



# Vacuum Contactor

# Vacuum Contactor

HYUNDAI Vacuum Contactors are designed and manufactured for frequent switchings, especially taking into account safety and quality assurance. They are suitable for switching and controlling squirrel cage and slipring motors, medium voltage loads and resistance furnaces, and capacitors and transformers.





## [ CONTENTS ]

Features / Operation and Application	04		Ratings	05			
Technical Data	06		Accessories	10		Circuit Diagrams	11
Dimensions	12		Order Information	18			

## » Features

### | Superior Switching Performance

Switching a vacuum makes for rapid breaking.  
Rapid build-up of the dielectric strength ensures safety breaking.  
The fuse mounted type also provides for protection against short-circuit currents.

### | Optimum Design

Optimized structure and mechanism complement frequent switching.

### | Low Surge

Special WCAg contact limits the chopping current up to 1A to protect the load from high surge.

### | High Reliability

Rigid insulation frame and operating mechanism offer high reliability, especially for safety and quality assurance.

### | Customer Convenience

Light weight and compact size enable easy installation with high efficiency in space.  
Optimum design makes maintenance convenient.

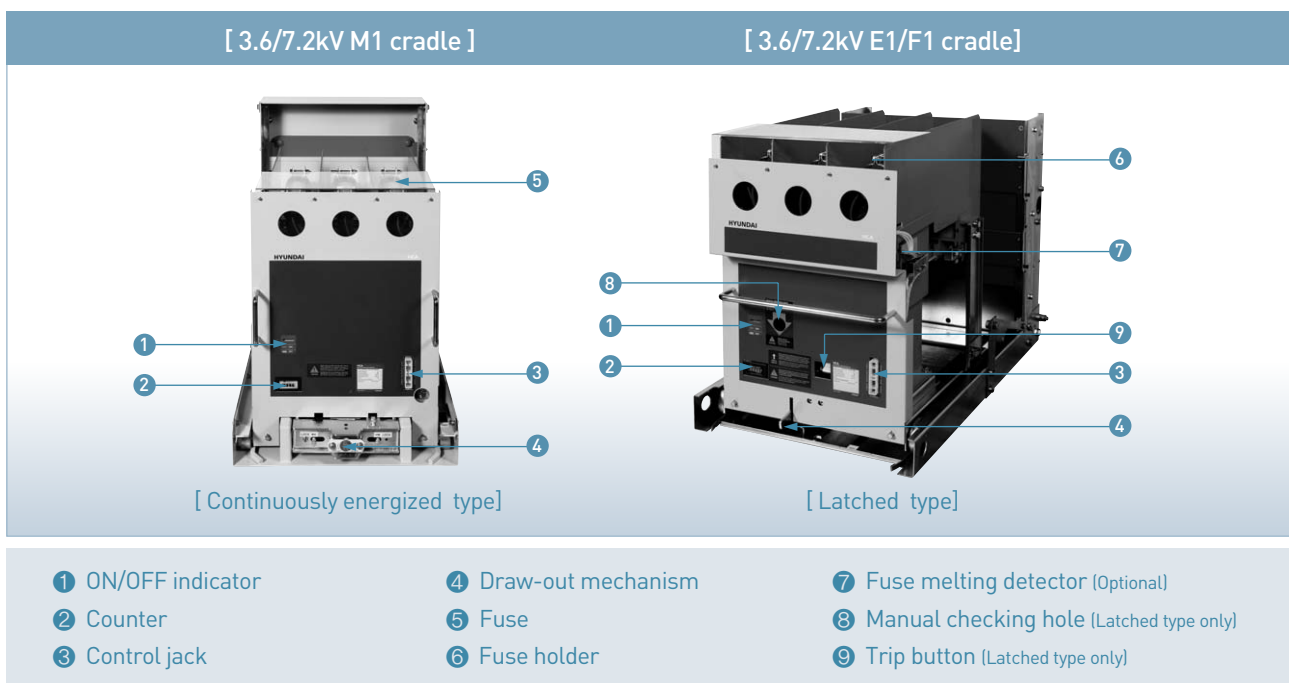
## » Operation and Application

### | Continuously Energized Type

Having longer mechanical life time than a latched type, more suitable for frequent switching.  
When the transformer for controlling power fails to supply power due to accidents, continuously energized type protects the loads by tripping automatically.

### | Latched Type

Latched type keeps the closing condition without the supply of power, so it is suitable for the system which has unstable power or the load which requires automatic closing with power.  
With the separate tripping circuit, DC control voltage is recommended for stable power supply. When AC control voltage is used, the CTD(consedor trip device) should be installed.



## » Ratings

### I Qualified Standard & Approval

#### ► Standard

- IEC 60470
- NEMA ICS 3

#### ► Approval

- KR/Korea Korean Register of Shipping
- GL/Germany Germanischer Lloyd
- LR/U.K Lloyd's Register of Shipping
- NK/Japan Nippon Kaiji Kyokai

Type		Fixed type						Draw-out type					
		F Without fuse holder		A With single fuse holder		J With double fuse holder <sup>1)</sup>		B Without fuse holder		D With single fuse holder		H With double fuse holder <sup>1)</sup>	
Operating method	Continuously energized	32C□	34C□	62C□	64C□	82C□	84C□	32C□	34C□	62C□	64C□	82C□	84C□
	Latched	32L□	34L□	62L□	64L□	82L□	84L□	32L□	34L□	62L□	64L□	82L□	84L□
Rated insulation voltage (kV)		3.6		7.2		12		3.6		7.2		12	
Rated operation voltage (kV)		3.3		6.6		11		3.3		6.6		11	
Rated frequency (Hz)		50/60											
Rated current (A)		200	400	200	400	200	400	200	400	200	400	200	400
Withstand voltage	Impulse (kV)	45		60		75		45		60		75	
	Power frequency (1min, kV)	16		20		28		16		20		28	
Control dielectric strength (min, kV)		2		2		2		2		2		2	
Utilization category		AC3				AC4		AC3				AC4	
Breaking capacity		4kA (0-3min-CO-3min-CO)											
Short-time current (kA)	1 sec	6.3		6.3		6.3		6.3		6.3		6.3	
	30 sec	2.4		2.4		2.4		2.4		2.4		2.4	
Mechanical life time	Continuously energized (1,000 times)	1,000		1,000		1,000		1,000		1,000		1,000	
	Latched (1,000 times)	250		250		250		250		250		250	
Electrical lifetime (1,000 times)		300											
Control voltage (V)		AC110/220, DC110/220											
Auxiliary contact		2a2b <sup>2)</sup>										5a5b	
Applicable load capacity	Motor (kW)	750	1,500	1,500	3,000	3,000	6,000	750	1,500	1,500	3,000	3,000	6,000
	Transformer (kVA)	1,000	2,000	2,000	4,000	4,000	8,000	1,000	2,000	2,000	4,000	4,000	8,000
	Condensor (kVAR)	750	1,200	1,500	2,000	3,000	4,000	750	1,200	1,500	2,000	3,000	4,000
Weight without fuse(kg)		F 21		F 22		F 61		B 38 <sup>3)</sup>		B 41 <sup>3)</sup>		B 80 <sup>4)</sup>	
		A 30		A 32		A 68		D 40 <sup>3)</sup>		D 43 <sup>3)</sup>		D 83 <sup>4)</sup>	
		J 33		J 35				H 43 <sup>3)</sup>		H 46 <sup>3)</sup>			

※ 1) Double fuse holder is not applicable to 12kV.

2) In case of 3.6/7.2kV fixed type without fuse, 3a3b is standard.

3) The weight of 3.6/7.2kV draw-out type is based on F1 cradle.

4) The weight of 12kV draw-out type is measured without cradle.

