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Global
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for 10 years

Susol *Super Solution*

Vacuum Circuit Breakers



LS[®] **ELECTRIC**

Susol *Super Solution*

VCB

Vacuum Circuit Breakers





Susol

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.

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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	630/1000/1250/2000/2500/3150/4000/5000
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

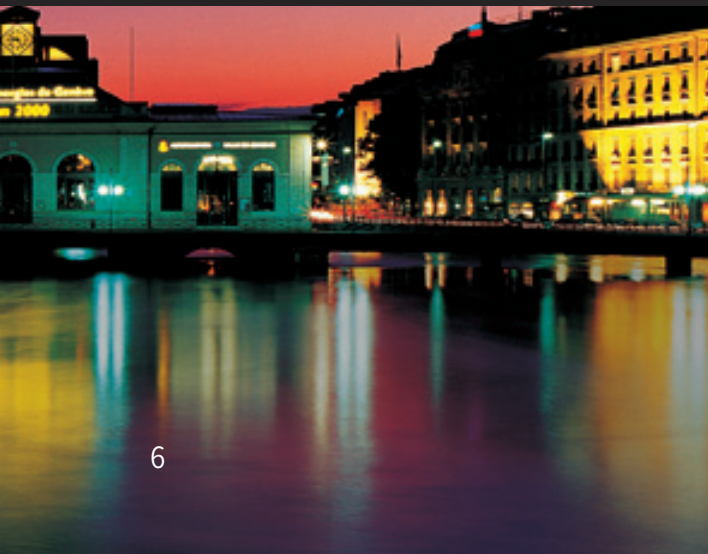
Susol VCB series are premium-type products featuring main structure with high reliability application and a variety of accessories and ability to maximize to be suitable for use as the main circuit breaker to protect key installations in the places such as device industry, power plants, high-rise buildings, 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
12	31.5	630
		1250
		2000
	20	630
		1000
		1250
17.5	25	2000
		630
		1000
	31.5	1250
		2000
		2500
24, 25.8	20	630
		1250
		2000
	25	630
		1250
		2000
36	31.5	630
		1250
		2000
	25	2500
		630
		1250

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



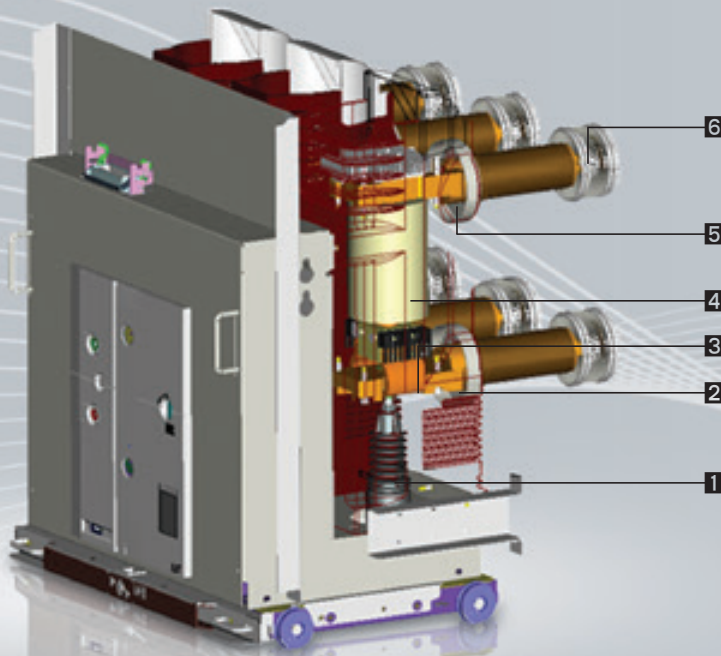
Ur (kV)	Isc (kA)	Ir (A)
7.2	31.5	1250
		2000
		3150
	40	1250
		2000
		3150
12	50	4000
		1250
		2000
	31.5	2500
		3150
		4000
17.5	31.5	3150
		1250
		2000
	40	3150
		2000
		2500
24, 25.8	50	3150
		1250
		2000
	25	2500
		3150
		1250
36	31.5	2000
		3150
		1250
	25	2000
		3150
		1250



VCB Cradle type

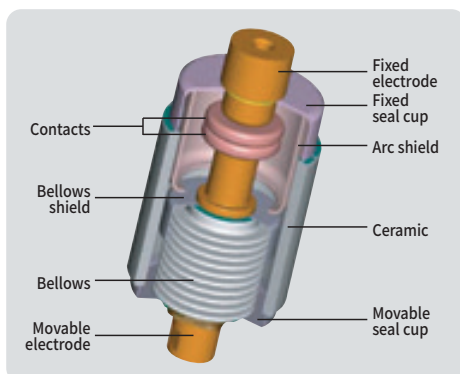
Main circuit structure
with high reliability

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 5×10^{-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

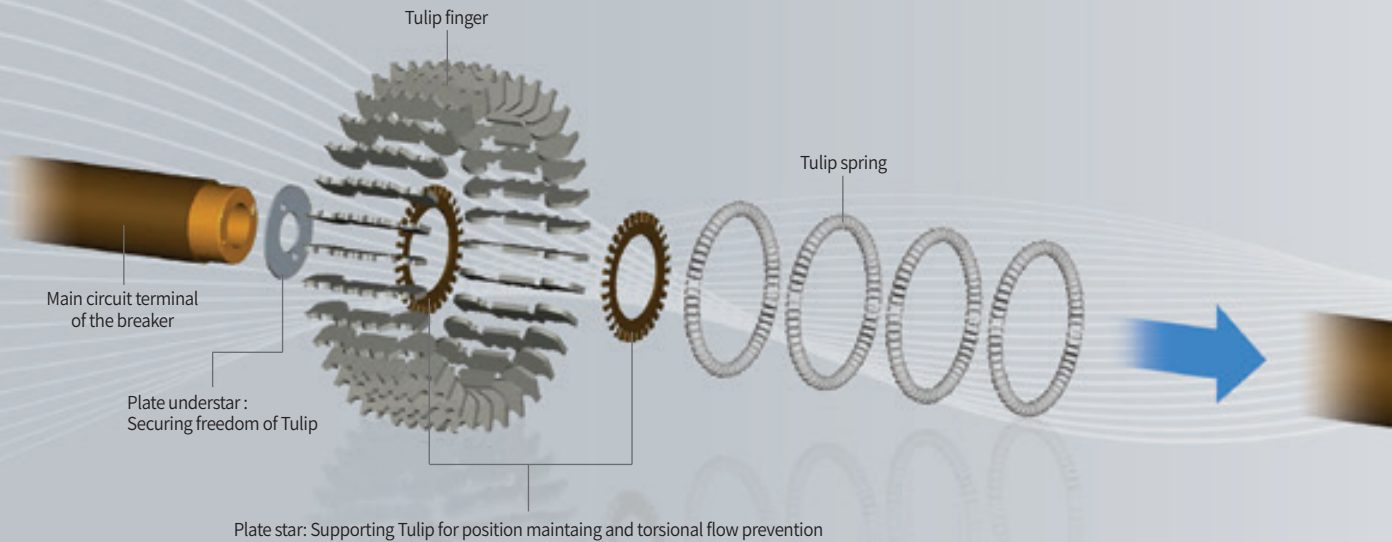
- Maximizing the durability and reliability of the main circuit contactors (Stego Tulip contactor)
- Strong structure for the temperature rise (Natural cooling system)



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.

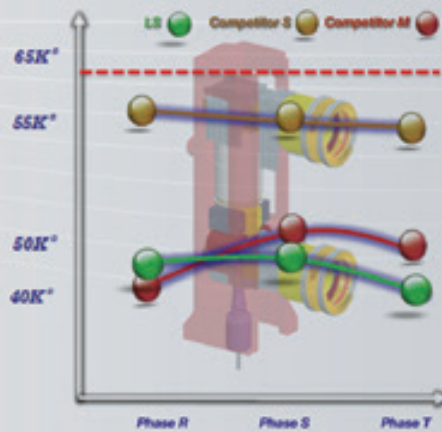
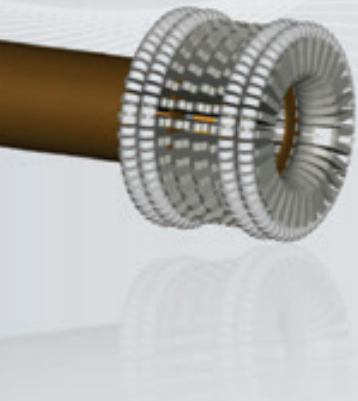


Major supply records

- 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)

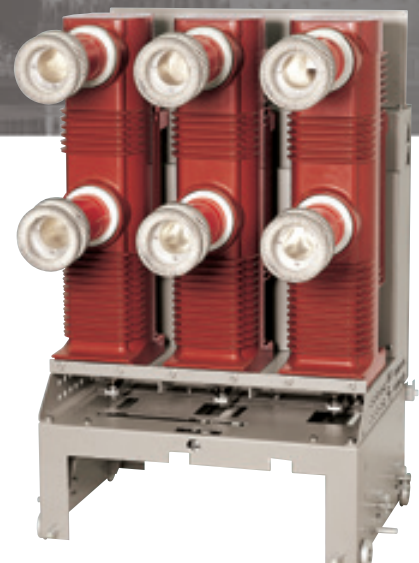
- Drawout / natural cooling system
- Improved temperature characteristics and ensured high reliability



VL type Tulip contactor



VH type Tulip contactor



36kV Tulip contactor

CB Compartment

Convenience in building switchgears

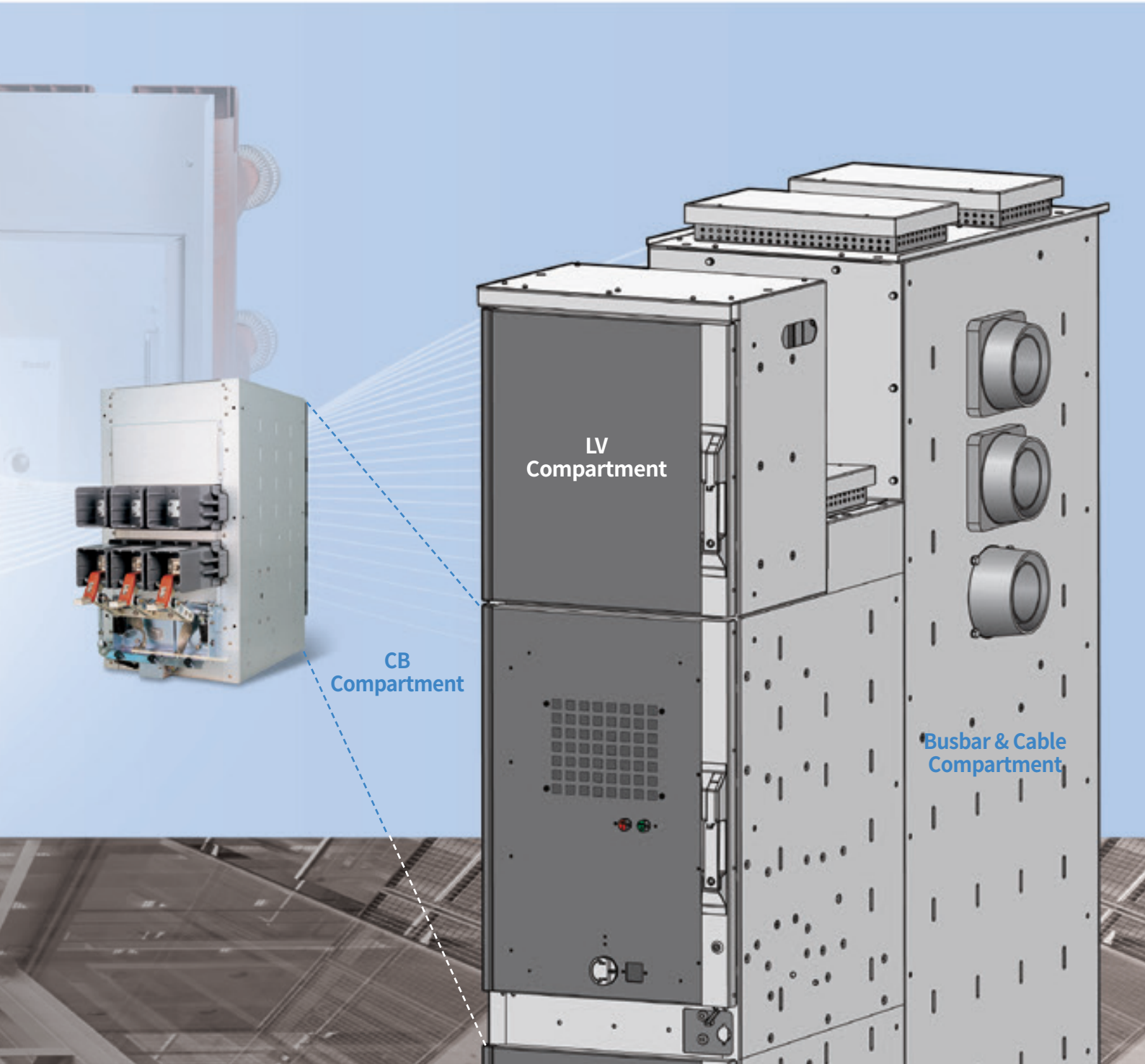
- CB compartment structure: H type cradle
- Metal isolation structure to prevent the accident spread and ensure safety
- Convenience of switchgear building



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





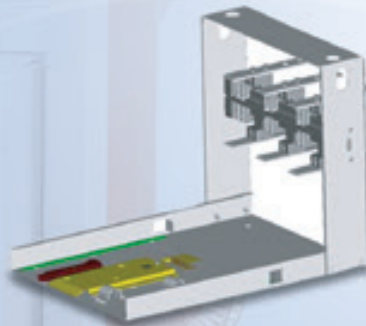
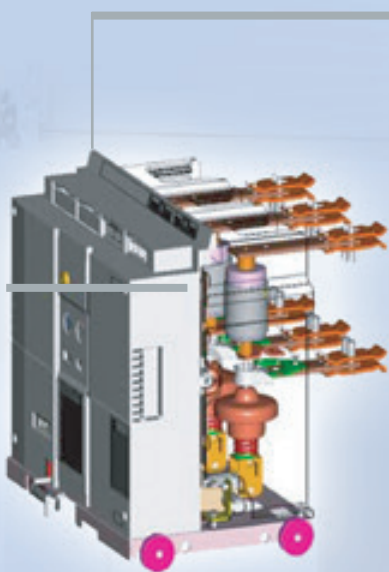
Accessories of CB compartment (H type cradle)

- 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

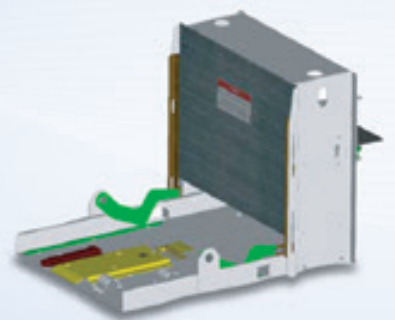
E type



E type

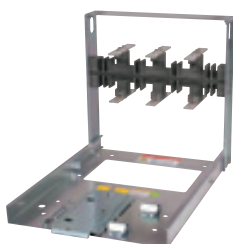
- Economic style cradle with the basic structure
- No safety shutter and bushing
- For MESG
- Applies VL type VCB

F type



F type

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



E type

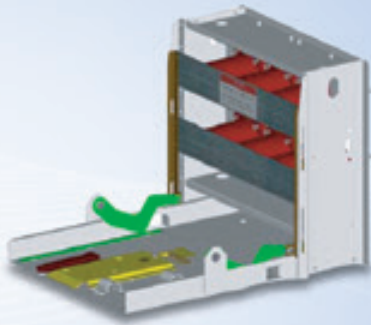


F type



H type

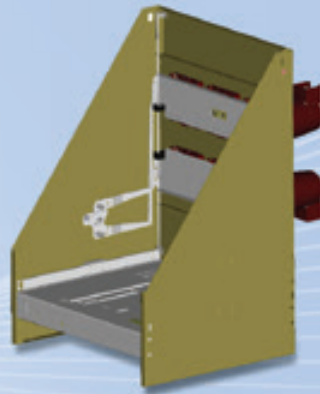
G type



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

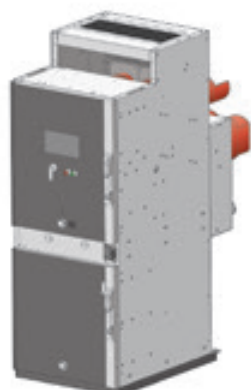
- Metal isolation structure to prevent the accident spread and ensure safety
- Convenience of operation by Truck
 - Drawable in the closed position of the switchgear door
 - Racking-in/out positions indicated mechanically
 - Control power connected Interlock
- Convenience in building switchgears
 - Module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



Ha type



Hb type



VH type



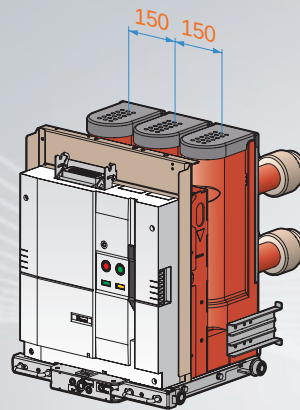
Convenience

Convenience in building switchgears

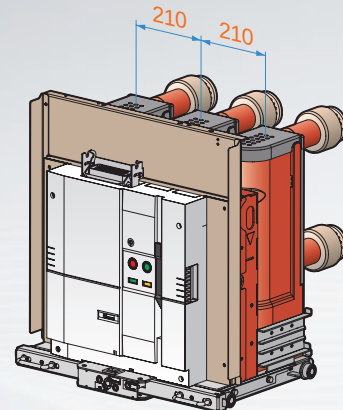
- Maximizing compatibility with existing products through the dualistic deployment of phases and compact models.

VCB rating

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



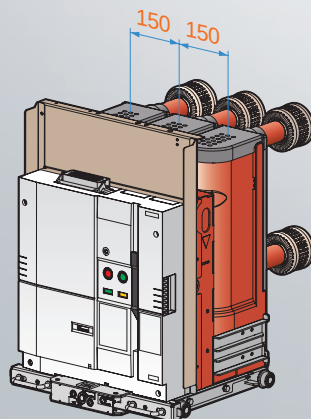
P150
(distance between phases: 150mm)



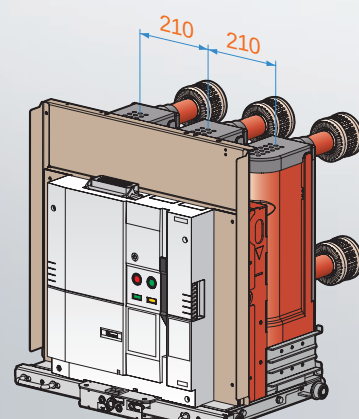
P210
(distance between phases: 210mm)

VCB rating

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



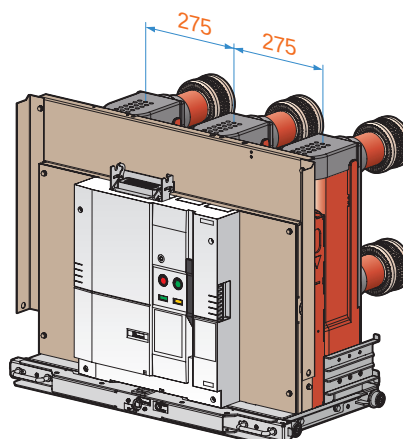
P150
(distance between phases: 150mm)



P210
(distance between phases: 210mm)

VCB rating

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

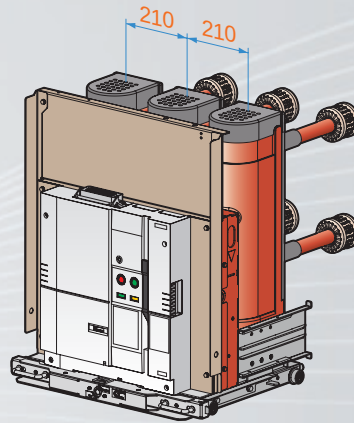
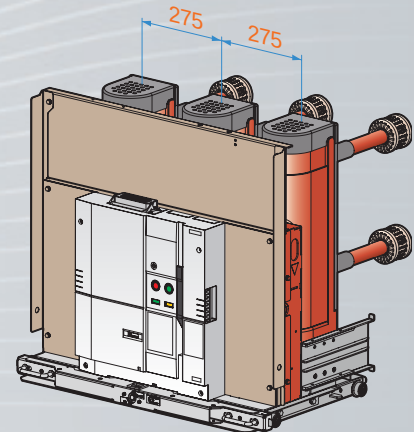


P275
(distance between phases: 275mm)

VCB rating

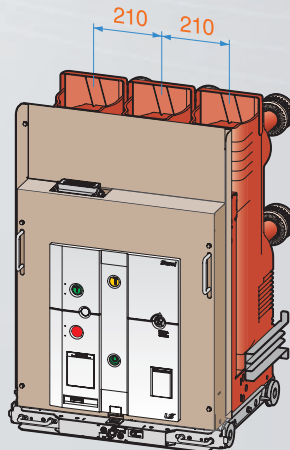
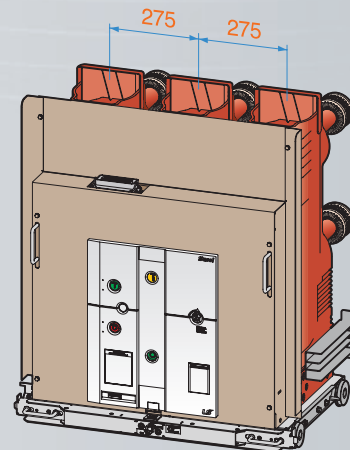
Ur (kV)	Isc (kA)	Ir (A)
24	12.5	630
		1250
	16/25	630
		1250
	25	2000
25.8	12.5	2500 *
		630
	16/25	1250
		630
	25	2000
		2500 *

* 2500A: phases distance 275mm only

P210
(distance between phases: 210mm)P275
(distance between phases: 275mm)

VCB rating

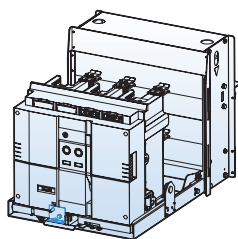
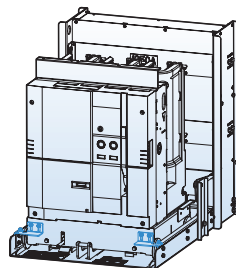
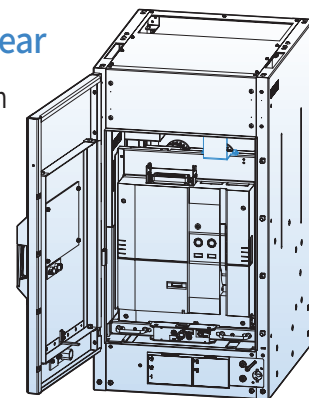
Ur (kV)	Isc (kA)	Ir (A)
24	31.5/40	2000
25.8	31.5/40	2000

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

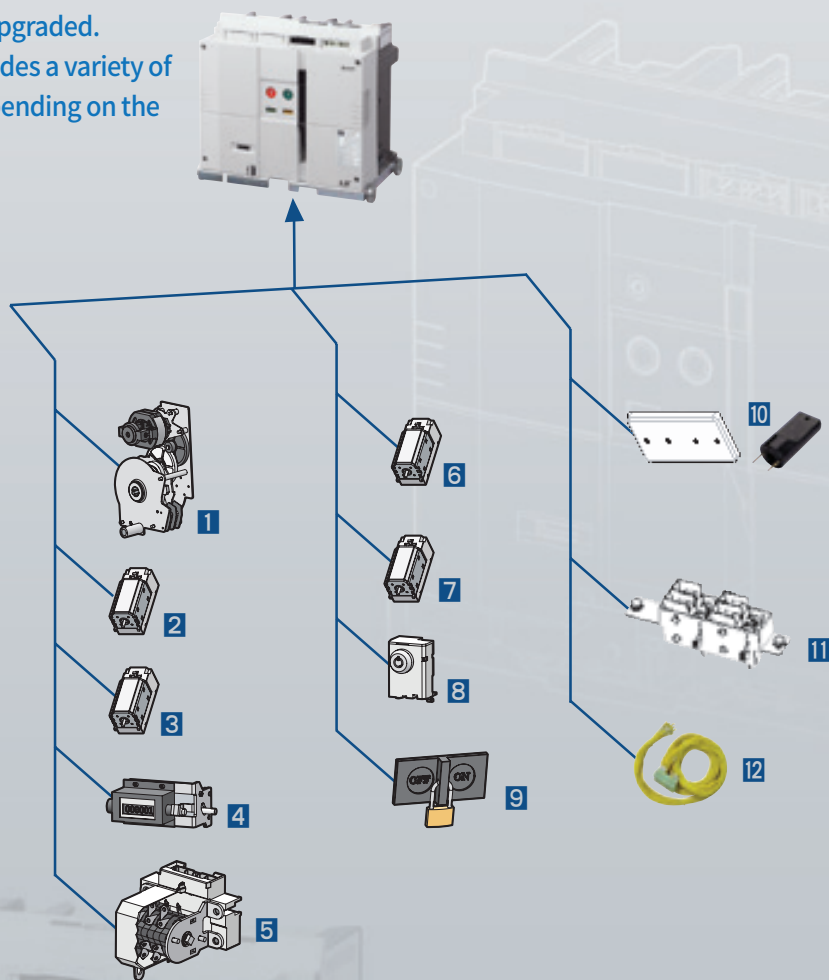
Fix bracket easily visible from the front of the breaker

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.

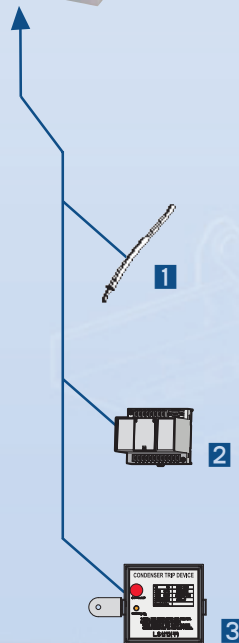
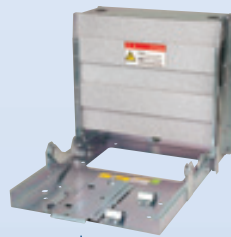


Breaker

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



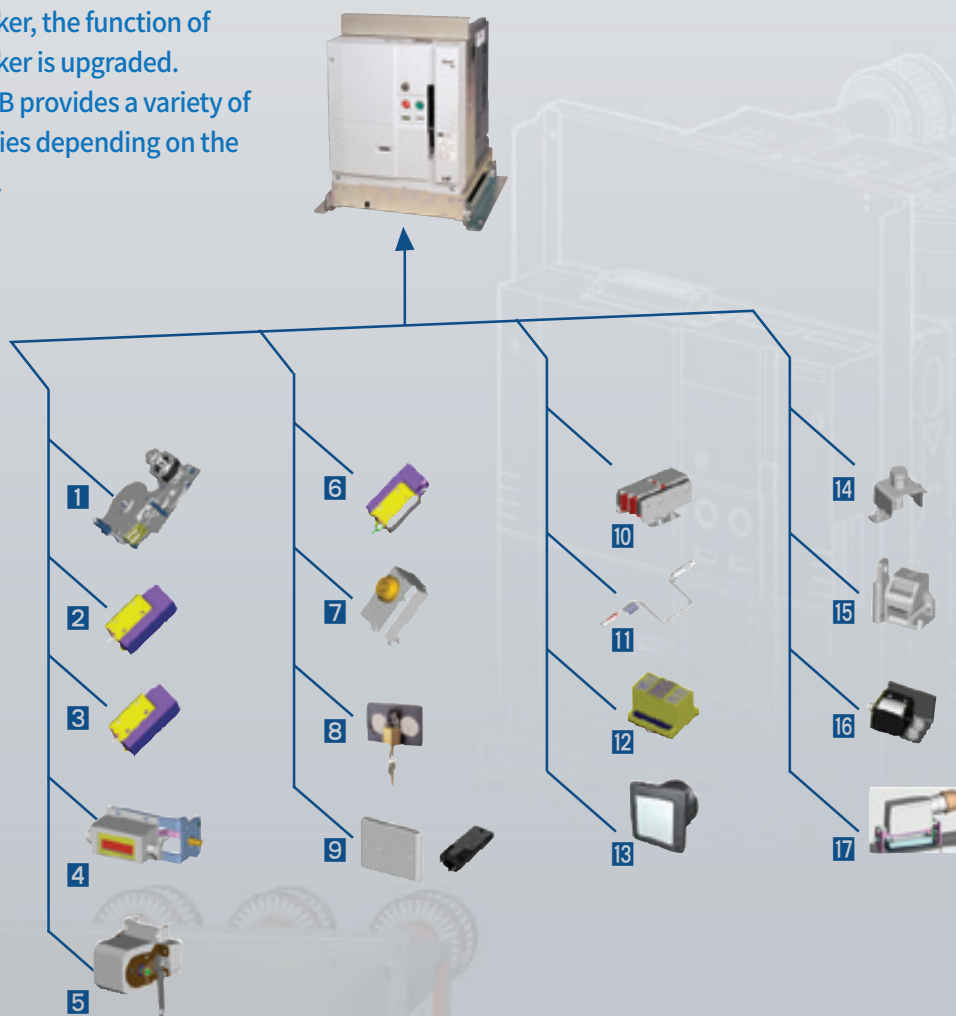
Cradle

- 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.

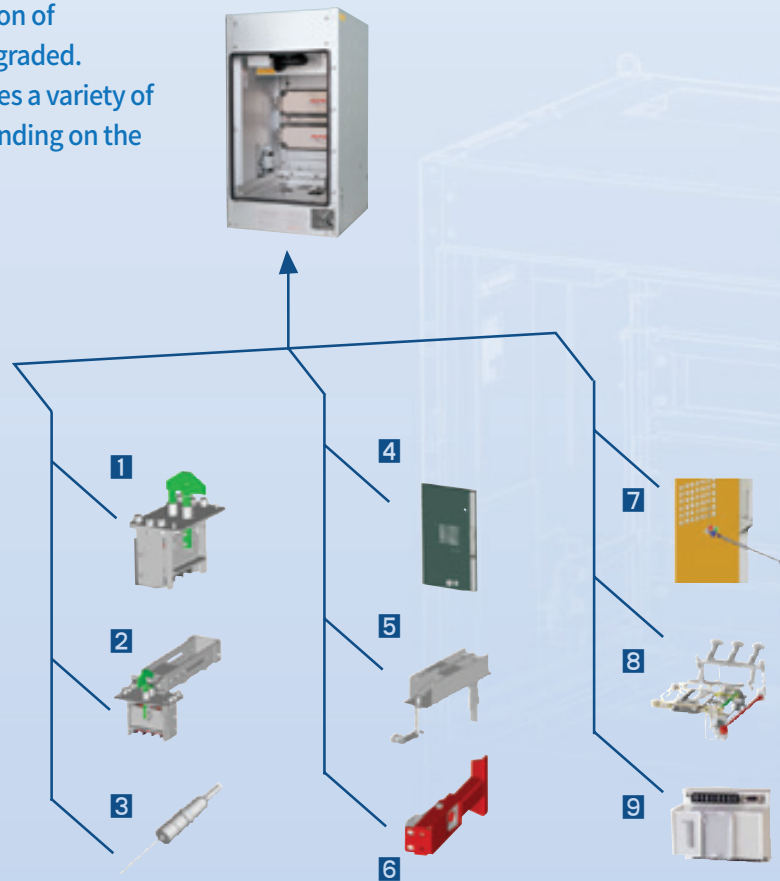


Breaker

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

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)

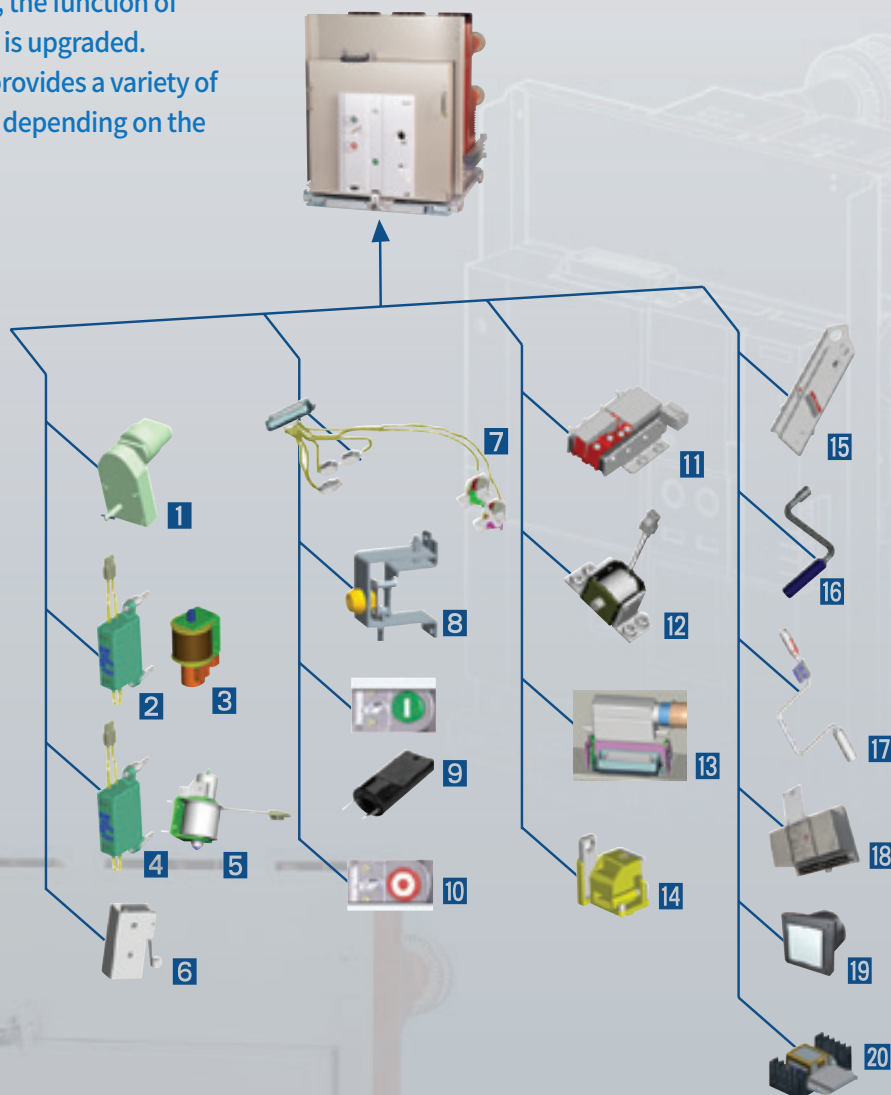
- ❶ TOC (Truck operated cell s/w)
- ❷ MOC (Mechanical operated cell s/w)
- ❸ Temperature sensor
- ❹ Door
- ❺ Door interlock
- ❻ Shutter padlock

- ❼ Emergency ON/OFF button
- ❽ Earthing switch & Accessory
- ❾ Key lock for Earthing switch
- ❿ Locking Magnet for Earthing switch
- ⓫ Position s/w for Earthing switch
- ⓬ 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.

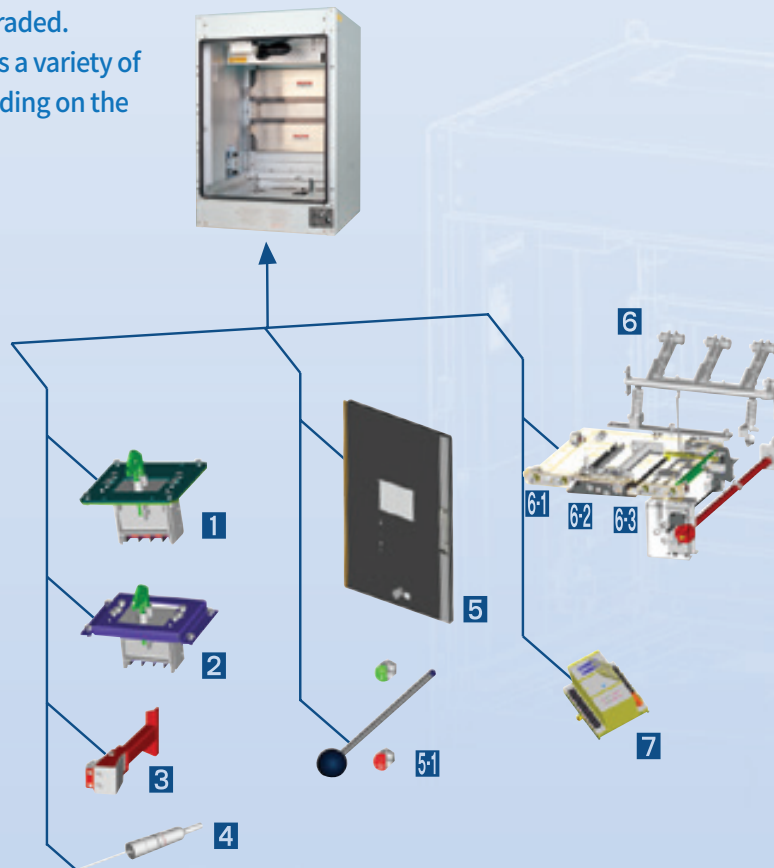


Breaker

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



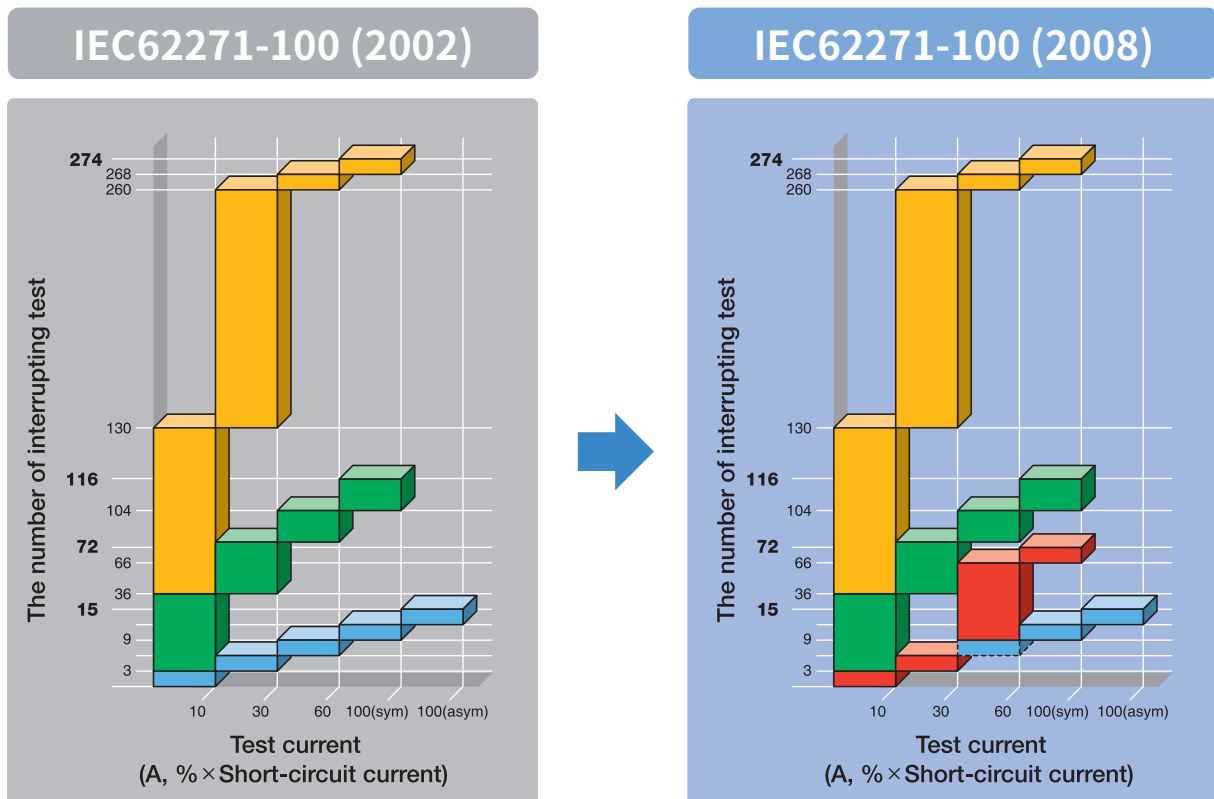
Cradle (H type)

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

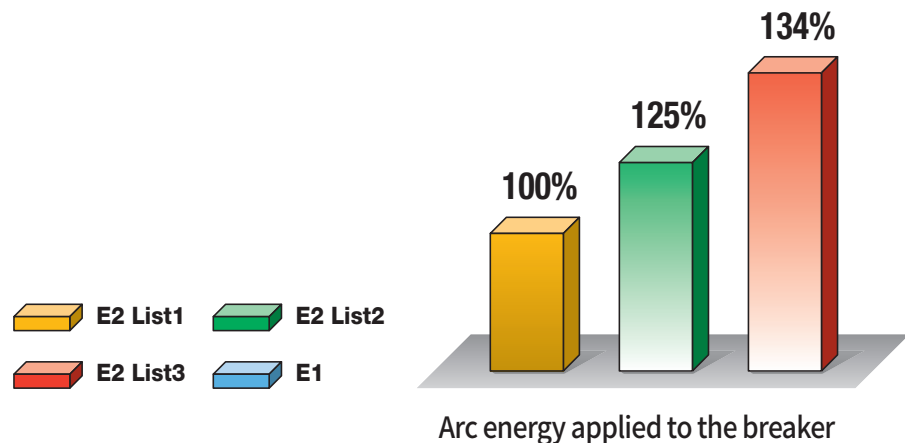
Standards and certifications

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 reliability 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

Breaker ... VL 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



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 and interrupting operation

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.

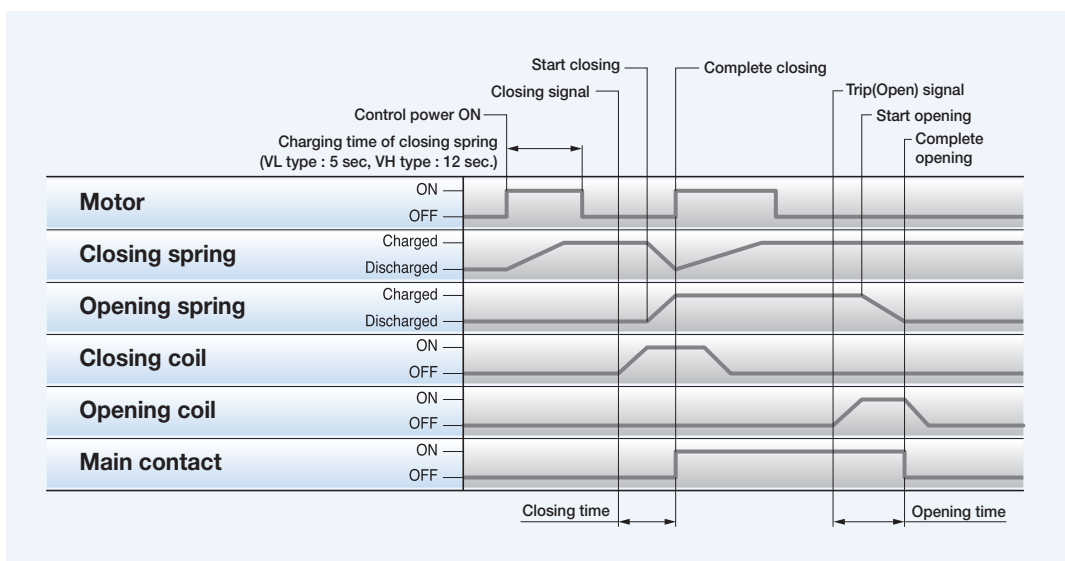
③ Electric trip

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.



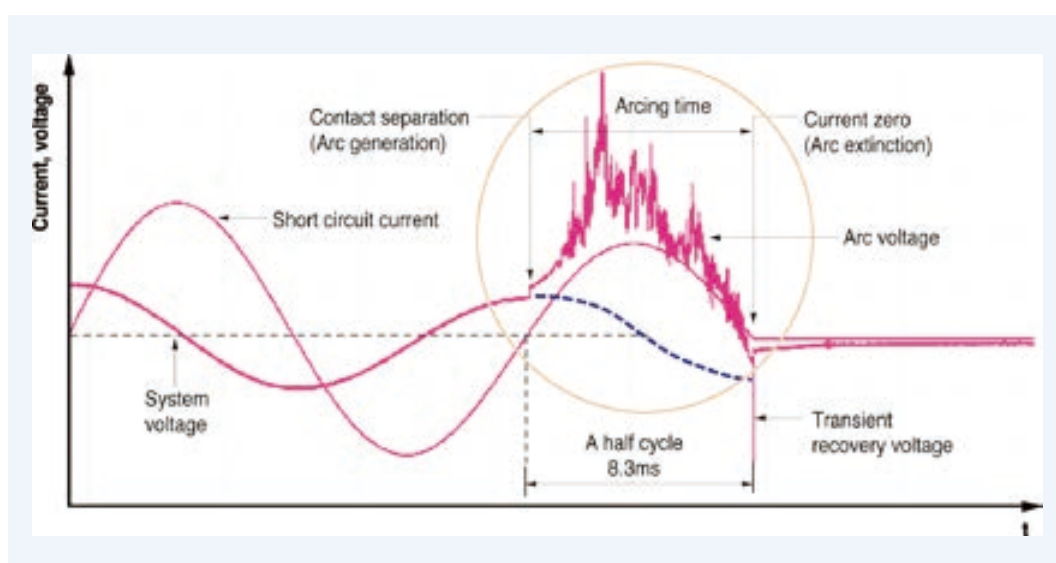
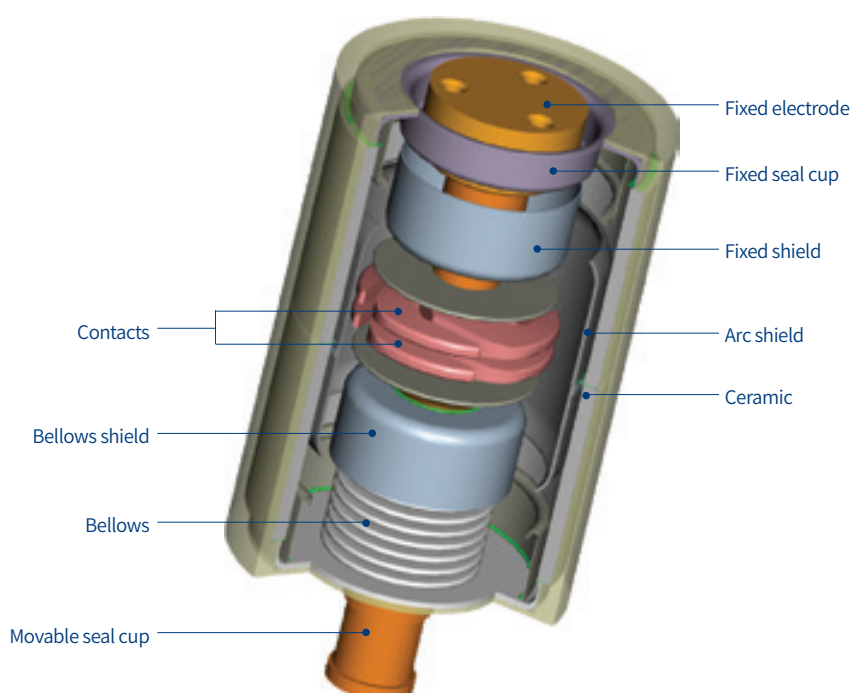
Sequence of the switching mechanism

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.

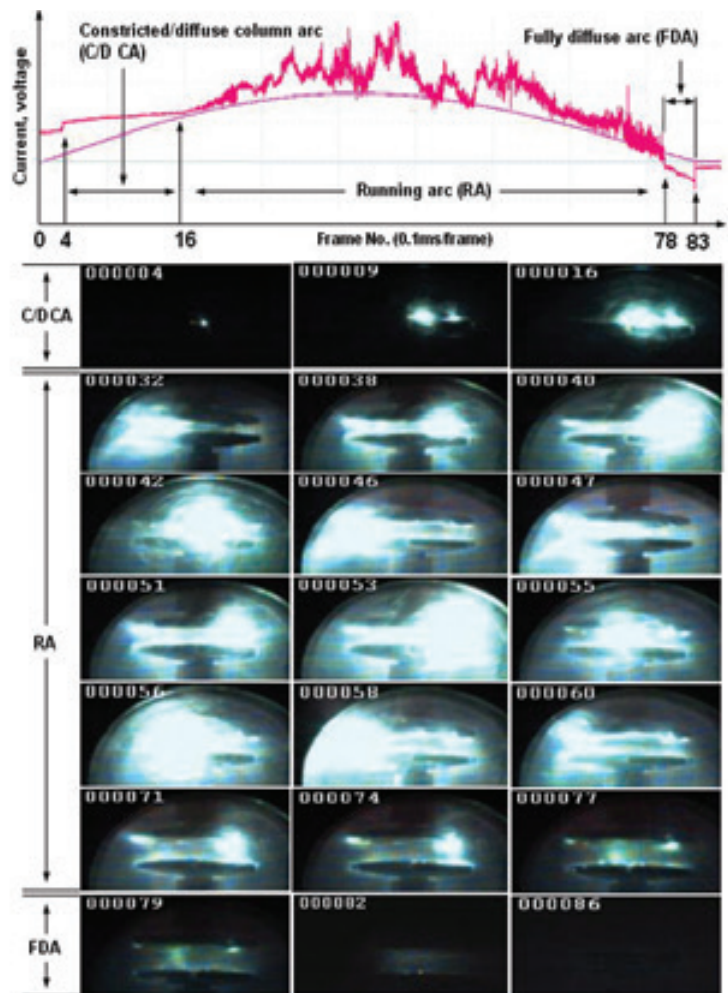
Spiral contacts make the arc generated between the surfaces of contacts rotated around the surface of contact by the induced magnetic field generated due to the spiral contact structure, which results in preventing local heating, thereby corruption and interrupting instantaneously.



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

Basic functions and interrupting operation

The interruption of vacuum interrupters



Arc voltage waveforms and arc image captured during arcing time

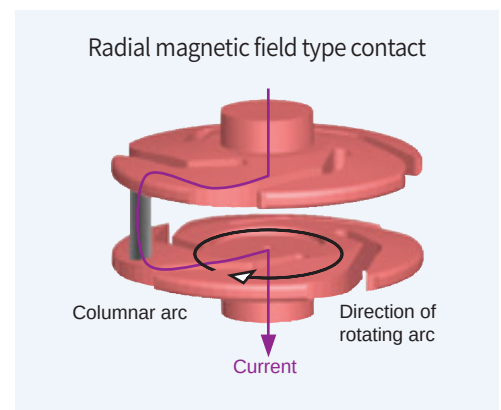
In case of using the flat contact any of the designs do not reflect on when contacts are opening the arc with high temperature is contracted and fixed in the center of the contacts, which is called pinch effect.

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 ($F = j \times B$) 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

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)

TEST REPORT

2007S0994 5/17

CLASSIFICATION	Type Test
APPARATUS	Vacuum Circuit Breaker
DESIGNATION	VH-02C38000
RATINGS	3 poles 25.8 kV to 2 500 A 40 kA 60 kV
APPLIED STANDARD	IEC 62271-100:2008-04
RECEIPT No.	TR00890008 (December 11, 2008)
APPLICANT	LS Industrial Systems Co., Ltd. Sungbuk-dong 1, Hongdeok-gu, Cheongju-si, 361-720, Korea
MANUFACTURER	LS Industrial Systems Co., Ltd. Sungbuk-dong 1, Hongdeok-gu, Cheongju-si, 361-720, Korea
DATE OF TESTS	June 30, 2008 ~ September 21, 2008
DATE OF ISSUE	December 14, 2008

The type tests have been carried out in accordance with IEC 62271-100:2008-04 & applicant's specification.

The test results are presented in the records of tests with the performance of the apparatus and the observations made during the tests. The oscillograms are attached.

The obtained values and the general performances are considered to comply with requirements of the above standard for the performed type tests.

The test results apply only to the tested specific samples.

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No. of PAGES INCORPORATED: records (47), photographs (4), circuit diagrams (X), oscillogram drawings & oscillograms (32), schematics (0)

Prepared by: Kim, Seon-Sun

Verified by: Park, Nam-G

Approved by (Technical Manager): Park, Sung



Power Apparatus Testing & Evaluation Institute

KERI KOREA ELECTRICITY RESEARCH INSTITUTE
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KERI Laboratories are accredited for ISO/IEC 17025 Laboratory Accreditation

TYPE TEST CERTIFICATE OF CAPACITIVE SWITCHING PERFORMANCE: 084135-L

APPARATUS	A three-phase withdrawable vacuum circuit breaker in a test rig (02600)	
DESIGNATION:	LVB-12 -25-66	Serial No. 20040520001
	LVB-12 -25-72	Serial No. 20040520002
	LVB-12 -25-02	Serial No. 20040520003
Rated voltage:	12 kV	Rated frequency: 50/60 Hz
Rated normal current:	630, 1250, 2000A	Rated Short-Circuit Current: 25 kA
MANUFACTURER:	LS Industrial Systems Co., Ltd., Hongbuk-gu, Cheongju, Korea	
CLIENT:	LS Industrial Systems Co., Ltd., Hongbuk-gu, Cheongju, Korea	
TESTED BY:	KEMA-Powerheat, Inc., Chalfont, PA, USA	
DATE(S) OF TESTS:	Sept. 14-26, 2004	

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with IEC 62271-100:2001, sub-clause 6.11.

THE RESULTS ARE SHOWN IN THE RECORD OF PROVING TESTS AND THE OSCILLOGRAMS ATTACHED HERETO. THE VALUES OBTAINED AND THE GENERAL PERFORMANCE ARE CONSIDERED TO COMPLY WITH THE ABOVE STANDARD AND TO JUSTIFY THE RATINGS ASSIGNED BY THE MANUFACTURER AS LISTED ON PAGE 1.

This Certificate and Record of Proving Tests applies only to the specific piece of apparatus tested from the particular place of manufacture. The responsibility for conformity of any apparatus having the same designation with that tested rests with the manufacturer at the place of manufacture of that apparatus.

This Certificate consists of 80 pages in total.

Only reproduction of the complete Certificate, or reproductions of this page accompanied by the papers on which are stated the tests performed and the assigned rated characteristics of the apparatus tested, are permitted without permission from KEMA-Powerheat.

KEMA-POWERHEAT

[Signature]
M. F. Schaefer

[Signature]
Date: _____



Form: C000P-02 Certificate Number: 2003-01 Serial: 0710084

Types and ordering information

7.2kV (VL-06)

Breaker

VL	06	P	08	A	04
Basic model name	Rated voltage (kV)	Version	Rated short time current (kA)	Phase distance/Compatibility	Rated current (A)
VL Susol VCB	06 7.2	P Fixed	08 8	A Standard	04 400
		E E type drawout	13 12.5	B Compatible with existing breaker Note6)	06 630
		F F type drawout			
		G G type drawout			

VL-06E08A04	M1	C1	T1	SA1	U1	A	1 4 7
	Motor control voltage		Trip coil voltage		UVT Note5)		
	M1 DC 110V		T1 DC 110V		U0 Without UVT		
	M2 DC 220V~250V		T2 DC 220V~250V		U1 DC 110V		
	M3 DC 125V		T3 DC 125V		U2 DC 220V~250V		
	M4 DC 24V~30V		T4 DC 24V~30V		U3 DC 125V		
	M5 DC 48V~60V		T5 DC 48V~60V		U4 DC 24V~30V		
	M6 AC 48V		T6 AC 48V		U5 DC 48V~60V		
	M7 AC 100V~130V		T7 AC 100V~130V		U6 AC 48V		
	M8 AC 200V~250V		T8 AC 200V~250V		U7 AC 100V~130V		
			T9 Current trip coil		U8 AC 200V~250V		
		Closing coil voltage		Auxiliary contacts & Connector type		Other accessories Note)	
		C1 DC 110V		SA1 A type connector, 2a2b		1 Secondary Trip coil Note5)	
		C2 DC 220V~250V		SA2 Standard A type connector, 4a4b		3 Position S/W (Test : 1a1b, Service : 2b)	
		C3 DC 125V		SA3 A type connector, 6a6b Note5)		4 Position S/W (Test : 2a, Service : 2a)	
		C4 DC 24V~30V		SA5 A type connector, 2a2b		5 Position S/W (Test : 1a1b, Service : 1a1b)	
		C5 DC 48V~60V		SA6 Flame retardant A type connector, 4a4b		7 Key lock (Individual key)	
		C6 AC 48V		SA7 A type connector, 6a6b Note5)		8 Button Padlock	
		C7 AC 100V~130V				9 Button cover	
		C8 AC 200V~250V				A Lead wire	
				Optional		B User Plug (Part)	
				LH Lifting Hook		G Key lock (Same key)	
				CTD1 Condenser Trip Device(AC 110V)		O Lead Wire special color (Blue)	
				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. 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). Compatible busbars are required for fixed version.
7. If T9(CTC) is selected, in case of adding Secondary trip coil, CTC is also added.
8. A7 (Keylock(Individual key)) and AG (Keylock(Same key)) an not be selected simultaneously

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

Cradle

VCL

Basic model name	
VCL	Susol VCB Cradle

—

06

Rated voltage (kV)	
06	7.2

E

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

08

Rated short time current (kA)	
08	8
13	12.5

A

Phase distance/Compatibility	
A	Standard
B	Compatible with existing breaker

Note(s)

06

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

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

Breaker

VL	06	H	20	A	06
Basic model name	Rated voltage (kV)	Version	Rated short time current (kA)	Phase distance/Compatibility	Rated current (A)
VL Susol VCB	06 7.2 12 12 17 17.5	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) H H type drawout (for MCSG)	20 20 25 25 32 31.5	A 150mm B 210mm D 275mm F Compatible with existing products K Compatible with K Pro-MEC G/T(T)	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) 6. Rated current 2500A: only available 31.5kA P/H type (phase distance 210/275mm)					

VL-06H20A06	—	M1	C1	T1	SQ2	U1	—	A	1 4 7																																																									
		<table><tr><th colspan="2">Motor control voltage</th></tr><tr><td>M1</td><td>DC 110V</td></tr><tr><td>M2</td><td>DC 220V~250V</td></tr><tr><td>M3</td><td>DC 125V</td></tr><tr><td>M4</td><td>DC 24V~30V</td></tr><tr><td>M5</td><td>DC 48V~60V</td></tr><tr><td>M6</td><td>AC 48V</td></tr><tr><td>M7</td><td>AC 100V~130V</td></tr><tr><td>M8</td><td>AC 200V~250V</td></tr></table>	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		<table><tr><th colspan="2">Trip coil voltage</th></tr><tr><td>T1</td><td>DC 110V</td></tr><tr><td>T2</td><td>DC 220V~250V</td></tr><tr><td>T3</td><td>DC 125V</td></tr><tr><td>T4</td><td>DC 24V~30V</td></tr><tr><td>T5</td><td>DC 48V~60V</td></tr><tr><td>T6</td><td>AC 48V</td></tr><tr><td>T7</td><td>AC 100V~130V</td></tr><tr><td>T8</td><td>AC 200V~250V</td></tr><tr><td>T9</td><td>Current trip coil</td></tr></table>	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		<table><tr><th colspan="2">UVT</th></tr><tr><td>U0</td><td>Without UVT</td></tr><tr><td>U1</td><td>DC 110V</td></tr><tr><td>U2</td><td>DC 220V~250V</td></tr><tr><td>U3</td><td>DC 125V</td></tr><tr><td>U4</td><td>DC 24V~30V</td></tr><tr><td>U5</td><td>DC 48V~60V</td></tr><tr><td>U6</td><td>AC 48V</td></tr><tr><td>U7</td><td>AC 100V~130V</td></tr><tr><td>U8</td><td>AC 200V~250V</td></tr></table>	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		
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U8	AC 200V~250V																																																																	

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

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

Cradle

VCL	—	06	H	20	A	06	—	A	1 5 7
Basic model name		Rated voltage (kV)		Rated short time current (kA)		Rated current (A)			
VCL	Susol VCB Cradle	06	7.2	20	20	06	630		
		12	12	25	25	13	1250		
		17	17.5	32	31.5	20	2000		
						25	2500		
		Version		Phase distance/Compatibility		Other accessories			
		P	Fixed	A	150mm	1	ES(Standard earthing Switch) without option		
		E	E type drawout (for MESG)	B	210mm	2	ES with position S/W(2a2b)		
		F	F type drawout (for MESG)	D	275mm	4	ES with position S/W(6a6b)		
		Fs	Fs type drawout (Screw Type)	F	Compatible with existing products	5	Key lock for ES		
		G	G type drawout (for MESG)	K	Compatible with K Pro-MEC G/T(T)	6	Locking magnet for ES: DC 110V		
		Gs	Gs type drawout (Screw Type)			7	Locking magnet for ES: DC 220V		
		K	K type drawout (for MCSG compatible with Pro-MEC)			8	Locking magnet for ES: DC 125V		
		Ha	Ha type drawout (for MCSG)			9	Locking magnet for ES: DC 24V		
		H	H type drawout (for MCSG)			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) 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)
3. Ha type: 7.2/12kV phase-to-phase 150mm only. Not available for 2500A

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)

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.
7. For Ha-type cradle, Shutter padlock (AE) can be selected, and only when Earthing Switch (A1~A4) is selected, A5, A6~AD can be selected.

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

Types and ordering information

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

Breaker

VL	20	H	13	B	06
Basic model name	Rated voltage (kV)	Version	Rated short time current (kA)	Phase distance/Compatibility	Rated current (A)
VL Susol VCB	20 24 25 25.8 36 36	P Fixed E E type drawout (for MESG) F F type drawout (for MESG) G G type drawout (for MESG) K K type drawout (for MCSG compatible with Pro-MEC) H H type drawout (for MCSG)	13 12.5 16 16 25 25	B 210mm F 265mm D 275mm G Enclosed type, Tulip Contact	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
 - K-type: 630A and 1250A - , 210mm and 265mm
 - 2000A - phase distance 210mm 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

SQ2

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~250

Auxiliary contacts & Connector type		
SA2	Standard	A type connector, 4a4b
SA4		A type connector, 10a10b
SQ2		Q type connector, 4a4b
SQ4		Q type connector, 10a10b
SA6	Flame retardant	A type connector, 4a4b
SA8		A type connector, 10a10b
SQ6		Q type connector, 4a4b
SQ8		Q type connector, 10a10b

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	
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 (Individual key)
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	Key lock (Same key)
J	Door Interlock
O	Lead Wire special color (Blue)
V	CT operated coil 1A
W	CT operated coil 5A

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. A/Q-type connector is applicable to P/E/F/G type and Q-type connector to H type.

9. Lead wire special color (blue) is applicable to A-type connector.

10. When the position switch is selected from accessories, auxiliary contacts and wiring ass'y can be selected as option A/Q-type (P/E/F/G/K-type) or Q-type(H-type) connector

11. Locking magnet of H type breaker use the same control power supply as motor.

12. Flame retardant type blue wire is not available.

13. 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.

14. A7 (Keylock(Individual key)) and AG (Keylock(Same key)) an not be selected simultaneously

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

Cradle

VCL		20		H		13		B		06		A		157		
Basic model name		Rated voltage (kV)				Rated short time current (kA)				Rated current (A)						
VCL	Susol VCB Cradle	20	24			13	12.5			06	630					
		25	25.8			16	16			13	1250					
		36	36			25	25			20	2000					
										25	2500					
				Version				Phase distance/Compatibility				Other accessories				
				E	E type drawout (for MESG)			B	210mm			1	ES(Standard earthing Switch) without option			
				F	F type drawout (for MESG)			F	265mm			2	ES with position S/W(2a2b)			
				G	G type drawout (for MESG)			D	275mm			4	ES with position S/W(6a6b)			
				K	K type drawout (for MCSG compatible with Pro-MEC)			G	Enclosed type, Tulip Contact			5	Key lock for ES			
				H	H type drawout (for MCSG)							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) 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. Accessory 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.

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

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

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

Types and ordering information

7.2/12kV (LVB-06/12)

Breaker

LVB		06	G	40	L	/	12	1A	2B	BB6GT2	
Basic model name		Rated voltage (kV)		Rated short time current (kA)		Rated current (A)		Connector and wire			
LVB	Susol VCB	06	7.2	32	31.5	12	1250	2B	A type connector, 4a4b		
		12	12	40	40	20	2000	2E	A type connector, 10a10b		
						30	3150	2M	Q type connector, 4a4b		
								2N	Q type connector, 10a10b		
								00	Dummy VCB		
Version		Model version		Control voltage		Other accessories ^{Note)}					
P	Fixed	L	Susol	1A	DC 110V	B	Position S/W(Test : 2a, Service : 2a)				
E	E type drawout			1B	DC 220V~250V	B1	Position S/W(Test : 1a1b, Service : 1a1b)				
F	F type drawout			1C	DC 48V	B2	Position S/W(Test : 1a1b, Service : 2b)				
G	G type drawout			1E	DC 125V	B6	User's Plug(Part)				
G	G/T type drawout (for MESG)+T2			1L	AC 220V	C1	Button Padlock(ON)				
				1M	AC 110V	C2	Button Padlock(OFF)				
				1N	AC 48V	C3	Button Padlock(ON,OFF)				
				00	Dummy VCB	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	Key lock (Individual key)				
						G1	Key lock (Same key)				
						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 selected 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.

7. G (Keylock(Individual key)) and G1 (Keylock(Same key)) an not be selected simultaneously

Cradle

LCL		—	06		G		—	40		D		/	12		—	BCDT2	
Basic model name		Rated voltage (kV)		Rated short time current (kA)						Rated current (A)							
LCL	PRO-MEC Cradle	06	7.2	32	31.5					12	1250						
		12	12	40	40					20	2000						
										30	3150						
						Version		Model version				Other accessories					
				P	Fixed			D	Pro-MEC			B	Earthing Switch	Note2)			
				E	E type drawout							C	Earthing Switch Position S/W(ON/OFF)				
				F	F type drawout							D	Earthing Switch Locking coil				
				G	G type drawout							T	Tulip contact, Closed type	Note1			
				G	G/T type drawout (for MESG)+T2							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

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	Rated voltage (kV)	Version	Rated short time current (kA)	Phase distance/Compatibility	Rated current (A)
VH Susol VCB	06 7.2	P Fixed	25 25	A 150mm	12 1200A
	12 12	E E type drawout (for MESH)	32 31.5	B 210mm	13 1250A
	17 17.5	F F type drawout (for MESH)	40 40	D 275mm	20 2000A
	20 24	Fs Fs type drawout (Screw Type)	50 50	E 300mm	25 2500A
	25 25.8	G G type drawout (for MESH)	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	K Compatible with K Pro-MEC G/T(T)	32 3150A
	36 36	Gs Gs type drawout (Screw Type)		L 320mm	40 4000A
		K K type drawout (for MCSG compatible with Pro-MEC type)			50 5000A
		H H type drawout (for MCSG)			
				Note) K can be selected for Pro-MEC G/T(T) compatible models ONLY and the phase distance is 150mm.	Note) Refer to the rating table for selecting rated current.

VH-06H25B13

M1

C1

T1

SQ2

U1

A

1 4 7

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

Auxiliary contacts & Connector type

SA2

Standard

A type connector, 4a4b

SA4

A type connector, 10a10b

SQ2

Q type connector, 4a4b

SQ4

Q type connector, 10a10b

SA6

Flame retardant

A type connector, 4a4b

SA8

A type connector, 10a10b

SQ6

Q type connector, 4a4b

SQ8

Q type connector, 10a10b

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

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 (Individual key)

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

Key lock (Same key)

O

Lead Wire special color (Blue)

X

Wireless Temperature monitoring sensor

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. A/Q-type connector is applicable to P/E/F/G/K type and Q-type connector to H type.

7. Lead Wire Special Color(blue) is available only for A type connector and the flame retardant is not applicable to it.

8. Locking magnet can be applied only to H type VCB - breaker and cradle.

9. Locking magnet of H type breaker use the same control power supply as motor.

10. 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.

11. 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.

12. When A1(Secondary trip coil) is selected the maximum available auxiliary contacts are 10a10b.

13. When A2(Secondary trip coil with TCM Contact) is selected the maximum available auxiliary contacts are 4a3b, 10a9b.

14. A7 (Keylock(Individual key)) and AG (Keylock(Same key)) an not be selected simultaneously

Note)

- If A1(Secondary trip coil), A4(Position S/W 2a2a), A7(Keylock) are selected, A147 is the type name in the ordering.
- A1(Secondary trip coil), U1~U8(UVT) can not be selected simultaneously.
- A3(Position S/W 1a3b), A4(Position S/W 2a2a), A5(Position S/W 2a2b) can not be selected simultaneously.
- A8 (Button Padlock) and A9 (Button Cover) can not be selected simultaneously.
- AC (Plug interlock), AD (H type Door interlock), AE (MOC) and AF (Locking magnet) are available only for H type.
- A/Q-type connector is applicable to P/E/F/G/K type and Q-type connector to H type.
- Lead Wire Special Color(blue) is available only for A type connector and the flame retardant is not applicable to it.
- Locking magnet can be applied only to H type VCB - breaker and cradle.
- Locking magnet of H type breaker use the same control power supply as motor.
- 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.
- 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.
- When A1(Secondary trip coil) is selected the maximum available auxiliary contacts are 10a10b.
- When A2(Secondary Trip coil with TCM Contact) is selected the maximum available auxiliary contacts are 4a3b, 10a9b.
- A7 (Keylock(Individual key)) and AG (Keylock(Same key)) an not be selected simultaneously

Cradle

VCH	—	06	H	25	B	13	—	A	157
Basic model name		Rated voltage (kV)		Rated short time current (kA)		Rated current (A)			
VCH	Susol VCB Cradle	06	7.2	25	25	12	1200A		
		12	12	32	31.5	13	1250A		
		17	17.5	40	40	20	2000A		
		20	24	50	50	25	2500A		
		25	25.8			32	3150A		
		36	36			40	4000A		
						50	5000A		

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

- * Only K-type cradle is available for 4000A.
 * E/F/Fs/Gs/K-type (open type cradle)
 * H-type (box type cradle)
 * Applies Ha type
 1) 7.2/12kV 40kA 1250/2000A phase distance 150mm
 2) 7.2/12/17.5kV 40kA 3150A phase distance 210mm
 3) 7.2/12/17.5kV 40/50kA 4000A phase distance 275mm
 4) 7.2/12kV 40/50kA 5000A phase distance 320mm
 * Applies Hb type
 1) 7.2/12kV 40/50kA 4000A phase distance 275mm

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)

- 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.
- AJ and AK can not be selected without door (AH).
- H type lead wire - one of AM, AN or AO is required for cradle in case of H type breaker.
- If the H type breaker options A8(Button Padlock) and A9(Button Cover) are selected, the cradle option AK(Door Emergency Push Button) is not available.
- When Keylock(A5) is selected, Earthing Switch is included as standard.
- T3/SM/LC/U/U1 can be selected for K type ONLY.
- When A1 is selected for 4000A, 5000A cradle, ES Position S/W with 4a4b is applied as default.
- If TOC/MOC option is selected, cradle's height is increased
(E/S equipped structure, Hb ONLY).
- Ha type is open-type MCSG Cradle with NO door related options included.
- Please contact us if you need IAC (Internal arc classification) of H type CB compartment.
- For 7.2/12kV 40kA 1250/2000 Ha type cradles, Shutter padlock (AE) can be selected, and A5, A6-AD can be selected only when Earthing Switch (A1~A4) is selected.
(For 7.2/12/17.5kV 40kA 3150A Ha type cradle, Earthing Switch cannot be selected, only Shutter padlock (AE) can be selected.

Type of circuit breakers

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-06□08A04	E,F,G	A
							VL-06□08B04	P,E,F,G	VCL-06□08B04	E,F,G	A
							VL-06□13A06	P,E,F,G	VCL-06□13A06	E,F,G	A
	12.5	630					VL-06□13B06	P,E,F,G	VCL-06□13B06	E,F,G	A
							VL-06□20A(K)06	P,E,F,G,H	VCL-06□20A(K)06	E,F,G,K,H,Ha	P,E,F,G,K:A/Q,H:Q
							VL-06□20A(K)13	P,E,F,G,H	VCL-06□20A(K)13	E,F,G,K,H,Ha	P,E,F,G,K:A/Q,H:Q
	20		630				VL-06□20A20	P,E,F,G,H	VCL-06□20A20	E,F,G,H,Ha	P,E,F,G:A/Q,H:Q
			1250				VL-06□25A(K)06	P,E,F,G,K,H	VCL-06□25A06	E,F,G,K,H,Ha	P,E,F,G,K:A/Q,H:Q
			2000				VL-06□25A(K)13	P,E,F,G,K,H	VCL-06□25A13	E,F,G,K,H,Ha	P,E,F,G,K:A/Q,H:Q
	25		630				VL-06□25A(K)20	P,E,F,G,K,H	VCL-06□25A20	E,F,G,K,H,Ha	P,E,F,G,K:A/Q,H:Q
			1250				VL-06□32A06	P,H	VCL-06H32A06	H,Ha	Q
12	31.5		1250				VL-06□32A(K)13	P,E,F,Gs,K,H	VCL-06□32A13	E,F,Fs,Gs,K,H,Ha	P,E,F,Fs,Gs,K:A/Q,H:Q
			2000				VL-06□32A(K)20	P,E,F,Fs,Gs,K,H	VCL-06□32A20	E,F,Fs,Gs,K,H,Ha	P,E,F,Fs,Gs,K:A/Q,H:Q
			630				VL-12□20A(K)06	P,K,H	VCL-12□20A06	K,H,Ha	K:A/Q,H:Q
	20		1250				VL-12□20A(K)13	P,K,H	VCL-12□20A13	K,H,Ha	K:A/Q,H:Q
			2000				VL-12H20A20	H	VCL-12H20A20	H,Ha	Q
			630				VL-12□20B06	P,E,F,H	VCL-12□20B06	E,F,H	P,E,F:A/Q,H:Q
			1250				VL-12□20B13	P,E,F,H	VCL-12□20B13	E,F,H	P,E,F:A/Q,H:Q
			2000				VL-12□20B20	P,E,F,H	VCL-12□20B20	E,F,H	P,E,F:A/Q,H:Q
			630				VL-12□20F06	E,F	VCL-12□20F06	E,F	A/Q
	25		1250				VL-12□20F13	E,F	VCL-12□20F13	E,F	A/Q
			630				VL-12□25A(K)06	P,K,H	VCL-12□25A06	K,H,Ha	K:A/Q,H:Q
			1250				VL-12□25A(K)13	P,K,H	VCL-12□25A13	K,H,Ha	K:A/Q,H:Q
			2000				VL-12□25A(K)20	K,H	VCL-12□25A20	K,H,Ha	K:A/Q,H:Q
			630				VL-12□25B06	P,E,F,H	VCL-12□25B06	E,F,H	P,E,F:A/Q,H:Q
			1250				VL-12□25B13	P,E,F,H	VCL-12□25B13	E,F,H	P,E,F:A/Q,H:Q
	31.5		2000				VL-12□25B20	P,E,F,H	VCL-12□25B20	E,F,H	P,E,F:A/Q,H:Q
			630				VL-12□25F06	E,F	VCL-12□25F06	E,F	A/Q
			1250				VL-12□25F13	E,F	VCL-12□25F13	E,F	A/Q
			630				VL-12□32A06	P,H	VCL-12H32A06	H,Ha	Q
			1250				VL-12□32A(K)13	P,Gs,K,H	VCL-12□32A13	Gs,K,H,Ha	Gs,K:A/Q,H:Q
			2000				VL-12□32A(K)20	Gs,K,H	VCL-12□32A20	Gs,K,H,Ha	Gs,K:A/Q,H:Q
17.5	20		630				VL-12□32B06	P,H	VCL-12H32B06	H	Q
			1250				VL-12□32B13	P,H	VCL-12H32B13	H	Q
			2000				VL-12□32B20	P,H	VCL-12H32B20	H	Q
			2500				VL-12□32B25	P,H	VCL-12H32B25	H	Q
					2500		VL-12□32D25	P,H	VCL-12H32D25	H	Q
			630				VL-17H20A06	H	VCL-17H20A06	H	Q
	25		1250				VL-17H20A13	H	VCL-17H20A13	H	Q
			2000				VL-17H20A20	H	VCL-17H20A20	H	Q
			630				VL-17□20B06	P,E,F,H	VCL-17□20B06	E,F,H	P,E,F:A/Q,H:Q
			1250				VL-17□20B13	P,E,F,H	VCL-17□20B13	E,F,H	P,E,F:A/Q,H:Q
			2000				VL-17□20B20	P,E,F,H	VCL-17□20B20	E,F,H	P,E,F:A/Q,H:Q
			630				VL-17□20F06	E,F	VCL-17□20F06	E,F	A/Q
	31.5		1250				VL-17□20F13	E,F	VCL-17□20F13	E,F	A/Q
			630				VL-17H25A06	H	VCL-17H25A06	H	Q
			1250				VL-17H25A13	H	VCL-17H25A13	H	Q
			2000				VL-17H25A20	H	VCL-17H25A20	H	Q
			630				VL-17□25B06	P,E,F,H	VCL-17□25B06	E,F,H	P,E,F:A/Q,H:Q
			1250				VL-17□25B13	P,E,F,H	VCL-17□25B13	E,F,H	P,E,F:A/Q,H:Q
24	31.5		2000				VL-17□25B20	P,E,F,H	VCL-17□25B20	E,F,H	P,E,F:A/Q,H:Q
			630				VL-17□25F06	E,F	VCL-17□25F06	E,F	A/Q
			1250				VL-17□25F13	E,F	VCL-17□25F13	E,F	A/Q
	36		630				VL-17□32A06	P,H	VCL-17H32A06	H	Q
			1250				VL-17□32A13	P,H	VCL-17H32A13	H	Q
			2000				VL-17□32A20	H	VCL-17H32A20	H	Q
	40.5		630				VL-17□32B06	P,H	VCL-17H32B06	H	Q
			1250				VL-17□32B13	P,H	VCL-17H32B13	H	Q
			2000				VL-17□32B20	P,H	VCL-17H32B20	H	Q
	50		2500				VL-17□32B25	P,H	VCL-17H32B25	H	Q
					2500		VL-17□32D25	P,H	VCL-17H32D25	H	Q

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-20□13B06	G,K,H	VCL-20□13B06	G,K,H	G,K:A/Q, H:Q
				1250			VL-20□13B13	G,K,H	VCL-20□13B13	G,K,H	G,K:A/Q, H:Q
					630		VL-20□13F06	P,E,F,G,K	VCL-20□13F06	E,F,G,K	A/Q
					630		VL-20□13G06	E,F	VCL-20□13G06	E,F	A/Q
					1250		VL-20□13F13	P,E,F,G,K	VCL-20□13F13	E,F,G,K	A/Q
					1250		VL-20□13G13	E,F	VCL-20□13G13	E,F	A/Q
						630	VL-20H13D06	H	VCL-20H13D06	H	Q
						1250	VL-20H13D13	H	VCL-20H13D13	H	Q
				630			VL-20□16B06	G,K,H	VCL-20□16B06	G,K,H	G,K:A/Q, H:Q
				1250			VL-20□16B13	G,K,H	VCL-20□16B13	G,K,H	G,K:A/Q, H:Q
					630		VL-20□16F06	P,E,F,G,K	VCL-20□16F06	E,F,G,K	A/Q
					630		VL-20□16G06	E,F	VCL-20□16G06	E,F	A/Q
	16				1250		VL-20□16F13	P,E,F,G,K	VCL-20□16F13	E,F,G,K	A/Q
					1250		VL-20□16G13	E,F	VCL-20□16G13	E,F	A/Q
						630	VL-20H16D06	H	VCL-20H16D06	H	Q
						1250	VL-20H16D13	H	VCL-20H16D13	H	Q
				630			VL-20□25B06	G,K,H	VCL-20□25B06	G,K,H	G,K:A/Q, H:Q
				1250			VL-20□25B13	G,K,H	VCL-20□25B13	G,K,H	G,K:A/Q, H:Q
				2000			VL-20□25B20	G,H	VCL-20□25B20	G,H	G:A/Q, H:Q
					630		VL-20□25F06	P,E,F,G,K	VCL-20□25F06	E,F,G,K	A/Q
					630		VL-20□25G06	E,F	VCL-20□25G06	E,F	A/Q
					1250		VL-20□25F13	P,E,F,G,K	VCL-20□25F13	E,F,G,K	A/Q
					1250		VL-20□25G13	E,F	VCL-20□25G13	E,F	A/Q
					2000		VL-20□25F20	P,E,F,K	VCL-20□25F20	E,F,K	A/Q
	25				2000		VL-20□25G20	E,F	VCL-20□25G20	E,F	A/Q
						630	VL-20H25D06	H	VCL-20H25D06	H	Q
						1250	VL-20H25D13	H	VCL-20H25D13	H	Q
						2000	VL-20H25D20	H	VCL-20H25D20	H	Q
						2500	VL-20H25D25	H	VCL-20H25D25-AS	H	Q
				630			VL-25□13B06	G,K,H	VCL-25□13B06	G,K,H	G,K:A/Q, H:Q
				1250			VL-25□13B13	G,K,H	VCL-25□13B13	G,K,H	G,K:A/Q, H:Q
					630		VL-25□13F06	P,E,F,G,K	VCL-25□13F06	E,F,G,K	A/Q
25.8	12.5				630		VL-25□13G06	E,F	VCL-25□13G06	E,F	A/Q
					1250		VL-25□13F13	P,E,F,G,K	VCL-25□13F13	E,F,G,K	A/Q
					1250		VL-25□13G13	E,F	VCL-25□13G13	E,F	A/Q
						630	VL-25H13D06	H	VCL-25H13D06	H	Q
						1250	VL-25H13D13	H	VCL-25H13D13	H	Q
	16			630			VL-25□16B06	G,K,H	VCL-25□16B06	G,K,H	G,K:A/Q, H:Q
				1250			VL-25□16B13	G,K,H	VCL-25□16B13	G,K,H	G,K:A/Q, H:Q
					630		VL-25□16F06	P,E,F,G,K	VCL-25□16F06	E,F,G,K	A/Q
					630		VL-25□16G06	E,F	VCL-25□16G06	E,F	A/Q
					1250		VL-25□16F13	P,E,F,G,K	VCL-25□16F13	E,F,G,K	A/Q
					1250		VL-25□16G13	E,F	VCL-25□16G13	E,F	A/Q
						630	VL-25H16D06	H	VCL-25H16D06	H	Q
						1250	VL-25H16D13	H	VCL-25H16D13	H	Q
	25			630			VL-25□25B06	G,K,H	VCL-25□25B06	G,K,H	G,K:A/Q, H:Q
				1250			VL-25□25B13	G,K,H	VCL-25□25B13	G,K,H	G,K:A/Q, H:Q
				2000			VL-25□25B20	G,H	VCL-25□25B20	G,H	G:A/Q, H:Q
					630		VL-25□25F06	P,E,F,G,K	VCL-25□25F06	E,F,G,K	A/Q
					630		VL-25□25G06	E,F	VCL-25□25G06	E,F	A/Q
					1250		VL-25□25F13	P,E,F,G,K	VCL-25□25F13	E,F,G,K	A/Q
					1250		VL-25□25G13	E,F	VCL-25□25G13	E,F	A/Q
					2000		VL-25□25F20	P,E,F,K	VCL-25□25F20	E,F,K	A/Q
					2000		VL-25□25G20	E,F	VCL-25□25G20	E,F	A/Q
						630	VL-25H25D06	H	VCL-25H25D06	H	Q
						1250	VL-25H25D13	H	VCL-25H25D13	H	Q
						2000	VL-25H25D20	H	VCL-25H25D20	H	Q
						2500	VL-25H25D25	H	VCL-25H25D25-AS	H	Q
	36					630	VL-36□25D06	P,H	VCL-36□25D06	H	P:A/Q, H:Q
						1250	VL-36□25D13	P,H	VCL-36□25D13	H	P:A/Q, H:Q
						2000	VL-36□25D20	P,H	VCL-36□25D20	H	P:A/Q, H:Q
						2500	VL-36□25D25	P,H	VCL-36□25D25	H	P:A/Q, H:Q

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). Compatible 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

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					VH-06□32A13	P,E,F,G	VCH-06□32A13	E,F,G	A/Q	
							LVB-06□-32L/12	P,E,F,G,G/T	LCL-06□-32D/12	E,F,G,G/G/T		
		2000					VH-06□32A20	P,E,F,G	VCH-06□32A20	E,F,G	A/Q	
							LVB-06□-32L/20	P,E,F,G,G/T	LCL-06□-32D/20	E,F,G,G/G/T		
			3150				VH-06□32B32	P,E,F,Fs,Gs,K,H	VCH-06□32B32	E,F,Fs,Gs,K,H	P,E,F,K:A/Q, Fs,Gs,H:Q	
							LVB-06□-32L/30	P,E,F,G/G/T	LCL-06□-32D/30	E,F,G,G/G/T		
					3150		VH-06□40D32	H	VCH-06□40D32	K,H	K:A/Q,H:Q	
	40	1250	1250				VH-06□40A13	P,E,F,Fs,G,Gs,K,H	VCH-06□40A13	E,F,Fs,G,Gs,K,H,Ha	P,E,F,Fs,G, Gs,K:A/Q,H:Q	
							LVB-06□-40L/12	P,E,F,G,G/G/T	LCL-06□-40D/12	E,F,G,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,Ha	P,E,F,Fs,G, Gs,K:A/Q,H:Q	
							LVB-06□-40L/20	P,E,F,G,G/G/T	LCL-06□-40D/20	E,F,G,G/G/T		
			3150				VH-06□40B32	P,E,F,Fs,G,Gs,K,H	VCH-06□40B32	E,F,Fs,G,Gs,K,H,Ha	P,E,F,G,K:A/Q Fs,Gs,H:Q	
							LVB-06□-40L/30	P,E,F,G/G/T	LCL-06□-40D/30	E,F,G,G/G/T		
						3150		VH-06□40D32	H	VCH-06□40D32	K,H	K:A/Q,H:Q
						4000		VH-06□40D40	P,K,H	VCH-06□40D40	K,Ha,Hb	Q
						5000	VH-06H40L50	H	VCH-06Ha40L50	Ha	Q	
	50		1250				VH-06□50B13	P,H	VCH-06H50B13	H	Q	
							2000			VH-06□50B20	P,H	VCH-06H50B20
					2500		VH-06□50D25	P,H	VCH-06H50D25	H	Q	
							3150			VH-06□50D32	P,H	VCH-06H50D32
					4000		VH-06□50D40	P,K,H	VCH-06□50D40	K,Ha,Hb	Q	
								5000	VH-06H50L50	H	VCH-06Ha50L50	Ha
	12	31.5	1250	1250				LVB-12G-32L/12-T2	G/T	LCL-12G-32D/12-T2	G/T	A/Q
2000											LVB-12G-32L/20-T2	G/T
			3150				VH-12□32B32	Gs,K,H	VCH-12□32B32	Gs,K,H	K:A/Q,Gs,H:Q	
							LVB-12G-32L/30-T2	G/T	LCL-12G-32D/30-T2	G/T	A/Q	
40		1250	1250				VH-12□40A(K)13	Gs,K,H	VCH-12□40A(K)13	Gs,K,H,Ha	Gs,K:A/Q,H:Q	
							LVB-12G-40L/12-T2	G/T	LCL-12G-40D/12-T2	G/T	A/Q	
		2000	2000				VH-12□40A(K)20	Gs,K,H	VCH-12□40A(K)20	Gs,K,H,Ha	K:A/Q,Gs,H:Q	
							LVB-12G-40L/20-T2	G/T	LCL-12G-40D/20-T2	G/T	A/Q	
			1250				VH-12□40B13	K,H	VCH-12□40B13	K,H	Q	
							2000			VH-12□40B20	K,H	VCH-12□40B20
			3150				VH-12□40B32	Gs,K,H	VCH-12□40B32	Gs,K,H,Ha	K:A/Q,Gs,H:Q	
							LVB-12G-40L/30-T2	G/T	LCL-12G-40D/30-T2	G/T	A/Q	
50			1250				VH-12H40D32	H	VCH-12H40D32	H	Q	
							4000			VH-12□40D40	P,K,H	VCH-12□40D40
					2500		VH-12H40L50	H	VCH-12Ha40L50	Ha	Q	
							VH-12□50B13	P,H	VCH-12H50B13	H	Q	
							VH-12□50B20	P,H	VCH-12H50B20	H	Q	
							VH-12□50D25	P,H	VCH-12H50D25	H	Q	
			3150		VH-12□50D32	P,H	VCH-12H50D32	H	Q			
					VH-12□50D40	P,K,H	VCH-12□50D40	K,Ha,Hb	Q			
					VH-12H50L50	H	VCH-12Ha50L50	Ha	Q			
					VH-12H50L50	H	VCH-12Ha50L50	Ha	Q			
17.5	31.5		3150			VH-17H32B32	H	VCH-17H32B32	H,Ha	Q		
								3150	VH-17H32D32	H	VCH-17H32D32	H
	40		1250			VH-17□40B13	K,H	VCH-17□40B13	K,H	K:A/Q,H:Q		
						2000			VH-17□40B20	K,H	VCH-17□40B20	K,H
			3150			VH-17H40B32	H	VCH-17H40B32	H,Ha	Q		
								3150	VH-17H40D32	H	VCH-17H40D32	H
				4000		VH-17□40D40	P,K,H	VCH-17□40D40	Ha,Hb	Q		

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-17□50B13	P,H	VCH-17H50B13	H	Q
			2000			VH-17□50B20	P,H	VCH-17H50B20	H	Q
				2500		VH-17□50D25	P,H	VCH-17H50D25	H	Q
				3150		VH-17□50D32	P,H	VCH-17H50D32	H	Q
				4000		VH-17□50D40	P,H	VCH-17□50D40	Ha,Hb	Q
24	25			2500		VH-20□25D25	P,H	VCH-20H25D25	H	Q
	31.5		1250			VH-20□32B13	P,H	VCH-20H32B13	H	Q
								VCH-20H32F13	H	Q
			2000			VH-20□32B20	P,H	VCH-20H32B20	H	Q
								VCH-20H32F20	H	Q
				1250		VH-20□32D13	P,H	VCH-20H32D13	H	Q
				2000		VH-20□32D20	P,H	VCH-20H32D20	H	Q
				3150		VH-20□32D32	P,H	VCH-20H32D32	H	Q
	40		1250			VH-20□40B13	P,H	VCH-20H40B13	H	Q
								VCH-20H40F13	H	Q
			2000			VH-20□40B20	P,H	VCH-20H40B20	H	Q
								VCH-20H40F20	H	Q
				1250		VH-20□40D13	P,H	VCH-20H40D13	H	Q
				2000		VH-20□40D20	P,H	VCH-20H40D20	H	Q
				3150		VH-20□40D32	P,H	VCH-20H40D32	H	Q
25.8	25			2500		VH-25□25D25	P,H	VCH-25H25D25	H	Q
	31.5		1250			VH-25□32B13	P,H	VCH-25H32B13	H	Q
								VCH-25H32F13	H	Q
			2000			VH-25□32B20	P,H	VCH-25H32B20	H	Q
								VCH-25H32F20	H	Q
				1250		VH-25□32D13	P,H	VCH-25H32D13	H	Q
				2000		VH-25□32D20	P,H	VCH-25H32D20	H	Q
				3150		VH-25□32D32	P,H	VCH-25H32D32	H	Q
	40		1250			VH-25□40B13	P,H	VCH-25H40B13	H	Q
								VCH-25H40F13	H	Q
			2000			VH-25□40B20	P,H	VCH-25H40B20	H	Q
								VCH-25H40F20	H	Q
				1250		VH-25□40D13	P,H	VCH-25H40D13	H	Q
				2000		VH-25□40D20	P,H	VCH-25H40D20	H	Q
				3150		VH-25□40D32	P,H	VCH-25H40D32	H	Q
36	25				1250	VH-36□25E13	P,H	VCH-36H25E13	H	Q
					2000	VH-36□25E20	P,H	VCH-36H25E20	H	Q
					3150	VH-36□25E32	P,H	VCH-36H25E32	H	Q
	31.5				1250	VH-36□32E13	P,H	VCH-36H32E13	H	Q
					2000	VH-36□32E20	P,H	VCH-36H32E20	H	Q
					3150	VH-36□32E32	P,H	VCH-36H32E32	H	Q
	40				1250	VH-36□40E13	P,H	VCH-36H40E13	H	Q
					2000	VH-36□40E20	P,H	VCH-36H40E20	H	Q
					3150	VH-36□40E32	P,H	VCH-36H40E32	H	Q

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 drawble type with a box type cradle for CB compartment construction.

6. G/T types are MCSG style drawble types with a cradle for building 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

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 (List 1)	
	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 (P, 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)	

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		I _k /t _k (kA/s)	20/3, 25/3								
Rated short-circuit breaking capacity		(MVA)	250/310			410/520			600/750		
Rated short-circuit making current		I _p (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)								
Rated breaking time		(cycle)	3								
Rated withstand voltage	Power frequency (1 min)	U _d (kV)	20			28			38		
	Impulse (1.2×50μs)	U _p (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		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)	115 (120)	180 (200)	170 (200)	170 (200)	180 (200)
Dimensions	Breaker (P, E, F, G, K, H type)		Page 100~113			Page 134~150			Page 134~150		
	Cradle (E, F, G, K type)		Page 100~113			Page 134~150			Page 134~150		
	Cradle (K, H type)		Page 100~113			Page 134~150			Page 134~150		
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

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			P type				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	160/175
	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 114~133			Page 151~169							
	Cradle (E, F, Fs, G, Gs, K, H type)		Page 114~133			Page 151~169							
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..

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								
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 (1.2×50μs)	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)	≤ 0.07								
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)								220 (250)
	Breaker (P, E, F, G, K type)	(kg)	110	115	120				135	-	
Dimensions	Breaker (P, E, F, G, K, H type)		Page 170~175		Page 175~187				Page 187~192		
	Cradle (E, F, G, K type)		Page 192~201		Page 192~201				Page 192~201		
Cradle (H type)			Page 192~201		Page 192~201				Page 192~201		
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.

Note 1) 24/25.8kV 25kA 2000A(Phase distance 210mm): 60Hz available only

2) For I_{cw} 4s, please contact us..

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

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 220~250, 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)	≤ 0.07			
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 (P, H type)		Page 202~207			
	Cradle (H type)		Page 202~207			
Standards			IEC 62271-100			

Note1) For Icw 4s, please contact us.

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		I _k /t _k (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		I _p (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)							
Rated breaking time		(cycle)	3							
Rated withstand voltage	Power frequency (1 min)	U _d (kV)	20				28			
	Impulse (1.2×50μs)	U _p (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 (List 3)							
	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 212~213	Page 208~209		Page 212~213	Page 212~213	Page 208~209		Page 212~213
	Cradle (MESG, MCSG)		Page 214~215	Page 210~211		Page 214~215	Page 214~215	Page 210~211		Page 214~215
Standards			IEC 62271-100							

* MCSG style drawout type provide a cradle for building 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

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		I _k /t _k (kA/s)	40/4									
Rated short-circuit breaking capacity		(MVA)	499		831		499		831		1212	
Rated short-circuit making current		I _p (kA)	2.5×Isc (50Hz)/2.6×Isc (60Hz)									
Rated breaking time		(cycle)	3									
Rated withstand voltage	Power frequency (1 min)	U _d (kV)	20		28 (42)		20		28 (42)		38	
	Impulse (1.2×50μs)	U _p (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 216~232					Page 216~232				
	Cradle (Fs, Gs, K, H type)		Page 216~232					Page 216~232				
Standards			IEC 62271-100									

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	K 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 216~232					
	Cradle (Fs, Gs, K, H type)		Page 216~232					
Standards			IEC 62271-100					

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

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				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 (List 3)											
	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 (P, H type)		Page 233~236				Page 233~236				Page 233~236			
	Cradle (H type)		Page 233~236				Page 233~236				Page 233~236			
Standards			IEC 62271-100, KERI/KEMA, V-check(KESCO)											

* H type is a box type cradle with CB compartment style structure.

Note1) Contact us.

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 220~250					
	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 1)					
	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)		395					
	Cradle (H type)		200					
Dimensions	Breaker (P, H type)		Page 237~240					
	Cradle (H type)		Page 237~240					
Standards			IEC 62271-100					

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

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 (1.2×50μs)	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 1)	
	Capacitive current switching		C2	
Installation version	Drawout		H type (for MCSG)	
Phase distance		(mm)	320	
Weight	Breaker (H type)	(kg)	430	
	Cradle (H type)	(kg)	200	
Dimensions	Breaker (H type)		Page 241~242	
	Cradle (H type)		Page 241~242	
Standards			IEC 62271-100	

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 (1.2×50μs)	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 (List 3)						
	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 (P, H type)		Page 243~251	Page 243~251			Page 243~251		
	Cradle (H type)		Page 243~251	Page 243~251			Page 243~251		
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

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 (List 3)								
	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 (P, H type)		Page 252~255			Page 252~255			Page 252~255		
	Cradle (H type)		Page 252~255			Page 252~255			Page 252~255		
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 (SQ)	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/Q 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

Accessories

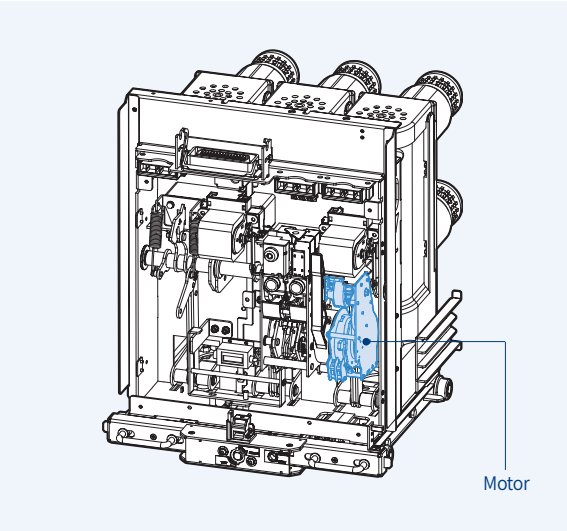
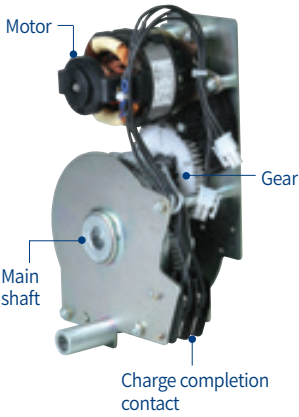


Mounting Position	Type	Accessory	Supplied as			Remarks	page
			VL: 7.2kV 8/12.5kA	VL: 20/25kA	VH		
Cradle	A1	ES(Earthing Switch)\ without Option	-	Option	Option	Attached at the factory	85
	A2	ES(Earthing Switch) with Position Switch(2a2b)	-	Option	Option	Attached at the factory	85
	A4	ES(Earthing Switch) 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

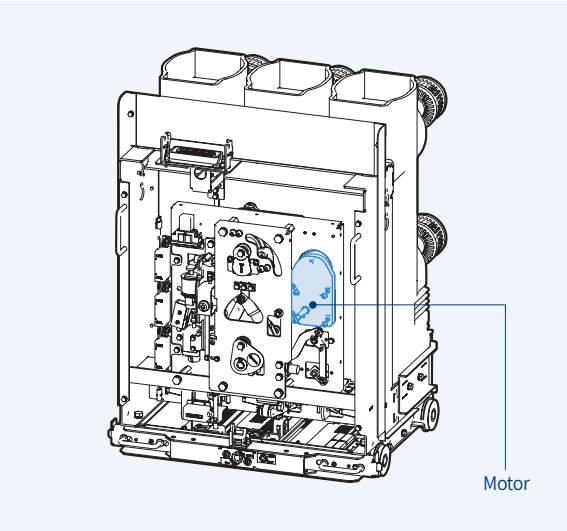


- Charge the closing spring of a circuit breaker by the external power source. When the charging is complete, control power of the motor will be "OFF" by the built-in Limit S/W. Without the external power source, charge manually.
- Operating voltage range (IEC 60947)
85%~110%Vn

Item	VL Type							
	DC 24~30V	DC 48~60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~130V	AC 200~250V
Input voltage (Vn)								
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



Item	VH Type						
	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Input voltage (Vn)							
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.						

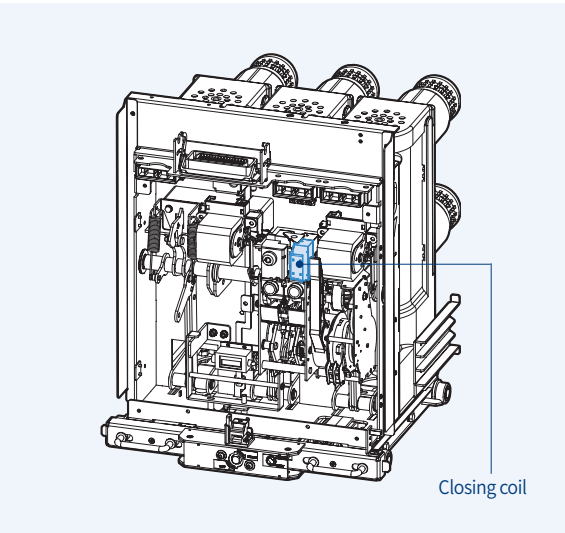
Note) Rated operation and control voltage range, see page 65.

Accessories

Closing Coil: C

Installed inside of a breaker as standard

VL type

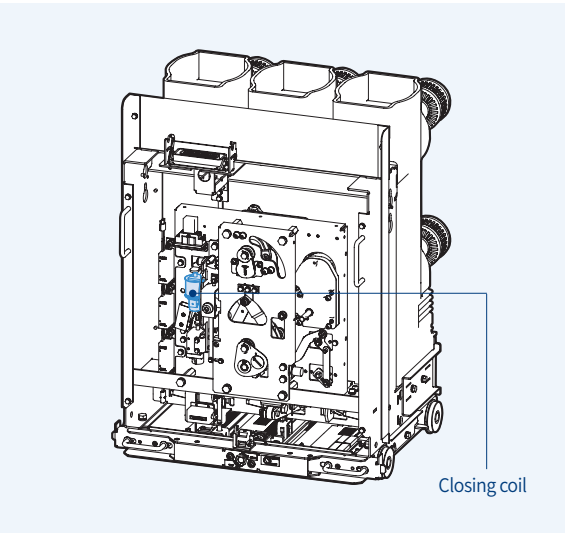


- It is a control device which closes a circuit breaker, when applying voltage continuously or instantaneously over 200ms to the coil control terminals.

Item	VL Type							
	Input voltage (Vn)	DC 24~30V	DC 48~60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~130V AC 200~250V
Power consumption (inrush, W)								200
Power consumption (steady, W)								≤ 5
Rated current (A)		≤ 10	≤ 5	≤ 4	≤ 2			-

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.

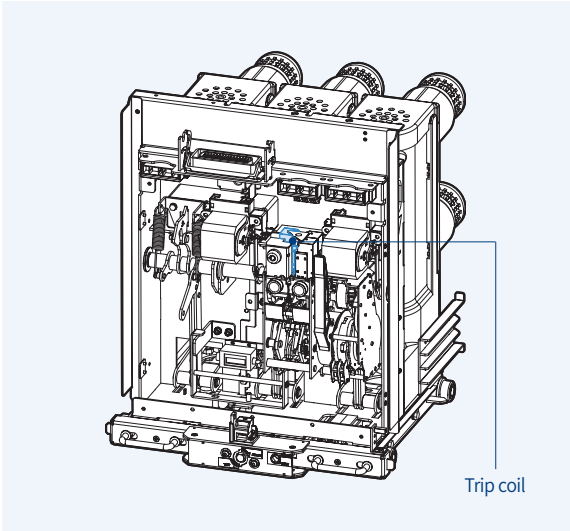
Item	VH Type						
	Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V AC 220V
Rated current (A)		≤ 8	≤ 3	≤ 3.5	≤ 2.5	≤ 8	≤ 3 ≤ 2.5

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

Trip Coil: T

Installed inside of a breaker as standard

VL type

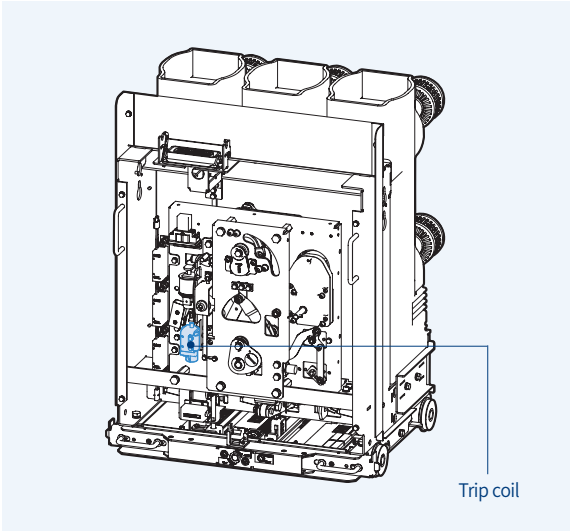


- It is a control device which trips a circuit breaker from remote place, when applying voltage continuously or instantaneously over 35ms to coil control terminals.
- When UVT coil is installed, its location is changed.

