

■ Description

7.2/3.6kV, 400A, 600A, 8kA, 12.5kA
 The new Multi-VCB series of general-purpose vacuum circuit breakers are based on the conventional HA series and feature improved safety and ease of use. With 2300mm high switchgear cubicles they can be stacked up to four high with consequent saving of installation space. Multi VCBs are available in different mounting version such as the fixed type (B, C, P) and draw-out type (X, Y, U).

■ Features

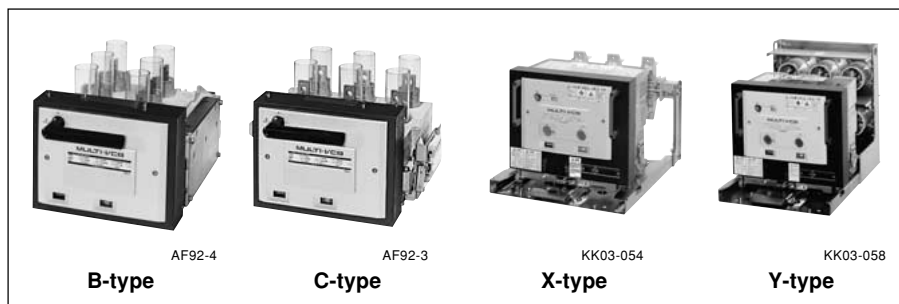
● Highly reliable and safety closing system

- Manual-spring stored energy closing system for improved operation safety, reliability, and constant closing speed.
- Half the torque formerly required for the manual operation and a new-turn-type handle improve operability.



AF92-7

AF92-8



B-type

C-type

X-type

Y-type

● Motor-spring stored energy type also improved

- Instantaneous closing system
 The new closing system ensures instantaneous closing time of 30ms. during switching to stand by circuit.
- AC/DC control circuit
 Common AC and DC control circuit eases application.

■ More compact

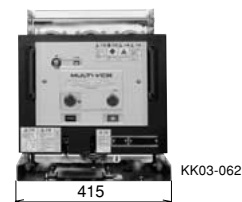
● Terminal blocks

- Terminal blocks are standard for the control circuits of motor-spring VCBs. Wire connect easily and quickly.

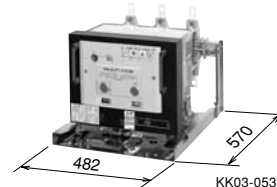
● Auxiliary switches

- Slide-action auxiliary switch contacts improve contact reliability.
- Auxiliary switches can have up to 5 NO contacts, and up to 5 NC contacts may be added as options for external circuits.

- The width of the draw-out type is compatible with a panel width of 500mm.
- The depth of the draw-out type is compatible with a panel depth of 700mm.



Draw-out MW and PW type



Draw-out type for small depth switchboard.

■ Specifications

Type	HA08□-H■	HA12□-H■	HA08□-A■	HA12□-A■	HA08A□-A■	HA12A□-A■
Closing system	Manual-spring		Motor-spring		Motor-spring	
Installation □	Fixed: B, C, P,		Fixed: B, C, P		Draw-out: X, Y, U	
Rated voltage (kV)	3.6/7.2		3.6/7.2		3.6/7.2	
Rated current (A)	400	600	400	600	400	600
Rated frequency (Hz)	50/60		50/60		50/60	
Rated breaking capacity (kA)	8	12.5	8	12.5	8	12.5
	50MVA at 3.6kV 100MVA at 7.2kV	80MVA at 3.6kV 160MVA at 7.2kV	50MVA at 3.6kV 100MVA at 7.2kV	80MVA at 3.6kV 160MVA at 7.2kV	50MVA at 3.6kV 100MVA at 7.2kV	80MVA at 3.6kV 160MVA at 7.2kV
Rated making current, peak value (kA)	20	31.5	20	31.5	20	31.5
Rated closing time	—		0.03		0.03	
Rated short-time current, 1 second (kA)	8	12.5	8	12.5	8	12.5
Insulation level	Dielectric: 22kV, 1 minute		Impulse (1.2 × 50μs): 60kV			
Rated breaking time	3-cycle		3-cycle		3-cycle	
Opening time (s)	0.03		0.03		0.03	
Operating duty	0 — 1 min. — CO — 3 min. — CO or CO — 15 sec. — CO					
Life expectancy	Mechanical (operations) Electrical (operations)		10,000 10,000			
No. of operations (operations/hour)	60					
Applicable capacitor capacity* (kVA)	3,000	5,000	3,000	5,000	3,000	5,000
Auxiliary contact	2NO + 2NC (5NO + 5NC available on request)				5NO + 5NC	
Mass (kg)	Fixed	23	26	25	28	—
	Draw-out (X type)	—	—	—	—	34
	Cradle for X type	—	—	—	—	35
		—	—	—	—	11
Standard	H.V. circuit breaker: JIS C 4603 (1990), AC circuit breaker: JEC 2300 (1998)					

Note: * Maximum values when the VCB is used with a 6% reactor connected in a 6.6kV AC circuit.
 Halve these values for a 3.3kV AC circuit.

■ Trip system

Fuji Electric FA Components & Systems Co., Ltd./D & C Catalog
 Information subject to change without notice

H.V. Distribution Equipment

Vacuum circuit breakers

Multi VCB

■ Closing system

System	Specification	Motor current	Coil current	Remarks
Motor-spring	A	100/110V AC/DC	0.5A	<ul style="list-style-type: none"> Use a VT with a capacity of at least 50VA. Use a 3A fuse to protect the control circuit Spring charging time is 5 seconds.
	B	200/220V AC/DC	0.5A	
	C	48V DC	1.0A	
	D	21/24V DC	1.5A	

■ Tripping system

System	Specification	Remarks
Shunt trip *1, *2	1	For an AC-trip control circuit, use also a capacitor trip device VCB-T1A (for 100/110 AC) or VCB-T2A (for 200/220V AC), sold separately.
	2	
	3	
	4	
Current trip	5	Operating current: At least 3A The impedance of coil is less than 8Ω.