## » Technical Data

### | Operating Time and Current

		Closing current (A)		Holding current (A)		Opening current (A)	Closing time (ms)	Opening time (ms)
		3.6/7.2kV	12kV	3.6/7.2kV	12kV			
Continuously energized type	DC110V	2.5	10.0	1.0	3.0	-	Max. 80	Max. 40
	DC220V	1.6	10.0	0.7	3.0			
	AC110V	2.0	10.0	0.8	3.0	-	Max. 80	Max. 40
	AC220V	1.0	10.0	0.5	3.0			
Latched type	DC110V	2.7	10.0	-	-	5.0	Max. 120	Max. 25
	DV220V	1.7	10.0			4.0		
	AC110V	1.9	10.0	-	-	3.5	Max. 120	Max. 25
	AC220V	1.2	10.0			3.0		

### | Control Voltage

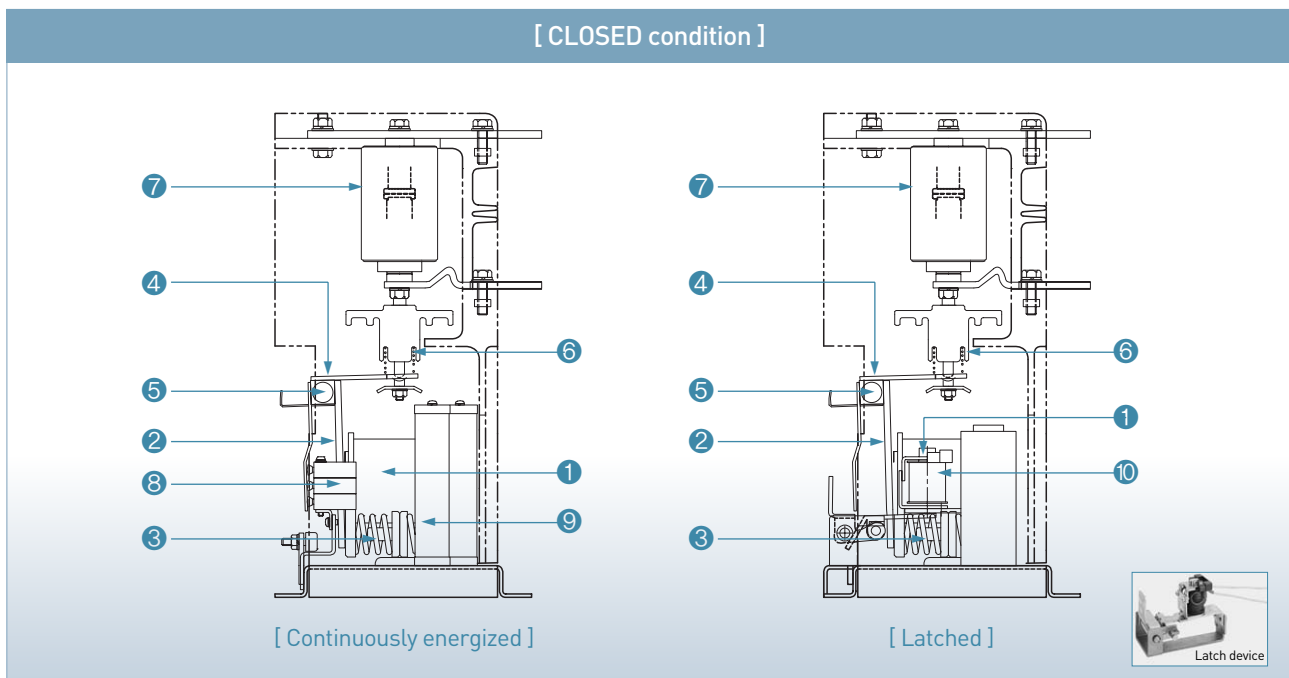
Closing	85 - 110% of rated voltage
Opening	70 - 110% of rated voltage

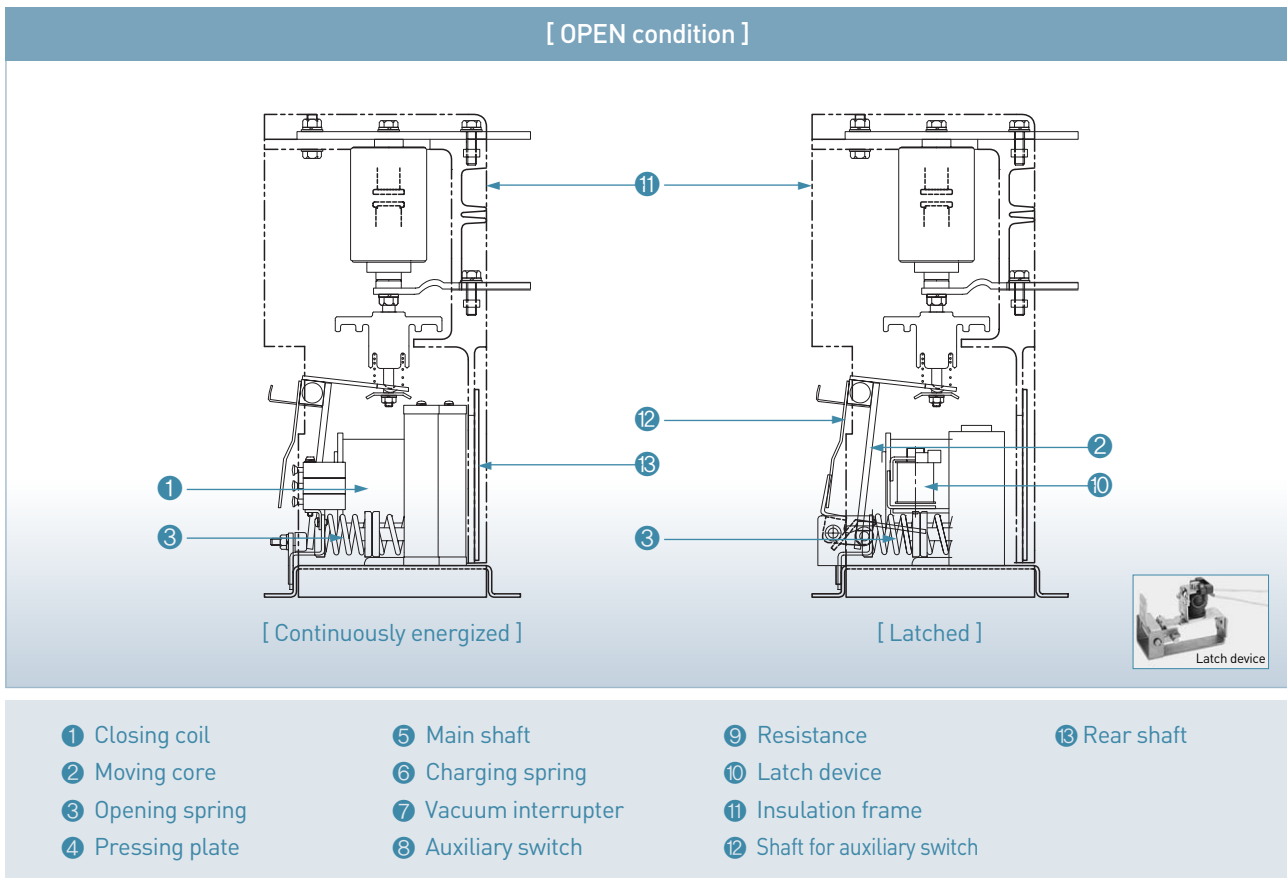
### | Rated Current of Auxiliary Contact

AC110V	5A
AC220V	2A

### | Closing & Opening

HCA type vacuum contactor consists of a three-pole insulated monoblock containing three vacuum interrupters. The following are main components in relation to operations of the vacuum contactor.





### ► Closing

When the closing coil (1) is energized, the moving core (2) moves to the closing coil and compresses the opening spring (3). At the same time the pressing plate (4), which is fixed on the main shaft (5), pushes the charging spring (6), so the movable stem of the vacuum interrupter (7) is moved up to make the CLOSED condition.

- Continuously energized type: When the moving core (2) moves, the auxiliary switch (8) leads the control power to resistance (9) and reduces the current of the closing coil (1).
- Latched type: When the contactor is closed, the latch device (10) of the contactor fixes the moving core (2) mechanically and keeps the closed condition. Then the control power is removed.

