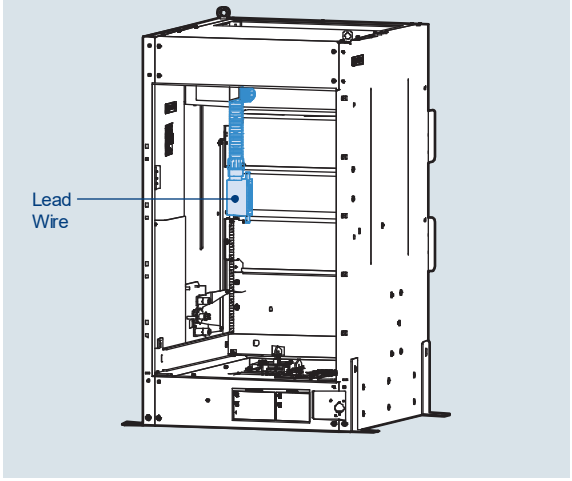
Racking in/out handle for H, K cradle



Type H Cradle Lead Wire: AM~AO

Built-in a cradle as an option

VL/VH type (7.2kV 20/25kA 630A~)

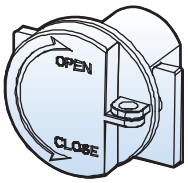


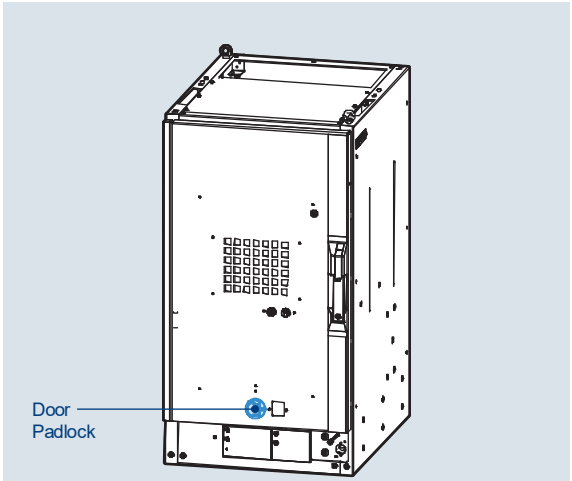
- In case of H type breaker of VL and VH models the Lead wire is installed in the cradle when supplied.
- 4a4b or 10a10b contacts are selectable according to the auxiliary contact of the breaker. Flame retardant cable is used for 4a4b.

Door Padlock

Built-in a cradle as an option

VL/VH type (7.2kV 20/25kA 630A~)



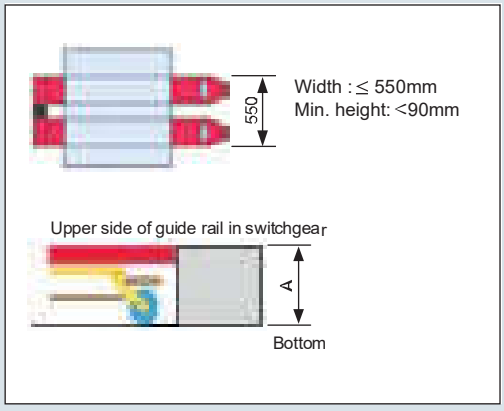


- It is supplied with a door for H type cradle as standard.
- It can be locked by seperate padlock to prevent entering the maunal handle.

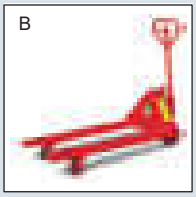
Auxiliary guide frame

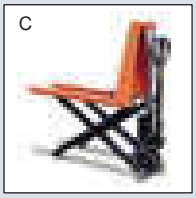
- Auxiliary guide frame is provided in order to move safely 36kV breaker into the switchgear.
- It can be used in combination with the hand pallet which meets the requirement shown below.

Applicable hand pallet



<Fig 1>



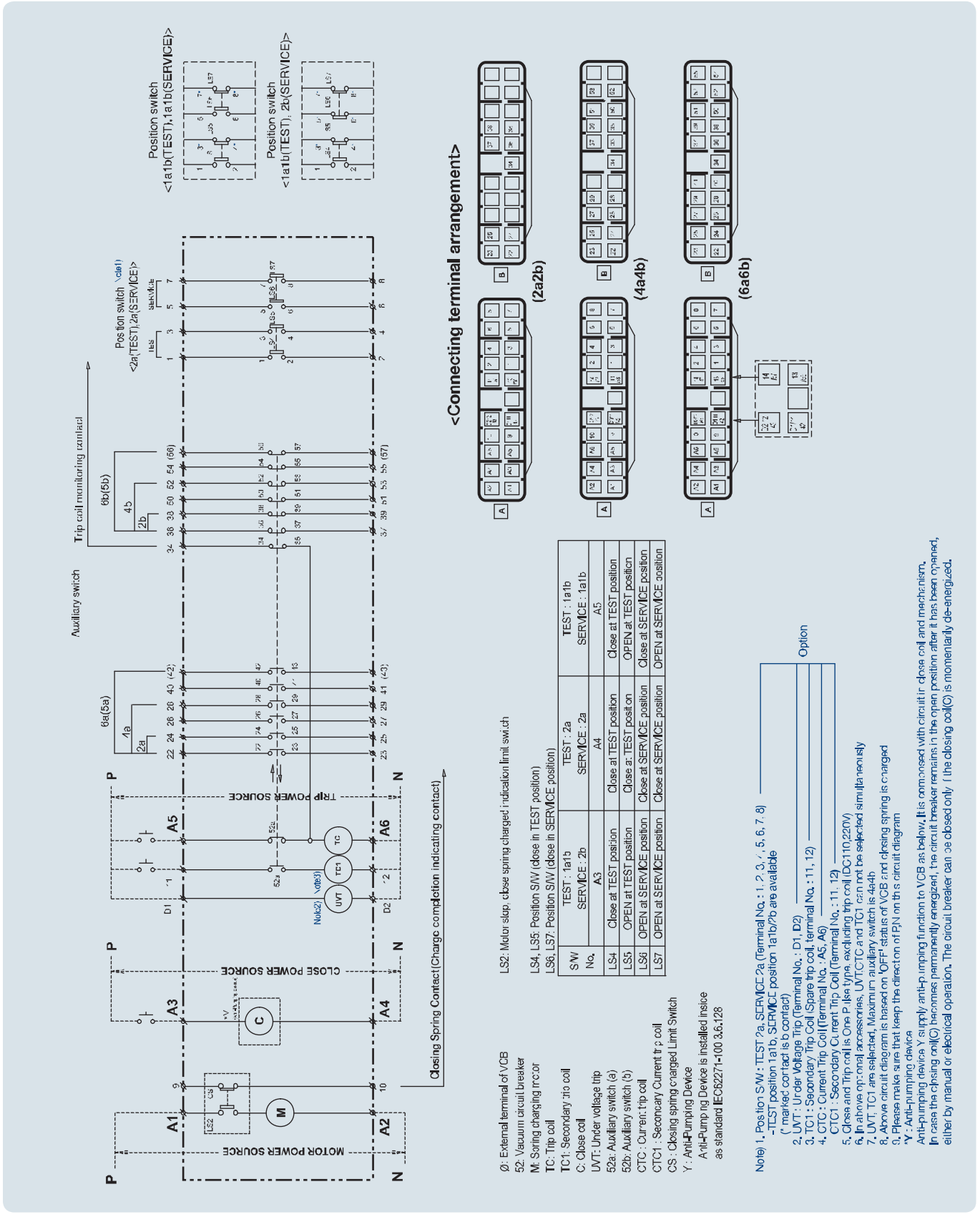


If dimension A in Fig. 1 is less than 120mm B type pallet can be used.
In case of more than 120mm C type must be applied.

Control circuit diagram - VL type

Susol

VL-06



Ø: External terminal of VCB
52: Vacuum circuit breaker
M: Spring charging motor
TC: Trip coil
TC1: Secondary trip coil
C: Close coil
UVT: Under voltage trip
52a: Auxiliary switch (a)
52b: Auxiliary switch (b)
CTC : Current trip coil
CTC1 : Secondary Current trip coil
CS : Closing spring charged Limit Switch
Y : Anti-Pumping Device is installed insted as standard IEC62271-100 3.6.128

LS2: Motor stop, close spring charged indication limit switch
LS4, LS5: Position S/W (close in TEST position)
LS6, LS7: Position S/W (close in SERVICE position)

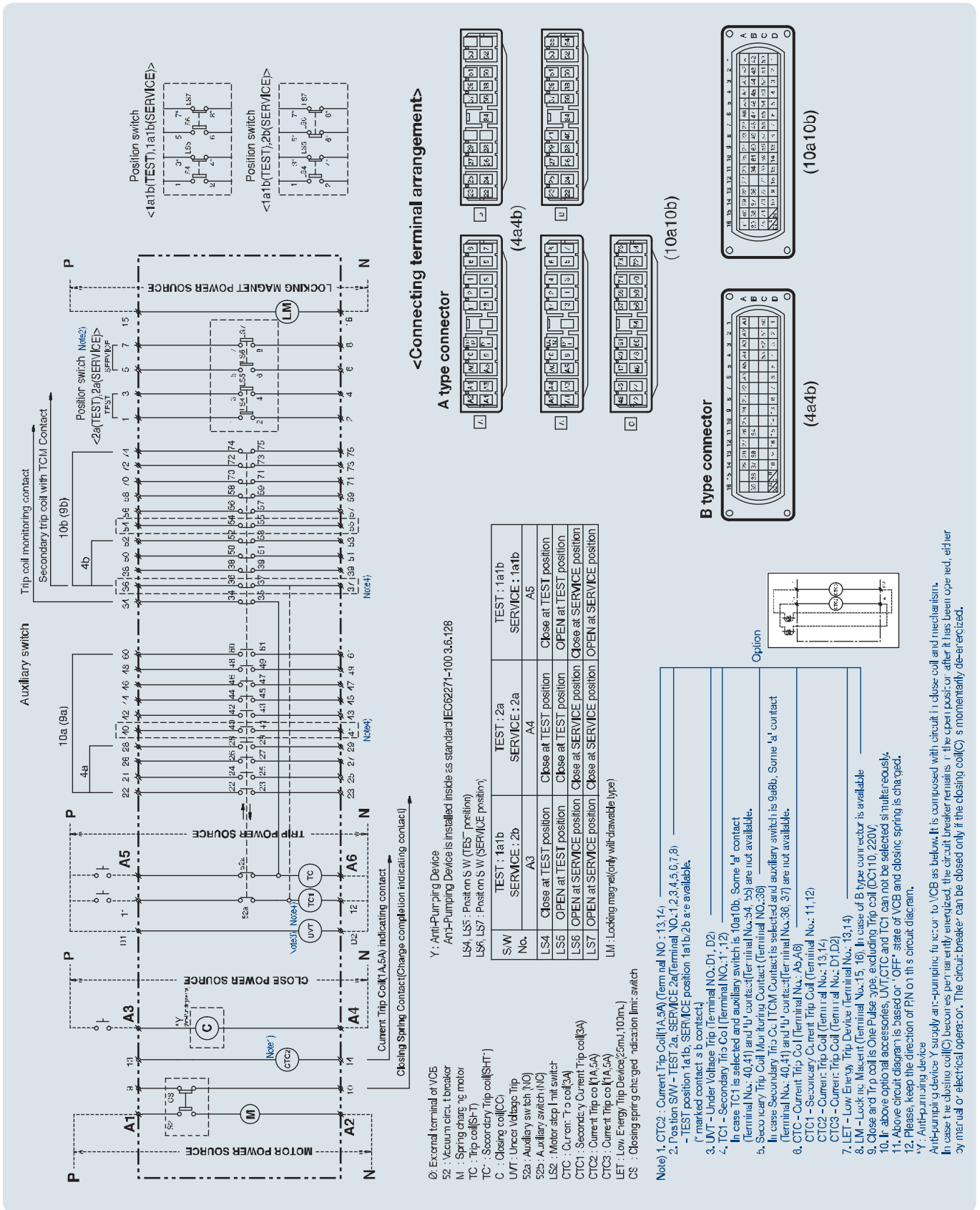
S/W No.	TEST : 1a1b SERVICE : 2b	TEST : 2a SERVICE : 2a	TEST : 1a1b SERVICE : 1a1b
	A3	A4	A5
LS4	Close at TEST position	Close at TEST position	Close at TEST position
LS5	OPEN at TEST position	Close at TEST position	OPEN at TEST position
LS6	OPEN at SERVICE position	Close at SERVICE position	Close at SERVICE position
LS7	OPEN at SERVICE position	Close at SERVICE position	OPEN at SERVICE position

Note) 1. Position S/W : TEST 2a, SERVICE 2a (Terminal No. : 1, 2, 3, 4, 5, 6, 7, 8)
-TEST position 1a1b, SERVICE position 1a1b/2b are available
(* marked contact is b contact)
2. UVT : Under Voltage Trip (Terminal No. : D1, D2)
3. TC1 : Secondary Trip Coil (Spare trip coil, terminal No. : 11, 12) — Option
4. CTC : Current Trip Coil (Terminal No. : A5, A6)
CTC1 : Secondary Current Trip Coil (Terminal No. : 11, 12)
5. Close and Trip coil is One Pulse type, excluding trip coil (DC110,220V)
6. In above optional accessories, UVT/CTC and TC1 can not be selected simultaneously
7. UVT, TC1 are selected, Maximum auxiliary switch is 4a4b
8. Above circuit diagram is based on 'OFF' status of VCB and closing spring is charged
9. Please make sure that keep the direction of P,N on this circuit diagram
'Y' : Anti-pumping device
Anti-pumping device Y supply anti-pumping function to VCB as below. It is connected with circuit for close coil and mechanism.
In case the closing coil(C) becomes permanently energized, the circuit breaker remains in the open position after it has been opened, either by manual or electrical operation. The circuit breaker can be closed only if the closing coil(C) is momentarily de-energized.

Control circuit diagram - VL type

Susol

VL-06/12/17/20/25/36



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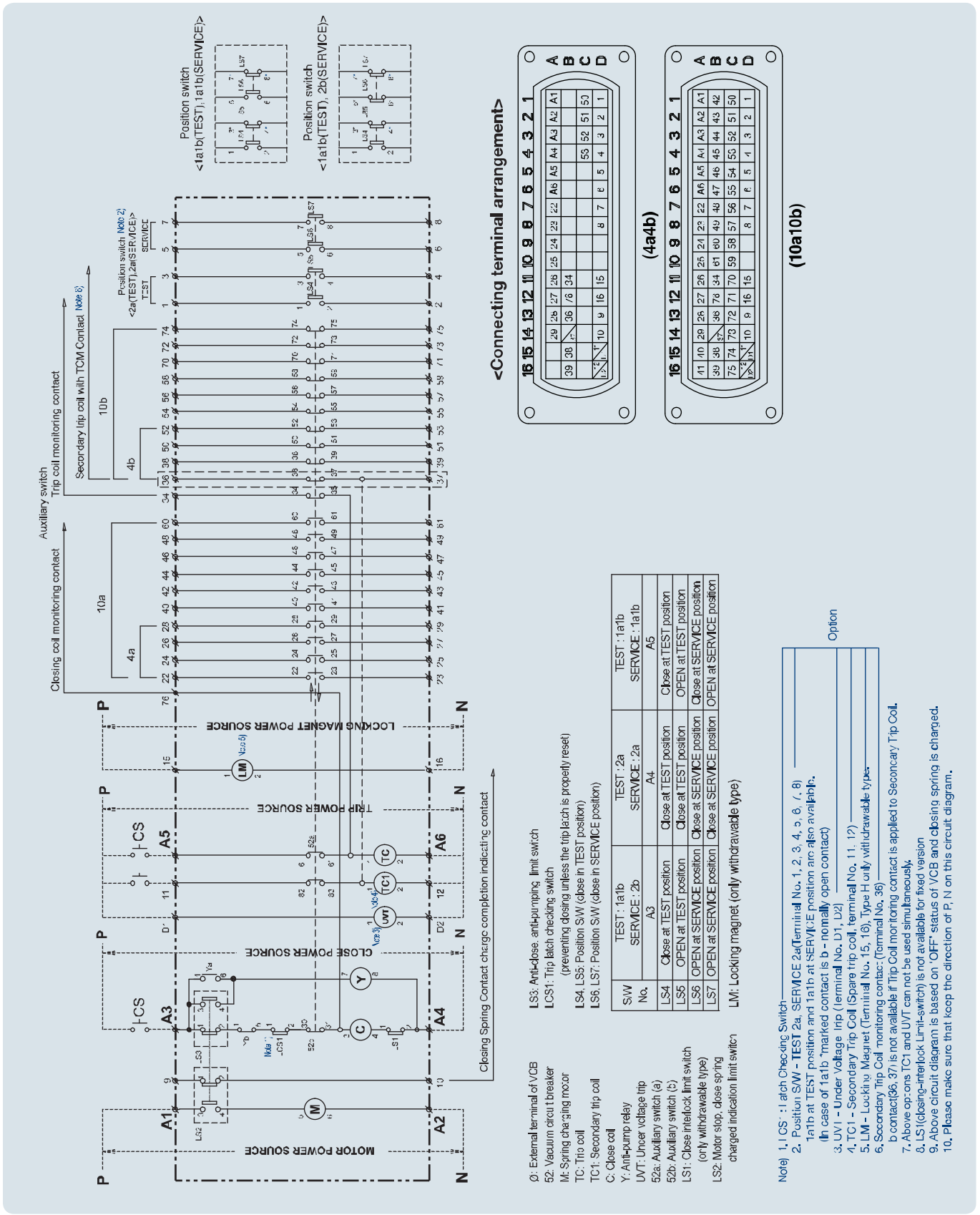
Control circuit diagram - VH type

Susol

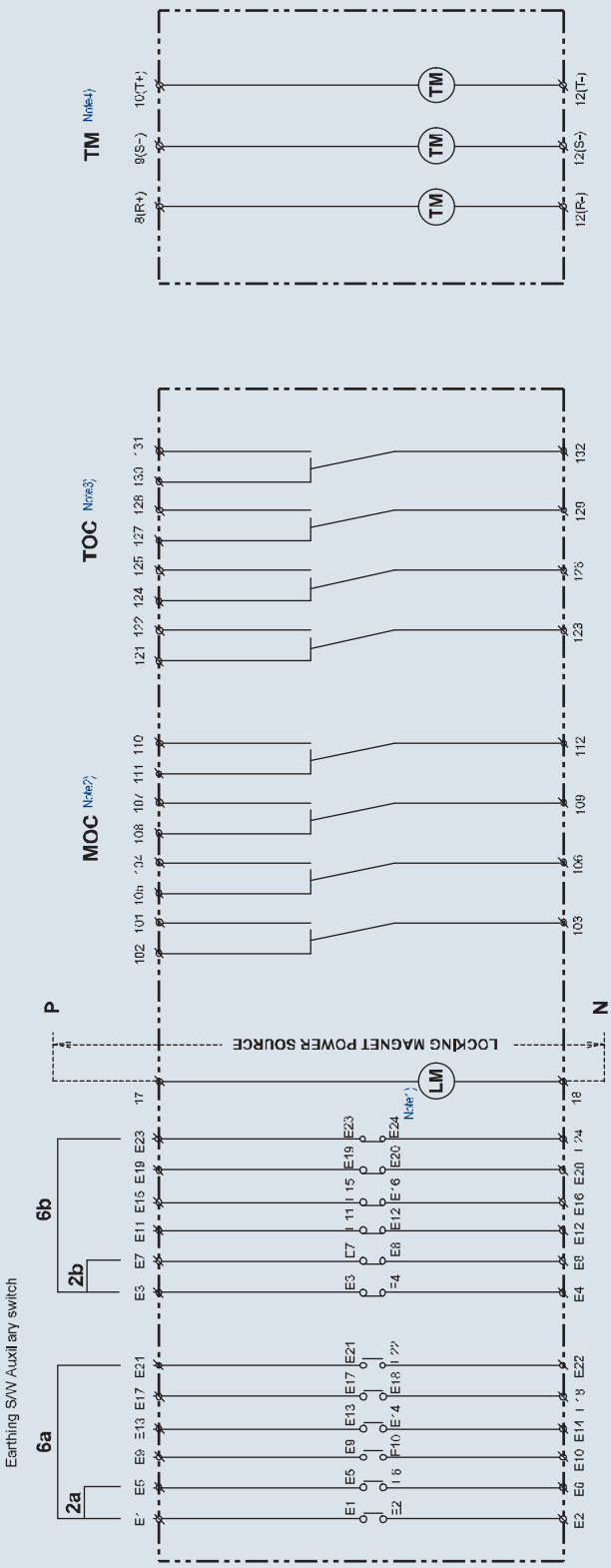
VH-06/12/17/20/25/36



Control circuit diagram - VH type

Susol

Compartment



Ø: External terminals for auxiliary contacts and locking magnet
LM : Locking magnet for earthing switch
MOC : Mechanism operated cell switch (for H type cradle)
TOC : Truck operated cell switch (for H type cradle)
TM : Temperature alarm (for H type cradle)

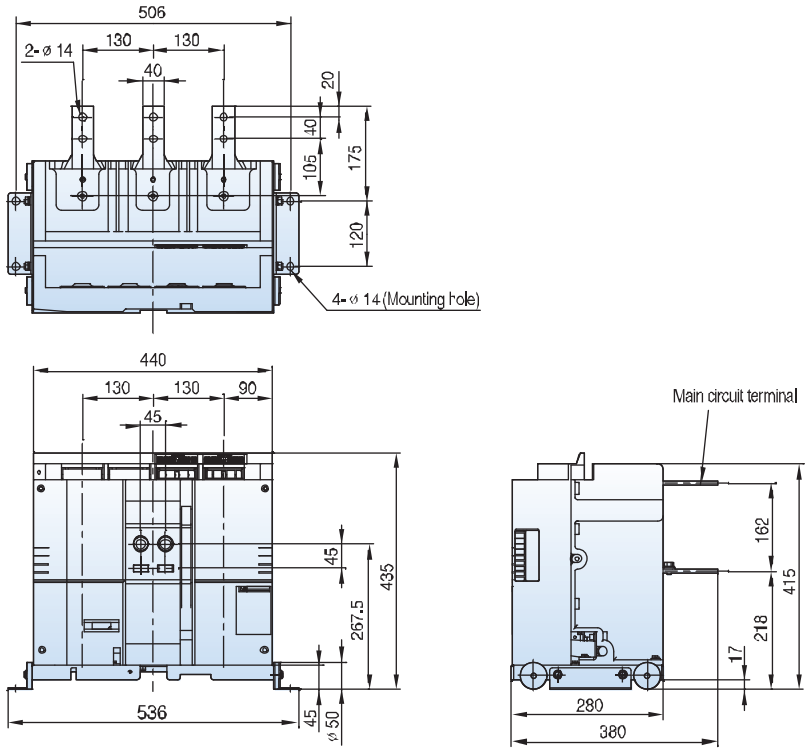
Note) 1. LM - If it is energized with the rated power the earthing switch can be closed or opened (for H type cradle)
2. MOC - This auxiliary switch is used to indicate the Close/Open of VCB (for H type cradle)
It is composed of 4 cell switches with 4 changeover contacts.
3. TOC - This auxiliary switch is used to indicate the 'SERVICE' position of VCB (for H type cradle)
It is composed of 4 cell switches with 4 changeover contacts.
4. TM - Temperature Alarm Unit displays the input temperature detected through the temperature sensor installed in H-type cradle. Temperature sensor can be installed in each phase and can be connected with the temperature module.
5. Please make sure that keep the direction of P, N on this circuit diagram.

Option

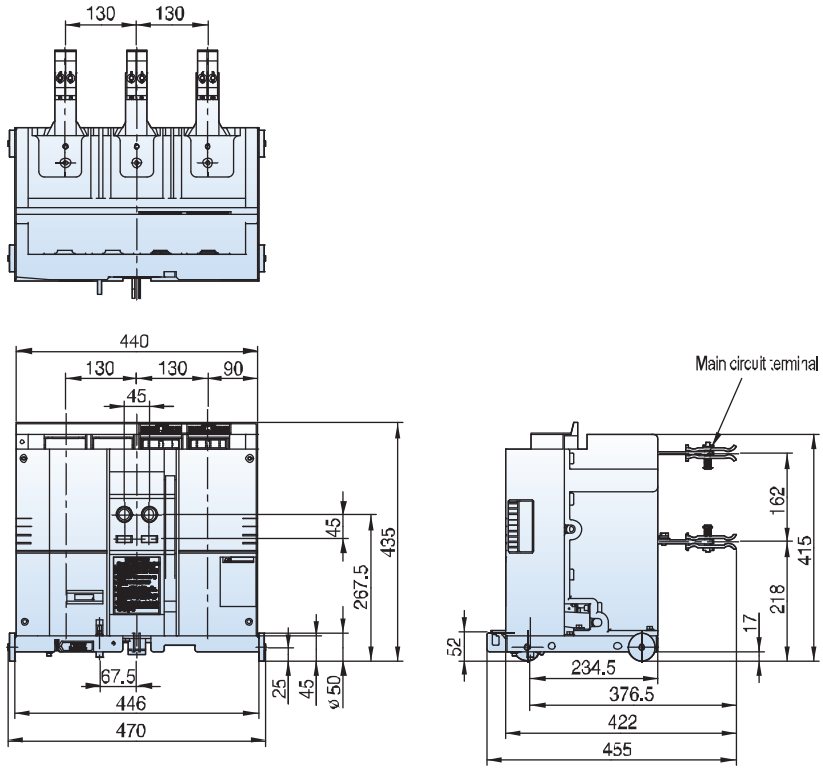
* Above circuit diagram is based on the status that the earthing S/W is Open and the breaker is at Test or between Test and Service position. MOC indicates the Open of the breaker. If the breaker is Closed from Service, the contacts configuration is displayed on the contrary.

7.2kV, 8/12.5kA, 400/630A

Fixed (P type)

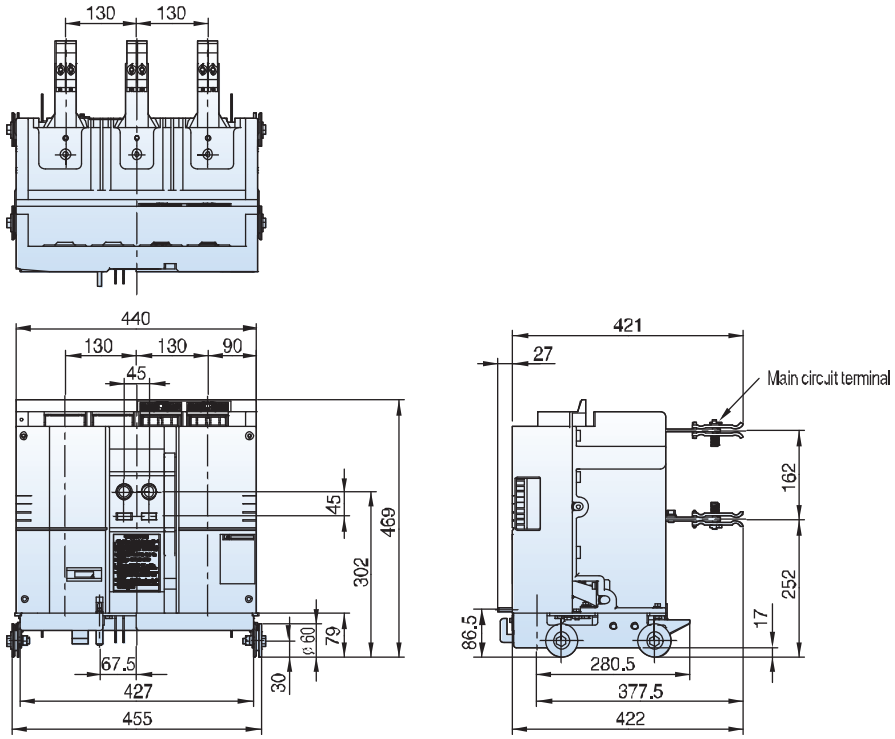


Withdrawable (Standard breaker E/F/G type)

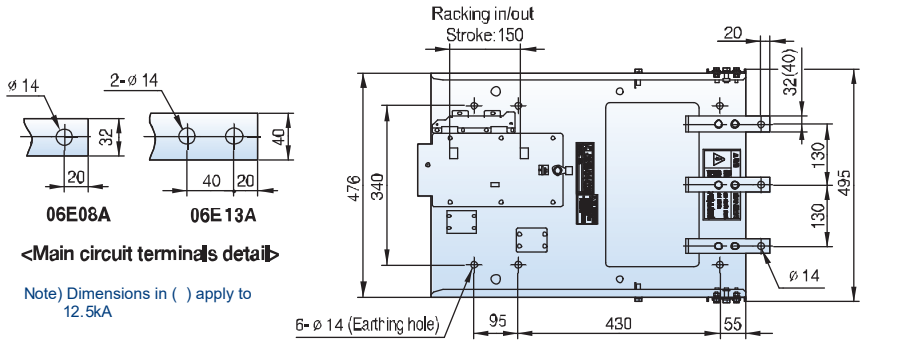


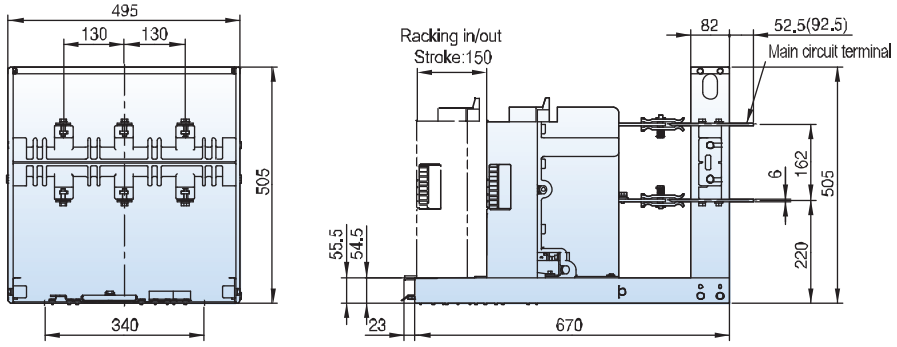
7.2kV, 8/12.5kA, 400/630A

Withdrawable (Compatible with existing breaker E/F/G type)



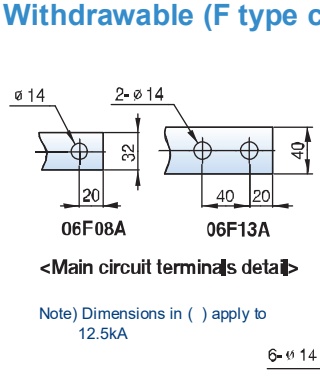
Withdrawable (E type cradle)



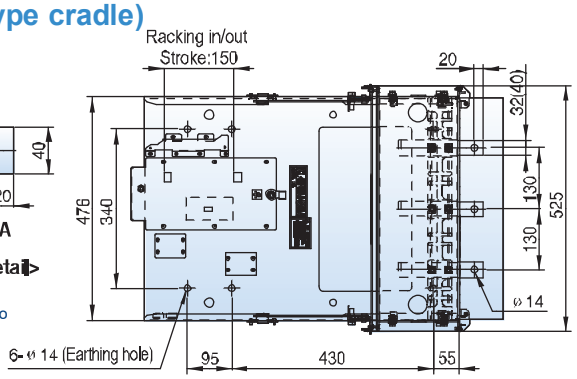


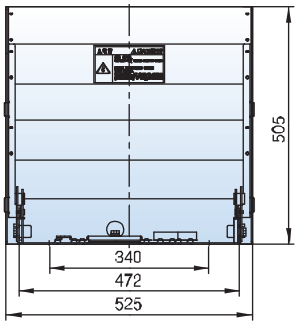
7.2kV, 8/12.5kA, 400/630A

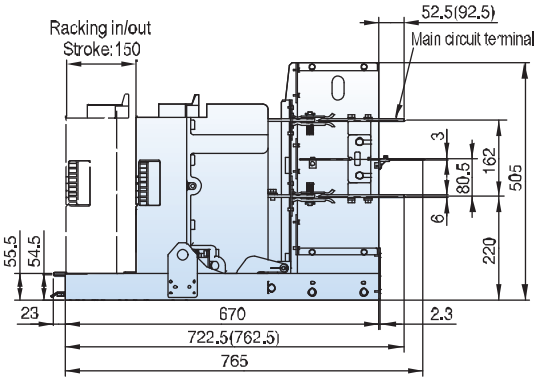
Withdrawable (F type cradle)



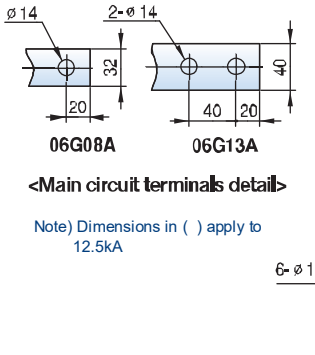
Note) Dimensions in ( ) apply to 12.5kA



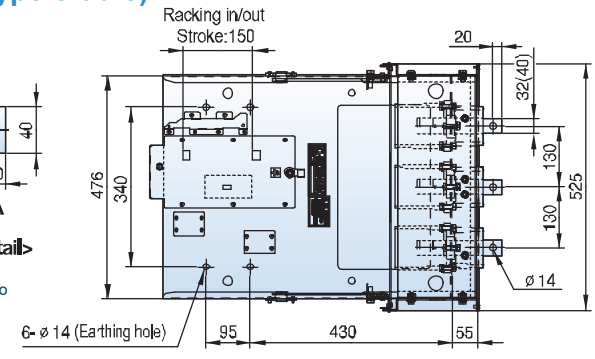


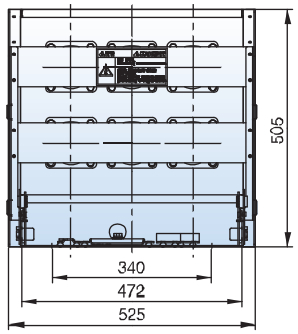


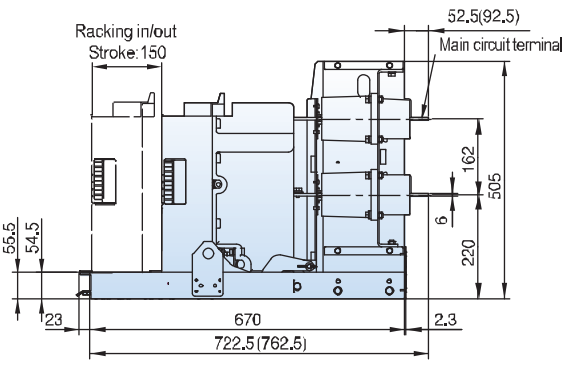
Withdrawable (G type cradle)



Note) Dimensions in ( ) apply to 12.5kA

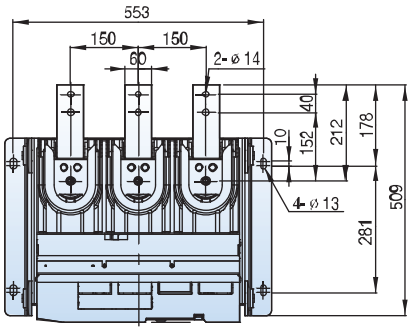


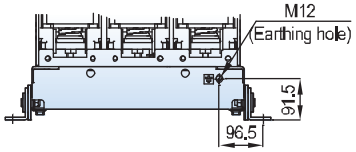


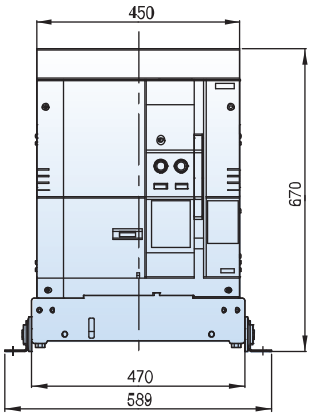


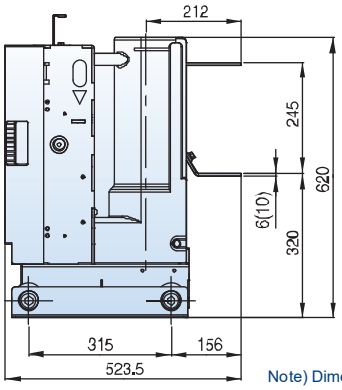
7.2kV, 20/25kA, 630/1250A

Fixed (P type, phase distance 150mm)



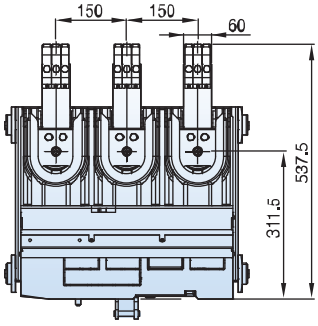


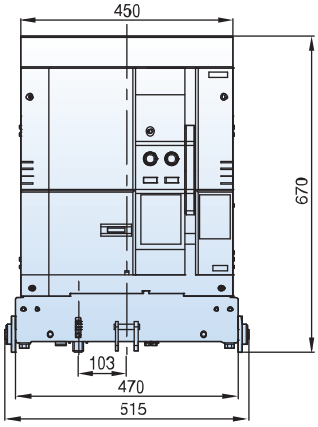


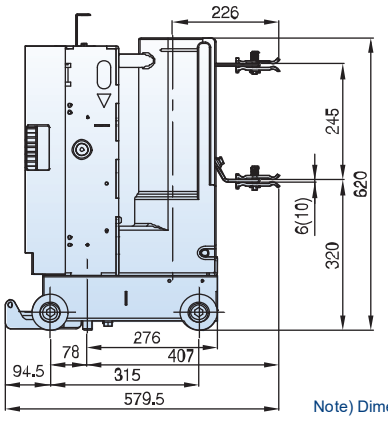


Note) Dimensions in ( ) apply to 1250A

Withdrawable (E type unit, phase distance 150mm)



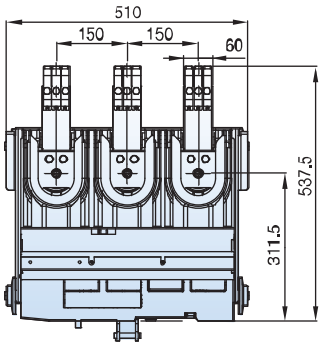


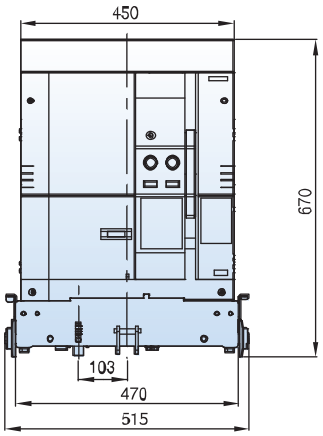


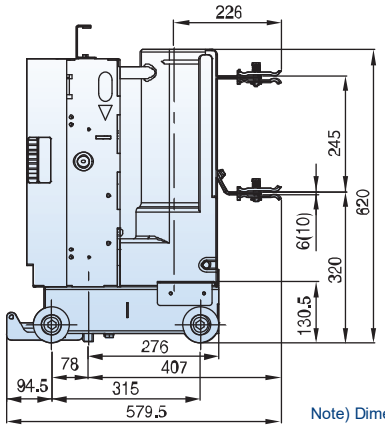
Note) Dimensions in ( ) apply to 1250A

7.2kV, 20/25kA, 630/1250A

Withdrawable (F type unit, phase distance 150mm)

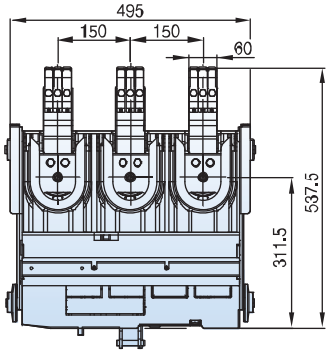


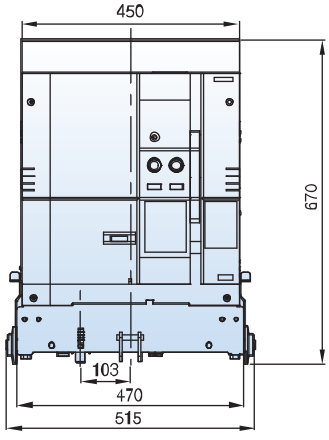


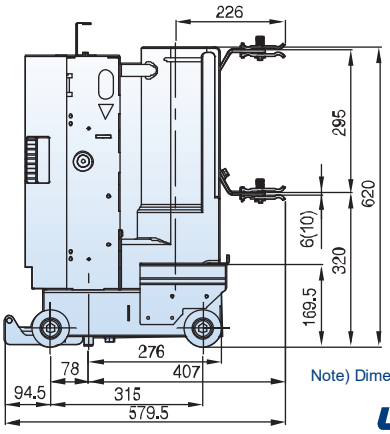


Note) Dimensions in ( ) apply to 1250A

Withdrawable (G type unit, phase distance 150mm)



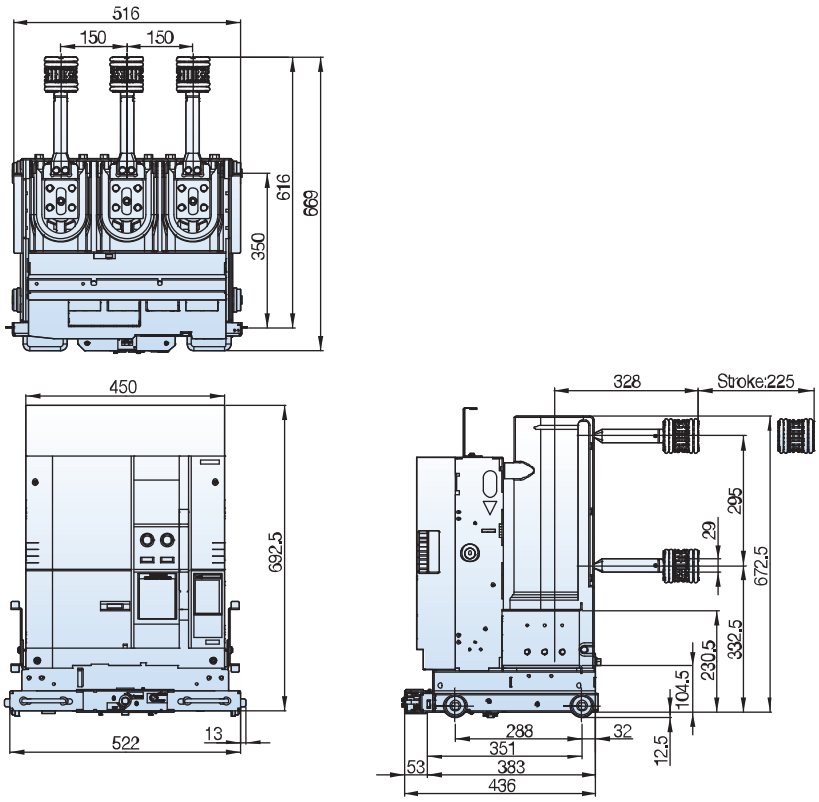




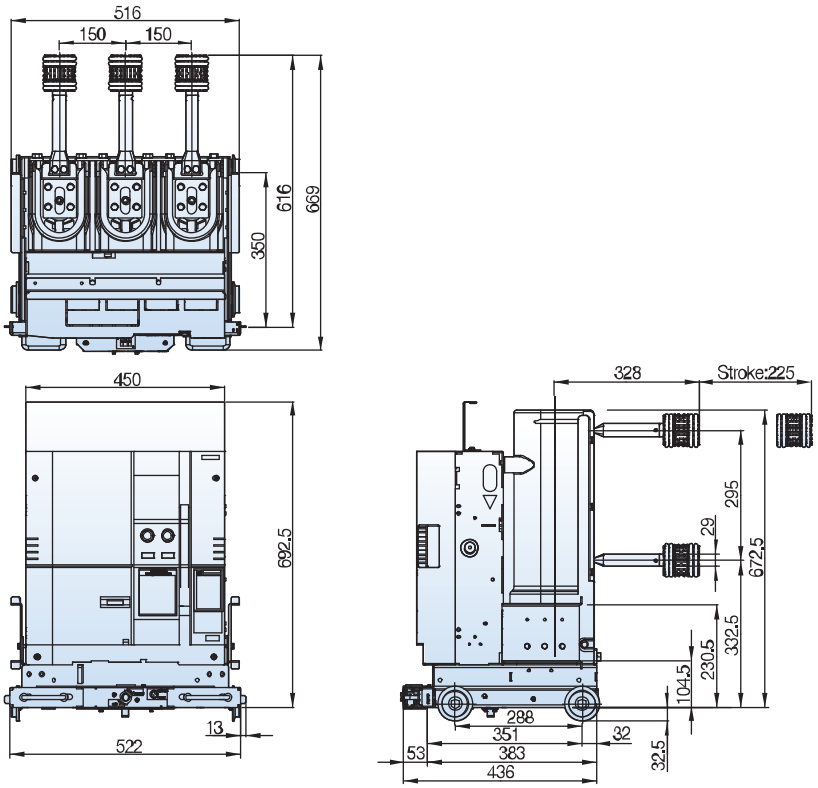
Note) Dimensions in ( ) apply to 1250A

7.2kV, 20/25kA, 630/1250A

Withdrawable (K type unit T type, phase distance 150mm)



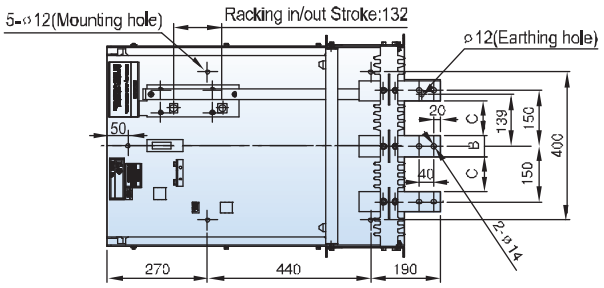
Withdrawable (K type unit T2 type, phase distance 150mm)

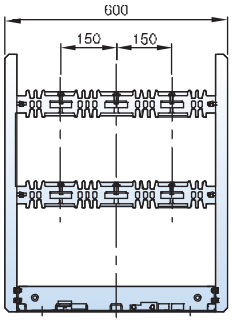


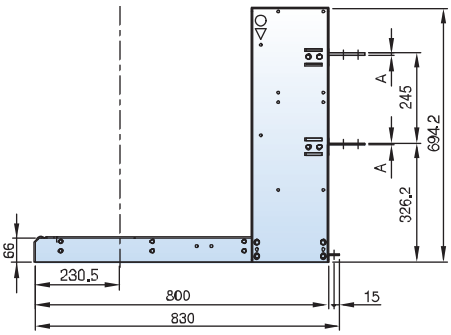
7.2kV, 20/25kA, 630/1250A

Withdrawable (E type cradle, phase distance 150mm)

Rating	630A	1250A
A	6	10
B	55	60
C	95	90



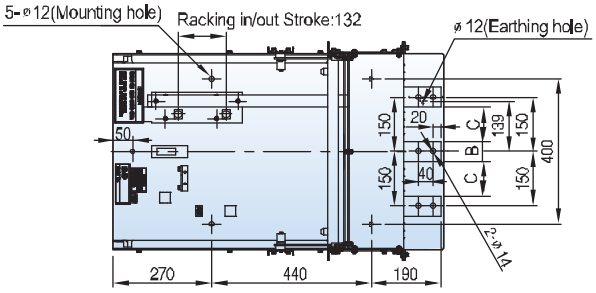


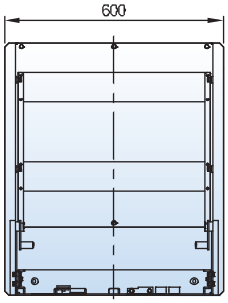


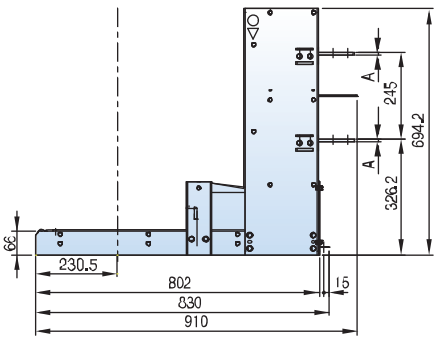
* Please be informed that the switchgear IP cover has to be back of — - — mark.

Withdrawable (F type cradle, phase distance 150mm)

Rating	630A	1250A
A	6	10
B	55	60
C	95	90



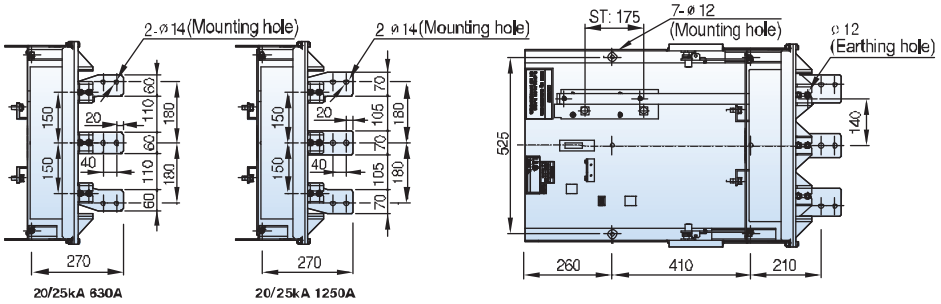


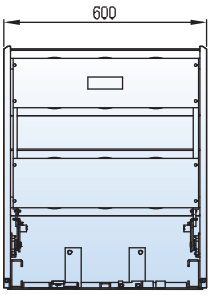


* Please be informed that the switchgear IP cover has to be back of — - — mark.

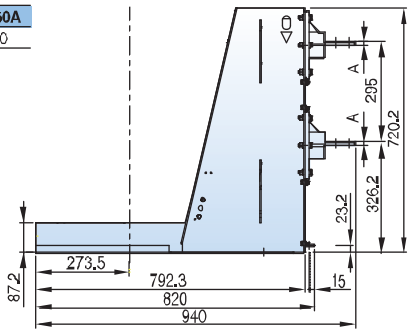
7.2kV, 20/25kA, 630/1250A

Withdrawable (G type cradle, phase distance 150mm)



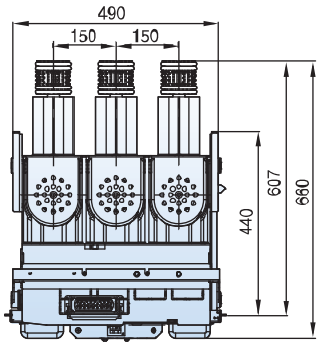


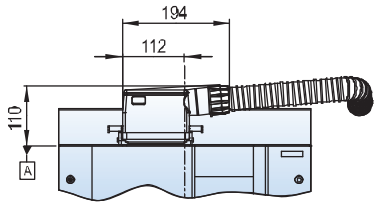
Rating	630A	1250A
A	6	10



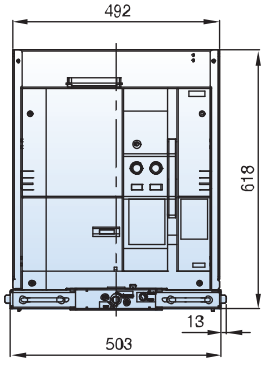
* Please be informed that the switchgear IP cover has to be back of —·— mark.

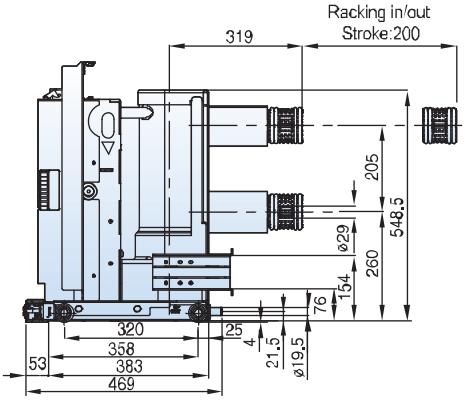
Withdrawable (H type unit, phase distance 150mm)





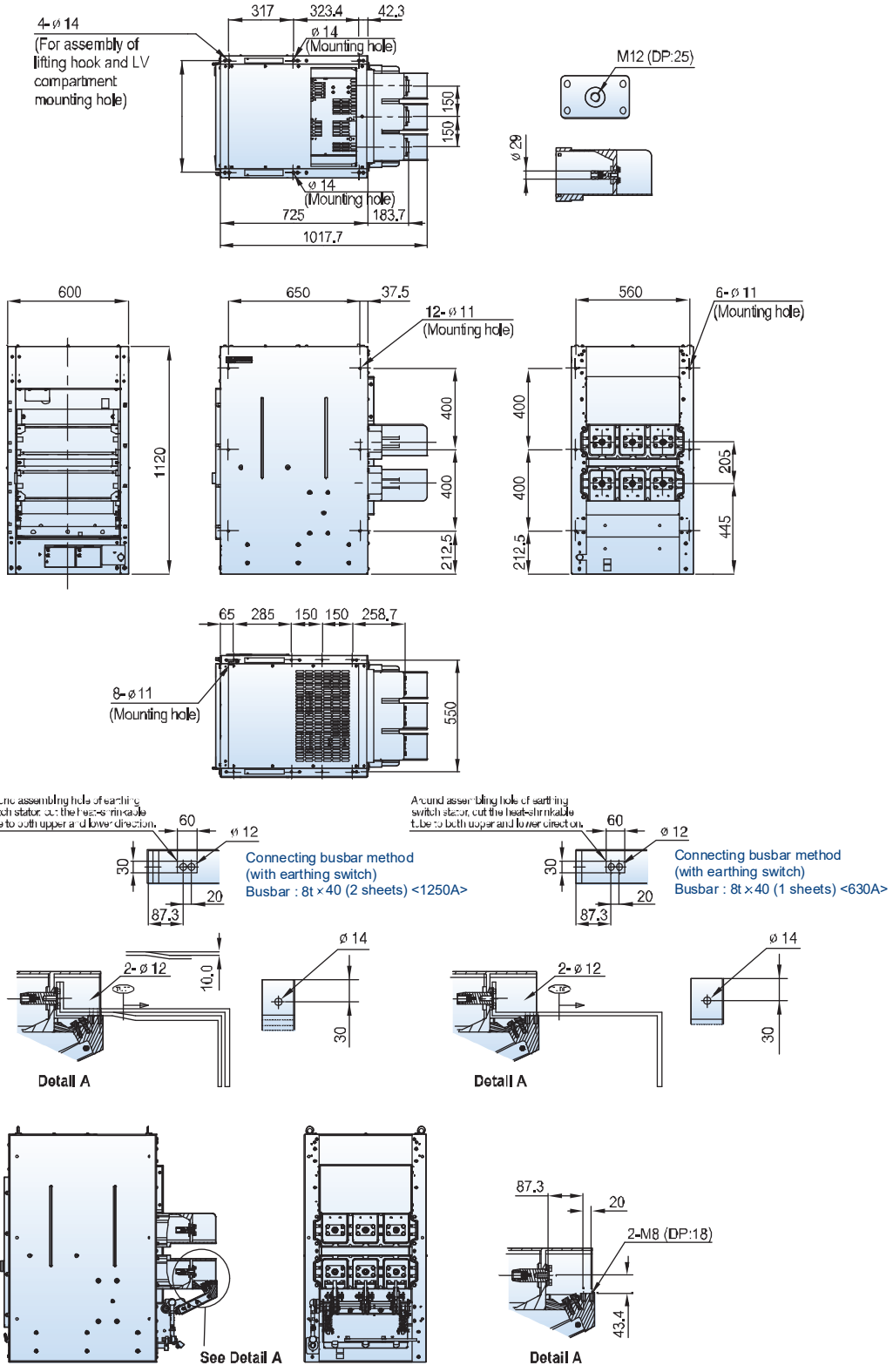
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





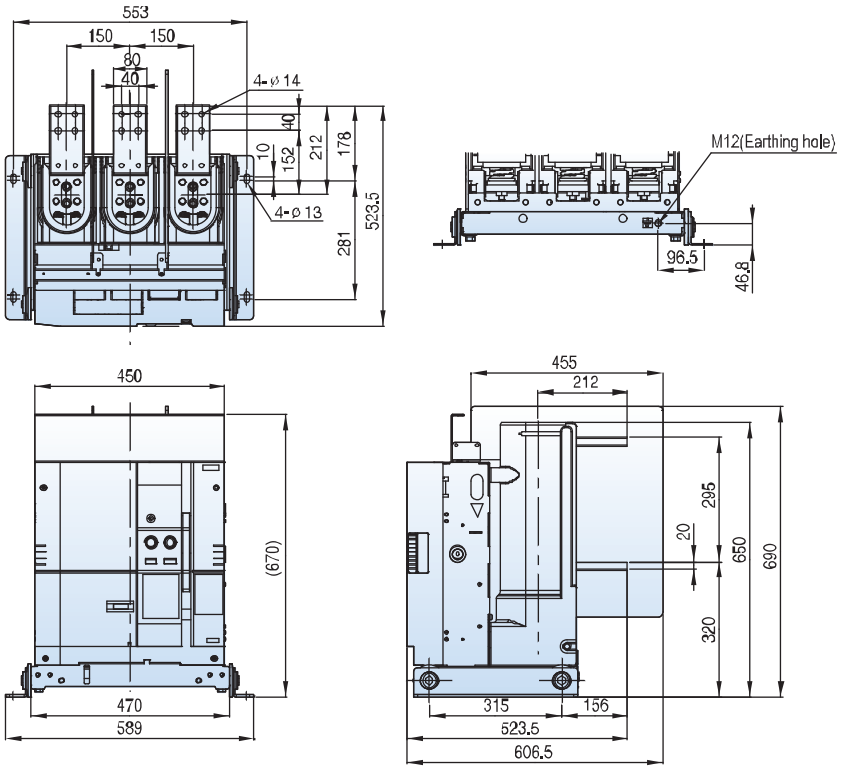
7.2kV, 20/25kA, 630/1250A

Withdrawable (H type cradle, phase distance 150mm)

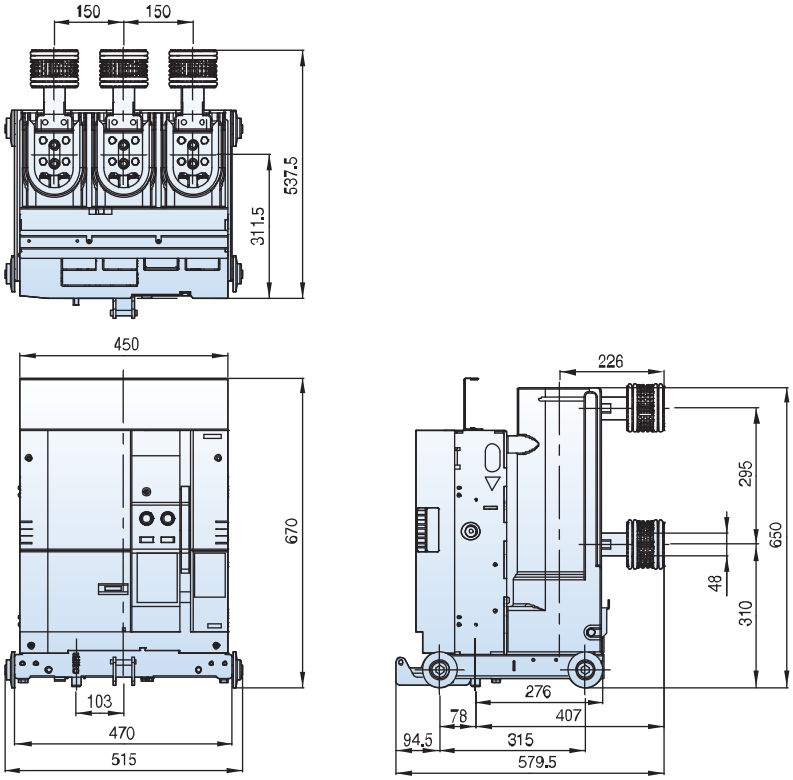


7.2kV, 20/25kA, 2000A

Fixed (P type, phase distance 150mm)

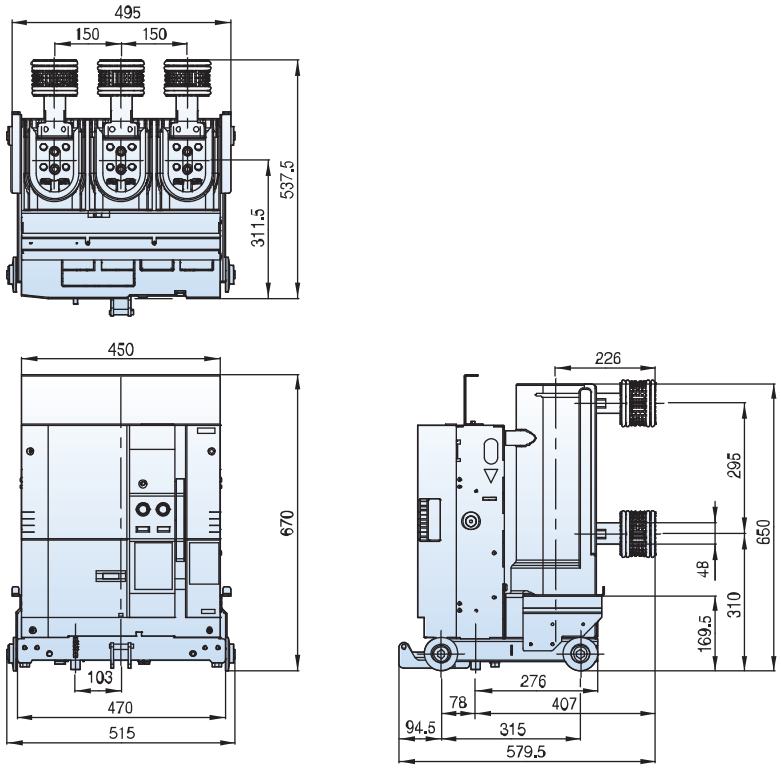


Withdrawable (E type unit, phase distance 150mm)

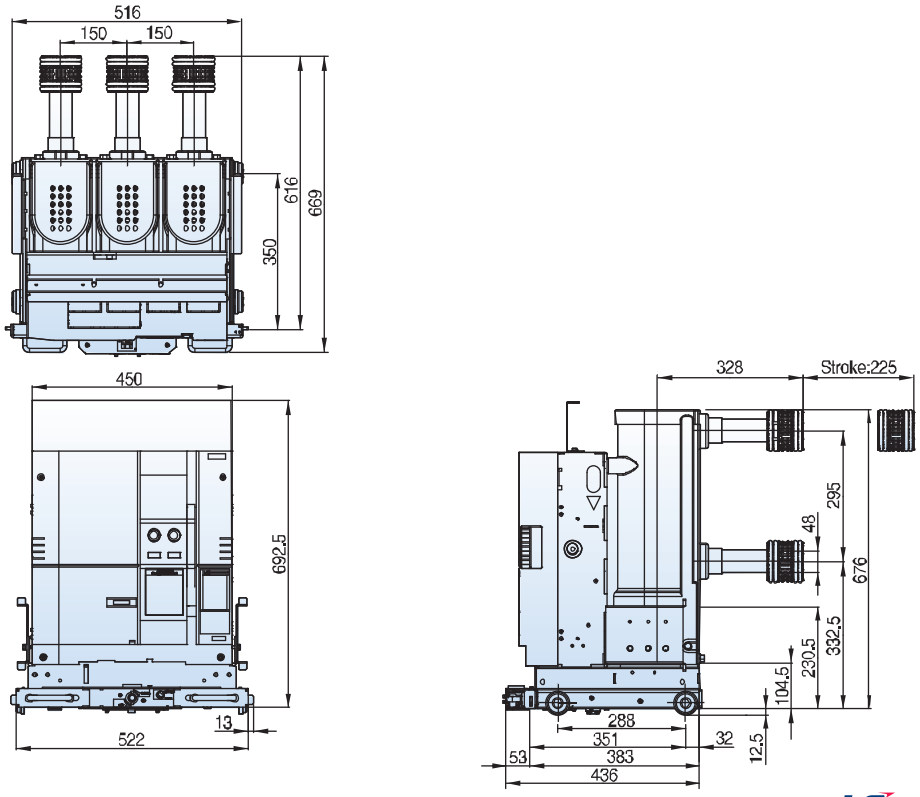


7.2kV, 20/25kA, 2000A

Withdrawable (F/G type unit, phase distance 150mm)

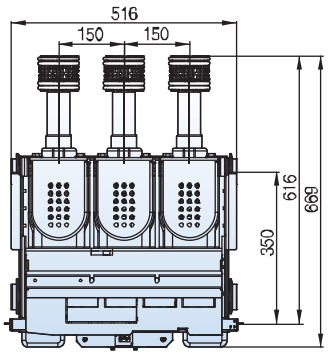


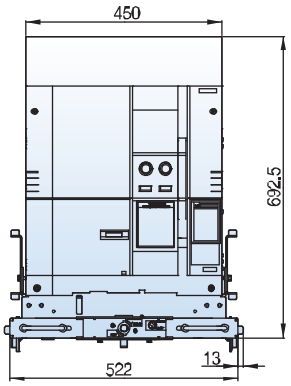
Withdrawable (K type unit T type, phase distance 150mm)

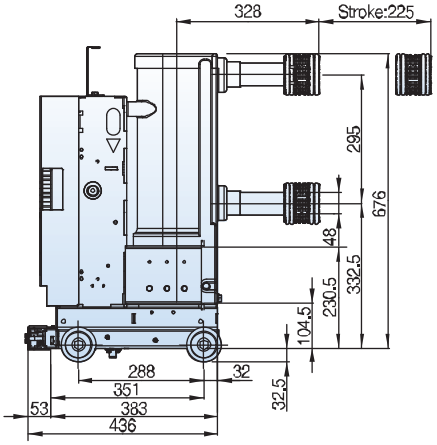


7.2kV, 20/25kA, 2000A

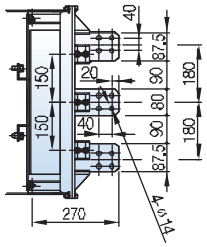
Withdrawable (K type unit T2 type, phase distance 150mm)

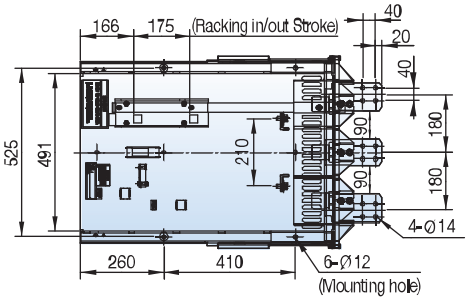


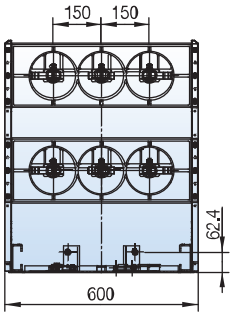


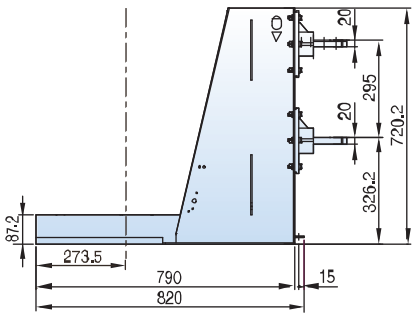


Withdrawable (E type cradle, phase distance 150mm)





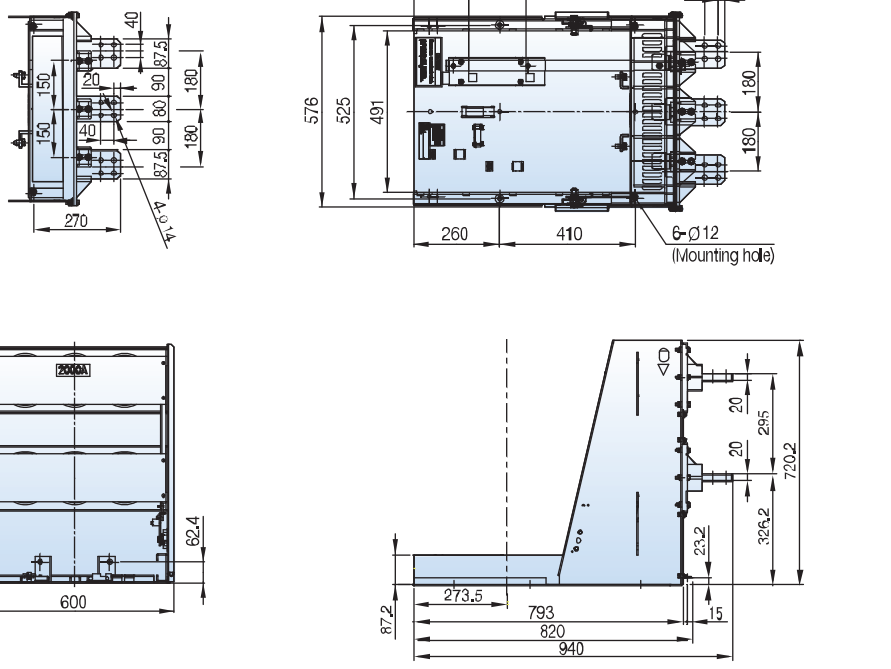




* Please be informed that the switchgear IP cover has to be back of ——— mark.

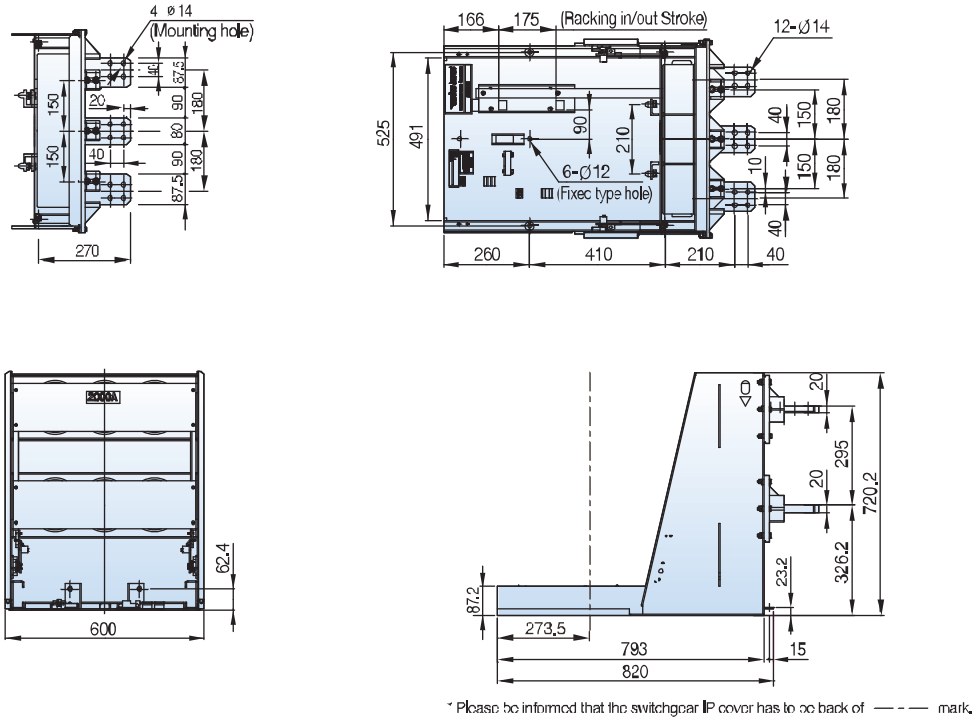
7.2kV, 20/25kA, 2000A

Withdrawable (F type cradle, phase distance 150mm)



* Please be informed that the switchgear IP cover has to be back of ——— mark.

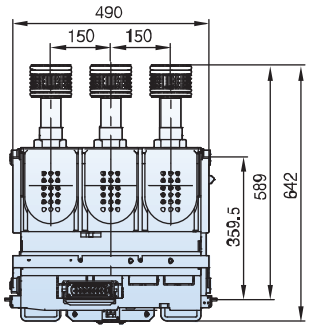
Withdrawable (G type cradle, phase distance 150mm)

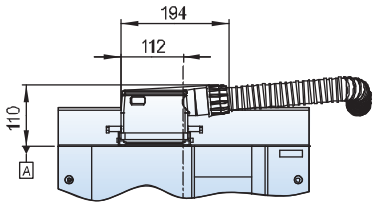


* Please be informed that the switchgear IP cover has to be back of ——— mark.