Note: *1 To use AC to trip the Multi VCB, use a capacitor trip device in combination with the trip system.

*2 Use the static-type OCR (overcurrent relay) in combination with Fuji Electric's QH-OC1 or QH-OC2, and fault display in combination with the JH11 type (shunt trip code 1, 2: DC1A coil, 3: DC3A coil, 4: DC3A coil, or 5: AC5A coil).

■ Auxiliary contact

Contact arrangement	Specification	Remarks
2NO + 2NC standard provided	100/200V AC, 10A 100/200V DC, 5/3A	5NO + 5NC contacts are available on request

■ Type number nomenclature

• Fixed type

Basic type

Breaking capacity

08: 8kA (Rated current 400A)
12: 12.5kA (Rated current 600A)

Installation

B: Fixed, switchboard use
C: Fixed, cubicle use
P: Fixed, portable type

HA 08 B - A 1 L

Vacuum interrupter used

Blank: Standard level interrupter
L: Low-level-surge interrupter

Tripping system

1: Shunt trip 100/110V DC
2: Shunt trip 200/220V DC
3: Shunt trip 48V DC
4: Shunt trip 21/24V DC
5: Current trip 3A × 2-trip coil

Closing system

H: Manual-spring
A: Motor-spring, Instantaneous closing
100/110V AC/DC
B: Motor-spring, Instantaneous closing
200/220V AC/DC
C: Motor-spring, Instantaneous closing 48V DC
D: Motor-spring, Instantaneous closing 21/24V DC

• Draw-out type

Basic type

Breaking capacity

08: 8kA (Rated current 400A)
12: 12.5kA (Rated current 600A)

Installation

X: Draw-out, with cradle for JEM 1425 class CW
Y: Draw-out, with cradle and shutter for JEM 1425 class MW and PW
U: For use in small depth switchboard, JEM 1425 class CW

Closing system

A: Motor-spring, Instantaneous closing
100/110V AC/DC
B: Motor-spring, Instantaneous closing
200/220V AC/DC
C: Motor-spring, Instantaneous closing 48V DC
D: Motor-spring, Instantaneous closing 21/24V DC

HA 08 A X - A 1 L S1 K

Panel lead wire

Blank: With panel lead wire
K: Plug only

Position switch

Blank: With no position switch
S1: Run position and test position, both with SPDT contacts

Vacuum interrupter used

Blank: Standard level interrupter
L: Low-level-surge interrupter

Tripping system

1: Shunt trip 100/110V DC
2: Shunt trip 200/220V DC
3: Shunt trip 48V DC
4: Shunt trip 21/24V DC

■ **Types and ratings**

Ratings	Installation	Closing system		Type	Ordering code
		Closing system	Operating voltage		
Voltage 3.6/7.2kV Breaking current 8.0kA Rated current 400A	Fixed: B	Manual-spring		HA08B-H □	HA31BH□-400
		Motor-spring	100/110V AC/DC	HA08B-A □	HA31BA□-400
		Instantaneous	200/220V AC/DC	HA08B-B □	HA31BB□-400
			48V DC 21/24V DC	HA08B-C □ HA08B-D □	HA31BC□-400 HA31BD□-400
	Fixed: C	Manual-spring		HA08C-H □	HA31CH□-400
		Motor-spring	100/110V AC/DC	HA08C-A □	HA31CA□-400
		Instantaneous	200/220V AC/DC	HA08C-B □	HA31CB□-400
			48V DC 21/24V DC	HA08C-C □ HA08C-D □	HA31CC□-400 HA31CD□-400
	Fixed: P	Manual-spring		HA08P-H □	HA31PH□-400
		Motor-spring	100/110V AC/DC	HA08P-A □	HA31PA□-400
		Instantaneous	200/220V AC/DC	HA08P-B □	HA31PB□-400
			48V DC 21/24V DC	HA08P-C □ HA08P-D □	HA31PC□-400 HA31PD□-400
	Draw-out: X	Motor-spring	100/110V AC/DC	HA08AX-A □	HA08AX-A□
		Instantaneous	200/220V AC/DC	HA08AX-B □	HA08AX-B□
			48V DC	HA08AX-C □	HA08AX-C□
			21/24V DC	HA08AX-D □	HA08AX-D□
	Draw-out: Y	Motor-spring	100/110V AC/DC	HA08AY-A □	HA08AY-A□
		Instantaneous	200/220V AC/DC	HA08AY-B □	HA08AY-B□
			48V DC	HA08AY-C □	HA08AY-C□
			21/24V DC	HA08AY-D □	HA08AY-D□
	Draw-out: U	Motor-spring	100/110V AC/DC	HA08AU-A □	HA08AU-A□
		Instantaneous	200/220V AC/DC	HA08AU-B □	HA08AU-B□
			48V DC	HA08AU-C □	HA08AU-C□
			21/24V DC	HA08AU-D □	HA08AU-D□
Voltage 3.6/7.2kV Breaking current 12.5kA Rated current 600A	Fixed: B	Manual-spring		HA12B-H □	HA32BH□-600
		Motor-spring	100/110V AC/DC	HA12B-A □	HA32BA□-600
		Instantaneous	200/220V AC/DC	HA12B-B □	HA32BB□-600
			48V DC 21/24V DC	HA12B-C □ HA12B-D □	HA32BC□-600 HA32BD□-600
	Fixed: C	Manual-spring		HA12C-H □	HA32CH□-600
		Motor-spring	100/110V AC/DC	HA12C-A □	HA32CA□-600
		Instantaneous	200/220V AC/DC	HA12C-B □	HA32CB□-600
			48V DC 21/24V DC	HA12C-C □ HA12C-D □	HA32CC□-600 HA32CD□-600
	Fixed: P	Manual-spring		HA12P-H □	HA32PH□-600
		Motor-spring	100/110V AC/DC	HA12P-A □	HA32PA□-600
		Instantaneous	200/220V AC/DC	HA12P-B □	HA32PB□-600
			48V DC 21/24V DC	HA12P-C □ HA12P-D □	HA32PC□-600 HA32PD□-600
	Draw-out: X	Motor-spring	100/110V AC/DC	HA12AX-A □	HA12AX-A□
		Instantaneous	200/220V AC/DC	HA12AX-B □	HA12AX-B□
			48V DC	HA12AX-C □	HA12AX-C□
			21/24V DC	HA12AX-D □	HA12AX-D□
	Draw-out: Y	Motor-spring	100/110V AC/DC	HA12AY-A □	HA12AY-A□
		Instantaneous	200/220V AC/DC	HA12AY-B □	HA12AY-B□
			48V DC	HA12AY-C □	HA12AY-C□
			21/24V DC	HA12AY-D □	HA12AY-D□
	Draw-out: U	Motor-spring	100/110V AC/DC	HA12AU-A □	HA12AU-A□
		Instantaneous	200/220V AC/DC	HA12AU-B □	HA12AU-B□
			48V DC	HA12AU-C □	HA12AU-C□
			21/24V DC	HA12AU-D □	HA12AU-D□