### ► Opening

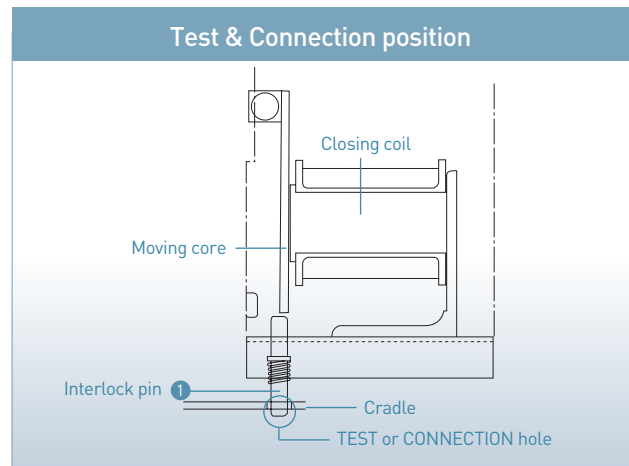
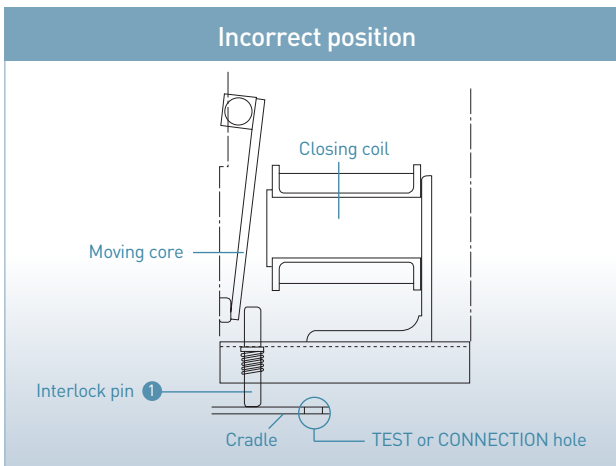
- Continuously energized type: When the closing coil (1) is de-energized by the OFF signal, the opening spring (3) is released to the OPEN condition.
- Latched type: When the opening coil is energized by the OFF signal or the opening button is pushed, the latch device (10) is released and the opening spring (3) lets the moving core (2) move to the OPEN condition. During a power failure, the trip button or condenser trip device (CTD) of the latched type also enable the opening of the contactor.

## » Technical Data

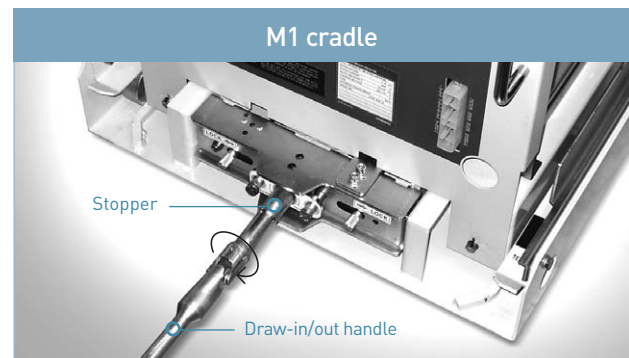
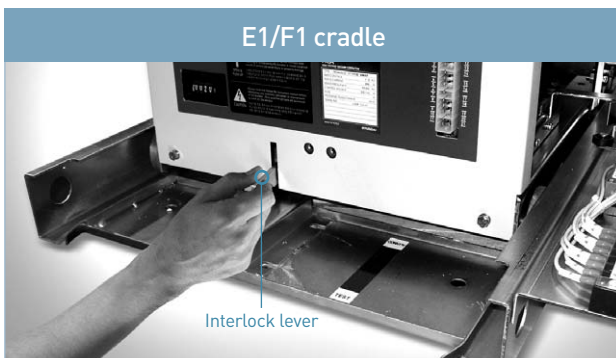
### | Interlock Function

Case		Principle	Release
When the contactor is closed,	it cannot be drawn-in from test position to connection position	The interlock pin of the contactor, which is inserted in the TEST/CONNECTION hole of cradle, mechanically prevents the contactor from moving.	Open the contactor and draw in/out to required position.
	it cannot be drawn-out from connection position to test position		
When the contactor is located in between each named position(DISCONNECTION-TEST, TEST-CONNECTION), it cannot be closed.		The interlock pin of the contactor mechanically prevents the contactor from closing.	After drawing in/out the contactor to the required position, close it.
		Electrical interlock (option): The auxiliary switch cuts off the control power when the contactor is in the incorrect position.	
When you draw in the contactor, it stops at the TEST position.		The interlock pin of the contactor is inserted in the TEST hole of the cradle and mechanically prevents the contactor from moving to the CONNECTION position.	E1/F1 Cradle: Hold up the interlock lever of the contactor, and push the contactor to the CONNECTION position. M1/T1 Cradle: Insert the draw-in/out handle to the stopper, and draw-into the contactor to CONNECTION position by turning the handle in a clockwise direction.

### ► Interlock Mechanism



### ► Interlock Release





## Fuse

### ▶ without Fuse Holder Type

The breaking current of without fuse type is limited, so a circuit breaker should be installed in the upper circuit of the line side. In the case of draw-out types, the fuse holder connection part is replaced by a bus-bar. When it is required, the fuse holder can be installed under our instruction.

### ▶ with Fuse Holder Type

The user can select and install fuses according to the specifications of the system. Fuses shall cut the short-circuit current within the capacity of the contactor. A protection relay is recommend for over-current protection.

A fuse Melting Detector can be offered as an option. The user can compose protection circuits for earth leakage and short-circuit of single-phase by using a fuse melting detector.

### ▶ Fuse Selection

Applicable fuse current	Load	3 $\phi$ Motor (kW)		3 $\phi$ Transformer (kVA)		3 $\phi$ Condenser (kVAR)	
		3.3kV	6.6kV	3.3kV	6.6kV	3.3kV	6.6kV
20A		-	-	50	100	30	60
30A		-	-	80	160	50	100
40A		-	-	100	200	75	150
50A		90	160	125	250	100	200
63A		100	200	160	315	125	250
80A		125	250	200	400	150	300
100A		160	330	250	500	200	400
125A		200	400	315	630	250	500
160A		275	550	400	800	300	650
200A		315	650	500	1,000	375	750
250A		400	830	630	1,250	500	1,000
315A		500	1,000	750	1,500	600	1,200
355A		600	1,200	900	1,800	700	1,400
2×160A		500	1,000	800	1,600	600	1,200
2×200A		650	1,300	1,000	2,000	750	1,500
2×250A		750	1,500	1,250	2,500	1,000	2,000

※ - This table is based on SIBA catalogue, and is for the 3-phase motor with starting time max. 15 seconds and starting frequency 2 times per hour.

- SIBA recommends choosing the next highest voltage range in the condenser load.

- Please contact us for the further details of application data.

## Operating Condition

### ▶ Altitude : less than 1,000m A.S.L.(above sea level)

Multiply the impulse and the withstand voltage in accordance with the following correction factor (k) for high locations.

Applied altitude	1,000m	1,500m	2,000m	2,500m	3,000m
Correction factor (k)	1.0	1.05	1.1	1.15	1.2

### ▶ Relative humidity : below 85%

Please consider a heater in switchgears for extremely humid conditions.

### ▶ Ambient temperature : -5°C - +40°C

Multiply the rated current in accordance with the following correction factor ( $\alpha$ ) in high temperature conditions.

Proper ventilation should be considered when installing more than three vacuum contactors into one switchgear.

Ambient temperature	40°C	45°C	50°C	55°C	60°C
Correction factor ( $\alpha$ )	1.0	1.05	1.1	1.15	1.2

### ▶ Special conditions

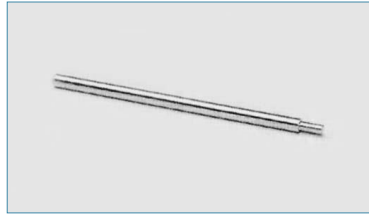
Please contact us for information on special cases like seashore use, corrosive chemical environments, and so on.

## » Accessories

### | Standard Accessories

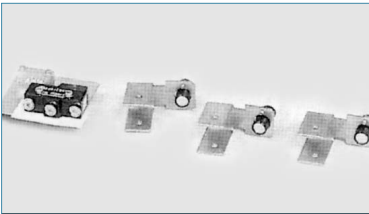


Control lead cable (1.2m)

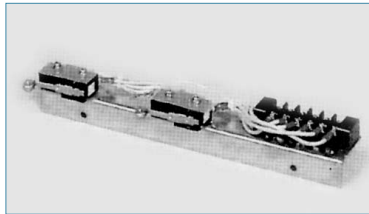


Manual closing handle for latched type

### | Additional Option



Fuse melting detector



Position switch

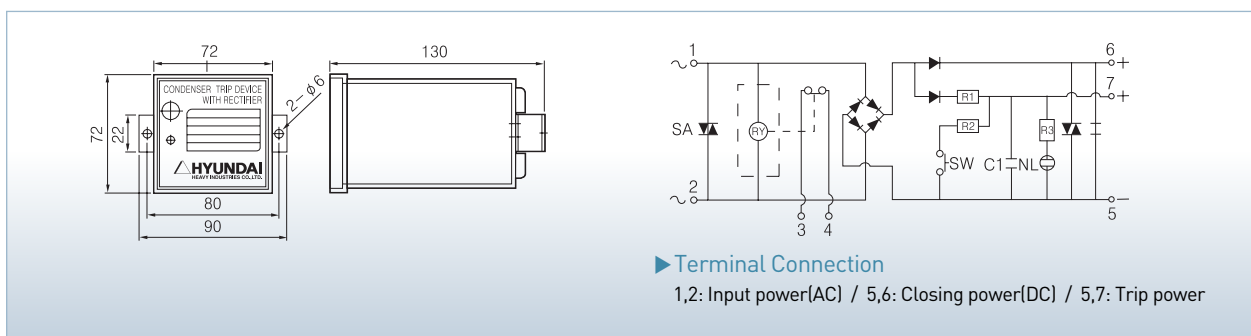
#### ► Electrical Interlock

#### ► Potential Transformer

#### ► Condensor Trip Device

When the latched type vacuum contactor is used in AC control voltage, the condensor trip device should be installed inside the 3.6/7.2kV contactor as an internal option. For 12kV contactor, it should be installed in switchgear.

