6

Accessories

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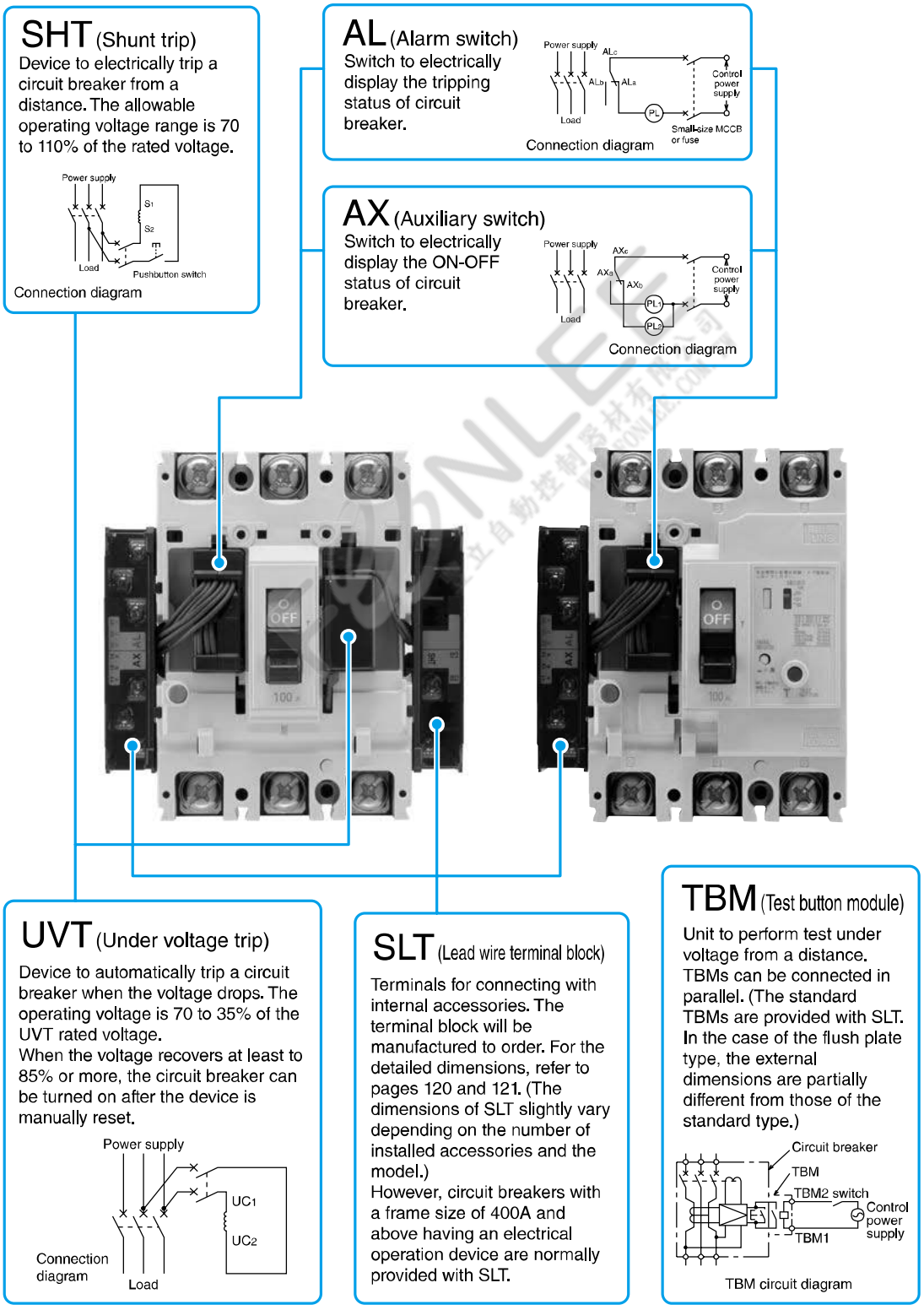
1. Internal Accessories

The accessories to be installed in circuit breakers include the followings. For the numbers of the accessories which can be installed, refer to the tables on pages 110 to 114. The standard internal accessories have lead wires (450mm in length) drawn out. (However, some of Models UVT and TBM have vertical lead wire terminal blocks as standard.) When circuit breakers are installed side by side, keep a space of 8mm or more for lead wires between the circuit breakers. (Models with lead wires drawn out toward load and models with lead wire grooves in the side faces can be installed in close contact.)



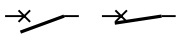
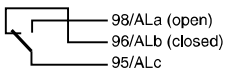
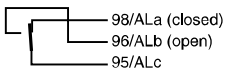
2. Terminal Symbols

Table 6-1

Accessory name		Nameplate (sample)	Accessory name		Nameplate (sample)
AL	Alarm switch		TBM	Test button module	
AX	Auxiliary switch				
SHT	Shunt tripping device				
UVT	Undervoltage tripping device				

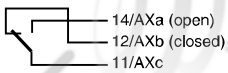
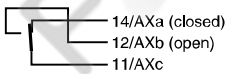
3. Operations and Ratings of Switches

Table 6-2 Operations of AL switch

Status of circuit breaker	Contact status of AL switch
 Off or On	 98/ALa (open) 96/ALb (closed) 95/ALc
 Trip	 98/ALa (closed) 96/ALb (open) 95/ALc

* The terminal numbers 98/ALa, 96/ALb and 95/ALc may vary depending on the number of installed switches and the installation poles.

Table 6-3 Operations of AX switch

Status of circuit breaker	Contact status of AX switch
 Off or Trip	 14/AXa (open) 12/AXb (closed) 11/AXc
 On	 14/AXa (closed) 12/AXb (open) 11/AXc

* The terminal numbers 14/AXa, 12/AXb and 11/AXc may vary depending on the number of installed switches and the installation poles.

Table 6-4 Ratings of AL·AX (Above 400A frame) switches

Applied switch	AC Voltage V	AC Current A Resistive load	AC Current A Inductive load	DC Voltage V	DC Current A Resistive load	DC Current A Inductive load
A	(250)	(1)	(0.5)	(50)	(1)	(0.5)
	125	3	(1)	30	2	(1)
S	460	—	—	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3
V	460	5	2	250	0.3	0.3
	250	10	10	125	0.6	0.6
	125	10	10	30	10	6

Remarks: 1. The ratings in parentheses do not conform to UL.
2. For the applied switches, refer to Tables 6-9 to 6-12-2.

Table 6-5 Ratings of corrosion resist AL and AX switches

Corrosion resist switch	AC Voltage V	AC Current A Resistive load	AC Current A Inductive load	DC Voltage V	DC Current A Resistive load	DC Current A Inductive load
ST	460	—	—	250	0.2	0.2
	250	3	2	125	0.4	0.4
	125	5	3	30	4	3
VT	460	1	0.5	250	0.3	0.3
	250	5	4	125	0.4	0.4
	125	5	4	30	5	3

Table 6-6 Ratings of small loads AL·AX switches

Switch	AC Voltage V	AC Current A Resistive load	AC Current A Inductive load	DC Voltage V	DC Current A Resistive load	DC Current A Inductive load
AB	125	0.1	—	30	(0.1)	—
SB	125	0.1	—	30	0.1	—
VB	125	0.1	—	30	0.1	—

Remark: 1. Ratings in parentheses are not subject to UL.

4. Maximum Number of Internal Accessories

●AL ○AX
▨ SHT or UVT ■ PAL
→ Outgoing direction of lead wires

Handle of circuit breaker
Left pole → ← Right pole
▭ indicates cassette type accessories.

■MCCB and Motor Protection Breakers

Table 6-7 Table of maximum number of internal accessories

Model							
	C	NF63-CV NF125-CV	NF63-CV NF125-CV NF250-CV		NF400-CW NF630-CW	NF800-CEW	
	S	NF32-SV NF63-SV NF125-SV	NF32-SV NF63-SV NF125-SV NF125-SGV NF160-SGV NF250-SV NF250-SGV	NF125-SEV NF250-SEV	NF400-SW NF400-SEW NF630-SW NF630-SEW	NF800-SEW NF800-SDW	NF1000-SEW NF1250-SEW NF1600-SEW
	L • H • R	NF63-HV	NF63-HV NF125-HV NF125-LGV NF125-HGV NF125-RGV NF160-LGV NF160-HGV NF250-HV NF250-LGV NF250-HGV NF250-RGV	NF125-HEV NF250-HEV	NF400-HEW NF400-REW NF630-HEW NF630-REW	NF800-HEW NF800-REW	
	U		NF125-UV NF250-UV		NF400-UEW(3P)	NF400-UEW(4P) NF800-UEW	
	HDV HDW HDVA	NF63-HDV	NF63-HDV(3P) NF125-HDVA(4P) NF250-HDVA(4P)		NF400-HDW(3P, 4P)	NF800-HDW(3P, 4P)	
Number of poles		2 poles	2, 3 or 4 poles	3, 4 poles	2, 3 or 4 poles	2, 3 or 4 poles	2, 3 or 4 poles
AL and AX (standard) switches		S					V
Accessory							
AL		●	❶ ❷	❶ ❷		(*6)	
AX		① ②	① ③ ②	① ③ ②	① ③ ② ④	(*6) ①⑤ ③ ②⑥ ④	① ③ ② ④ ⑤ ⑥
SHT or UVT		(*1)	(*1)(*4)	(*1)(*4)	(*1) (*5)	(*1) (*5)	(*1)
AL + AX		● ○	(*2) ❶ ❷ ① ②	(*2) ❶ ❷ ① ②	(*6)	(*6)	
SHT + UVT					(*1) (*5)	(*1) (*5)	
AL + SHT or UVT			(*1)	(*1)	(*1) (*5) (*6) (*7)	(*1) (*5) (*6) (*7)	(*1)
AX + SHT or UVT			(*1) ① ②	(*1) ① ②	(*1) (*5) (*6) (*7) ③ ① ②	(*1) (*5) (*6) (*7) ③ ① ④ ②	(*1)
AL + AX + SHT or UVT			(*1)	(*1)	(*1) (*5) (*6) (*7)	(*1) (*5) (*6) (*7)	(*1)
PAL (contact output)				(*3)	(*8) Option for NF400-SEW, HEW, REW and UEW and NF630-SEW, HEW and REW	(*8) Option for NF800-CEW, SEW, HEW and REW and NF800-UEW	(*8) Option for NF1000-SEW and NF1250-SEW and NF1600-SEW

Notes
*1 When UVT is provided, the UVT voltage module will come in the vertical lead wire terminal block type. (SHT does not have a voltage module.)
*2 The second AX can be installed in place of the AL on the left pole side. When placing an order, specify the incorporation of the switches in the body.
*3 PAL (contact output) can be installed together with AL and AX on the left pole side. (It cannot be installed together with SHT or UVT.)
The standard type is provided with SLT. PAL control voltage (compatible with 100 to 200VAC) is necessary.
*4 SHT and UVT can be installed on the left side.
*5 SHT and UVT are normally installed on the right pole side. If you intend to install them on the left pole side, specify so. (The non-reset type UVT must be installed on the left pole side.)
*6 In the case where three or more accessories are installed on the left pole side and AL, AX or AL and AX are installed on the pole on which SLT, SHT or UVT is installed, the SLT will be manufactured to order.
*7 When AL, AX or AL and AX are installed on the pole on which UVT is installed, the UVT voltage module must be installed separately.
*8 SLT is provided as standard. A control power supply (100 to 200VAC) is required. (In this case, other internal accessories cannot be installed on the right pole side.)

Remarks:
1. For electrically operated automatic reset type circuit breakers having a frame size of 400A or above, the numbers of AL switches which can be installed are smaller by 1 than the values shown above.
2. The encircled numbers indicate the order of installation.
3. AL and AX for minute load can be manufactured to order.

ELCB

●AL ○AX SHT or UVT

Table 6-8 Table of maximum number of internal accessories

Handle of circuit breaker
Left pole → ← Right pole
indicates cassette type accessories.

TBM →Outgoing direction of lead wires

Model				
	C	NV63-CV NV125-CV NV250-CV	NV400-CW NV630-CW	
	S	NV32-SV NV63-SV NV125-SV NV125-SEV NV250-SV NV250-SEV	NV400-SW NV400-SEW NV630-SW NV630-SEW	NV800-SEW
	H • R	NV63-HV NV125-HV NV125-HEV NV250-HV NV250-HEV	NV400-HEW NV630-HEW	NV800-HEW
Number of poles		2, 3, or 4 poles	3 poles	
Switch		S		
Accessory				
AL				(*6)
AX		① ②		(*6)
AL + AX		(*2)	(*6)	(*6)
SHT or UVT		(*3)	(*5)	(*5)
AL + SHT or UVT			(*4) (*5) (*6)	(*4) (*5) (*6)
AX + SHT or UVT			(*4) (*5) (*6)	(*4) (*5) (*6)
AL + AX + SHT or UVT			(*4) (*5) (*6)	(*4) (*5) (*6)
TBM		(*1)	(*1)	(*1)

Notes *1 The standard type is provided with SLT. Only in the case of 24VDC, specify the control voltage.
*2 The second AX can be installed in place of the AL on the left pole side. When placing an order, specify the incorporation of the switches in the body.
*3 When UVT is provided, the UVT voltage module will come in the vertical lead wire terminal block type. (SHT does not have a voltage module.)
*4 When AL, AX or AL and AX are installed on the pole on which UVT is installed, the UVT voltage module must be separately installed.
*5 When the accessory is provided with UVT, the UVT voltage module has a vertical lead wire terminal block. The UVT is not provided with a cassette.
*6 SLT to be used when three or more accessories are installed on the left pole is manufactured to order.

Remarks: 1. The encircled numbers indicate the order of installation.
2. TBM can be installed regardless of the number of installed AL, AX, SHT and UVT.
3. AL and AX for minute load can be manufactured to order.

UL Circuit Breakers

Handle of circuit breaker
Left pole → ← Right pole
● AL ○ AX ▨ SHT or UVT ➡ TBM →Outgoing direction of lead wires
▭ indicates cassette type accessories.