Tripping system


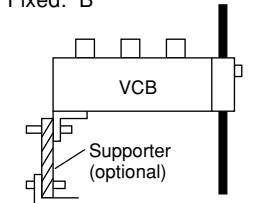

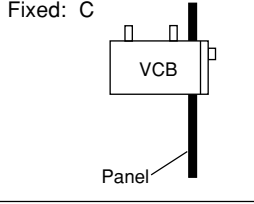

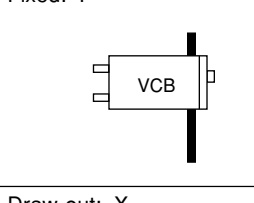

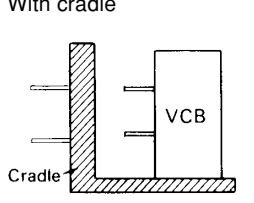

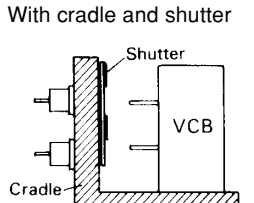

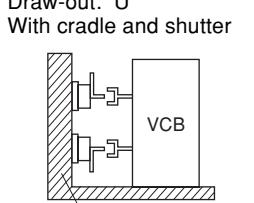
- : 1: Shunt trip 100/110V DC
- 2: Shunt trip 200/220V DC
- 3: Shunt trip 48V DC
- 4: Shunt trip 21/24V DC
- 5: Current trip 3A × 2 -trip coil (Fixed type only)

H.V. Distribution Equipment

Vacuum circuit breakers

Multi VCB

■ Installation and accessories

Photo	Installation system	Description	Supplied accessories	Optional accessories
 <p>AF92-4</p>	Fixed: B 	<ul style="list-style-type: none"> Fixed type Open-type switchboard, indoor use Manual-spring handle or motor-spring H.V. main terminals are positioned at the top of the VCB. This facilitates replacement of VCB. 	<ul style="list-style-type: none"> Insulation tube for main terminal Manual handle for motor-spring type 	<ul style="list-style-type: none"> Supporter Capacitor trip device Vacuum condition tester Surge absorber
 <p>AF92-3</p>	Fixed: C 	<ul style="list-style-type: none"> Fixed type Open-type cubicle use Manual-spring handle or motor-spring H.V. main terminals are located at the top of VCB. This facilitates replacement of VCB. 	<ul style="list-style-type: none"> Insulation tube for main terminal Manual handle for motor-spring type 	<ul style="list-style-type: none"> Supporter Capacitor trip device Vacuum condition tester Surge absorber
 <p>AF92-5</p>	Fixed: P 	<ul style="list-style-type: none"> Fixed type Open-type, portable type Manual-spring handle or motor-spring H.V. main terminals are located at the back of VCB. This facilitates replacement of VCB. 	<ul style="list-style-type: none"> Manual handle for motor-spring type 	<ul style="list-style-type: none"> Capacitor trip device Vacuum condition tester Surge absorber
 <p>KK03-054</p>	Draw-out: X With cradle 	<ul style="list-style-type: none"> Draw-out type JEM 1425 Class CW type metal enclosure/indoor use Manual-spring handle or motor-spring Cradle is provided to facilitate assembly and adjustment of switchgear. Interlock system and grounding device are provided. 	<ul style="list-style-type: none"> Manual handle for motor-spring type Draw-out handle 	<ul style="list-style-type: none"> Draw-out extension rail Position indicating switch Capacitor trip device Vacuum condition tester Surge absorber Lifter Testing jumper Connector with external lead wire
 <p>KK03-058</p>	Draw-out: Y With cradle and shutter 	<ul style="list-style-type: none"> Draw-out type Class MW, PW type metal enclosure/indoor use Manual-spring handle or motor-spring Cradle with shutter is provided to facilitate assembly and adjustment of switchgear. Interlock system and grounding device are provided. 	<ul style="list-style-type: none"> Manual handle for motor-spring type Draw-out handle 	<ul style="list-style-type: none"> Draw-out extension rail Position indicating switch Capacitor trip device Vacuum condition tester Surge absorber Lifter Testing jumper Connector with external lead wire
 <p>KK03-053</p>	Draw-out: U With cradle and shutter 	<ul style="list-style-type: none"> Draw-out type Class CW type metal enclosure/indoor use Manual-spring handle or motor-spring Cradle with shutter is provided to facilitate assembly and adjustment of switchgear. Interlock system and grounding device are provided. 	<ul style="list-style-type: none"> Manual handle for motor-spring type Draw-out handle 	<ul style="list-style-type: none"> Draw-out extension rail Position indicating switch Capacitor trip device Vacuum condition tester Surge absorber Lifter Testing jumper Connector with external lead wire