Order code	HCAS0012	HCAS0013
Rated input voltage	AC110V	AC220V
Ordinary charging voltage	DC145V	DC290V
Ordinary current	DC2A	
Frequency	50/60Hz	
Applied standard	IEC 60694/KSC 4611	



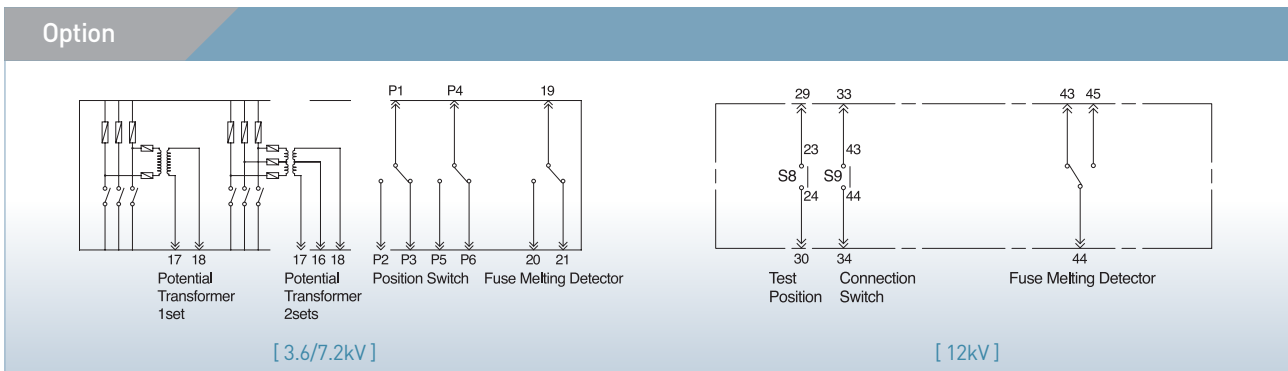
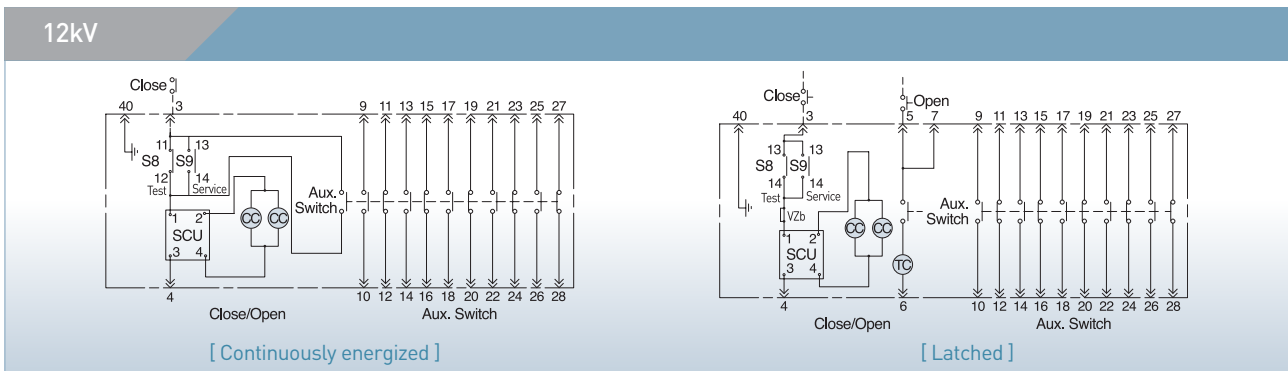
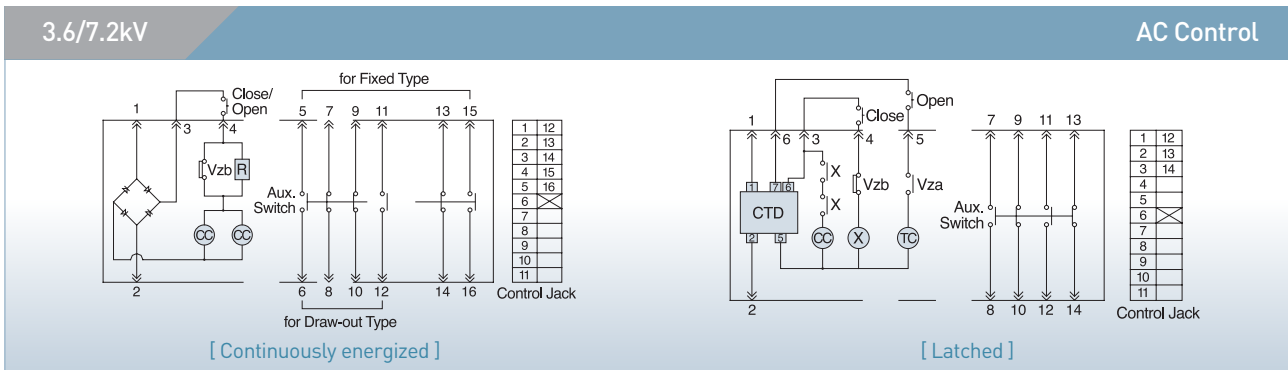
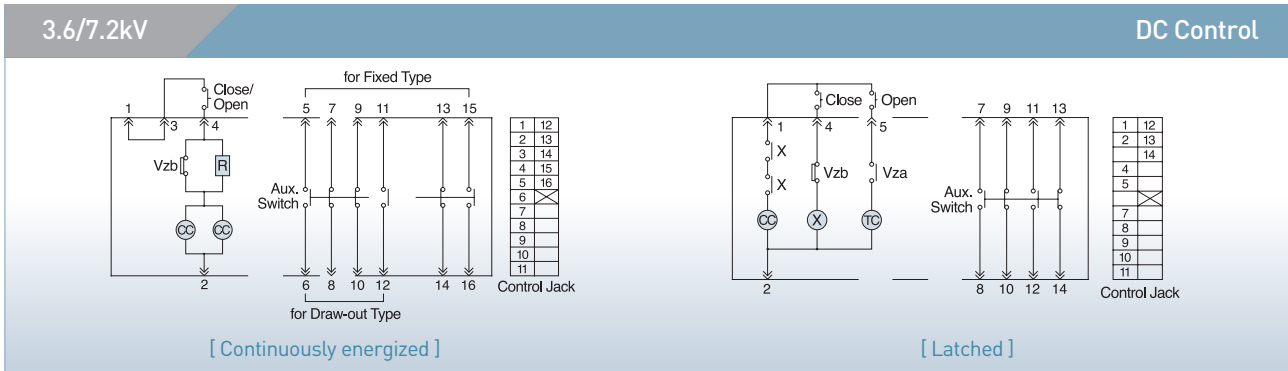
### | Vacuum Checker

The portable vacuum checker can be used to check the condition of vacuums.