Item	VL Type							
Input voltage (Vn)	DC 24~30V	DC 48~60V	DC 110V	DC 125V	DC 220V	AC 48V	AC 100~130V	AC 200~250V
Power consumption (inrush, W)						200		
Power consumption (steady, W)						≤ 5		
Rated current (A)	≤ 10	≤ 5	≤ 4		≤ 2	-		

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.

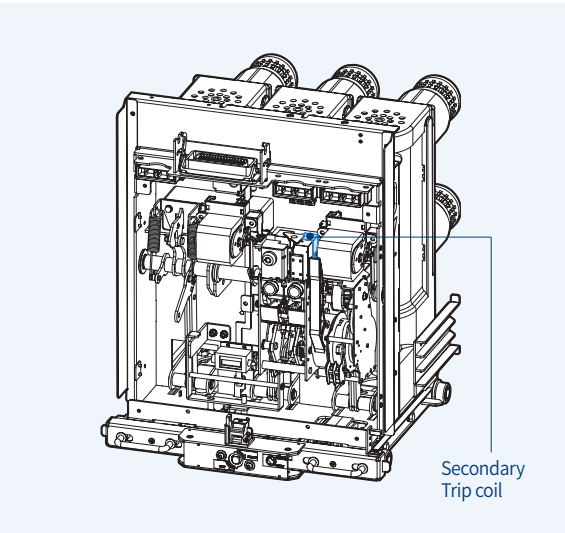
Item	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Rated current (A)	≤ 8	≤ 3	≤ 3.5	≤ 2.5	≤ 8	≤ 3	≤ 2.5

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

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

Installed inside of a breaker as an option

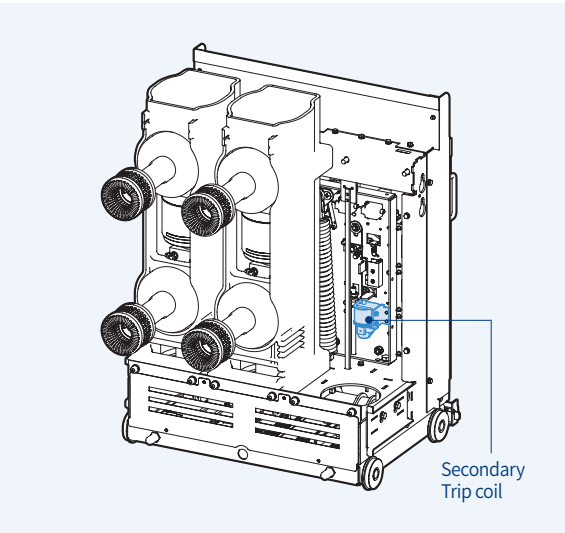
VL type



- 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.

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

Item	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Rated current (A)	≤ 8	≤ 3	≤ 3.5	≤ 2.5	≤ 8	≤ 3	≤ 2.5

Rated operation and control voltage range

Item		Susol VCB			Remarks
		VL : 7.2kV8/12.5kA	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(2012)KSC4611	IEC62271-100(2012)	IEC62271-100(2012)	

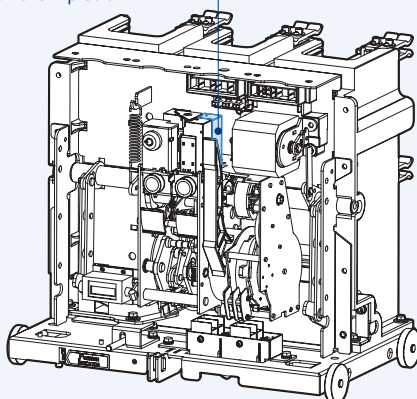
Current Trip Coil

Installed inside of a breaker as an option

VL type: T9



Current Trip Coil



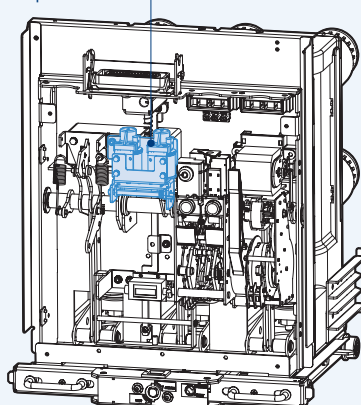
- This trip coil uses the output of the CT as its control power source and is used with over current relay in combination.
Two current trip coils are supplied.
- Coil burden is 90VA.(T9)
- Coil impedance(Z) is like below
 - 3A: 10Ω or less, Operating current AC 3A (T9)
 - 1A: 160Ω or less, Operating 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



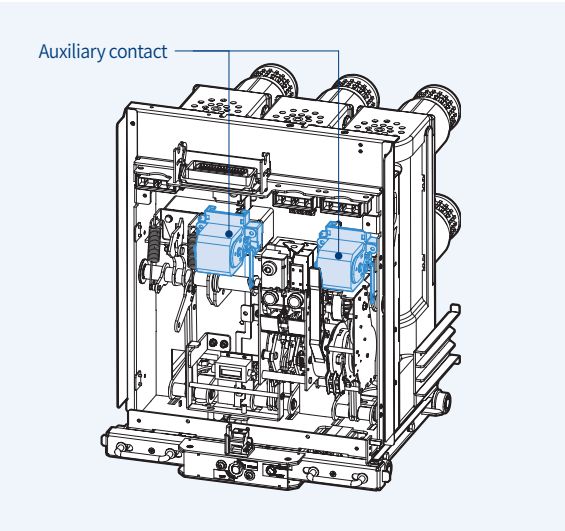
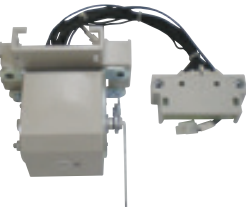
Current Trip Coil



Auxiliary Contact: SA

Installed inside of a breaker as an option

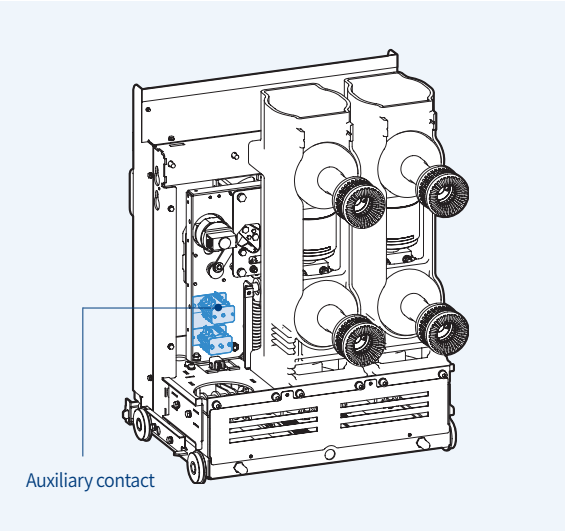
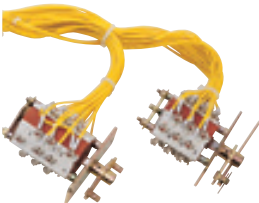
VL type



- 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



Item			VL/VH Type		Remarks
			Resistive load (A)	Inductive load (A)	
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/VH type

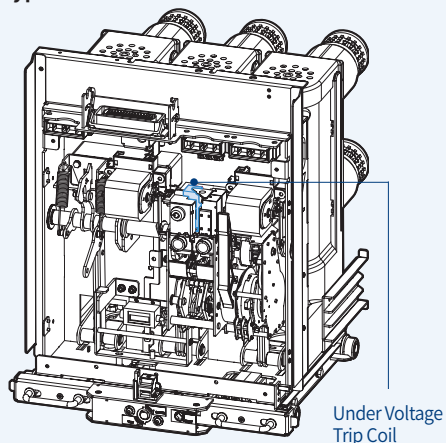


VL type



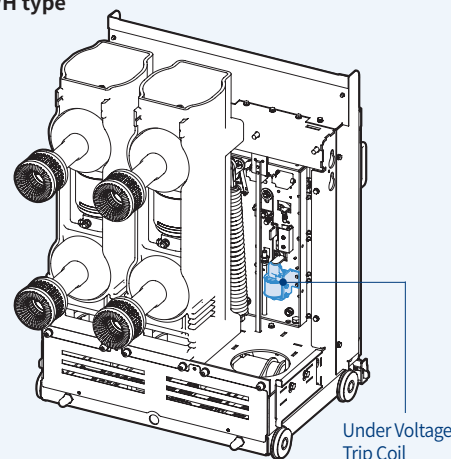
VH type

VL type



Under Voltage Trip Coil

VH type



Under Voltage Trip Coil

- 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)

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

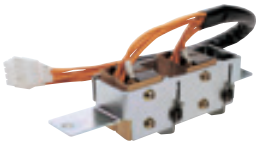
Item	VH Type						
Input voltage (Vn)	DC 48V	DC 110V	DC 125V	DC 220V	AC 48V	AC 110V	AC 220V
Power consumption (inrush, W)	350						
Power consumption (steady, W)	≤ 10						

Accessories

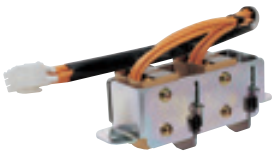
Position Switch: A3, A4, A5

Installed inside of a breaker as an option

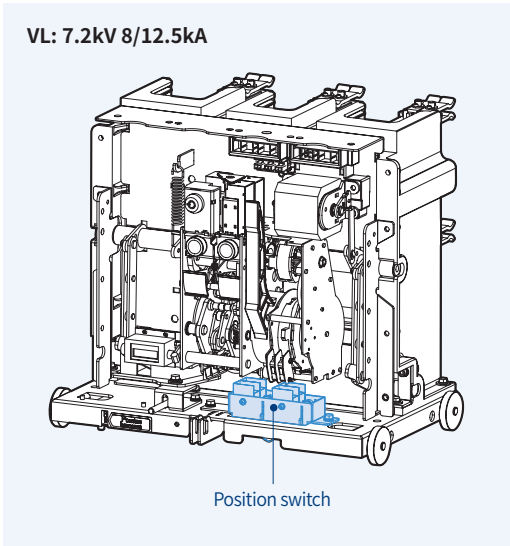
VL type E/F/G Cradle



Small VCB (VL)

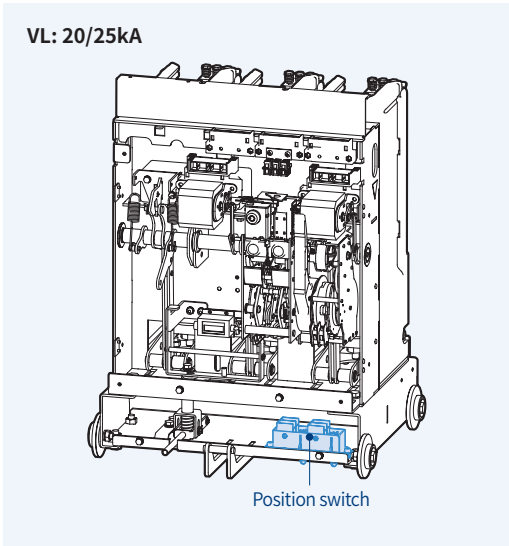


Medium VCB (VL)



VL: 7.2kV 8/12.5kA

Position switch

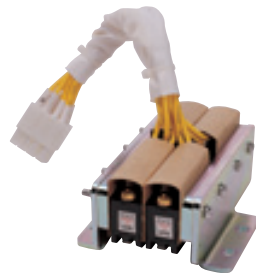


VL: 20/25kA

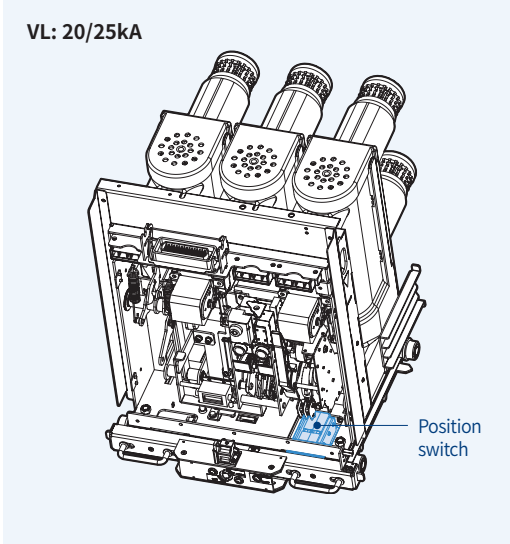
Position switch

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

VL/VH type H Cradle

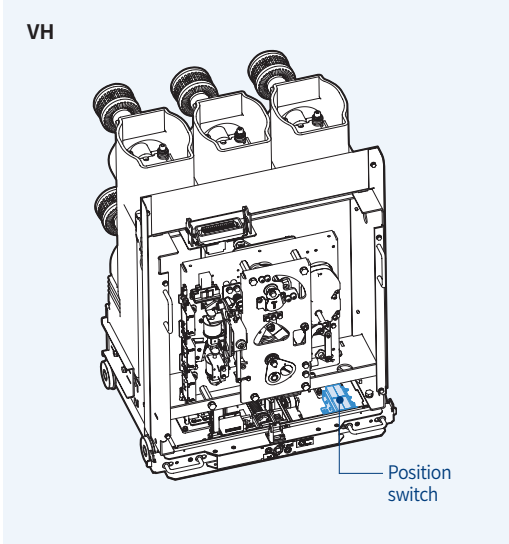


Large model (VH)



VL: 20/25kA

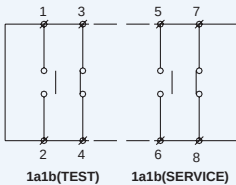
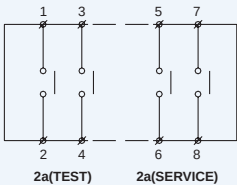
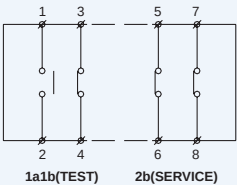
Position switch



VH

Position switch

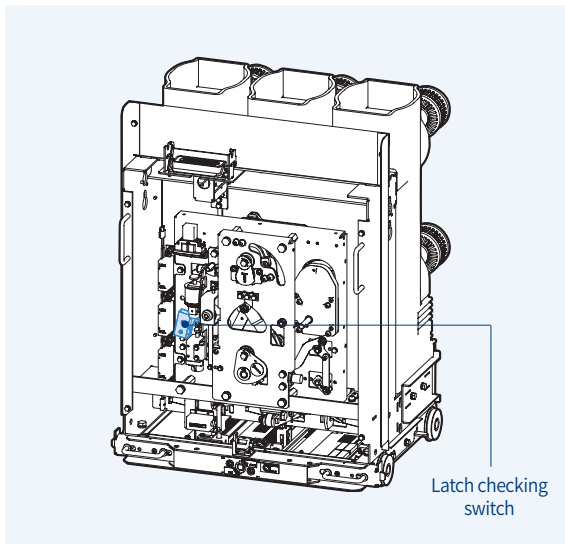
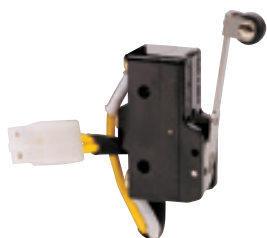
Contact configuration



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



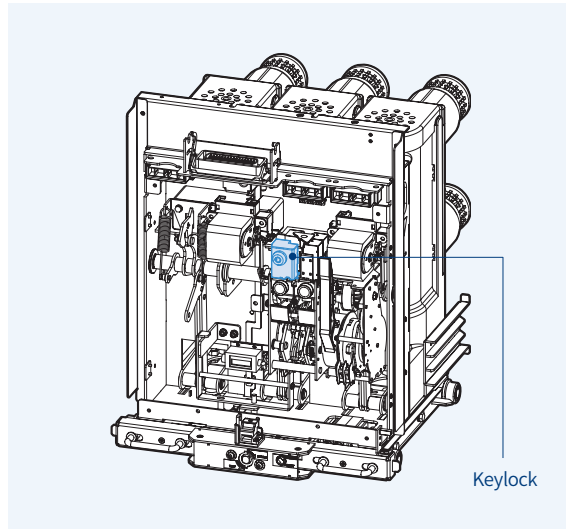
- It displays the total number of ON/OFF operations of a breaker.

Accessories

Keylock: A7, AG

Installed inside of a breaker as an option

VL type

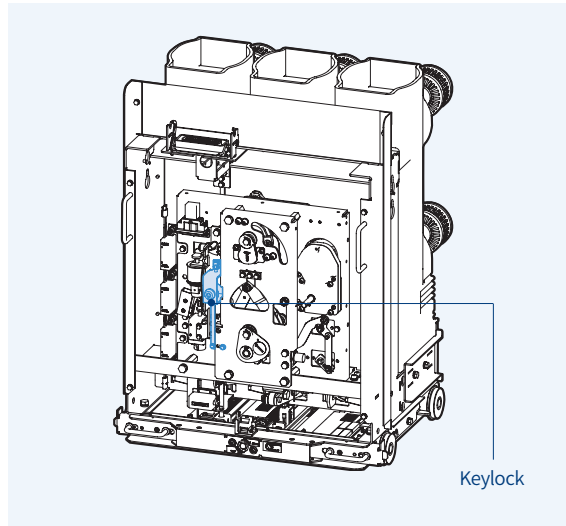


- The key is to unlock the locking device first to close the breaker electrically and mechanically.

* 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



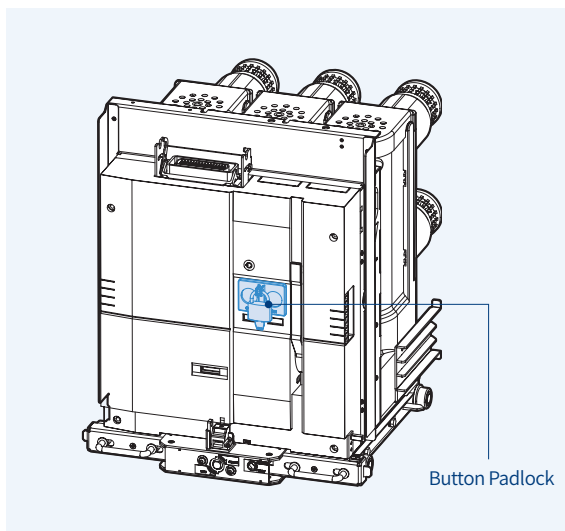
*How to operate

- 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 inside of a breaker as an option

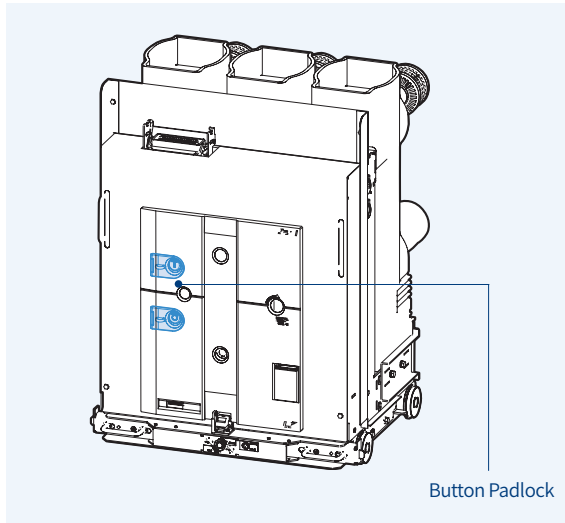
VL type



- 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

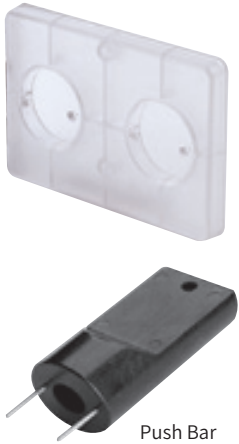


Accessories

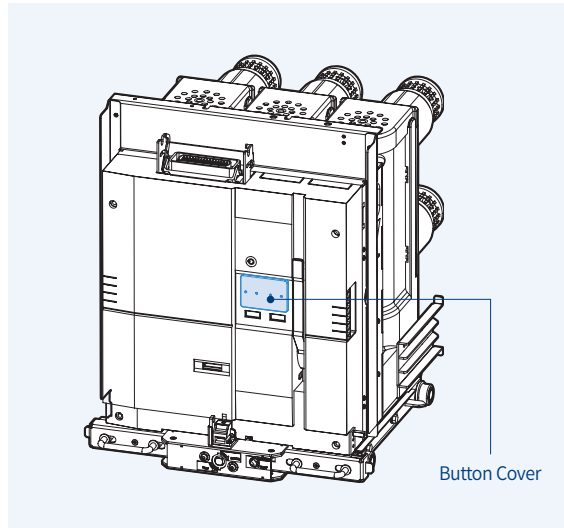
Button Cover: A9

Installed inside of a breaker as an option

VL type



Push Bar

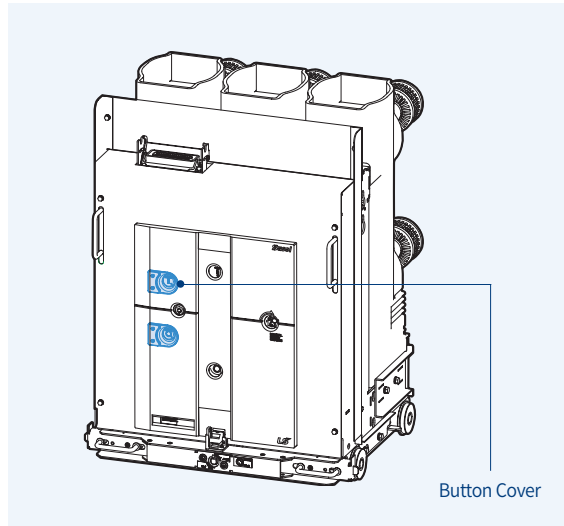


- It is a protection cover to prevent an accident due to unintended operation of ON/OFF button.
- Use the push-bar to operate the ON/OFF button.

VH type



Push Bar



Lead wire

Supplied separately from a breaker as an option

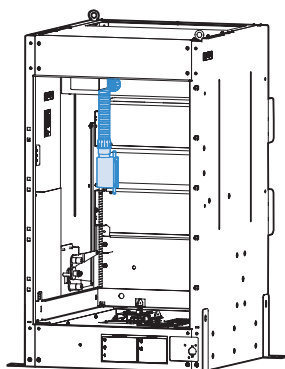
VL/VH type



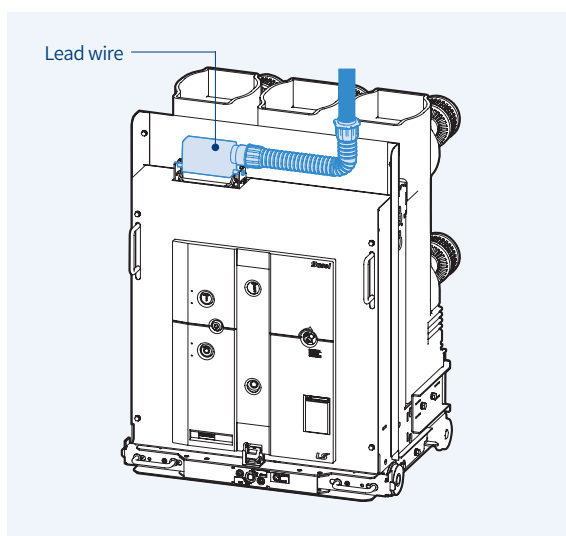
A type connector



Q 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.
- Q 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



Q 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 Q.

Accessories

Standard Lead Wire

Type	Detailed breaker type	Wiring type	Auxiliary contact connector	Flammability rating	Color	SA/SB Type *1)		SA/SQ Type *2)	
						Standard wiring (-)	Optional wiring (A1,A2,A3,A4,A5)	Standard wiring (-)	Optional wiring (A1,A2,A3,A4,A5)
VL-Type	VL-06□08,13□04,06	Lead wire	SA1	HB	yellow	70723171101	70723171102	70723171101	70723171102
					blue	70723171107	70723171108	70723171107	70723171108
			XHHW	HB	yellow	70723171113	70723171114	70723171113	70723171114
					blue	70723171120	70723171121	70723171120	70723171121
			SA2	HB	yellow	70723171105	70723171106	70723171105	70723171106
					blue	70723171111	70723171112	70723171111	70723171112
		SA3	HB	HB	yellow	70723171103	70723171104	70723171103	70723171104
					blue	70723171113	70723171114	70723171113	70723171114
			XHHW	HB	yellow	70723171115	70723171116	70723171115	70723171116
					blue	70723171124	70723171125	70723171124	70723171125
		User plug	SA1			77023171003		77023171003	
			SA2						
			SA3						
	VL-06,12,17,20,25□ 20,25,32□13,20,25	Lead wire	SA2	HB	yellow	70723172101	70723172102	70723172101	70723172102
					blue	70723172112	70723172113	70723172112	70723172113
			XHHW	HB	yellow	70723172116	70723172117	70723172116	70723172117
					blue	70723172144	70723172145	70723172144	70723172145
			SA4	HB	yellow	70723172103	70723172104	70723172103	70723172104
					blue	70723172114	70723172115	70723172114	70723172115
			XHHW	HB	yellow	70723172118	70723172119	70723172118	70723172119
					blue	70723172146	70723172147	70723172146	70723172147
			SQ2 (SB2)	HB	yellow	70723172107		70723172503	
					blue	70723172149		70723172519	
			XHHW	HB	yellow	70723172109		70723172505	
					blue	70723172150		70723172521	
		SQ4 (SB4)	HB	HB	yellow	70723172108		70723172504	
					blue	70723172151		70723172520	
			XHHW	HB	yellow	70723172170		70723172506	
					blue			70723172522	
		User plug	SA2			77023172101	77023172101	77023172101	77023172101
			SA4			77023172101	77023172101	77023172101	77023172101
			SQ2(SB2)			70723172110		70723172511	
			SQ4(SB4)			70723172111		70723172512	
VH-Type	VH-06,12,17,20,25,36□ 32,40,50□13,20,25,32,40,50	Lead wire	SQ2 (SB2)	HB	yellow	70723173109		70723172503	
					blue	70723173111		70723172519	
			XHHW	HB	yellow	70723173119		70723172505	
					blue	70723173112		70723172521	
		User plug	SQ4 (SB4)	HB	yellow	70723173110		70723172504	
					blue	70723173113		70723172520	
			SQ2(SB2)			70723173105		70723172511	
						70723173106		70723172512	
LVB-Type	LVB-06,12□-32,40□12,20,30 VH-06,12□32,40□13,20,30 (Pro-MEC & Susol PI)	Lead wire	SA2	HB	yellow	70723143117	70723143117	70723143117	70723143117
					blue	70713143020	70713143020	70713143020	70713143020
			XHHW	HB	yellow	70713143012	70713143012	70713143012	70713143012
					blue	70713143030	70713143030	70713143030	70713143030
			SA4	HB	yellow	70723143118	70723143118	70723143118	70723143118
					blue	70713143021	70713143021	70713143021	70713143021
			XHHW	HB	yellow	70713143013	70713143013	70713143013	70713143013
					blue	70713143031	70713143031	70713143031	70713143031
		2M (2G)	HB	HB	yellow	70713143024		70723143524	
					blue	70713143044		70723143544	
			XHHW	HB	yellow	70713143049		70723143549	
					blue	70713143047		70723143547	
		2N (2H)	HB	HB	yellow	70713143025		70723143525	
					blue	70713143045		70723143545	
		User plug	XHHW	HB	yellow	70713143048		70723143548	
					blue	70713143046		70723143546	
			2B			73263143007		73263143007	
						73263143008		73263143008	
		2M(2G)				73263143030		70723143651	
						73263143031		70723143652	

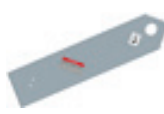
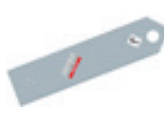
*1: If even one of the options A1, A2, A3, A4, A5 is applied to the VCB code, please order with the optional wiring code.

(ex. Wiring (HB/Yellow) code conforming to VL-06F13A06-M1C1T1SA2U0-A4: 70723171106

*2: After April 2021, the B Type connector is changed to Q Type (VL/VH: SB->SQ, LVB: 2G, 2H->2M, 2N), please order with the appropriate wiring.

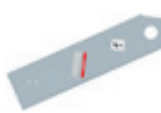
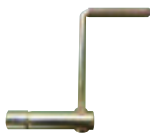
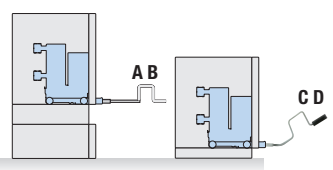
(ex. Wiring (HB/Yellow) code conforming to VL-06F25A06-M1C1T1SQ2U0: 70723172503

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					75123173132	
VL-06,12, 17□20,25,31.5 VL-24,25□13, 16,25	P	N. A.				VH-20,25□25□25 VH-20,25□32, 40□13,20,32	75123173105	
	E, F, G	55213143005					75123173106	
	H.K	A type	55223172407 For medium size CB [Short]			VH-36□25,32, 40□13,20,32	75123173165	
		B type	55223172403 For medium size CB [Long]				75123173166	
		C type	55223172405 With universal joint [Short]					
		D type	55223172406 With universal joint [Long]					

Accessories

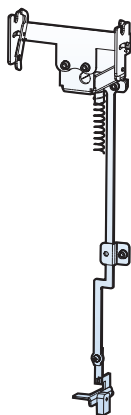
Handle & Lifting Hook

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									
		55213163003	 With universal joint								
	VH-06, 12,17□50 VH-20,25, 36□25,32,40	P	N. A.						Panel door type	code	Appearance
H		A type	55223172407	 For medium size CB [Short]					Right open (Standard handle)	55223172701	
		B type	55223172403	 For medium size CB [Long]					Right open (Standard handle)	55223172703	
		C type	55223172405	 With universal joint [Short]					Ratchet type (In case of insufficient operating space)	55223172101	
		D type	55223172406	 With universal joint [Long]							
											

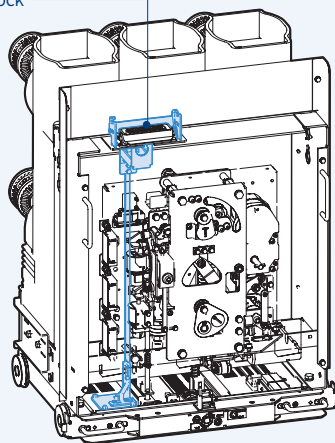
Plug interlock: AC

Installed inside of a breaker as an option

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



Plug interlock

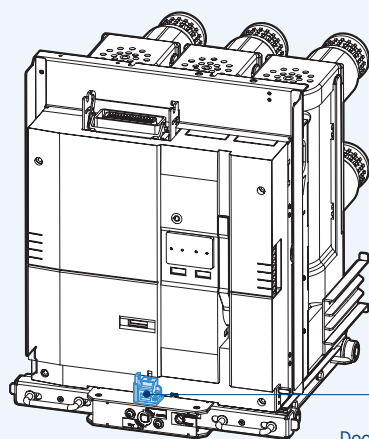


- It checks if the control power connector on the cradle (H type) is connected with the connecting terminal of the breaker before the proceeding of draw-in or out.
- It is not allowed to separate the control power connector from the breaker in the position of draw-in /out or SERVICE, but TEST position.

Padlock/Door racking interlock: AD

Installed inside of a breaker as an option

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



Door interlock

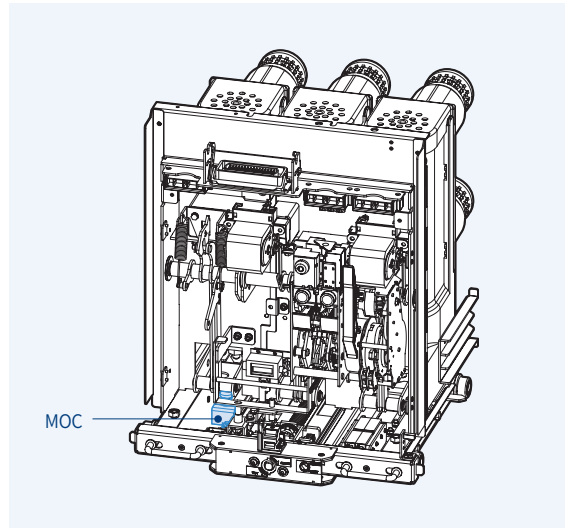
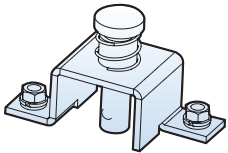
- With this door options for H type cradle draw-in/out is allowed only when the door is closed.
- If draw-in /out is necessary when the door is open, use the operation lever put in the slot of the breaker handle. Insert it into the hole in the bottom of door interlock.
- Padlock is also optional, which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

Accessories

MOC drive device: AE

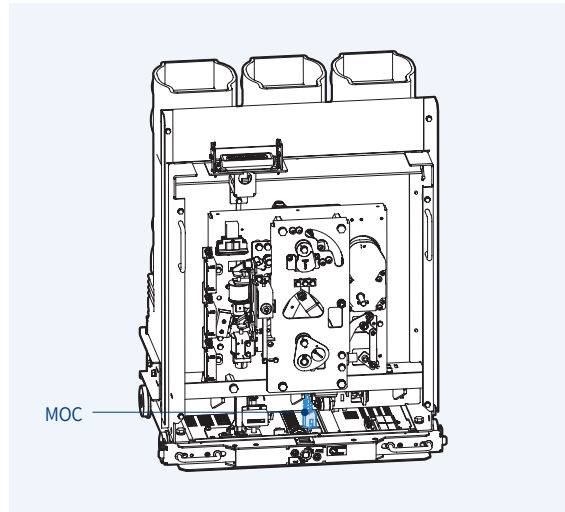
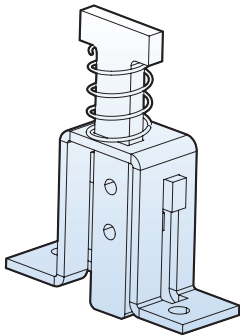
Installed inside of a breaker as an option

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.

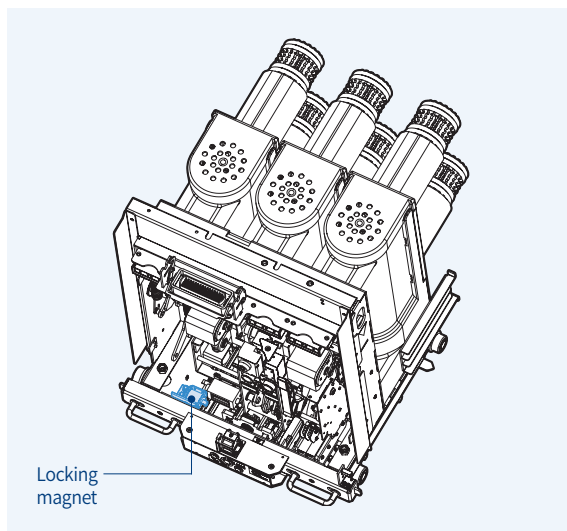
VH type



Locking magnet: AF

Installed inside of a breaker as an option

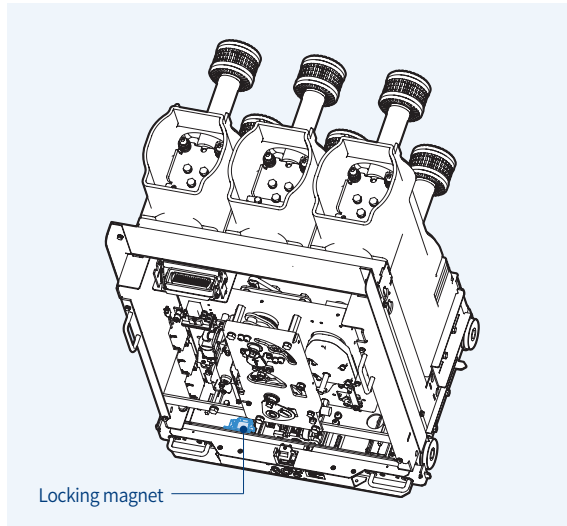
VL type



- 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.
- Constant power must be supplied to locking magnet until the draw-in/out operation is completed and operation handle is inserted

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

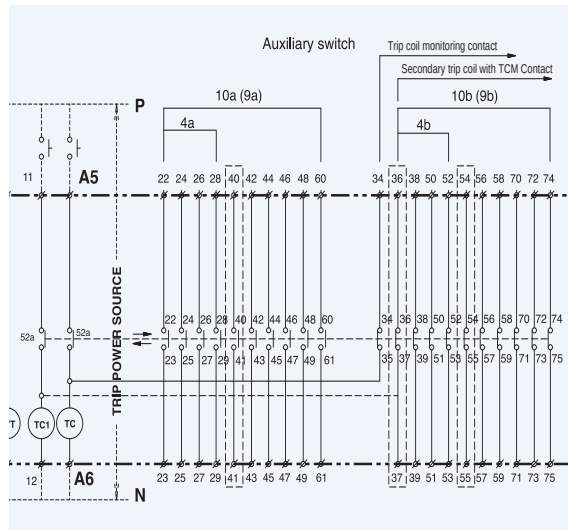
VH type



Trip coil monitoring contact

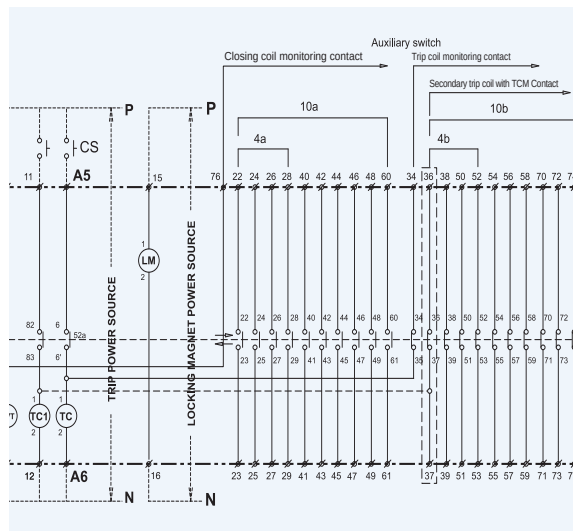
Installed inside of a breaker as standard

VL type



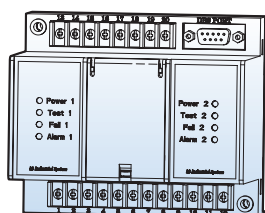
- Device for monitoring the functions of the trip coils.
- To monitor the trip coils connect its terminals with the trip coil monitoring relay as shown on the circuit diagram.
 - If the trip coil is normal: closed-circuit consisting
 - If the trip coil is damaged: open circuit
- 1) Terminal A5 and A6 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 optional, which enable monitoring the coils by connecting in parallel with the trip coil operation switch.
- Trip coil monitoring contact is available only when trip coils T1, T2, T3, T4, T5 are selected.

VH type



Coil Test Unit: CTU

Installed inside 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.

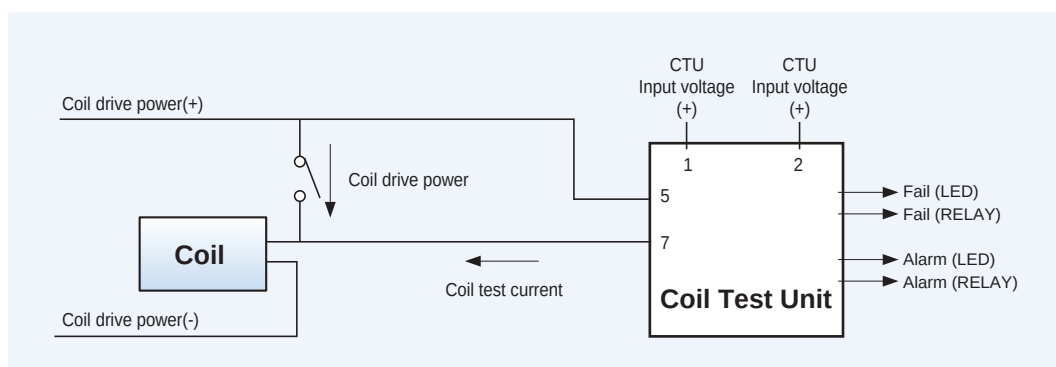
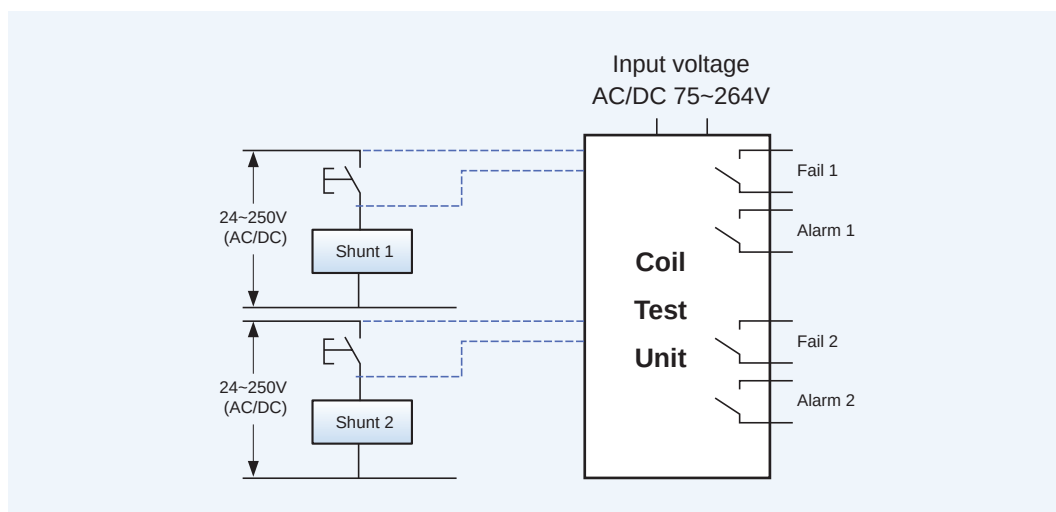
※ One test unit can monitor up to two coils.

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)



Accessories

Condenser trip device: CTD

Installed inside of a breaker as an option

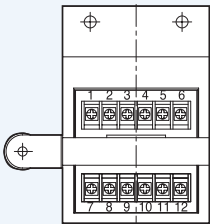
Ratings



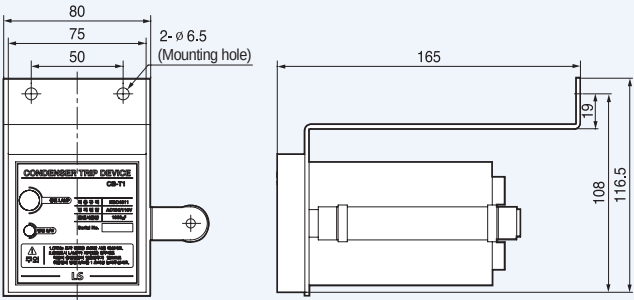
Ratings	Specification	
Model	CB - T1	CB - T2
Rated input voltage (V)	AC 100/110	AC 200/220
Frequency (Hz)	50/60	50/60
Rated charge voltage (V)	140/155	280/310
Charging time	Within 10sec.	Within 10sec.
Trip possible time	Within 30sec.	Within 30sec.
Range of Input voltage	85%~110%	85%~110%
Condenser capacity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

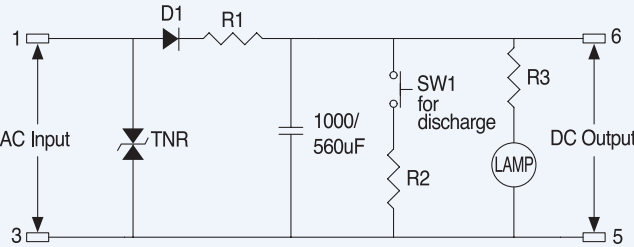
Terminal arrangement



External dimension



Circuit diagram



UVT Time delay: UDC

Installed inside 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.

■ Characteristics

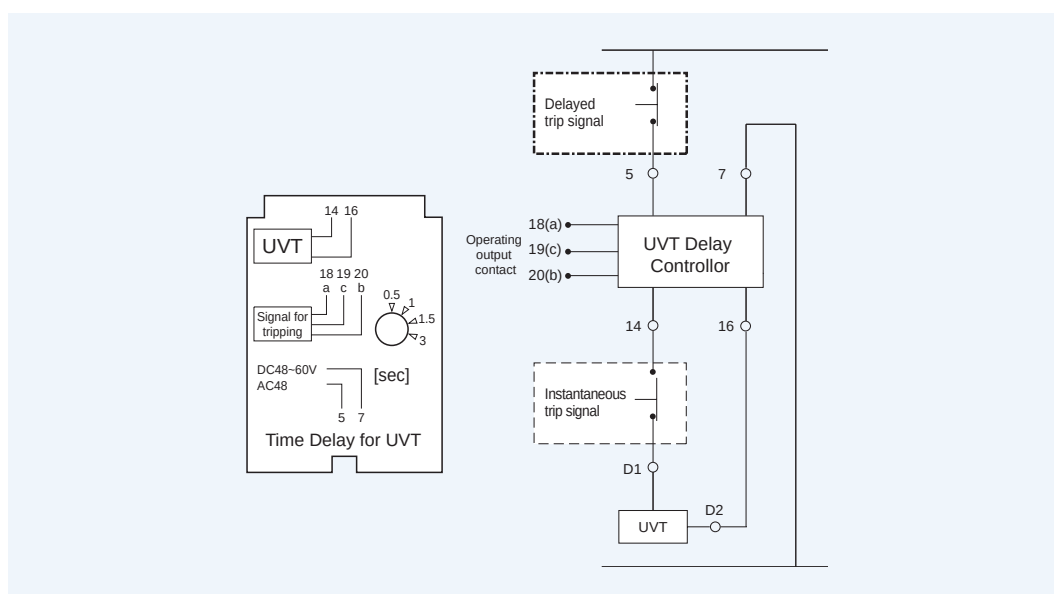
Rated voltage (Vn)		Operation voltage range (V)		Consumption (VA or W)		Time delay (ms)
DC (V)	AC (V)	Pick up	Drop out	Inrush	Steady-state	
48~60	48	0.65~0.85 Vn	0.4~0.65 Vn	200	≤ 5	0.5, 1, 1.5, 3
100~130	100~130					
200~250	200~250					

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

■ 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		

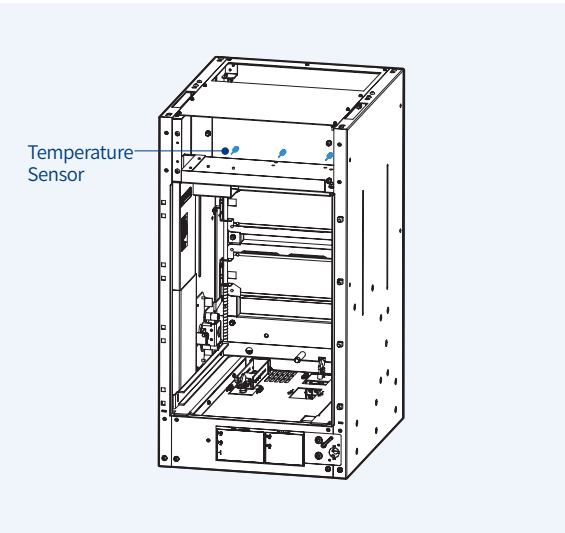
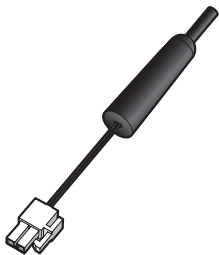
■ Wiring diagram



Temperature sensor and monitoring unit: TM

Installed inside of a breaker as an option

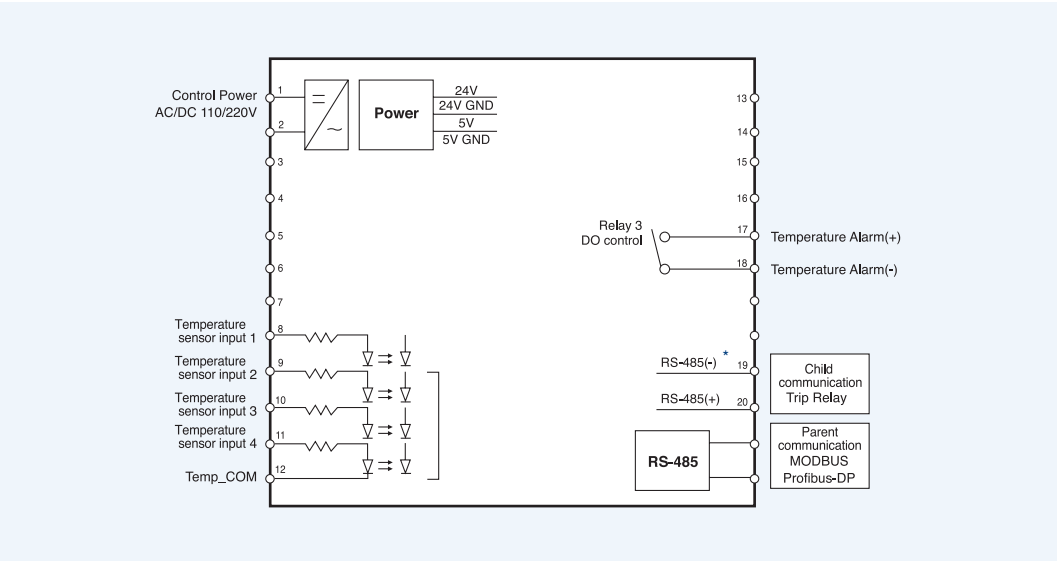
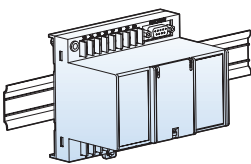
VL/VH type
(7.2kV 20/25kA 630A~)



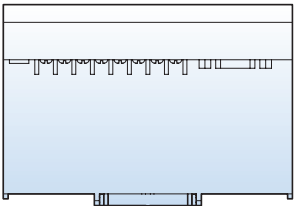
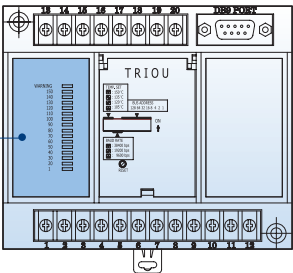
- Temperature Alarm Unit displays the input temperature detected through the temperature sensor installed in H-type cradle.
 - Temperature sensor can be installed up to three (R, S, T phase).
 - Temperature Alarm Unit converts the temperatures detected from the sensor in the cradle and displays the maximum value and can transmit it through 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



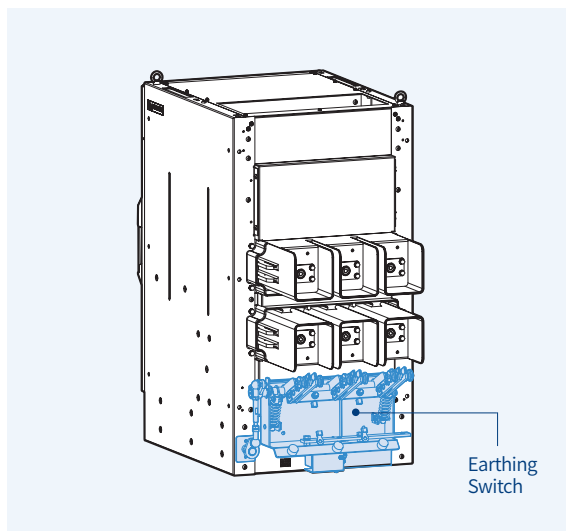
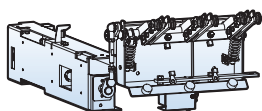
LED temperature display (°C):
10 ~150°C, Warning
Display maximum value
of temperatures



Earthing Switch: A1

Built-in a cradle as an option

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



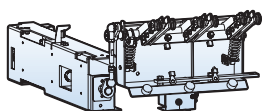
- For the safety during the maintenance of switchgear in the position of TEST/Drawout discharge the charging current in the load side of a VCB with this earthing switch. It is available only for H type drawout breaker.

* 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

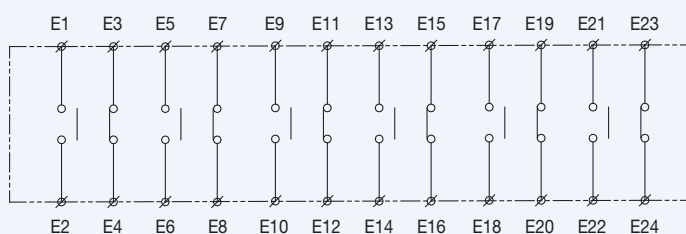


Position switch for E/S

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

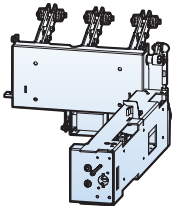
** Contact configuration: 2a2b, 6a6b

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

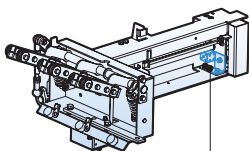


- In case of using earthing switch it can be added to prevent the earthing switch from opening or earthing before it is energized.

- 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

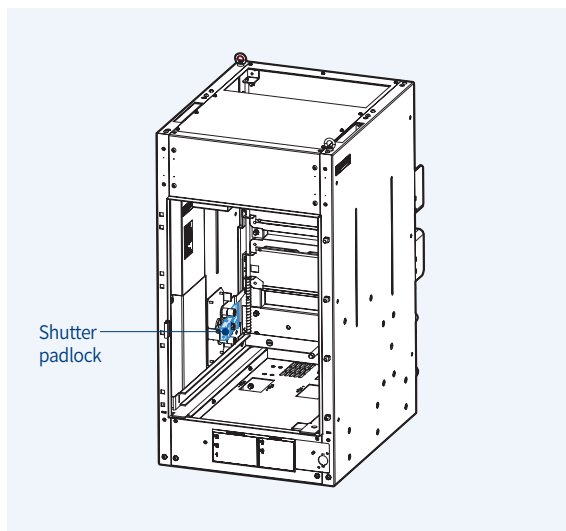
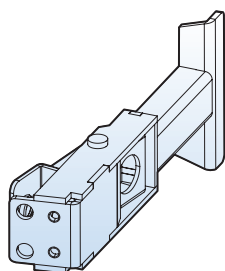


Locking magnet for
Earthing Switch

Shutter padlock: AE

Built-in a cradle as an option

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

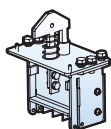


- It is the locking device to lock the primary and secondary shutter in closed state for safety while the breaker is drawn out for maintenance.
- When the breaker is drawn in, the shutter is automatically opened.
- There is a hole for padlock to lock the shutter.
- It can be applied only to H type cradle.

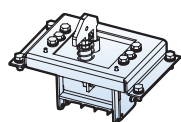
Truck operated cell switch (TOC: AF)

Built-in a cradle as an option

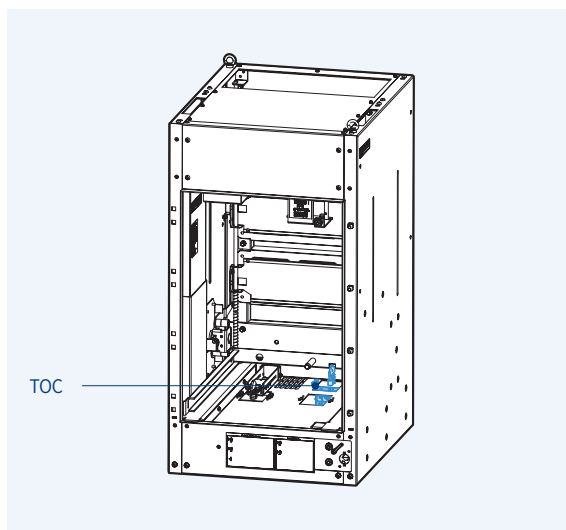
VL/VH type
(7.2kV 20/25kA 630A~)



VL type

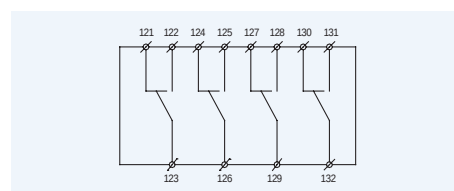


VH Type



- 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



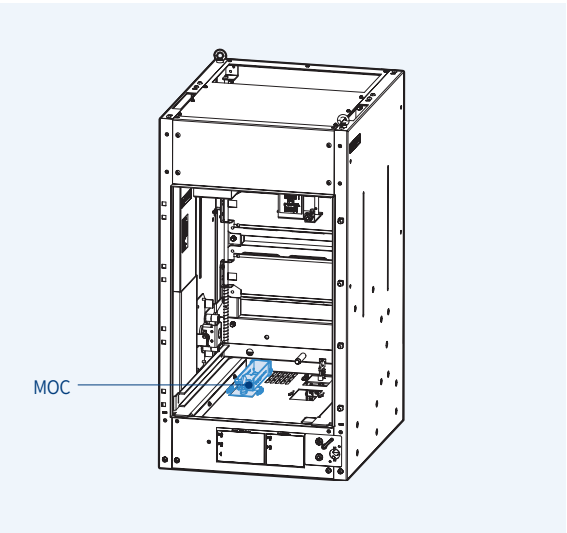
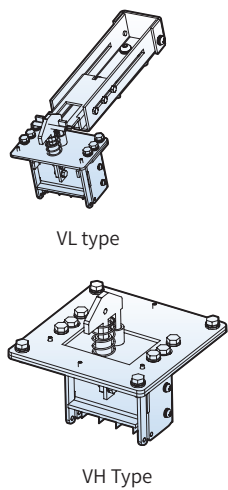
- a Contact: 122-123, 125-126, 128-129, 131-132,
b Contact: 121-123, 124-126, 127-129, 130-132

Accessories

Mechanical Operated Cell Switch (MOC: AG)

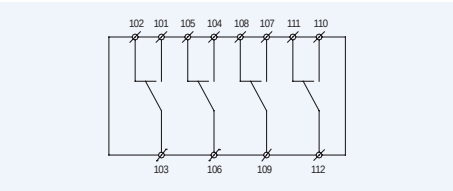
Built-in a cradle as an option

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



- 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

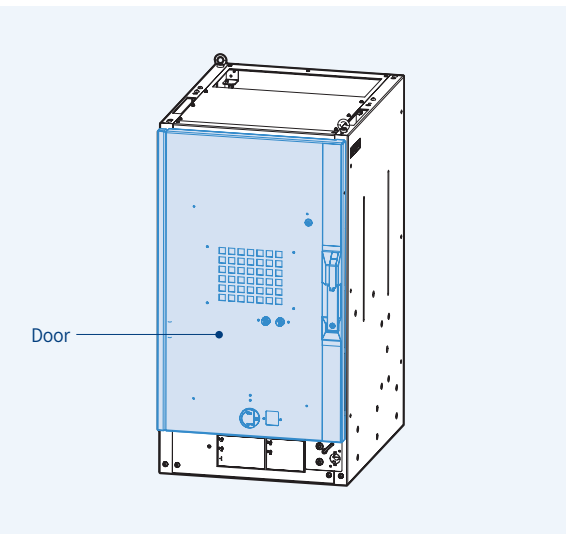


- a Contact: 101-103, 104-106, 107-109, 110-112,
b Contact: 102-103, 105-106, 108-109, 111-112

Door: AH

Built-in a cradle as an option

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

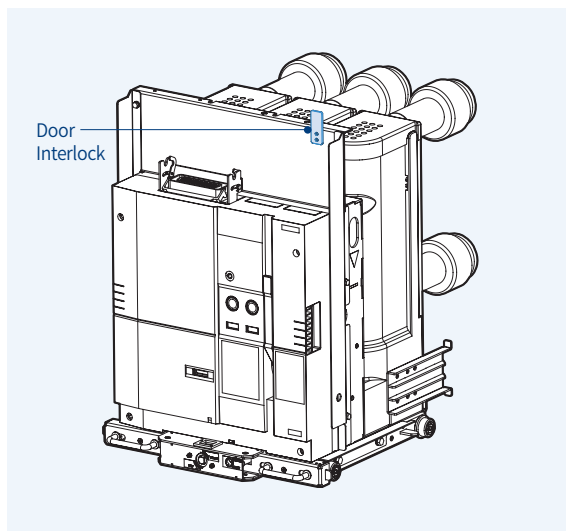


- It is outside door for H type cradle.
- Accessories are available for the door.

Door Interlock: AJ

Built-in a cradle as an option

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

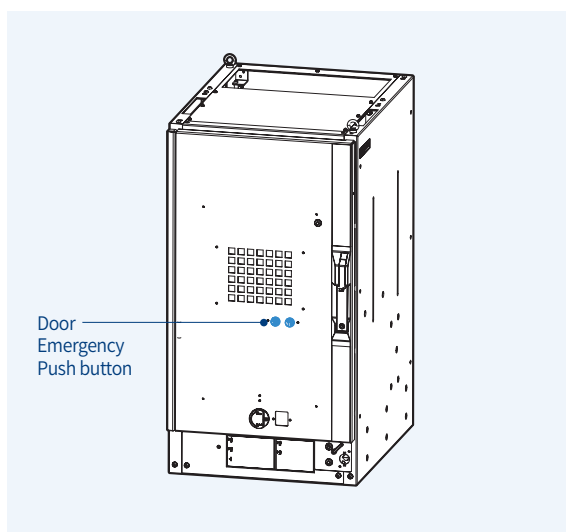
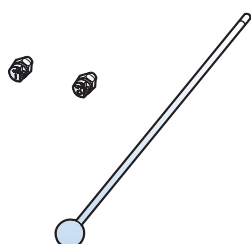


- When the Door is installed to H type cradle, this door interlock prevents opening it at SERVICE position.

Door Emergency Push button: AK

Built-in a cradle as an option

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



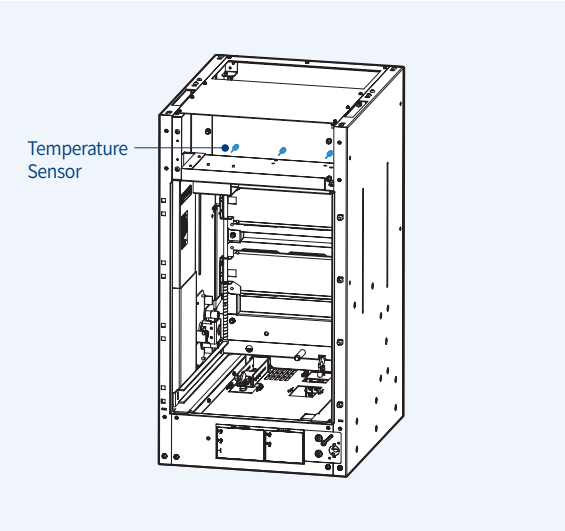
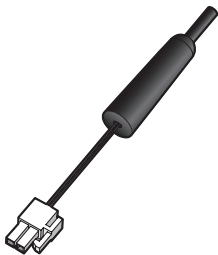
- It is used to enable the Close/Trip of the breaker manually from outside of the door installed to H type cradle during an emergency.
- Push the ON/OFF button by ON/OFF handle supplied separately.

Accessories

Temperature Sensor: AC

Built-in a cradle as an option

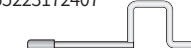
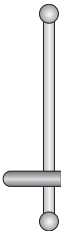
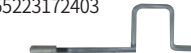
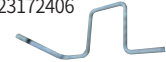
VL/VH type
(7.2kV 20/25kA 630A~)



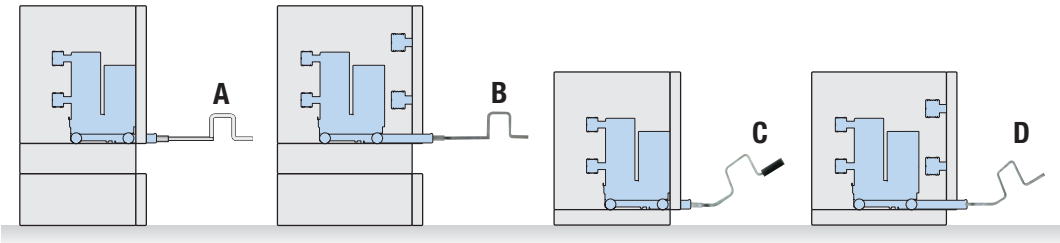
- This sensor is used to detect the temperature in H-type cradle combined with Temperature monitoring unit.
- It can be installed up to three (R, S, T phase).

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	55223171101 	Not required	-
	F			
	G			
VL-06□20, 25	E	55213143005 	Not required	-
	F			
	G			
VL-06□20, 25	H	A 55223172407 	Not required	
		B 55223172403 		
VH-06, 12, 17, 24, 35, 36□	K	C 55223172405 	55213143006 	
		D 55223172406 		

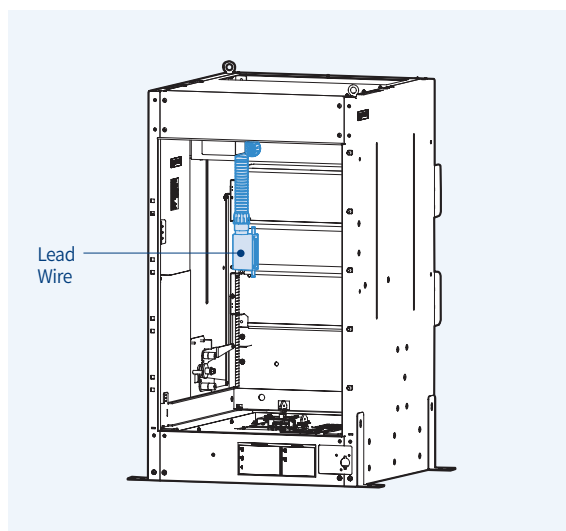
Racking in/out
handle for
H, K cradle



Type H Cradle Lead Wire: AM~A0

Built-in a cradle as an option

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

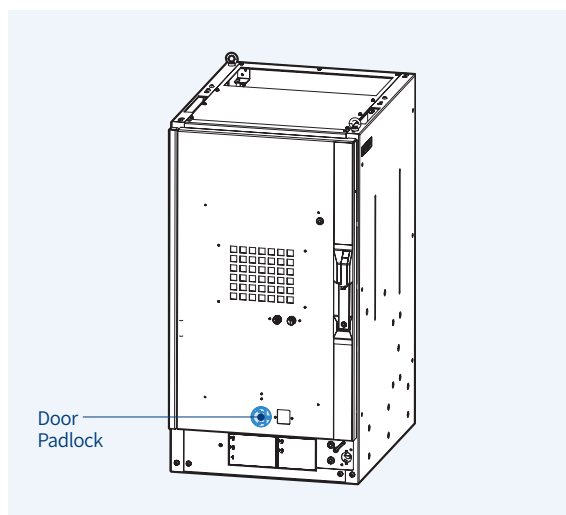
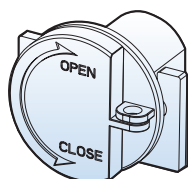


- In case of H type breaker of VL and VH models the Lead wire is installed in the cradle when supplied.
- 4a4b or 10a10b contacts are selectable according to the auxiliary contact of the breaker. Flame retardant cable is used for 4a4b.

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 separate padlock to prevent entering the manual handle.

Accessories

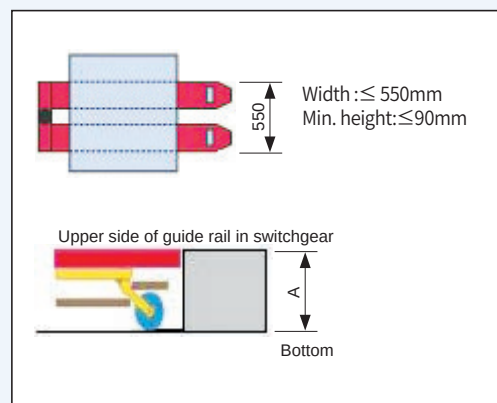
Auxiliary guide frame



- 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>



B

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.

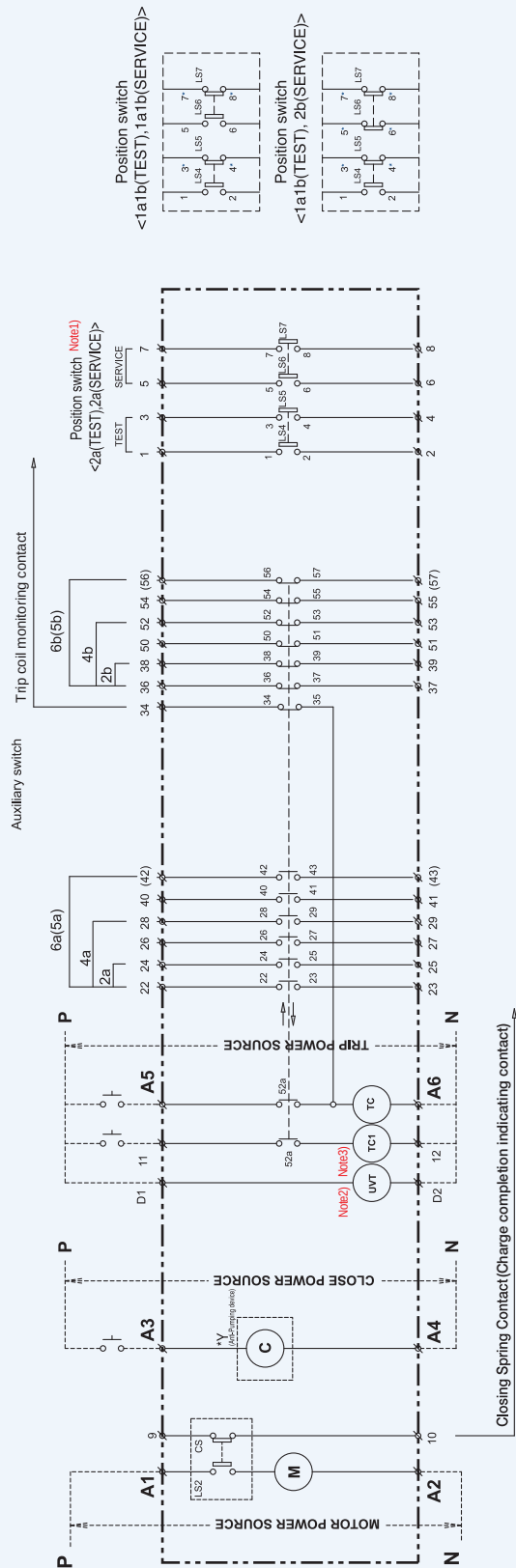


C

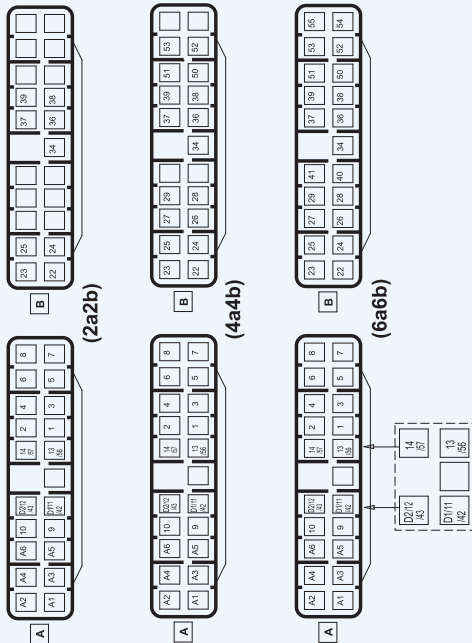
Control circuit diagram - VL type

Susol VCB

VL-06



<Connecting terminal arrangement>



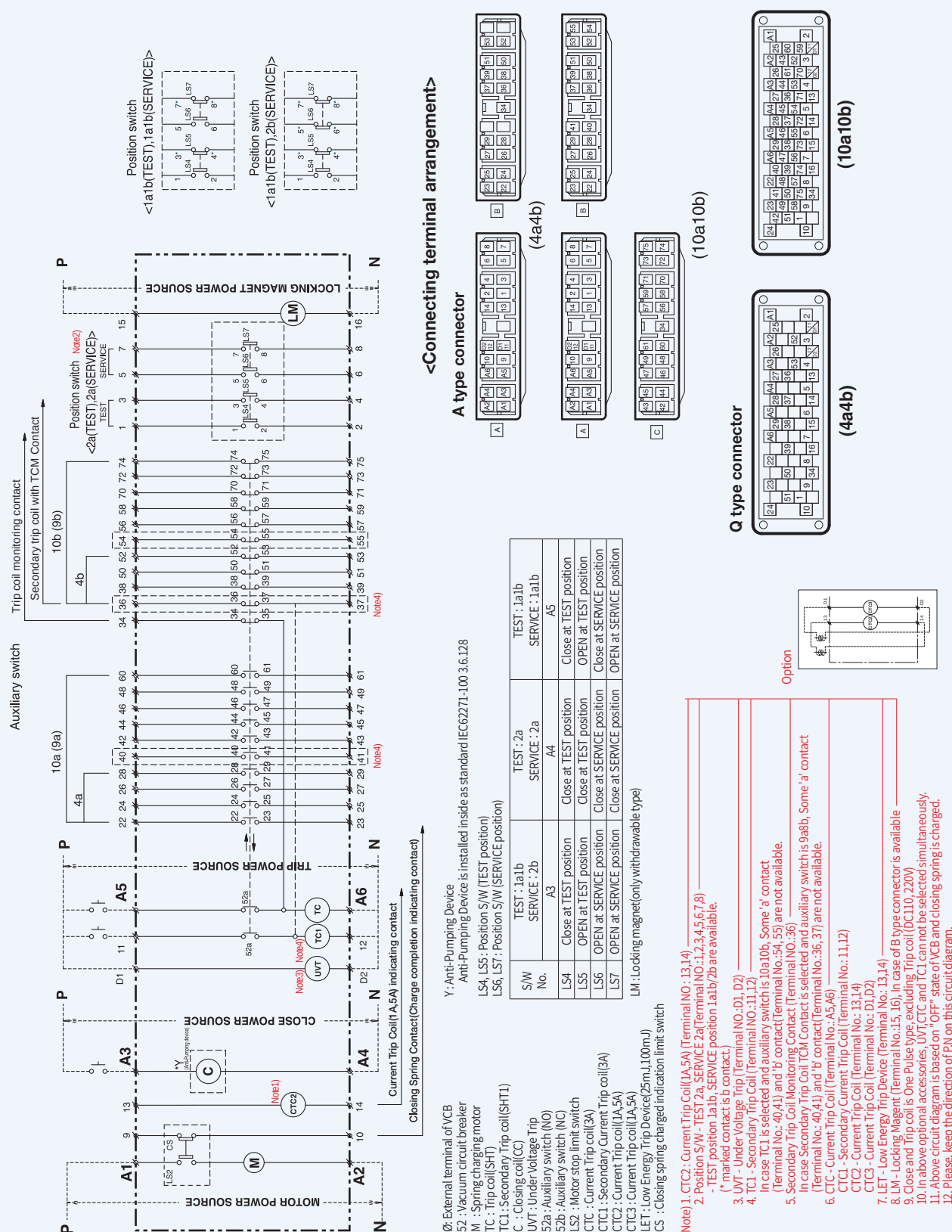
S/W No.	TEST : 2a		TEST : 1a1b	
	SERVICE : 2a		SERVICE : 1a1b	
LS4	Close at TEST position	Close at TEST position	Close at TEST position	Close at TEST position
LS5	OPEN at TEST position	Close at TEST position	OPEN at TEST position	OPEN at TEST position
LS6	OPEN at SERVICE position	Close at SERVICE position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

0: 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
Anti-Pumping Device is installed inside as standard IEC62271-100 3.6.1.28

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
2. UVT : Under Voltage Trip (Terminal No. : D1, D2)
3. CTC1 : Secondary Trip Coil (Spare trip coil, terminal No. : 11, 12)
4. CTC : Current Trip Coil (Terminal No. : A5, A6)
5. Close and Trip coil is One Pulse type, excluding trip coil (DC110/220V)
6. In above optional accessories, UVT, CTC and CTC1 can not be selected simultaneously
7. UVT, CTC 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 composed with circuit in 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

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

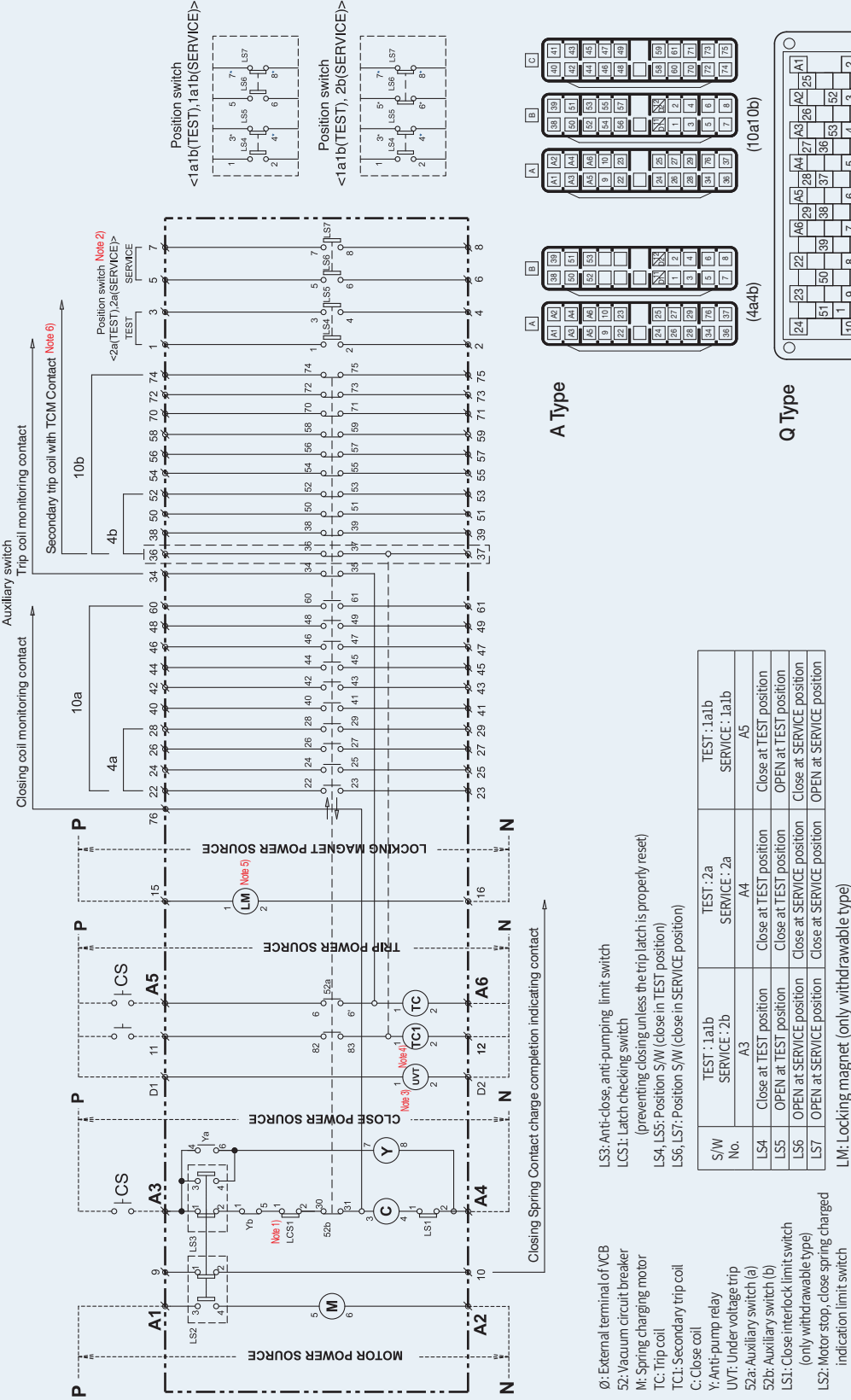


17. Please, keep the direction of PN on this circuit diagram.

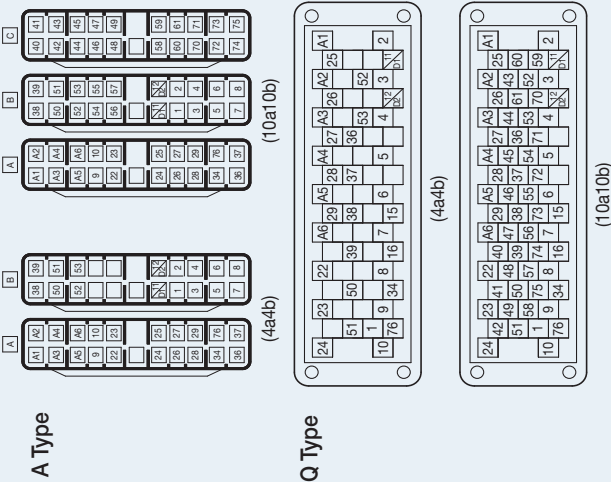
Control circuit diagram - VH type

SusolVCB

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



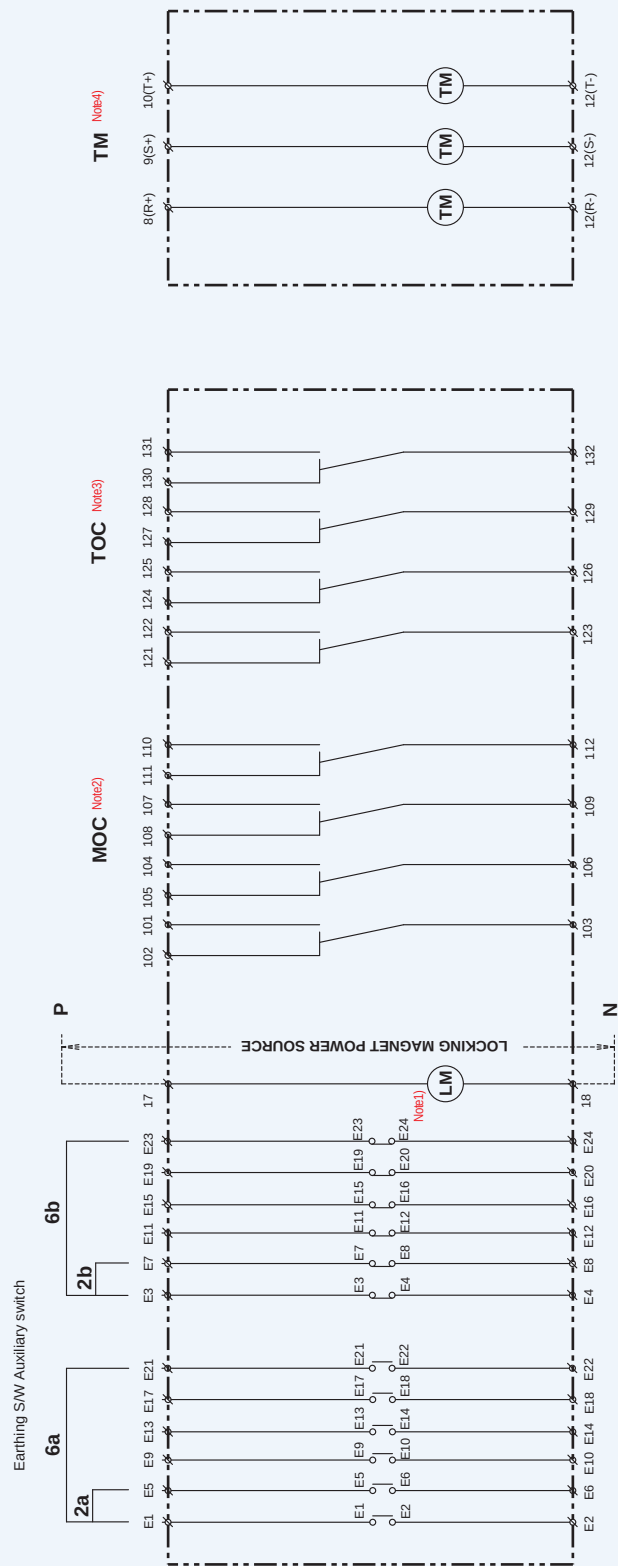
- Note 1:** LCSI: Latch Checking Switch
- Note 2:** Position S/W - TEST 2a, SERVICE 2a (Terminal No. 1, 2, 3, 4, 5, 6, 7, 8)
- Note 3:** 1a1b at TEST position and 1a1b at SERVICE position are also available.
- Note 4:** In case of 1a1b *marked contact is b - normally open contact
- Note 5:** UVT - Under Voltage Trip (Terminal No. D1, D2)
- Note 6:** TC1 - Secondary Trip Coil (Spare trip coil, terminal No. 11, 12)
- Note 7:** LM - Locking Magnet (Terminal No. 15, 16), Type H only withdrawable type.
- Note 8:** Secondary Trip Coil monitoring contact (Terminal No. 36)
- Note 9:** b contact (36, 37) is not available if Trip Coil monitoring contact is applied to Secondary Trip Coil.
- Note 10:** Above options TC1 and UVT can not be used simultaneously.
- Note 11:** LS1 (closing interlock limit switch) is not available for fixed version
- Note 12:** 9. Above circuit diagram is based on "OFF" status of VCB and closing spring is charged.
- Note 13:** 10. Please make sure that keep the direction of P, N on this circuit diagram.



<Connecting Terminal Configuration>

Control circuit diagram - VH type

Compartment

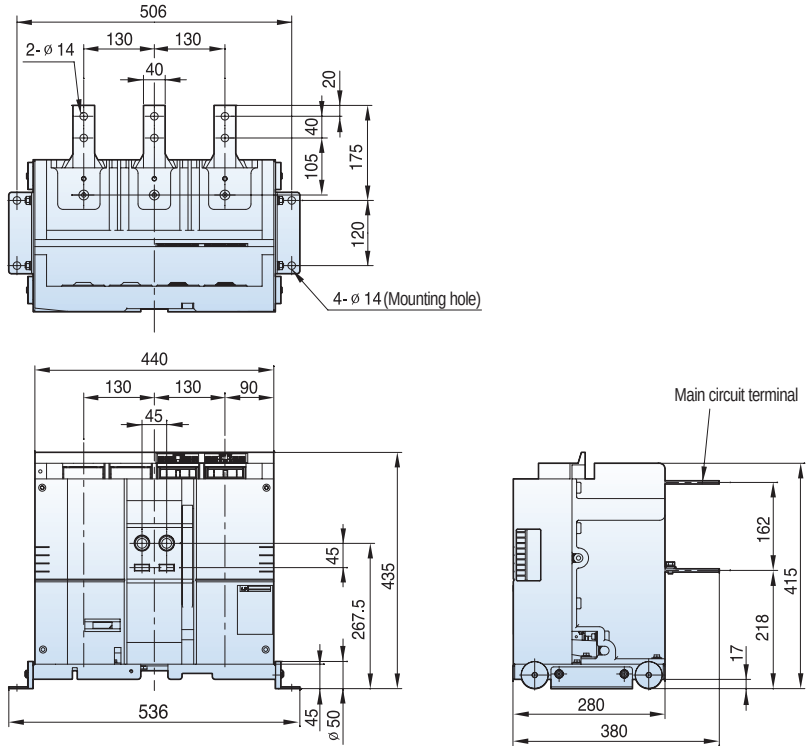


7.2kV, 8/12.5kA, 400/630A

Fixed

■ P type, phase distance 130mm

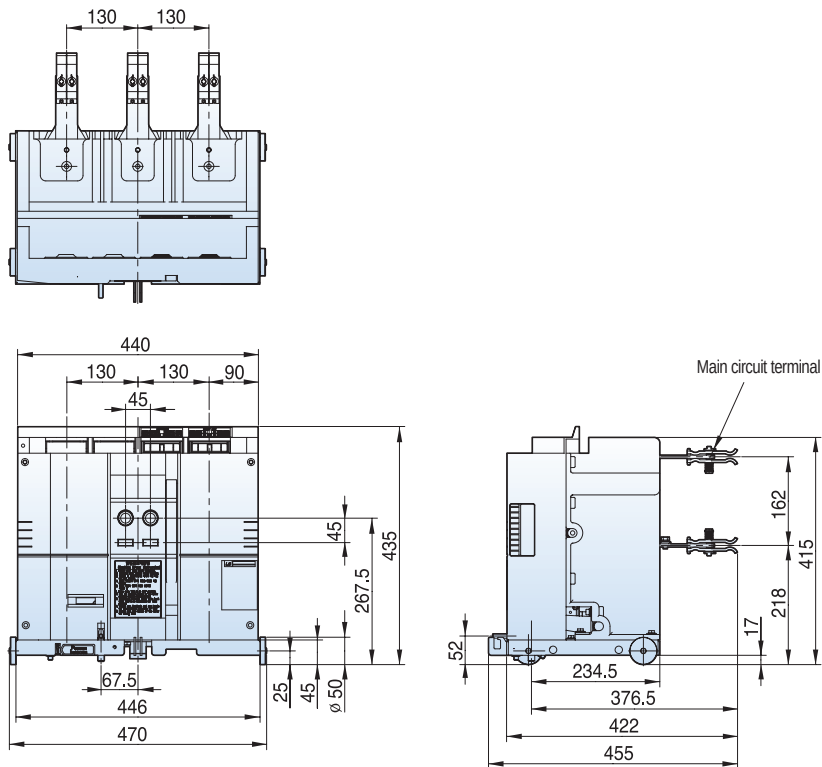
Type
VL-06P08A04
VL-06P13A06



Withdrawable

■ Standard breaker E/F/G type, phase distance 130mm

Type
VL-06E08A04
VL-06E13A06
VL-06F08A04
VL-06F13A06
VL-06G08A04
VL-06G13A06



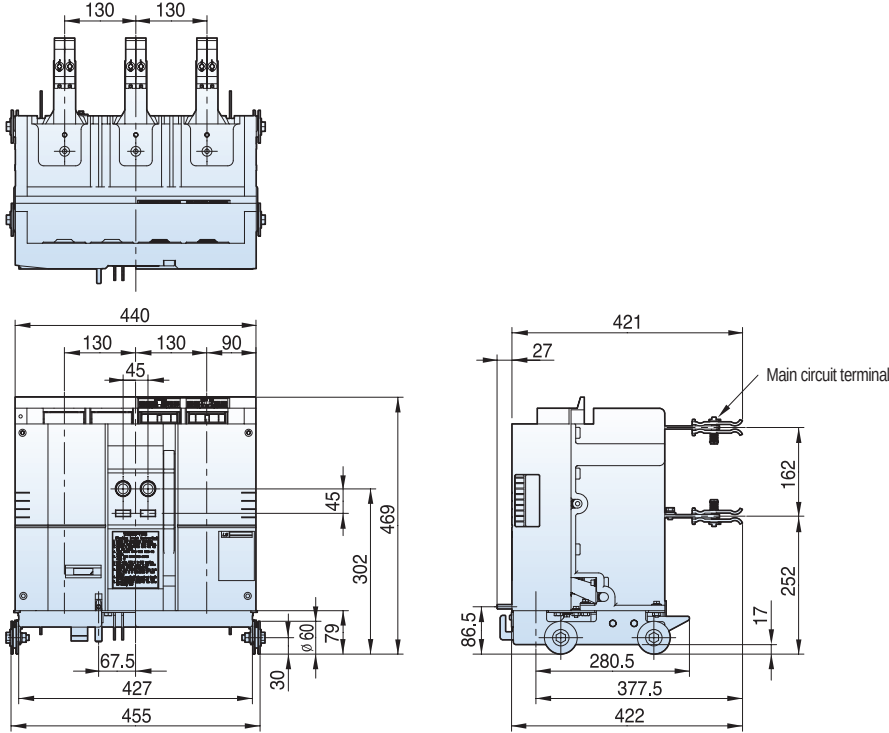
Dimensions - VL type (VL-06)

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

Withdrawable

Compatible with existing breaker E/F/G type, phase distance 130mm

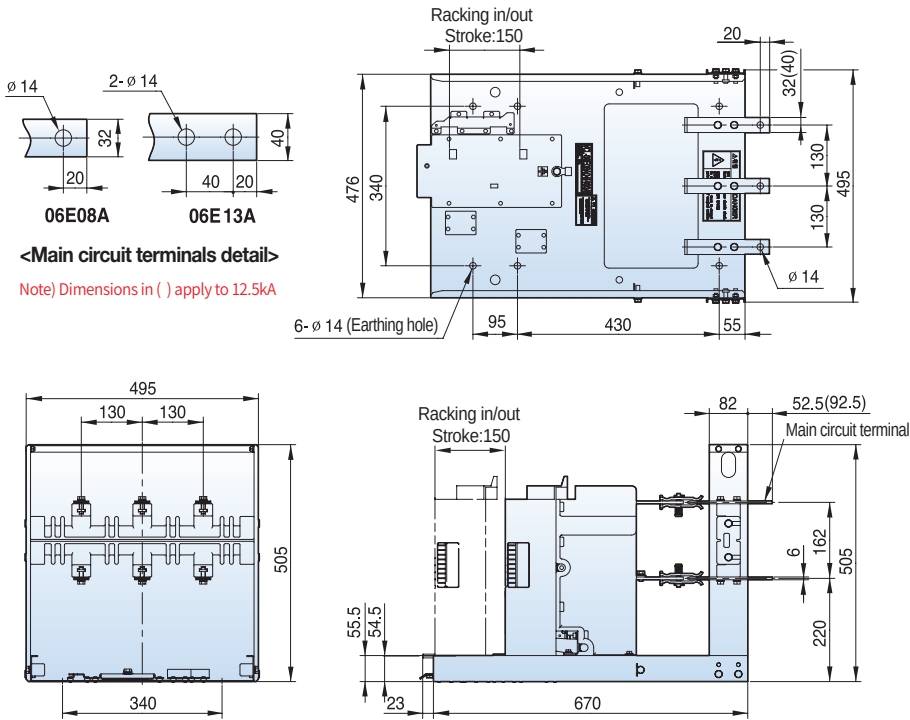
Type
VL-06E08B04
VL-06E13B06
VL-06F08B04
VL-06F13B06
VL-06G08B04
VL-06G13B06



Withdrawable

E type cradle, phase distance 130mm

Type
VCL-06E08A04
VCL-06E13A06



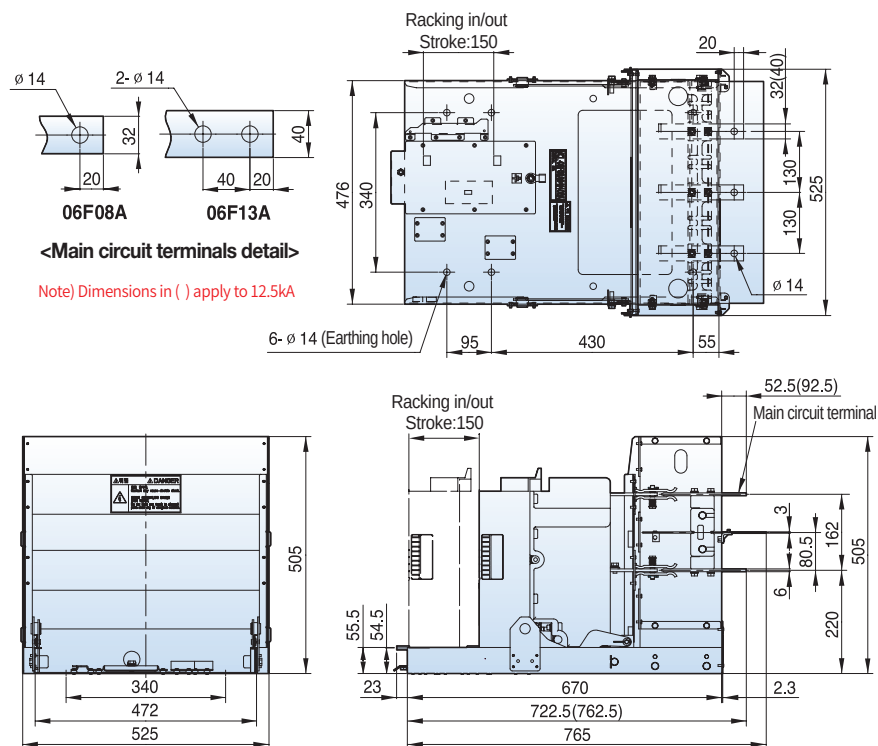
7.2kV, 8/12.5kA, 400/630A

Withdrawable

■ F type cradle, phase distance 130mm

Type

VCL-06F08A04
VCL-06F13A06

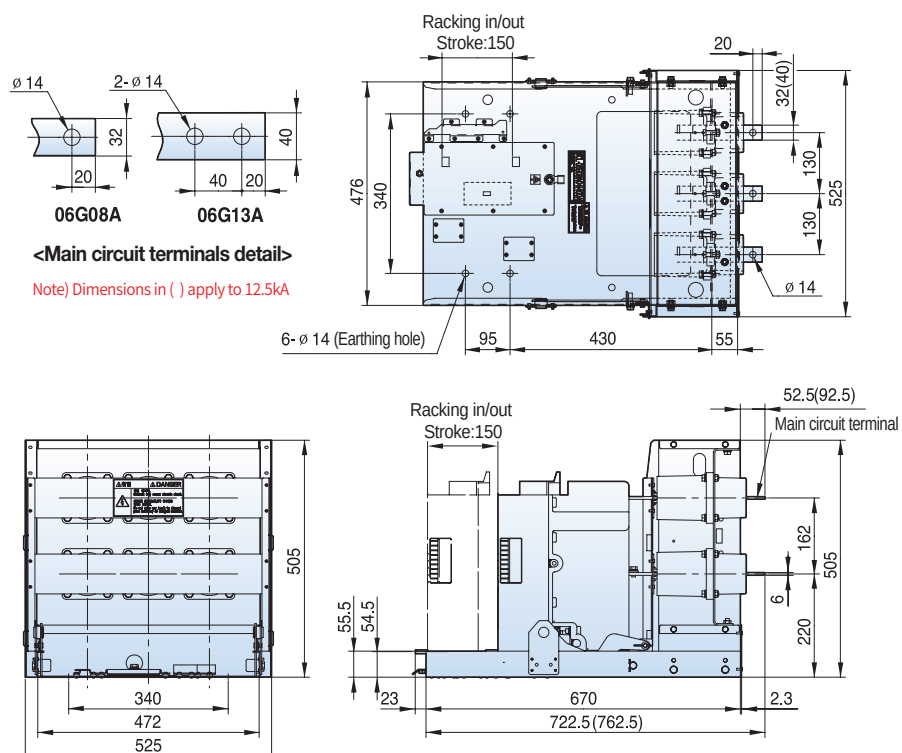


Withdrawable

■ G type cradle, phase distance 130mm

Type

VCL-06G08A04
VCL-06G13A06



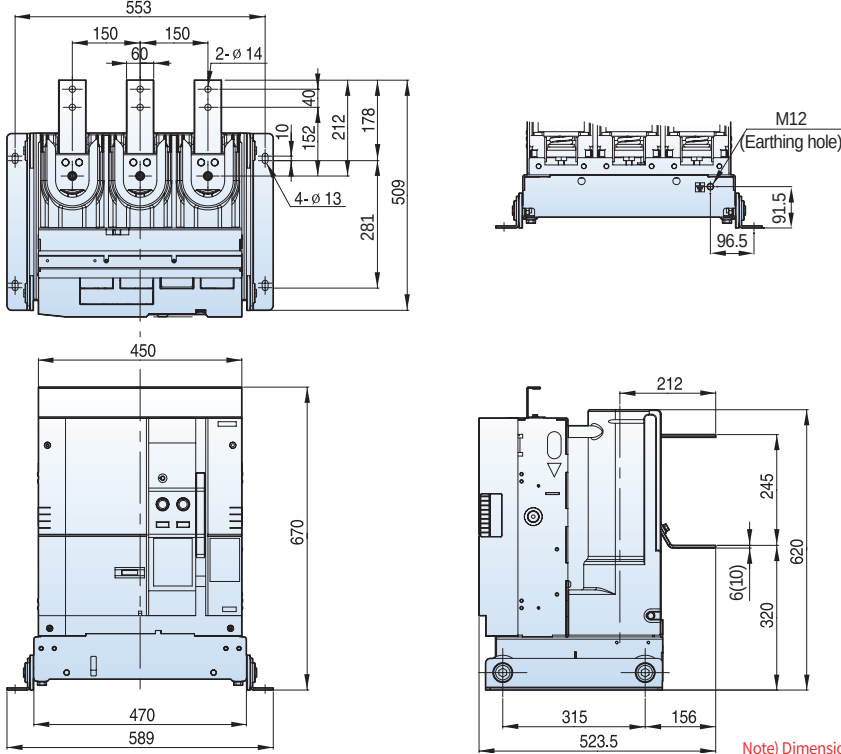
Dimensions - VL type (VL-06/12/17)

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

Fixed

■ P type, phase distance 150mm

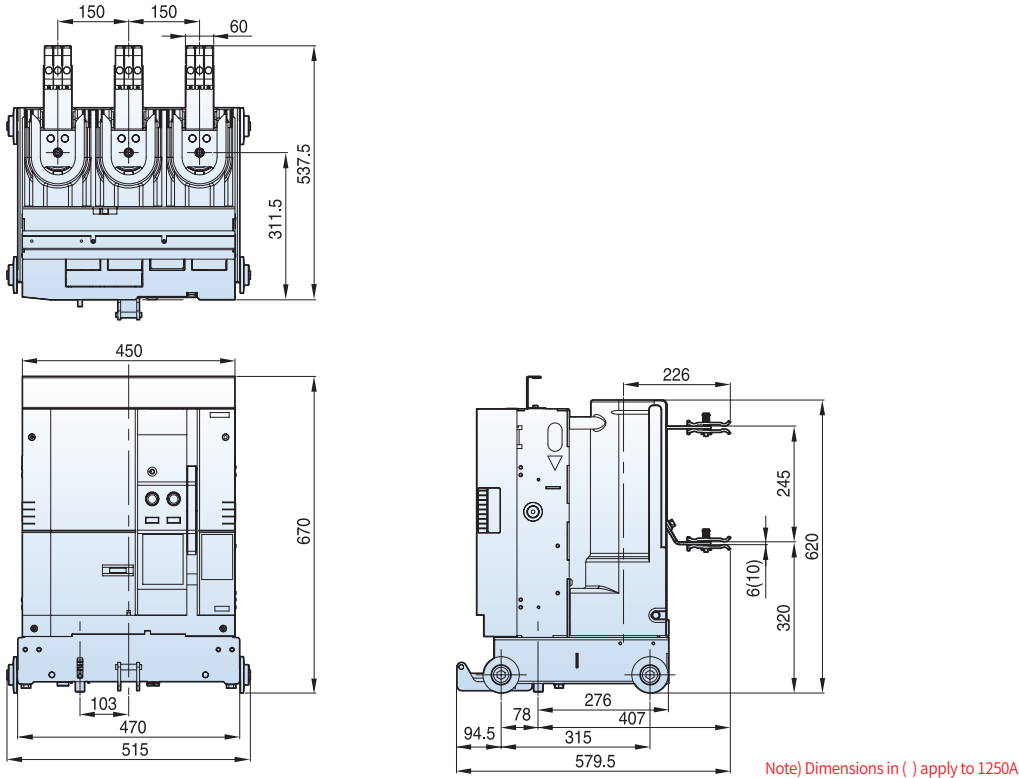
Type
VL-06P20A06
VL-06P20A13
VL-06P25A06
VL-06P25A13



Withdrawable

■ E type unit, phase distance 150mm

Type
VL-06E20A06
VL-06E20A13
VL-06E25A06
VL-06E25A13



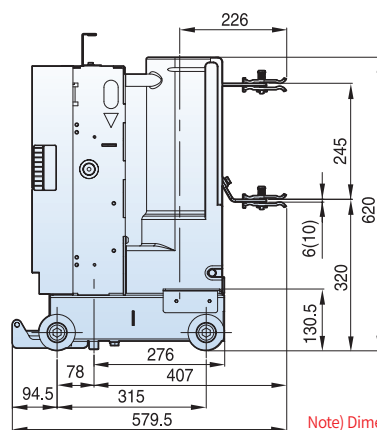
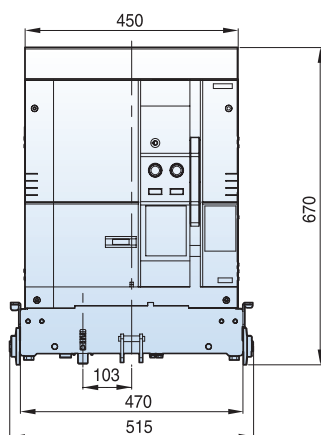
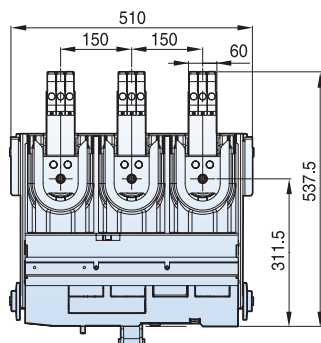
7.2kV, 20/25kA, 630/1250A

Withdrawable

■ F type unit, phase distance 150mm

Type

VL-06F20A06
VL-06F20A13
VL-06F25A06
VL-06F25A13



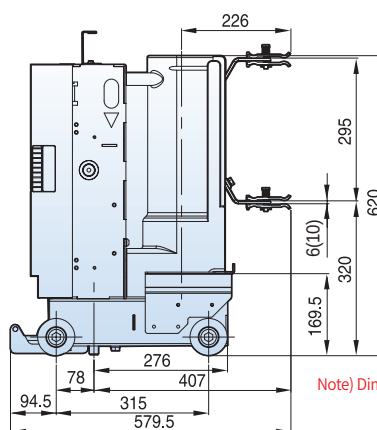
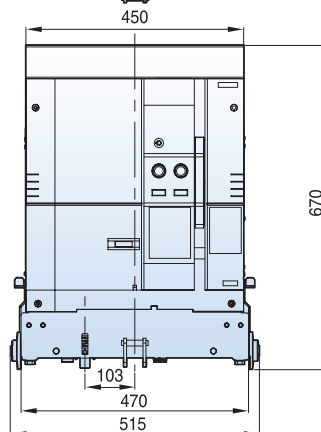
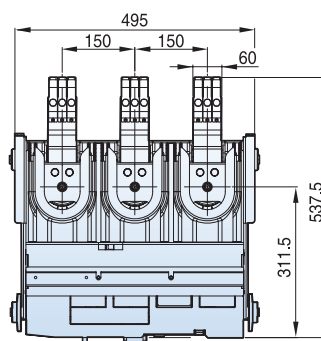
Note) Dimensions in () apply to 1250A

Withdrawable

■ G type unit, phase distance 150mm

Type

VL-06G20A06
VL-06G20A13
VL-06G25A06
VL-06G25A13



Note) Dimensions in () apply to 1250A

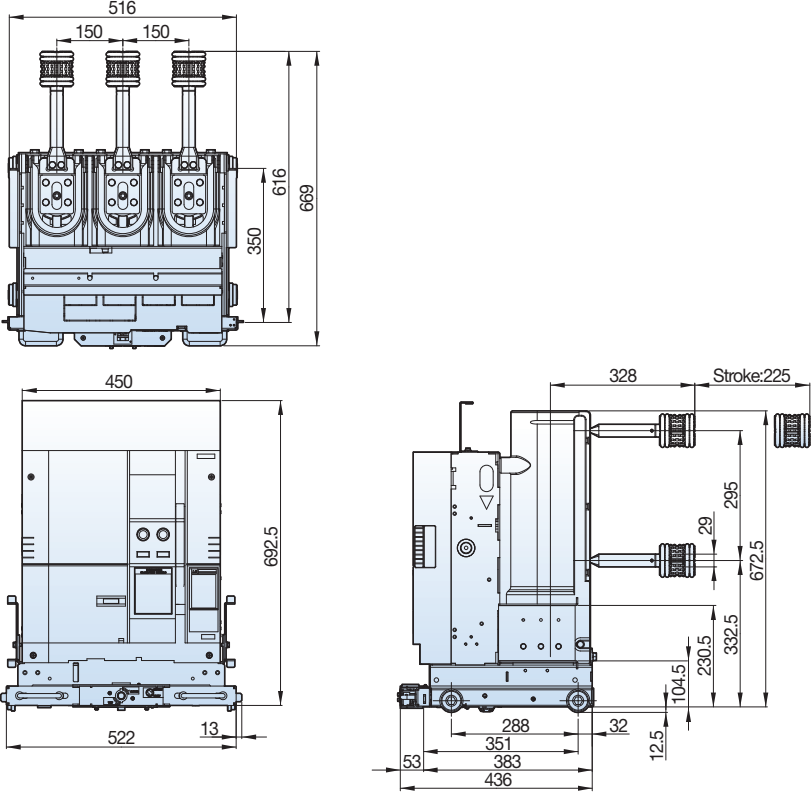
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ K type unit T type, phase distance 150mm

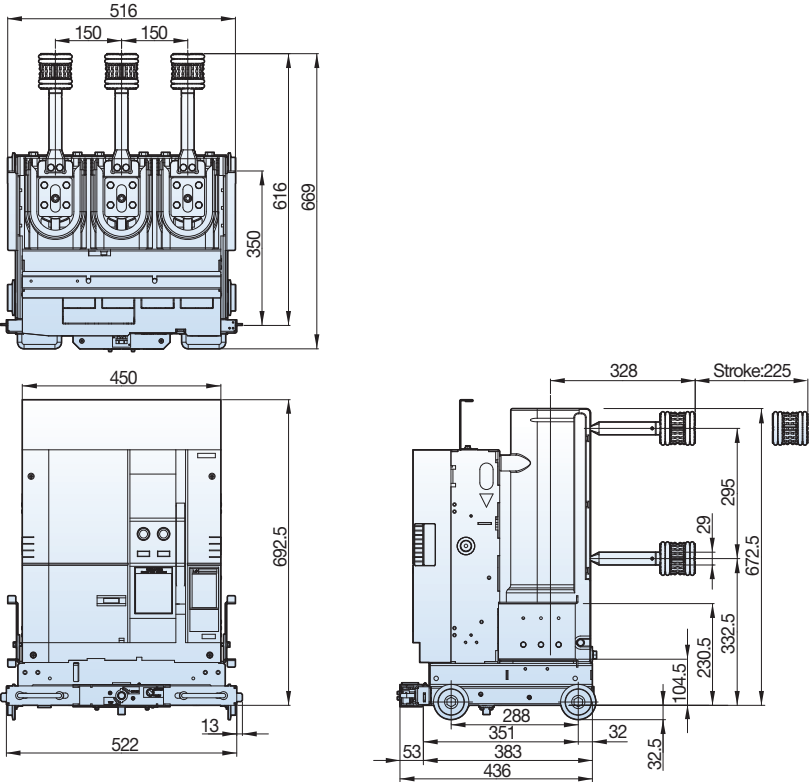
Type
VL-06K20K06
VL-06K20K13
VL-06K25K06
VL-06K25K13



Withdrawable

■ K type unit T2 type, phase distance 150mm

Type
VL-06K20A06
VL-06K20A13
VL-06K25A06
VL-06K25A13



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

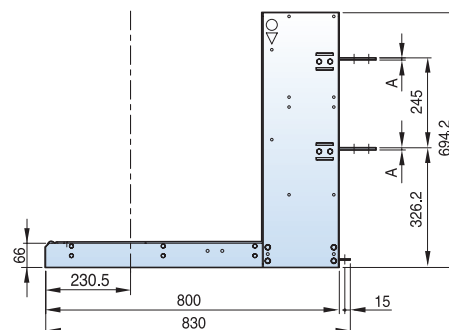
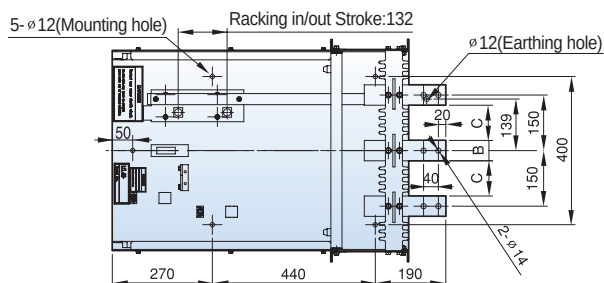
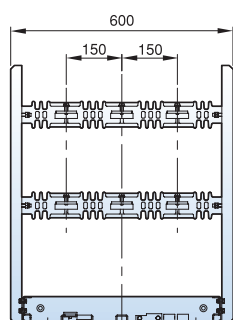
Withdrawable

■ E type cradle, phase distance 150mm

Type

VCL-06E20A06
VCL-06E20A13
VCL-06E25A06
VCL-06E25A13

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.