Table 6-9-1 Table of maximum number of internal accessories

Model / Number of poles / AL and AX (standard) switches / Accessory	MCCB	NF30-FAU NF50-FAU	NF50-FHU NF100-FHU(3P)	NF100-SRU NF100-HRU		NF50-SVFU NF100-CVFU	NF50-SVFU NF100-CVFU	NF125-SVU NF125-HVU NF250-SVU NF250-HVU NF250-CVU	NF400-SWU NF400-HWU	NF630-SWU NF630-HWU
		2, 3 poles	2, 3 poles	2 poles	3 poles	2 poles	3 poles	2 or 3 poles	3 poles	3 poles
		A	S	A		S				
AL			(*9)	(*10)	(*9)					(*4)
AX			(*9)	(*10)	(*9)					(*4)
SHT or UVT		(*8)	(*8) (*9)	(*10) (*11)	(*8) (*9) (*11)	(*1) (*6)	(*1) (*3) (*6)	(*1) (*3)	(*1) (*3)	(*1) (*3)
AL + AX		Only 3 poles	Only 3 poles	(*10)	(*9)		(*2)	(*2)	(*6)	(*6)
AL + SHT or UVT		(*8) Only 3 poles	(*8) (*9) Only 3 poles	(*10) (*11)	(*8) (*9) (*11)		(*1) (*6)	(*1)	(*1) (*3) (*4) (*5)	(*1) (*3) (*4) (*5)
AX + SHT or UVT				(*10) (*11)	(*8) (*9) (*11)		(*1) (*6)	(*1)	(*1) (*3) (*4) (*5)	(*1) (*3) (*4) (*5)
AL + AX + SHT or UVT				(*10) (*11)	(*8) (*9) (*11)		(*1) (*6)	(*1)	(*1) (*3) (*4) (*5)	(*1) (*3) (*4) (*5)

Model / Number of poles / AL and AX (standard) switches / Accessory	NF	NF50-SMU
		1, 2, 3 poles
		-
AL		
AX		
SHT		
AL + AX		
AL + SHT		
AX + SHT		
AL + AX + SHT		

Table 6-9-2 Table of maximum number of accessories

Model / Number of poles / AL and AX (standard) switches / Accessory	ELCB	NV30-FAU NV50-FAU	NV50-FHU NV100-FHU(3P)	NV100-SRU NV100-HRU(3P)	NV50-SVFU	NV50-SVFU NV100-CVFU	NV125-SVU NV125-HVU NV250-SVU NV250-HVU
		2, 3 poles	2, 3 poles	2, 3 poles	2 poles	3 poles	3 poles
		A	S	A	S		
AL			(*9)	(*9) (*10)			
AX			(*9)	(*9) (*10)			
SHT or UVT						(*1) (*6)	(*1)
AL + AX		Only 3 poles	(*9) Only 3 poles	(*9) (*10)		(*2)	(*2)
AL + SHT or UVT				(*9) (*10) (*11)			
AX + SHT or UVT				(*9) (*10) (*11)			
AL + AX + SHT or UVT				(*9) (*10) (*11)			
TBM					(*7)	(*7)	(*7)

Notes
*1 When UVT is provided, the UVT voltage module will come in the vertical lead wire terminal block type. (SHT does not have a voltage module.)
*2 SHT cannot be installed.
*3 SHT and UVT are normally installed on the right pole side. If you intend to install them on the left pole side, specify so.
*4 In the case where three or more accessories are installed on the left pole side and AL, AX or AL and AX are installed on the pole on which SLT, SHT or UVT is installed, the SLT will be manufactured to order.
*5 When AL, AX or AL and AX are installed on the pole on which UVT is installed, the UVT voltage module must be installed separately.
*6 UVT of NF50-SVFU and NV50-SVFU are not provided with cassettes.
*7 The standard type is provided with SLT. Only in the case of 24VDC, specify the control voltage.
*8 UVT cannot be installed.
*9 Lead drawing is standard. Lead drawing is also available. For NF/NV100-FHU. Lead wires are usually extended load side.
*10 Lead drawing is not available.
*11 Left pole SHT and UVT are mounted on the side of circuit breaker.

Remarks:
1. The encircled numbers indicate the order of installation.
2. AL and AX for minute load can be manufactured to order. (These switches have been certified only by UL and CSA. They have not been certified by TUV.)

MDU Breakers

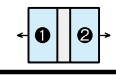
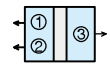
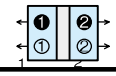
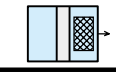
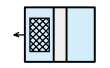
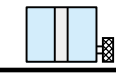
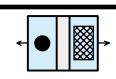
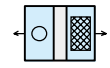
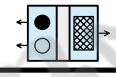
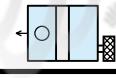
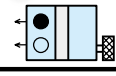
Table 6-10-1 Table of maximum number of internal accessories

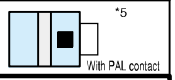
● AL ○ AX ● AL for transmission with MDU ○ AX for transmission with MDU ▩ SHT or UVT ■ PAL ➡ TBL ➡ TBM ▭ indicates cassette type accessories. → Outgoing direction of lead wires

Handle of circuit breaker

Left pole → ← Right pole

The numbers in ○ indicate the mounting order.

Model	NF250-SEV with MDU NF250-HEV with MDU
Number of poles	3, 4 poles
Switch	S
AL	 *1
AX	 *1
AL+AX	 *1 *2
SHT	 *1 *3
	
UVT	 *4
AL+SHT	 *1
AX+SHT	 *1
AL+AX+SHT	 *1
AL+UVT	 *4
AX+UVT	 *4
AL+AX+UVT	 *4

Model	NF250-SEV with MDU NF250-HEV with MDU
Number of poles	3, 4 poles
Switch	S
PAL	 *5 With PAL contact
AL for transmission with MDU *6	
AX for transmission with MDU *6	
AL+AX for transmission with MDU *6	
AL+AX+AL for transmission with MDU *6	 *1
AL+AX+AX for transmission with MDU *6	 *1
AL+AX+AL+AX for transmission with MDU *6	 *1

Notes:
*1 The right pole SLT specification is built into the main unit (not included with the cassette).
When MDU specification is “Breaker mounting”, “Breaker mounting unit separates”.
*2. The second AX can be mounted in place of the AL on the left pole side. Please order with the built-in body.
*3. Left pole mounting is also possible.
*4. The UVT voltage module is a vertical lead wire terminal block type. UVT is not included with the cassette.

MDU installation type	UVT specification	Remarks
Breaker mounting	· UVT voltage module separate installation is standard. · In the case of separate display unit, UVT voltage module body mounting is also available.	Left pole mounting is also possible. (Reset type UVT can not be mounted on the left)
Breaker mounting unit separate installation		
External mounting	·UVT voltage module body mounting is standard. ·A separate UVT voltage module can also be manufactured.	
Panel mounting		

*5. It comes with a terminal block specification.
A control power supply (100-240VAC/DC common) is required (In this case, other internal accessories can not be mounted on the right pole).
When MDU specification is “Breaker mounting”, “Breaker mounting unit separates”.
*6. When transmitting AL, AX, AL + AX, AL and AX for MDU transmission are left pole mounted.
In this case, AL and AX for MDU transmission installed on the left pole side can not be used for lead wire extraction and terminal block installation to the outside.

Remark:
1. AL and AX for minute load can be manufactured to order.

MDU Breakers

Table 6-10-2 Table of maximum number of internal accessories

● AL ○ AX ● AL for transmission with MDU ○ AX for transmission with MDU ▨ SHT or UVT ■ PAL ➡ TBL ➡ TBM ▭ indicates cassette type accessories. ⟶ Outgoing direction of lead wires

Handle of circuit breaker

Left pole → ← Right pole

TI

The numbers in ○ indicate the mounting order.

Model	NF400-SEW with MDU NF400-HEW with MDU	NF800-SEW with MDU NF800-HEW with MDU
Number of poles	3, 4 poles	
Switch	S	
AL		*1
AX		*1
SHT	*2	
UVT	*3 *4	
AL+AX	*1	
AL+SHT	*2	*1 *2
AX+SHT	*2	*1 *2
AL+AX+SHT	*1 *2	*1 *2
AL+UVT	*3 *4 *5	*1 *3 *4 *5
AX+UVT	*3 *4 *5	*1 *3 *4 *5
AL+AX+UVT	*1 *3 *4 *5	*1 *3 *4 *5

Model	NF400-SEW with MDU NF400-HEW with MDU	NF800-SEW with MDU NF800-HEW with MDU
Number of poles	3, 4 poles	
Switch	S	
PAL	*6	
TI	*6 With PAL· OAL contact	
AL for transmission with MDU *7		
AX for transmission with MDU *7		
AL+AX for transmission with MDU *7		
AL+AX+AL for transmission with MDU *7		
AL+AX+AX for transmission with MDU *7		
AL+AX+AL+AX for transmission with MDU *7		

Notes: *1 When mounting 3 or more accessories on the left pole, SLT is manufactured upon order.
*2 The right pole mounting is standard for SHT. Please specify for left pole installation.
*3 The UVT voltage module is a vertical lead wire terminal block type. UVT is not included with the cassette. With embedded UVT, "UVT voltage module separate" Please specify
*4 UVT is standard with right pole mounting. Please specify for left pole installation. (The reset prevention type UVT has a left pole mounting)
*5 When mounting AL, AX, AL + AX on the same pole as UVT, the UVT voltage module is separate.
*6 It comes with a terminal block specification. Control power supply (100-240VAC/DC shared) 5VA is required.
(In this case, other internal accessories can not be mounted on the right pole)
*7 When transmitting AL, AX, AL + AX, AL and AX for MDU transmission are left pole mounted.
In this case, AL and AX for MDU transmission installed on the left pole side can not be used for lead extraction and terminal block installation to the outside.

MDU installation type	UVT specification	Remarks
Breaker mounting	· UVT voltage module separate installation is standard. · In the case of separate display unit, UVT voltage module body mounting is also available.	Left pole mounting is also possible. (Reset type UVT can not be mounted on the left)
Breaker mounting unit separate installation		
External mounting	·UVT voltage module body mounting is standard. ·A separate UVT voltage module can also be manufactured.	
Panel mounting		

Remark: 1. AL and AX for minute load can be manufactured to order.

5. Cassette Type Accessories

The internal accessories for major models having a frame size from 30 to 800A come in cassettes, and they can be installed to and removed from circuit breakers by the user.
Some cassette type accessories have lead wires drawn out, and others have vertical lead wire terminal blocks (SLT). (These parts are supplied by 10 pieces for frame size from 30 to 250A or by 1 piece for frame size from 400 to 800A.)

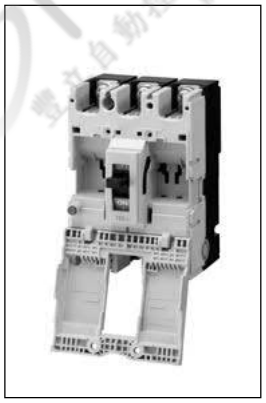
Applicable models and kinds of cassette type accessories

	Model	Alarm switch (AL)	Auxiliary switch (AX)	Shunt tripping device (SHT)	Undervoltage tripping device (UVT)
MCCB	NF100-SRU, NF100-HRU NF63-CV~NF250-CV, NF32-SV~NF250-SV NF63-HV~NF250-HV NF125-SGV~NF250-SGV, NF125-LGV~NF250-LGV NF125-HGV~NF250-HGV NF125-SEV, NF250-SEV, NF125-HEV, NF250-HEV NF125-RGV, NF250-RGV, NF125-UV, NF250-UV NF100-CVFU, NF125-SVU/HVU, NF250-CVU/SVU/HVU	○	○	○	○
	NF50-SVFU, NF400-CW, NF630-CW, NF800-CEW NF400-SW, NF630-SW, NF400-SEW~NF800-SEW NF800-SDW, NF400-HEW~NF800-HEW NF400-REW~NF800-REW, NF400-UEW, NF800-UEW NF400-SWU/HWU, NF630-SWU/HWU	○	○	○	–
ELCB	NV100-SRU, NV100-HRU NV63-CV~NV250-CV, NV32-SV~NV250-SV NV63-HV~HV250-HV NV125-SEV, NV250-SEV, NV125-HEV, NV250-HEV NV100-CVFU, NV125-SVU/HVU, NV250-CVU/SVU/HVU	○	○	○	○
	NV50-SVFU, NV400-CW, NV630-CW NV400-SW, NV630-SW, NV400-SEW~NV800-SEW NV400-HEW~NV800-HEW	○	○	○	–

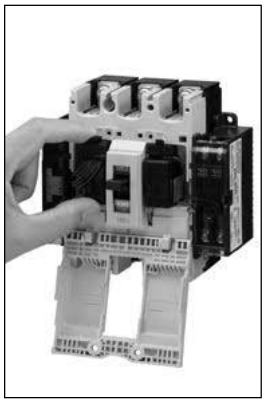
Procedure for installing cassette type accessories

1. Press the trip button (PTT) to trip the circuit breaker. (*1)

2. Loosen the cover screws.



3. Open the cover.



4. Install the cassette type accessory. (*2)

5. Close the cover, and tighten the screws.

Notes *1. When installing any cassette type accessory, set the circuit breaker to the tripped state.
*2. If the inner lid or another accessory has been installed, remove it before installing the accessory.
When any circuit breaker supplied with the inner lid is used without an accessory, fit the inner lid without fail.
Failure to do so may affect the short-circuiting performance.
Models with inner lid: NF125-SV, NF125-HV, NF125-UV
NV125-SV, NV125-HV
NF250-SV, NF250-HV, NF250-CVU
NV250-SV, NV250-HV, NV250-CVU
NF125-SVU, NF125-HVU, NV125-SVU, NV125-HVU
NF250-SVU, NF250-HVU, NV250-SVU, NV250-HVU
NF125-SGV~NF250-SGV
NF125-LGV~NF250-LGV
NF125-HGV~NF250-HGV
NF250-SEV, NF250-HEV, NF250-UV
NV250-HEV
NF125-SEV, NF125-HEV
NV125-SEV, NV125-HEV
NF400-REW, NF400-UEW
NF630-REW
NF800-HEW, NF800-REW, NF800-UEW
NV800-HEW
NF630-SWU, NF630-HWU

Cautions when installing

Before installing or removing any cassette type accessory, set the circuit breaker and accessories to the no-voltage state.
Never install a cassette type accessory while the handle is in the ON or OFF position. Doing so may damage the accessory.
When installing an accessory with lead wires drawn out, apply the supplied nameplate to the circuit breaker side face.
When installing an accessory with lead wires drawn out for a frame size of 400 to 800A, secure the lead wires along the circuit breaker side face with the supplied lead wire retainers.