Order code	HAFS-VC9
Rated input voltage	AC200/220V
Rated out-put voltage	AC11/22kV
Dimension	W200 × L350 × H176mm
Weight	22kg

## » Circuit Diagrams



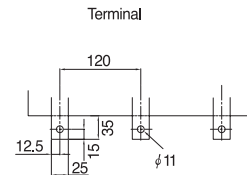
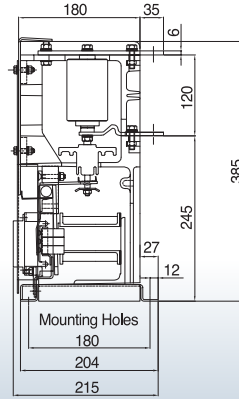
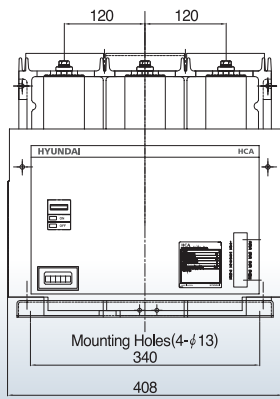
※ • Vza, Vzb: Control Switch • R: Resistor • CC: Closing Coil • Aux. Switch: Auxiliary Switch • X: Relay  
 • TC: Trip Coil • CTD: Condensor Trip Device • SCU: Control Unit • S8, S9: Internal Position Switch

## » Dimensions

(Unit: mm)

### 3.6/7.2kV Fixed type

### without fuse holder

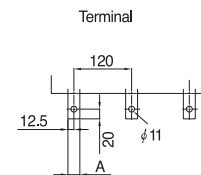
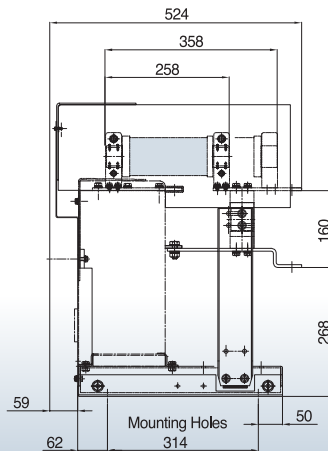
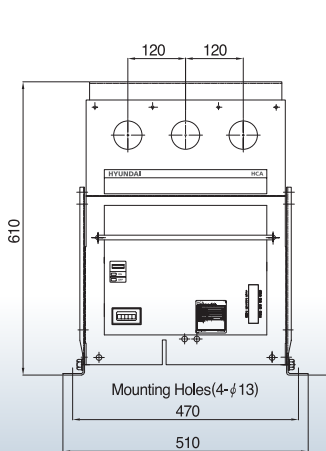


Dimension Y	
200A	400A
25	32

(Unit: mm)

### 3.6/7.2kV Fixed type

### with single fuse holder

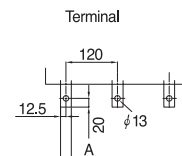
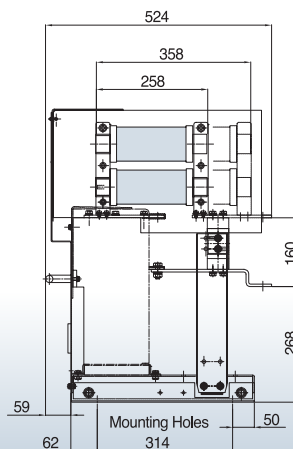
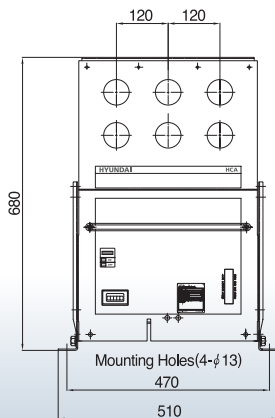


Dimension A	
200A	400A
25	32

(Unit: mm)

### 3.6/7.2kV Fixed type

### with double fuse holder



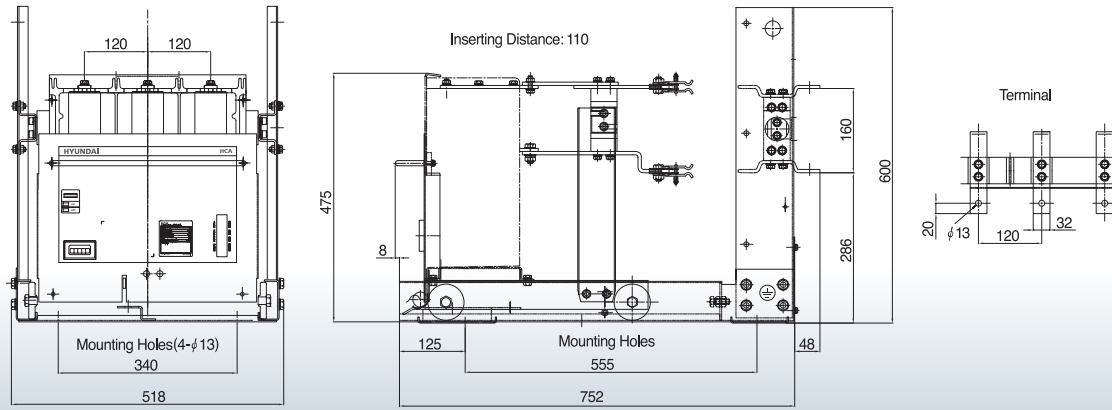
Dimension A	
200A	400A
25	32

※ Dimensions may be revised without notice.

(Unit: mm)

3.6/7.2kV Draw-out type, E1 cradle

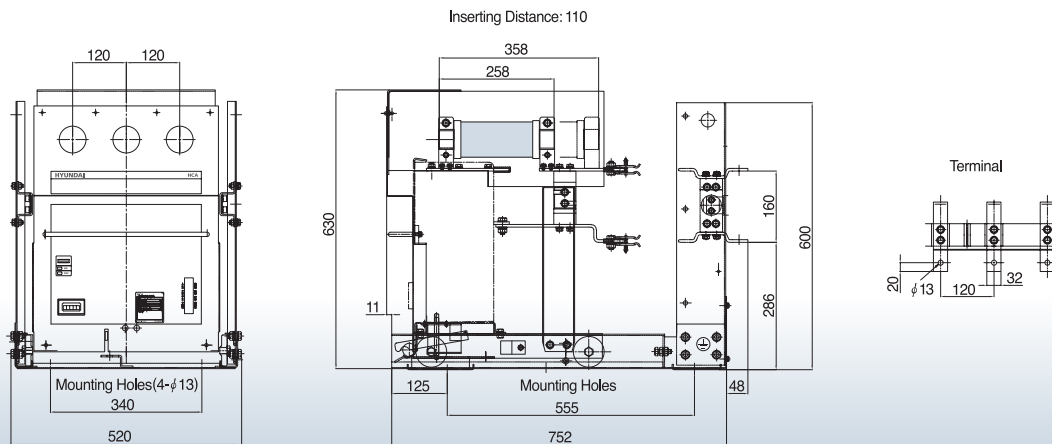
without fuse holder



(Unit: mm)

3.6/7.2kV Draw-out type, E1 cradle

with single fuse holder



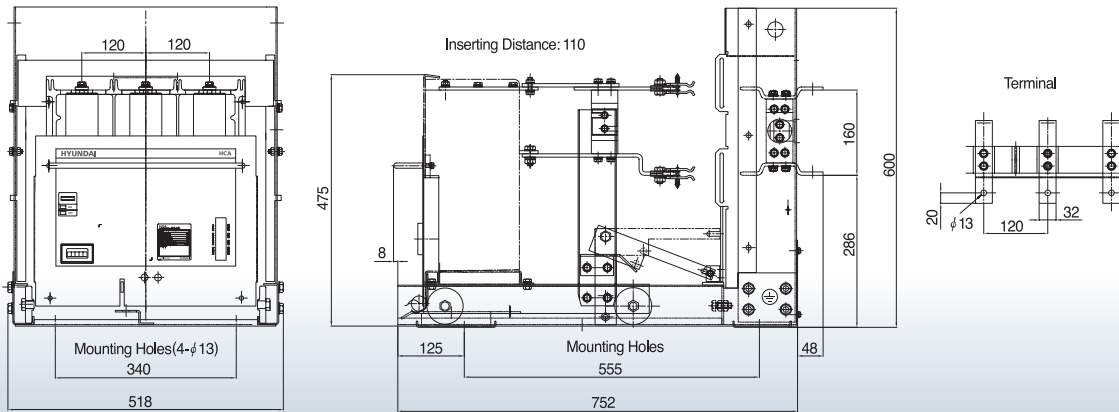
※ Dimensions may be revised without notice.