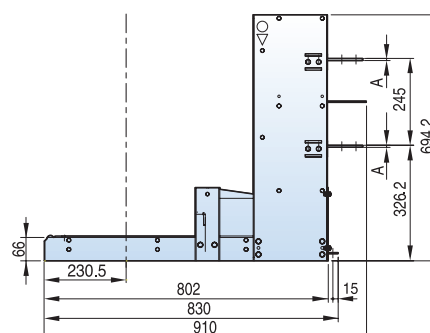
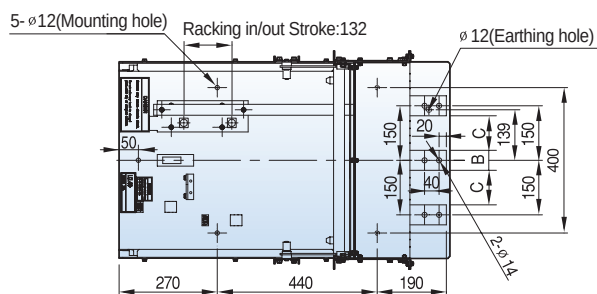
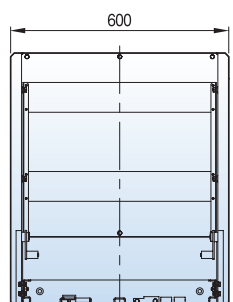
Withdrawable

■ F type cradle, phase distance 150mm

Type

VCL-06F20A06
VCL-06F20A13
VCL-06F25A06
VCL-06F25A13

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



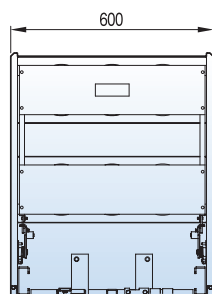
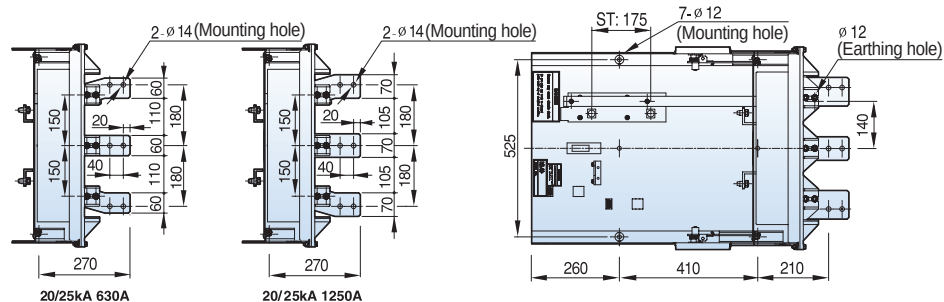
* Please be informed that the switchgear IP cover has to be back of — — — mark.

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

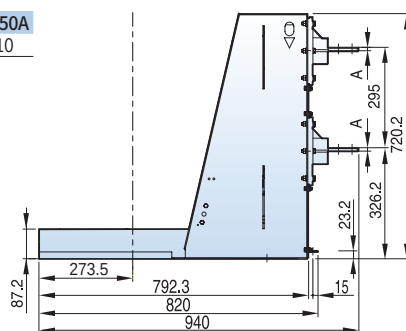
■ G type cradle, phase distance 150mm

Type

VCL-06G20A06
VCL-06G20A13
VCL-06G25A06
VCL-06G25A13



Rating	630A	1250A
A	6	10

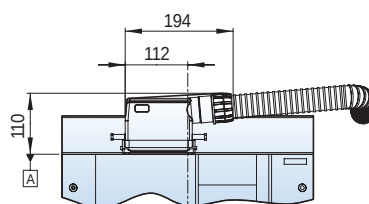
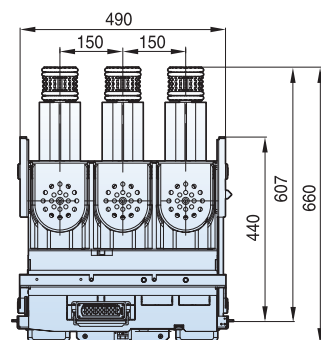


* Please be informed that the switchgear IP cover has to be back of — — — mark.

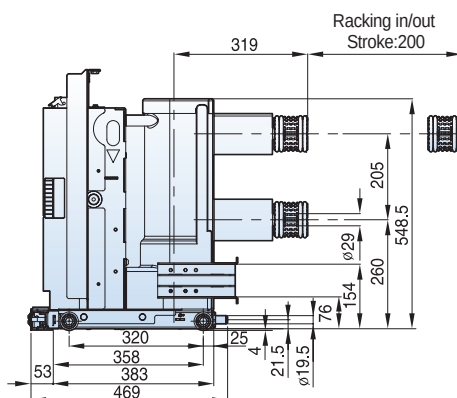
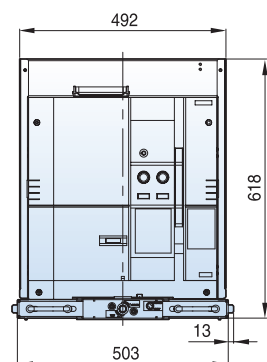
■ H type unit, phase distance 150mm

Type

VL-06H20A06
VL-06H20A13
VL-06H25A06
VL-06H25A13



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



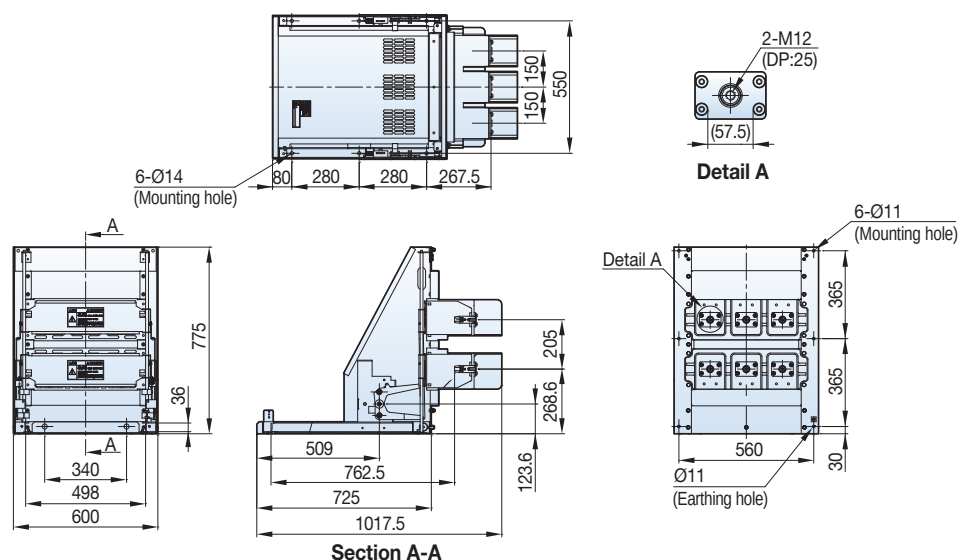
7.2kV, 20/25kA, 630/1250A

Withdrawable

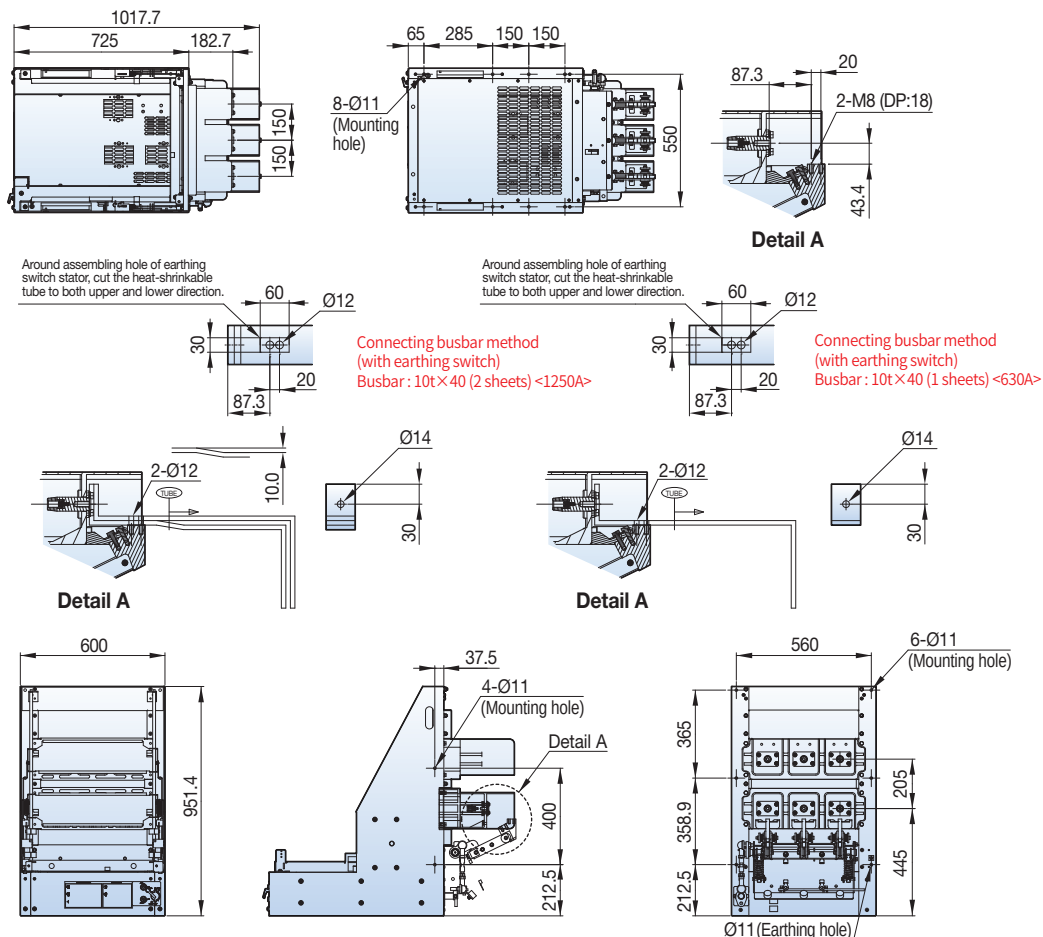
Type

VCL-06Ha20A06
VCL-06Ha20A13
VCL-06Ha25A06
VCL-06Ha25A13

■ Ha type cradle, phase distance 150mm



■ Ha type cradle, phase distance 150mm (Earthing S/W Option type)



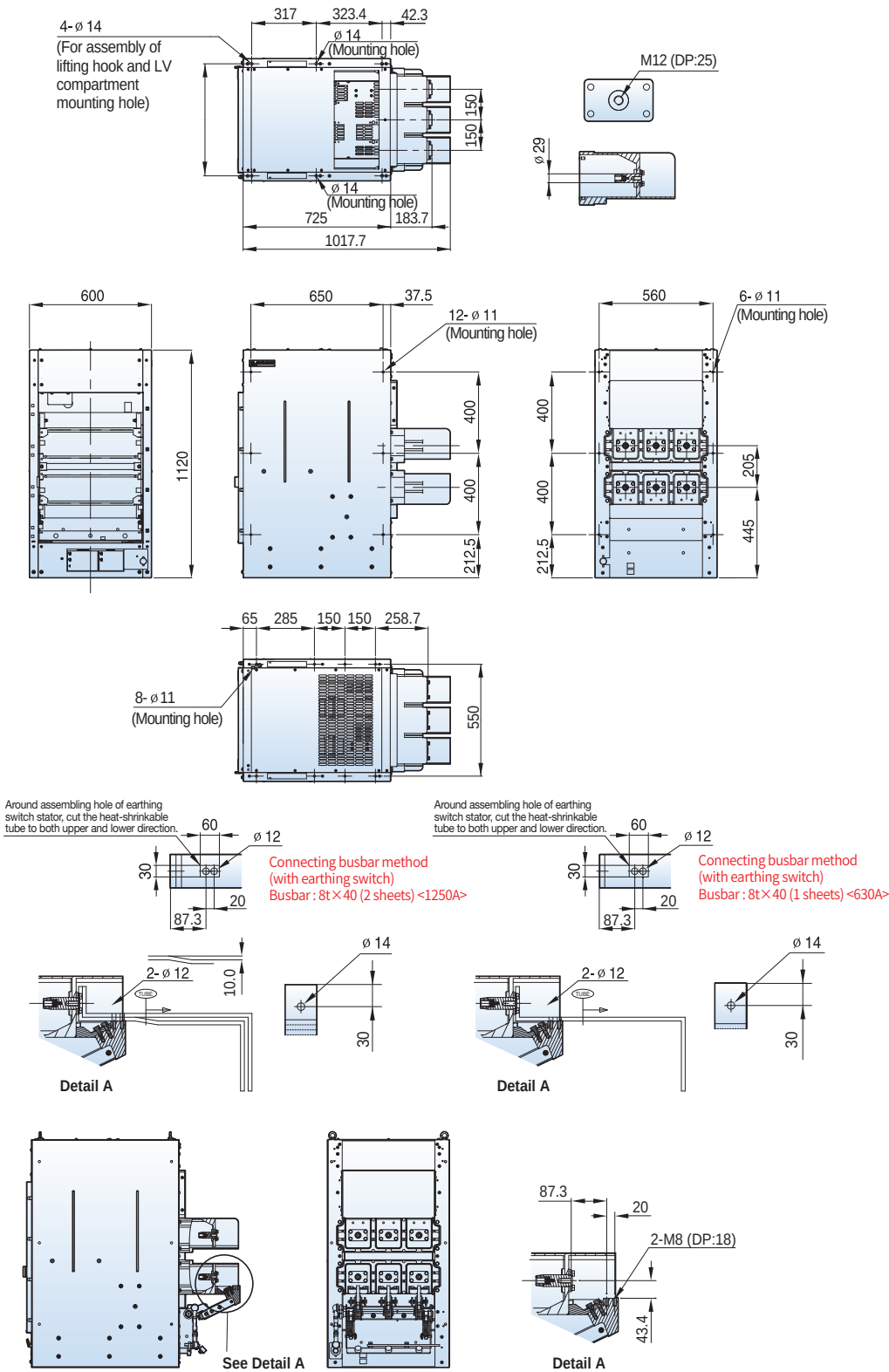
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ H type cradle, phase distance 150mm

Type
VCL-06H20A06
VCL-06H20A13
VCL-06H25A06
VCL-06H25A13



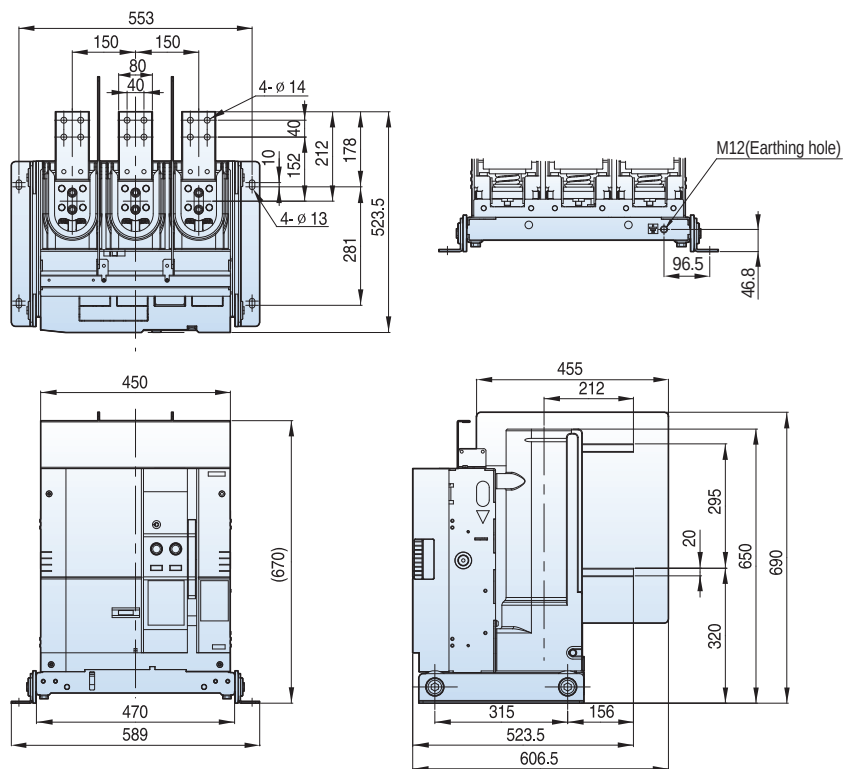
7.2kV, 20/25kA, 2000A

Fixed

■ P type, phase distance 150mm

Type

VL-06P20A20
VL-06P25A20

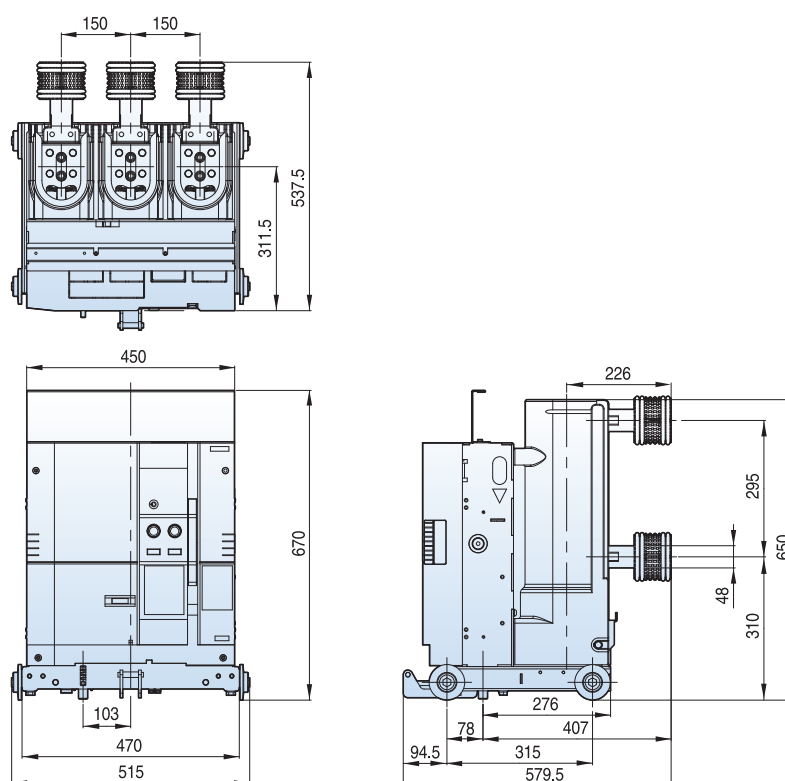


Withdrawable

■ E type unit, phase distance 150mm

Type

VL-06E20A20
VL-06E25A20



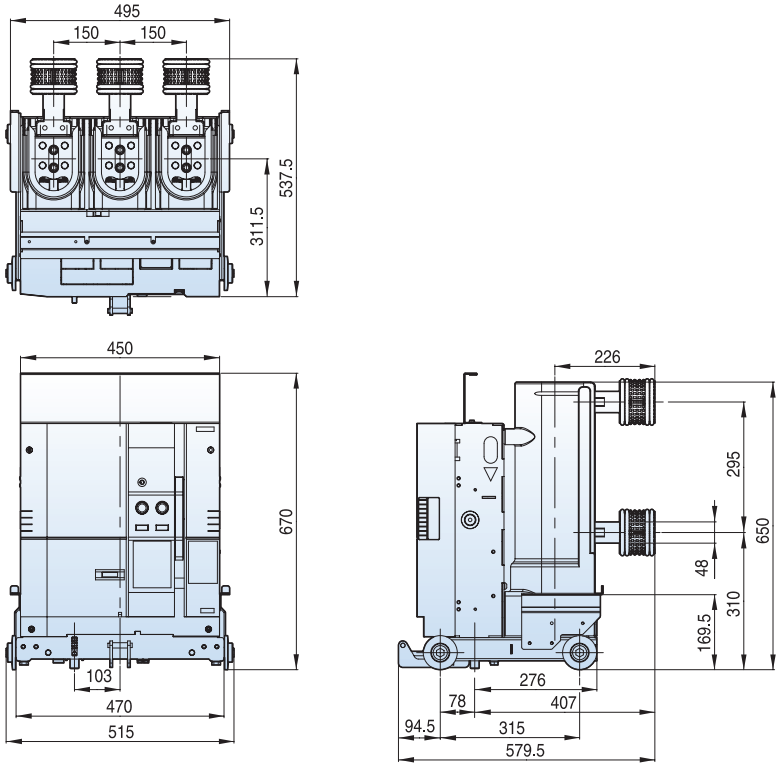
Dimensions - VL type (VL-06/12/17)

7.2kV, 20/25kA, 2000A

Withdrawable

■ F/G type unit, phase distance 150mm

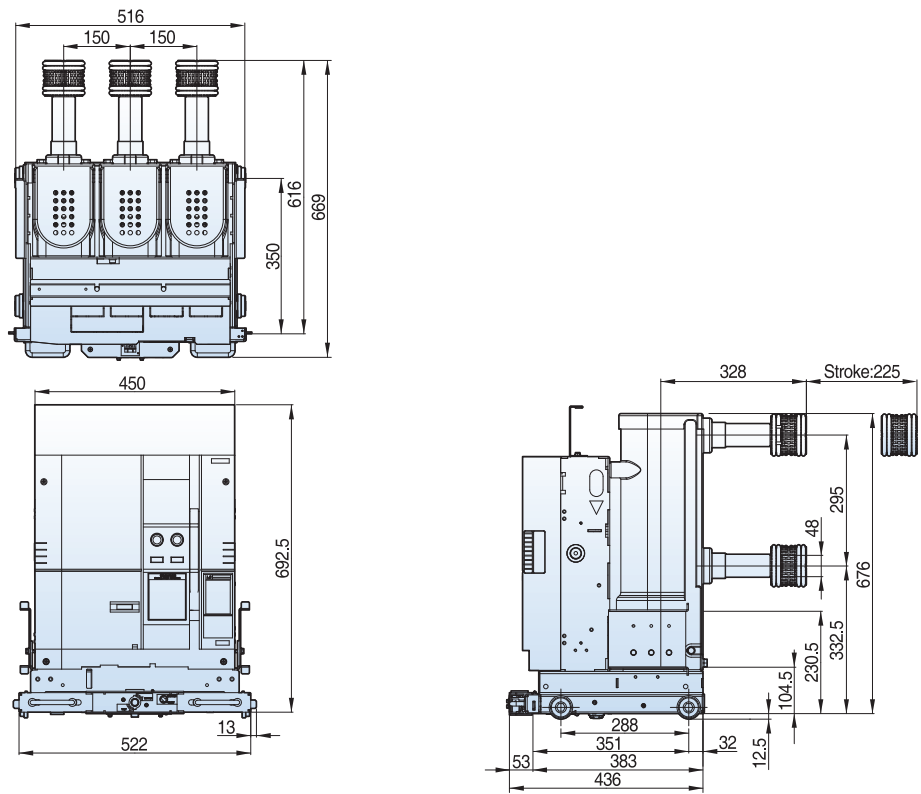
Type
VL-06F20A20
VL-06F25A20
VL-06G20A20
VL-06G25A20



Withdrawable

■ K type unit T type, phase distance 150mm

Type
VL-06K20K20
VL-06K25K20



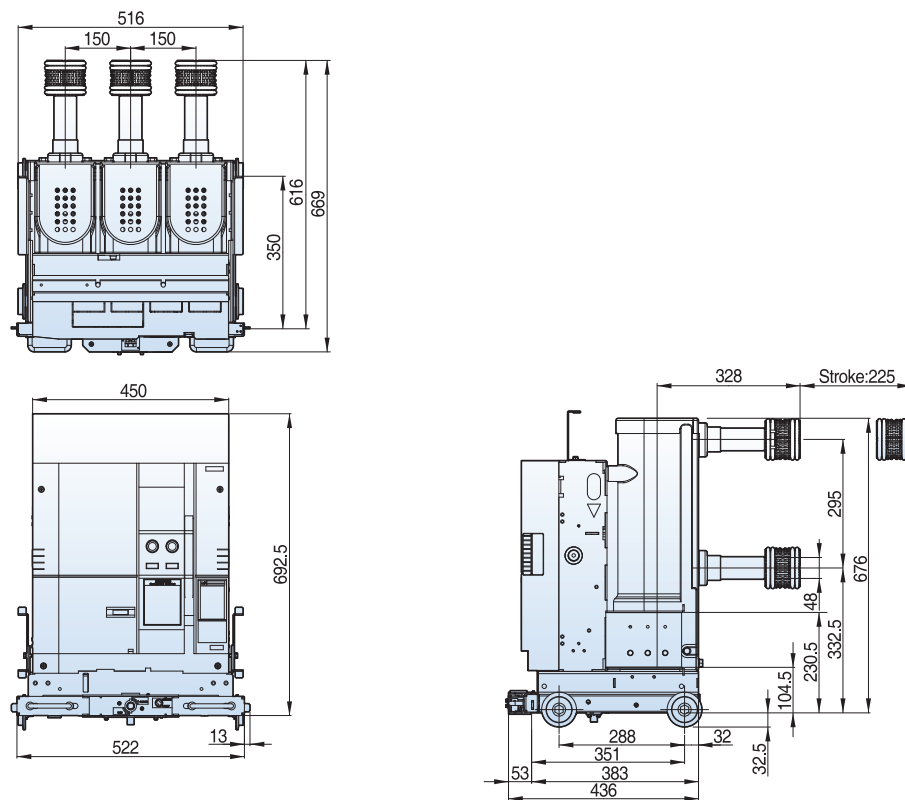
7.2kV, 20/25kA, 2000A

Withdrawable

■ K type unit T2 type, phase distance 150mm

Type

VL-06K20A20
VL-06K25A20

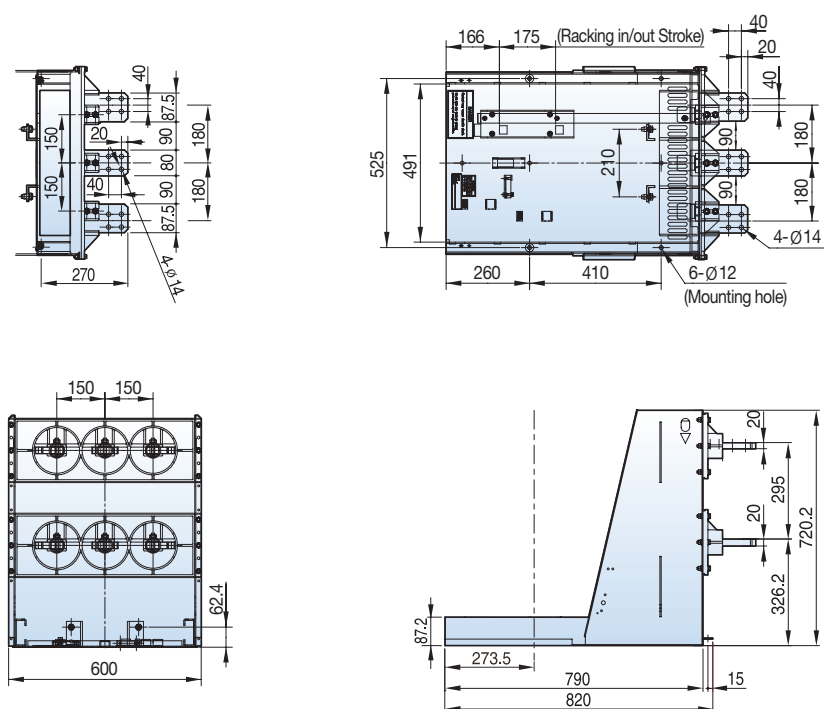


Withdrawable

■ E type cradle, phase distance 150mm

Type

VCL-06E20A20
VCL-06E25A20



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

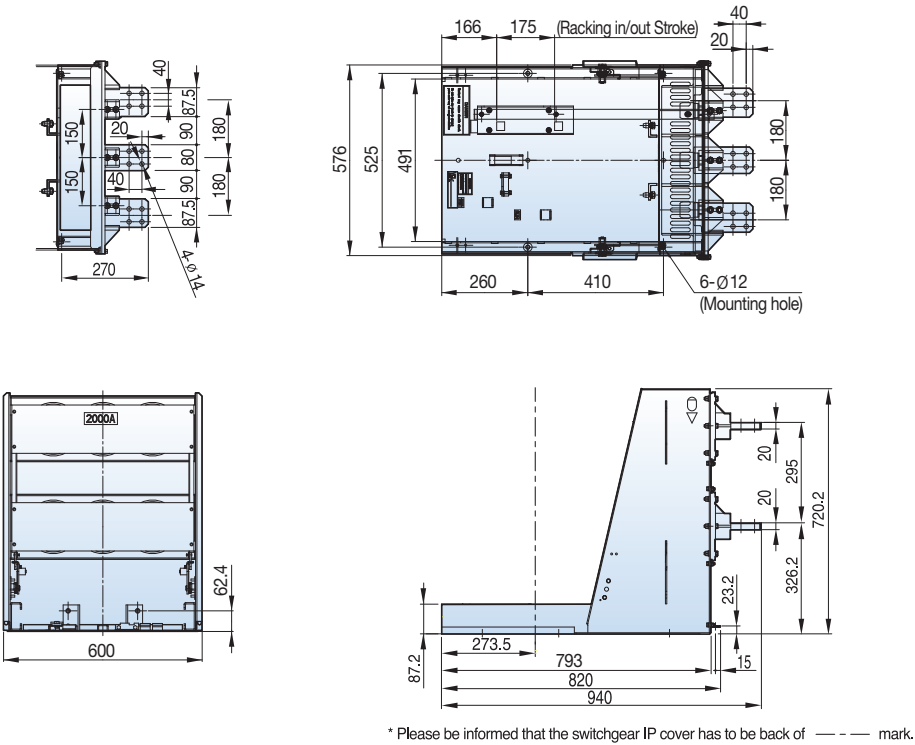
Dimensions - VL type (VL-06/12/17)

7.2kV, 20/25kA, 2000A

Withdrawable

F type cradle, phase distance 150mm

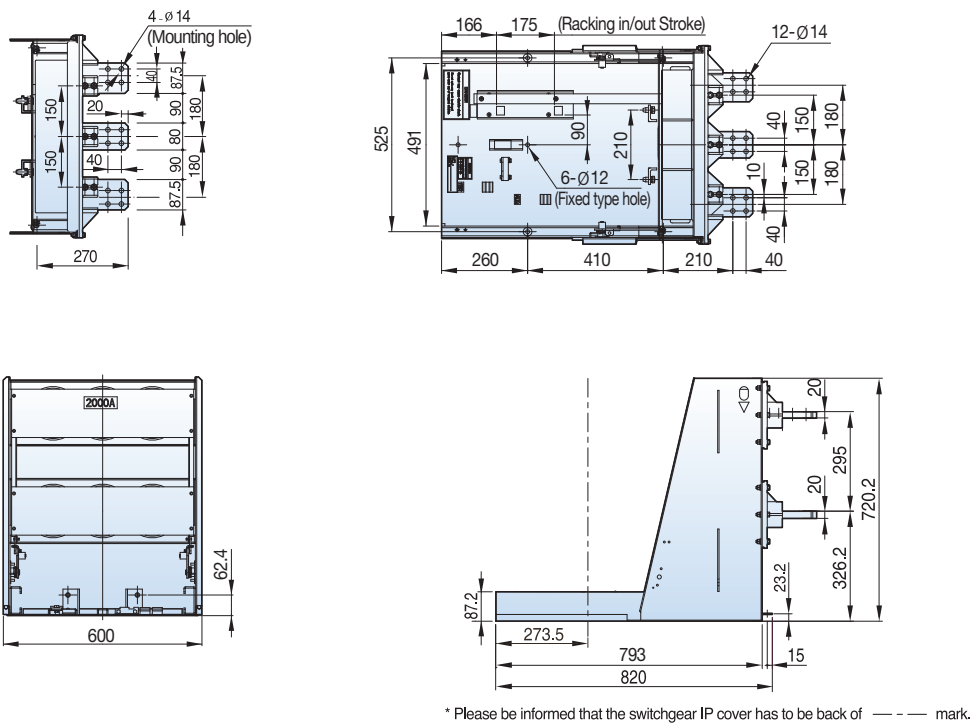
Type
VCL-06F20A20
VCL-06F25A20



Withdrawable

G type cradle, phase distance 150mm

Type
VCL-06G20A20
VCL-06G25A20



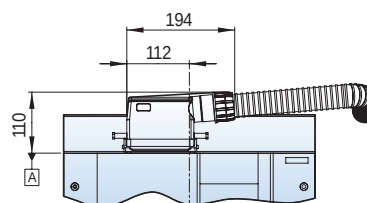
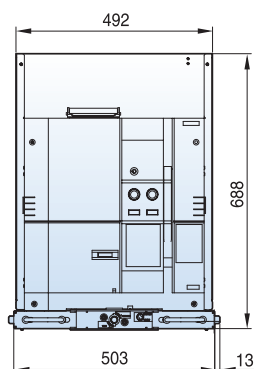
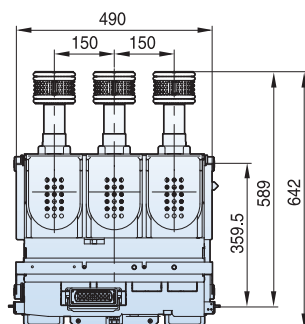
7.2kV, 20/25kA, 2000A

Withdrawable

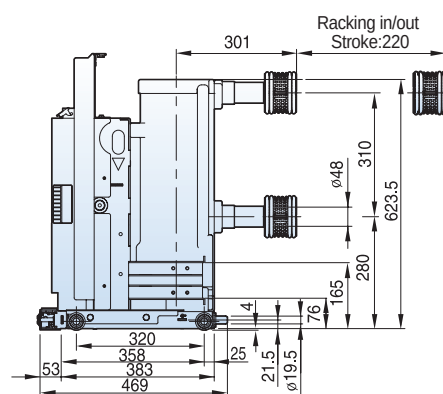
■ H type unit, phase distance 150mm

Type

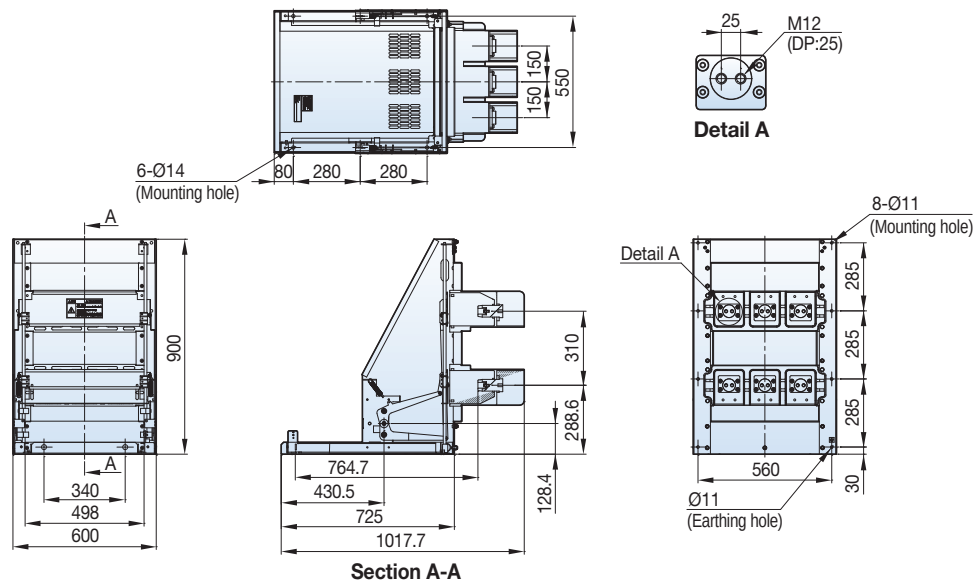
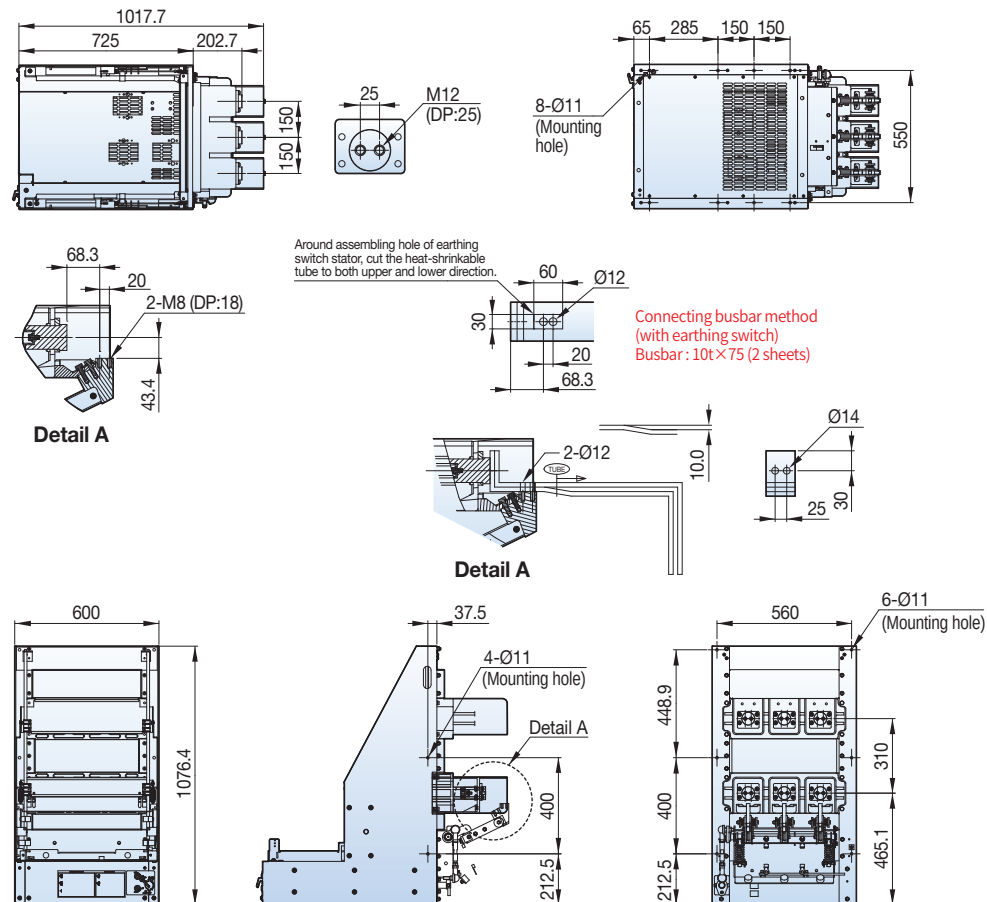
VL-06H20A20
VL-06H25A20



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



Type
VCL-06Ha20A20
VCL-06Ha25A20

[illegible]

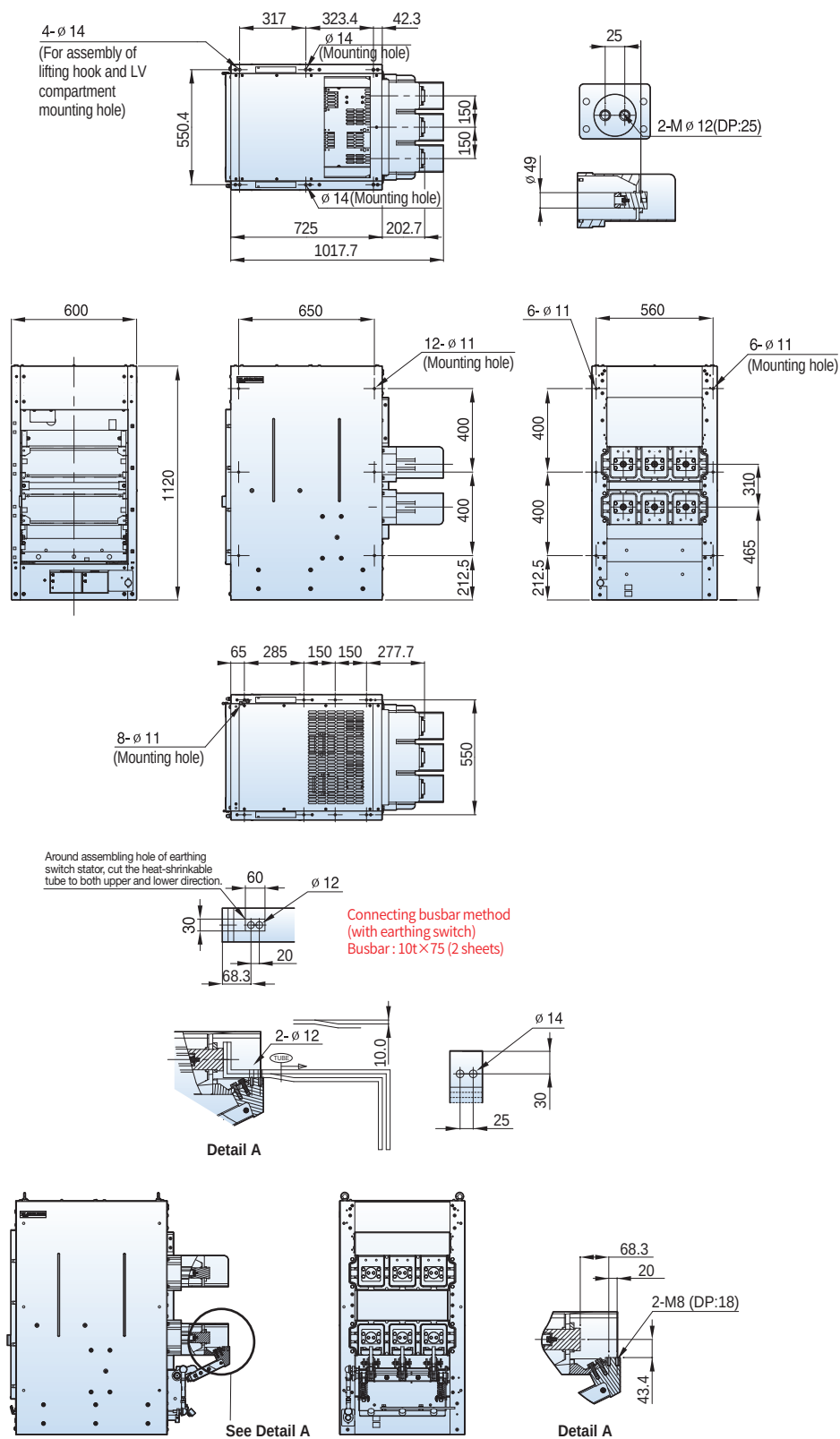
7.2kV, 20/25kA, 2000A

Withdrawable

Type

VCL-06H20A20
VCL-06H25A20

■ H type cradle, phase distance 150mm



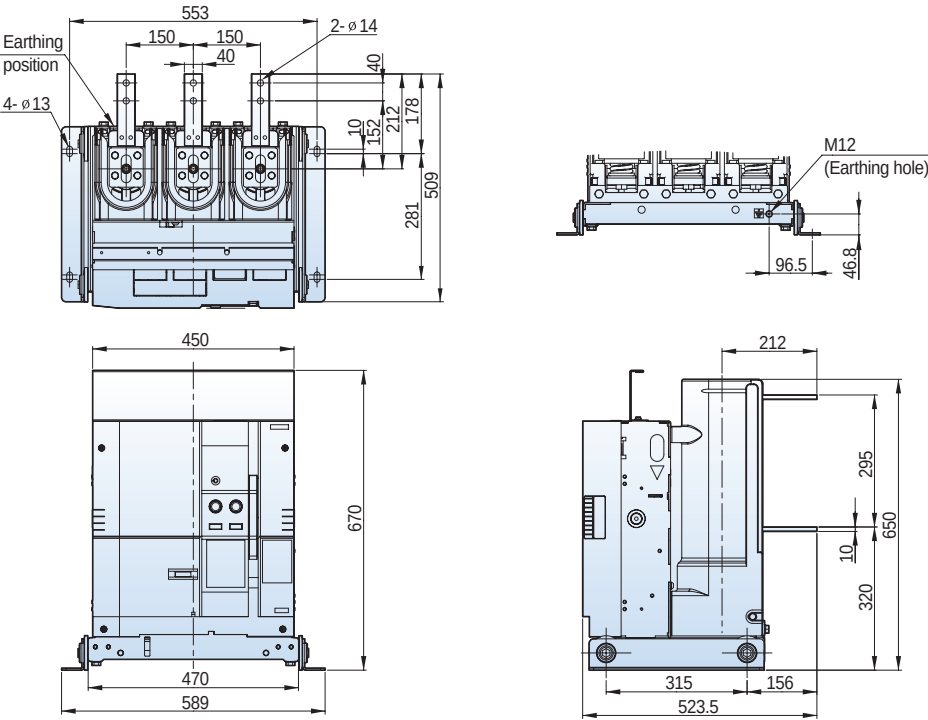
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 630A

Fixed

■ P type, phase distance 150mm

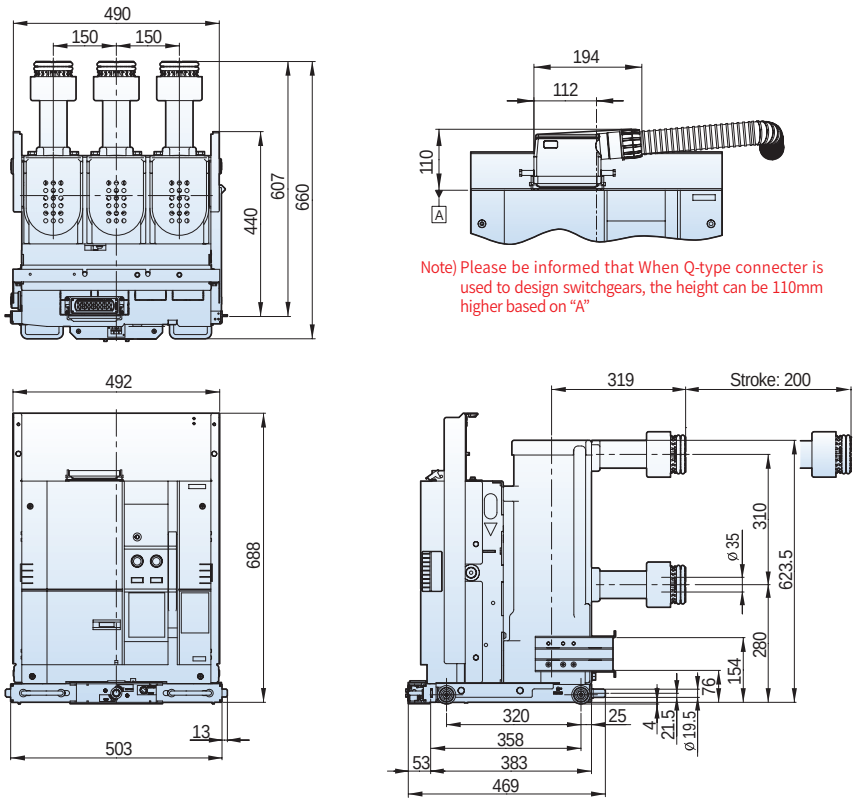
Type
VL-06P32A06



Withdrawable

■ H type unit, phase distance 150mm

Type
VL-06H32A06



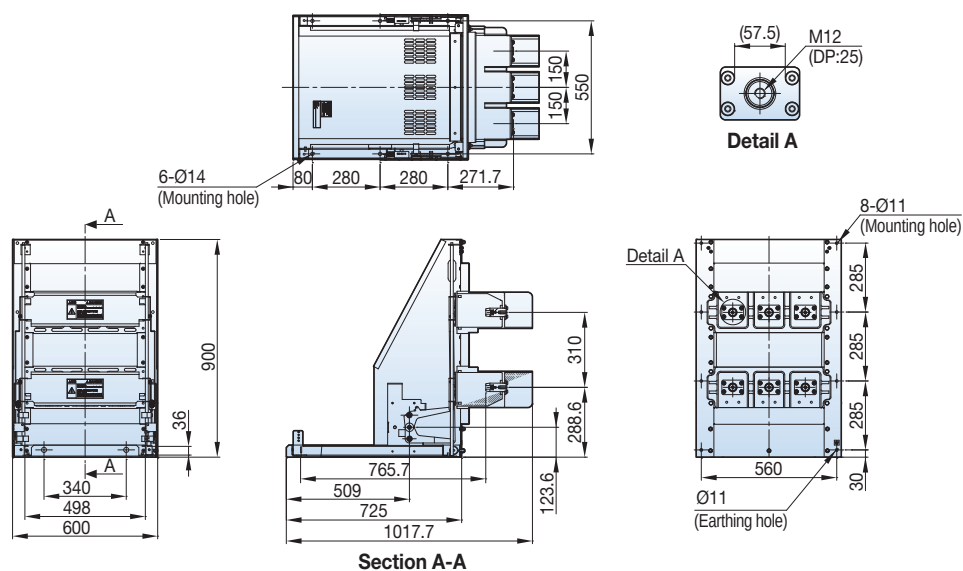
7.2kV, 31.5kA, 630A

Withdrawable

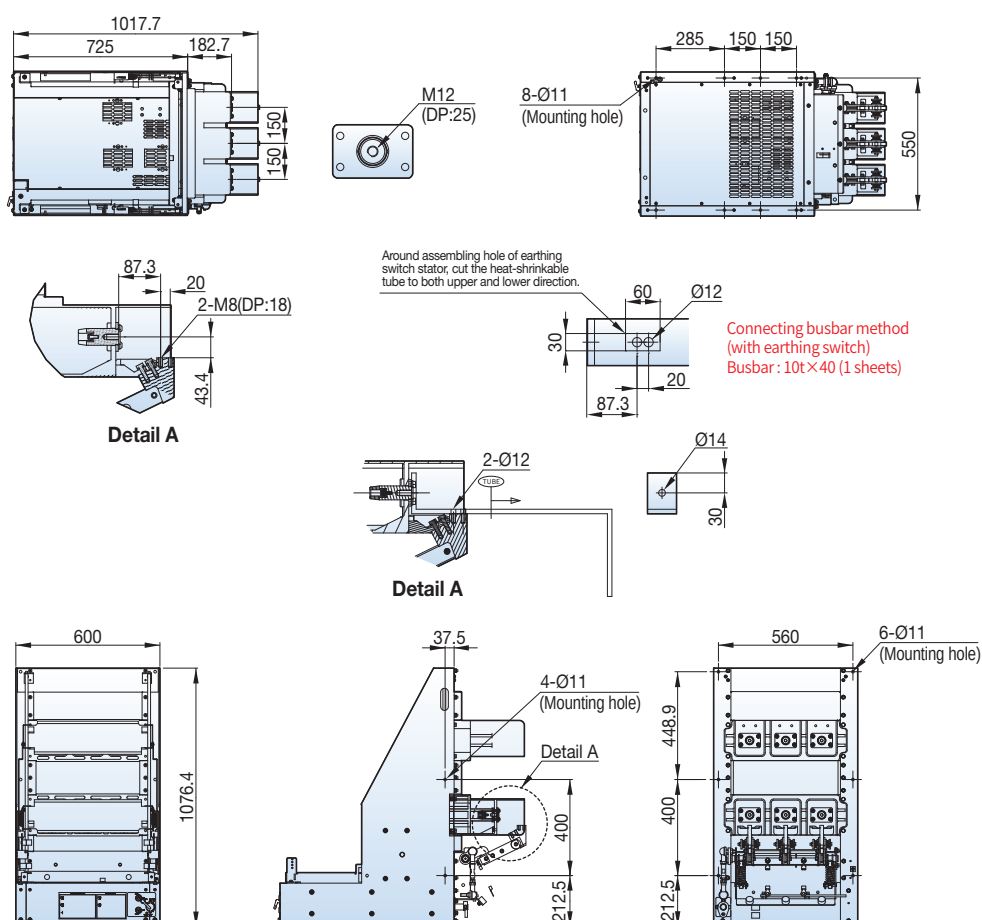
Type

VCL-06Ha32A06

■ Ha type cradle, phase distance 150mm



■ Ha type cradle, phase distance 150mm (Earthing S/W Option type)



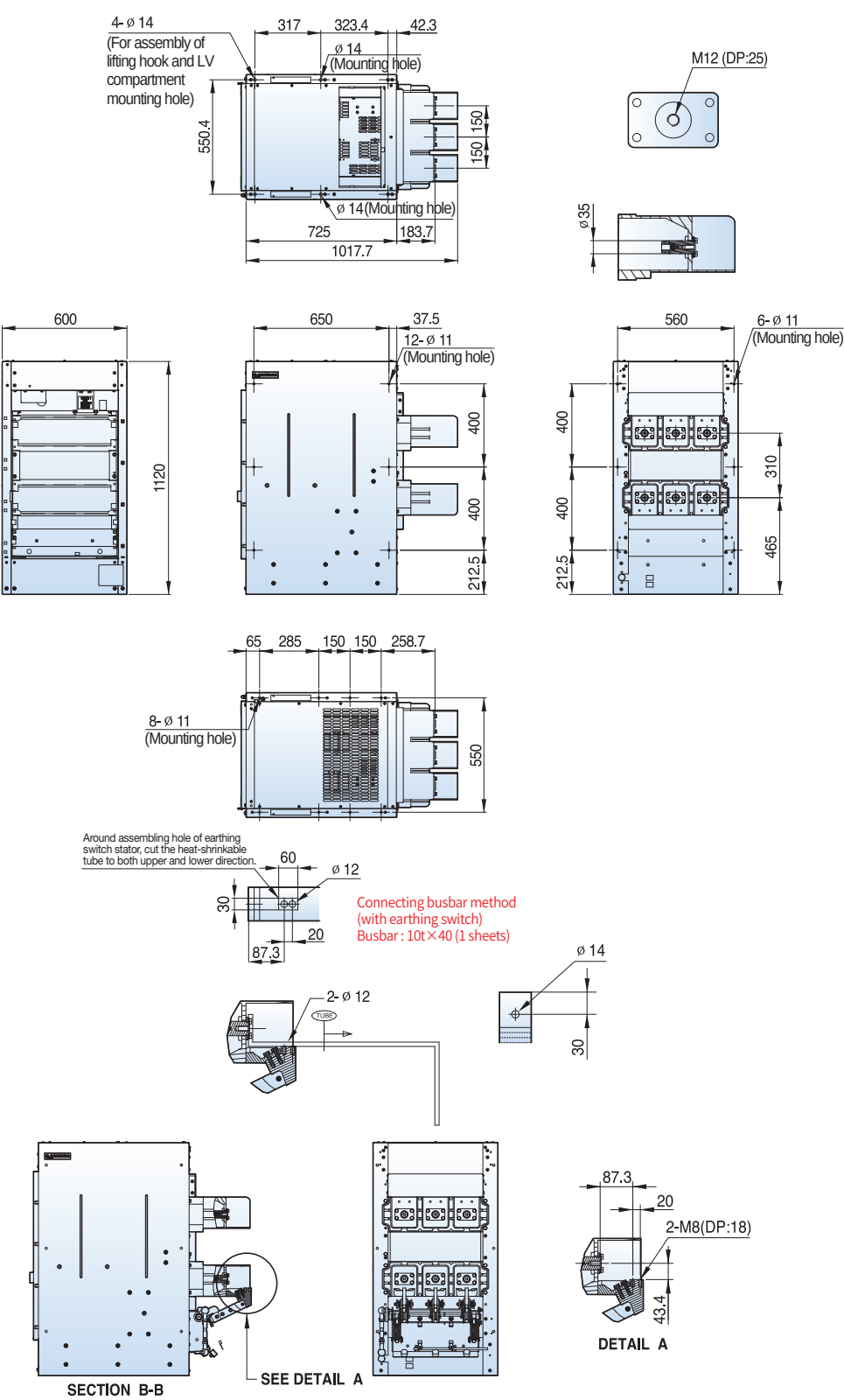
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 630A

Withdrawable

■ H type cradle, phase distance 150mm

Type
VCL-06H32A06



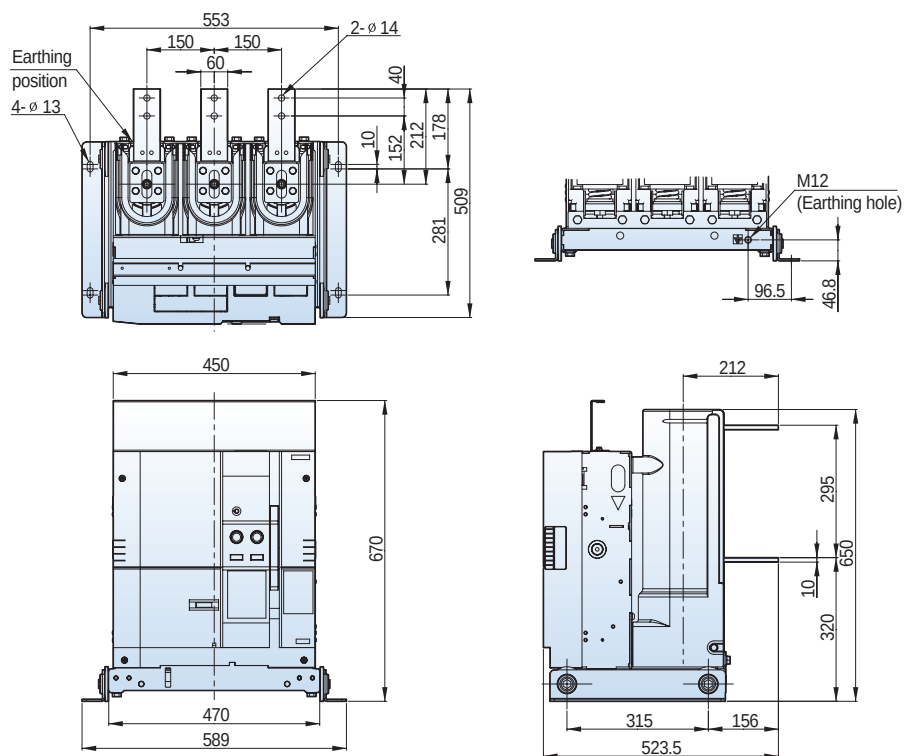
7.2kV, 31.5kA, 1250A

Fixed

■ P type, phase distance 150mm

Type

VL-06P32A13

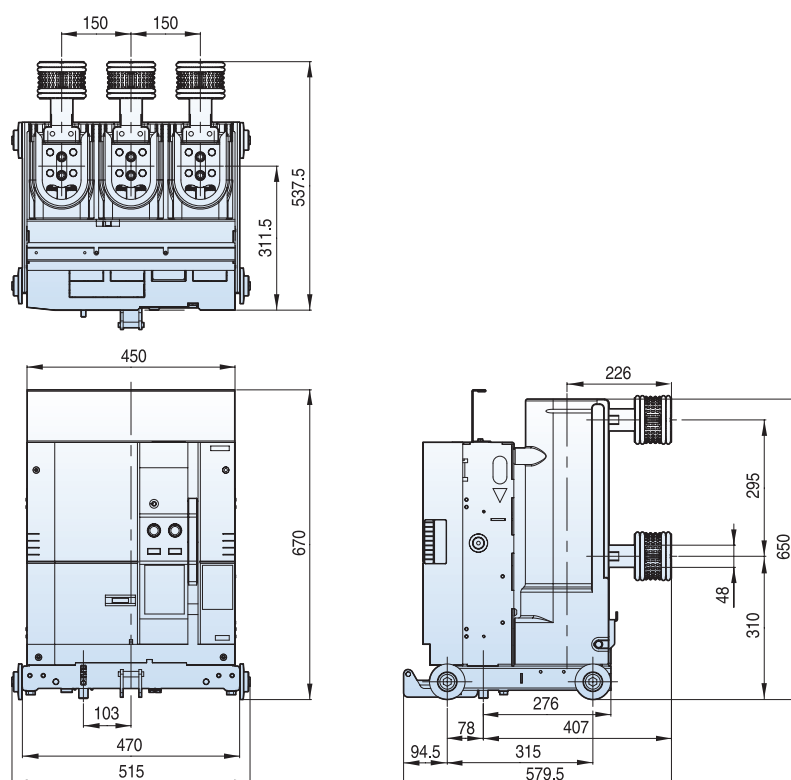


Withdrawable

■ E type unit, phase distance 150mm

Type

VL-06E32A13



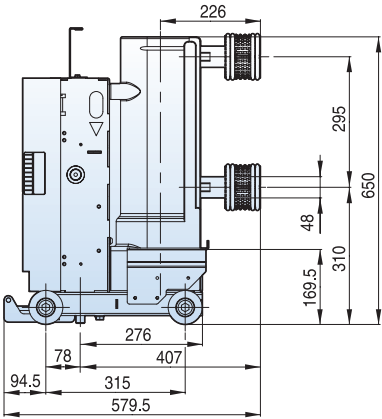
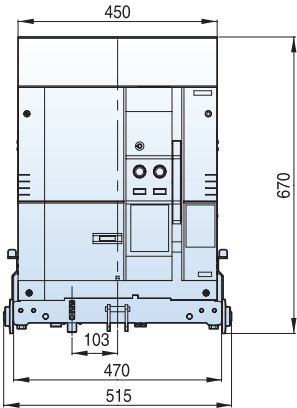
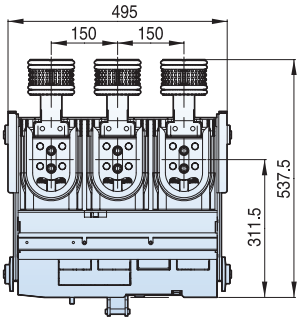
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 1250A

Withdrawable

■ F/G type unit, phase distance 150mm

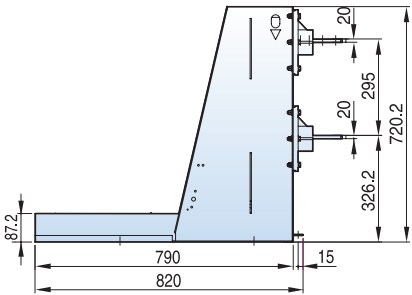
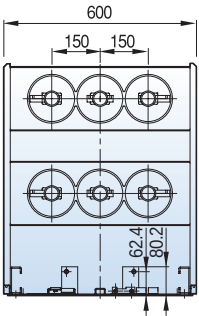
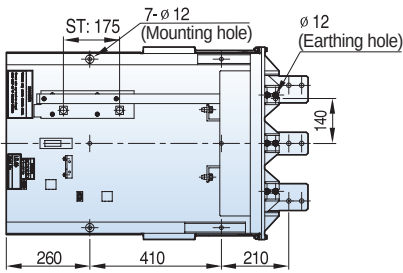
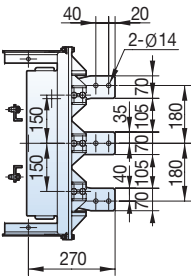
Type
VL-06F32A13
VL-06G32A13



Withdrawable

■ E type cradle, phase distance 150mm

Type
VCL-06E32A13



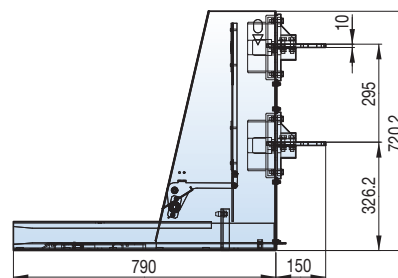
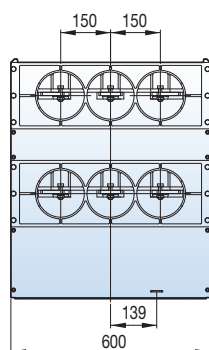
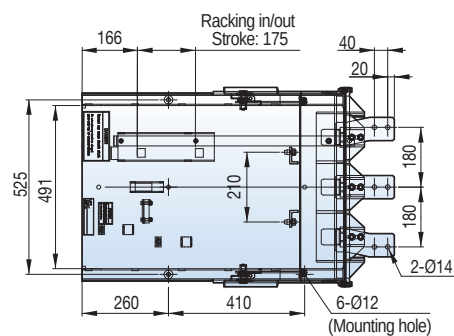
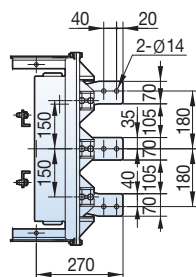
7.2kV, 31.5kA, 1250A

Withdrawable

■ F type cradle , phase distance 150mm

Type

VCL-06F32A13

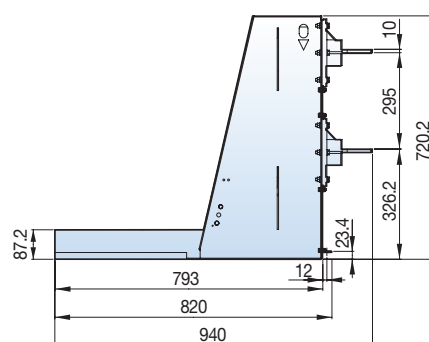
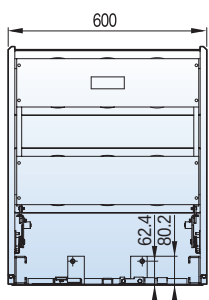
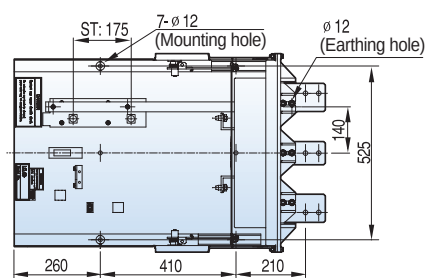
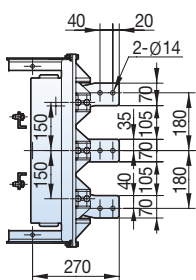


Withdrawable

■ G type cradle, phase distance 150mm

Type

VCL-06G32A13



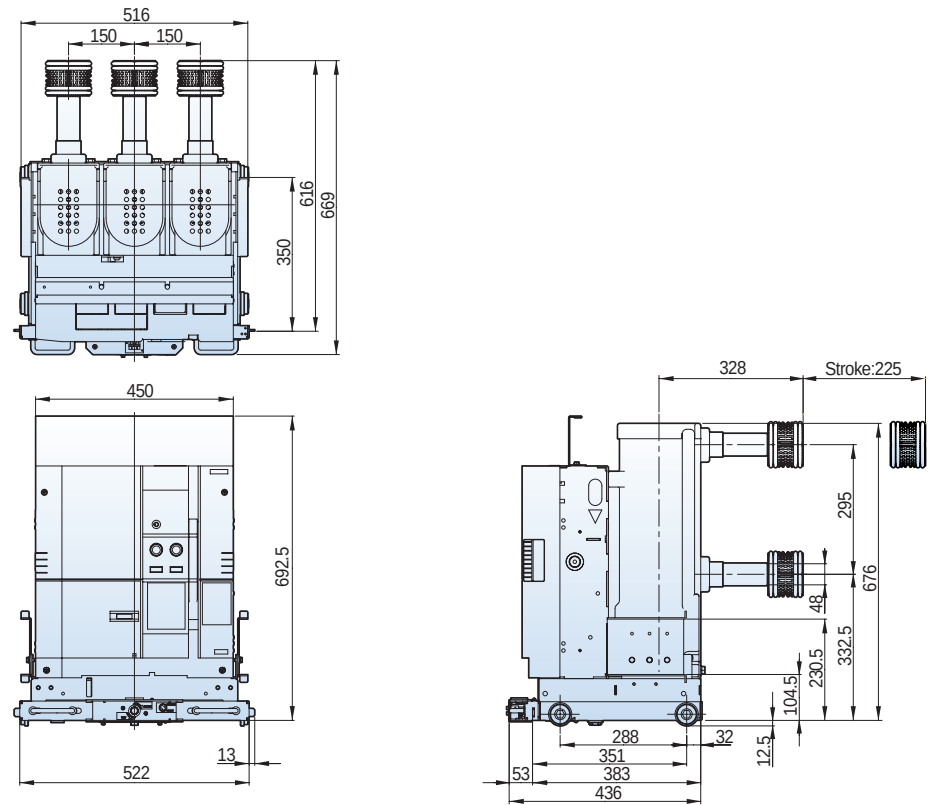
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 1250A

Withdrawable

Type
VL-06K32K13

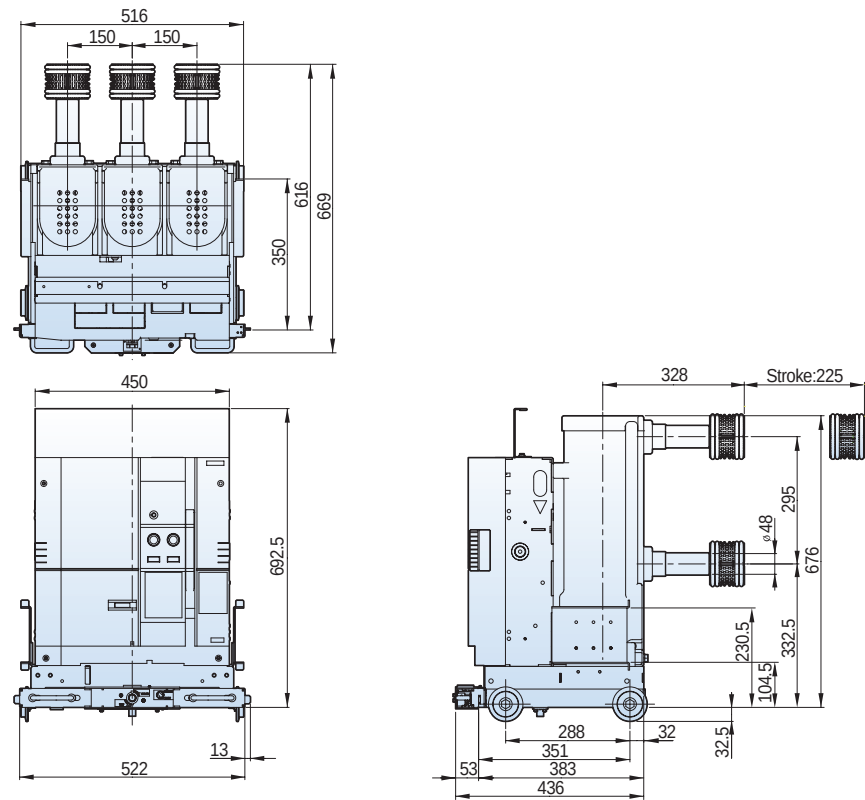
■ K type unit T type, phase distance 150mm



Withdrawable

Type
VL-06K32A13

■ K type unit T2 type, phase distance 150mm



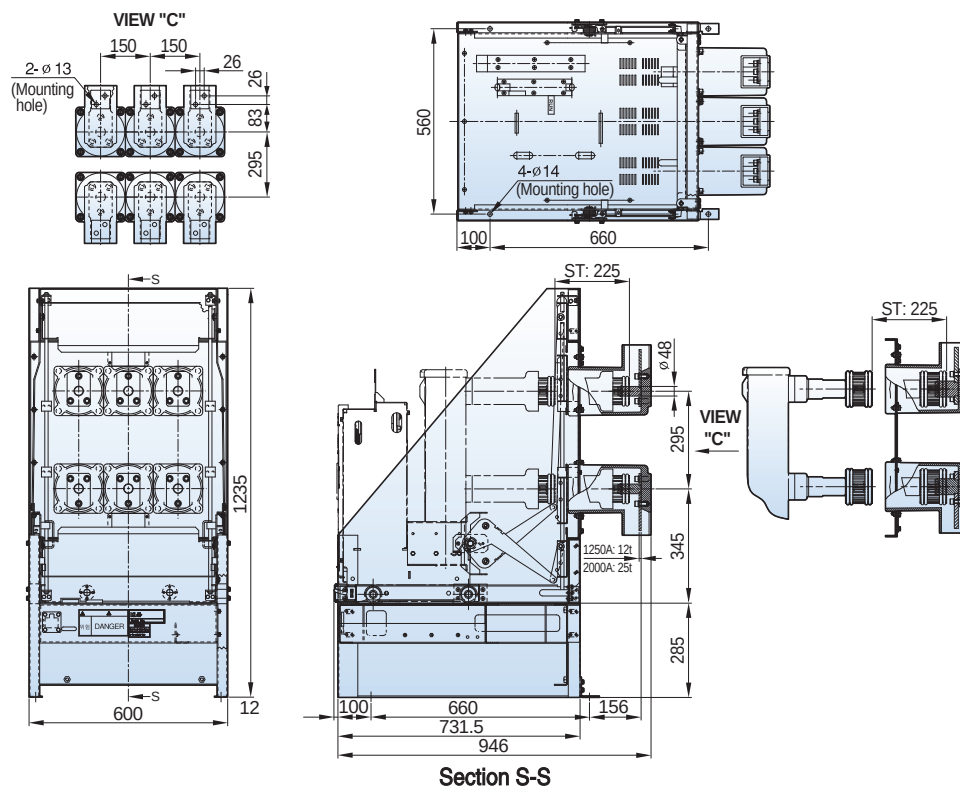
7.2kV, 31.5kA, 1250A

Withdrawable

Type

VCL-06K32K13

■ MCSG cradle T type, phase distance 150mm

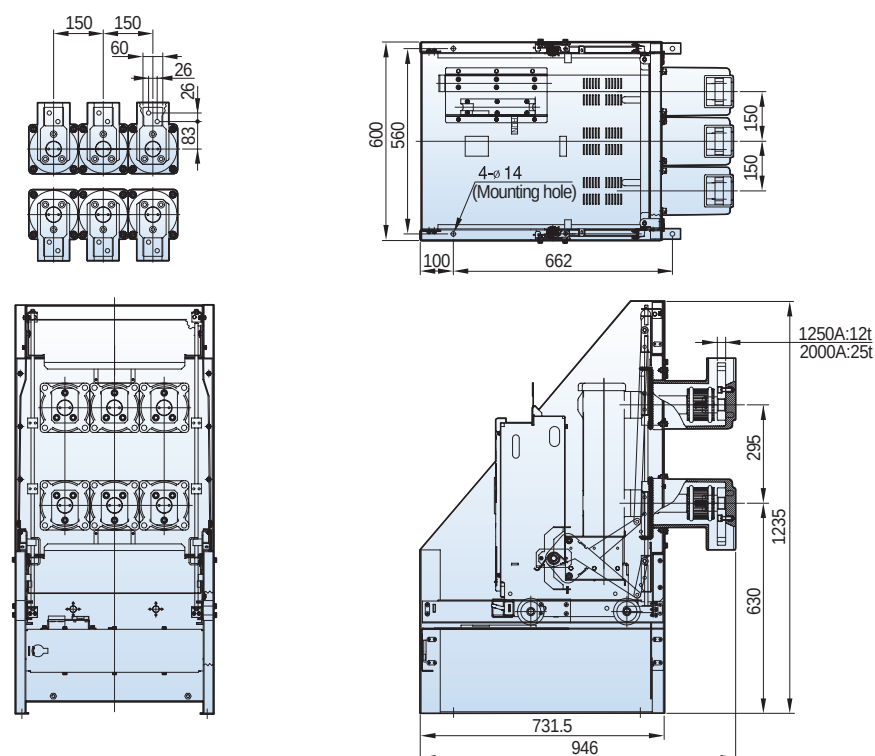


Withdrawable

Type

VCL-06K32A13

■ MCSG cradle T2 type, phase distance 150mm



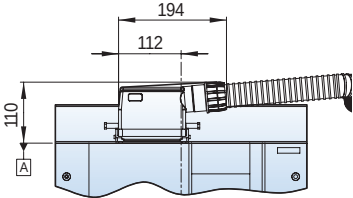
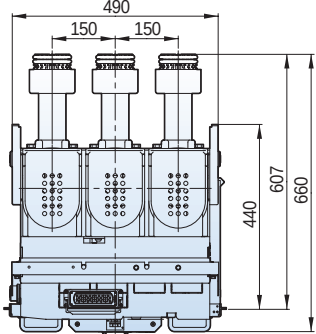
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 1250A

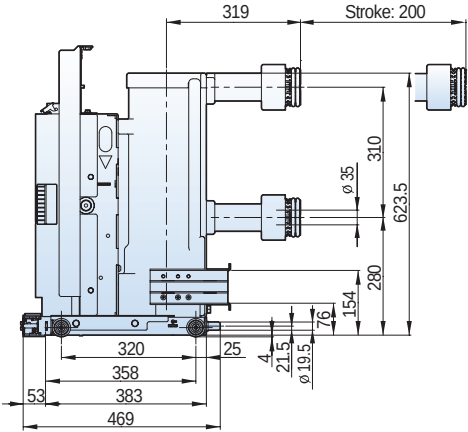
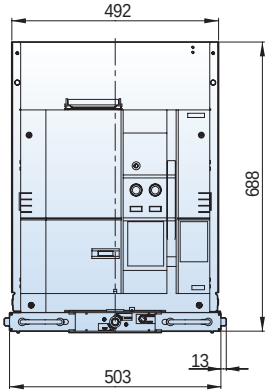
Withdrawable

■ H type unit, phase distance 150mm

Type
VL-06H32A13



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



VCL-06Ha32A13

■ Ha type cradle, phase distance 150mm



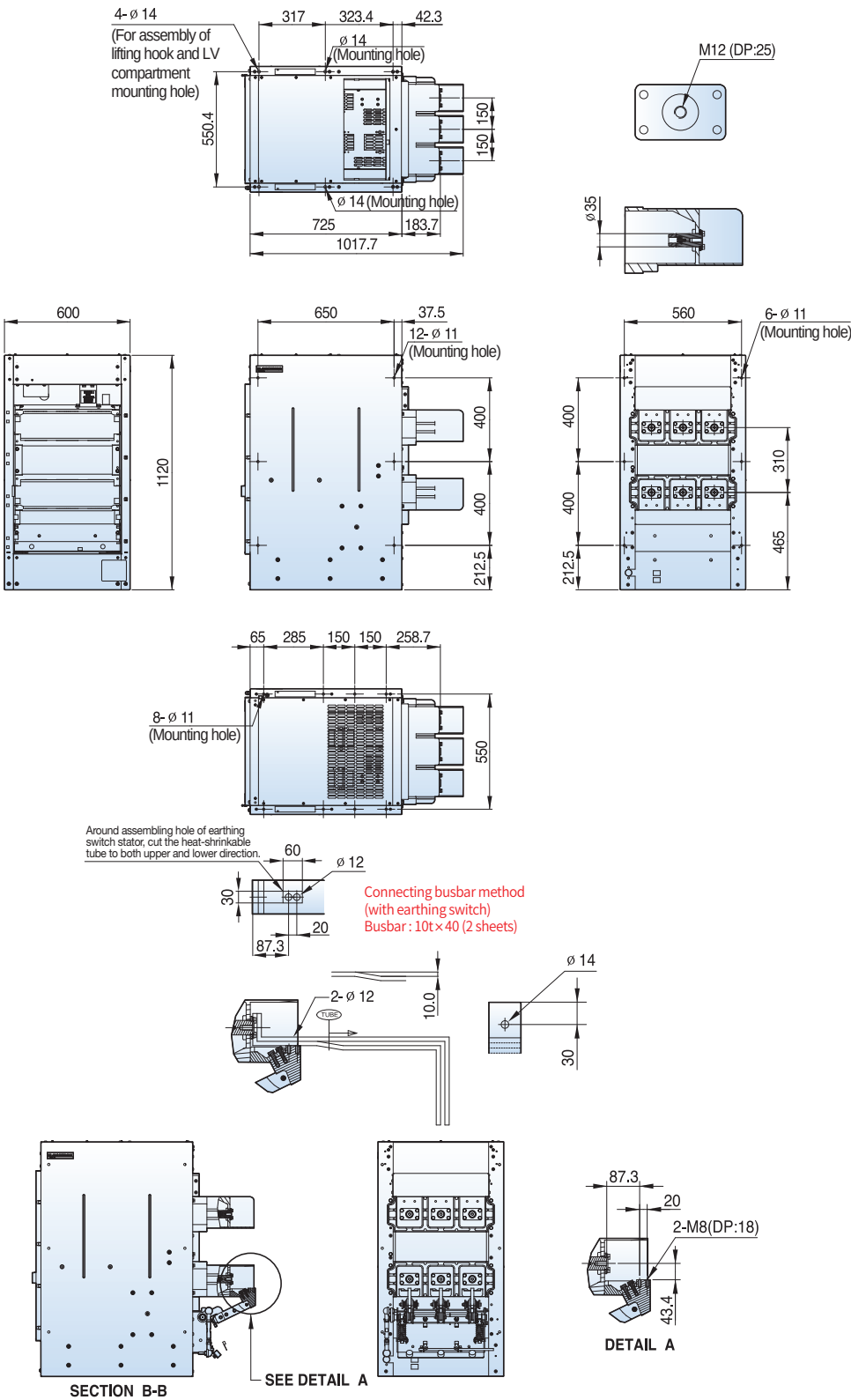
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 1250A

Withdrawable

Type
VCL-06H32A13

■ H type cradle, phase distance 150mm



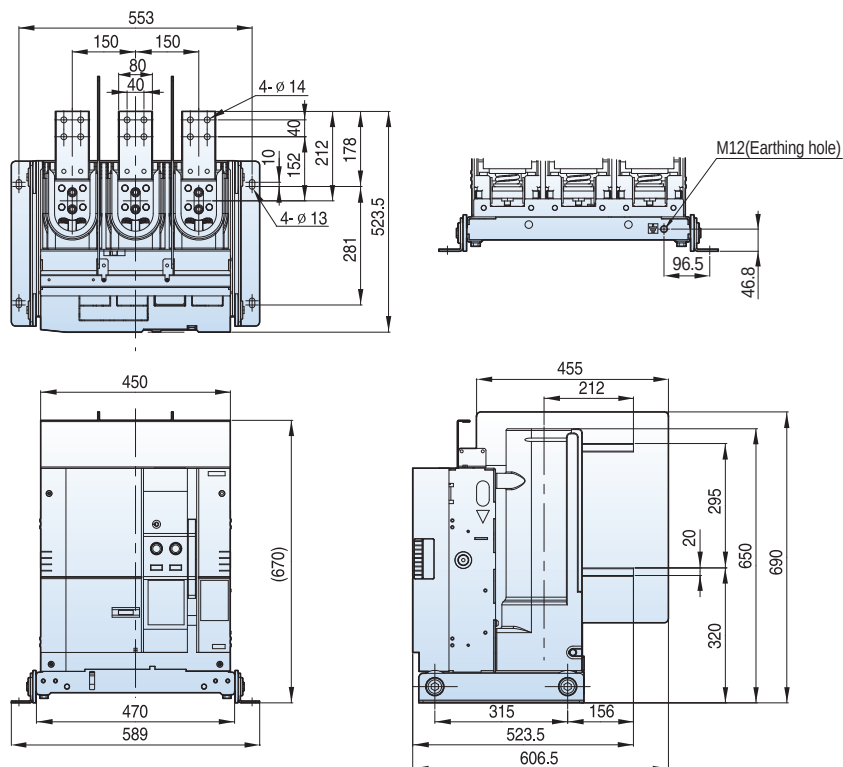
7.2kV, 31.5kA, 2000A

Fixed

■ P type, phase distance 150mm

Type

VL-06P32A20

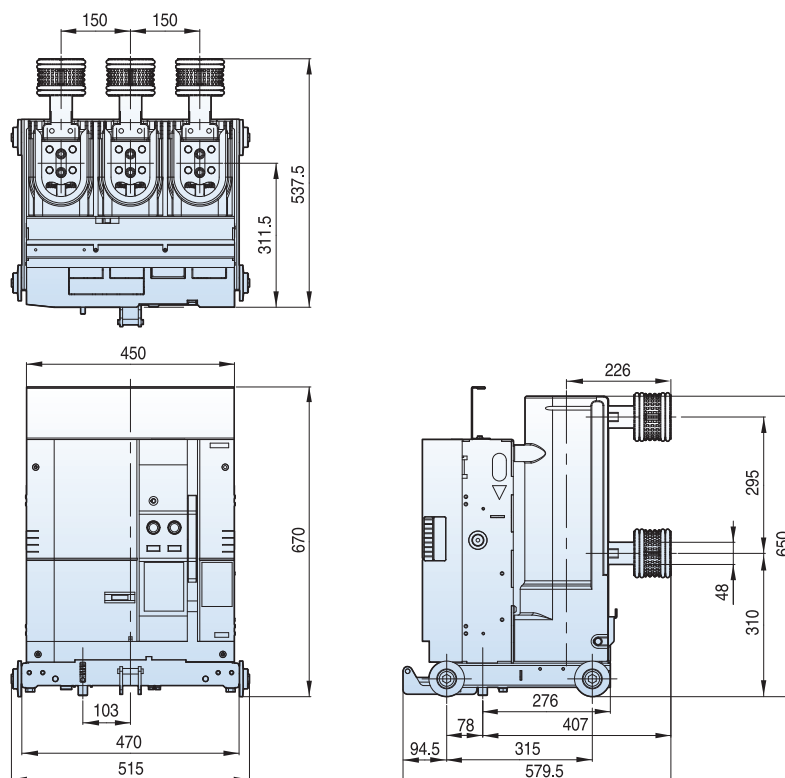


Withdrawable

■ E type unit, phase distance 150mm

Type

VL-06E32A20



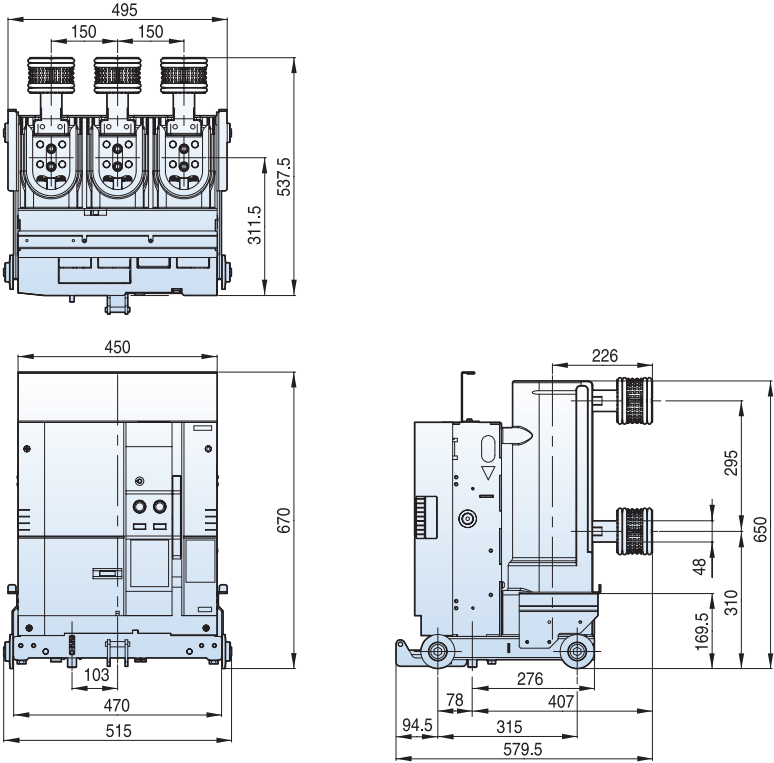
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 2000A

Withdrawable

■ F/G type unit, phase distance 150mm

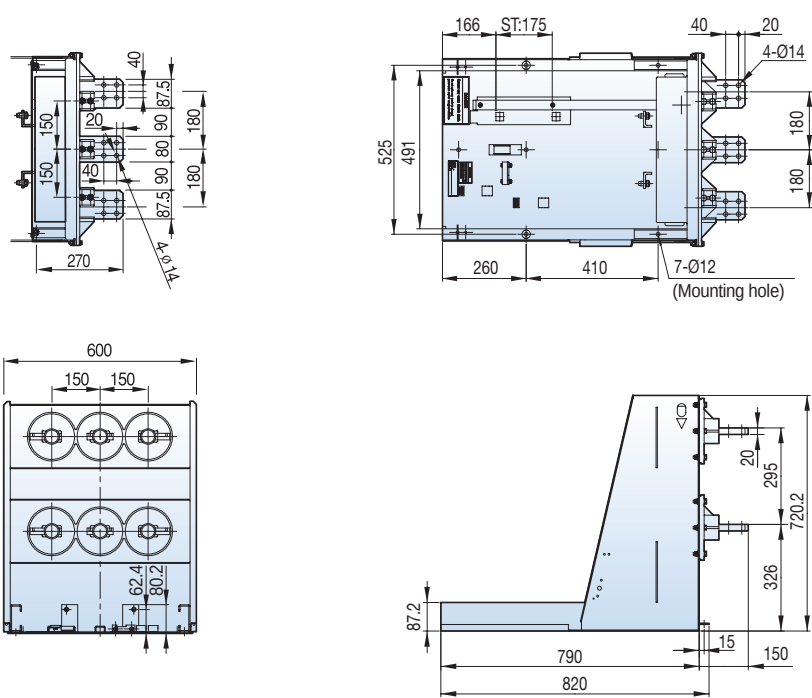
Type
VL-06F32A20
VL-06G32A20



Withdrawable

■ E type cradle, phase distance 150mm

Type
VCL-06E32A20



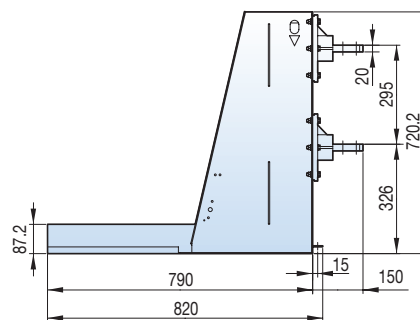
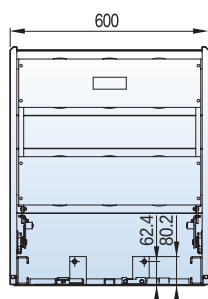
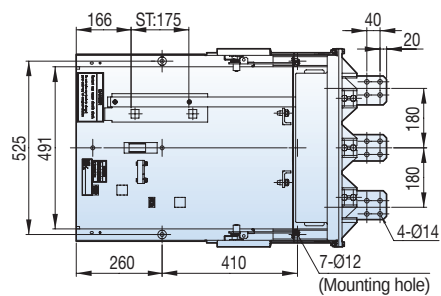
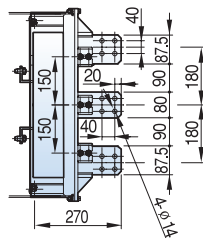
7.2kV, 31.5kA, 2000A

Withdrawable

Type

VCL-06F32A20

■ F type cradle, phase distance 150mm

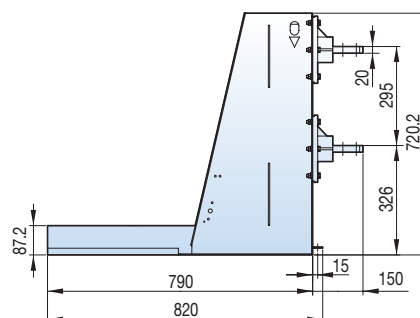
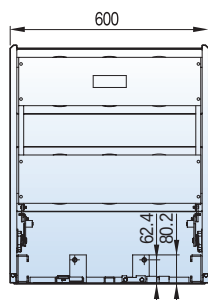
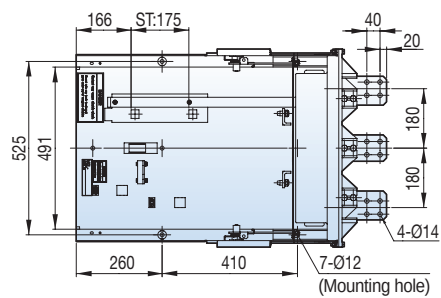
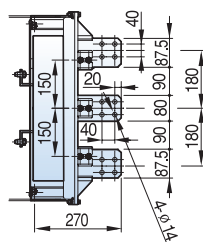


Withdrawable

Type

VCL-06G32A20

■ G type cradle, phase distance 150mm



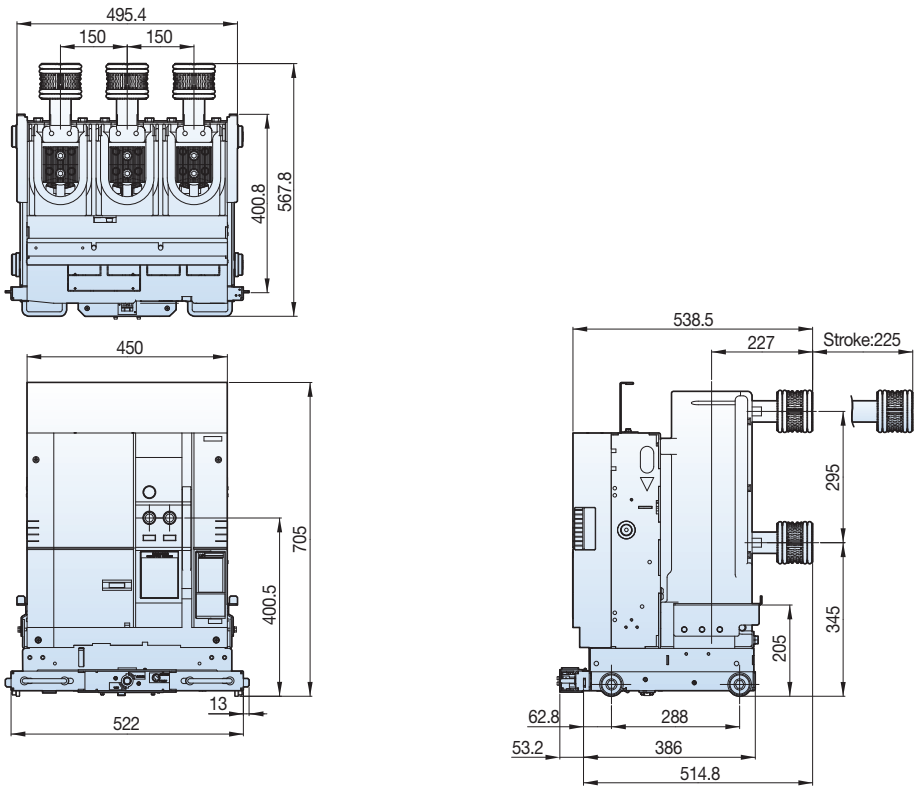
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 1250/2000A