Type name

Table 6-11-1

Model MCCB	Model ELCB	Installation pole	AL	AX	AL+AX	SHT	UVTN or UVTS
NF50-SVFU		For right pole	AL-03SVU AL-03SVURS	AX-03SVU AX-03SVURS	ALAX-03SVU ALAX-03SVURS	SHTA240-03SVUR SHTA440-03SVUR SHTD100-03SVUR SHTA240-03SVURS SHTA440-03SVURS SHTD100-03SVURS	–
		For left pole					
	NV50-SVFU	For left pole	AL-03SVU AL-03SVULS	AX-03SVU AX-03SVULS	ALAX-03SVU ALAX-03SVULS	SHTA240-03SVUL SHTA440-03SVUL SHTD100-03SVUL SHTA240-03SVULS SHTA440-03SVULS SHTD100-03SVULS	–
NF32-SV, NF63-CV, NF63-SV, NF63-HV NF125-CV, NF125-SV, NF125-HV NF125-SGV, NF125-LGV, NF125-HGV NF160-SGV, NF160-LGV, NF160-HGV NF125-SEV, NF125-HEV NF125-RGV, NF125-UV NF250-CV, NF250-SV, NF250-HV NF250-SGV, NF250-LGV, NF250-HGV NF250-SEV, NF250-HEV NF250-RGV, NF250-UV		For right pole	AL-05SV AL-05SVRS	AX-05SV AX-05SVRS	ALAX-05SV ALAX-05SVRS	SHTA240-05SVR SHTA550-05SVR SHTD125-05SVR SHTA240-05SVRS SHTA550-05SVRS SHTD125-05SVRS	UVTNAD130-05SVR UVTSAD130-05SVR UVTNA250-05SVR UVTSA250-05SVR UVTNA480-05SVR UVTSA480-05SVR UVTNAD130-05SVRS UVTSAD130-05SVRS UVTNA250-05SVRS UVTSA250-05SVRS UVTNA480-05SVRS UVTSA480-05SVRS
		For left pole					
	NV32-SV, NV63-CV NV63-SV, NV63-HV NV125-CV, NV125-SV NV125-HV NV125-SEV, NV125-HEV NV250-CV, NV250-SV NV250-HV NV250-SEV, NV250-HEV	For left pole	AL-05SV AL-05SVLS	AX-05SV AX-05SVLS	ALAX-05SV ALAX-05SVLS	SHTA240-05SVL SHTA550-05SVL SHTD125-05SVL SHTA240-05SVLS SHTA550-05SVLS SHTD125-05SVLS	UVTNAD130-05SVL UVTSAD130-05SVL UVTNA250-05SVL UVTSA250-05SVL UVTNA480-05SVL UVTSA480-05SVL UVTNAD130-05SVLS UVTSAD130-05SVLS UVTNA250-05SVLS UVTSA250-05SVLS UVTNA480-05SVLS UVTSA480-05SVLS
NF100-CVFU NF125-SVU/HVU NF250-CVU/SVU/HVU		For right pole	AL-05SVU AL-05SVURS	AX-05SVU AX-05SVURS	ALAX-05SVU ALAX-05SVURS	SHTA240-05SVUR SHTA550-05SVUR SHTD125-05SVUR SHTA240-05SVURS SHTA550-05SVURS SHTD125-05SVURS	UVTNAD130-05SVUR UVTSAD130-05SVUR UVTNA250-05SVUR UVTSA250-05SVUR UVTNA480-05SVUR UVTSA480-05SVUR UVTNAD130-05SVURS UVTSAD130-05SVURS UVTNA250-05SVURS UVTSA250-05SVURS UVTNA480-05SVURS UVTSA480-05SVURS
		For left pole					
	NV100-CVFU NV125-SVU/HVU NV250-CVU/SVU/HVU	For left pole	AL-05SVU AL-05SVULS	AX-05SVU AX-05SVULS	ALAX-05SVU ALAX-05SVULS	SHTA240-05SVUL SHTA550-05SVUL SHTD125-05SVUL SHTA240-05SVULS SHTA550-05SVULS SHTD125-05SVULS	UVTNAD130-05SVUL UVTSAD130-05SVUL UVTNA250-05SVUL UVTSA250-05SVUL UVTNA480-05SVUL UVTSA480-05SVUL UVTNAD130-05SVULS UVTSAD130-05SVULS UVTNA250-05SVULS UVTSA250-05SVULS UVTNA480-05SVULS UVTSA480-05SVULS
NF100-SRU NF100-HRU		For right pole	AL-05SRU	AX-05SRU	ALAX-05SRU	SHTA240-05SRU SHTA480-05SRU SHTD125-05SRU	–
			AL-05SRURS	AX-05SRURS	ALAX-05SRURS	SHTA240-05SRURS SHTA480-05SRURS SHTD125-05SRURS	
		For left pole	AL-05SRU	AX-05SRU	ALAX-05SRU	SHTA110-05SRULS SHTA127-05SRULS SHTA220-05SRULS	UVTNA110-05SRULS UVTNA127-05SRULS UVTNA220-05SRULS
	NV100-SRU NV100-HRU	For left pole	AL-05SRULS	AX-05SRULS	ALAX-05SRULS	SHTA240-05SRULS SHTD024-05SRULS SHTD110-05SRULS	UVTNA240-05SRULS UVTND024-05SRULS UVTND110-05SRULS
NF400-CW, NF400-SW, NF400-SEW NF400-HEW, NF400-REW, NF400-UEW NF630-CW, NF630-SW, NF630-SEW NF630-HEW, NF630-REW NF800-CEW, NF800-SDW, NF800-SEW NF800-HEW, NF800-REW, NF800-UEW		For right pole (2, or 3 poles)	–	AX-4SW AX-4SWRS AX2-4SWRS	–	SHT-4SW SHT-4SWRS	–
		For right pole (4 poles)	–	–	–	SHT-4SWRFS SHT-8SWRFS	–
		For left pole (2, 3 or 4 poles)	AL-4SWL AL-4SWLS AL2-4SWLS	AX-4SW AX-4SWLS AX2-4SWLS	ALAX-4SWL ALAX-4SWLS	SHT-4SW SHT-4SWLS	–
	NV400-CW, NV400-SW NV400-SEW, NV400-HEW NV630-CW, NV630-SW NV630-SEW, NV630-HEW NV800-SEW, NV800-HEW	For left pole (2, 3 or 4 poles)					
NF400-SWU, NF400-HWU NF630-SWU, NF630-HWU		For right pole	–	AX-4SWU AX-4SWURS AX2-4SWURS	–	SHT-4SWU SHT-4SWURS	–
		For left pole	AL-4SWU	AX-4SWU	ALAX-4SWU	SHT-4SWU	

Remarks:
1. For the possibility of installation of accessories and the installation pole, refer to the tables of maximum numbers on pages 110 to 114.
2. AL and AX for minute load can be manufactured to order. (Please specify "B" at the end of the model.)
3. Corrosion-proof cassette type AL and AX are not available. When the circuit breaker body is exposed to class 1 tropicalization, class 2 tropicalization, reinforced corrosion resistance treatment or class 2 heat resistance treatment, place an order for the circuit breaker including the accessories.
4. Cassette type accessories with SLT for right pole cannot be installed to 4-pole circuit breakers. Accessories with SLT for right pole to be used in 4-pole circuit breakers are manufactured to order.
5. Cassette type accessories with SLT cannot be installed to flush plate type circuit breakers.
6. It is impossible to install a combination of a cassette type accessory with lead wires drawn out and that with SLT or a combination of cassette type accessories with SLT on the same pole.
7. It is impossible to install the cassette type AL or AX to the pole to which UVT has been installed.
8. AX and SHT with lead wires drawn out for frame size from 400 to 800A can be installed to any of the right and left poles.
9. When installing more than one AL or AX with lead wires drawn out for frame size from 400 to 800A to one side, install the necessary number of the accessories for one piece. The lead wires from the circuit breaker vary in length depending on the installation position.
10. Install the cassette accessories for frame size from 400 to 800A starting from the outside of the installation positions. For the installation positions, see the installation positions shown in the following table.
11. When three pieces of more of AL and AX are installed on a circuit breaker with a frame size 400 to 800A, the AL and AX with SLT are manufactured to order.

Installation positions of cassette type accessories for 400 to 800A frames

Installation positions

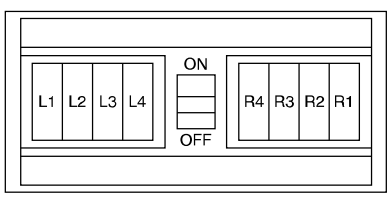


Table 6-11-2 Installation positions of cassette type accessories

Frame (A)	400•600•630					800							
Accessory \ Installation positions	L1	L2	L3	R2	R1	L1	L2	L3	L4	R4	R3	R2	R1
AL	○	○	–	–	–	○	○	○	–	–	–	–	–
AX	○	○	–	○	○	○	○	○	○	–	–	○ (*1)	○
AL + AX	○	○	–	–	–	○	○	–	–	–	–	–	–
SHT	–	○		○		–	–	○		○ (*1)		–	–

* Accessories only for Earth Leakage Circuit Breakers (NV-C, S and H), Earth Leakage Alarm Breakers (NF-Z) and single-phase 3-wire circuits (NF-N and NV-N) cannot be installed to R1, R2, R3 or R4.

Note *1 It is impossible to simultaneously install AX on R2 and SHT on R3 or R4.

Interpretation of type name

(1) Alarm switch • Auxiliary switch

AL 2 — 4 SV (or SW) L S B

Kind of accessory	
AL	Alarm switch
AX	Auxiliary switch

Number of accessories to be installed: When installing more than one AL or AX with SLT, specify the number.

Ampere frame	
05	For 30 to 250A frames
4	For 400 to 800A frames

Installation position	
R	Right pole, 2 or 3 poles
RF	Right pole, 4 poles
L	Left pole
Blank	Right and left

Kind of switch	
Blank	Standard
B	Minute load

With SLT (vertical lead wire terminal block) (with lead wires drawn out unless otherwise specified)

(2) Shunt tripping device

Undervoltage tripping device

SHT A1 — 1 SV (or SW) R S

Kind of accessory	
SHT	Shunt tripping device
UVTN (*1)	Undervoltage tripping device
UVTS (*2)	

Voltage (SHT)	
A240	100-240VAC
A440	380-440VAC
A480	380-480VAC
A550	380-550VAC
D100	100VDC
D125	100-125VDC
Blank	100-450VAC/100-200VDC

Voltage (UVTN or UVTS)	
AD130	Switching between 100 to 130VAC and 100 to 130VDC
A250	200-250VAC
A480	380-480VAC

Ampere frame	
05	For 30 to 250A frames
4	For 400•600•630A frames For 800A frames (3P)
8	For 800A frames (4P)

Installation position	
R	Right pole, 2 or 3 poles
RF	Right pole, 4 poles
L	Left pole
Blank	Right and left

With SLT (vertical lead wire terminal block) (with lead wires drawn out unless otherwise specified)

Notes *1 The circuit breaker cannot be reset if voltage is not applied to UVTN. (Non-reset type UVT)
*2 The circuit breaker can be reset even if voltage is not applied to UVTS. (Reset type UVT)

6. Shunt Trip (SHT)

Coil ratings (standard)

Table 6-12-1

Model	Provision of coil burnout preventing switch	Voltage (V)	Input (VA) (*1) AC	Input (VA) (*1) DC	Operating time (*2) (ms)
NF30-FAU NF50-FAU	Provided	100-120VAC 200-240VAC	120	—	20 or less
NF50-FHU NF100-FHU		100-120VAC 200-240VAC 100VDC		50	15 or less
NF50-SVFU NV50-SVFU		100-240VAC 380-440VAC 100VDC		60	15 or less
NF32-SV, NF63-CV/SV/HV, NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV, NF125-CV/SV/HV/SEV/HEV/RGV/UV NF250-CV/SV/HV/SEV/HEV/RGV/UV NF250-SGV/LGV/HGV NV32-SV, NV63-CV/SV/HV NV125-CV/SV/HV/SEV/HEV, NV250-CV/SV/HV/SEV/HEV NF100-CVFU, NF125-SVU/HVU, NF250-CVU/SVU/HVU NV100-CVFU, NV125-SVU/HVU, NV250-CVU/SVU/HVU		100-240VAC 380-550VAC 100-125VDC		50	
NF100-SRU/HRU (*3)		100-240VAC 380-480VAC 100-125VDC			
NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW/UEW NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW NV800-SEW/HEW, NF400-SWU/HWU, NF630-SWU/HWU		Compatible with 100 to 450VAC and 100 to 200VDC	100V 20 200V 50 380V 120 450V 170	100V 10 200V 35	5-15
NF100-SRU/HRU NV100-SRU/HRU	Not provided	100-110VAC, 110-127VAC 200-220VAC, 220-240VAC	10	—	15 or less
		24VDC, 100-110VDC	—	10	
NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	Provided	100-120VAC 200-240VAC 380-450VAC 100VDC	200	70	7-15
			300	100	15-25

Notes *1 Ensure that the voltage of the operating power supply for SHT is not dropped below the allowable operating voltage (70% of the rated minimum voltage value) by the input power.
*2 The operating time is the time from when the rated voltage is applied to the shunt tripping device until the main contact of the circuit breaker starts opening.
*3 Available for right pole.
Remark: 1. The accessory is usable at 50 Hz and 60 Hz.

Coil ratings (list of available special voltage coils)

Table 6-12-2

Model	VAC										VDC											Compatible with AC/DC
	24	25-27	24-48	48	50-55	60	440-480	380-550	440-550	500-550	12	24	24-36	36	36-48	48	60	110	125	220	200-250	220-250	24-48
NF32-SV, NF63-CV/SV/HV NF125-CV/SV/HV/SEV/HEV/RGV/UV NF125-SGV/LGV/HGV, F160-SGV/LGV/HGV NF250-CV/SV/HV/SEV/HEV/RGV/UV NF250-SGV/LGV/HGV NV32-SV, NV63-CV/SV/HV NV125-CV/SV/HV/SEV/HEV NV250-CV/SV/HV/SEV/HEV NF100-CVFU, NF125-SVU/HVU, NF250-CVU/SVU/HVU NV100-CVFU, NV125-SVU/HVU, NV250-CVU/SVU/HVU	–	–	○	–	–	–	–	–	–	–	○	–	○	–	○	–	–	–	–	–	○	–	–
NF100-SRU/HRU (*1)	–	–	○	–	–	○	–	–	–	–	○	–	○	–	○	–	○	–	–	–	–	○	–
NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW/UEW NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW NV800-SEW/HEW, NF400-SWU/HWU, NF630-SWU/HWU	–	–	–	–	–	–	–	○	–	–	○	–	–	–	–	–	–	–	–	–	–	–	○
NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	○	–	–	○	–	–	○	–	–	○	○	○	–	○	–	○	–	○	○	–	–	–	–

Notes *1 Available for right pole.

7. Undervoltage Trip (UVT)

(1) Specifications for UVT and coil ratings

Table 6-13

Model	Specification		Coil ratings			
			Voltage (V)		Input (VA)	Operating time (*2) (ms)
	Reset type	Non-reset type	Standard voltage	Special voltage (*1)		
NF50-SVFU NV50-SVFU	–	○	100-130VAC/DC 200-250VAC 380-480VAC	24VAC/DC 48VAC/DC	5	30 or less
NF32-SV, NF63-CV/SV/HV/HRV NF125-CV/SV/HV/RGV/SEV/HEV/UV NF125-SGV/LGV/HGV, NF160-SGV/LGV/HGV NF250-CV/SV/HV/RGV/SEV/HEV/UV NF250-SGV/LGV/HGV NV32-SV, NV63-CV/SV/HV NV125-CV/SV/HV/SEV/HEV NV250-CV/SV/HV/SEV/HEV NF100-CVFU, NF125-SVU/HVU, NF250-CVU/SVU/HVU NV100-CVFU, NV125-SVU/HVU, NV250-CVU/SVU/HVU	○	○		24VAC/DC 48VAC/DC 500-600VAC		
NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW/UEW NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW NV800-SEW/HEW	○ (*4)	○ (*5)	Switching between 100 to 110 and 120 to 130VAC (*3) Switching between 200 to 220 and 230 to 250VAC Switching between 380 to 415 and 440 to 480VAC Switching between 100 and 110VDC	Switching between 24/48VAC (*3) Switching between 500 to 550/600VAC Switching between 24/48VDC Switching between 110/125VDC	5	5-30
NF1000-SEW, NF1250-SEW NF1600-SEW	○	○				5-35
NF400-SWU/HWU, NF630-SWU/HWU	○ (*4)	–				5-30
NF100-SRU/HRU, NV100-SRU/HRU	–	○	100-110VAC 110-127VAC 200-220VAC 220-240VAC 24VDC 100-110VDC	–	10	30 or less

Notes *1 Some special voltage models vary in voltage range.
*2 The operating time is the time from when the undervoltage tripping device is set to the no-voltage state until the main contact starts opening.
*3 The accessory is usable at 50Hz and 60Hz.
*4 If UVT is turned on without excitation, the circuit breaker instantaneously opens and immediately trips.
*5 Only for installation on the left pole

(2) Reset type and non-reset type UVT

■Reset type (Refer to Table 6-15.)