■ **Supplied accessories**

● **Insulation tube for main terminal**

Installation types: B and C



● **Manual handle for motor-spring type**



● **Draw-out handle**

Installation types: X, Y, and U



● **Connector with external lead wire**
 Installation types: X, Y and U

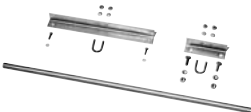


■ **Optional accessories**

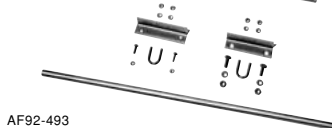
● **Supporter**

Supporter kit for stabilizing the back of fixed type B, C VCB on the floor.

Type: C



Type: B



● **Draw-out extension rail (HZ2AE)**

Used with draw-out type (X, Y, U).
 Use of an extension rail makes daily checking easier because the VCB can be pulled out of the panel.
 Double stack types do not require lifters or chain blocks.



● **Position indicating switch (HZ2AD)**

Switch for indicating the service positions and test positions of draw-out (X, Y, U).
 Used for interlocking to other devices attached to the cradle for draw-out type.



● **Vacuum condition tester VC-1A**

For further information see page 12/25.



● **C-R type surge absorber**
AF3320R3TXG0542
AF6620R3TXG0543

For further information see page 12/25.

● **Testing jumper (HZ2AG)**

Use to test remote ON/OFF operation of a VCB.



● **Arrester**
GLI-3G
GLI-6G

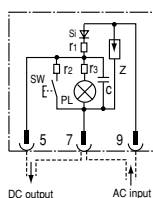


● **Capacitor trip device**
VCB-T1A, T2A, VCB-T1PA, T2PA

These are used when the trip circuit is connected to AC power supply.

Type	VCB-T1A VCB-T1PA	VCB-T2A VCB-T2PA
Rated input voltage	100/110V AC	200/220V AC
Shunt trip coil volt	100/110V DC	200/220V DC

Wiring diagram



Surface mounting
VCB-T1A, T2A



Flush mounting
VCB-T1PA, T2PA



● **Lifter**
L-2HNB



Name
 r1: Charging resistor
 r2: Discharge resistor
 r3: Series resistor
 Si: Silicon rectifier diode
 PL: Pilot lamp

C: Electrolytic capacitor
 SW: Discharge switch
 Z: Surge absorber

H.V. Distribution Equipment

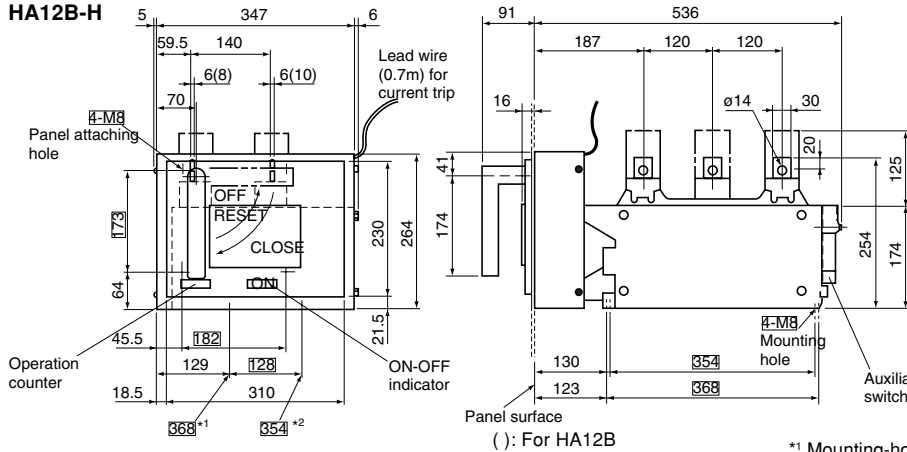
Vacuum circuit breakers

Multi VCB

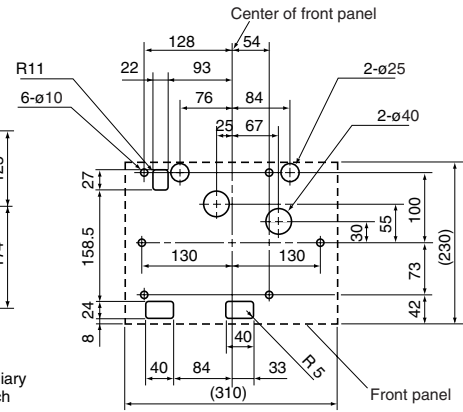
■ Dimensions, mm

Fixed/B type

HA08B-H
HA12B-H

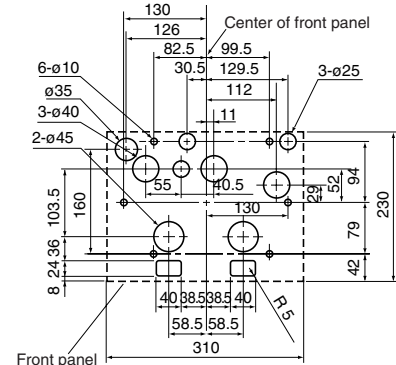
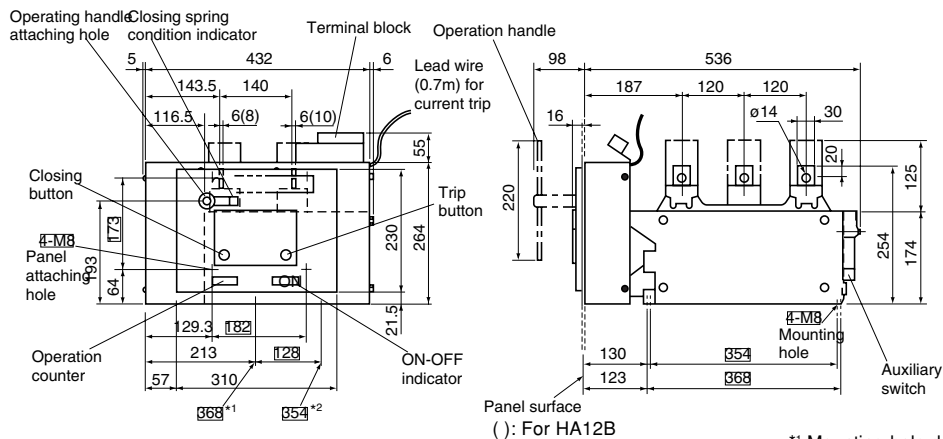