Withdrawable

Type
VL-06Fs32A13
VL-06Fs32A20

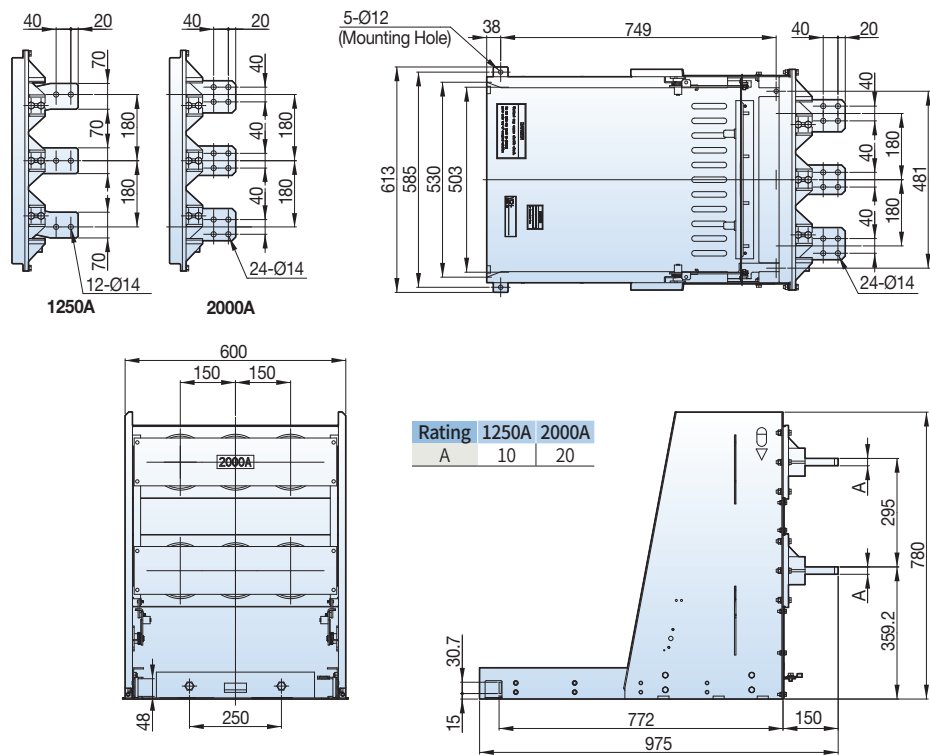
■ Fs type unit, phase distance 150mm



Withdrawable

Type
VCL-06Fs32A13
VCL-06Fs32A20

■ Fs type cradle, phase distance 150mm



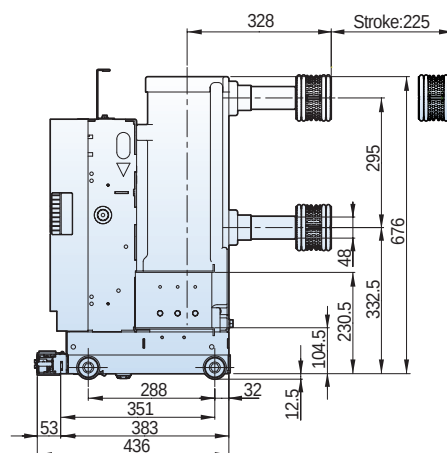
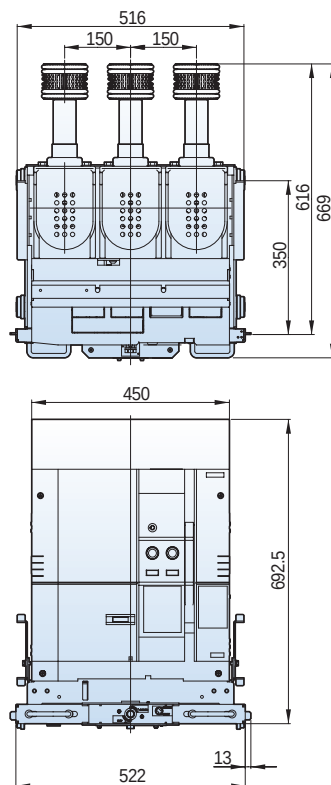
7.2kV, 31.5kA, 2000A

Withdrawable

Type

VL-06K32K20

■ K type unit T type, phase distance 150mm

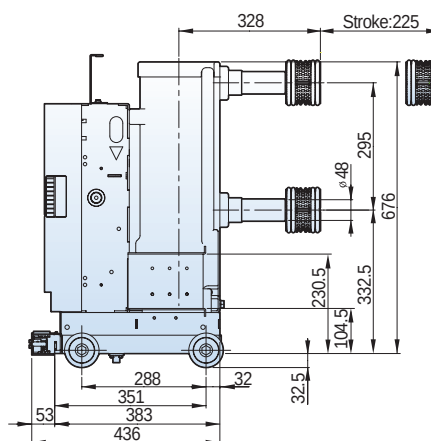
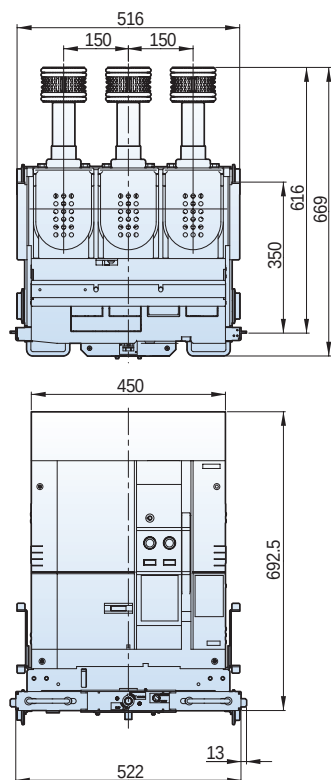


Withdrawable

Type

VL-06K32A20

■ K type unit T2 type, phase distance 150mm



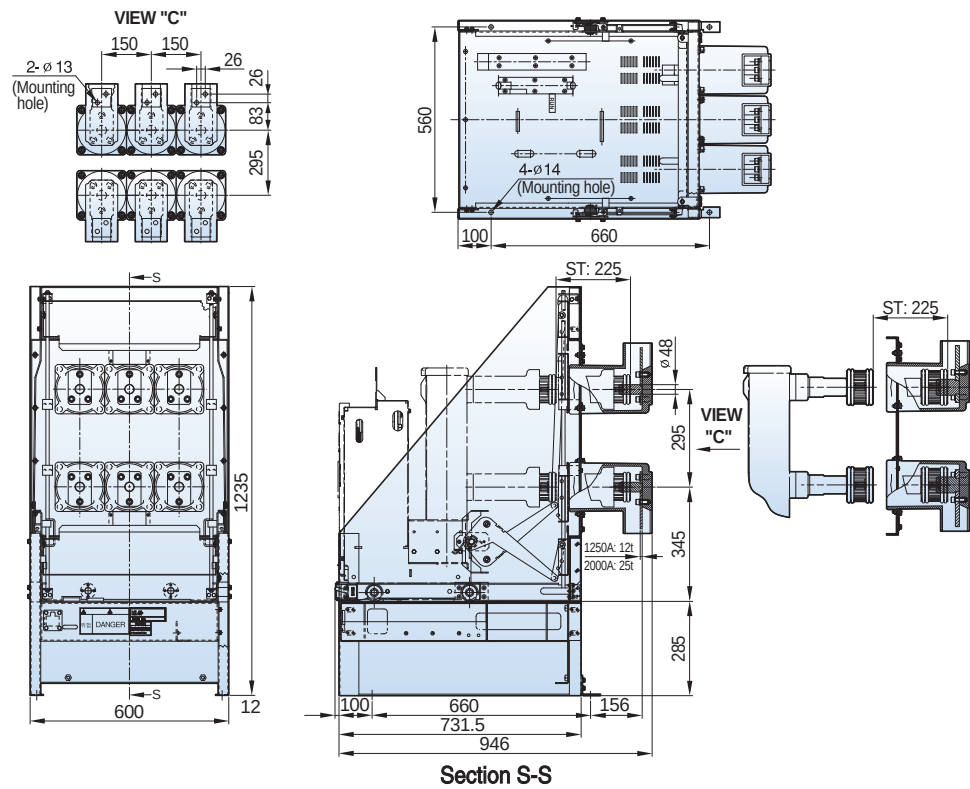
Dimensions - VL type (VL-06/12/17)

7.2kV, 31.5kA, 2000A

Withdrawable

Type
VCL-06K32K20

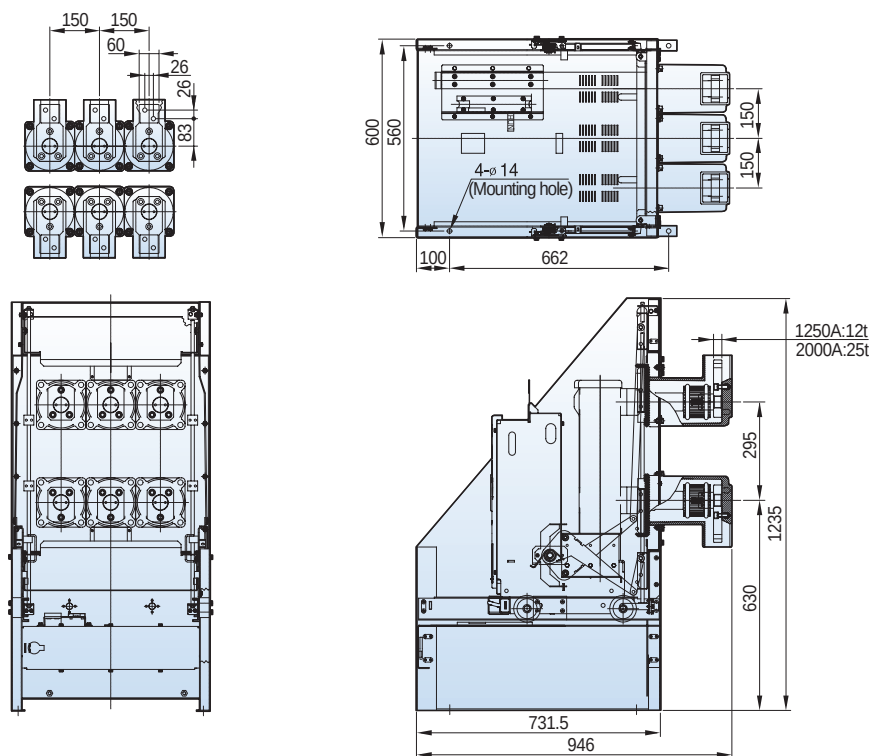
■ MCSG cradle T type, phase distance 150mm



Withdrawable

Type
VCL-06K32A20

■ MCSG cradle T2 type, phase distance 150mm



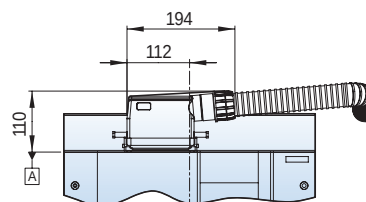
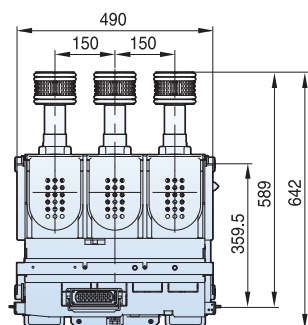
7.2kV, 31.5kA, 2000A

Withdrawable

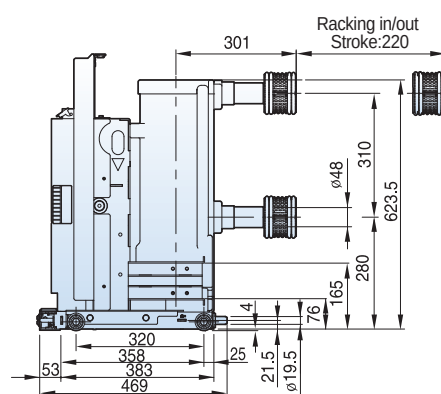
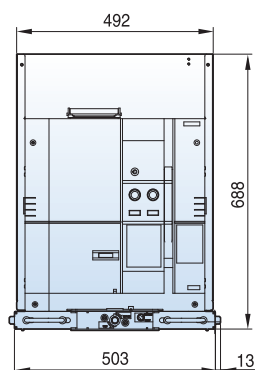
Type

VL-06H32A20

■ H type unit, phase distance 150mm



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



Withdrawable

VCL-06Ha32A20

■ Ha type cradle, phase distance 150mm



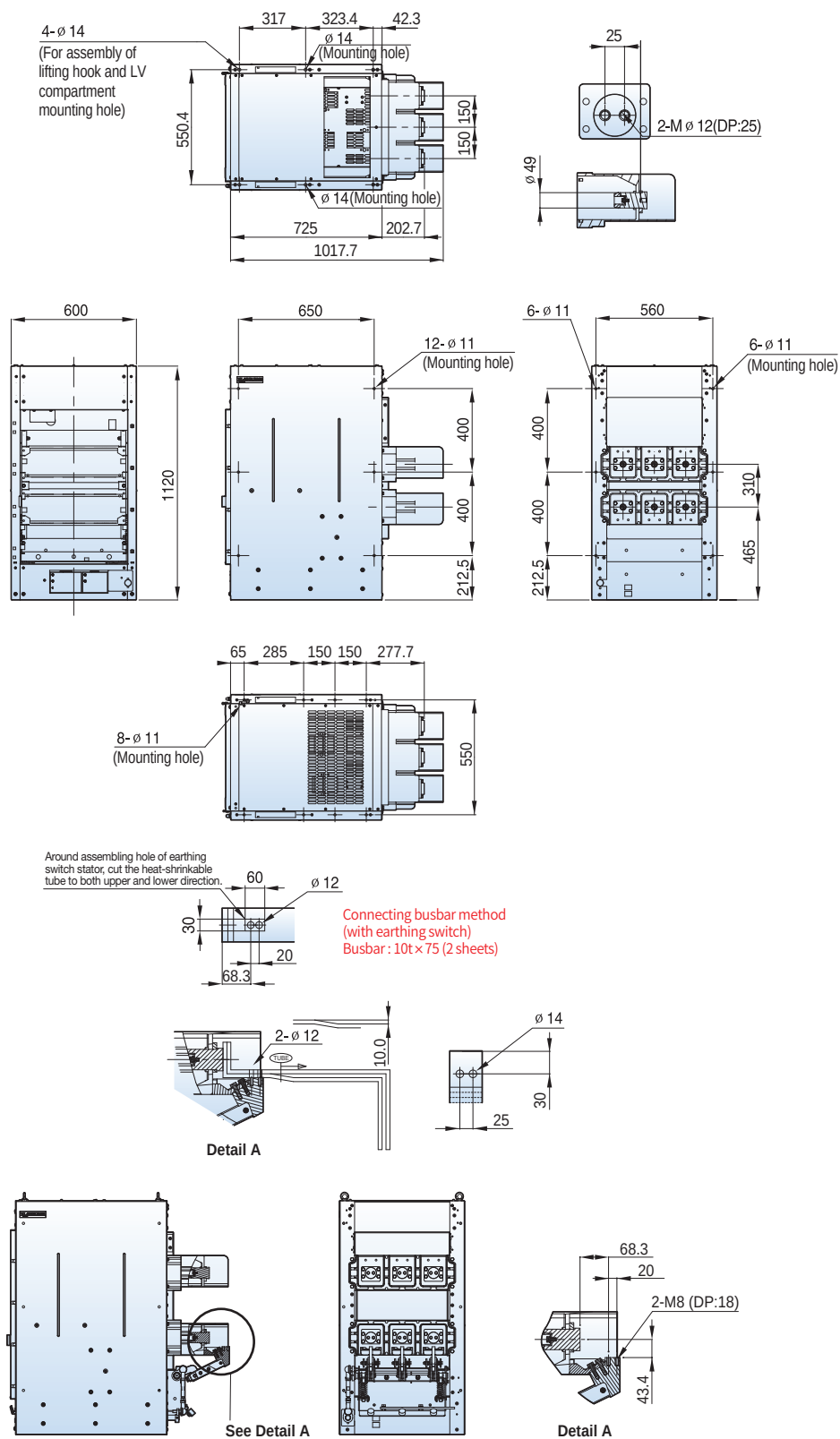
7.2kV, 31.5kA, 2000A

Withdrawable

Type

VCL-06H32A20

■ H type cradle, phase distance 150mm



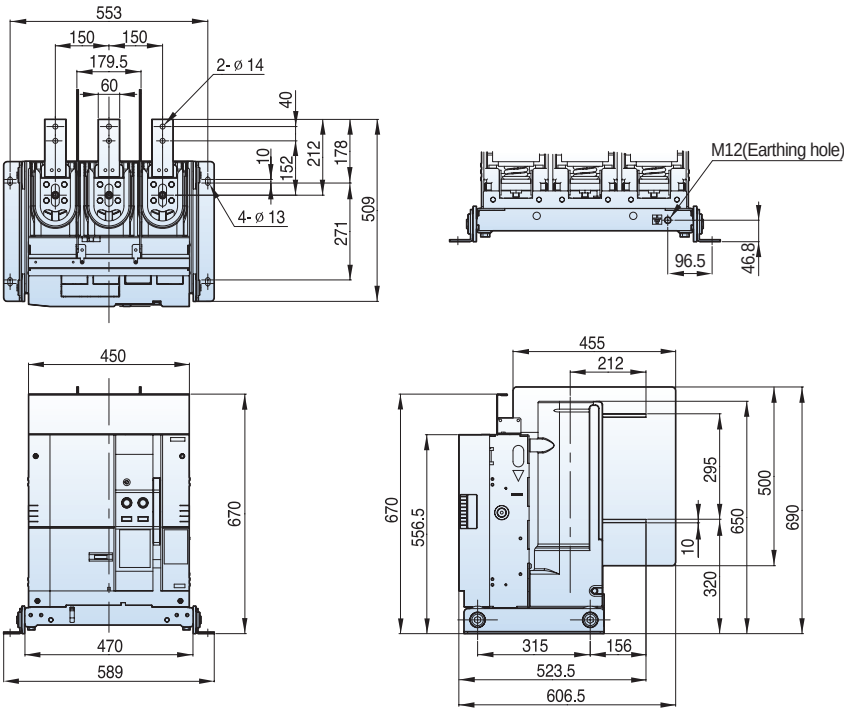
Dimensions - VL type (VL-06/12/17)

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

Fixed

■ P type, phase distance 150mm

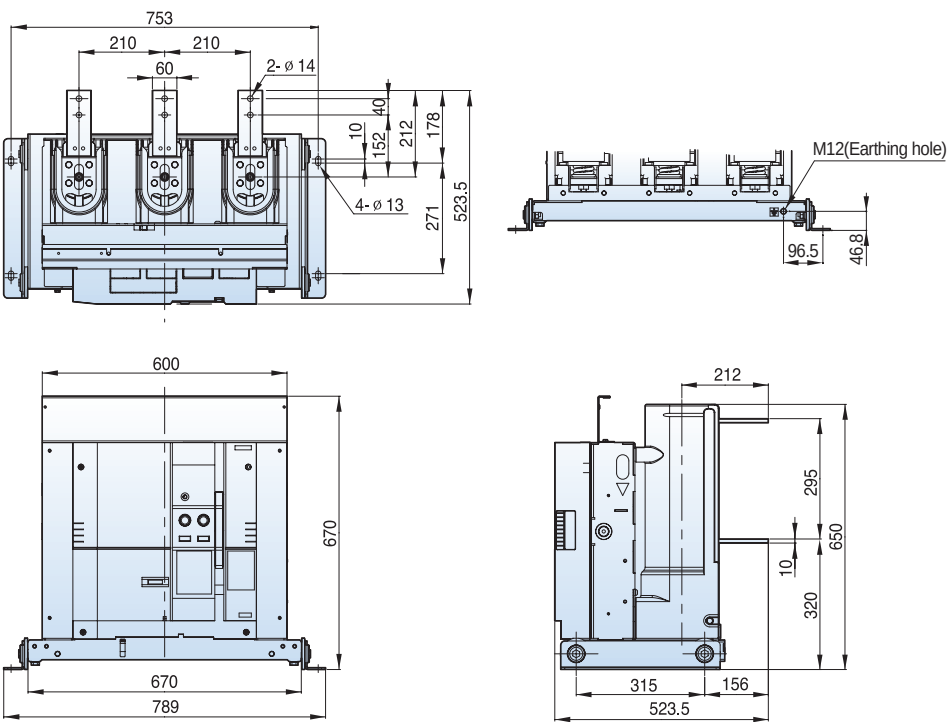
Type
VL-12P20A06
VL-12P25A06
VL-12P20A13
VL-12P25A13
VL-17P20A06
VL-17P25A06
VL-17P20A13
VL-17P25A13



Fixed

■ P type, phase distance 210mm

Type
VL-12P20B06
VL-12P25B06
VL-12P20B13
VL-12P25B13
VL-17P20B06
VL-17P25B06
VL-17P20B13
VL-17P25B13



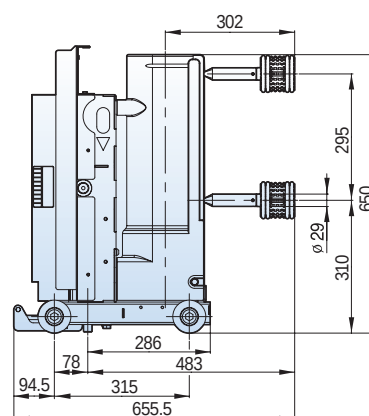
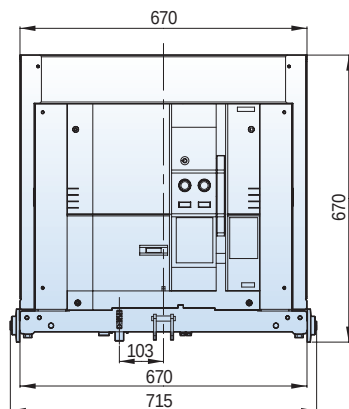
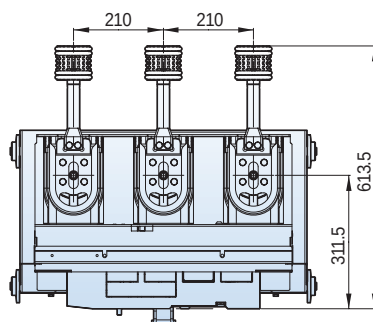
12/17.5kV, 20/25kA, 630/1250A

Withdrawable

■ Compatible with existing E type unit, phase distance 210mm

Type

VL-12E20F06
VL-12E25F06
VL-12E20F13
VL-12E25F13
VL-17E20F06
VL-17E25F06
VL-17E20F13
VL-17E25F13

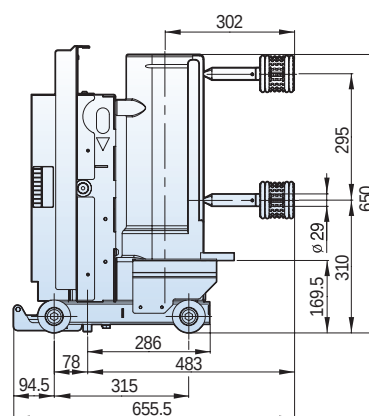
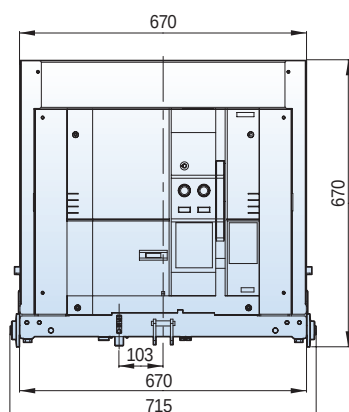
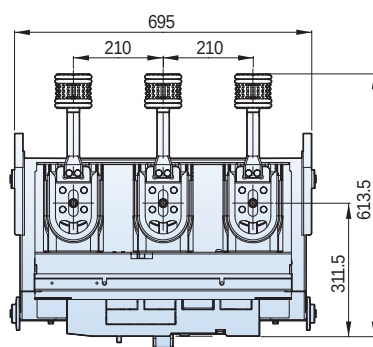


Withdrawable

■ Compatible with existing F type unit, phase distance 210mm

Type

VL-12F20F06
VL-12F25F06
VL-12F20F13
VL-12F25F13
VL-17F20F06
VL-17F25F06
VL-17F20F13
VL-17F25F13



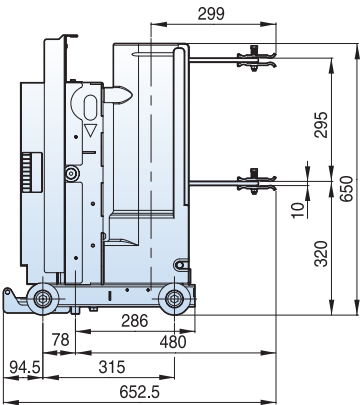
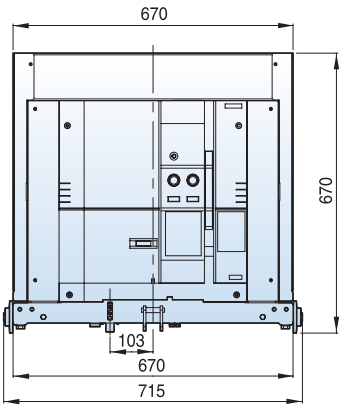
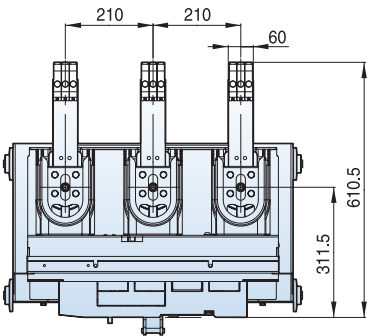
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ E type unit, phase distance 210mm

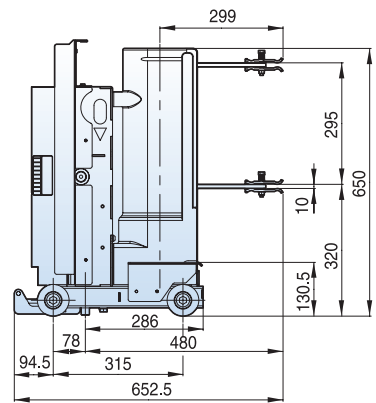
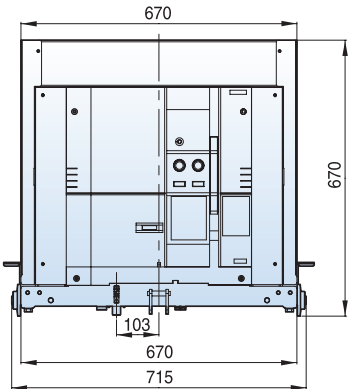
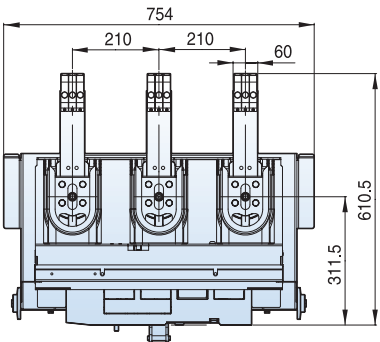
Type
VL-12E20B06
VL-12E25B06
VL-12E20B13
VL-12E25B13
VL-17E20B06
VL-17E25B06
VL-17E20B13
VL-17E25B13



Withdrawable

■ F type unit, phase distance 210mm

Type
VL-12F20B06
VL-12F25B06
VL-12F20B13
VL-12F25B13
VL-17F20B06
VL-17F25B06
VL-17F20B13
VL-17F25B13



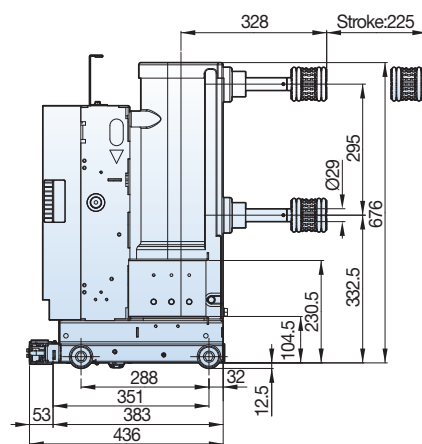
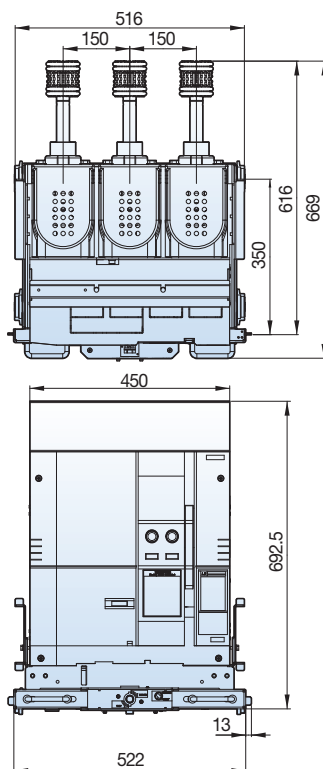
12kV, 20/25kA, 630/1250A

Withdrawable

■ K type unit T type, phase distance 150mm

Type

VL-12K20K06
VL-12K25K06
VL-12K20K13
VL-12K25K13

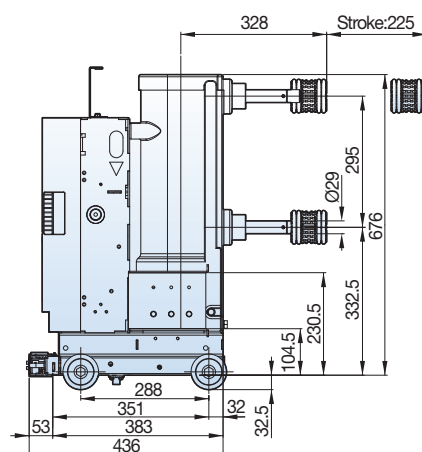
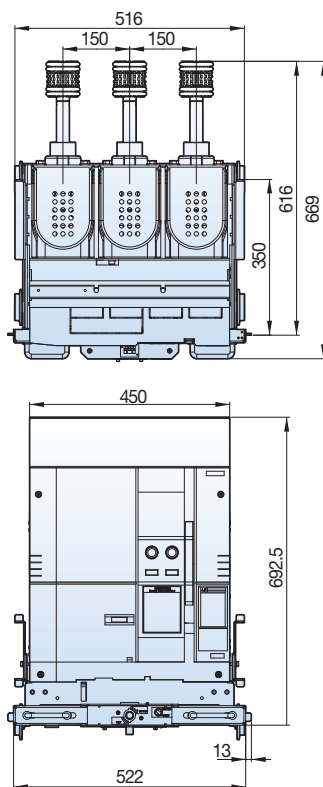


Withdrawable

■ K type unit T2 type, phase distance 150mm

Type

VL-12K20A06
VL-12K25A06
VL-12K20A13
VL-12K25A13



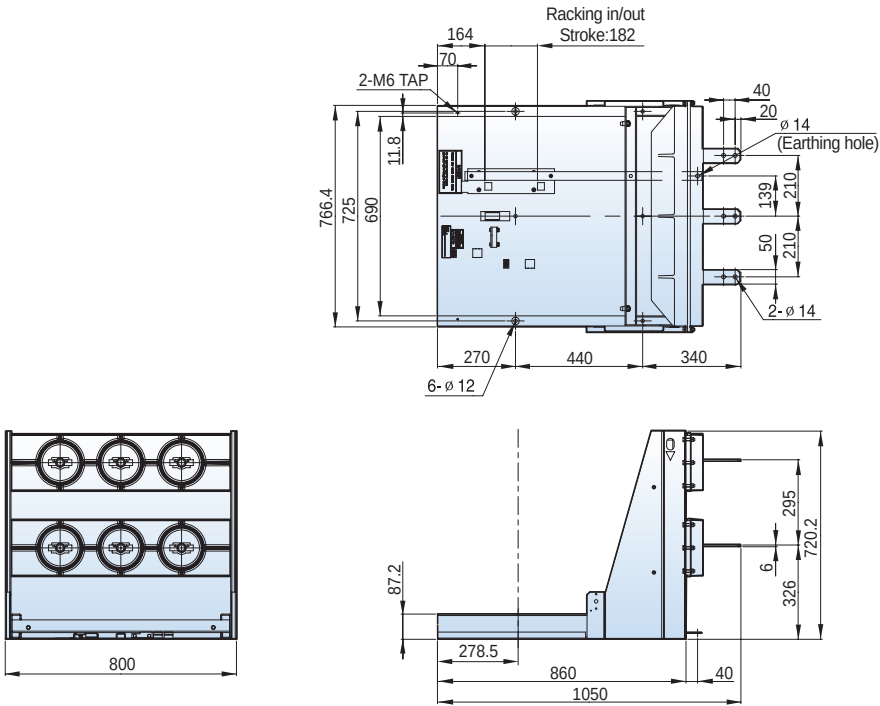
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

Type
VCL-12E20F06
VCL-12E25F06
VCL-17E20F06
VCL-17E25F06

Compatible with existing E cradle, phase distance 210mm

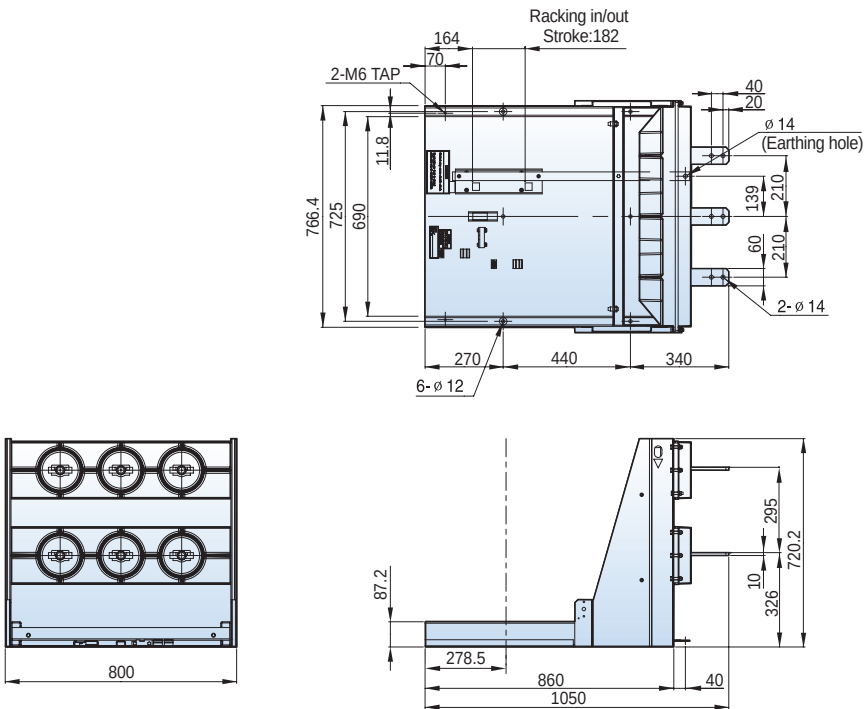


12/17.5kV, 20/25kA, 630A

Withdrawable

Type
VCL-12E20F13
VCL-12E25F13
VCL-17E20F13
VCL-17E25F13

Compatible with existing E cradle, phase distance 210mm



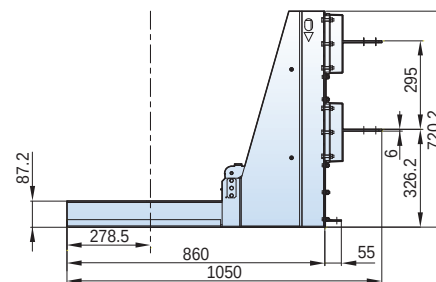
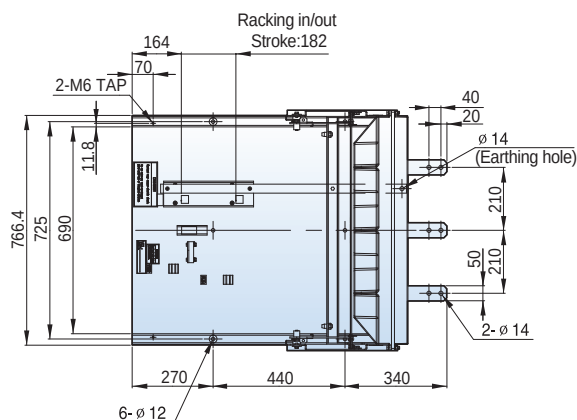
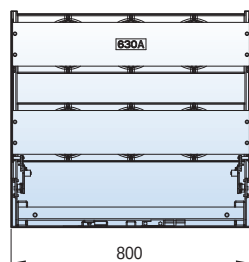
12/17.5kV, 20/25kA, 630A

Withdrawable

■ Compatible with existing F cradle, phase distance 210mm

Type

VCL-12F20F06
VCL-12F25F06
VCL-17F20F06
VCL-17F25F06



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

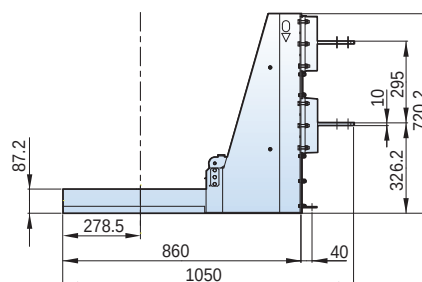
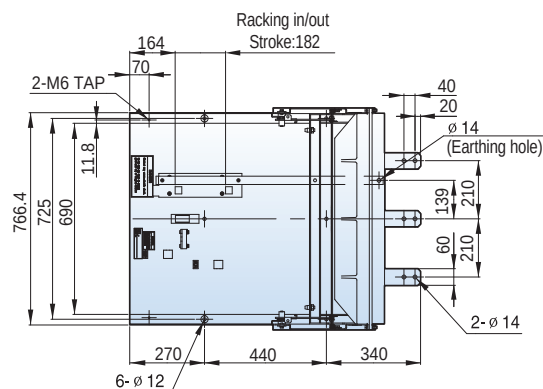
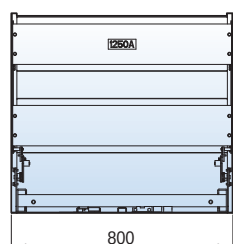
12/17.5kV, 20/25kA, 1250A

Withdrawable

■ Compatible with existing F cradle, phase distance 210mm

Type

VCL-12F20F13
VCL-12F25F13
VCL-17F20F13
VCL-17F25F13



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

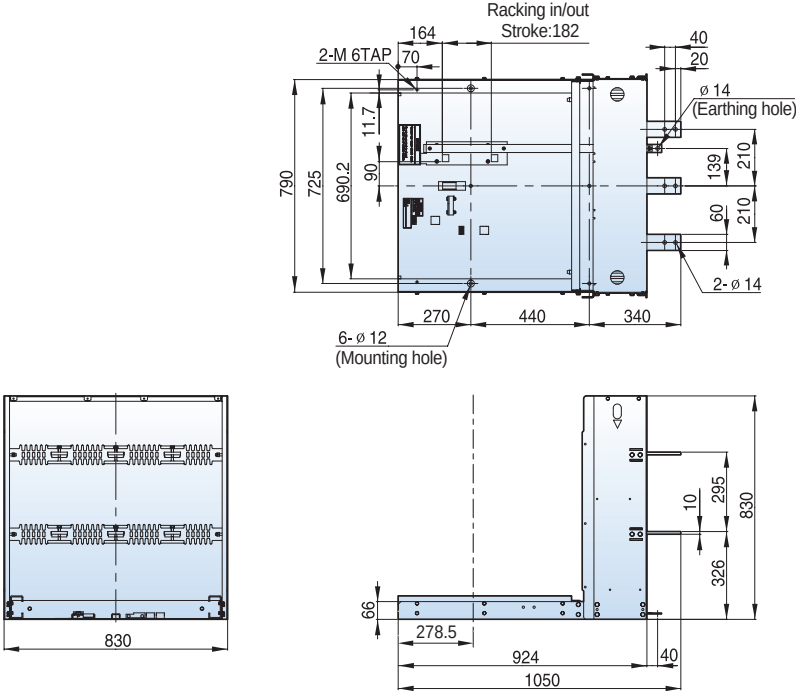
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ E type cradle, phase distance 210mm

Type
VCL-12E20B06
VCL-12E25B06
VCL-12E20B13
VCL-12E25B13
VCL-17E20B06
VCL-17E25B06
VCL-17E20B13
VCL-17E25B13

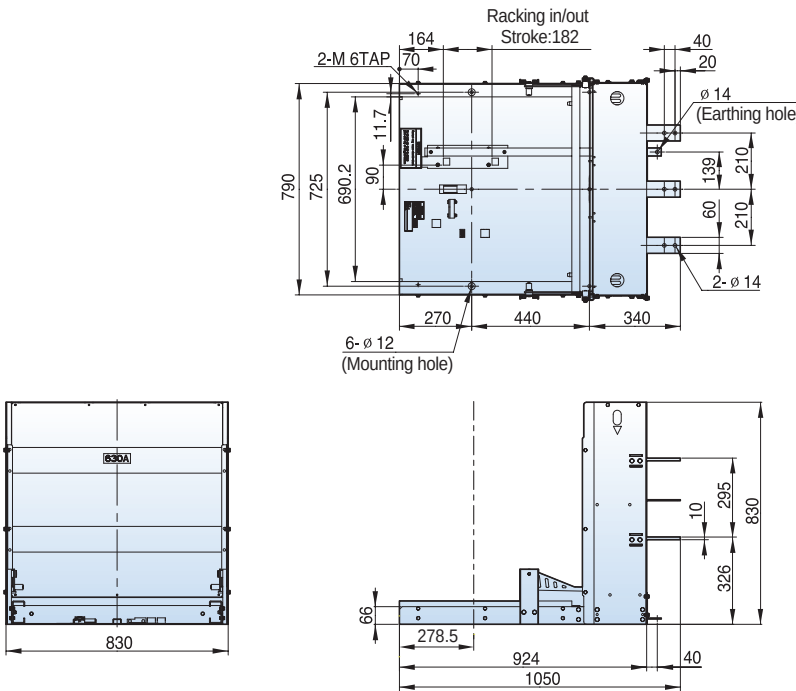


* Please be informed that the switchgear IP cover has to be back of - - - mark.

Withdrawable

■ F type cradle, phase distance 210mm

Type
VCL-12F20B06
VCL-12F25B06
VCL-12F20B13
VCL-12F25B13
VCL-17F20B06
VCL-17F25B06
VCL-17F20B13
VCL-17F25B13



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

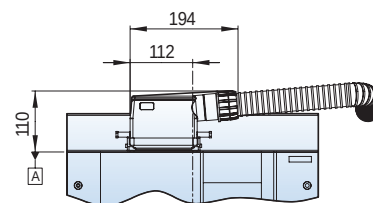
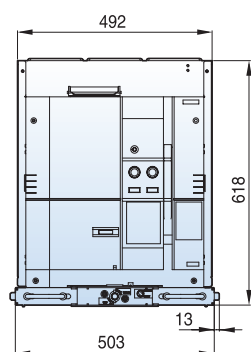
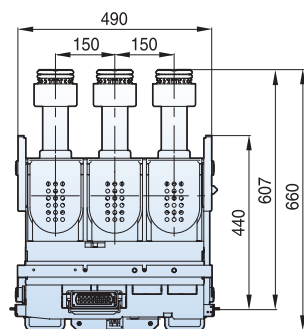
12/17.5kV, 20/25kA, 630/1250A

Withdrawable

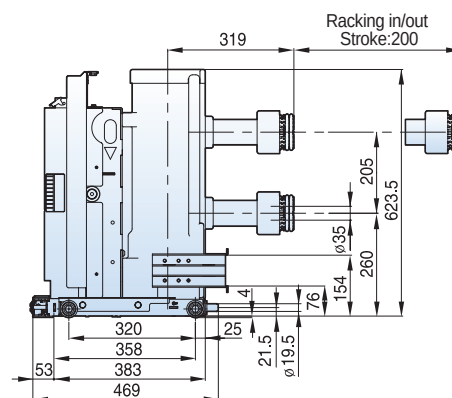
■ H type unit, phase distance 150mm

Type

VL-12H20A06
VL-12H25A06
VL-12H20A13
VL-12H25A13
VL-17H20A06
VL-17H25A06
VL-17H20A13
VL-17H25A13



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

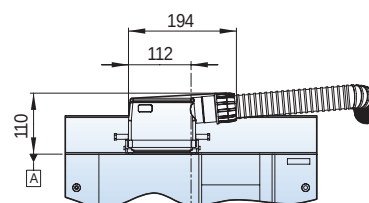
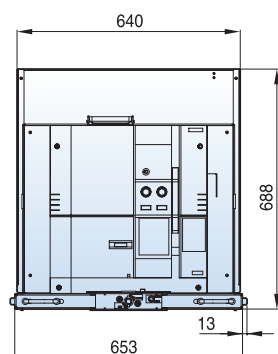
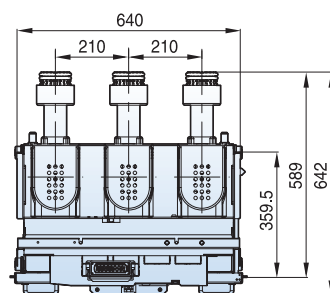


Withdrawable

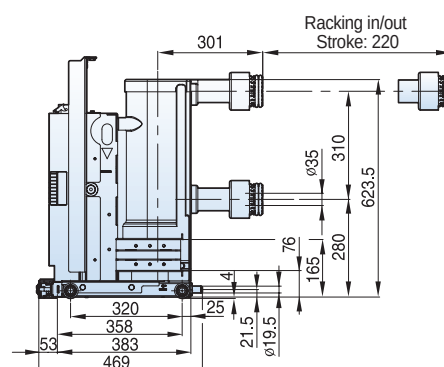
■ H type unit, phase distance 210mm

Type

VL-12H20B06
VL-12H25B06
VL-12H20B13
VL-12H25B13
VL-17H20B06
VL-17H25B06
VL-17H20B13
VL-17H25B13



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



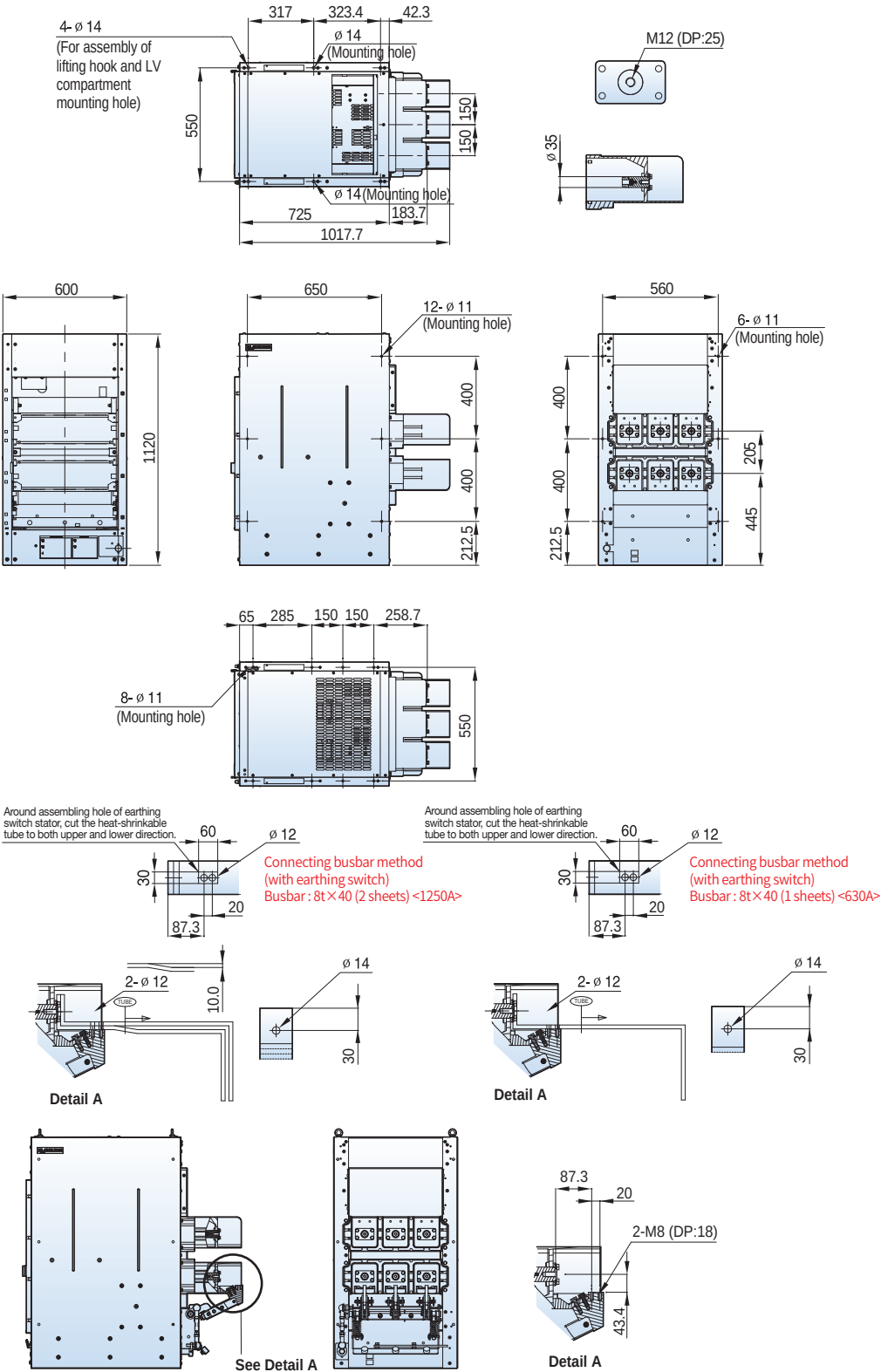
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ H type cradle, phase distance 150mm

Type
VCL-12H20A06
VCL-12H25A06
VCL-12H20A13
VCL-12H25A13
VCL-17H20A06
VCL-17H25A06
VCL-17H20A13
VCL-17H25A13



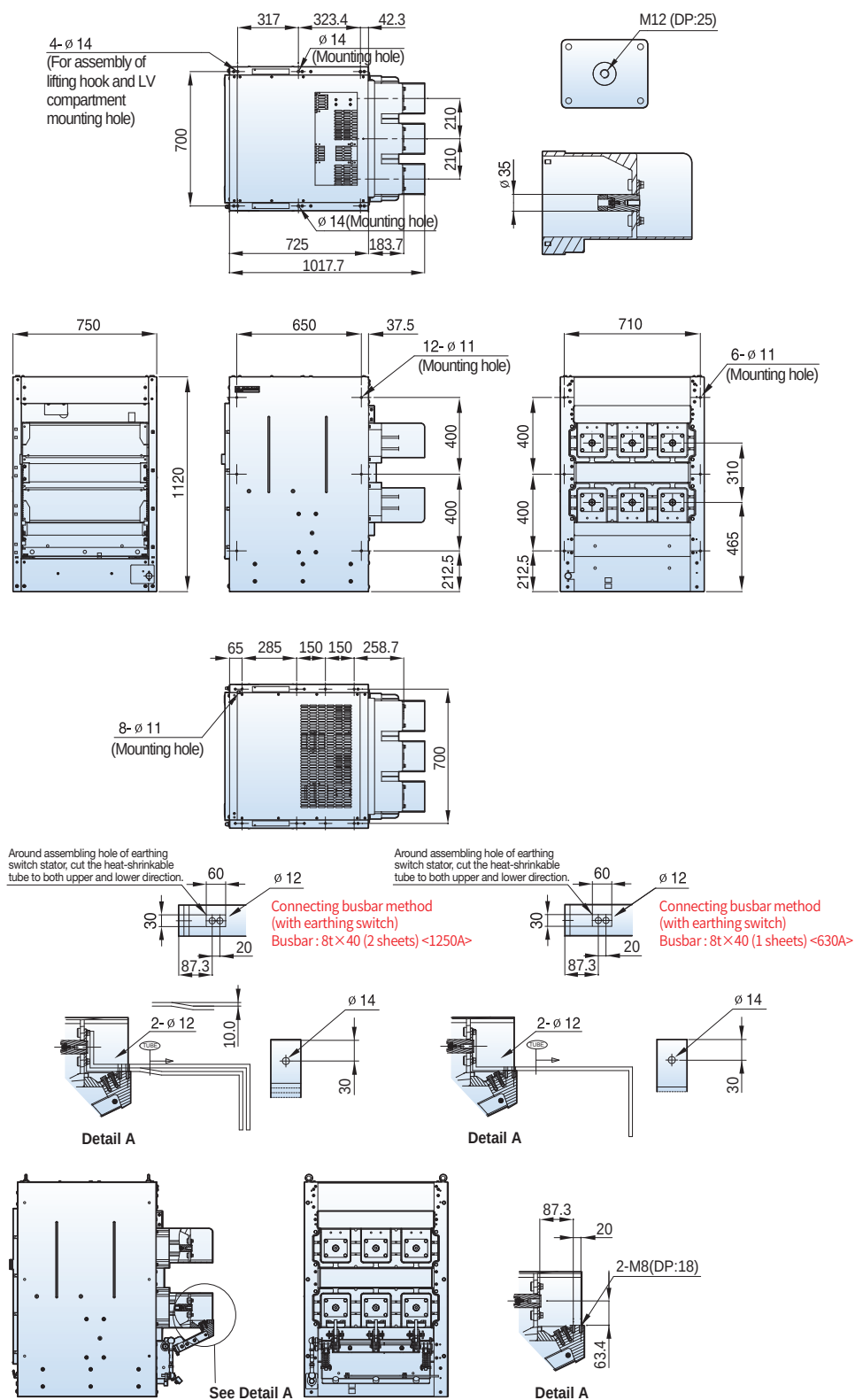
12/17.5kV, 20/25kA, 630/1250A

Withdrawable

■ H type cradle, phase distance 210mm

Type

VCL-12H20B06
VCL-12H25B06
VCL-12H20B13
VCL-12H25B13
VCL-17H20B06
VCL-17H25B06
VCL-17H20B13
VCL-17H25B13



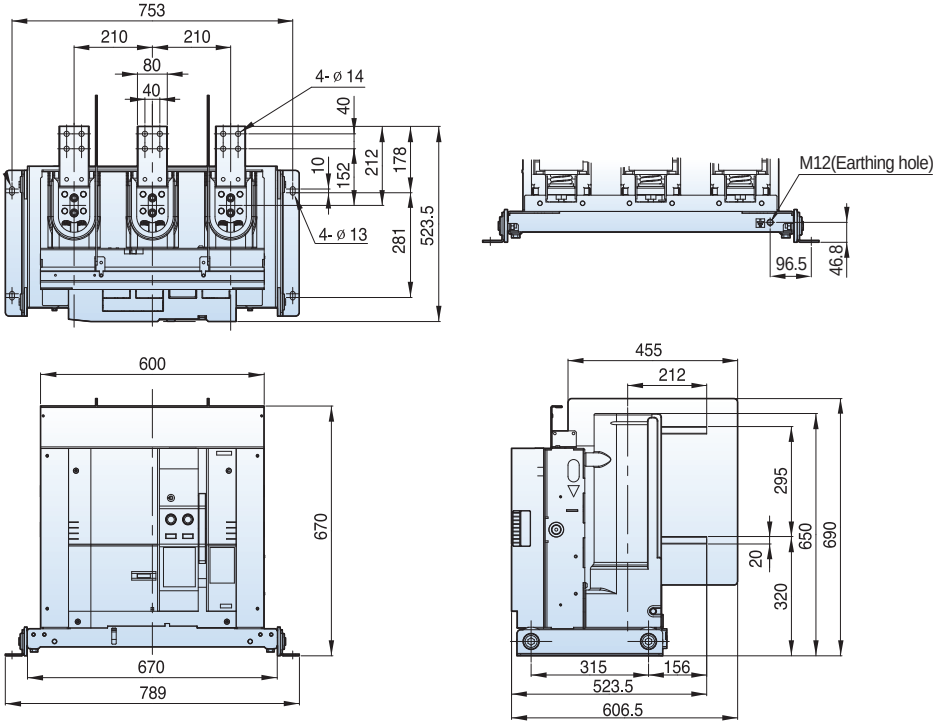
Dimensions - VL type (VL-06/12/17)

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

Fixed

■ P type, phase distance 210mm

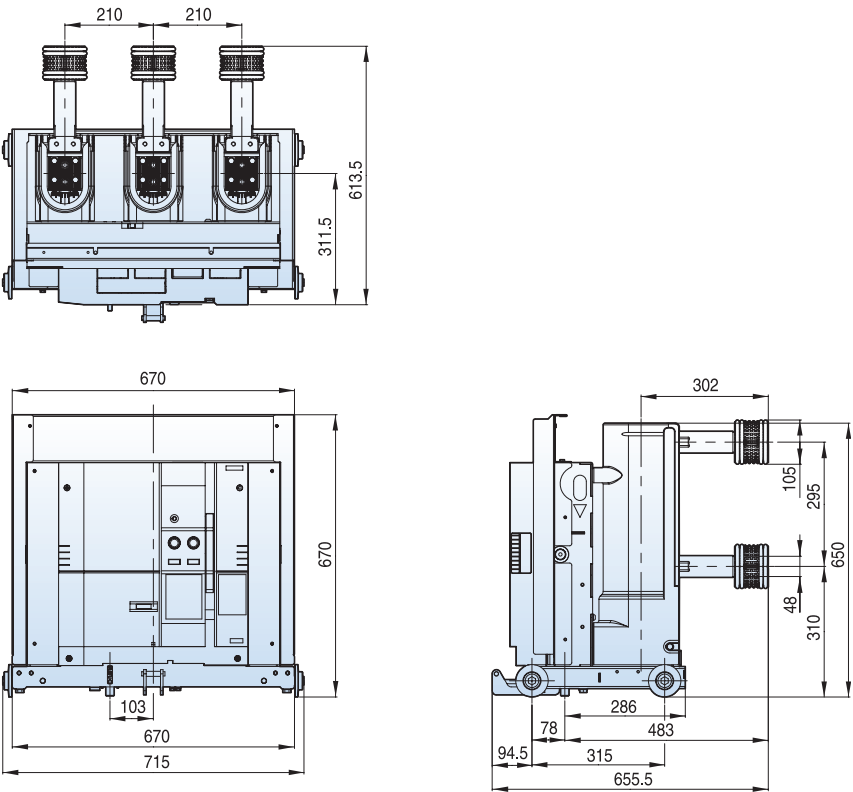
Type
VL-12P20B20
VL-12P25B20
VL-17P20B20
VL-17P25B20



Withdrawable

■ E type unit, phase distance 210mm

Type
VL-12E20B20
VL-12E25B20
VL-17E20B20
VL-17E25B20



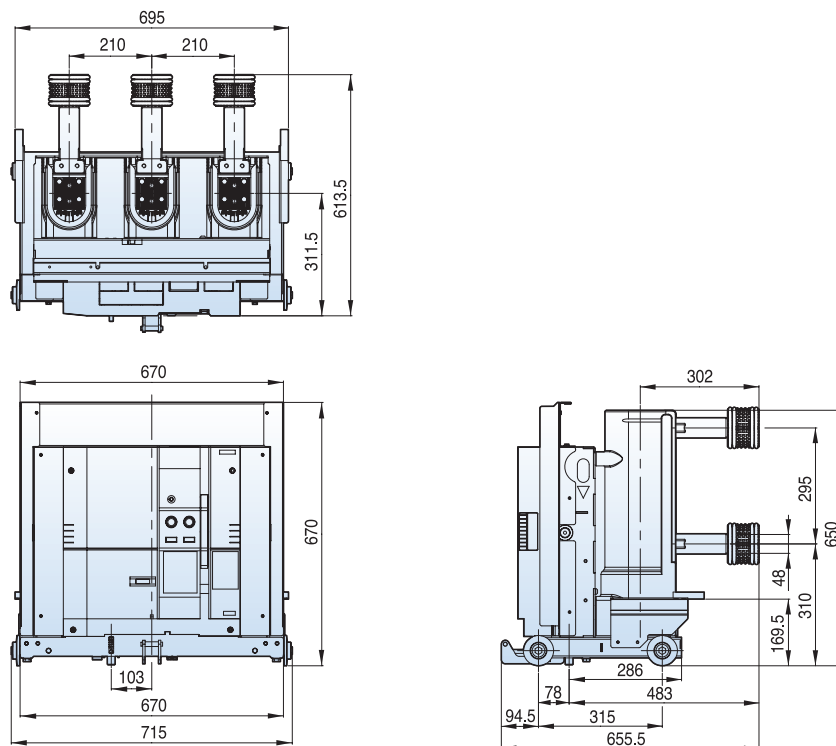
12/17.5kV, 20/25kA, 2000A

Withdrawable

■ F type unit, phase distance 210mm

Type

VL-12F20B20
VL-12F25B20
VL-17F20B20
VL-17F25B20

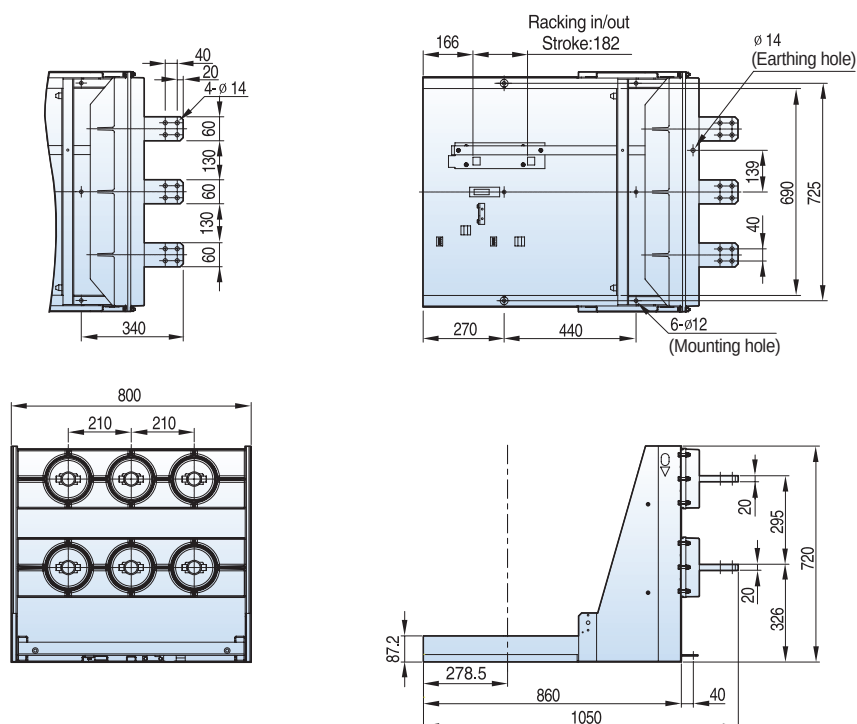


Withdrawable

■ E type cradle, phase distance 210mm

Type

VCL-12E20B20
VCL-12E25B20
VCL-17E20B20
VCL-17E25B20



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

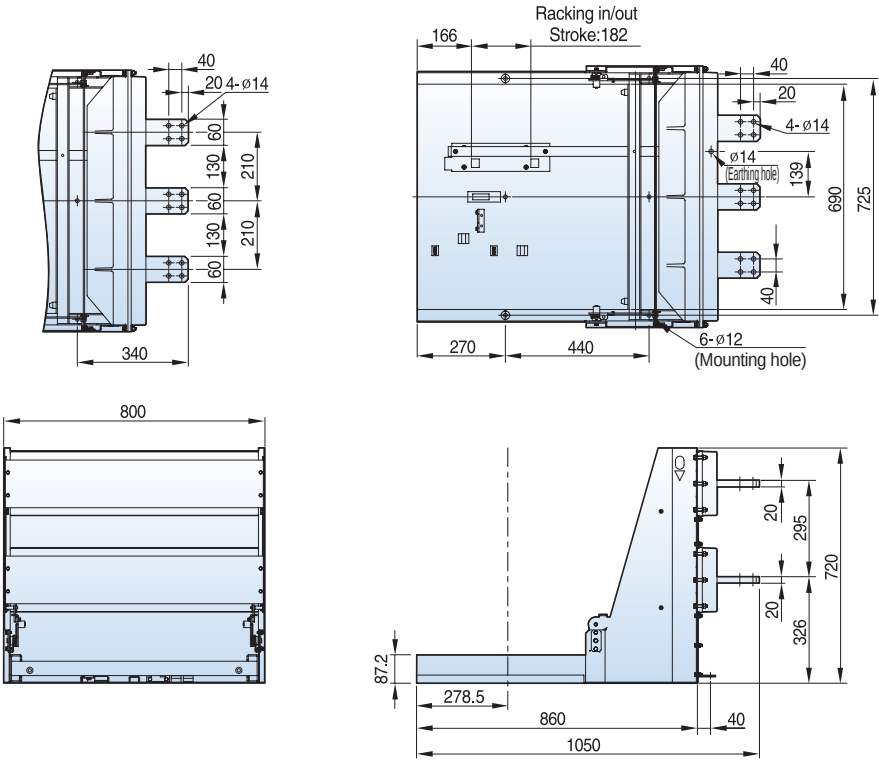
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ F type cradle, phase distance 210mm

Type
VCL-12F20B20
VCL-12F25B20
VCL-17F20B20
VCL-17F25B20



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

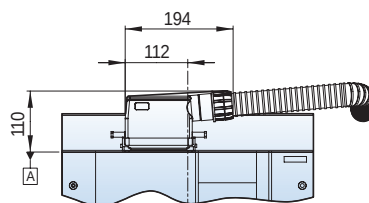
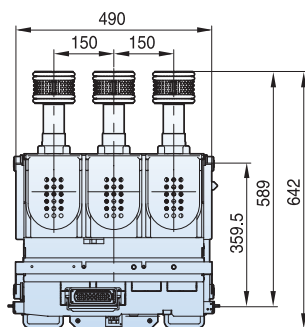
12/17.5kV, 20/25kA, 2000A

Withdrawable

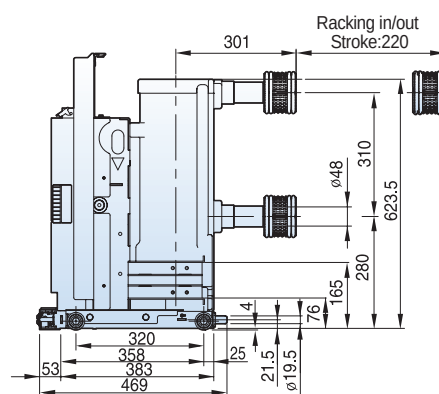
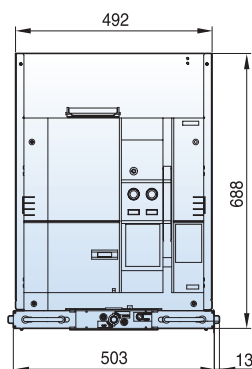
■ H type unit, phase distance 150mm

Type

VL-12H20A20
VL-12H25A20
VL-17H20A20
VL-17H25A20



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

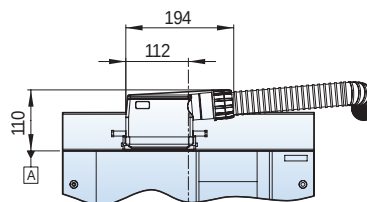
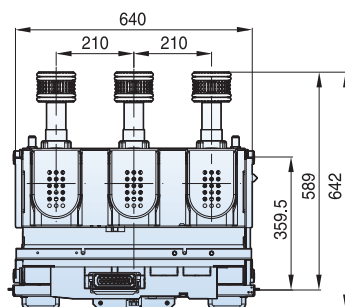


Withdrawable

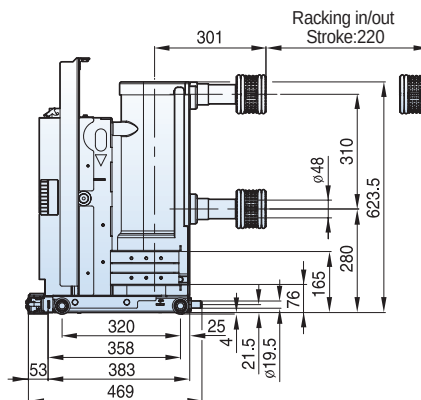
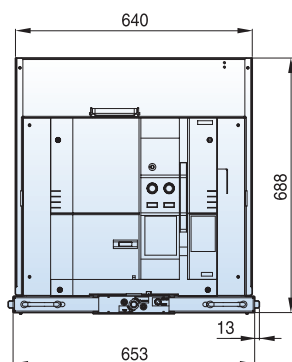
■ H type unit, phase distance 210mm

Type

VL-12H20B20
VL-12H25B20
VL-17H20B20
VL-17H25B20



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



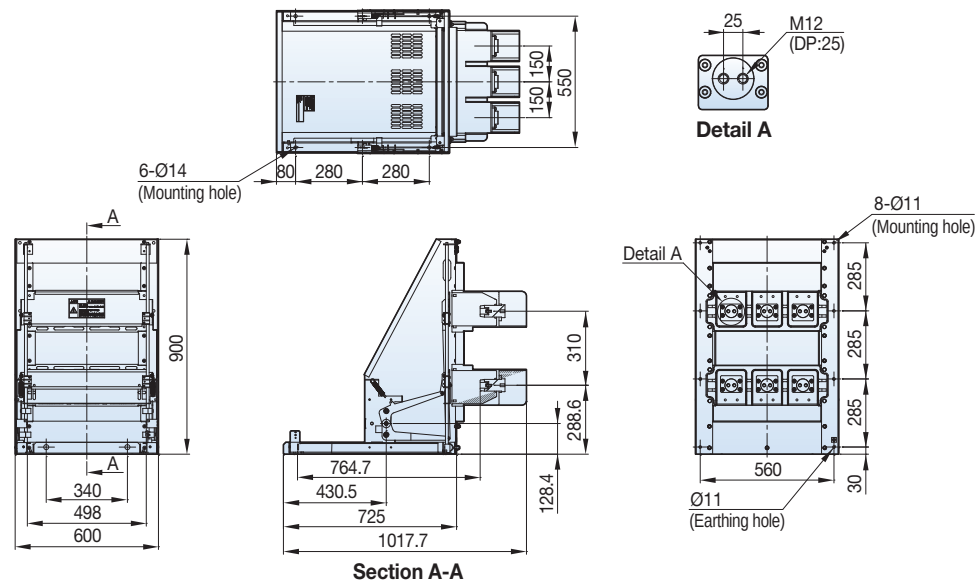
Dimensions - VL type (VL-06/12/17)

12kV, 20/25kA, 2000A

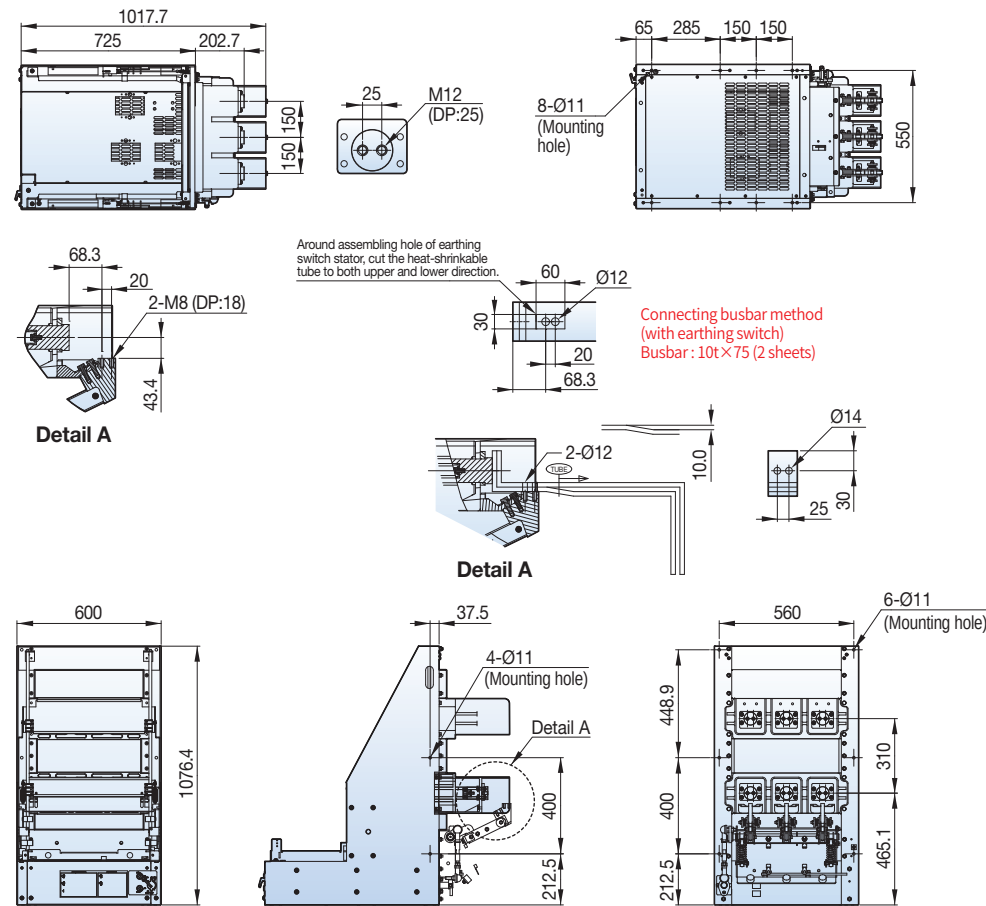
Withdrawable

Type
VCL-12Ha20A20
VCL-12Ha25A20

■ Ha type cradle, phase distance 150mm



■ Ha type cradle, phase distance 150mm (Earthing S/W Option type)



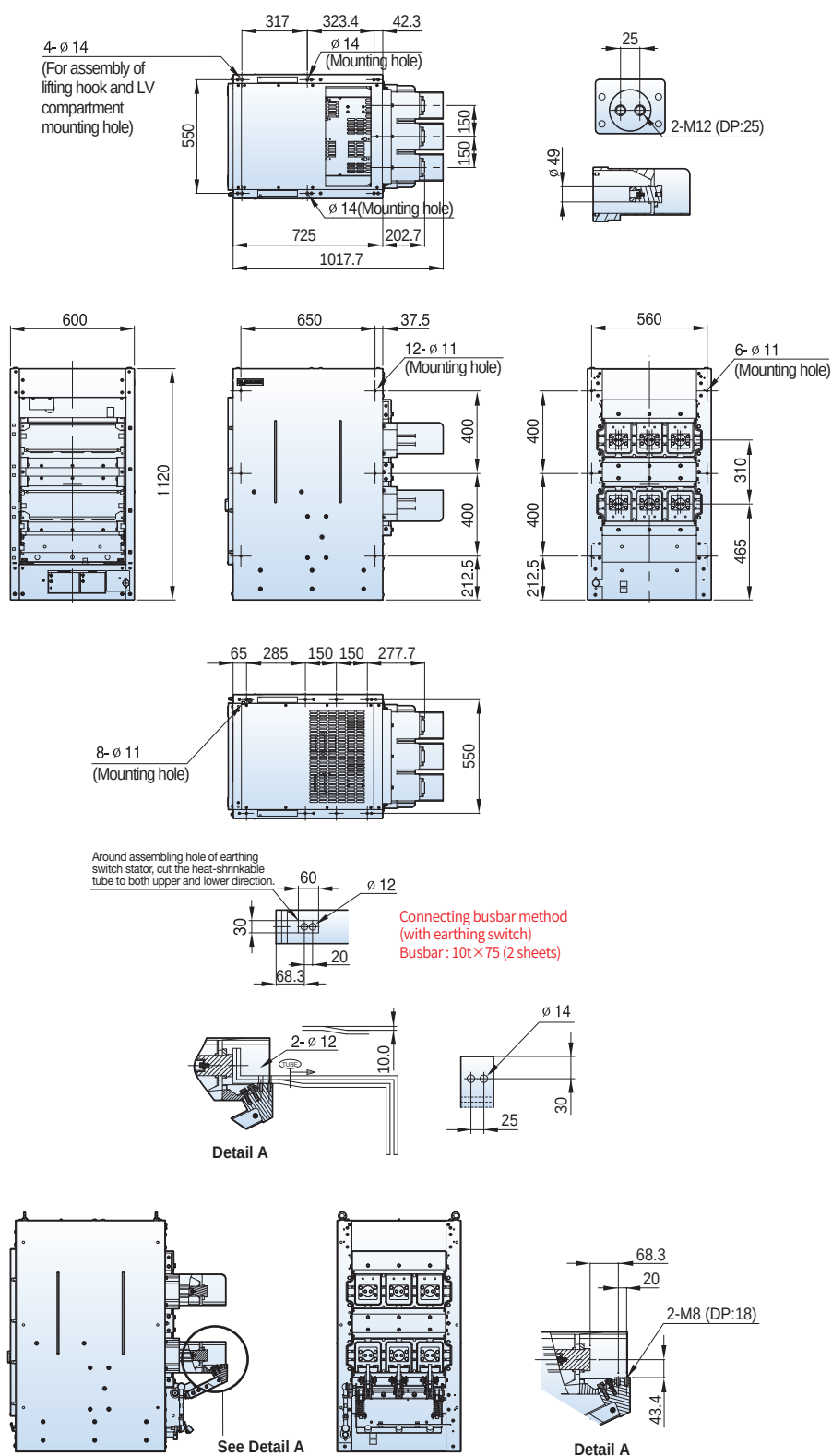
12/17.5kV, 20/25kA, 2000A

Withdrawable

■ H type cradle, phase distance 150mm

Type

VCL-12H20A20
VCL-12H25A20
VCL-17H20A20
VCL-17H25A20



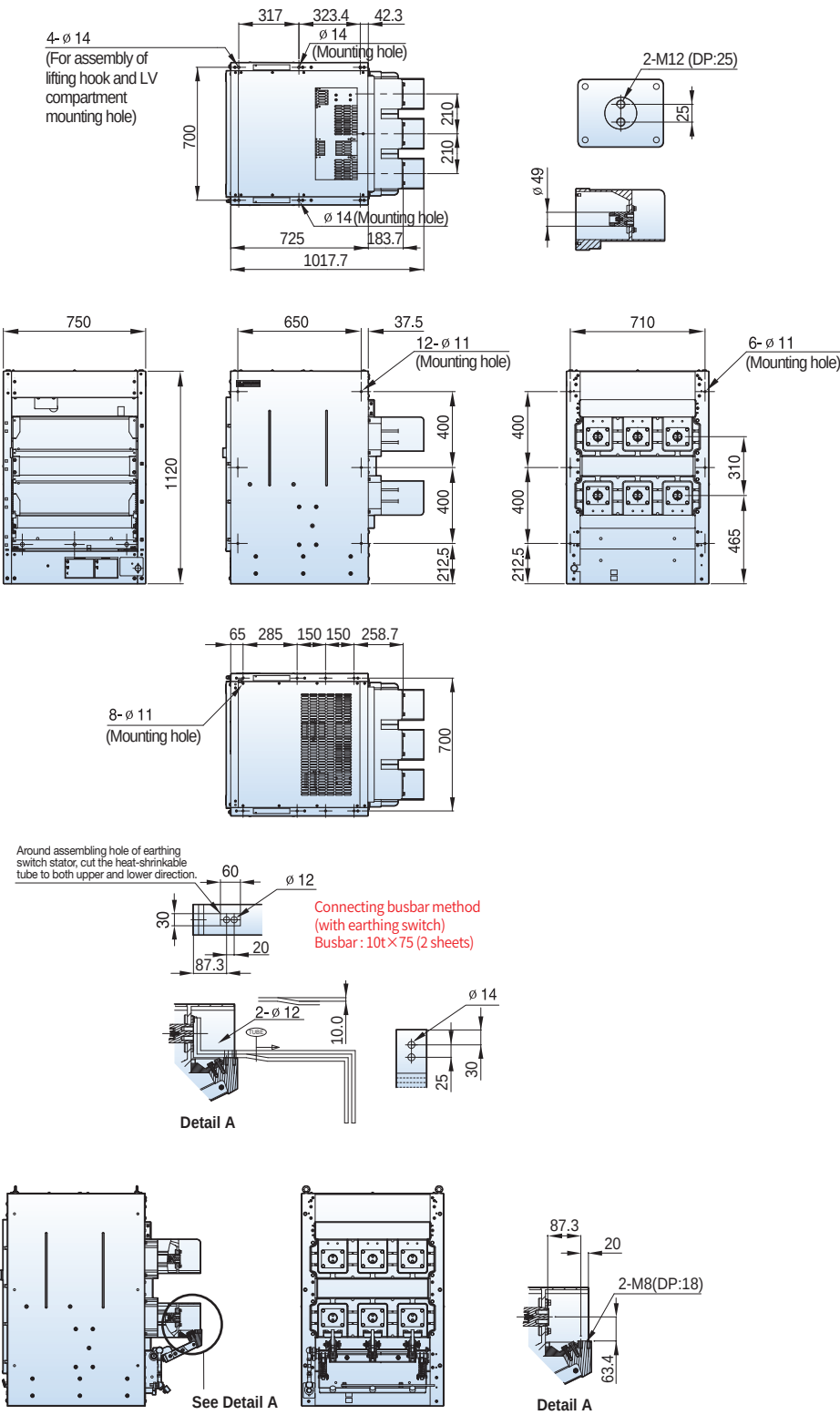
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ H type cradle, phase distance 210mm

Type
VCL-12H20B20
VCL-12H25B20
VCL-17H20B20
VCL-17H25B20



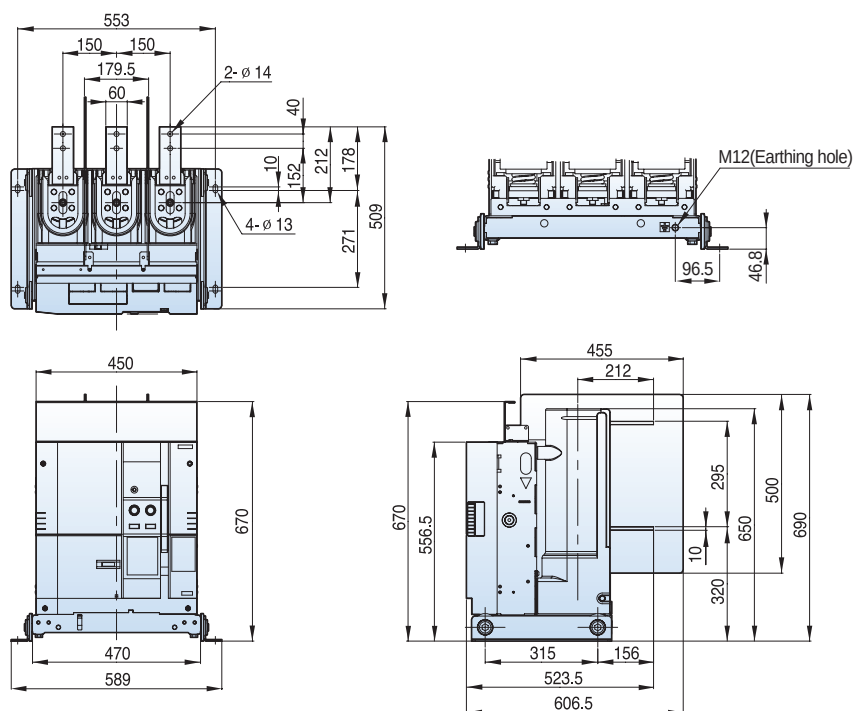
12/17.5kV, 31.5kA, 630/1250A

Fixed

■ P type, phase distance 150mm

Type

VL-12P32A06
VL-12P32A13
VL-17P32A06
VL-17P32A13

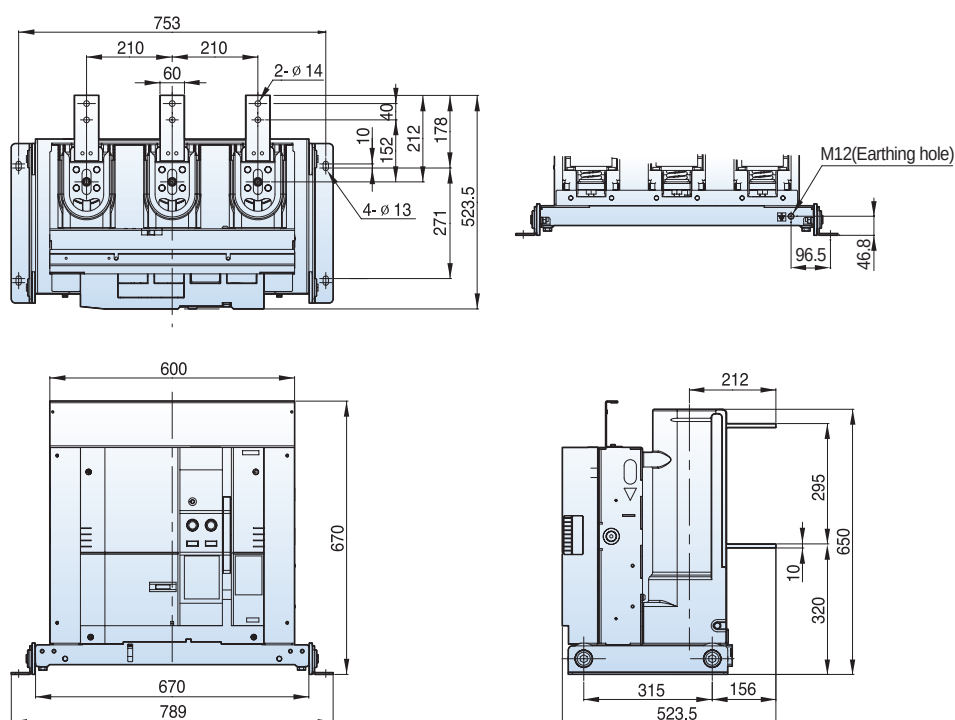


Fixed

■ P type, phase distance 210mm

Type

VL-12P32B06
VL-12P32B13
VL-17P32B06
VL-17P32B13



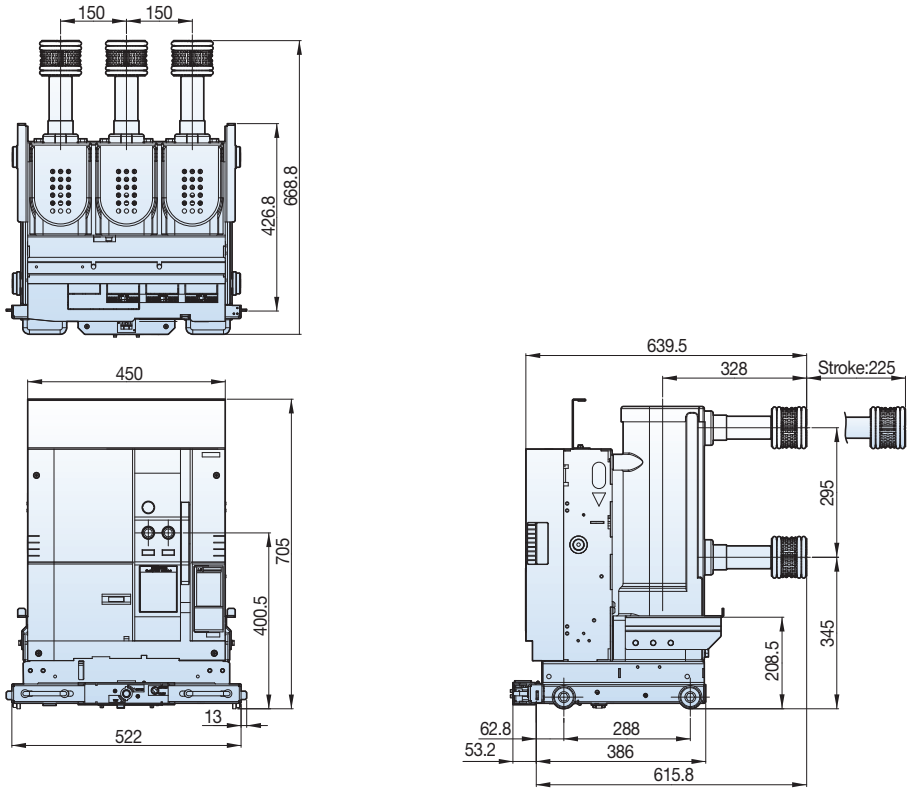
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ Gs type unit, phase distance 150mm

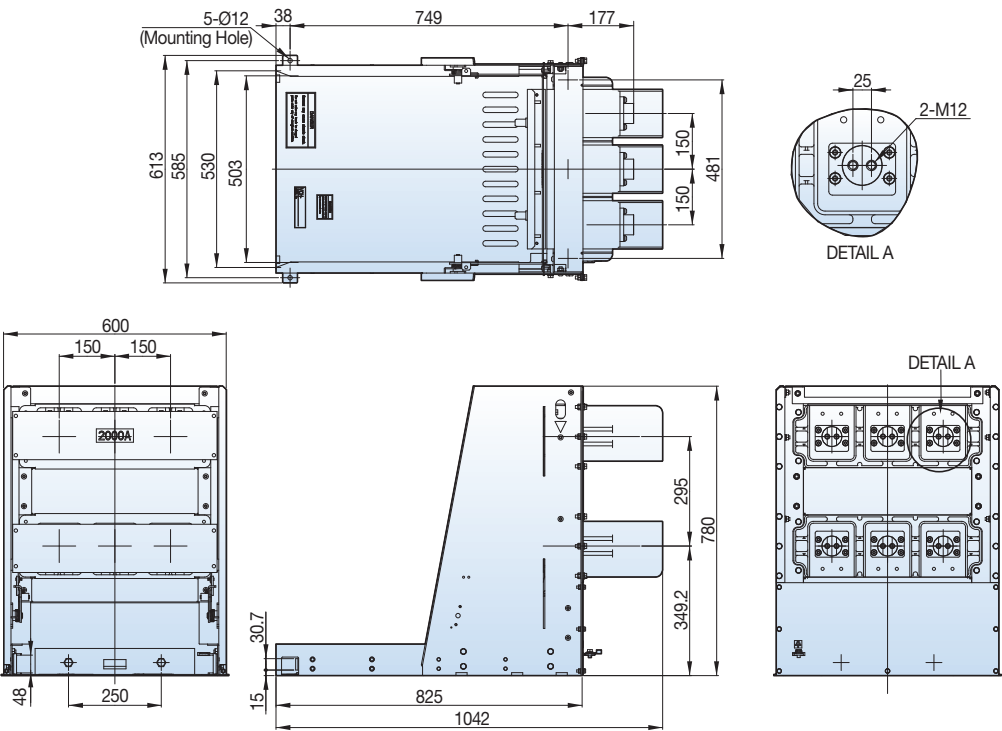
Type
VL-06Gs32A13
VL-06Gs32A20
VL-12Gs32A13
VL-12Gs32A20



Withdrawable

■ Gs type cradle, phase distance 150mm

Type
VCL-06Gs32A13
VCL-06Gs32A20
VCL-12Gs32A13
VCL-12Gs32A20



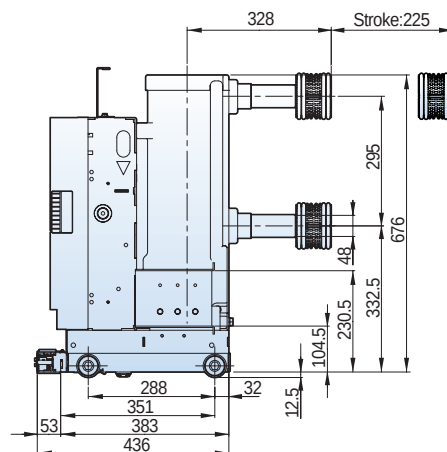
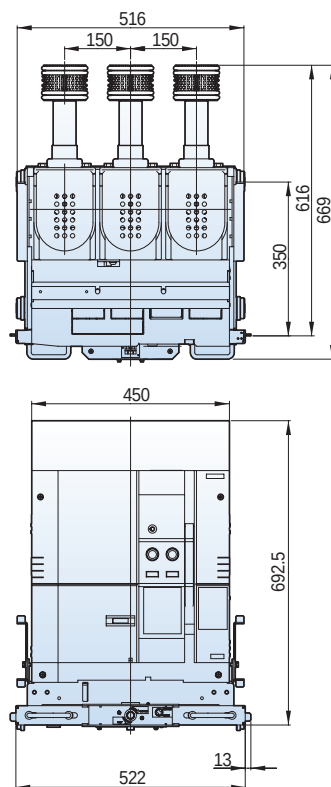
12kV, 31.5kA, 1250A

Withdrawable

■ K type unit T type, phase distance 150mm

Type

VL-12K32K13

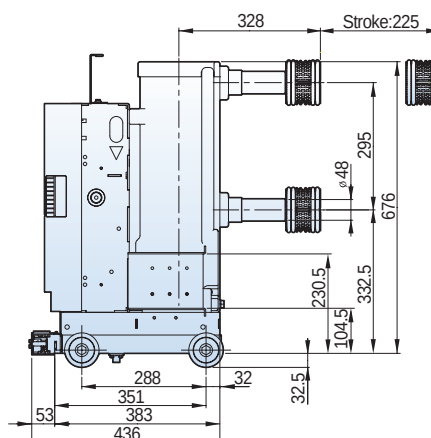
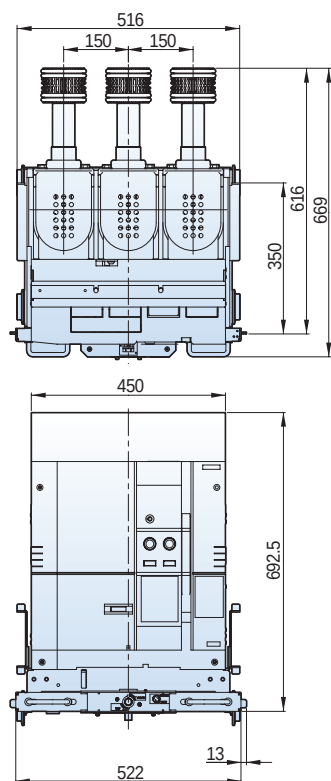


Withdrawable

■ K type unit T2 type, phase distance 150mm

Type

VL-12K32A13

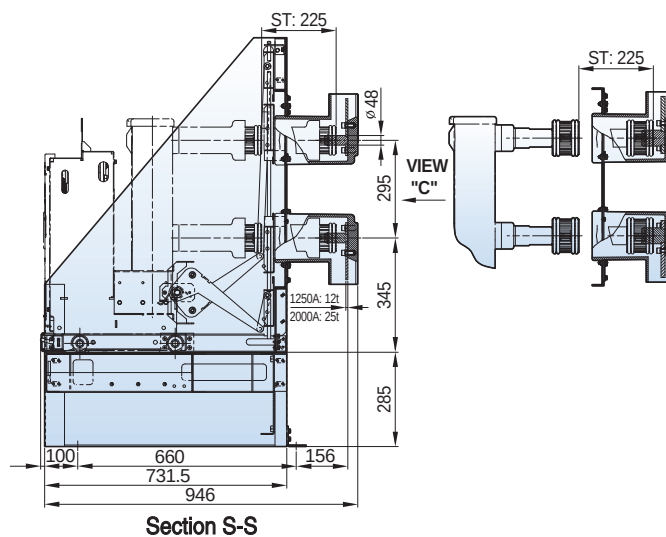
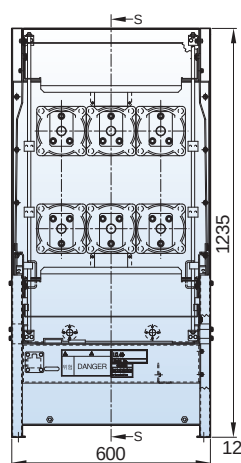
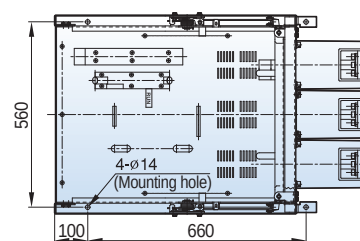


Type
VCL-12K32K13

VIEW "C-C"

2-ø 13
(Mounting hole)

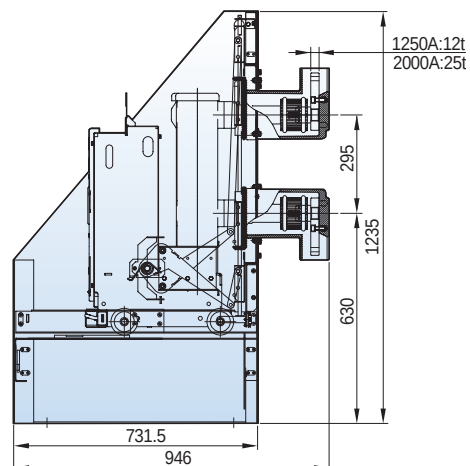
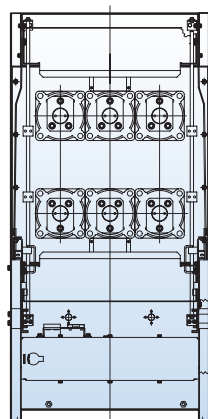
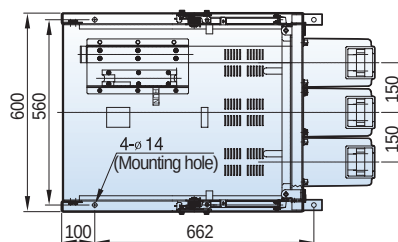
150 150 26 26 83 295



Section S-S

Type
VCL-12K32A13

Technical drawing of a three-phase motor showing dimensions in mm. The top view shows a circular base with three mounting feet. The side view shows the motor's profile. Dimensions include: 150 mm for the distance between mounting feet, 60 mm for the mounting foot height, 26 mm for the mounting foot width, 26 mm for the mounting foot thickness, 83 mm for the mounting foot depth, and 150 mm for the distance between mounting feet.