The reset type UVT has a structure which does not trip a circuit breaker even if the UVT coil is not excited when the circuit breaker handle is in the OFF or reset position. Therefore, it keeps the circuit breaker in the reset state even if the coil is not excited when the breaker is reset electrically.

When the coil in the unexcited state is turned on, the circuit breaker is normally tripped. However, the major contacts of some models of circuit breakers may instantaneously close, or, on circuit breakers with AX, the AX switches may instantaneously change over. For electrical interlock, use a non-reset type UVT.

■Non-reset type (Refer to Table 6-15.)

When the UVT coil is not excited, the circuit breaker cannot be set to the off state even if the circuit breaker is tried to be reset from the tripped state. When the coil exciting voltage restores to the reference voltage or more, the circuit breaker can be reset to the off state.

(3) Time delay UVT

- This type of UVT has a time delay in operation.
- It can prevent operation upon occurrence of instantaneous power failure.

Table 6-14

UVT module type name	Time delay	Voltage (V)	
		Standard voltage	Special voltage
U-05W	Switching among 0.1, 0.3 and 0.5s	24/48AC 100–120/200–240/380–450AC 220–250/380–450/460–550AC (Compatible with 50Hz and 60Hz) 100–110DC	380–450/460–550/600–690AC (Compatible with 50Hz and 60Hz) 24/48DC
U-30W	Switching among 0.5, 1 and 3s	100–120/200–240/380–450AC 220–250/380–450/460–550AC (Compatible with 50Hz and 60Hz)	–

Notes *1 Available voltage ranges between 85% of the minimum rated voltage to 110% of the maximum rated voltage for each setting.
(Ex.: In the case of 100 to 120V, a voltage range of 85 to 131V is available.)
*2 The operating time denotes the time from when the UVT is set to the no-voltage state until the main contact of the breaker starts to open.
*3 Operating time ranges for each setting are as shown below.
0.1s setting: 0.1 to 0.3s, 0.3s setting: 0.3 to 0.5s,
0.5s setting: 0.5 to 1.0s,
1.0s setting: 1.0 to 3.0s, 3.0s setting: 3.0 to 6.0s
*4 The maximum operating time is set by default.
*5 This value is for the minimum voltage for each rated voltage. (Ex.: 85V or less in the case of 100 to 120V.)
*6 This value is for the maximum voltage for each rated voltage. (Ex.: 42 to 84V in the case of 100 to 120V.)
Remark *1 Contact us for details on applicable type names and ordering procedures.

(4) Structure of UVT

The UVT mechanical unit is installed in a circuit breaker, and the UVT voltage module is installed on the outside of the circuit breaker. When the voltage drops, the UVT voltage module detects the voltage drop, and the UVT mechanical unit trips the circuit breaker.

The UVT voltage module has a vertical lead wire terminal block and is normally installed on the body. The external module will be manufactured to order.

●Outline drawing

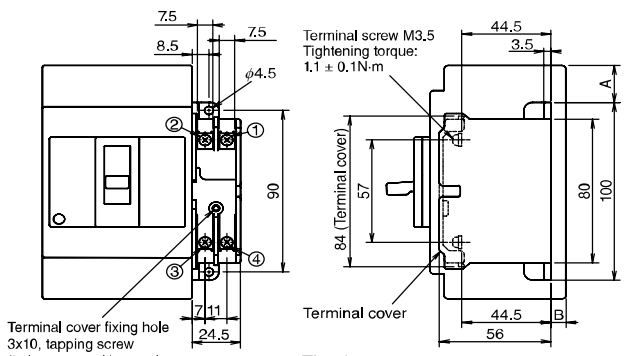


Fig. 1

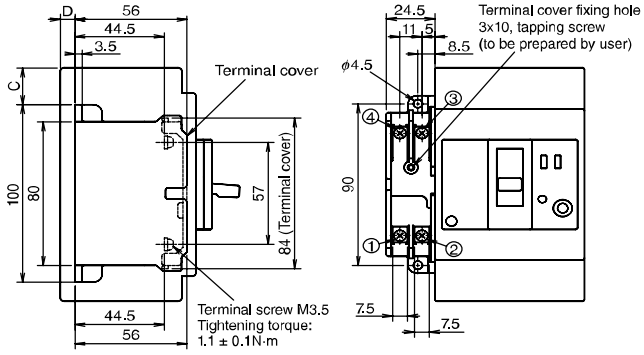


Fig. 2

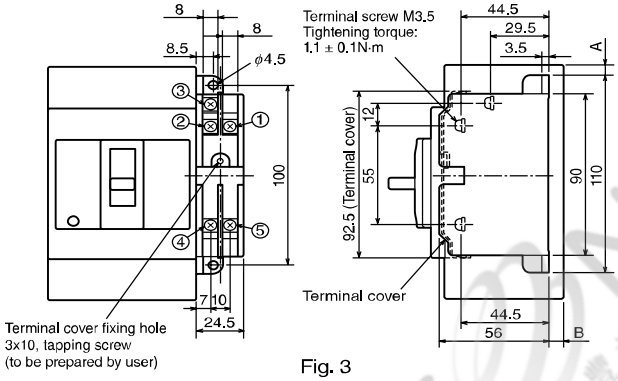


Fig. 3

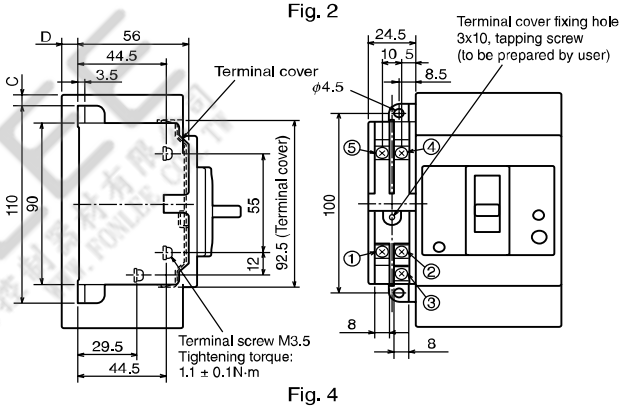
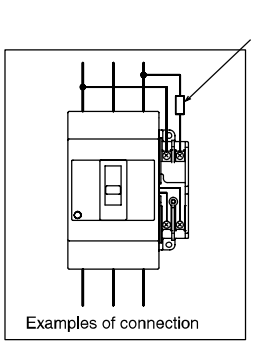


Fig. 4

●Examples of connection

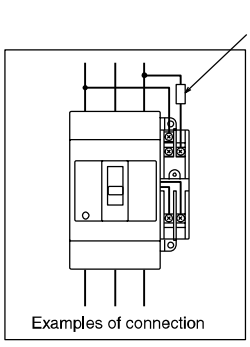


Terminal symbols

①	D1/P1	Control power supply terminal (COM)
②	D2/P2	Control power supply terminal (rated voltage)
③	J1/UC1	UVT coil connecting terminal
④	J2/UC2	UVT coil connecting terminal

Remarks: 1 When the UVT voltage module is installed on the body (standard), the UVT is supplied with J1/UC1 and J2/UC2 terminals connected with the UVT coil.
2 When the UVT is installed on the left pole side, the UVT module terminal positions are reversed (on the power supply and load sides). Carefully connect the terminals.

Fig. 5



Terminal symbols

①	D1/P1	Control power supply terminal (COM)
②	D2/P2	Control power supply terminal (rated voltage Lo)
③	D3/P3	Control power supply terminal (rated voltage Hi)
④	J1/UC1	UVT coil connecting terminal
⑤	J2/UC2	UVT coil connecting terminal

Remarks: 1 When the UVT is used at the rated voltage Lo, connect the control voltage to D1/P1 and D2/P2 terminals.
When the UVT is used at the rated voltage Hi, connect the control voltage to D1/P1 and D3/P3 terminals.
(Ex.) 100 to 110/120 to 130VAC
(Rated voltage Lo/rated voltage Hi)
2 When the UVT voltage module is installed on the body (standard), the UVT is supplied with J1/UC1 and J2/UC2 terminals connected with the UVT coil.
3 When the UVT is installed on the left pole side, the UVT module terminal positions are reversed (on the power supply and load sides). Carefully connect the terminals.

Fig. 6

Table 6-15 Installation on right pole side (mm)

Model	Reference drawing	Variable dimensions A	B
NF50-SVFU	Fig. 1 Fig. 5	11	7.5
NF32-SV, NF63-CV/SV/HV		20.5	7.5
NF100-CVFU		20.5	7.5
NF125-CV/SV/HV		20.5	7.5
NF125-SVU/HVU		41.5	7.5
NF125-UV		81.5	7.5
NF125-SEV/HEV/RGV, NF250-CV/SV/HV/RGV/SEV/HEV NF125-SGV/LGV/HGV, NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV		38	7.5
NF250-CVU/SVU/HVU		48	7.5
NF250-UV		113	7.5
NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW, NF400-SWU/HWU	Fig. 3 Fig. 6	67.5	41.5
NF400-UEW(3P)		107.5	138.5
NF800-CEW/SDW/SEW/HEW/REW, NF630-SWU/HWU		76.5	41.5
NF400-UEW(4P), NF800-UEW		123.5	138.5
NF1000-SEW, NF1250-SEW, NF-1600-SEW		161	63

Table 6-16 Installation on left pole side (mm)

Model	Reference drawing	Variable dimensions C	D
NV50-SVFU	Fig. 2 Fig. 5	11	7.5
NV32-SV, NV63-CV/SV/HV		20.5	7.5
NV100-CVFU		30.5	7.5
NV125-CV/SV/HV		20.5	7.5
NV125-SVU/HVU		41.5	7.5
NV125-SEV/HEV, NV250-CV/SV/HV/SEV/HEV		38	7.5
NV250-CVU/SVU/HVU		48	7.5
NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW NF400-ZCW/ZSW/ZEW NF400-SWU/HWU	Fig. 4 Fig. 6	67.5	41.5
NF400-UEW(3P)		107.5	138.5
NF800-CEW/SDW/SEW/HEW/REW NV800-SEW/HEW, NF630-SWU/HWU		76.5	41.5
NF400-UEW(4P), NF800-UEW		123.5	138.5

8. Lead Wire Drawing

■Lead wire lateral drawing … Available to all models

Note *1 Except for BH-D6, BH-D10, BH-DN, BV-D, BV-DN and KB-D.

Remark: 1. Although the following models are applicable to lead wires drawn laterally, they are normally applicable to installation in close contact with the circuit breaker side faces. (The circuit breaker side faces have grooves.)

NF32-SV, NF63-CV/SV/HV~NF250-CV/SV/HV/UV
NF125-SEV/HEV, NF250-SEV/HEV, NF125-RGV
NF250-RGV, NF125-SGV/LGV/HGV~NF250-SGV/LGV/HGV
NV32-SV, NV63-CV/SV/HV~NV250-CV/SV/HV
NV125-SEV/HEV, NV250-SEV/HEV
NF50-SVFU, NF100-CVFU, NF125-SVU/HVU,
NF250-CVU/SVU/HVU, NV100-CVFU, NV125-SVU/HVU
NV250-CVU/SVU/HVU

(When a 4-pole model among the above models has accessories installed on the right pole side, the lead wires are 400mm long.)

■Specifications for lead wires

Table 6-17

Applicable model	Kind of lead wire	Lead wire thickness	Lead wire length	Example of ring mark
1000A frame or above	Heat-resistant wire	0.75mm²	450mm	98/ALa (Red), 96/ALb (Blue), 95/ALc (Gray), 14/AXa (Brown), 12/AXb (Black), 11/AXc (White), C1/S1 (Red), C2/S2 (Red), J1/UC1 (White), J2/UC2 (White) A terminal symbol is indicated on each lead wire with a ring mark.
30 to 800A frames except above models		0.5mm²		

9. Lead Wire Terminal Block

(1) Vertical lead wire terminal block (SLT)

The lead wire terminal blocks for plug-in terminal blocks are available (P-LT). The drilling size of these terminal blocks differs from the standard size. Consult us for details.

For a flush plate type circuit breaker, a terminal block will be installed on the circuit breaker rear face. (Specify as FP-LT.)

Note *1 When the circuit breaker body is equipped with internal accessories and electrical operation device of motor-driven type (2) or spring charge type (2), the circuit breaker is normally provided with a lead wire terminal block.