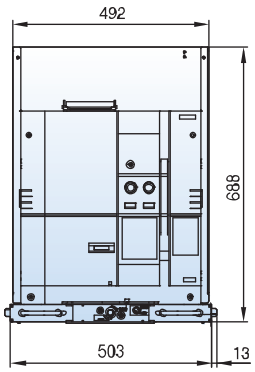
7.2kV, 20/25kA, 2000A

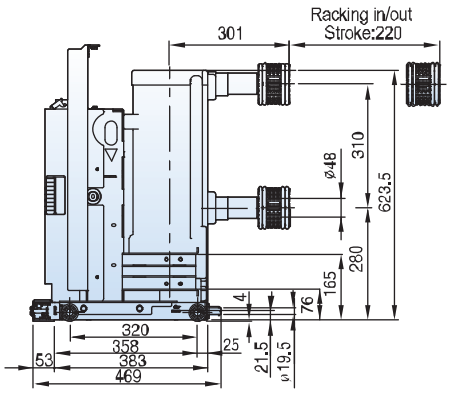
Withdrawable (H type unit, phase distance 150mm)





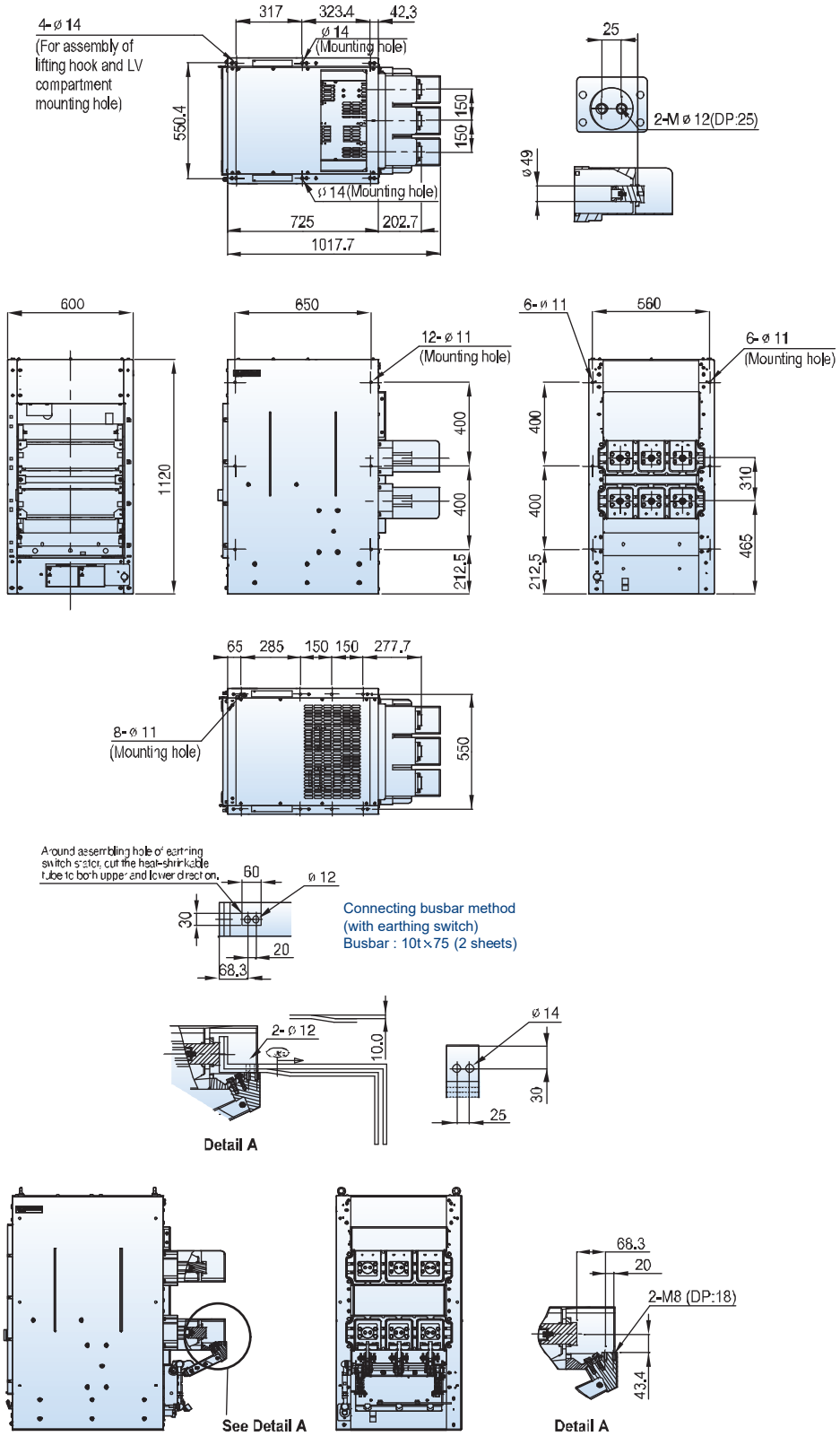
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





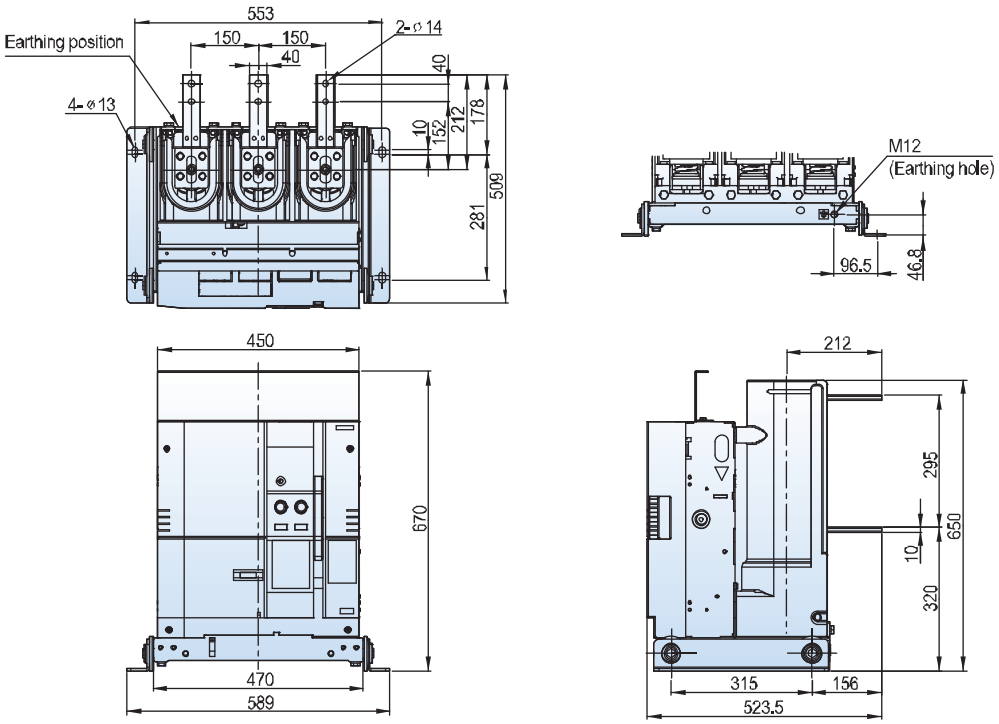
7.2kV, 20/25kA, 2000A

Withdrawable (H type cradle, phase distance 150mm)

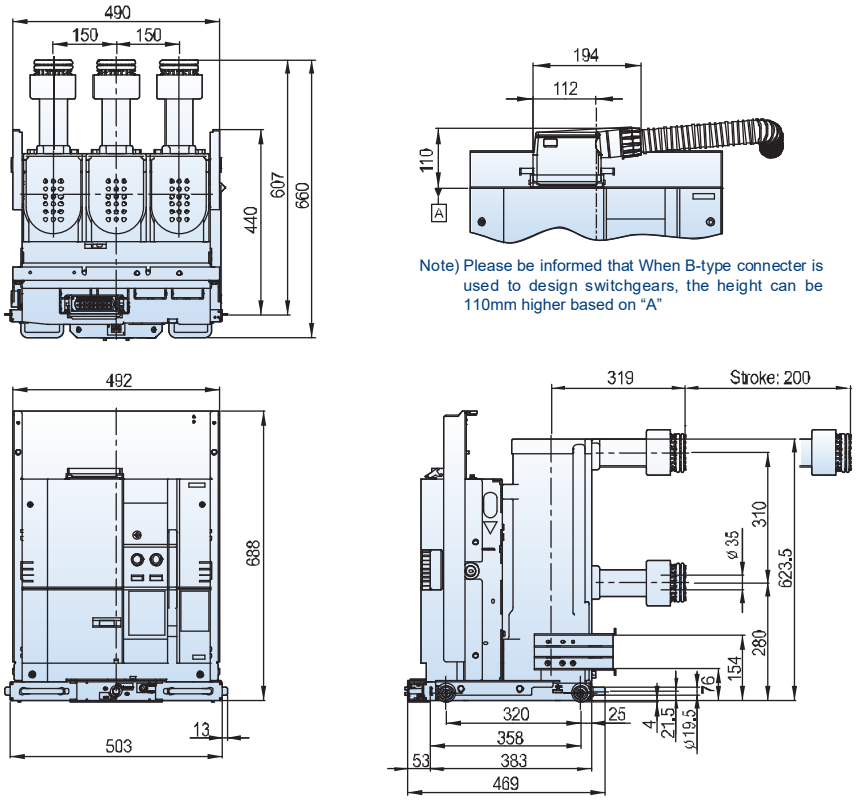


7.2kV, 31.5kA, 630A

Fixed (P type, phase distance 150mm)

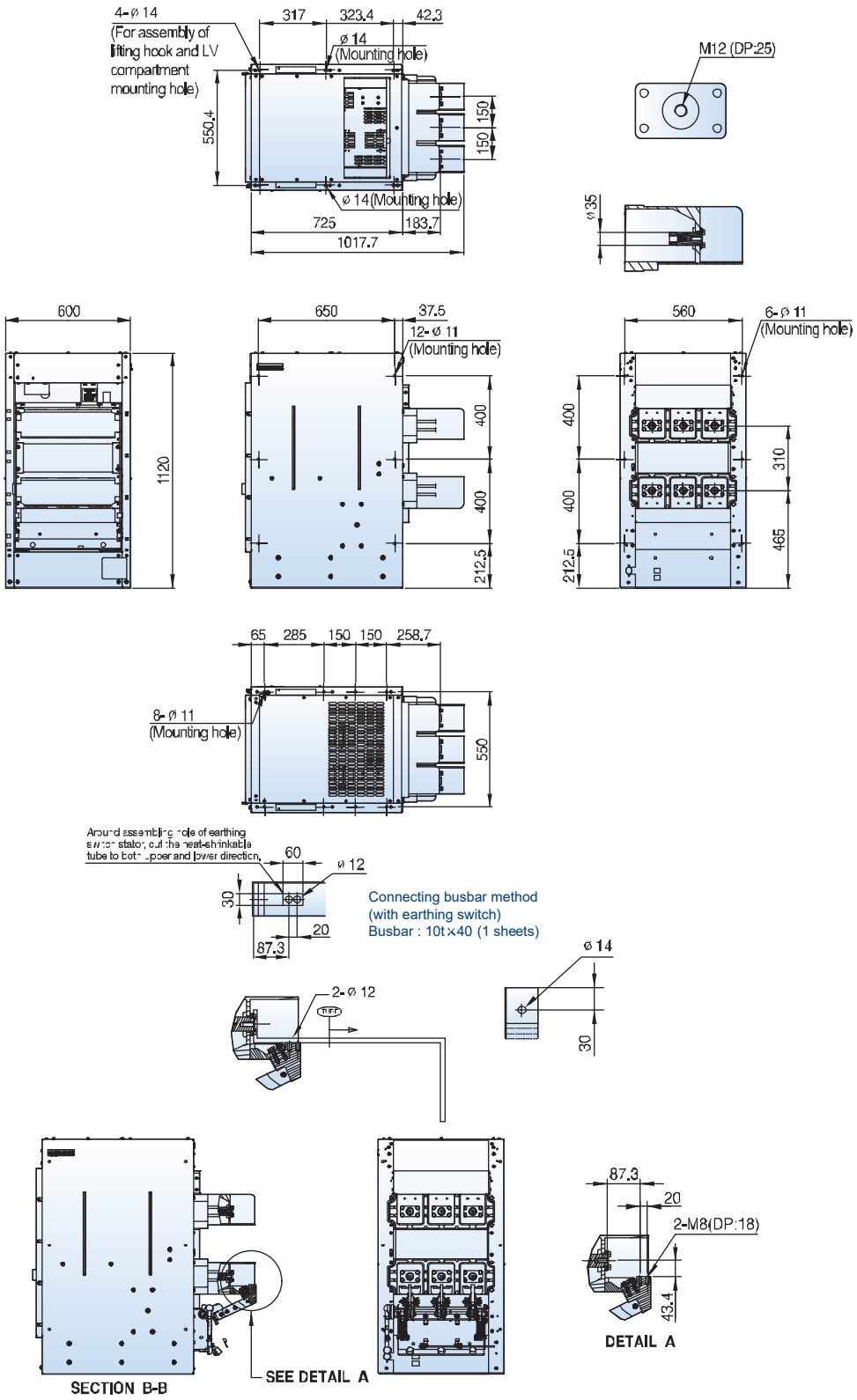


Withdrawable (H type unit, phase distance 150mm)



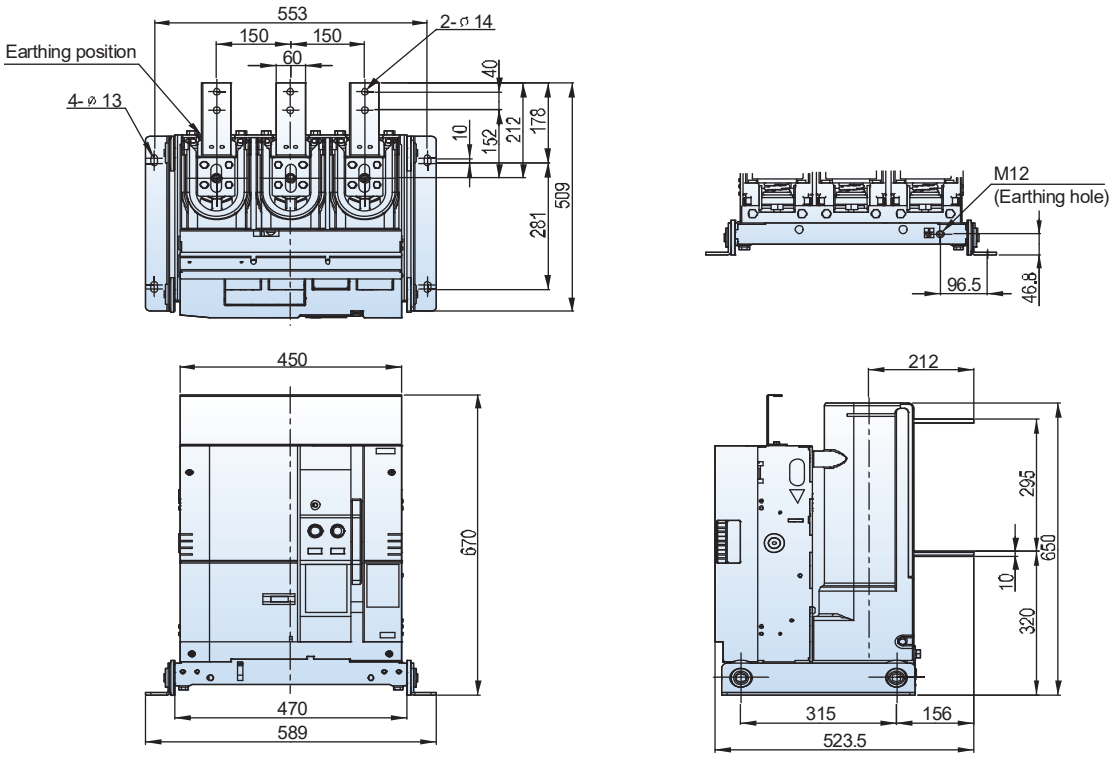
7.2kV, 31.5kA, 630A

Withdrawable (H type cradle, phase distance 150mm)

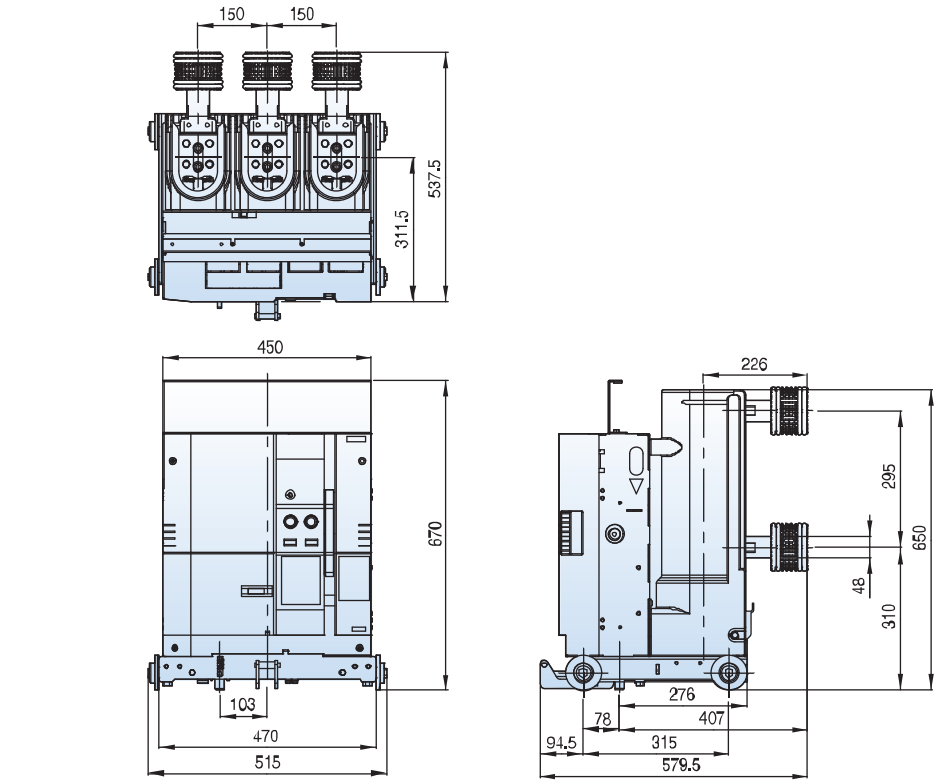


7.2kV, 31.5kA, 1250A

Fixed (P type, phase distance 150mm)

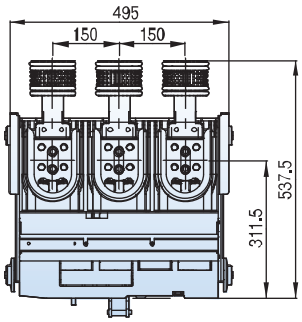


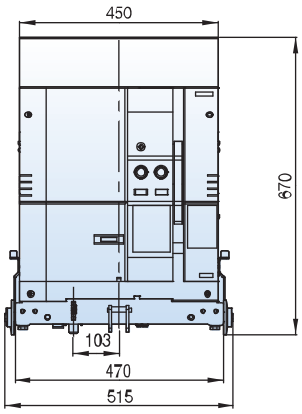
Withdrawable (E type unit, phase distance 150mm)

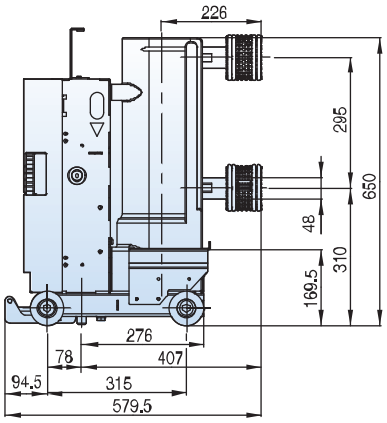


7.2kV, 31.5kA, 1250A

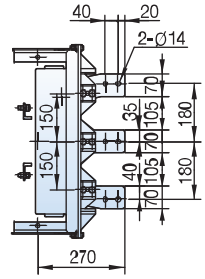
Withdrawable (F/G type unit, phase distance 150mm)

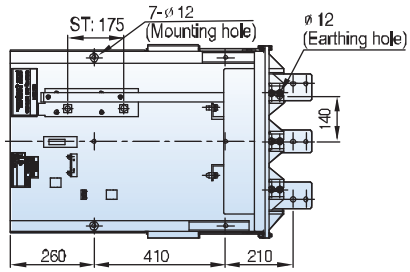


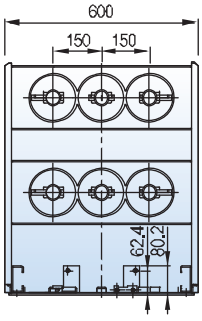


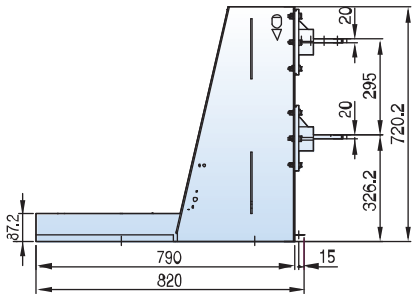


Withdrawable (E type cradle, phase distance 150mm)



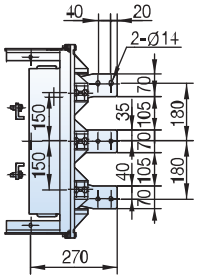


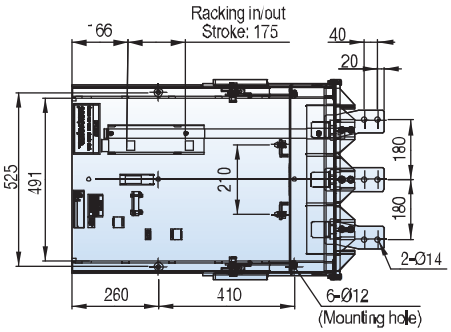


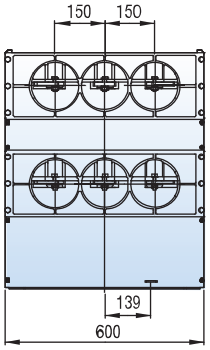


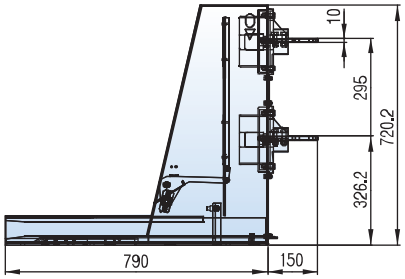
7.2kV, 31.5kA, 1250A

Withdrawable (F type cradle , phase distance 150mm)

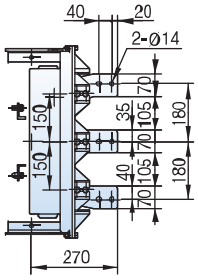


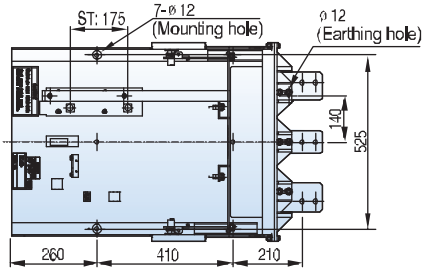


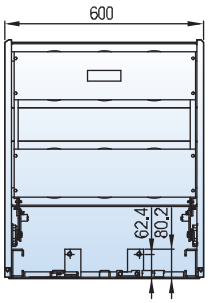


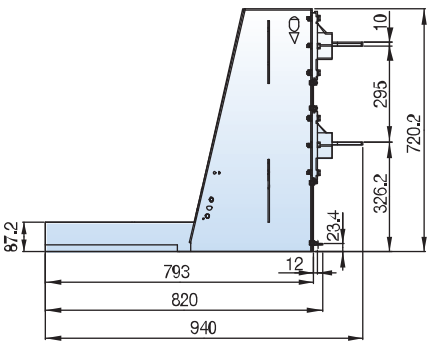


Withdrawable (G type cradle, phase distance 150mm)



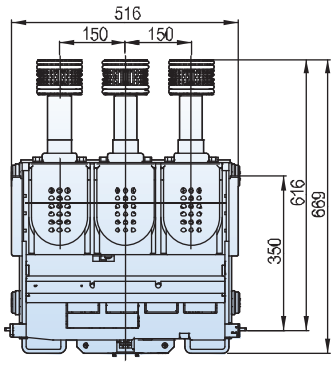


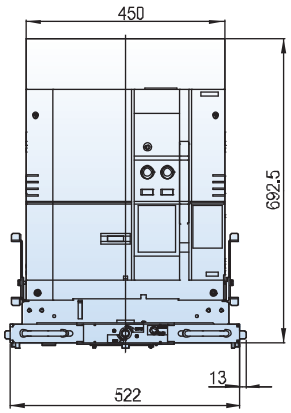


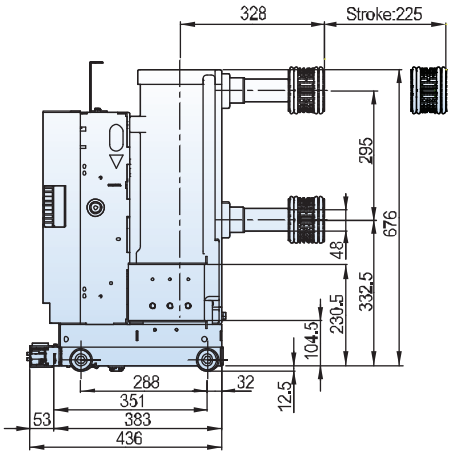


7.2kV, 31.5kA, 1250A

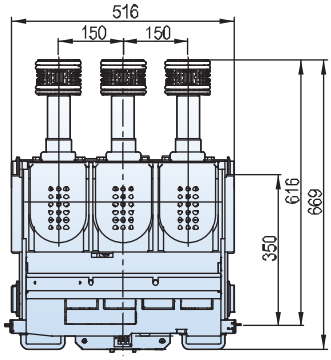
Withdrawable (K type unit T type, phase distance 150mm)

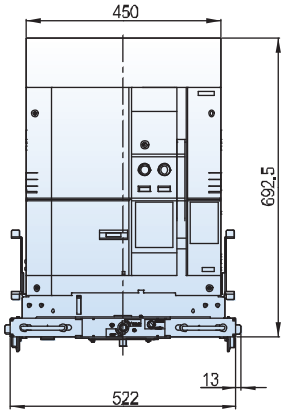


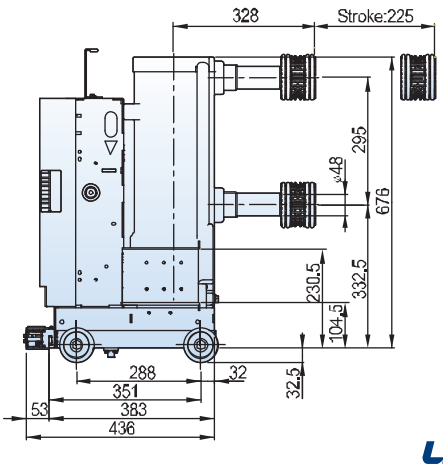




Withdrawable (K type unit T2 type, phase distance 150mm)

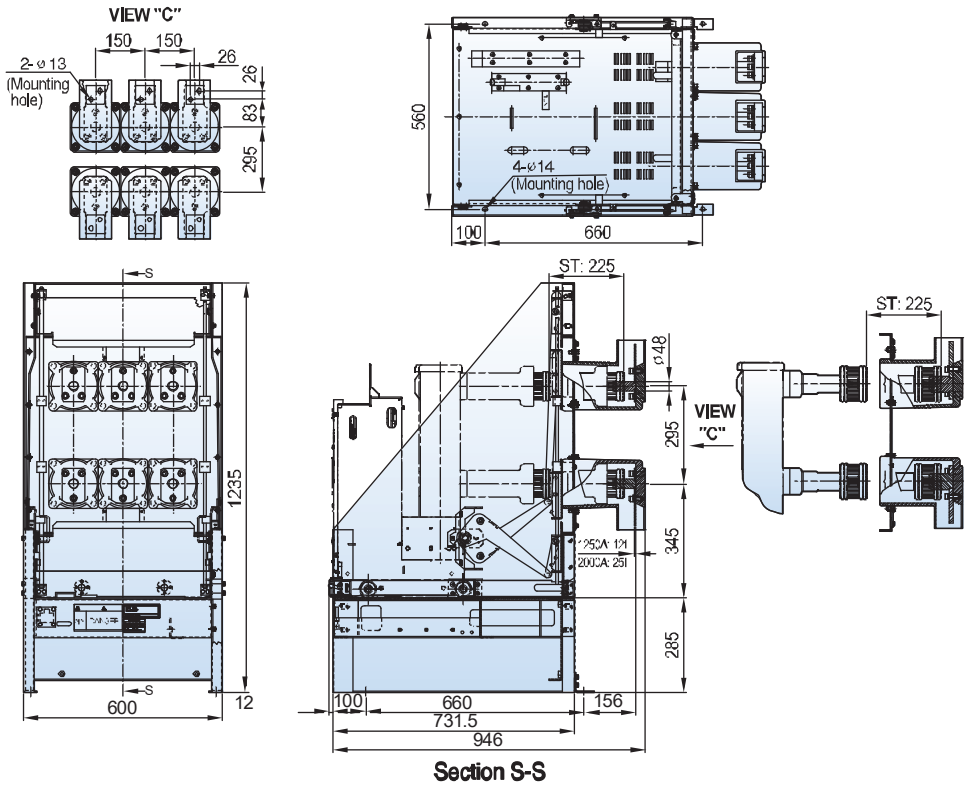




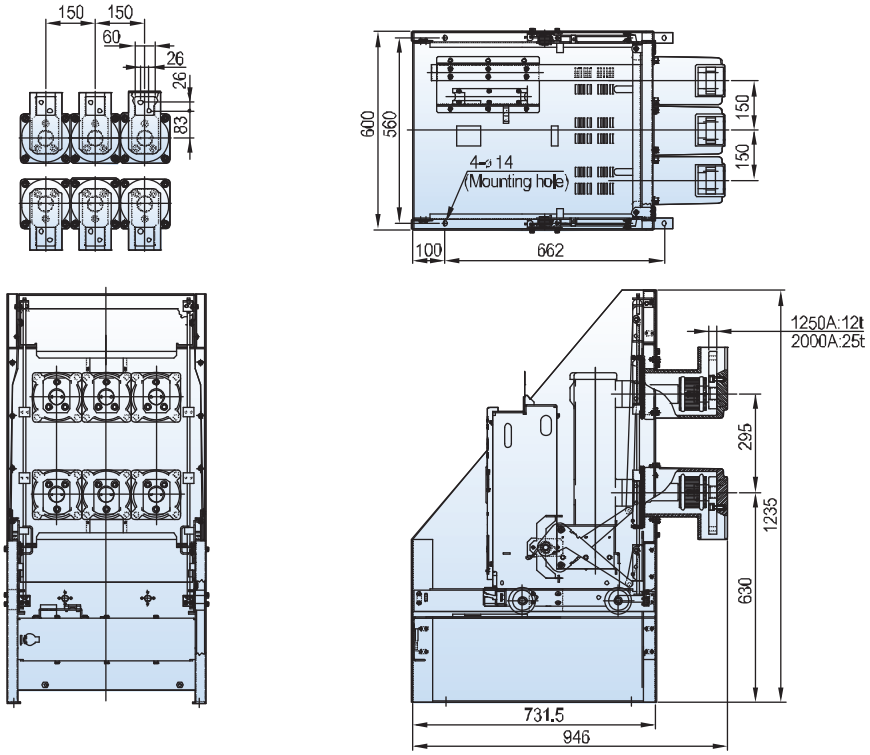


7.2kV, 31.5kA, 1250A

Withdrawable (G type cradle T type, phase distance 150mm)

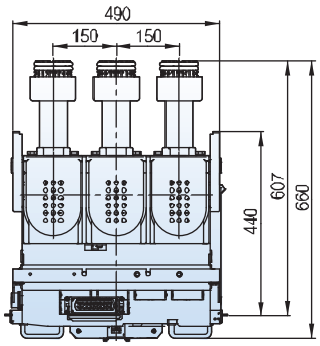


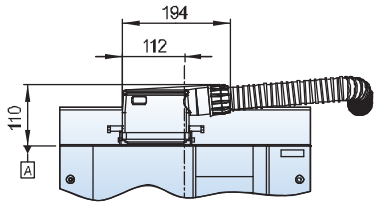
Withdrawable (MCSG cradle T2 type, phase distance 150mm)



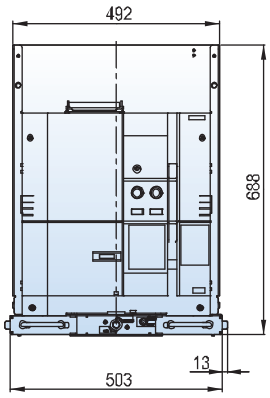
7.2kV, 31.5kA, 1250A

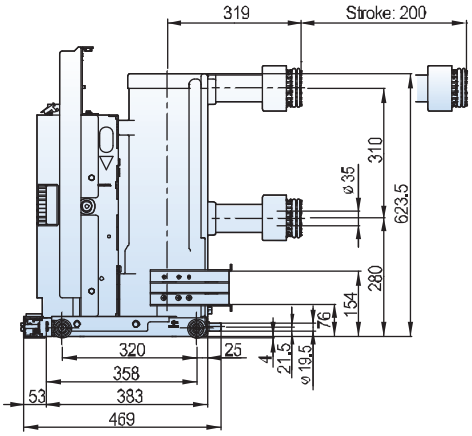
Withdrawable (H type unit, phase distance 150mm)





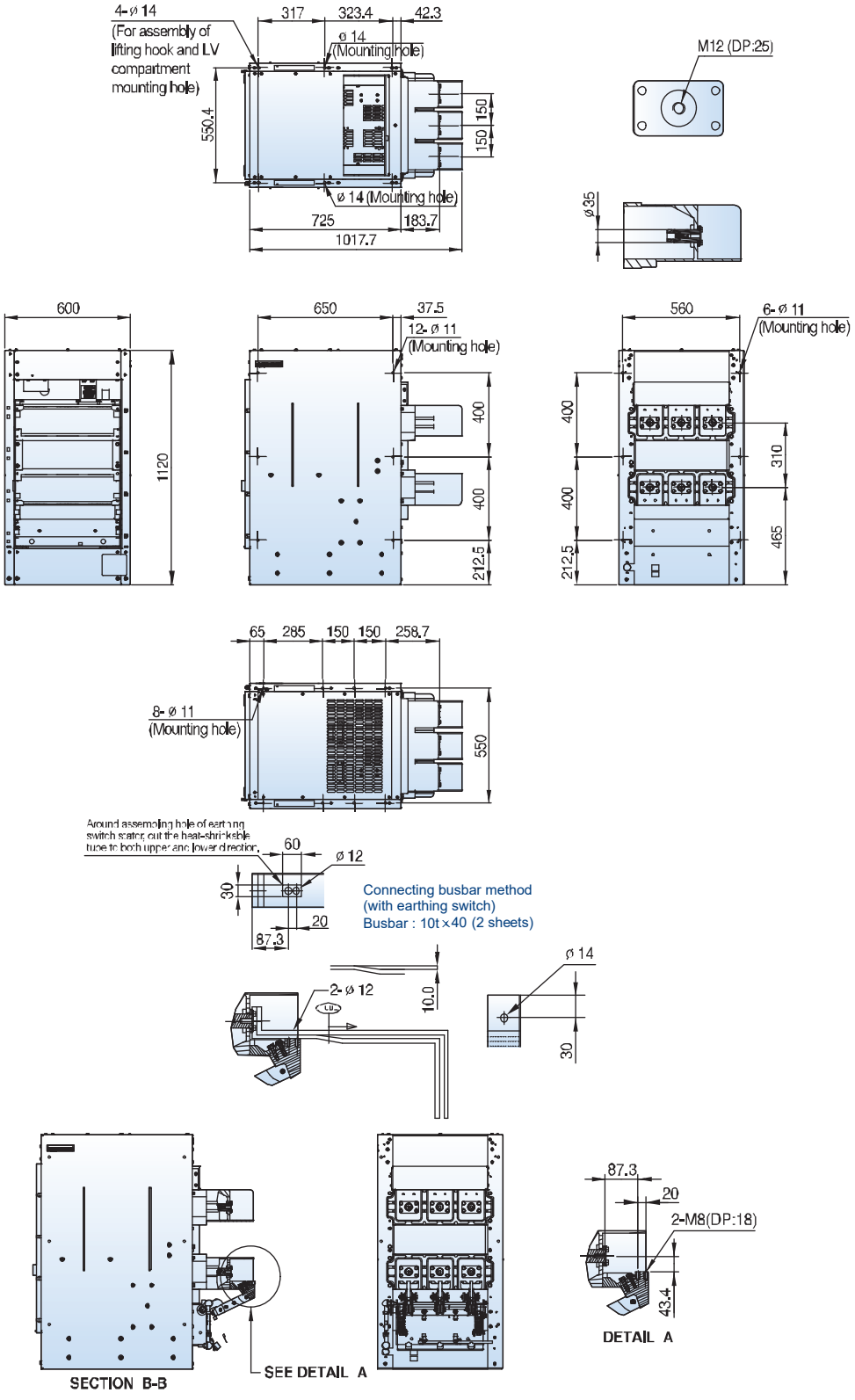
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





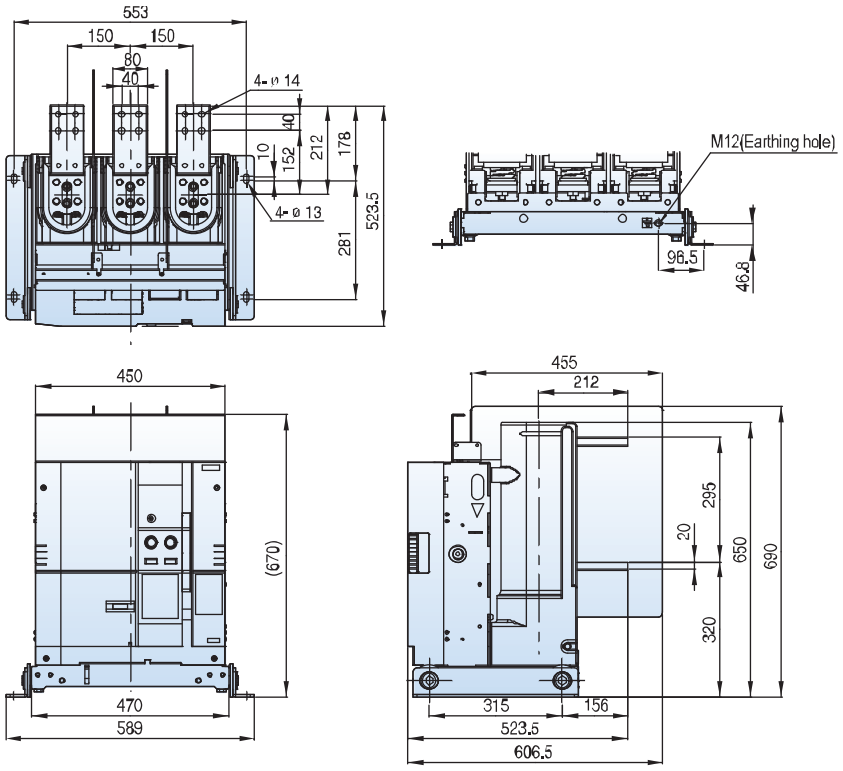
7.2kV, 31.5kA, 1250A

Withdrawable (H type cradle, phase distance 150mm)

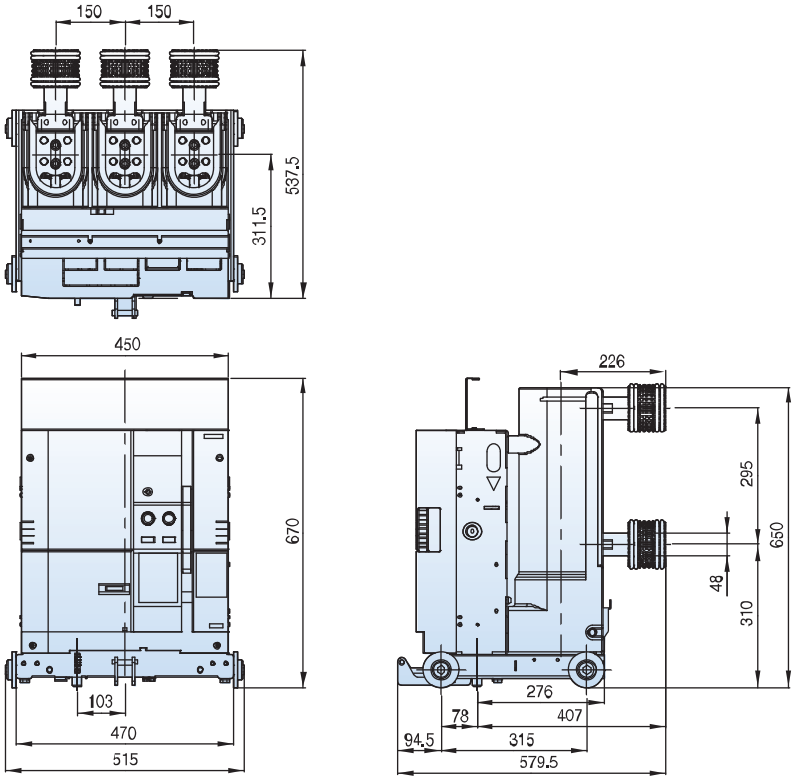


7.2kV, 31.5kA, 2000A

Fixed (P type, phase distance 150mm)

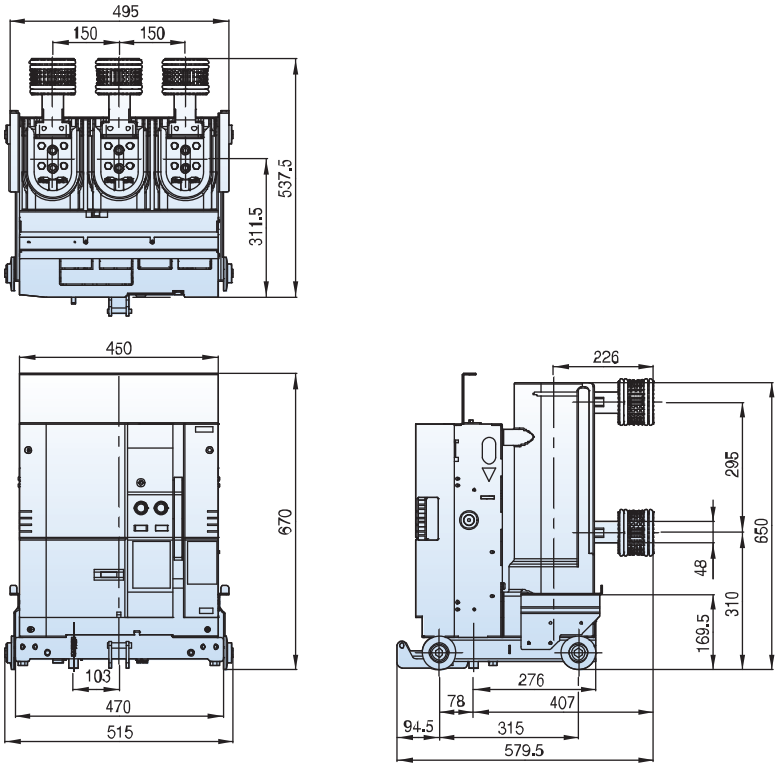


Withdrawable (E type unit, phase distance 150mm)

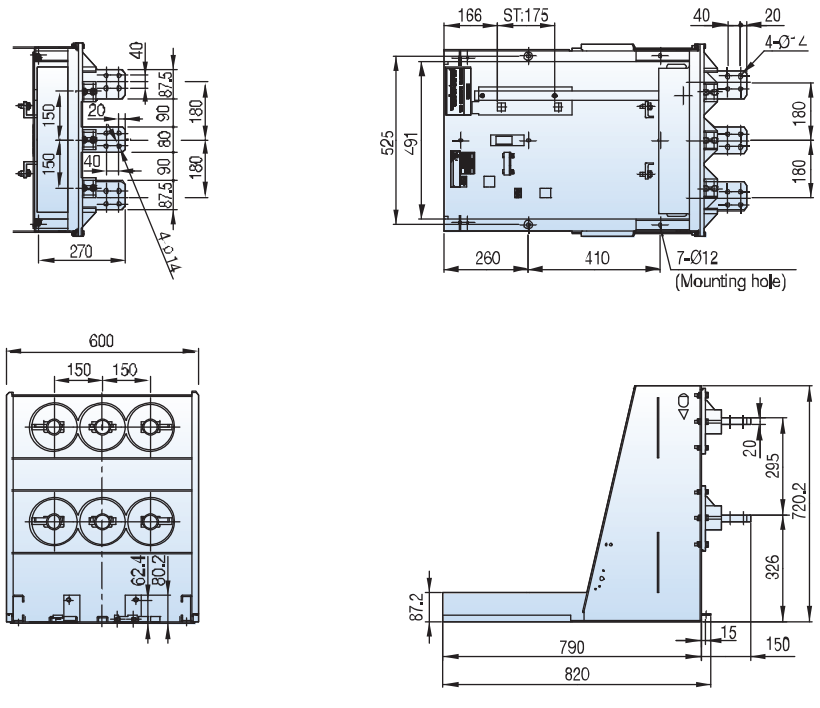


7.2kV, 31.5kA, 2000A

Withdrawable (F/G type unit, phase distance 150mm)

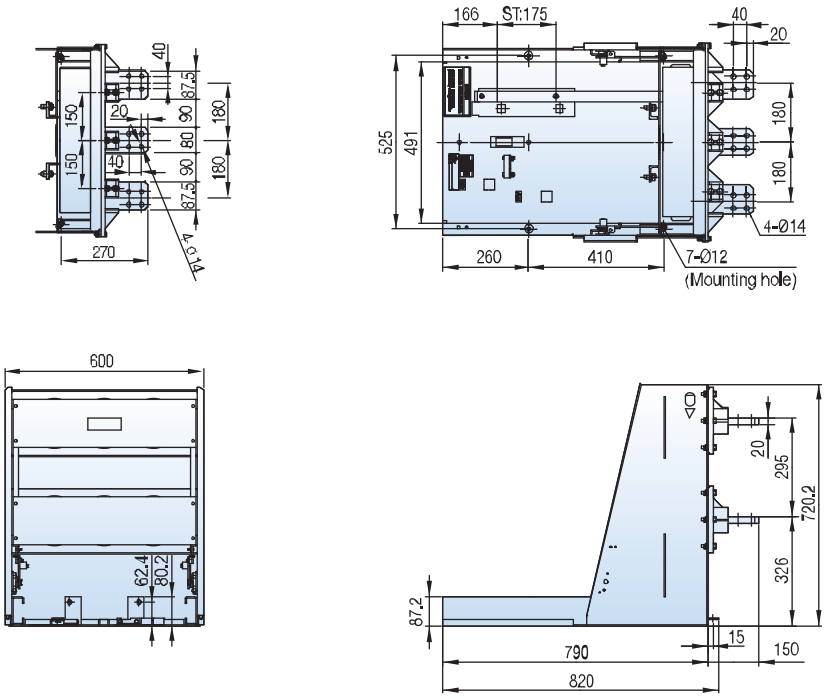


Withdrawable (E type cradle, phase distance 150mm)

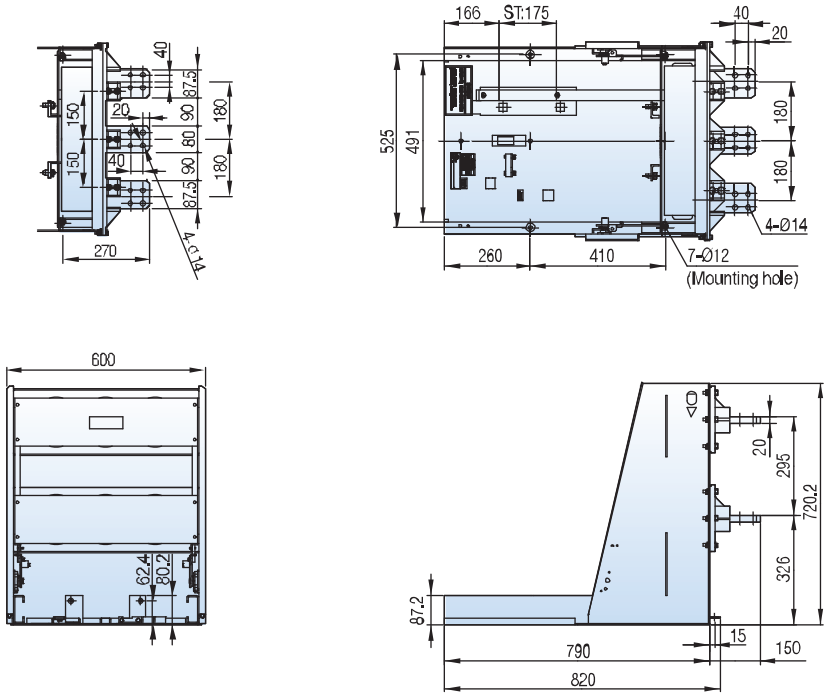


7.2kV, 31.5kA, 2000A

Withdrawable (F type cradle, phase distance 150mm)

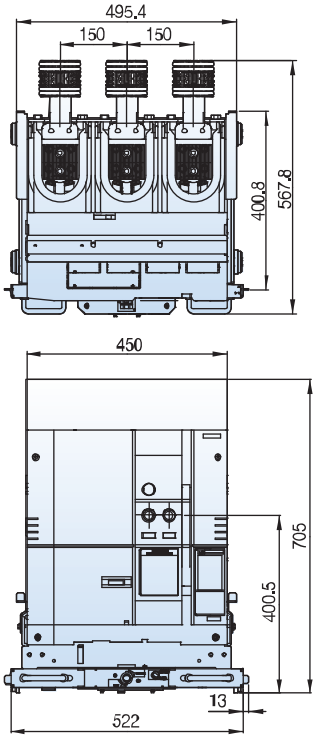


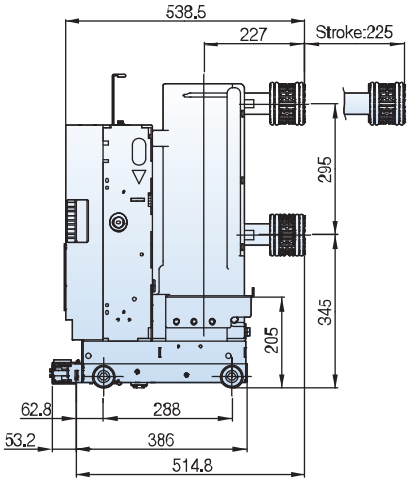
Withdrawable (G type cradle, phase distance 150mm)



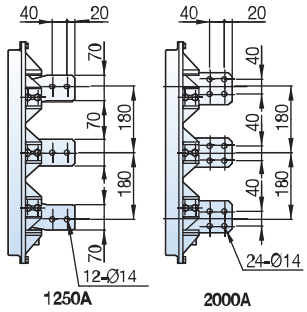
7.2kV, 31.5kA, 1250/2000A

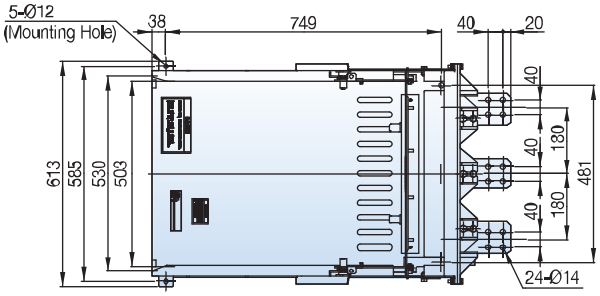
Withdrawable (Fs type unit, phase distance 150mm

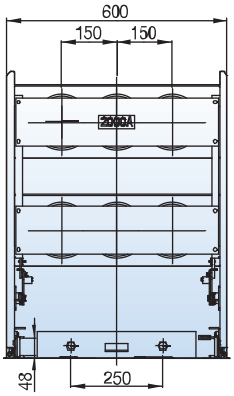




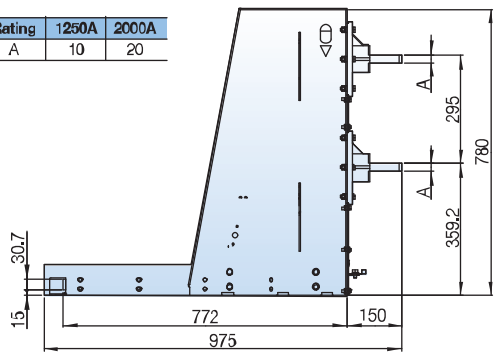
Withdrawable (Fs type cradle, phase distance 150mm)





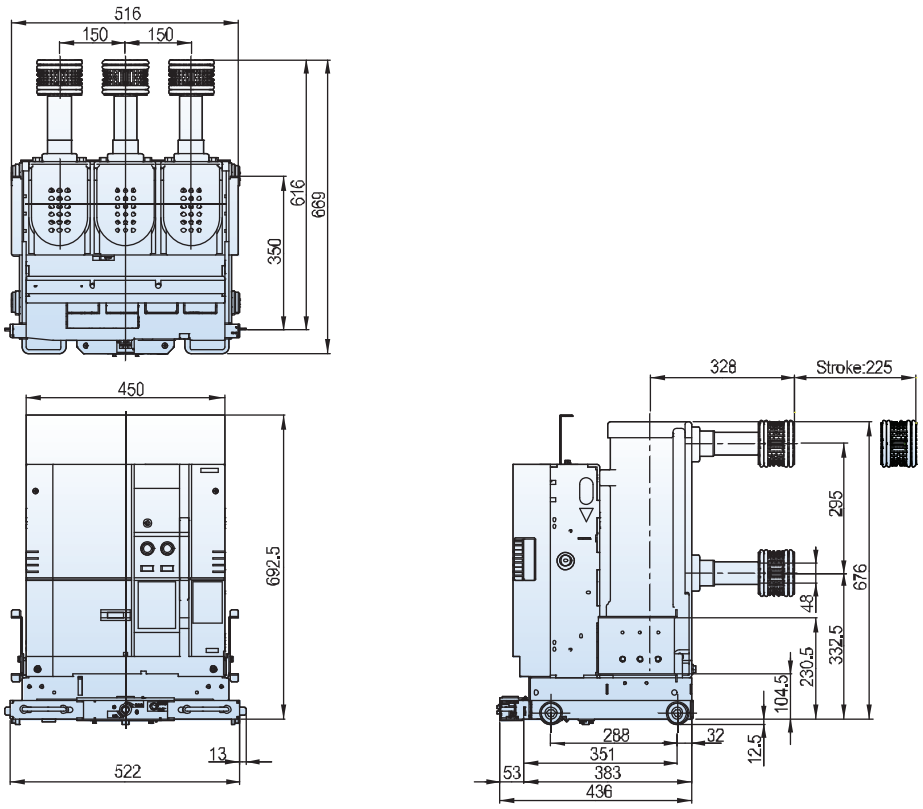


Rating	1250A	2000A
A	10	20

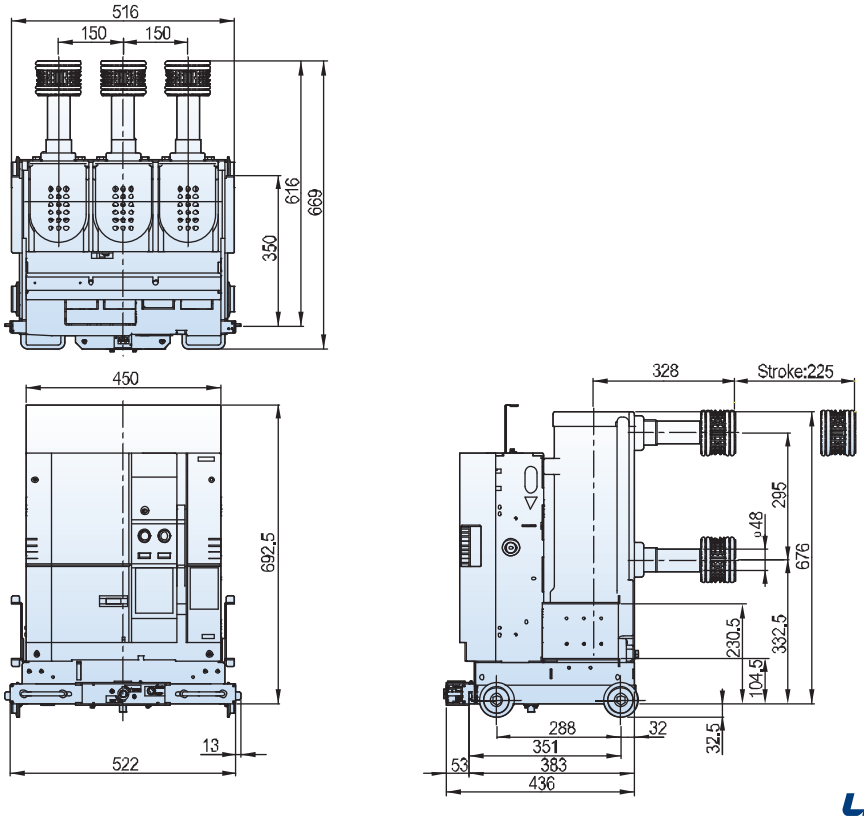


7.2kV, 31.5kA, 2000A

Withdrawable (K type unit T type, phase distance 150mm)

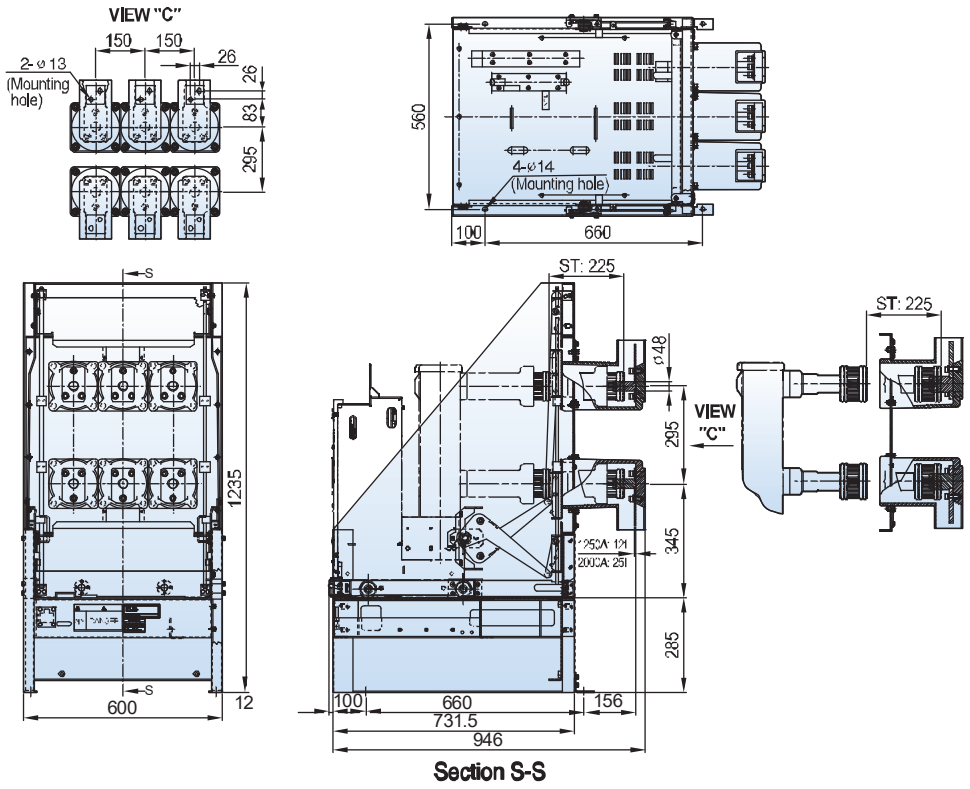


Withdrawable (K type unit T2 type, phase distance 150mm)

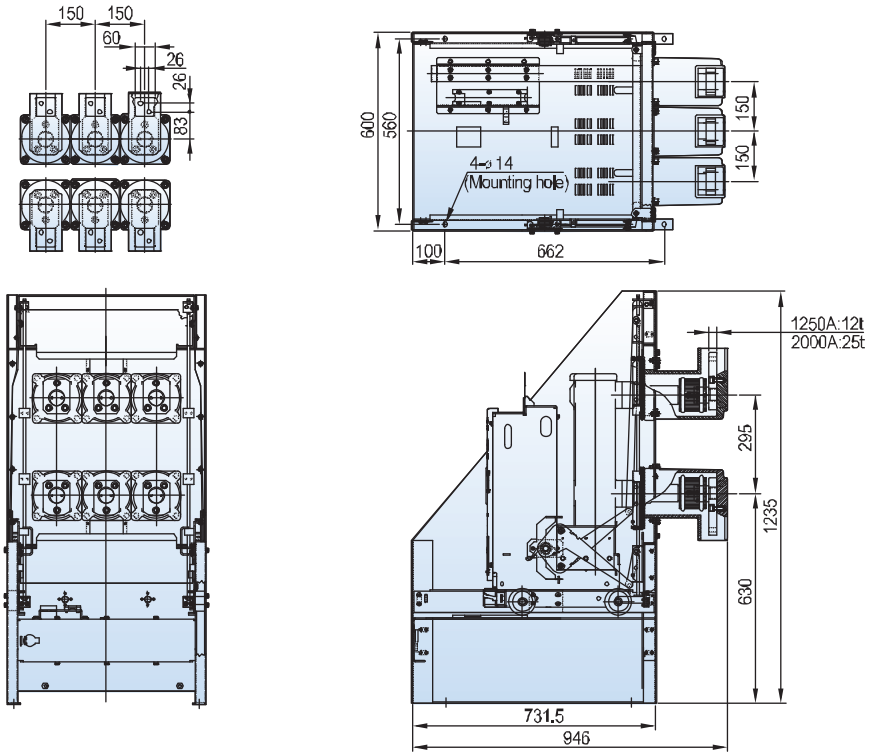


7.2kV, 31.5kA, 2000A

Withdrawable (G type cradle T type, phase distance 150mm)

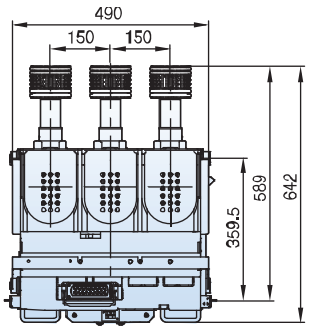


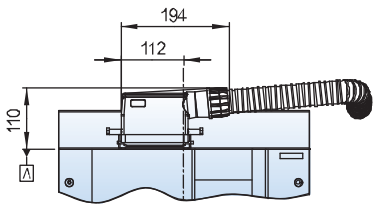
Withdrawable (MCSG cradle T2 type, phase distance 150mm)



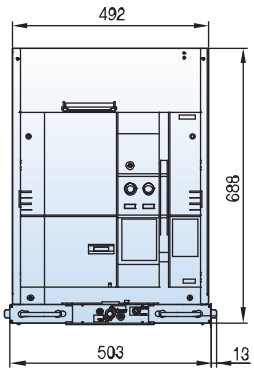
7.2kV, 31.5kA, 2000A

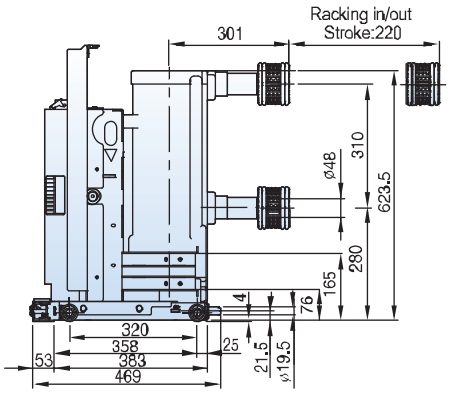
Withdrawable (H type unit, phase distance 150mm)





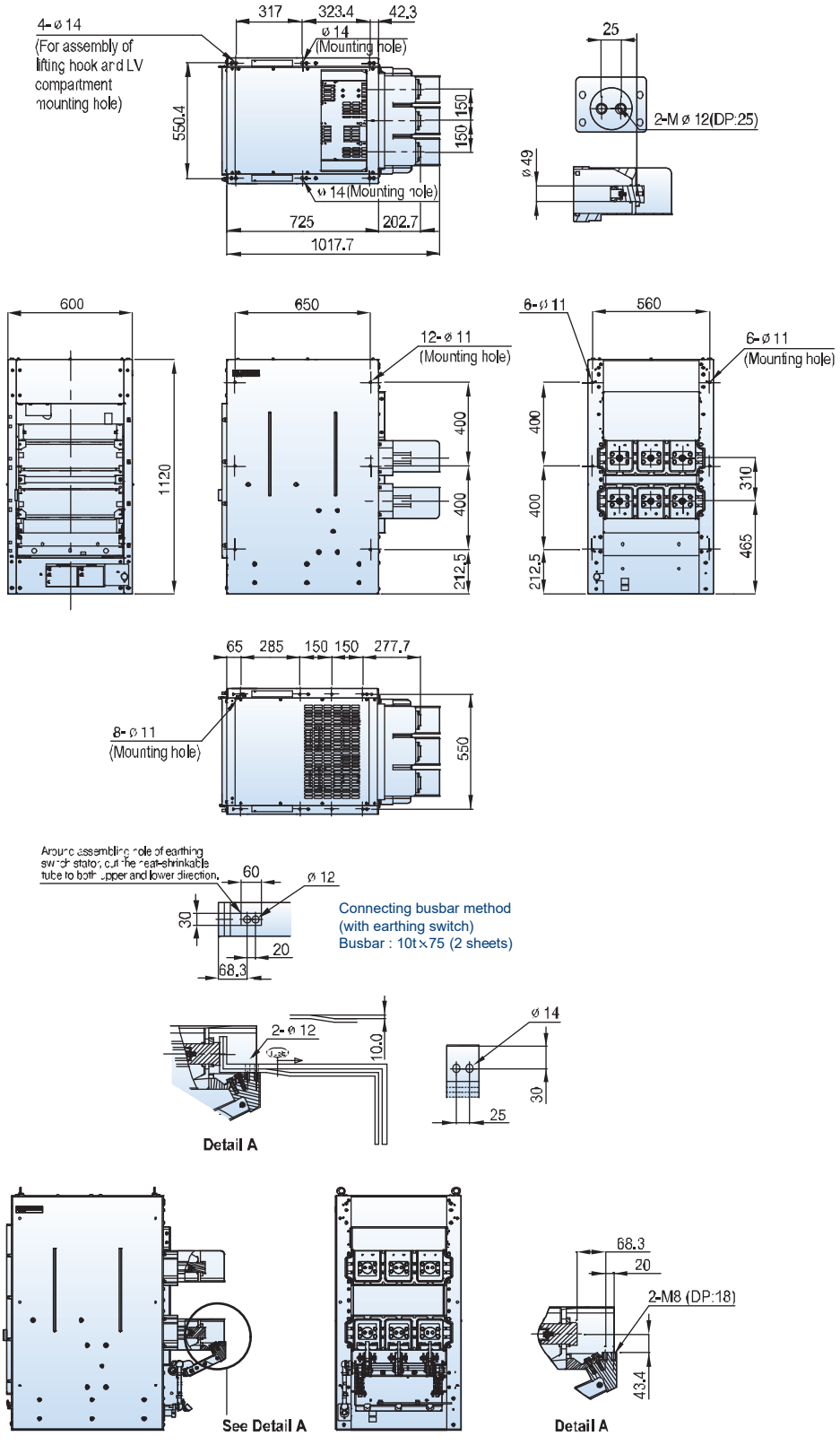
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





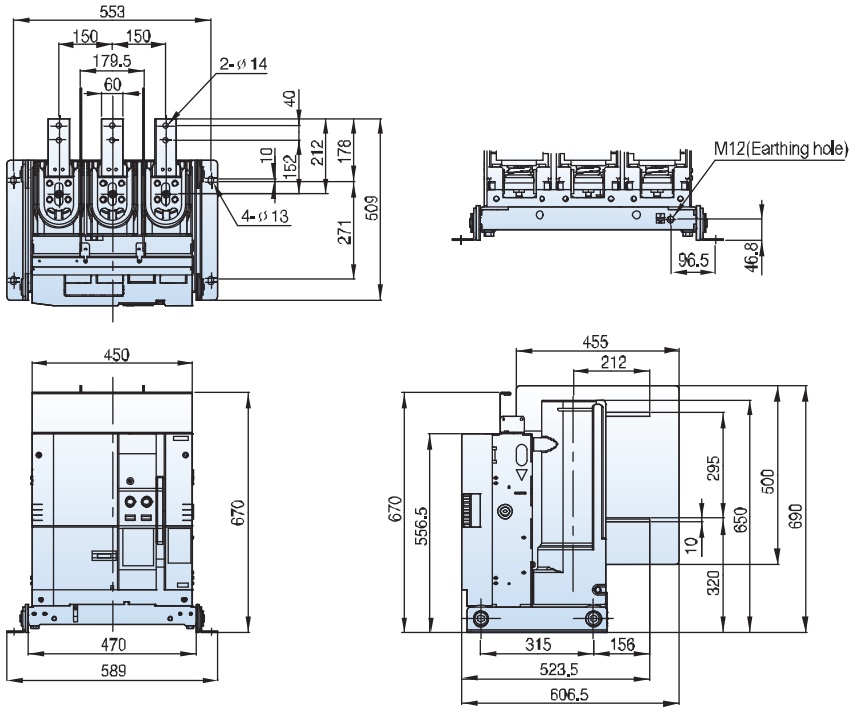
7.2kV, 31.5kA, 2000A

Withdrawable (H type cradle, phase distance 150mm)

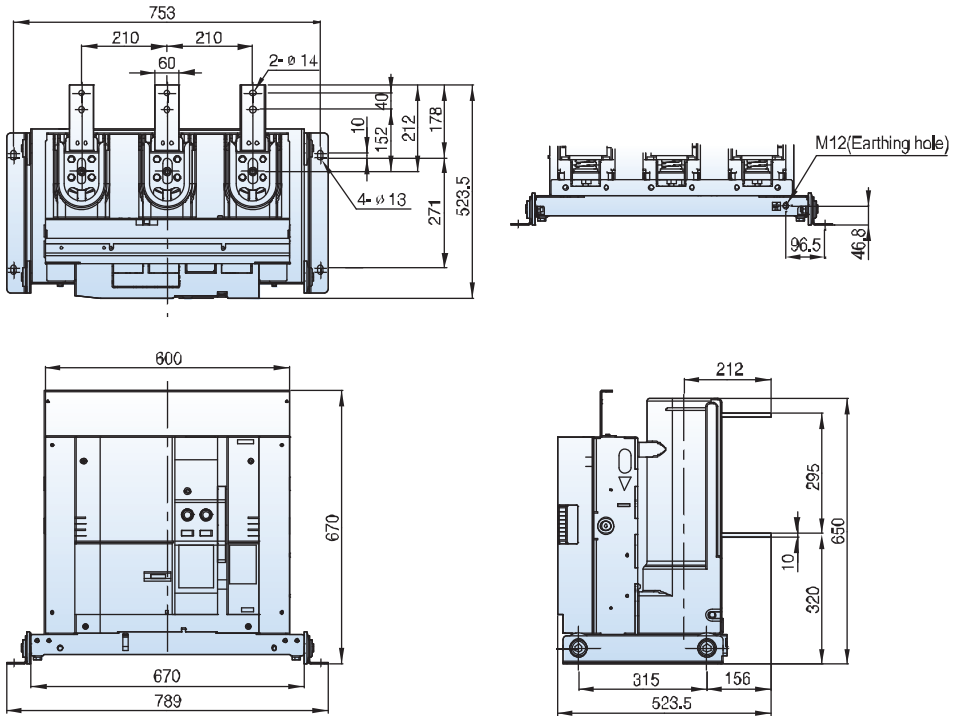


12/17.5kV, 20/25kA, 630/1250A

Fixed (P type, phase distance 150mm)

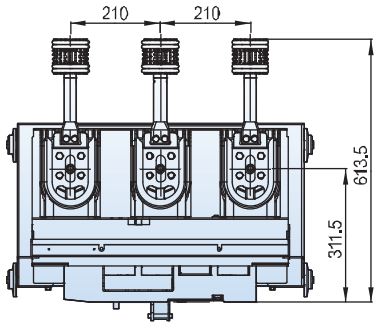


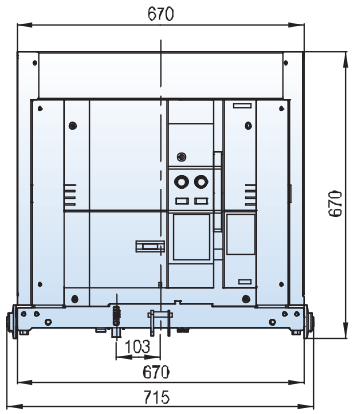
Fixed (P type, phase distance 210mm)

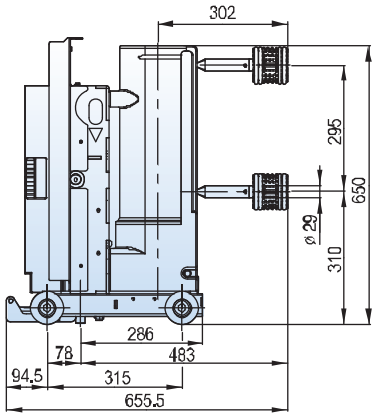


12/17.5kV, 20/25kA, 630/1250A

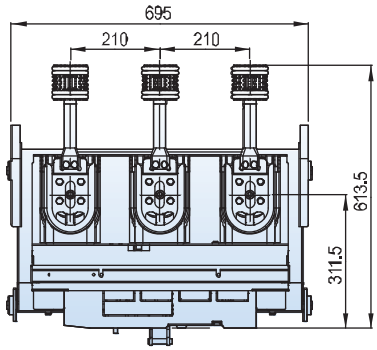
Withdrawable (Compatible with existing E type unit, phase distance 210mm)

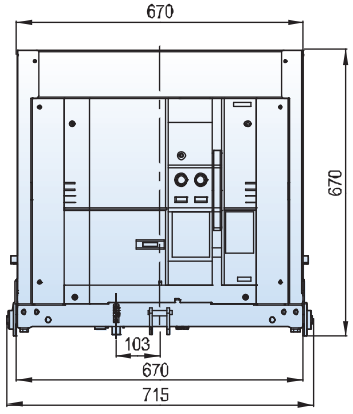


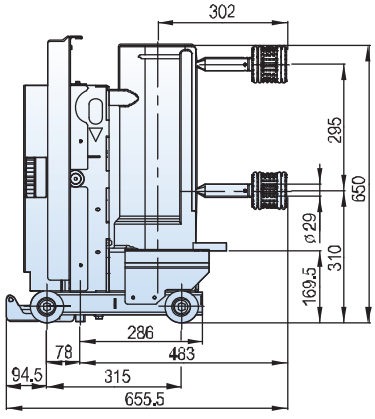




Withdrawable (Compatible with existing F type unit, phase distance 210mm)

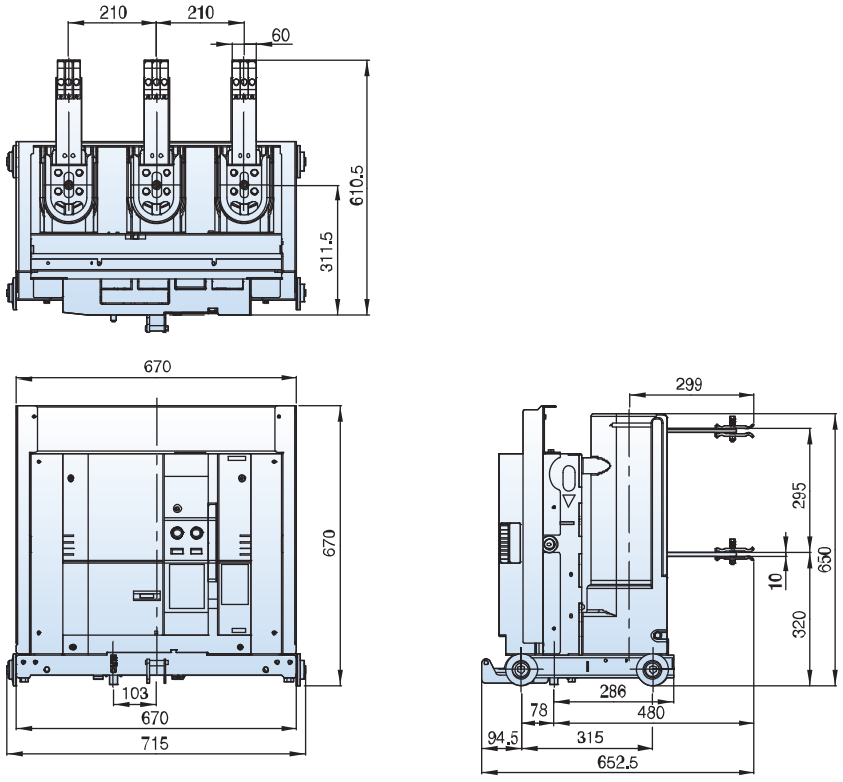




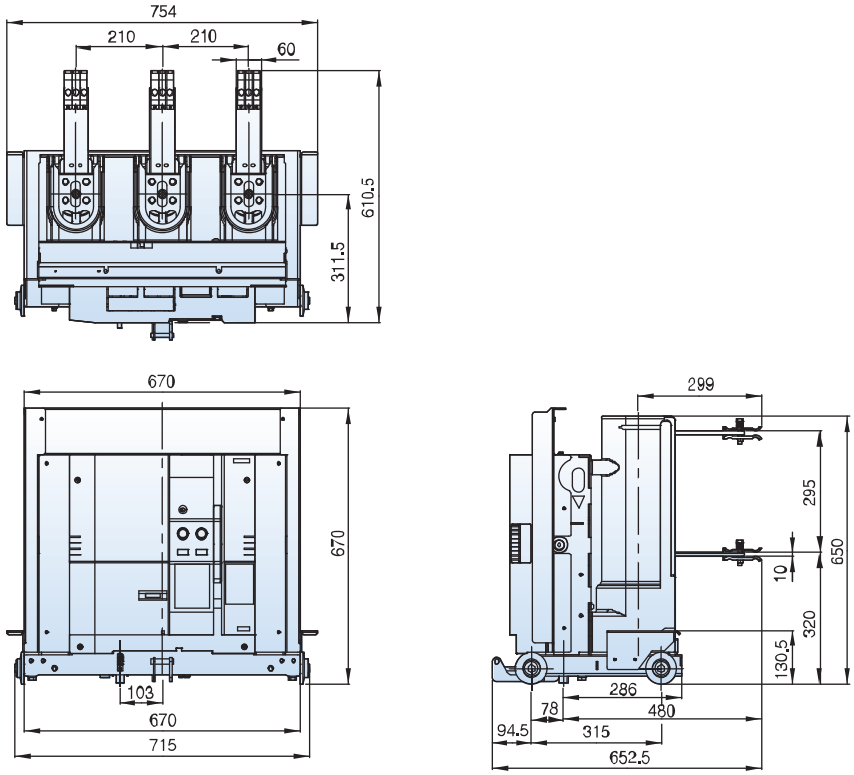


12/17.5kV, 20/25kA, 630/1250A

Withdrawable (E type unit, phase distance 210mm)

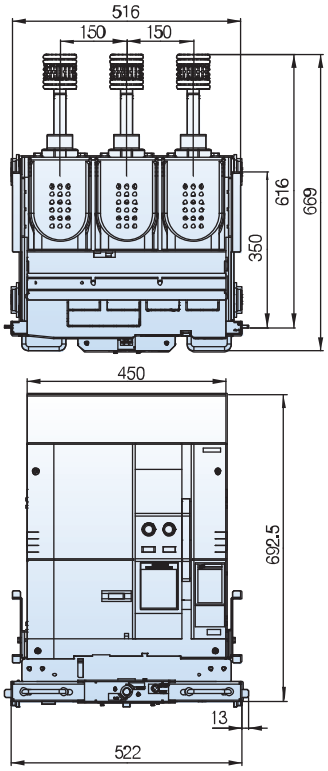


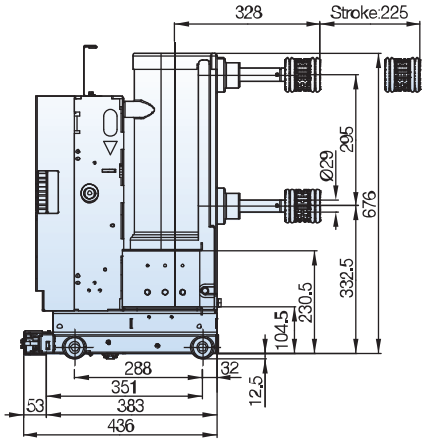
Withdrawable (F type unit, phase distance 210mm)



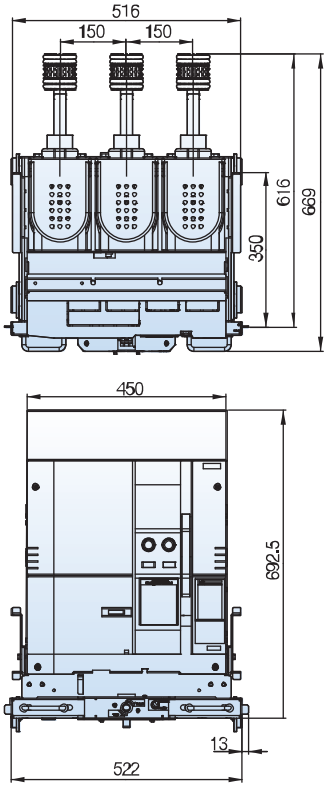
12kV, 20/25kA, 630/1250A

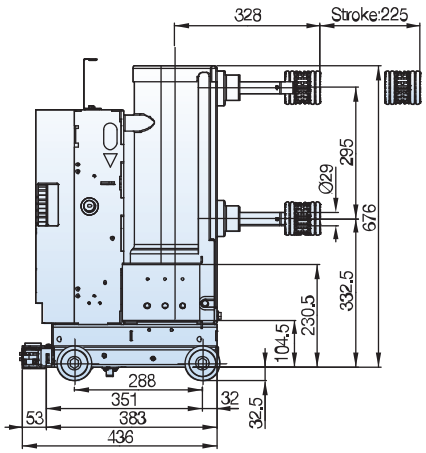
Withdrawable (K type unit T type, phase distance 150mm)





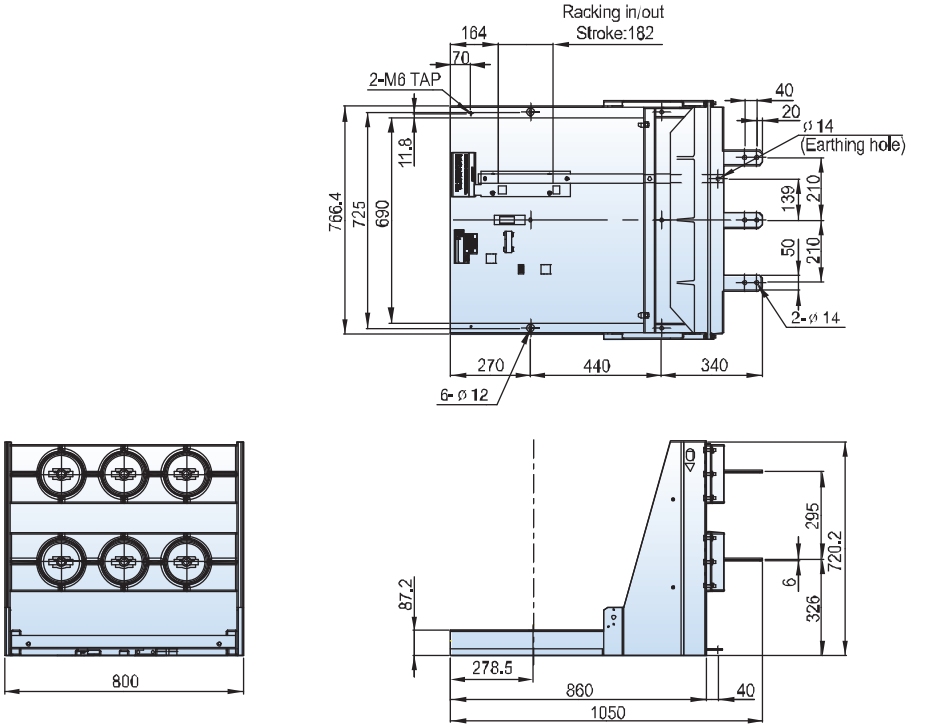
Withdrawable (K type unit T2 type, phase distance 150mm)





12/17.5kV, 20/25kA, 630A

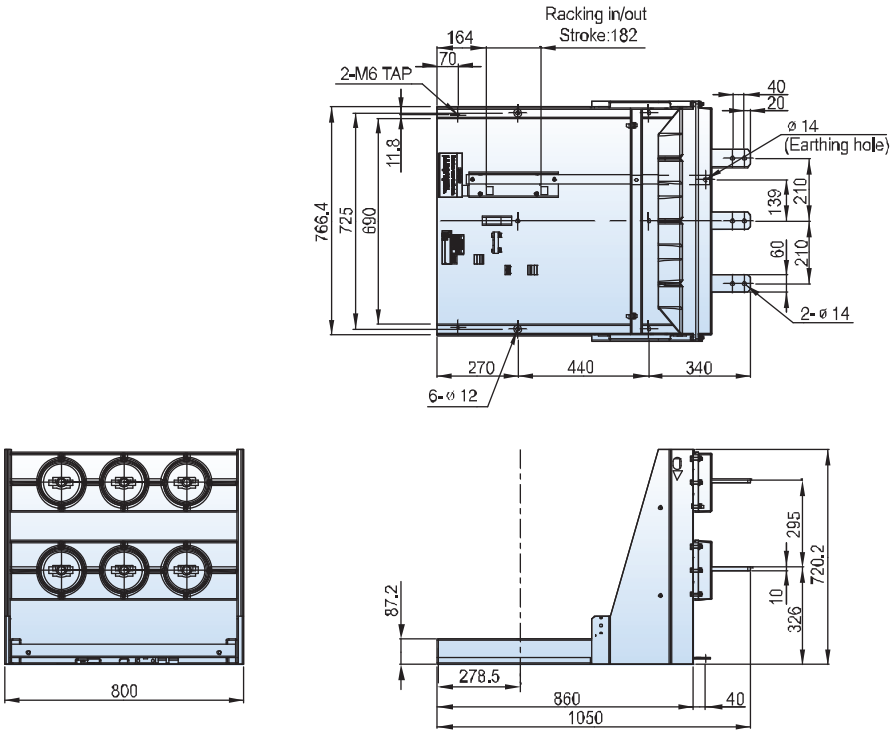
Withdrawable (Compatible with existing E cradle, phase distance 210mm)



* Please be informed that the switchgear IP cover has to be back of —·—·— mark.