Panel cutting



*1 Mounting-hole depth dimension pitch: 368mm side from panel surface
*2 Mounting-hole depth dimension pitch: 354mm side from panel surface

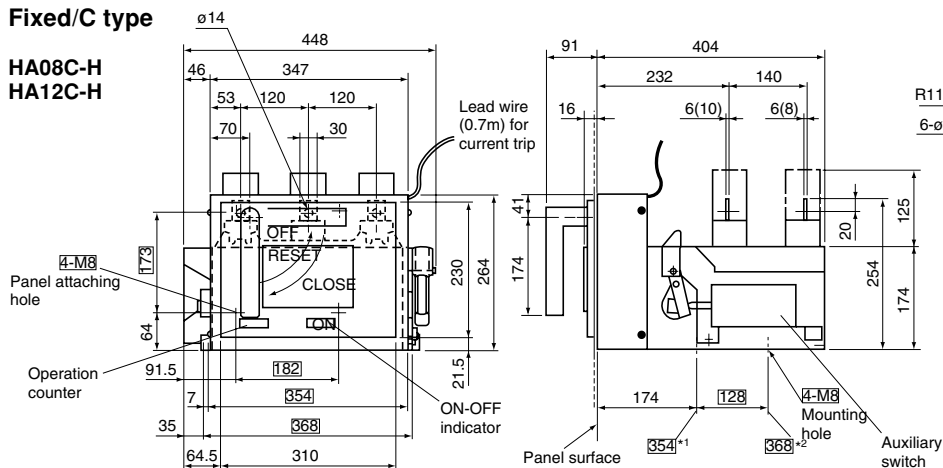
HA08B-A
HA12B-A



*1 Mounting-hole depth dimension pitch: 368mm side from panel surface
*2 Mounting-hole depth dimension pitch: 354mm side from panel surface

Fixed/C type

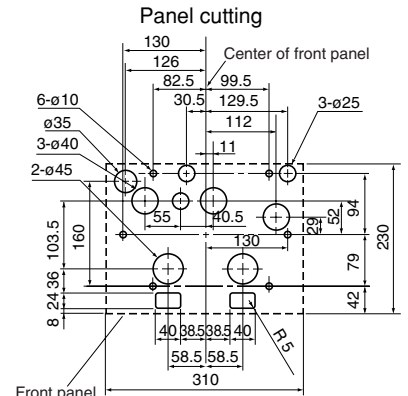
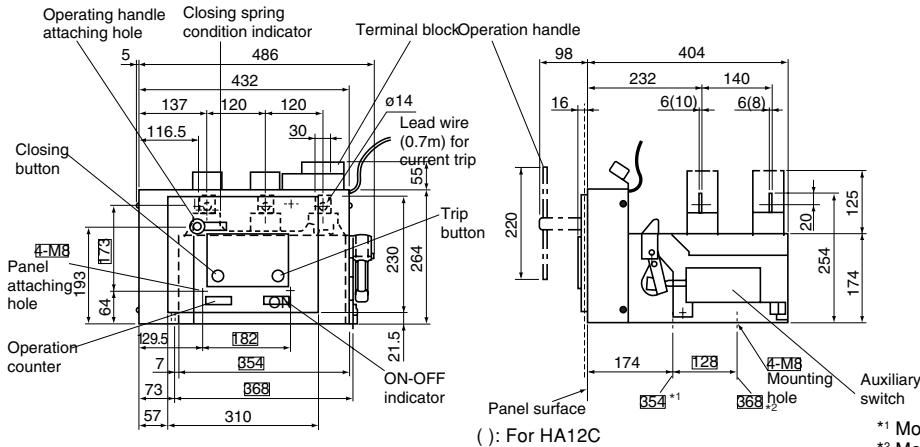
HA08C-H
HA12C-H



*1 Mounting-hole width-direction dimension pitch: 354mm side
*2 Mounting-hole width-direction dimension pitch: 368mm side

■ Dimensions, mm
Fixed/C type

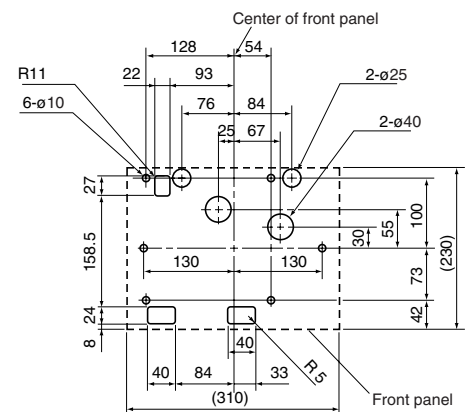
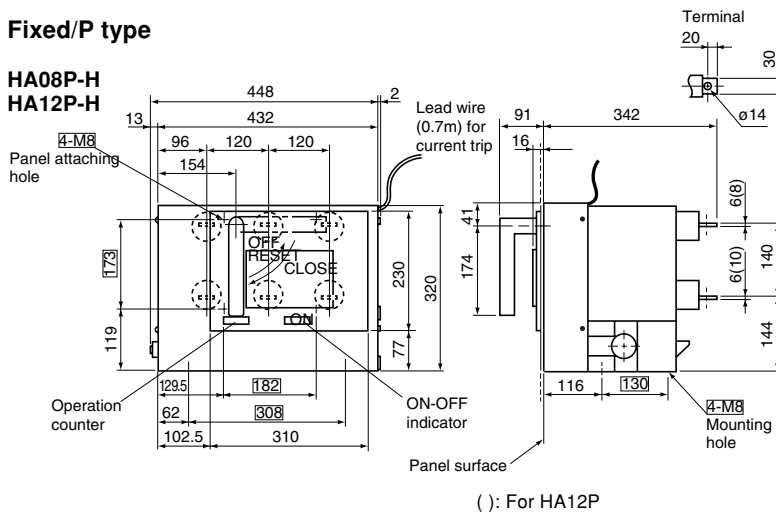
HA08C-A
HA12C-A