■MCCB

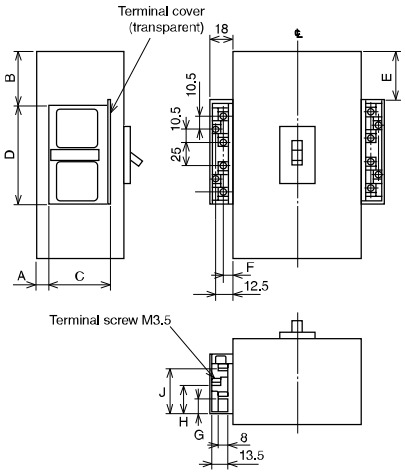


Table 6-18-1 Table of variable dimensions

(mm)

Model		A	B	C	D	E	F	G	H	J
NF30-FAU, NF50-FAU	(*1)	7	1.5	44.5	69	–	9	10.5	22.5	34.5
NF100-SRU	(*1)	16	16.5	44.5	86.5	16.5	6	10.5	22.5	34.5
NF100-HRU	(*1)	22	16.5	44.5	86.5	16.5	6	10.5	22.5	34.5
NF50-SVFU		16.5	17	44.5	86.5	17	6	10.5	22.5	34.5
NF32-SV, NF63-CV/SV/HV NF63-HDV		7	26.5	54	86.5	26.5	7	14	26	38
NF100-CVFU		7	36.5	54	86.5	36.5	7	14	26	38
NF125-CV/SV/HV		7	26.5	54	86.5	26.5	7	14	26	38
NF125-SVU/HVU		7	47.5	54	86.5	47.5	7	14	26	38
NF125-UV		7	87.5	54	86.5	87.5	7	14	26	38
NF250-UV		7	119	54	86.5	119	7	14	26	38
NF125-SEV/HEV/HDVA NF250-CV/SV/HV/SEV/HEV/HDVA		7	44	54	86.5	44	7	14	26	38
NF125-RV, NF250-RV		7	28.5	54	86.5	28.5	7	14	26	38
NF250-CVU/SVU/HVU		7	54	54	86.5	54	7	14	26	38
NF400-CW/SW/SEW/HEW/REW, NF400-SWU/HWU NF630-CW/SW/SEW/HEW/REW		41	79.5	54	86.5	79.5	7	14	26	38
NF800-CEW/SDW/SEW/HEW/REW, NF630-SWU/HWU			88.5	54	86.5	88.5	7	14	26	38
NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW		62.5	173	52	86.5	173	7	14	26	38
NF400-UEW(3P)		138	119.5	54	86.5	119.5	7	14	26	38
NF400-UEW(4P), NF800-UEW			135.5	54	86.5	135.5	7	14	26	38
NF50-FHU		14	5	44.5	86.5	5	7	10	22	34
NF100-FHU		14	7	44.5	86.5	–4	7	10	22	34
NF400-HDW		47	79.5	54	86.5	79.5	7	14	26	38
NF800-HDW		47	88.5	54	86.5	88.5	7	14	26	38

Note *1 The terminal positions are different from those shown in the left figure. Consult us for details.
Remark: 1. Terminal screw tightening torque: M3.5 … 1.1 ± 0.1N·m

ELCB

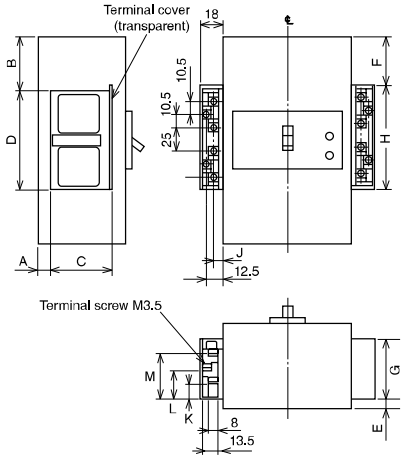


Table 6-18-2 Table of variable dimensions

(mm)

Model		A	B	C	D	E	F	G	H	J	K	L	M
NV30-FAU, NV50-FAU	(*1)	7	1.5	44.5	69	–	–	–	–	9	10.5	22.5	34.5
NV100-SRU	(*1)	16	16.5	44.5	86.5	–	–	–	–	6	10.5	22.5	34.5
NV100-HRU	(*1)	22	16.5	44.5	86.5	–	–	–	–	6	10.5	22.5	34.5
NV50-SVFU		16.5	17	54	86.5	16.5	17	54	86.5	6	10.5	22.5	34.5
NV32-SV, NV63-CV/SV/HV		7	26.5	54	86.5	7	26.5	54	86.5	7	14	26	38
NV100-CVFU		7	36.5	54	86.5	7	36.5	54	86.5	7	14	26	38
NV125-CV/SV/HV		7	26.5	54	86.5	7	26.5	54	86.5	7	14	26	38
NV125-SVU/HVU		7	47.5	54	86.5	7	47.5	54	86.5	7	14	26	38
NV125-SEV/HEV, NV250-CV/SV/HV/SEV/HEV		7	44	54	86.5	7	44	54	86.5	7	14	26	38
NV250-CVU/SVU/HVU		7	54	54	86.5	7	54	54	86.5	7	14	26	38
NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW, NV400-SWU/HWU		41	79.5	54	86.5	26.5	79.5	52	92	7	14	26	38
NV800-SEW/HEW		41	88.5	54	86.5	26.5	88.5	52	92	7	14	26	38
NV50-FHU		14	5	44.5	86.5	14	5	44.5	86.5	7	10	22	34
NV100-FHU		14	7	44.5	86.5	14	–4	44.5	86.5	7	10	22	34

Notes *1 The terminal positions are different from those shown in the left figure. Consult us for details.
Remark : 1. Terminal screw tightening torque: M3.5 … 1.1 ± 0.1N·m

14-terminal SLT

SLT for installing three or more internal accessories on the left pole side

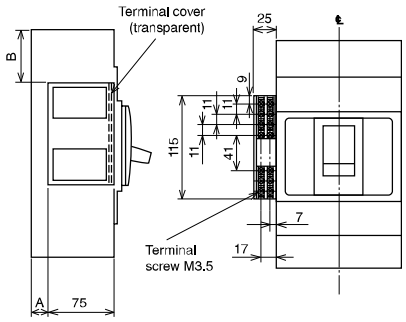


Table 6-18-3 Table of variable dimensions

(mm)

Model		A	B
MCCB	ELCB		
NF400-CW/SW/SEW NF400-HEW/REW NF630-CW/SW/SEW NF630-HEW/REW	NV400-CW/SW/SEW NV400-HEW NV630-CW/SW/SEW/HEW	20	60
NF400-UEW(3P)	–	117	100
NF800-CEW/SDW/SEW NF800-HEW/REW	NV800-SEW/HEW	20	69
NF400-UEW(4P), NF800-UEW	–	117	116
NF1000-SEW, NF1250-SEW NF1600-SEW	–	35	154

Remarks : 1. The terminal positions are different from those shown in the left figure. Consult us for details.
2. Terminal screw tightening torque: M3.5 … 1.1 ± 0.1N·m

10. Test Button Module (TBM)

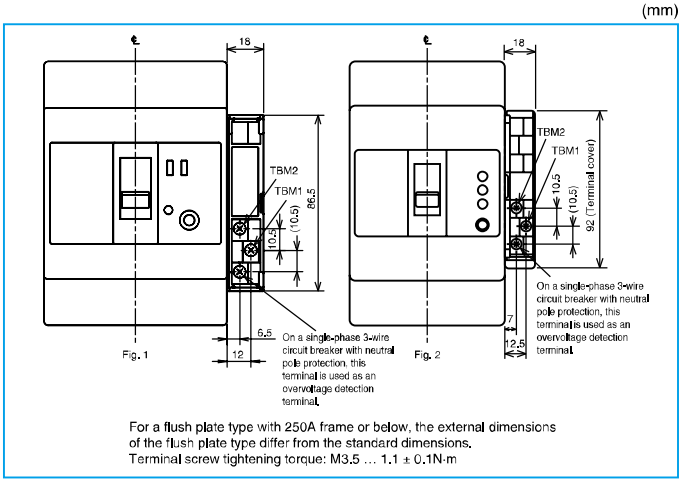
- The test button is kept pressed while control input voltage is applied to the button. (When ELCB of time delay type is used, apply voltage for 2 seconds or more.)
- The test button module is supplied with voltage through a circuit isolated from the main circuit. It can share the control sequence with SHT of a molded case circuit breaker.
- The test button modules can be connected in parallel.
- The module is normally provided with a vertical lead wire terminal block (SLT).

Table 6-19

(mm)

Model	NV32-SV NV63-CV/SV/HV NV125-CV/SV/HV NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV NV50-SVFU NV100-CVFU NV125-SVU/HVU NV250-CVU/SVU/HVU	NV400-CW/SW NV630-CW/SW NV400-SEW~NV800-SEW NV400-HEW~NV800-HEW
Control input Rated voltage (V)	Compatible with 100 to 240AC and 100 to 240DC (24DC) (*1)	
Control input (VA)	1.5VA or less	1VA or less
Reference drawing	Fig. 1	Fig. 2

Note *1 Unless otherwise specified, the module will be manufactured for 100 to 240VAC and 100 to 240VDC.
In the case of 24VDC, specify the voltage.
Remark: 1. The length of the lead wires to be connected to TBM1 and 2 shall be 100 mm or less.



11. Pre-Alarm Module (PAL)

The pre-alarm is a function to output an alarm when the load current exceeds the preset current value. It is helpful in securing continuous power supply and preventive maintenance.
It can be fitted to electronic circuit breakers with a frame size from 125 to 1600A.

■ 125 and 250A frames

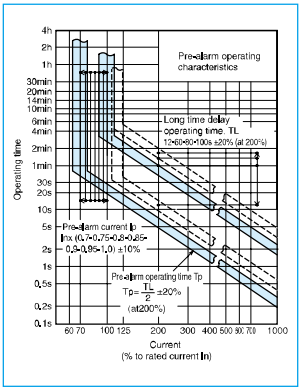
● Pre-alarm module (PAL module)

The standard modules have SLT. Other internal accessories cannot be installed on the right pole side.
A control power supply (compatible with 100 to 240VAC and DC) is necessary. The control power supply voltage range is 85 to 246VAC/DC, and the required volt-ampere is 5VA.

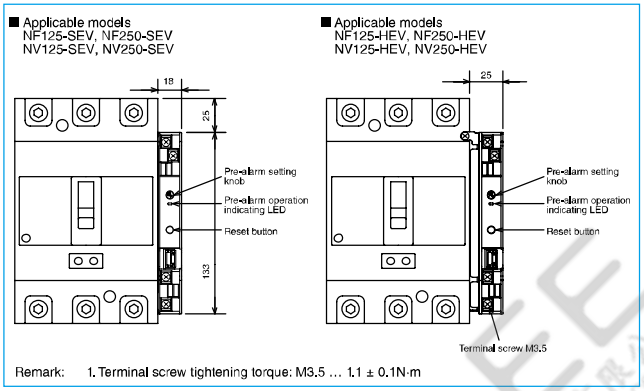
Table 6-20-1

Model	Switching capacity Contact output (1a)	Resetting method
NF125-SEV NF125-HEV NF250-SEV NF250-HEV NV125-SEV NV125-HEV NV250-SEV NV250-HEV	125VAC 2A 30VDC 2A 250VAC 2A 100VDC 0.3A	Press the reset button, or turn off the control power supply.

Pre-alarm characteristics



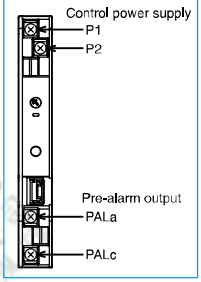
Dimensional drawing of pre-alarm module (mm)



Remark: 1. Terminal screw tightening torque: M3.5 … 1.1 ± 0.1N·m

Terminal arrangement

NF125-SEV NF125-HEV
NF250-SEV NF250-HEV
NV125-SEV NV125-HEV
NV250-SEV NV250-HEV



● Pre-alarm LED indication

When the load current exceeds the preset current value, the LED lamp on the pre-alarm module front panel starts blinking. When the pre-alarm output is given, the lamp stops blinking and turns on.

● Pre-alarm current setting (Ip setting)

The pre-alarm current can be set to the rated current In × 0.7-0.75-0.8-0.85-0.9-0.95-1.0 with the knob on the pre-alarm module front panel.

■ 400A frame or above

● Solid state relay (SSR) output (PAL lead)

The lead wires are drawn out. On the right pole side, only internal accessories with lead wires drawn out can be installed. A control power supply is unnecessary.

Table 6-20-2

Model	Switching capacity Solid state relay (SSR) — Non-contact output	Resetting method
NF400-SEW NF400-HEW NF400-REW NF400-UEW NF630-SEW NF630-HEW NF630-REW NF800-CEW NF800-SEW NF800-HEW NF800-REW NF800-UEW NF1000-SEW NF1250-SEW NF1600-SEW NV400-SEW NV400-HEW NV630-SEW NV630-HEW NV800-SEW NV800-HEW	24 to 240VAC/DC 20mA	When the load current becomes lower than the preset current value, the alarm is reset.

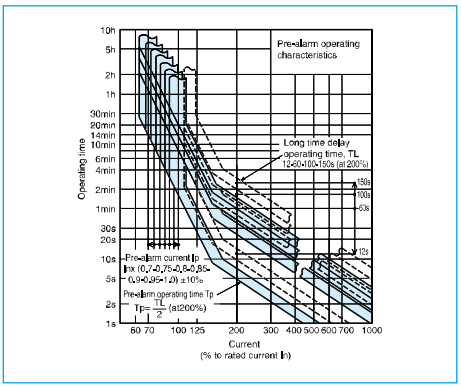
● Pre-alarm module (PAL module)

The standard modules have SLT. Other internal accessories cannot be installed on the right pole side.
A control power supply (compatible with 100 to 200VAC) is necessary. The control power supply voltage range is 80 to 242VAC, and the required volt-ampere is 10VA.

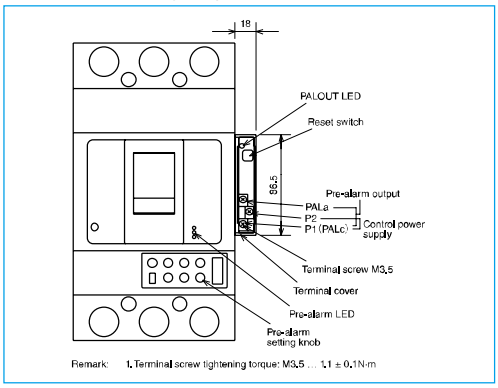
Table 6-20-3

Model	Switching capacity Contact output (1a)	Resetting method
NF400-SEW NF400-HEW NF400-REW NF400-UEW NF630-SEW NF630-HEW NF630-REW NF800-CEW NF800-SEW NF800-HEW NF800-REW NF800-UEW NF1000-SEW NF1250-SEW NF1600-SEW NV400-SEW NV400-HEW NV630-SEW NV630-HEW NV800-SEW NV800-HEW	100VAC or 200VAC, 2A	Press the reset button, or turn off the control power supply.

Pre-alarm characteristics



Detailed drawing of pre-alarm module

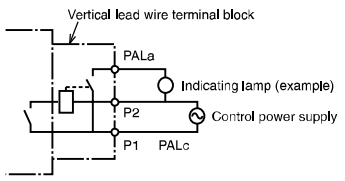


Remark: 1. Terminal screw tightening torque: M3.5 … 1.1 ± 0.1N·m

Pre-alarm module output rating

AC		
Voltage V	Current (A)	
	Resistive load	Inductive load
200	3	2
100	3	2

A control power supply (compatible with 100 to 200VAC) is necessary. For the wiring method, see the following figure. (The control power supply voltage range is 80 to 242VAC.) The required volt-ampere is 10VA.



● Pre-alarm LED display (standard device)

When the load current exceeds the preset current value, the LED lamp on the circuit breaker front panel starts blinking. When the pre-alarm output is given, the lamp stops blinking and turns on at PALOUT LED.

● Pre-alarm current setting (Ip setting)

The pre-alarm current can be set to the rated current In × 0.7-0.75-0.8-0.85-0.9-0.95-1.0 with the knob on the circuit breaker front panel.

1. F-Type Operating Handle

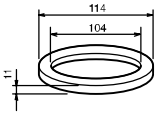
Operating handle of breaker mount type to be installed to circuit breaker body

●Appearance (Color: Munsell N1.5)

- The handle provides an isolating function in combination with the circuit breaker body (except F10SW and above).
- It has a safety device which prevents the circuit breaker turning on while the door is open.
- It can be locked in the OFF position. (Up to 3 commercially available padlocks (35mm and 40mm) can be fitted. A type which can be locked in the ON or OFF position can be manufactured. Specify the type if required.) On circuit breakers with a frame size of 1000A or above, the handle can be locked in the ON or OFF position. (If it is necessary to lock the handle only in the OFF position, specify so.)
- It is in protection class IP54 (IEC 60529). (For circuit breakers with a frame size of 1000A or above, the protection class (IEC 60529) is IP3X (IP5X when dust-proof packing is provided).