12/17.5kV, 20/25kA, 1250A

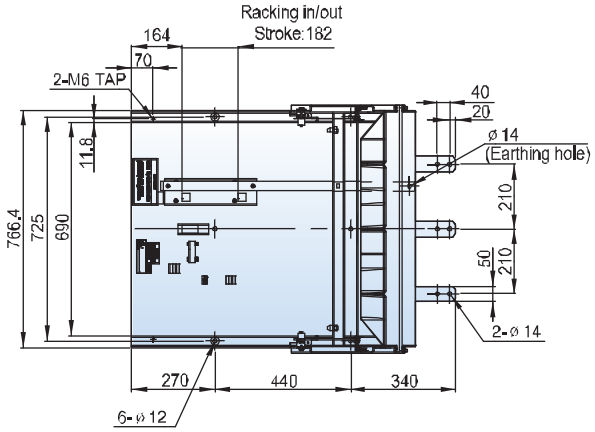
Withdrawable (Compatible with existing E cradle, phase distance 210mm)

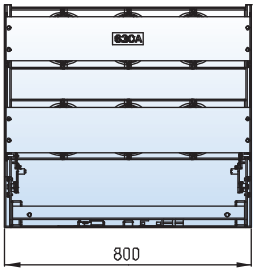


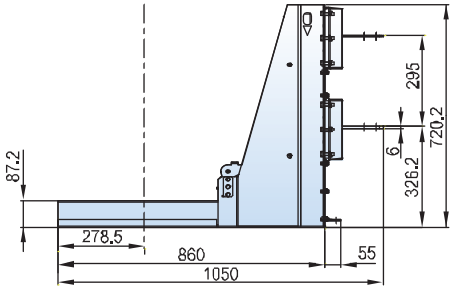
* Please be informed that the switchgear IP cover has to be back of —·—·— mark.

12/17.5kV, 20/25kA, 630A

Withdrawable (Compatible with existing F cradle, phase distance 210mm)



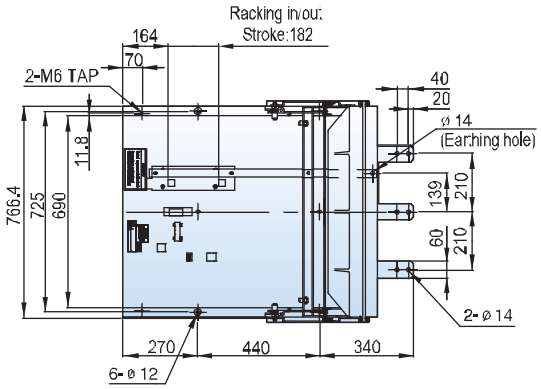


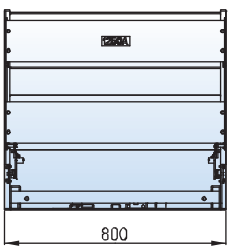


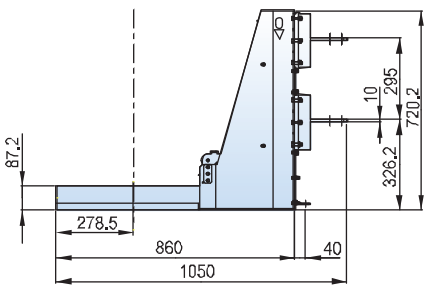
* Please be informed that the switchgear IP cover has to be back of — - — mark.

12/17.5kV, 20/25kA, 1250A

Withdrawable (Compatible with existing F cradle, phase distance 210mm)



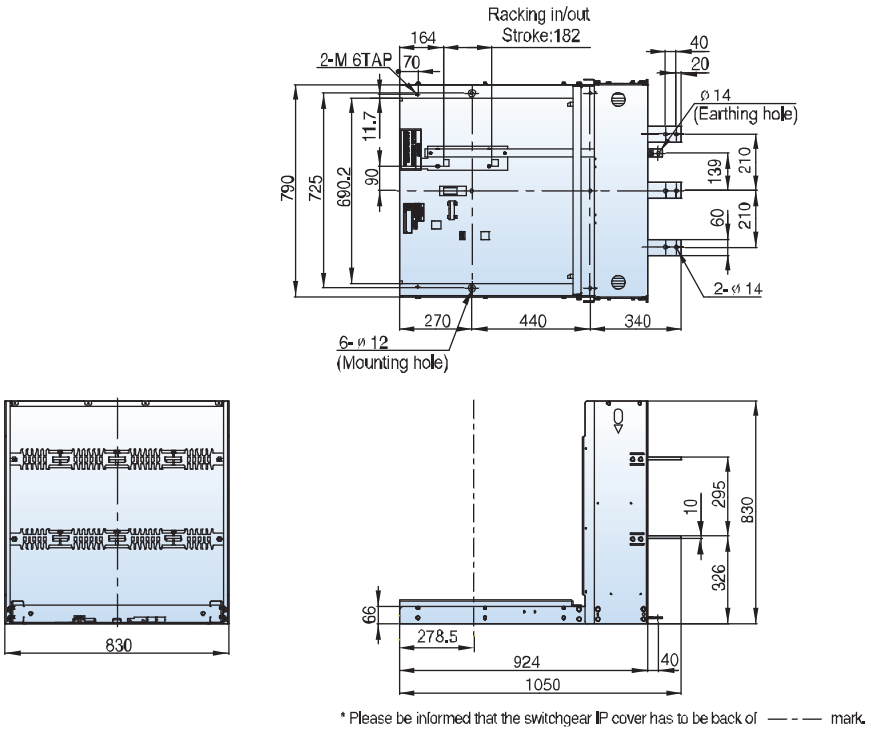




* Please be informed that the switchgear IP cover has to be back of — - — mark.

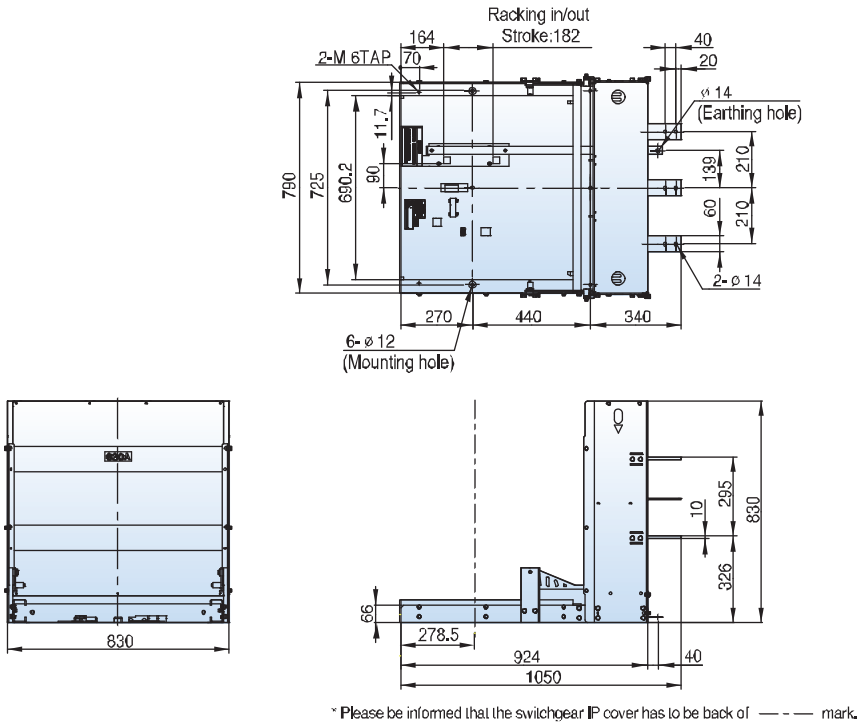
12/17.5kV, 20/25kA, 630/1250A

Withdrawable (E type cradle, phase distance 210mm)



* Please be informed that the switchgear IP cover has to be back of — - - — mark.

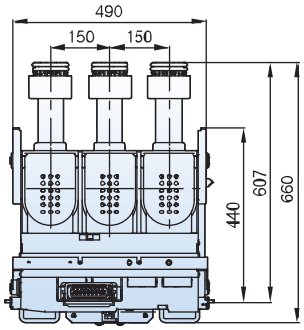
Withdrawable (F type cradle, phase distance 210mm)

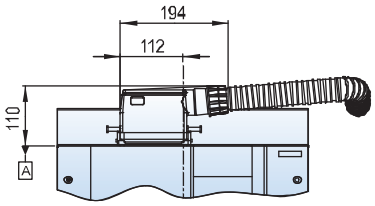


* Please be informed that the switchgear IP cover has to be back of — - - — mark.

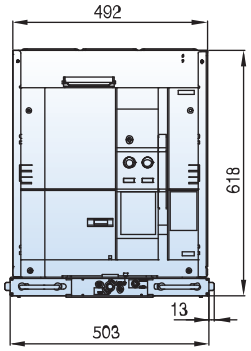
12/17.5kV, 20/25kA, 630/1250A

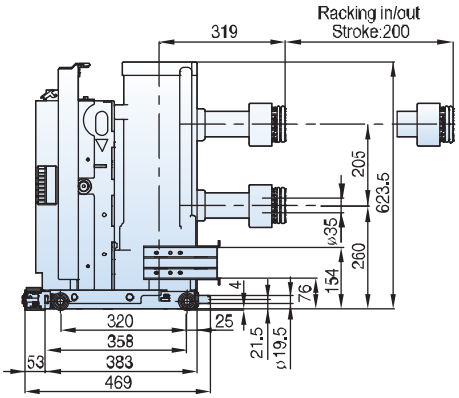
Withdrawable (H type unit, phase distance 150mm)



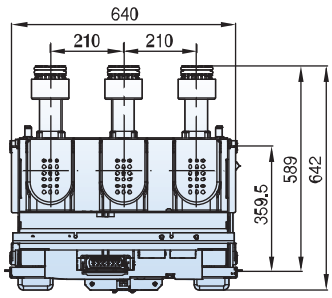


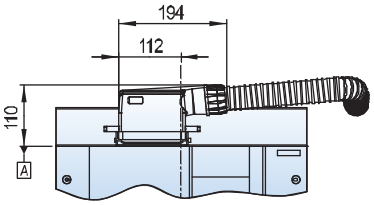
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"



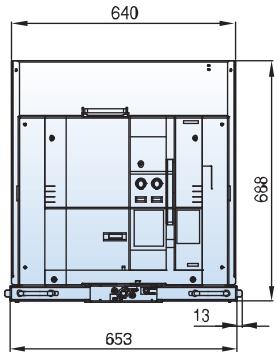


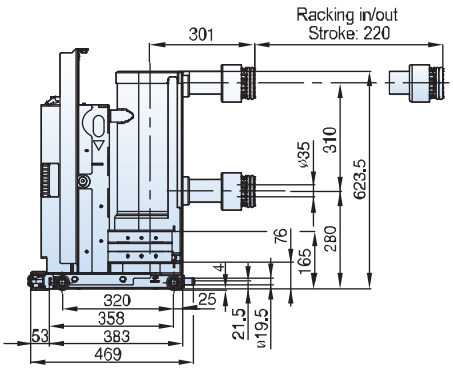
Withdrawable (H type unit, phase distance 210mm)





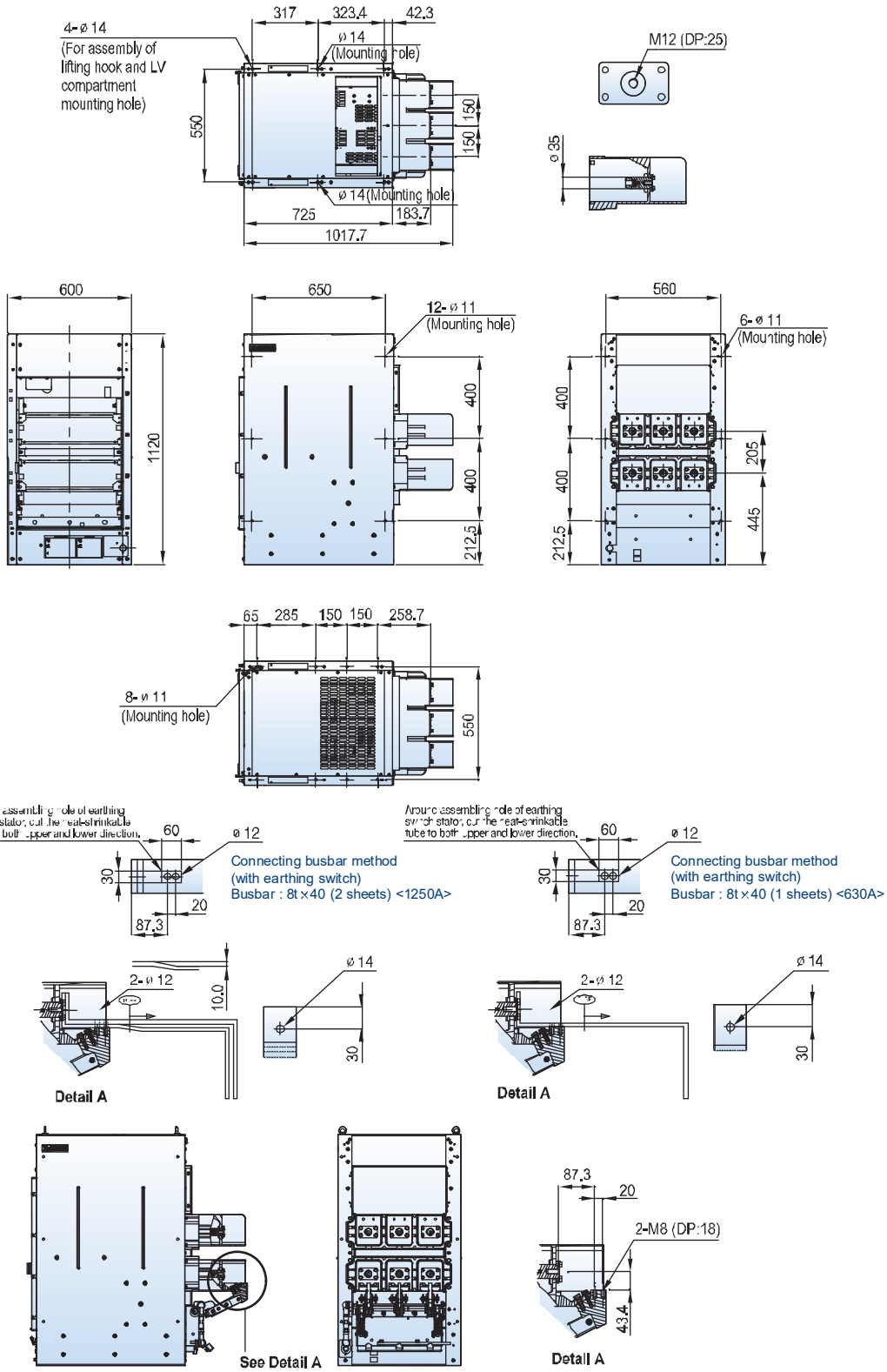
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





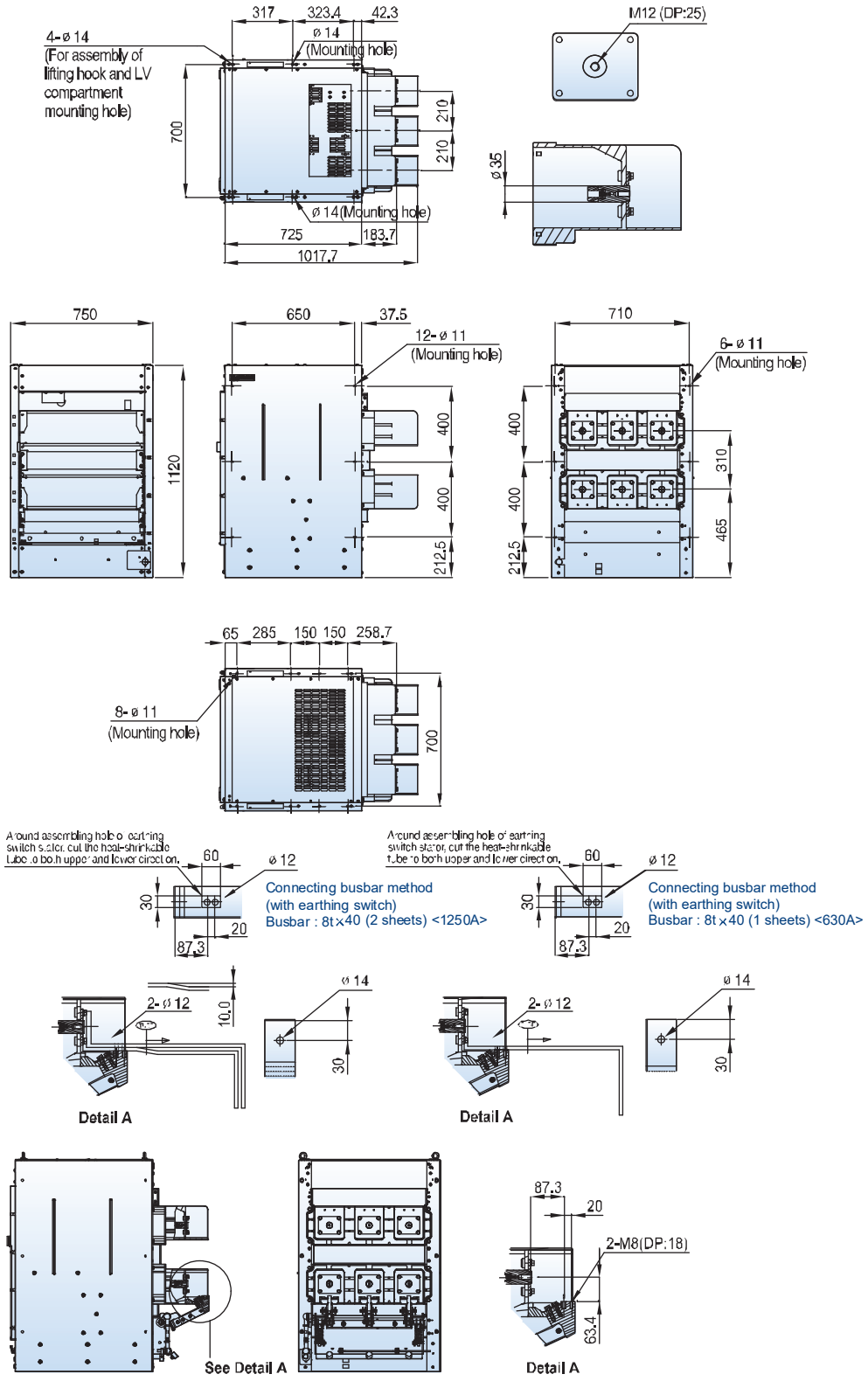
12/17.5kV, 20/25kA, 630/1250A

Withdrawable (H type cradle, phase distance 150mm)



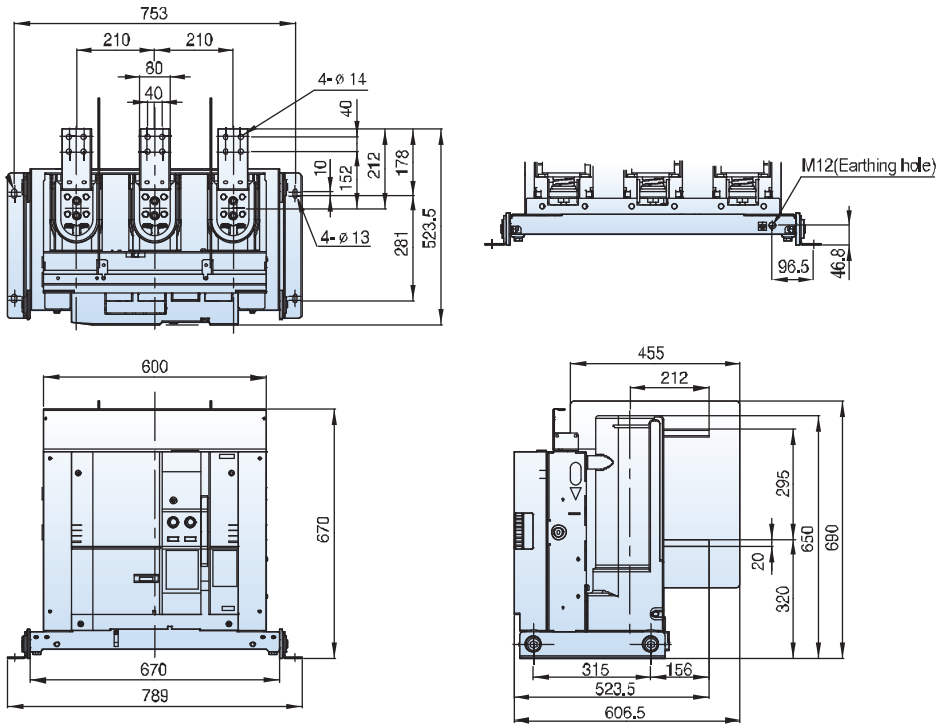
12/17.5kV, 20/25kA, 630/1250A

Withdrawable (H type cradle, phase distance 210mm)

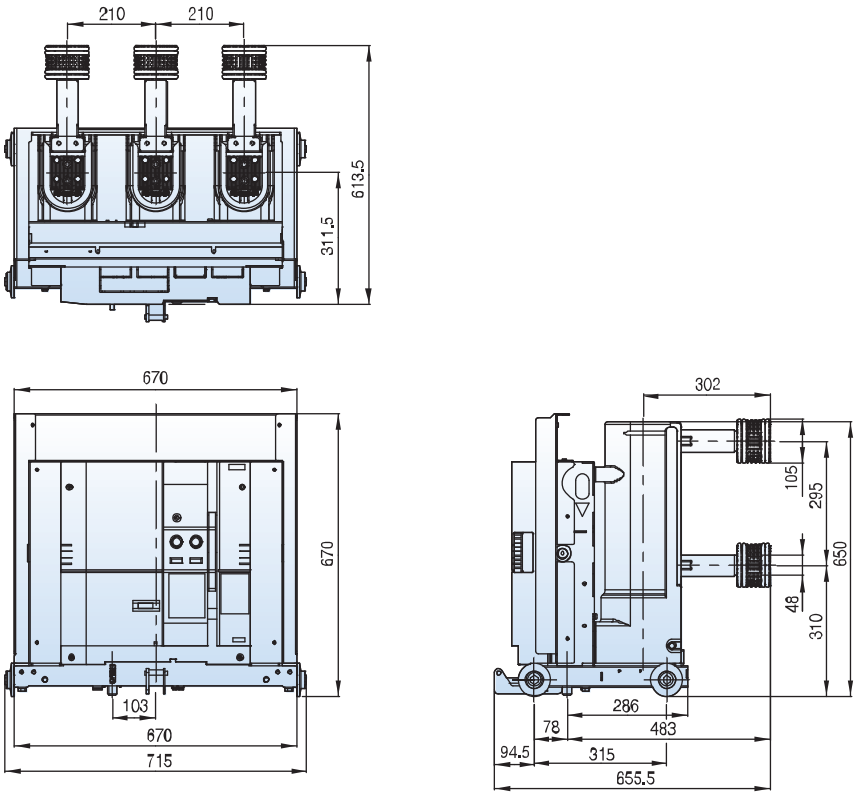


12/17.5kV, 20/25kA, 2000A

Fixed (P type, phase distance 210mm)

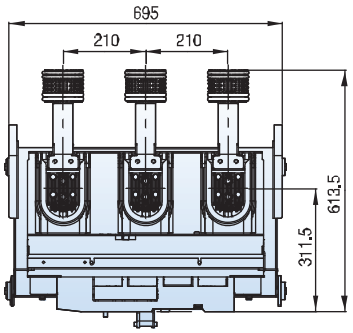


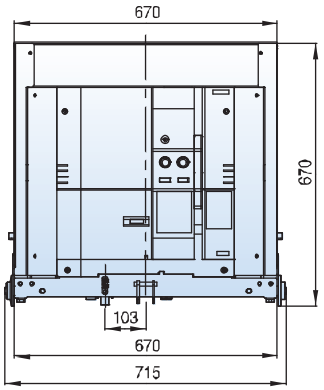
Withdrawable (E type unit, phase distance 210mm)

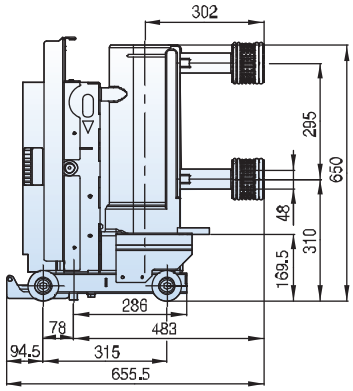


12/17.5kV, 20/25kA, 2000A

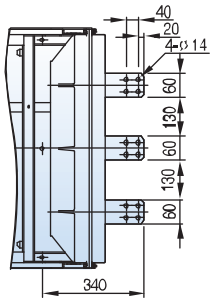
Withdrawable (F type unit, phase distance 210mm)

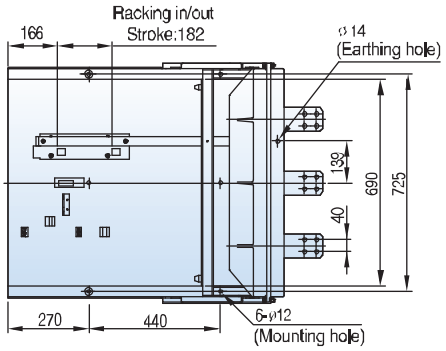


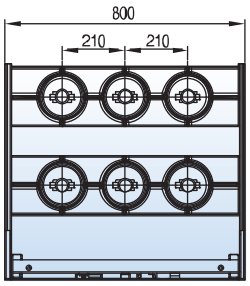


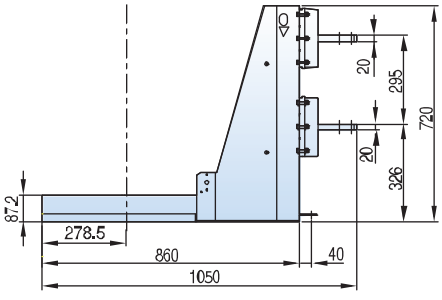


Withdrawable (E type cradle, phase distance 210mm)





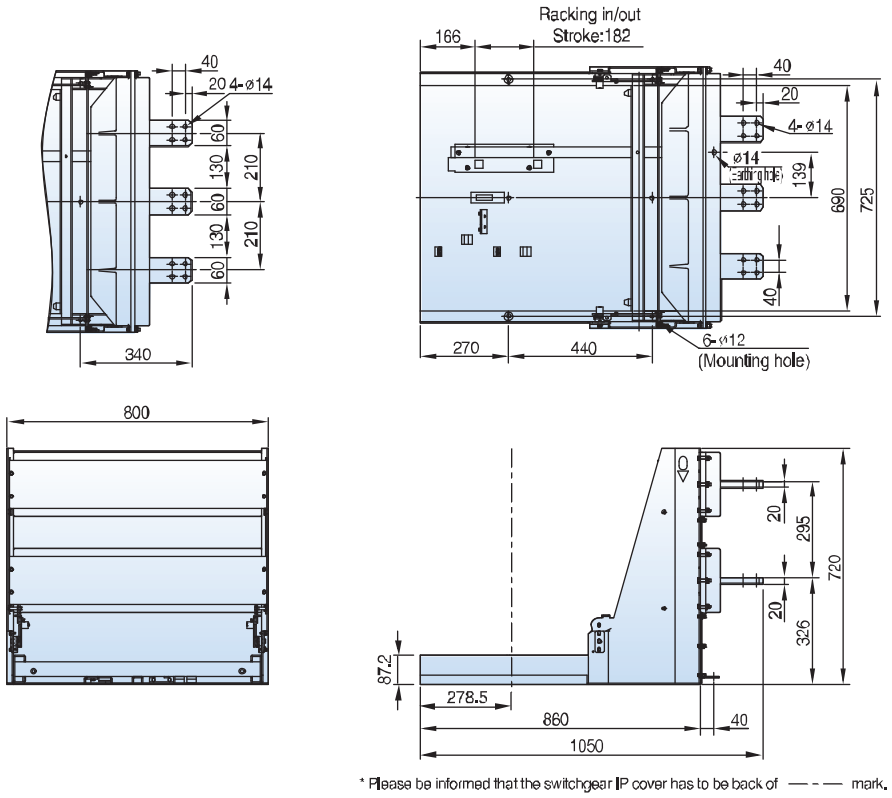




* Please be informed that the switchgear IP cover has to be back of — - — mark.

12/17.5kV, 20/25kA, 2000A

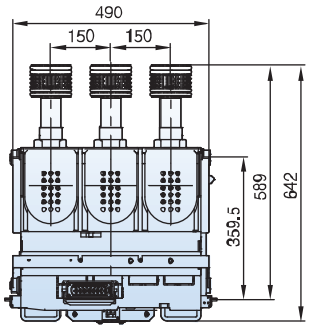
Withdrawable (F type cradle, phase distance 210mm)

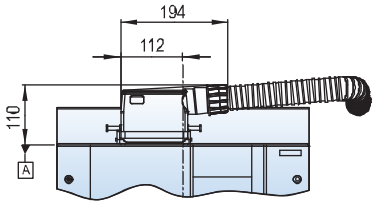


* Please be informed that the switchgear IP cover has to be back of - - - mark.

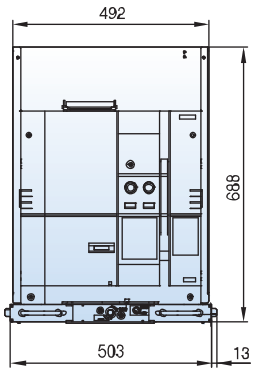
12/17.5kV, 20/25kA, 2000A

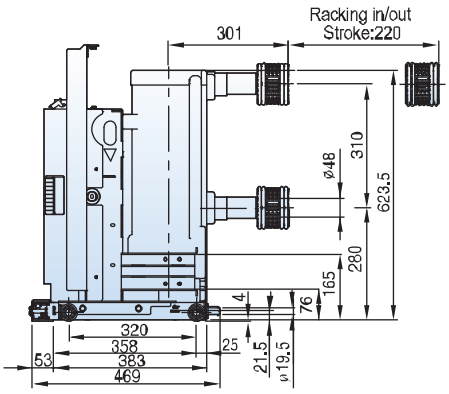
Withdrawable (H type unit, phase distance 150mm)



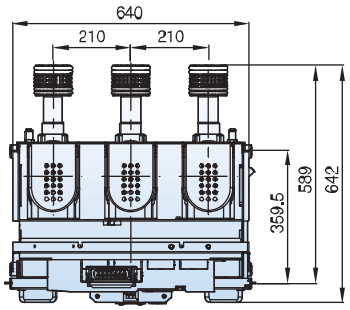


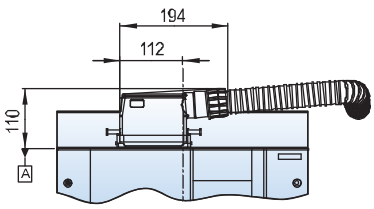
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"



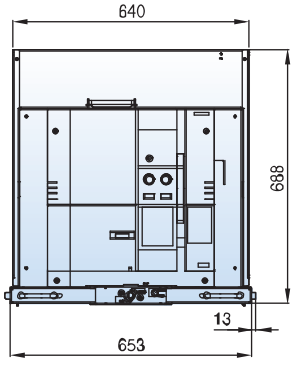


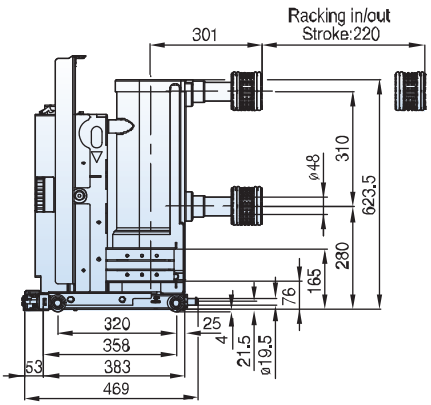
Withdrawable (H type unit, phase distance 210mm)





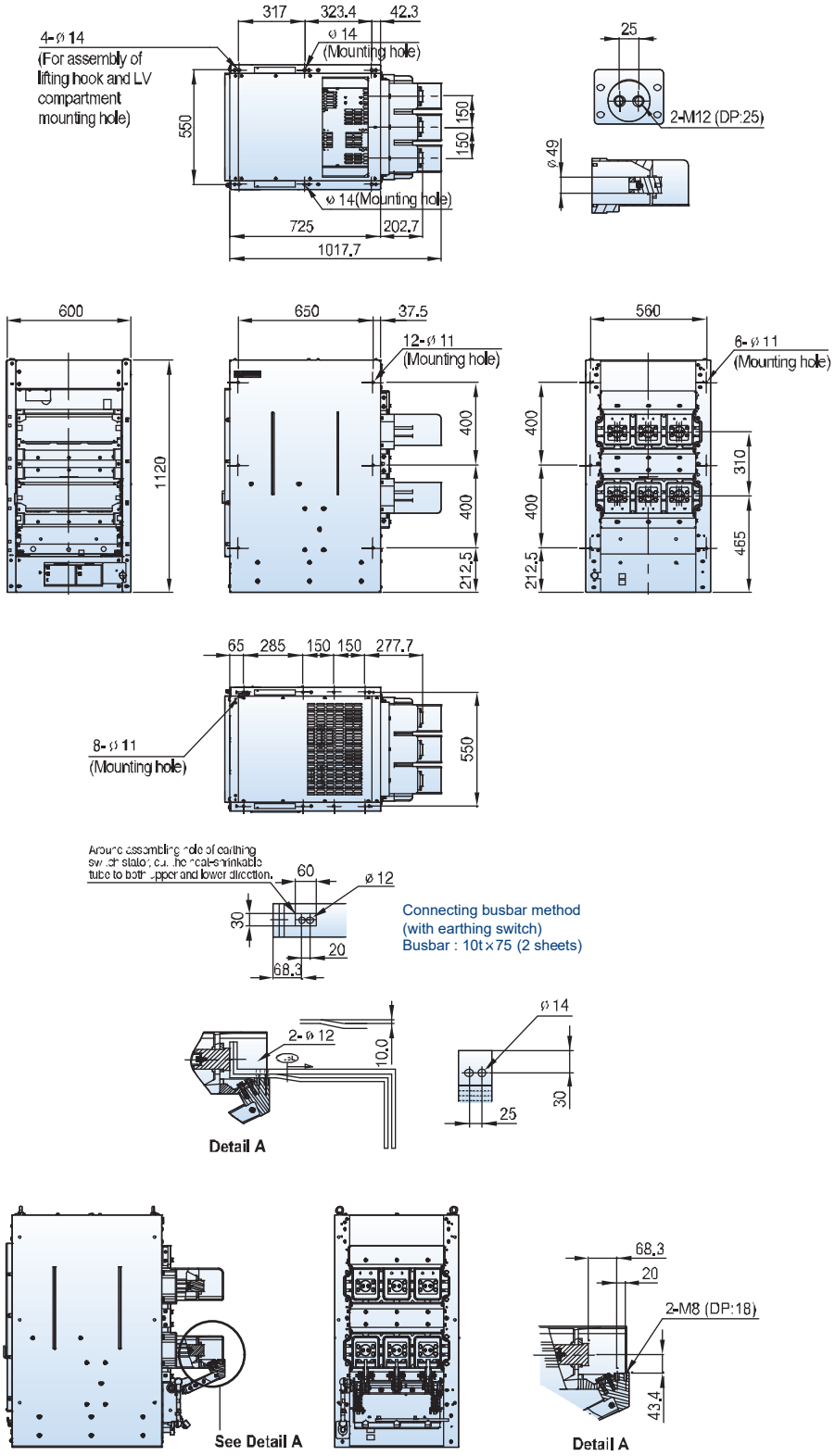
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





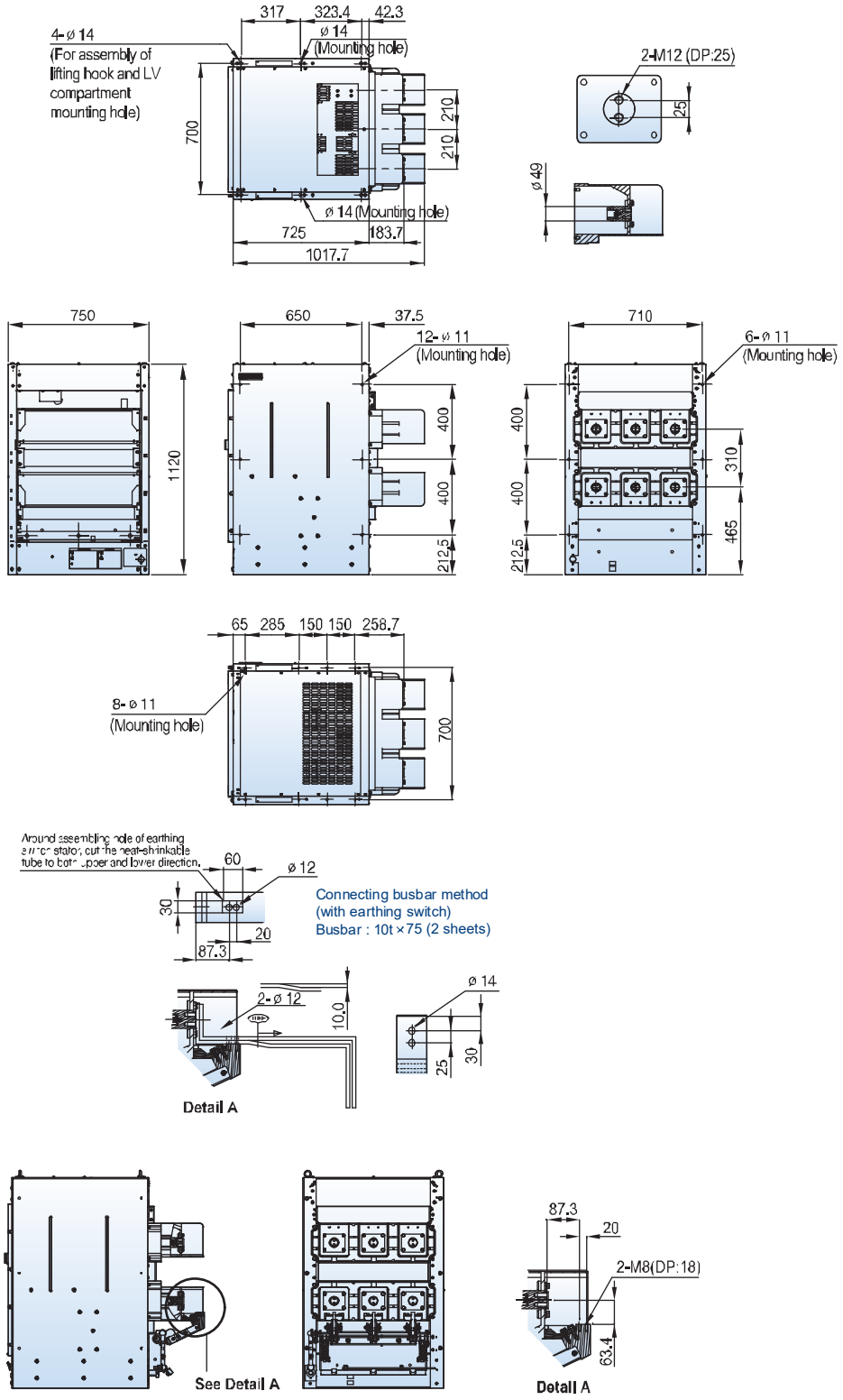
12/17.5kV, 20/25kA, 2000A

Withdrawable (H type cradle, phase distance 150mm)



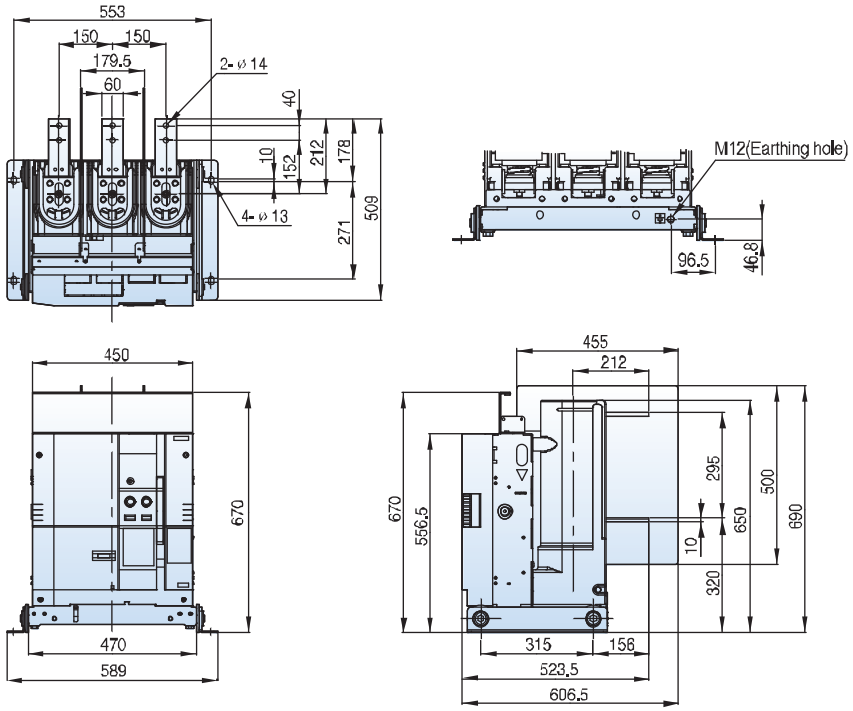
12/17.5kV, 20/25kA, 2000A

Withdrawable (H type cradle, phase distance 210mm)

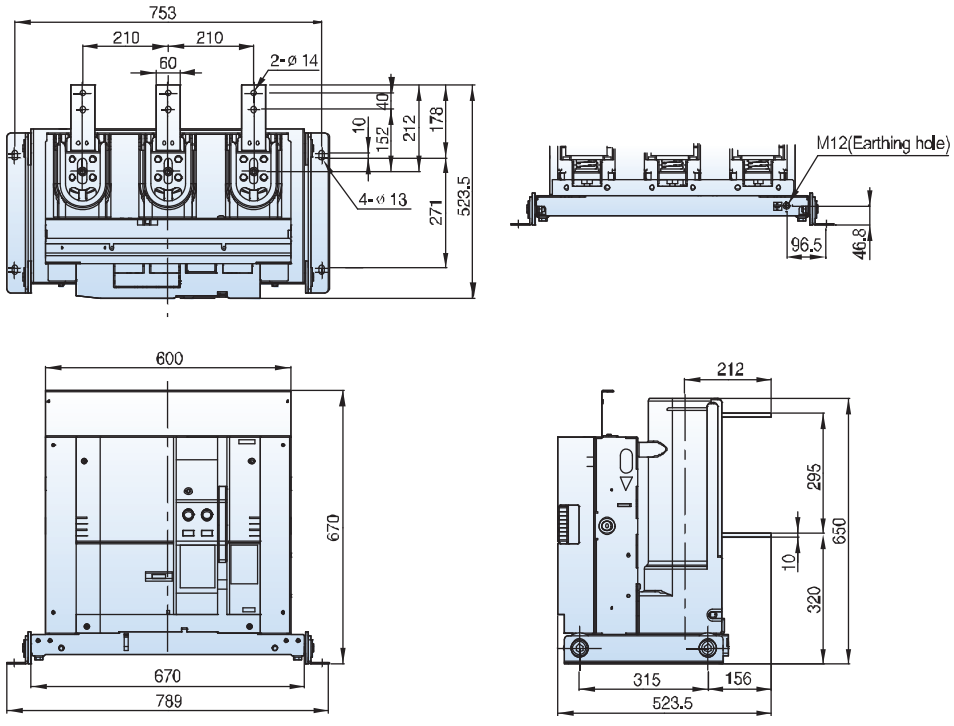


12/17.5kV, 31.5kA, 630/1250A

Fixed (P type, phase distance 150mm)

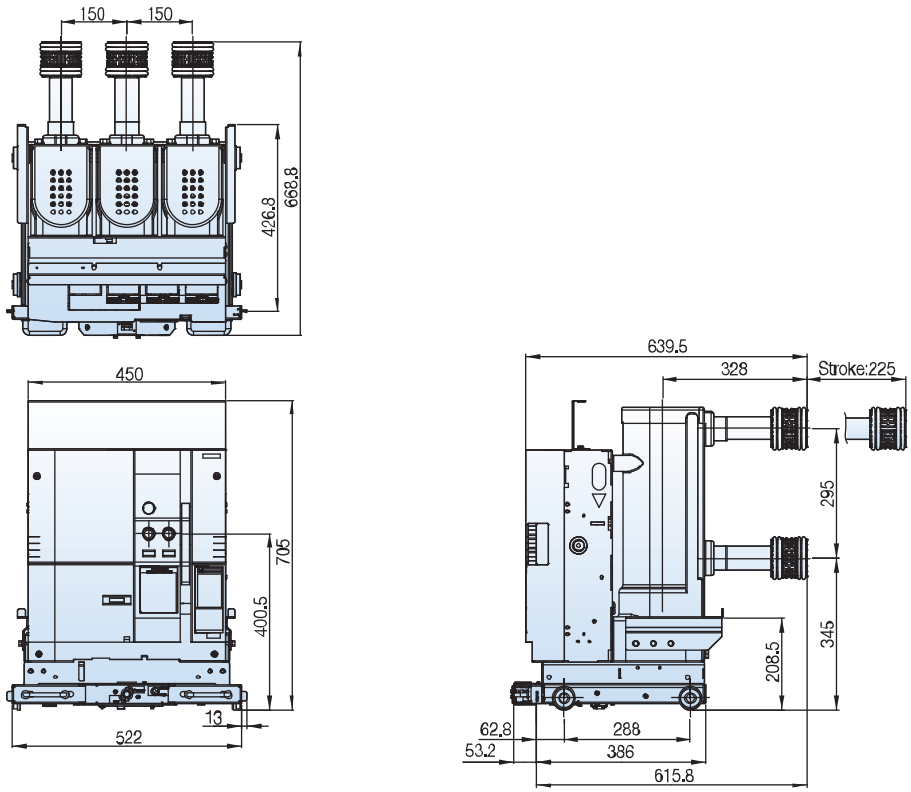


Fixed (P type, phase distance 210mm)

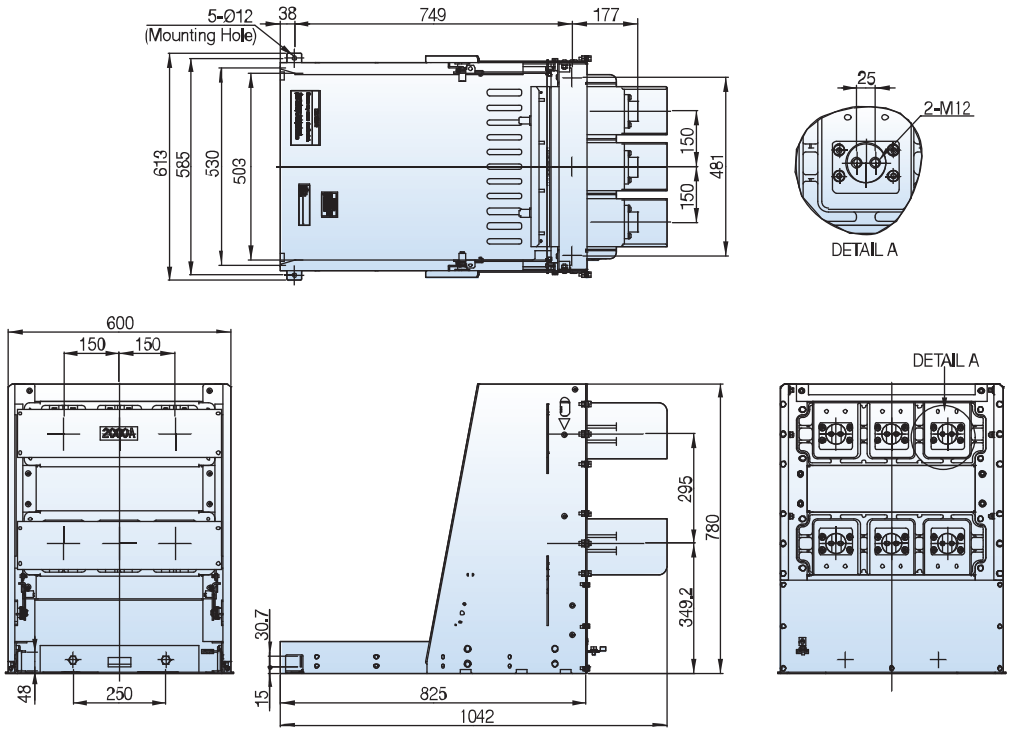


7.2/12kV, 31.5kA, 1250/2000A

Withdrawable (Gs type unit, phase distance 150mm)

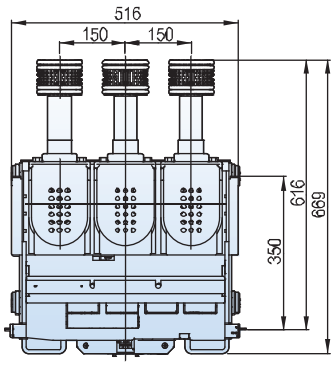


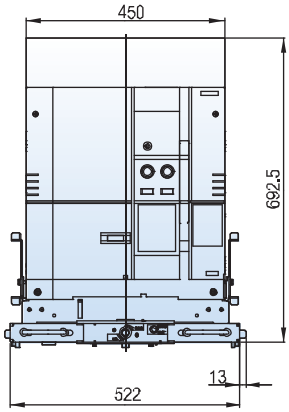
Withdrawable (Gs type cradle, phase distance 150mm)

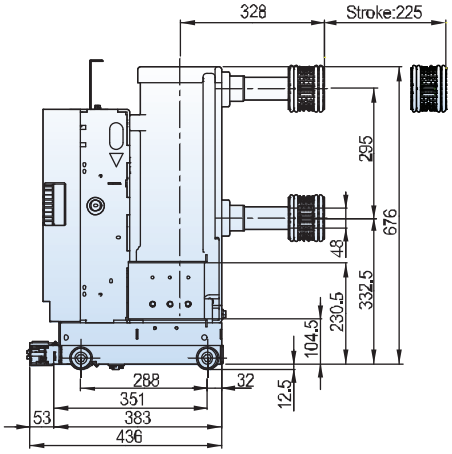


12kV, 31.5kA, 1250A

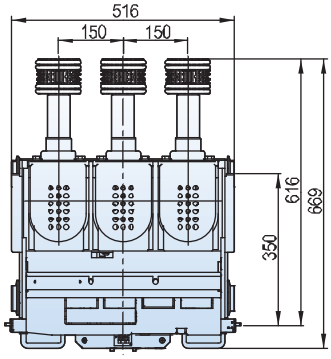
Withdrawable (K type unit T type, phase distance 150mm)

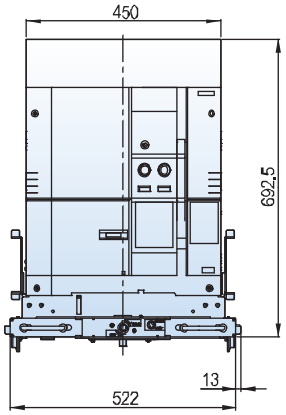


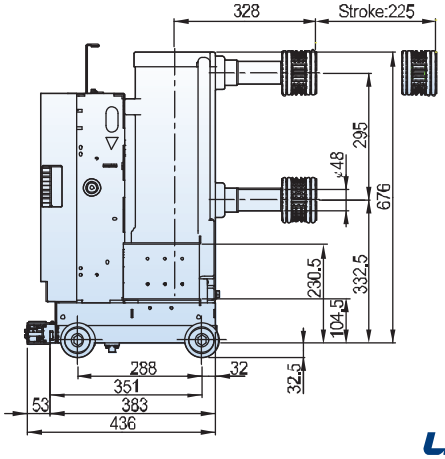




Withdrawable (K type unit T2 type, phase distance 150mm)

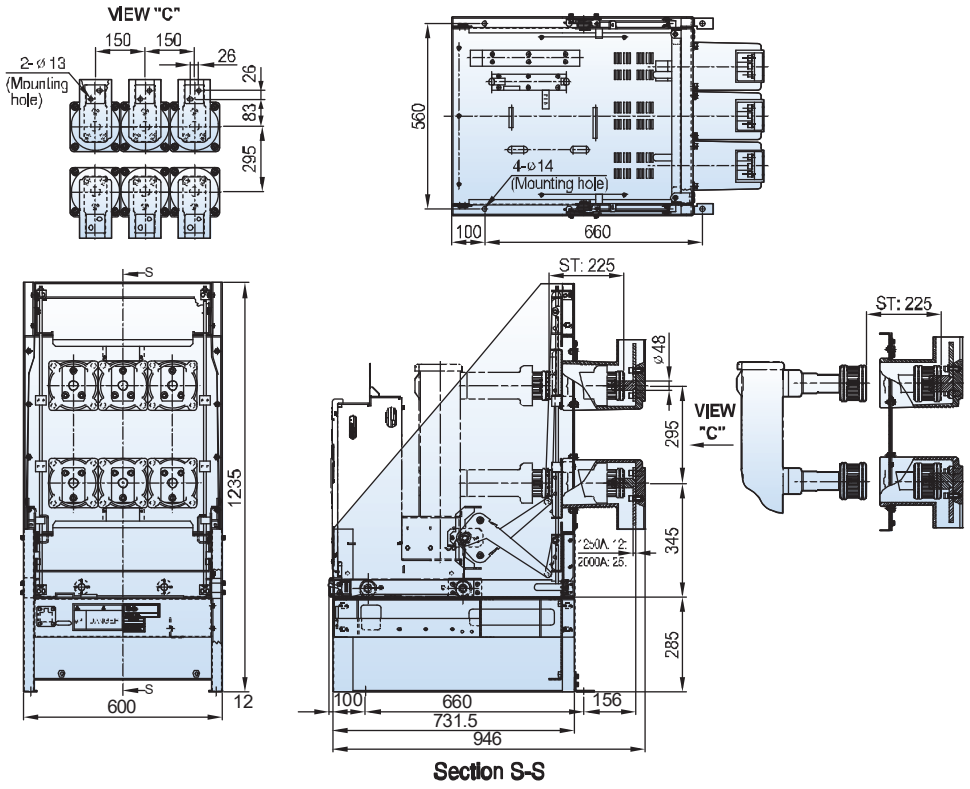




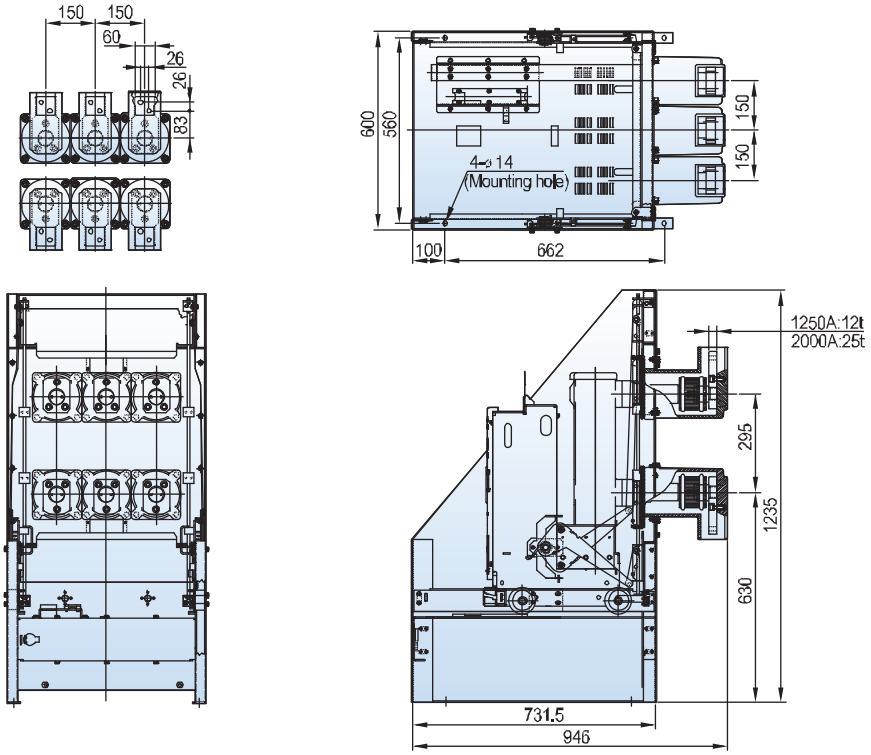


12kV, 31.5kA, 1250A

Withdrawable (G type cradle T type, phase distance 150mm)

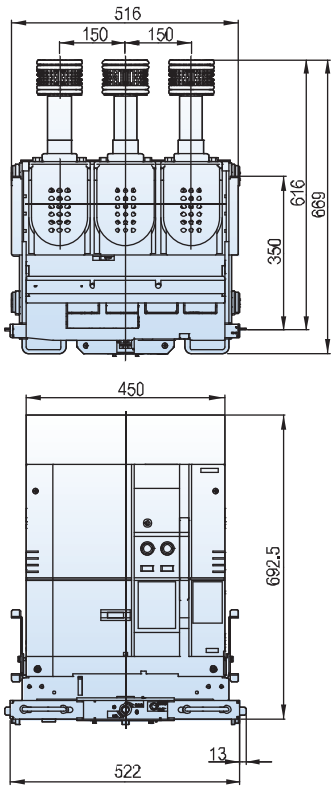


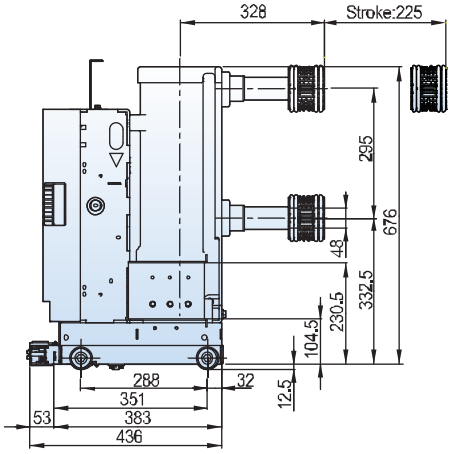
Withdrawable (MCSG cradle T2 type, phase distance 150mm)



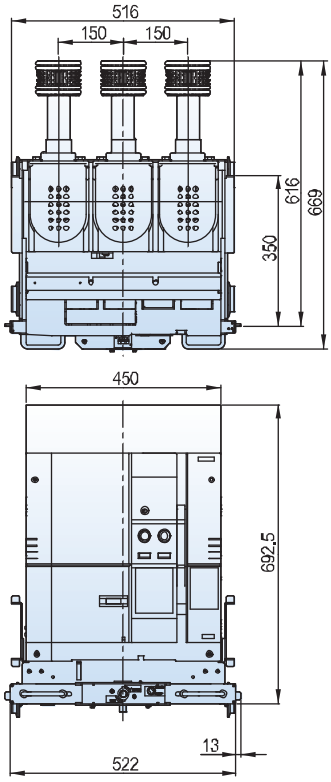
12kV, 31.5kA, 2000A

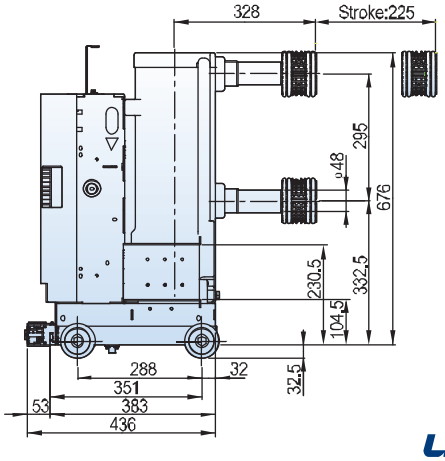
Withdrawable (K type unit T type, phase distance 150mm)





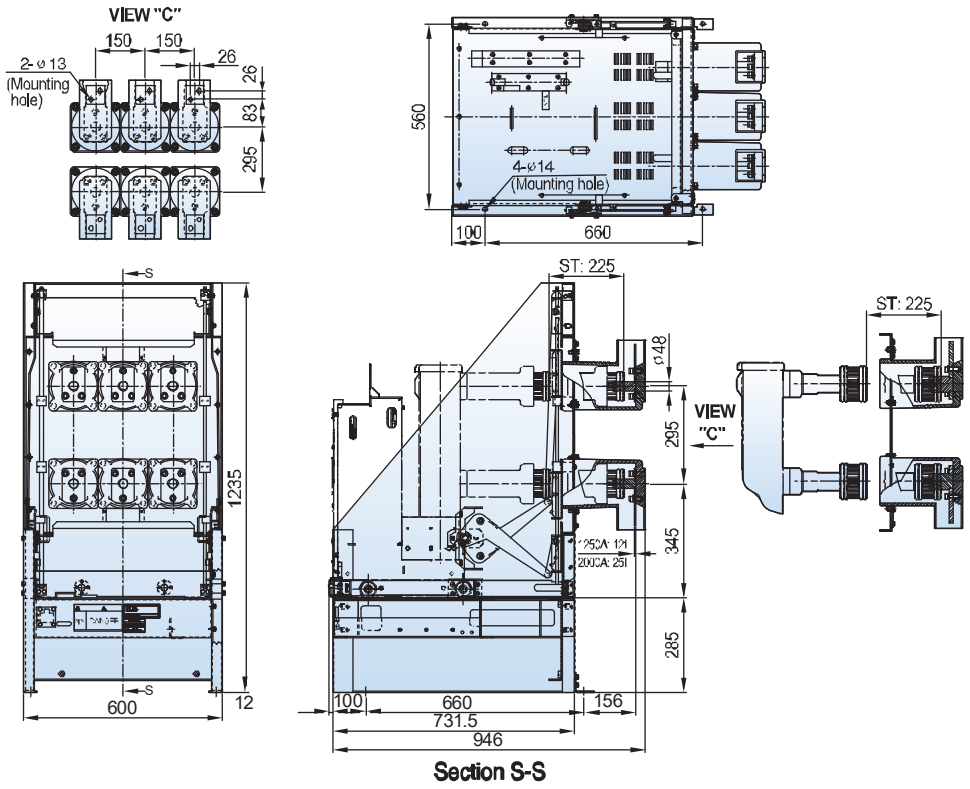
Withdrawable (K type unit T2 type, phase distance 150mm)



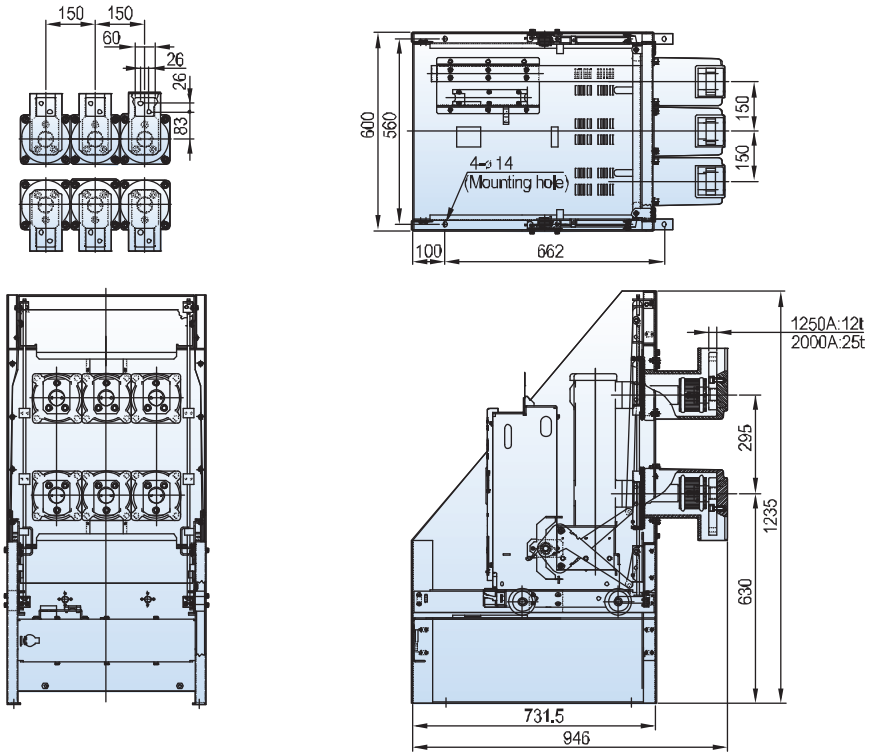


12kV, 31.5kA, 2000A

Withdrawable (G type cradle T type, phase distance 150mm)

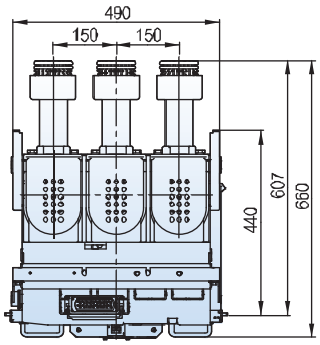


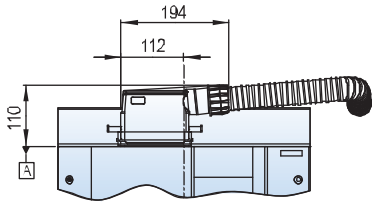
Withdrawable (MCSG cradle T2 type, phase distance 150mm)



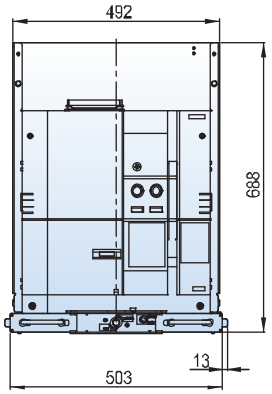
12/17.5kV, 31.5kA, 630/1250A

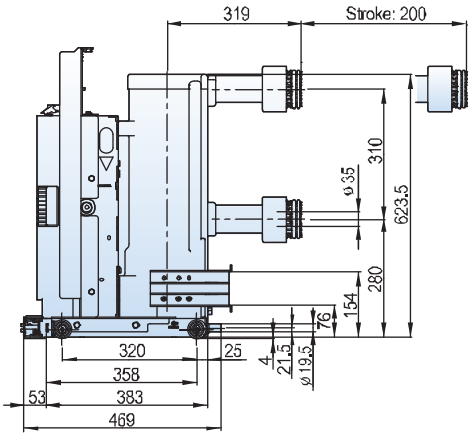
Withdrawable (H type unit, phase distance 150mm)



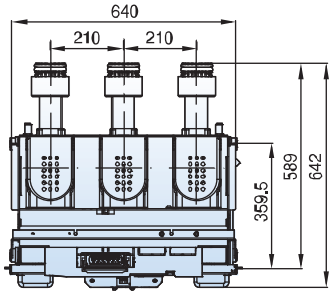


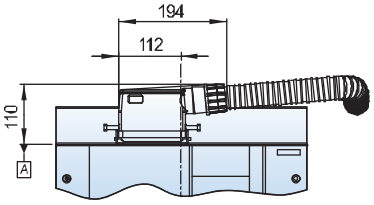
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"



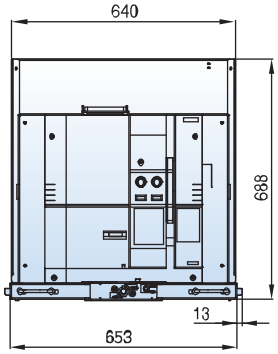


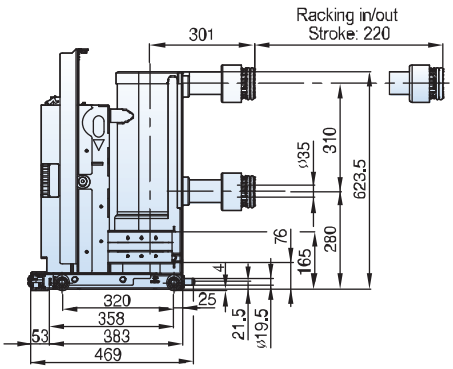
Withdrawable (H type unit, phase distance 210mm)





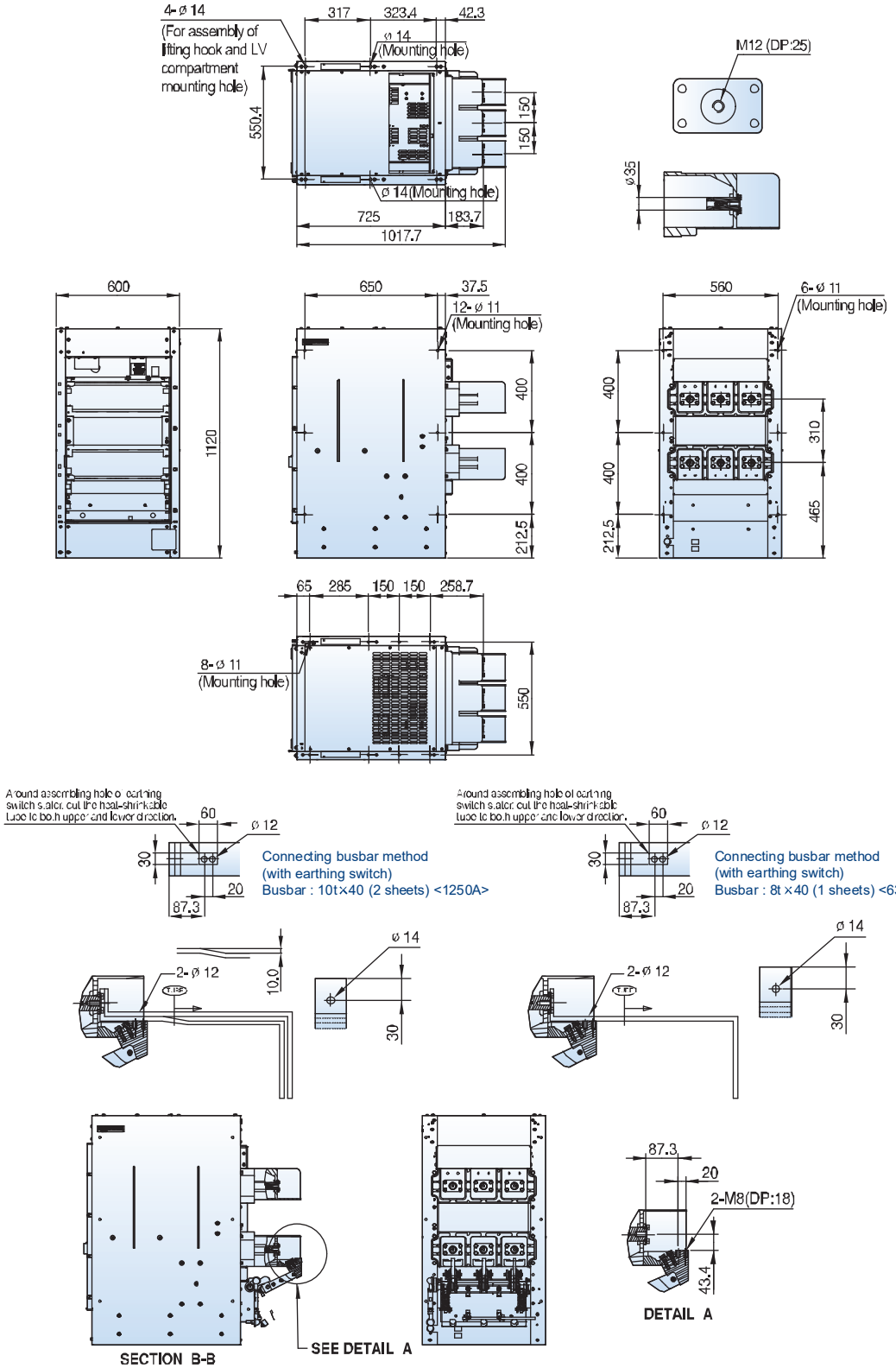
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





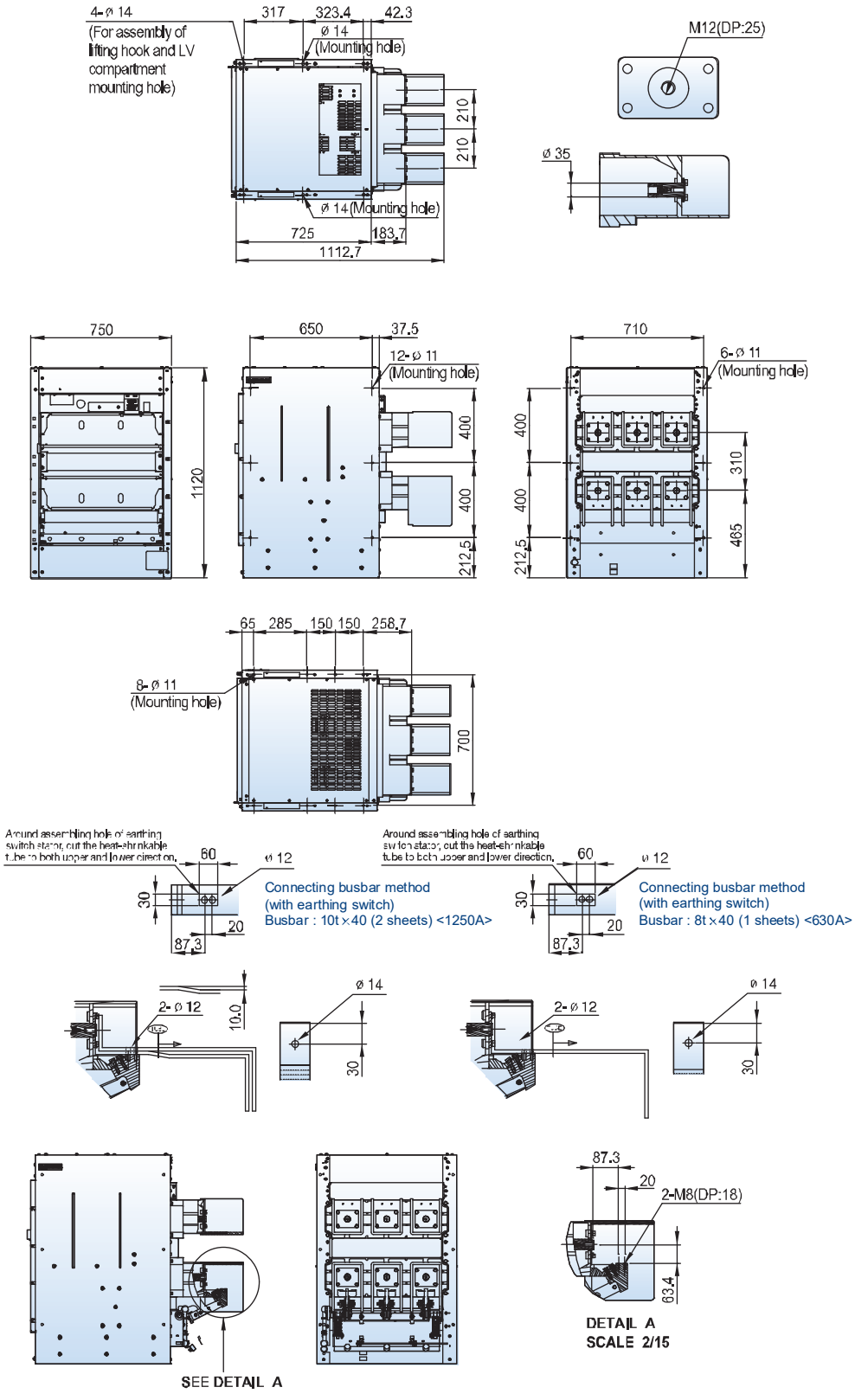
12/17.5kV, 31.5kA, 630/1250A

Withdrawable (H type cradle, phase distance 150mm)



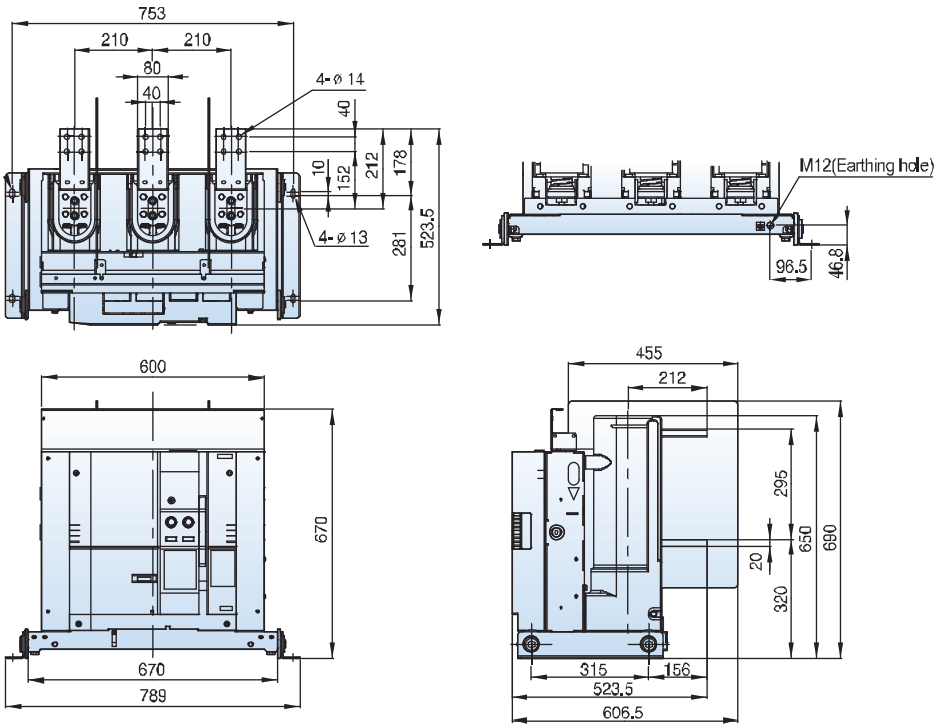
12/17.5kV, 31.5kA, 630/1250A

Withdrawable (H type cradle, phase distance 210mm)