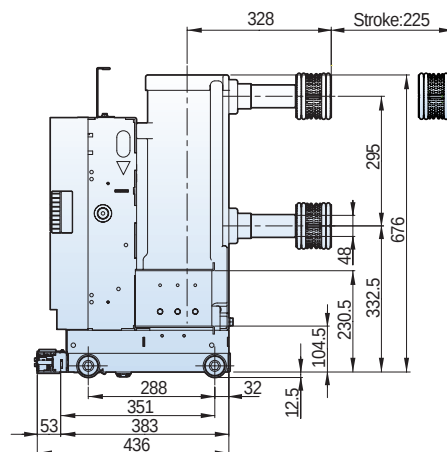
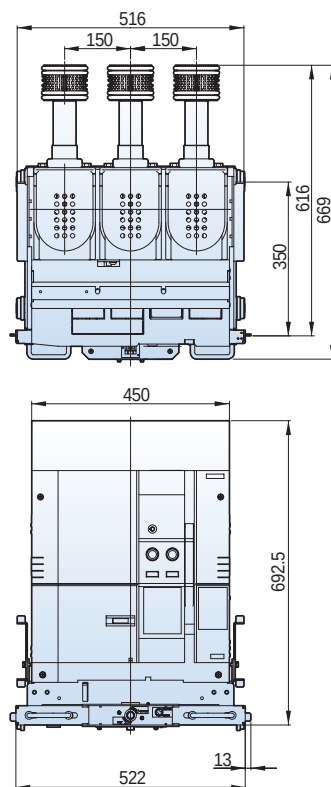
12kV, 31.5kA, 2000A

Withdrawable

■ K type unit T type, phase distance 150mm

Type

VL-12K32K20

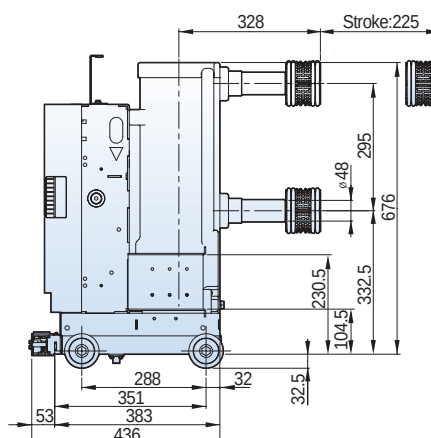
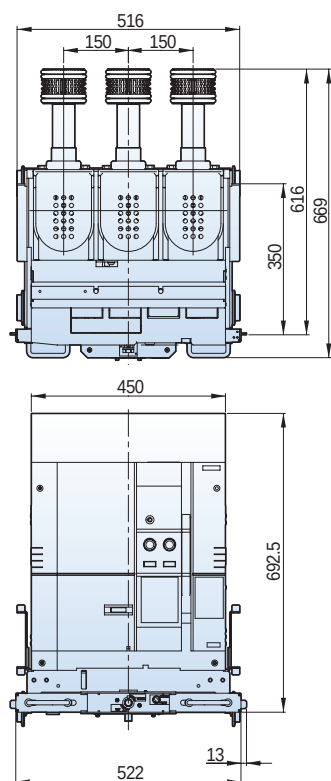


Withdrawable

■ K type unit T2 type, phase distance 150mm

Type

VL-12K32A20



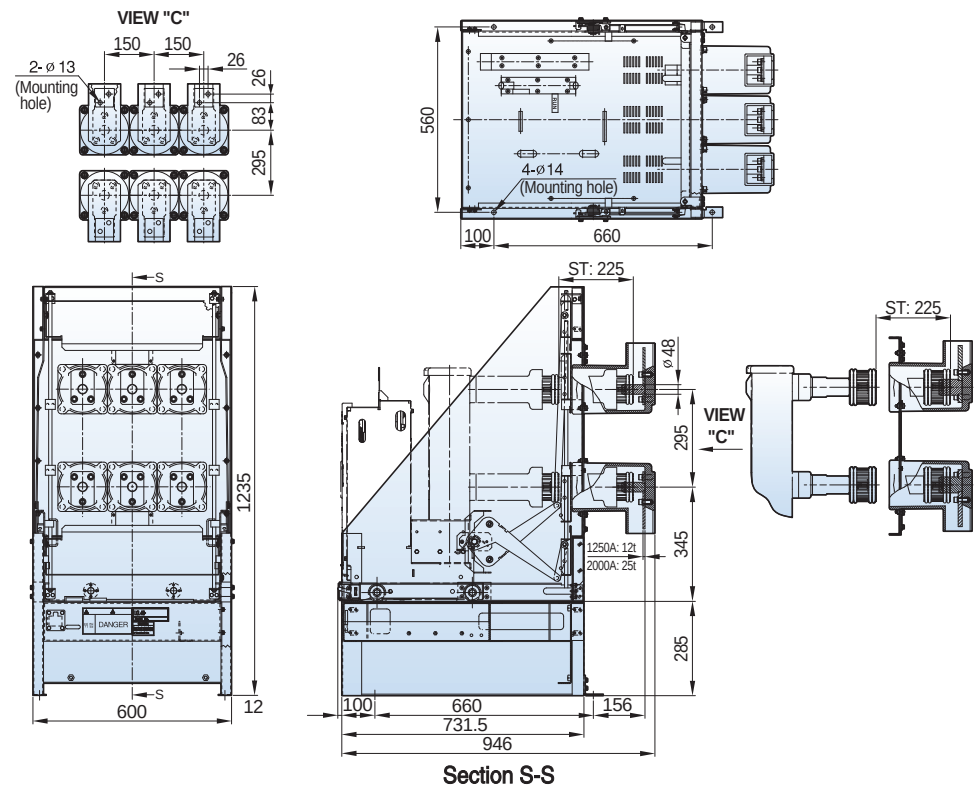
Dimensions - VL type (VL-06/12/17)

12kV, 31.5kA, 2000A

Withdrawable

Type
VCL-12K32K20

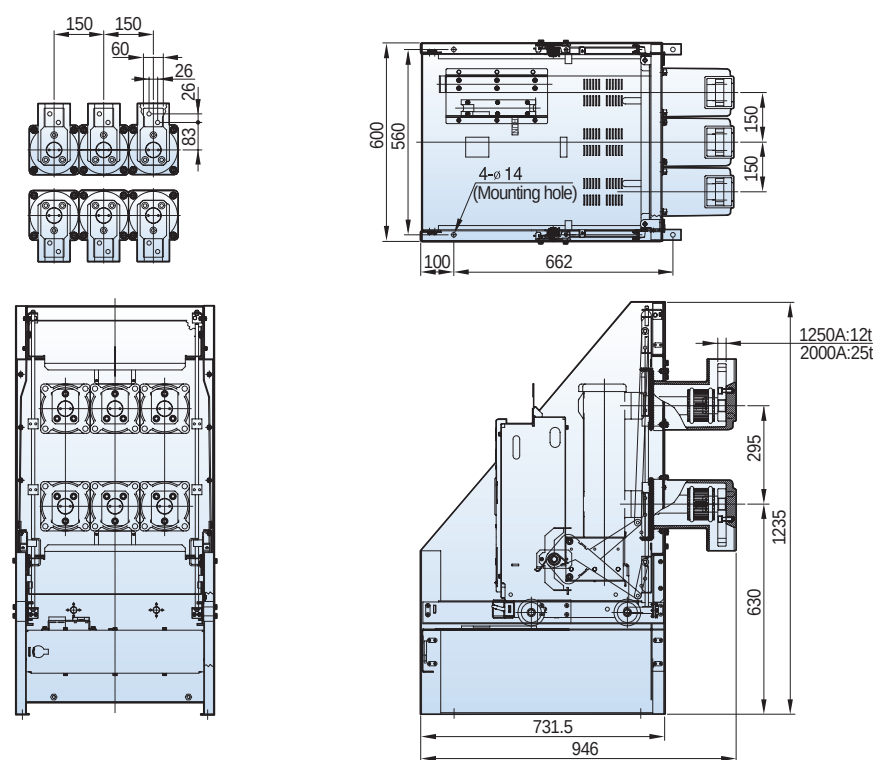
■ MCSG cradle T type, phase distance 150mm



Withdrawable

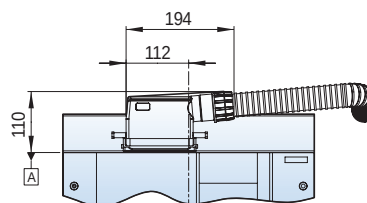
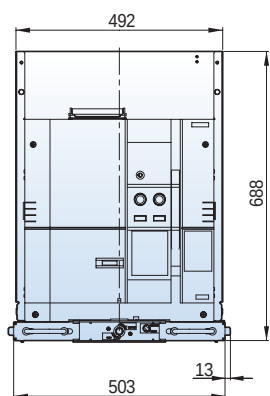
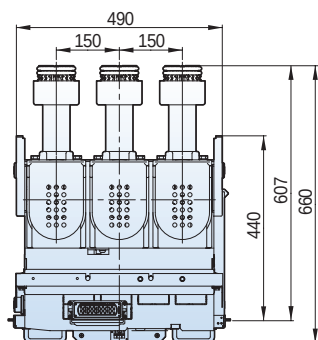
Type
VCL-12K32A20

■ MCSG cradle T2 type, phase distance 150mm

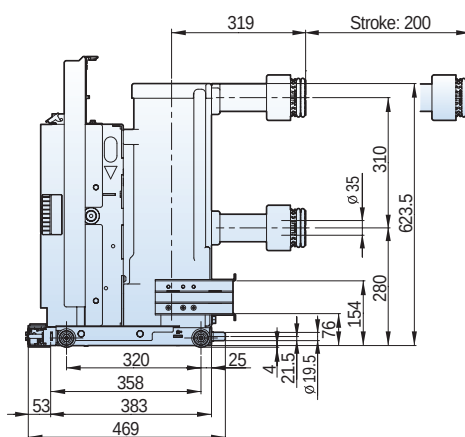


■ H type unit, phase distance 150mm

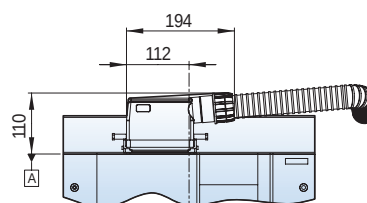
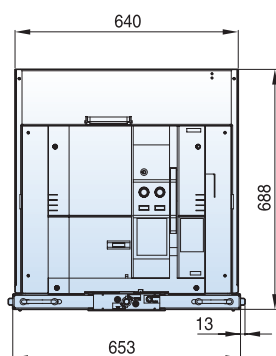
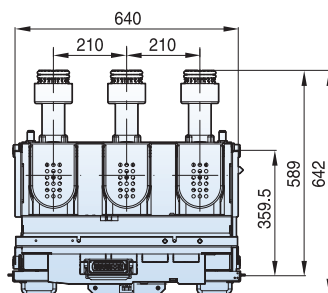
Type



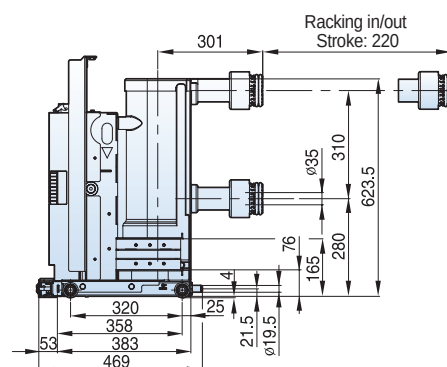
Note) Please be informed that When B-type connector is used to design switchgears, the height can be 110mm higher based on "A"



Withdrawable



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



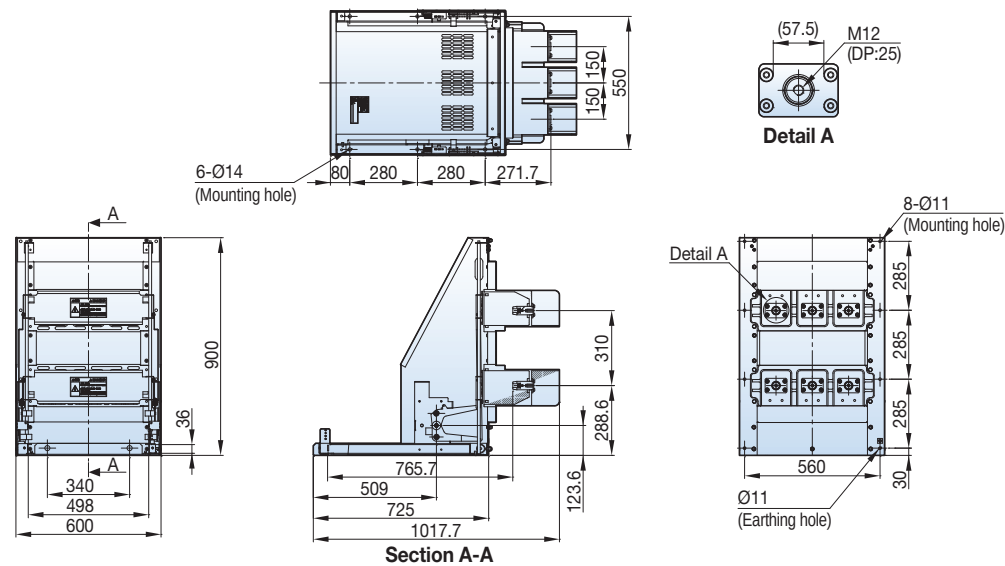
Dimensions - VL type (VL-06/12/17)

12kV, 31.5kA, 630/1250A

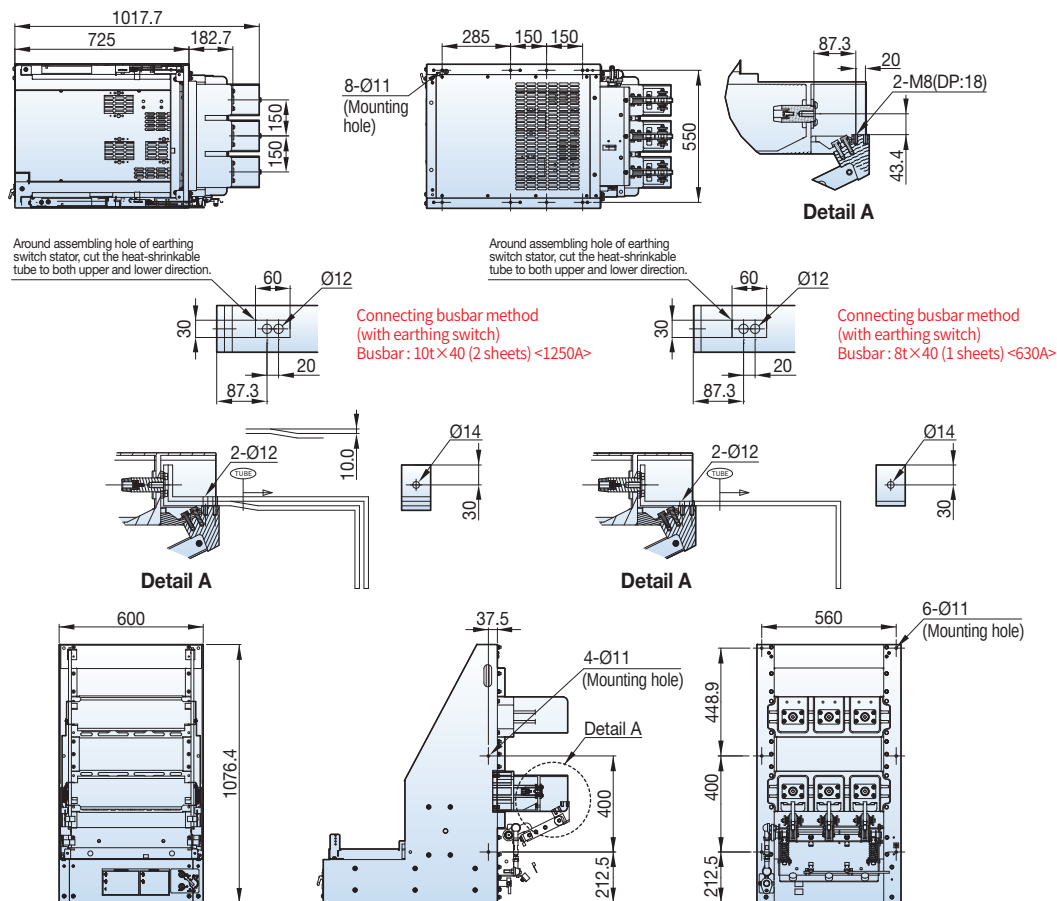
Withdrawable

Type
VCL-12Ha32A06
VCL-12Ha32A13

■ Ha type cradle, phase distance 150mm



■ Ha type cradle, phase distance 150mm (Earthing S/W Option type)



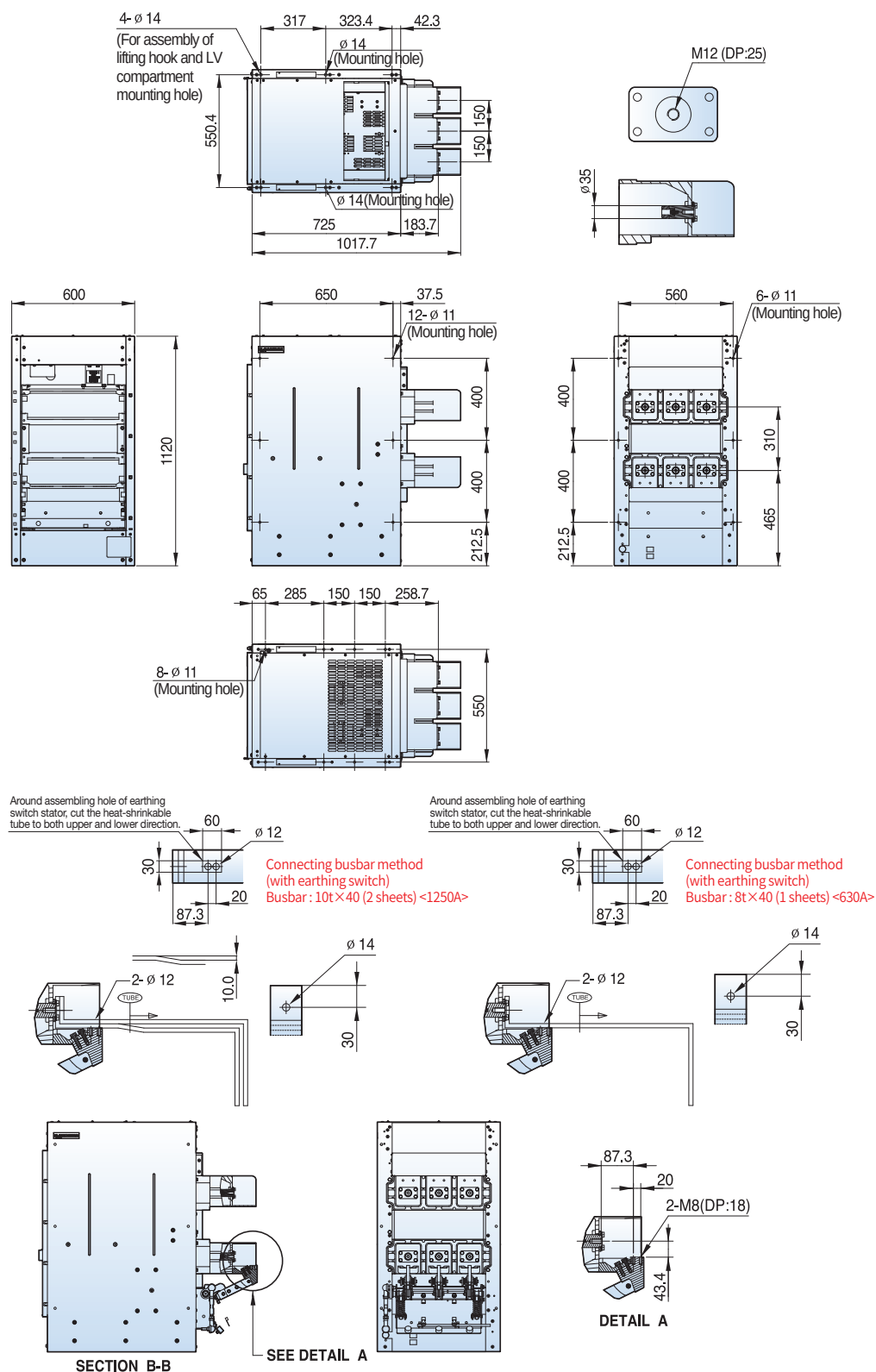
12/17.5kV, 31.5kA, 630/1250A

Withdrawable

Type

VCL-12H32A06
VCL-12H32A13
VCL-17H32A06
VCL-17H32A13

■ H type cradle, phase distance 150mm



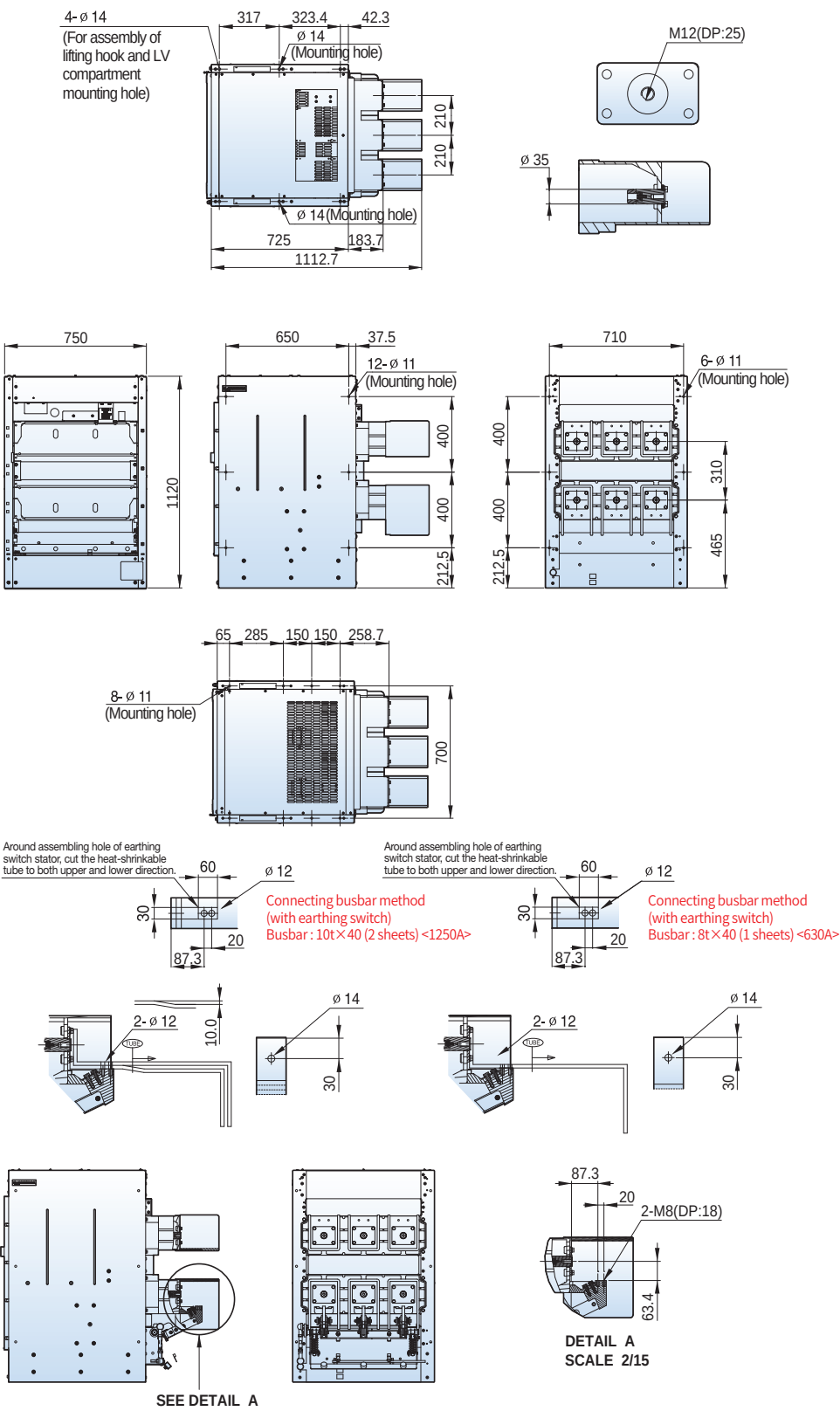
Dimensions - VL type (VL-06/12/17)

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

Withdrawable

■ H type cradle, phase distance 210mm

Type
VCL-12H32B06
VCL-12H32B13
VCL-17H32B06
VCL-17H32B13



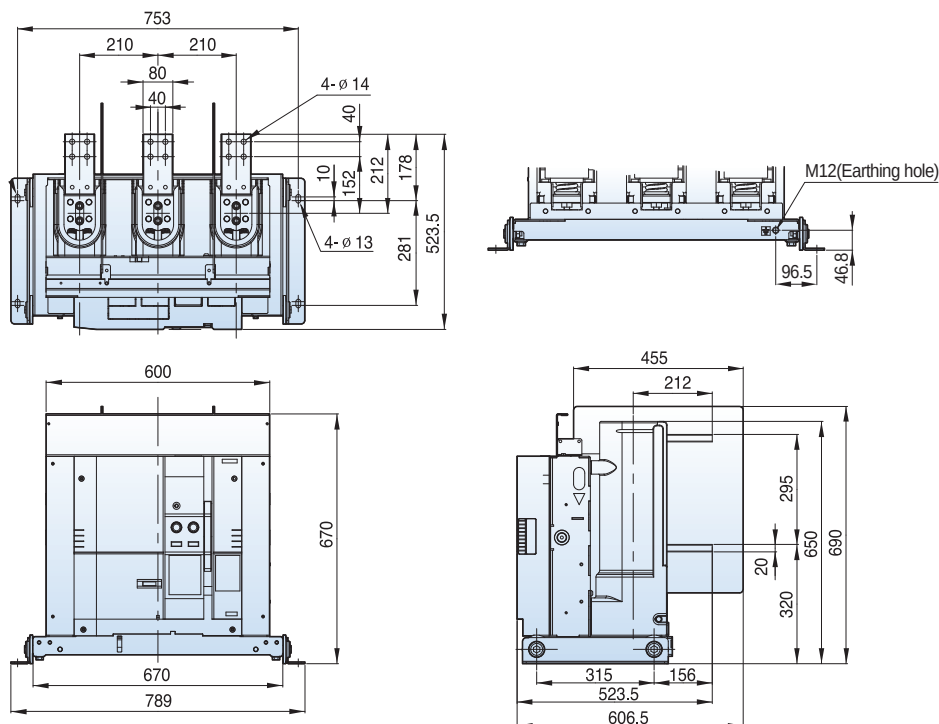
12/17.5kV, 31.5kA, 2000A

Fixed

■ P type, phase distance 210mm

Type

VL-12P32B20
VL-17P32B20

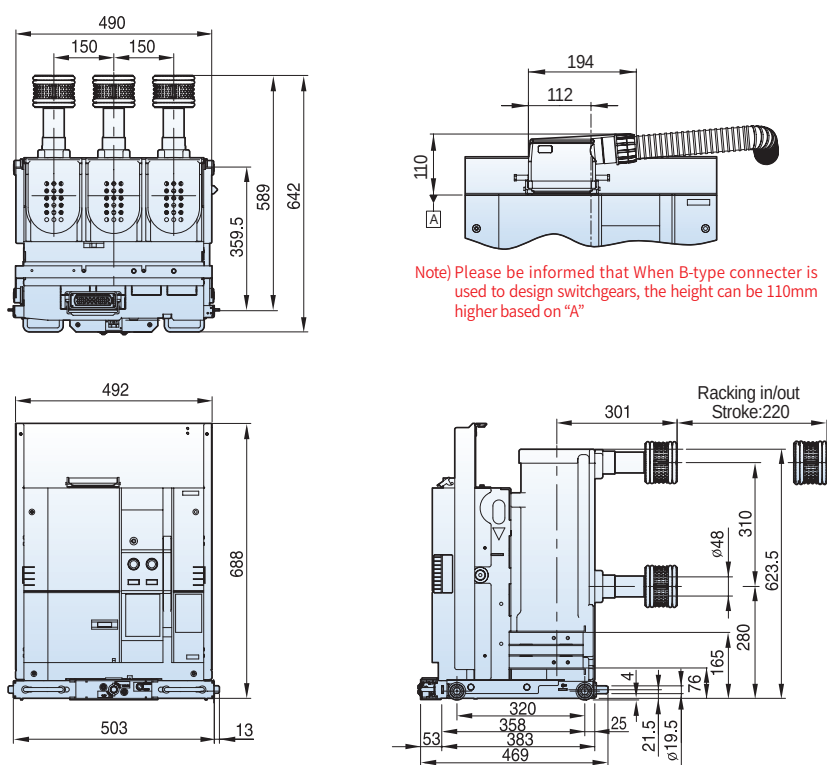


Withdrawable

■ H type unit, phase distance 150mm

Type

VL-12H32A20
VL-17H32A20



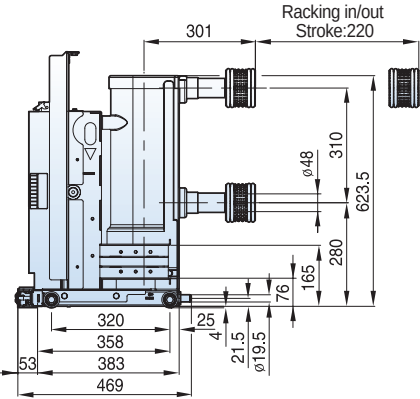
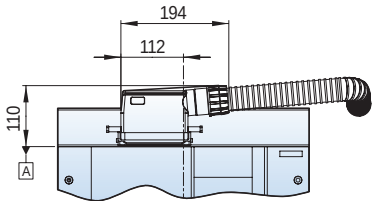
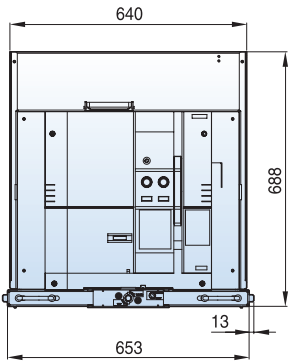
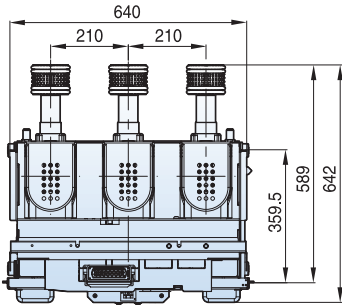
Dimensions - VL type (VL-06/12/17)

12/17.5kV, 31.5kA, 2000A

Withdrawable

■ H type unit, phase distance 210mm

Type
VL-12H32B20
VL-17H32B20



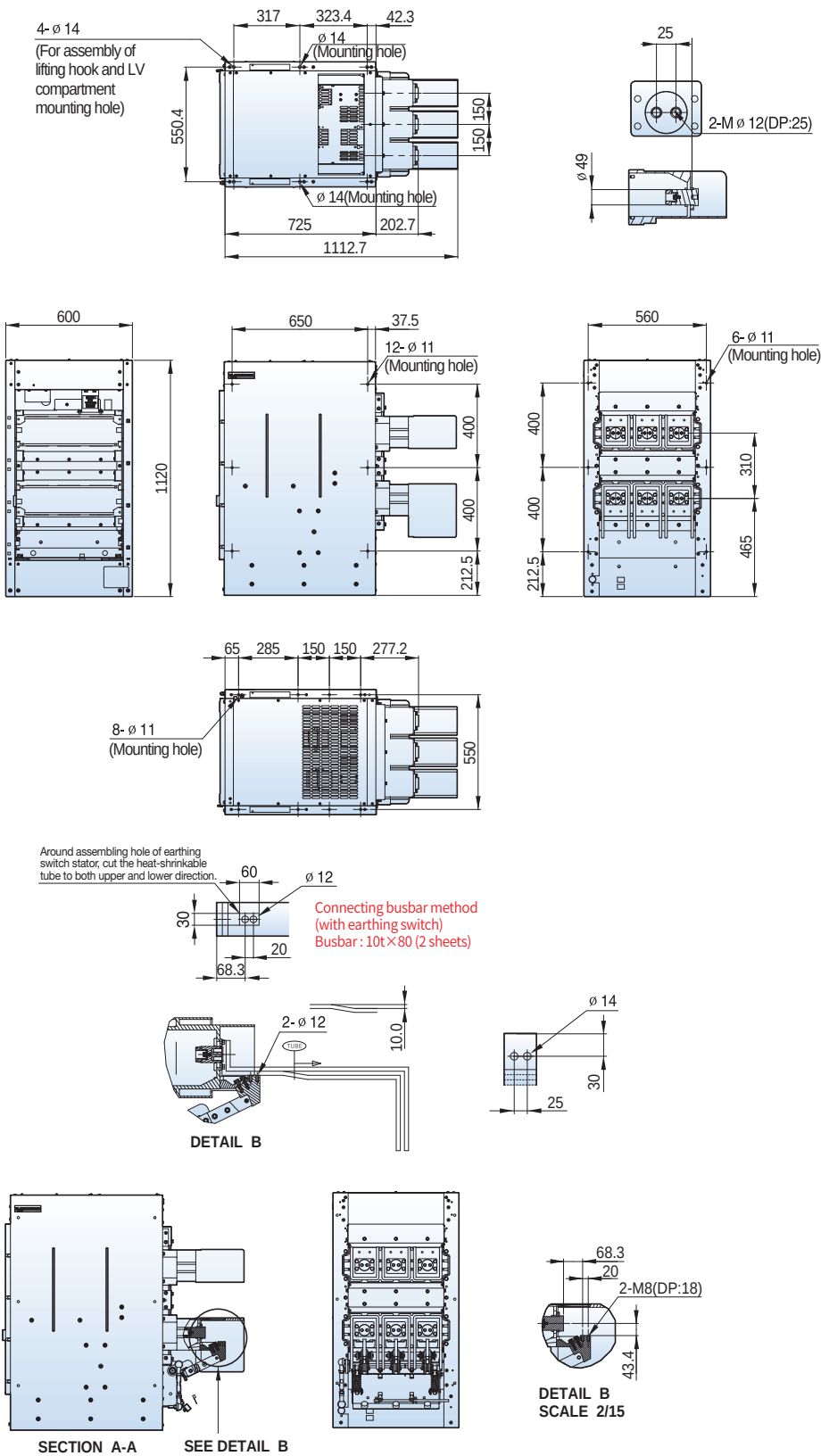
Dimensions - VL type (VL-06/12/17)

12/17.5kV, 31.5kA, 2000A

Withdrawable

■ H type cradle, phase distance 150mm

Type
VCL-12H32A20
VCL-17H32A20



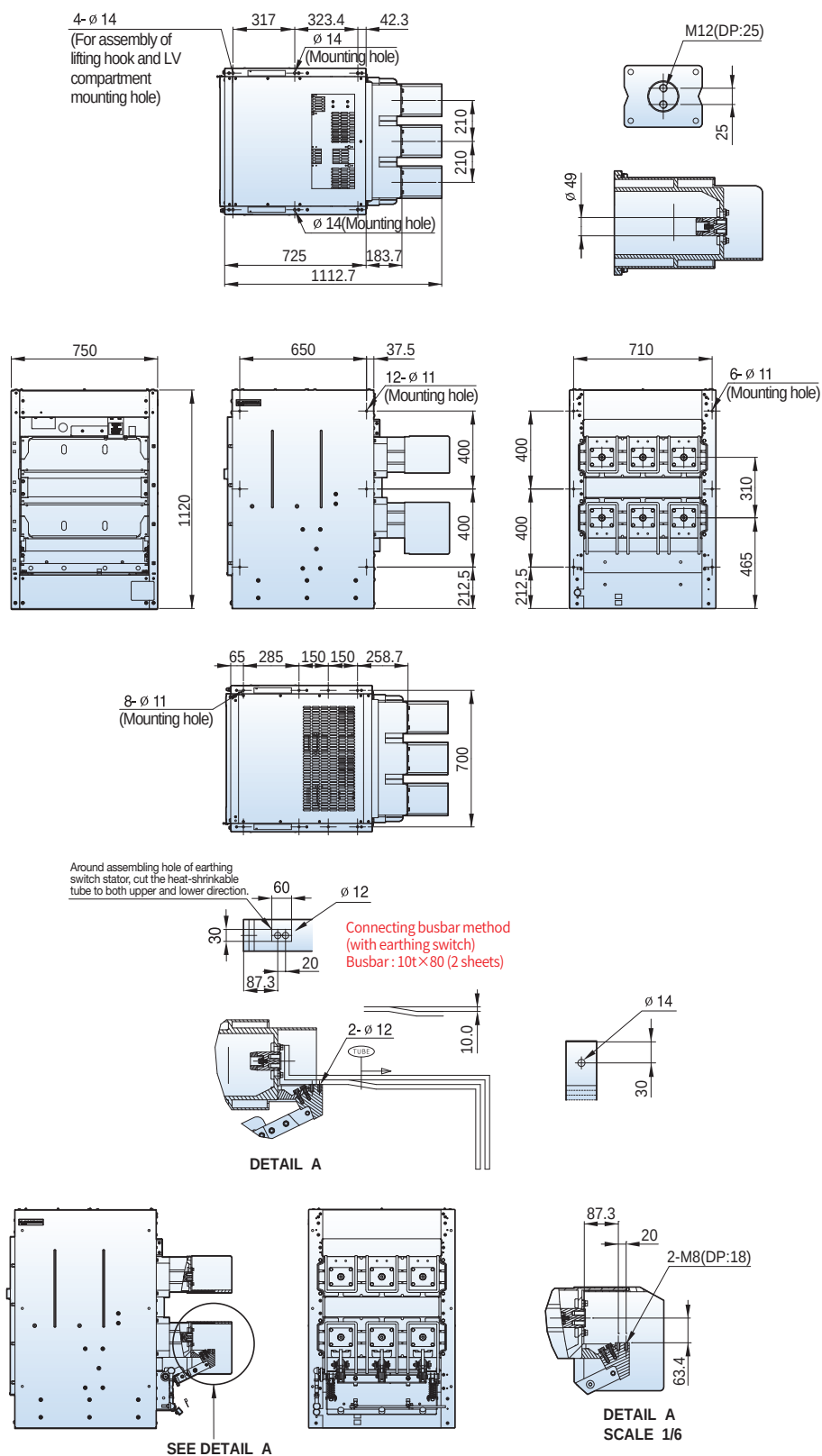
12/17.5kV, 31.5kA, 2000A

Withdrawable

Type

VCL-12H32B20
VCL-17H32B20

■ H type cradle, phase distance 210mm



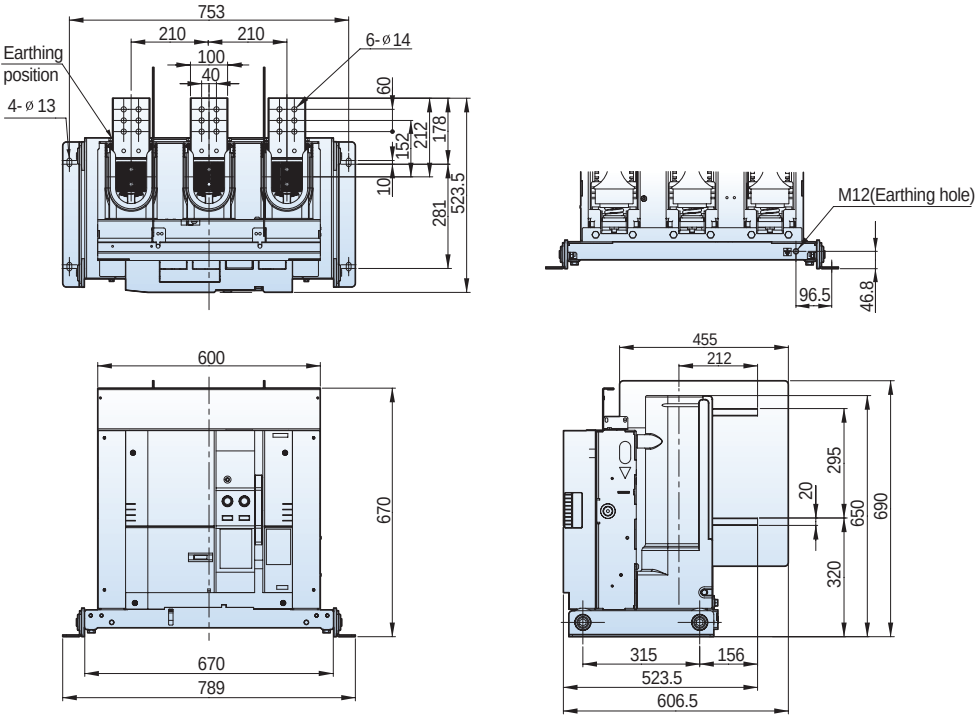
Dimensions - VL type (VL-06/12/17)

12/17.5kV, 31.5kA, 2500A

Fixed

■ P type, phase distance 210mm

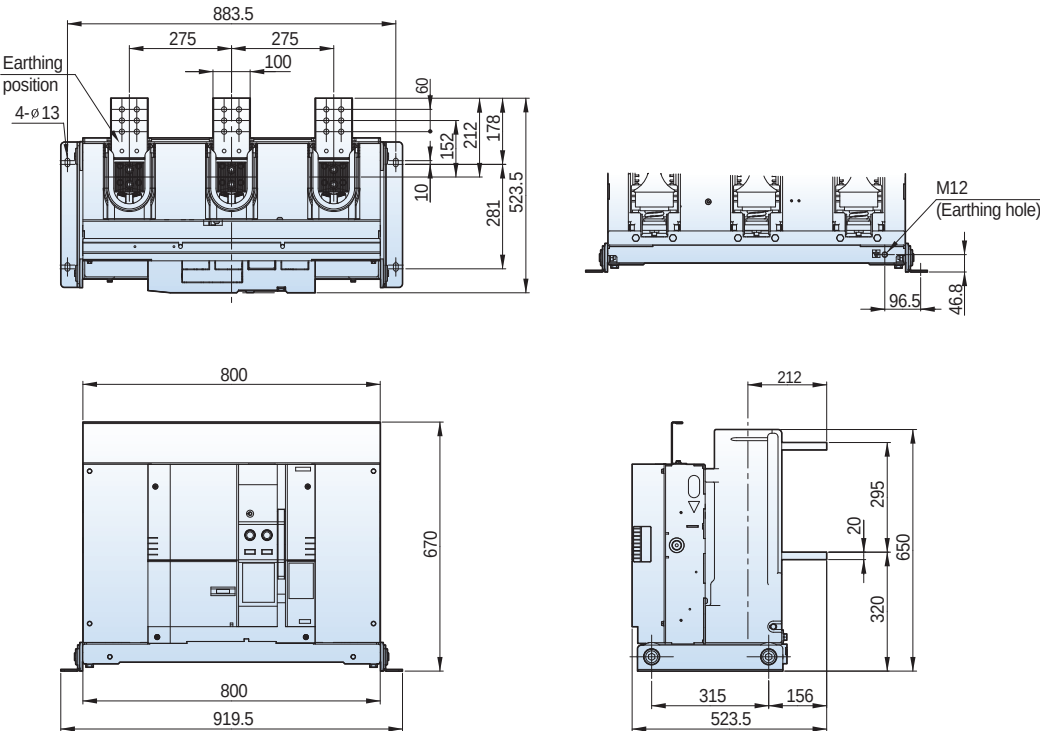
Type
VL-12P32B25
VL-17P32B25



Fixed

■ P type, phase distance 275mm

Type
VL-12P32D25
VL-17P32D25



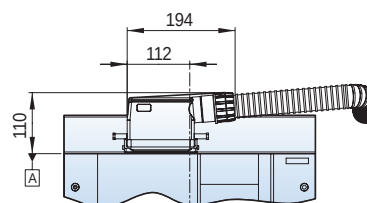
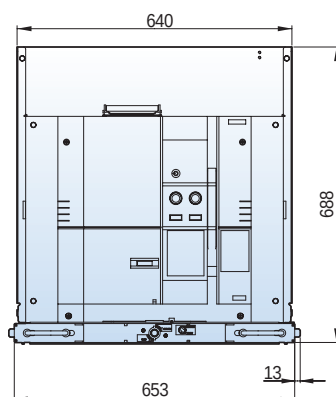
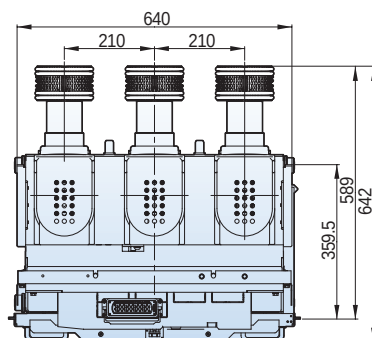
12/17.5kV, 31.5kA, 2500A

Withdrawable

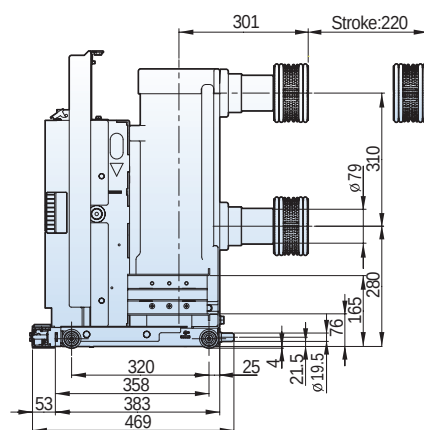
■ H type unit, phase distance 210mm

Type

VL-12H32B25
VL-17H32B25



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

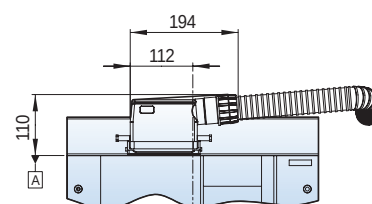
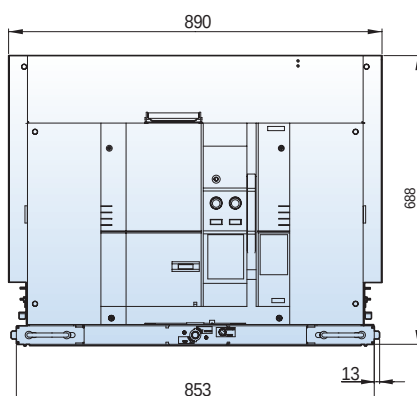
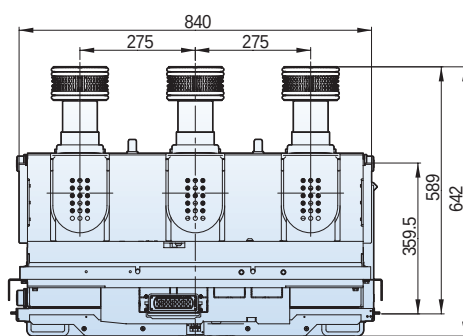


Withdrawable

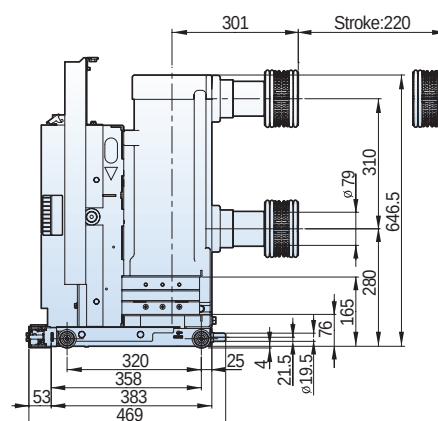
■ H type unit, phase distance 275mm

Type

VL-12H32D25
VL-17H32D25



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



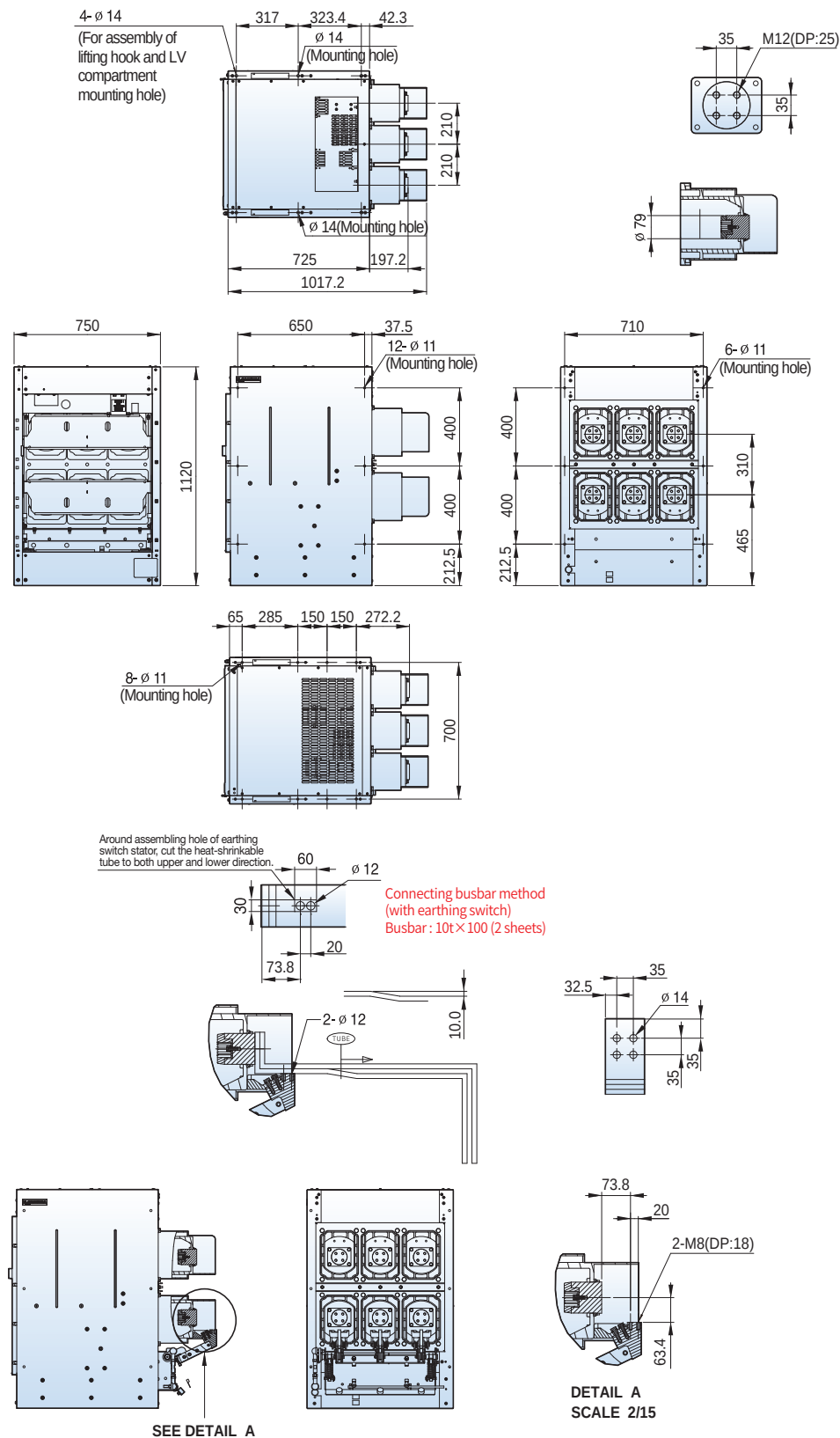
Dimensions - VL type (VL-06/12/17)

12/17.5kV, 31.5A, 2500A

Withdrawable

Type
VCL-12H32B25
VCL-17H32B25

■ H type cradle, phase distance 210mm



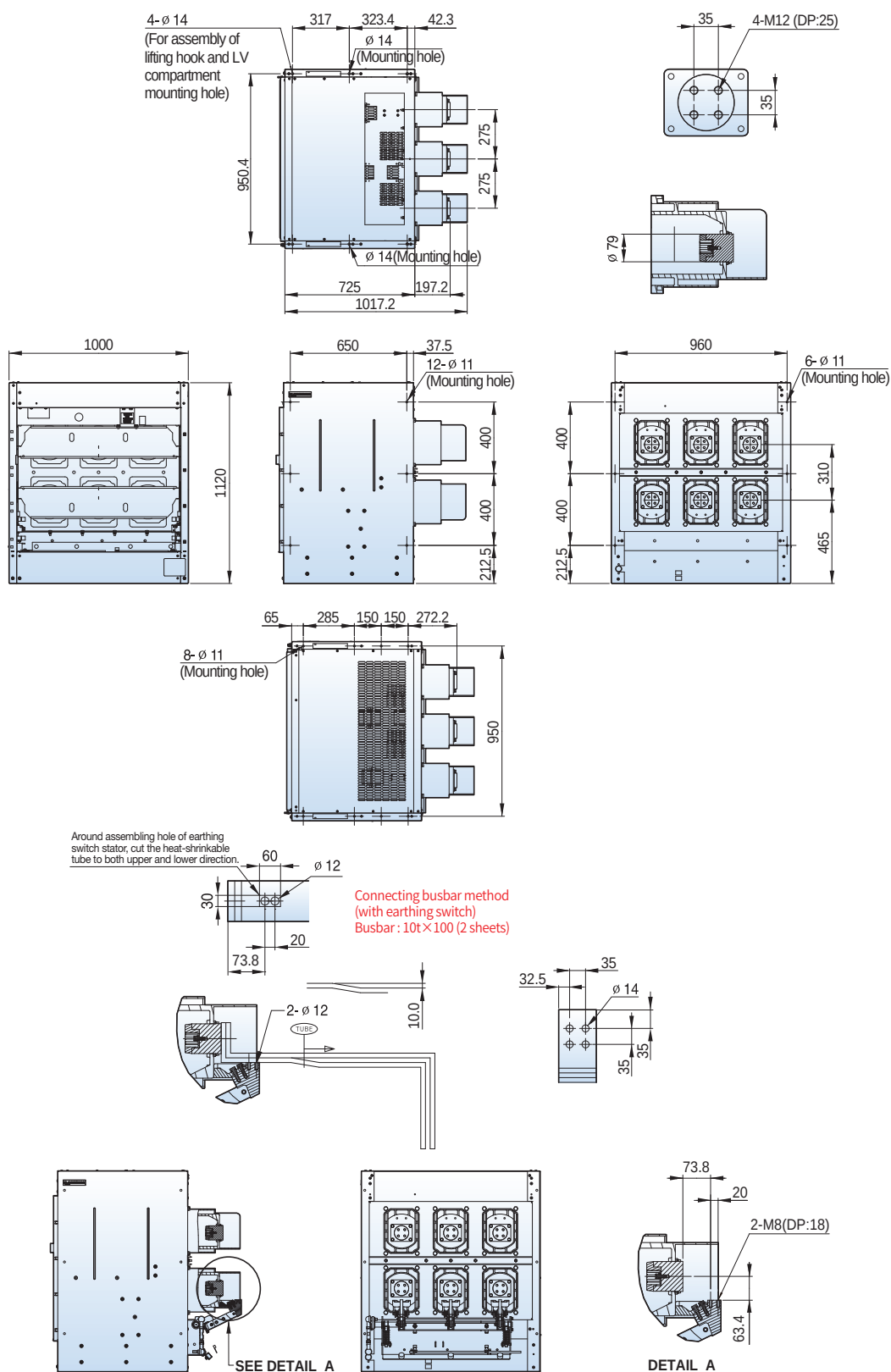
12/17.5kV, 31.5A, 2500A

Withdrawable

Type

VCL-12H32D25
VCL-17H32D25

■ H type cradle, phase distance 275mm



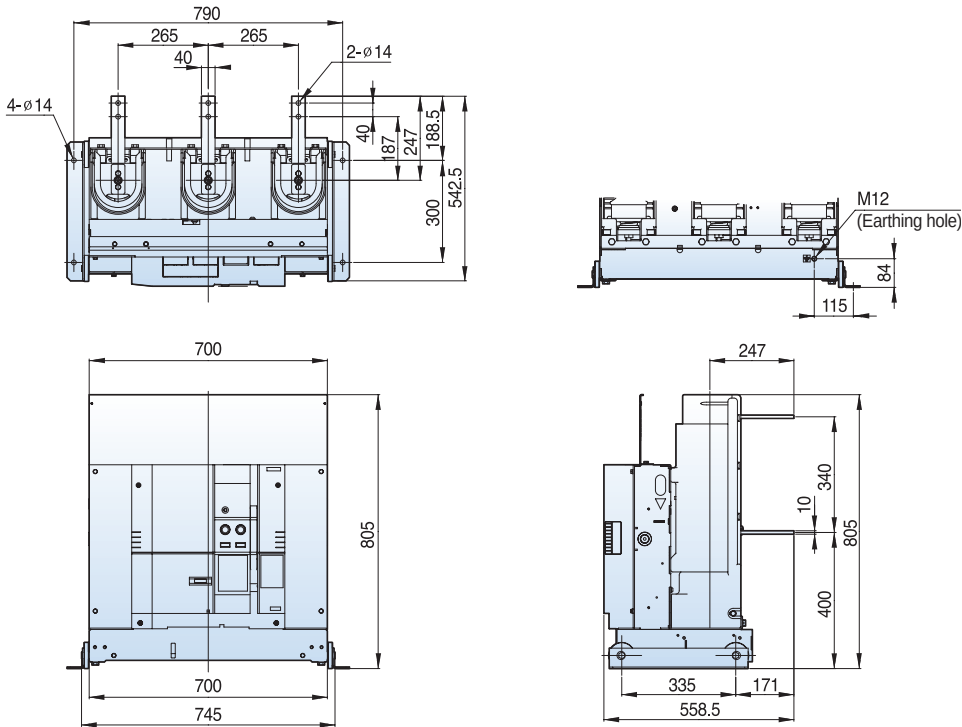
Dimensions - VL type (VL-20/25)

24/25.8kV 12.5kA 630A

Fixed

■ P type, phase distance 265mm

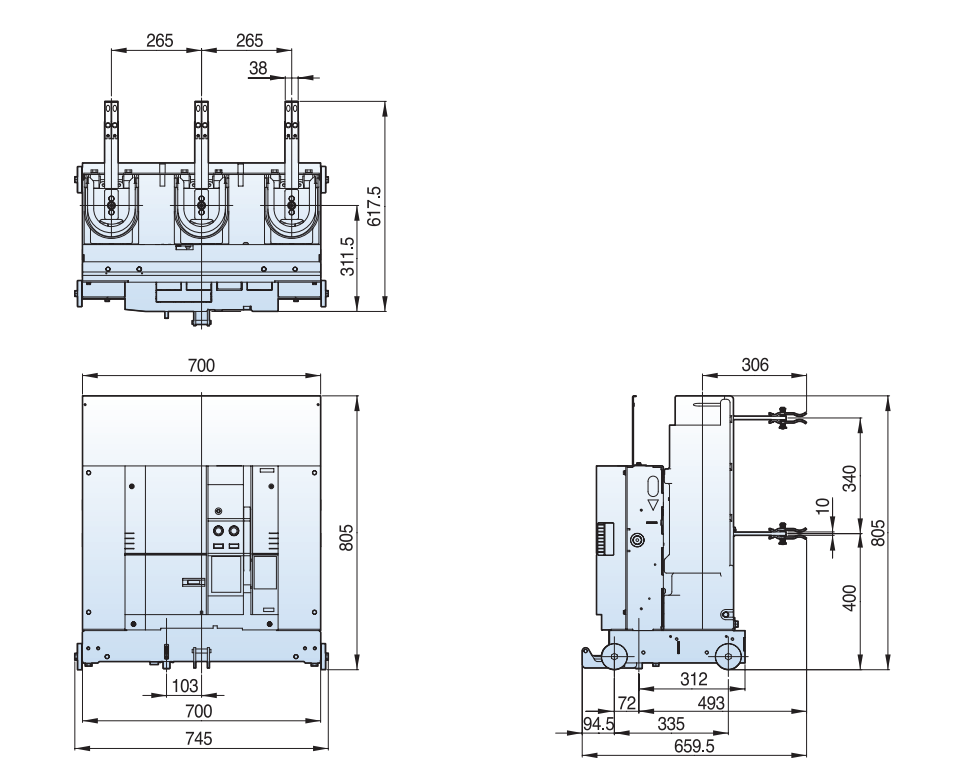
Type
VL-20P13F06
VL-25P13F06



Withdrawable

■ E type unit Visible, Clip contact, phase distance 265mm

Type
VL-20E13F06
VL-25E13F06



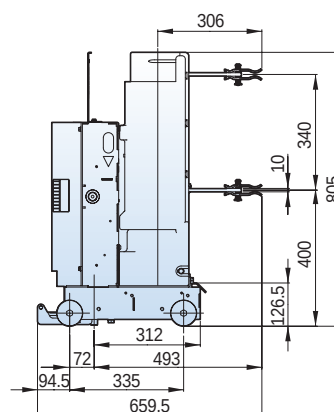
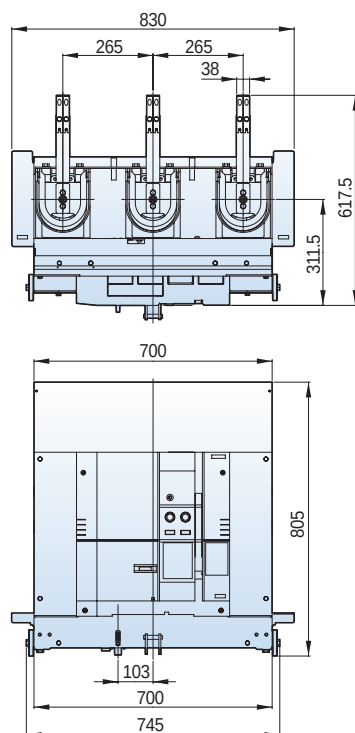
24/25.8kV 12.5kA 630A

Withdrawable

■ F type unit Visible, Clip contact, phase distance 265mm

Type

VL-20F13F06
VL-25F13F06

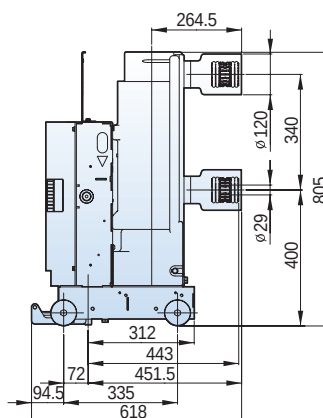
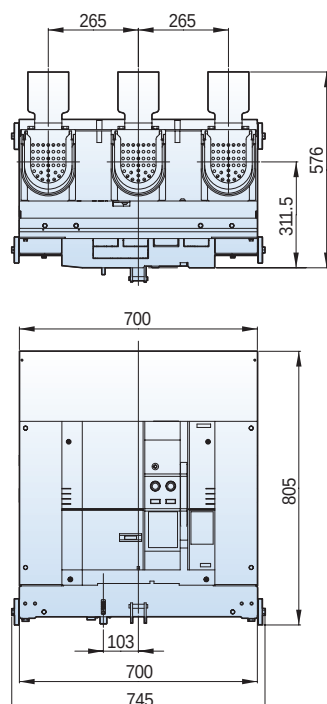


Withdrawable

■ E type unit Enclosed, Tulip contact, phase distance 265mm

Type

VL-20E13G06
VL-25E13G06



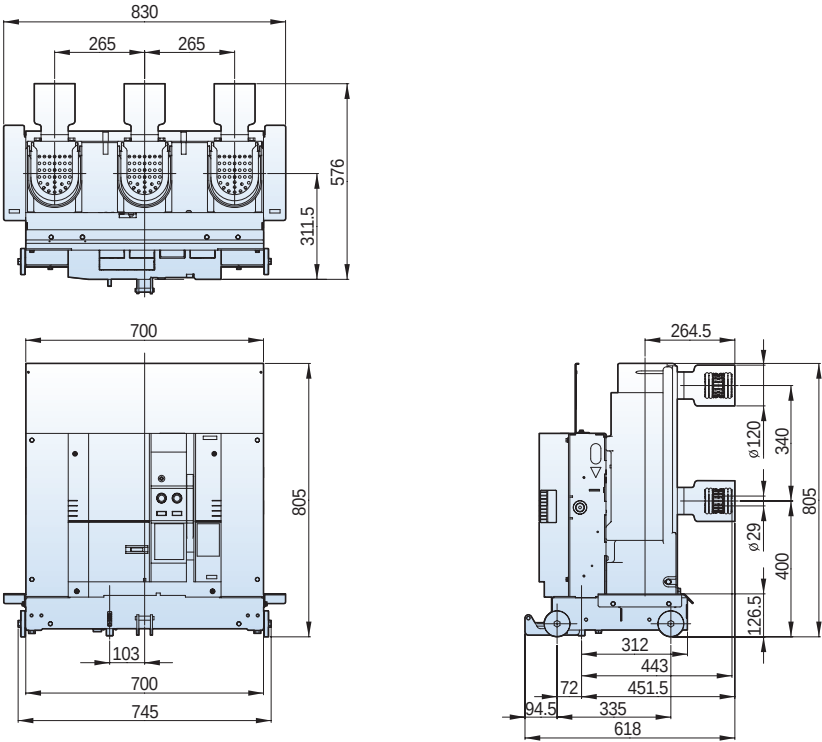
Dimensions - VL type (VL-20/25)

24/25.8kV 12.5kA 630A

Withdrawable

Type
VL-20F13G06
VL-25F13G06

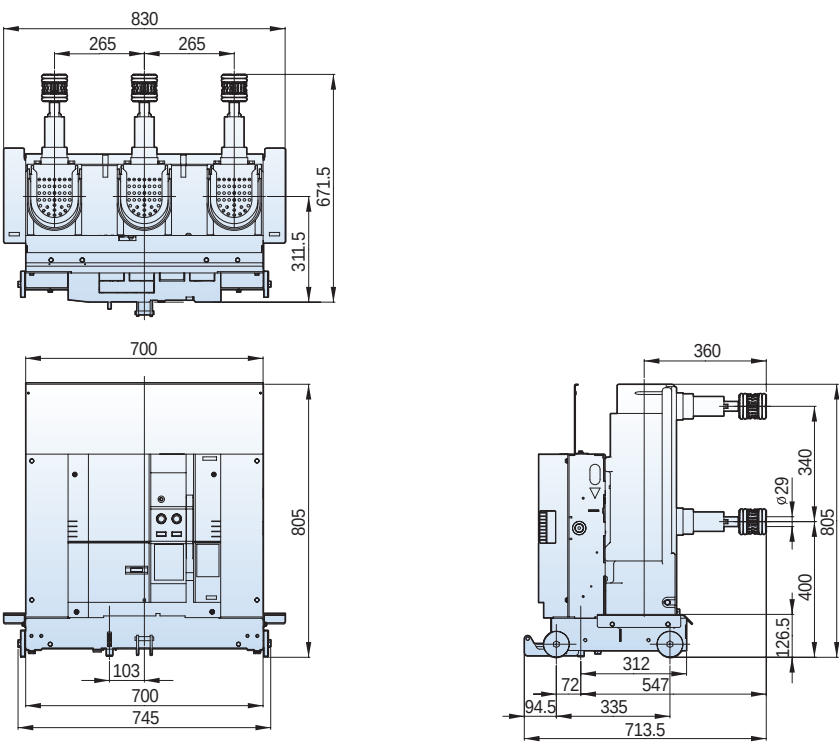
■ F type unit Enclosed, Tulip contact, phase distance 265mm



Withdrawable

Type
VL-20G13F06
VL-25G13F06

■ G type unit Tulip contact, phase distance 265mm



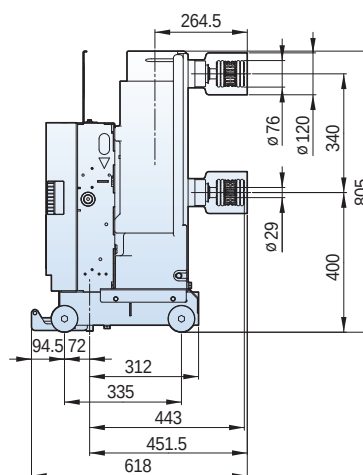
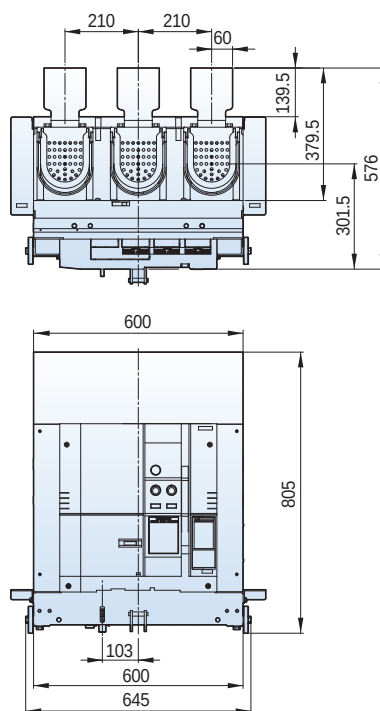
24/25.8kV 12.5kA 630A

Withdrawable

Type

VL-20G13B06
VL-25G13B06

■ G type unit, phase distance 210mm

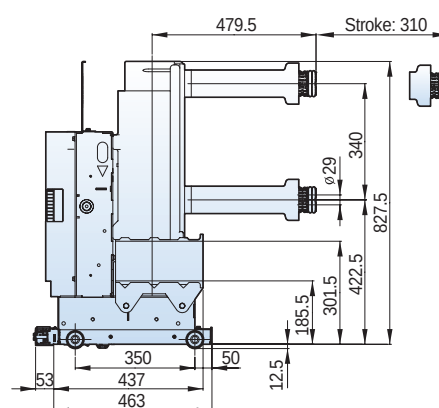
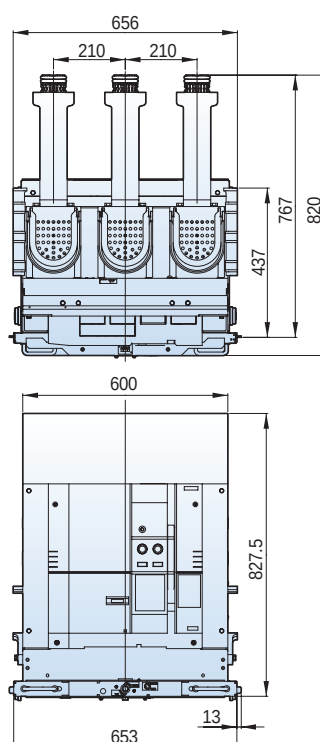


Withdrawable

Type

VL-20K13B06
VL-25K13B06

■ K type unit, phase distance 210mm



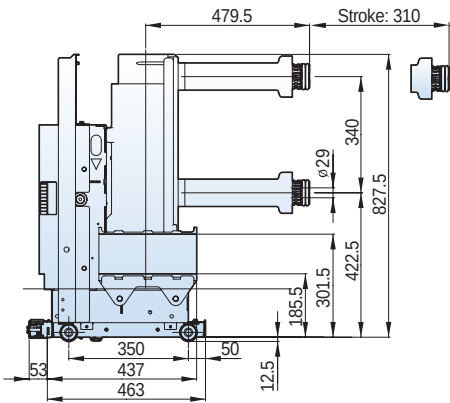
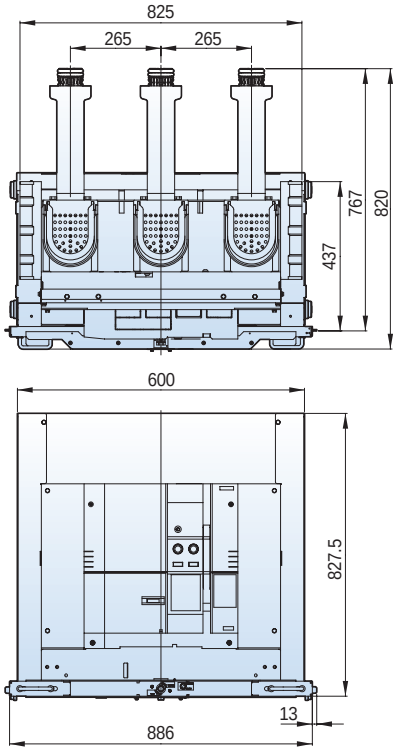
Dimensions - VL type (VL-20/25)

24/25.8kV 12.5kA 630A

Withdrawable

Type
VL-20K13F06
VL-25K13F06

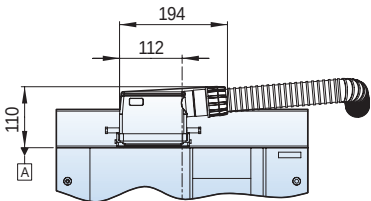
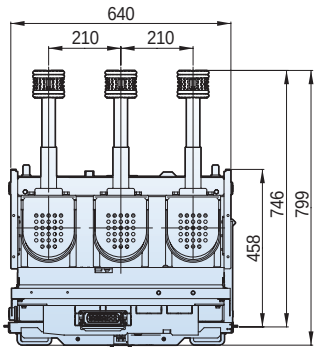
■ K type unit, phase distance 265mm



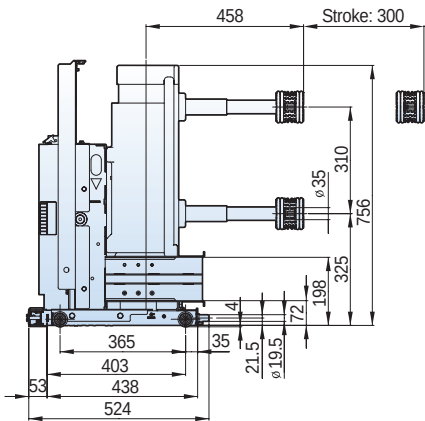
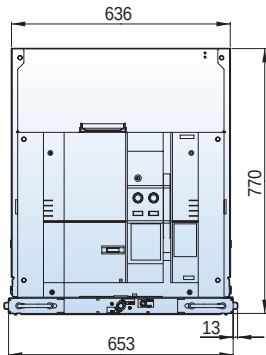
Withdrawable

Type
VL-20H13B06
VL-25H13B06

■ H type unit, phase distance 210mm



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



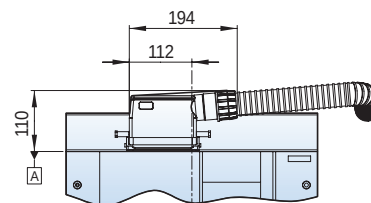
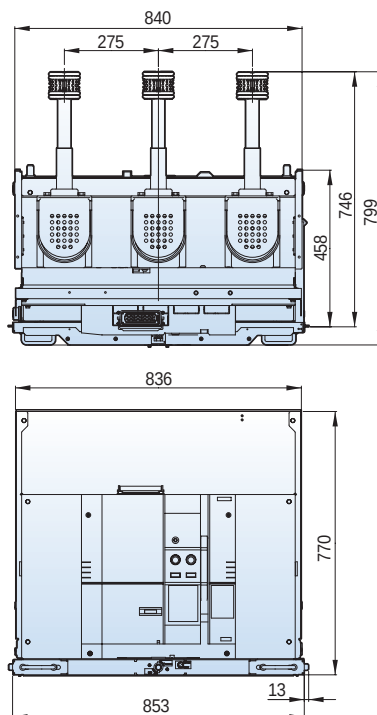
24/25.8kV 12.5kA 630A

Withdrawable

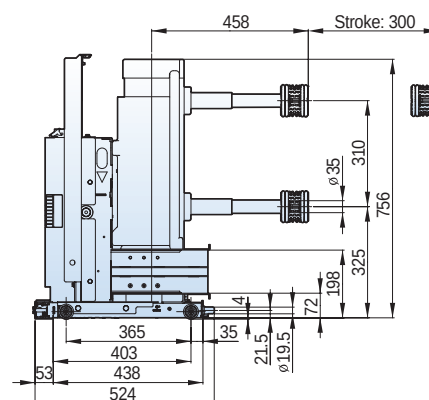
■ H type unit, phase distance 275mm

Type

VL-20H13D06
VL-25H13D06



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



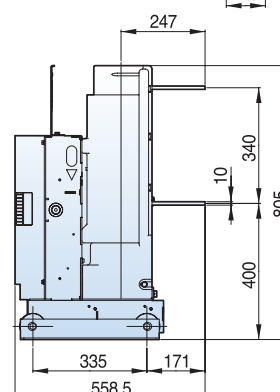
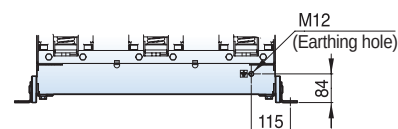
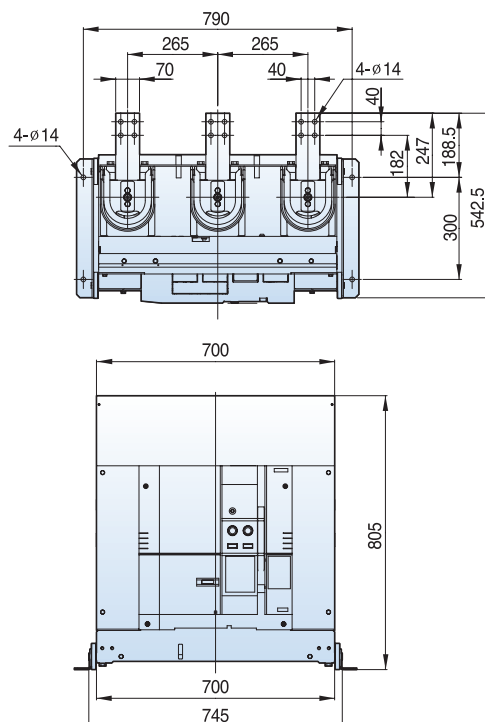
24/25.8kV 12.5kA 1250A

Fixed

■ P type, phase distance 265mm

Type

VL-20P13F13
VL-25P13F13



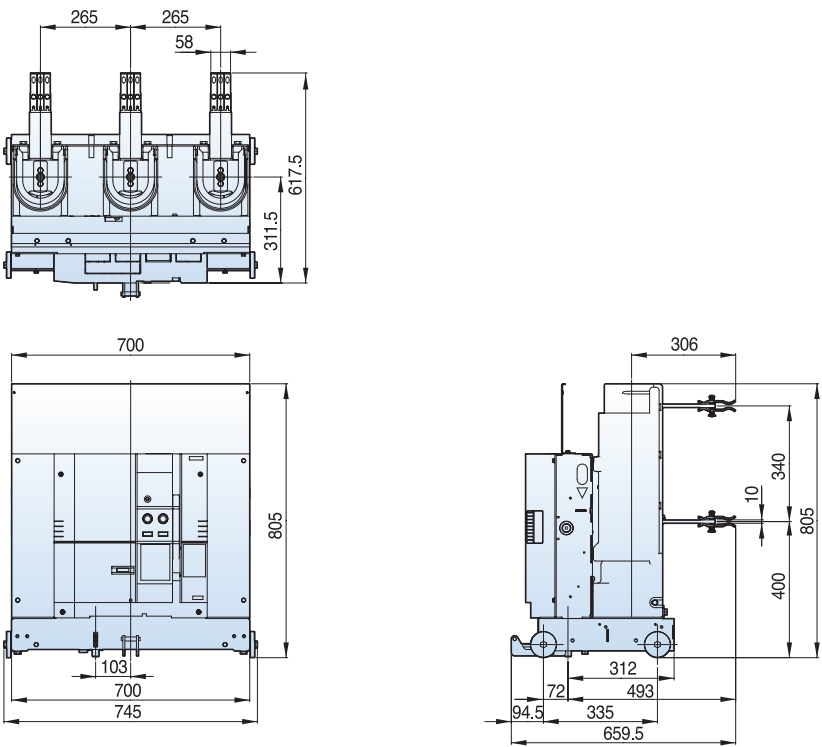
Dimensions - VL type (VL-20/25)

24/25.8kV 12.5kA 1250A

Withdrawable

■ E type unit Visible, Clip contact, phase distance 265mm

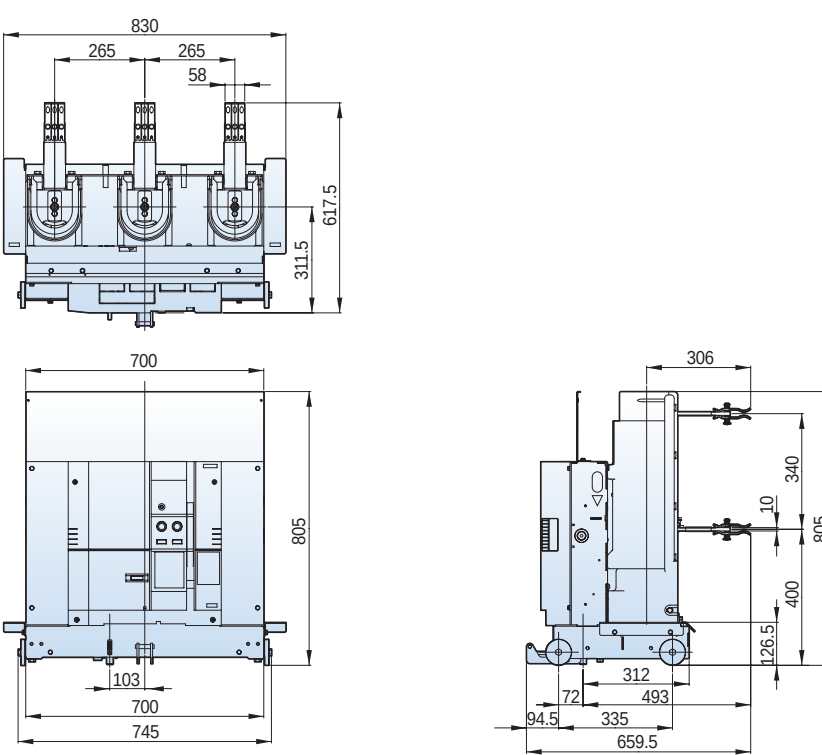
Type
VL-20E13F13
VL-25E13F13



Withdrawable

■ F type unit Visible, Clip contact, phase distance 265mm

Type
VL-20F13F13
VL-25F13F13



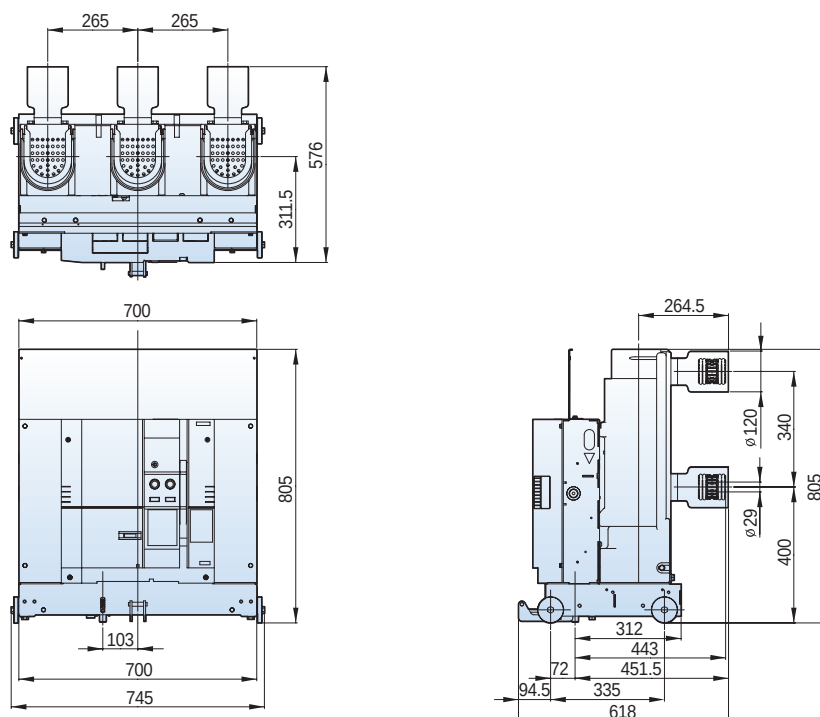
24/25.8kV 12.5kA 1250A

Withdrawable

Type

VL-20E13G13
VL-25E13G13

■ E type unit Enclosed, Tulip contact, phase distance 265mm

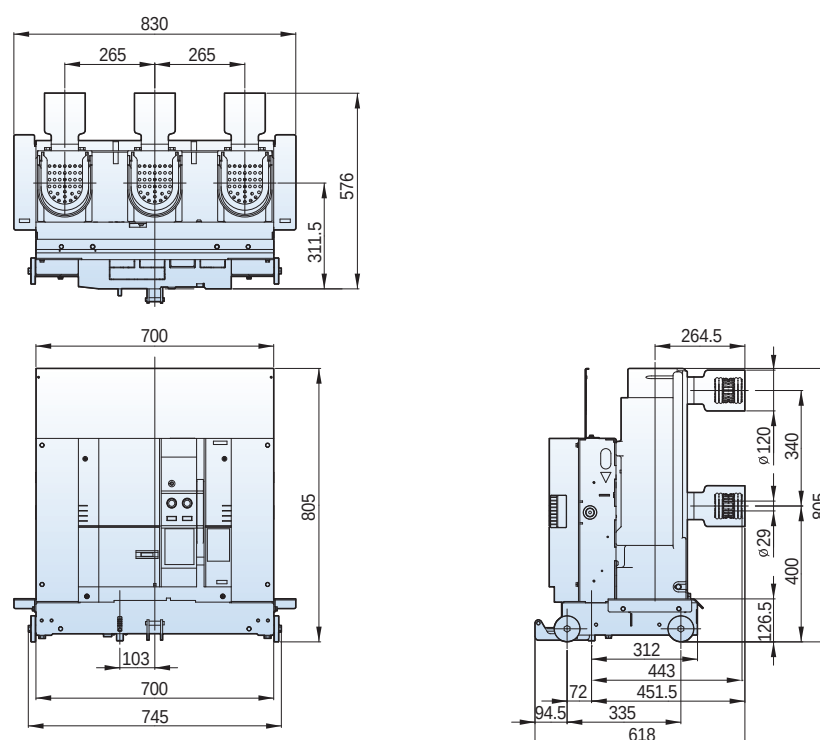


Withdrawable

Type

VL-20F13G13
VL-25F13G13

■ F type unit Enclosed, Tulip contact, phase distance 265mm



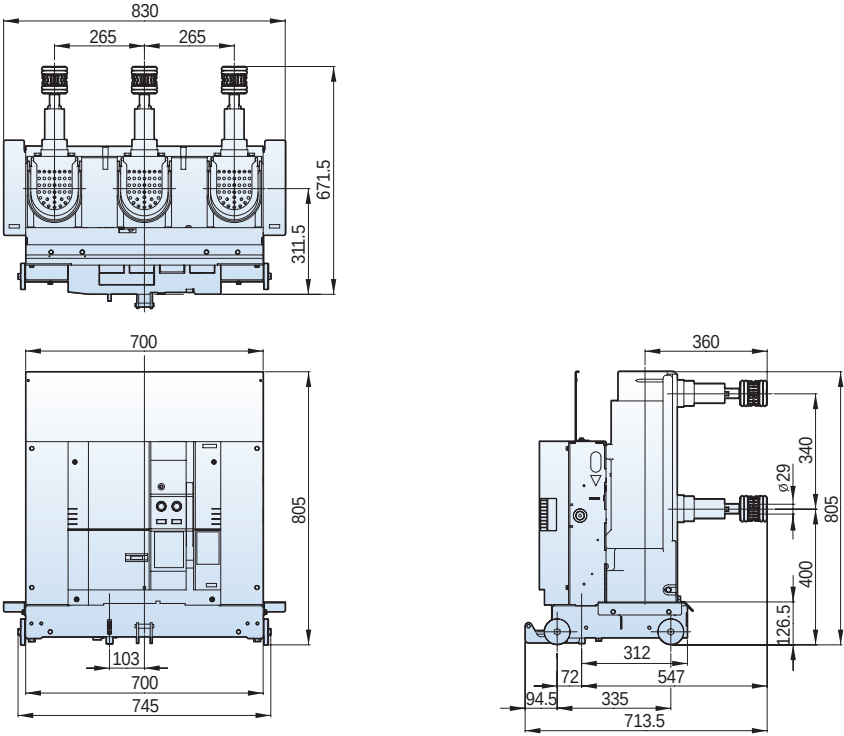
Dimensions - VL type (VL-20/25)

24/25.8kV 12.5kA 1250A

Withdrawable

■ G type unit Tulip contact, phase distance 265mm

Type
VL-20G13F13
VL-25G13F13

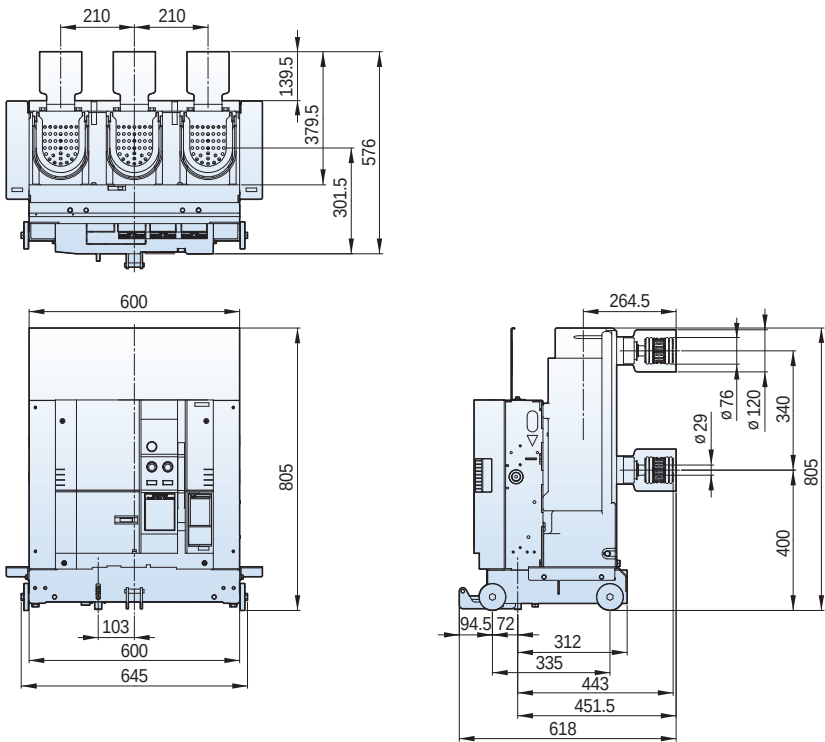


24/25.8kV 12.5kA 1250A & 16/25kA 630/1250A

Withdrawable

■ G type unit, phase distance 210mm

Type
VL-20G13B13
VL-25G13B13
VL-20G16B06
VL-20G16B13
VL-20G25B06
VL-20G25B13
VL-25G16B06
VL-25G16B13
VL-25G25B06
VL-25G25B13



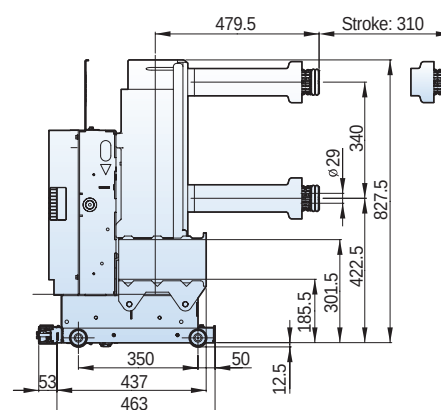
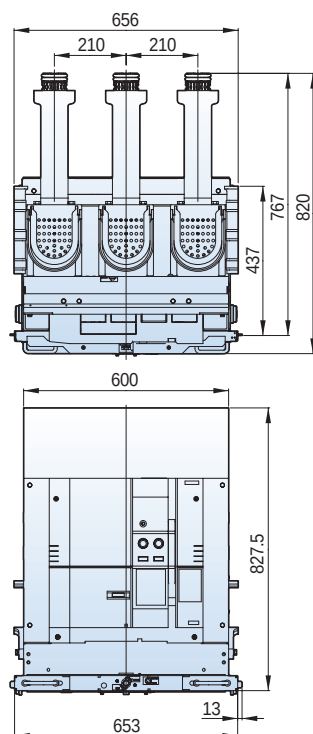
24/25.8kV 12.5kA 1250A

Withdrawable

Type

VL-20K13B13
VL-25K13B13

■ K type unit, phase distance 210mm

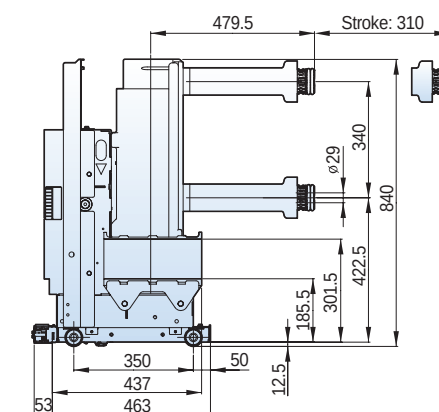
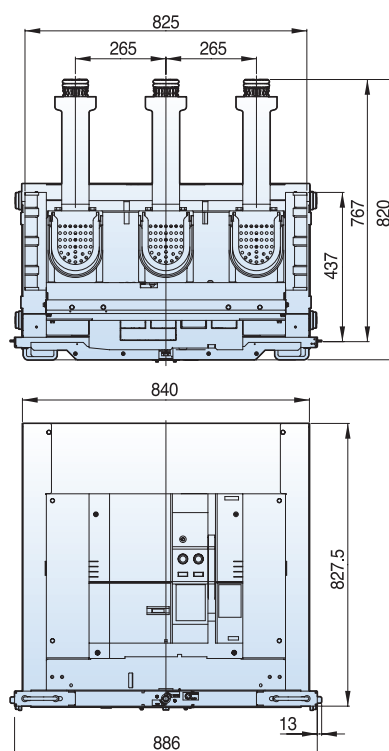


Withdrawable

Type

VL-20K13F13
VL-25K13F13

■ K type unit, phase distance 265mm



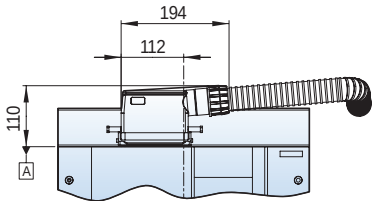
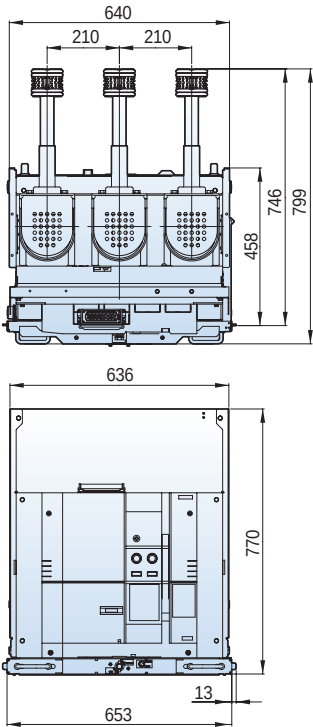
Dimensions - VL type (VL-20/25)

24/25.8kV 12.5kA 1250A

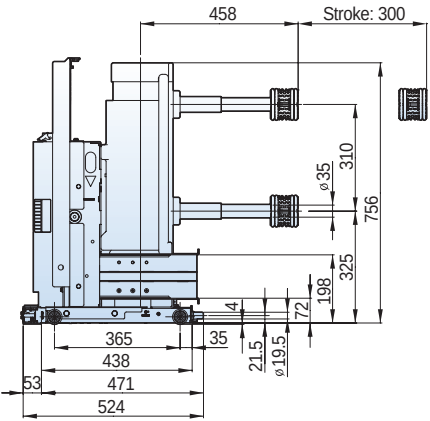
Withdrawable

Type
VL-20H13B13
VL-25H13B13

■ H type unit, phase distance 210mm



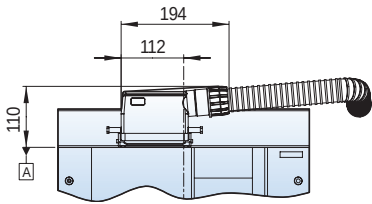
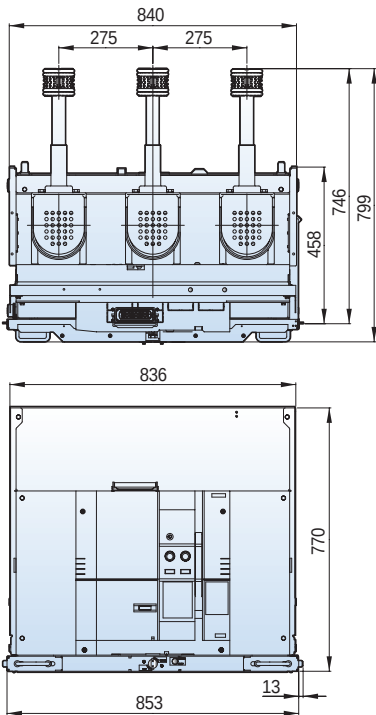
Note) Please be informed that When B-type connector is used to design switchgears, the height can be 110mm higher based on "A"



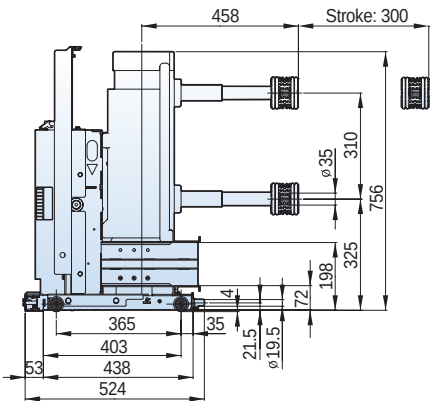
Withdrawable

Type
VL-20H13D13
VL-25H13D13

■ H type unit, phase distance 275mm



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



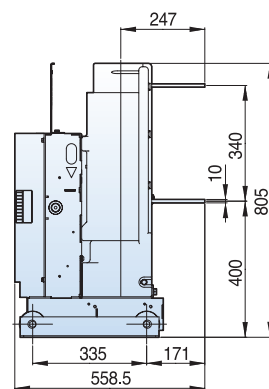
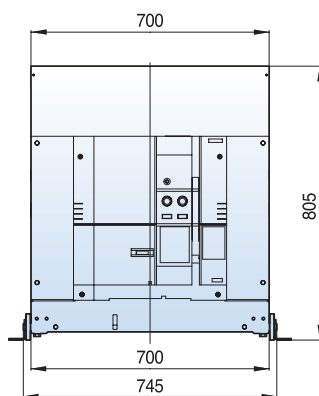
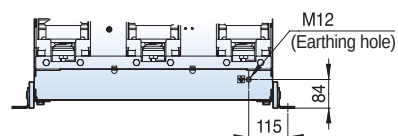
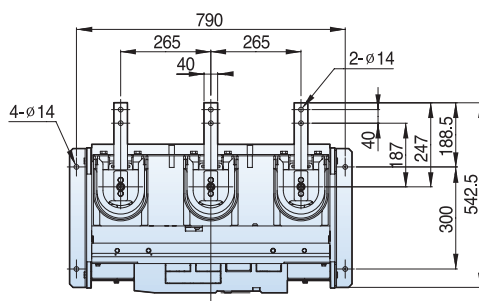
24/25.8kV 16/25kA 630A

Fixed

■ P type, phase distance 265mm

Type

VL-20P16F06
VL-20P25F06
VL-25P16F06
VL-25P25F06



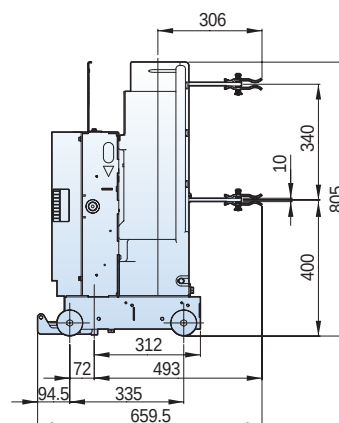
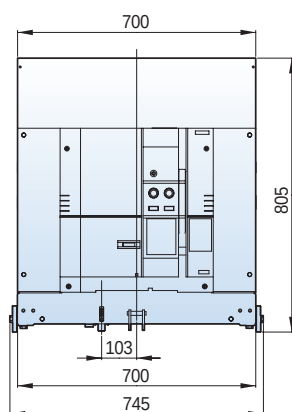
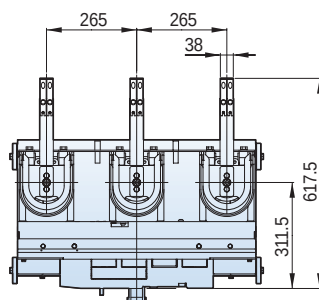
24/25.8kV 16kA 630A

Withdrawable

■ E type unit Visible, Clip contact, phase distance 265mm

Type

VL-20E16F06
VL-25E16F06



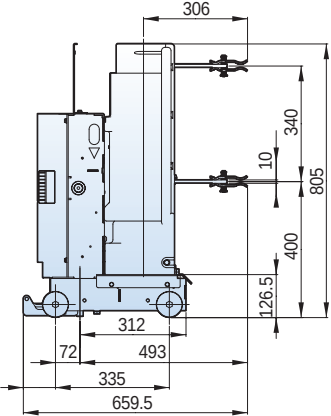
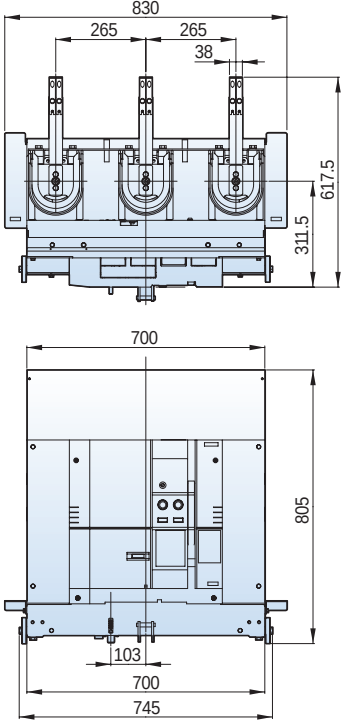
Dimensions - VL type (VL-20/25)

24/25.8kV 16kA 630A

Withdrawable

■ F type unit Visible, Clip contact, phase distance 265mm

Type
VL-20F16F06
VL-25F16F06

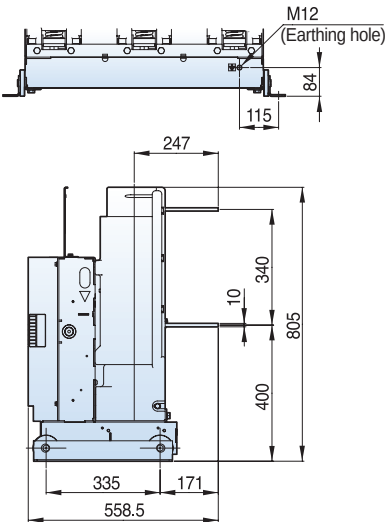
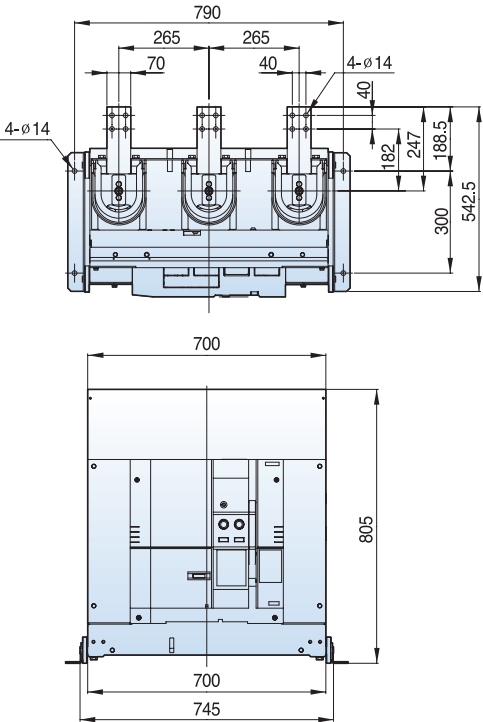


24/25.8kV 16/25kA 1250A

Fixed

■ P type, phase distance 265mm

Type
VL-20P16F13
VL-20P25F13
VL-25P16F13
VL-25P25F13



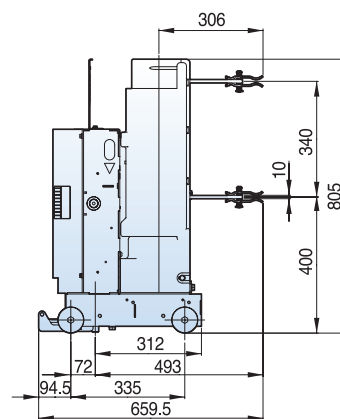
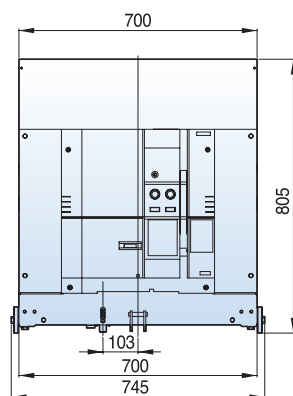
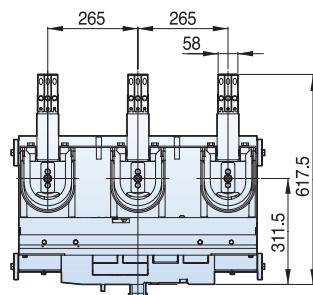
24/25.8kV 25kA 630A & 24/25.8kV 16/25kA 1250A

Withdrawable

■ E type unit Visible, Clip contact, phase distance 265mm

Type

VL-20E25F06
VL-25E25F06
VL-20E16F13
VL-20E25F13
VL-25E16F13
VL-25E25F13

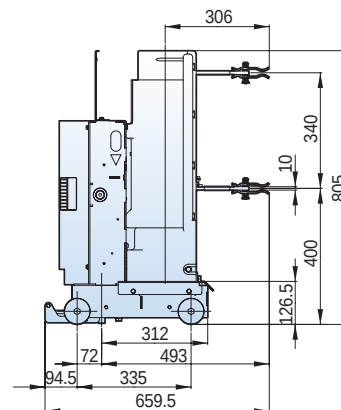
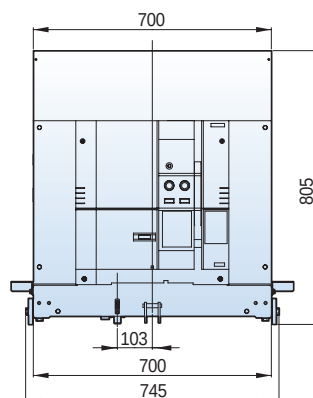
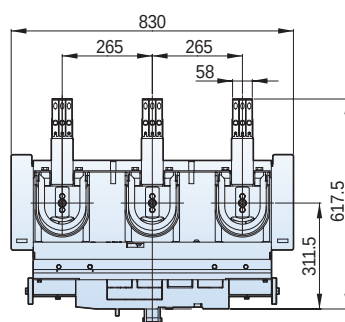


Withdrawable

■ F type unit Visible, Clip contact, phase distance 265mm

Type

VL-20F25F06
VL-25F25F06
VL-20F16F13
VL-20F25F13
VL-25F16F13
VL-25F25F13



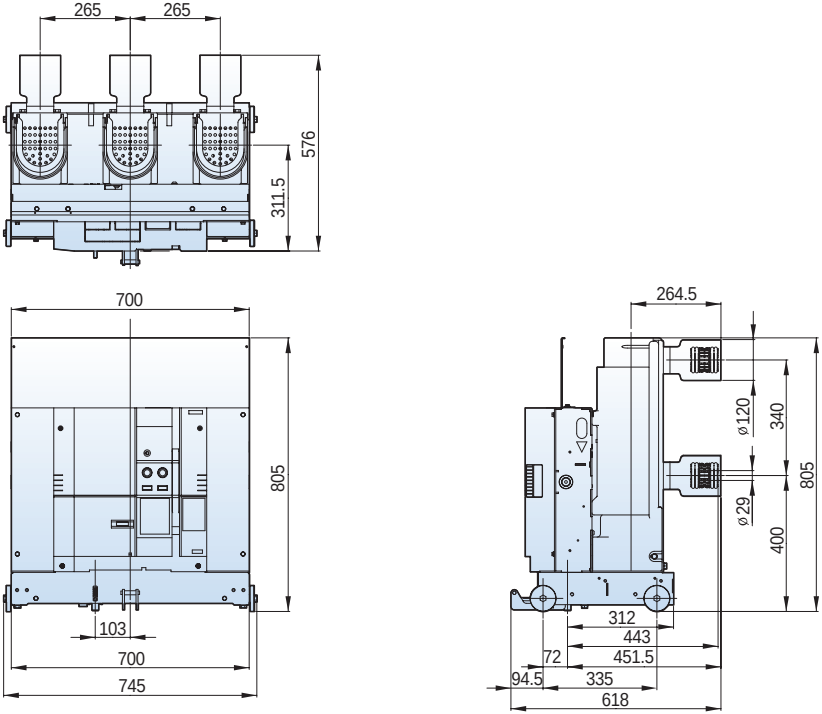
Dimensions - VL type (VL-20/25)

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

Withdrawable

■ E type unit Enclosed, Tulip contact, phase distance 265mm

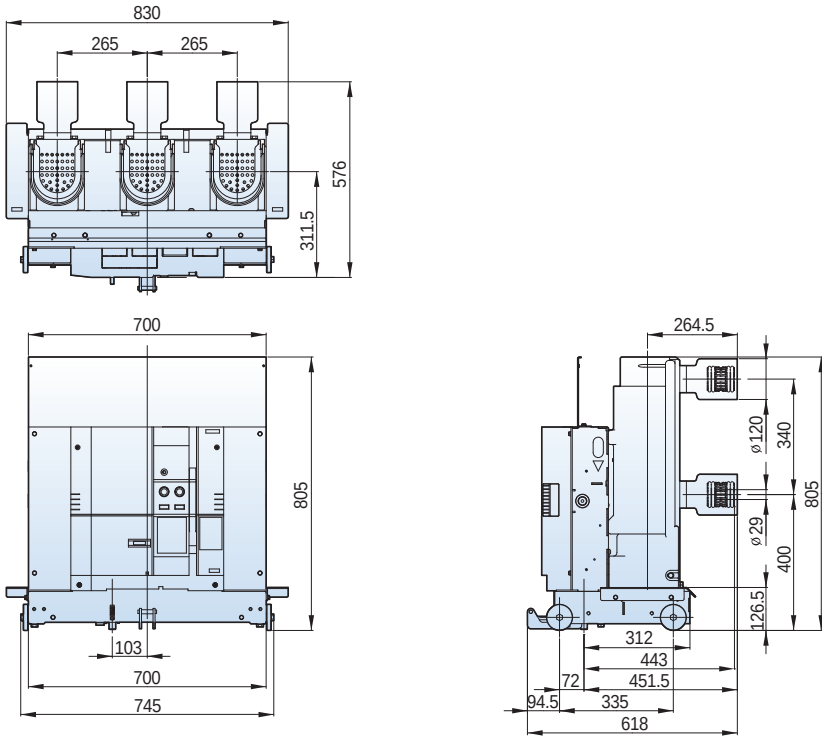
Type
VL-20E16G06
VL-20E16G13
VL-20E25G06
VL-20E25G13
VL-25E16G06
VL-25E16G13
VL-25E25G06
VL-25E25G13



Withdrawable

■ F type unit Enclosed, Tulip contact, phase distance 265mm

Type
VL-20F16G06
VL-20F16G13
VL-20F25G06
VL-20F25G13
VL-25F16G06
VL-25F16G13
VL-25F25G06
VL-25F25G13



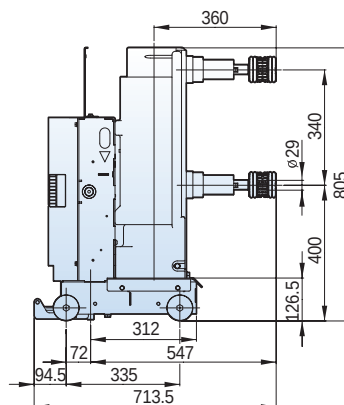
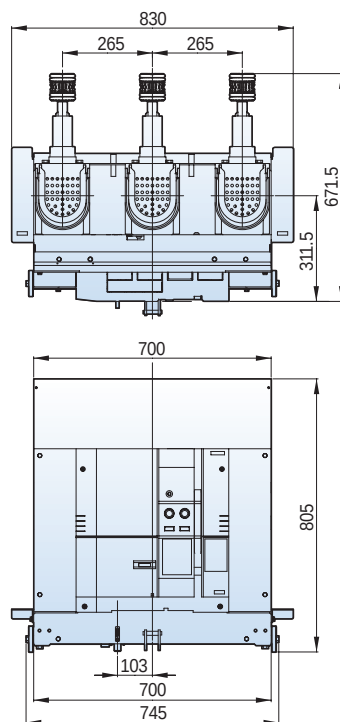
24/25.8kV 16/25kA 630/1250A