Dust-proof packing (optional)

Type nema	Operating handle type name	Delivery category
PFL	F10SW~F120UR	●



●Outline drawings

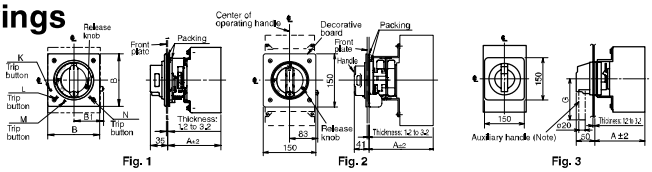
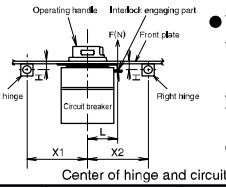


Fig. 1 Fig. 2 Fig. 3

Note Auxiliary handles are provided with F10SW, F10SW4P and F120UR as standard.
Auxiliary handles (F-HT) are provided for F-4S ~ F-6SUL as option.

●Center of hinge and breaker

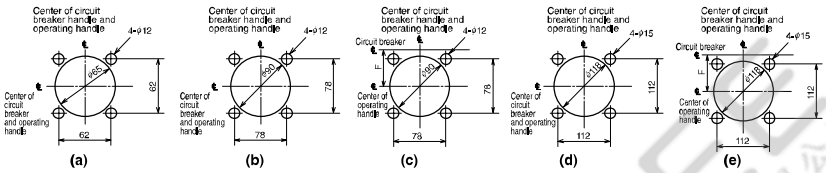


● The left drawing shows the relationship between the hinges and circuit breaker viewed from the load side of the circuit breaker.

Center of hinge and circuit breaker (mm)

	Hinge on left side		Hinge on right side	
	H	X_1	H	X_2
For 30 to 250A frames	0 or more	(5H+85) or more	Less than 10	170 or more
			10 or more	(5H+120) or more
For 400 to 800A frames	0 or more	(5H+85) or more	0 or more	(4H+120) or more
For 1000 to 1600A frames	0 or more	(8H+150) or more	0 or more	(4H+120) or more

●Dimensional drawings of front plate drilling



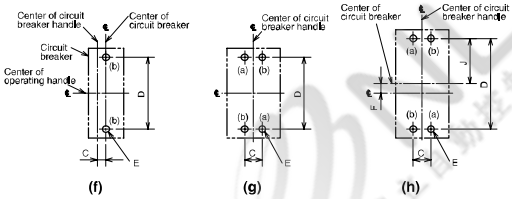
(a) (b) (c) (d) (e)

Remarks: 1. The handle is opened and closed in the projection area of the handle and does not run over the projection area of the circuit breaker (except when the auxiliary handle is provided.)
2. When the operating handle is fitted to NV, the test button cannot be pressed easily. If necessary, use a circuit breaker with TBL or TBM. When using an Earth Leakage Alarm Breaker, use the externally resetting type (ECA-SLT RST) or automatically resetting type (ARS).

●Door lock withstand load

	F(N)	L(mm)
F-05~F-2	500	50
F-4~F-8		68

●Dimensional drawings of circuit breaker mounting holes



(f) (g) (h)

Table 6-21 Table of variable dimensions

Type name	Door opening position: OFF position	Door opening position: Reset position	Applicable model: MCCB	Applicable model: Number of poles	Applicable model: ELCB	Applicable model: Number of poles	Reference drawing	Drilling plan		A (*1)	B	B1	C	D	E	F	G	J	Trip button position (*4)	Mounting screw
F-05SV2 F-05SVE2	–	○	NF32-SV NF63-CV, NF63-SV, NF63-HV	2P	–	–	Fig. 1	b	f	105	104	58	13	111	M4 screw or ϕ5	–		–	N	(a) Circuit breaker mounting screw (2 pcs.) (b) Circuit breaker handle mounting screw (2 pcs.) F-05SV2 F-05SVE2 F-1SV2 F-1SVE2 F-05SRUL2 F-03SVUL2 F-05SVUL2 Only the screws (b) are used for the following models.
F-05SV F-05SVE (*2)	–	○	NF32-SV NF63-CV, NF63-SV, NF63-HV	3P • 4P	NV32-SV NV63-CV, NV63-SV, NV63-HV	2P • 3P			g				25						L	
F-1SV2, F-1SVE2	–	○	NF125-CV, NF125-SV	2P	–	–			f	105			15			–		–	N	
F-1SV F-1SVE	–	○	NF125-CV, NF125-SV NF125-HV	3P • 4P 2P • 3P • 4P	NV125-CV, NV125-SV, NV125-HV	3P • 4P			g				30						L	
F-1UV, F-1UVE	–	○	NF125-UV	2P • 3P • 4P	–	–		c	h					172		31		86	L	(b)
F-2SV F-2SVE	–	○	NF125-SEV, NF125-HEV, NF125-RV NF125-SGV, NF125-LGV, NF125-HGV NF160-SGV, NF160-LGV, NF160-HGV NF250-SGV, NF250-LGV, NF250-HGV NF250-CV, NF250-SV, NF250-HV NF250-SEV, NF250-HEV, NF250-RV	2P • 3P • 4P	NV125-SEV, NV125-HEV NV250-CV, NV250-SV, NV250-HV NV250-SEV, NV250-HEV	3P • 4P		b	f	107			35	126		–	–	–	K	
F-2UV, V-2UVE	–	○	NF250-UV	2P • 3P • 4P	–	–		c	h					201		38		100.5	K	
F-1SVUL	–	○	NF125-SVU, NF125-HVU	3P	NV125-SVU, NV125-HVU	3P		c	h	105			30	123		6		61.5	L	
F-2SVUL	–	○	NF250-CVU, NF250-SVU, NF250-HVU	3P	NV250-CVU, NV250-SVU, NV250-HVU	3P		b	g	107			35	126					K	
F-05SRUL2	–	○	NF100-SRU NF100-HRU	2P	NV100-SRU –	2P			f	110 116			0	92					–	
F-05SRUL	–	○	NF100-SRU NF100-HRU	3P	NV100-SRU NV100-HRU	3P			g	110 116			25			–		–		
F-03SVUL2	–	○	NF50-SVFU	2P	NV50-SVFU	2P		a	f	105	80	50	9	82.5					M	
F-03SVUL	–	○		3P		3P			g				18							
F-05SVUL2	–	○	NF100-CVFU	2P	–	–		b	f		104	58	13	111					N	
F-05SVUL	–	○		3P	NV100-CVFU	3P			g				25						L	
F-4S F-4SE	–	○	NF400-CW, SW, SEW, HEW, REW NF630-CW, SW, SEW, HEW, REW	2P, 3P, 4P	NV400-CW, SW, SEW, HEW NV630-CW, SW, SEW, HEW	3P, 4P	Fig. 2	d	g	183	–	–	44	194	M6 screw or ϕ7	–	–	–	–	(a)(b) Circuit breaker mounting screw (4 pcs.)
F-4U F-4UE	–	○	NF400-UEW	3P	–	–		e	h	280				234		20				
F-8S F-8SE	–	○	NF800-CEW, SDW, SEW NF800-HEW, REW	2P, 3P, 4P	NV800-SEW, HEW	3P		d	g	183			70	243		–				
F-8U F-8UE	–	○	NF800-UEW NF400-UEW(4P)	3P, 4P	–	–		e	h	280				290		23.5				
F-4SUL	–	○	NF400-SWU/HWU	3P	–	–		d	g	183			44	194		–				
F-6SUL	–	○	NF630-SWU/HWU	3P	–	–							70	243						
F10SW (*3)	–	○	NF1000-SEW NF1250-SEW/SDW NF1600-SEW/SDW	2P, 3P	–	–	Fig. 3	d	g	221	–	–	70	375	M8 screw or ϕ10	–	200			
F10SW4P (*3)				4P																

Notes *1 The dimensions for the front connection type are shown. On some models of the rear connection type and plug-in type, the reference surface for mounting the circuit breaker may change.
*2 For the 4-pole plug-in type, a special handle is required. Consult us for details.
*3 If a handle which can be locked only in the OFF position is required, specify so.
*4 The circuit breaker can be tripped by operating the trip button while the door is open.
*5 Do not remove the sponge packing used to secure the protection class IP51. Fit the supplied packing without fail.
*6 The handle cannot be used when the circuit breaker is installed on IEC 35mm rails.

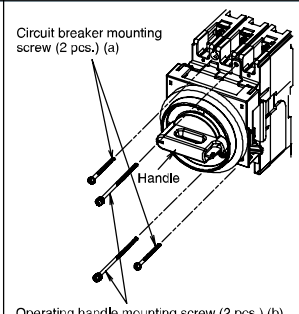
Remarks: 1. The handles with E in their model names are designed for emergency stop devices.
2. The standard handles are Reset Open Type which can open the doors only when they are reset to open. OFF Open type handles which can open the doors when they are in the OFF position can be manufactured to order.
3. A handle which can be operated and can indicate the ON and OFF positions in the same manner as the standard models even if the circuit breaker is installed horizontally can be manufactured to order.
4. F10SW and higher models do not conform to the isolation function.
5. Handles which are opened and closed in the OFF position can be opened also in the reset position.

●Installation procedure For details, please refer to Operating Handle Installation Manual supplied with the product.

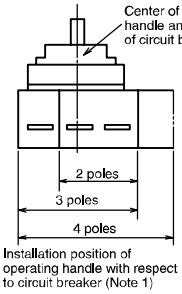
① Installation to a breaker Install the operating handle to the circuit breaker in accordance with the following procedure.

Installation procedure

250A frame and below



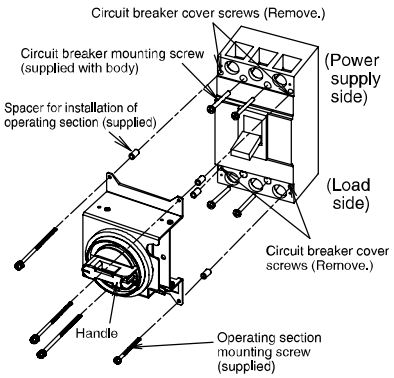
(Installation procedure)
① Install the circuit breaker on the panel with the two circuit breaker mounting screws through the holes (a).
② Install the operating handle with the supplied two operating handle mounting screws through the holes (b).



(In the case of F-05SV2, F-1SV2, F-05SRUL2, F-05SUL2 and F-1SUL2

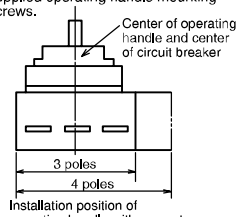
Tighten the circuit breaker and operating handle together with the supplied two operating handle mounting screws.

400 to 1600A frames



(In the case of F-4S to F-6SUL)
The operating handle mounting screws are tapping screws without washers or spring washers.

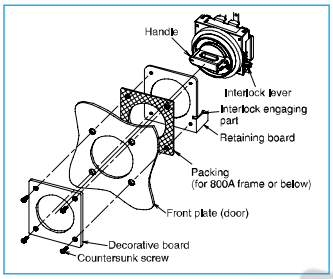
(Installation procedure)
(1) Remove the circuit breaker cover screws in the same positions as the operating handle mounting holes.
(2) Install the circuit breaker with the four circuit breaker mounting screws.
(3) Fit the spacer(s) for installation of operating handle between the circuit breaker and operating handle. (The number of the spacers varies depending on the model.)
(4) Install the operating handle with the supplied operating handle mounting screws.



Note *1 In the case of F-05SRUL2, the center of the operating handle is the same as the center of the circuit breaker.

② Installation of decorative board and retaining board

Drill holes in the door according to the drilling size shown on the previous page, and tighten the decorative board and retaining board with the supplied countersunk screws. In the case of 800A frame or below, fit the supplied packing to the position shown right.



●Door locking mechanism

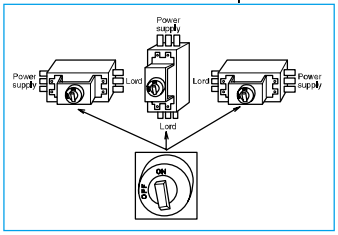
The panel door can be opened only when the operating handle is operated to open (reset). (On F-4S to F10SW, the door lock is held in the released state even if the handle is returned to OFF.) The door can be opened when the handle is in the ON position if the release knob is operated with a tool.

●Operation locking mechanism

Circuit breakers with a frame size of 800A or below can be locked by setting the handle in the OFF position. (Operating handles which can lock circuit breakers in the ON or OFF position can be manufactured.) Operate the locking part, and lock the handle with padlocks. Up to three padlocks can be fitted.
Lockout hasps (scissors locks) can be used.
If the circuit breaker trips even when the operating handle is locked in the ON position, also the operating handle indicates that it has tripped.
[F-2SUL or below: Only when one 35mm padlock (weighing 70g or less) is used
F-4S or above: Only when one 40mm padlock (weighing 100g or less) is used]
To 800A frame or below, padlocks with dimension B of 3mm to 8mm can be applied.
For 1000A or above, padlocks with dimension of 3mm to 6mm can be applied. (When using padlocks of 3mm or less, please consult us.)

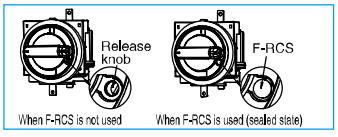
●Circuit breaker installation direction (except UL 489 listed circuit breakers)

We can supply circuit breakers on which the handles and their ON and OFF positions are in the same directions as on vertically installed circuit breakers even when they are installed horizontally. The door drilling size is identical. If you intend to install an operating handle on a horizontally installed circuit breaker, specify "Y" (horizontal installation with power supply on the left) or "Z" (horizontal installation with power supply on the right) at the end of the model name. (Ex.: F-4S Y)



●Sealing of release knob

The use of an optional part, Release Protection "F-RCS," can prevent the panel door being opened by operating the release knob. (800A frame or below)



● Operation Lock Devices

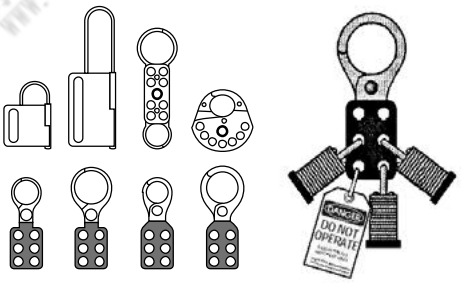
(1) Padlock

Padlock Dimensions
Use commercially available padlocks. (mm)

Applicable model	A (Nominal size)	B
All models	35	5
	40	6.5 or less

Dimension B: Maximum 8mm.

(2) Lockout Devices (Scissors Lock)



●How to order

For 800A frame or below, specify the following specification symbols together with the model name.
- Operation lock: LF ····· Lock in OFF position
- Operation lock: LN ····· Lock in ON or OFF position
- Door opening: DR ····· Reset to open
- Operation lock: DF ····· Open in OFF position
- Installation direction: Blank ··· Power supply upward
- Installation direction: Y ····· Power supply on left
- Operation lock: Z ····· Power supply on right

For a standard product with a frame size of 1000A or above, specify the model name. When it is required to enable the operation lock only in the OFF position, specify the model name and "only lock in OFF position."
If you intend to seal the release knob, place an order for the release protection. (Lot: 10 pcs.)