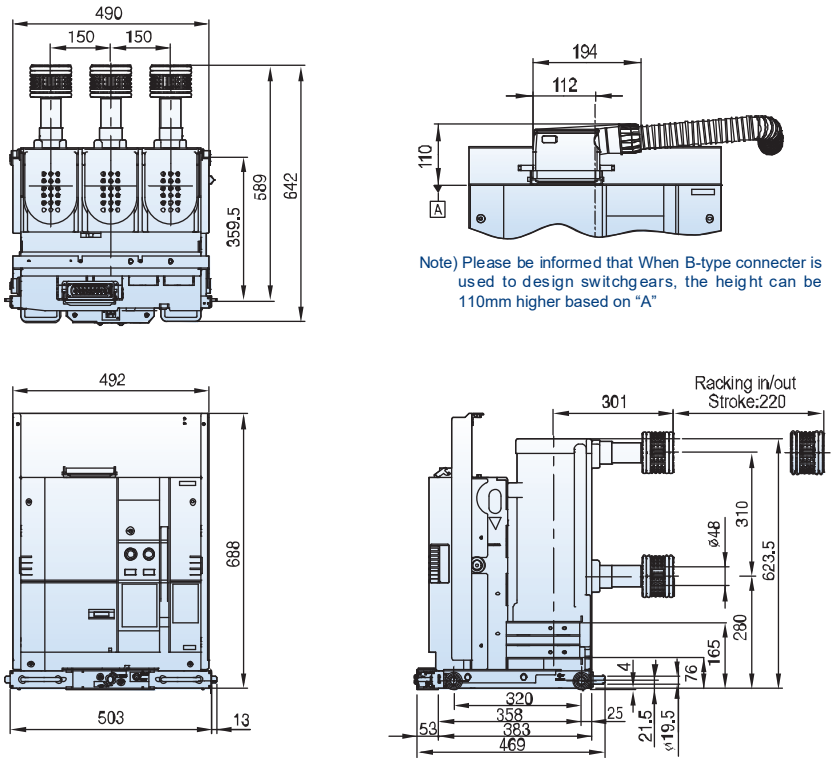


12/17.5kV, 31.5kA, 2000A

Fixed (P type, phase distance 210mm)



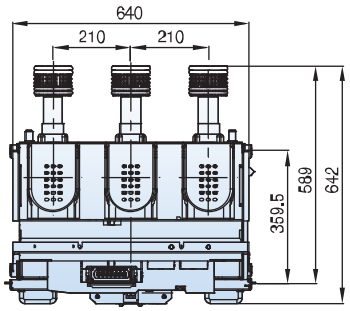
Withdrawable (H type unit, phase distance 150mm)

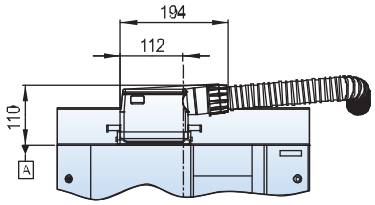


Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"

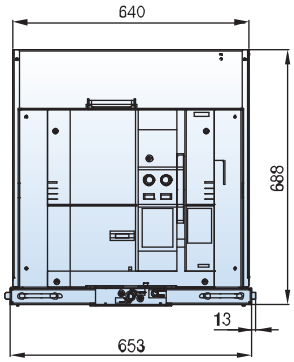
12/17.5kV, 31.5kA, 2000A

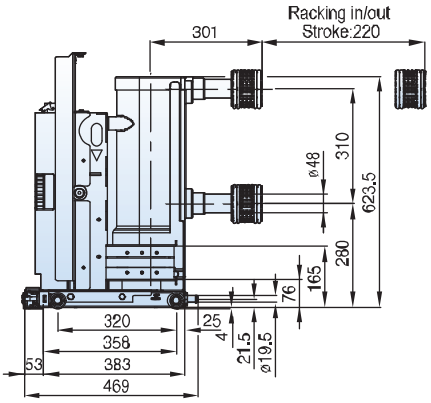
Withdrawable (H type unit, phase distance 210mm)





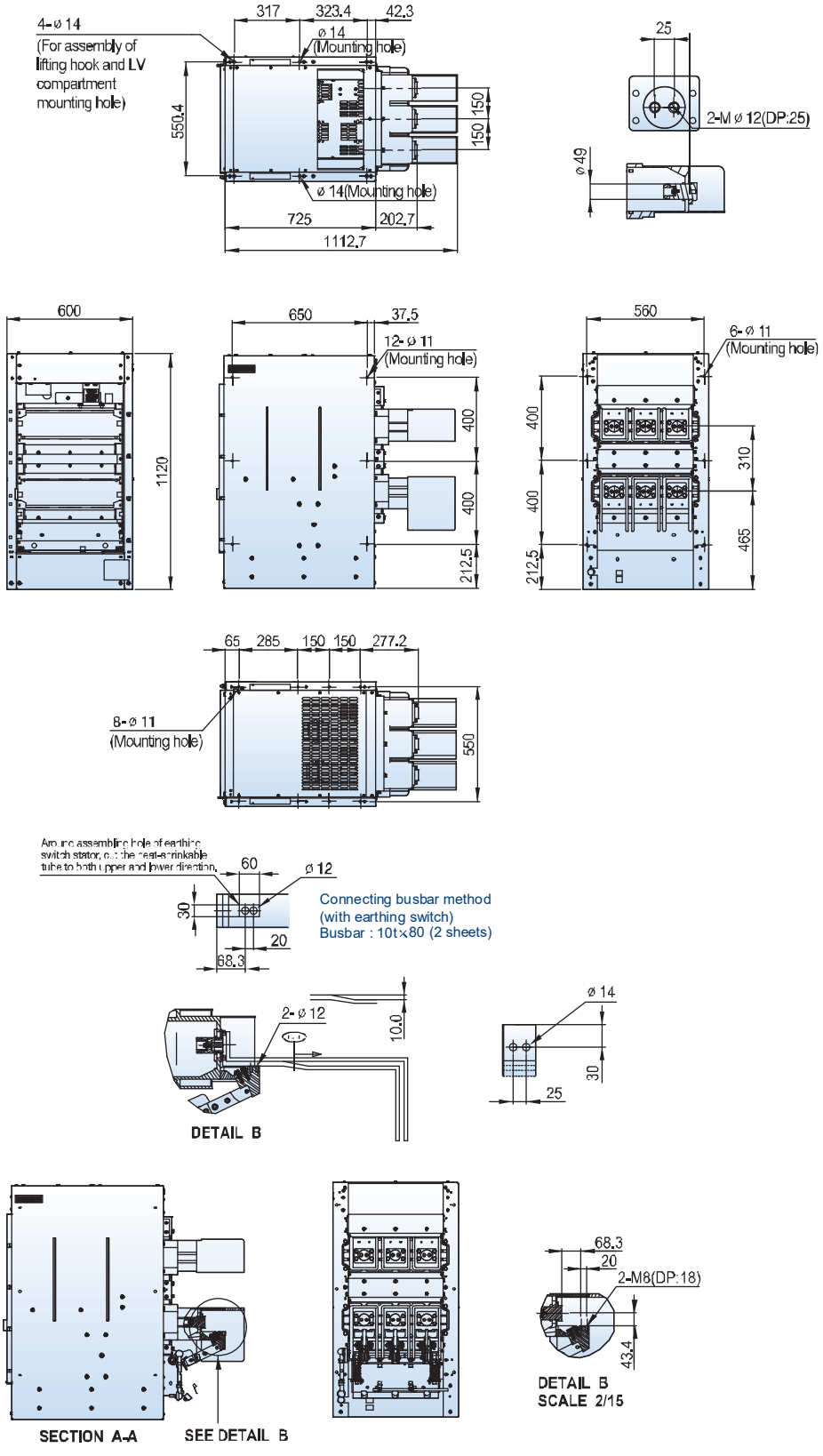
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





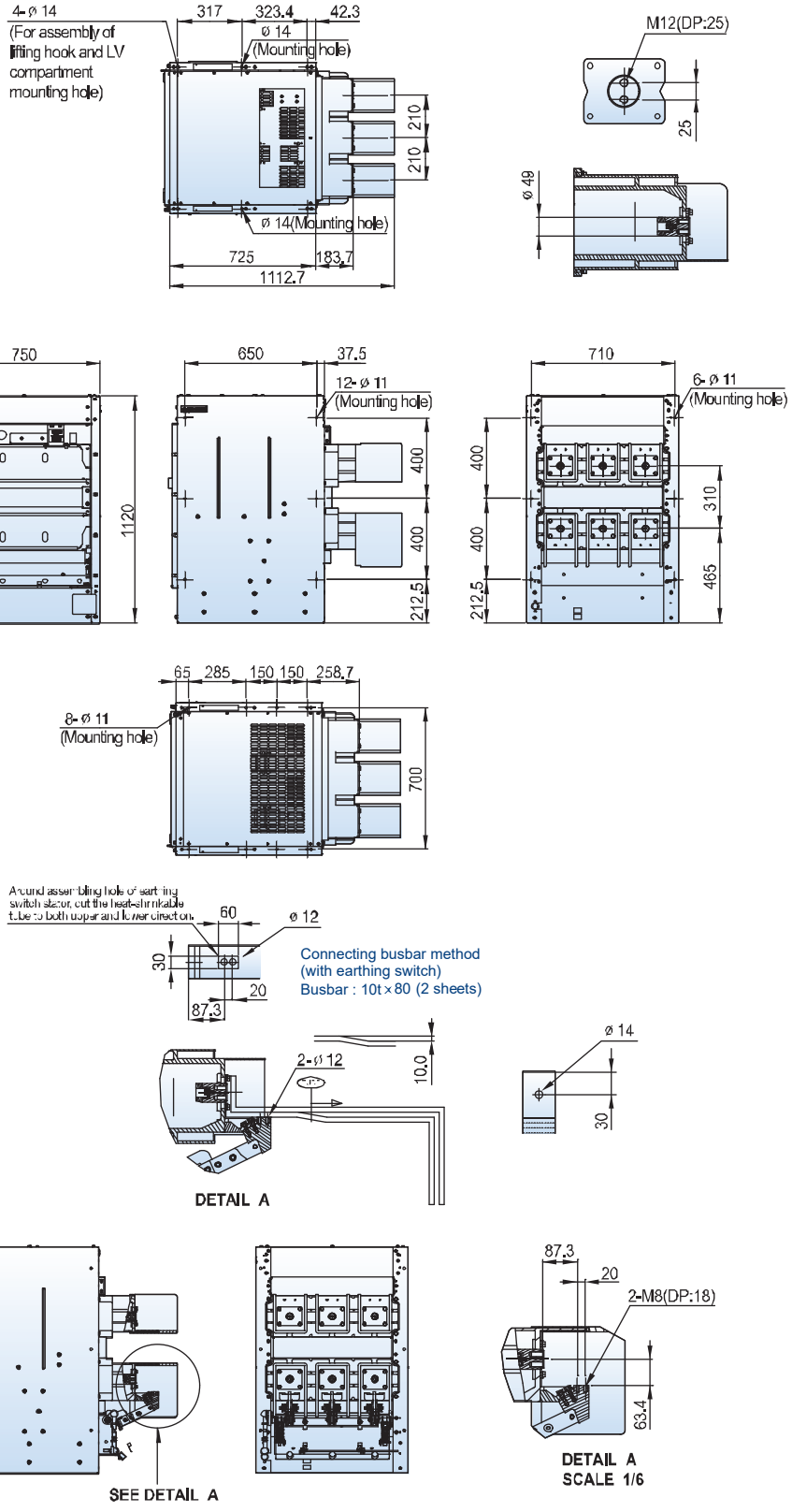
12/17.5kV, 31.5kA, 2000A

Withdrawable (H type cradle, phase distance 150mm)



12/17.5kV, 31.5kA, 2000A

Withdrawable (H type cradle, phase distance 210mm)

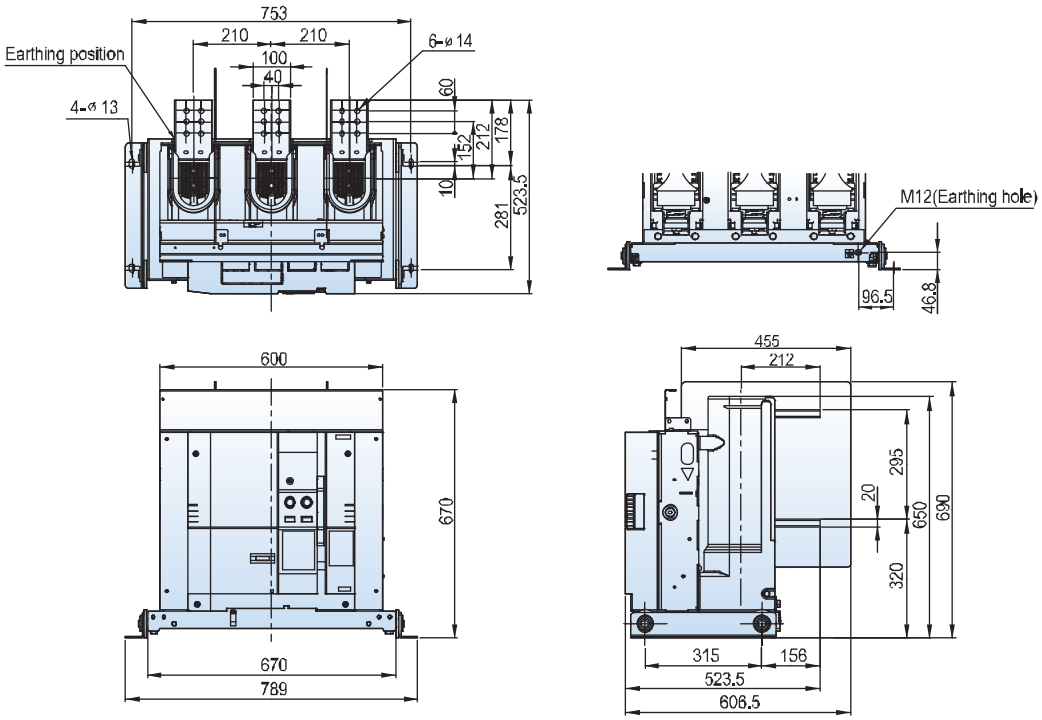


Dimensions - VL type

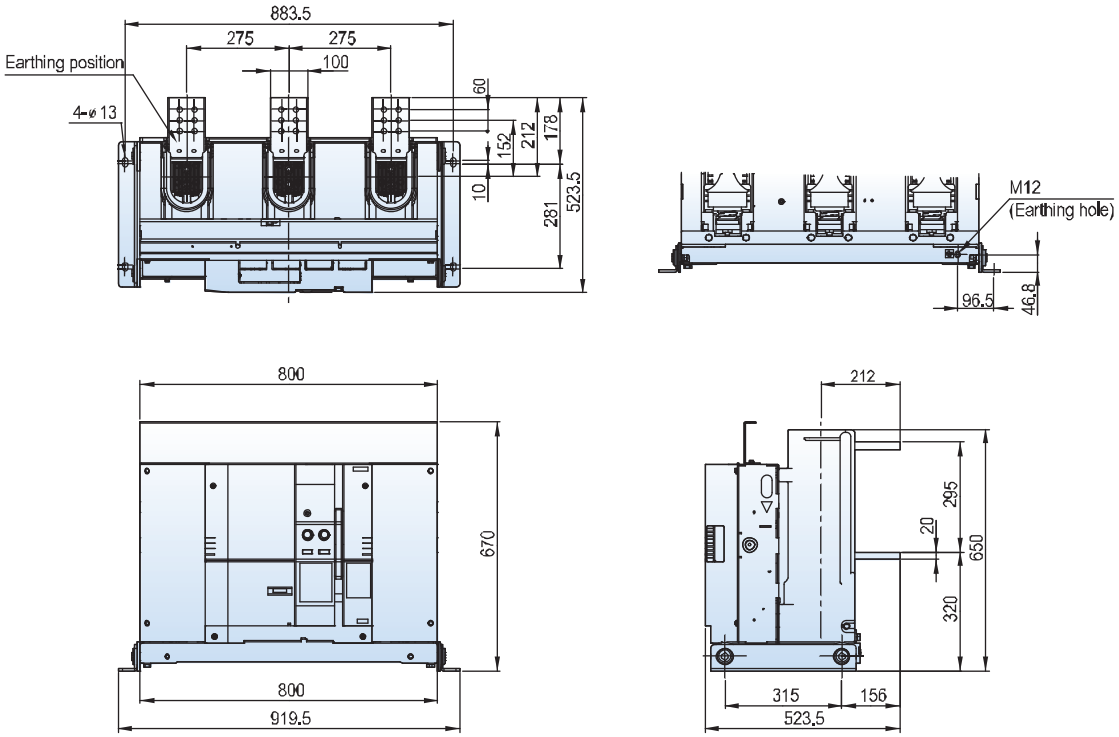
Susol

12/17.5kV, 31.5kA, 2500A

Fixed (P type, phase distance 210mm)

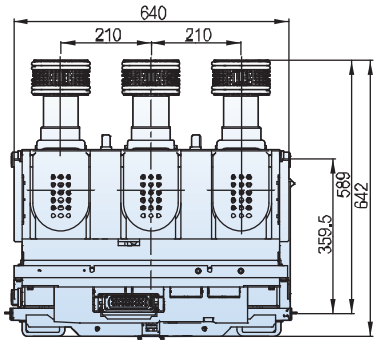


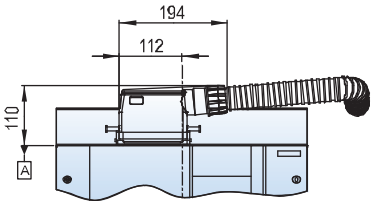
Fixed (P type, phase distance 275mm)



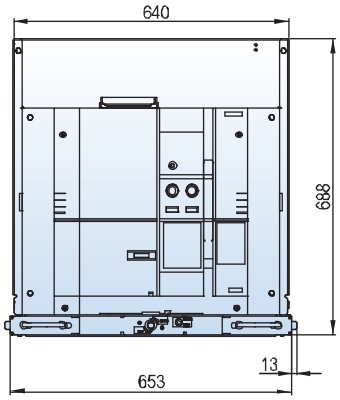
12/17.5kV, 31.5kA, 2500A

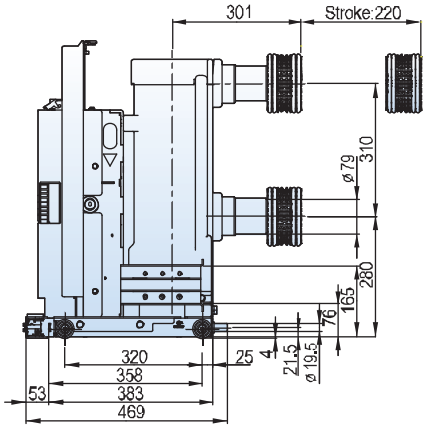
Withdrawable (H type unit, phase distance 210mm)



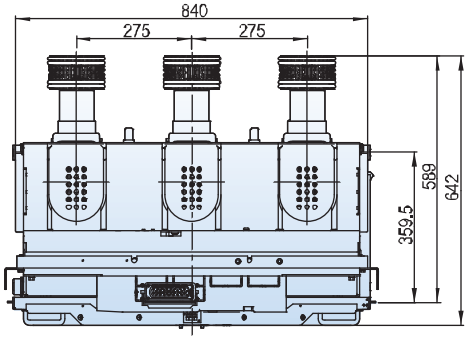


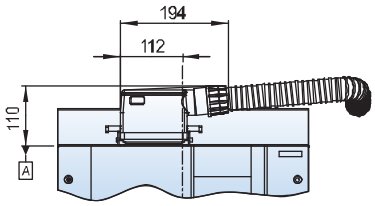
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"



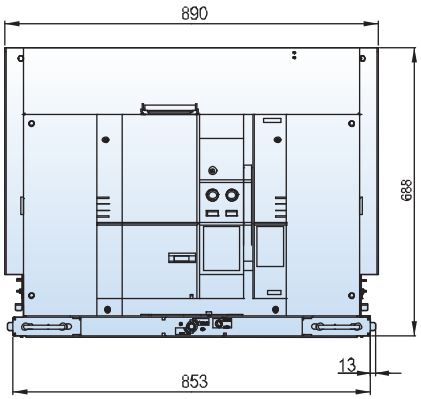


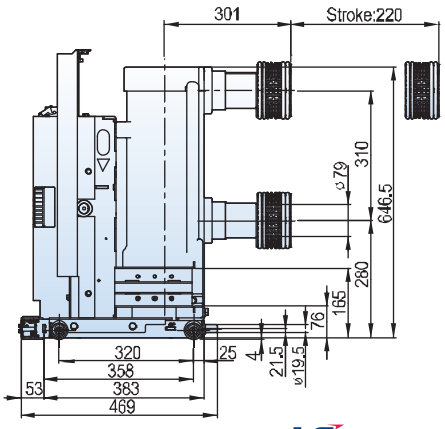
Withdrawable (H type unit, phase distance 275mm)





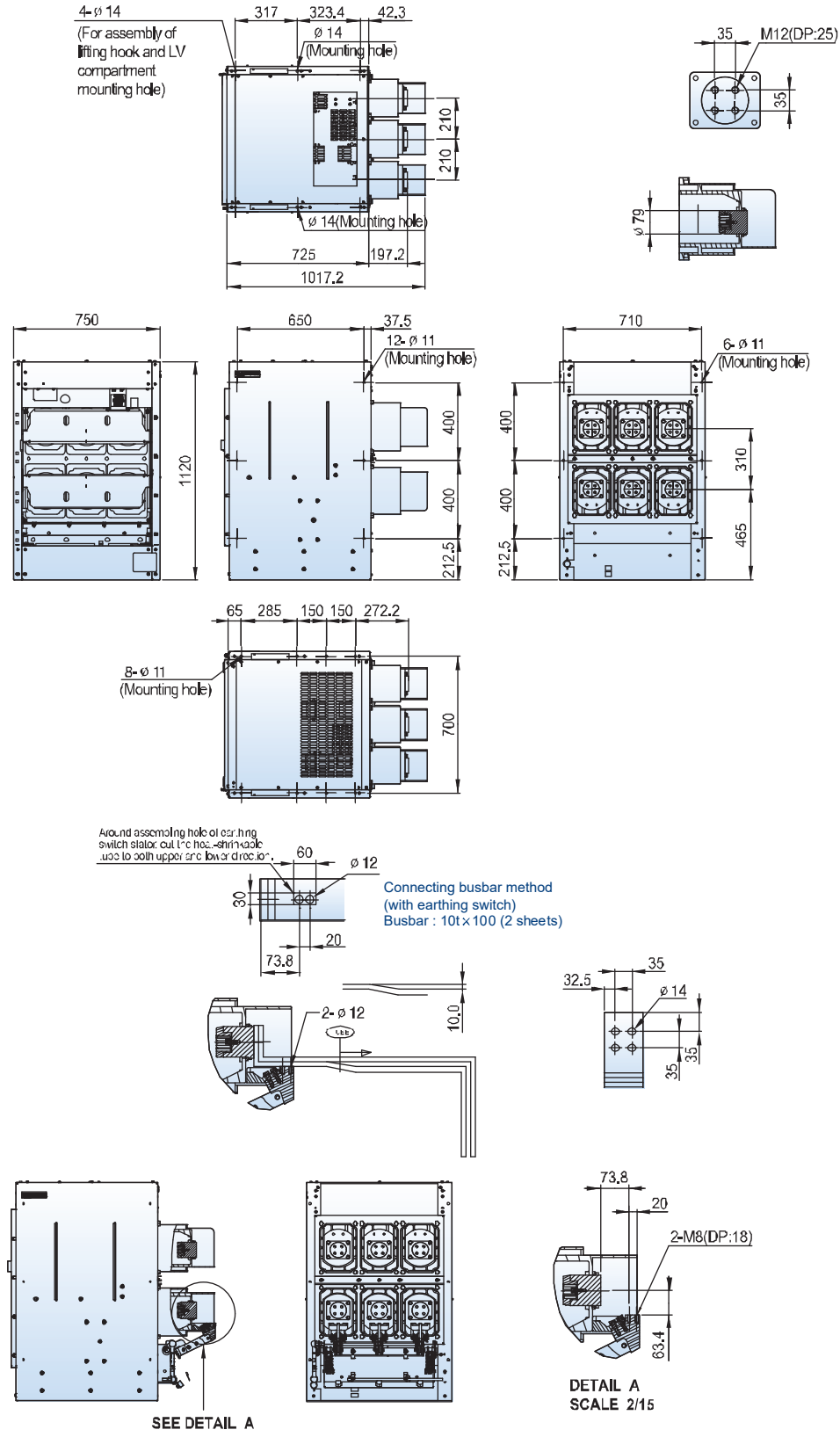
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





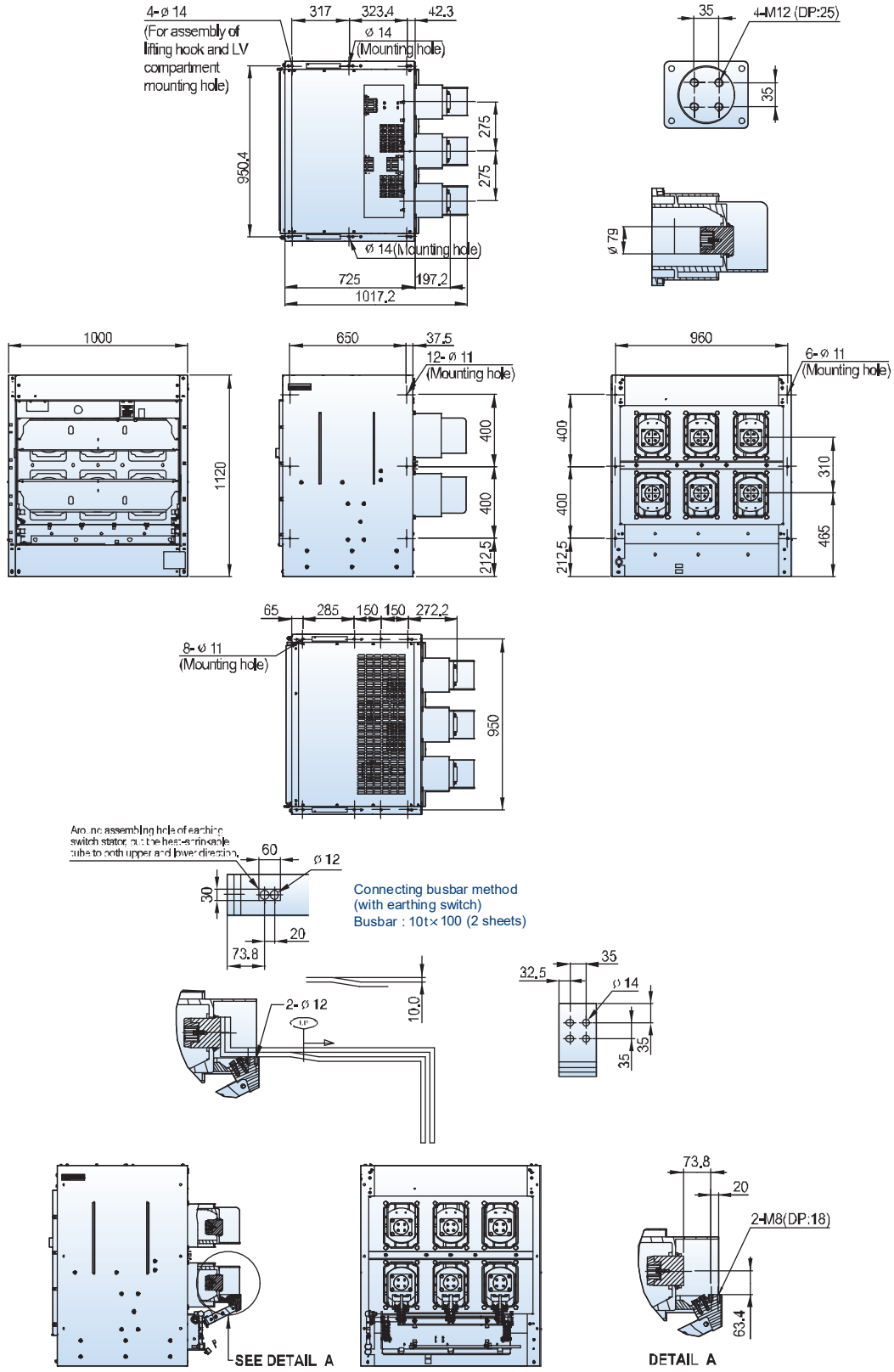
12/17.5kV, 31.5A, 2500A

Withdrawable (H type cradle, phase distance 210mm)



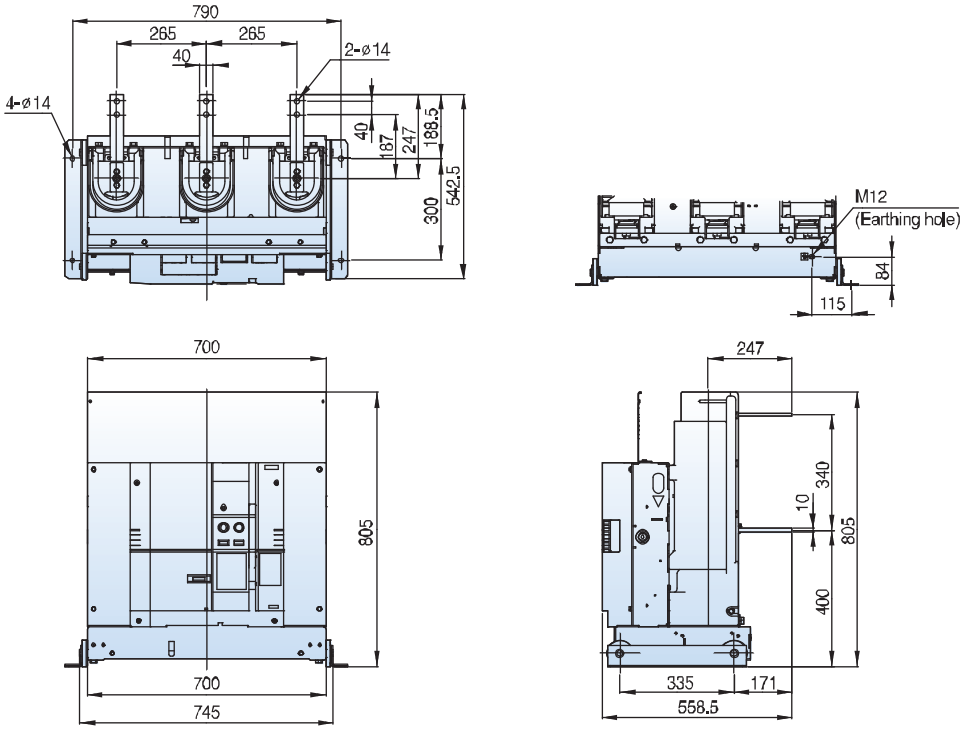
12/17.5kV, 31.5A, 2500A

Withdrawable (H type cradle, phase distance 275mm)

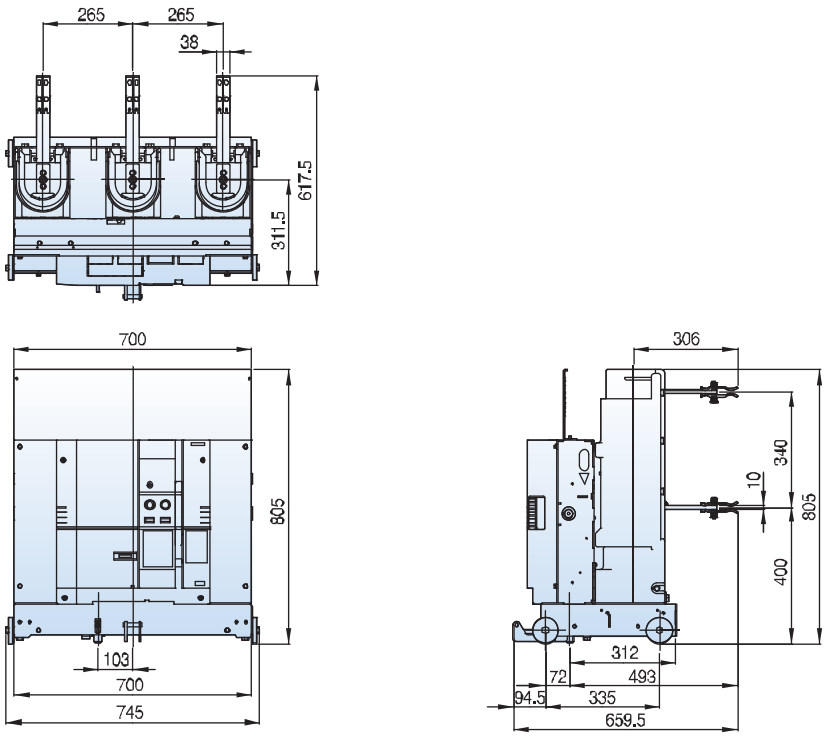


24/25.8kV 12.5kA 630A

Fixed (P type, phase distance 265mm)

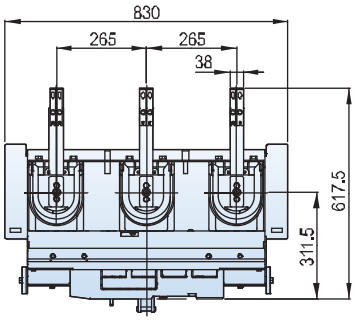


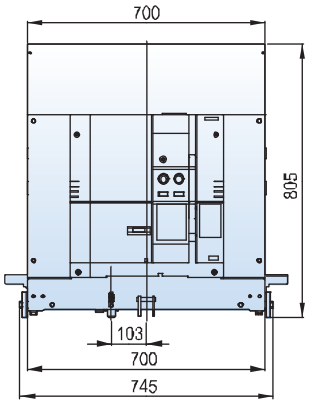
Withdrawable (E type unit Visible, Clip contact, phase distance 265mm)

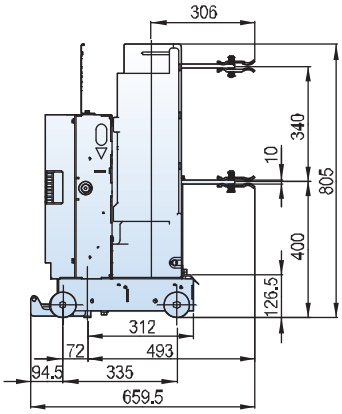


24/25.8kV 12.5kA 630A

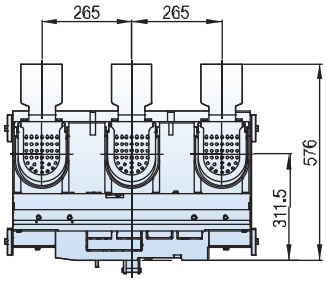
Withdrawable (F type unit Visible, Clip contact, phase distance 265mm)

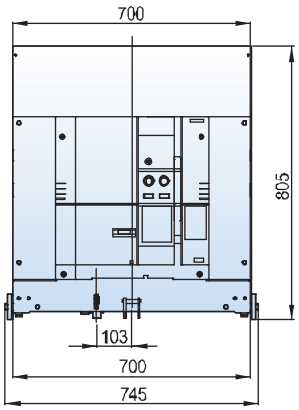


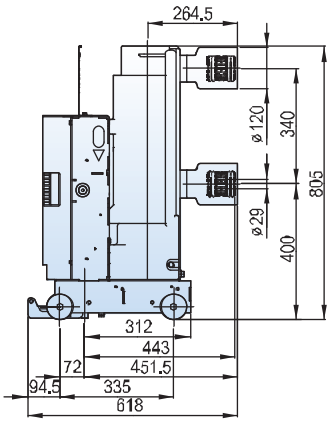




Withdrawable (E type unit Enclosed, Tulip contact, phase distance 265mm)

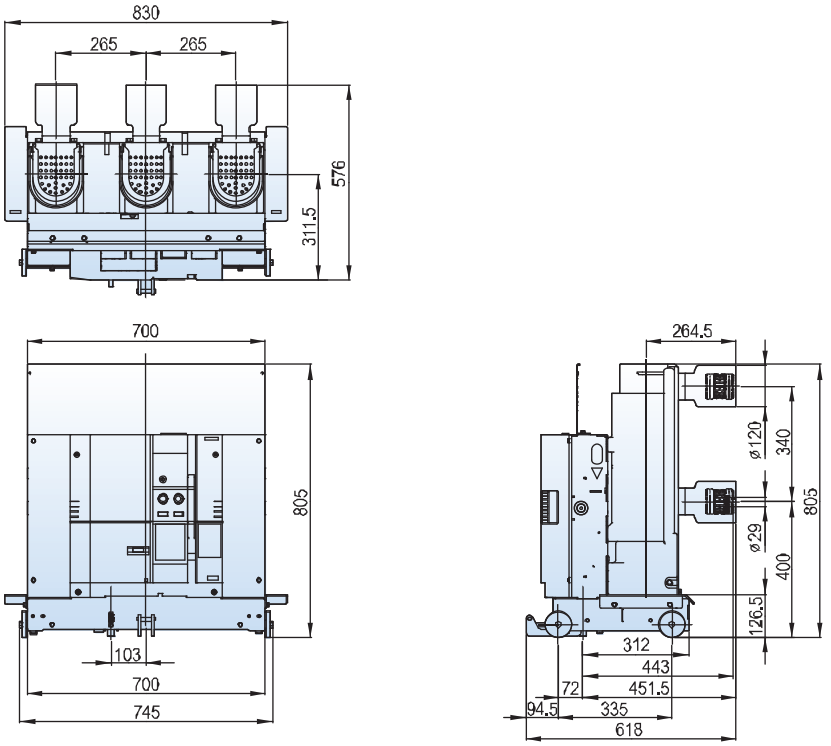




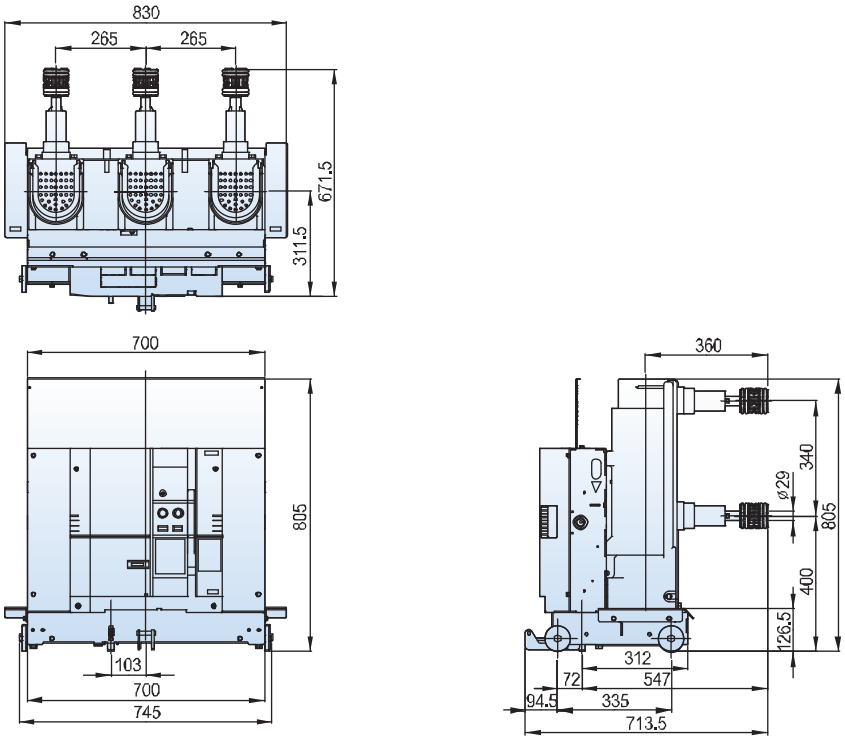


24/25.8kV 12.5kA 630A

Withdrawable (F type unit Enclosed, Tulip contact, phase distance 265mm)

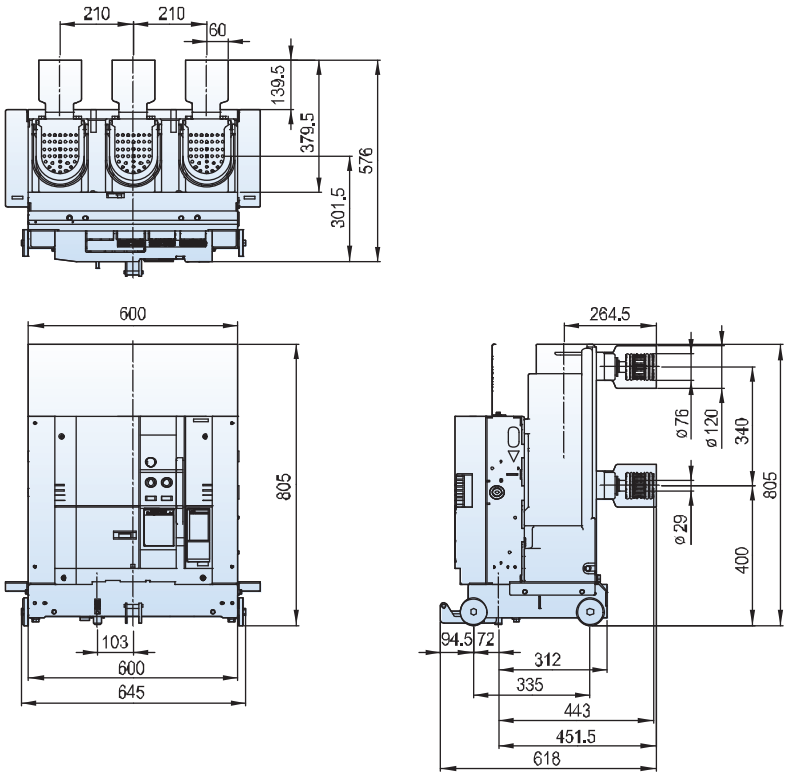


Withdrawable (G type unit Tulip contact, phase distance 265mm)

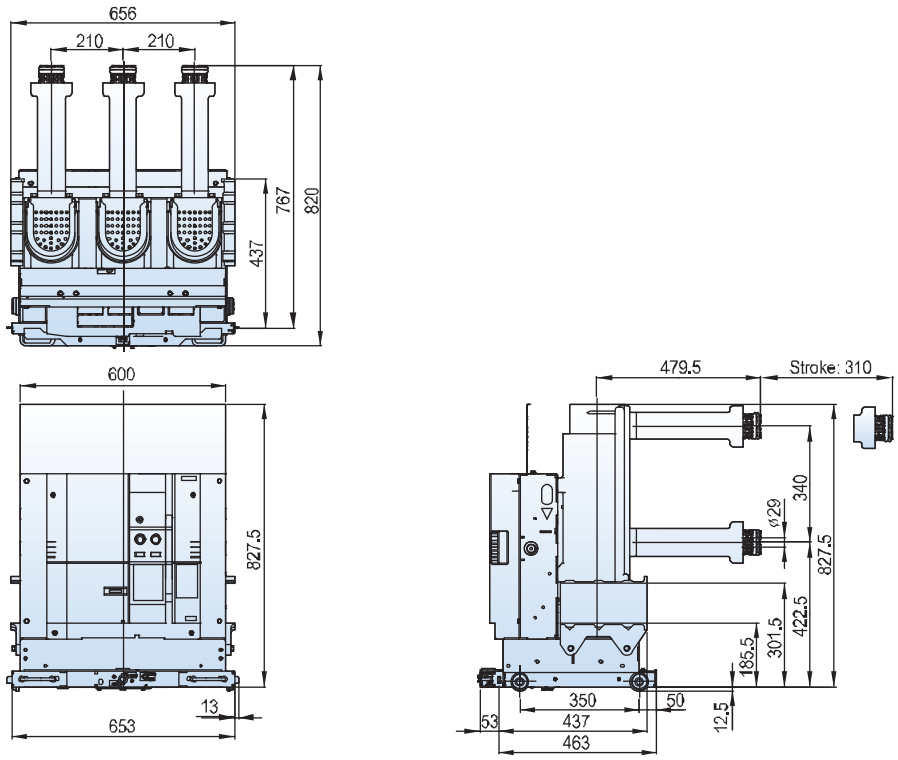


24/25.8kV 12.5kA 630A

Withdrawable (G type unit, phase distance 210mm)

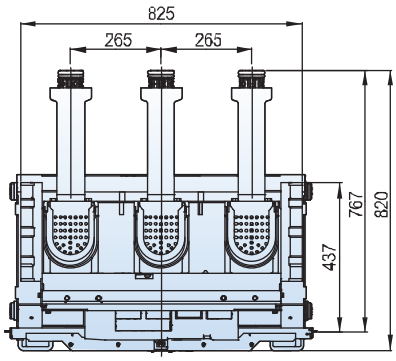


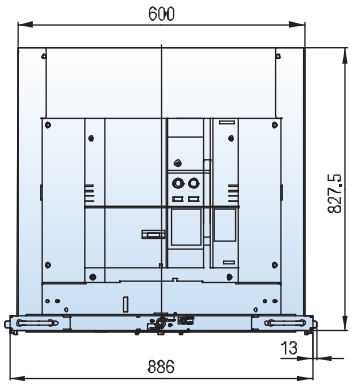
Withdrawable (K type unit, phase distance 210mm)

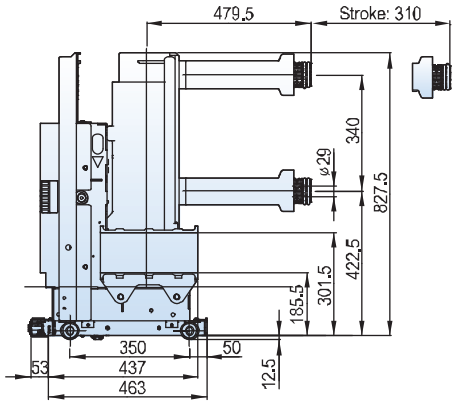


24/25.8kV 12.5kA 630A

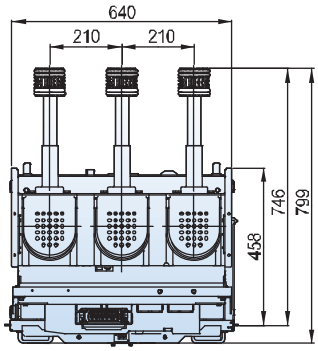
Withdrawable (K type unit, phase distance 265mm)

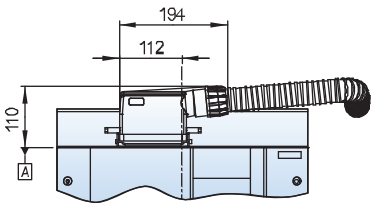




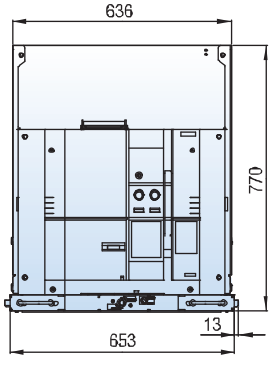


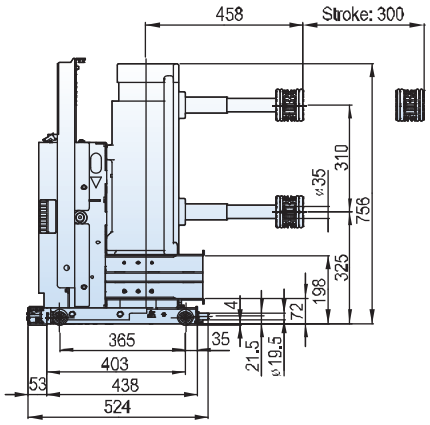
Withdrawable (H type unit, phase distance 210mm)





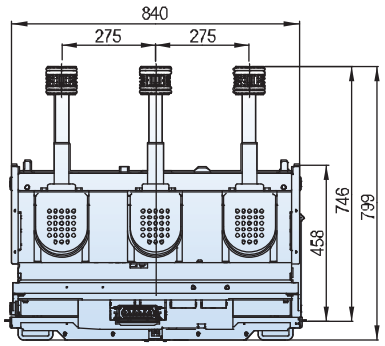
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"

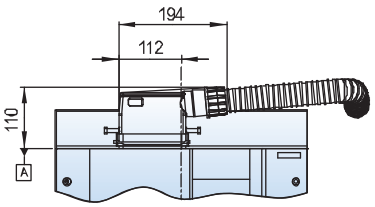




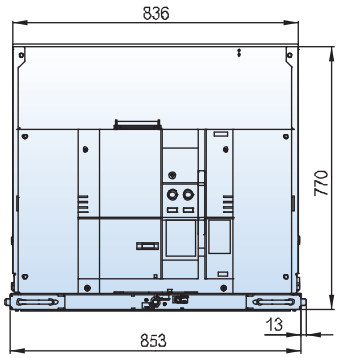
24/25.8kV 12.5kA 630A

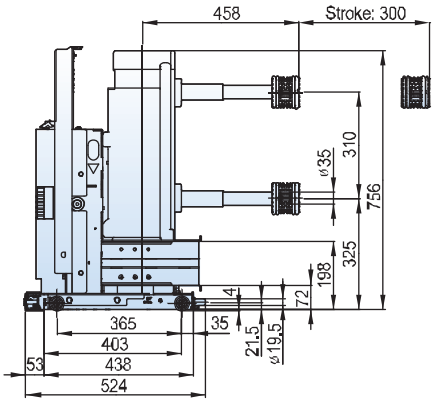
Withdrawable (H type unit, phase distance 275mm)





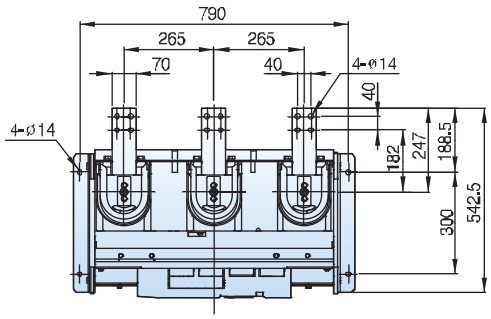
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"

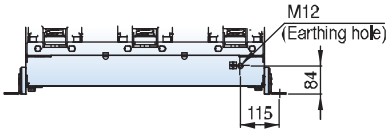


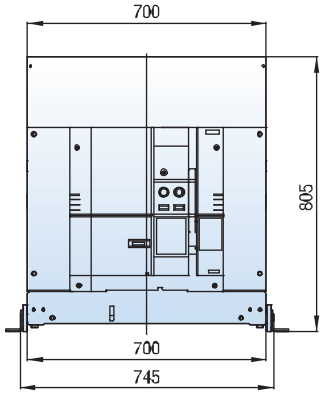


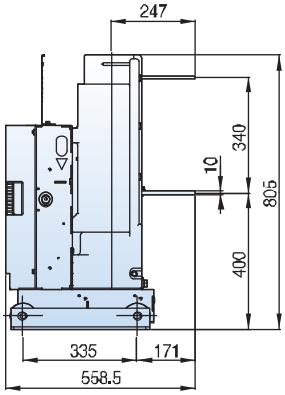
24/25.8kV 12.5kA 1250A

Fixed (P type, phase distance 265mm)



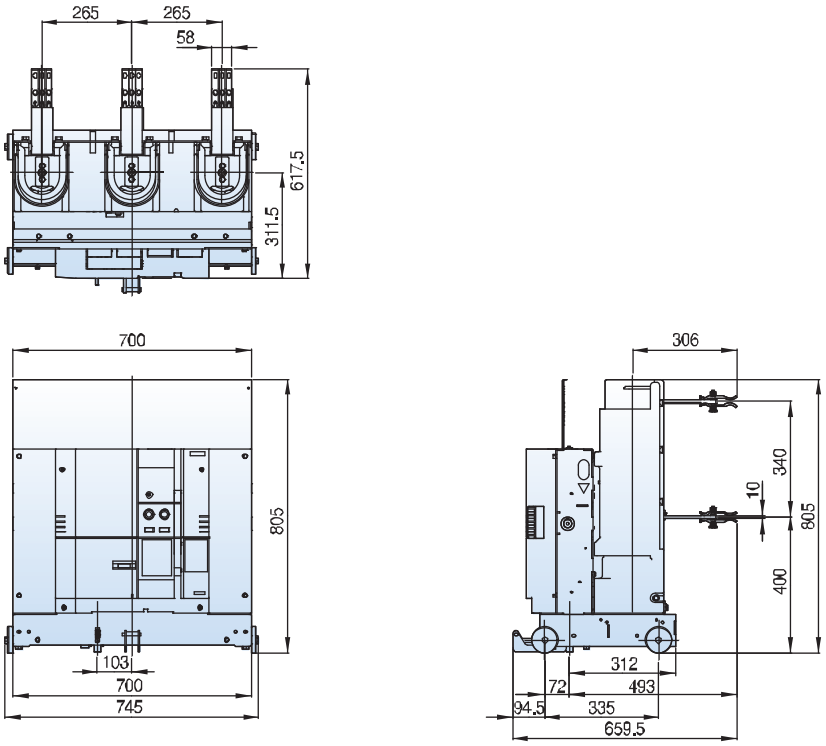




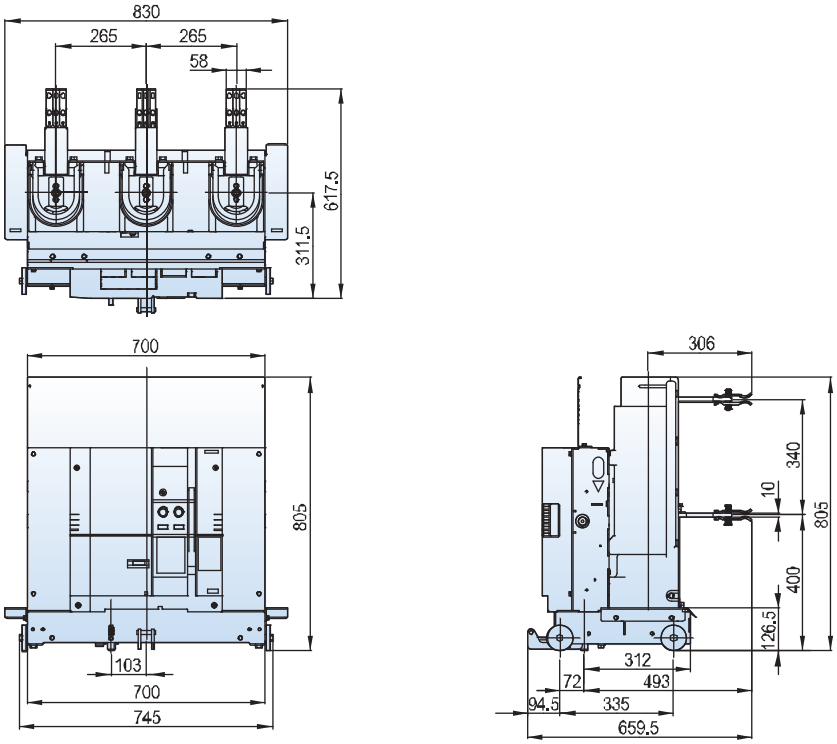


24/25.8kV 12.5kA 1250A

Withdrawable (E type unit Visible, Clip contact, phase distance 265mm)

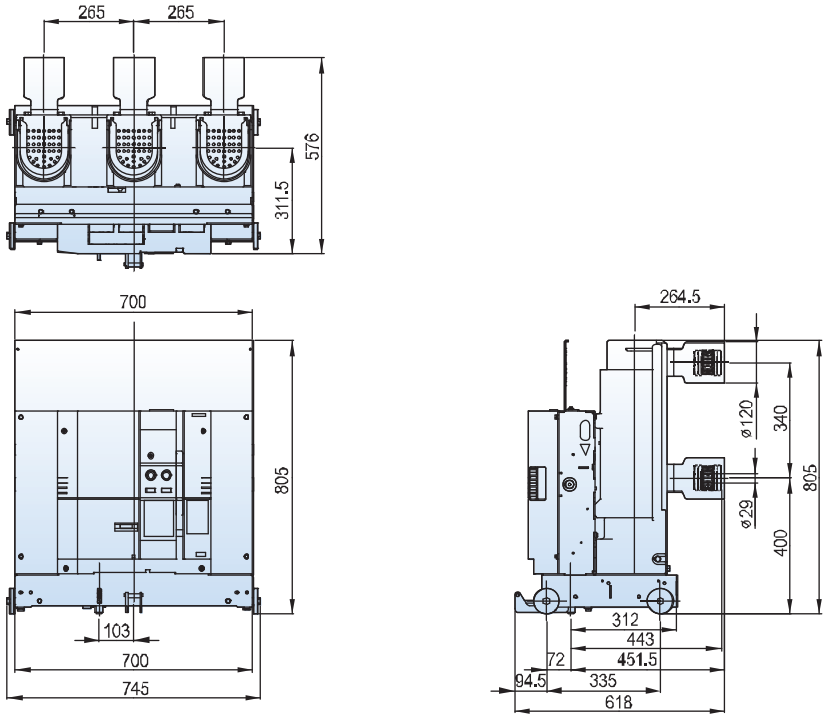


Withdrawable (F type unit Visible, Clip contact, phase distance 265mm)

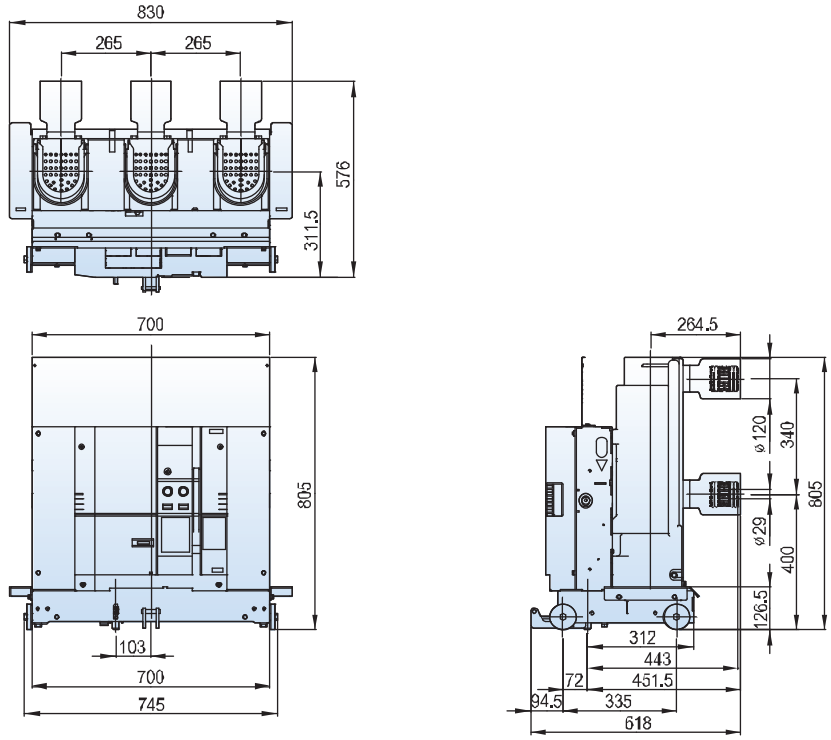


24/25.8kV 12.5kA 1250A

Withdrawable (E type unit Enclosed, Tulip contact, phase distance 265mm)

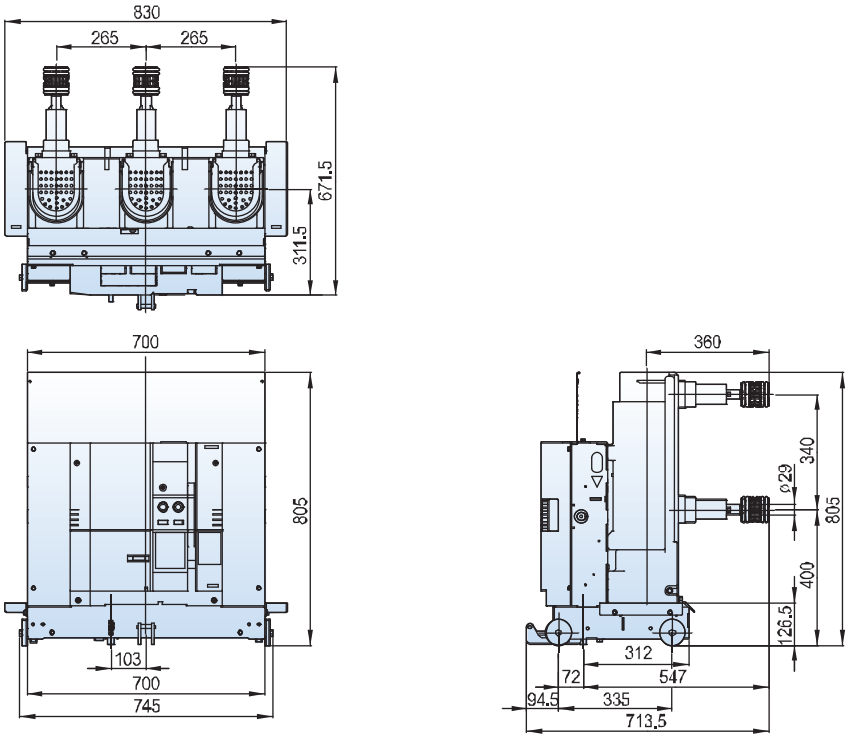


Withdrawable (F type unit Enclosed, Tulip contact, phase distance 265mm)



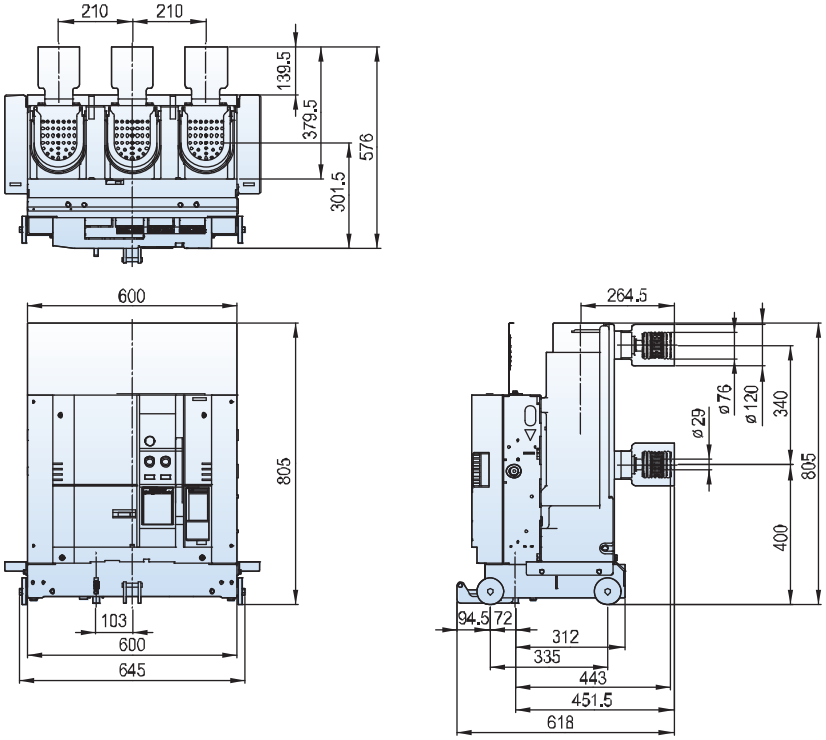
24/25.8kV 12.5kA 1250A

Withdrawable (G type unit Tulip contact, phase distance 265mm)



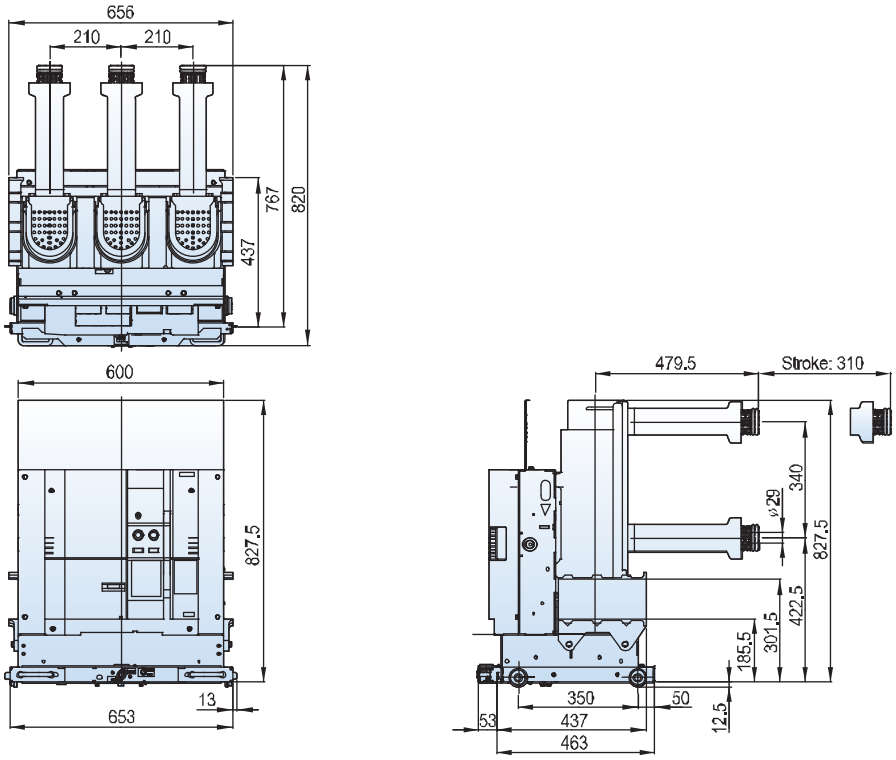
24/25.8kV 12.5kA 1250A & 16/25kA 630/1250A

Withdrawable (G type unit, phase distance 210mm)

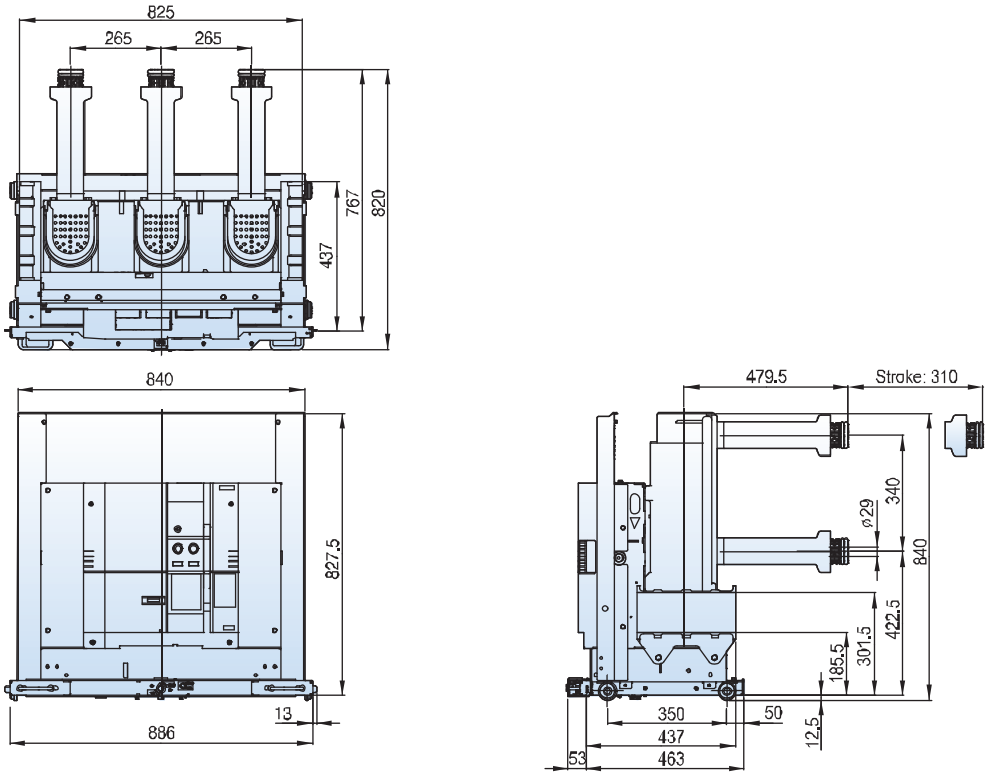


24/25.8kV 12.5kA 1250A

Withdrawable (K type unit, phase distance 210mm)

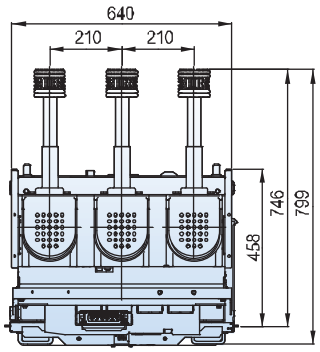


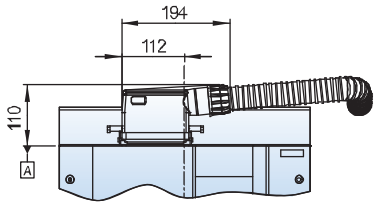
Withdrawable (K type unit, phase distance 265mm)



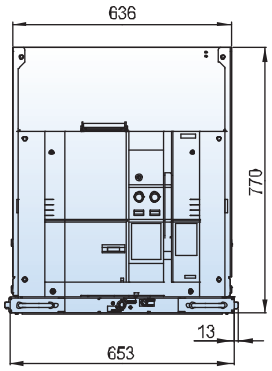
24/25.8kV 12.5kA 1250A

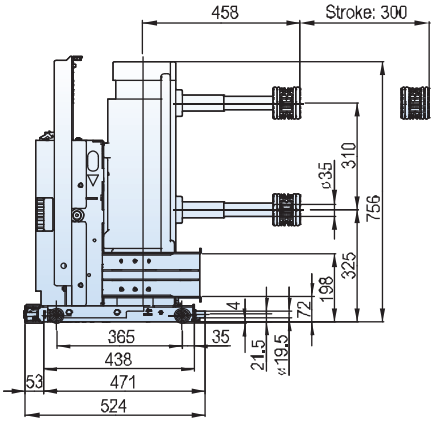
Withdrawable (H type unit, phase distance 210mm)



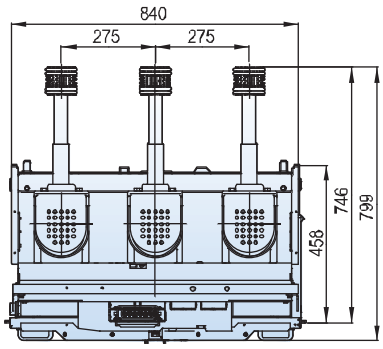


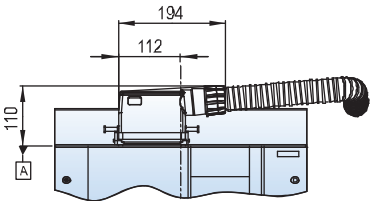
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"



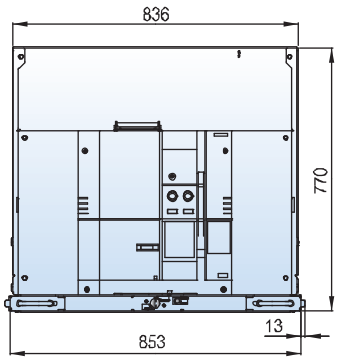


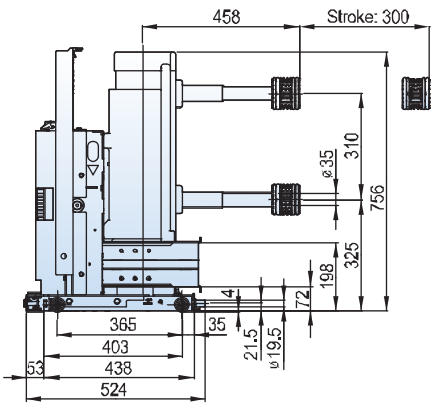
Withdrawable (H type unit, phase distance 275mm)





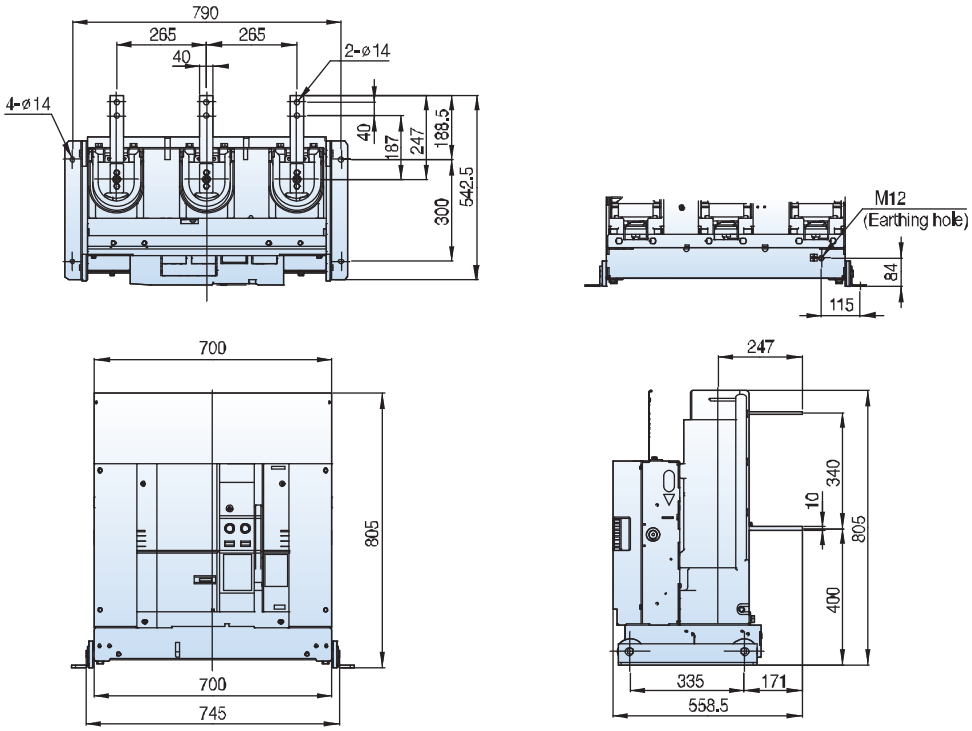
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"





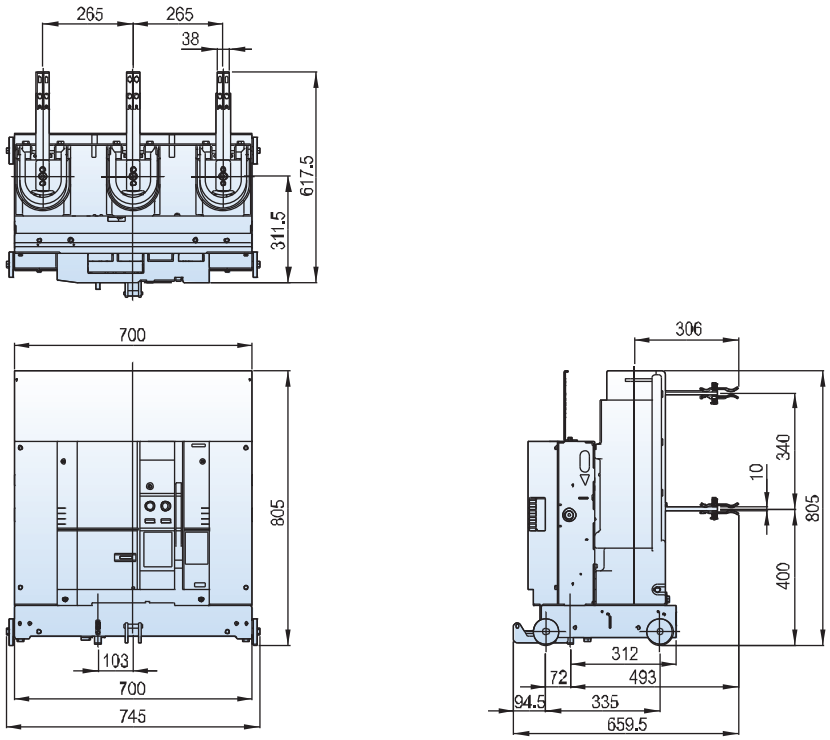
24/25.8kV 16/25kA 630A

Fixed (P type, phase distance 265mm)



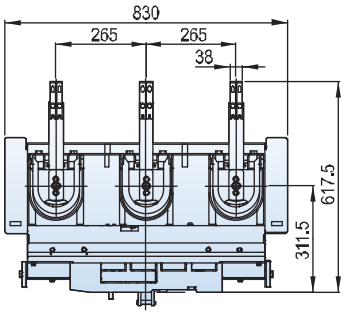
24/25.8kV 16kA 630A

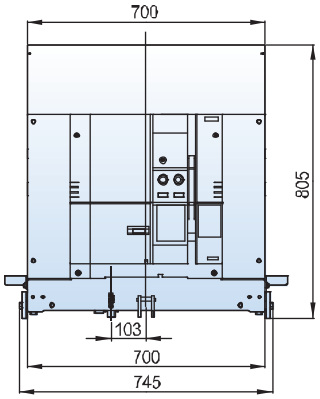
Withdrawable (E type unit Visible, Clip contact, phase distance 265mm)

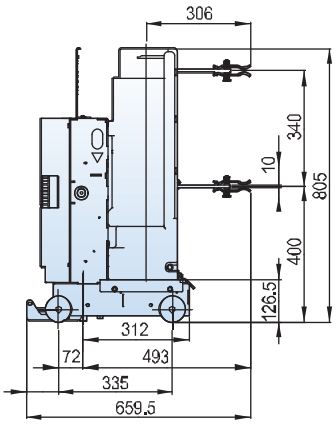


24/25.8kV 16kA 630A

Withdrawable (F type unit Visible, Clip contact, phase distance 265mm)

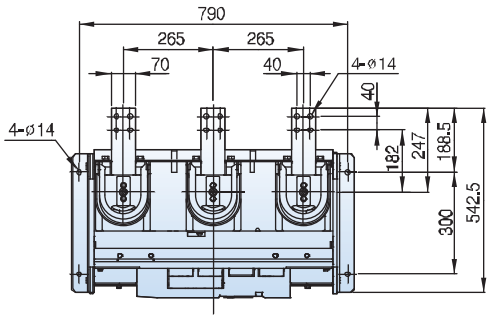


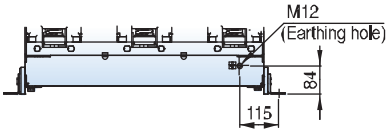


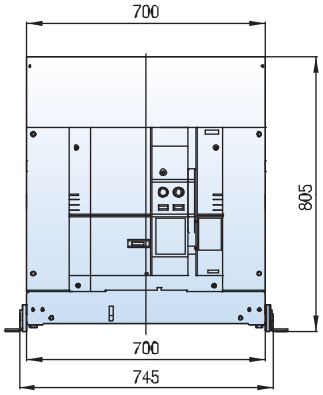


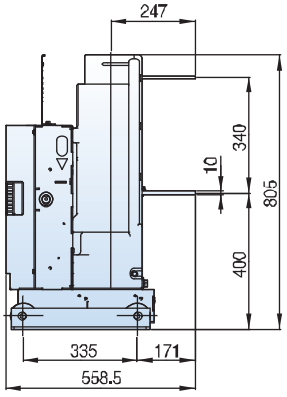
24/25.8kV 16/25kA 1250A

Fixed (P type, phase distance 265mm)