# » Dimensions

(Unit: mm)

3.6/7.2kV Draw-out type, F1 cradle

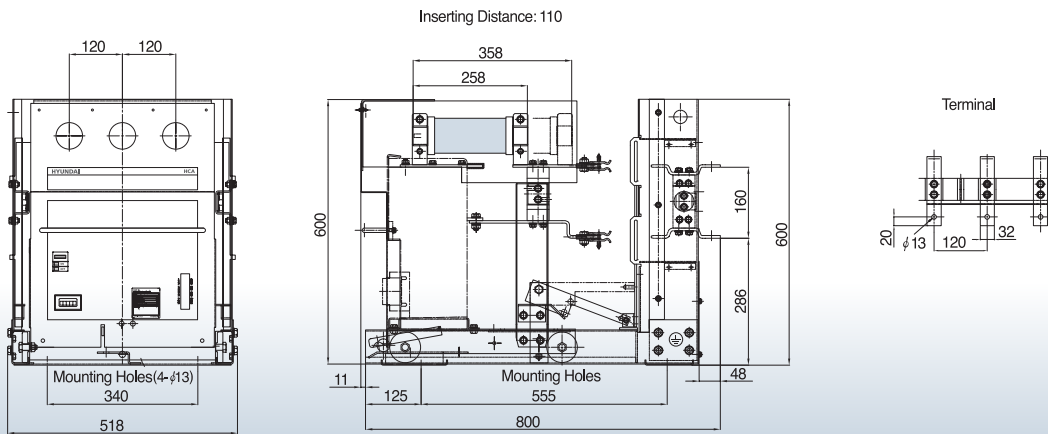
without fuse holder



(Unit: mm)

3.6/7.2kV Draw-out type, F1 cradle

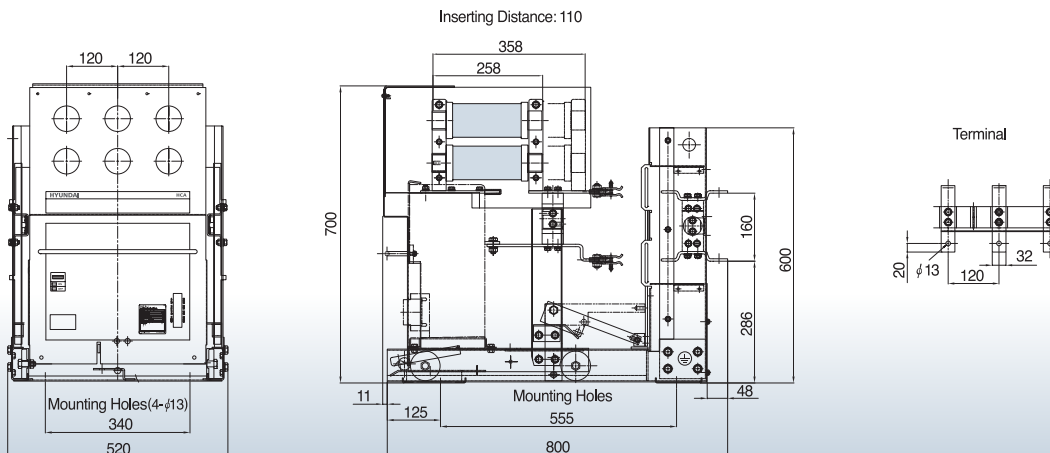
with single fuse holder



(Unit: mm)

3.6/7.2kV Draw-out type, F1 cradle

with double fuse holder

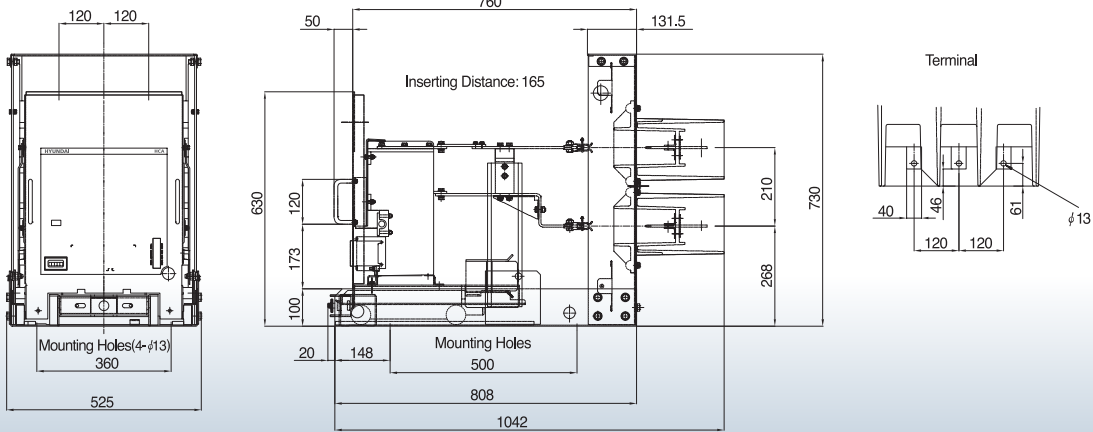


※ Dimensions may be revised without notice.

(Unit: mm)

3.6/7.2kV Draw-out type, M1 cradle

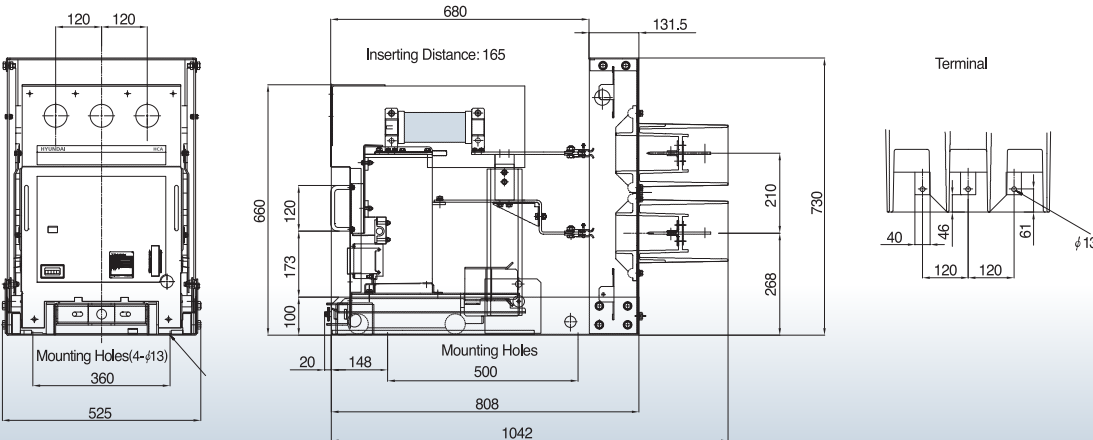
without fuse holder



(Unit: mm)

3.6/7.2kV Draw-out type, M1 cradle

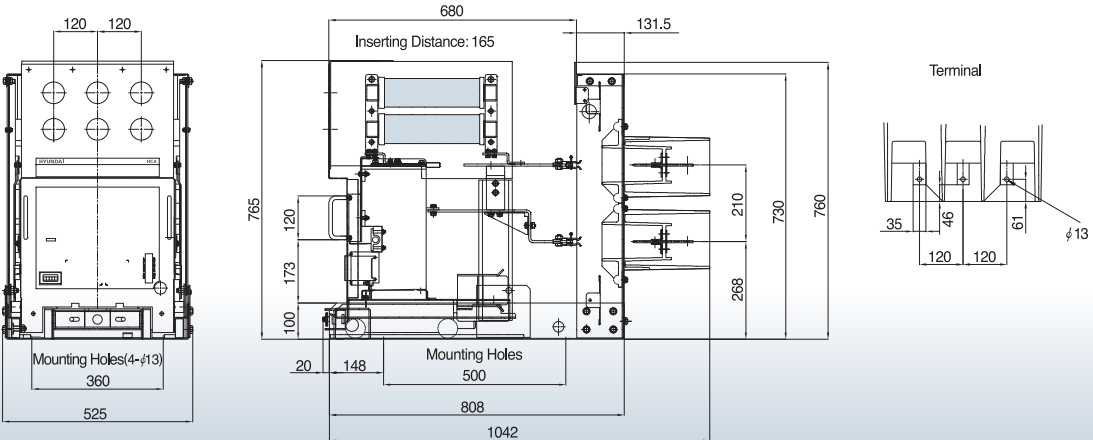
with single fuse holder



(Unit: mm)

3.6/7.2kV Draw-out type, M1 cradle

with double fuse holder



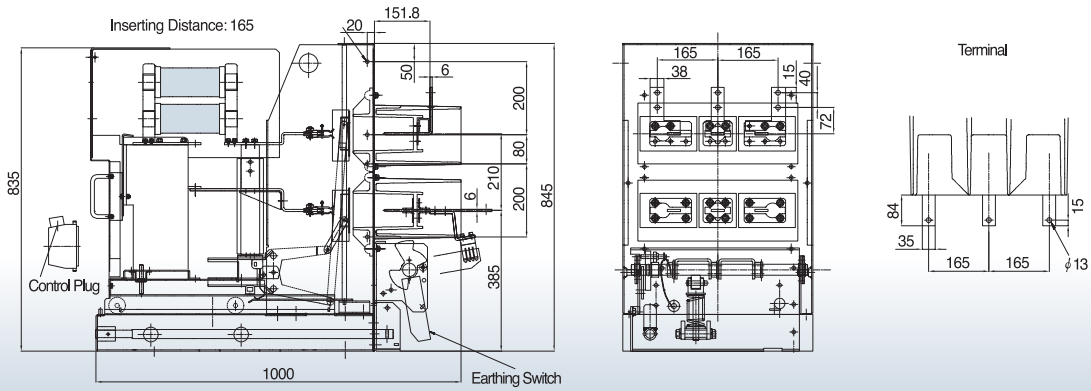
※ Dimensions may be revised without notice.