●Interpretation of model name

(1) For 800A frame or below

F	–	1	SV	UL	E	2
1)		2)	3)	4)	5)	6)

1) F: Operating handle type name
2) 1: Circuit breaker group (0.5, 1, 2, 4, 6 or 8)
3) SV: Classification of circuit breaker (S, SV, H, U, UV, SR or SG)
4) UL: Blank···General product UL···UL 489 listed product
5) E: Blank···Standard E···For emergency stop
6) 2: Blank···3P or 4P 2···2P

(2) For 1000A frame or above

F	10	SW	4P
1)	2)	3)	4)

1) F: Operating handle type name
2) 4: Circuit breaker A frame (10 or 120)
3) SW: Series name
4) 4P: Number of poles (4P) * Not indicated for 3P

2. V-Type Operating Handle

Operating handle of door mount type consisting of operating section to be mounted on circuit breaker body and operating handle on panel door

- The handle provides an isolation function in combination with the circuit breaker body.
- Conforming to the safety regulations of EN Standard (EN 60204-1)
- Protection class (IEC 60529) IP65 as standard
- The handle can be locked only in the OFF position with up to three commercially available padlocks (35mm or 40mm).
- The panel door can be opened in the OFF position. In the ON and trip positions, the panel door is locked and cannot be opened. However, the door can be opened even in the ON and trip positions by operating the release part with a tool.

Appearance (Color: Munsell N1.5)

Outline drawings

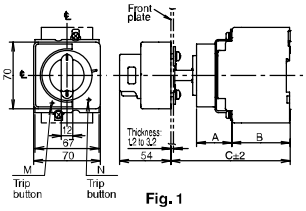


Fig. 1

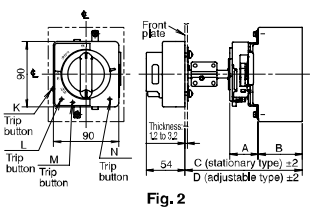


Fig. 2

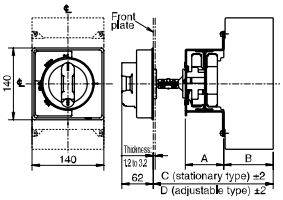
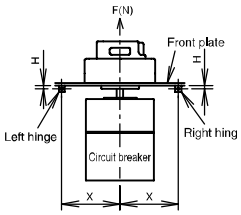


Fig. 3

Note Auxiliary handles (F-HT) are provided for V-4S ~ V-6SUL as option.

Center of hinge and breaker



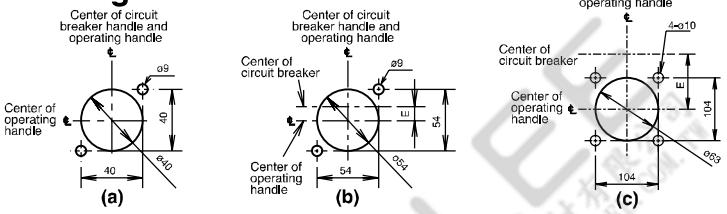
Relationship between hinges and circuit breaker viewed from load side of circuit breaker

(mm)

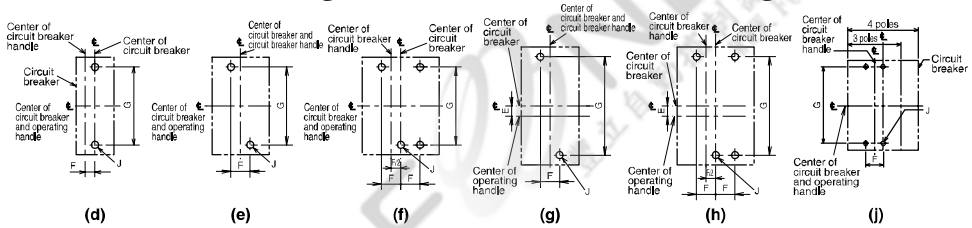
	H	X
For 30 to 250A frames	0 or more	5H+100 or more
For 400 to 800A frames		8H+150 or more

* The above figure shows the relationship viewed from the load side.

Dimensional drawings for front plate drilling



Dimensional drawings of circuit breaker mounting holes



Door lock withstand load

	F(N)
30 to 800A frames	200

Table 6-22 Table of variable dimensions

Type name		Applicable model				Reference drawing			Dimensions (mm)									Trip button position (*5)
Stationary type	Adjustable type	MCCB	Number of poles	ELCB	Number of poles	Dimensional drawing	Drilling plan		A	B	Stationary type C	Adjustable type(*2) D (min)	Adjustable type(*2) D (max)	E	F	G	J	
V-05SV2 V-05SVE2	(*1) Adjusting unit V-AD3S is mounted on stationary type.	NF32-SV NF63-CV, NF63-SV, NF63-HV	2P	–	–	Fig. 2	b	d	39	61	125	–	–	–	12.5	111	M4 screw or ϕ5	N
V-05SV V-05SVE		NF32-SV NF63-CV, NF63-SV, NF63-HV	3P	NV32-SV NV63-CV, NV63-SV, NV63-HV	2P, 3P			e				162	300		25			L
			4P	–	–													
V-1SV2, V-1SVE2		NF125-CV, NF125-SV	2P	–	–			d				–	–	–	15			N
V-1SV V-1SVE		NF125-CV, NF125-SV	3P	NV125-CV, NV125-SV, NV125-HV	3P			e				162	300	–	30			L
			4P		4P			f										
		NF125-HV	2P, 3P	–	–			e										
			4P					f										
V-1UV V-1UVE		NF125-UV	2P, 3P	–	–			g	39					30.5		172		
			4P					h										
V-2SV V-2SVE		NF125-SEV, NF125-HEV, NF125-SGV NF125-LGV, NF125-HGV, NF125-RGV NF160-SGV, NF160-LGV, NF160-HGV NF250-CV, NF250-SV, NF250-HV NF250-SGV, NF250-LGV, NF250-HGV NF250-SEV, NF250-HEV, NF250-RGV	2P, 3P	NV125-SEV, NV125-HEV NV250-CV, NV250-SV, NV250-HV NV250-SEV, NV250-HEV	3P			e	41			162	300	–	35	126		K
			4P		4P			f										
V-2UV V-2UVE		NF250-UV	2P, 3P	–	–			g						37.5		201		
			4P					h										
V-03SVUL2	–	NF50-SVFU	2P	NV50-SVFU	2P	Fig. 1	a	d	37	61	125	–	–	–	9	82.5	M4 screw or ϕ5	M
V-03SVUL			3P		3P			e							18			N
V-05SVUL2	(*1) Adjusting unit V-AD3S is mounted on stationary type.	NF100-CVFU	2P	–	–	Fig. 2	b	d	39	61	125	–	–	–	12.5	111		N
V-05SVUL			3P	NV100-CVFU	3P			e				162	300		25			L
V-1SVUL		NF125-SVU, NF125-HVU	3P	NV125-SVU, NV125-HVU	3P		b	g	39	61	125	162	300	6	30	123		L
V-2SVUL		NF250-CVU/SVU/HVU	3P	NV250-CVU/SVU/HVU	3P			e	41					–	35	126		K
V-05SRUL2	(*1) Adjusting unit V-AD3L is mounted on stationary type.	NF100-SRU	2P	NV100-SRU	2P		b	d	44	61	130	–	–	–	0	92	M4 screw or ϕ5	–
		NF100-HRU		–	–					67	136							
V-05SRUL		NF100-SRU	3P	NV100-SRU	3P			e		61	130	167	305		25			
		NF100-HRU		NV100-HRU						67	136	173	311					
V-4S V-4SE		NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	2P, 3P, 4P	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW	3P, 4P	Fig. 3	c	j	76	97	191	233	300	–	44	194	M6 screw or ϕ7	–
V-4U V-4UE		NF400-UEW	3P	–	–			h		194	288	330	397	20		234		
V-8S V-8SE		NF800-CEW/SDW/SEW/HEW/REW	2P, 3P, 4P	NV800-SEW/HEW	3P			j		97	191	233	300	–	70	243		
V-4SUL		NF400-SWU/HWU	3P	–	–										44	194		
V-6SUL		NF630-SWU/HWU	3P	–	–										70	243		

Notes
*1 For the adjustable type, purchase the optional adjusting unit V-AD3S or V-AD3L.
*2 The dimensions of the adjustable type models provided with the adjusting unit V-AD3S or V-AD3L are shown.
*3 When using the operating handle for a plug-in type model with a frame size of 250A or below, specify so.
*4 The dimensions on the front connection type are shown. For the rear connection and plug-in types, separately consult us.
*5 The circuit breaker can be tripped by operating the trip button while the door is open. (The trip button position varies depending on the model.)
*6 The handle cannot be used when the circuit breaker is installed on IEC 35mm rails.

Remarks
1. The products whose model names contain E are designed for emergency stop.
2. When the operating handle is fitted to NV, the test button cannot be pressed easily. If necessary, use a circuit breaker with TBL or TBM. When using an Earth Leakage Alarm Breaker, use the externally resetting type (ECA-SLT) or automatically resetting type (ARS).

●Installation procedure For details, please refer to Operating Handle Installation Manual supplied with the product.

① Installation to a breaker Install the operating handle to the circuit breaker in accordance with the following procedure.

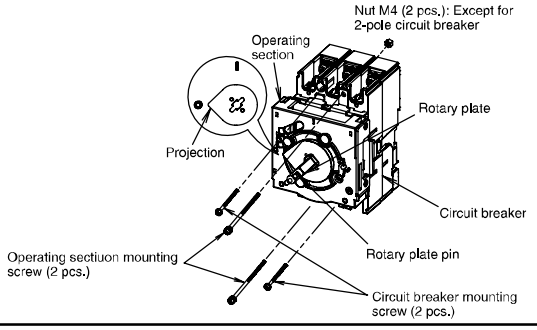
Installation procedure

250A frame and below

(Installation procedure)

① Operating handle for 3- or 4-pole circuit breaker
Set the rotary plate of the operating section to the OFF (symbol O) position, and fit the plate to the circuit breaker with the supplied operating section mounting screws and nuts. Install the circuit breaker to the panel with the circuit breaker mounting screws (2 pcs.).

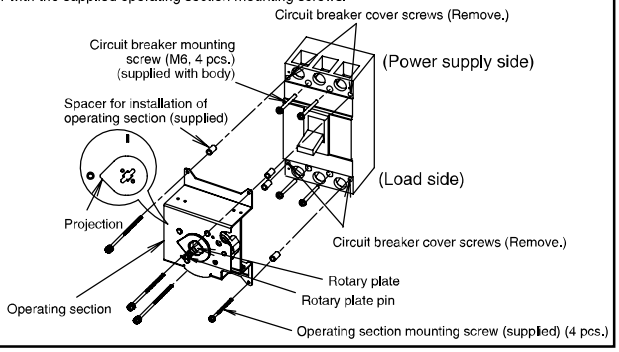
② Operating handle for 2-pole circuit breaker
Install the operating section together with the circuit breaker to the panel with the supplied operating section mounting screws (2 pcs.)



400 to 800A frames

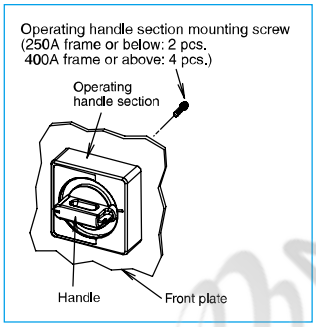
(Installation procedure)

① Remove the circuit breaker cover screws (4 pcs.) in the same positions as the operating handle mounting holes.
② Install the circuit breaker with the circuit breaker mounting screws (4 pcs.).
③ Fit the supplied operating section mounting spacers (4 pcs.) between the circuit breaker and operating handle.
④ Set the rotary plate to the OFF (symbol O) position, and install the operating section to the circuit breaker with the supplied operating section mounting screws.



② Installation of operating handle section

Drill a hole in the door according to the dimensional drawing for front plate drilling given on the previous page, and install the operating handle section in accordance with the following procedure.

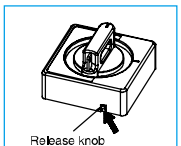


[Confirmation items]

1. The handle should turn smoothly to the ON and OFF positions.
2. When the handle is turned slightly in the ON direction (approx. 5 degrees) when in an OFF state, it should slowly return to the OFF position on its own. Furthermore, when in this state, the OFF position should not change when the handle is lightly forced in the reset direction.
3. When released, the front plate should open and then immediately close.
4. The operating handle section should be parallel with the breaker.

●Door locking mechanism

The operating handle is provided with an interlock mechanism to prevent the door opening in the ON and TRIP positions. In the OFF position, the door can be opened. However, the door can be opened in the ON or TRIP position by pressing the release knob in the arrow direction with a tool (3mm wide and 1.8mm thick).



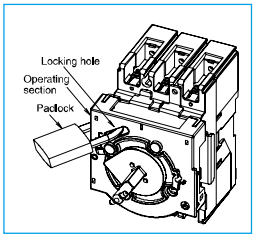
●Operation locking mechanism

① Operating handle section

Operation lock can be set only in the OFF Position. Up to three commercially available padlocks (A = 35 or 40mm) can be fitted. Lockout hasps (scissors locks) can be used. When the operating handle section is locked with padlocks, also the door is locked.

② Operating section

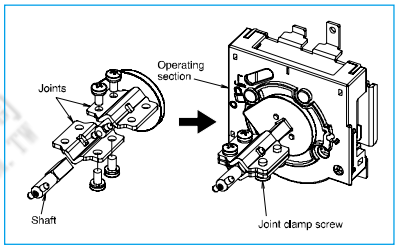
The operating section can be locked so that the circuit breaker will not be turned on carelessly when the inside of the panel is inspected with the panel door open. Fit a padlock through the hole in the operating section of the operating handle.



●Adjusting unit

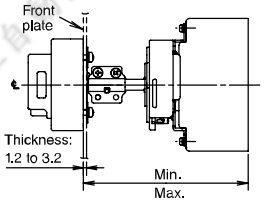
The height from the circuit breaker mounting surface to the panel door can be adjusted by fitting the optional adjusting unit V-AD3S or V-AD3L. Cut the shaft of the adjusting unit according to the height.

Note The adjusting unit is not applicable to 2-pole external type circuit breakers. If it is used on a 2-pole external type circuit breaker, the positions may not be correctly displayed.

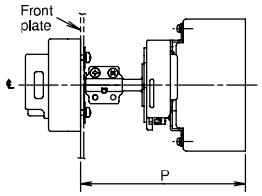


Make adjustments with the adjusting unit as stated below.