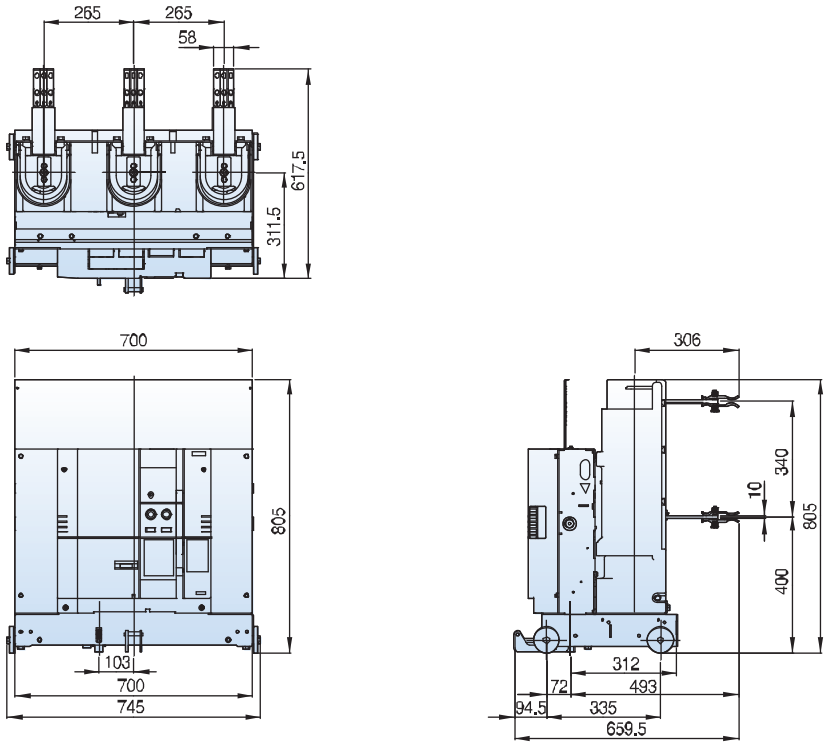




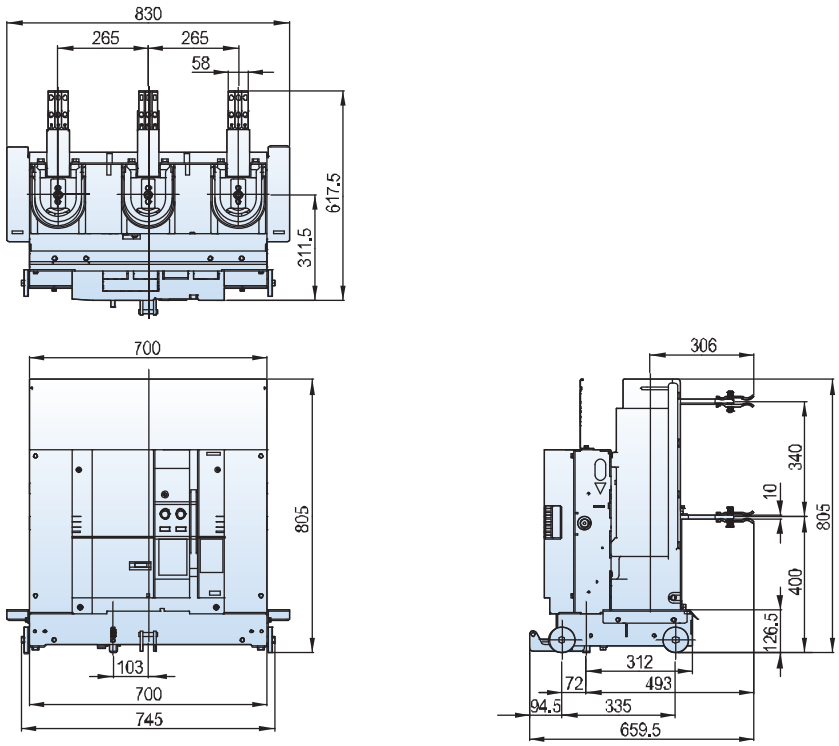


24/25.8kV 25kA 630A & 24/25.8kV 16/25kA 1250A

Withdrawable (E type unit Visible, Clip contact, phase distance 265mm)

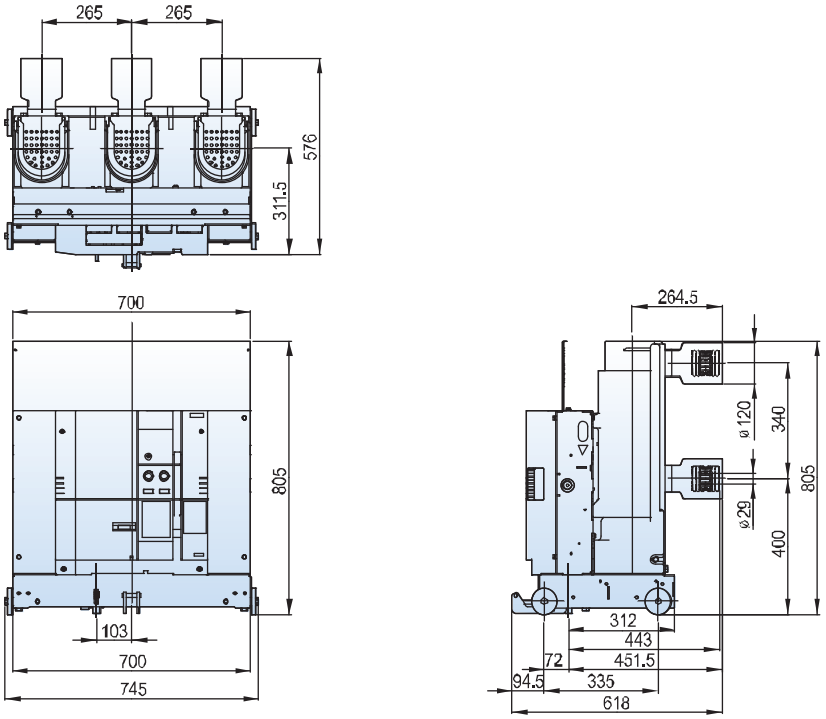


Withdrawable (F type unit Visible, Clip contact, phase distance 265mm)

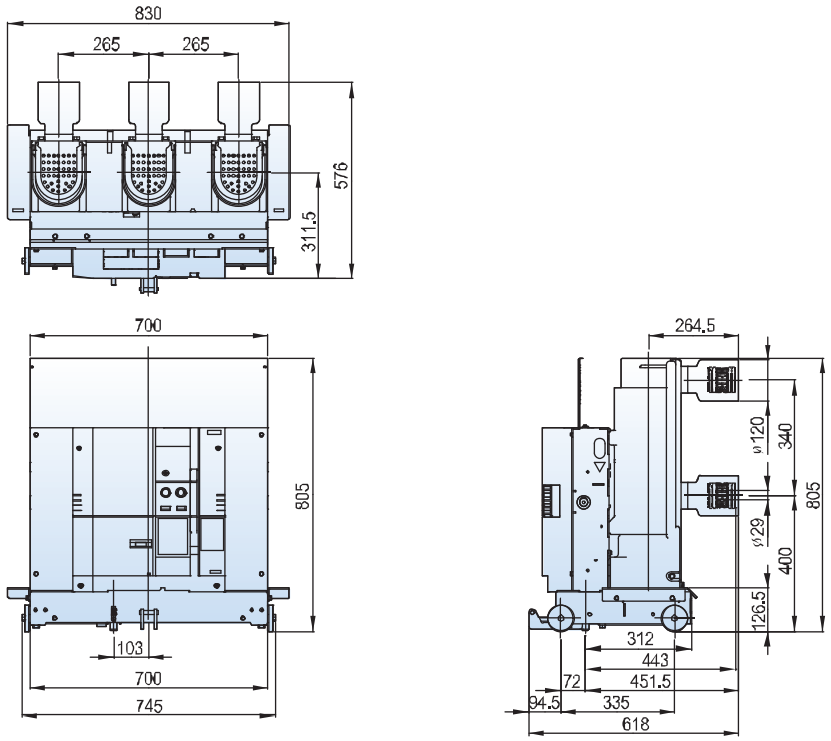


24/25.8kV 16/25kA 630/1250A

Withdrawable (E type unit Enclosed, Tulip contact, phase distance 265mm)

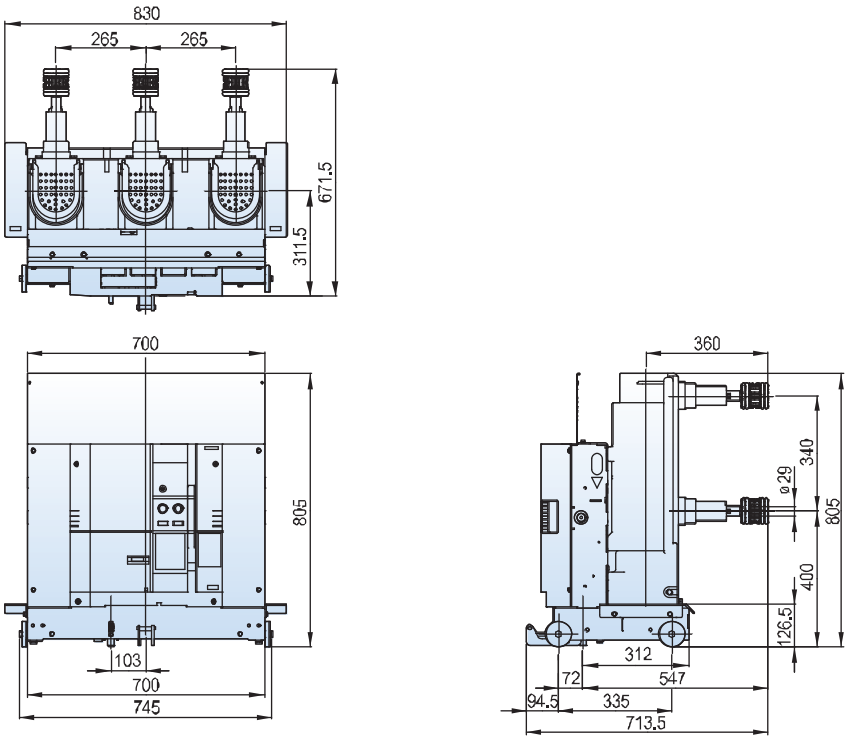


Withdrawable (F type unit Enclosed, Tulip contact, phase distance 265mm)

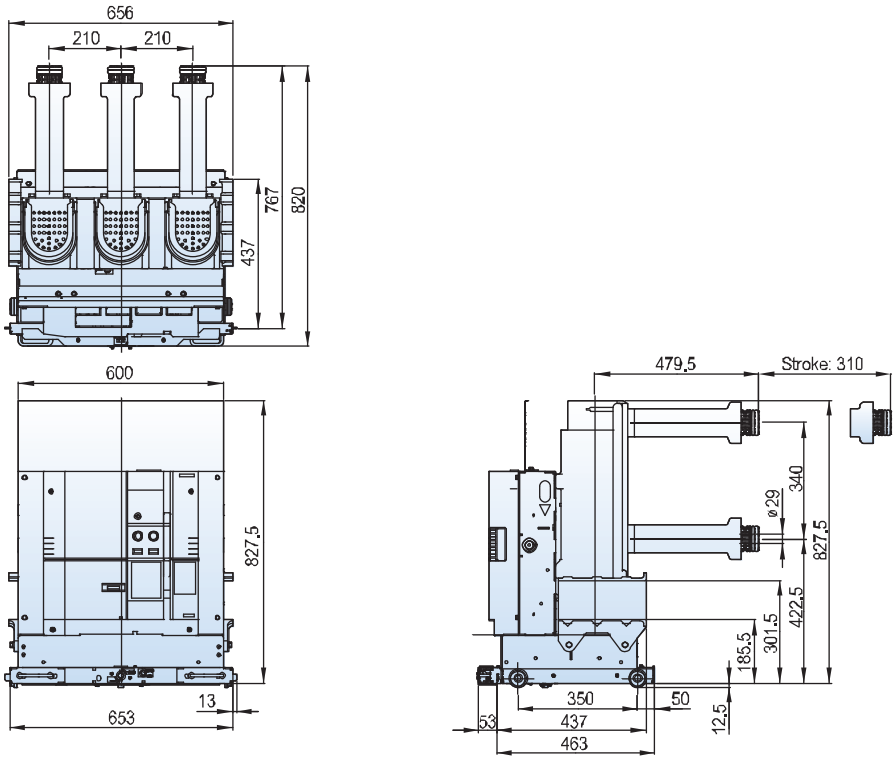


24/25.8kV 16/25kA 630/1250A

Withdrawable (G type unit Tulip contact, phase distance 265mm)

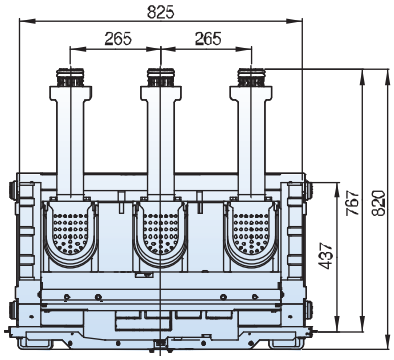


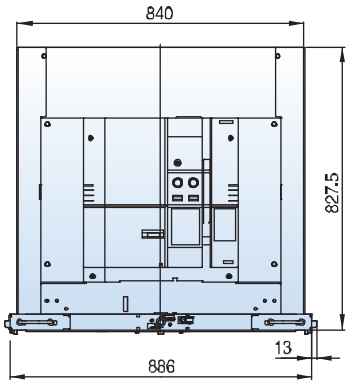
Withdrawable (K type unit, phase distance 210mm)

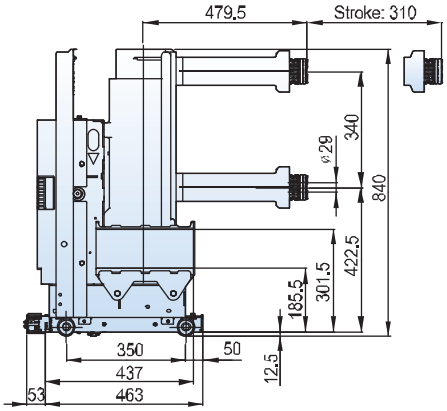


24/25.8kV 16/25kA 630/1250A

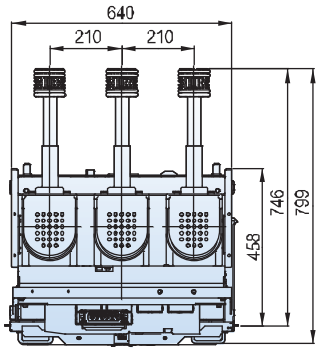
Withdrawable (K type unit, phase distance 265mm)

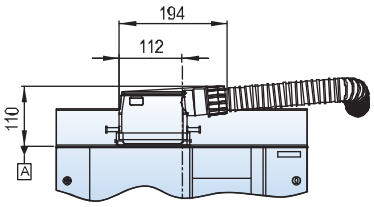




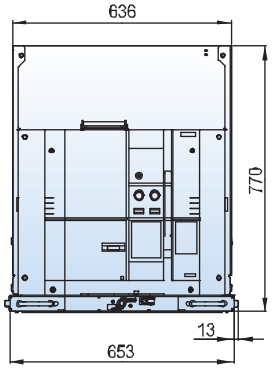


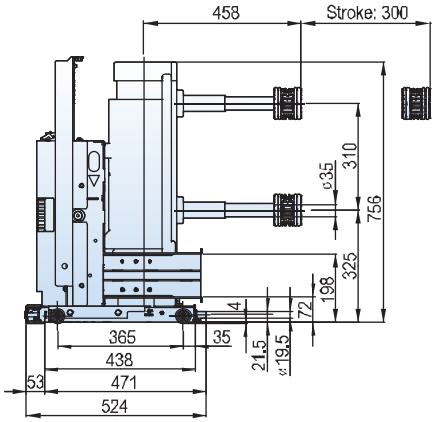
Withdrawable (H type unit, phase distance 210mm)





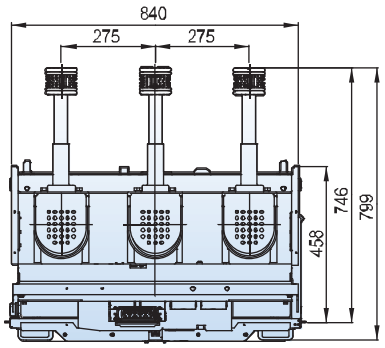
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"

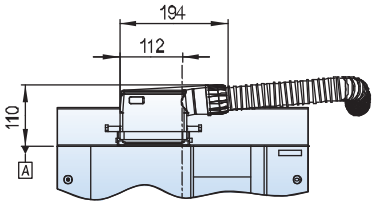




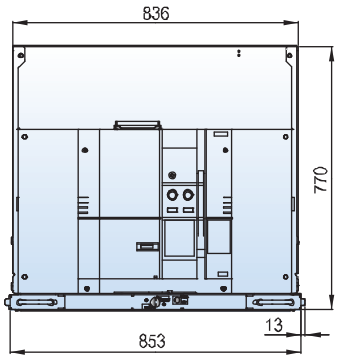
24/25.8kV 16/25kA 630/1250A

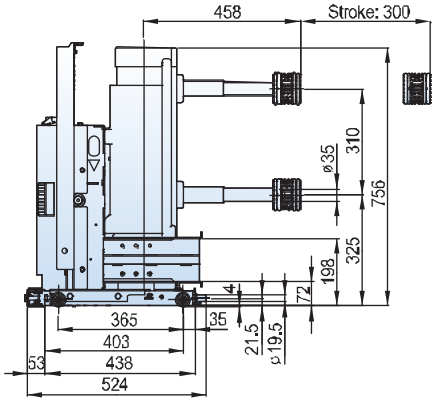
Withdrawable (H type unit, phase distance 275mm)





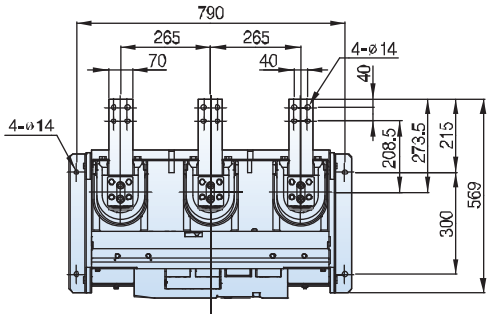
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"

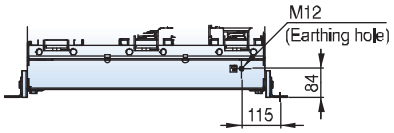


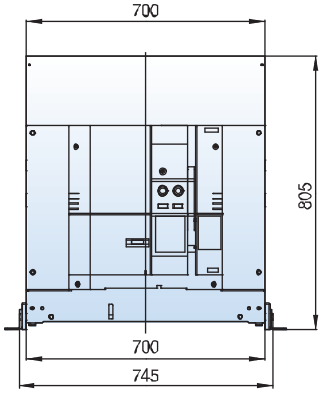


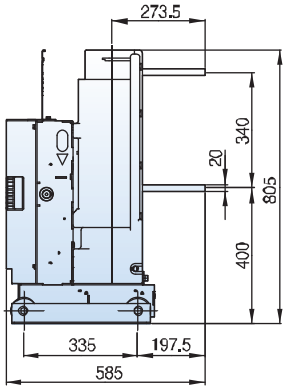
24/25.8kV 25kA 2000A

Fixed (P type, phase distance 265mm)



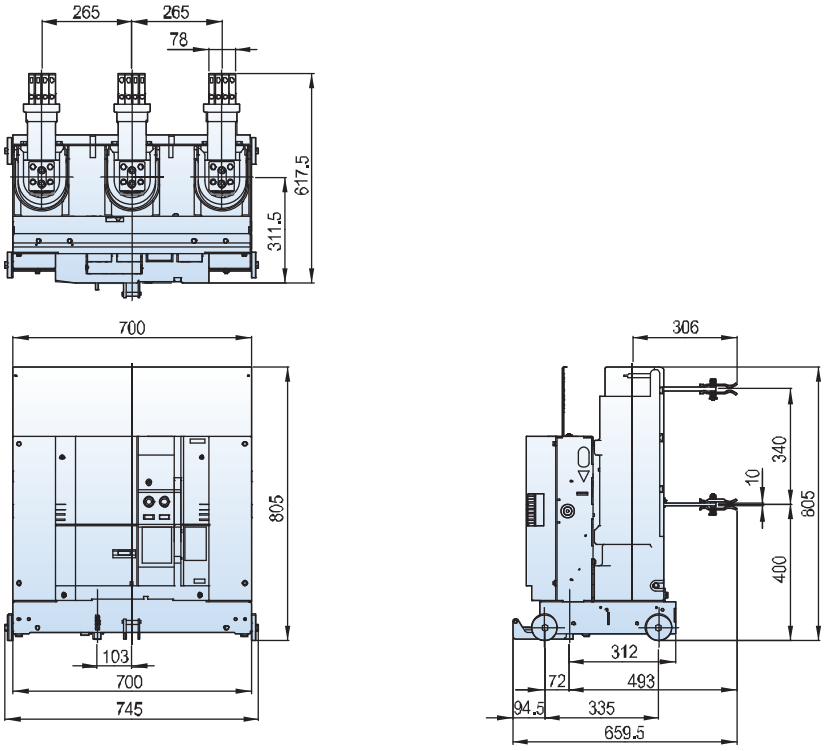




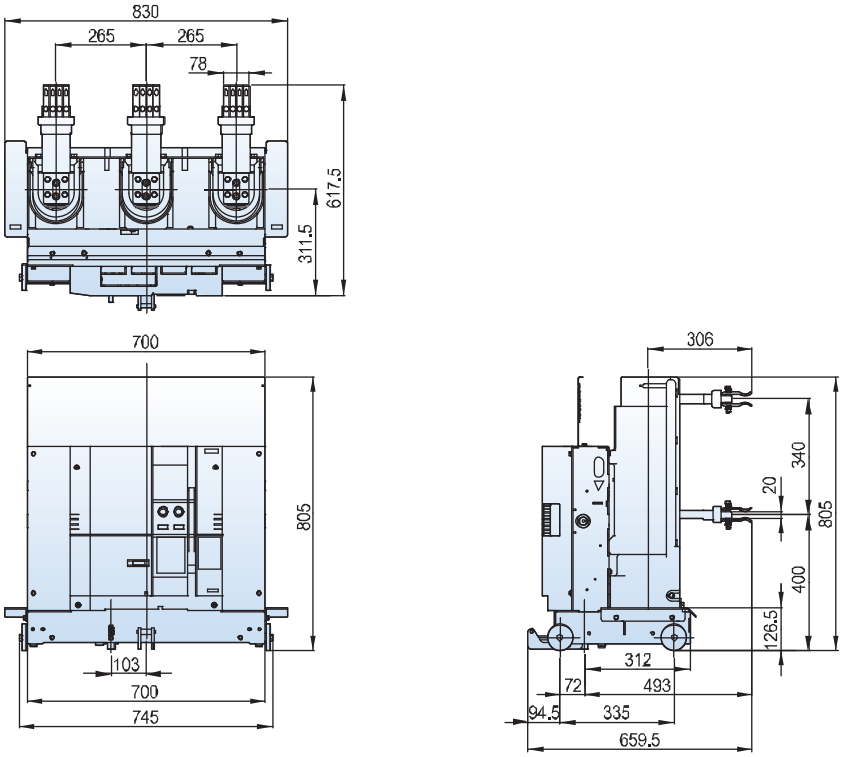


24/25.8kV 25kA 2000A

Withdrawable (E type unit Visible, Clip contact, phase distance 265mm)

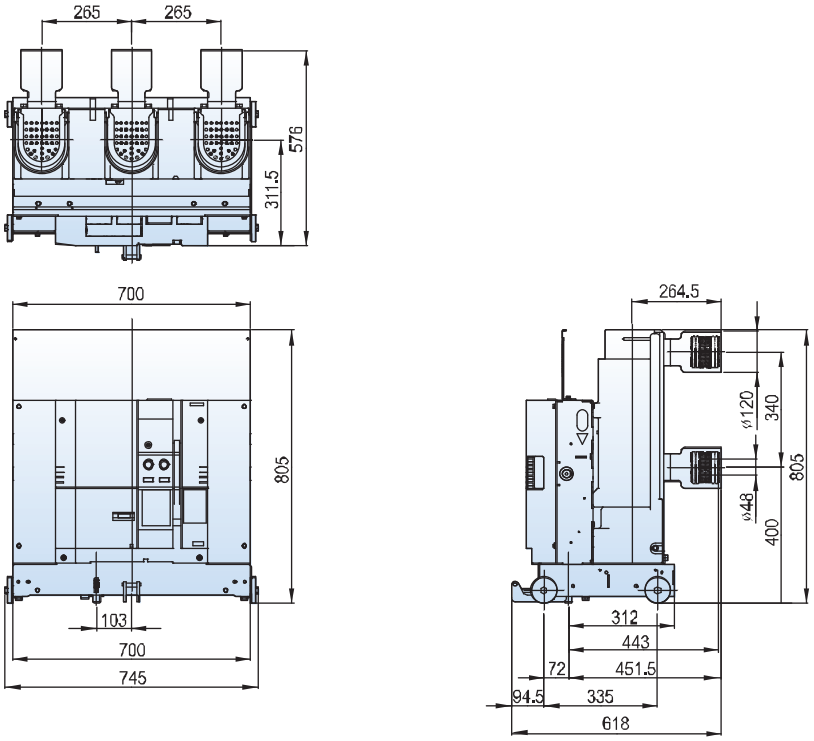


Withdrawable (F type unit Visible, Clip contact, phase distance 265mm)

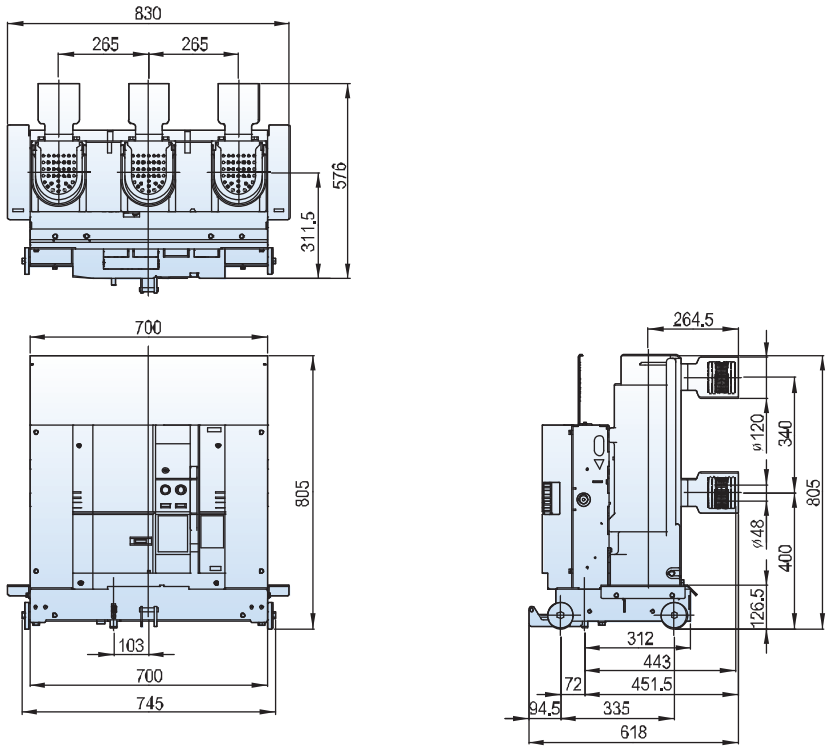


24/25.8kV 25kA 2000A

Withdrawable (E type unit Enclosed, Tulip contact, phase distance 265mm)

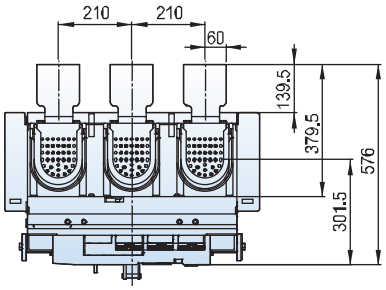


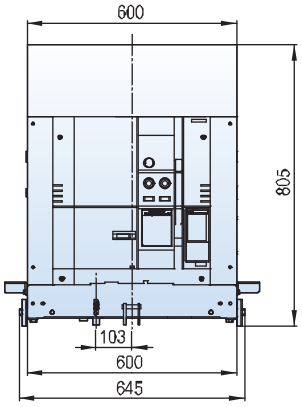
Withdrawable (F type unit Enclosed, Tulip contact, phase distance 265mm)

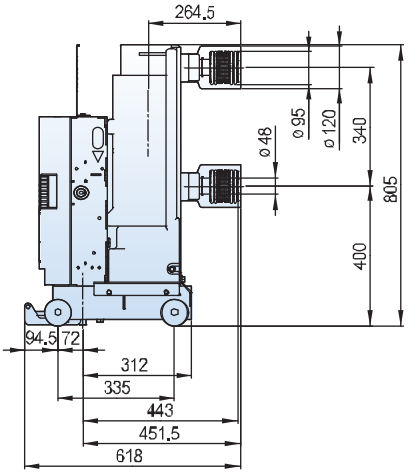


24/25.8kV 25kA 2000A

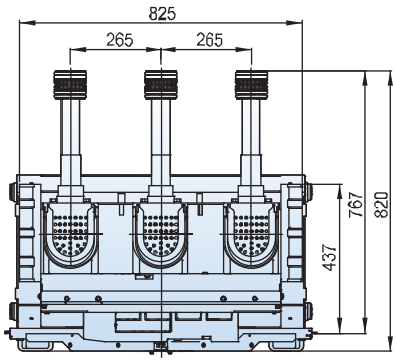
Withdrawable (G type unit, phase distance 210mm)

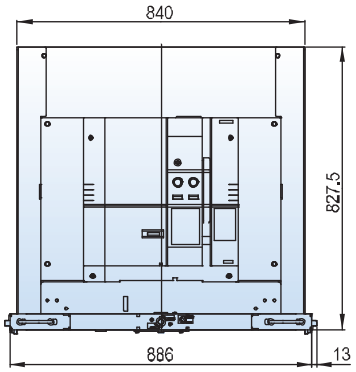


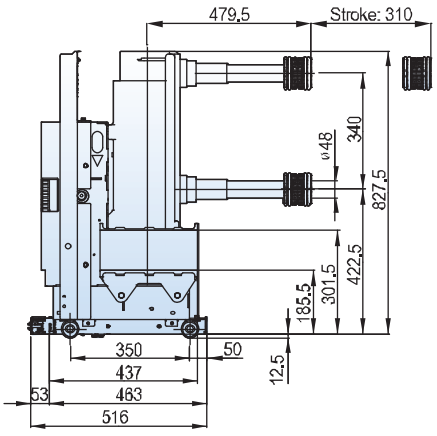




Withdrawable (K type unit, phase distance 265mm)

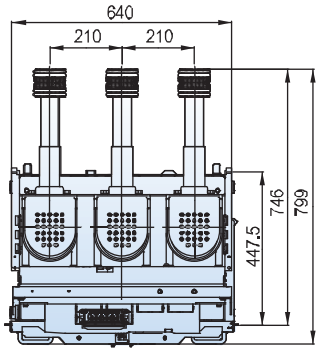


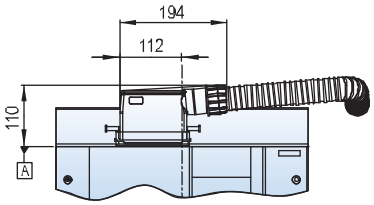




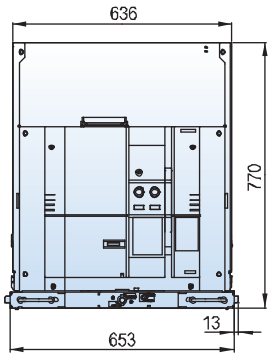
24/25.8kV 25kA 2000A

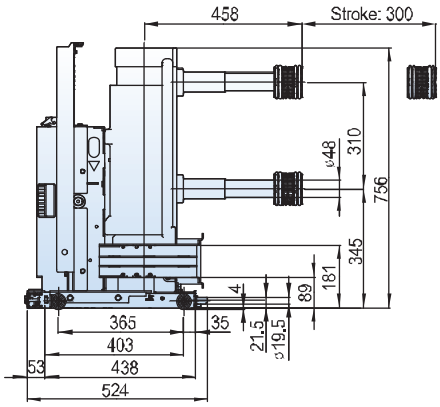
Withdrawable (H type unit, phase distance 210mm)



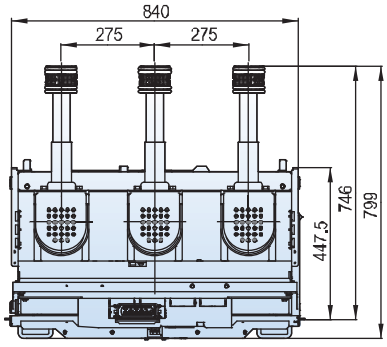


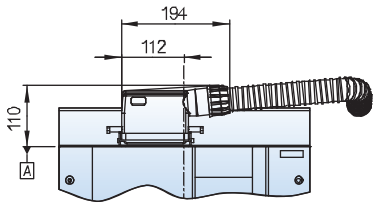
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"



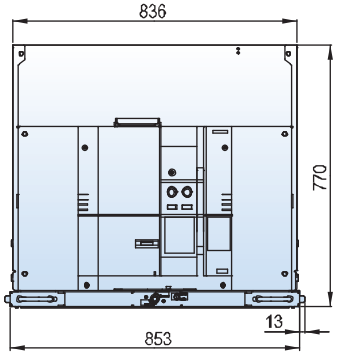


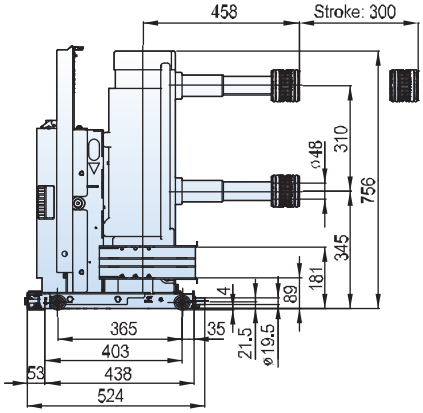
Withdrawable (H type unit, phase distance 275mm)





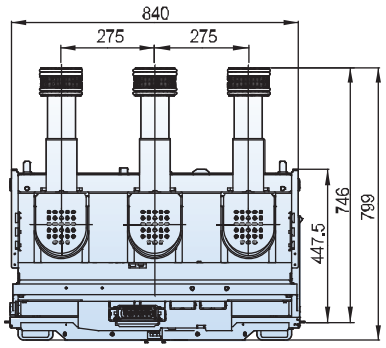
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"

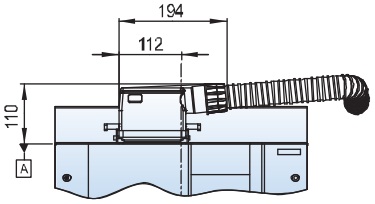




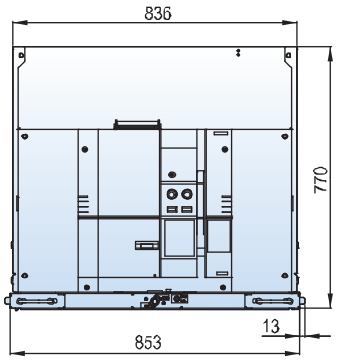
24/25.8kV 25kA 2500A

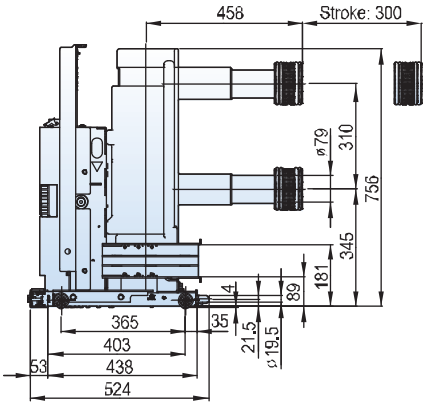
Withdrawable (H type unit, phase distance 275mm)





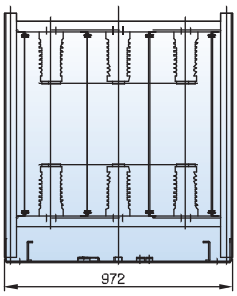
Note) Please be informed that When B-type connecter is used to design switchgears, the height can be 110mm higher based on "A"

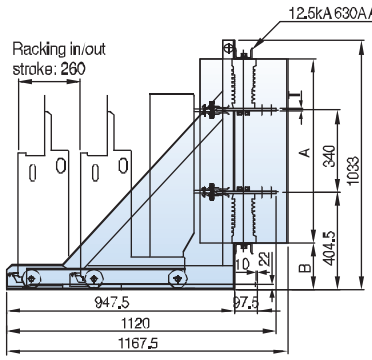




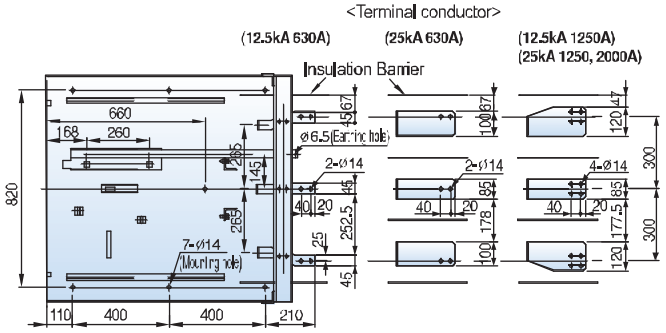
24/25.8kV 12.5/16/25kA 630/1250/2000A

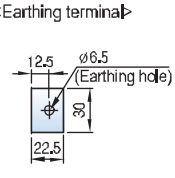
Withdrawable (E type cradle Visible, Clip contact, phase distance 265mm)





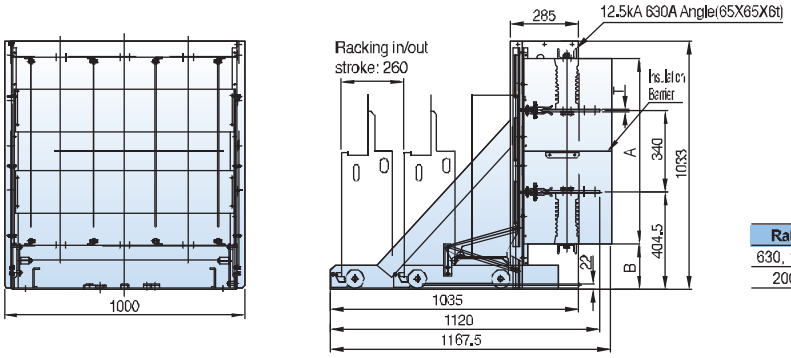
Rating	A	B	T
630, 1250A	768	190.5	10
2000A	778	185.5	20



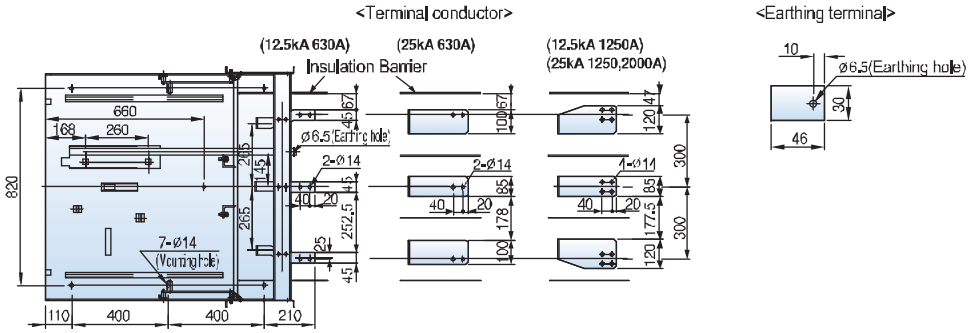


24/25.8kV 12.5/16/25kA 630/1250/2000A

Withdrawable (F type cradle Visible, Clip contact, phase distance 265mm)

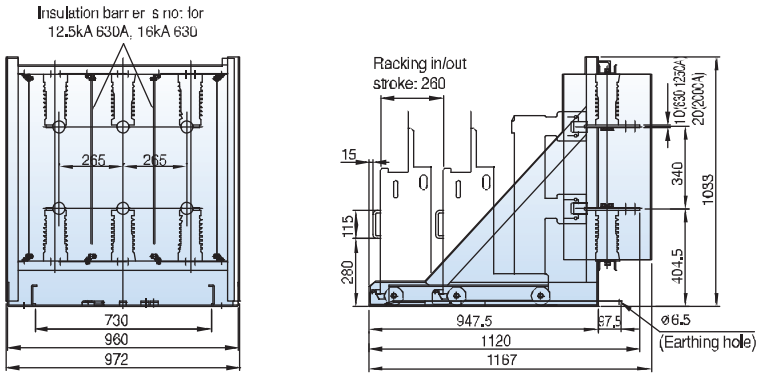


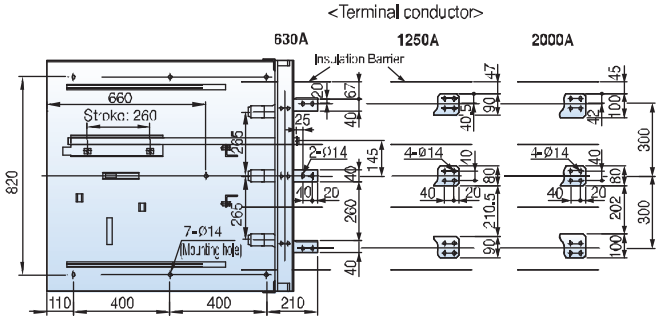
Rating	A	B	T
630, 1250A	768	190.5	10
2000A	778	185.5	20



24/25.8kV 12.5/16/25kA 630/1250/2000A

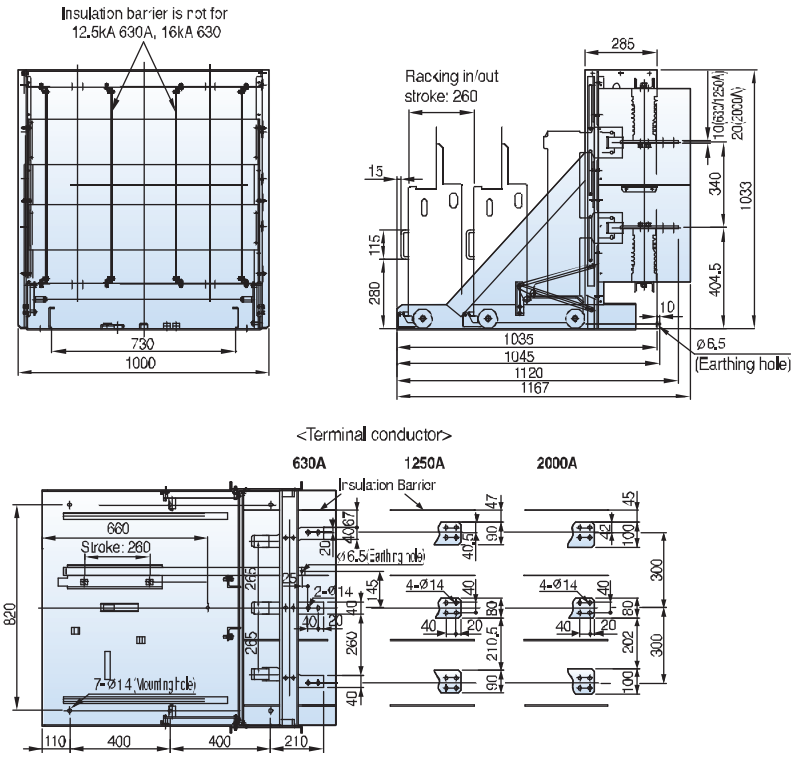
Withdrawable (E type cradle Enclosed, Tulip contact, phase distance 265mm)





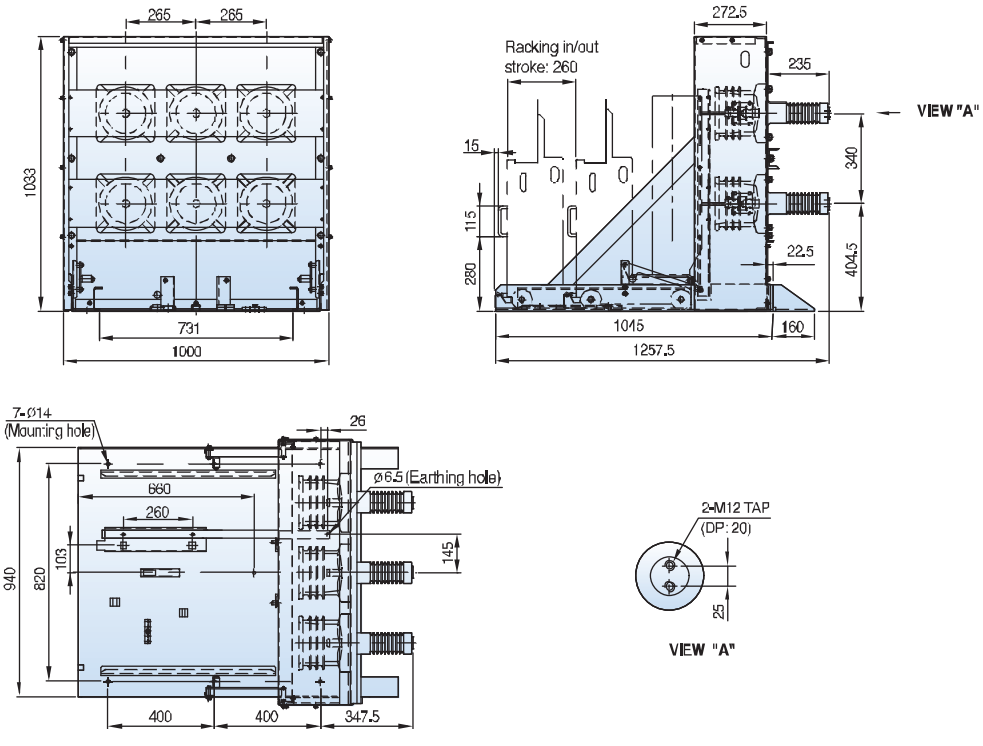
24/25.8kV 12.5/16/25kA 630/1250/2000A

Withdrawable (F type cradle Enclosed, Tulip contact, phase distance 265mm)



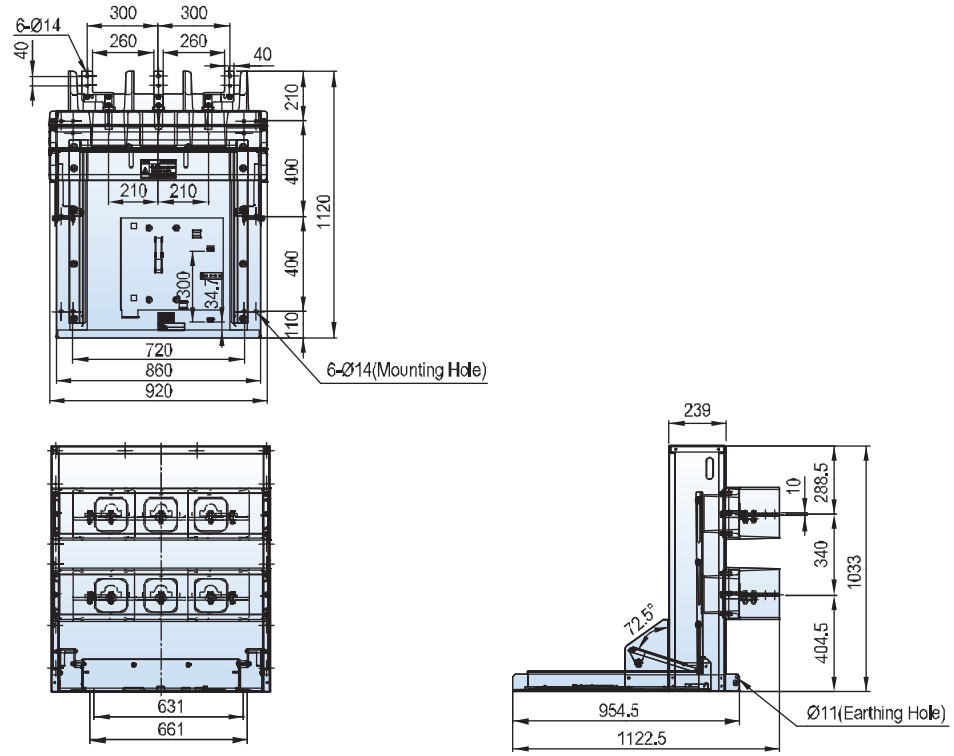
24/25.8kV 12.5/16/25kA 630/1250A

Withdrawable (G type cradle Tulip contact, phase distance 265mm)



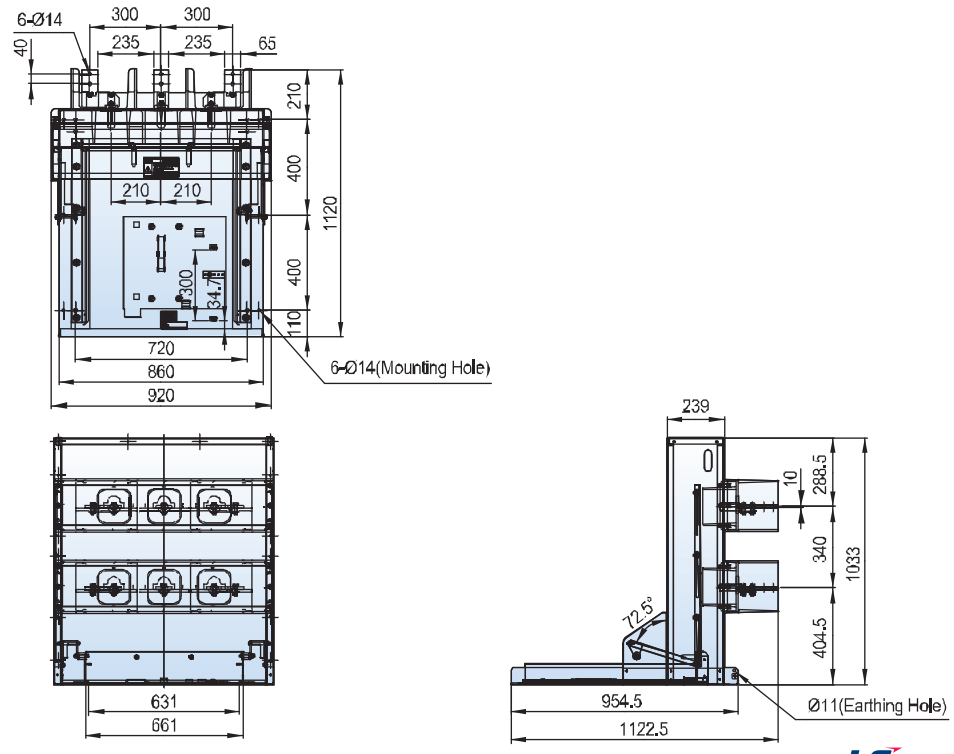
24/25.8kV 12.5/16/25kA 630A

Withdrawable (G type cradle, Tulip contact, phase distance 210mm)



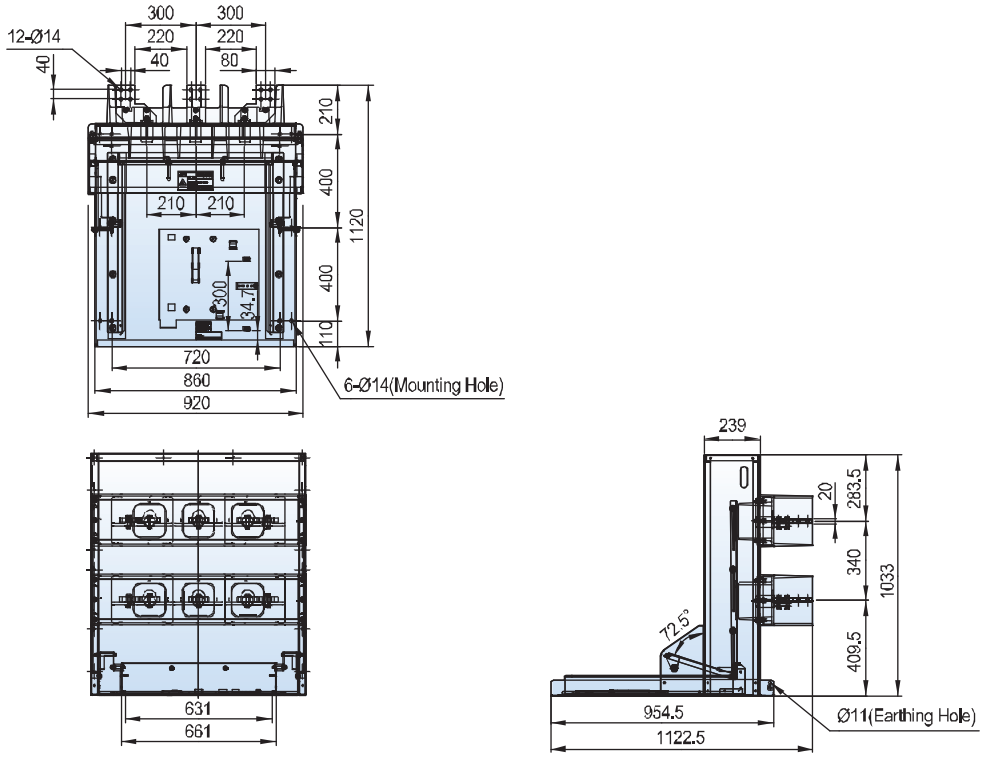
24/25.8kV 12.5/16/25kA 1250A

Withdrawable (G type cradle, Tulip contact, phase distance 210mm)



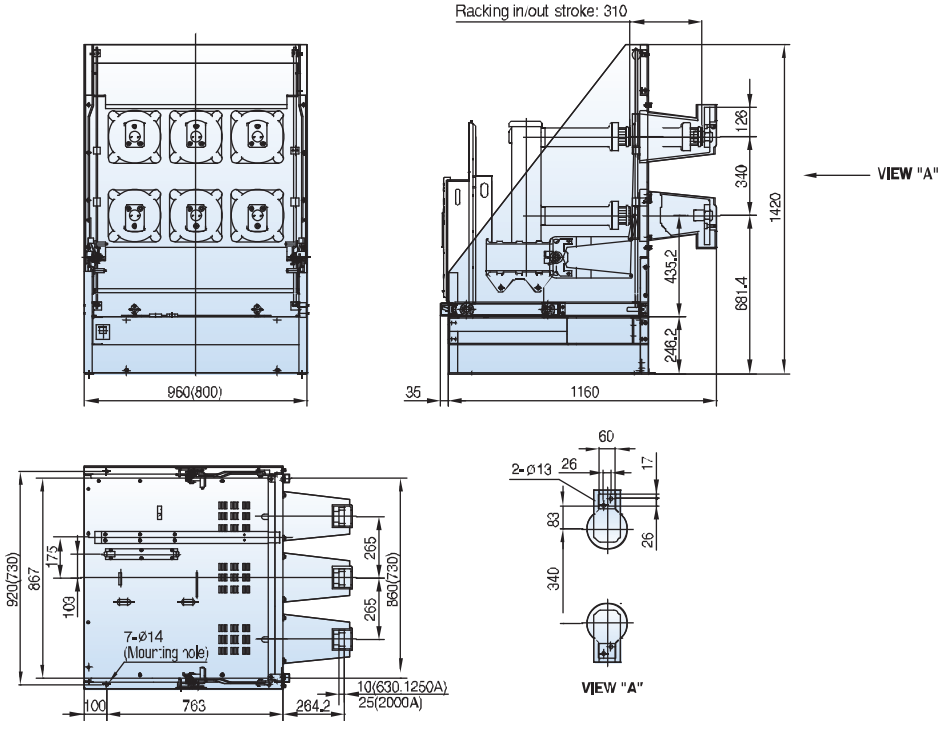
24/25.8kV 12.5/16/25kA 2000A

Withdrawable (G type cradle, Tulip contact, phase distance 210mm)



24/25.8kV 12.5/16/25kA 630/1250/2000A

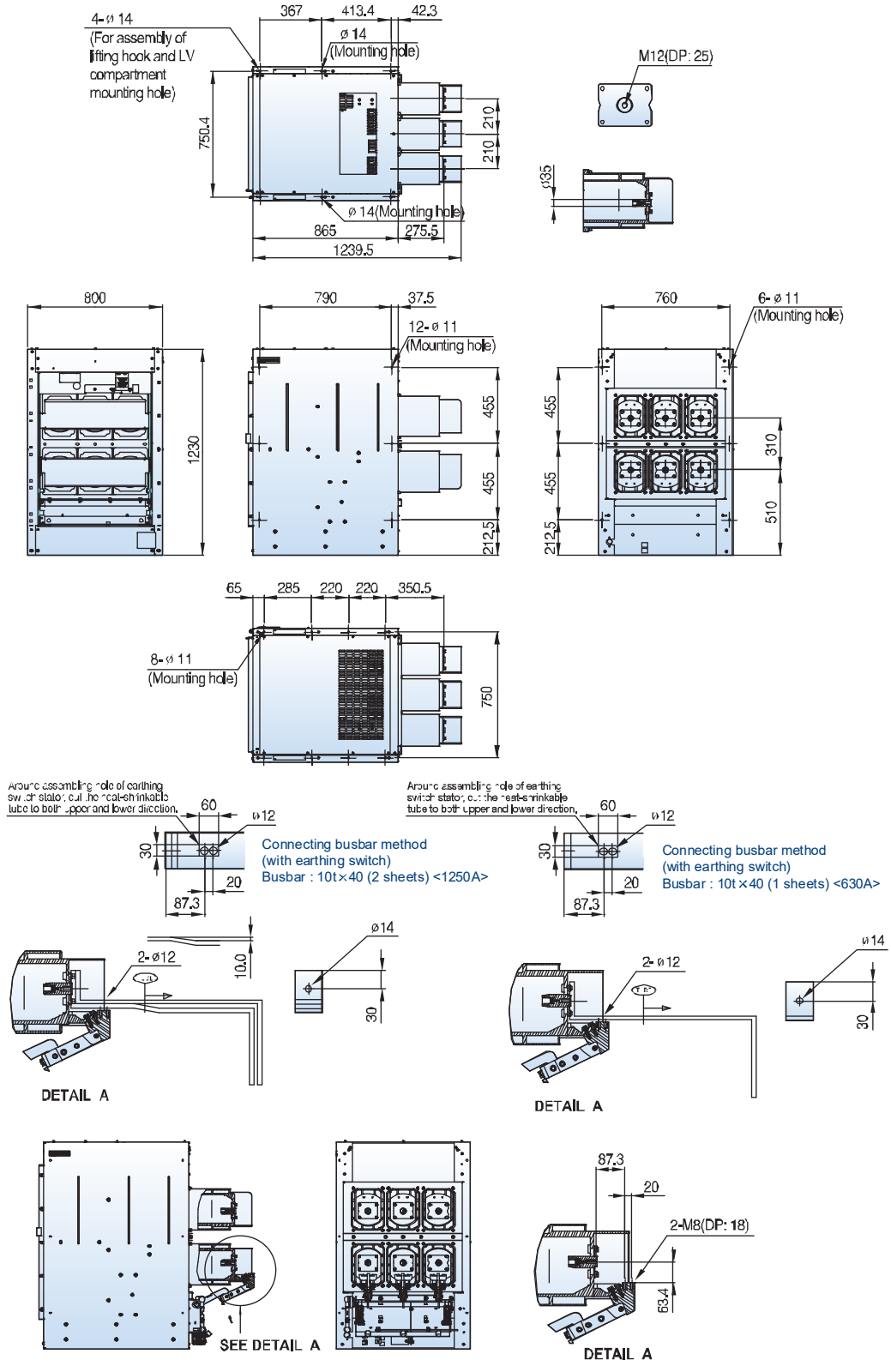
Withdrawable (K type cradle Enclosed, Tulip contact, phase distance 210/265mm)



Note) In case of phase distance 210mm ( ) means dimensions and 630A, 1250A areavailable only
Items : VCL-20K13B06, VCL-20K13B13, (G-type closed Tulip way, 630A, 1250A)

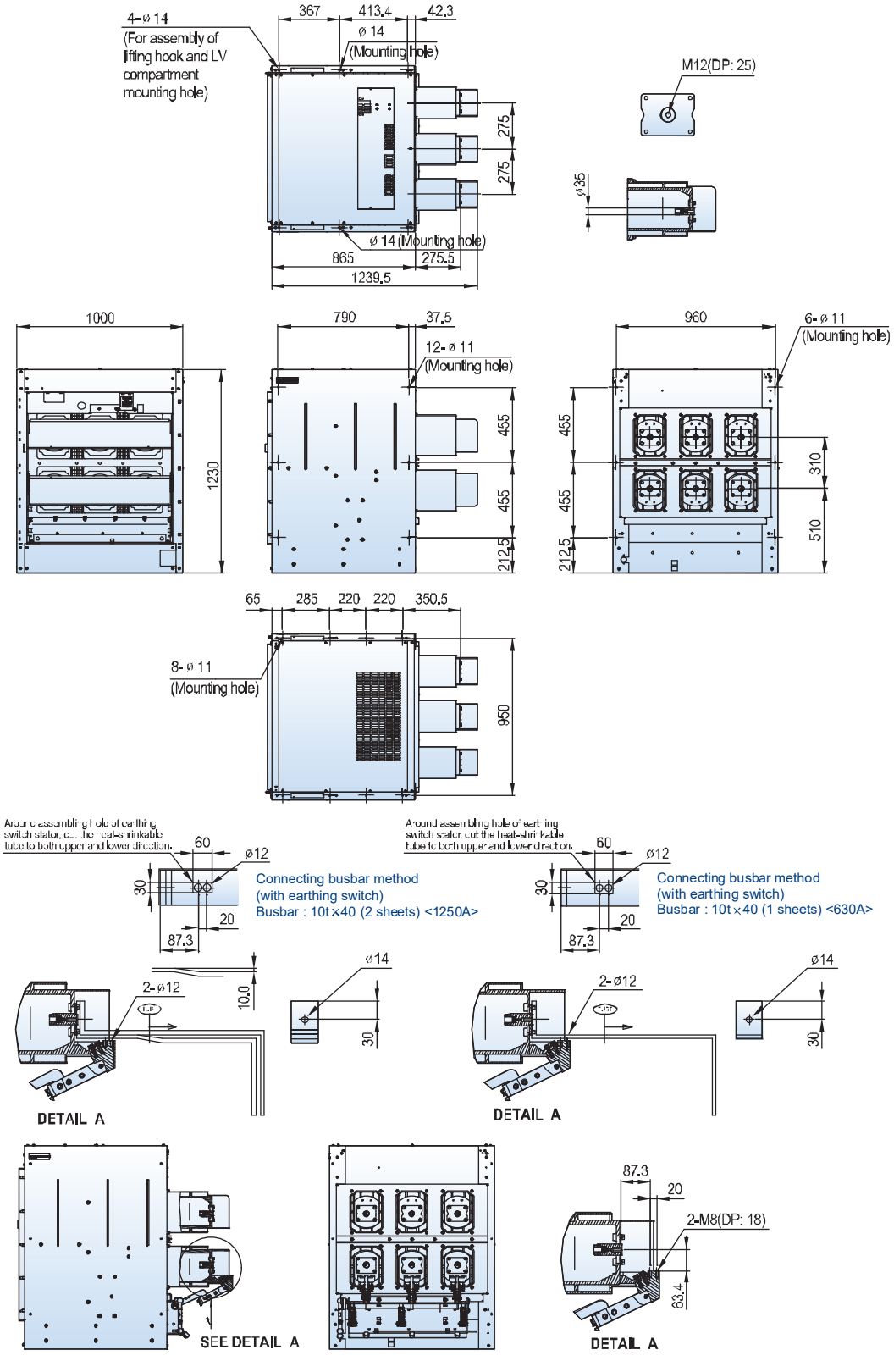
24/25.8kV 12.5/16/25kA 630/1250A

Withdrawable (H type cradle, phase distance 210mm)



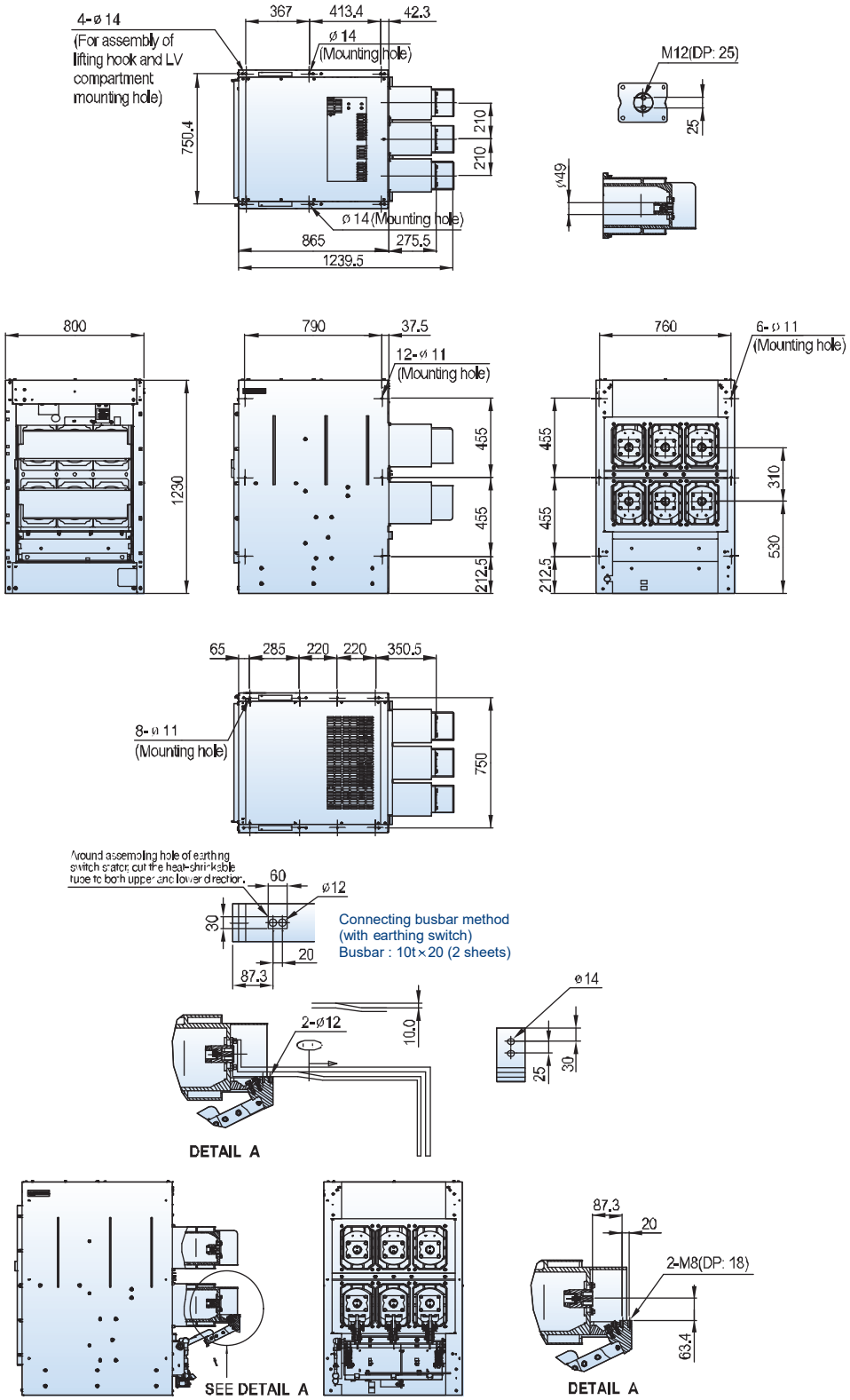
24/25.8kV 12.5/16/25kA 630/1250A

Withdrawable (H type cradle, phase distance 275mm)



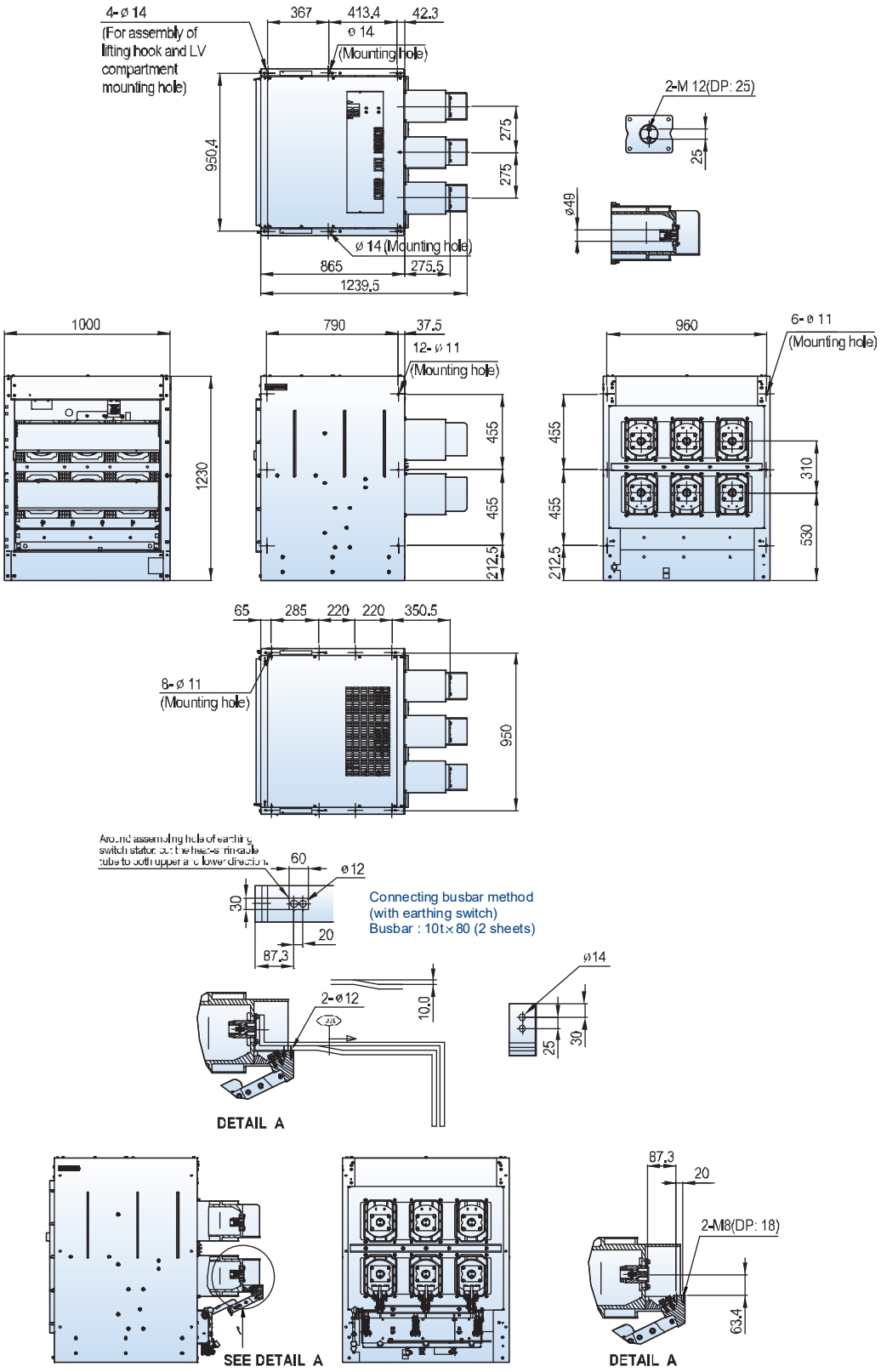
24/25.8kV 25kA 2000A

Withdrawable (H type cradle, phase distance 210mm)



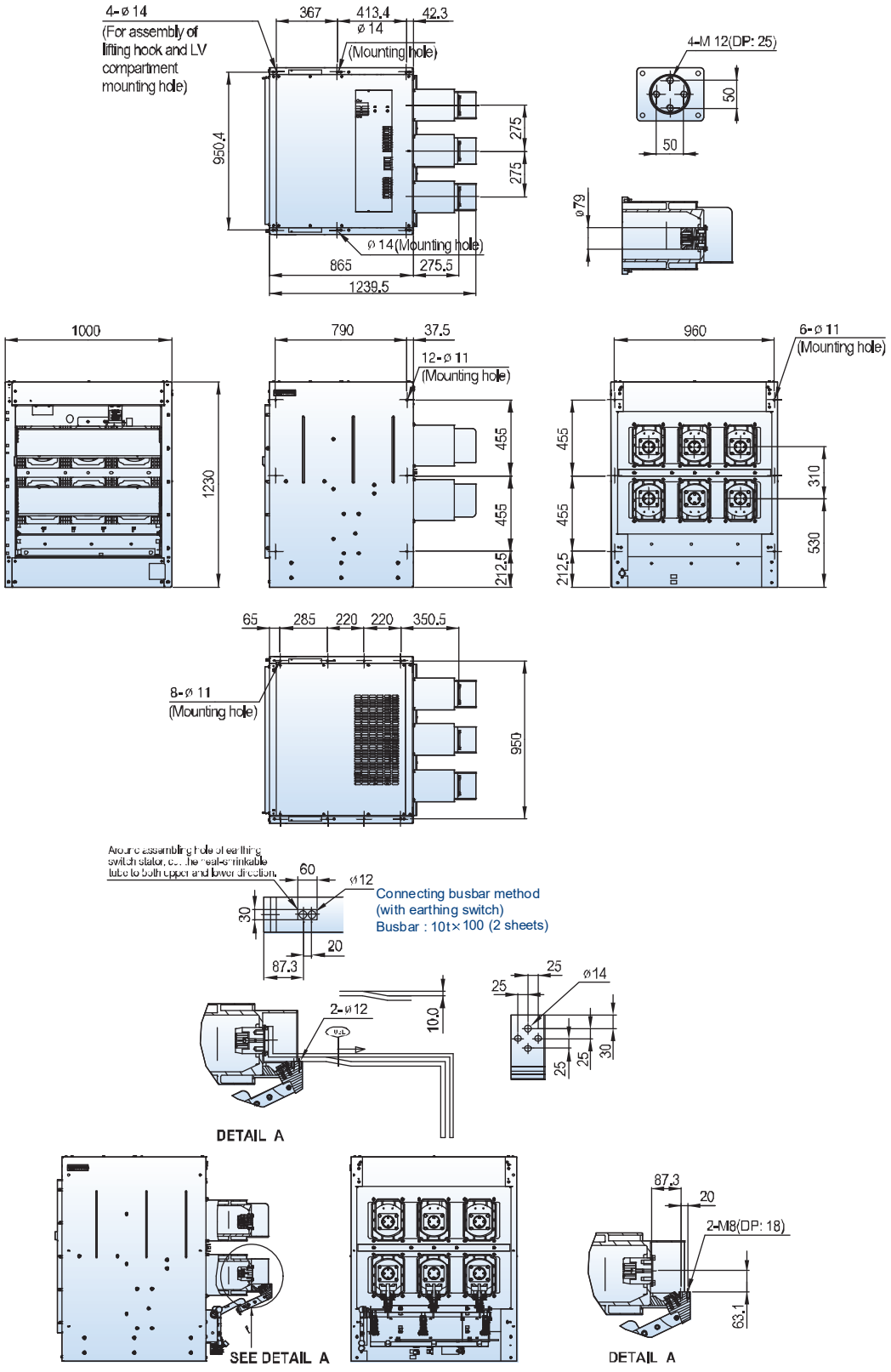
24/25.8kV 25kA 2000A

Withdrawable (H type cradle, phase distance 275mm)



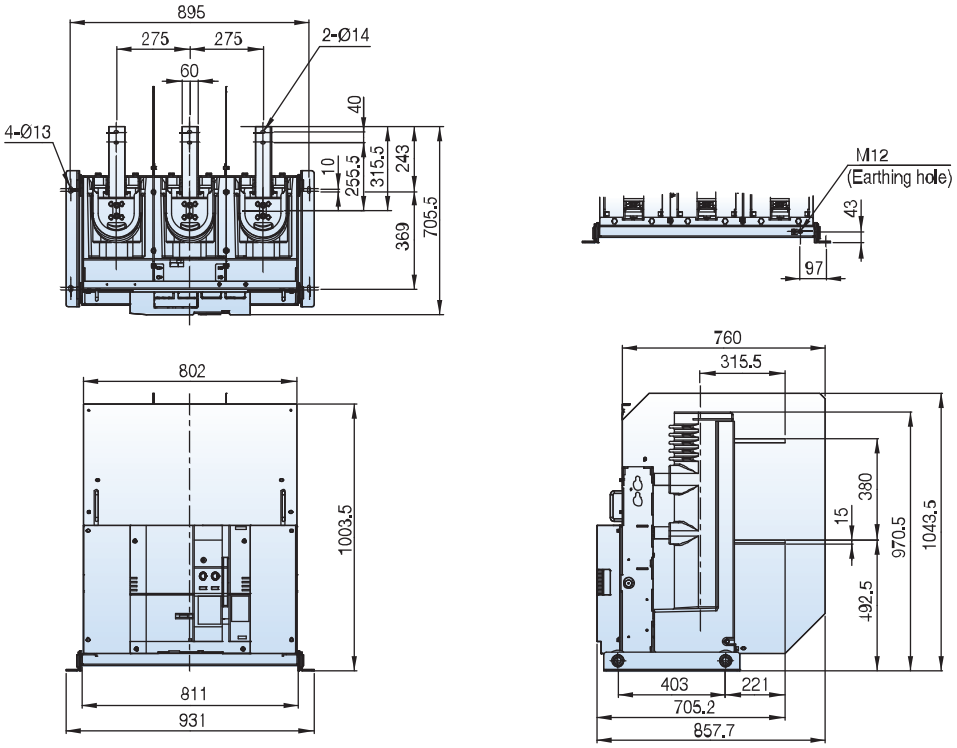
24/25.8kV 25kA 2500A

Withdrawable (H type cradle, phase distance 275mm)

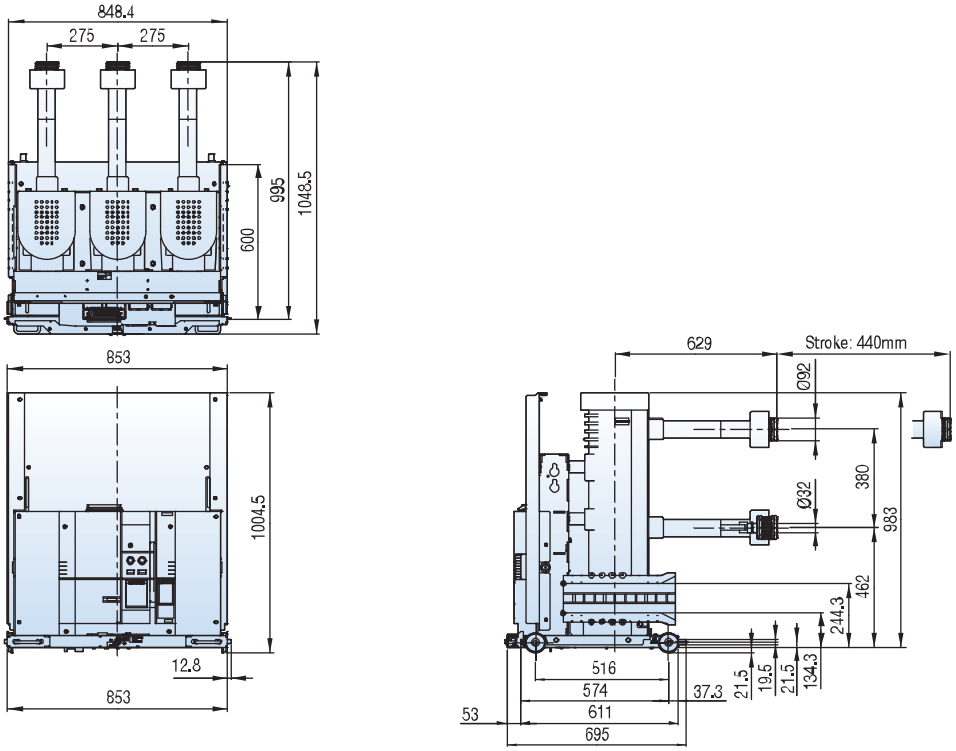


36kV 25kA 630/1250A

Fixed (P type, phase distance 275mm)