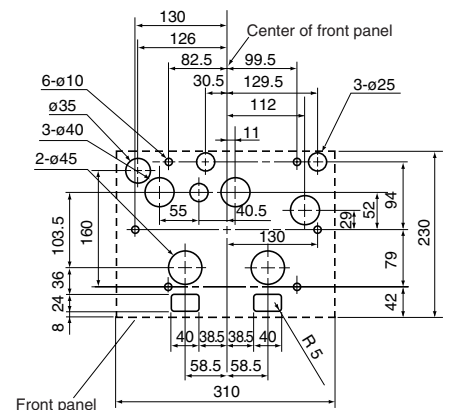
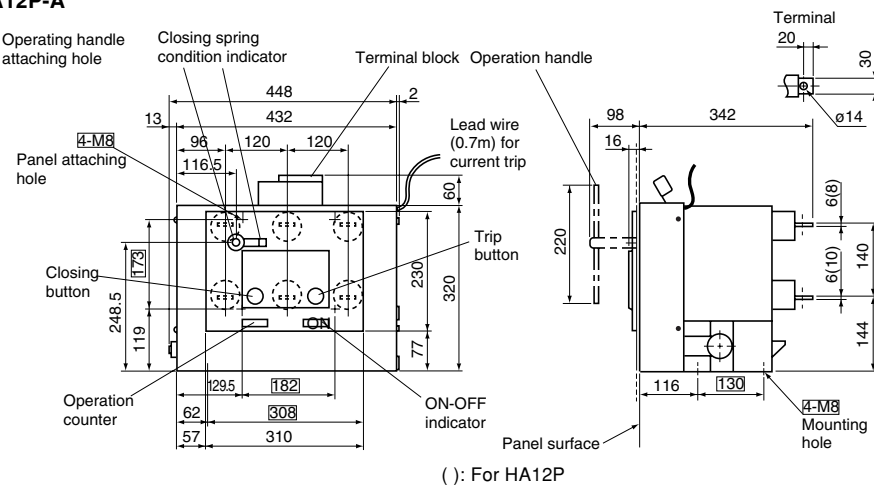
*1 Mounting-hole width-direction dimension pitch: 354mm side
 *2 Mounting-hole width-direction dimension pitch: 368mm side