## » Dimensions

(Unit: mm)

3.6/7.2kV Draw-out type, T1 cradle

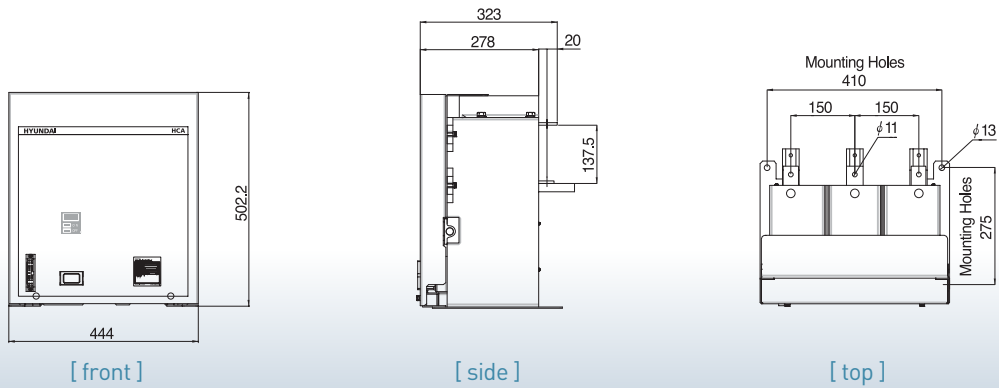
with double fuse holder



(Unit: mm)

12kV Fixed type

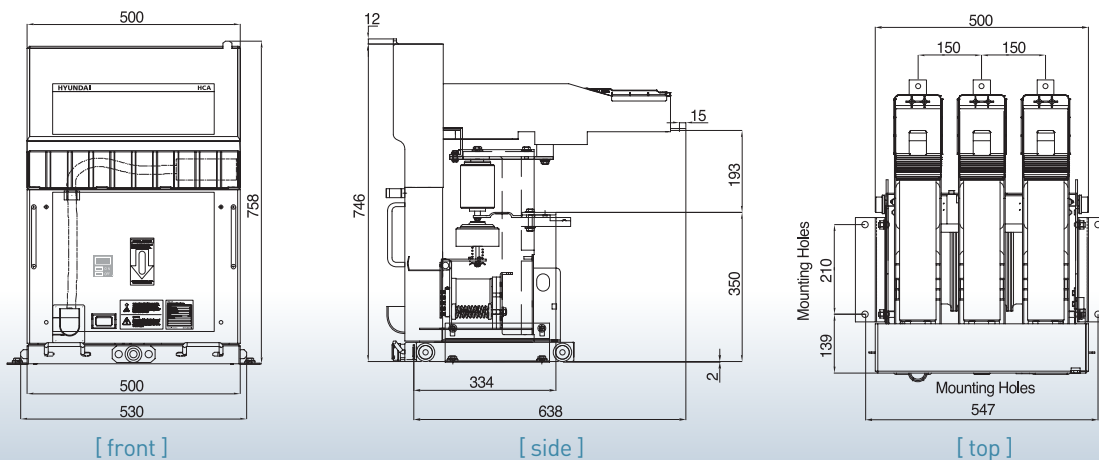
without fuse holder



(Unit: mm)

12kV Fixed type

with single fuse holder



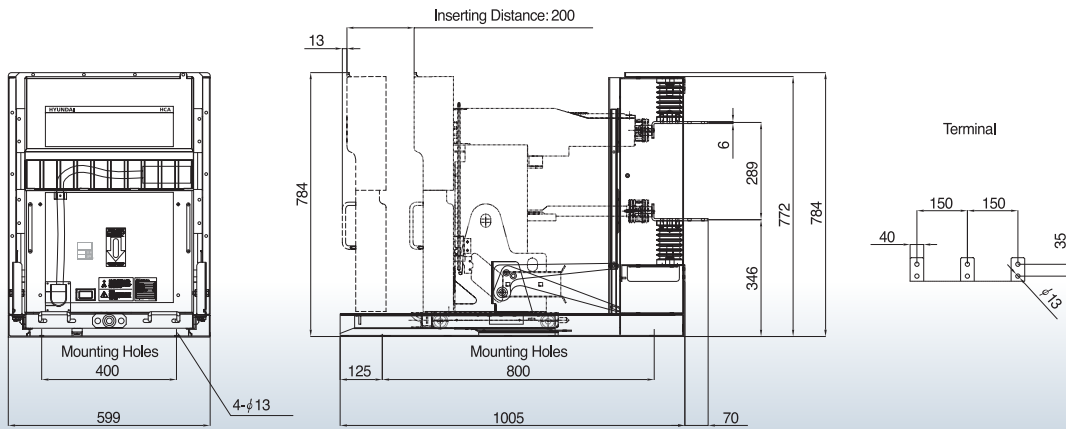
※ Dimensions may be revised without notice.



(Unit: mm)

12kV Draw-out type, E1/F1 cradle

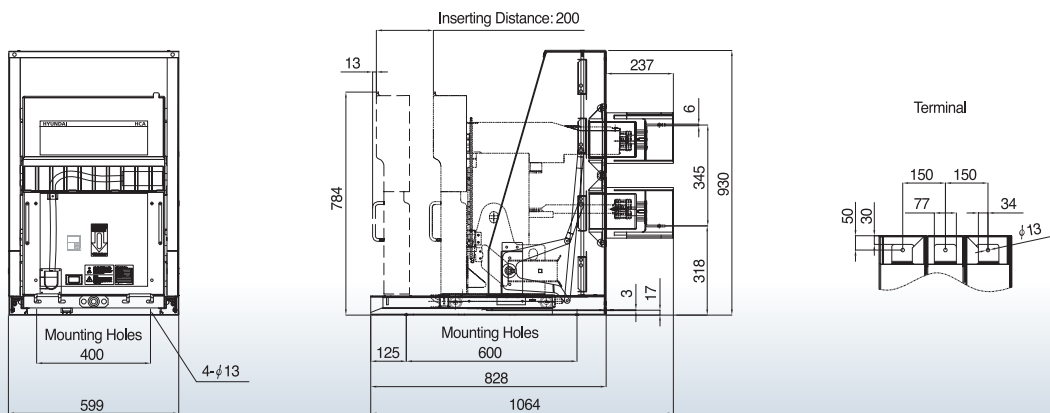
without fuse holder / with single fuse holder



(Unit: mm)

12kV Draw-out type, M1 cradle

without fuse holder / with single fuse holder



※ Dimensions may be revised without notice.

## » Order Information

HCA		6		4		C		D			4	
Code	Model Name	Code	Rated Voltage	Code	Rated Current	Code	Operating Method	Code	Structure		Code	Control Voltage
HCA	HCA								Contactor	Fuse Holder		
		3	3.6kV	2	200A	C	Continuously Energized	F	Fixed type up to 12kV	-	1	DC110V
		6	7.2kV	4	400A	L	Latched	A	Fixed type up to 12kV	Single	2	DC220V
		8	12kV					J	Fixed type up to 7.2kV	Double	3	AC110V
								B	Draw-out type up to 12kV	-	4	AC220V
								D	Draw-out type up to 12kV	Single		
								H	Draw-out type up to 7.2kV	Double		