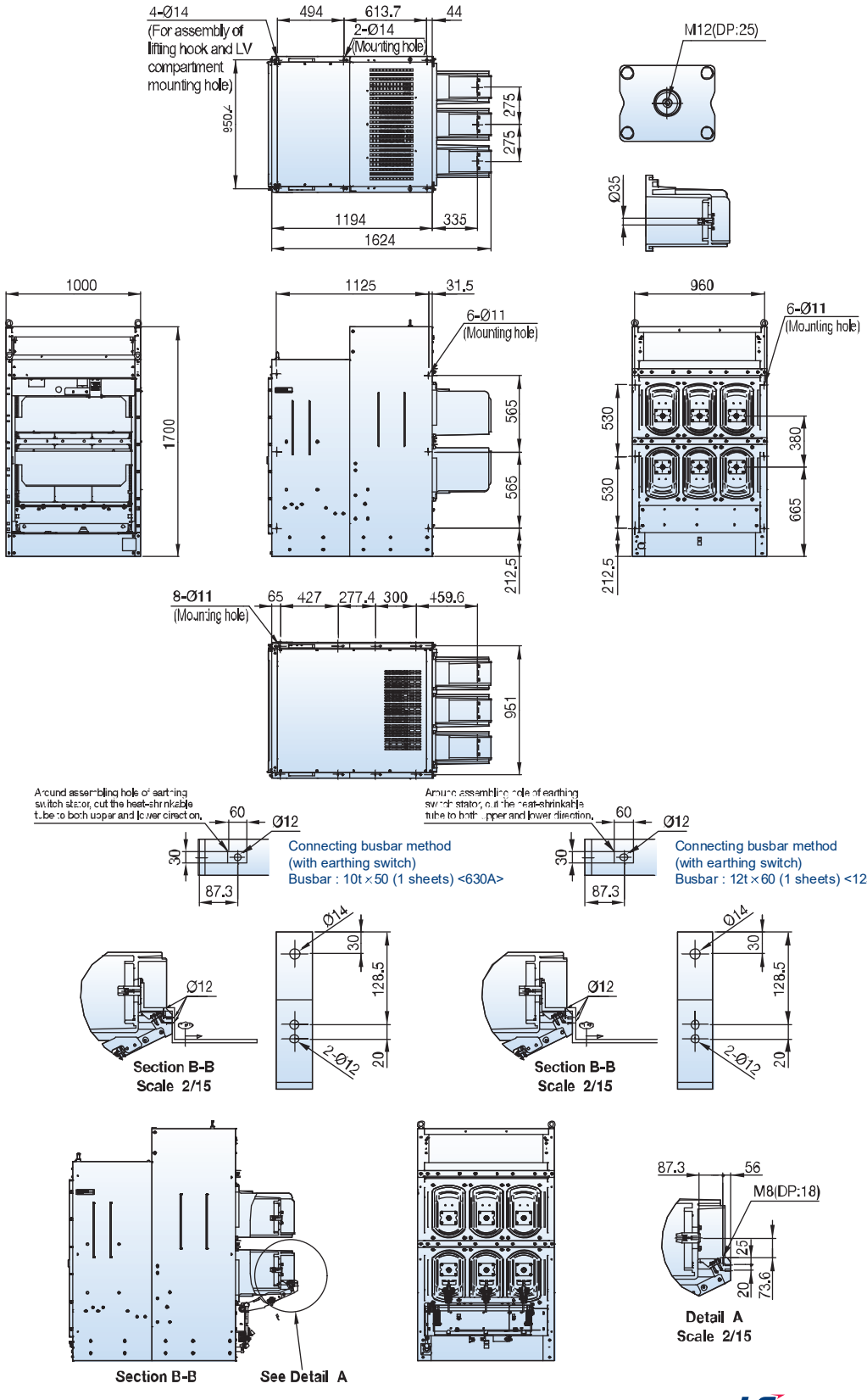


Withdrawable (H type unit, phase distance 275mm)



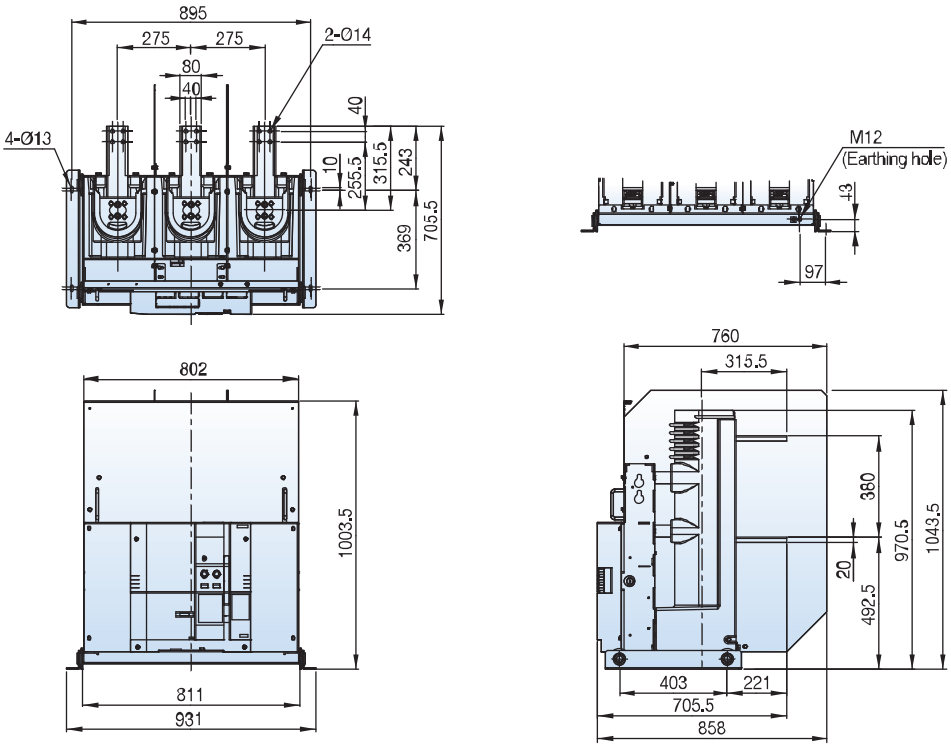
36kV 25kA 630/1250A

Withdrawable (H type cradle, phase distance 275mm)

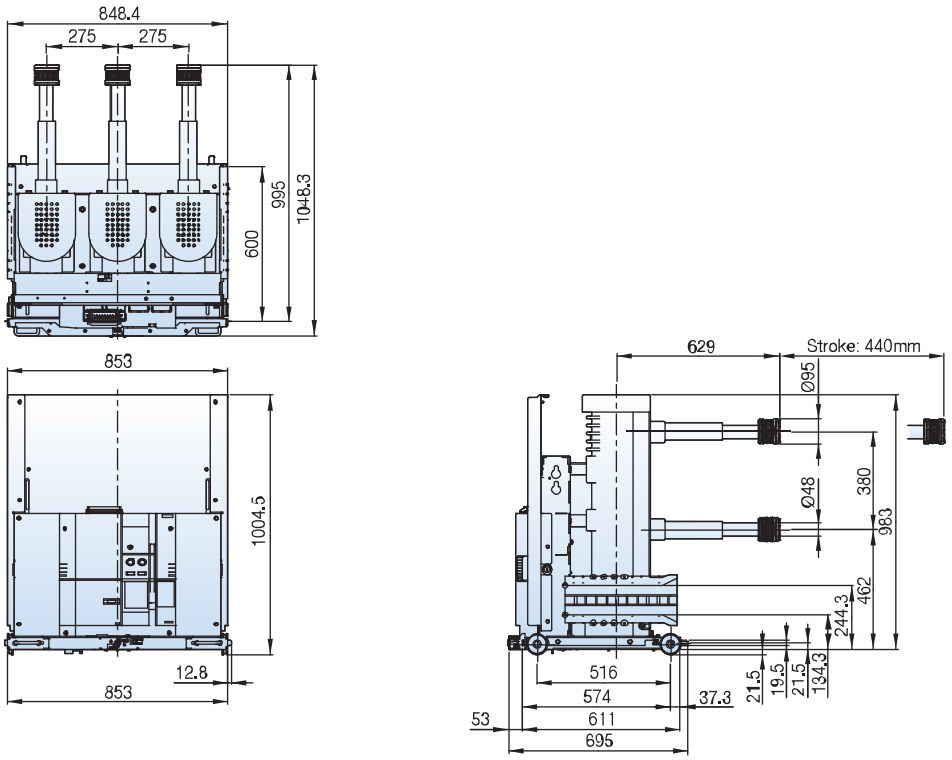


36kV 25kA 2000A

Fixed (P type, phase distance 275mm)

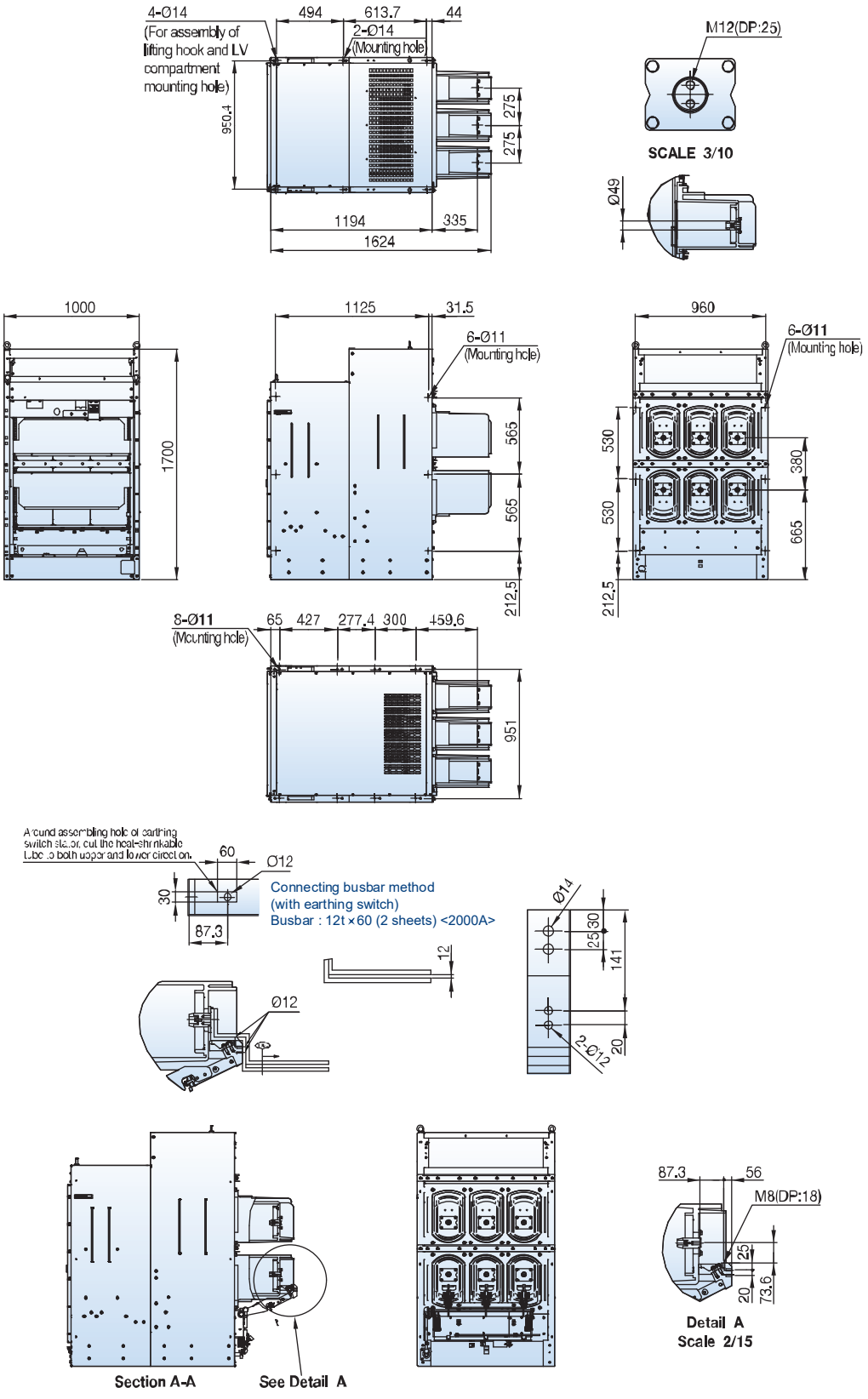


Withdrawable (H type unit, phase distance 275mm)



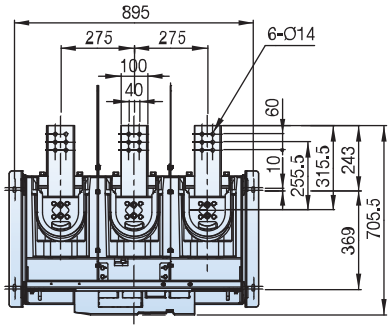
36kV 25kA 2000A

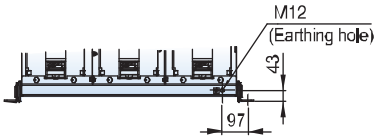
Withdrawable (H type cradle, phase distance 275mm)

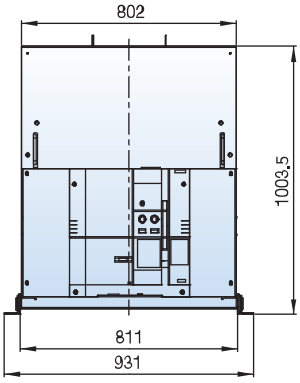


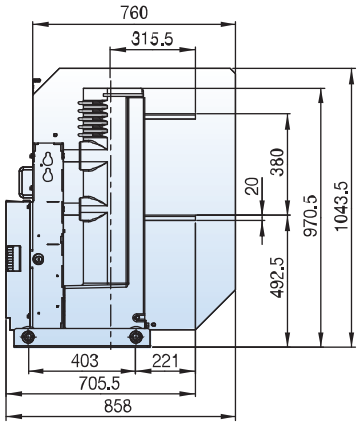
36kV 25kA 2500A

Fixed (P type, phase distance 275mm)

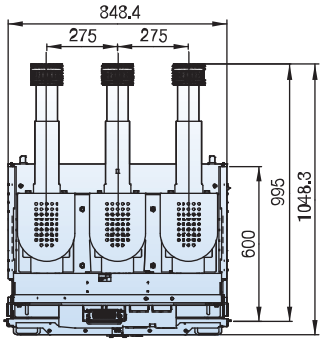


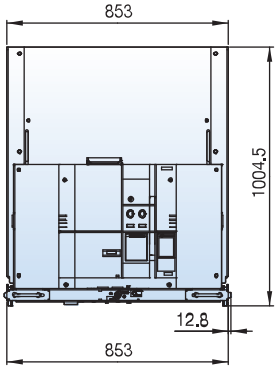


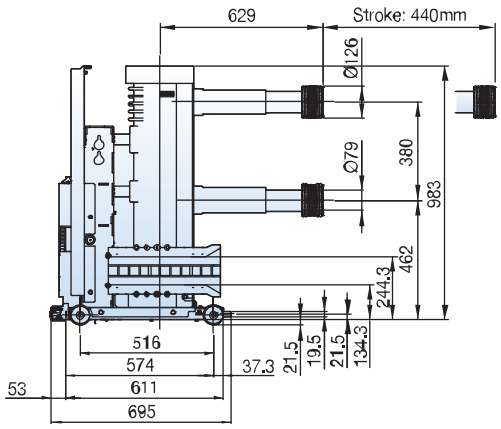




Withdrawable (H type unit, phase distance 275mm)

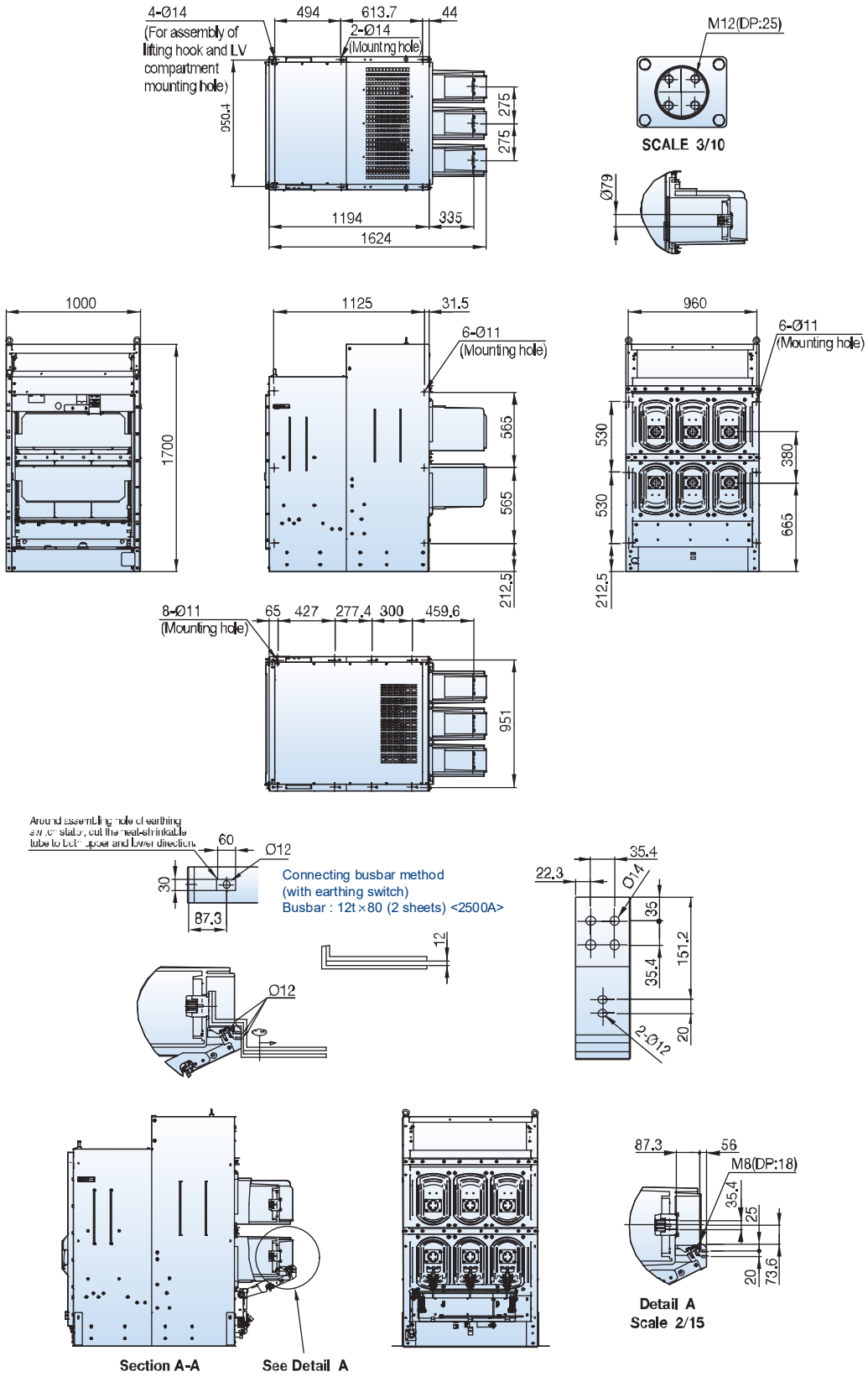






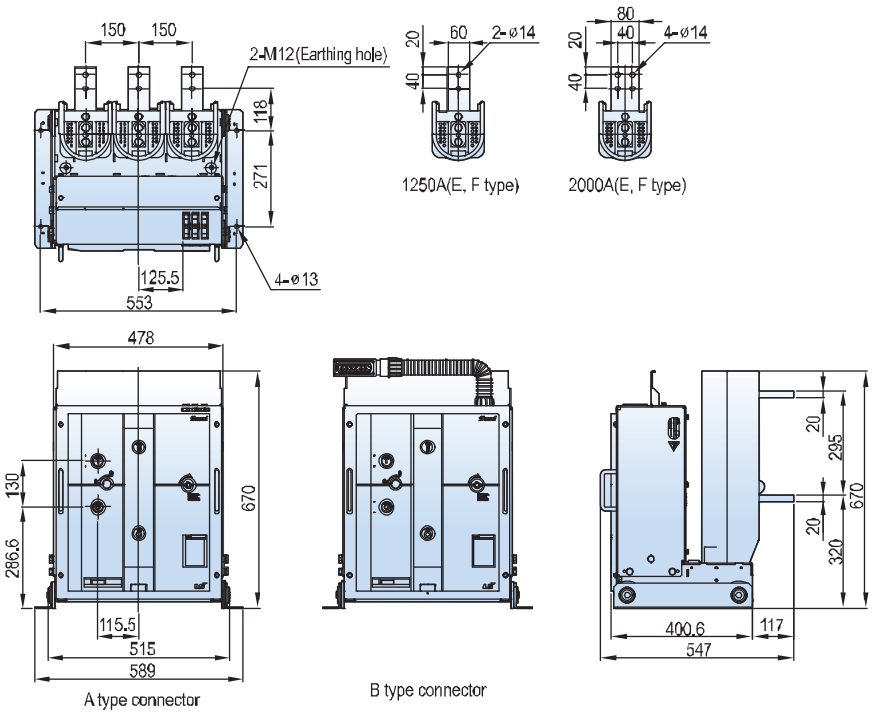
36kV 25kA 2500A

Withdrawable (H type cradle, phase distance 275mm)

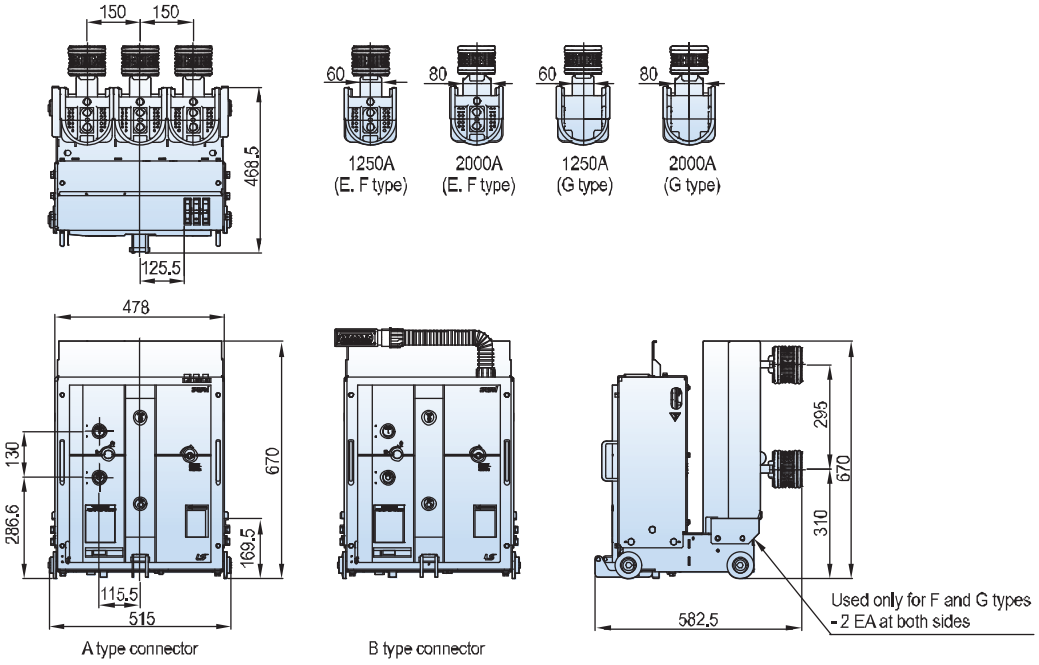


7.2kV, 40kA, 1250/2000A

Fixed (P type, phase distance 150mm)

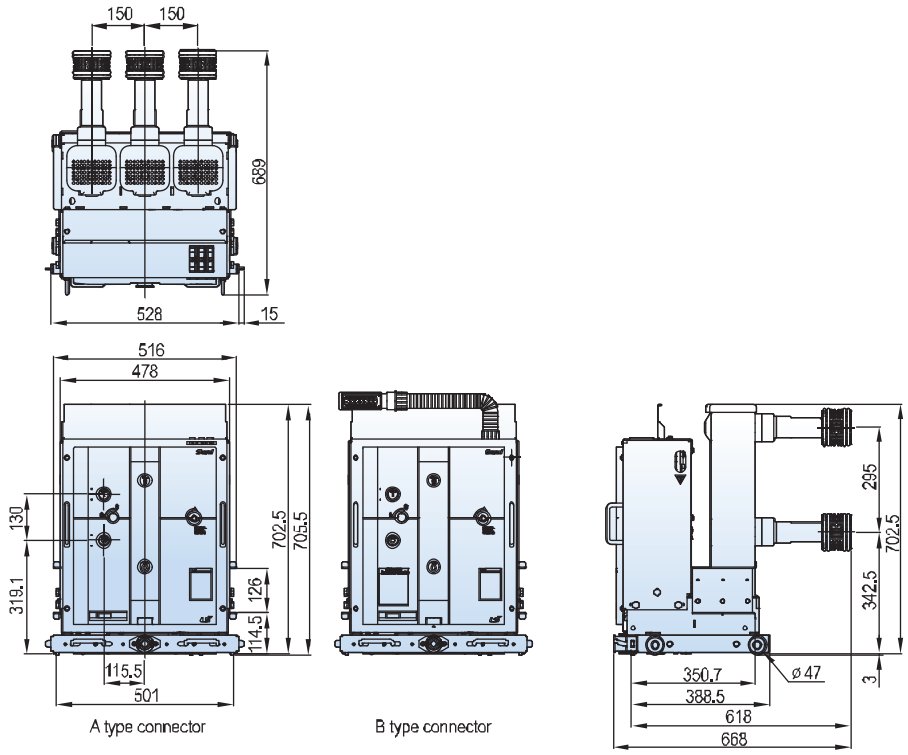


Withdrawable (E,F,G type unit, phase distance 150mm)



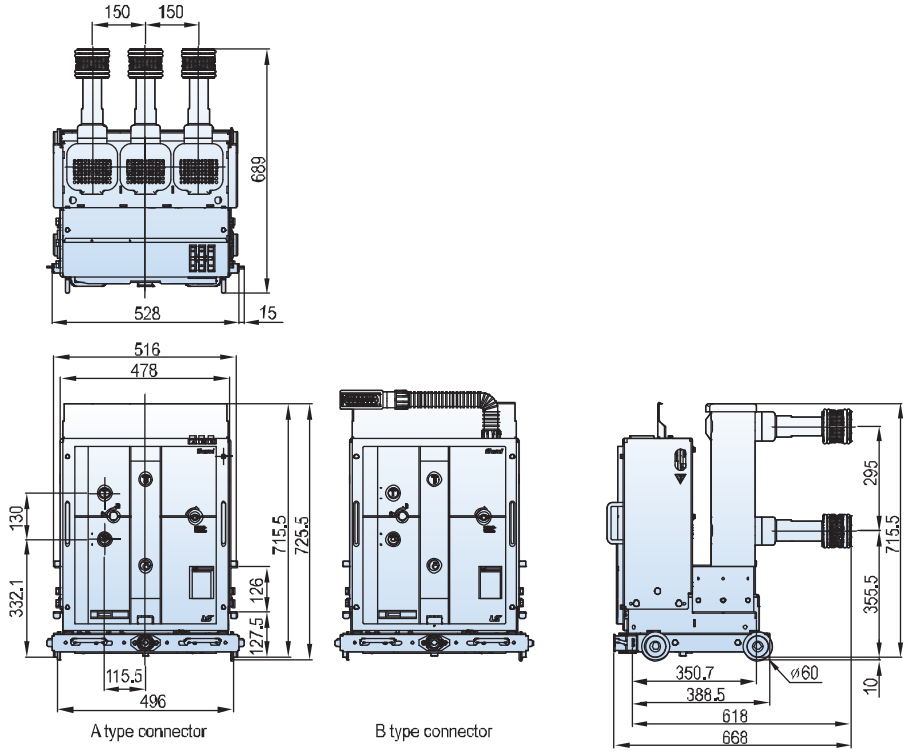
7.2/12kV, 40kA, 1250/2000A

Withdrawable (MCSG type unit, phase distance 150mm): option type T



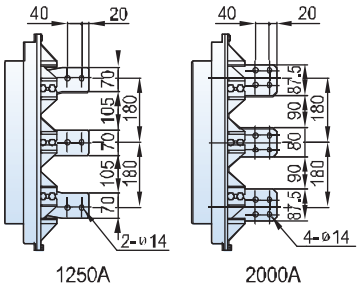
7.2/12kV, 31.5/40kA, 1250/2000A

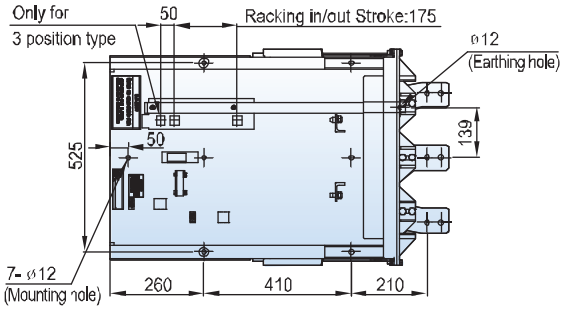
Withdrawable (MCSG type unit, phase distance 150mm): option type T2(standard)



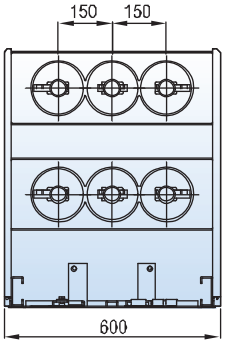
7.2kV, 40kA 1250/2000A

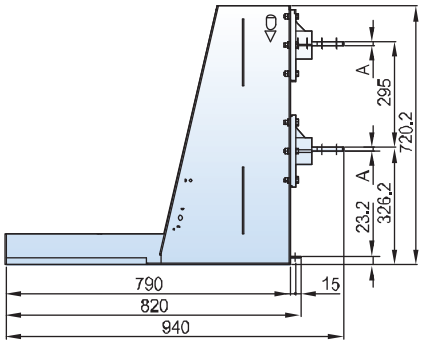
Withdrawable (E type cradle, phase distance 150mm)



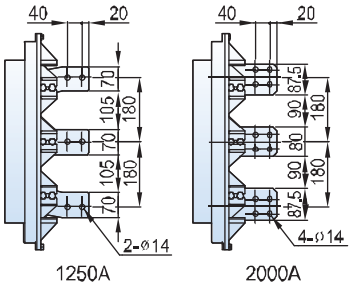


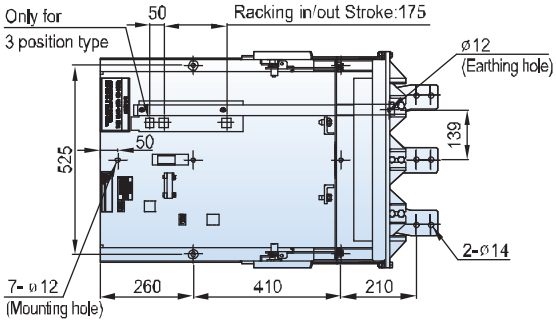
Rating	1250A	2000A
A	10	20



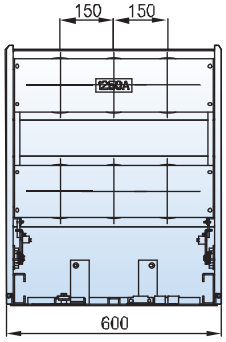


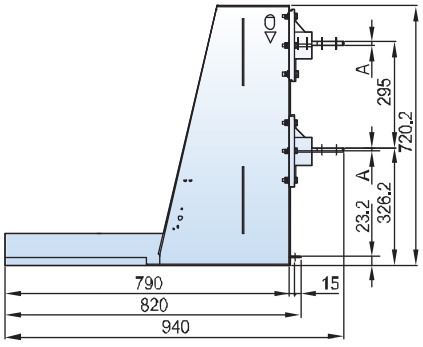
Withdrawable (F, G type cradle, phase distance 150mm)





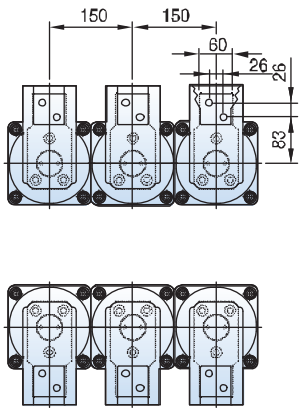
Rating	1250A	2000A
A	10	20

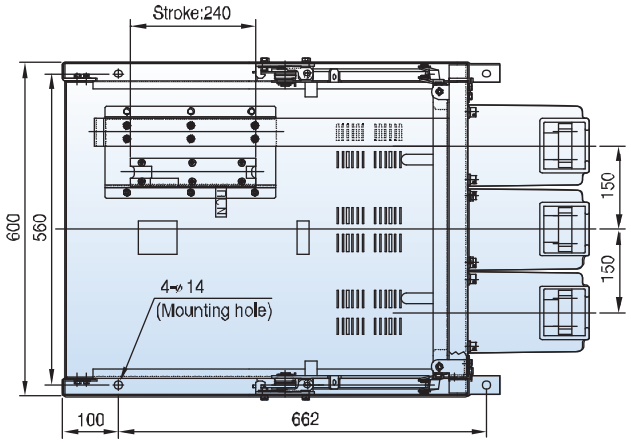


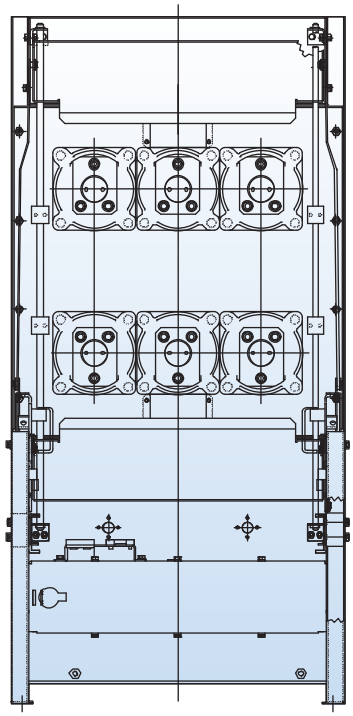


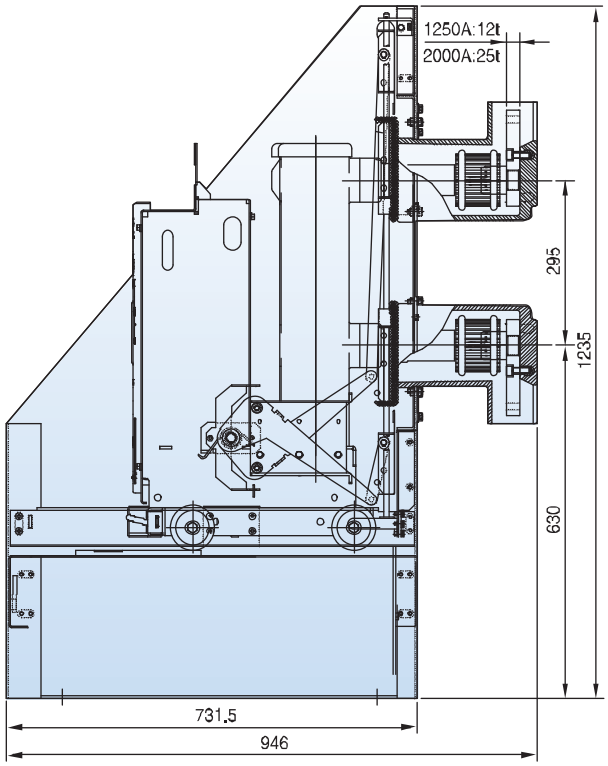
7.2/12kV, 40kA 1250/2000A

Withdrawable (MCSG type cradle, phase distance 150mm)





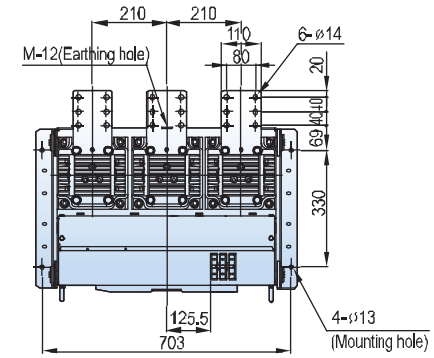


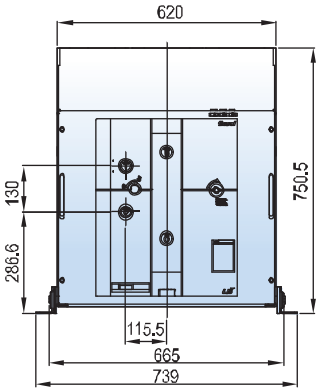


Dimensions - LVB, VH type

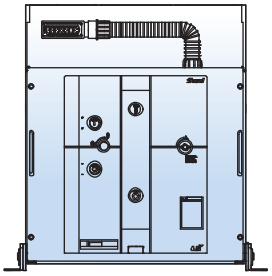
7.2kV, 31.5/40kA, 3150A

Fixed (P type, phase distance 210mm)

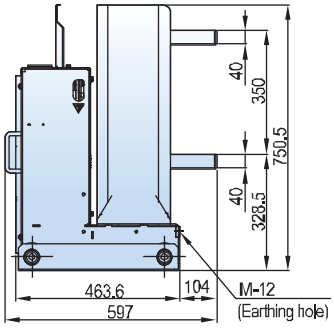




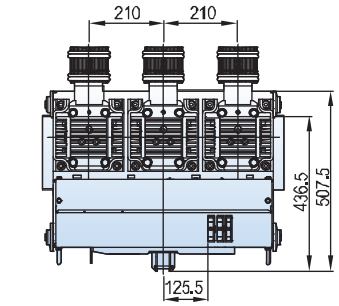
A type connector

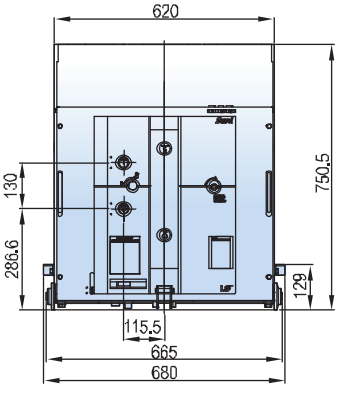


B type connector

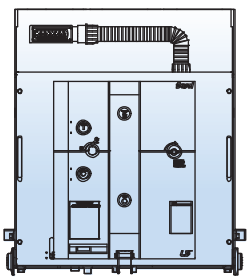


Withdrawable (E,F,G type unit, phase distance 210mm)

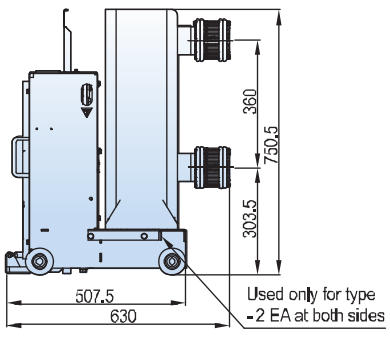




A type connector

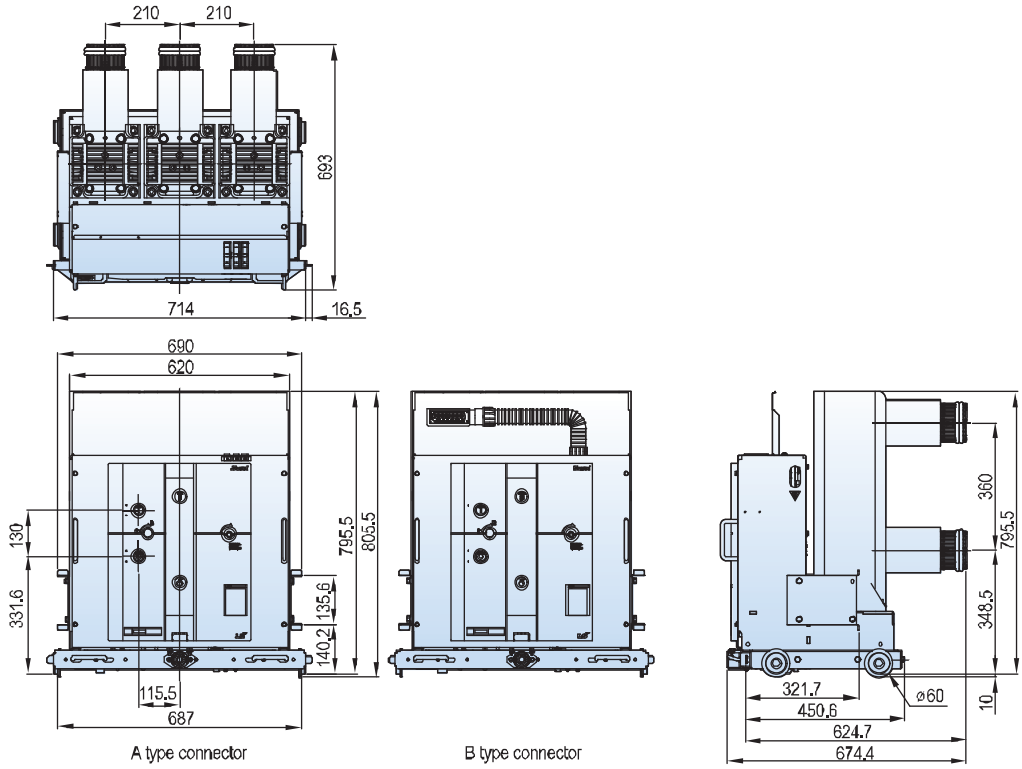


B type connector



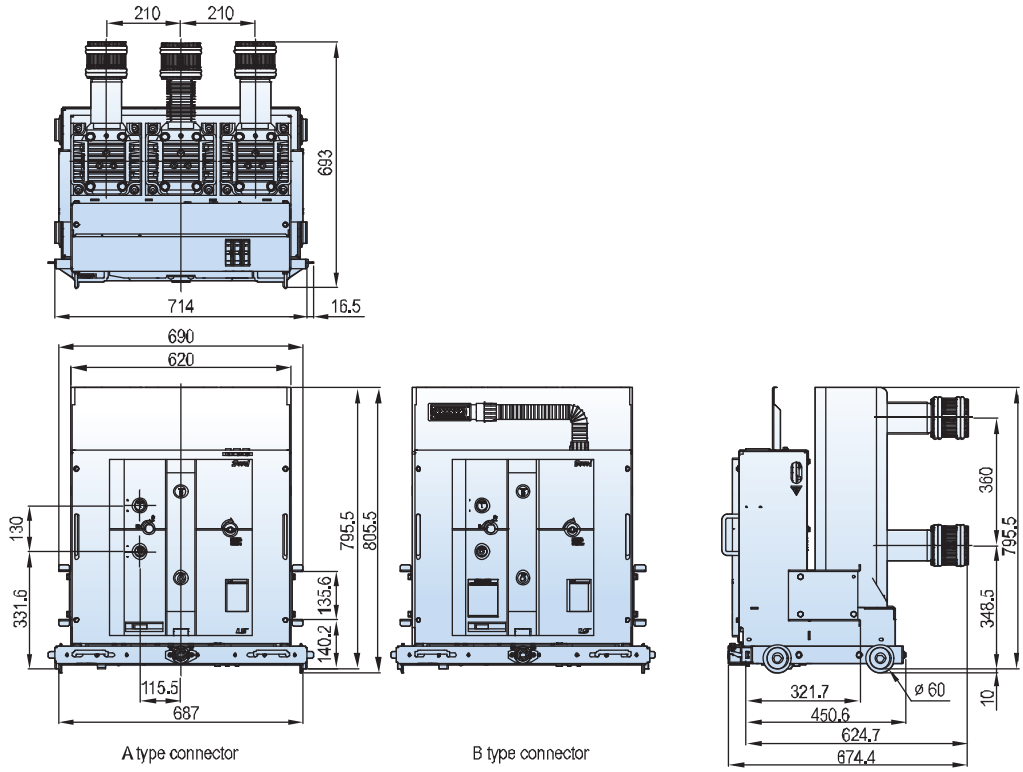
7.2kV, 31.5/40kA, 3150A

Withdrawable (MCSG type unit, phase distance 210mm)



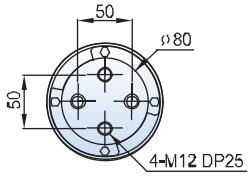
12kV, 31.5/40kA, 3150A

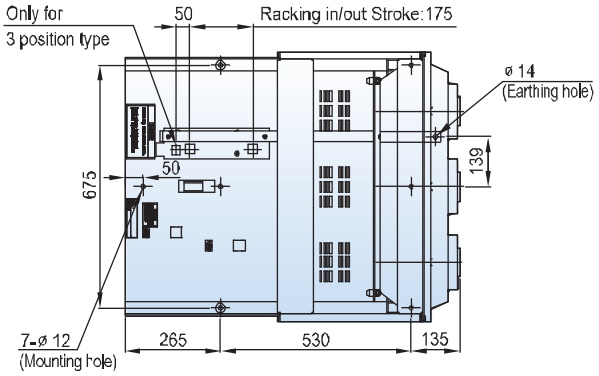
Withdrawable (MCSG type unit, phase distance 210mm)

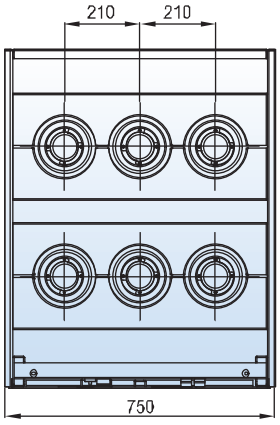


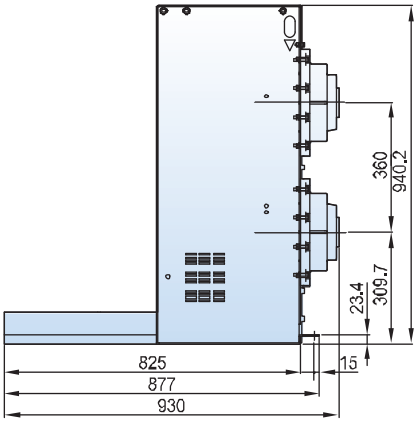
7.2kV, 31.5/40kA 3150A

Withdrawable (E type cradle, phase distance 210mm)

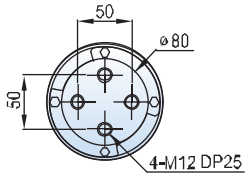


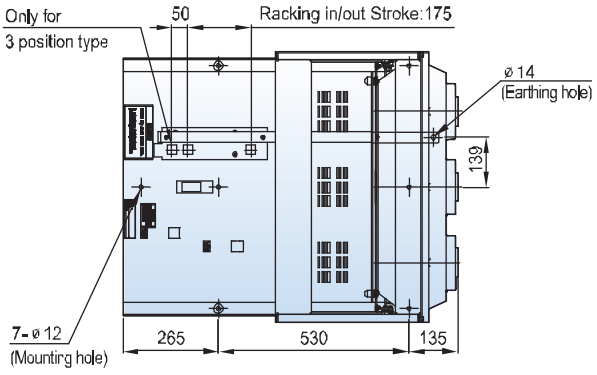


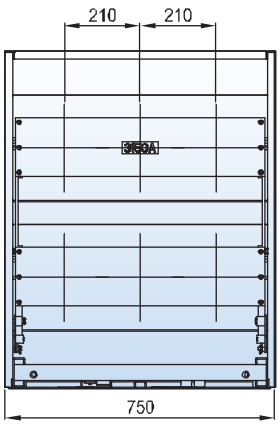


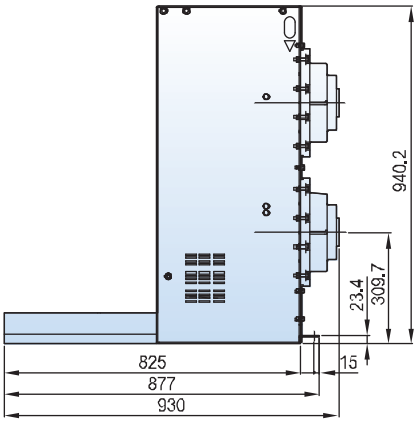


Withdrawable (F,G cradle)



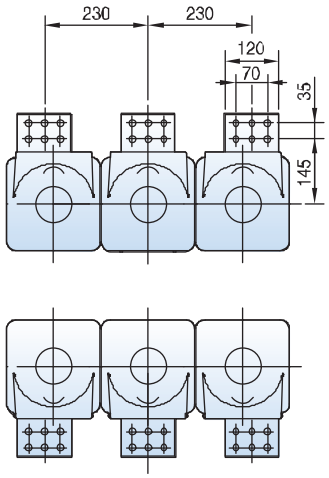


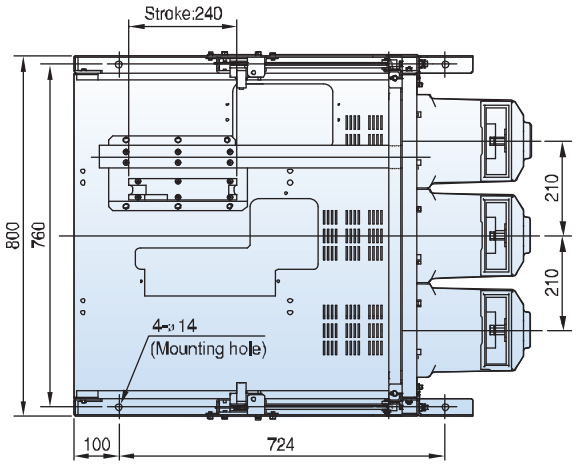


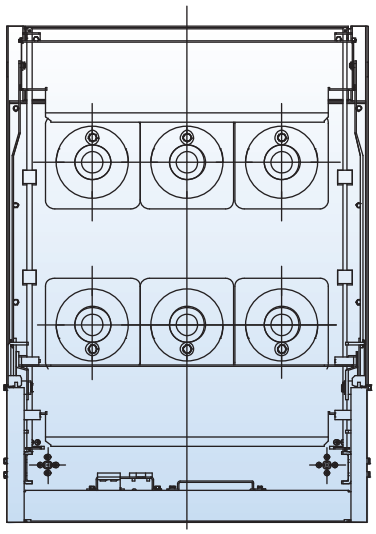


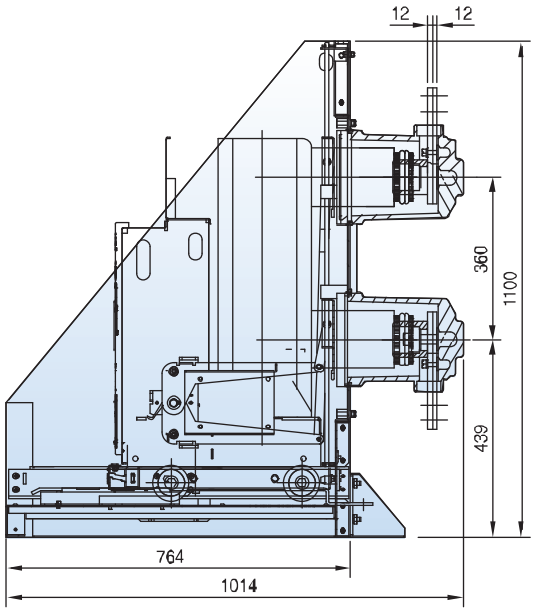
7.2/12kV, 31.5/40kA 3150A

Withdrawable (MCSG type cradle, phase distance 210mm)



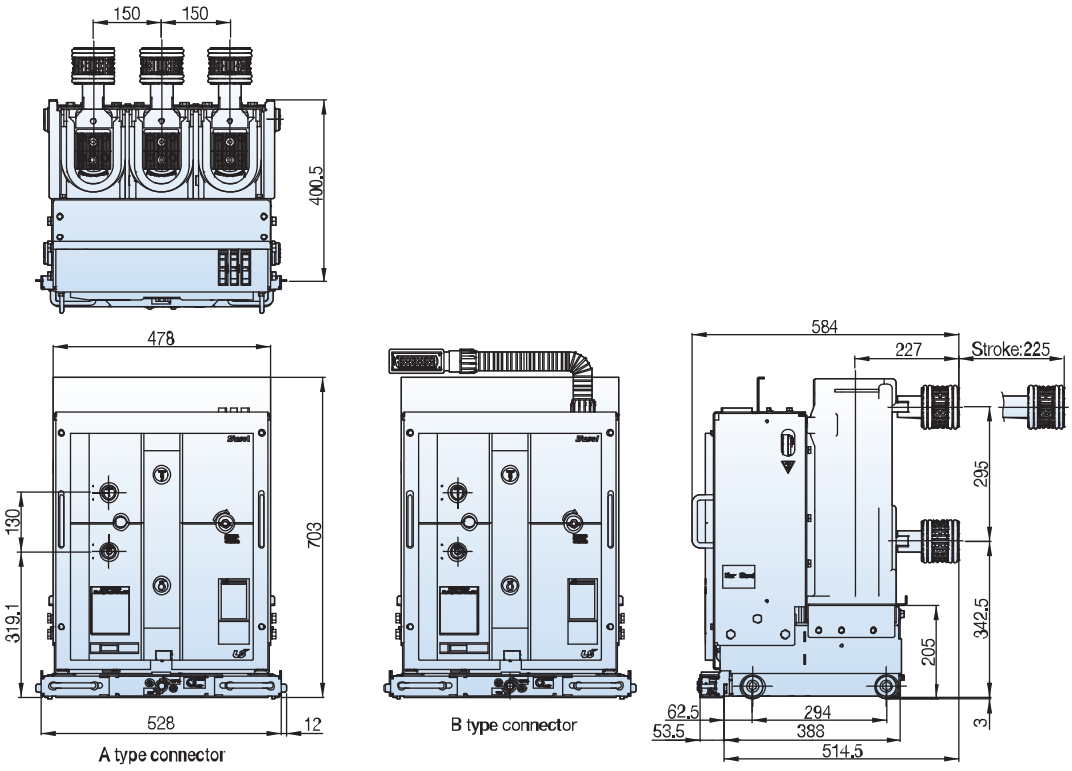




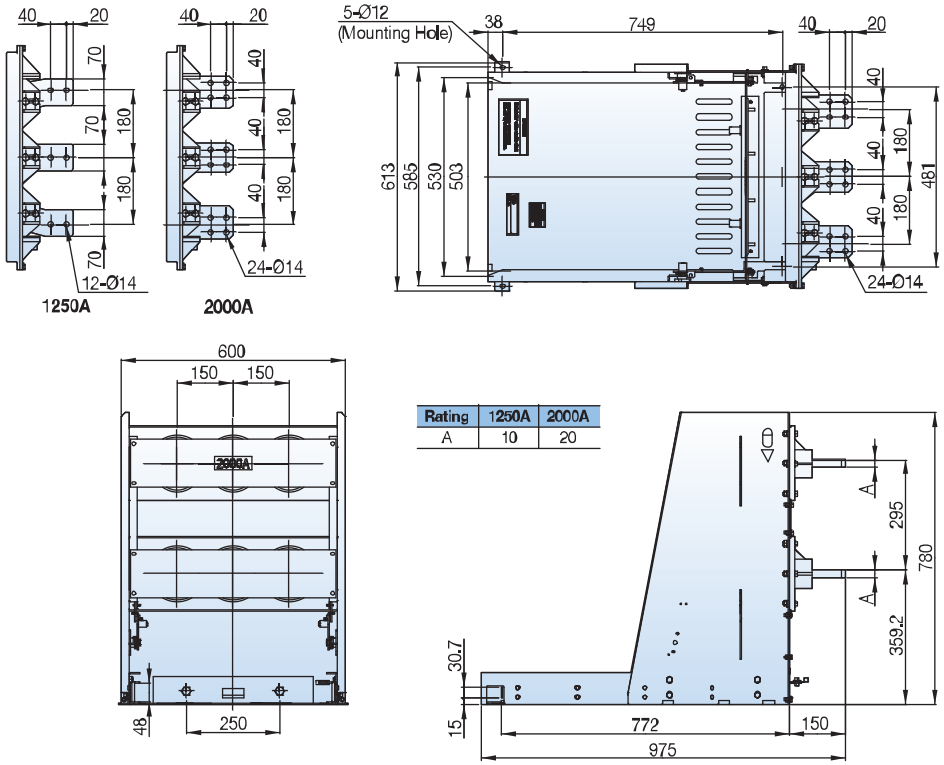


7.2kV 40kA 1250/2000A

Withdrawable (Fs type unit, phase distance 150mm)

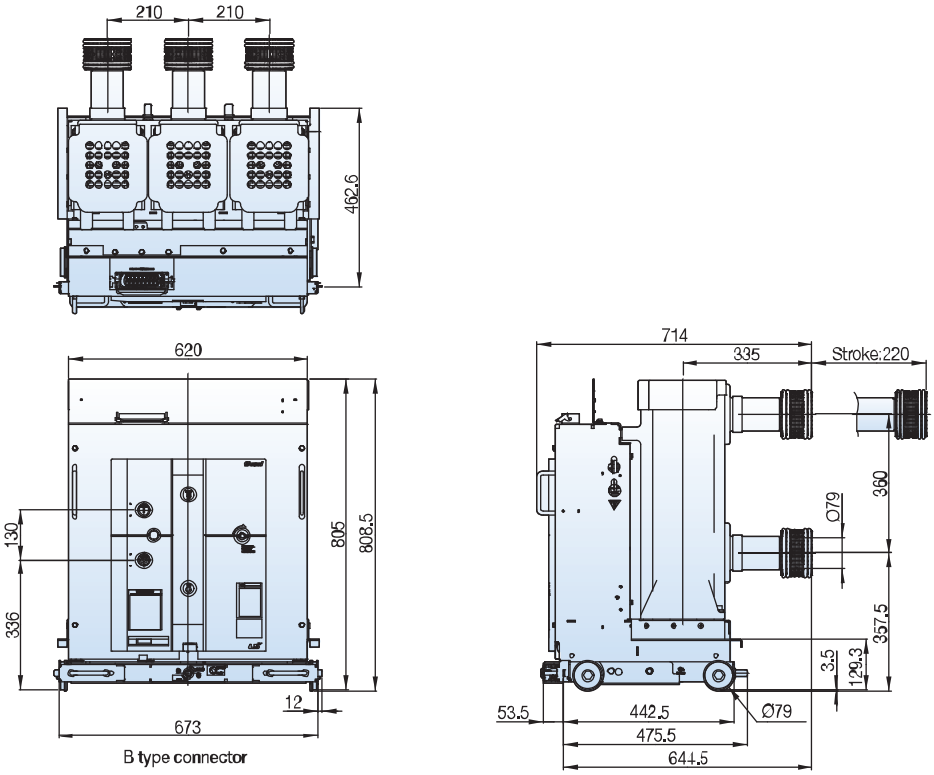


Withdrawable (Fs type cradle, phase distance 150mm)

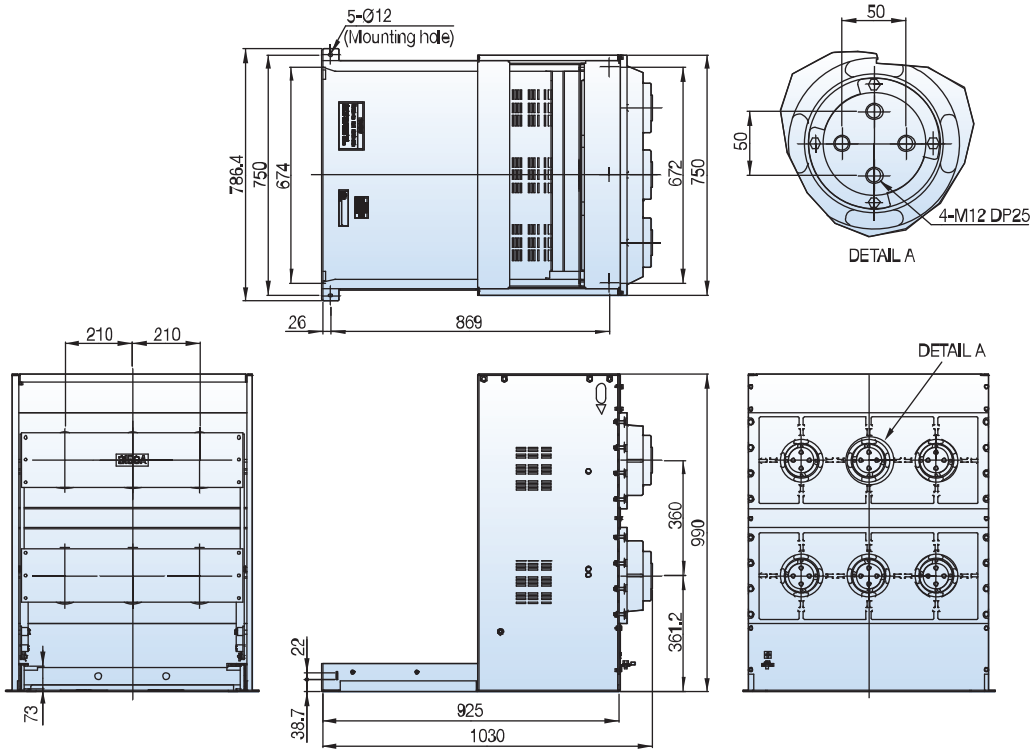


7.2kV, 31.5/40kA, 3150A

Withdrawable (Fs type unit, phase distance 210mm)



Withdrawable (Fs type cradle, phase distance 210mm)

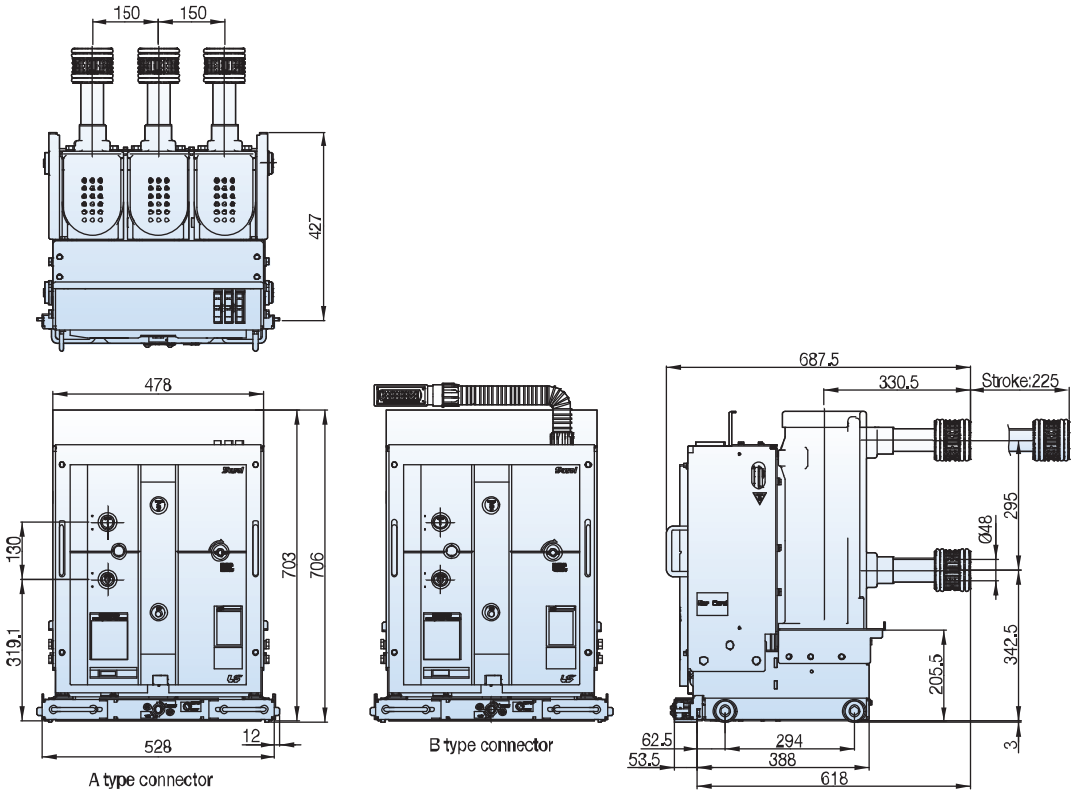


Dimensions -VH type

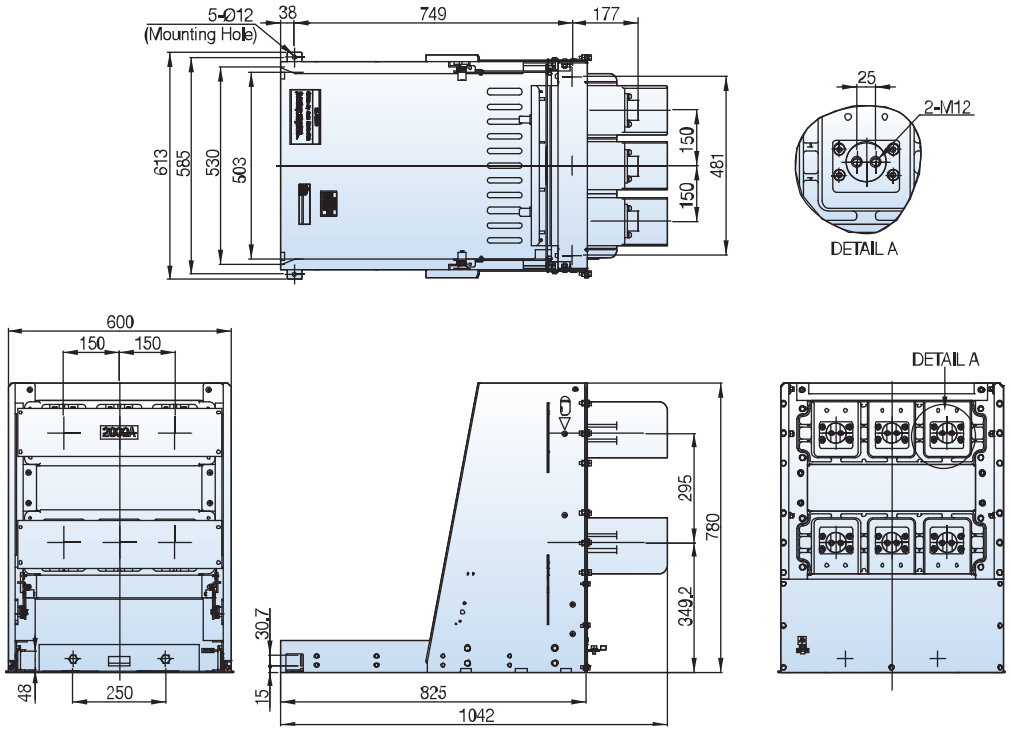
Susol

7.2/12kV, 40kA, 1250/2000A

Withdrawable (Gs type unit, phase distance 150mm)

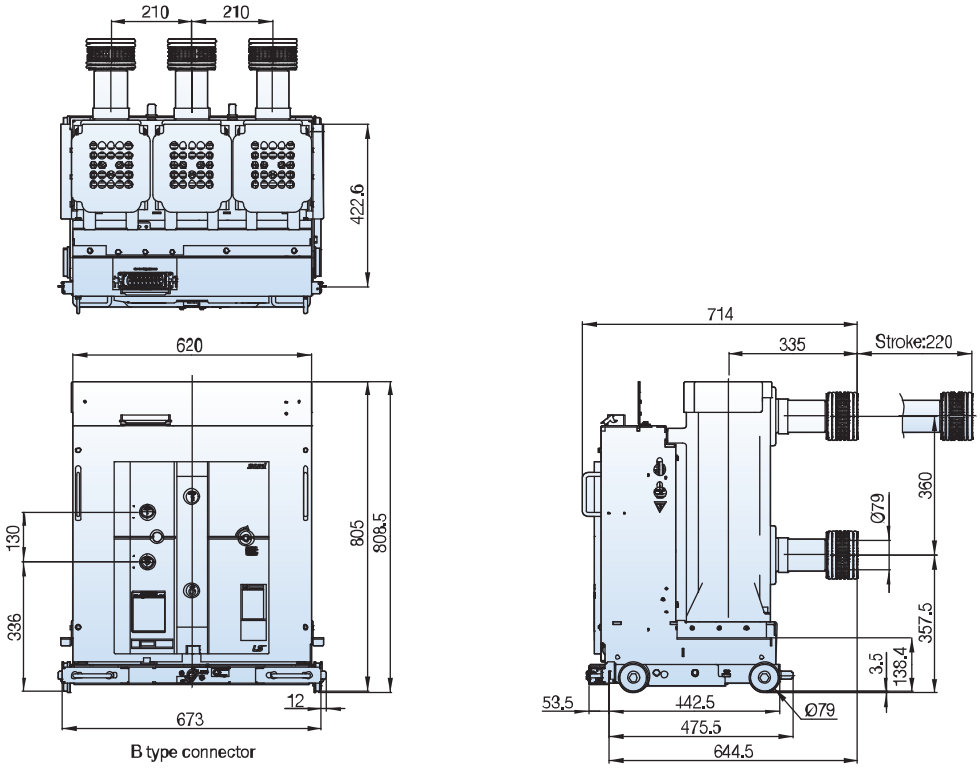


Withdrawable (Gs type cradle, phase distance 150mm)

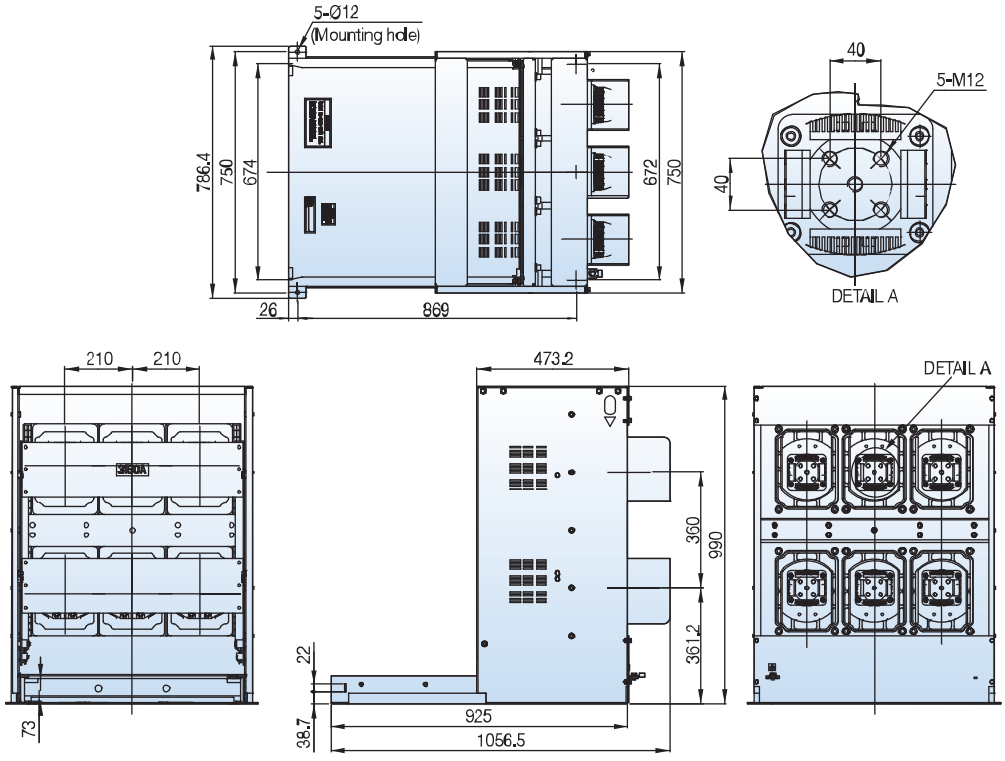


7.2/12kV, 31.5/40kA, 3150A

Withdrawable (Gs type unit, phase distance 210mm)

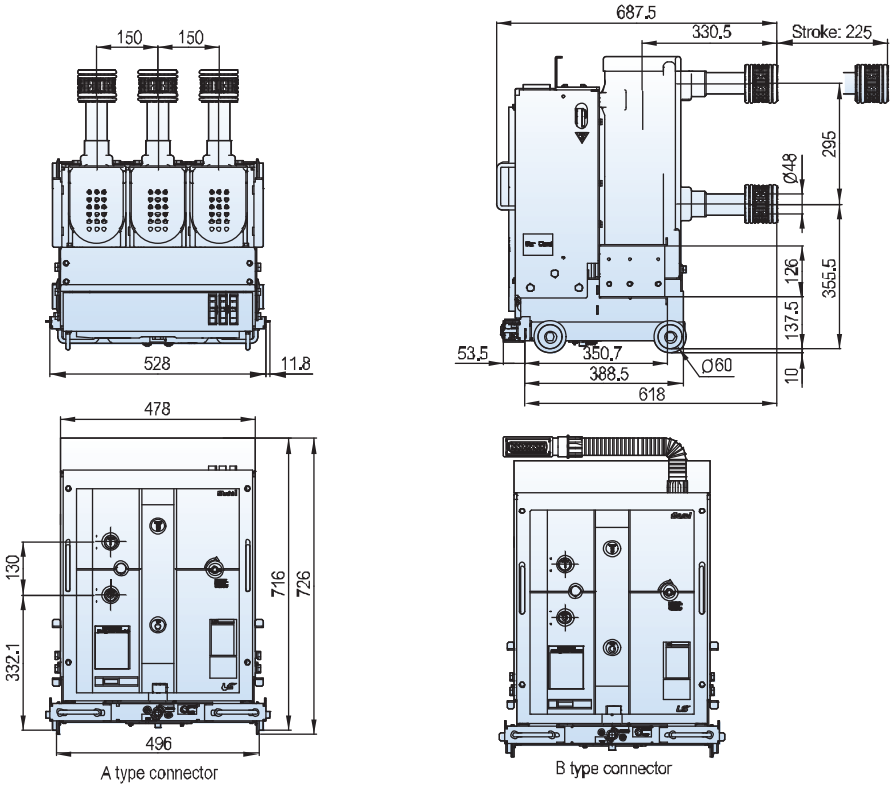


Withdrawable (Gs type cradle, phase distance 210mm)

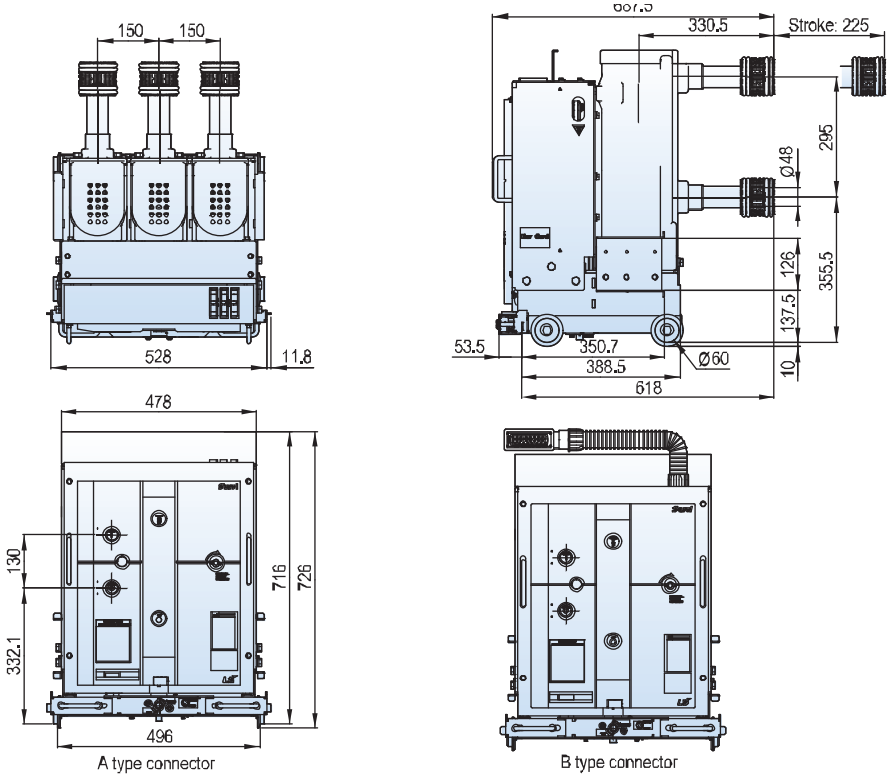


7.2/12kV, 40kA, 1250/2000A

Withdrawable (K type unit, phase distance 150mm, G / T (T) compatible)

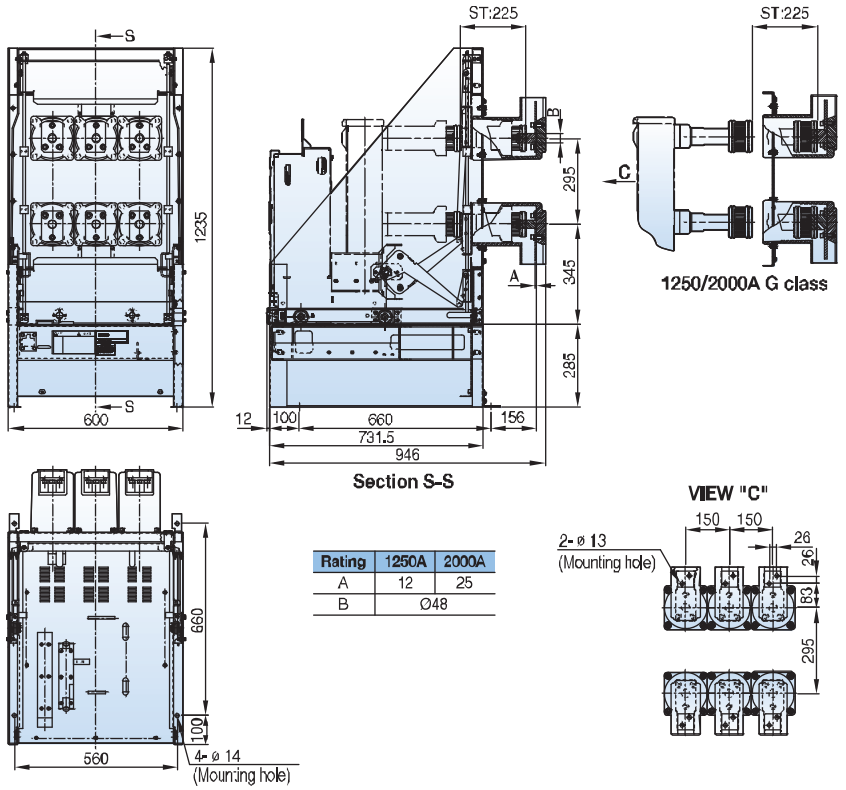


Withdrawable (K type unit, phase distance 150mm, G / T (T2) compatible)