Fixed/P type

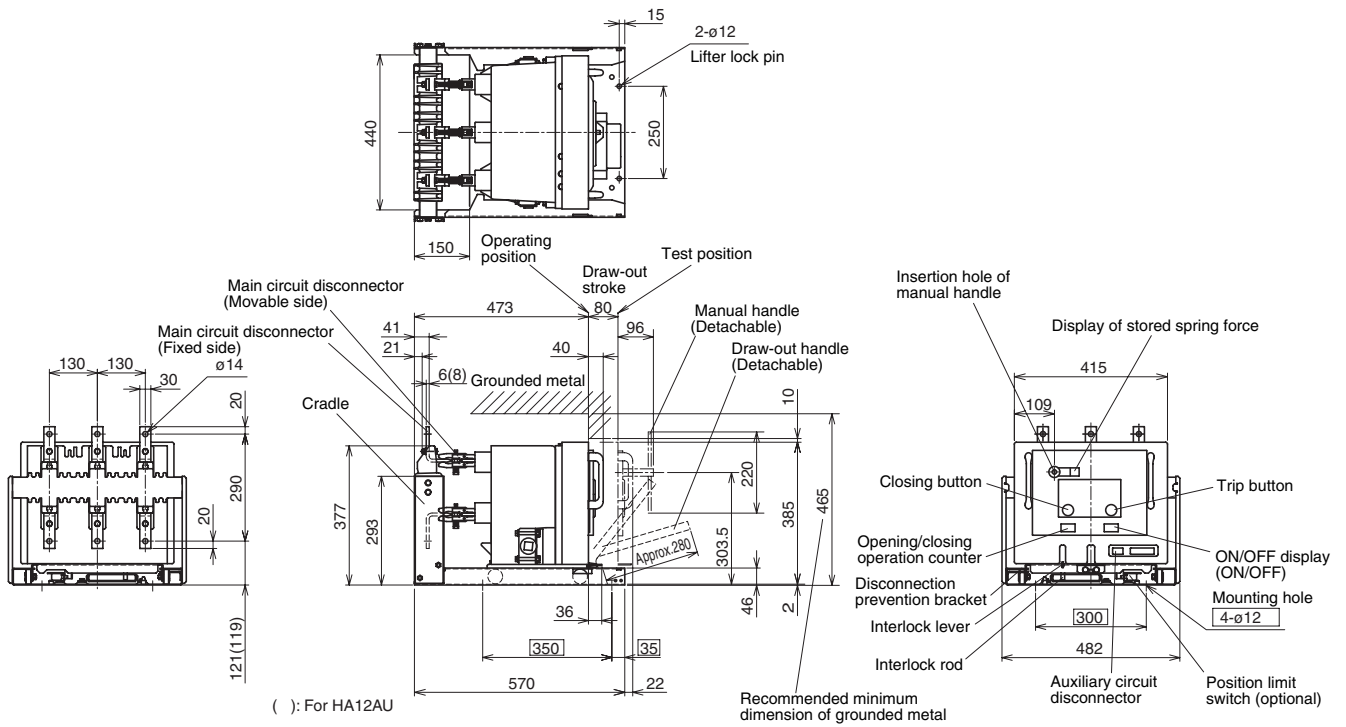
HA08P-H
HA12P-H



HA08P-A
HA12P-A



HA08AU-A
HA12AU-A



H.V. Distribution Equipment

Vacuum circuit breakers

Multi VCB

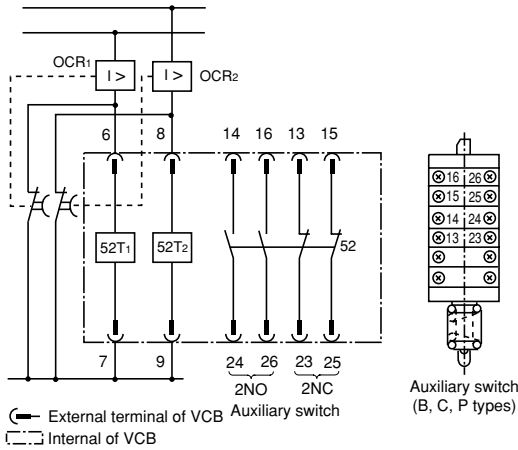
■ Wiring diagrams

● Fixed type

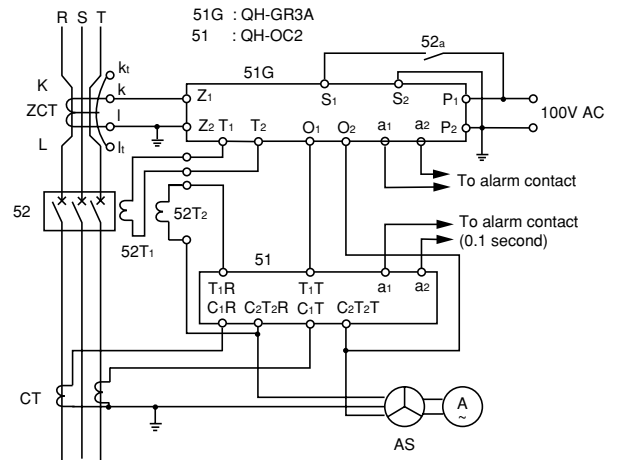
Manual-spring closing/current trip

HA08□-H5

HA12□-H5



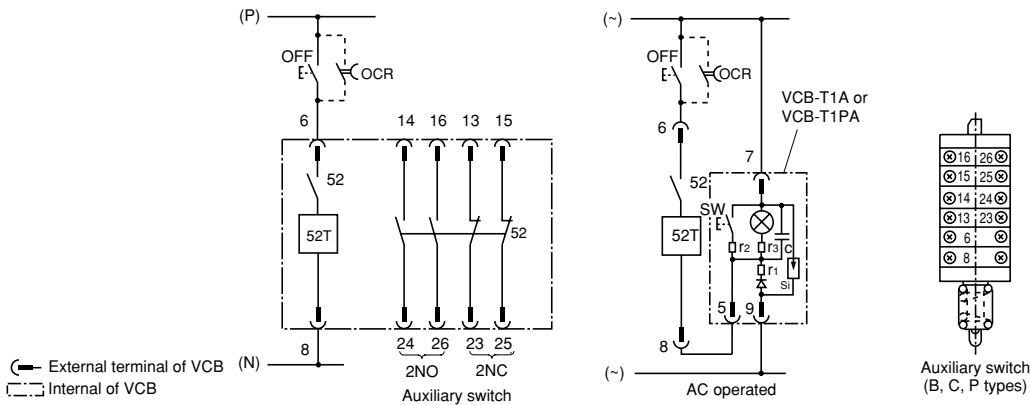
Connected with ground fault relay



Manual-spring closing/shunt trip

HA08□-H1, HA08□-H2, HA08□-H3, HA08□-H4

HA12□-H1, HA12□-H2, HA12□-H3, HA12□-H4

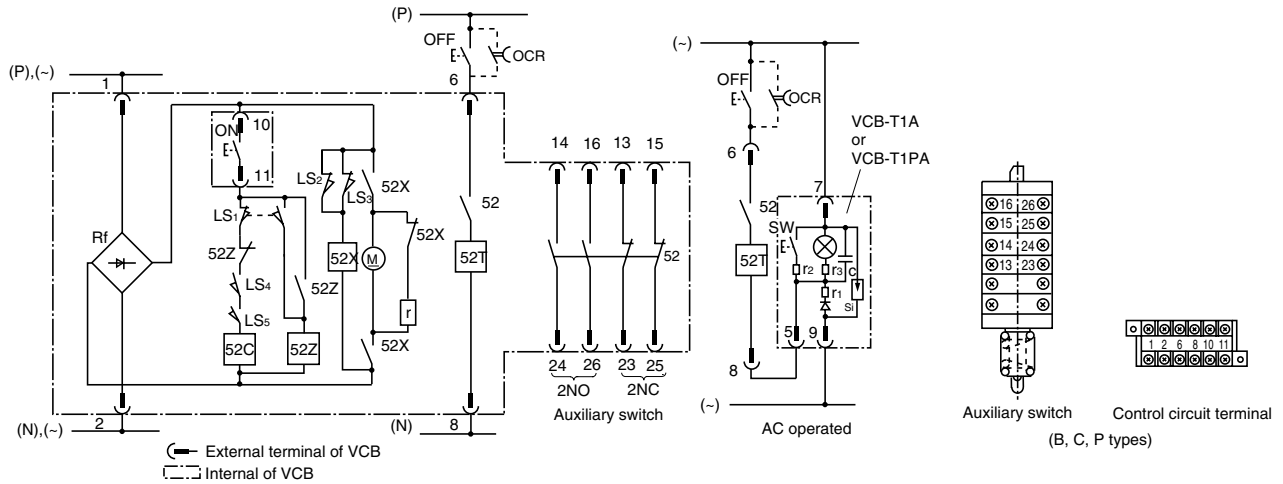


52T, 52T₁, 52T₂ : Trip coil
VCB-T1A, T1PA : Capacitor trip device (sold separately)