Withdrawable

■ G type unit Tulip contact, phase distance 265mm

Type

VL-20G16F06
VL-20G16F13
VL-20G25F06
VL-20G25F13
VL-25G16F06
VL-25G16F13
VL-25G25F06
VL-25G25F13

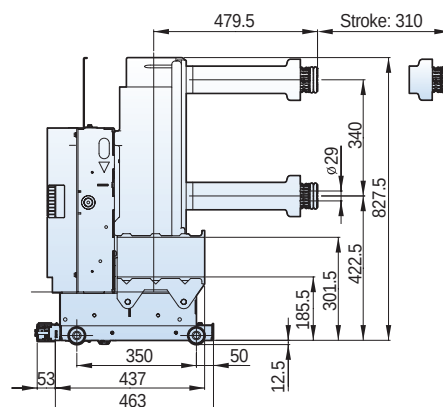
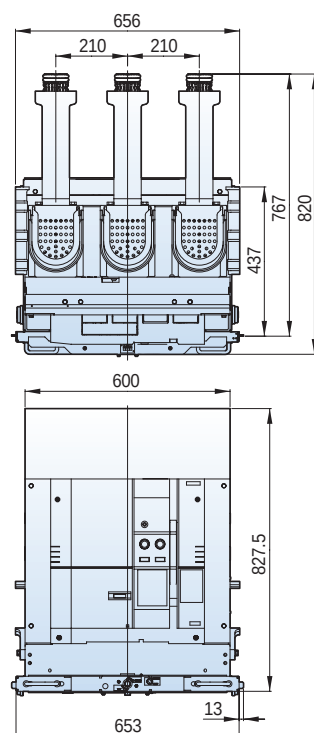


Withdrawable

■ K type unit, phase distance 210mm

Type

VL-20K16B06
VL-20K16B13
VL-20K25B06
VL-20K25B13
VL-25K16B06
VL-25K16B13
VL-25K25B06
VL-25K25B13



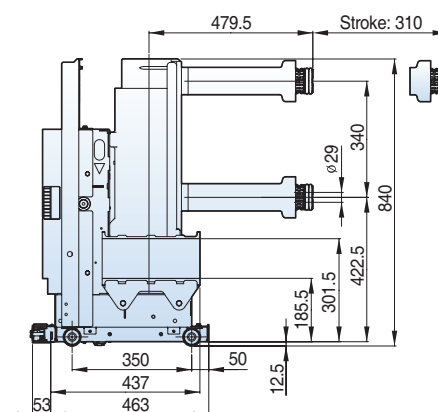
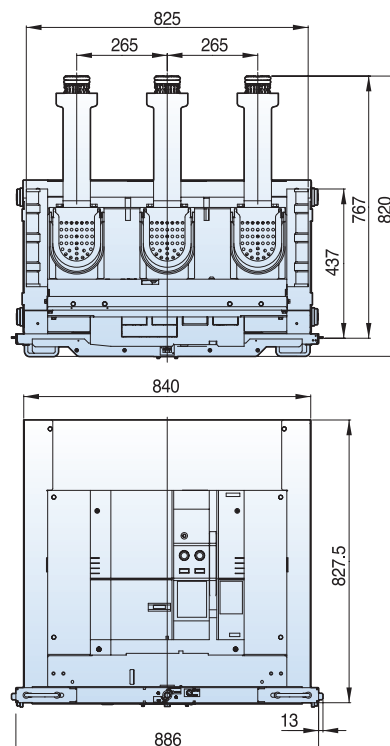
Dimensions - VL type (VL-20/25)

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

Withdrawable

Type

VL-20K16F06
VL-20K16F13
VL-20K25F06
VL-20K25F13
VL-25K16F06
VL-25K16F13
VL-25K25F06
VL-25K25F13

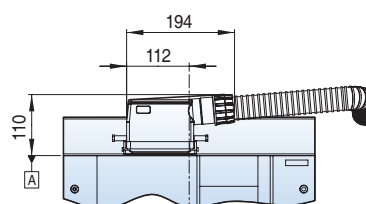
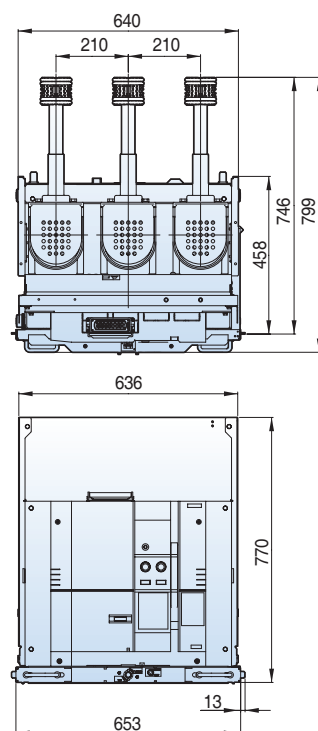


Withdrawable

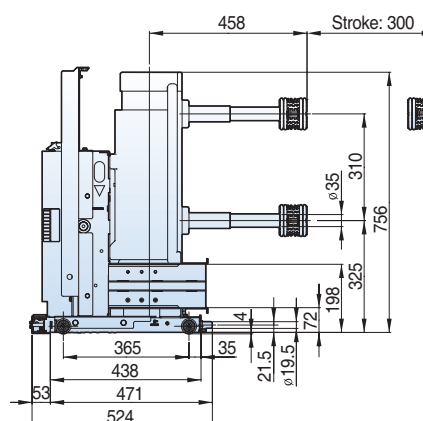
Type

VL-20H16B06
VL-20H16B13
VL-20H25B06
VL-20H25B13
VL-25H16B06
VL-25H16B13
VL-25H25B06
VL-25H25B13

■ H type unit, phase distance 210mm



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



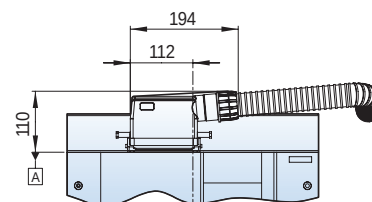
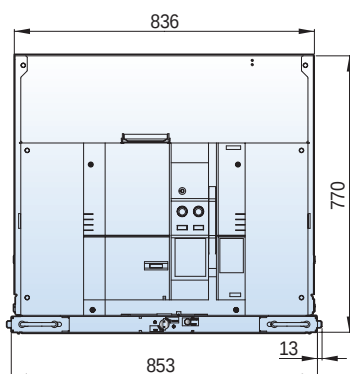
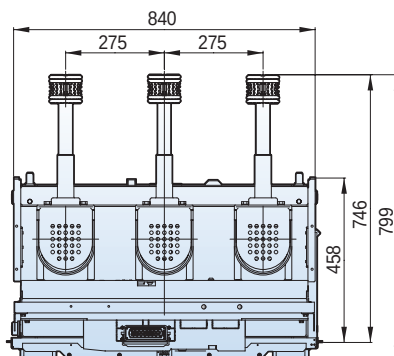
24/25.8kV 16/25kA 630/1250A

Withdrawable

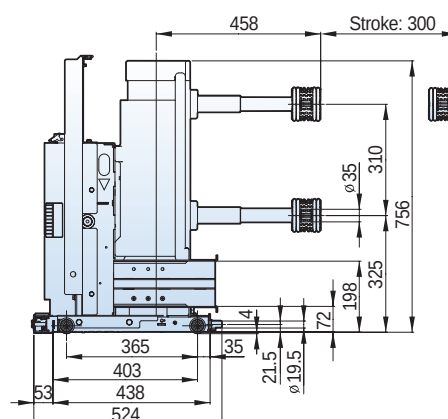
■ H type unit, phase distance 275mm

Type

VL-20H16D06
VL-20H16D13
VL-20H25D06
VL-20H25D13
VL-25H16D06
VL-25H16D13
VL-25H25D06
VL-25H25D13



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



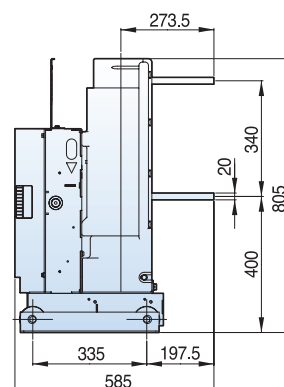
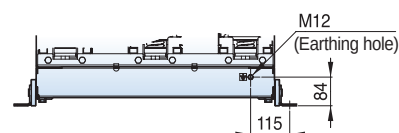
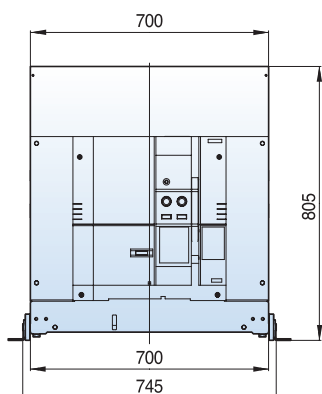
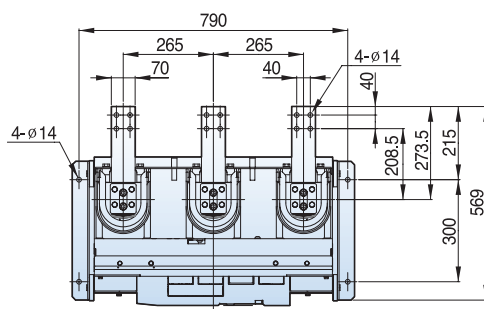
24/25.8kV 25kA 2000A

Fixed

■ P type, phase distance 265mm

Type

VL-20P25F20
VL-25P25F20



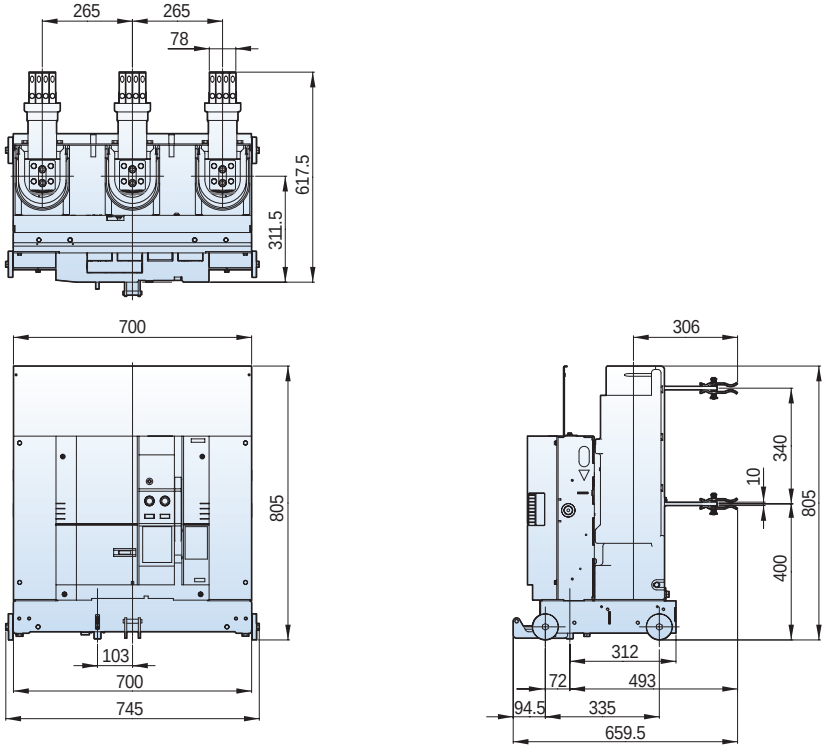
Dimensions - VL type (VL-20/25)

24/25.8kV 25kA 2000A

Withdrawable

Type
VL-20E25F20
VL-25E25F20

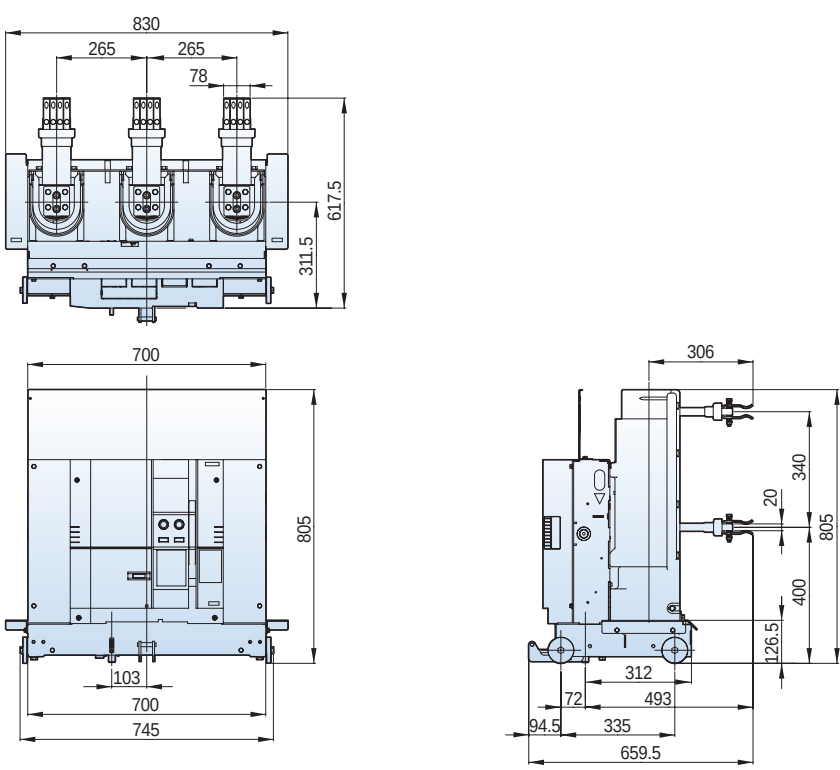
E type unit Visible, Clip contact, phase distance 265mm



Withdrawable

Type
VL-20F25F20
VL-25F25F20

F type unit Visible, Clip contact, phase distance 265mm



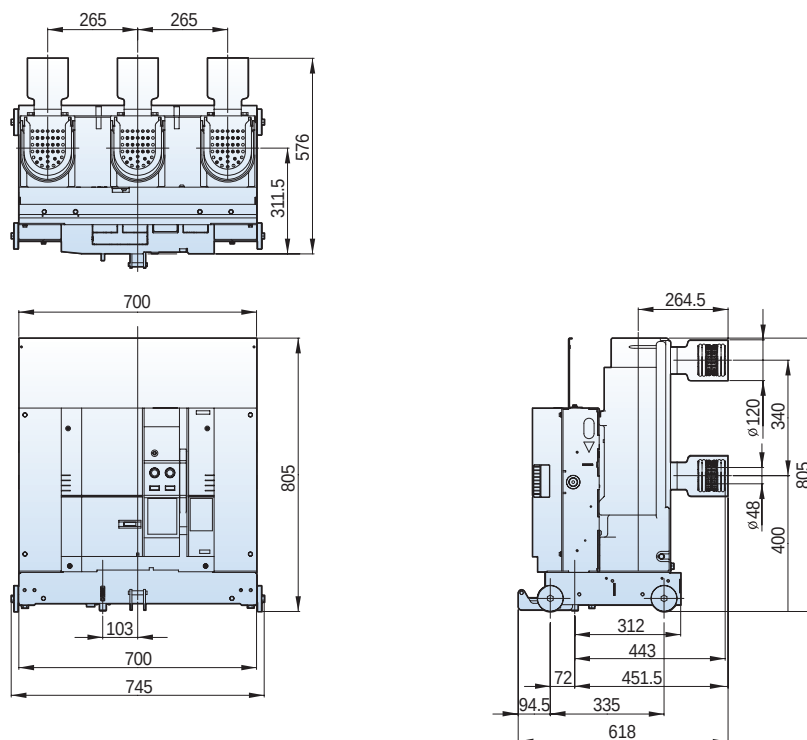
24/25.8kV 25kA 2000A

Withdrawable

Type

VL-20E25G20
VL-25E25G20

■ E type unit Enclosed, Tulip contact, phase distance 265mm

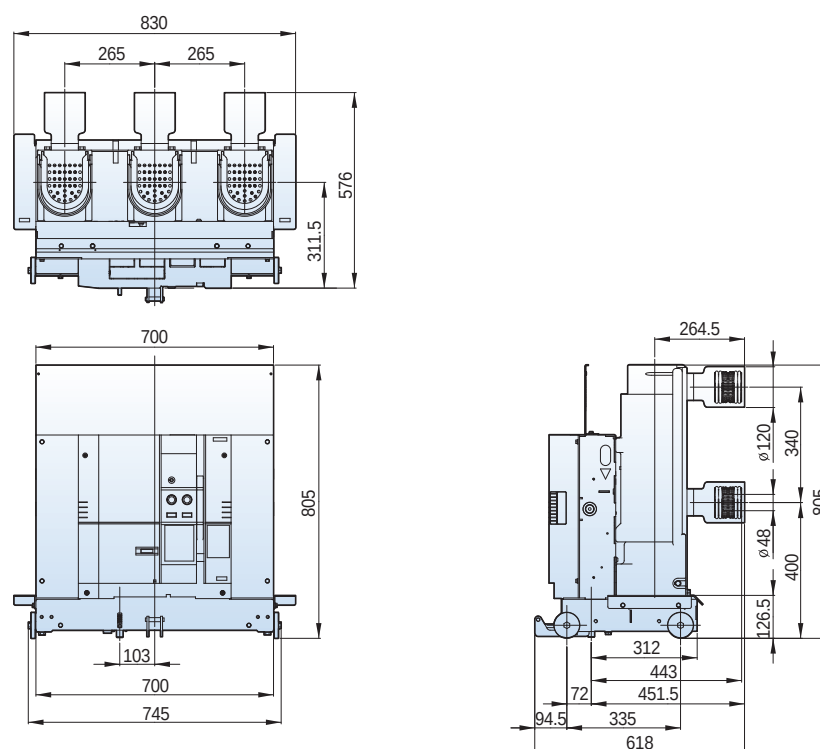


Withdrawable

Type

VL-20F25G20
VL-25F25G20

■ F type unit Enclosed, Tulip contact, phase distance 265mm



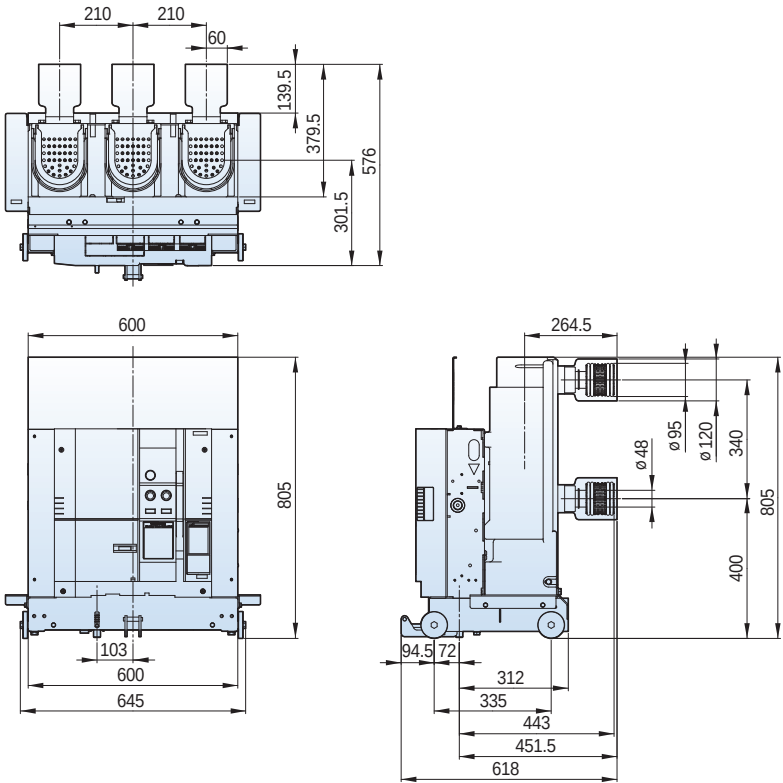
Dimensions - VL type (VL-20/25)

24/25.8kV 25kA 2000A

Withdrawable

Type
VL-20G25B20
VL-25G25B20

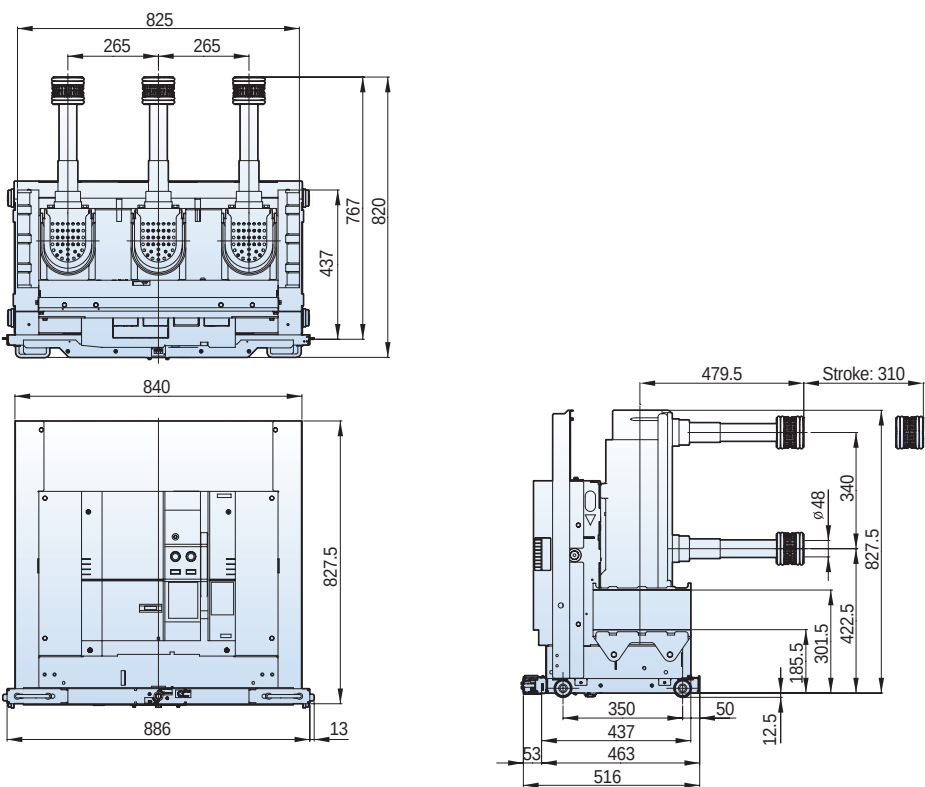
■ G type unit, phase distance 210mm



Withdrawable

Type
VL-20K25F20
VL-25K25F20

■ K type unit, phase distance 265mm



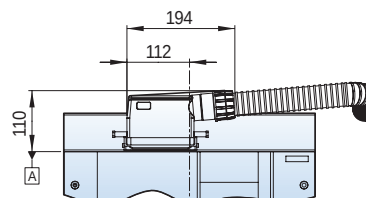
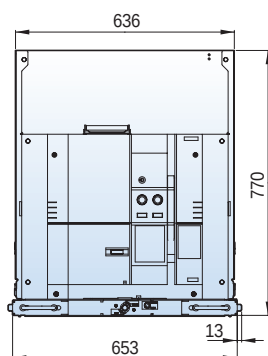
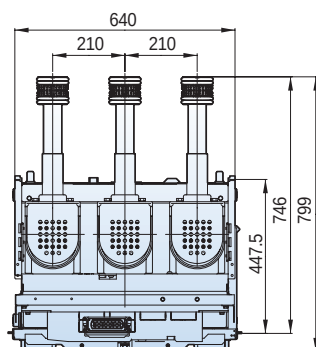
24/25.8kV 25kA 2000A

Withdrawable

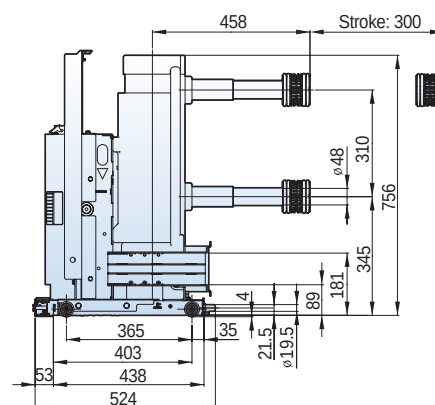
■ H type unit, phase distance 210mm

Type

VL-20H25B20
VL-25H25B20



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

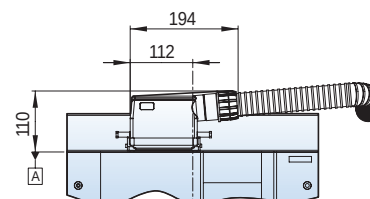
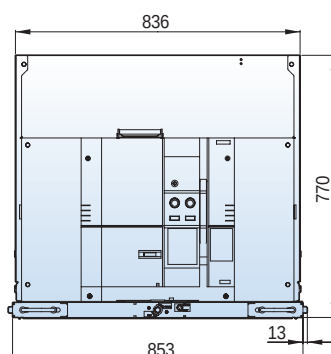
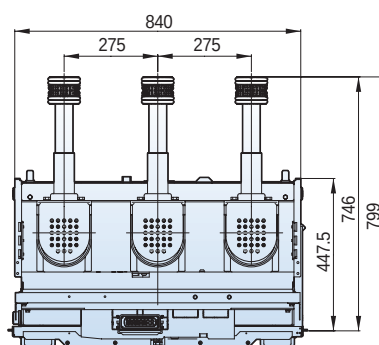


Withdrawable

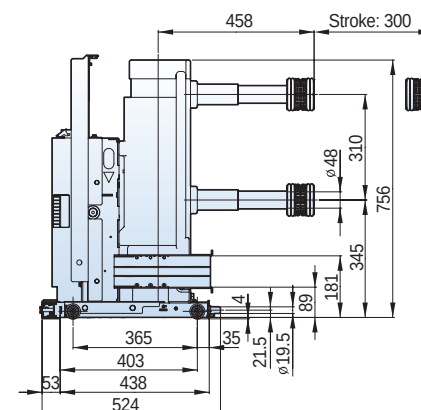
■ H type unit, phase distance 275mm

Type

VL-20H25D20
VL-25H25D20



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



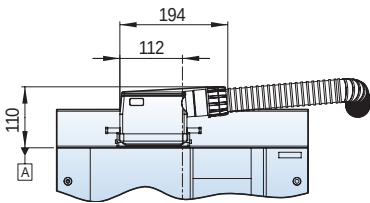
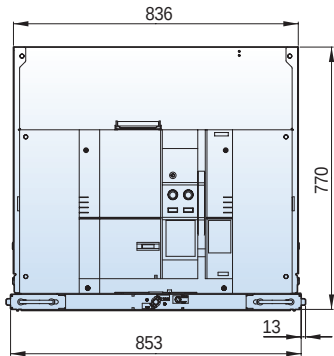
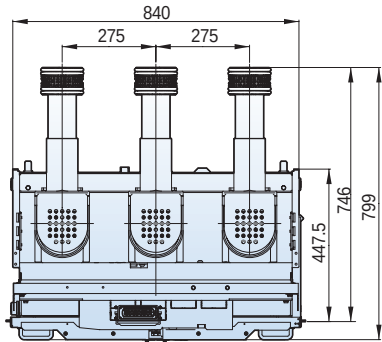
Dimensions - VL type (VL-20/25)

24/25.8kV 25kA 2500A

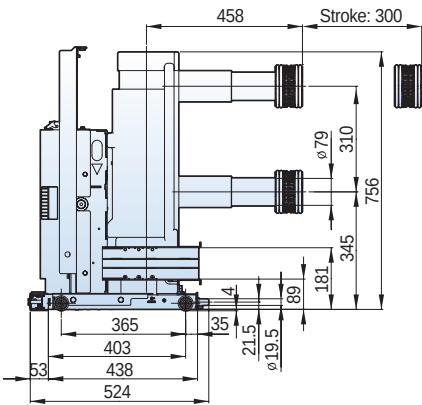
Withdrawable

Type
VL-20H25D25
VL-25H25D25

H type unit, phase distance 275mm



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

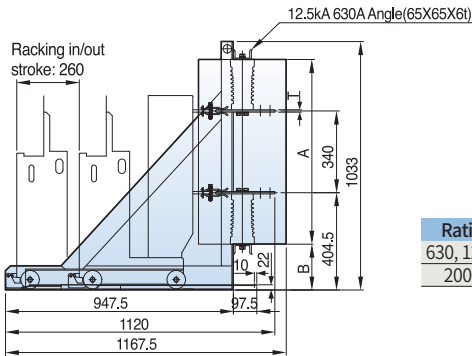
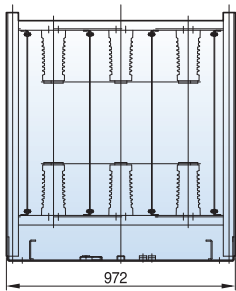


24/25.8kV 12.5/16/25kA 630/1250/2000A

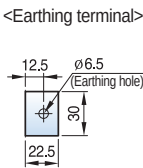
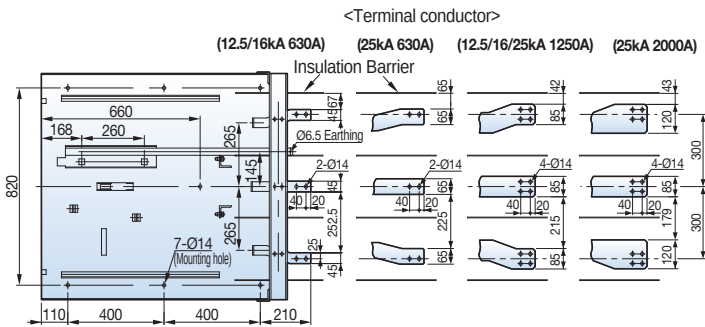
Withdrawable

Type
VCL-20E13F06
VCL-20E13F13
VCL-20E16F06
VCL-20E16F13
VCL-20E25F06
VCL-20E25F13
VCL-20E25F20
VCL-25E13F06
VCL-25E13F13
VCL-25E16F06
VCL-25E16F13
VCL-25E25F06
VCL-25E25F13
VCL-25E25F20

E type cradle Visible, Clip contact, phase distance 265mm



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



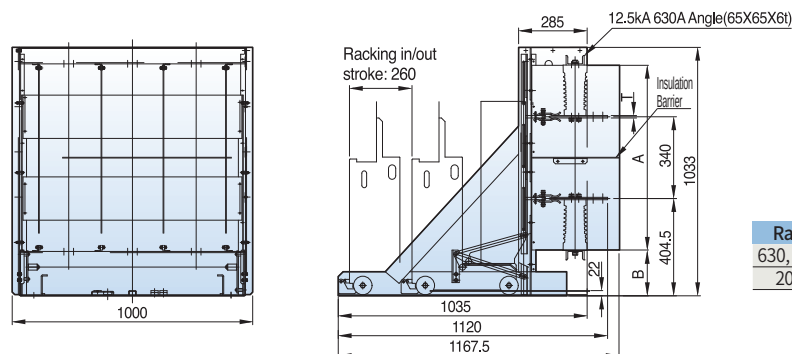
24/25.8kV 12.5/16/25kA 630/1250/2000A

Withdrawable

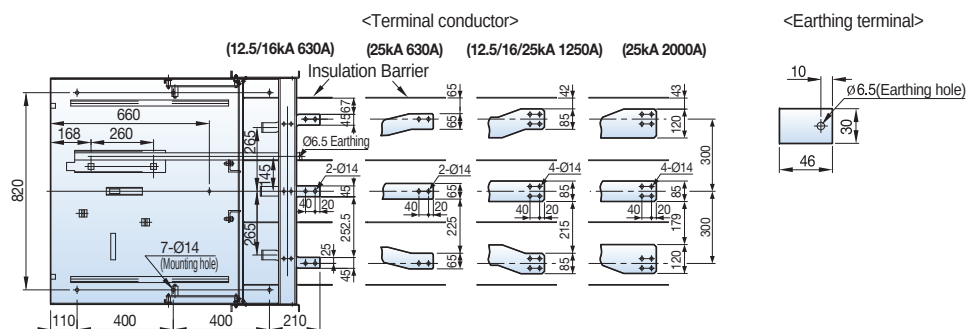
■ F type cradle Visible, Clip contact, phase distance 265mm

Type

VCL-20F13F06
VCL-20F13F13
VCL-20F16F06
VCL-20F16F13
VCL-20F25F06
VCL-20F25F13
VCL-20F25F20
VCL-25F13F06
VCL-25F13F13
VCL-25F16F06
VCL-25F16F13
VCL-25F25F06
VCL-25F25F13
VCL-25F25F20



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



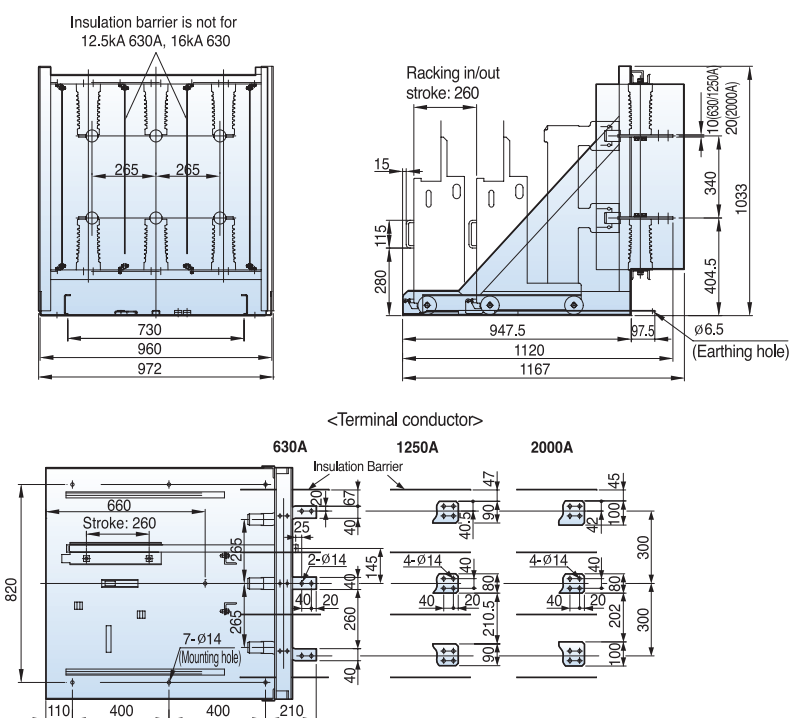
24/25.8kV 12.5/16/25kA 630/1250/2000A

Withdrawable

■ E type cradle Enclosed, Tulip contact, phase distance 265mm

Type

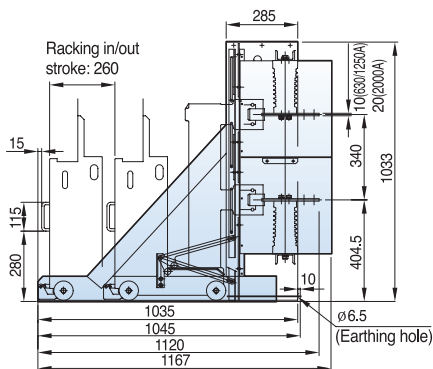
VCL-20E13G06
VCL-20E13G13
VCL-20E16G06
VCL-20E16G13
VCL-20E25G06
VCL-20E25G13
VCL-20E25G20
VCL-25E13G06
VCL-25E13G13
VCL-25E16G06
VCL-25E16G13
VCL-25E25G06
VCL-25E25G13
VCL-25E25G20



Withdrawable

VCL-20F13G06
VCL-20F13G13
VCL-20F16G06
VCL-20F16G13
VCL-20F25G06
VCL-20F25G13
VCL-20F25G20
VCL-25F13G06
VCL-25F13G13
VCL-25F16G06
VCL-25F16G13
VCL-25F25G06
VCL-25F25G13
VCL-25F25G20

Technical drawing of a rectangular frame or container. The drawing shows a top-down view of a rectangular structure with a grid pattern. The dimensions are indicated at the bottom: a width of 730 and a height of 1000. The drawing includes various structural details such as bolts, welds, and internal bracing.



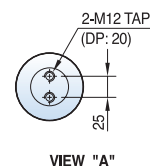
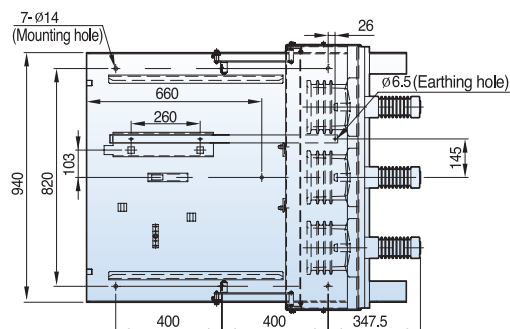
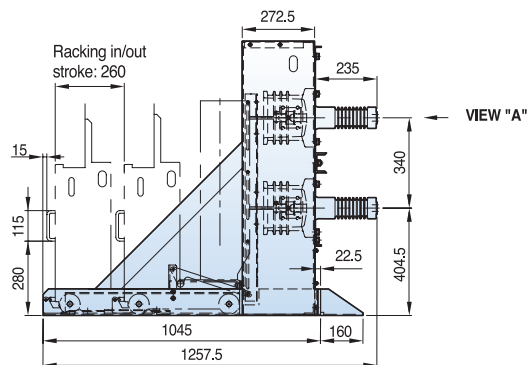
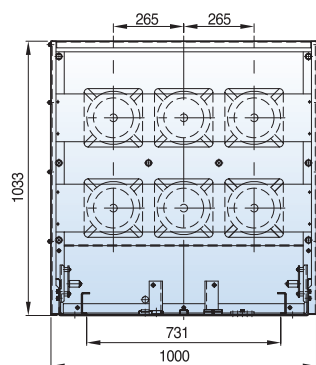
Technical drawing of the front view of a terminal block, showing dimensions and mounting details for models 630A, 1250A, and 2000A.

Dimensions and Features:

- Overall Width:** 820
- Internal Widths:** 660, 260 (Stroke), 285, 265, 210
- Mounting Holes:** 7- $\varnothing 14$ (Mounting hole)
- Earth Hole:** $\varnothing 6.5$ (Earth hole)
- Insulation Barrier:** Indicated between the main body and the terminal block.
- Terminal Block Dimensions:**
 - 630A:** 110, 400, 400, 210
 - 1250A:** 4- $\varnothing 14$, 40, 20, 40, 260, 40, 190, 47
 - 2000A:** 4- $\varnothing 14$, 40, 20, 40, 210, 5, 100, 45, 100, 45, 300

Withdrawable

VCL-20G13F06
VCL-20G13F13
VCL-20G16F06
VCL-20G16F13
VCL-20G25F06
VCL-20G25F13
VCL-25G13F06
VCL-25G13F13
VCL-25G16F06
VCL-25G16F13
VCL-25G25F06
VCL-25G25F13



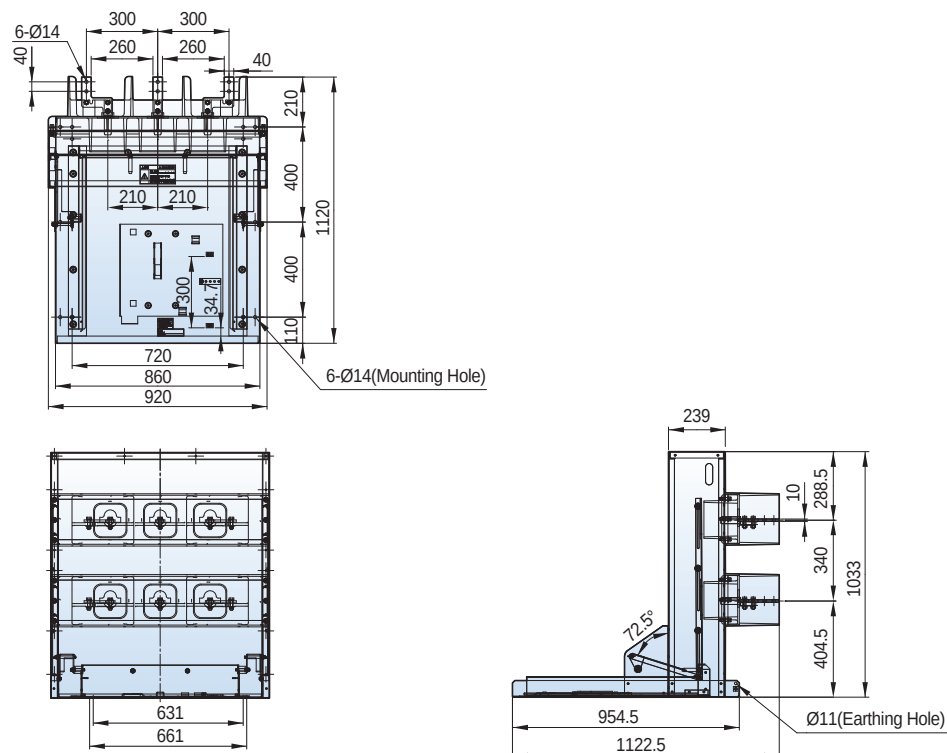
24/25.8kV 12.5/16/25kA 630A

Withdrawable

■ G type cradle, Tulip contact, phase distance 210mm

Type

VCL-20G13B06
VCL-20G16B06
VCL-20G25B06
VCL-25G13B06
VCL-25G16B06
VCL-25G25B06



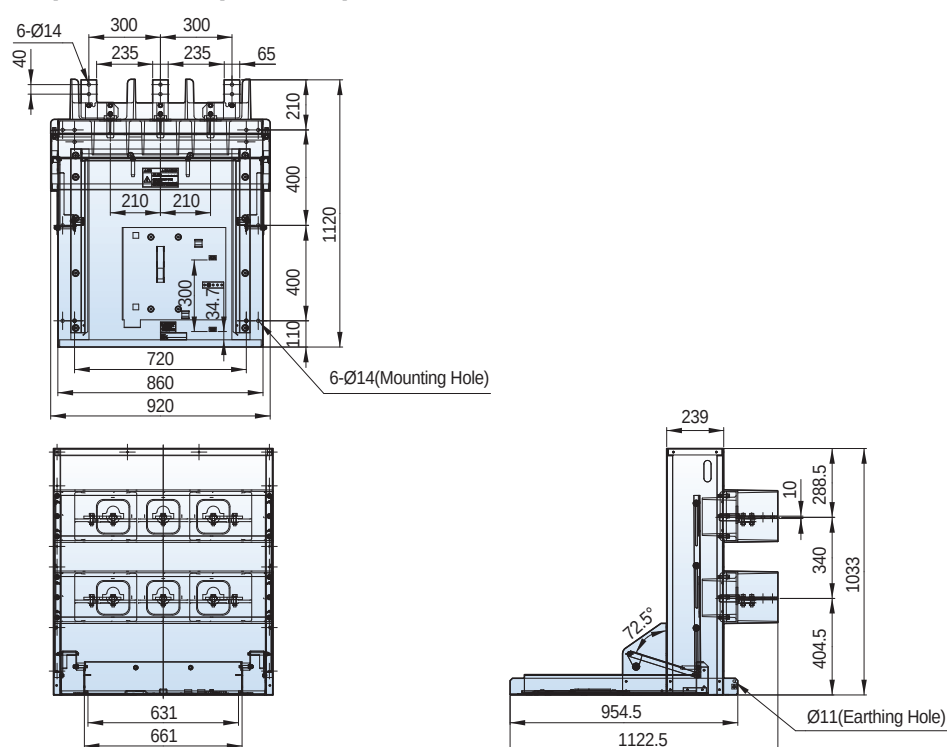
24/25.8kV 12.5/16/25kA 1250A

Withdrawable

■ G type cradle, Tulip contact, phase distance 210mm

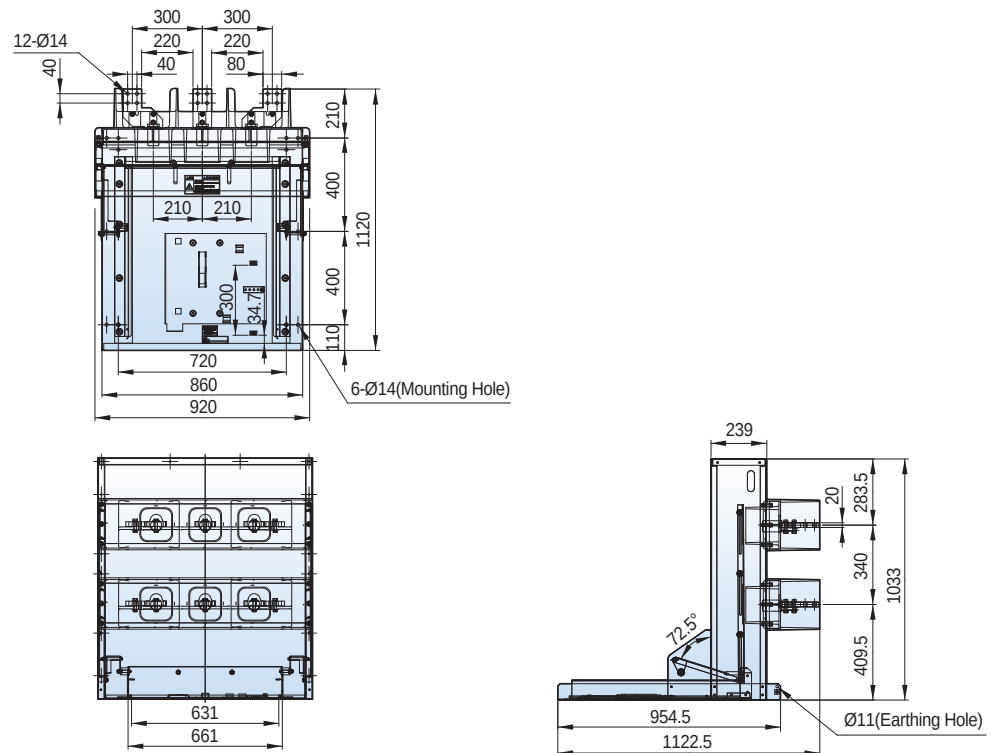
Type

VCL-20G13B13
VCL-20G16B13
VCL-20G25B13
VCL-25G13B13
VCL-25G16B13
VCL-25G25B13



Withdrawable

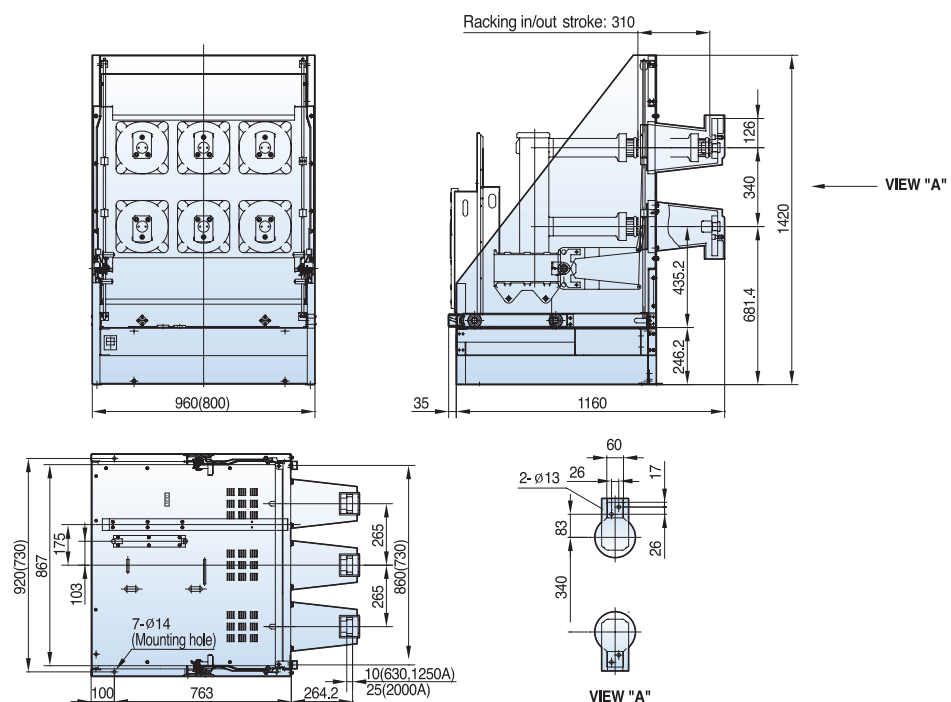
Type
VCL-20G13B20
VCL-20G16B20
VCL-20G25B20
VCL-25G13B20
VCL-25G16B20
VCL-25G25B20



■ K type cradle Enclosed, Tulip contact, phase distance 210/265mm

Withdrawable

Type
VCL-20K13B06
VCL-20K13B13
VCL-20K16B06
VCL-20K16B13
VCL-20K25B06
VCL-20K25B13
VCL-25K13B06
VCL-25K13B13
VCL-25K16B06
VCL-25K16B13
VCL-25K25B06
VCL-25K25B13
VCL-20K13F06
VCL-20K13F13
VCL-20K16F06
VCL-20K16F13
VCL-20K25F06
VCL-20K25F13
VCL-25K13F06
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VCL-25K16F13
VCL-25K25F06
VCL-25K25F13
VCL-25K25F20

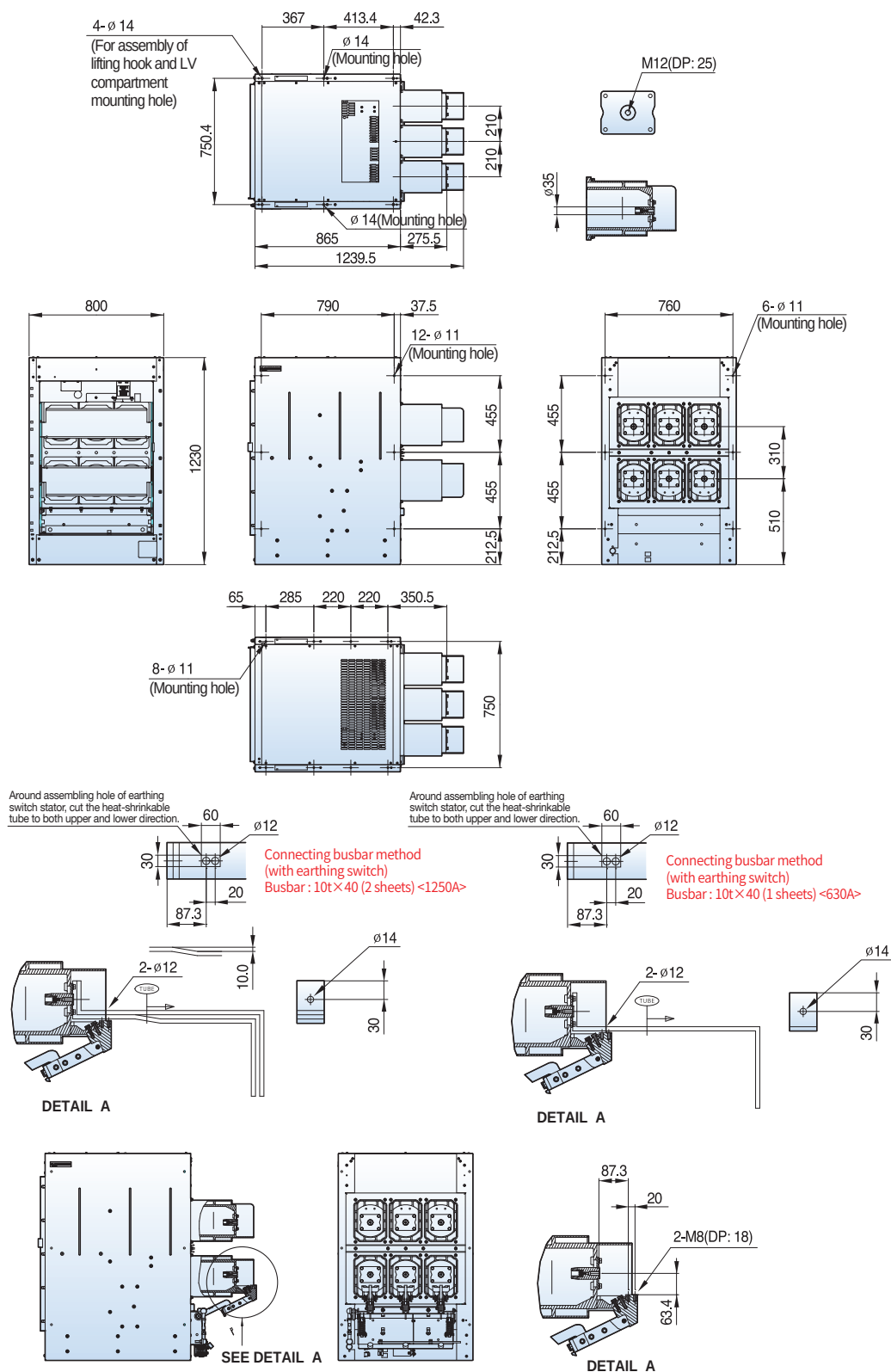


Note) In case of phase distance 210mm () means dimensions and 630A, 1250A are available only
Items: VCL-20K13B06, VCL-20K13B13, (G-type closed Tulip way, 630A, 1250A)

Withdrawable

Type

VCL-20H13B06
VCL-20H13B13
VCL-20H16B06
VCL-20H16B13
VCL-20H25B06
VCL-20H25B13
VCL-25H13B06
VCL-25H13B13
VCL-25H16B06
VCL-25H16B13
VCL-25H25B06
VCL-25H25B13



■ H type cradle, phase distance 275mm



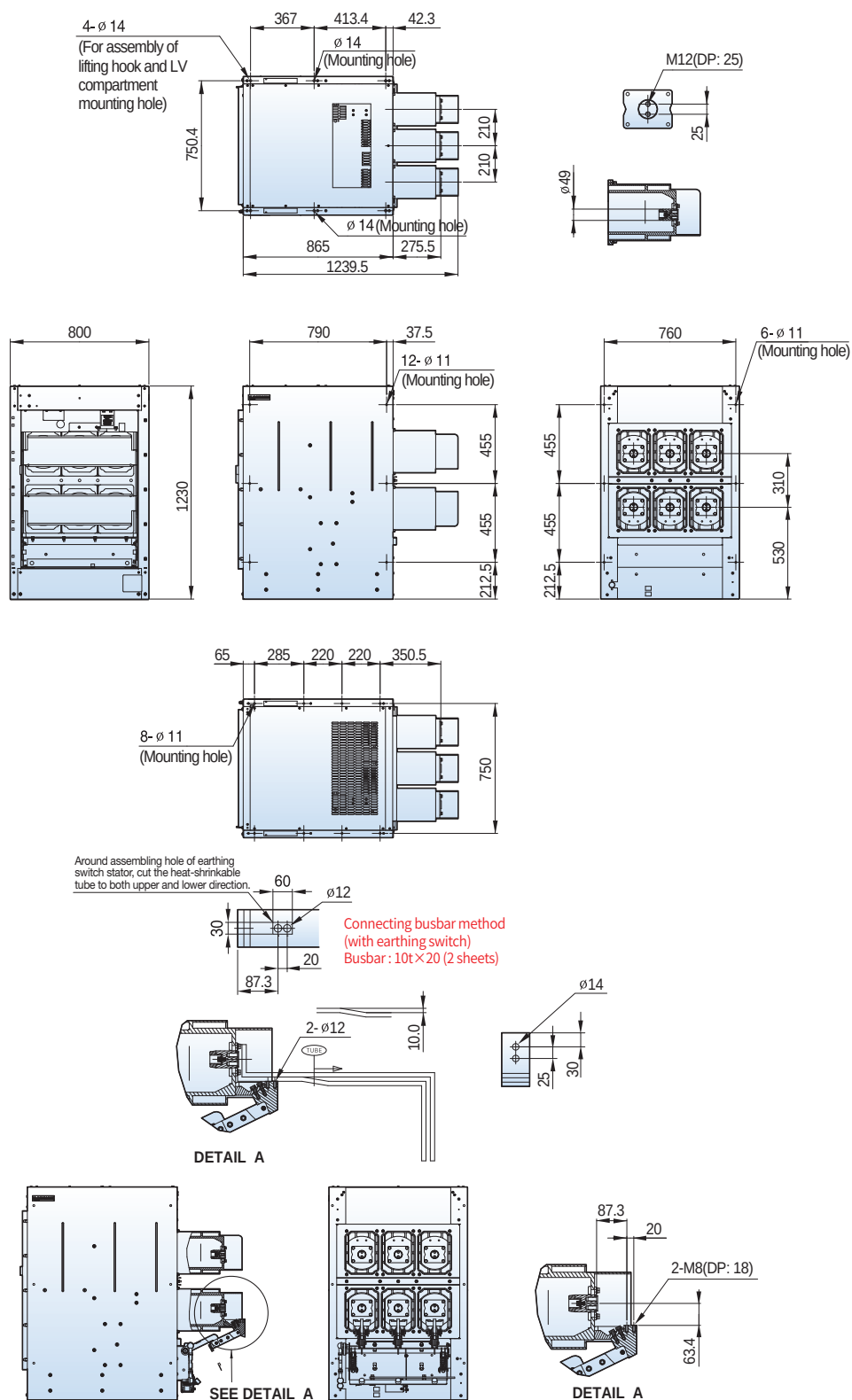
24/25.8kV 25kA 2000A

Withdrawable

Type

VCL-20H25B20
VCL-25H25B20

■ H type cradle, phase distance 210mm



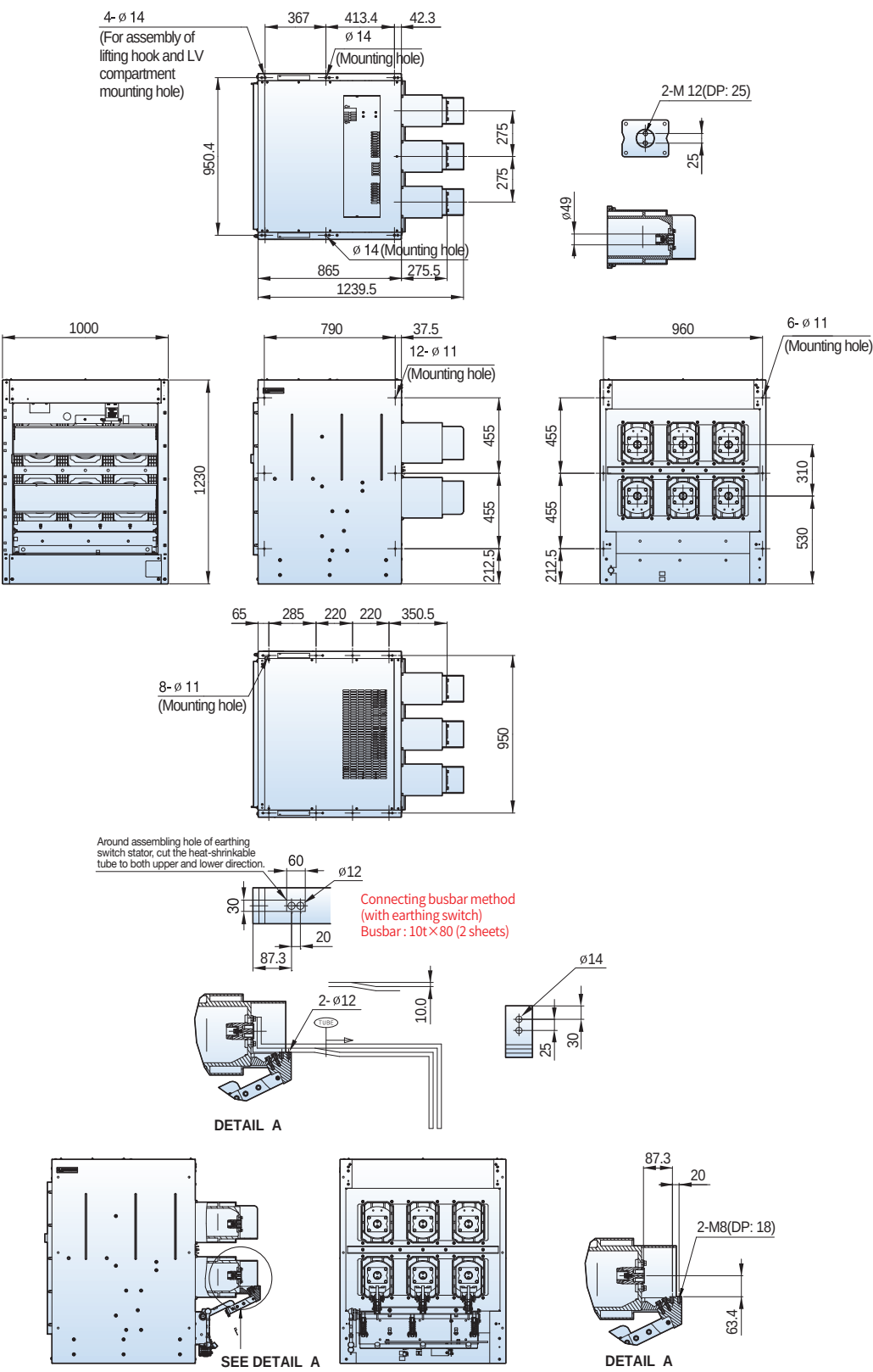
Dimensions - VL type (VL-20/25)

24/25.8kV 25kA 2000A

Withdrawable

Type
VCL-20H25D20
VCL-25H25D20

■ H type cradle, phase distance 275mm



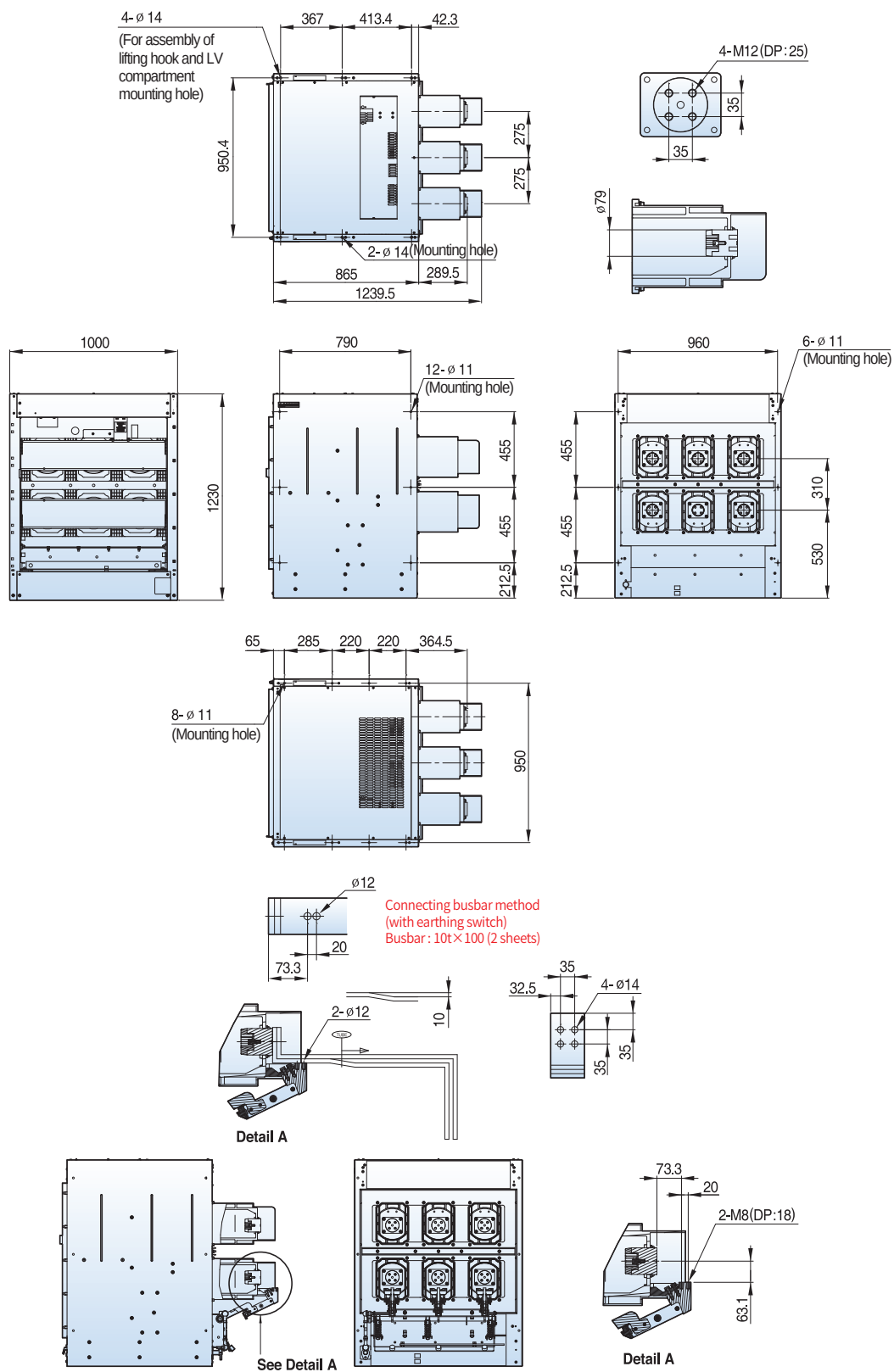
24/25.8kV 25kA 2500A

Withdrawable

Type

VCL-20H25D25
VCL-25H25D25

■ H type cradle, phase distance 275mm



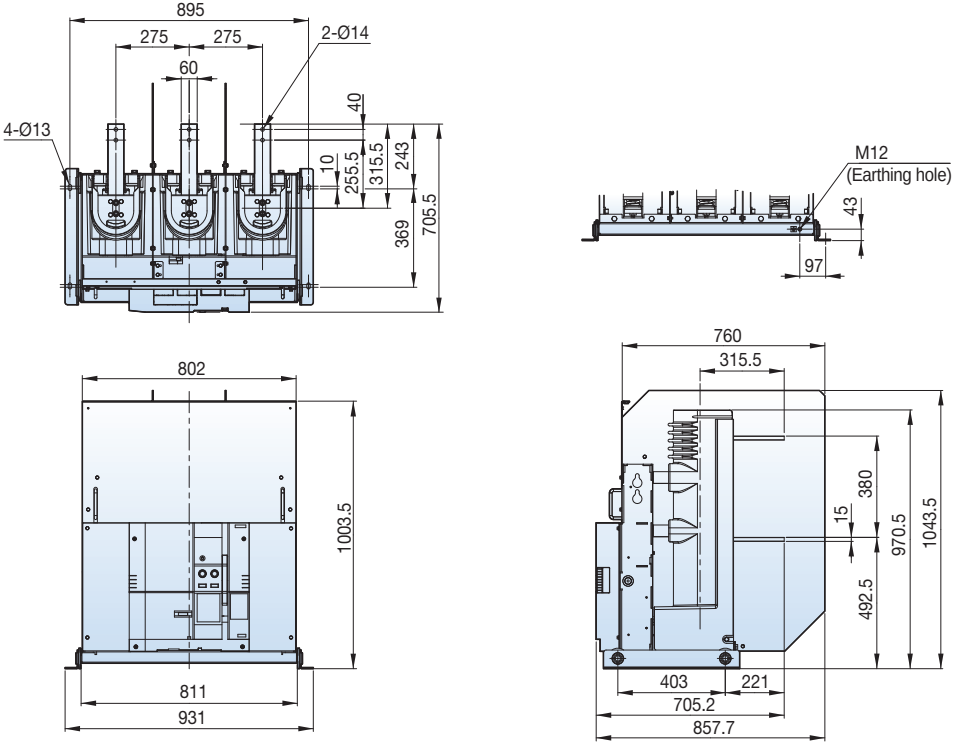
Dimensions - VL type (VL-36)

36kV 25kA 630/1250A

Fixed

■ P type, phase distance 275mm

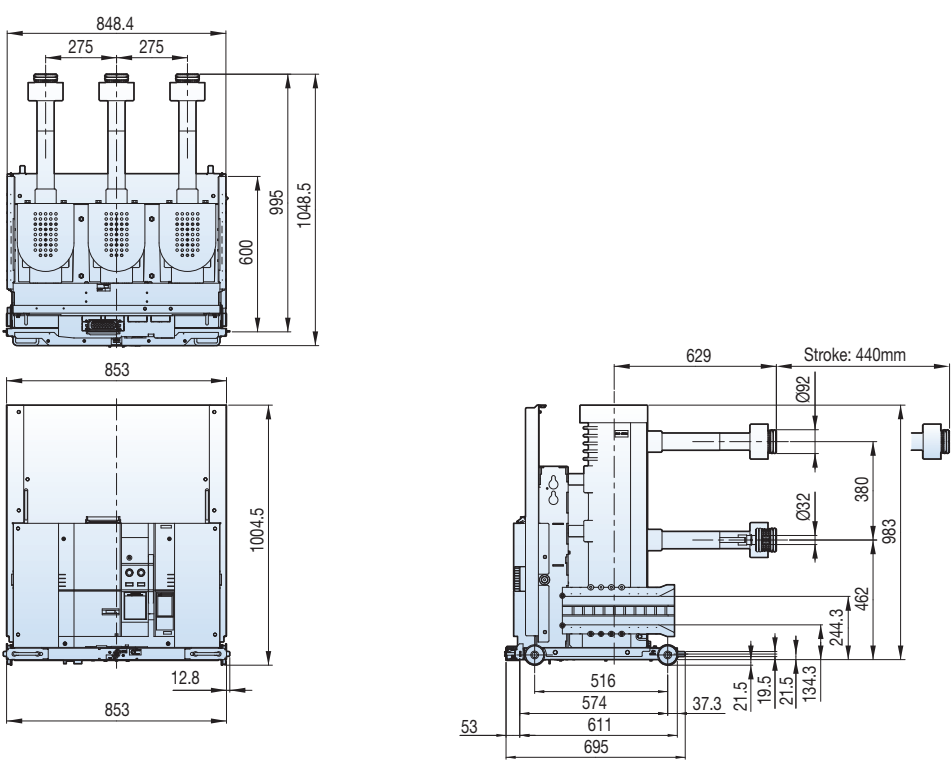
Type
VL-36P25D06
VL-36P25D13



Withdrawable

■ H type unit, phase distance 275mm

Type
VL-36H25D06
VL-36H25D13



■ H type cradle, phase distance 275mm

VCL-36H25D06
VCL-36H25D13



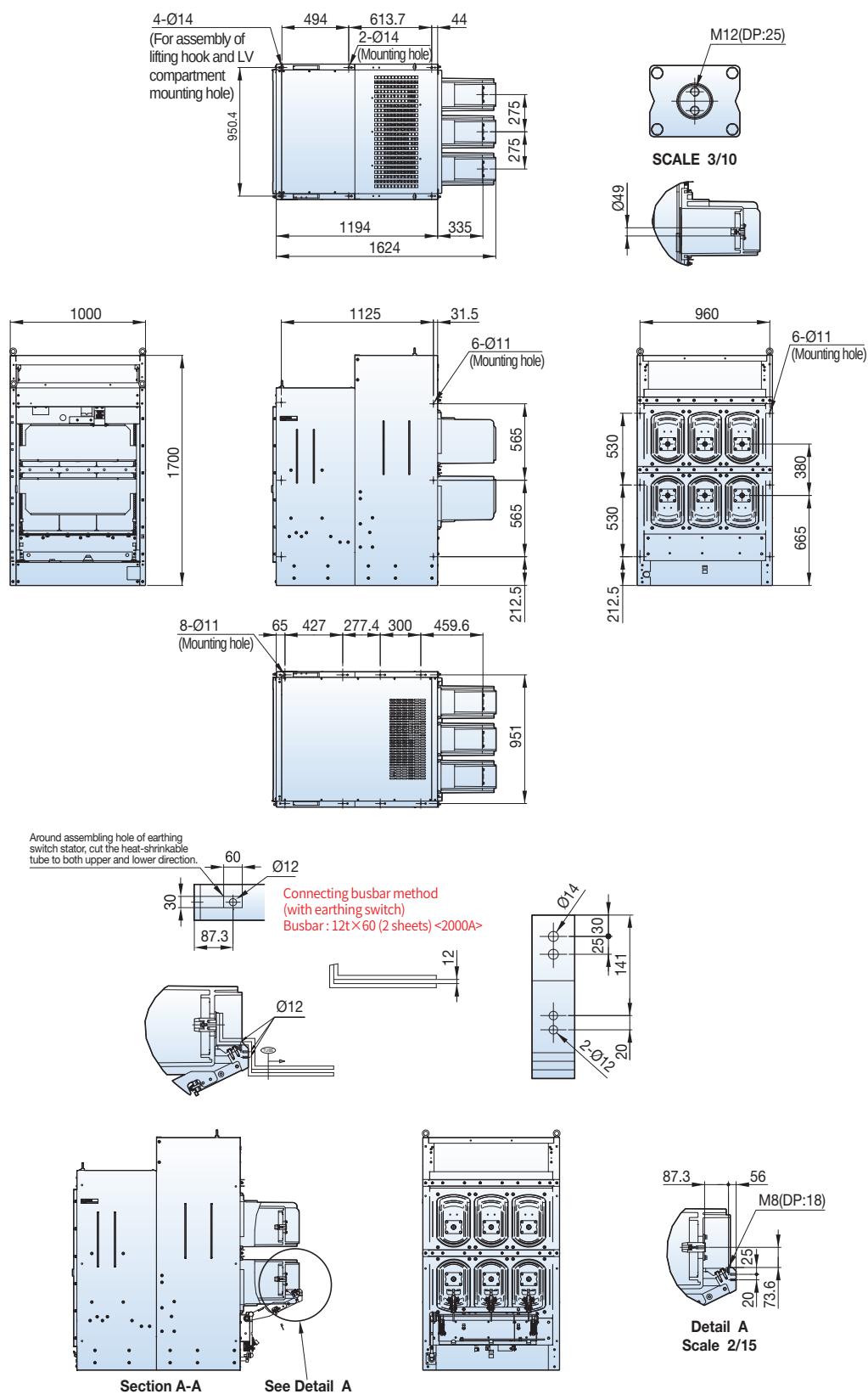
36kV 25kA 2000A

Withdrawable

Type

VCL-36H25D20

■ H type cradle, phase distance 275mm



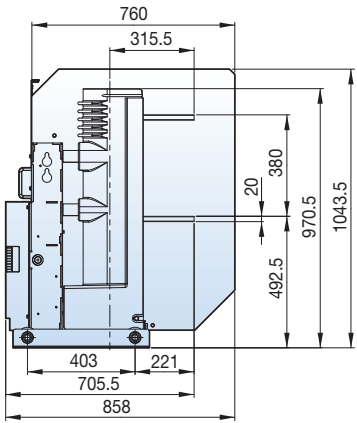
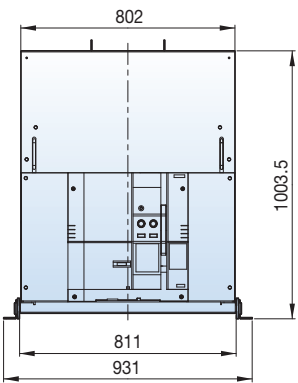
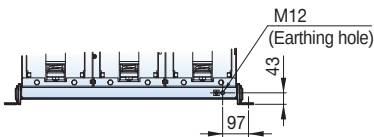
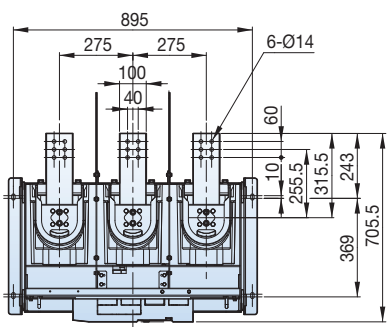
Dimensions - VL type (VL-36)

36kV 25kA 2500A

Fixed

■ P type, phase distance 275mm

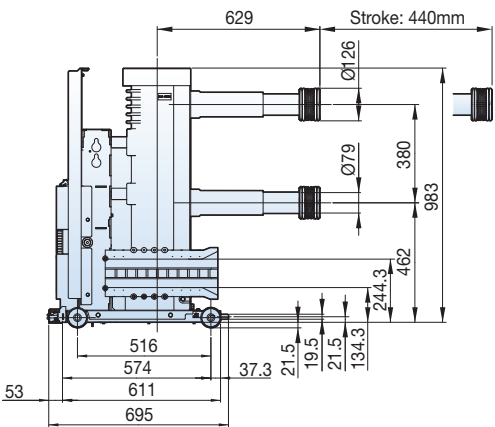
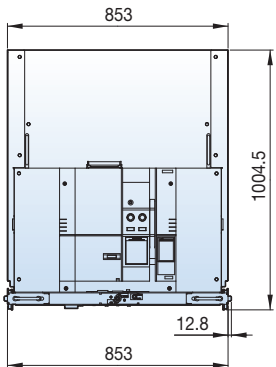
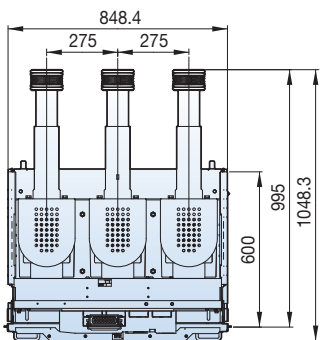
Type
VL-36P25D25



Withdrawable

■ H type unit, phase distance 275mm

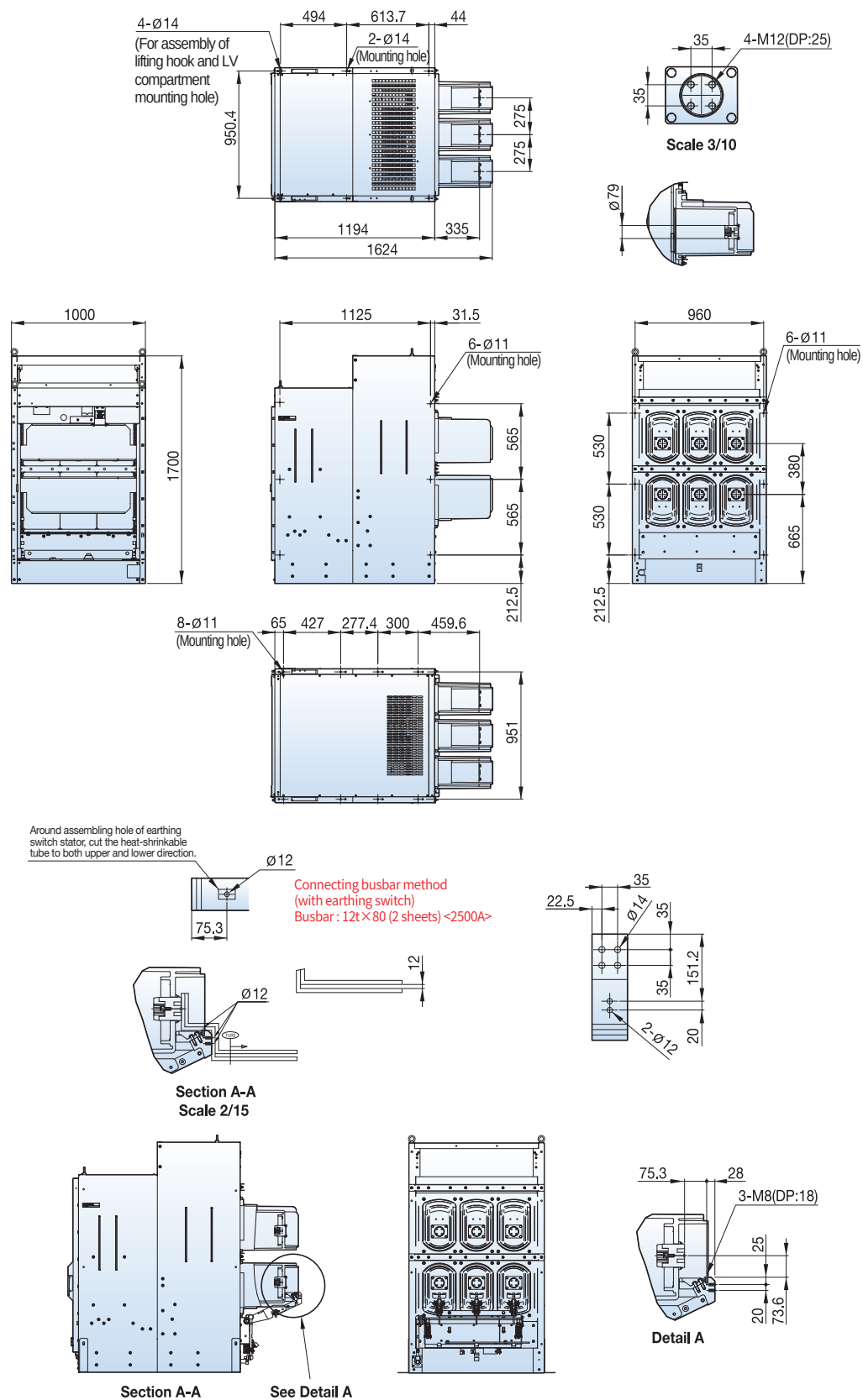
Type
VL-36H25D25



Withdrawable

Type

VCL-36H25D25



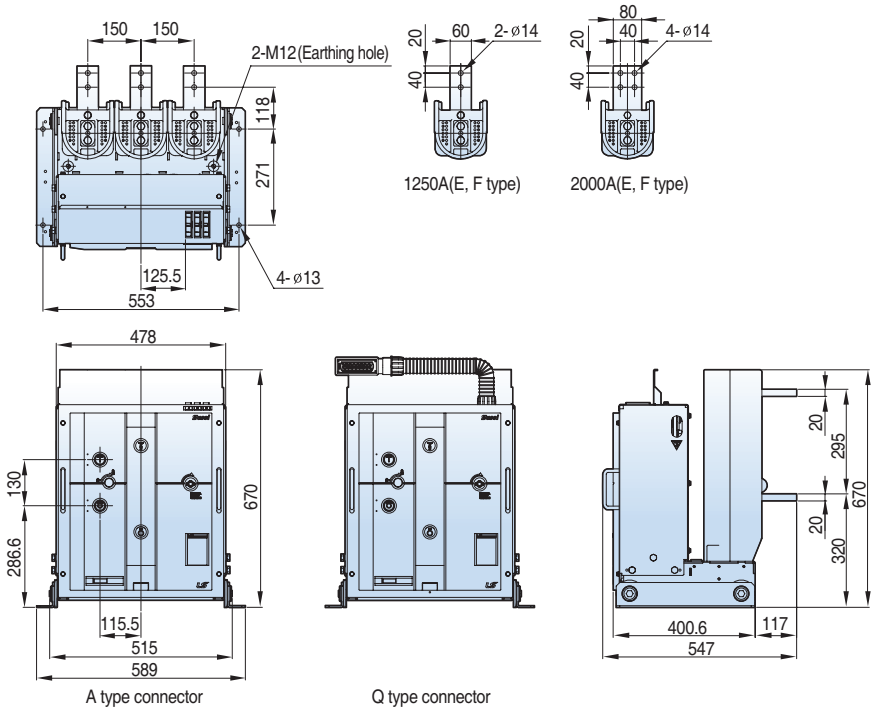
Dimensions - LVB, VH type (LVB, VH-06/12)

7.2kV, 40kA, 1250/2000A

Fixed

■ P type, phase distance 150mm

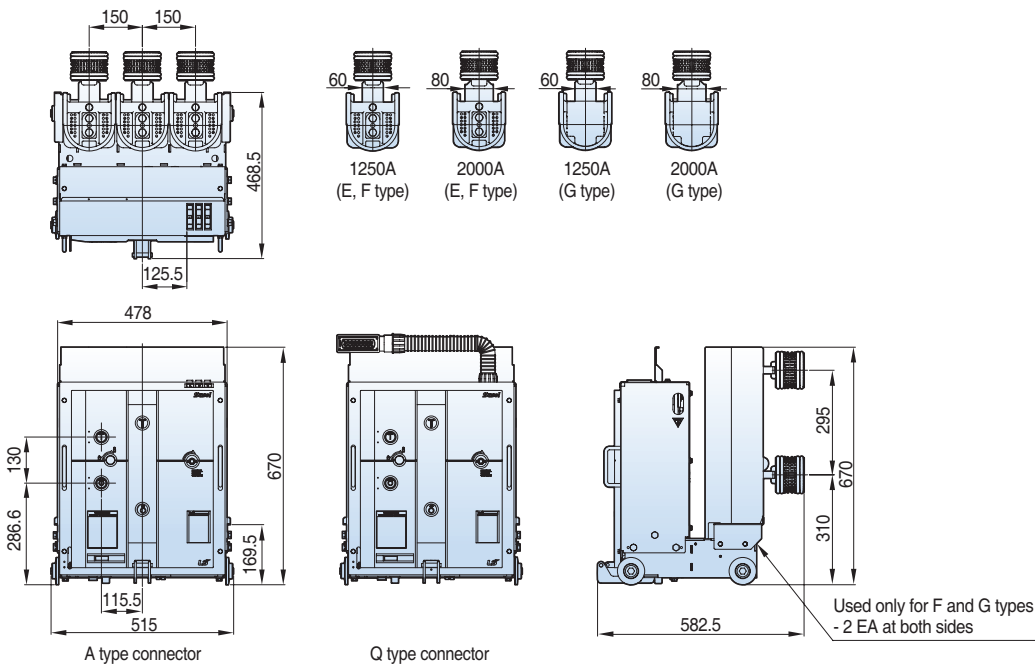
Type
LVB-06P-32L/12
LVB-06P-32L/20
LVB-06P-40L/13
LVB-06P-40L/20



Withdrawable

■ E,F,G type unit, phase distance 150mm

Type
LVB-06E-32L/12
LVB-06E-32L/20
LVB-06E-40L/13
LVB-06E-40L/20
LVB-06F-32L/12
LVB-06F-32L/20
LVB-06F-40L/13
LVB-06F-40L/20
LVB-06G-32L/12
LVB-06G-32L/20
LVB-06G-40L/13
LVB-06G-40L/20



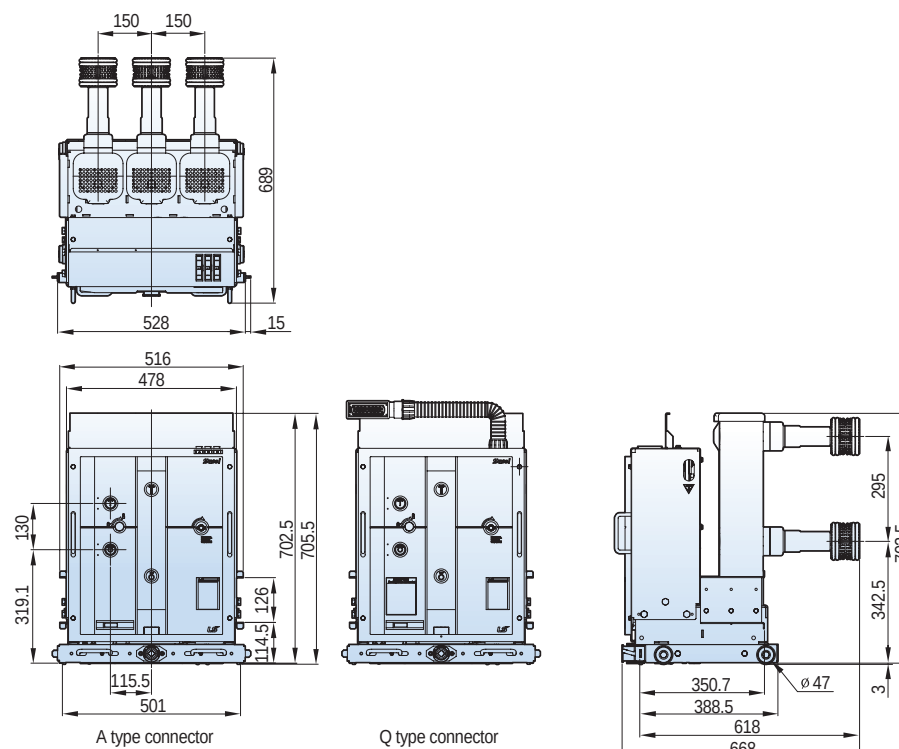
7.2/12kV, 40kA, 1250/2000A

Withdrawable

■ MCSG type unit, phase distance 150mm: option type T

Type

LVB-06G-32L/12-T
LVB-06G-32L/20-T
LVB-06G-40L/12-T
LVB-06G-40L/20-T
LVB-12G-32L/12-T
LVB-12G-32L/20-T
LVB-12G-40L/12-T
LVB-12G-40L/20-T



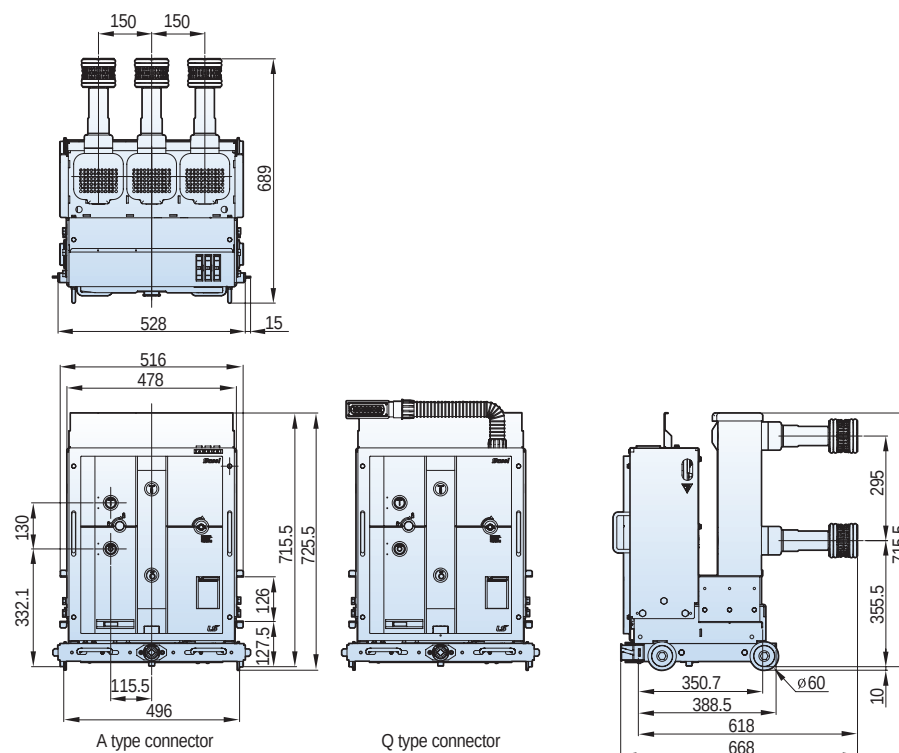
7.2/12kV, 31.5/40kA, 1250/2000A

Withdrawable

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

Type

LVB-06G-32L/12-T2
LVB-06G-32L/20-T2
LVB-06G-40L/12-T2
LVB-06G-40L/20-T2
LVB-12G-32L/12-T2
LVB-12G-32L/20-T2
LVB-12G-40L/12-T2
LVB-12G-40L/20-T2



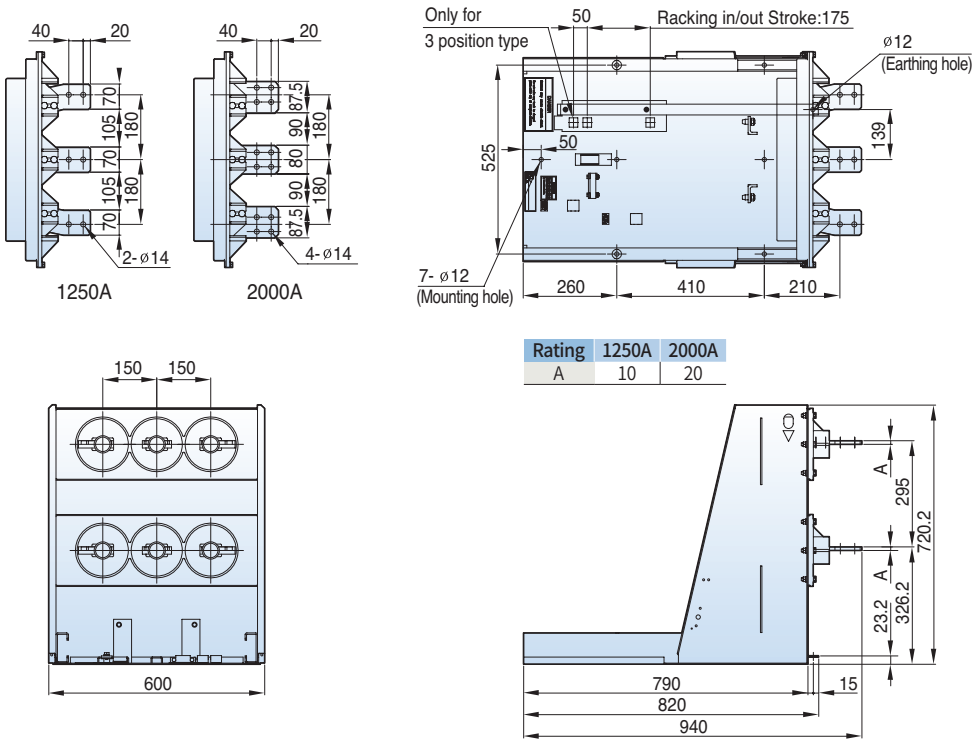
Dimensions - LVB, VH type (LVB, VH-06/12)

7.2kV, 40kA 1250/2000A

Withdrawable

E type cradle, phase distance 150mm

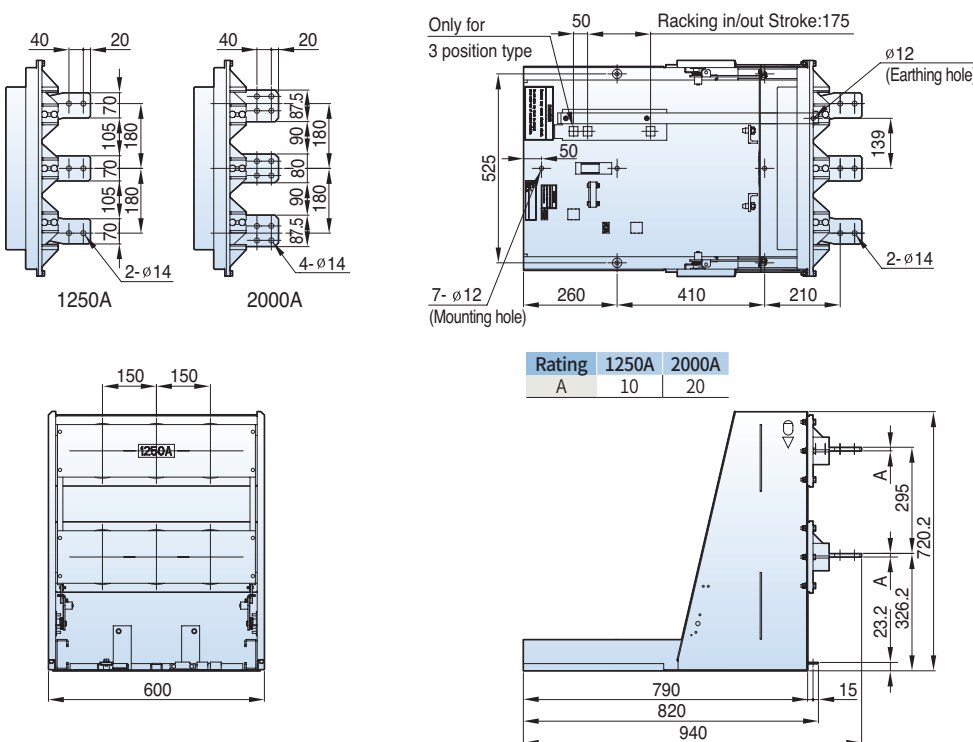
Type
LCL-06E-32D/12
LCL-06E-32D/20
LCL-06E-40D/12
LCL-06E-40D/20



Withdrawable

F, G type cradle, phase distance 150mm

Type
LCL-06F-32D/12
LCL-06F-32D/20
LCL-06F-40D/12
LCL-06F-40D/20
LCL-06G-32D/12
LCL-06G-32D/20
LCL-06G-40D/12
LCL-06G-40D/20



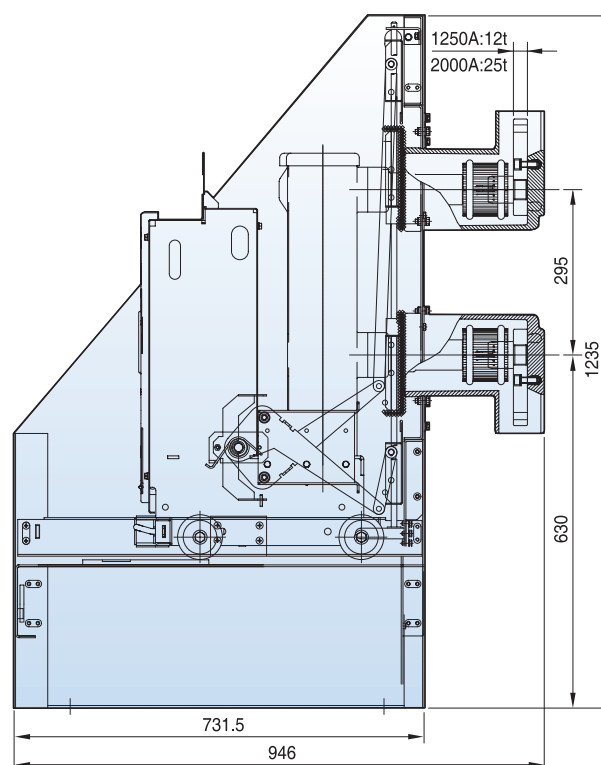
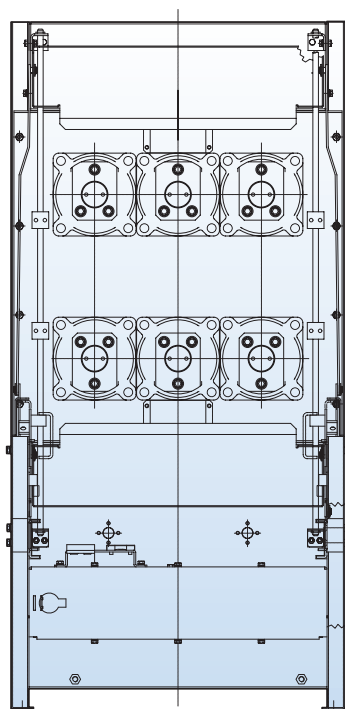
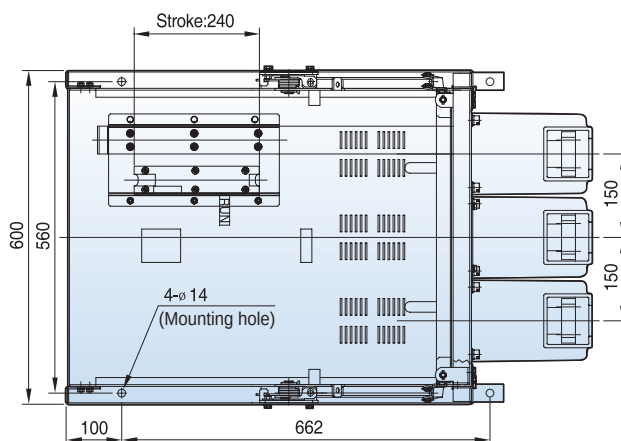
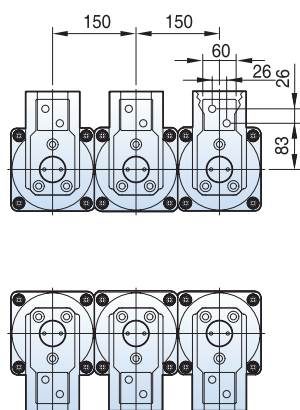
7.2/12kV, 40kA 1250/2000A

Withdrawable

■ MCSG type cradle, phase distance 150mm

Type

LCL-06G-32D/12-T2
 LCL-06G-32D/20-T2
 LCL-06G-40D/12-T2
 LCL-06G-40D/20-T2
 LCL-12G-32D/12-T2
 LCL-12G-32D/20-T2
 LCL-12G-40D/12-T2
 LCL-12G-40D/20-T2



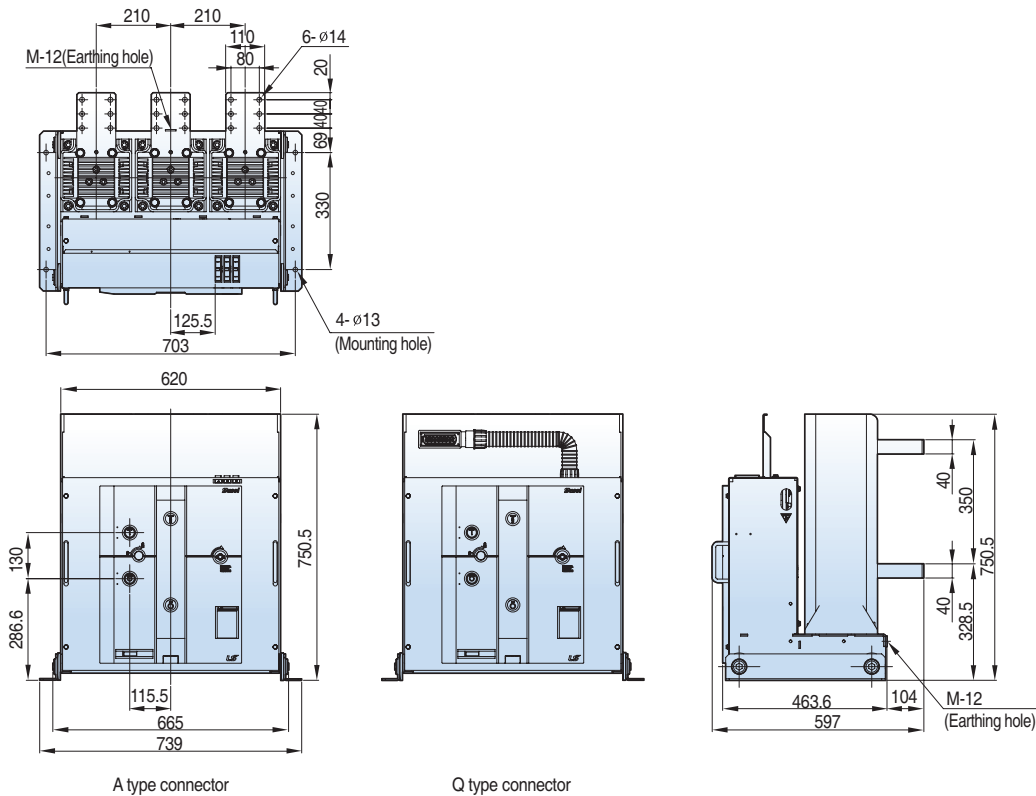
Dimensions - LVB, VH type (LVB, VH-06/12)