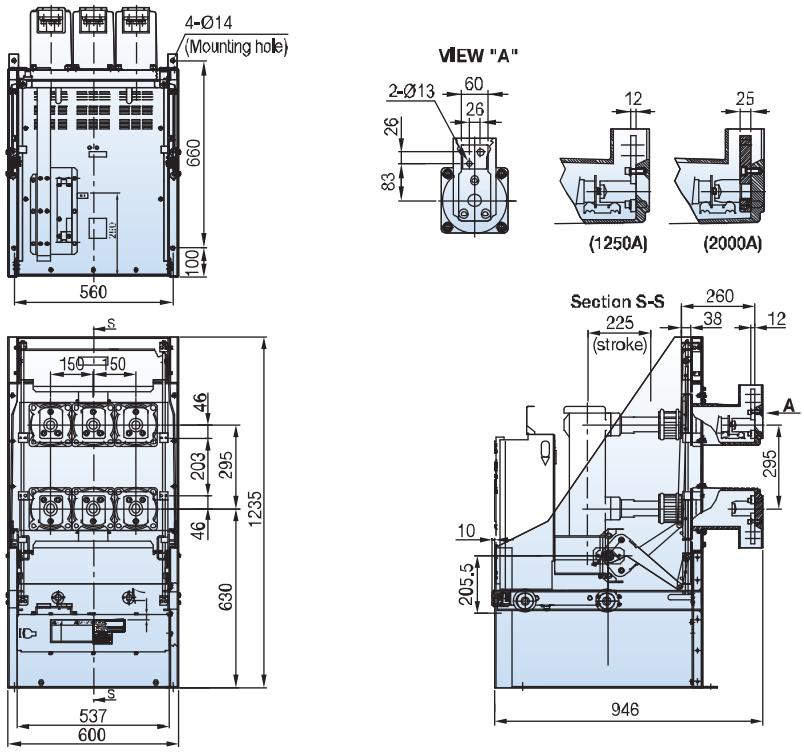
7.2/12kV, 40kA, 1250/2000A

Withdrawable (K type cradle, phase distance 150mm)



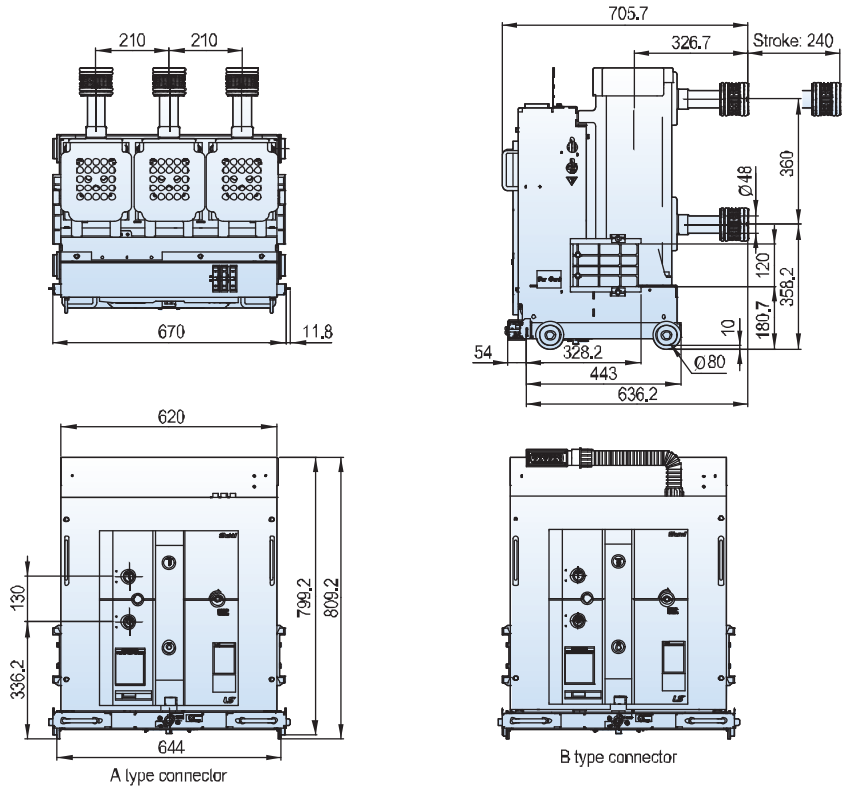
Rating	1250A	2000A
A	12	25
B	Ø48	

Withdrawable (MCSG cradle T2 type, phase distance 150mm)

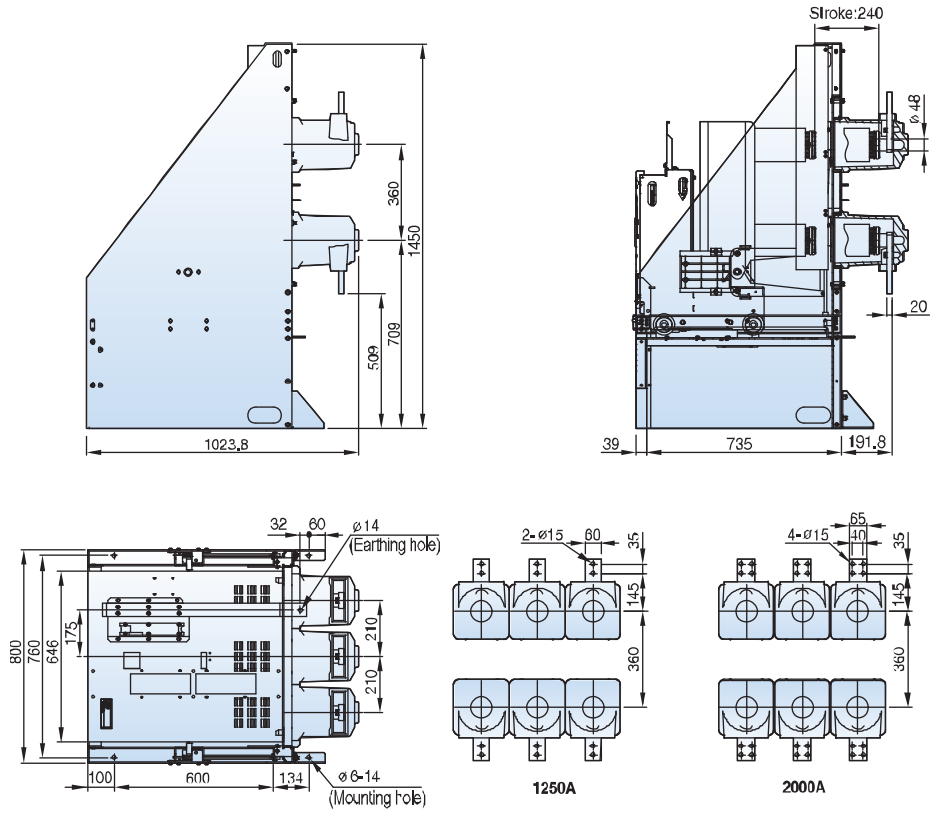


7.2/12/17.5kV, 40kA, 1250/2000A

Withdrawable (K type unit, phase distance 210mm, G / T (T2) compatible)

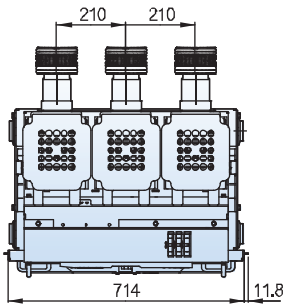


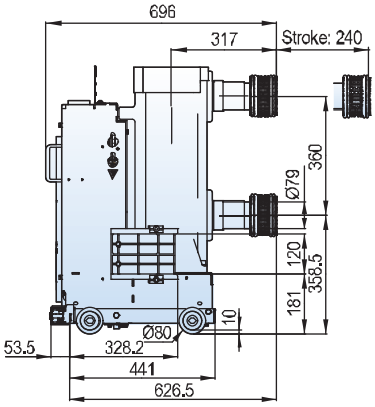
Withdrawable (MCSG cradle T2 type, phase distance 210mm)

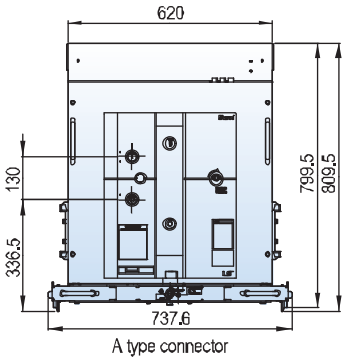


7.2/12kV, 31.5/40kA, 3150A

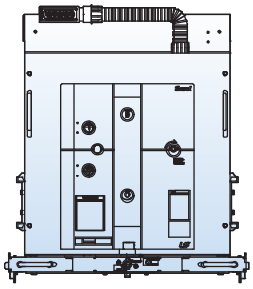
Withdrawable (K type unit, phase distance 210mm, G / T (T2) compatible)





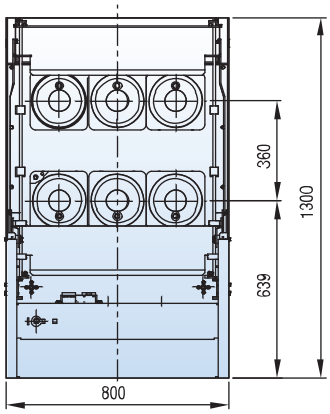


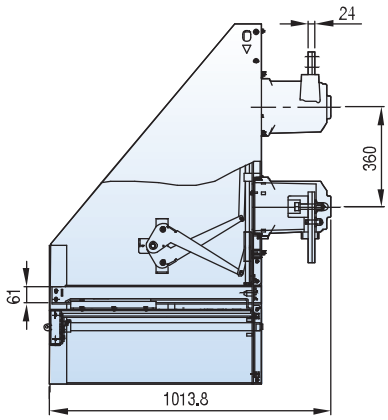
A type connector

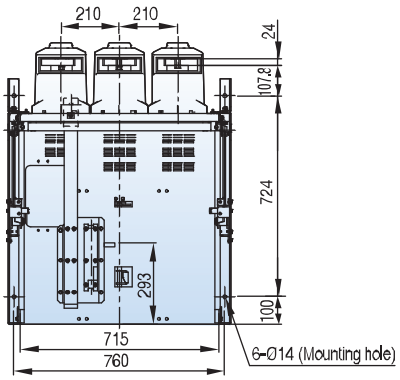


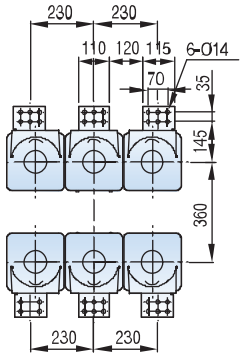
B type connector

Withdrawable (MCSG cradle T2 type, phase distance 210mm)



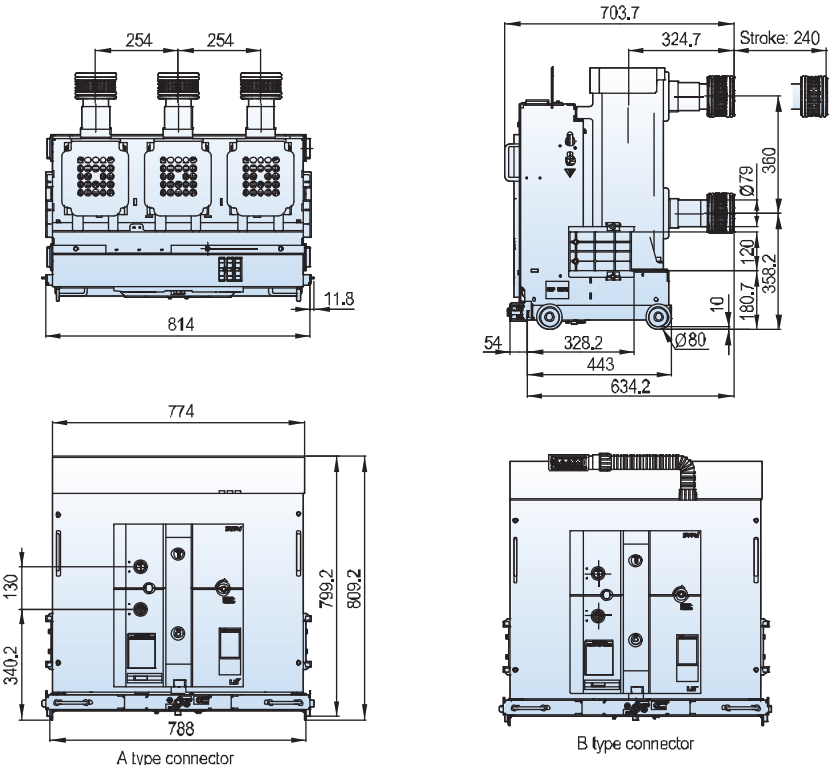




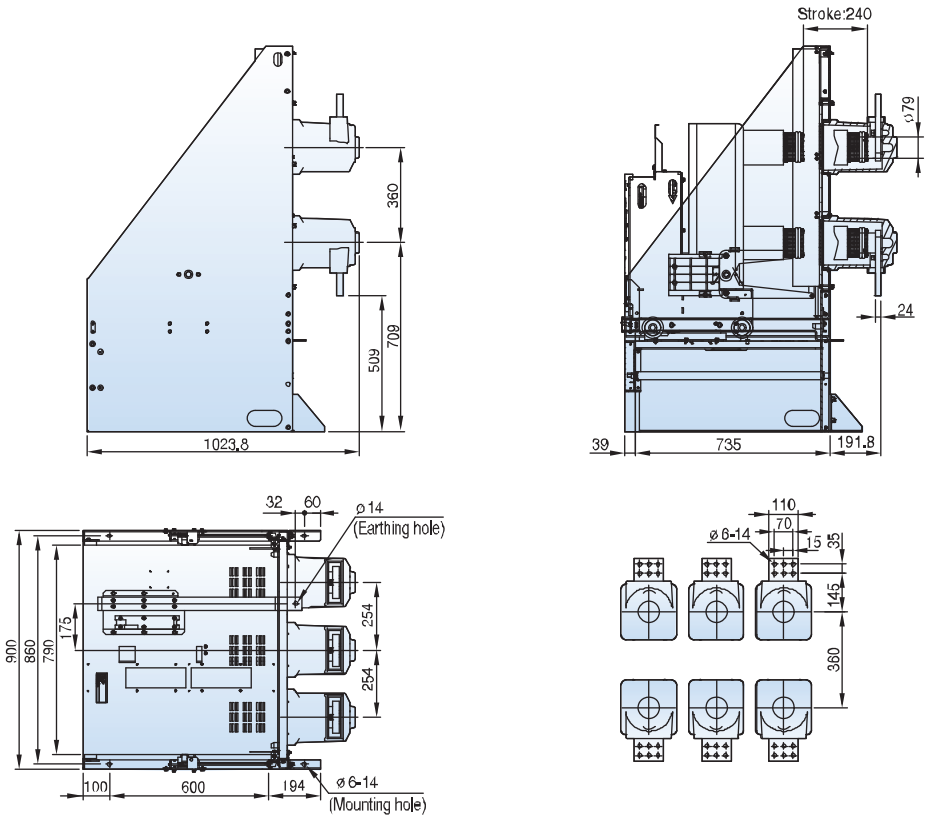


17.5kV, 40kA, 3150A

Withdrawable (K type unit, phase distance 254mm, G / T (T) compatible)

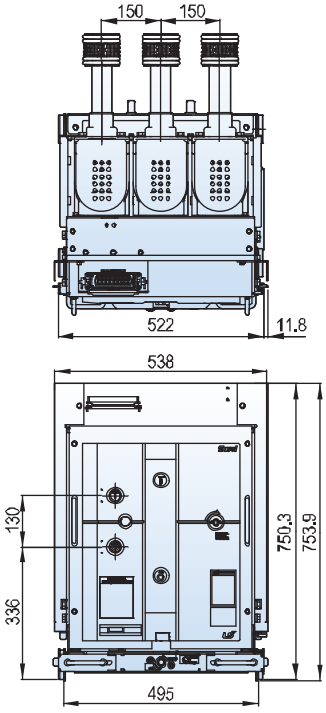


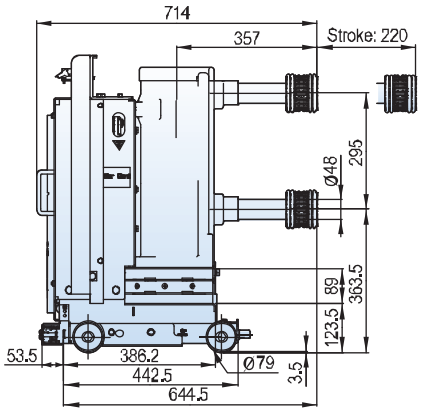
Withdrawable (MCSG cradle T2 type, phase distance 254mm)



7.2/12kV, 40kA, 1250A

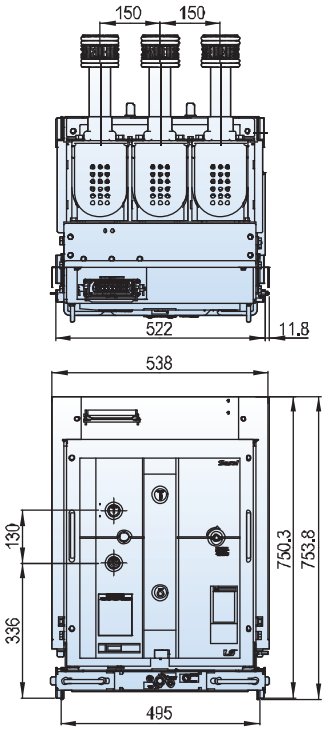
Withdrawable (H type unit, phase distance 150mm)

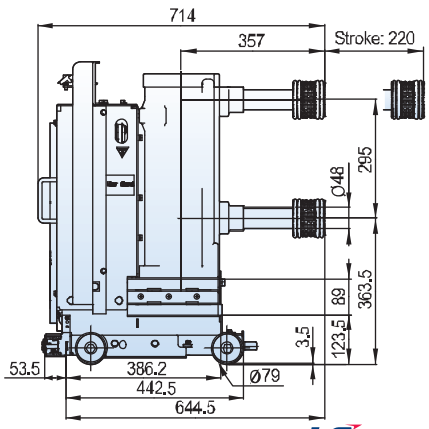




7.2/12kV, 40kA, 2000A

Withdrawable (H type unit, phase distance 150mm)

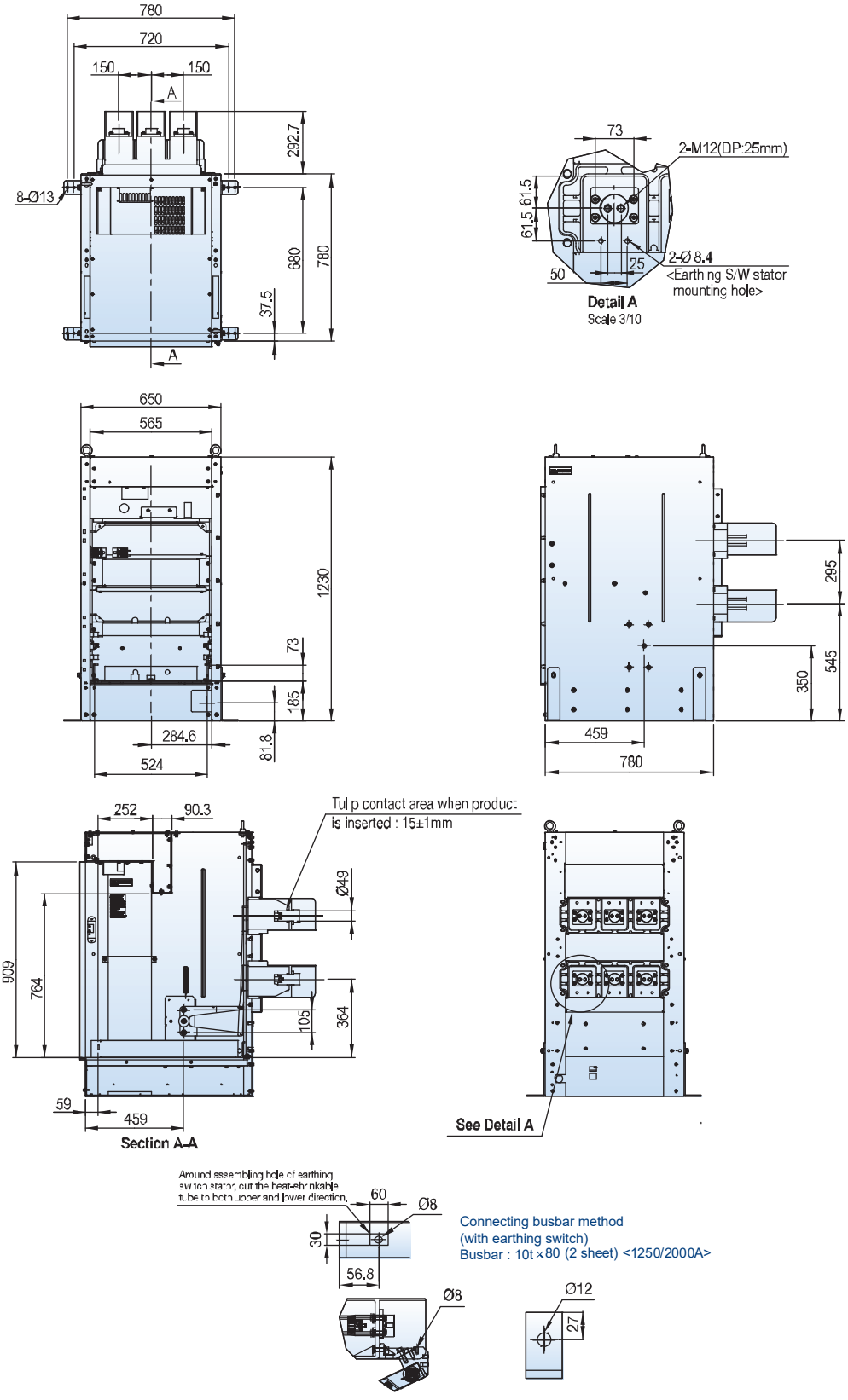




Dimensions -VH type

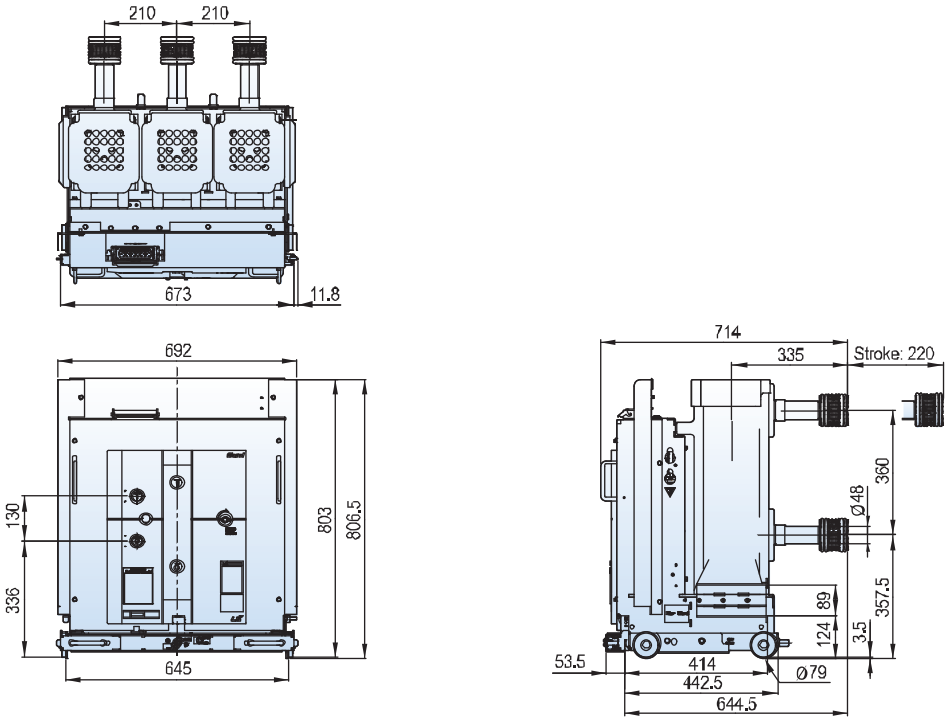
7.2/12kV, 40kA, 1250/2000A

Withdrawable (H cradle, phase distance 150mm)



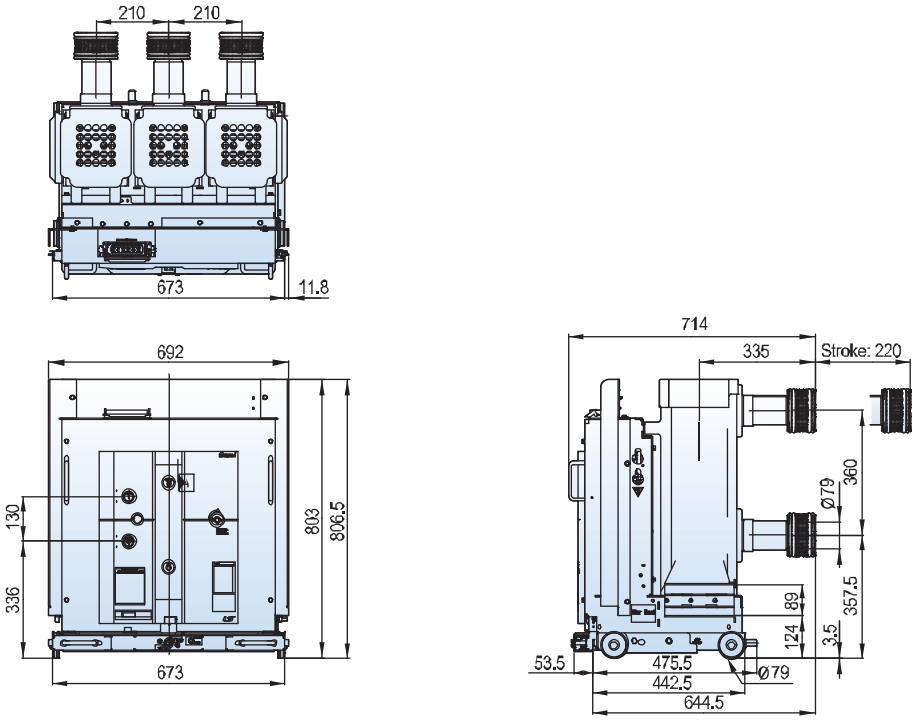
7.2/12/17.5kV, 40kA, 1250/2000A

Withdrawable (H type unit, phase distance 210mm)



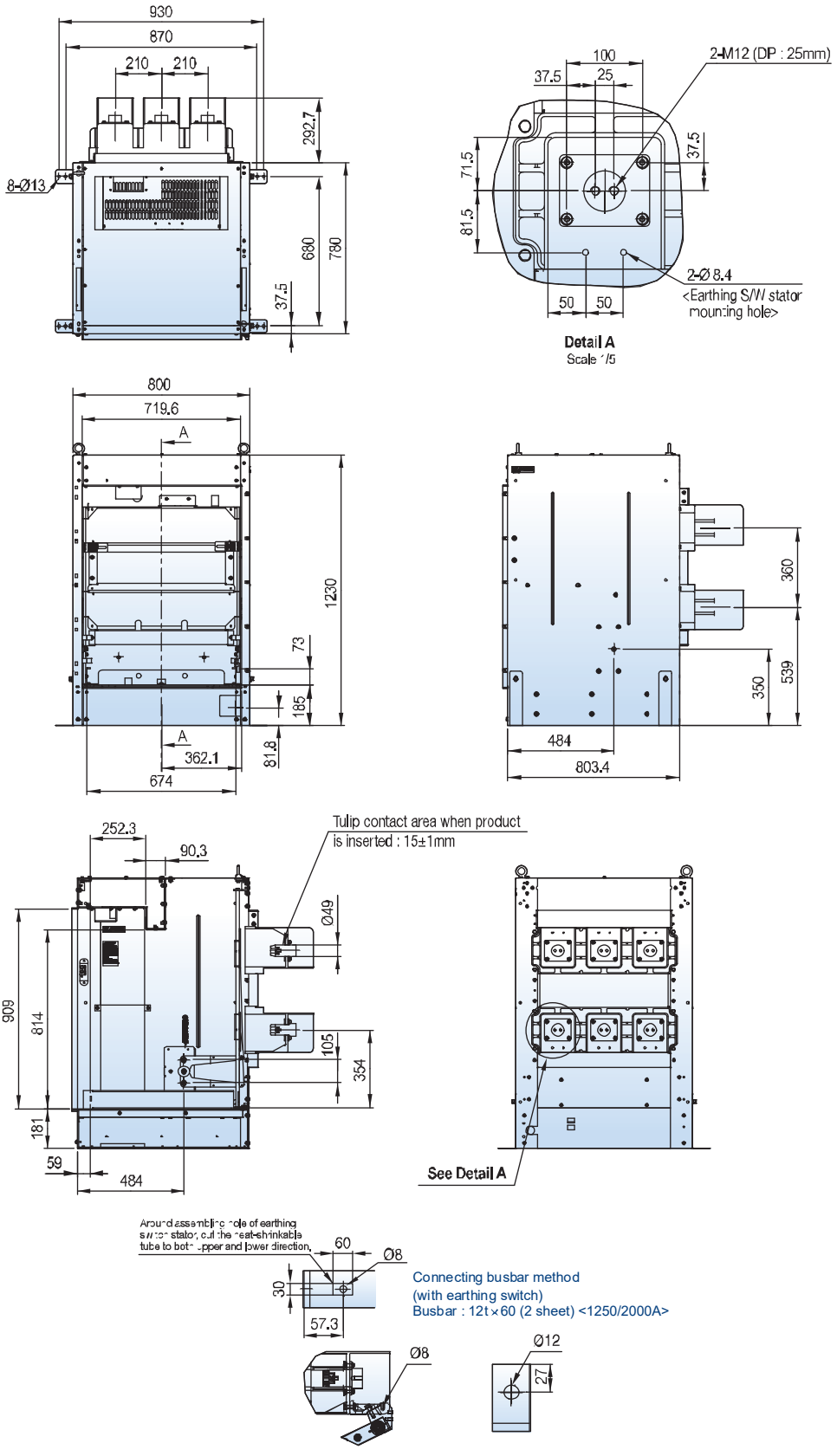
7.2/12/17.5kV, 31.5/40kA, 3150A

Withdrawable (H type unit, phase distance 210mm)



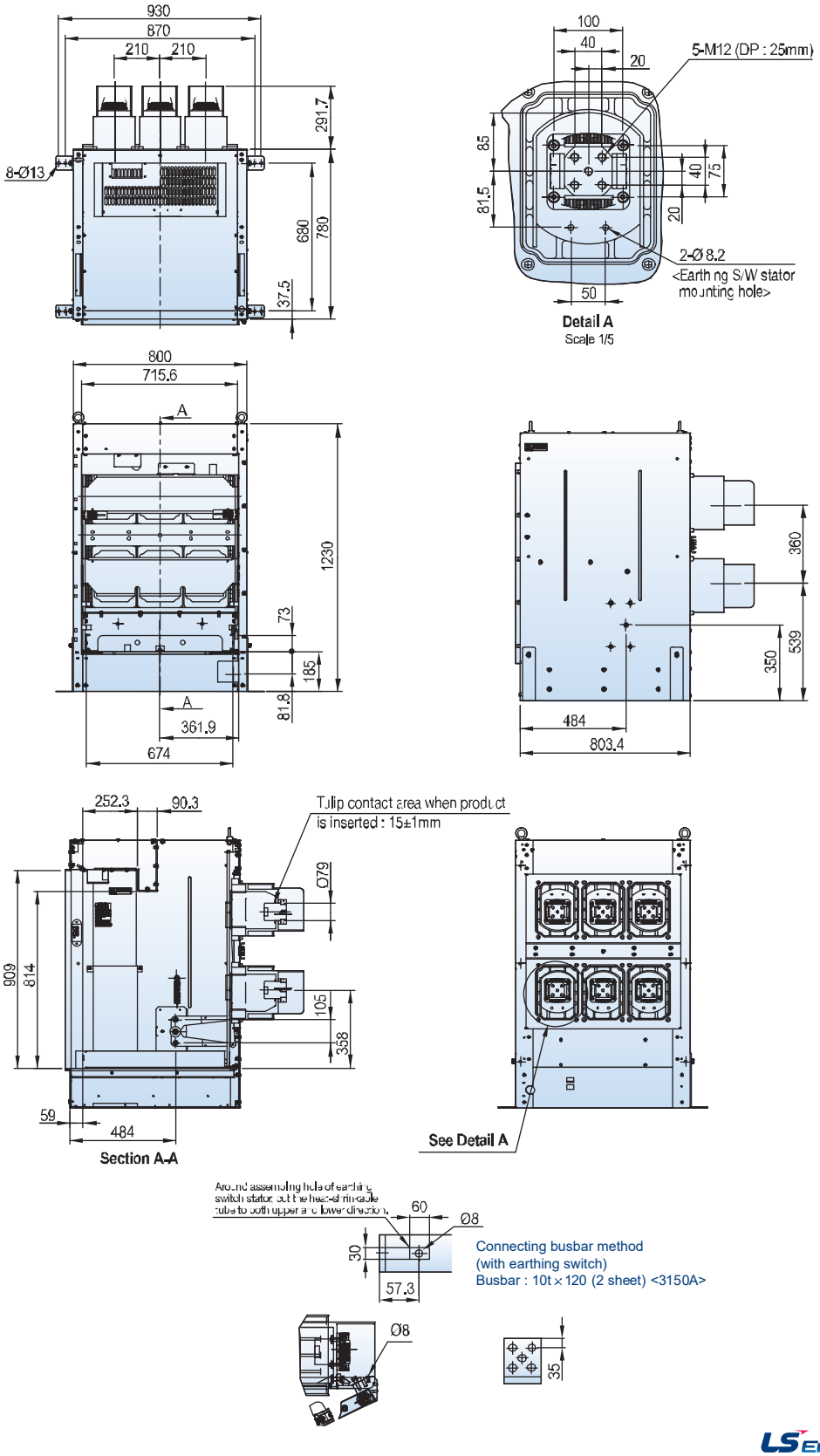
7.2/12/17.5kV, 40kA, 1250/2000A

Withdrawable (H cradle, phase distance 210mm)



7.2/12/17.5kV, 31.5/40kA, 3150A

Withdrawable (H cradle, phase distance 210mm)

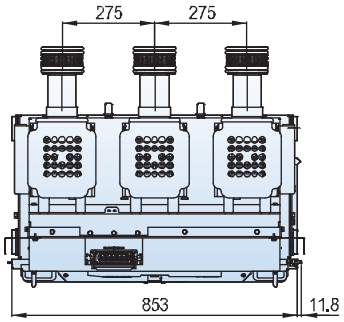


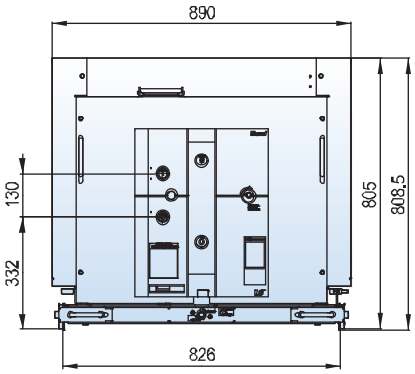
Dimensions -VH type

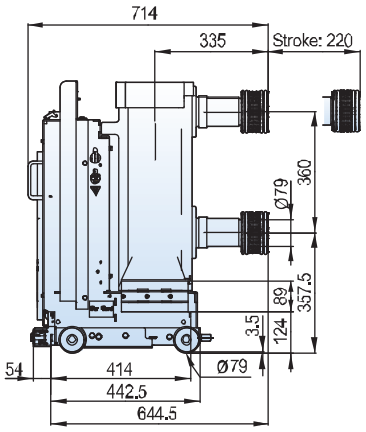
Susol

17.5kV, 31.5/40kA, 3150A

Withdrawable (H type unit, phase distance 275mm)

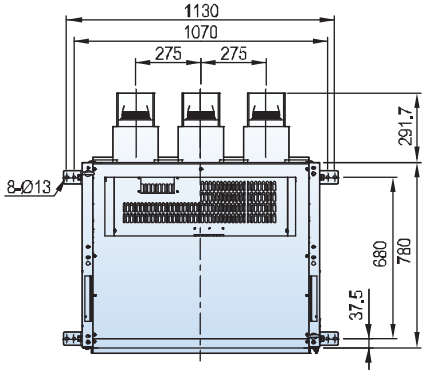


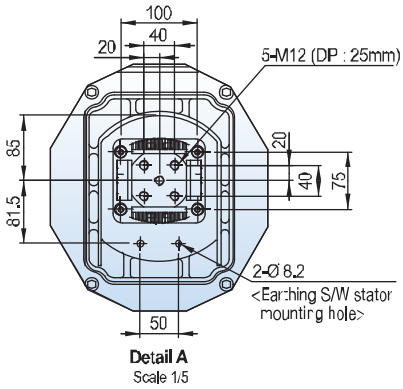


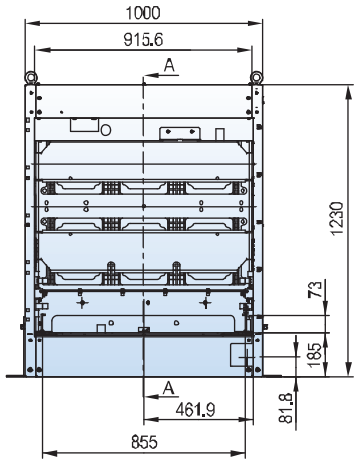


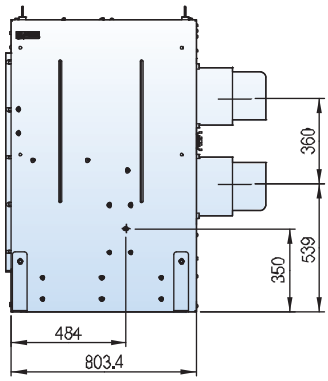
17.5kV, 31.5/40kA, 3150A

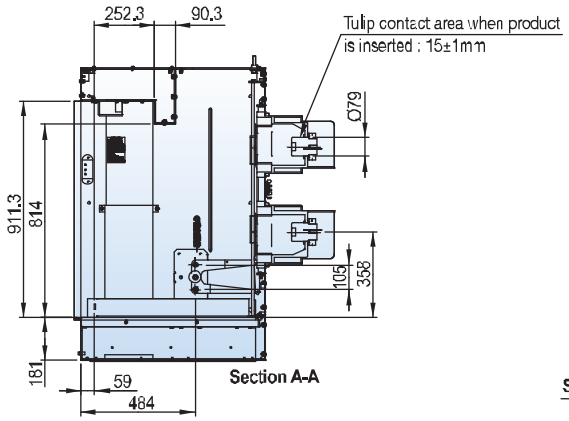
Withdrawable (H cradle, phase distance 275mm)

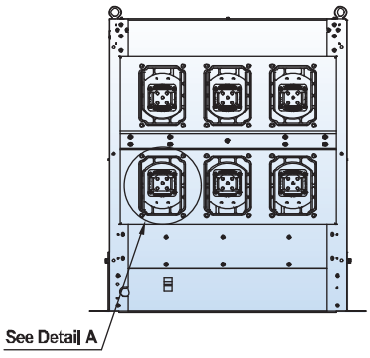


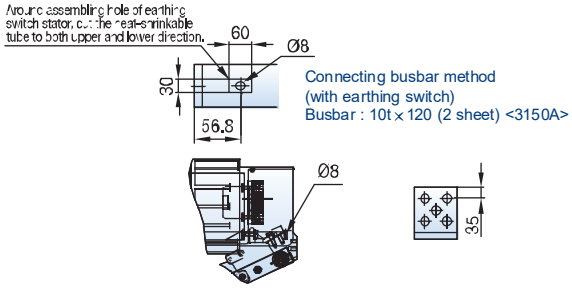






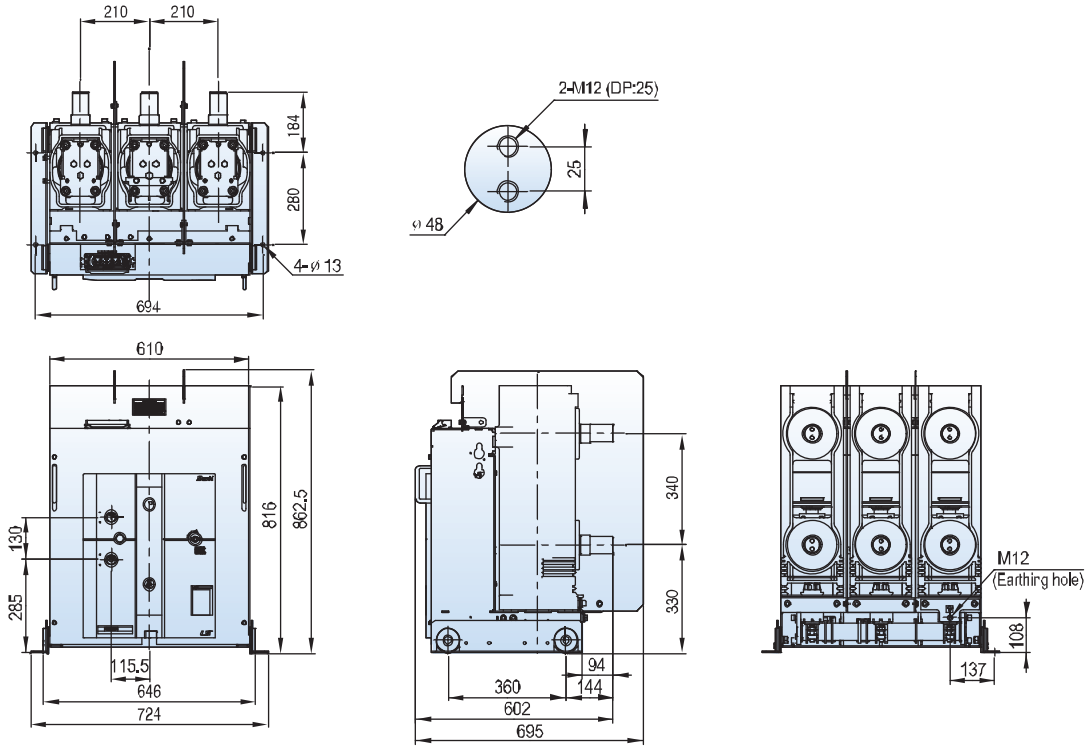




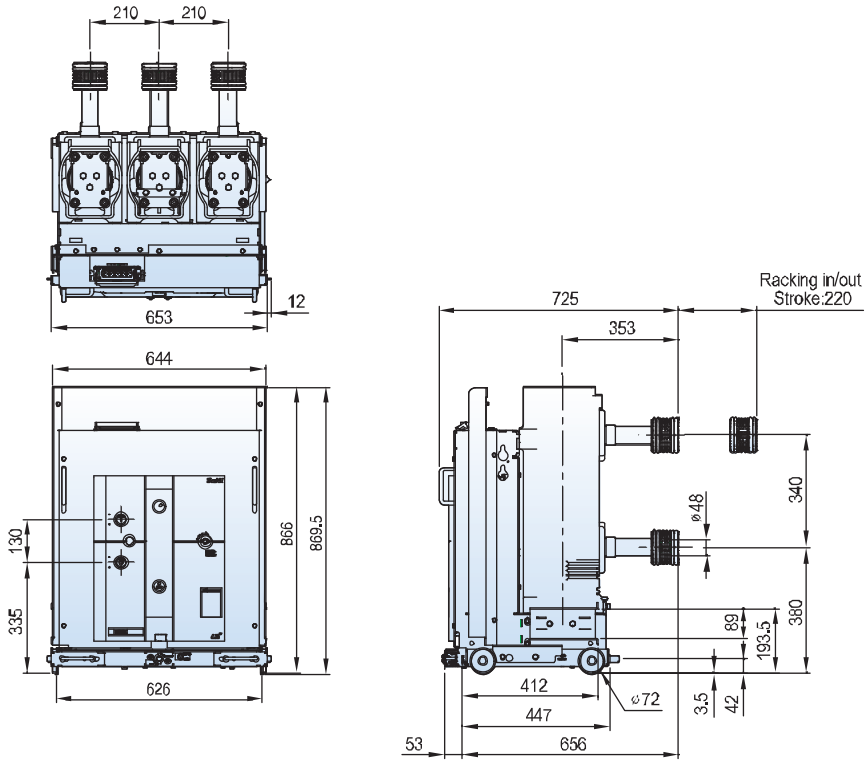


7.2/12/17.5kV, 50kA, 1250/2000A

Fixed (P type, phase distance 210mm)

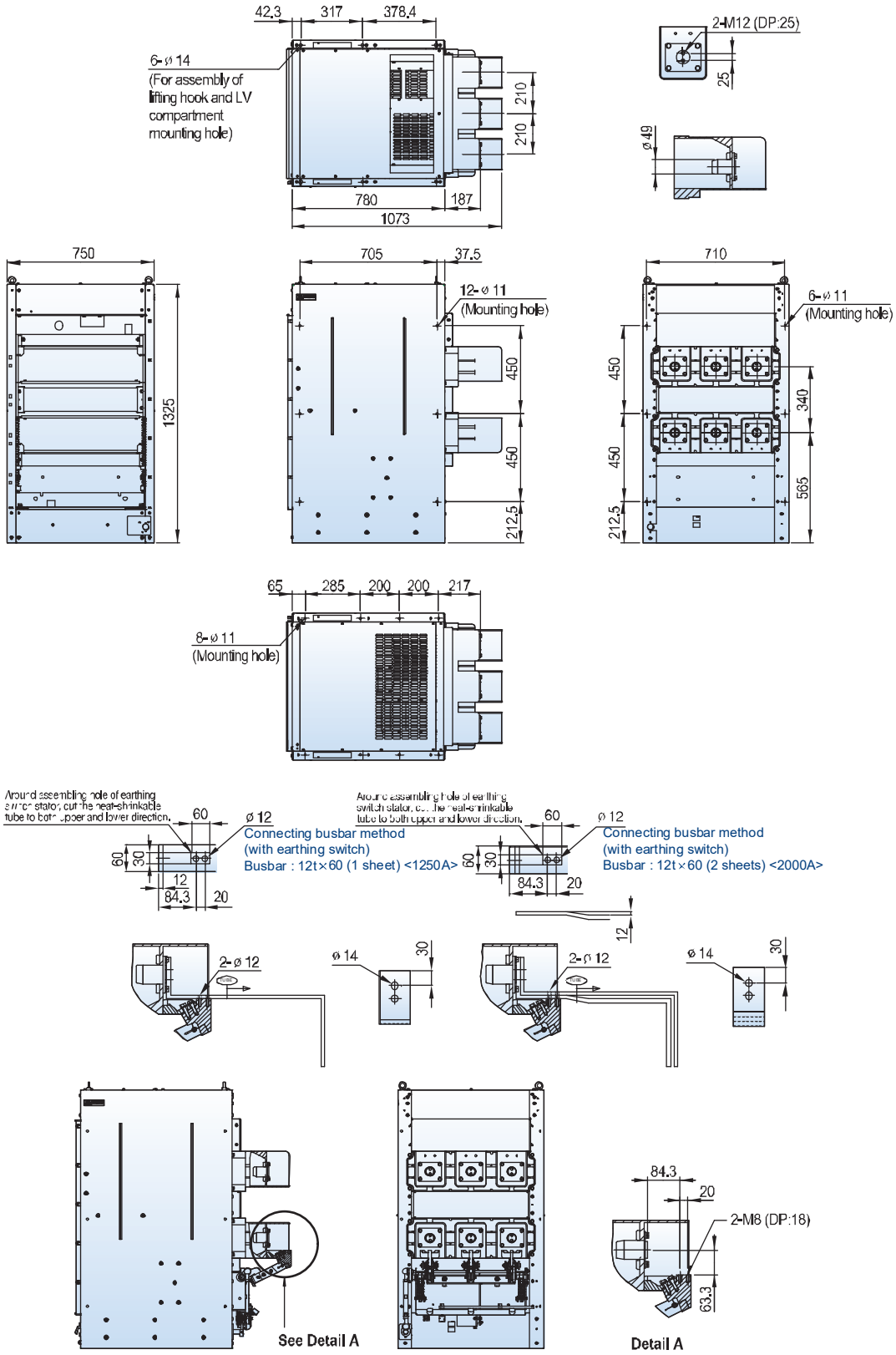


Withdrawable (H type unit, phase distance 210mm)



7.2/12/17.5kV, 50kA, 1250/2000A

Withdrawable (H cradle, phase distance 210mm)

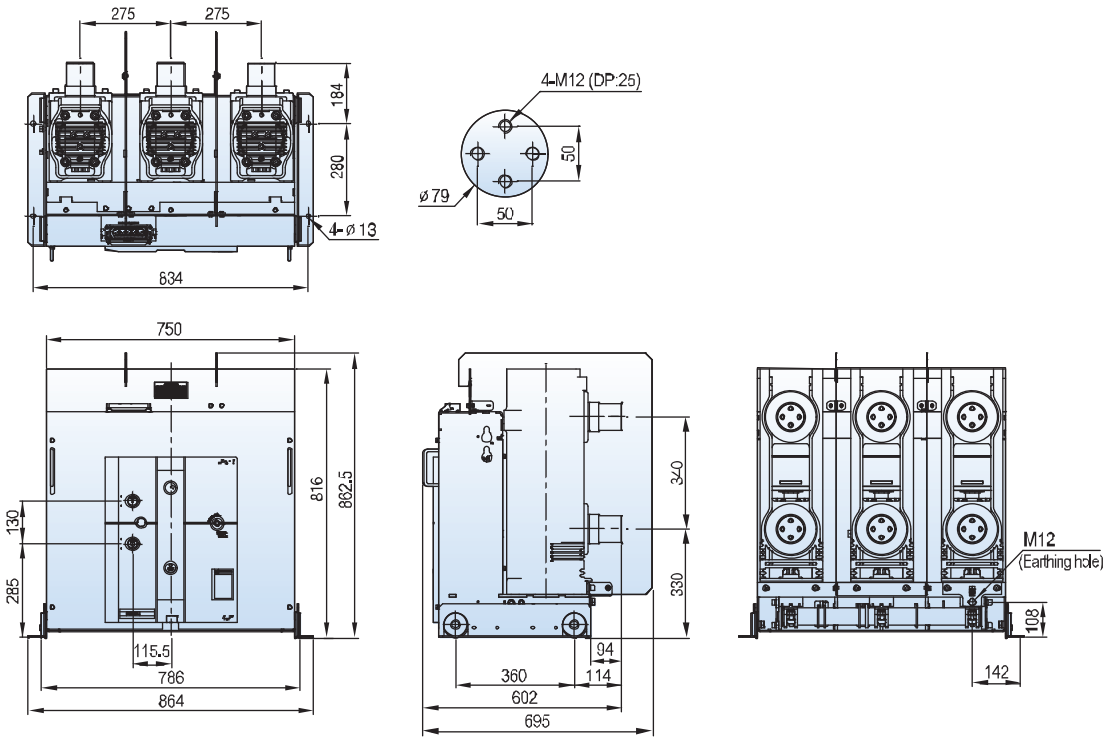


Dimensions -VH type

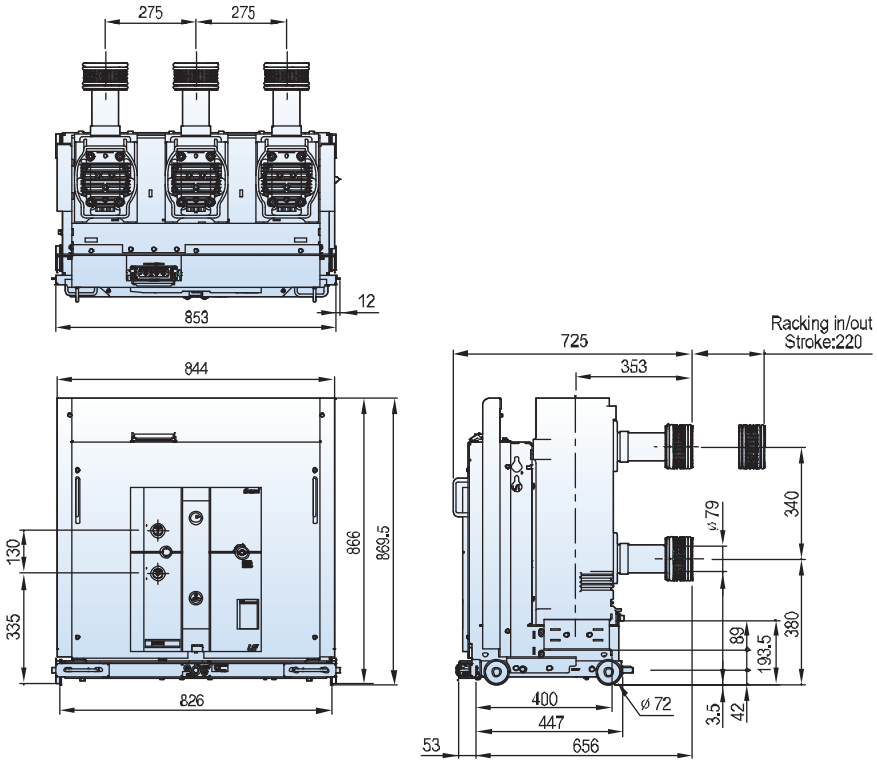
Susol

7.2/12/17.5kV, 50kA, 2500/3150A

Fixed (P type, phase distance 275mm)

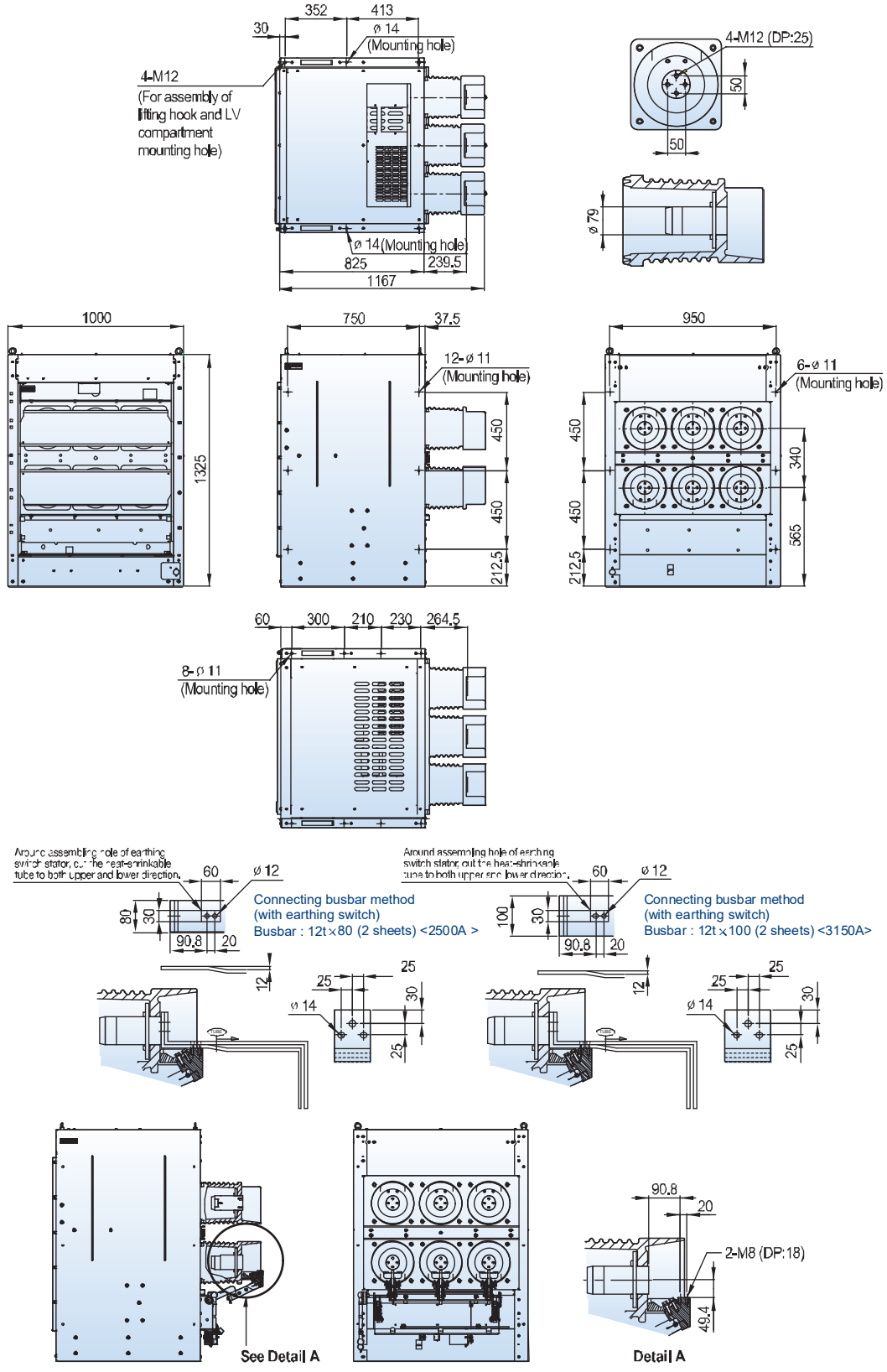


Withdrawable (H type unit, phase distance 275mm)



7.2/12/17.5kV, 50kA, 2500/3150A

Withdrawable (H cradle, phase distance 275mm)

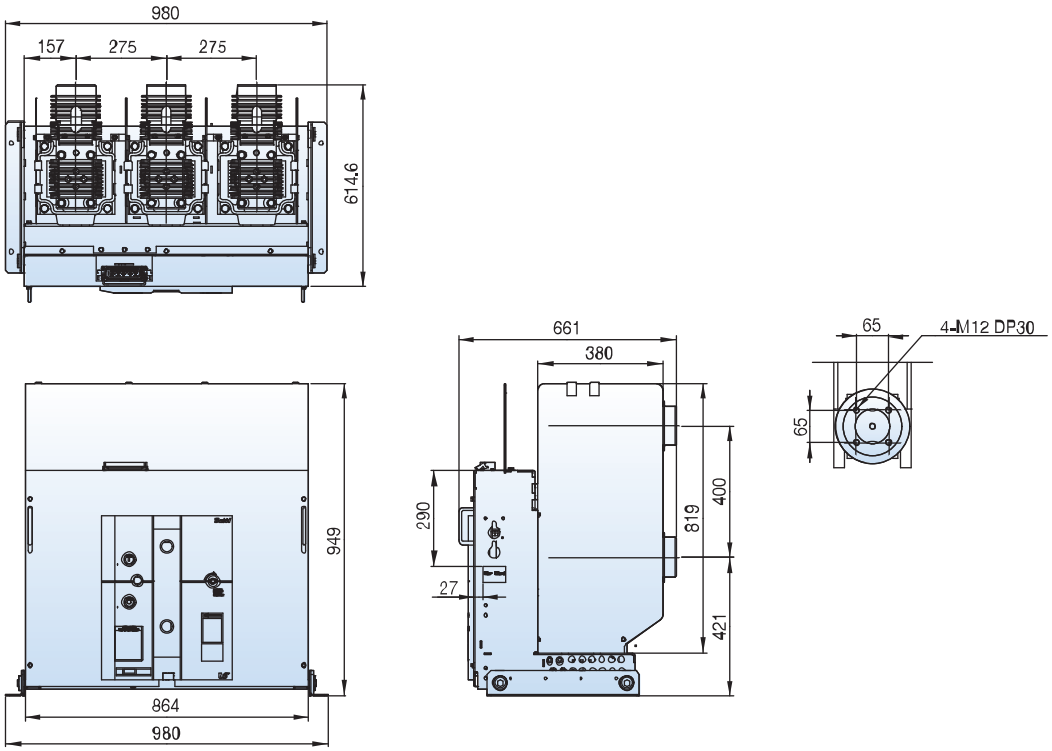


Dimensions -VH type

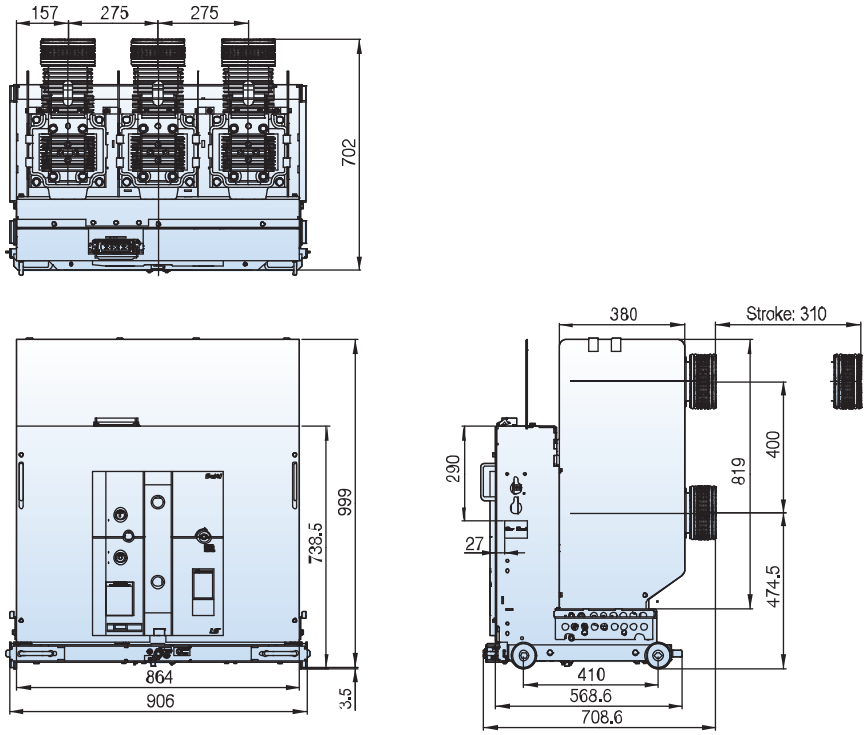
Susol

7.2/12/17.5kV, 40/50kA, 4000A

Fixed (P type, phase distance 275mm)

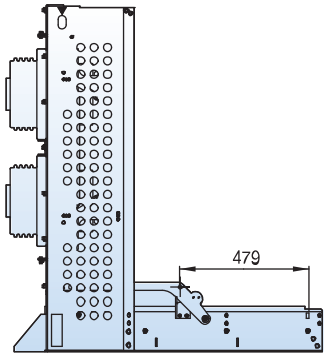


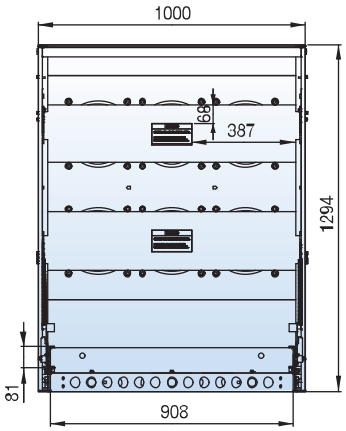
Withdrawable (H type unit, phase distance 275mm)

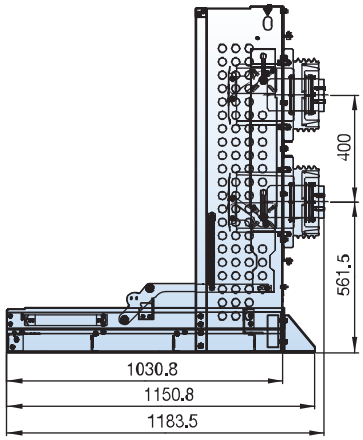


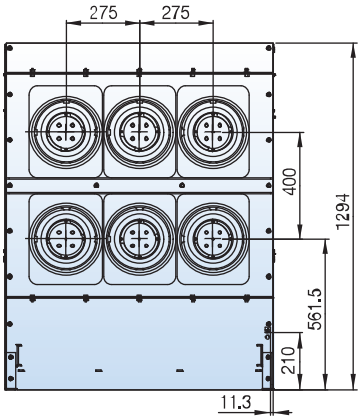
7.2/12/17.5kV, 40/50kA, 4000A

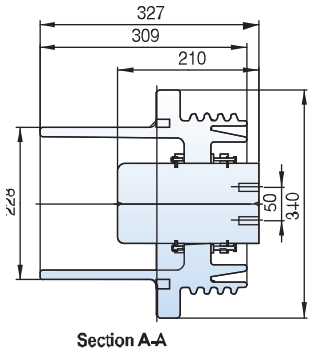
Withdrawable (Ha type cradle, phase distance 275mm, Normal Type)

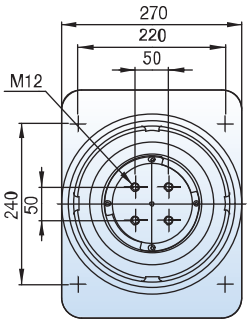


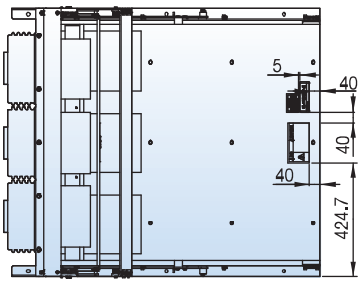










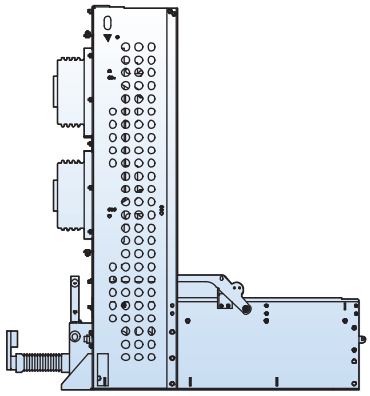


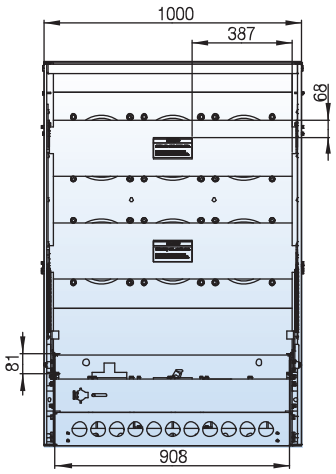
Dimensions -VH type

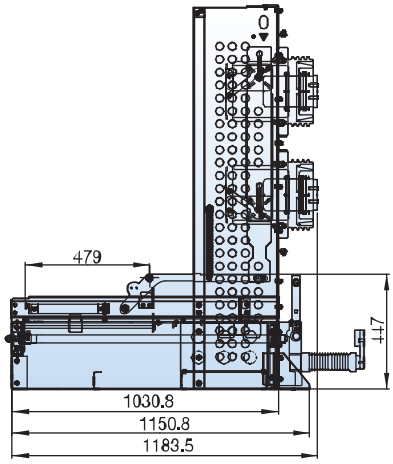
Susol

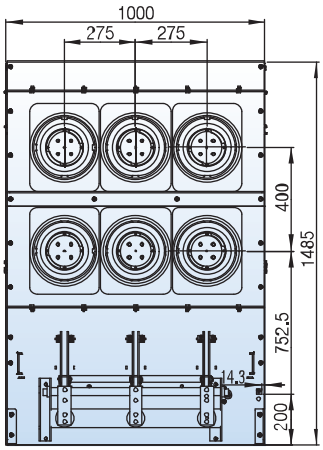
7.2/12/17.5kV, 40/50kA, 4000A

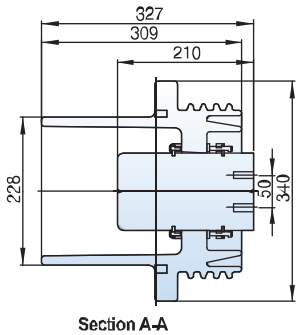
Withdrawable (Ha type cradle, phase distance 275mm, with Earthing Switch)
The same applies to MOC or TOC



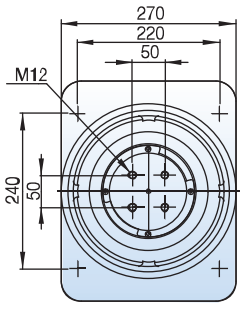


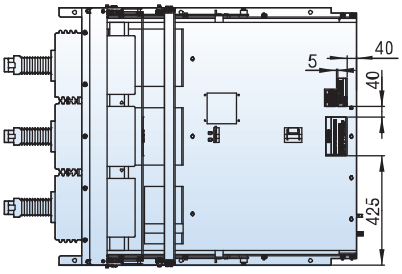






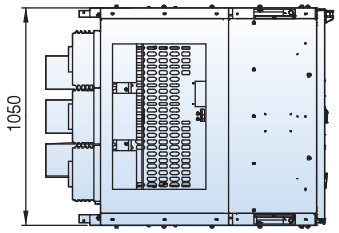
Section A-A

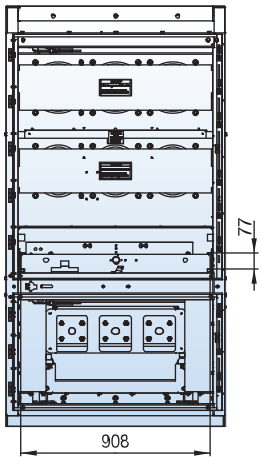


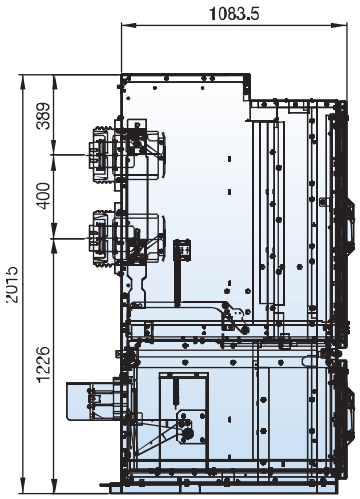


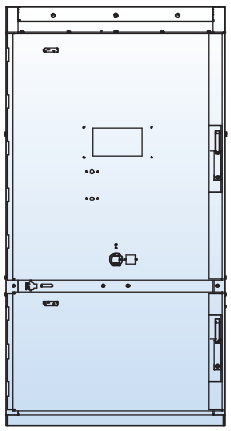
7.2/12/17.5kV, 40/50kA, 4000A

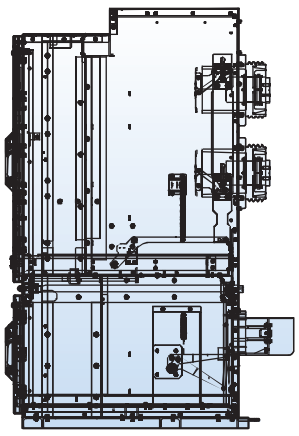
Withdrawable (Hb type cradle, phase distance 275mm)

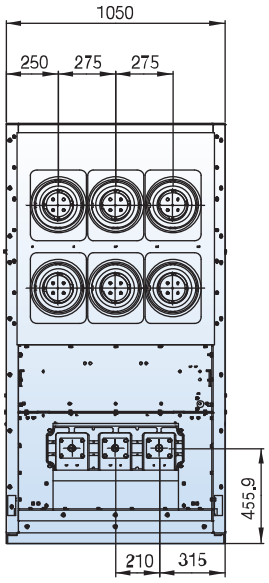






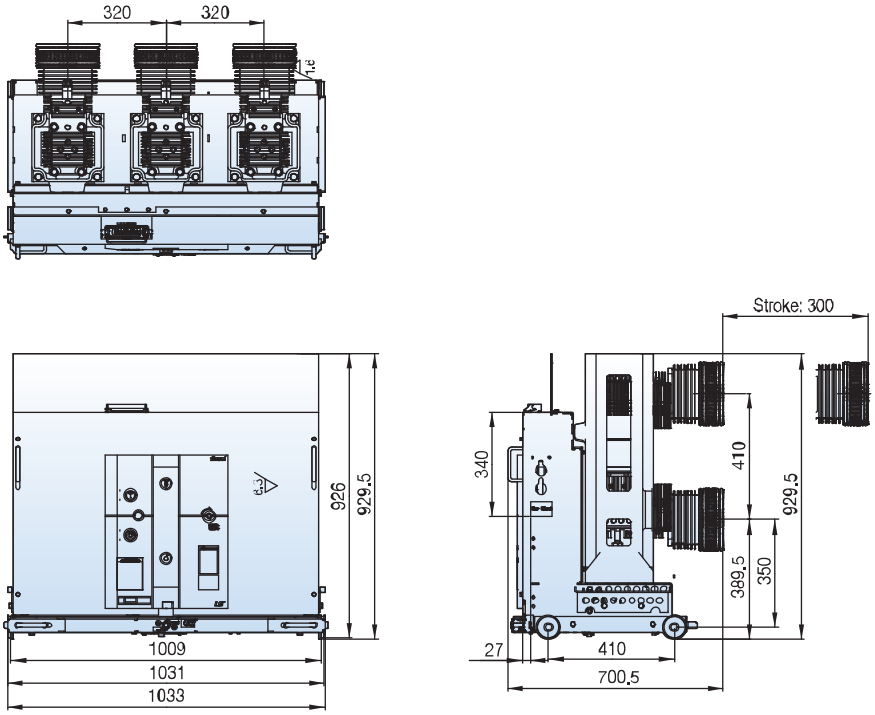




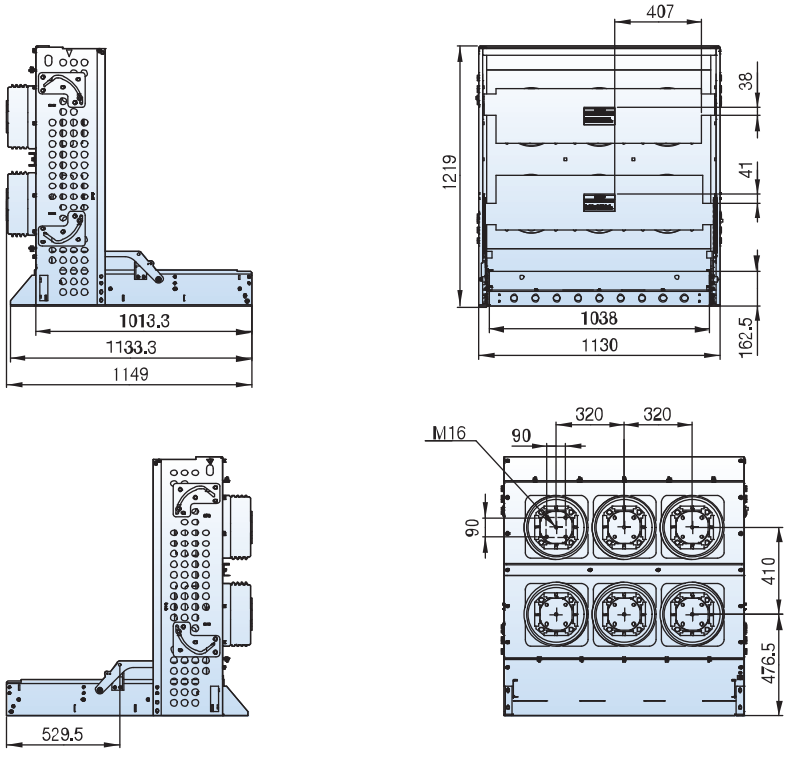


7.2/12kV, 40/50kA, 5000A

Withdrawable (H type unit, phase distance 320mm)

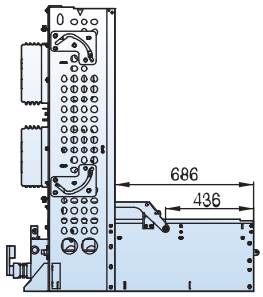


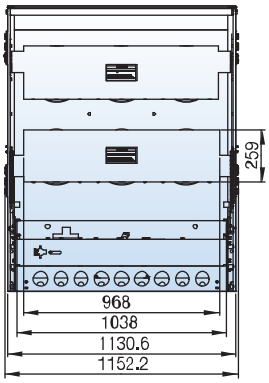
Withdrawable (Ha type cradle, phase distance 320mm, Normal Type)

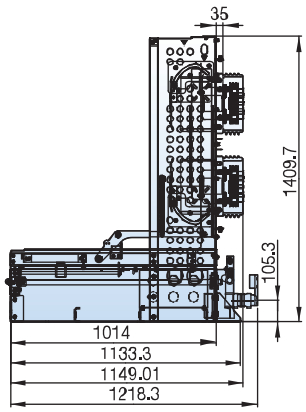


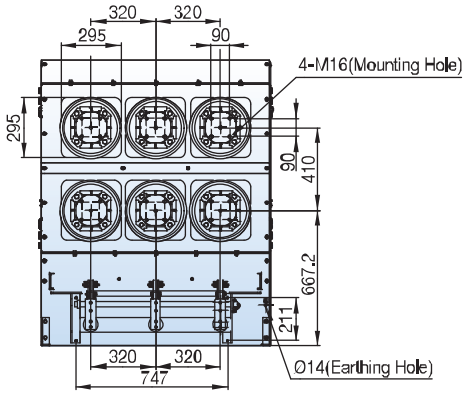
7.2/12kV, 40/50kA, 5000A

Withdrawable (Ha type cradle, phase distance 320mm, with Earthing Switch)
The same applies to MOC or TOC







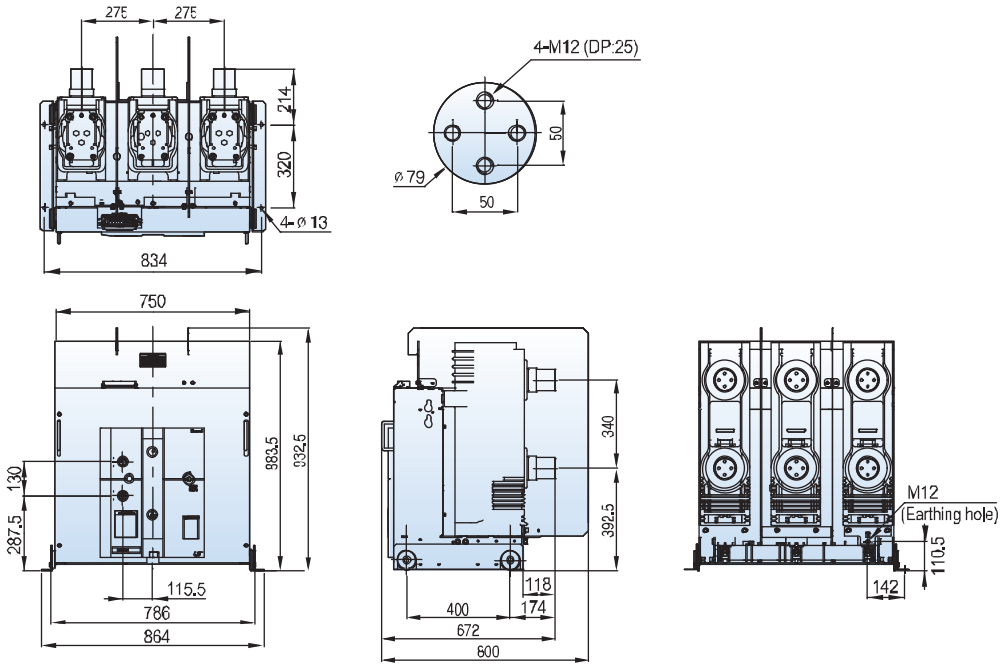


Dimensions -VH type

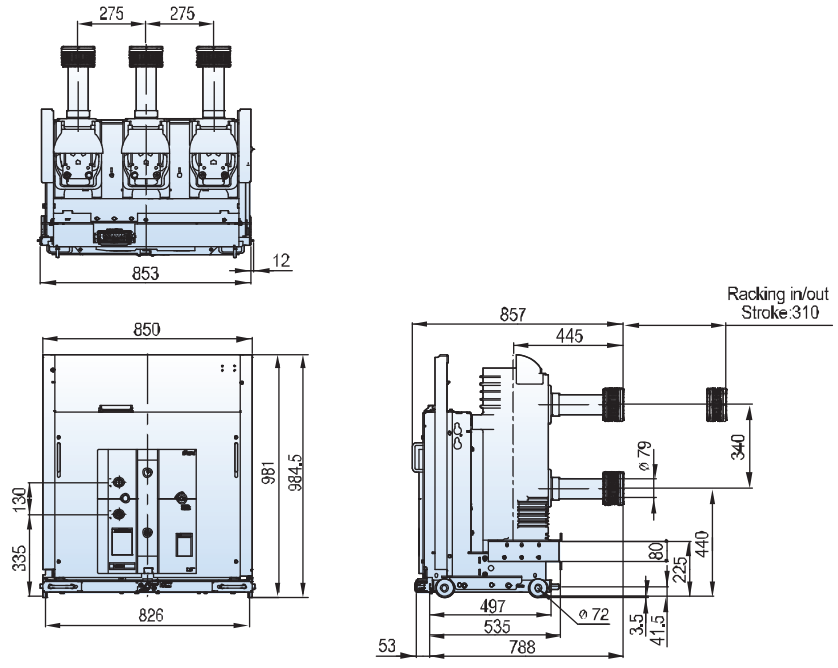
Susol

24kV, 25kA, 2500A

Fixed (P type, phase distance 275mm)