OCR, OCR₁, OCR₂ : Overcurrent protective relay
51G : Ground fault relay

Motor-spring closing/shunt trip

HA08□-A*, HA08□-B*, HA08□-C*, HA08□-D*
HA12□-A*, HA12□-B*, HA12□-C*, HA12□-D*
 (* : 1, 2, 3, 4)



52X : Magnetic contactor
 52Z : Anti-pumping relay
 52T : Shunt trip coil
 52C : Closing coil
 M : Motor
 Rf : Rectifier

LS₁ : Limit switch
 LS₂ : Limit switch (motor stop)
 LS₃ : Limit switch (motor start)
 LS₄ : Limit switch (closes when the closing spring is in the stored condition)
 LS₅ : Limit switch (closes when the closing spring is in the stored condition)

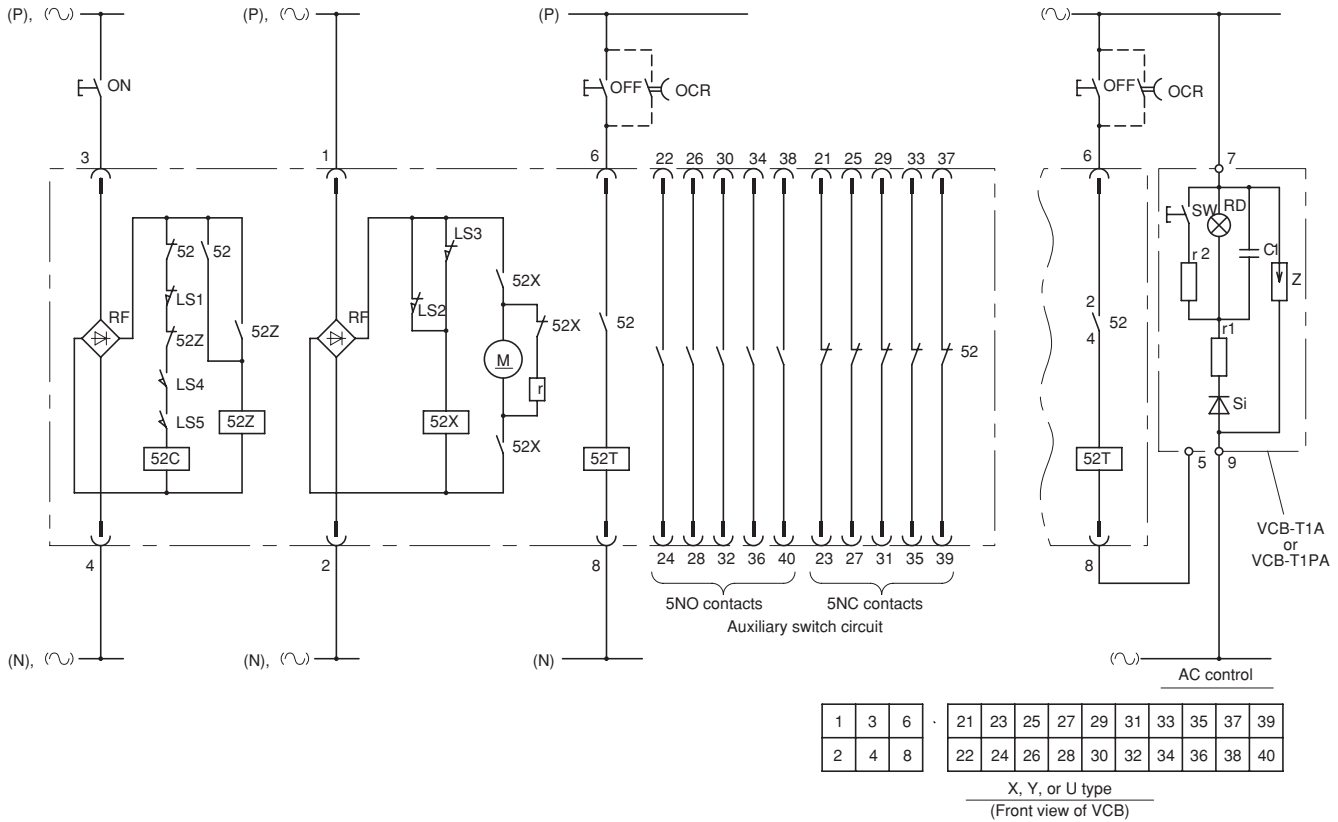
VCB-T1A, T1PA : Capacitor trip device
 OCR : Overcurrent relay

H.V. Distribution Equipment

Vacuum circuit breakers

Multi VCB

● Draw-out type
Motor-spring closing/shunt trip



52C: Closing coil
52T: Breaking coil
52X: Magnetic contactor for closing circuit
52Z: Pumping prevention relay
M: Control motor
RF: Rectifier

LS1: Limit switch (Draw-out interlock use)
LS2: Limit switch (Motor stopping use)
LS3: Limit switch (Motor startup use)
LS4: Limit switch
LS5: Limit switch (LS4 and LS5 are both turned on only when the the circuit is ready to be turned on.)

VCB-T1A or VCB-T1PA: Capacitor shunt trip power supply (Sold separately)
OCR: Overcurrent relay