7.2kV, 31.5/40kA, 3150A

Fixed

■ P type, phase distance 210mm

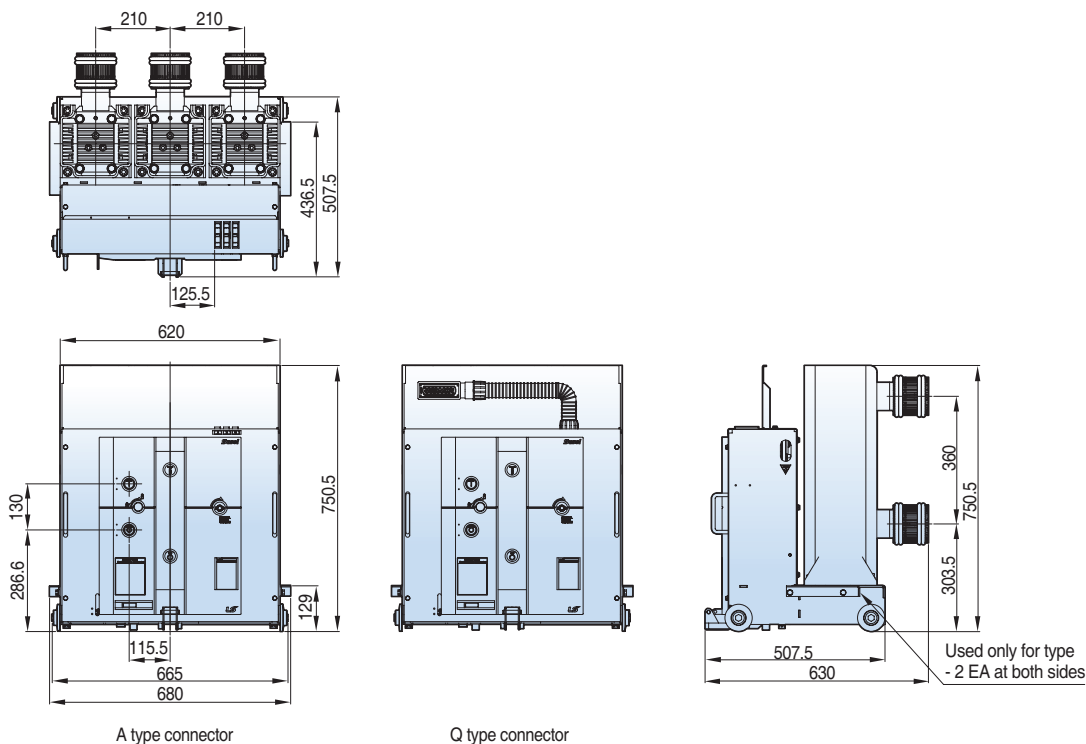
Type
LVB-06P-32L/30
LVB-06P-40L/30



Withdrawable

■ E,F,G type unit, phase distance 210mm

Type
LVB-06E-32L/30
LVB-06E-40L/30
LVB-06F-32L/30
LVB-06F-40L/30
LVB-06G-32L/30
LVB-06G-40L/30



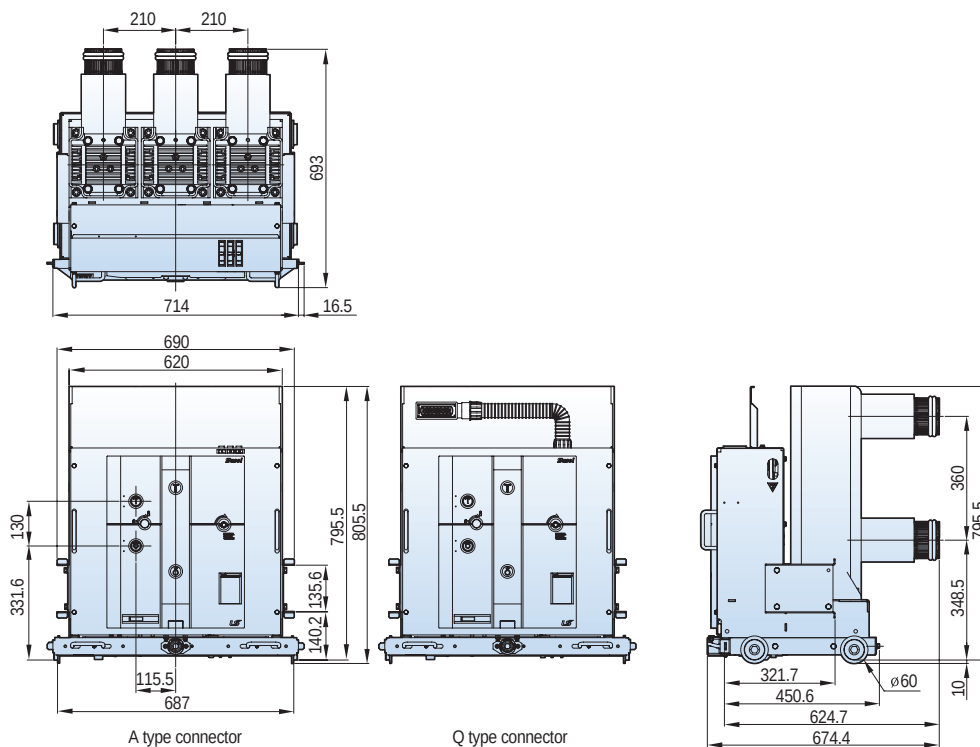
7.2kV, 31.5/40kA, 3150A

Withdrawable

Type

LVB-06G-32L/30-T
LVB-06G-40L/30-T
LVB-06G-32L/30-T2
LVB-06G-40L/30-T2

■ MCSG type unit, phase distance 210mm



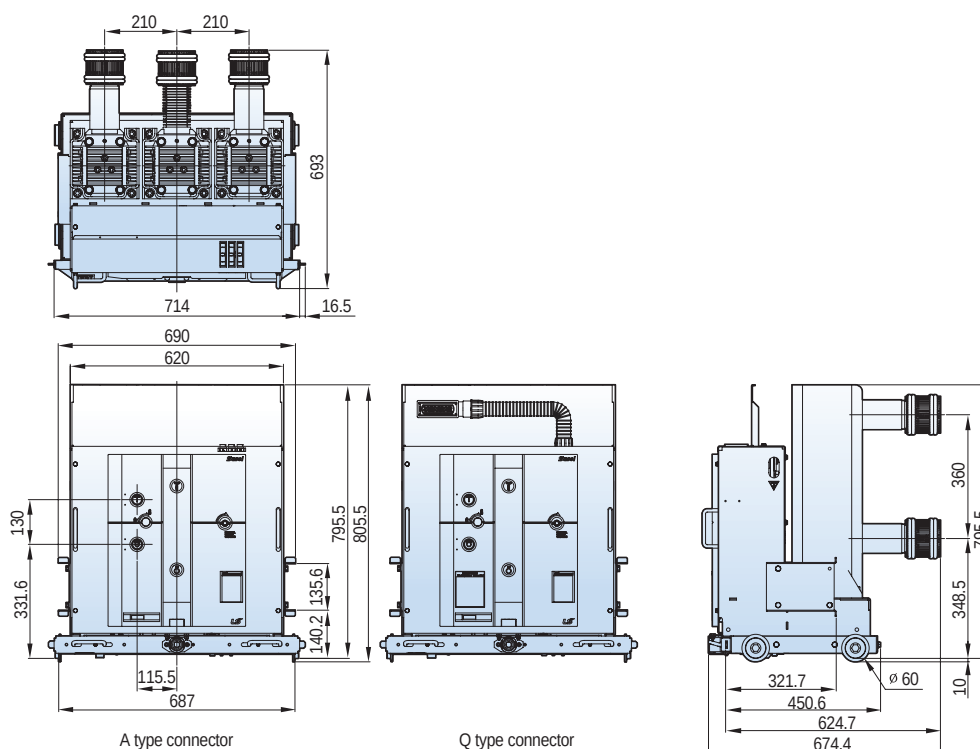
12kV, 31.5/40kA, 3150A

Withdrawable

Type

LVB-12G-32L/30-T
LVB-12G-40L/30-T
LVB-12G-32L/30-T2
LVB-12G-40L/30-T2

■ MCSG type unit, phase distance 210mm



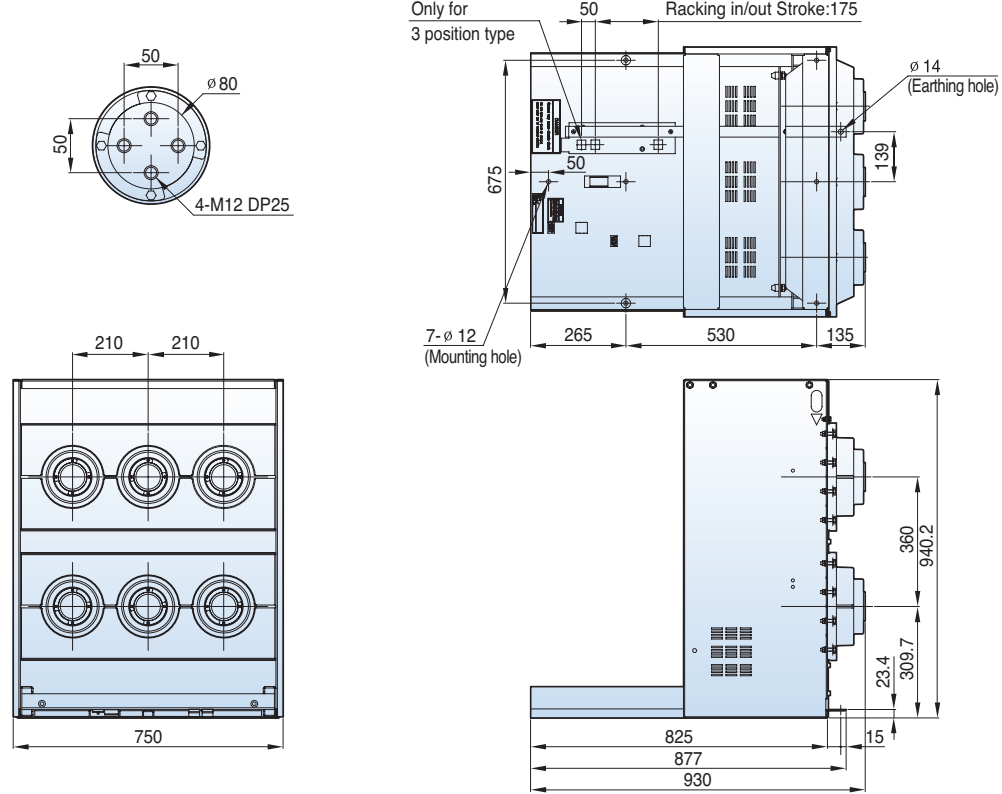
Dimensions - LVB, VH type (LVB, VH-06/12)

7.2kV, 31.5/40kA 3150A

Withdrawable

E type cradle, phase distance 210mm

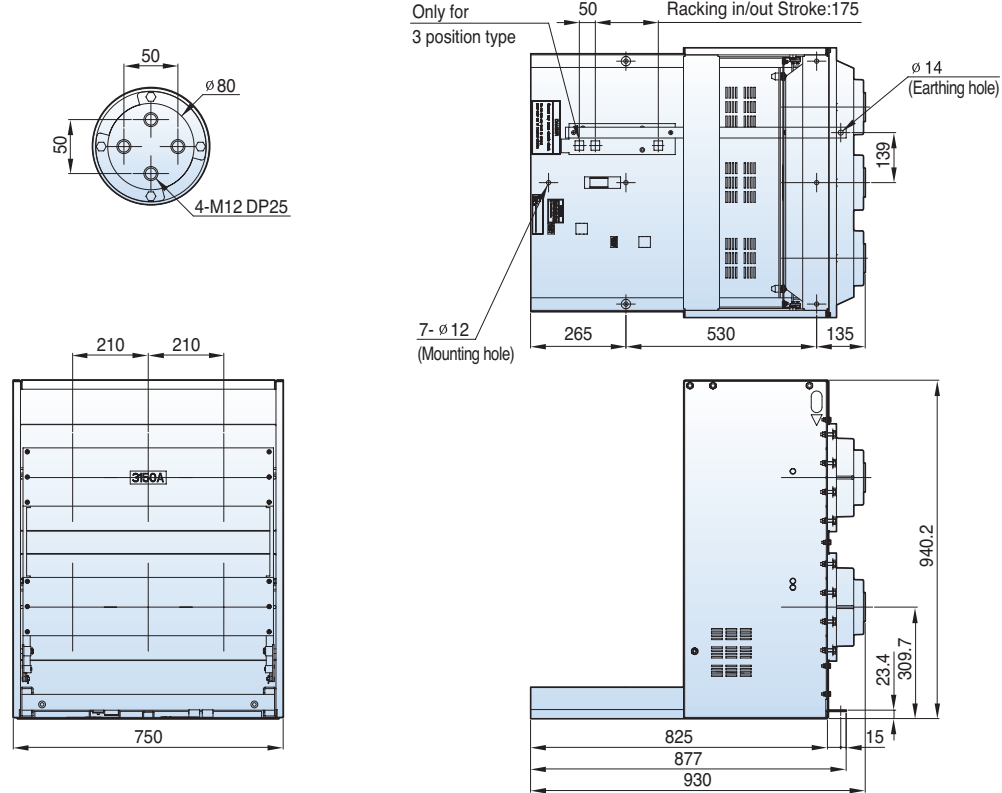
Type
LCL-06E-32D/30
LCL-06E-40D/30



Withdrawable

F, G type cradle, phase distance 210mm

Type
LCL-06F-32D/30
LCL-06F-40D/30
LCL-06G-32D/30
LCL-06G-40D/30



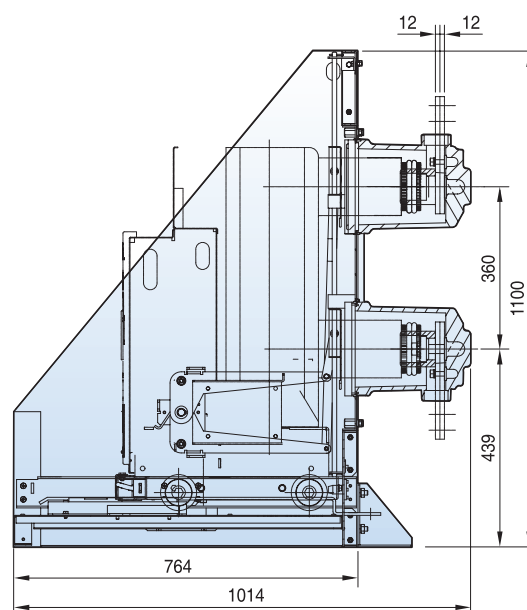
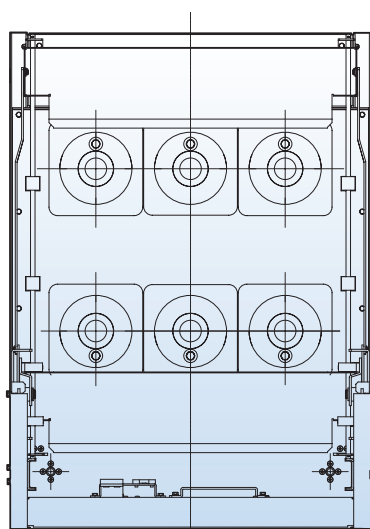
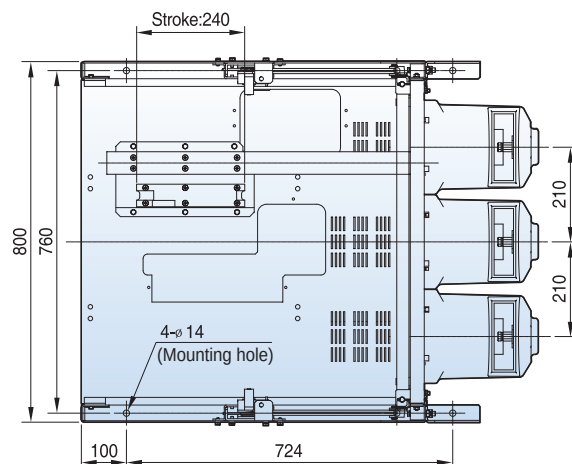
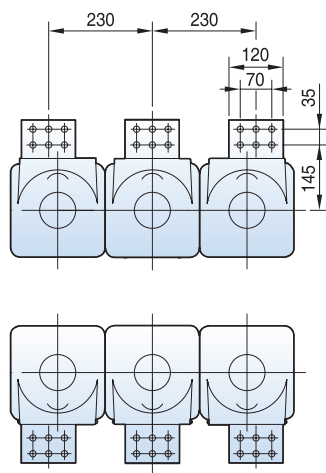
7.2/12kV, 31.5/40kA 3150A

Withdrawable

■ MCSG type cradle, phase distance 210mm

Type

LCL-06G-32D/30-T
LCL-06G-40D/30-T
LCL-12G-32D/30-T
LCL-12G-40D/30-T



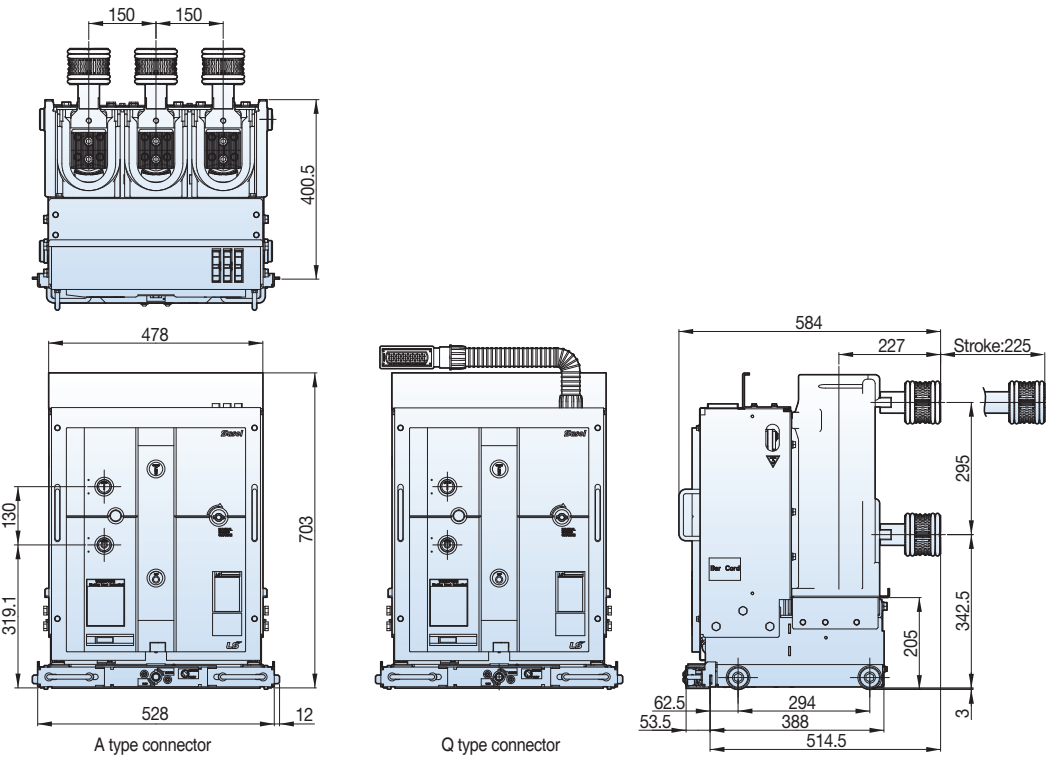
Dimensions - VH type (VH-06/12/17)

7.2kV 40kA 1250/2000A

Withdrawable

Type
VH-06Fs40A13
VH-06Fs40A20

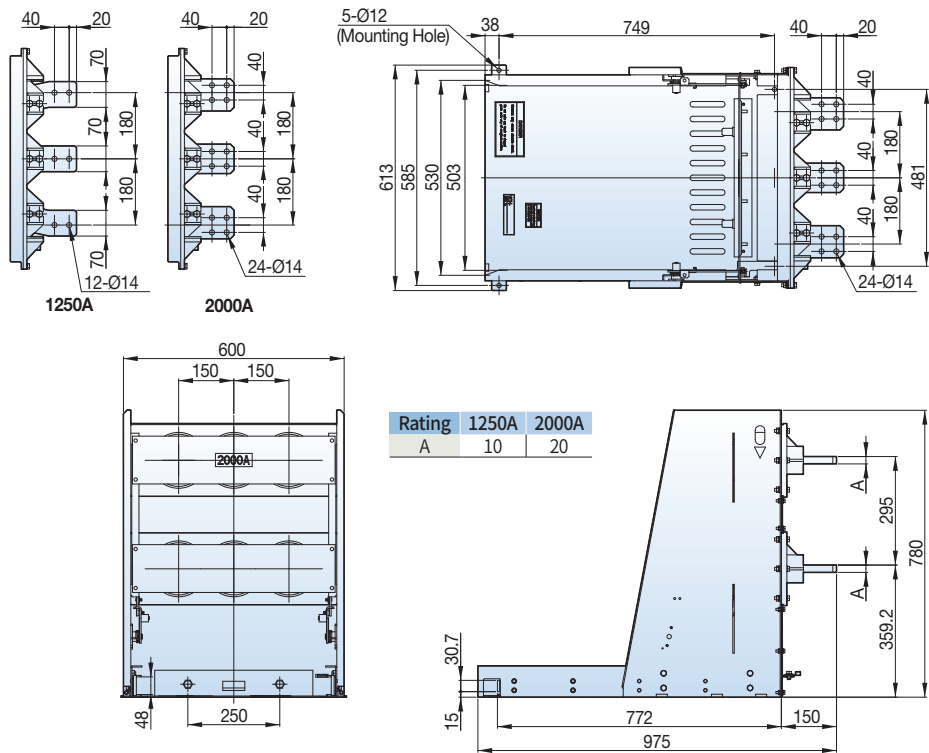
■ Fs type unit, phase distance 150mm



Withdrawable

Type
VCH-06Fs40A13
VCH-06Fs40A20

■ Fs type cradle, phase distance 150mm



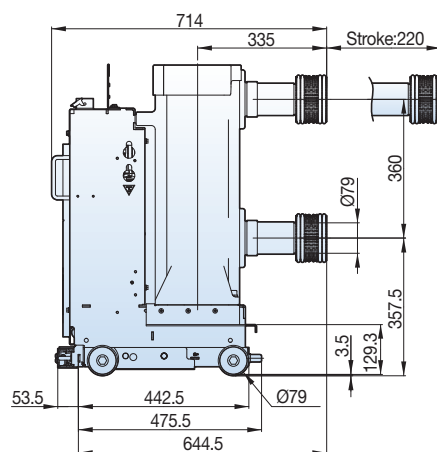
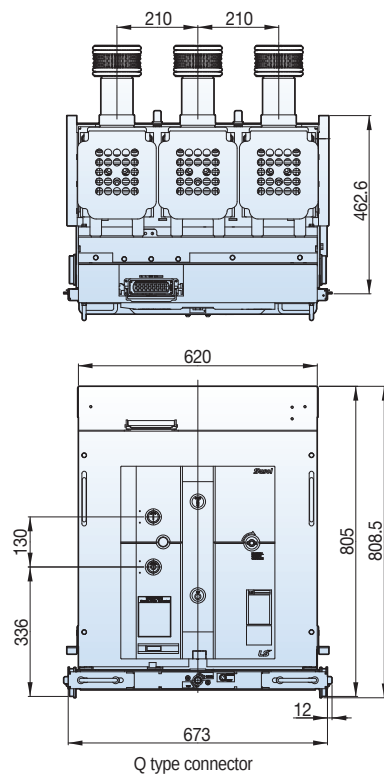
7.2kV, 31.5/40kA, 3150A

Withdrawable

Type

VH-06Fs32B32
VH-06Fs40B32

■ Fs type unit, phase distance 210mm

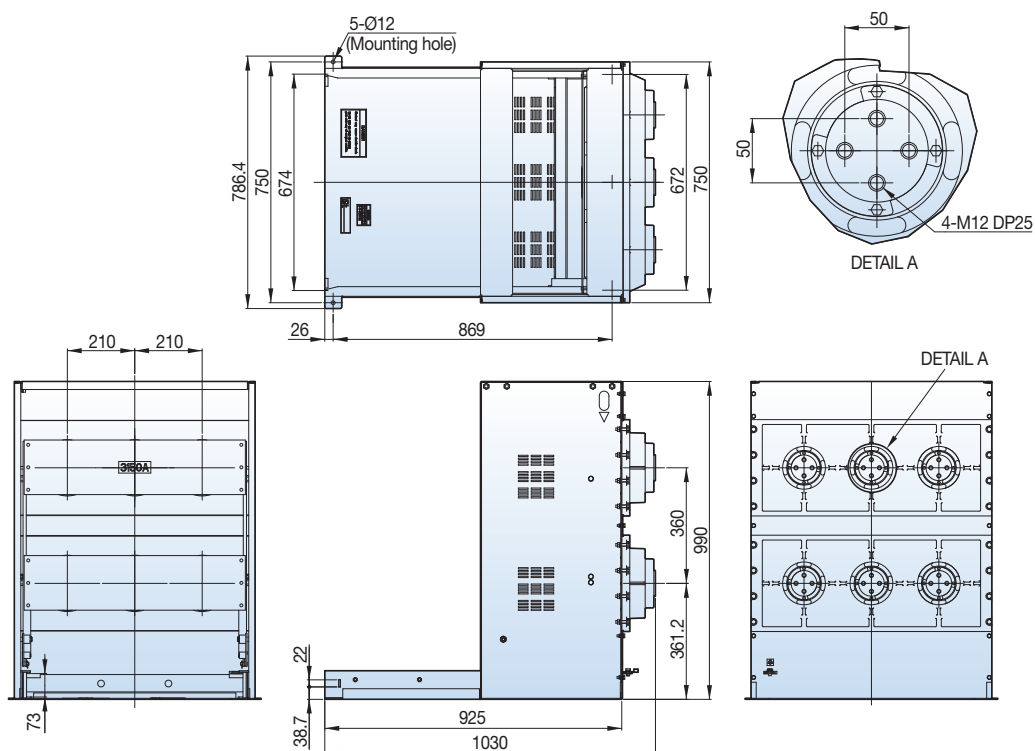


Withdrawable

Type

VCH-06Fs32B32
VCH-06Fs40B32

■ Fs type cradle, phase distance 210mm



Dimensions - VH type (VH-06/12/17)

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

Withdrawable

Type

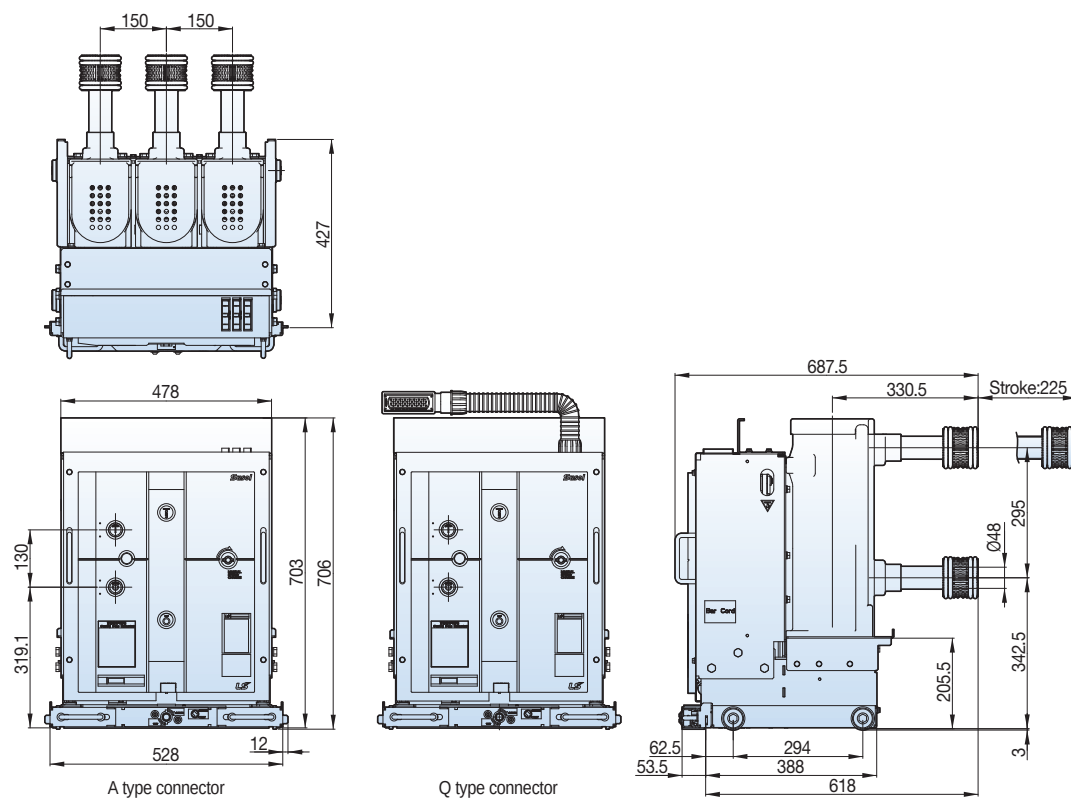
VH-06Gs40A13

VH-06Gs40A20

VH-12Gs40A13

VH-12Gs40A20

■ Gs type unit, phase distance 150mm



Withdrawable

Type

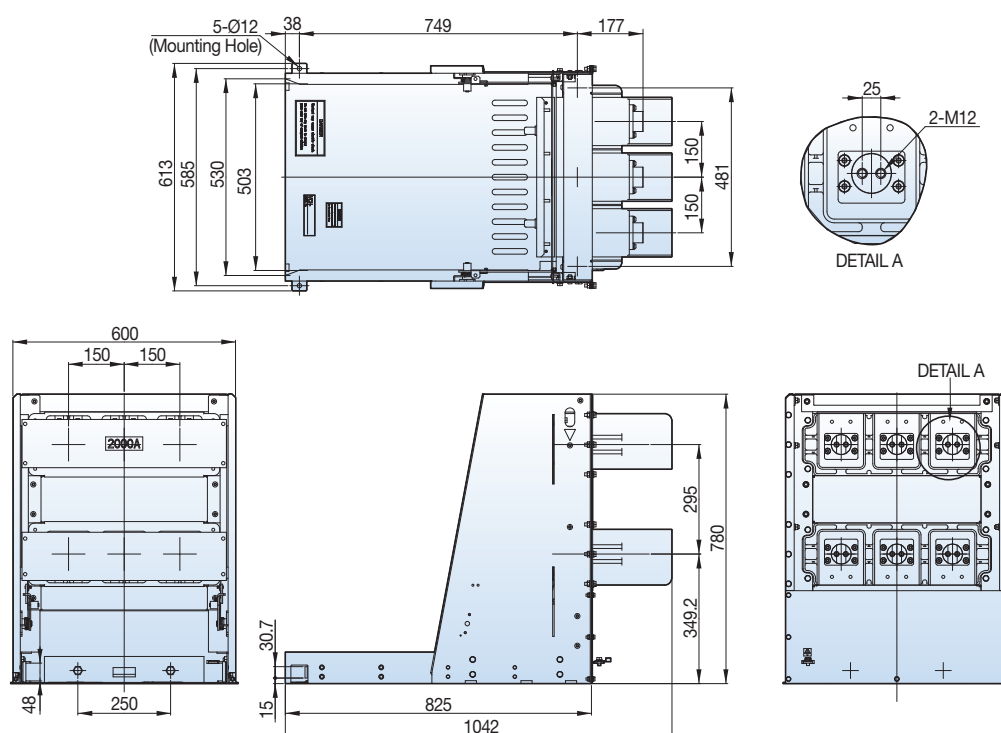
VCH-06Gs40A13

VCH-06Gs40A20

VCH-12Gs40A13

VCH-12Gs40A20

■ Gs type cradle, phase distance 150mm



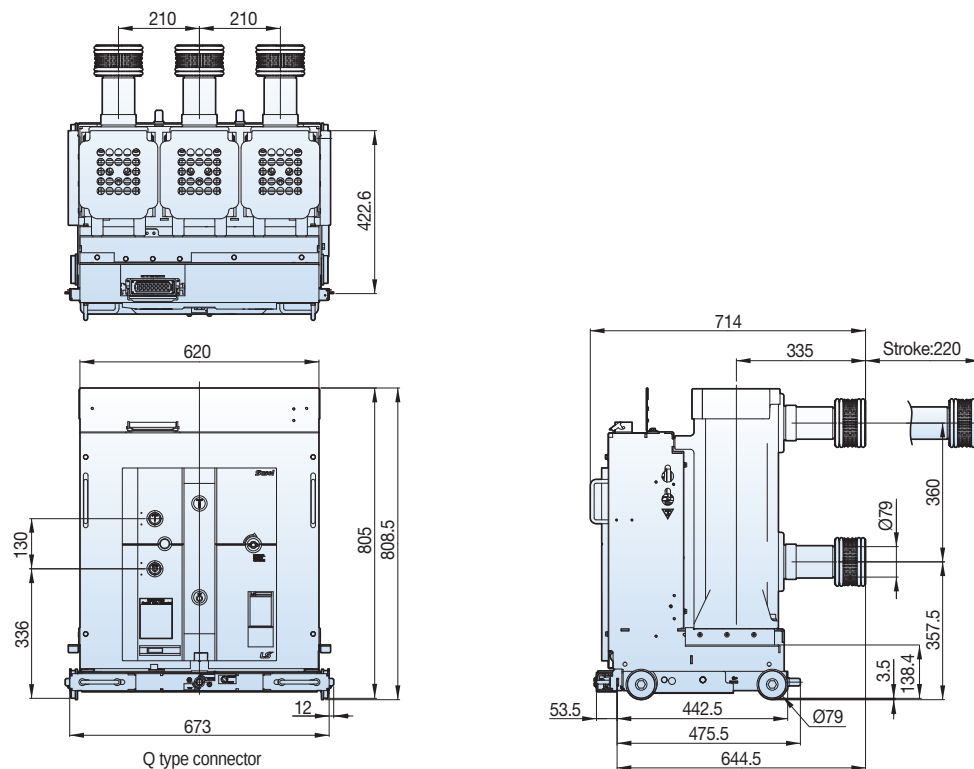
7.2/12kV, 31.5/40kA, 3150A

Withdrawable

■ Gs type unit, phase distance 210mm

Type

VH-06Gs32B32
VH-06Gs40B32
VH-12Gs32B32
VH-12Gs40B32

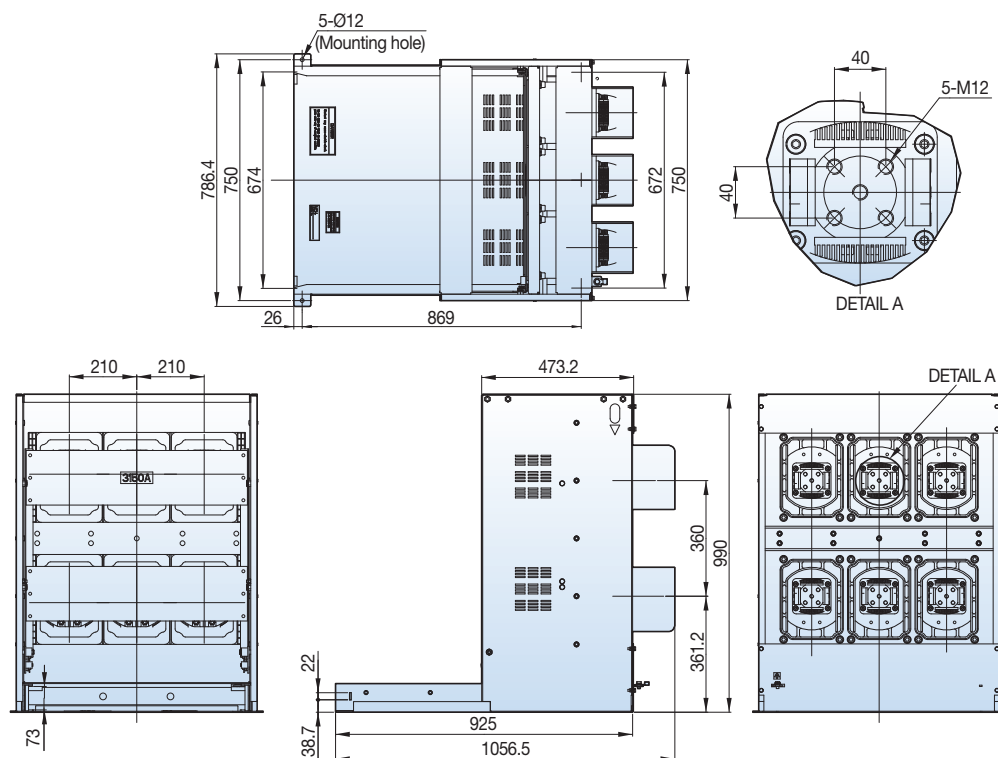


Withdrawable

■ Gs type cradle, phase distance 210mm

Type

VCH-06Gs32B32
VCH-06Gs40B32
VCH-12Gs32B32
VCH-12Gs40B32



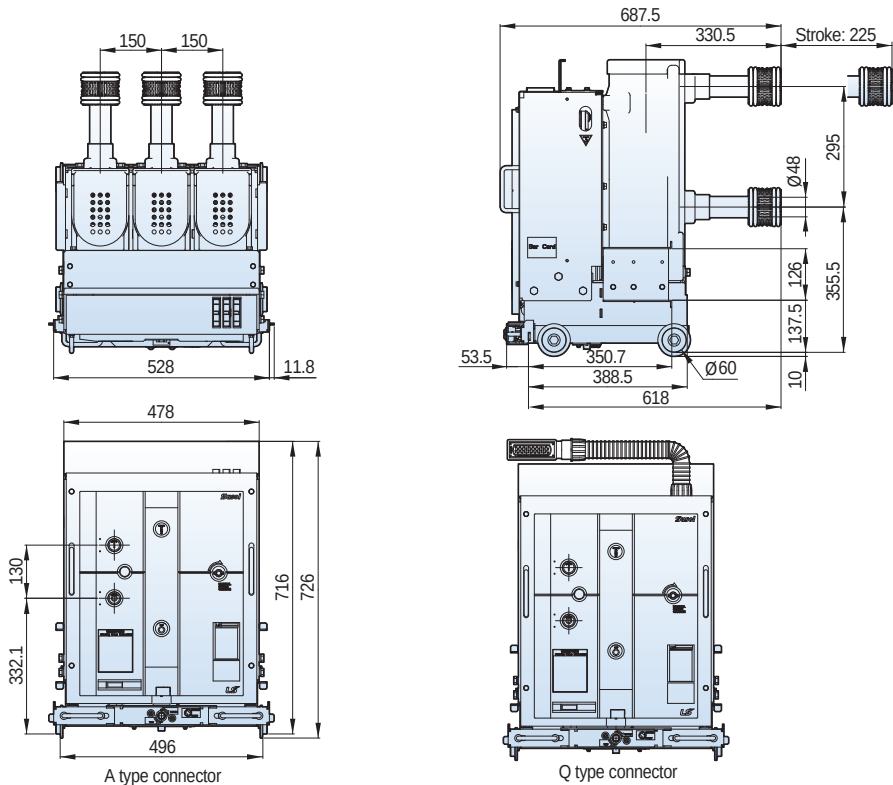
Dimensions - VH type (VH-06/12/17)

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

Withdrawable

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

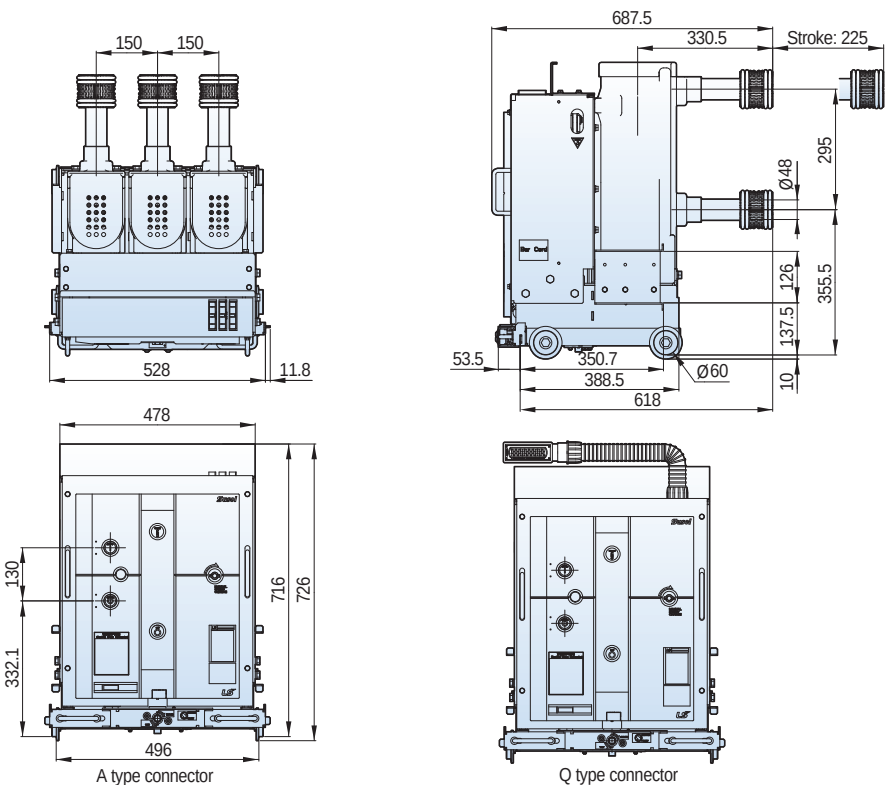
Type
VH-06K40K13
VH-06K40K20
VH-12K40K13
VH-12K40K20



Withdrawable

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

Type
VH-06K40A13
VH-06K40A20
VH-12K40A13
VH-12K40A20



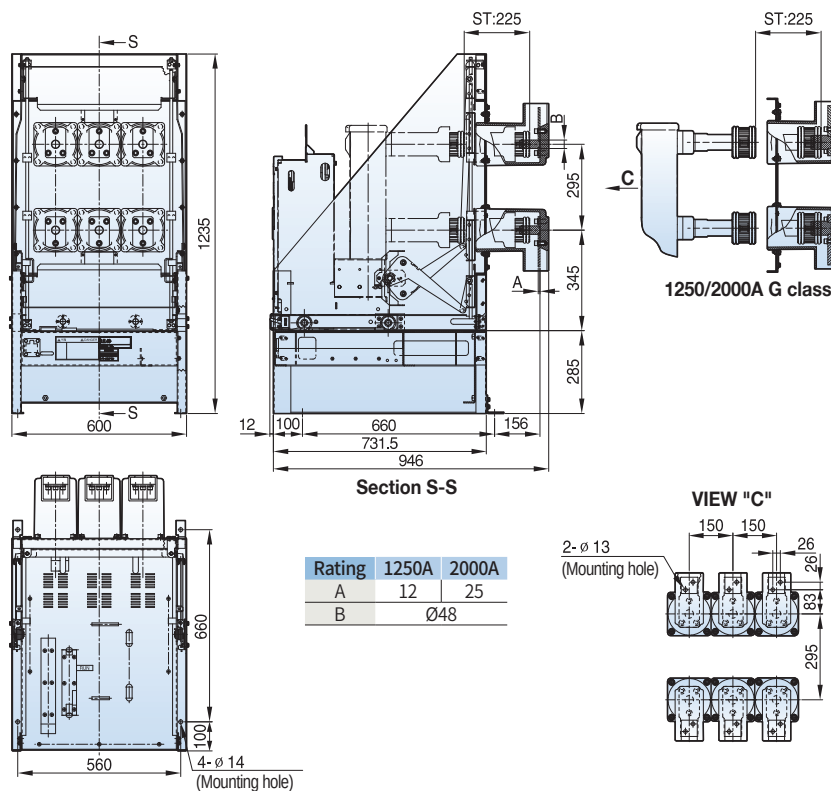
7.2/12kV, 40kA, 1250/2000A

Withdrawable

■ K type cradle, phase distance 150mm

Type

VCH-06K40K13
VCH-06K40K20
VCH-12K40K13
VCH-12K40K20

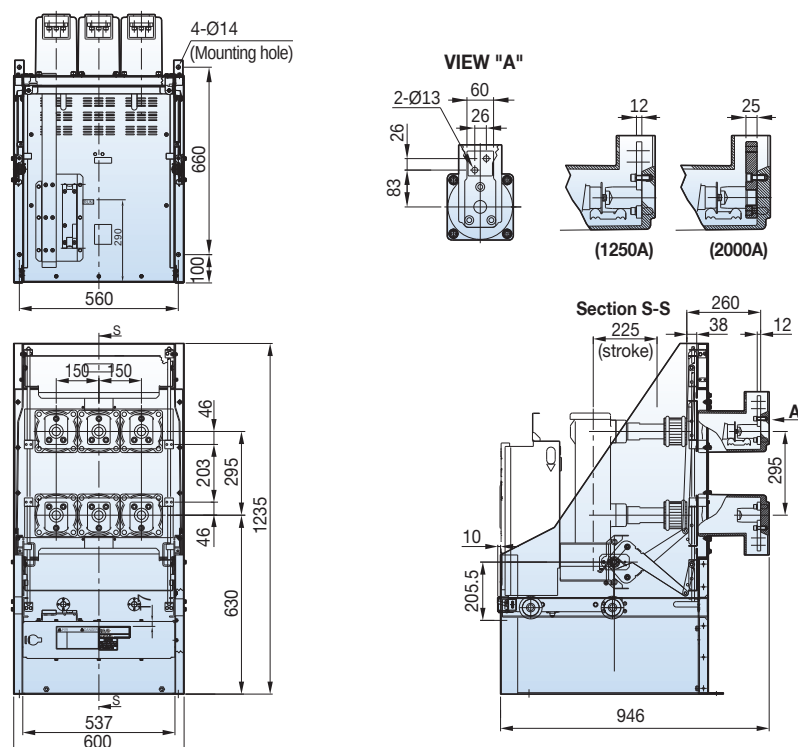


Withdrawable

■ MCSG cradle T2 type, phase distance 150mm

Type

VCH-06K40A13
VCH-06K40A20
VCH-12K40A13
VCH-12K40A20



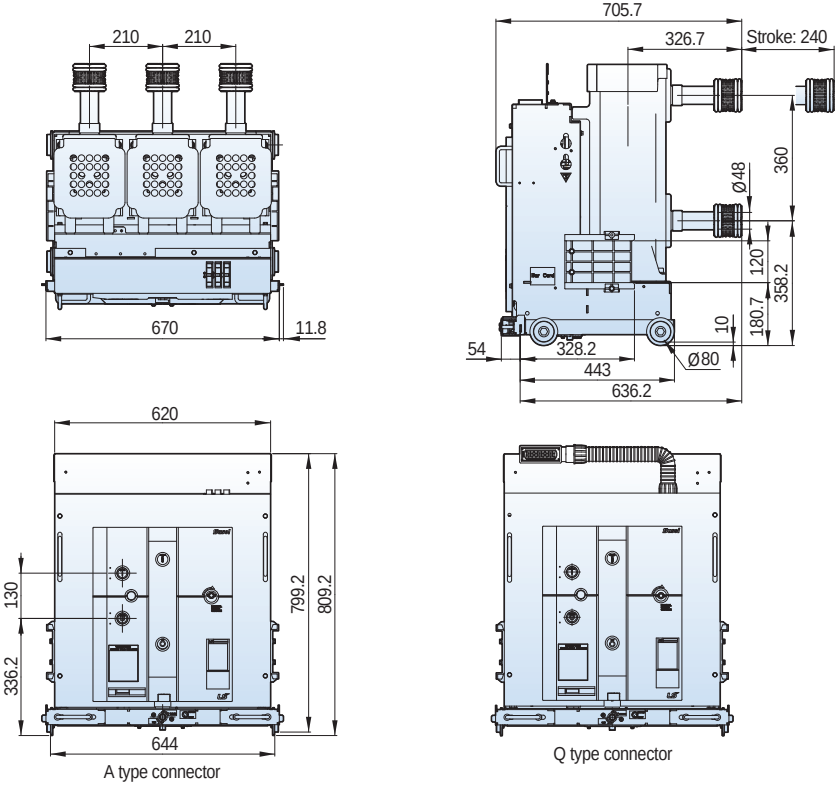
Dimensions - VH type (VH-06/12/17)

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

Withdrawable

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

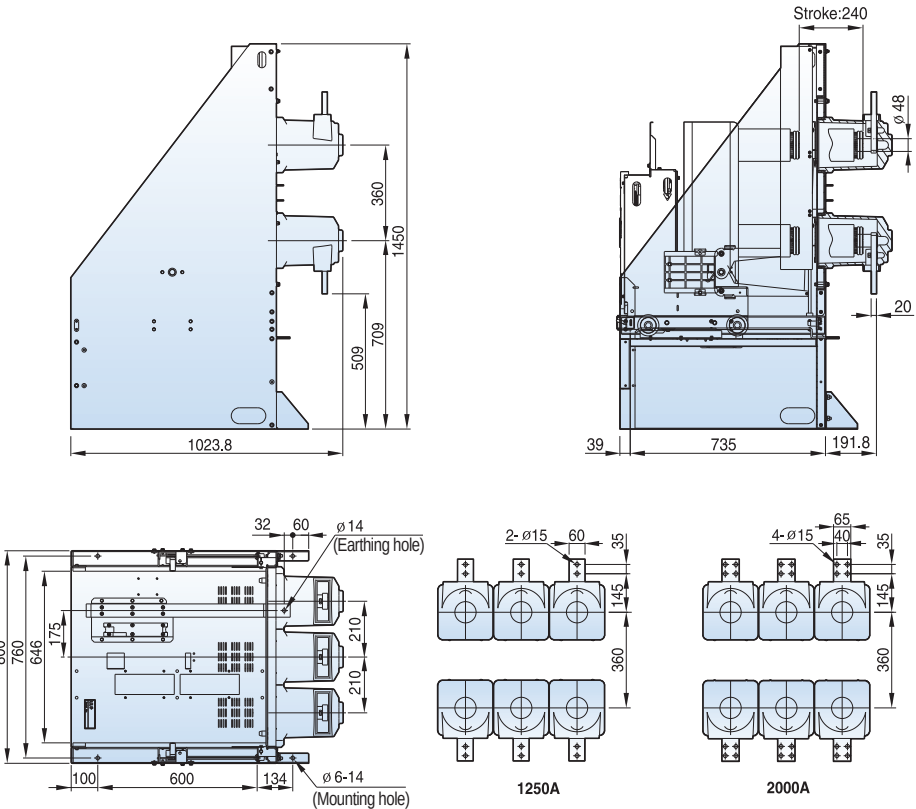
Type
VH-06K40B13
VH-06K40B20
VH-12K40B13
VH-12K40B20



Withdrawable

■ MCSG cradle T2 type, phase distance 210mm

Type
VCH-06K40B13
VCH-06K40B20
VCH-12K40B13
VCH-12K40B20



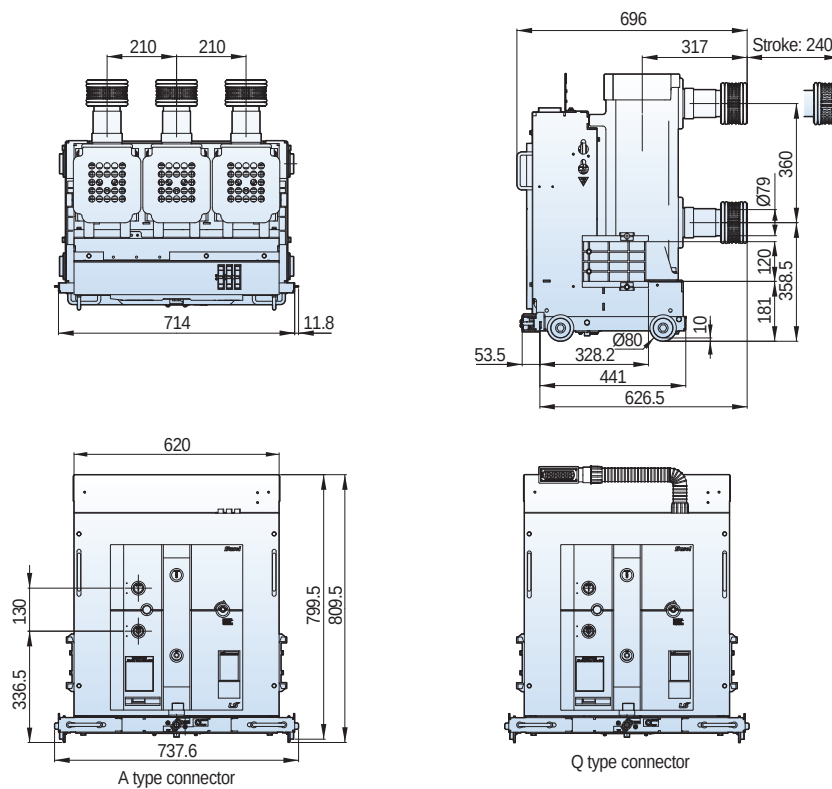
7.2/12kV, 31.5/40kA, 3150A

Withdrawable

Type

VH-06K32B32
VH-06K40B32
VH-12K32B32
VH-12K40B32

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

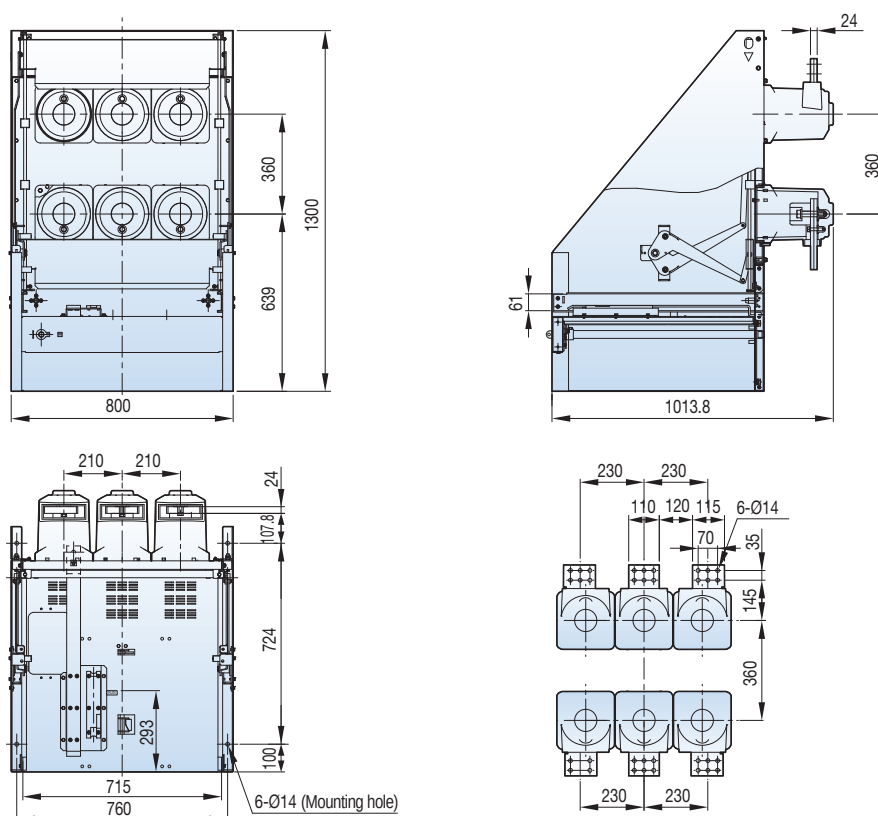


Withdrawable

Type

VCH-06K32B32
VCH-06K40B32
VCH-12K32B32
VCH-12K40B32

■ MCSG cradle T2 type, phase distance 210mm



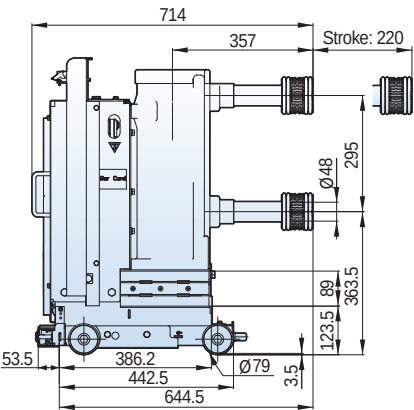
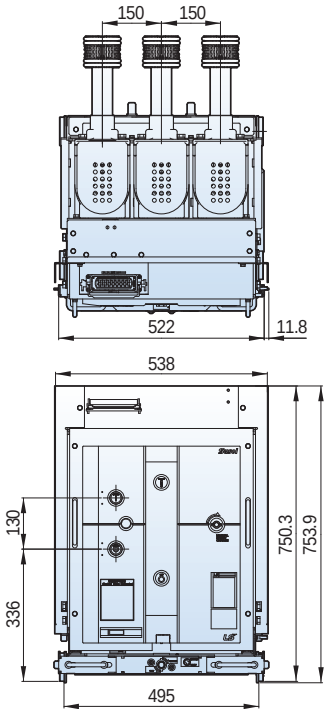
Dimensions - VH type (VH-06/12/17)

7.2/12kV, 40kA, 1250A

Withdrawable

■ H type unit, phase distance 150mm

Type
VH-06H40A13
VH-12H40A13

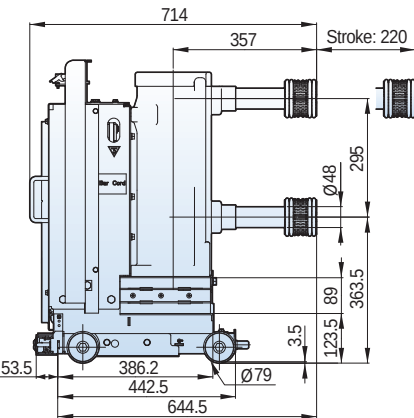
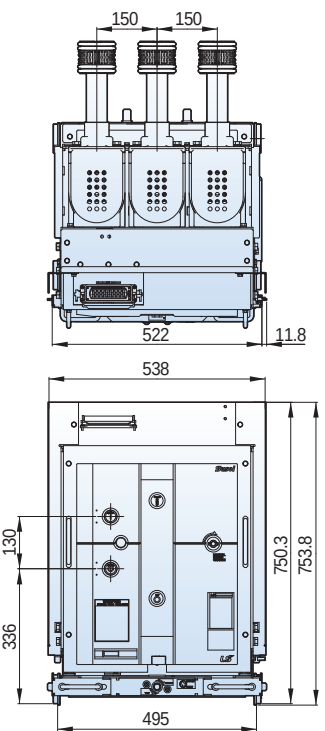


7.2/12kV, 40kA, 2000A

Withdrawable

■ H type unit, phase distance 150mm

Type
VH-06H40A20
VH-12H40A20



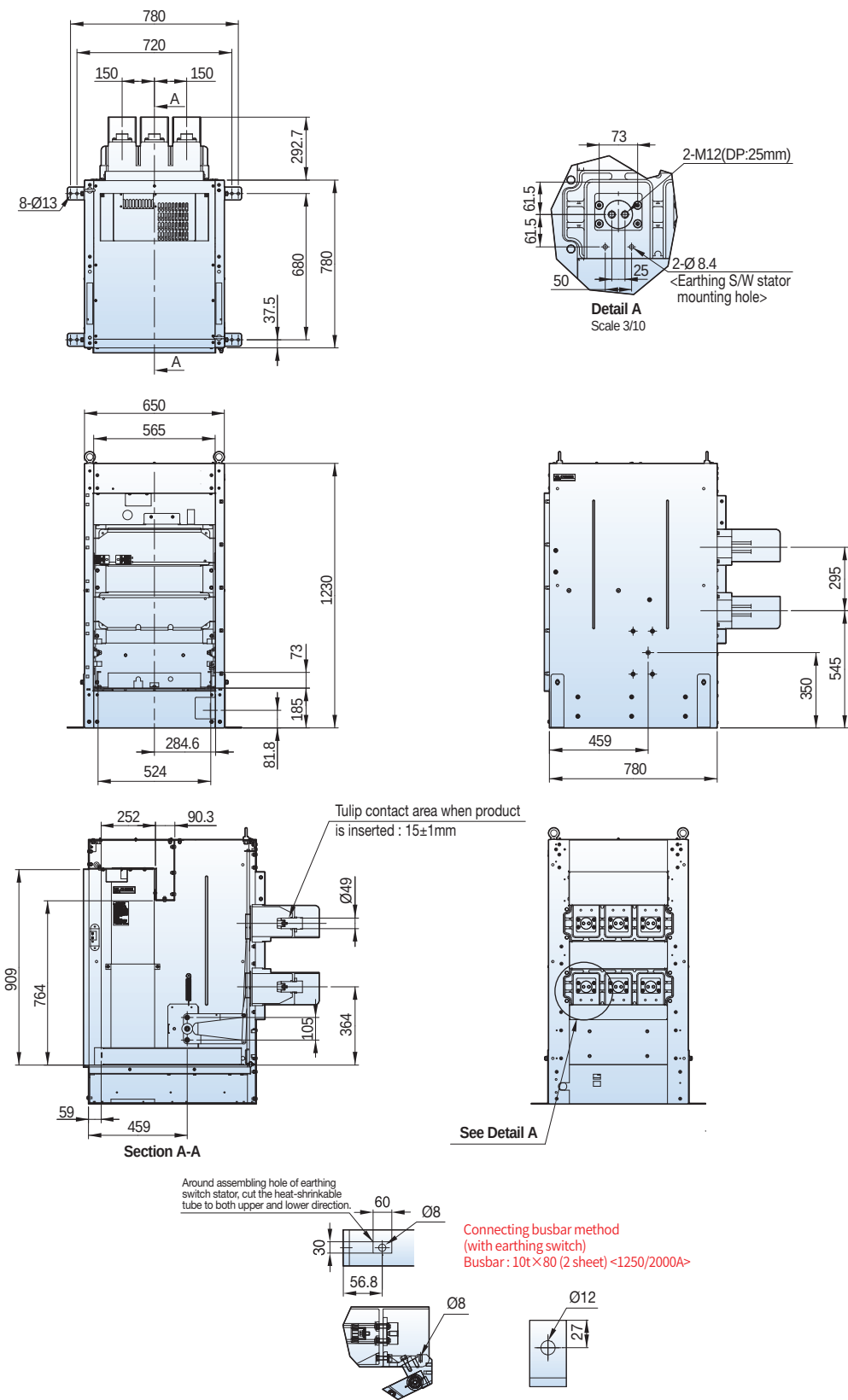
Dimensions - VH type (VH-06/12/17)

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

Withdrawable

■ H cradle, phase distance 150mm

Type
VCH-06H40A13
VCH-06H40A20
VCH-12H40A13
VCH-12H40A20



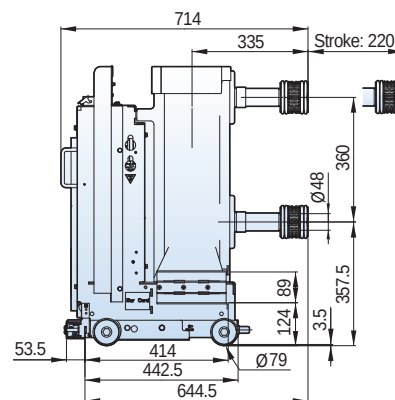
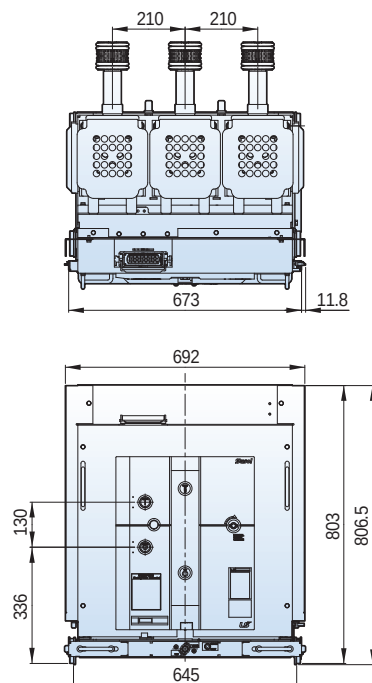
7.2/12/17.5kV, 40kA, 1250/2000A

Withdrawable

■ H type unit, phase distance 210mm

Type

VH-06H40B13
VH-06H40B20
VH-12H40B13
VH-12H40B20
VH-17H40B13
VH-17H40B20



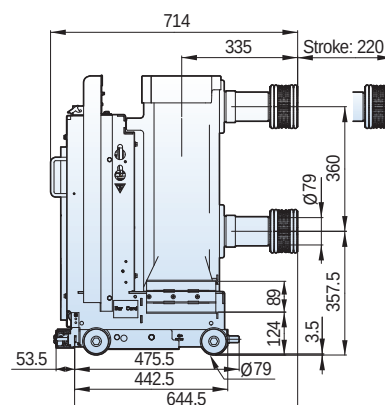
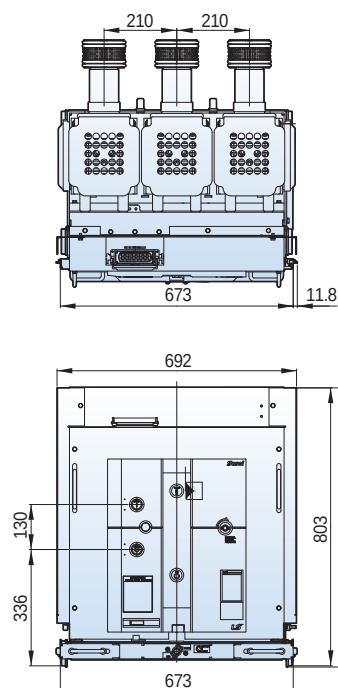
7.2/12/17.5kV, 31.5/40kA, 3150A

Withdrawable

■ H type unit, phase distance 210mm

Type

VH-06H32B32
VH-06H40B32
VH-12H32B32
VH-12H40B32
VH-17H32B32
VH-17H40B32



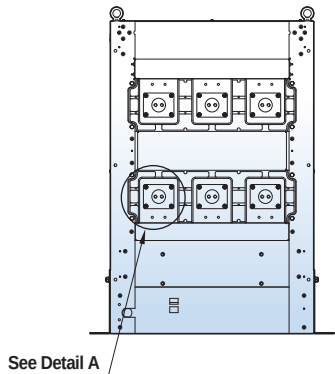
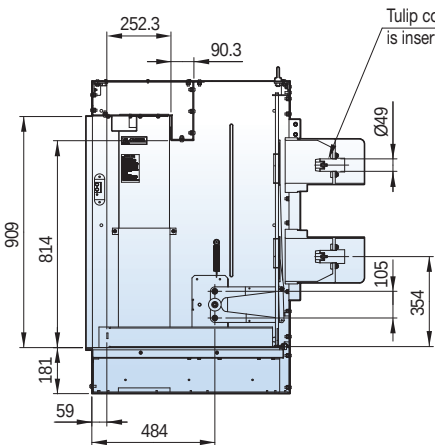
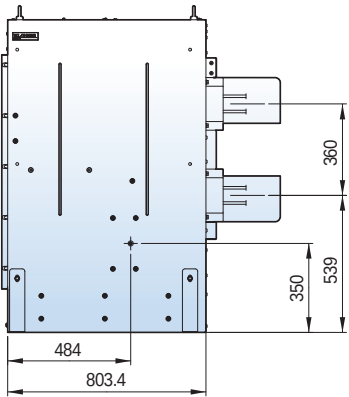
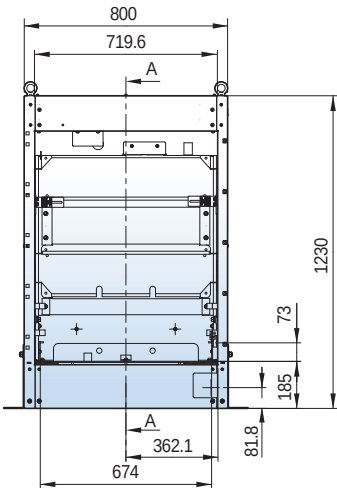
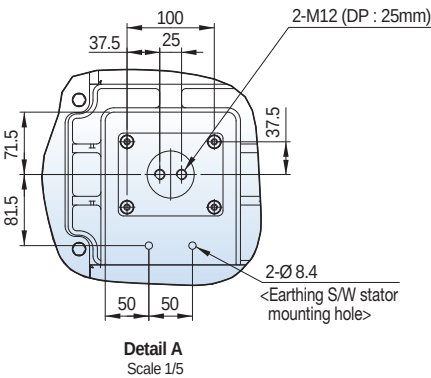
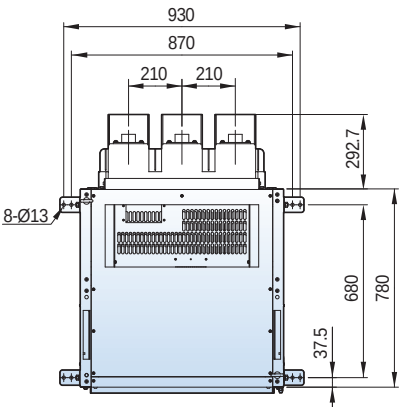
Dimensions - VH type (VH-06/12/17)

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

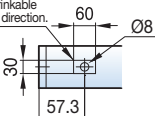
Withdrawable

■ H cradle, phase distance 210mm

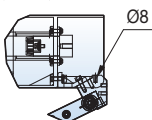
Type
VCH-06H40B13
VCH-06H40B20
VCH-12H40B13
VCH-12H40B20
VCH-17H40B13
VCH-17H40B20



Around assembling hole of earthing switch stator, cut the heat-shrinkable tube to both upper and lower direction.



Connecting busbar method (with earthing switch)
Busbar : 12t×60 (2 sheet) <1250/2000A>



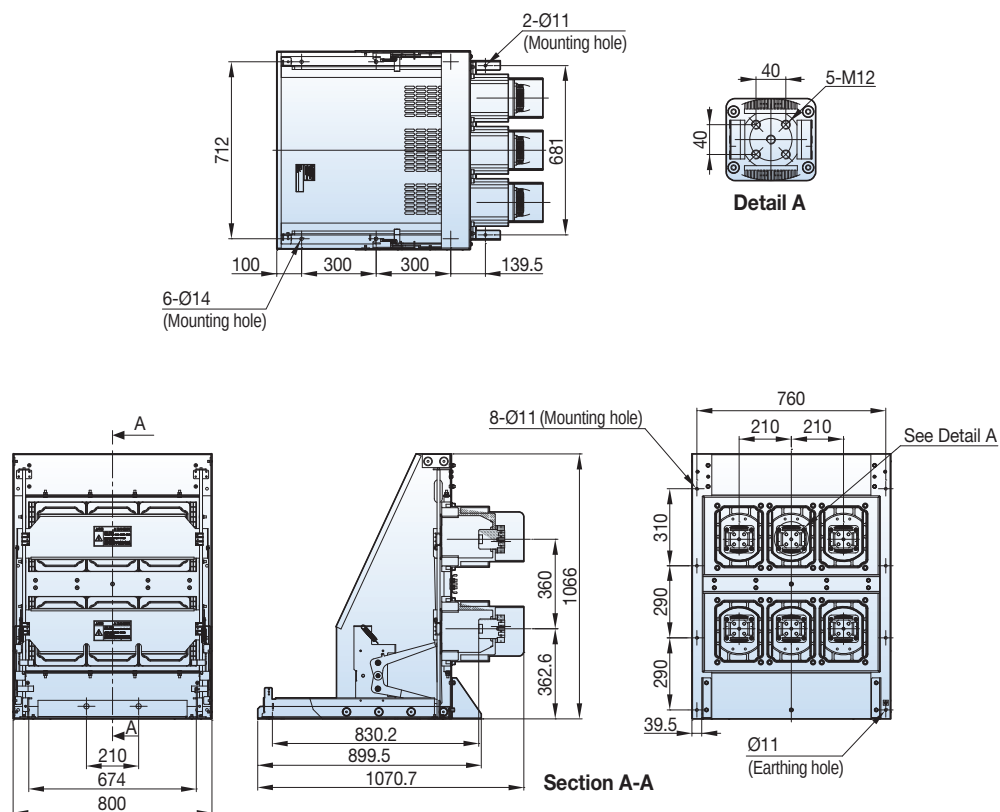
7.2/12/17.5kV, 31.5/40kA, 3150A

Withdrawable

■ H cradle, phase distance 210mm

Type

VCH-06Ha32B32
VCH-06Ha40B32
VCH-12Ha32B32
VCH-12Ha40B32
VCH-17Ha32B32
VCH-17Ha40B32



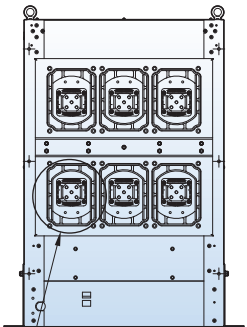
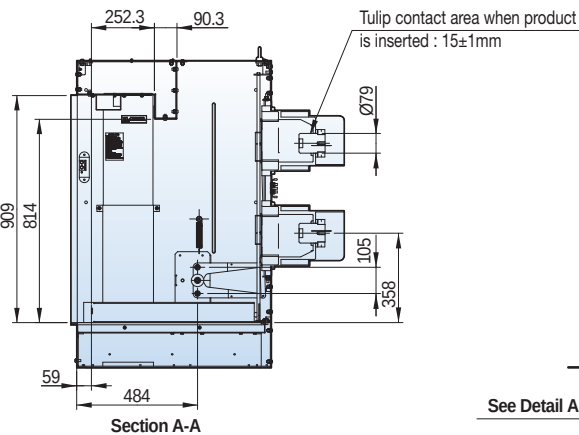
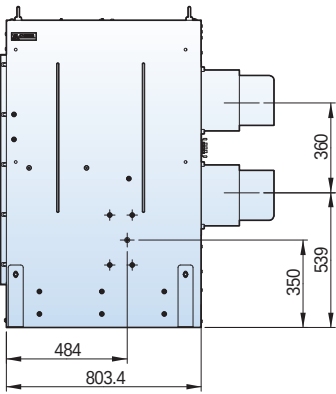
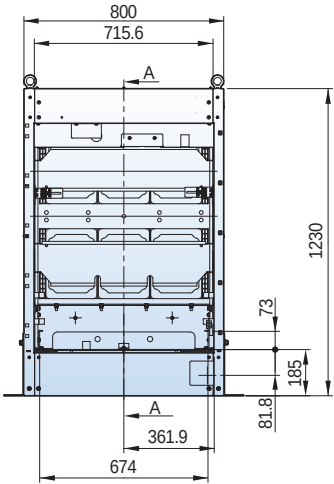
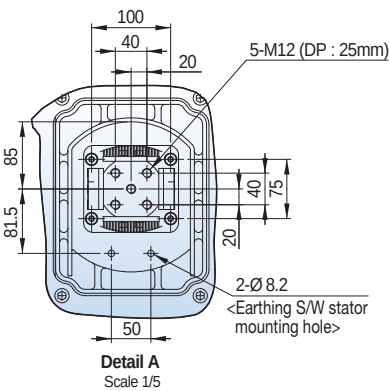
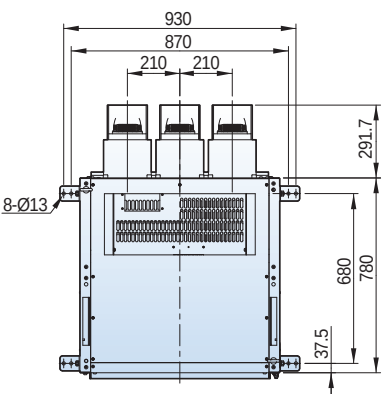
Dimensions - VH type (VH-06/12/17)

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

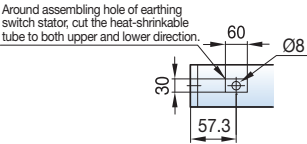
Withdrawable

■ H cradle, phase distance 210mm

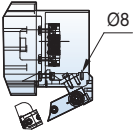
Type
VCH-06H32B32
VCH-06H40B32
VCH-12H32B32
VCH-12H40B32
VCH-17H32B32
VCH-17H40B32



See Detail A



Connecting busbar method
(with earthing switch)
Busbar : 10t×120 (2 sheet) <3150A>



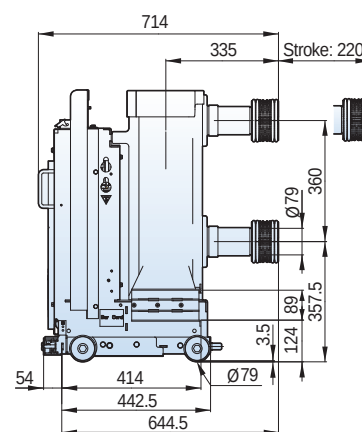
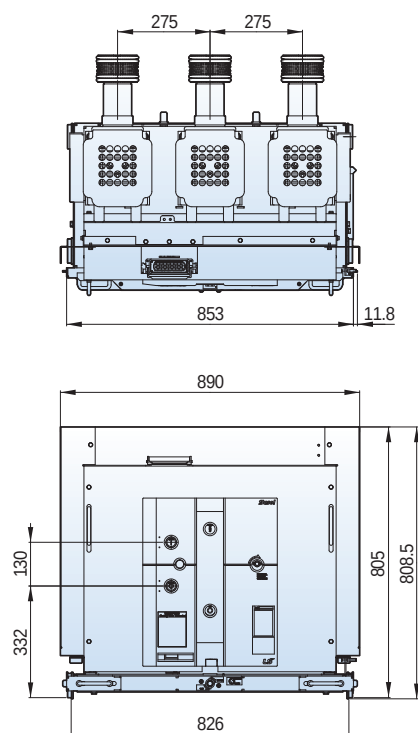
17.5kV, 31.5/40kA, 3150A

Withdrawable

■ H type unit, phase distance 275mm

Type

VH-17H32D32
VH-17H40D32



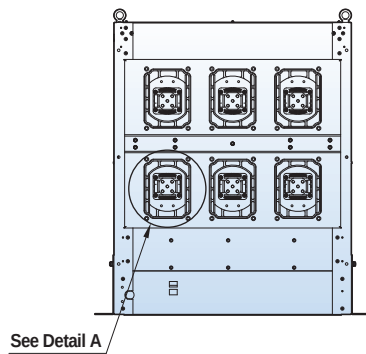
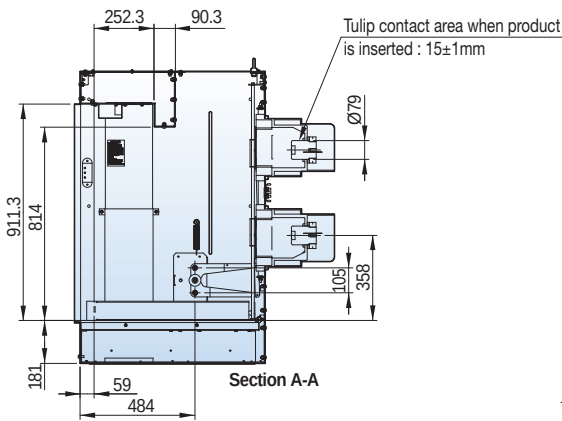
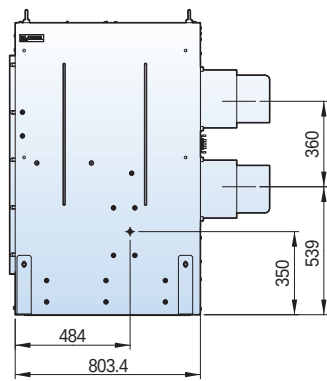
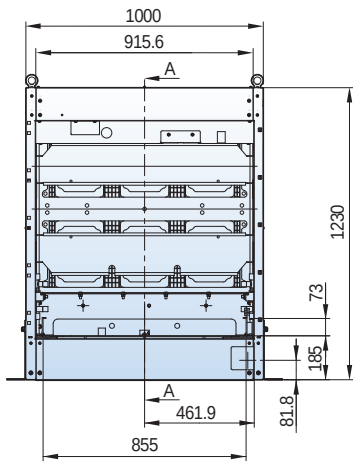
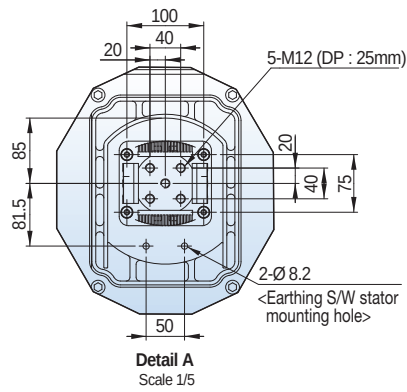
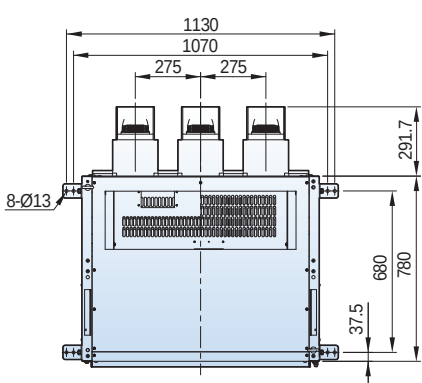
Dimensions - VH type (VH-06/12/17)

17.5kV, 31.5/40kA, 3150A

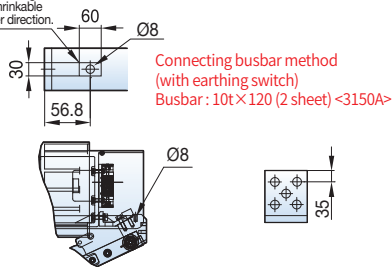
Withdrawable

■ H cradle, phase distance 275mm

Type
VCH-17H32D32
VCH-17H40D32



Around assembling hole of earthing switch stator, cut the heat-shrinkable tube to both upper and lower direction.



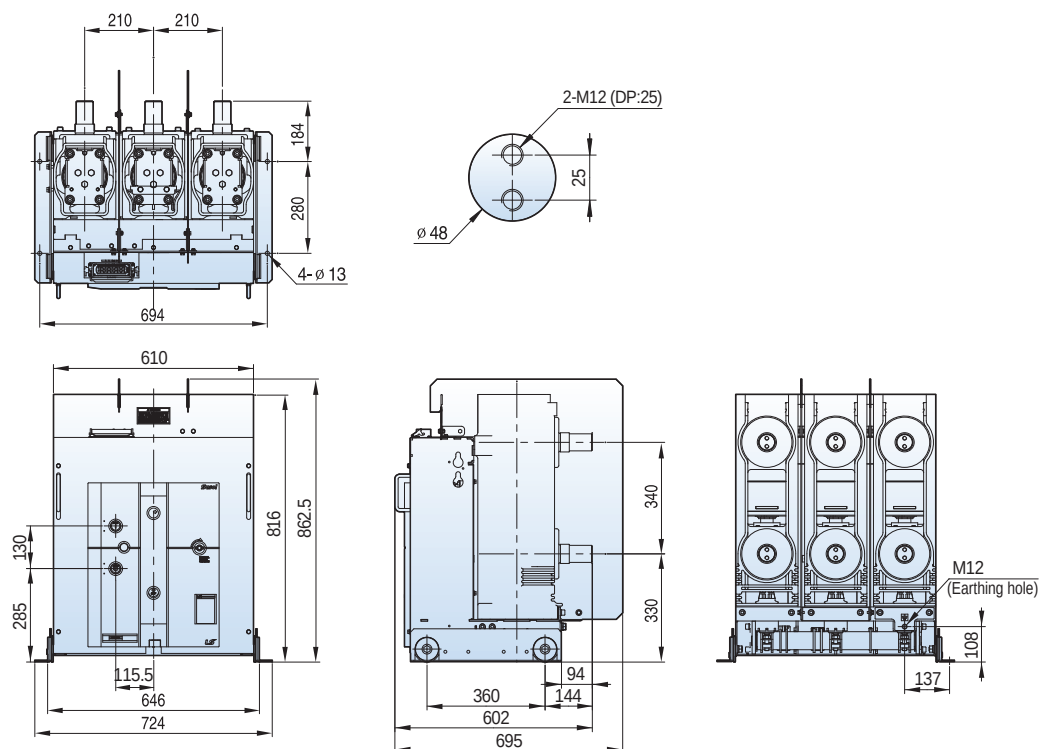
7.2/12/17.5kV, 50kA, 1250/2000A

Fixed

■ P type, phase distance 210mm

Type

VH-06P50B13
VH-06P50B20
VH-12P50B13
VH-12P50B20
VH-17P50B13
VH-17P50B20

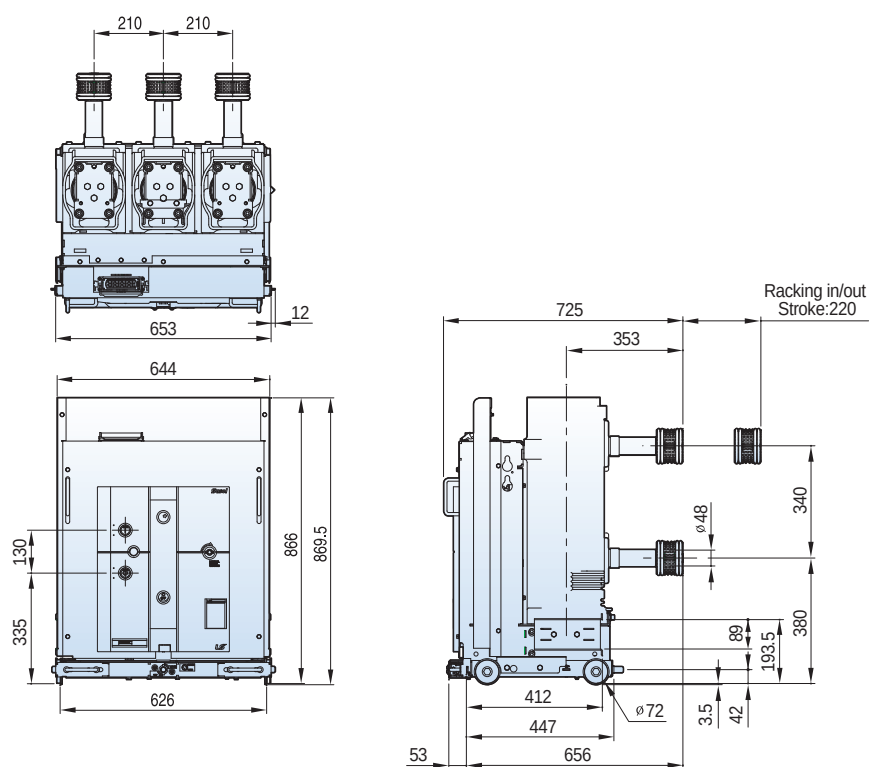


Withdrawable

■ H type unit, phase distance 210mm

Type

VH-06H50B13
VH-06H50B20
VH-12H50B13
VH-12H50B20
VH-17H50B13
VH-17H50B20



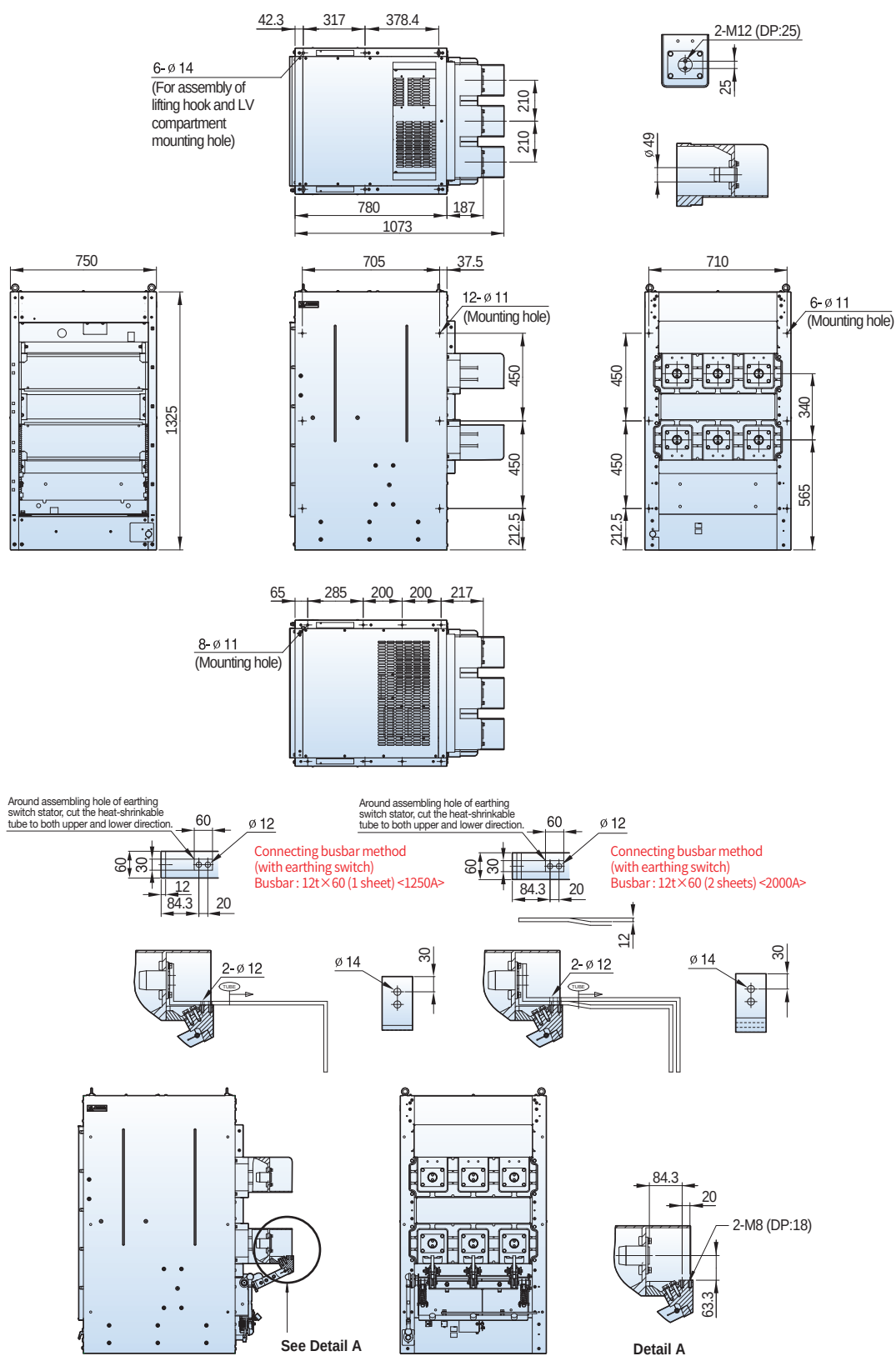
Dimensions - VH type (VH-06/12/17)

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

Withdrawable

■ H cradle, phase distance 210mm

Type
VCH-06H50B13
VCH-06H50B20
VCH-12H50B13
VCH-12H50B20
VCH-17H50B13
VCH-17H50B20



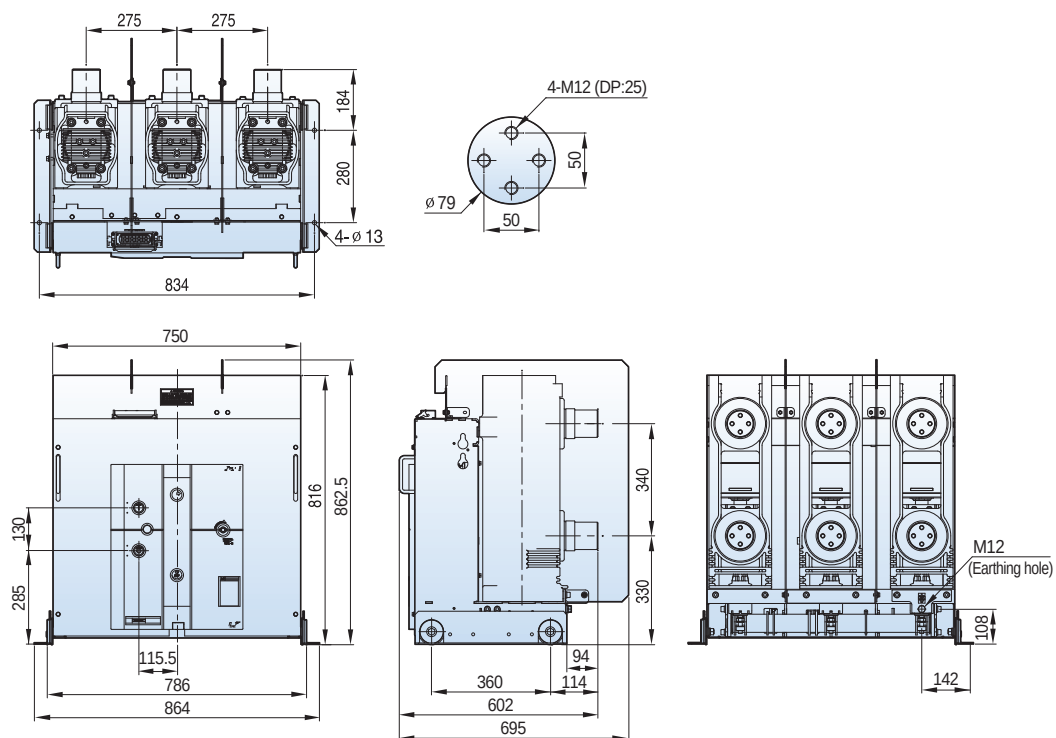
7.2/12/17.5kV, 50kA, 2500/3150A

Fixed

■ P type, phase distance 275mm

Type

VH-06P50D25
VH-06P50D32
VH-12P50D25
VH-12P50D32
VH-17P50D25
VH-17P50D32

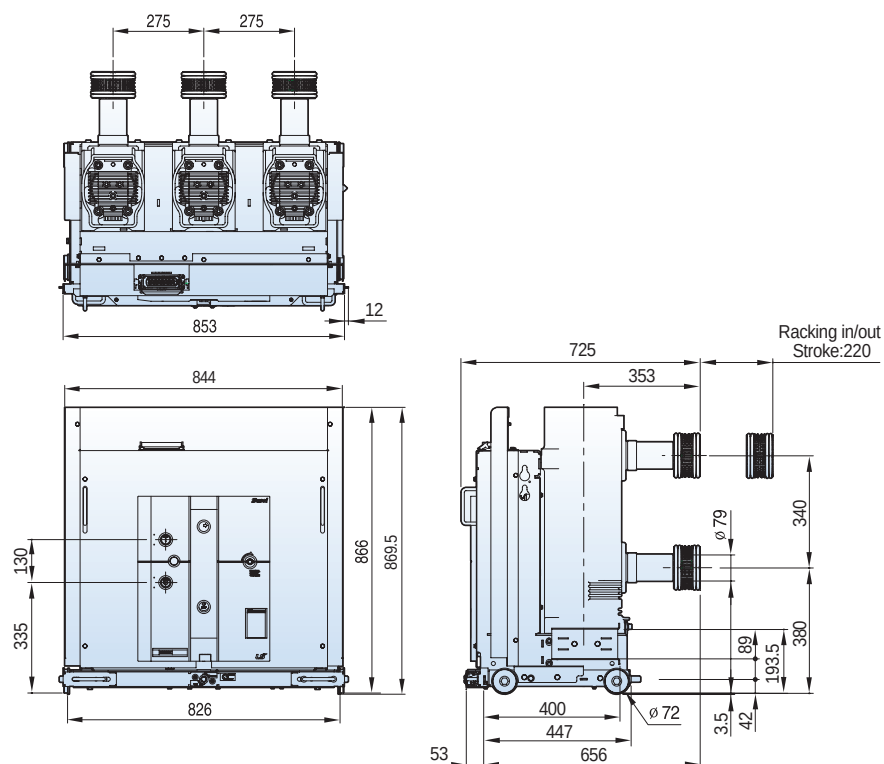


Withdrawable

■ H type unit, phase distance 275mm

Type

VH-06H50D25
VH-06H50D32
VH-12H50D25
VH-12H50D32
VH-17H50D25
VH-17H50D32



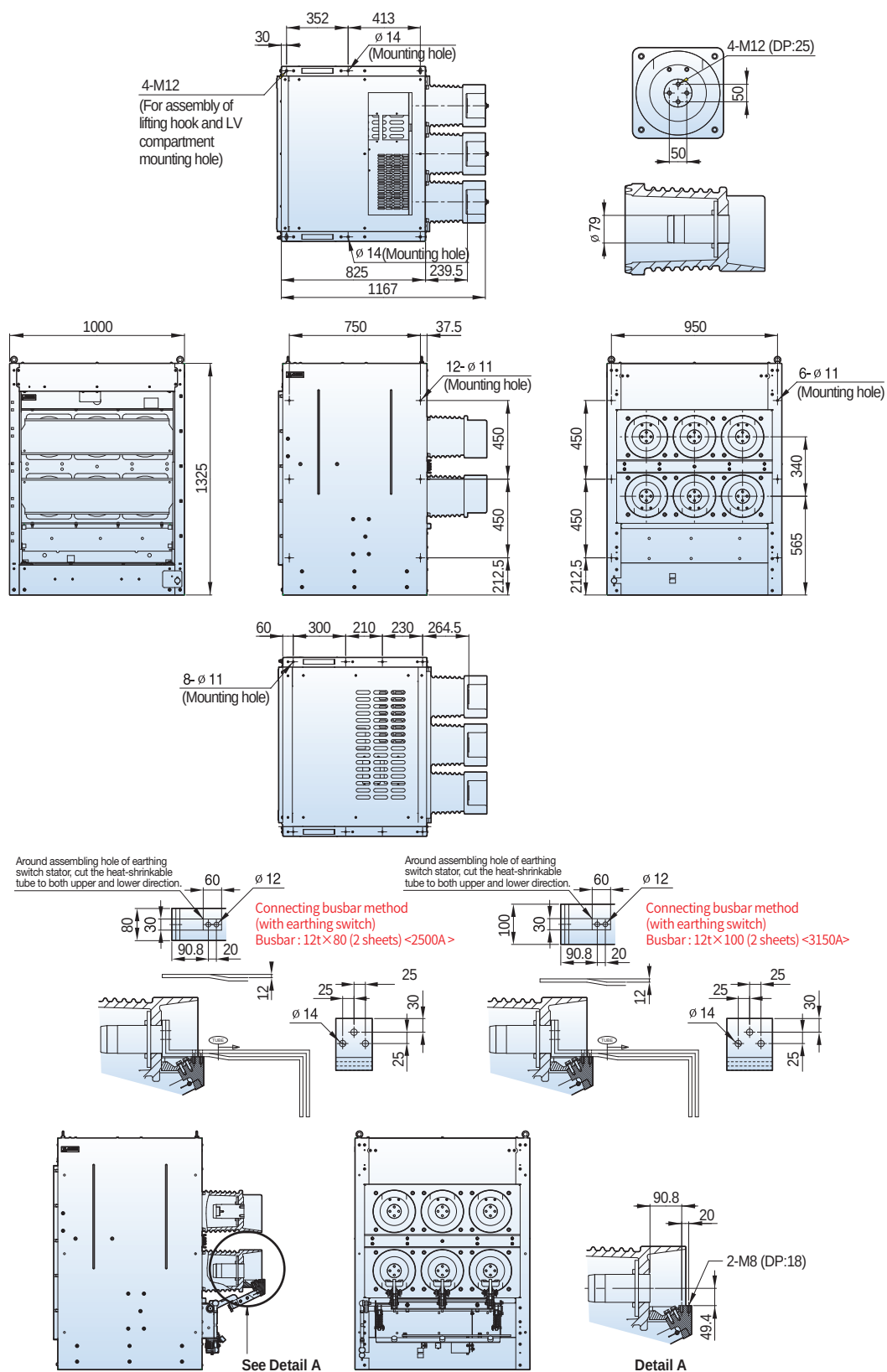
Dimensions - VH type (VH-06/12/17)

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

Withdrawable

■ H cradle, phase distance 275mm

Type
VCH-06H50D25
VCH-06H50D32
VCH-12H50D25
VCH-12H50D32
VCH-17H50D25
VCH-17H50D32



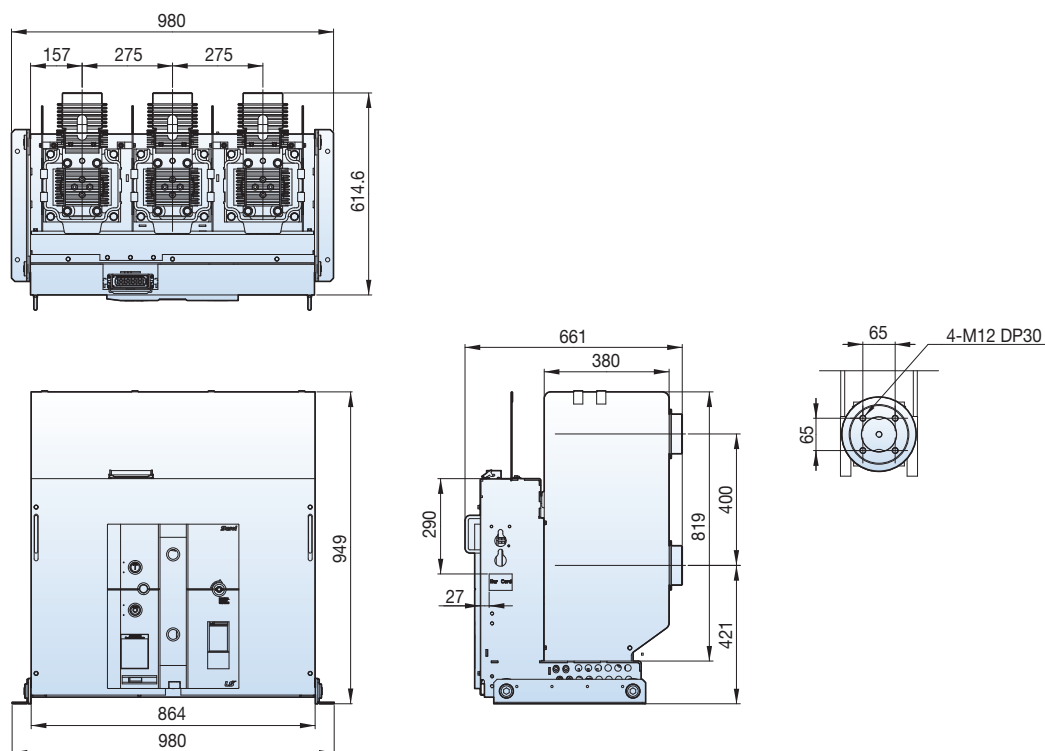
7.2/12/17.5kV, 40/50kA, 4000A

Fixed

■ P type, phase distance 275mm

Type

VH-06P40D40
VH-06P50D40
VH-12P40D40
VH-12P50D40
VH-17P40D40
VH-17P50D40

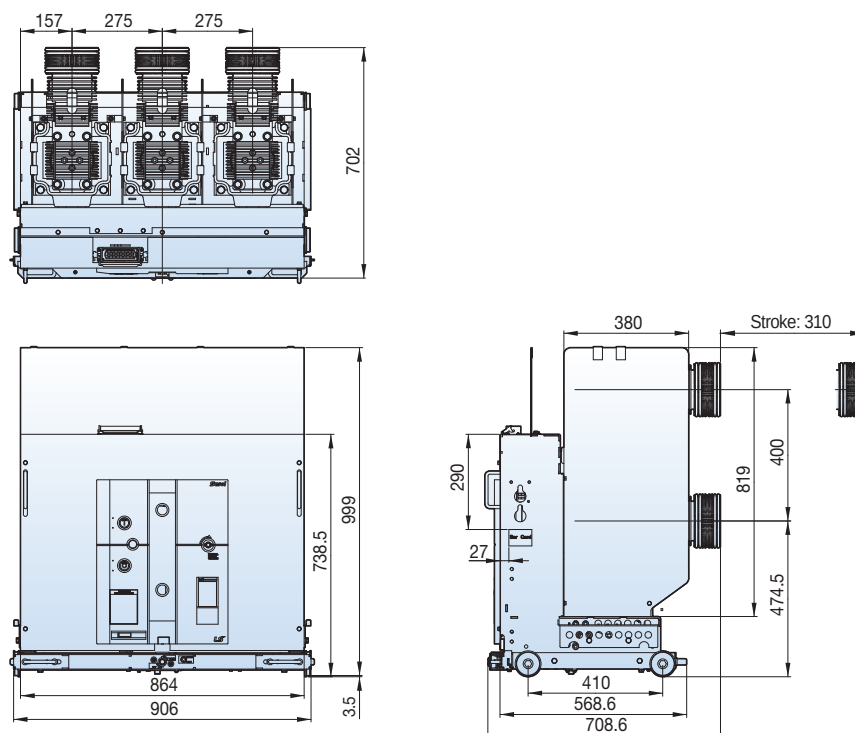


Withdrawable

■ H type unit, phase distance 275mm

Type

VH-06H40D40
VH-06H50D40
VH-12H40D40
VH-12H50D40
VH-17H40D40
VH-17H50D40



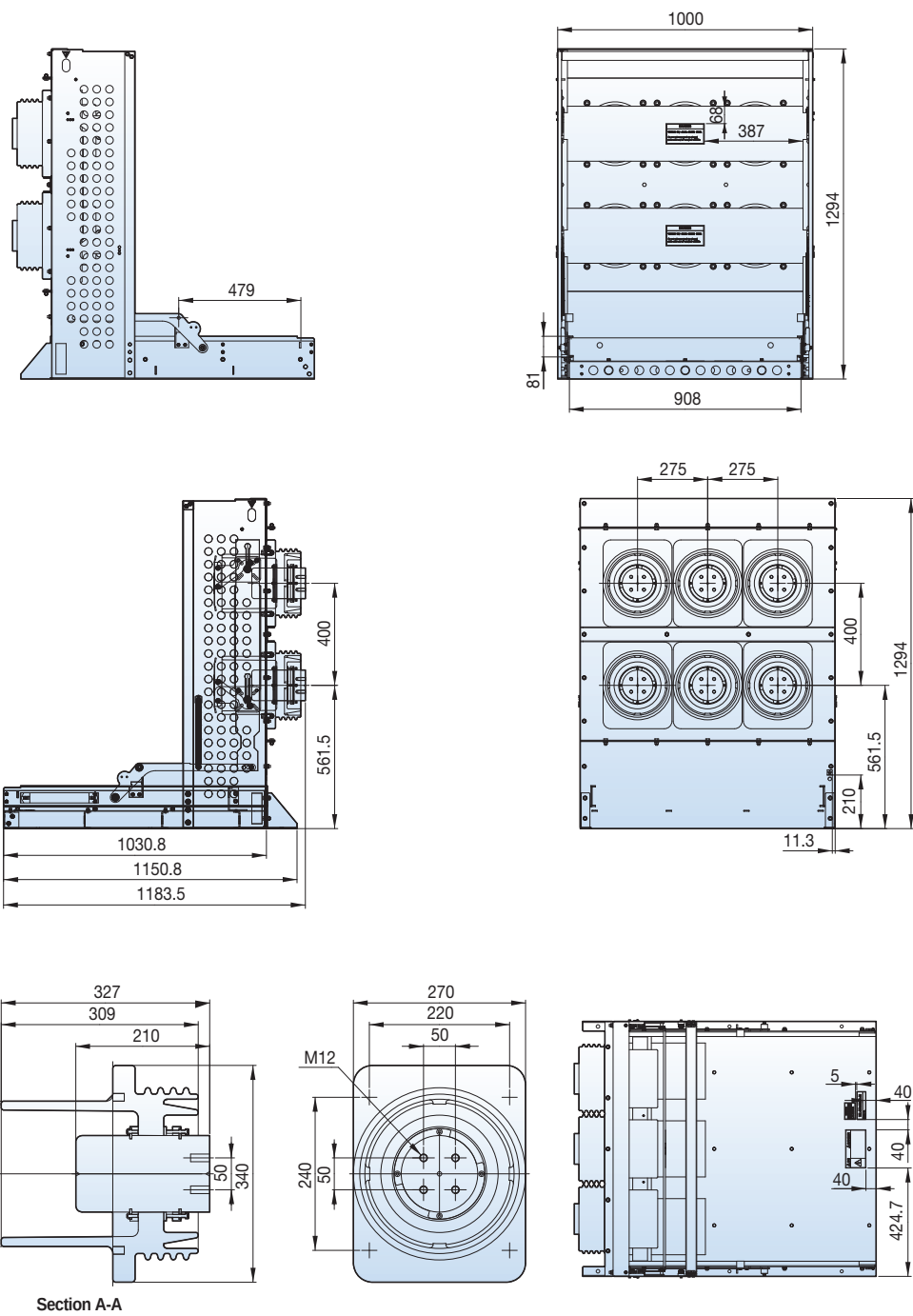
Dimensions - VH type (VH-06/12/17)

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

Withdrawable

■ Ha type cradle, phase distance 275mm, Normal Type

Type
VCH-06Ha40D40
VCH-06Ha50D40
VCH-12Ha40D40
VCH-12Ha50D40
VCH-17Ha40D40
VCH-17Ha50D40



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

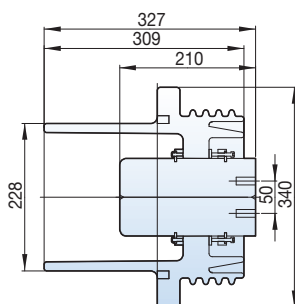
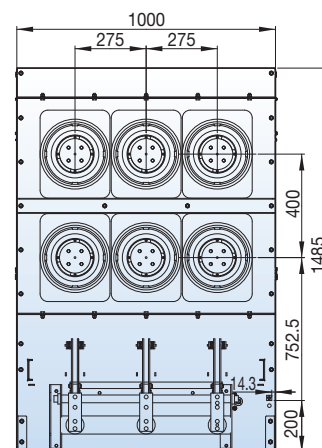
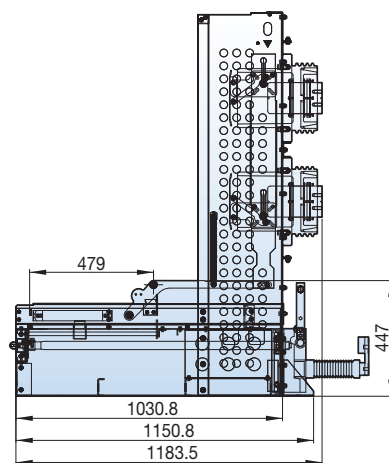
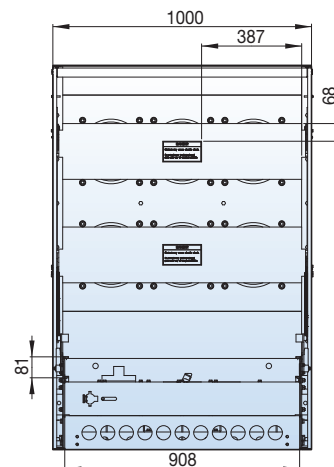
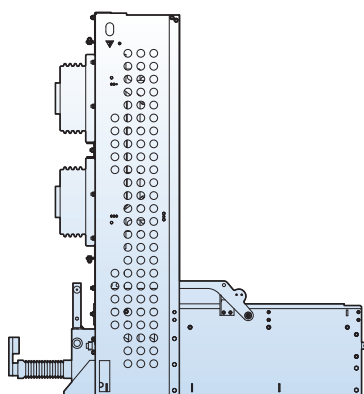
Withdrawable

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

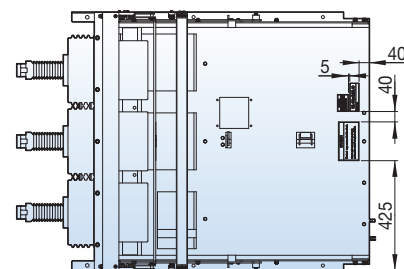
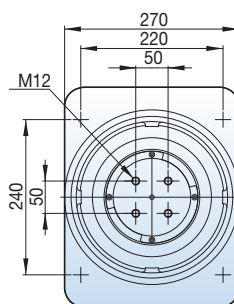
Type

VCH-06Ha40D40-A1FG
VCH-06Ha50D40-A1FG
VCH-12Ha40D40-A1FG
VCH-12Ha50D40-A1FG
VCH-17Ha40D40-A1FG
VCH-17Ha50D40-A1FG

* Even if only one of the 1, F, or G option is applied, the external drawing is as same as above type.