### Standard Order Code

Continuously energized				Latched				Category
Code	Specification			Code	Specification			
HCA32CF 4000000	3.6kV	200A	Fixed type without fuse holder, AC220V, No cradle, No fuse holder	HCA32LF 4000000 AF	3.6kV	200A	Fixed type without fuse holder, AC220V, No cradle, No fuse holder, AC220V CTD	VC V2
HCA62CF 4000000	7.2kV			HCA62LF 4000000 AF	7.2kV			
HCA82CF 4000000	12kV			HCA82LF 4000000 BF <sup>1)</sup>	12kV			
HCA32CD 4F16000	3.6kV	200A	Draw-out type with single fuse holder, AC220V, F1 cradle, No fuse	HCA32LD 4F16000 AF	3.6kV	200A	Draw-out type with single fuse holder, AC220V, F1 cradle, No fuse, AC220V CTD	
HCA62CD 4F16000	7.2kV			HCA62LD 4F16000 AF	7.2kV			
HCA82CD 4F1600A	12kV			HCA82LD 4F16000 BF <sup>1)</sup>	12kV			
HCA32CD 4M16000	3.6kV	200A	Draw-out type with single fuse holder, AC220V, M1 cradle, No fuse	HCA32LD 4M16000 AF	3.6kV	200A	Draw-out type with single fuse holder, AC220V, M1 cradle, No fuse, AC220V CTD	
HCA62CD 4M16000	7.2kV			HCA62LD 4M16000 AF	7.2kV			
HCA82CD 4M1600A	12kV			HCA82LD 4M16000 BF <sup>1)</sup>	12kV			
HCA34CF 4000000	3.6kV	400A	Fixed type without fuse holder, AC220V, No cradle, No fuse holder	HCA34LF 4000000 AF	3.6kV	400A	Fixed type without fuse holder, AC220V, No cradle, No fuse holder, AC220V CTD	
HCA64CF 4000000	7.2kV			HCA64LF 4000000 AF	7.2kV			
HCA84CF 4000000	12kV			HCA84LF 4000000 BF <sup>1)</sup>	12kV			
HCA34CD 4F16000	3.6kV	400A	Draw-out type with single fuse holder, AC220V, F1 cradle, No fuse	HCA34LD 4F16000 AF	3.6kV	400A	Draw-out type with single fuse holder, AC220V, F1 cradle, No fuse, AC220V CTD	
HCA64CD 4F16000	7.2kV			HCA64LD 4F16000 AF	7.2kV			
HCA84CD 4F1600A	12kV			HCA84LD 4F16000 BF <sup>1)</sup>	12kV			
HCA34CD 4M16000	3.6kV	400A	Draw-out type with single fuse holder, AC220V, M1 cradle, No fuse	HCA34LD 4M16000 AF	3.6kV	400A	Draw-out type with single fuse holder, AC220V, M1 cradle, No fuse, AC220V CTD	
HCA64CD 4M16000	7.2kV			HCA64LD 4M16000 AF	7.2kV			
HCA84CD 4M1600A	12kV			HCA84LD 4M16000 BF <sup>1)</sup>	12kV			

※ 1) CTD of 12kV contactor will be delivered as separate part.

M1		6000		AMAP				
Code	Cradle	Code	Fuse Application		Code	Additional Option	Application	Mounting
			Fuse Holder	Fuse Specification				
00	N/A (for Fixed type)	0000	-	-	AE	CTD, AC110V	3.6/7.2kV	Latched type, AC control
E1	without Shutter	6000	Single	up to 250A, 192mm	BE		12kV	
F1	with Insulation Shutter	600A	Single	3.6/7.2kV 315/355A, 12kV, 292mm	AF	CTD, AC220V	3.6/7.2kV	
M1	with Metal Shutter and Bushing				BF		12kV	
T1	with Metal Shutter, Bushing and Earthing Switch	600B	Double	3.6/7.2kV, 192mm	AL	Electrical Interlock	3.6/7.2kV	Draw-out type
		600C	Single	442mm	BL		12kV	
		AM	Fuse Melting Detector	3.6/7.2kV	for Fuse	BM	12kV	
AP	Position Switch	3.6/7.2kV		Draw-out type		BP	12kV	
T1		Potential Transformer, 3.6kV x 1EA	3.6/7.2kV		All	Cradle	Inside of contactor	
T3	Potential Transformer, 7.2kV x 1EA							
T4	Potential Transformer, 3.6kV x 2EA							
T6	Potential Transformer, 7.2kV x 2EA							

※ Fuse is not included.

## I Spare Parts

Code	Specification	Category	Code	Specification	Category
HCAS0001	Counter (5 digit)	VC V8	HCAS6032	Fuse - 7.2kV/31.5A/63kA, 192mm, 1EA (SIBA)	VC V8
HCAS0002	Manual closing handle (for latched type)		HCAS6040	Fuse - 7.2kV/40A/63kA, 192mm, 1EA (SIBA)	
HCAS0003	Latch device (DC110V)		HCAS6050	Fuse - 7.2kV/50A/63kA, 192mm, 1EA (SIBA)	
HCAS0004	Latch device (DC220V)		HCAS6063	Fuse - 7.2kV/63A/63kA, 192mm, 1EA (SIBA)	
HCAS0005	Fuse melting detector (3.6/7.2kV)		HCAS6080	Fuse - 7.2kV/80A/63kA, 192mm, 1EA (SIBA)	
HCAS0006	Position indicator (3.6/7.2kV)		HCAS6100	Fuse - 7.2kV/100A/63kA, 192mm, 1EA (SIBA)	
HCAS0007	Closing coil (DC110/220V, 3.6/7.2kV, 1EA) <sup>1)</sup>		HCAS6125	Fuse - 7.2kV/125A/63 kA, 192mm, 1EA (SIBA)	
HCAS0008	Closing coil (DC110/220V, 12kV, 1EA) <sup>1)</sup>		HCAS6160	Fuse - 7.2kV/160A/63kA, 192mm, 1EA (SIBA)	
HCAS0009	Potential transformer (7.2kV/200VA)		HCAS6200	Fuse - 7.2kV/200A/50kA, 192mm, 1EA (SIBA)	
HCAS0011	Potential transformer (3.6kV/200VA)		HCAS6250	Fuse - 7.2kV/250A/50kA, 192mm, 1EA (SIBA)	
HCAS0012	Condenser trip device (AC110V)		HCAS6315	Fuse - 7.2kV/315A/50kA, 292mm, 1EA (SIBA)	
HCAS0013	Condenser trip device (AC220V)		HCAS6355	Fuse - 7.2kV/355A/50kA, 292mm, 1EA (SIBA)	
HCAS0015	Control lead cable (length 1.5m, 3.6/7.2kV)		HCAS7006	Fuse - 12kV/6.3A/63kA, 292mm, 1EA (SIBA)	
HCAS0016	Control lead cable (length 2.0m, 3.6/7.2kV)		HCAS7010	Fuse - 12kV/10A/63kA, 292mm, 1EA (SIBA)	
HCAS0019	Fuse holders for single type (3.6/7.2kV, 1EA) <sup>1)</sup>		HCAS7016	Fuse - 12kV/16A/63kA, 292mm, 1EA (SIBA)	
HCAS0020	Fuse holders for double type (3.6/7.2kV, 1EA) <sup>1)</sup>		HCAS7020	Fuse - 12kV/20A/63kA, 292mm, 1EA (SIBA)	
HCAS0018	Fuse holders for single type (12kV, 1EA) <sup>1)</sup>		HCAS7025	Fuse - 12kV/25A/63kA, 292mm, 1EA (SIBA)	
HCAS0021	Isolating contact (3.6/7.2kV, 200A)		HCAS7032	Fuse - 12kV/32A/63kA, 292mm, 1EA (SIBA)	
HCAS0022	Isolating contact (3.6/7.2kV, 400A)		HCAS7040	Fuse - 12kV/40A/63kA, 292mm, 1EA (SIBA)	
HCAS0023	Isolating contact (12kV, 400A)		HCAS7050	Fuse - 12kV/50A/63kA, 292mm, 1EA (SIBA)	
HVC00704	Vacuum interrupter (7.2kV, 400A)		HCAS7063	Fuse - 12kV/63A/63kA, 292mm, 1EA (SIBA)	
HVC01204	Vacuum interrupter (12kV, 400A)		HCAS7080	Fuse - 12kV/80A/63kA, 292mm, 1EA (SIBA)	
HCAS6006	Fuse - 7.2kV/6.3A/63kA, 192mm, 1EA (SIBA)		HCAS7100	Fuse - 12kV/100A/63kA, 292mm, 1EA (SIBA)	
HCAS6010	Fuse - 7.2kV/10A/63kA, 192mm, 1EA (SIBA)		HCAS7125	Fuse - 12kV/125A/63kA, 292mm, 1EA (SIBA)	
HCAS6020	Fuse - 7.2kV/20A/63kA, 192mm, 1EA (SIBA)		HCAS7160	Fuse - 12kV/160A/63kA, 292mm, 1EA (SIBA)	
HCAS6025	Fuse - 7.2kV/25A/63kA, 192mm, 1EA (SIBA)		HCAS7200	Fuse - 12kV/200A/50kA, 292mm, 1EA (SIBA)	

※ - 442mm fuse is applicable to 12kV vacuum contactor, but not supplied by HHI.

1) 2EA is required for 1set of vacuum contactor.

2) 6EA is required for 1set of vacuum contactor.