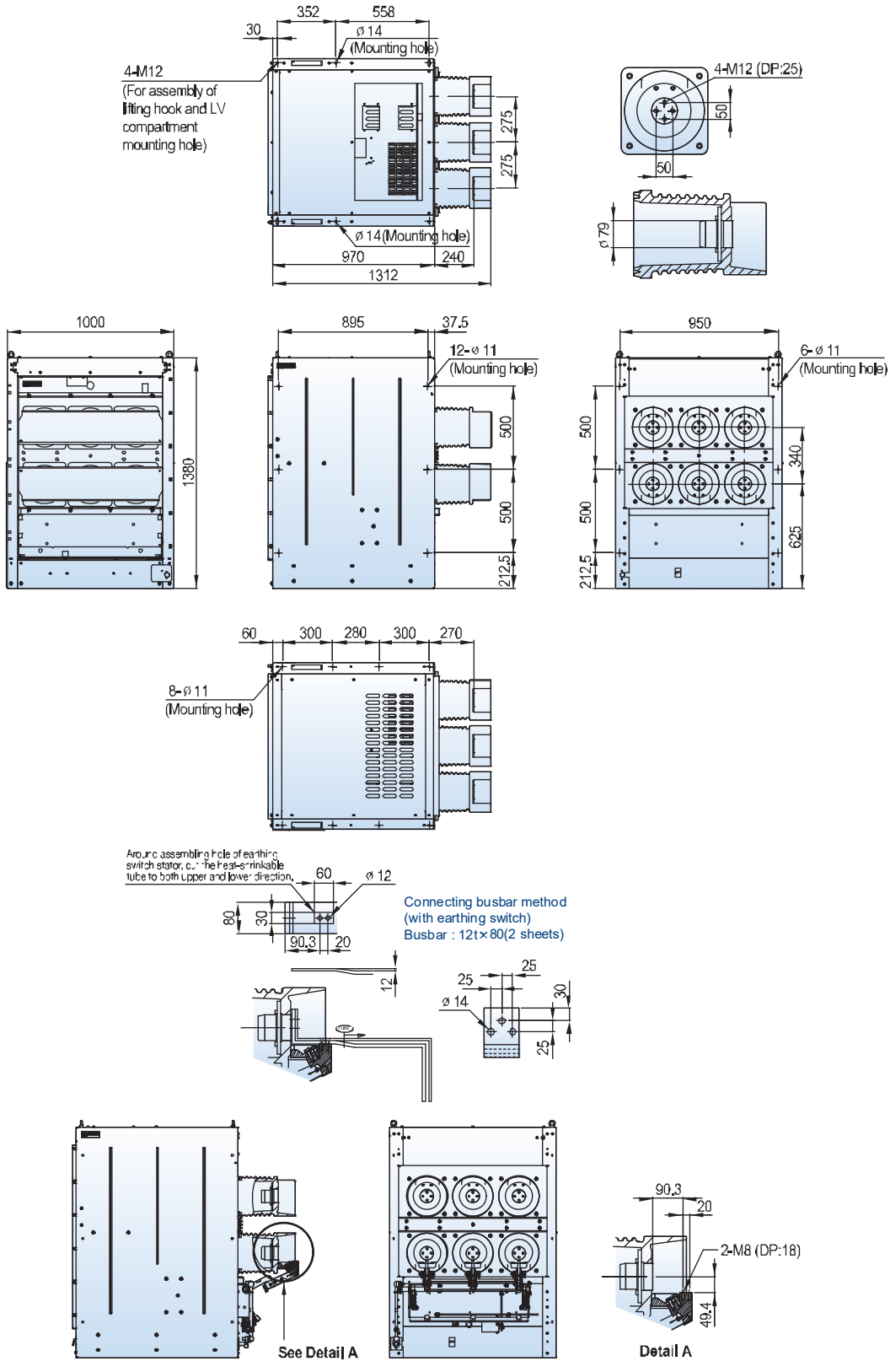


Withdrawable (H type unit, phase distance 275mm)



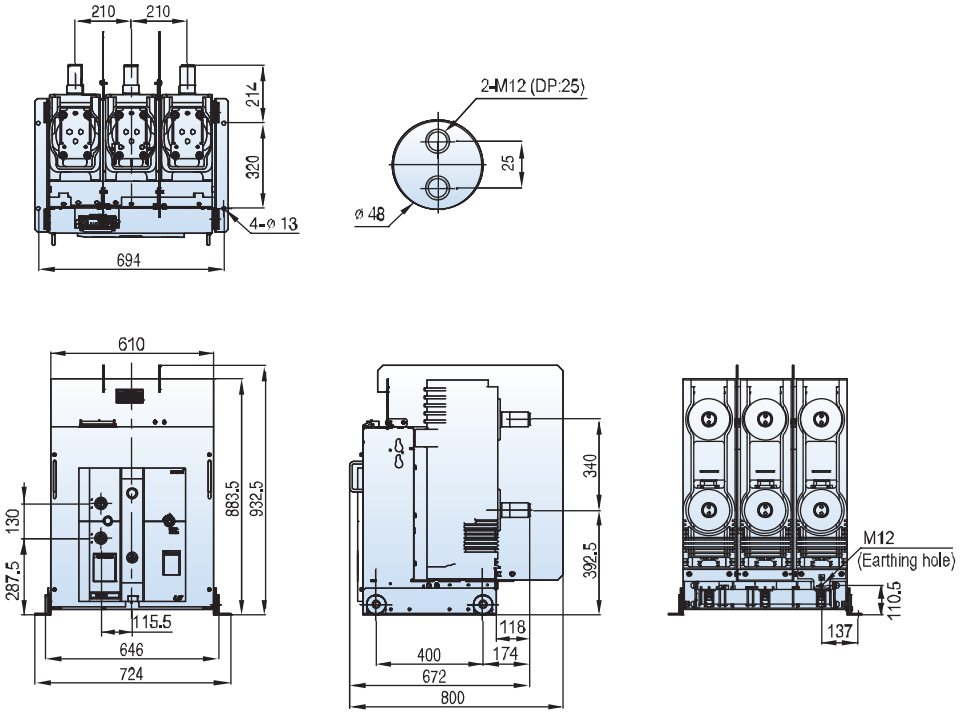
24kV, 25kA, 2500A

Withdrawable (H cradle, phase distance 275mm)

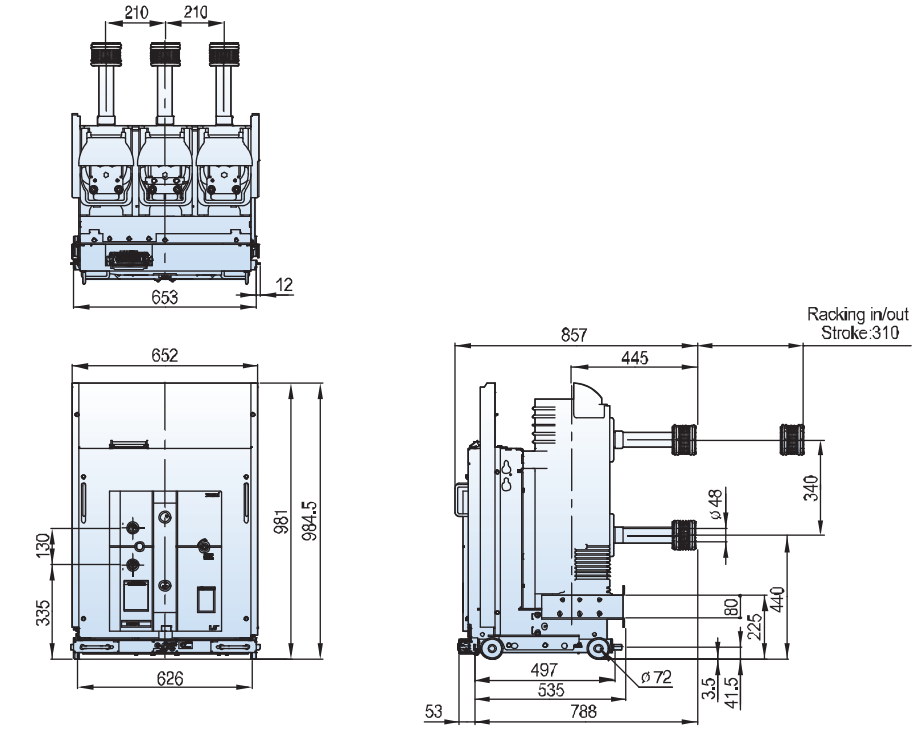


24kV, 31.5/40kA, 1250/2000A

Fixed (P type, phase distance 210mm)

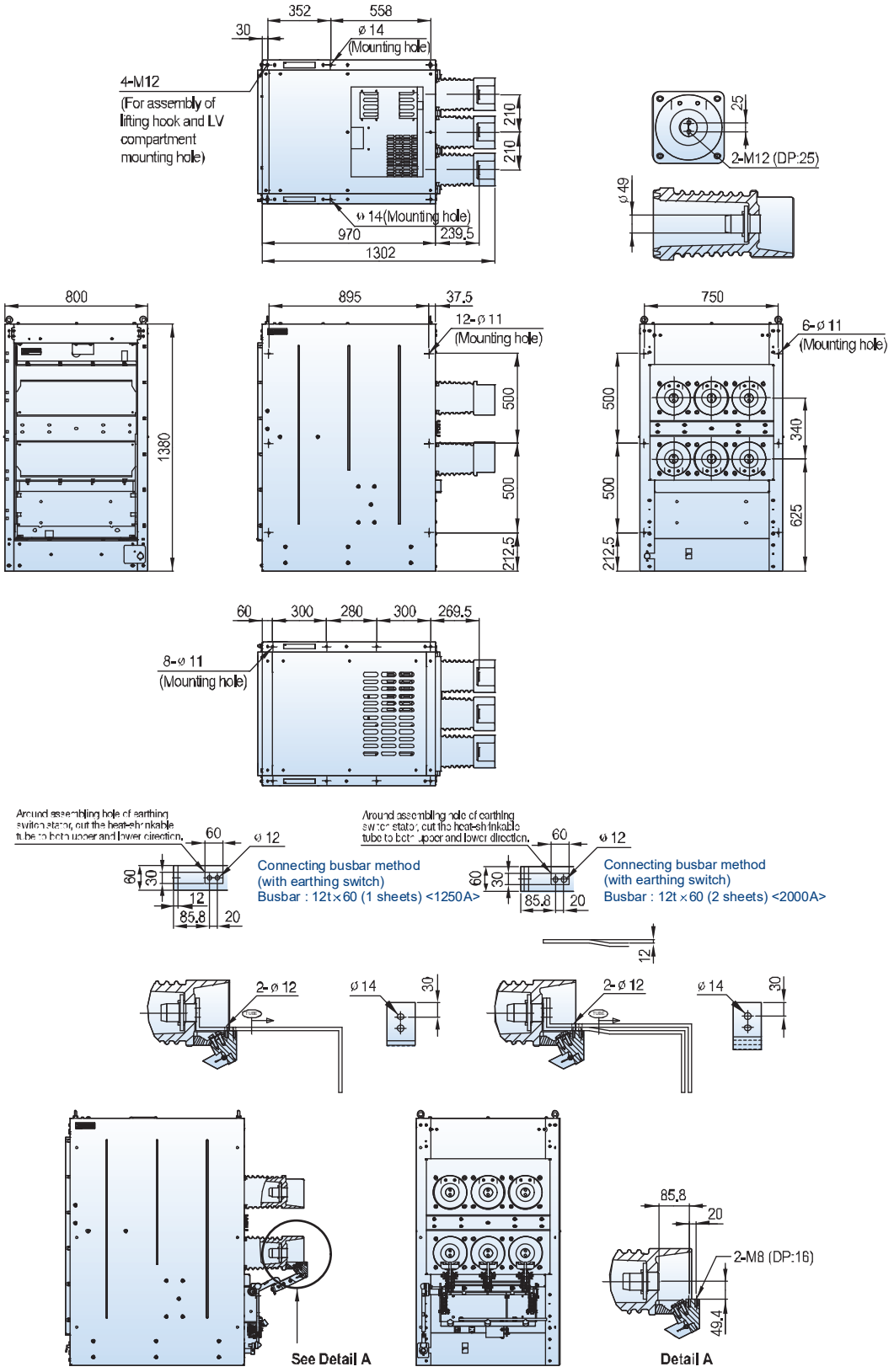


Withdrawable (H type unit, phase distance 210mm)



24kV, 31.5/40kA, 1250/2000A

Withdrawable (H cradle, phase distance 210mm)

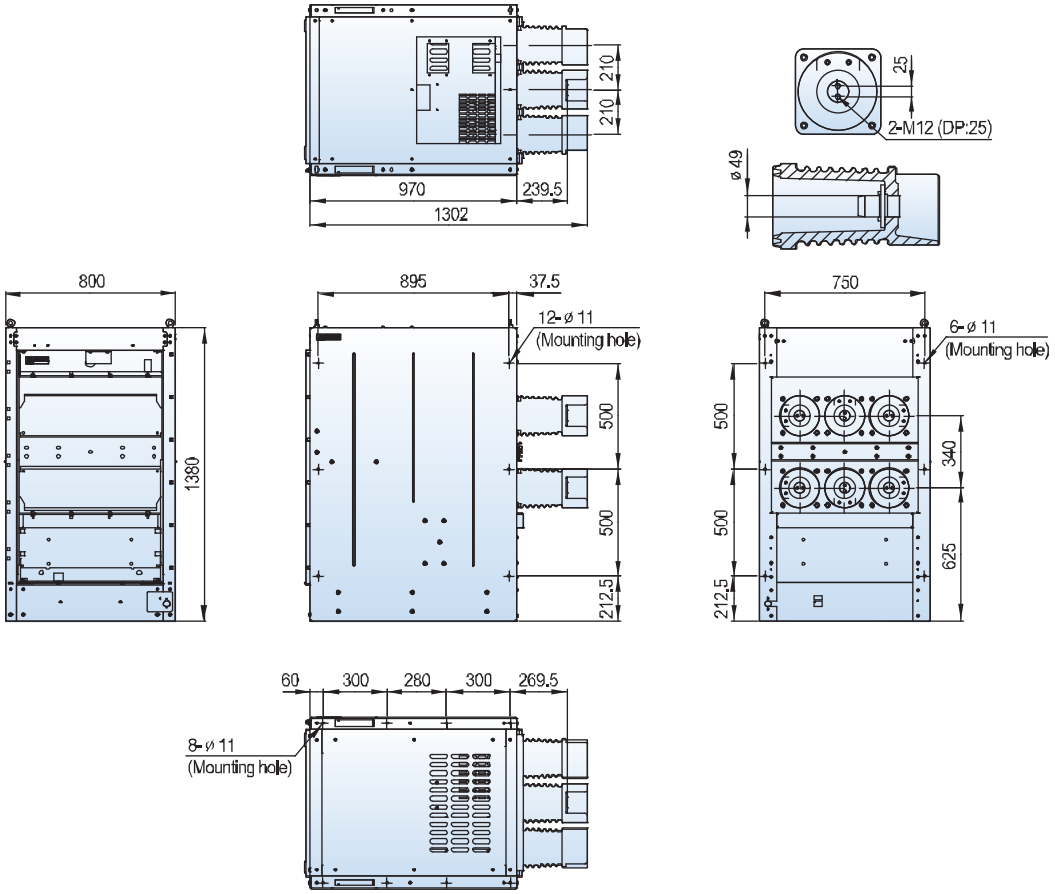


Dimensions -VH type

Susol

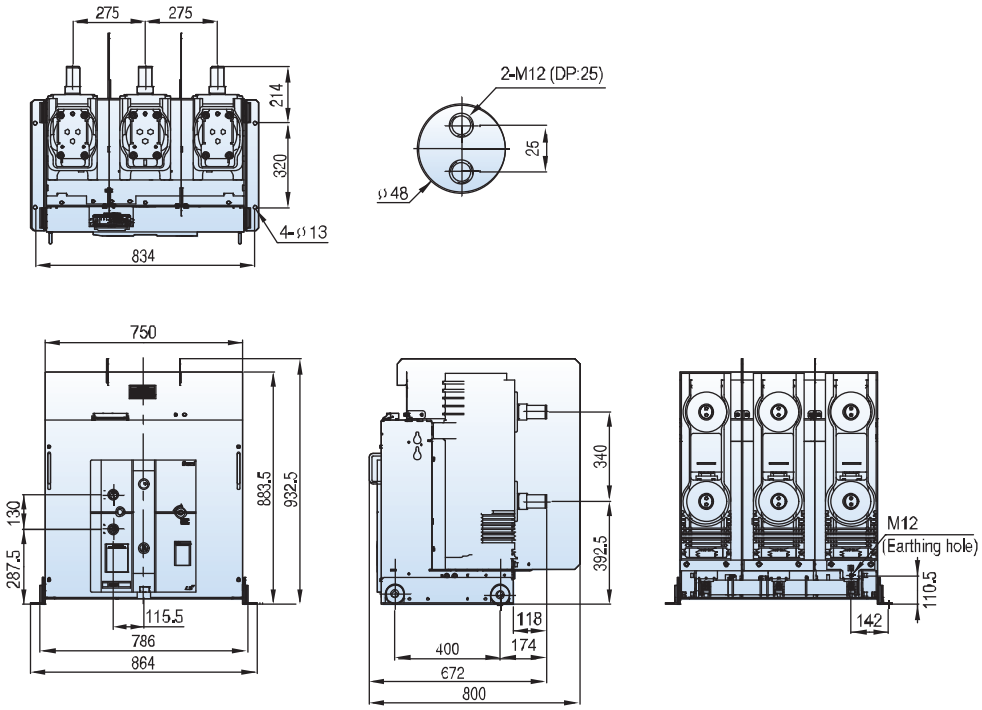
24kV, 31.5/40kA, 1250/2000A

Withdrawable (H cradle, Rotated bushing type, phase distance 210mm)

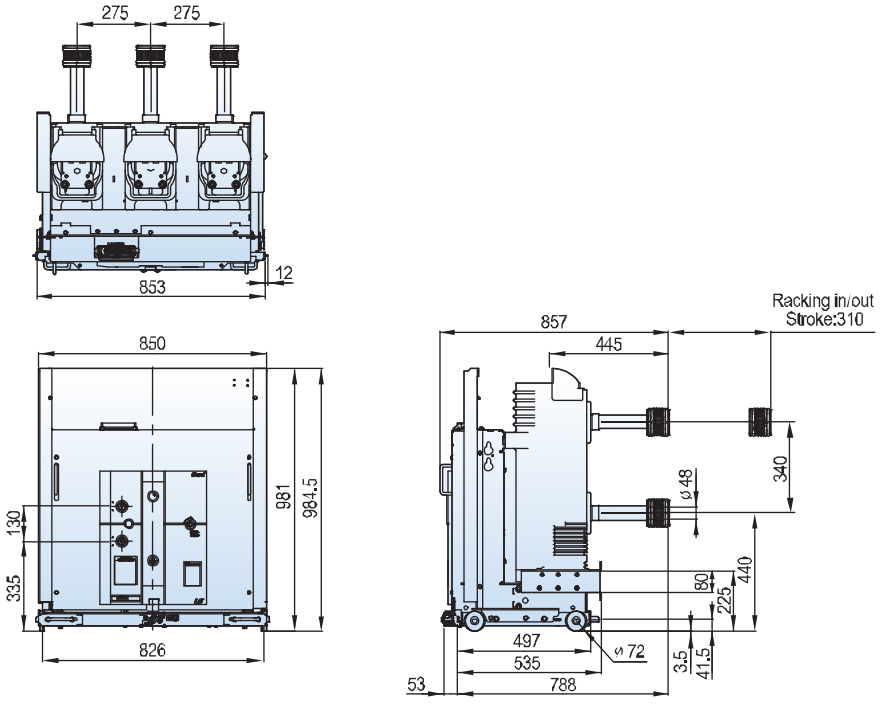


24kV, 31.5/40kA, 1250/2000A

Fixed (P type, phase distance 275mm)



Withdrawable (H type unit, phase distance 275mm)

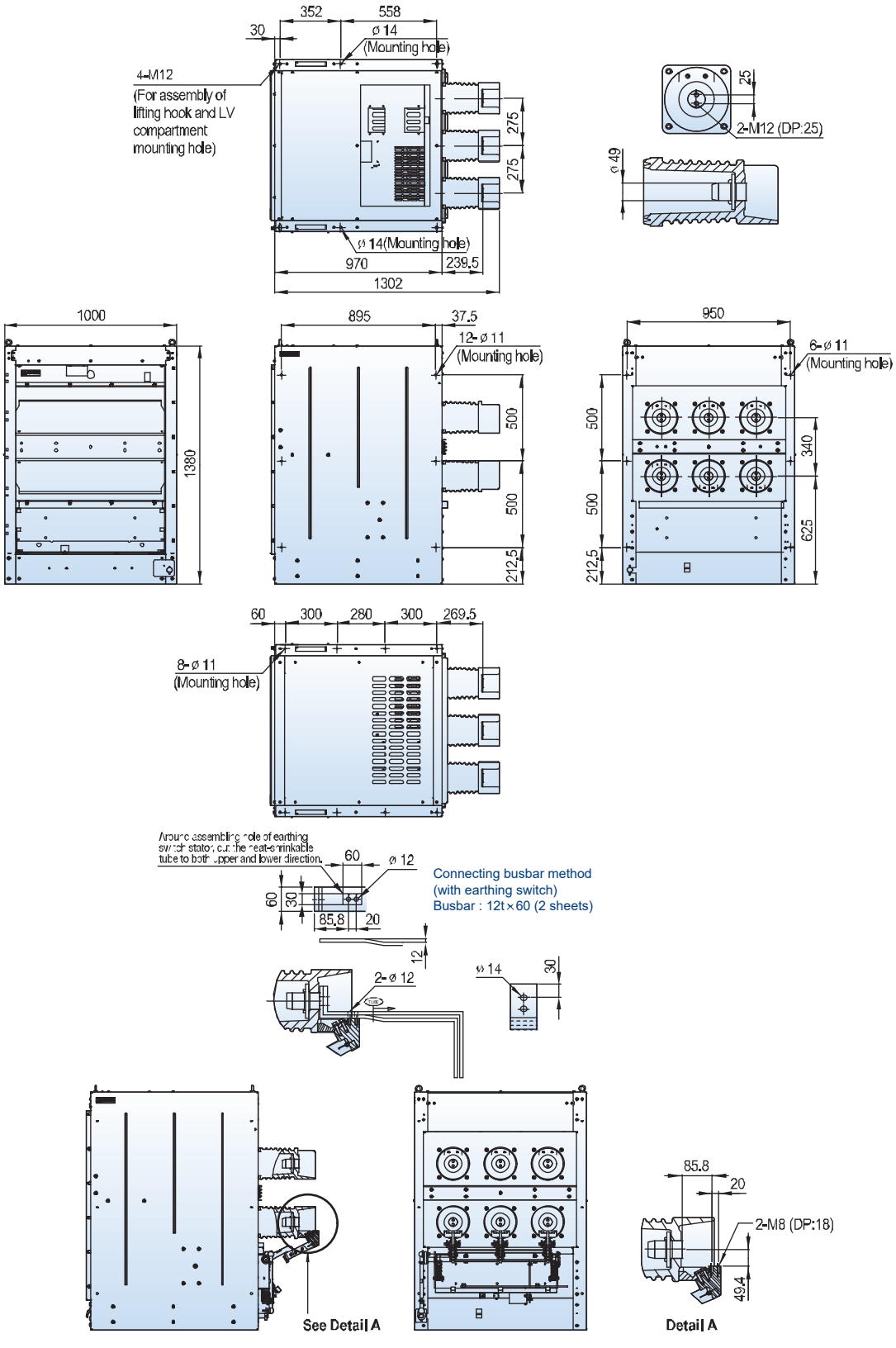


Dimensions -VH type

Susol

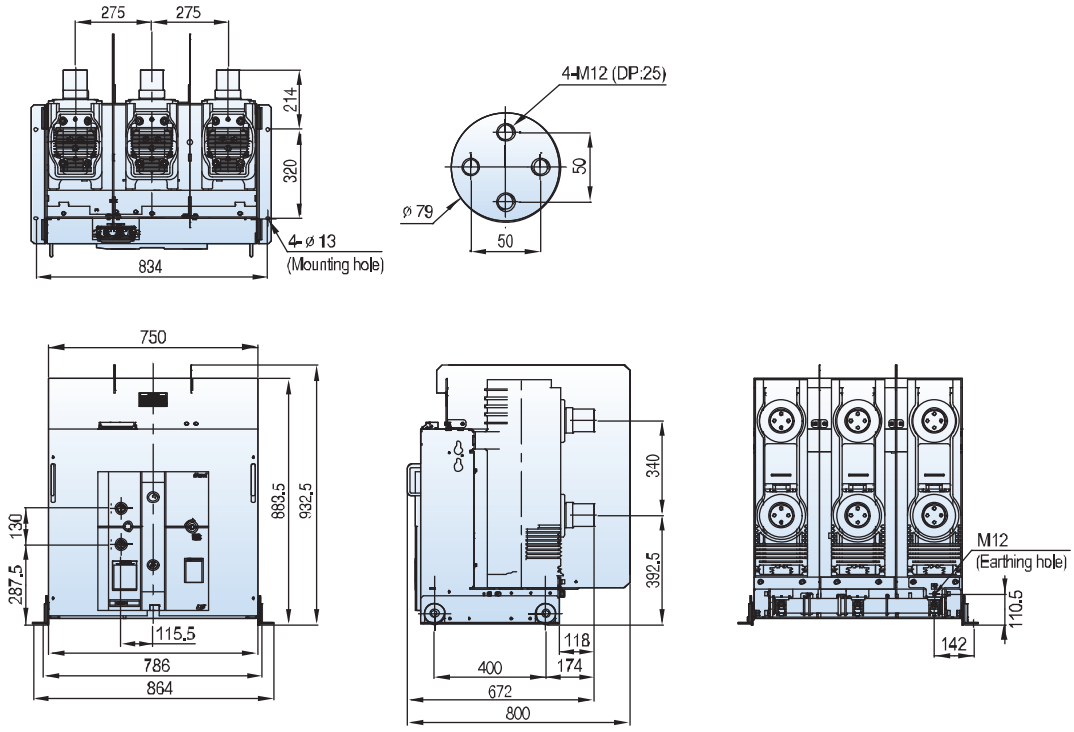
24kV, 31.5/40kA, 1250/2000A

Withdrawable (H cradle, phase distance 275mm)

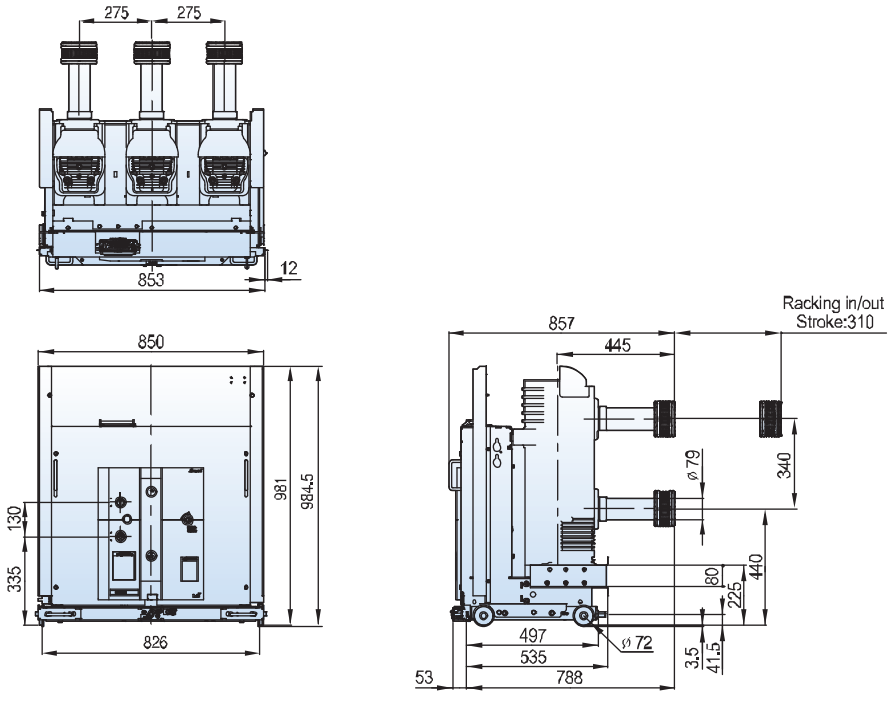


24kV, 31.5/40kA, 3150A

Fixed (P type, phase distance 275mm)



Withdrawable (H type unit, phase distance 275mm)

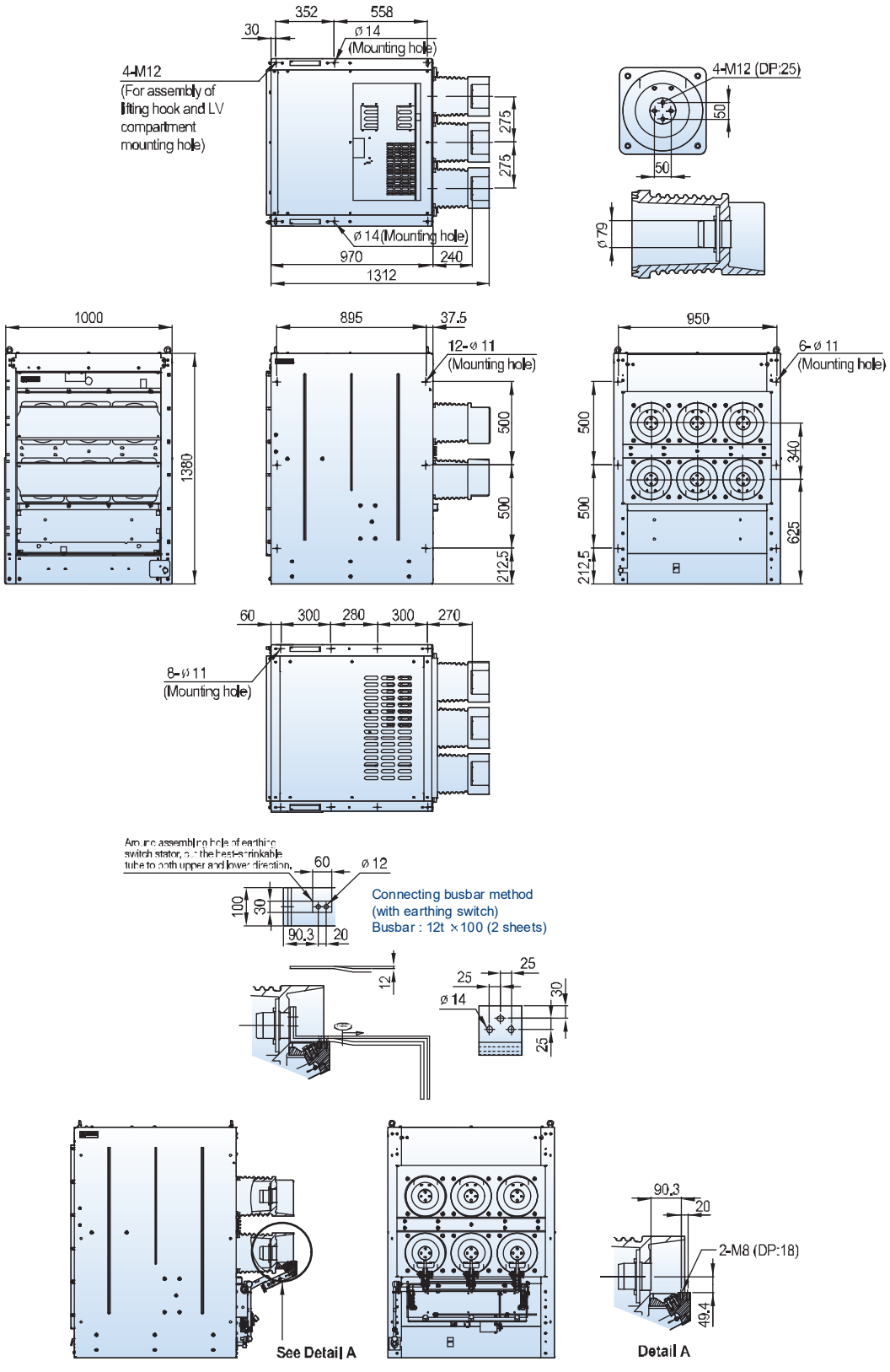


Dimensions -VH type

Susol

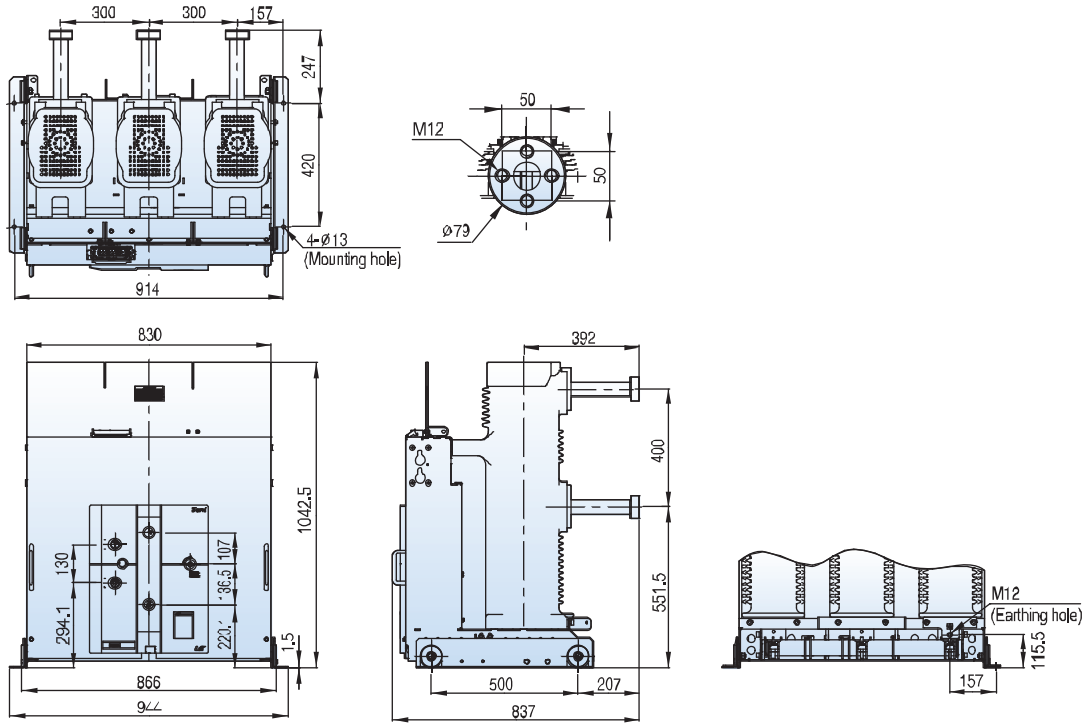
24kV, 31.5/40kA, 3150A

Withdrawable (H type cradle, phase distance 275mm)

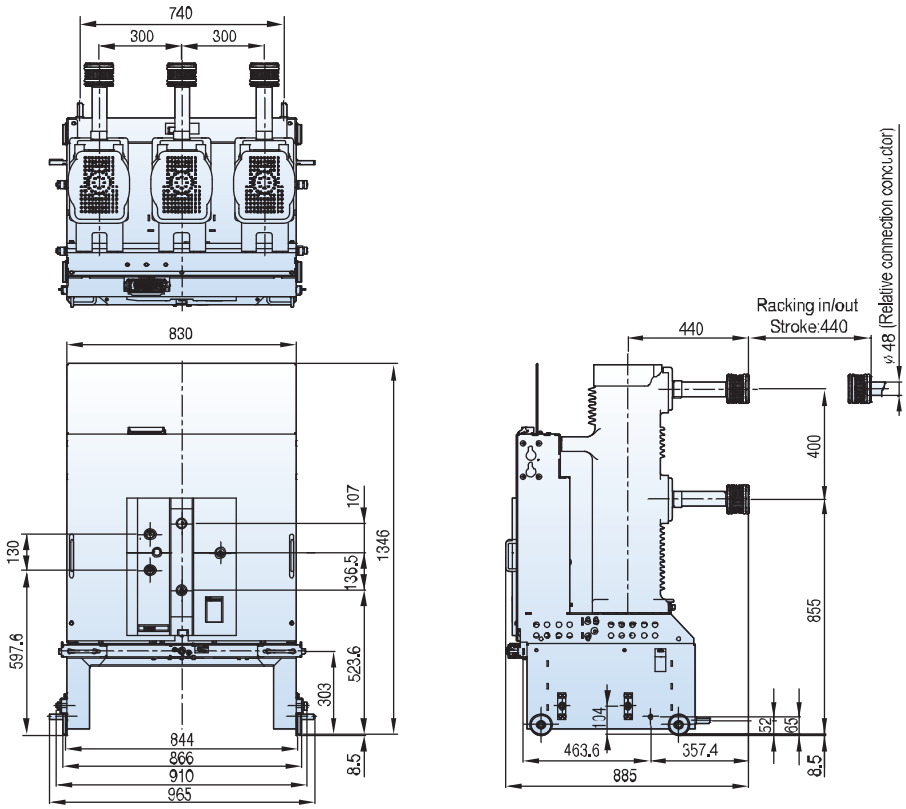


36kV, 25/31.5/40kA, 1250/2000A

Fixed (P type, phase distance 300mm)



Withdrawable (H type unit, phase distance 300mm)

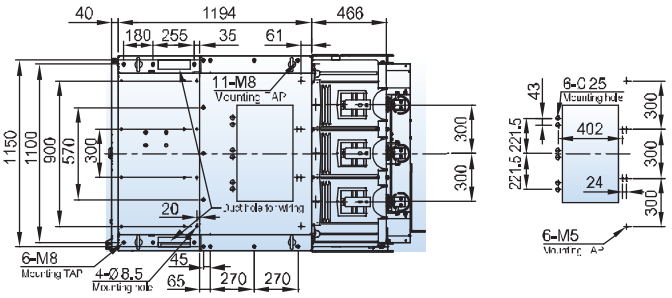


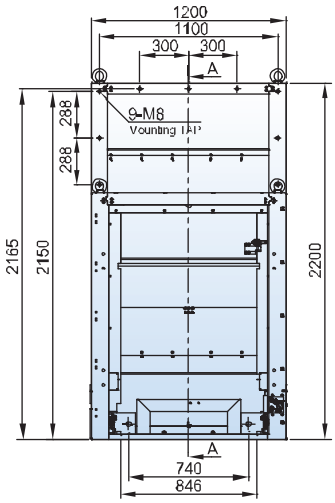
Dimensions -VH type

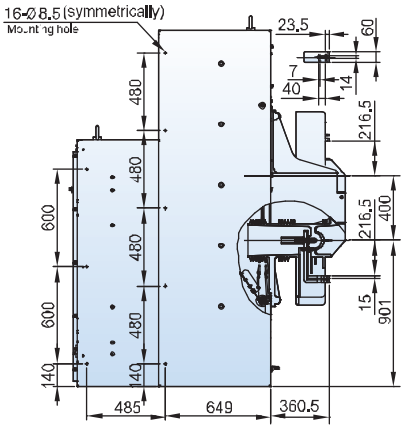
Susol

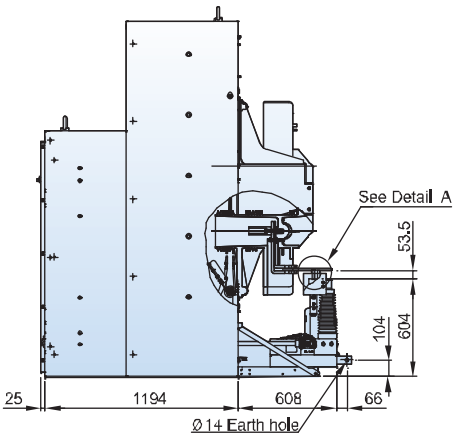
36kV, 25/31.5/40kA, 1250/2000A

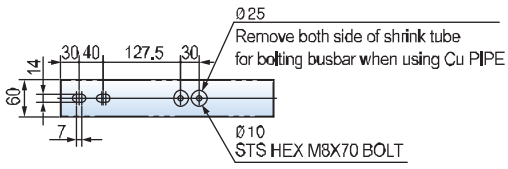
Withdrawable (H type cradle, phase distance 300mm)

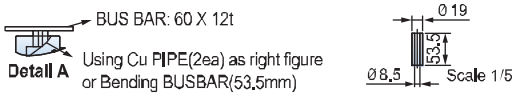




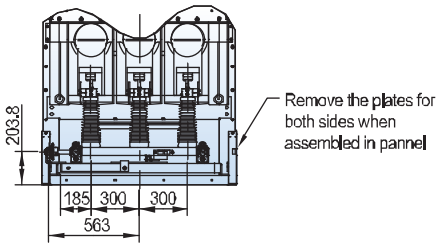


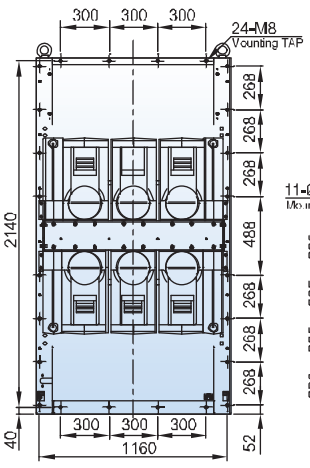


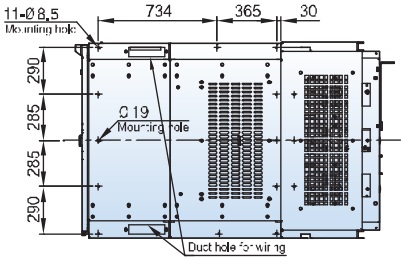




<For connecting BUSBAR>

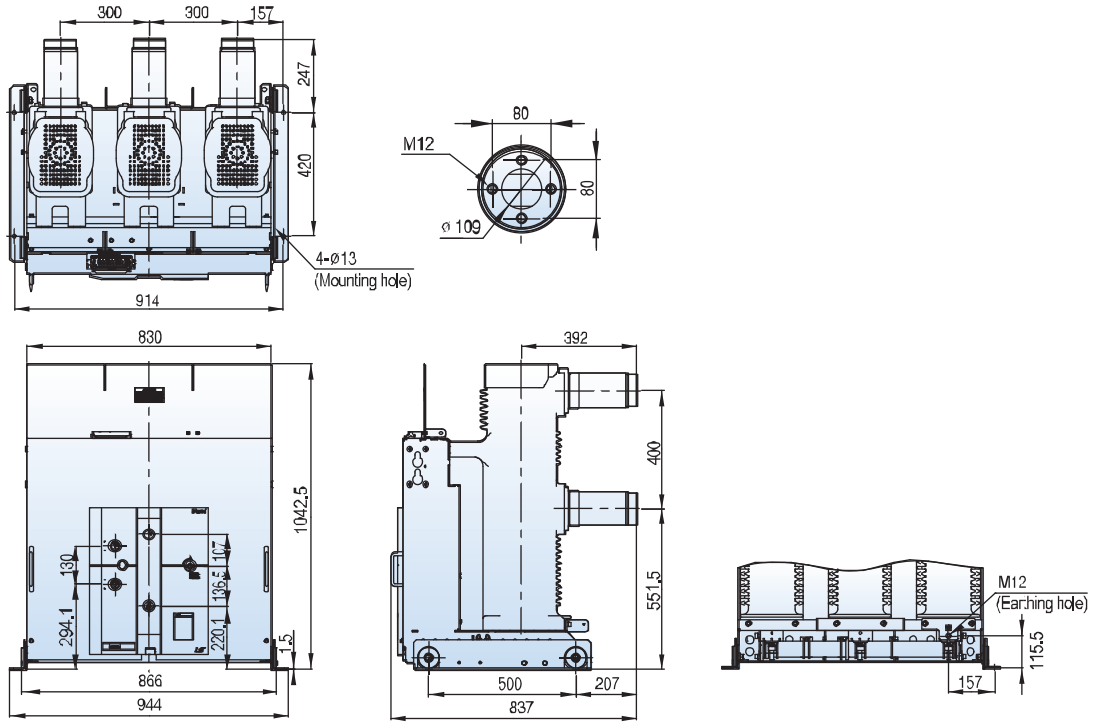




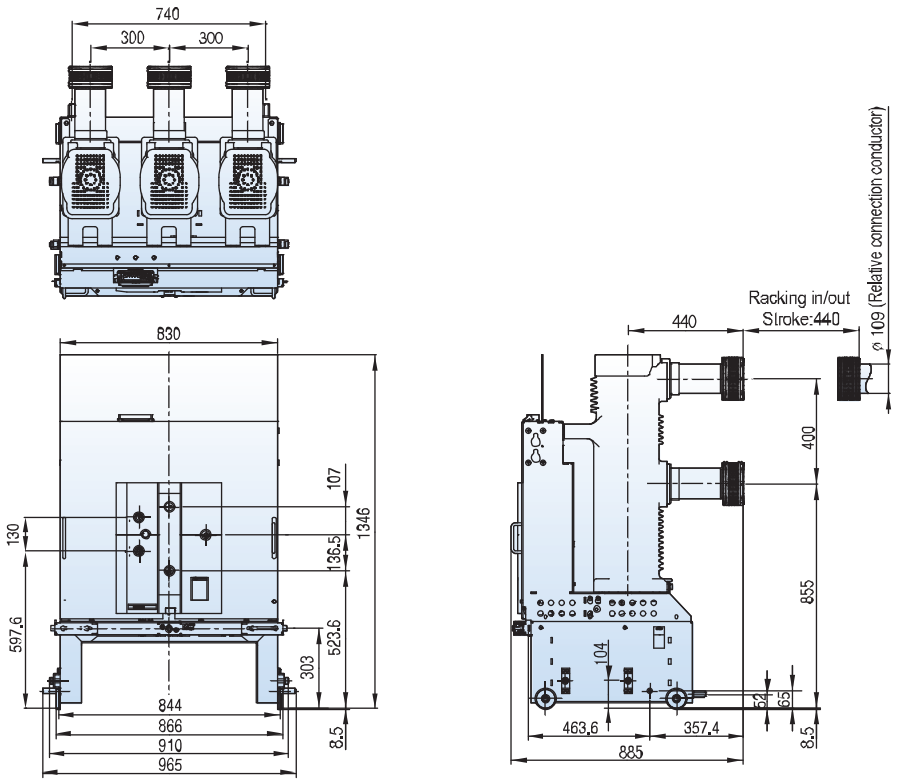


36kV, 25/31.5/40kA, 3150A

Fixed (P type, phase distance 300mm)

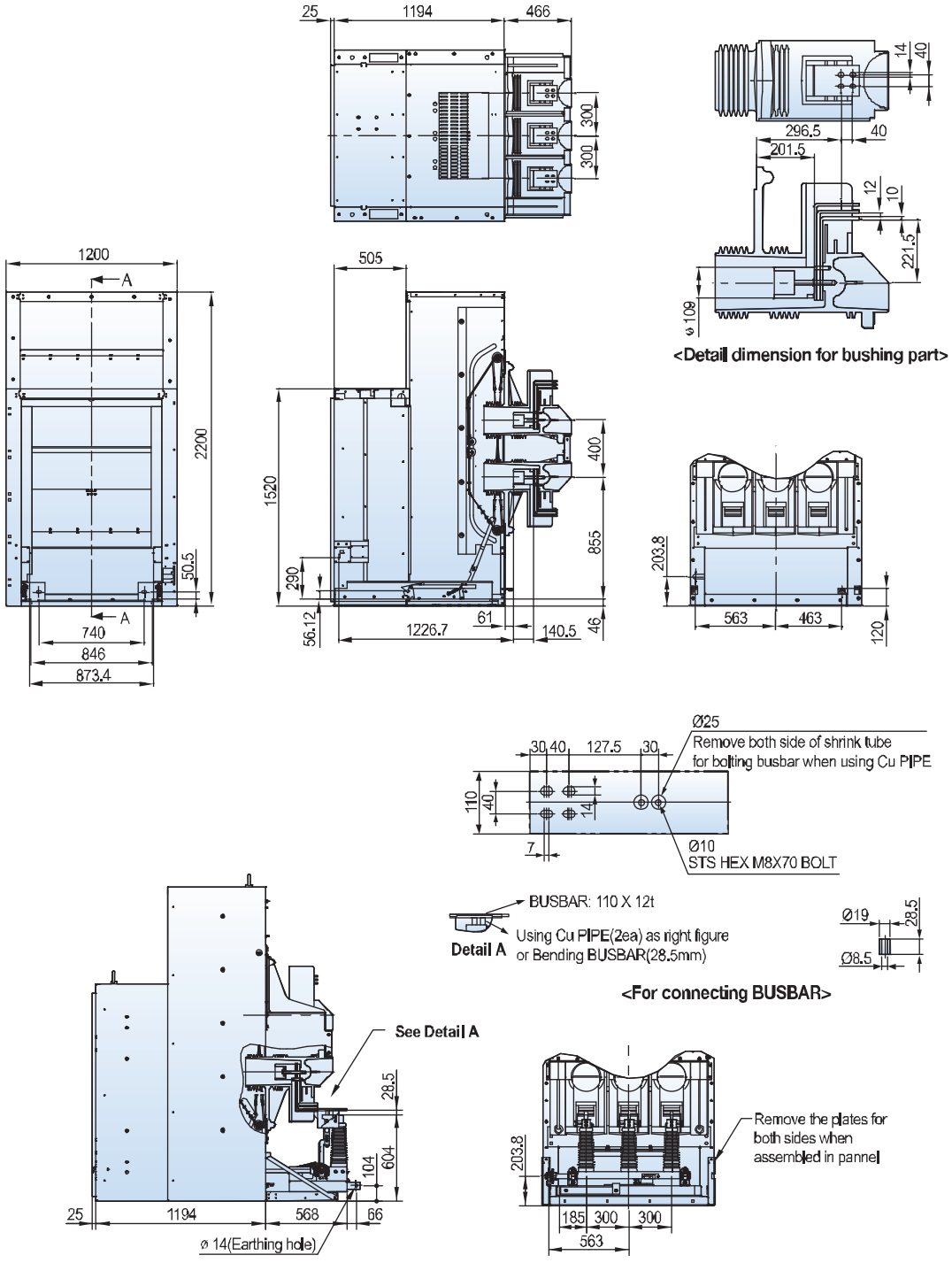


Withdrawable (H type unit, phase distance 300mm)



36kV, 25/31.5/40kA, 3150A

Withdrawable (H type cradle, phase distance 300mm)



* Mounting information is same as 36kV 25/31.5/40kA 1250/2000A

Side-Mount type VCB

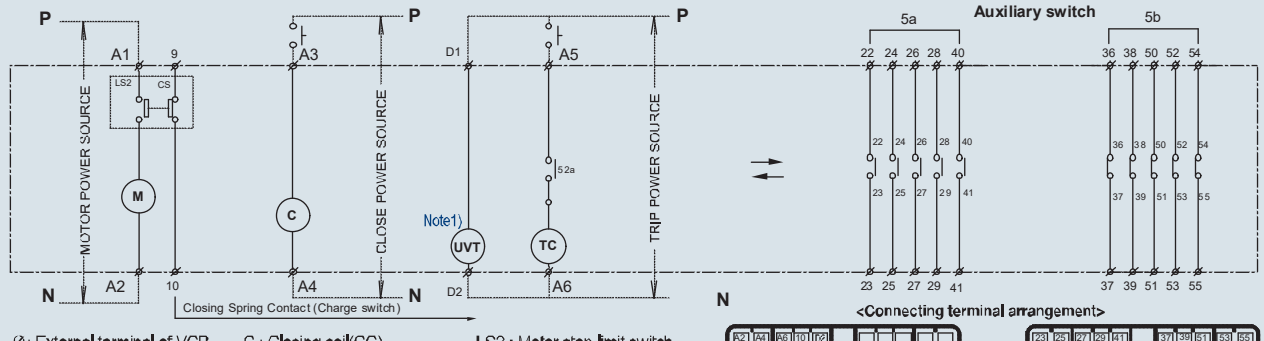
Susol

25.8kV 16kA 630A

Item			VL-25□16B 06
Rated voltage		Ur (kV)	25.8
Rated normal current		Ir (A)	630
Rated frequency		fr (Hz)	50/60
Rated short-circuit breaking current		Isc (kA)	16
Rated short-time withstand current (3 sec)		Ik (kA)	16
Rated short-circuit breaking capacity		(MVA)	665/715
Rated short-circuit making current		Ip (kA)	40/41.6
Rated breaking time		(cycle)	3
Rated withstand	Power frequency (1 min)	Ud (kV)	60
voltage	Impulse (1.2 x 50㎲)	Up (kV)	125
Rated operating sequence			O-0.3s-CO-3min-CO
Control voltage	Closing coil	(V)	DC 24~30V, DC 48~60V, DC 110V, DC 125V, DC 220V, AC 48V, AC 100~130V, AC 200~250V
	Trip coil	(V)	DC 24~30V, DC 48~60V, DC 110V, DC 125V, DC 220V, AC 48V, AC 100~130V, AC 200~250V
Auxiliary contact			5a5b
Rated opening time		(sec)	≤ 0.04
No-load closing time		(sec)	≤ 0.06
Type test class	Mechanical		M1
	Electrical		E1
	Capacitive current switching		C1
Lifetime *	Mechanical	(time)	2,000
	Electrical	(time)	2,000
Installation	Fixed	Right	R type
		Left	L type
Pole centre distance		(mm)	210
Weight	CB	(kg)	95
Standards			IEC 62271-100

* Lifetime with maintenance

Control circuit diagram



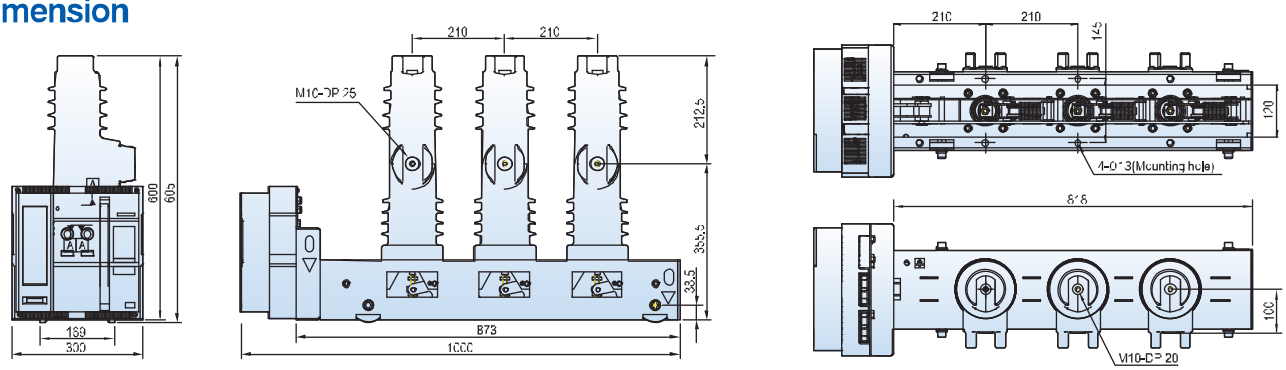
Ø : External terminal of VCB
52 : Vacuum circuit breaker
M : Spring charging motor
TC : Trip coil(SHT)

C : Closing coil(CC)
UVT : Under Voltage Trip
52a : Auxiliary switch (a)
52b : Auxiliary switch (b)

LS2 : Motor stop limit switch
CS : Closing spring charged indication limit switch

Note) 1. UVT : Under Voltage Trip (No. D1, D2) ——————— Option
* Closing and Trip coil : One Pulse type
* This circuit diagram is based on 'OFF' status of CB and Closing spring is charged.

Dimension



Note) This external shape is based on "R" Type (Installation type)

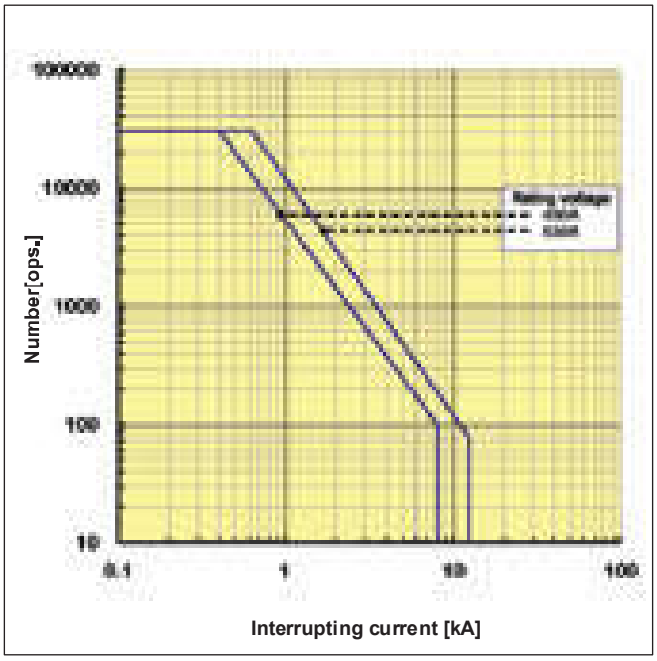
Ordering information

VL	—	25	R	16	B	06
Basic model name		Rated voltage (kV)	Installation type	Breaking	Phase distance/Compatibility	Rated current (A)
e-VCB		25 25.8	R On the right (Fixed type) L On the left (Fixed type)	16 16	B 210mm	06 680

VL-25□16B06	—	M1	C1	T1	SA5	U1	AAB

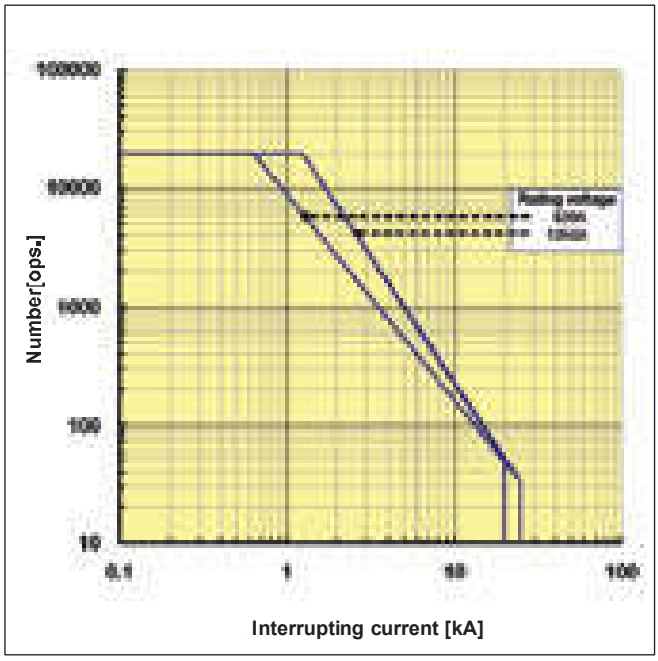
Motor control voltage		Closing coil voltage		Trip coil voltage		Aux. contact & wire ass'y		UVT		Other accessories	
M0	Without Motor	C0	Without Closing coil	T0	Without Trip coil	SA5	A type connector, 5a5b	U0	Without UVT	AA	Lead Wire
M1	DC 110V	C1	DC 110V	T1	DC 110V			U1	DC 110V	AB	User Plug(Part)
M2	DC 220V	C2	DC 220V	T2	DC 220V			U2	DC 220V		
M3	DC 125V	C3	DC 125V	T3	DC 125V			U3	DC 125V		
M4	DC 24V~30V	C4	DC 24V~30V	T4	DC 24V~30V			U4	DC 24V~30V		
M5	DC 48V~60V	C5	DC 48V~60V	T5	DC 48V~60V			U5	DC 48V~60V		
M6	AC 48V	C6	AC 48V	T6	AC 48V			U6	AC 48V		
M7	AC 100V~130V	C7	AC 100V~130V	T7	AC 100V~130V			U7	AC 100V~130V		
M8	AC 200V~250V	C8	AC 200V~250V	T8	AC 200V~250V			U8	AC 200V~250V		

Electrical endurance by interrupting current



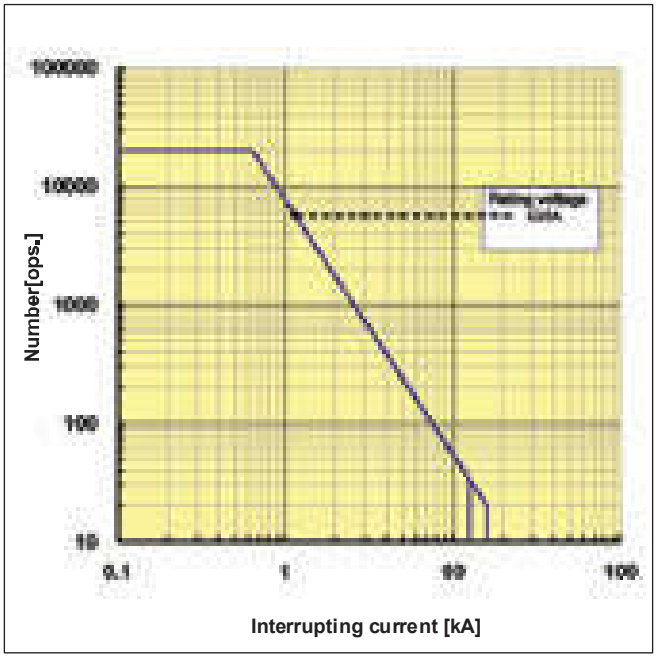
VI model LV2 at 7.2kV

- N : Operation numbers
- I : Interrupting current



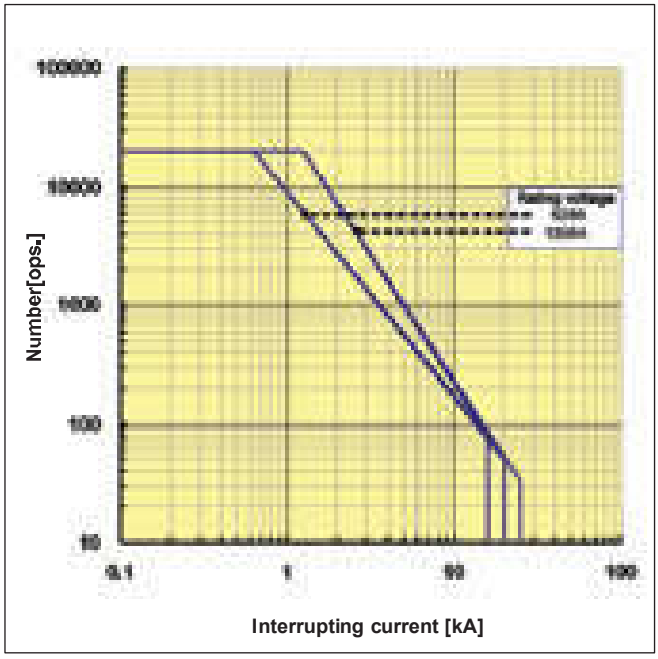
VI model LV3 at 7.2kV

- N : Operation numbers
- I : Interrupting current



VI model LV4 at 24kV

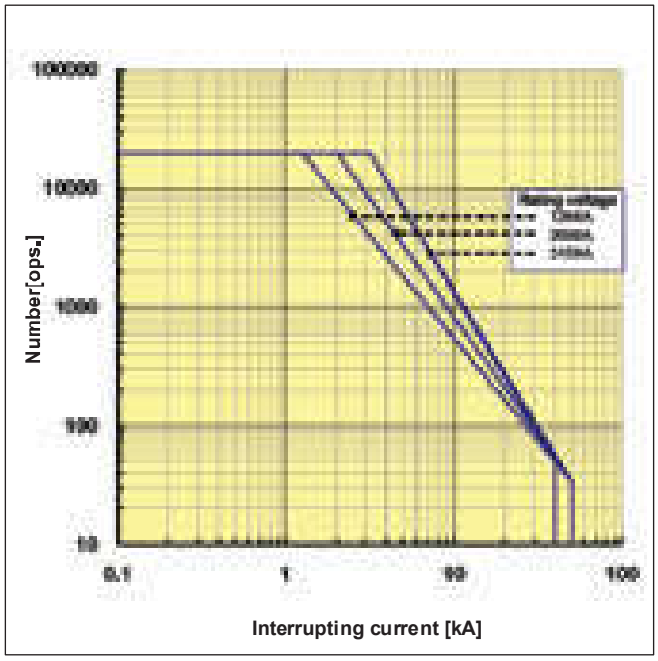
- N : Operation numbers
- I : Interrupting current



VI model LV5 at 17.5kV

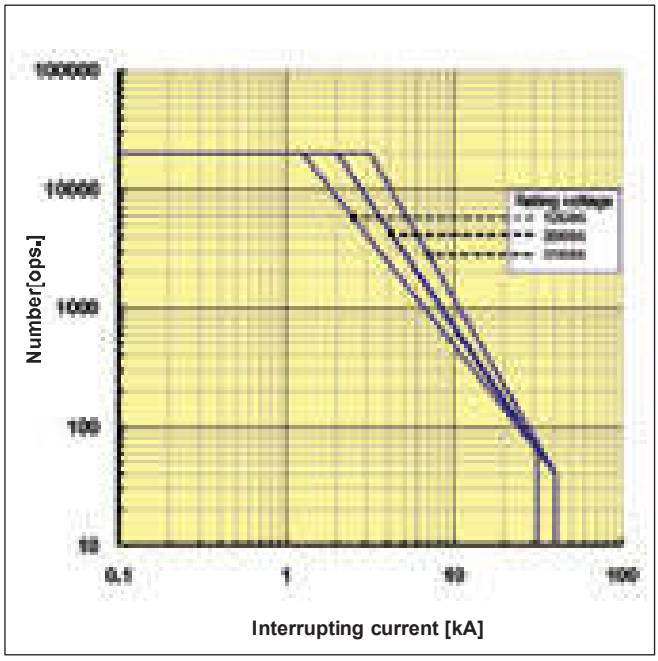
- N : Operation numbers
- I : Interrupting current

Electrical endurance by interrupting current



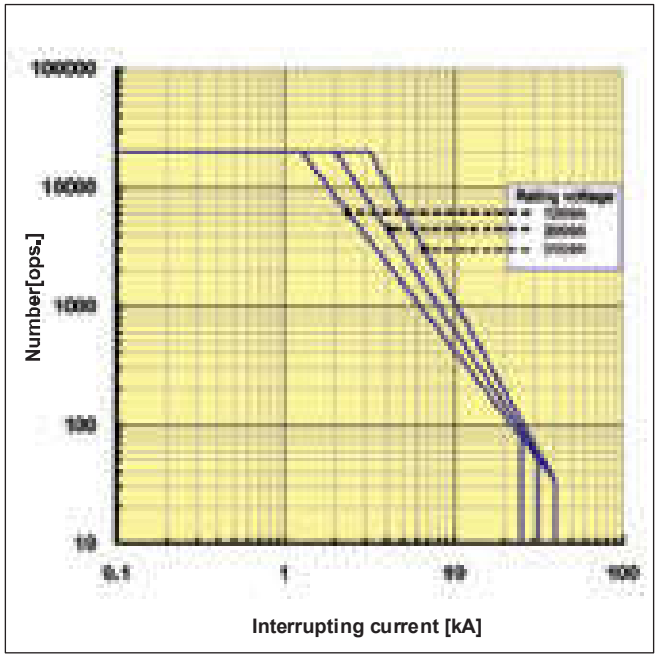
VI model LV8 at 17.5kV

- N : Operation numbers
- I : Interrupting current



VI model LV7-P1 at 24kV

- N : Operation numbers
- I : Interrupting current



VI model LV8 at 36kV

- N : Operation numbers
- I : Interrupting current

Note) 1. Above graphs represent the characteristics of the electrical life of LS Susol VCB.
2. Life characteristics of each model in each rating represents the LOG-LOG graphs.

Standard Use Environment for Susol VCB

The operation characteristic of Vacuum Circuit Breaker such as insulation and endurance is often influenced largely by external environment and thus should be applied appropriately with conditions of the place where it is used taken into consideration.

The following values are the limits have been set in accordance with IEC 62271-100 (IEC 62271-1)

Ambient Temperature

- maximum temperature: +40℃
- 24-hour average maximum temperature: +35℃
- minimum temperature: -5℃

Altitude

- 1000m or less above sea level

Relative Humidity

- 24 hours average value: 95% or less
- One month average: 90% or less

- If a standard circuit breaker is used in high temperature exceeding 40℃, you are advised to use it according to the current corrected for each level of ambient temperature in catalog.
- If used in conditions of high humidity, the dielectric strength or electric performance may be degraded.

- It is highly recommended to use a dust cover or anti-humid agent if it is used in dusty and humid conditions.
- Excessive vibration may cause a trip breaker such as connection fault or flaw on mechanical parts.

- If it is left ON or OFF for a long time, it is recommended to switch load current on a regular basis.
- It is recommend to put it in the sealed protection if corrosive gas is prevalent.

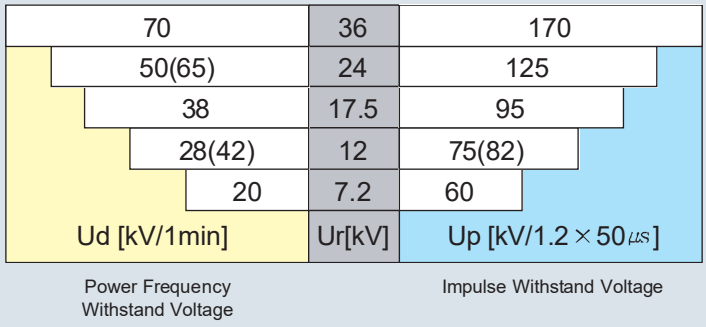
Special Use Environment

The circuit breaker is designed for use in standard use environment specified in Section 2.1 of IEC62271-1. Concerning the special use environments as below the special use conditions are required to be considered, thus please contact us in advance.

- where altitude and ambient temperature are out of standard use environment.(-40℃)
- where a strong sea breeze blows
- when usually used in a humid place
- where a lot of steam or oil steam exists
- where explosive, flammable and other harmful gases might permeate the breaker
- In a dusty place
- where abnormal vibration or shock exists
- where a lot of ice and snow exist
- other special conditions

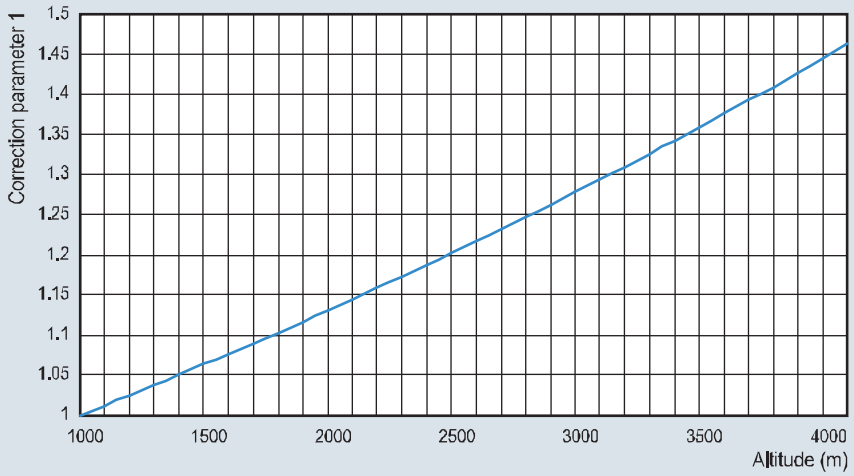
Withstand voltage compensation according to altitude

If the breaker is used in areas of sea level higher than 1000m the degradation of insulation performance should be taken into consideration.

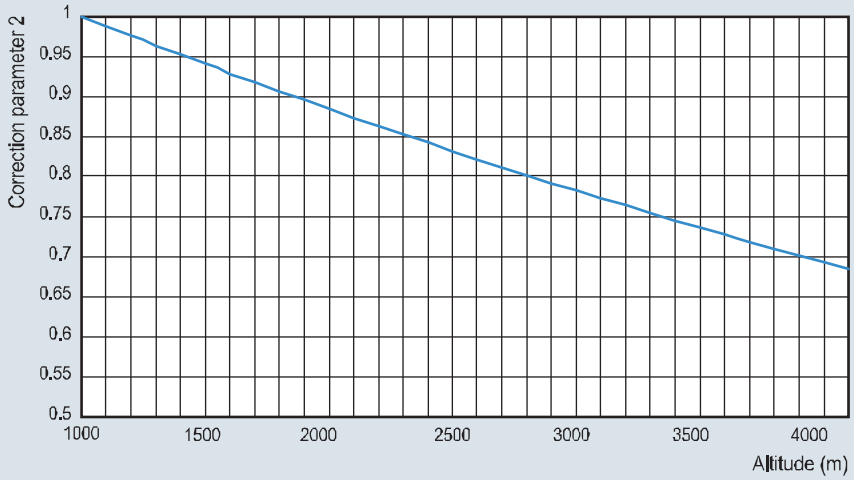


<Table 1> Criteria of withstand voltages by rated voltages specified in IEC62271-1

Withstand voltage compensation according to altitude



<Fig.1 > withstand voltage correction parameter 1 by altitude (based on a required withstand voltage)



<Fig.2 > withstand voltage correction parameter 2 by altitude (based on a applicable withstand voltage)

Ex) Selecting a breaker to be used in a place of 2500m above sea level with a rated voltage 7.2kV (correction parameter 1 applied)

- correction parameter at 2500m is 1.2
- criteria of withstand voltage by rated voltage:
  Power Frequency Withstand Voltage (Ud) = 20kV, Impulse Withstand Voltage (Up) = 60kV
- requirements withstand voltage criteria:
  Power Frequency Withstand Voltage (Ud) = 20 × 1.2 = 24kV, Impulse Withstand Voltage (Up) = 72kV
  Therefore rated voltage 12kV breaker shall apply to satisfy the required withstand voltage.

Ex) To apply a breaker with a rated voltage 12kV to the place of 2,500m above sea level (correction parameter 2 applied)

- correction parameter at 2500m is 0.825
- dielectric strength of VCB : Power Frequency Withstand Voltage (Ud) = 28 × 0.825 = 23.1kV,
  Impulse Withstand Voltage (Up) = 75 × 0.825 = 62kV/1.2 × 50 μs
  Therefore above breaker with rated voltage 12kV shall apply to rated voltage system 7.2kV at the altitude.

Special Use Environment

Rated current compensation in accordance with ambient temperature

When normal ambient temperature exceeds the temperature specified in the environment the following formula help to select the applicable current.

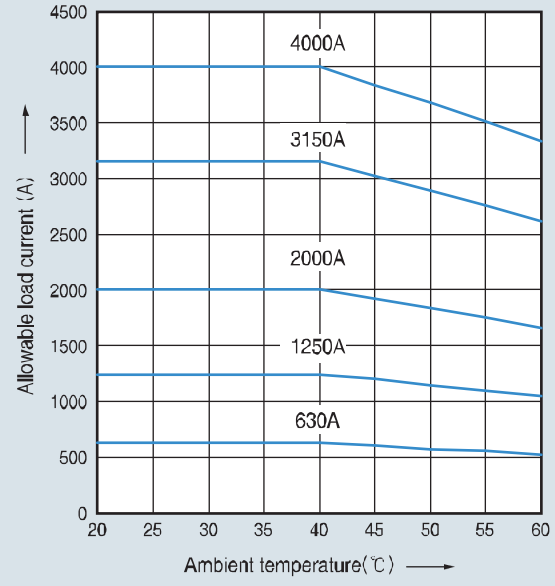
$$Ia = Ir\left(\left(\Theta_{max} - \Theta_a\right)/\Theta_r\right)^{1/2}$$

Ia: allowable continuous current in the actual ambient temperature Θ_a
Ir: rated current at 40℃ ambient temperature
Θ_{max}: acceptable overall temperature of the hottest spot
Θ_a: the actual ambient temperature expected at -30℃ and 60℃
Θ_r: allowable temperature in the hottest place at rated current

Ex) The calculation of the applicable load current value when a breaker with rated current 2000A is used at 55 ℃ ambient temperature
Ia = 2000×((105-55)/65)$^{1/2}$ = 2000×0.87 = 1754A

Rated current (A)	Ambient temperature (℃)								
	20	25	30	35	40	45	50	55	60
4000	4000	4000	4000	4000	4000	3843	3679	3508	3328
3150	3150	3150	3150	3150	3150	3026	2898	2763	2621
2000	2000	2000	2000	2000	2000	1922	1840	1754	1664
1250	1250	1250	1250	1250	1250	1201	1150	1096	1040
630	630	630	630	630	630	605	580	553	524

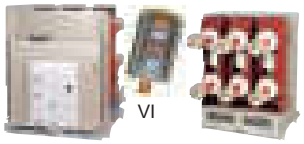
<Table 2> Allowable load current by ambient temperature



<Figure 3> Allowable load current by ambient temperature

Comparison of GCB & VCB

In the system of medium voltage lines VCB uses a vacuum which is an eco friendly medium for arc extinguishing.
It also offers excellent interrupting properties and ease of maintenance and has expanded the area to the scope of the GCB as the overlap increases.

Items	GCB	VCB	Comparison results	Remarks
Images		 VI		
Arc extinguish medium and characteristics	SF_6 gas - Greenhouse gas that causes global warming. - The toxic gas generated by chemical reactions due to arc energy. - 5kgf/㎟ high pressure required.	Vacuum - Green clean medium. - 5×10^{-5} Torr vacuum rate to maintain.	VCB is better than GCB	
Maintenance of the arc media	- Periodic check and supplement the gas pressure required. - Automatic locking if gas pressure falls below the certain value. In the event of an accident while the gas valve is locked trip is disable and the load equipment can not be protected.	- Available until the product life. - Always keep trip-first feature. When an accident occurs the trip-first feature functions to protect the equipment.	VCB is better than GCB	
Rated voltage range (kV)	3.6~550	3.6~36	GCB is better than VCB	VCB has been increasing rapidly in the medium voltage systems.
Applicable rate of transient recovery voltage (RRRV)	Low	High	VCB is better than GCB	IEC62271-100 Annex M applied/ Interrupting performance verified.
Development and trends	Decline - Company M discontinued producing GCB. - Company A manufactures VCB in medium voltage GCB production factory. - GCB Maker S started the production of VCB.	Increasing - Companies A and S have developed new VCBs. - Development trend that the voltage coverage of VCB expands. - VI increased coverage. (GIS, DAIS, SIS, etc.)	VCB is better than GCB	

FUTURING SMART ENERGY

We open up a brighter future through
efficient and convenient energy solutions.

Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
  Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concernec.

- According to The WEEE Directive, please do not discard the device with your household waste.

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