Section A-A



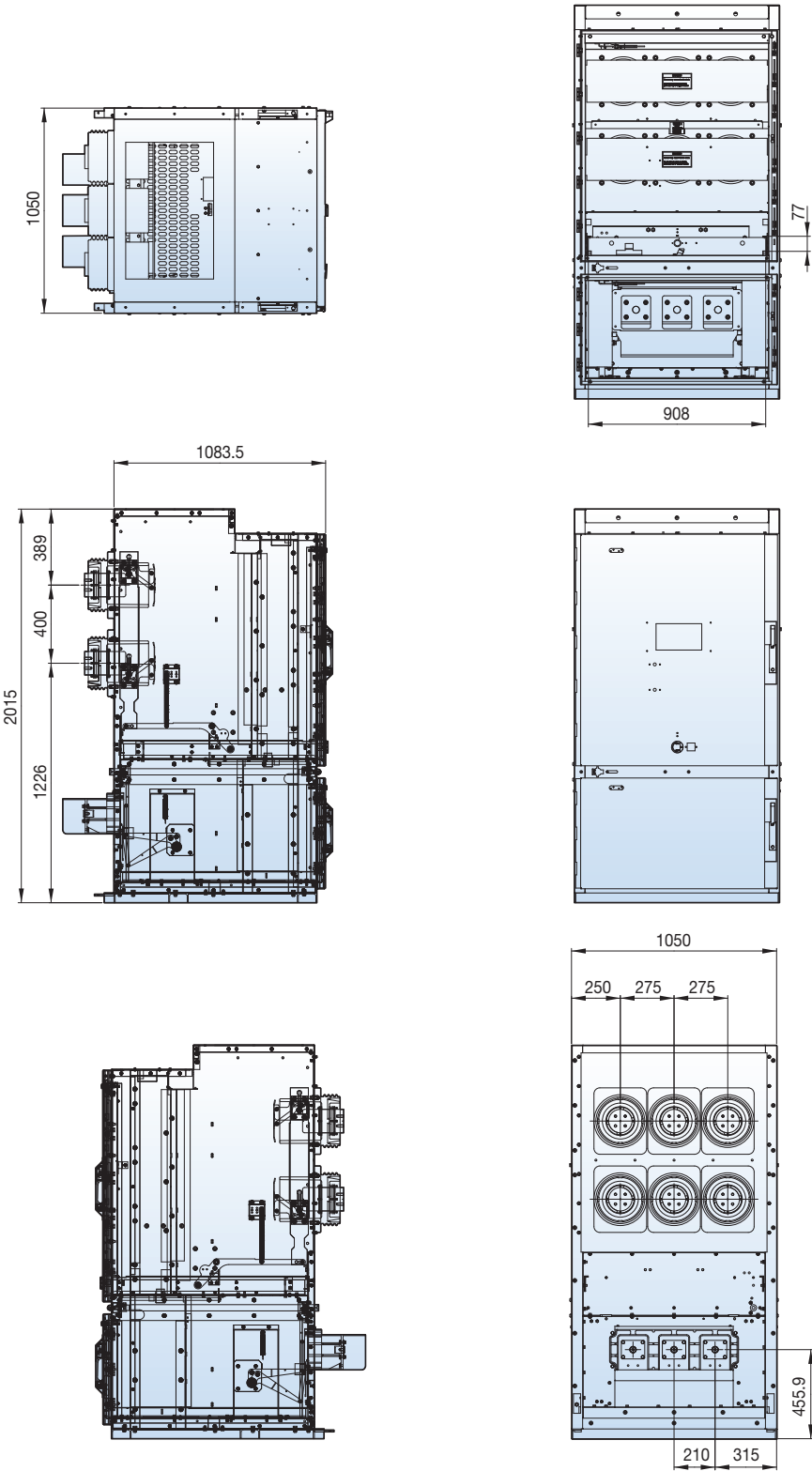
Dimensions - VH type (VH-06/12/17)

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

Withdrawable

■ Hb type cradle, phase distance 275mm

Type
VCH-06Hb40D40
VCH-06Hb50D40
VCH-12Hb40D40
VCH-12Hb50D40
VCH-17Hb40D40
VCH-17Hb50D40



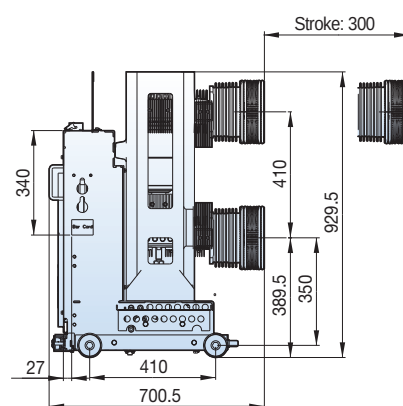
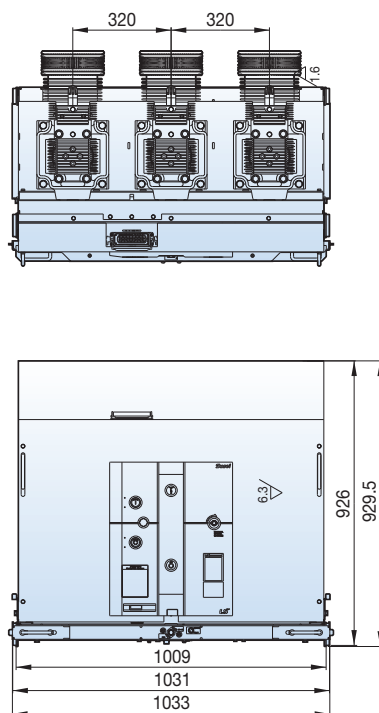
7.2/12kV, 40/50kA, 5000A

Withdrawable

■ H type unit, phase distance 320mm

Type

VH-06H40L50
VH-06H50L50
VH-12H40L50
VH-12H50L50

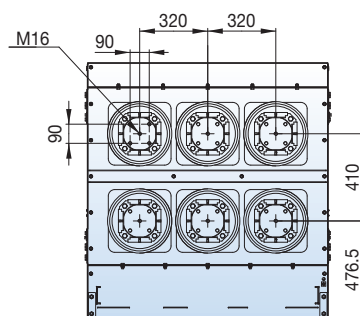
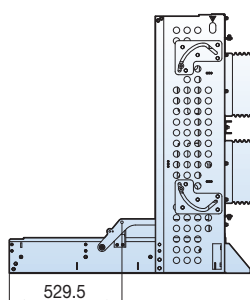
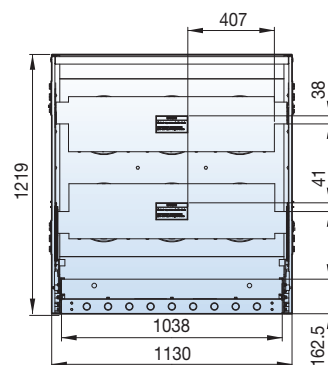
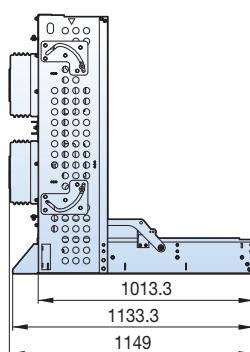


Withdrawable

■ Ha type cradle, phase distance 320mm, Normal Type

Type

VCH-06Ha40L50
VCH-06Ha50L50
VCH-12Ha40L50
VCH-12Ha50L50



Dimensions - VH type (VH-20/25)

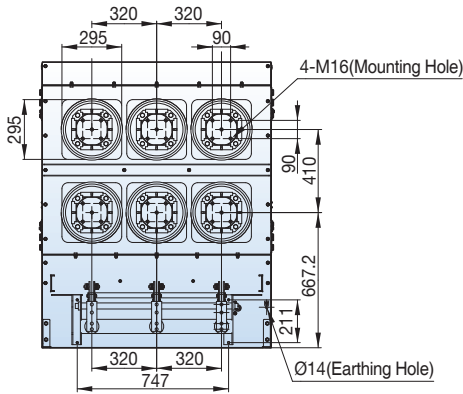
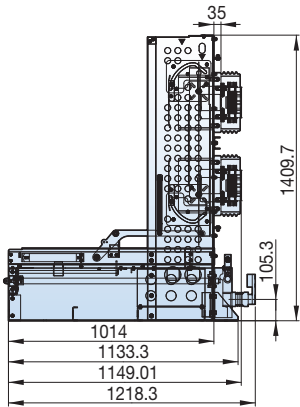
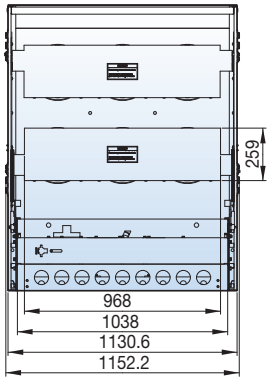
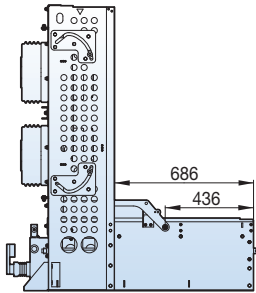
7.2/12kV, 40/50kA, 5000A

Withdrawable

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

Type
VCH-06Ha40L50-A1FG
VCH-06Ha50L50-A1FG
VCH-12Ha40L50-A1FG
VCH-12Ha50L50-A1FG
VCH-06Ha40L50-A3FG
VCH-06Ha50L50-A3FG
VCH-12Ha40L50-A3FG
VCH-12Ha50L50-A3FG

* Even if only one of the 1, F, or G option is applied, the external drawing is as same as above type. (A1 and A3 cannot be selected at the same time)



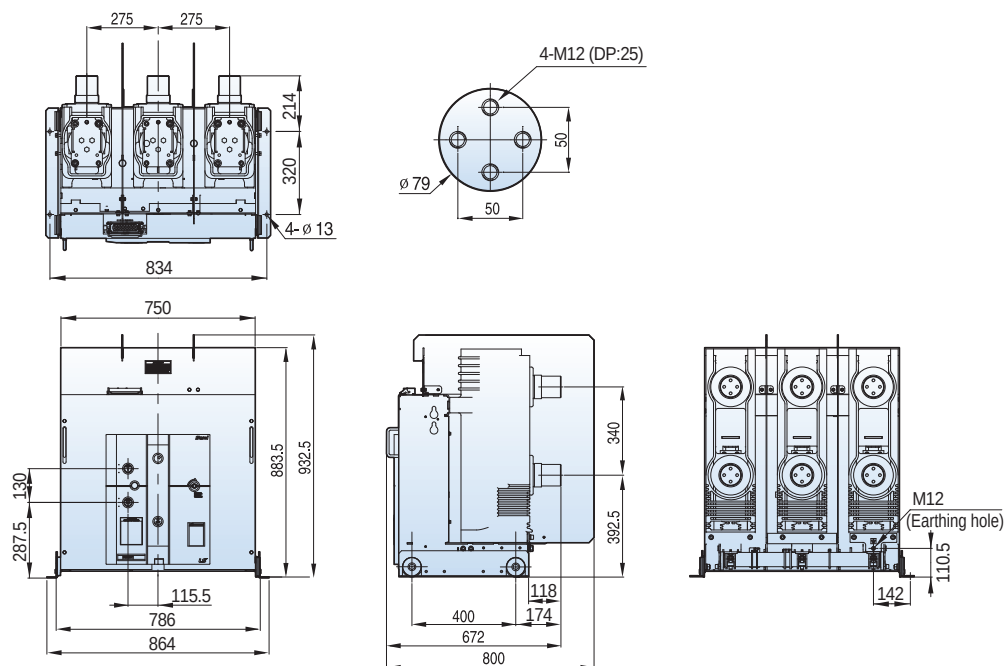
24/25.8kV, 25kA, 2500A

Fixed

■ P type, phase distance 275mm

Type

VH-20P25D25
VH-25P25D25

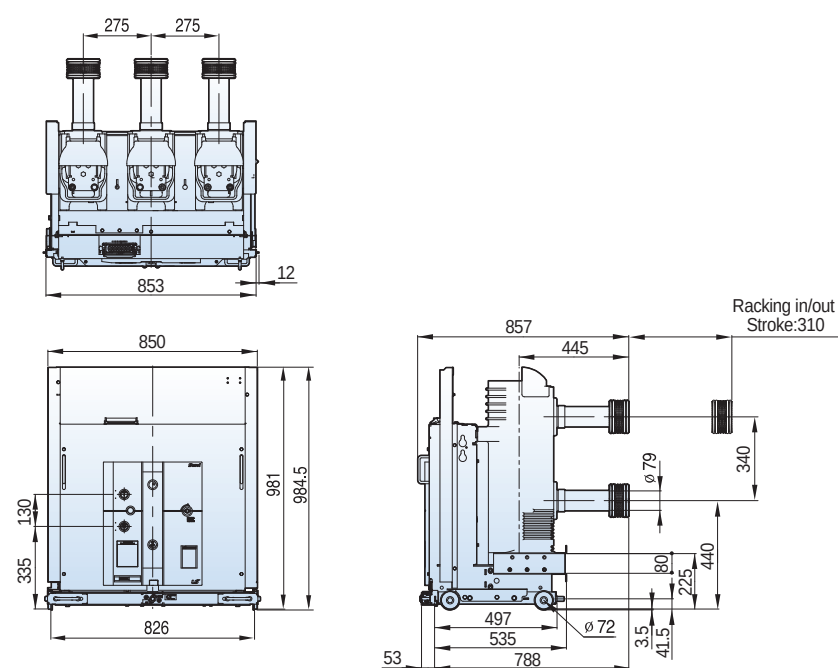


Withdrawable

■ H type unit, phase distance 275mm

Type

VH-20H25D25
VH-25H25D25



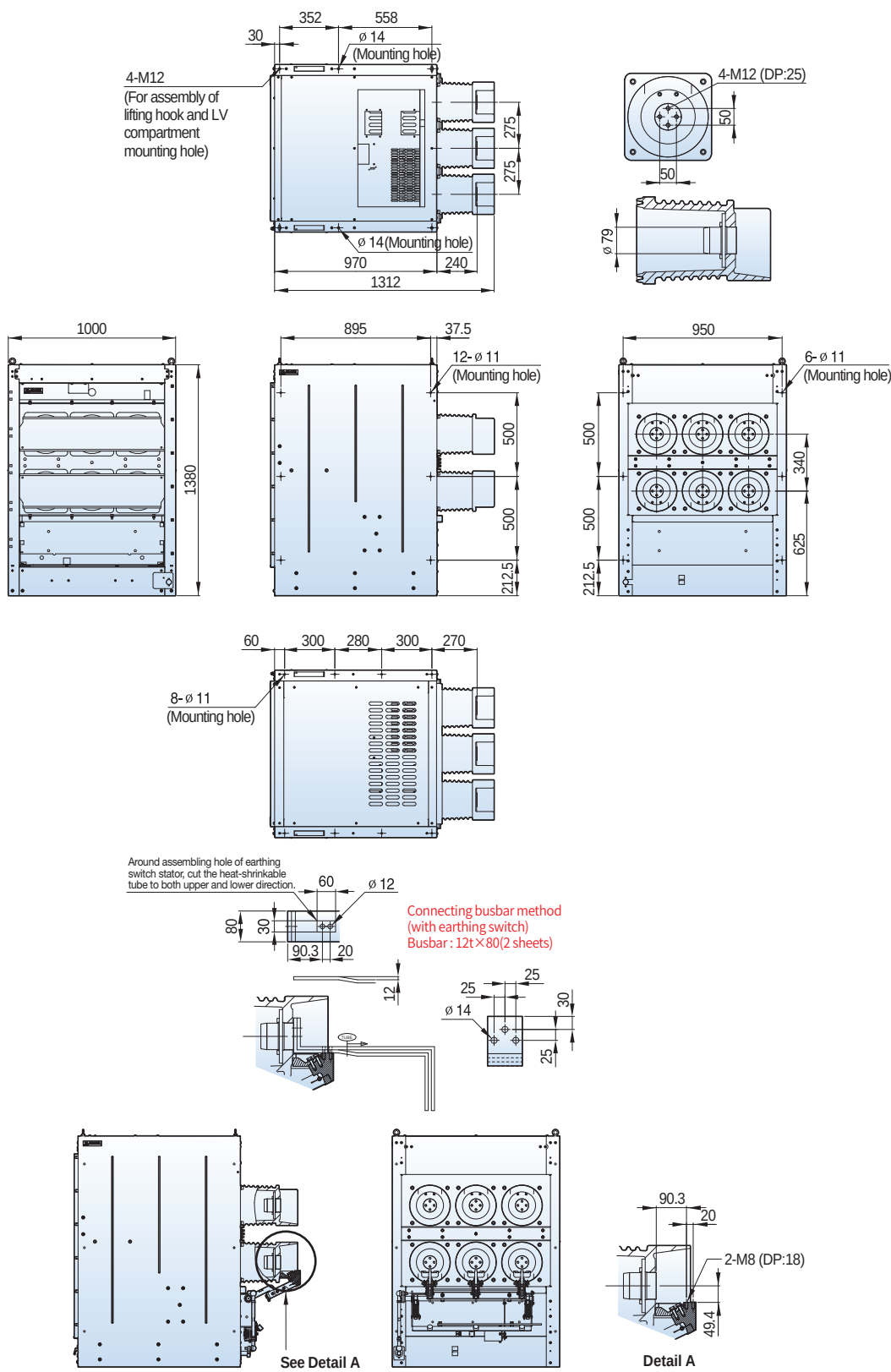
Dimensions - VH type (VH-20/25)

24/25.8kV, 25kA, 2500A

Withdrawable

■ H cradle, phase distance 275mm

Type
VCH-20H25D25
VCH-25H25D25



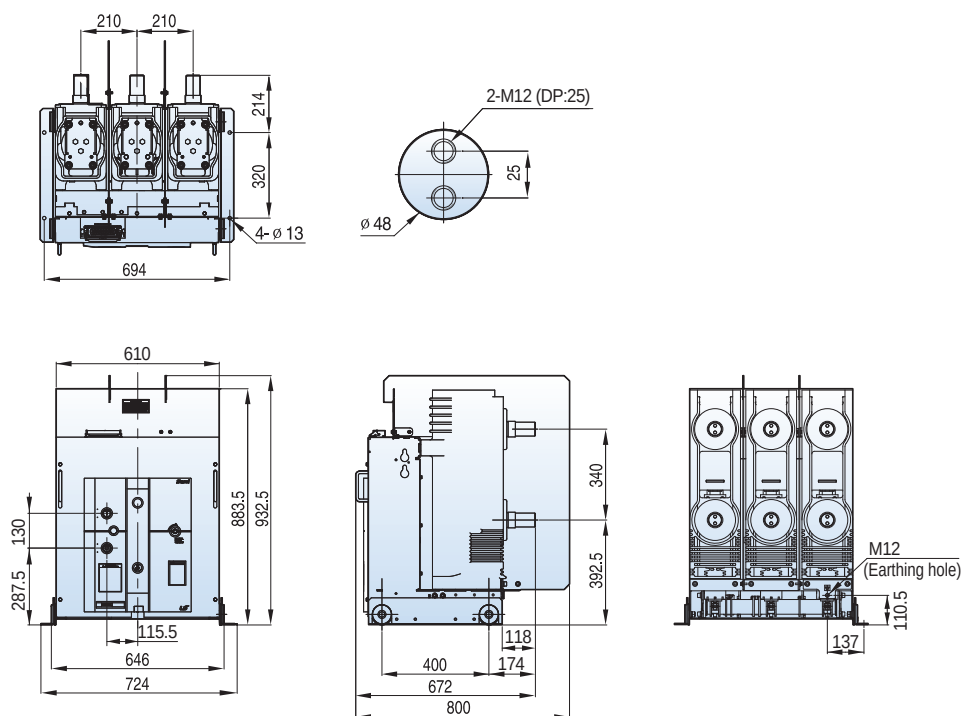
24/25.8kV, 31.5/40kA, 1250/2000A

Fixed

■ P type, phase distance 210mm

Type

VH-20P32B13
VH-20P32B20
VH-20P40B13
VH-20P40B20
VH-25P32B13
VH-25P32B20
VH-25P40B13
VH-25P40B20

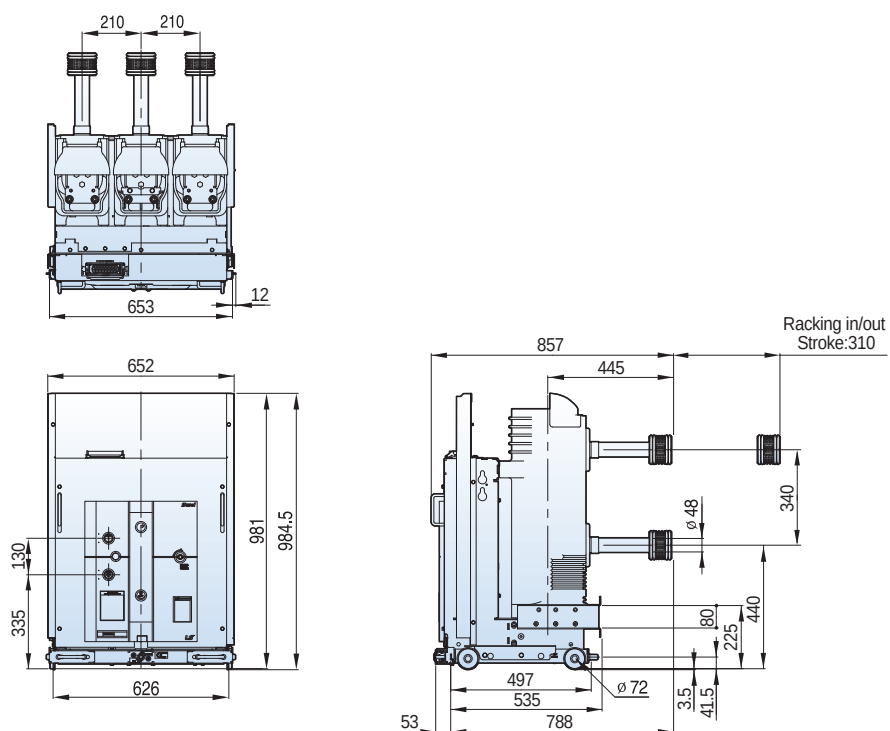


Withdrawable

■ H type unit, phase distance 210mm

Type

VH-20H32B13
VH-20H32B20
VH-20H40B13
VH-20H40B20
VH-25H32B13
VH-25H32B20
VH-25H40B13
VH-25H40B20



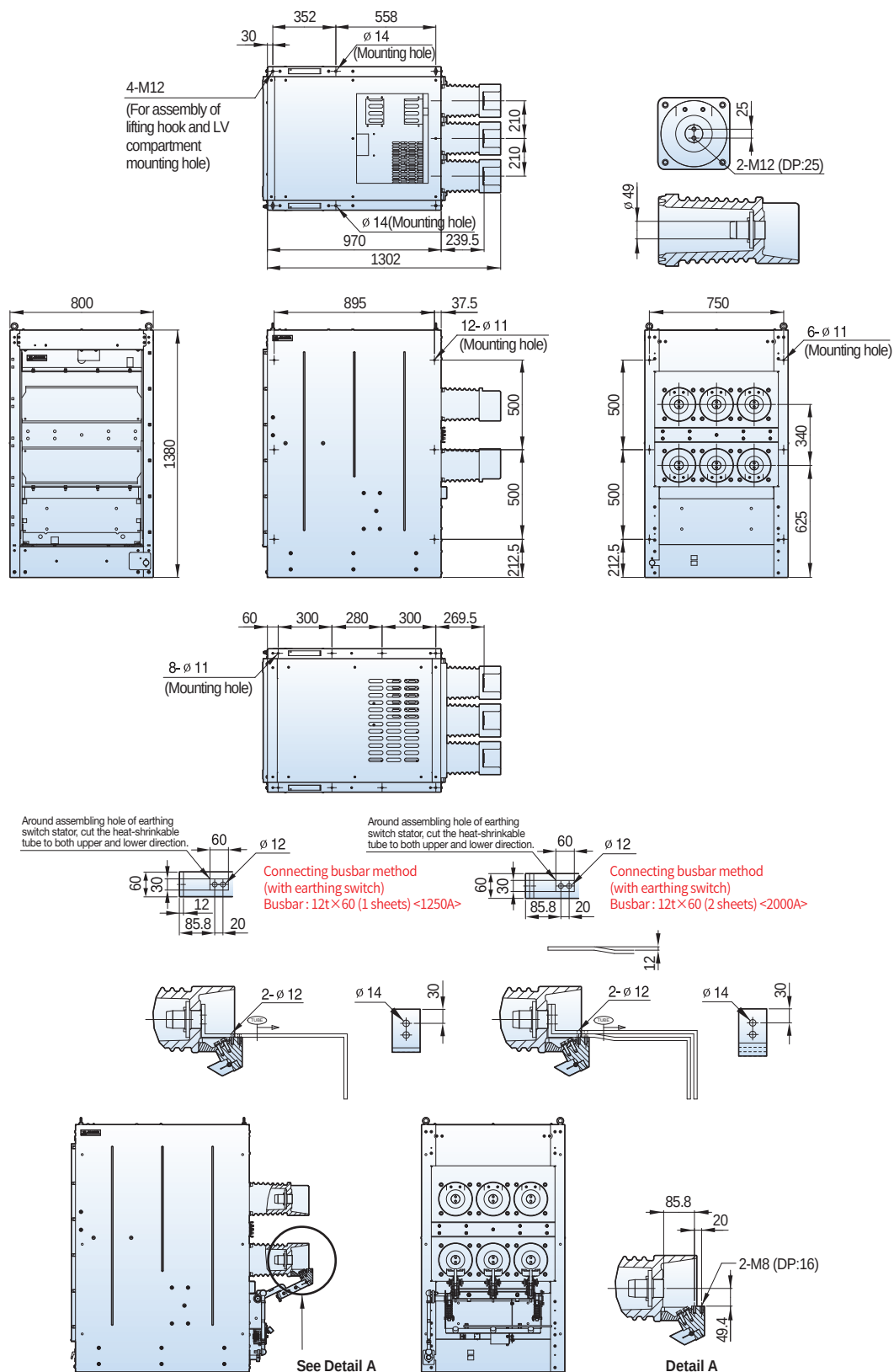
Dimensions - VH type (VH-20/25)

24/25.8kV, 31.5/40kA, 1250/2000A

Withdrawable

■ H cradle, phase distance 210mm

Type
VCH-20H32B13
VCH-20H32B20
VCH-20H40B13
VCH-20H40B20
VCH-25H32B13
VCH-25H32B20
VCH-25H40B13
VCH-25H40B20



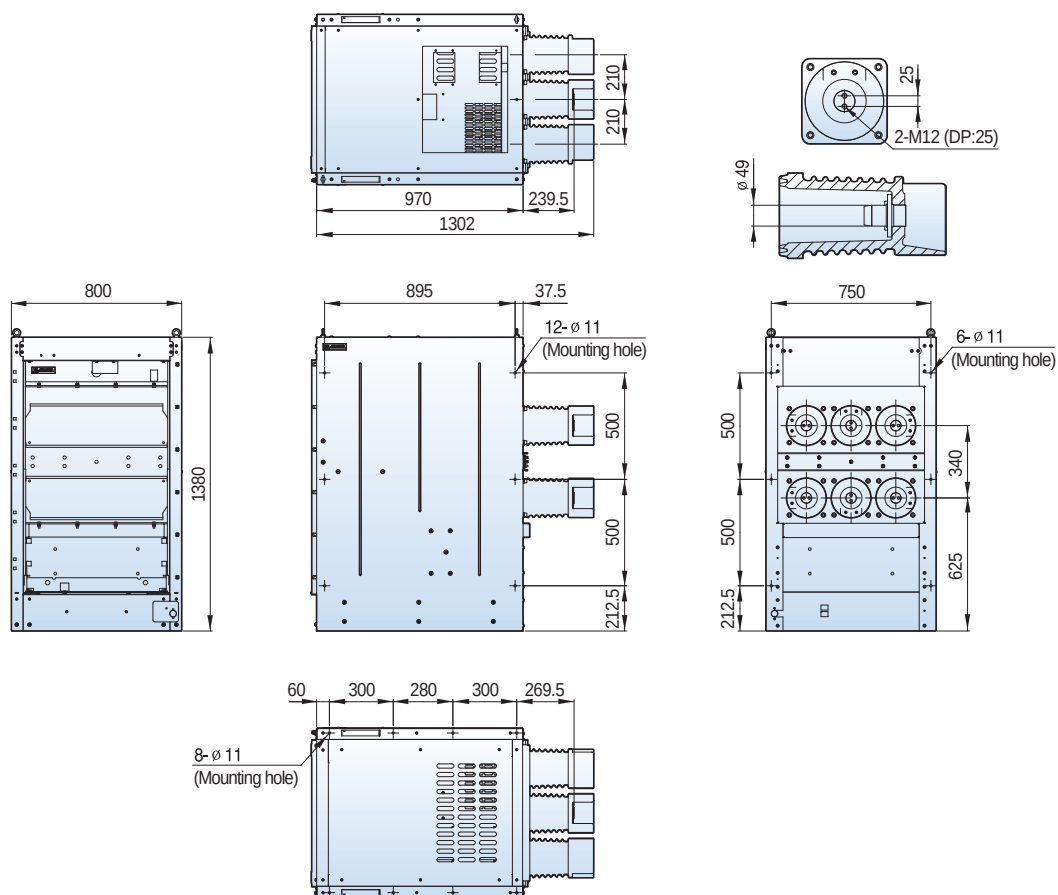
24/25.8kV, 31.5/40kA, 1250/2000A

Withdrawable

■ H cradle, Rotated bushing type, phase distance 210mm

Type

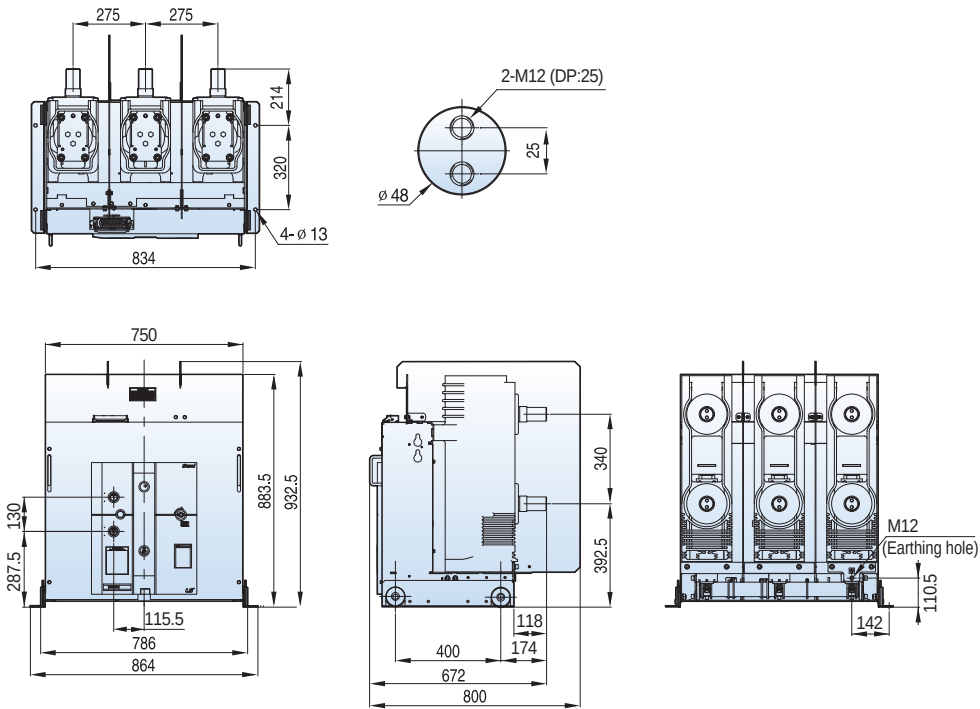
VCH-20H32J13
VCH-20H32J20
VCH-20H40J13
VCH-20H40J20
VCH-25H32J13
VCH-25H32J20
VCH-25H40J13
VCH-25H40J20



24/25.8kV, 31.5/40kA, 1250/2000A

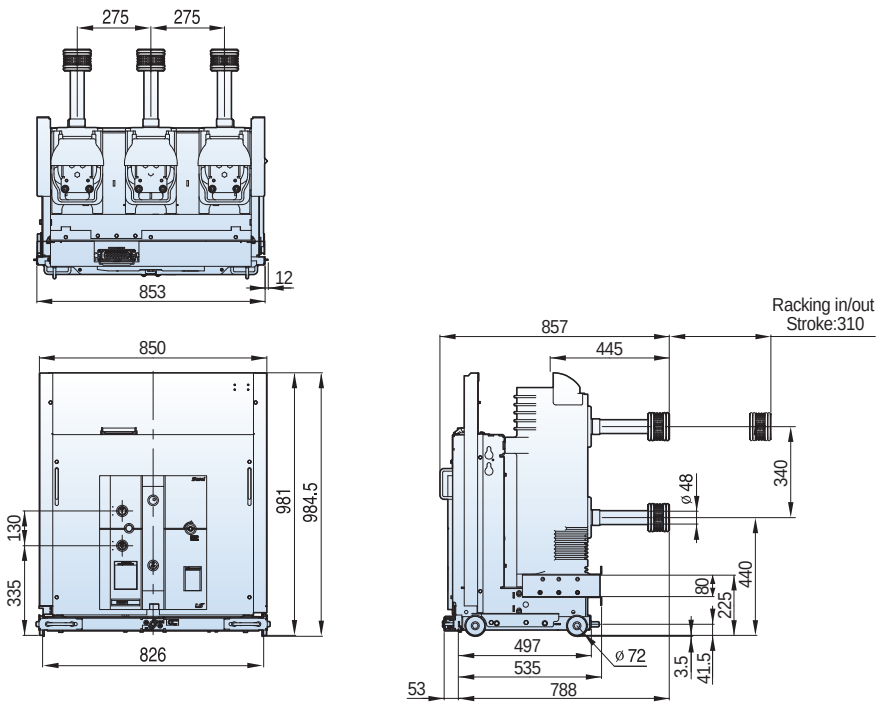
■ P type, phase distance 275mm

Type
VH-20P32D13
VH-20P32D20
VH-20P40D13
VH-20P40D20
VH-25P32D13
VH-25P32D20
VH-25P40D13
VH-25P40D20



■ H type unit, phase distance 275mm

Type
VH-20H32D13
VH-20H32D20
VH-20H40D13
VH-20H40D20
VH-25H32D13
VH-25H32D20
VH-25H40D13
VH-25H40D20



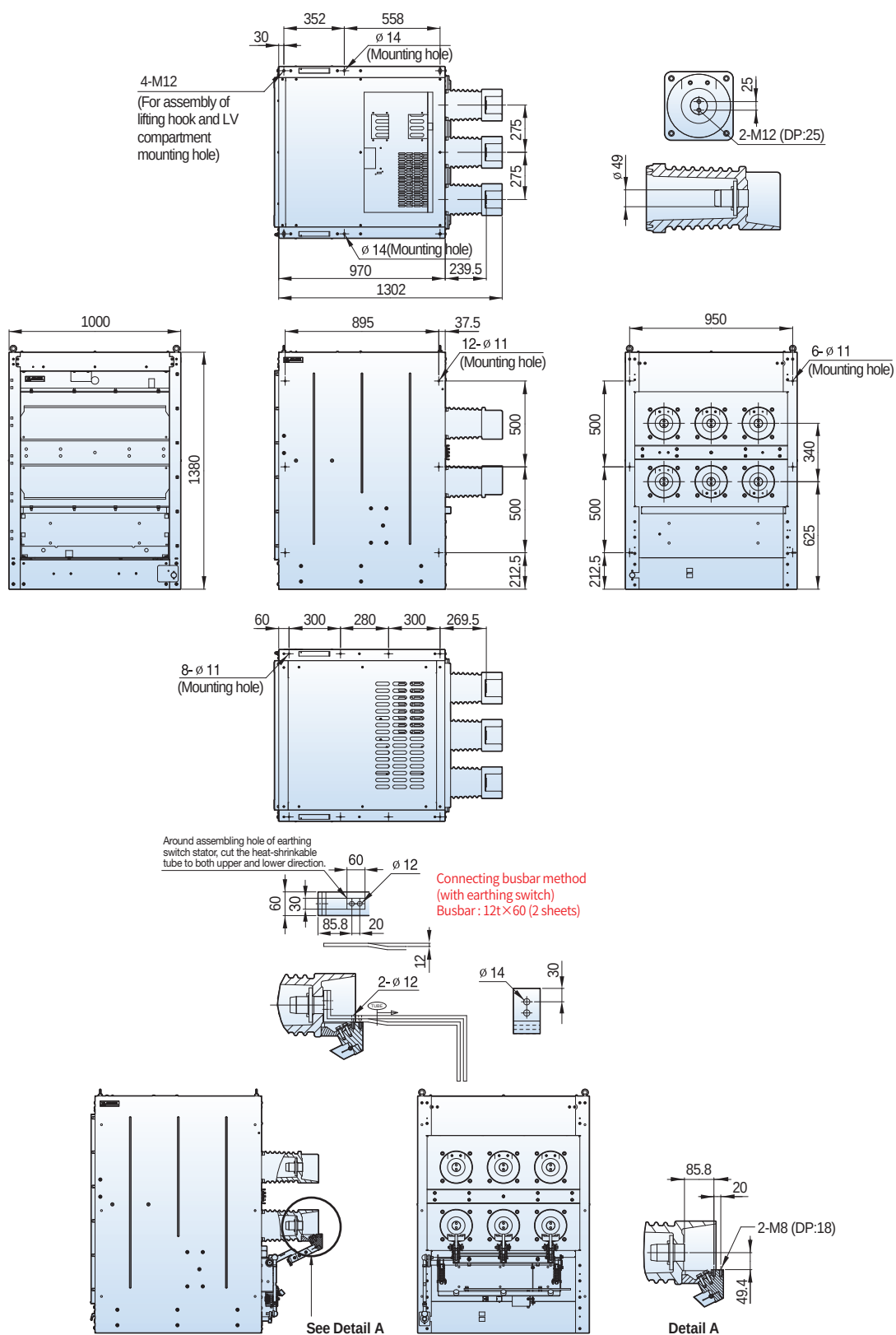
24/25.8kV, 31.5/40kA, 1250/2000A

Withdrawable

■ H cradle, phase distance 275mm

Type

VCH-20H32D13
VCH-20H32D20
VCH-20H40D13
VCH-20H40D20
VCH-25H32D13
VCH-25H32D20
VCH-25H40D13
VCH-25H40D20



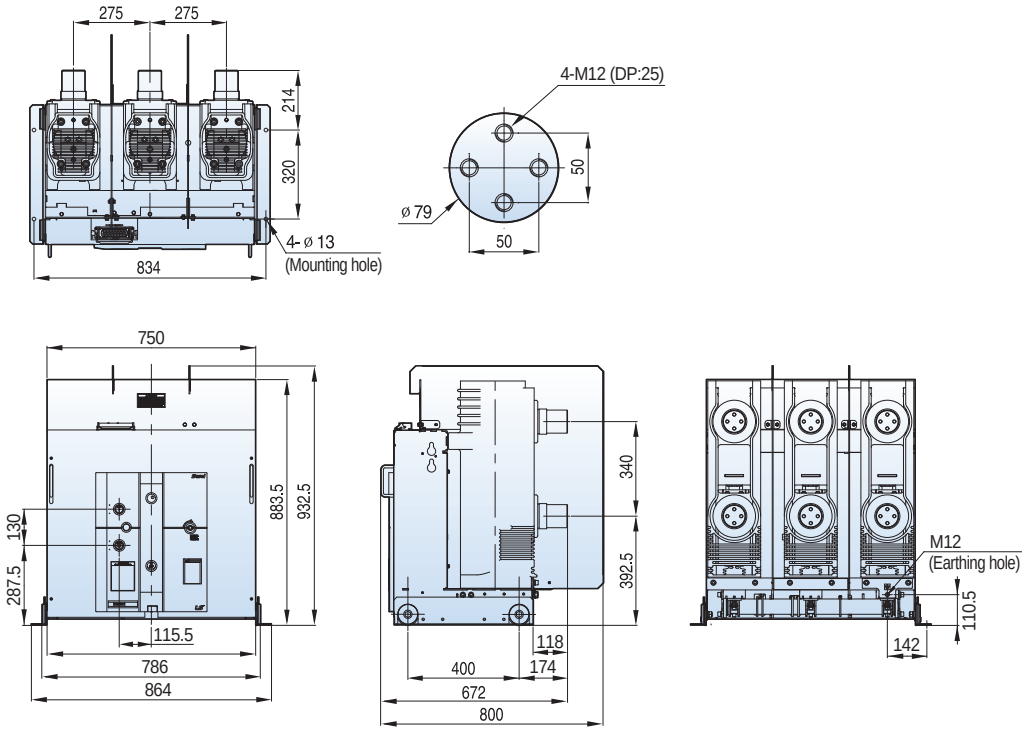
Dimensions - VH type (VH-20/25/36)

24/25.8kV, 31.5/40kA, 3150A

Fixed

■ P type, phase distance 275mm

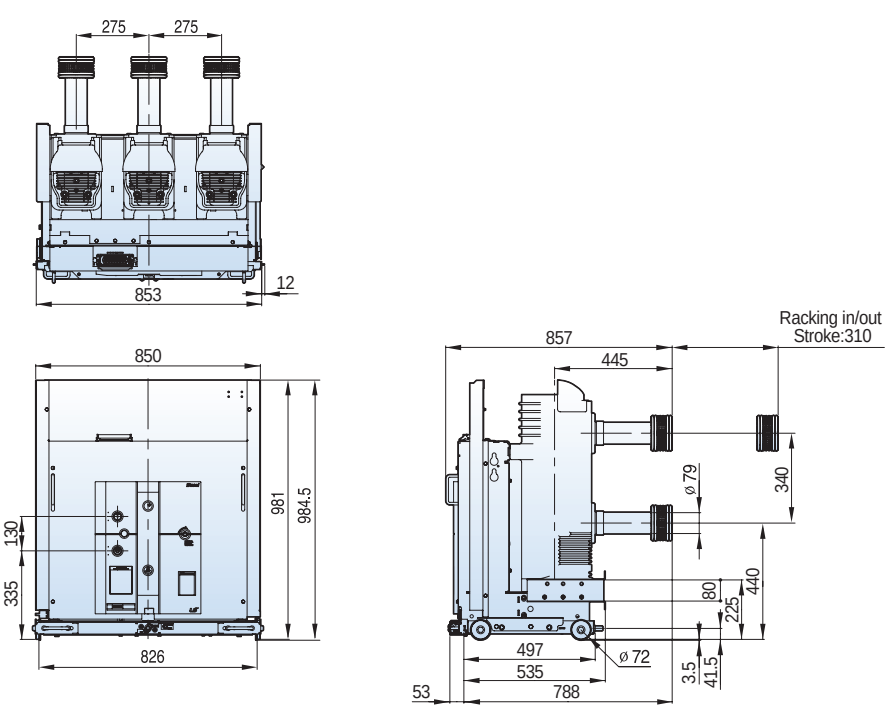
Type
VH-20P32D32
VH-20P40D32
VH-25P32D32
VH-25P40D32



Withdrawable

■ H type unit, phase distance 275mm

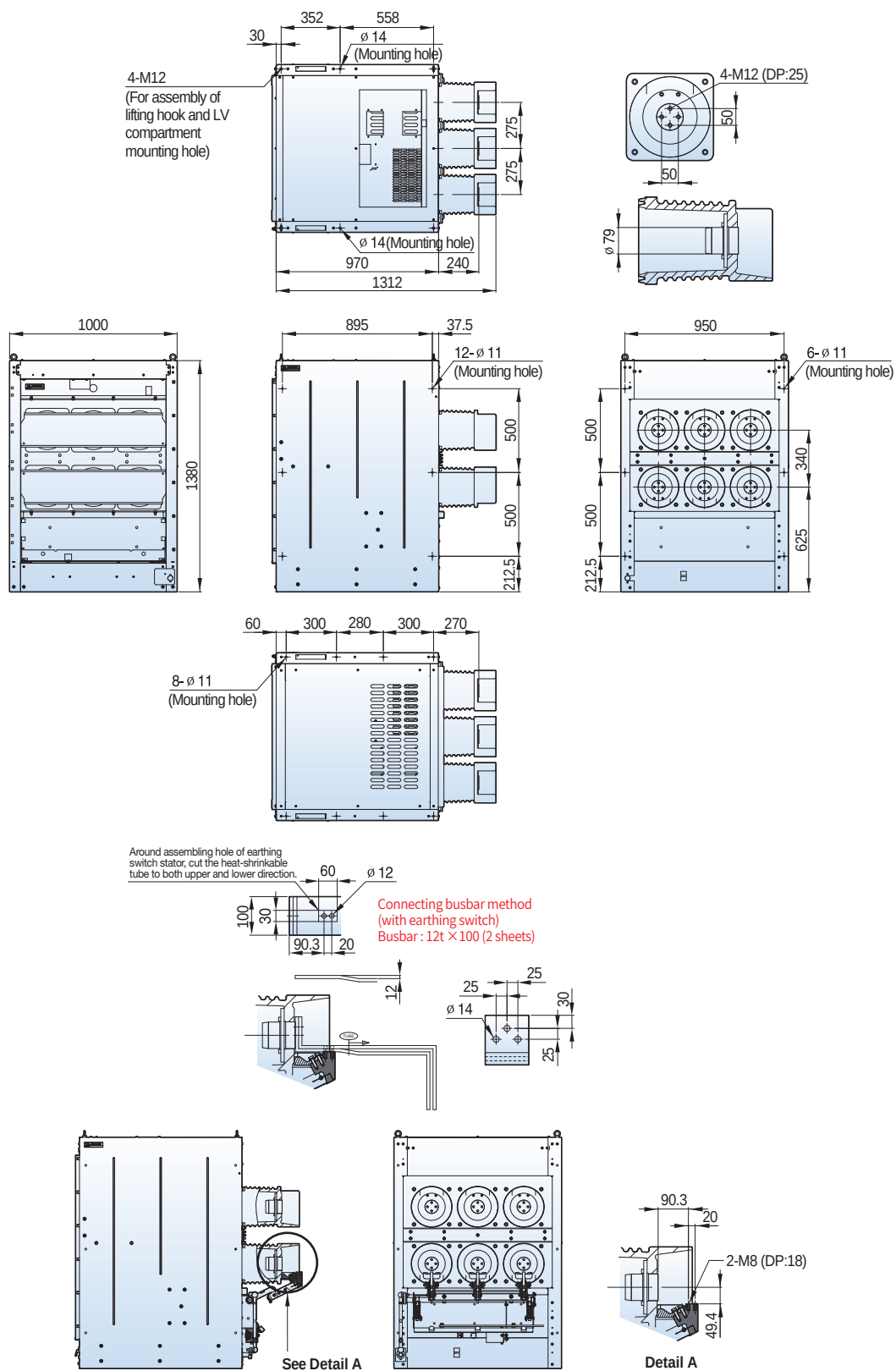
Type
VH-20H32D32
VH-20H40D32
VH-25H32D32
VH-25H40D32



Downloaded from <http://ajph.org/> at University of California, San Diego on June 11, 2015

MGL 2011-0522

Abstract



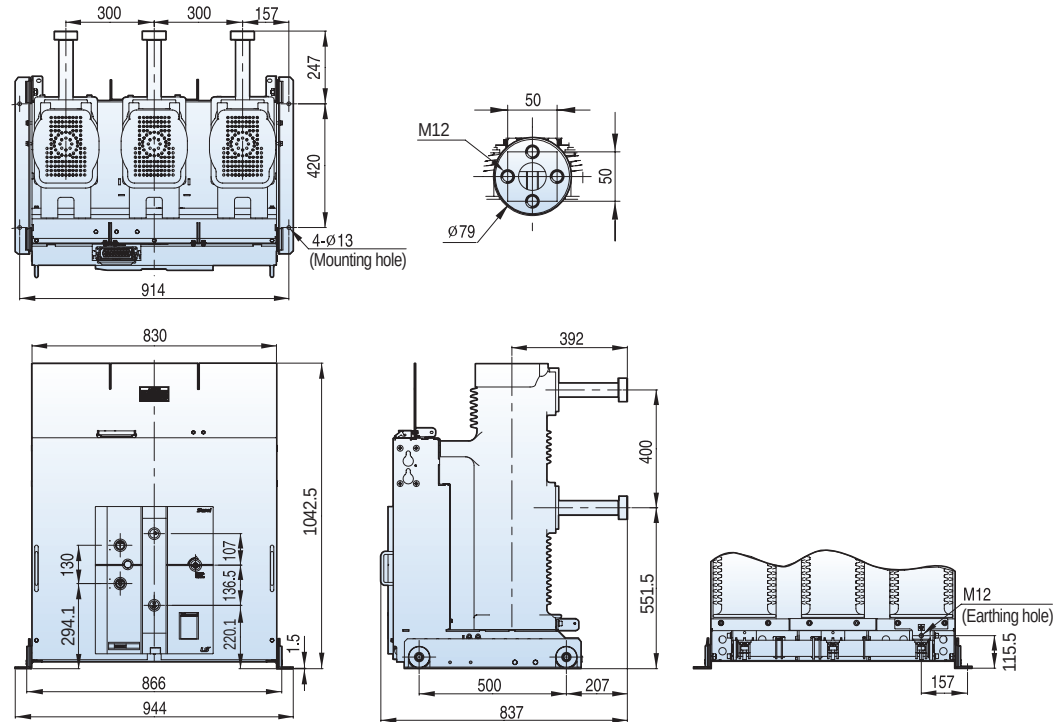
Dimensions - VH type (VH-36)

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

Fixed

■ P type, phase distance 300mm

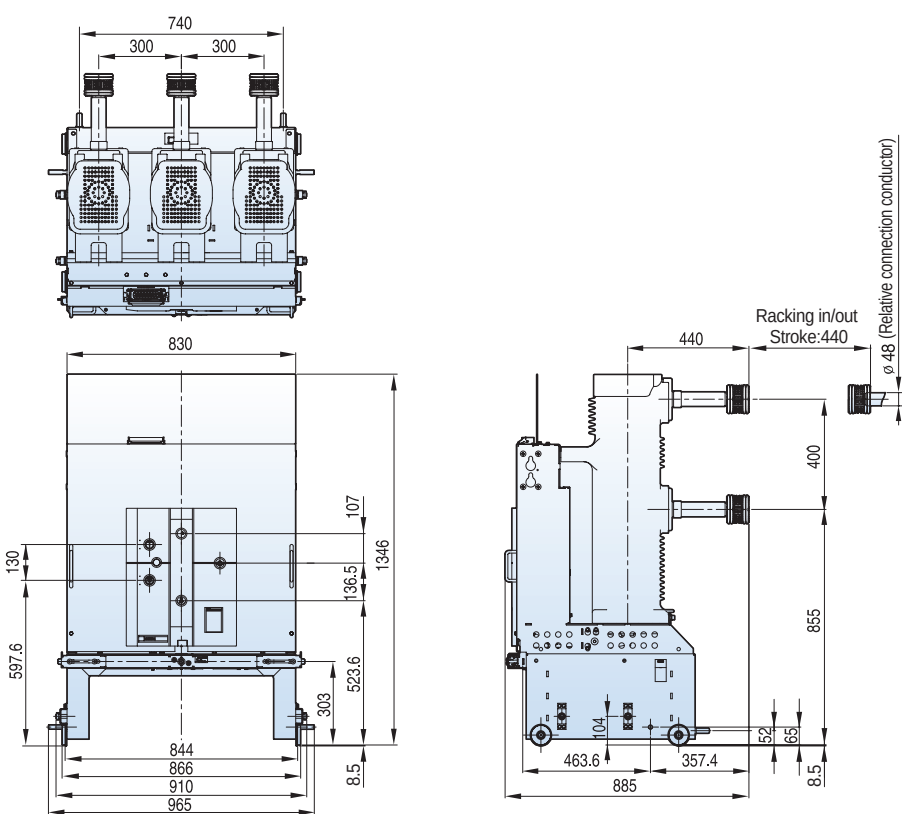
Type
VH-36P25E13
VH-36P25E20
VH-36P32E13
VH-36P32E20
VH-36P40E13
VH-36P40E20



Withdrawable

■ H type unit, phase distance 300mm

Type
VH-36H25E13
VH-36H25E20
VH-36H32E13
VH-36H32E20
VH-36H40E13
VH-36H40E20



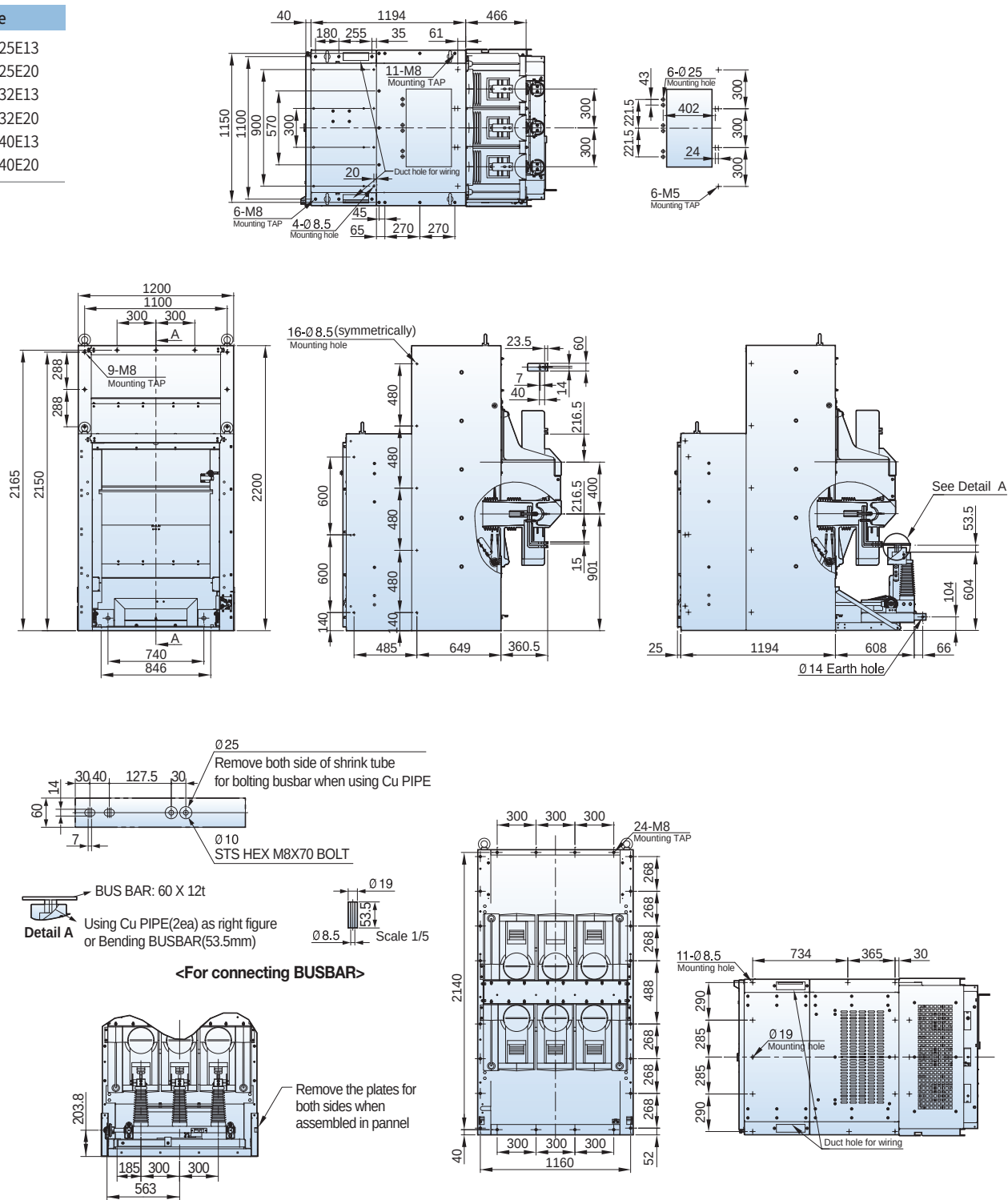
36kV, 25/31.5/40kA, 1250/2000A

Withdrawable

■ H type cradle, phase distance 300mm

Type

VCH-36H25E13
VCH-36H25E20
VCH-36H32E13
VCH-36H32E20
VCH-36H40E13
VCH-36H40E20



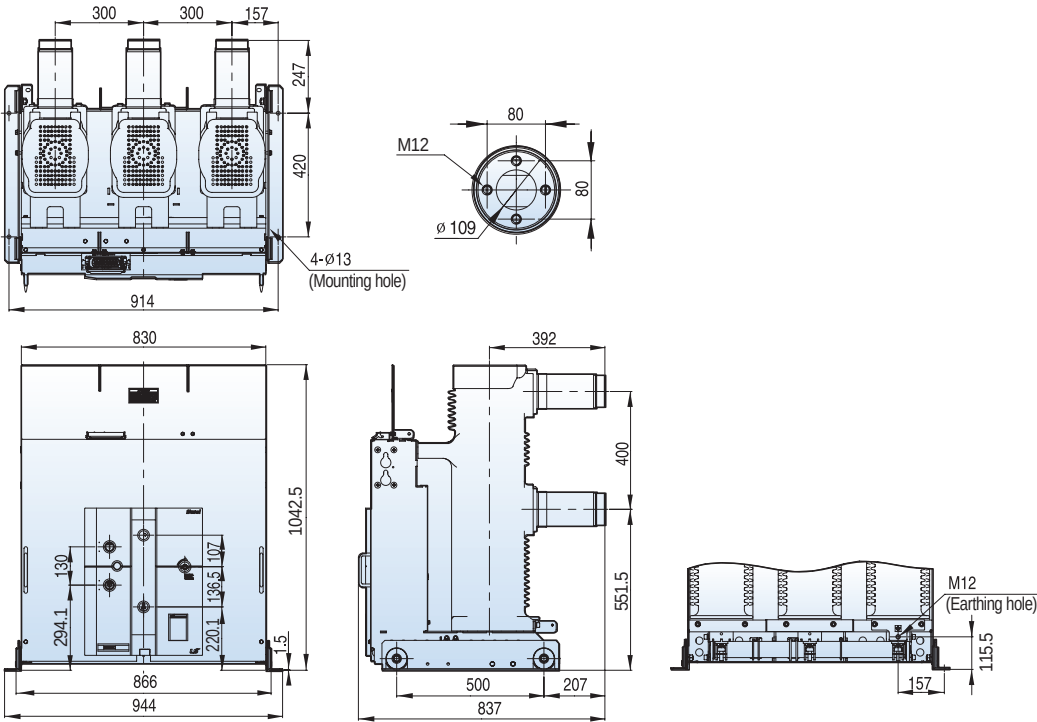
Dimensions - VH type (VH-36)

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

Fixed

■ P type, phase distance 300mm

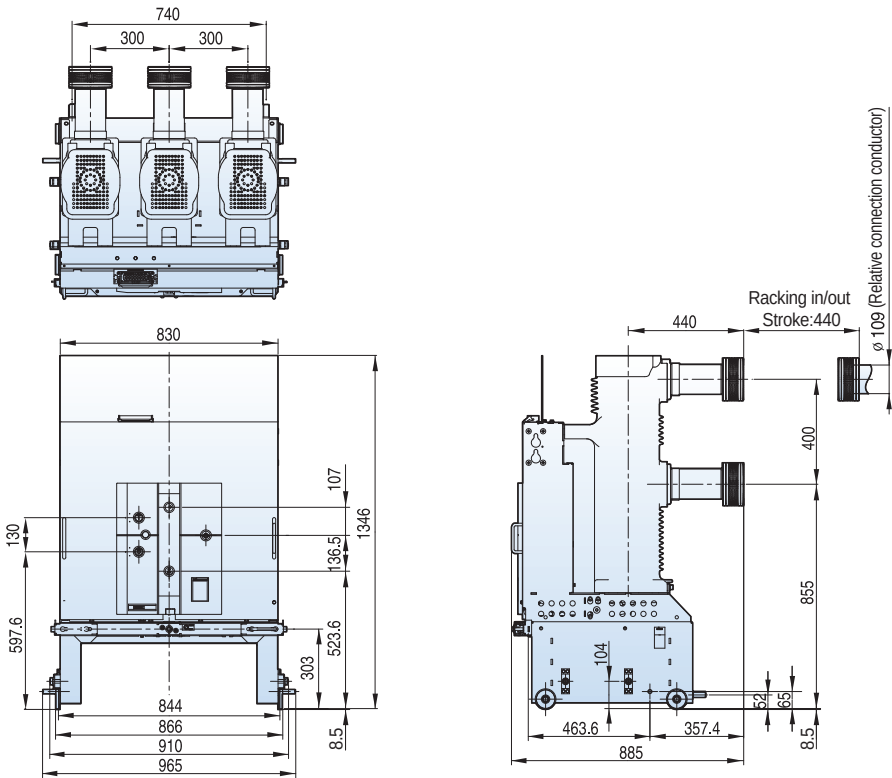
Type
VH-36P25E32
VH-36P32E32
VH-36P40E32



Withdrawable

■ H type unit, phase distance 300mm

Type
VH-36H25E32
VH-36H32E32
VH-36H40E32



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

Withdrawable

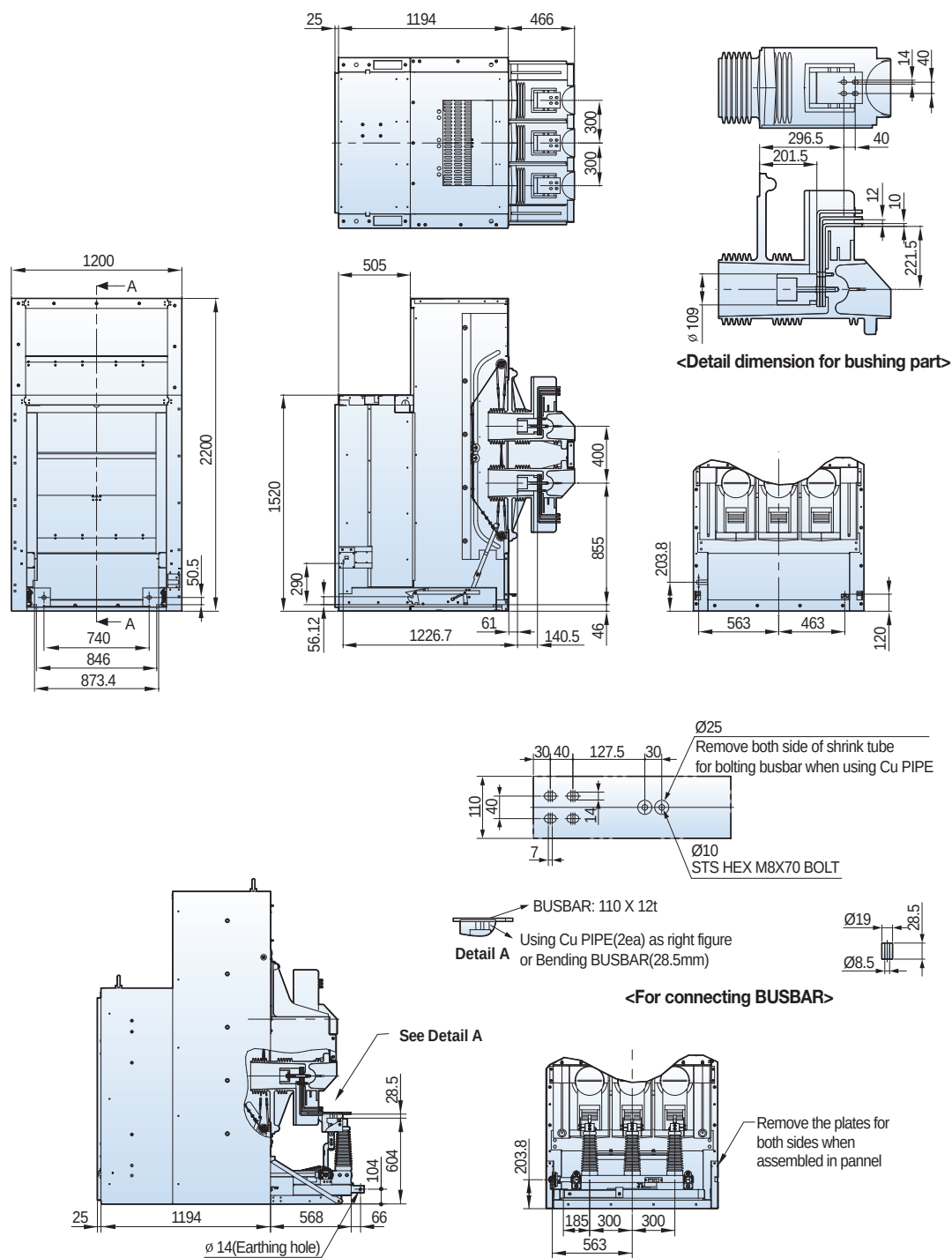
Type

VCH-36H25E32

VCH-36H32E32

VCH-36H40E32

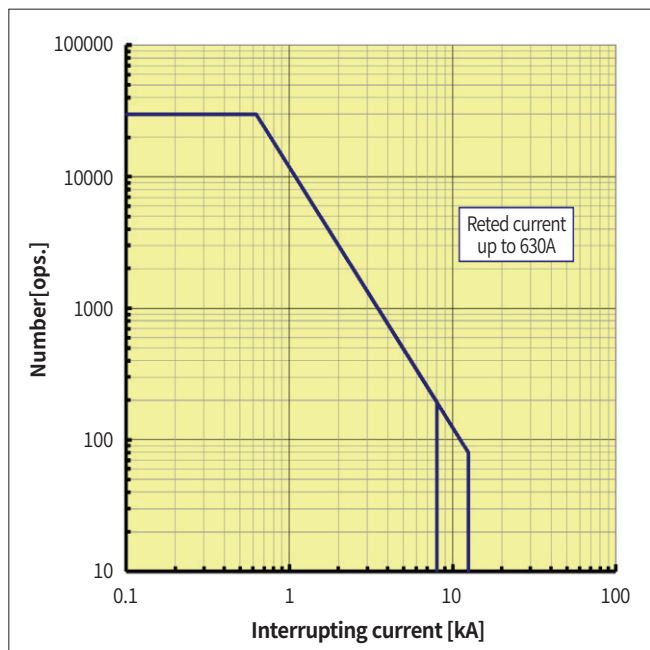
■ H type cradle, phase distance 300mm



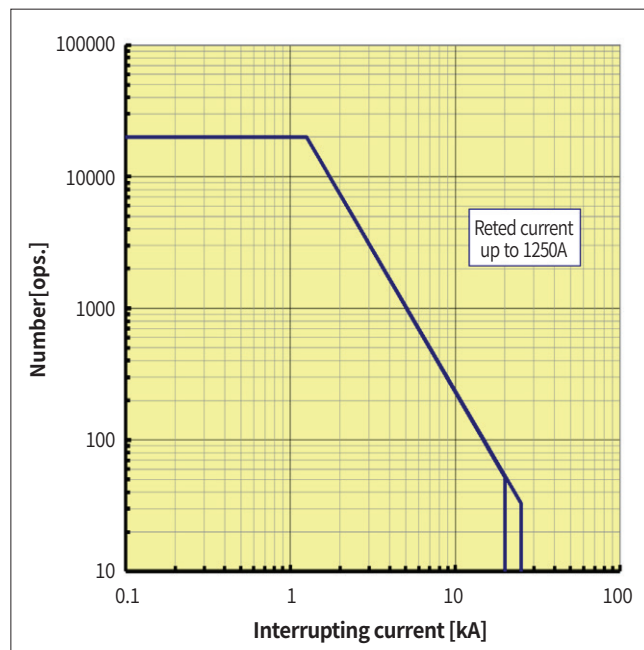
* Mounting information is same as 36kV 25/31.5/40kA 1250/2000A

Technical data

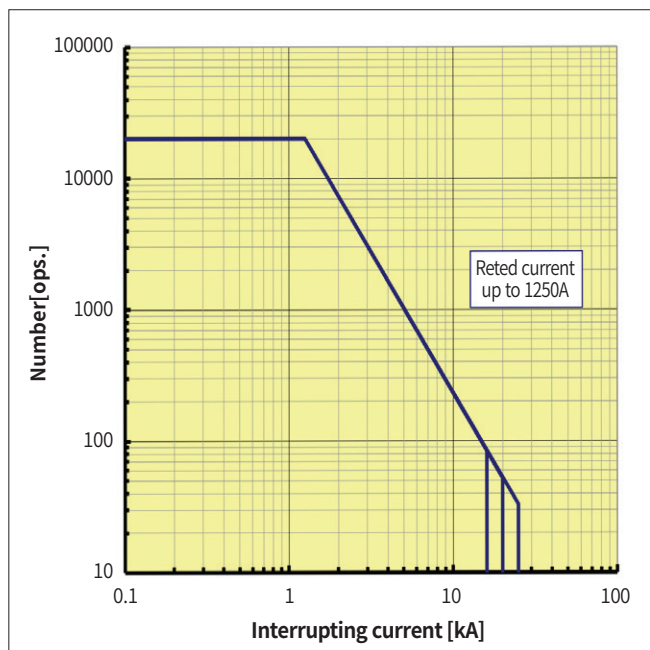
Electrical endurance by interrupting current



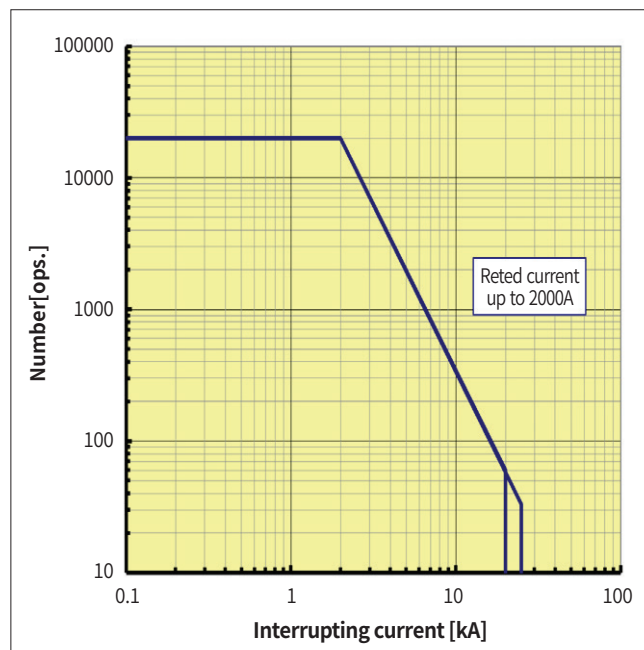
7.2kV 8/12.5kA 400/630A (LV2)



7.2kV 20/25kA 630/1250A (LV3)

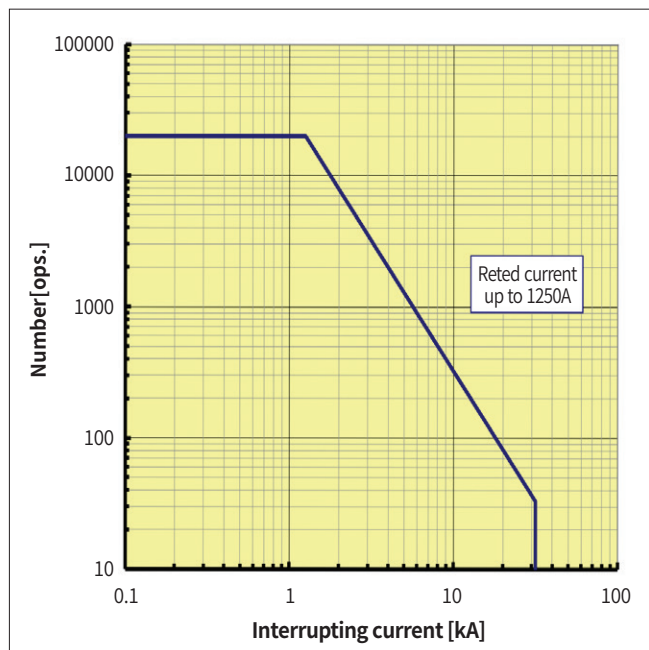


12/17.5kV 20/25kA 630/1250A (LV5-P)

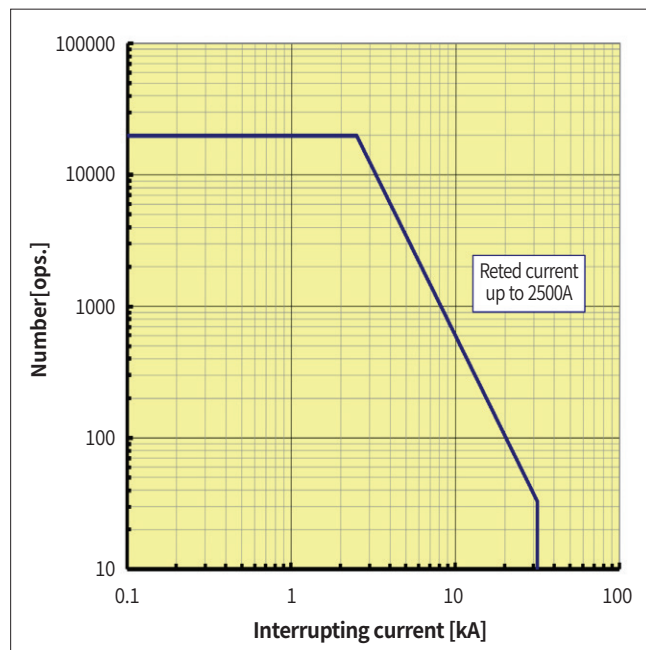


7.2/12/17.5kV 20/25kA 2000A (LV5A)

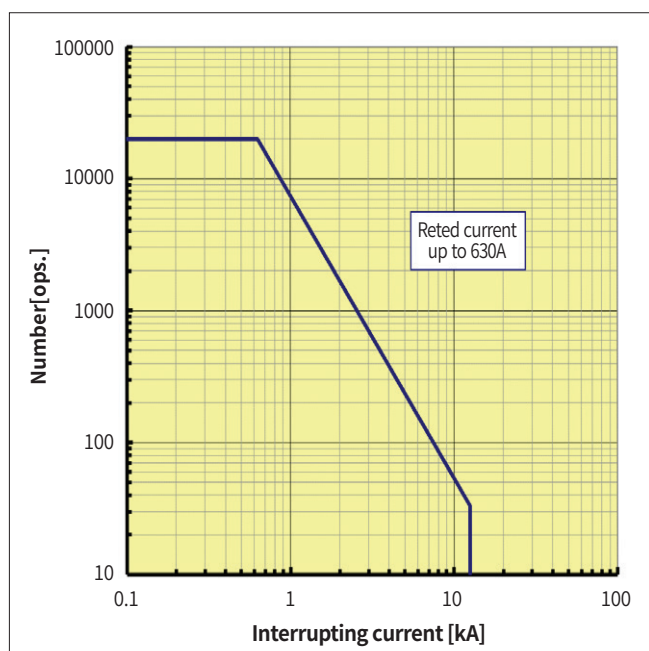
- N : Operation numbers
- I : Interrupting current



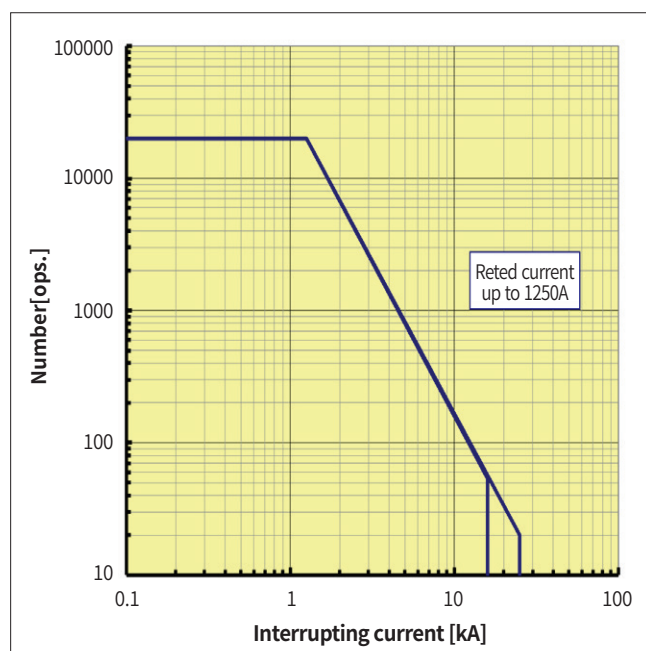
7.2/12/17.5kV 31.5kA 630/1250A (LV6)



7.2/12/17.5kV 31.5kA 2000/2500A (LV6A)



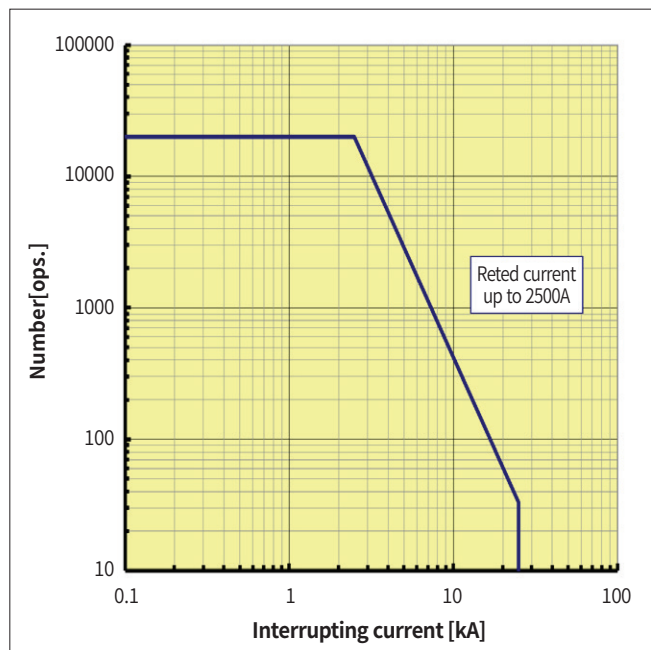
24/25.8kV 12.5kA 630A (LV4A-P1)

24/25.8kV 12.5kA 1250A
24/25.8kV 16/25kA 630/1250A (LV5-P1)

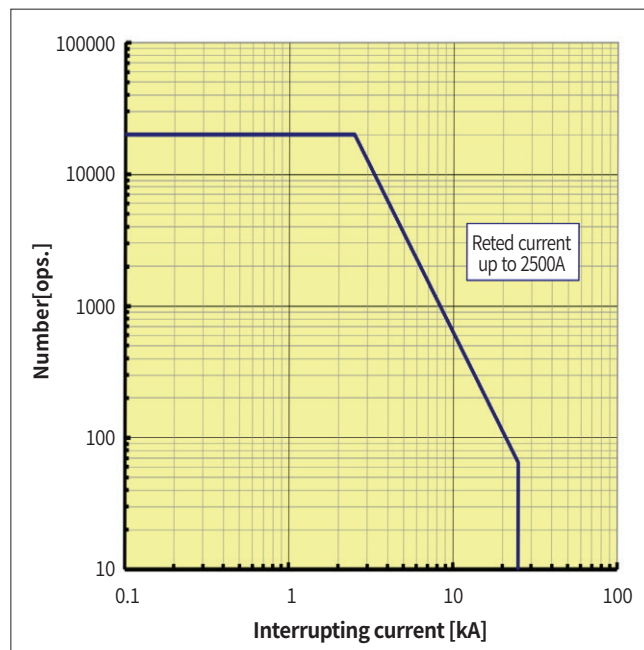
Note) 1. Above graphs represent the characteristics of the electrical life of LS Susol VCB.
2. Life characteristics of each model in each rating represents the LOG-LOG graphs.

Technical data

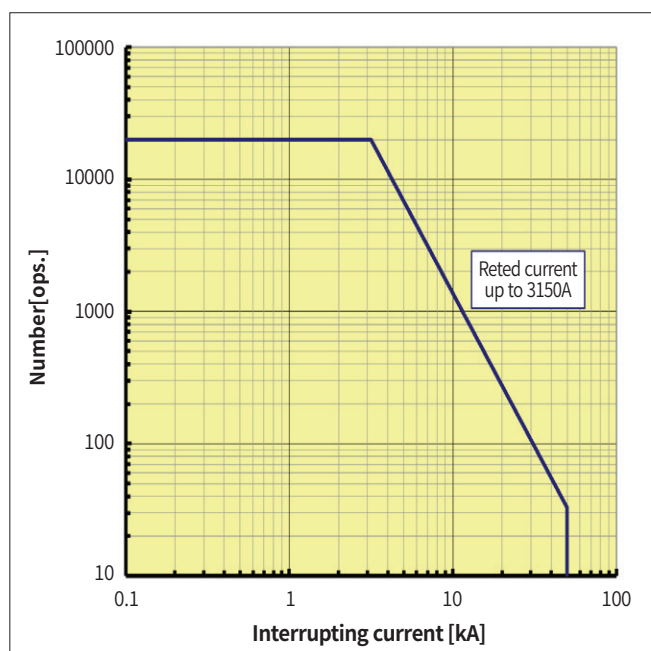
Electrical endurance by interrupting current



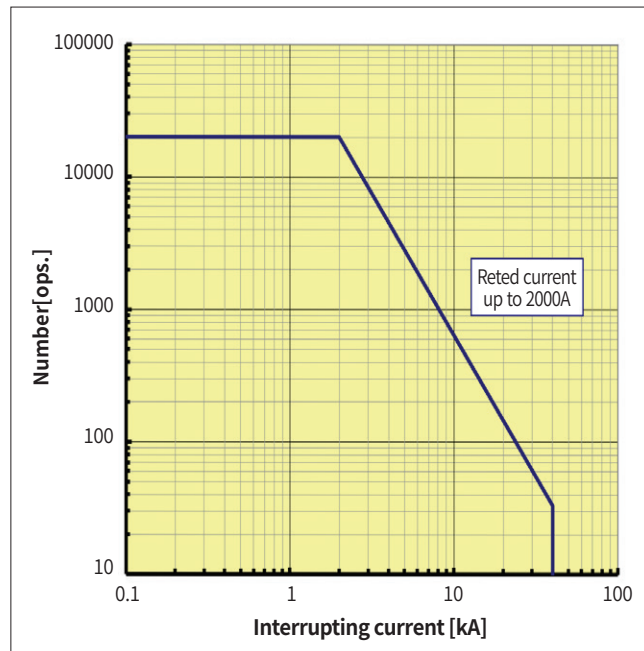
24/25.8kV 25kA 2000/2500A (LV5A-P1)



36kV 25kA 630/1250/2000/2500A (LV11-P)

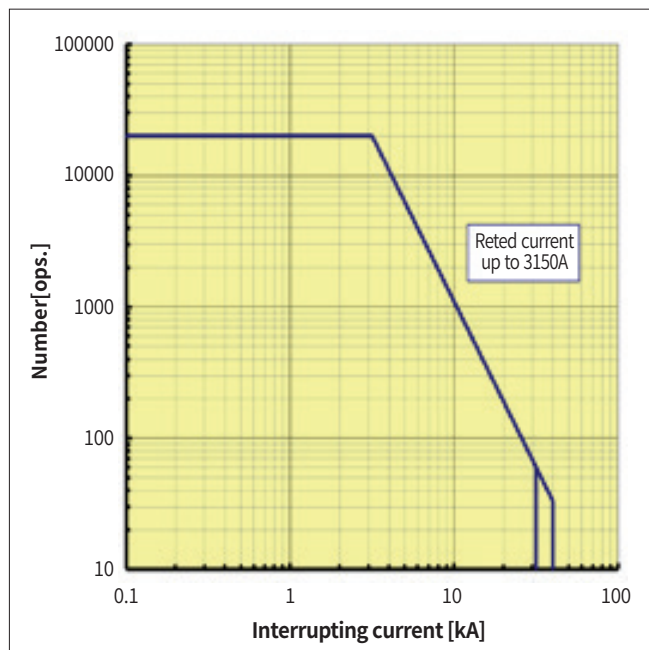


7.2/12/17.5kV 50kA 1250/2000/2500/3150A(LV8)

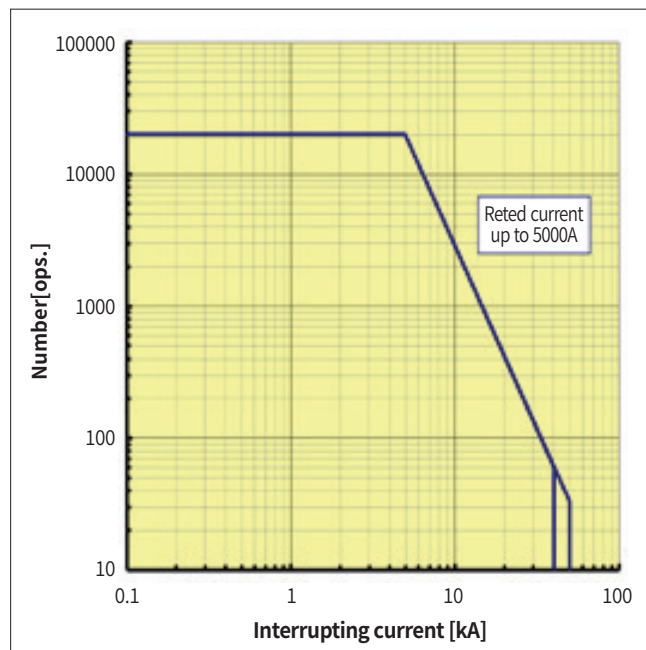


7.2/12kV 40kA 1250/2000A(LV10)

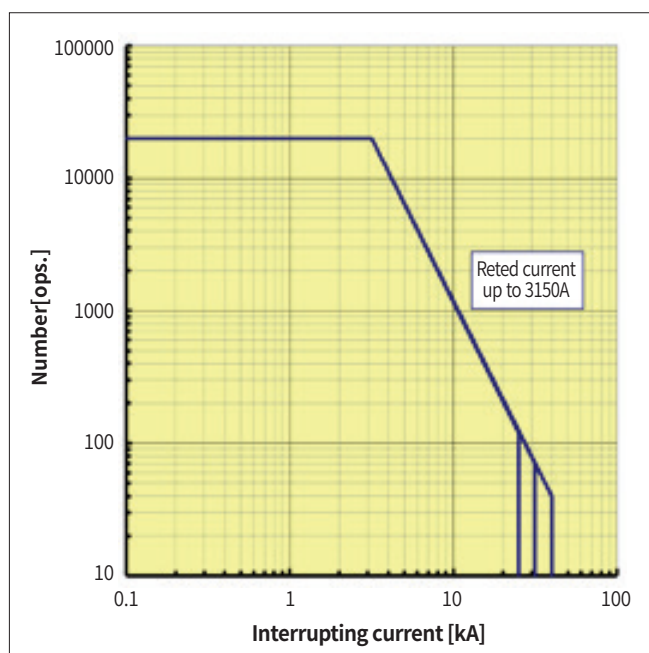
- N : Operation numbers
- I : Interrupting current



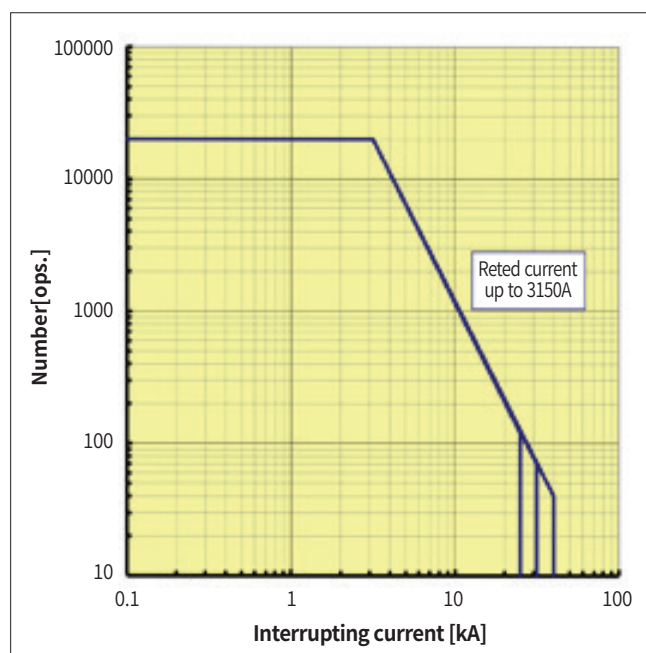
17.5kV 31.5/40kA 1250/2000A
7.2/12/17.5kV 31.5/40kA 3150A (LV8A)



7.2/12/17.5kV 40/50kA 4000/5000A (LV10505)



24/25.8kV 25/31.5/40kA 1250/2000/2500/3150A(LV7-P1)



36kV 25/31.5/40kA 1250/2000/3150A (LV8-P)

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.

Technical data

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°C
- 24-hour average maximum temperature: +35°C
- minimum temperature: -5°C

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°C, 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°C)
- 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

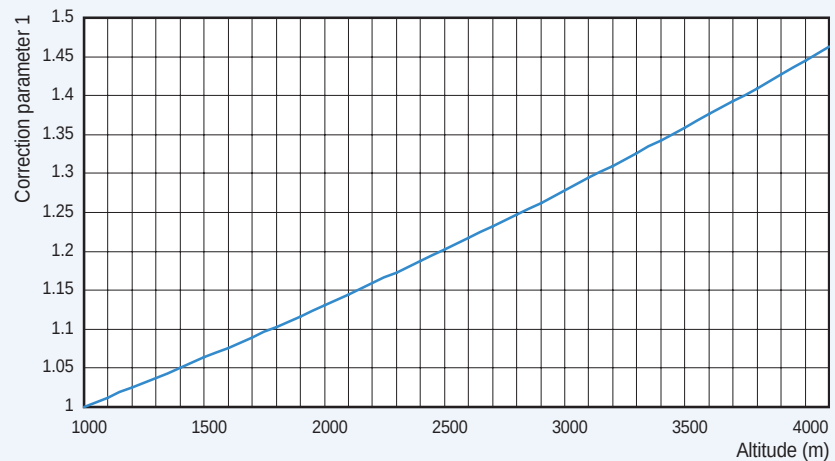
Withstand voltage compensation according to altitude

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

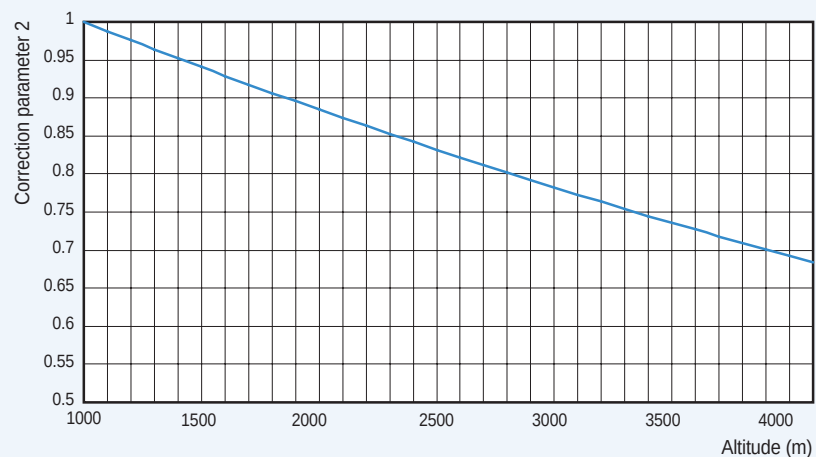
70	36	170
50(65)	24	125
38	17.5	95
28(42)	12	75(82)
20	7.2	60
Ud [kV/1min]	Ur[kV]	Up [kV/1.2 × 50 μ s]
Power Frequency Withstand Voltage		Impulse Withstand Voltage

<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 (U_d) = 20kV, Impulse Withstand Voltage (U_p) = 60kV
- Requirements withstand voltage criteria:
Power Frequency Withstand Voltage (U_d) = $20 \times 1.2 = 24\text{kV}$, Impulse Withstand Voltage (U_p) = 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 (U_d) = $28 \times 0.825 = 23.1\text{kV}$,
Impulse Withstand Voltage (U_p) = $75 \times 0.825 = 62\text{kV}/1.2 \times 50 \mu\text{s}$
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.

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

I_a : allowable continuous current in the actual ambient temperature Θ_a

I_r : rated current at 40°C ambient temperature

$\Theta_{\max}$: acceptable overall temperature of the hottest spot

Θ_a : the actual ambient temperature expected at -30°C and 60°C

Θ_r : allowable temperature in the hottest place at rated current

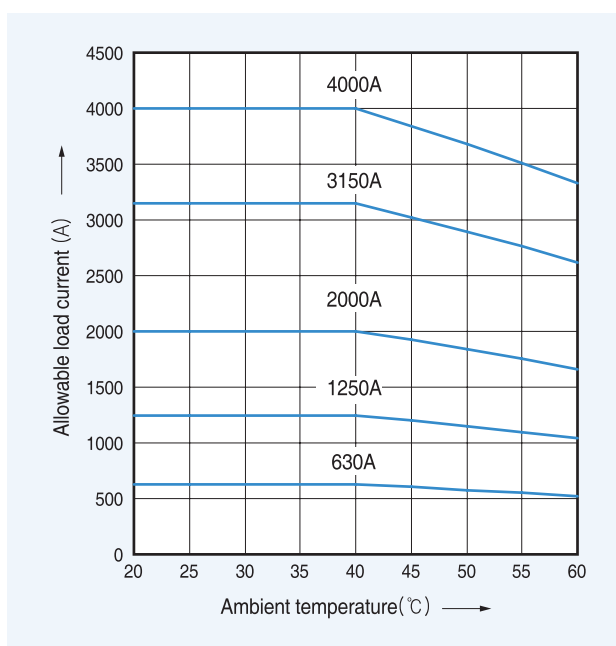
Ex) The calculation of the applicable load current value when a breaker with rated current

2000A is used at 55 °C ambient temperature

$$I_a = 2000 \times ((105-55)/65)^{1/2} = 2000 \times 0.87 = 1754A$$

Rated current (A)	Ambient temperature (°C)								
	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

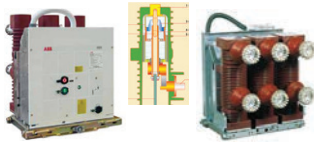
<Table 2> Allowable load current by ambient temperature

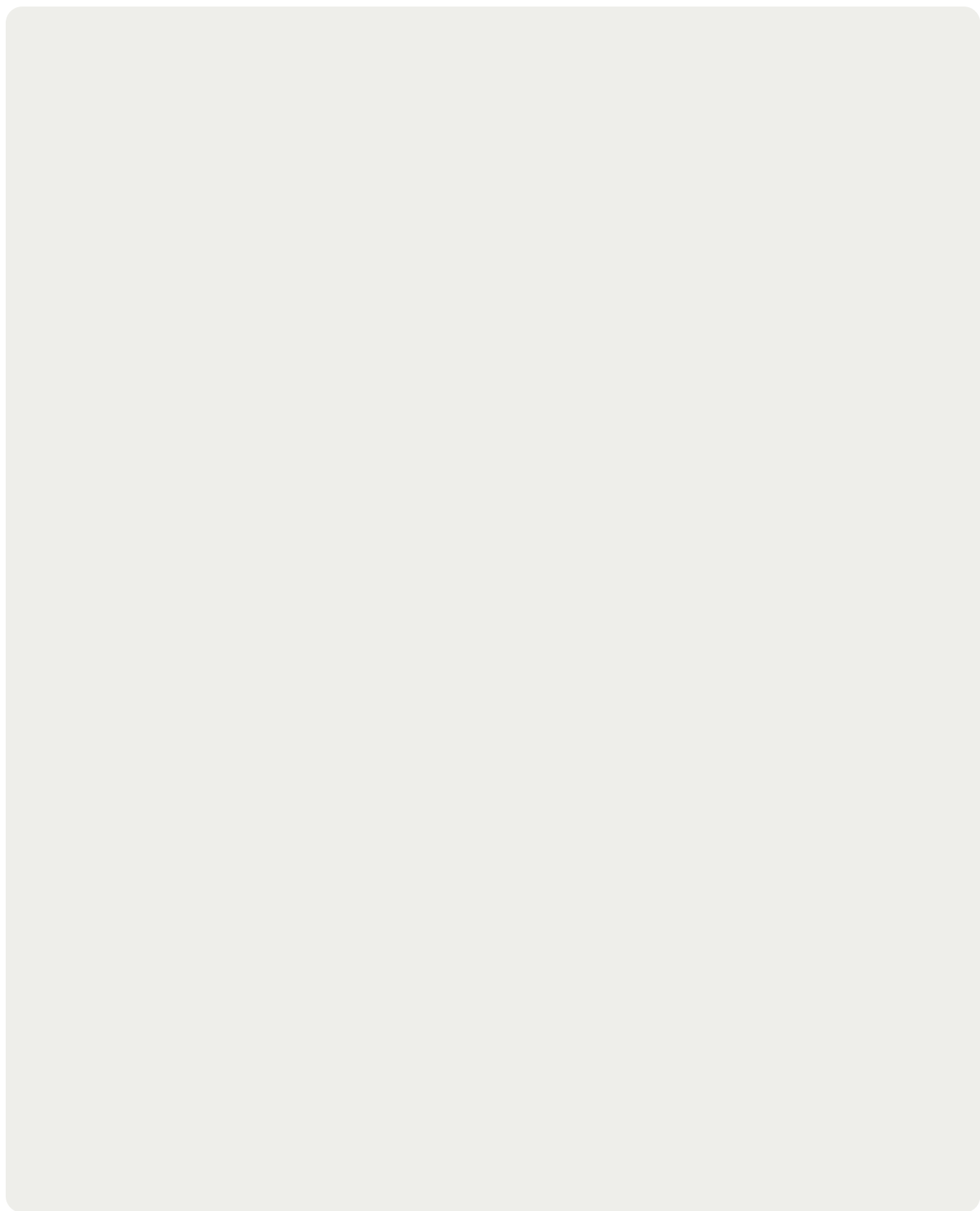


<Figure 3> Allowable load current by ambient temperature

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				
Arc extinguish medium and characteristics	SF6 gas - Greenhouse gas that causes global warming. - The toxic gas generated by chemical reactions due to arc energy. - 5kgf/cm² 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 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	





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 concerned.



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



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