①External dimension drawing



②Calculation of shaft cutting allowance



Type name	Dimensions (mm) Min.	Dimensions (mm) Max.	Cutting allowance	Calculation
V-05SV V-05SVUL V-1SV V-1SVUL V-1SUL V-2SV V-2SVUL V-2SUL	162	300	Shaft □8 X 175 Cutting allowance	(Cutting allowance)(P max)(panel size) X = 300 mm - P
V-2SGUL	180	318		
V-4S V-8S V-4SUL V-6SUL	233	300	Shaft □10 X 109 Cutting allowance	

Note The unit is applicable to operating handles for emergency stop (E).

●Padlocks

The user must prepare padlocks.
The dimensions of the padlocks are the same as those shown on page 134.

●How to order

Specify the model name of the operating handle.
For adjustable type, place an order for the adjustment unit. (One lot includes 1 pc.)
250A frame or below: V-AD3S
400 to 800A frames: V-AD3L

●Interpretation of model name

(1) For 800A frame or below

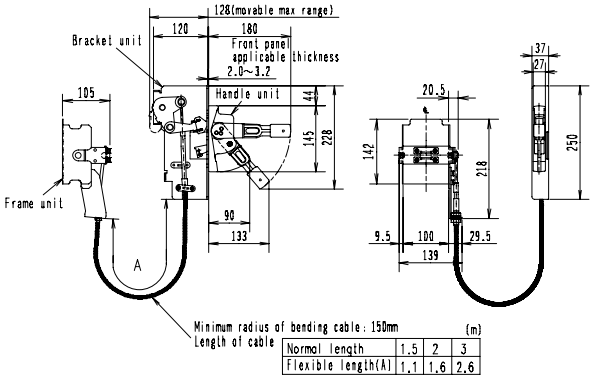
V	–	1	S	UL	E	2
1)		2)	3)	4)	5)	6)

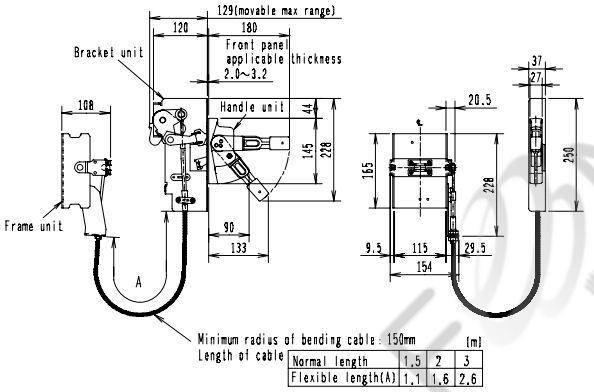
1) V: Operating handle type name
2) 1: Circuit breaker group (0.5, 1, 2, 4, 6 or 8)
3) S: Classification of circuit breaker (S, SV, H, U, UV)
4) UL: Blank···General product UL···UL 489 listed product
5) E: Blank···Standard E···For emergency stop
6) 2: Blank···3P or 4P 2···2P

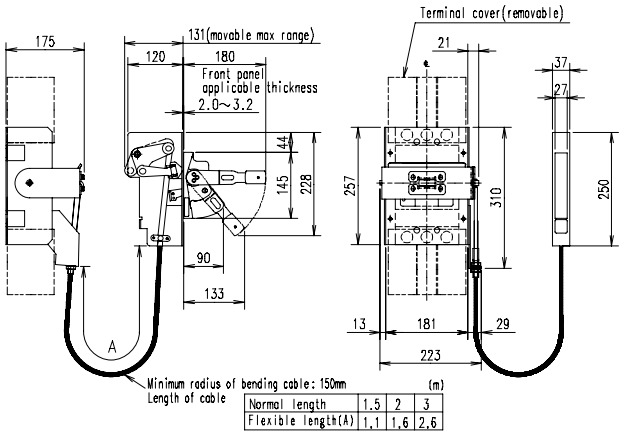
3. C-type (cable-type) Operating Handle

- The panel door can only be opened in the OFF position.
- It has a safety device which prevents the circuit breaker turning on while the door is open.
- The handle can be locked only in the OFF position with up to three commercially available padlocks.
- The panel door can be opened in the ON position by turning the release knob.
- Protection class (IEC 60529) IP23 as standard.
- The handle does not provide an isolation function.

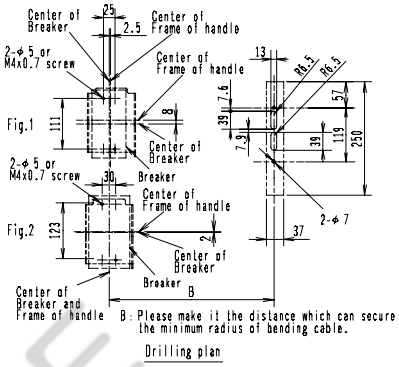
●Outline drawings

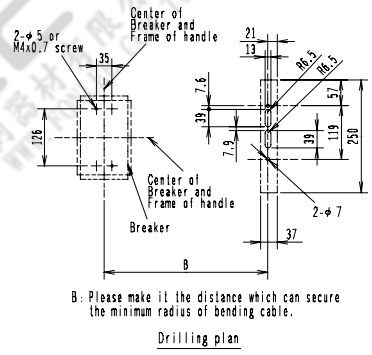


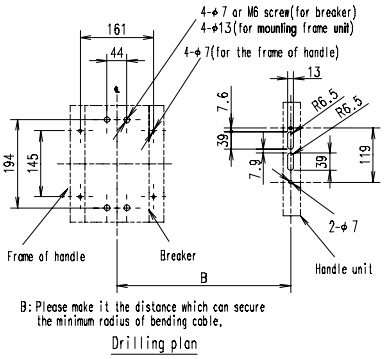




●Dimensional drawings of circuit breaker mounting holes







●Door interlock drawing

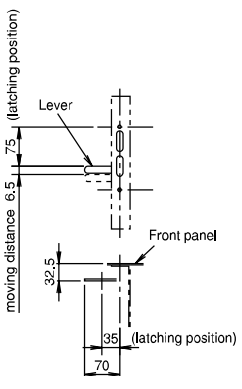


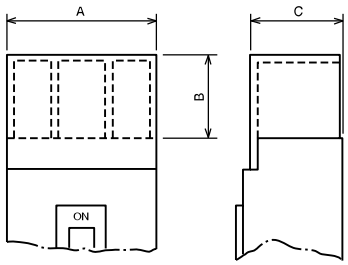
Table 6-23

Type name	Applicable model		Number of poles	Reference drawing	
	MCCB	ELCB		Dimensional drawing	Drilling plan
C1SVU	NF100-CVFU	NV100-CVFU	3P	Fig.1	a
	NF125-SVU/HVU	NV125-SVU/HVU			
C2SVU	NF250-CVU/SVU/HVU	NV250-CVU/SVU/HVU		Fig.2	b
C4SWU	NF400-SWU/HWU	NV400-SWU/HWU		Fig.3	c

Notes *1 Only 3-pole models are available.
*2 For internal accessories, only models with lead wires drawn out can be used.

4. Terminal Covers

The terminal covers are used to avoid exposure of live parts. Many kinds of terminal covers, including large terminal covers (TC-L), small terminal covers (TC-S), transparent terminal covers (TTC), rear terminal covers (BTC) and plug-in terminal covers (PTC), for various models and applications are available, and they are helpful. (The terminal covers cannot be fitted to electrically operated circuit breakers of spring charged type (2) and motor-drive type (2). The standard terminal covers can be used for the spring charged type (1). For the motor-drive type, special terminal covers can be manufactured. Consult us for details.)



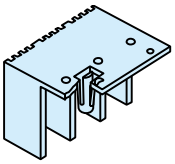
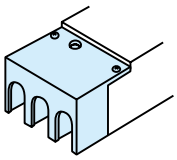
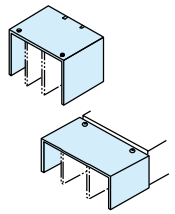
(TC-L·TC-S·TTC)

●Quick terminal covers

These covers are very convenient because they can be fitted only by inserting them into the mounting holes in the circuit breaker body. To remove the terminal cover, shift the projections of the terminal cover with the tip of a slotted screwdriver or finger, and draw it out.

●Table of variable dimensions

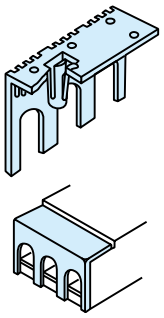
Table 6-24 Large terminal covers (TC-L)

Type name	Color	Number of poles of circuit breaker	Applicable model		Dimensions (mm)			Contents			Appearance	Remarks
			MCCB	ELCB	A	B	C	Number of covers	Cover mounting screw	Sealing plate		
TCL-05FH2	White	2	NF50-FHU	NV50-FHU	50	27	55.5	2	–	–		
TCL-05FH3	White	3			75	27	55.5	2	–	–		
TCL-05SV2 (*1)(*7)	White	2	NF32-SV NF63-CV/SV/HV	–	50	25	65.5	2	–	2		
TCL-05SV2L (*1)(*8)	White	2	NF32-SV NF63-CV/SV/HV	–	50	40	65.5	2	–	2		
TCL-05SV3 (*2)(*7)	White	3	NF32-SV NF63-CV/SV/HV	NV32-SV, NV63-HV	75	25	65.5	2	–	2		
	White	2, 3	–	NV63-CV/SV								
TCL-05SV3L (*2)(*8)	White	3	NF32-SV, NF63-CV/SV/HV	NV32-SV, NV63-HV	75	40	65.5	2	–	2		
	White	2, 3	–	NV63-CV/SV								
TCL-05SV4 (*2)	White	4	NF63-SV/HV	–	100	25	65.5	2	–	2		
TCL-1SV2 (*1)	White	2	NF125-CV/SV	–	60	40	65.5	2	–	2		
TCL-1SV3 (*2)	White	3	NF125-CV/SV	NV125-CV/SV/HV	90	40	65.5	2	–	2		
	White	2, 3	NF125-HV/UV	–								
TCL-1SV4 (*2)	White	4	NF125-SV/HV/UV	NV125-SV/HV	120	40	65.5	2	–	2		
TCL-1FH3	White	3	NF100-FHU	NV100-FHU	75	42	55.5	2	–	2		
TCL-2SV3 (*2)(*9)(*11)	White	2, 3	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV NV250-SEV/HEV NV125-SEV/HEV	105	40	65.5	2	–	2		
TCL-2SV3L (*2)(*10)(*11)	White	2, 3	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV NV250-SEV/HEV NV125-SEV/HEV	105	50	65.5	2	–	2		
TCL-2SV4 (*2)(*4)(*11)	White	4	NF250-SV/HV/UV NF250-SEV/HEV NF125-SEV/HEV (*5)	NV250-SV/HV NV250-SEV/HEV NV125-SEV/HEV	140	40	65.5	2	–	2		
TCL-4SW3 (*2)	White	2, 3	NF400-CW/SW/SEW NF630-CW/SW/SEW	NV400-CW/SW/SEW NV630-CW/SW/SEW	171	110	99.5	2	–	2	Quick type The cover can be sealed with the sealing plate.	
	White	3	NF400-SEW with MDU (*6)	–								
			NF400-UEW (*3)	–	171	110	132.5/196.5	2	–			
TCL-4SW4 (*2)	White	4	NF400-SW/SEW/HEW NF630-SW/SEW NF400-SEW with MDU (*6)	NV400-SEW/HEW NV630-SEW	240	110	105	2	6	–		Use in combination with insulating barrier.
TCL-8SW3 (*2)	White	2, 3	NF800-CEW/SDW/SEW/HEW/REW	NV800-SEW/HEW	224	155	103.5	2	4	–		
	White	3	NF800-SEW with MDU/HEW with MDU (*6)	–								
TCL-8UW3	Transparent	3	NF800-UEW (*3)	–	220	155	146/194.5	2	4	–		
TCL-8SW4 (*2)	White	4	NF800-SEW/HEW NF800-SEW with MDU/HEW with MDU (*6)	–	294	155	103.5	2	6	–		
TCL-8UW4	Transparent	4	NF400-UEW, NF800-UEW (*3)	–	290	155	146/194.5	2	6	–		
TCL-10SW3	Transparent	3	NF1000-SEW NF1250-SEW/SDW	–	220	150	139	2	4	–		
TCL-10SW4	Transparent	4	NF1000-SEW NF1250-SEW/SDW	–	290	150	139	2	4	–		
TCL-05SRU2 (*2)	White	2	NF100-SRU	NF100-SRU	50	40	66	2	4	–	Screw type	
			NF100-HRU	–			72					
TCL-05SRU3 (*2)	White	3	NF100-SRU	NF100-SRU	75	40	66		–			
			NF100-HRU	NF100-HRU			72					
TCL-03SVU2 (*2)	White	2	NF50-SVFU	NV50-SVFU	36	30	65.5	2	–	–	Quick type (Remove the existing cover from the body, and fit the terminal cover.)	
TCL-03SVU3 (*2)	White	3	NF50-SVFU	NV50-SVFU	54	30	65.5	2	–	–		
TCL-05SVU2 (*1)(*7)	White	2	NF100-CVFU	–	50	25	65.5	2	2	–	Screw type	
TCL-05SU2L (*1)(*8)	White	2	NF100-CVFU	–	50	40	65.5	2	2	–		
TCL-05SVU3 (*2)(*7)	White	3	NF100-CVFU	NV100-CVFU	75	25	65.5	2	2	–		
TCL-05SVU3L (*2)(*8)	White	3	NF100-CVFU	NV100-CVFU	75	40	65.5	2	2	–		
TCL-1SVU3 (*2)	White	2, 3	NF125-SVU	–	90	40	65.5	2	2	–	Screw type (Remove the existing cover from the body, and fit the terminal cover.)	
		3	NF125-HVU	NV125-SVU/HVU								
TCL-2SVU3 (*2)(*9)	White	3	NF250-CVU/SVU/HVU	NV250-CVU/SVU/HVU	105	40	65.5	2	2	–	Screw type (Remove the existing cover from the body, and fit the terminal cover.)	
TCL-2SVU3L (*2)(*10)	White	3	NF250-CVU/SVU/HVU	NV250-CVU/SVU/HVU	105	50	65.5	2	2	–	Screw type (Remove the existing cover from the body, and fit the terminal cover.)	
TCL-4SWU	White	3	NF400-SWU/HWU	–	171	110	99.5	2	–	2	Quick type	
TCL-6SWU	Transparent	3	NF630-SWU/HWU	–	224	155	103.5	2	4	–	Screw type	Use in combination with insulating barrier.

Notes *1 For a circuit breaker with F or V type operating handle, specify the model name with F at the end.
(F or V type operating handle dedicated models, screws are used for fixing.)
*2 The standard models can be used in combination with F and V Type Operating Handles.
*3 The dimension C is the size on the power supply side and load side.
*4 When a crimp terminal applicable to wires with a size of 117.2 to 152.05mm^2 (Model 2CR-150 or CB150-S8) is used, TC-L cannot be fitted. Insulate the terminal from TC-S with insulating tube or taping.
*5 In the case of installation on the body, specify the model name with-MDU at the end.
*6 It cannot be installed in the case of installation on the body.
*7 Applicable to circuit breakers with rating of 75A or less (max. wire size 25mm^2)
*8 Applicable to circuit breakers with rating of 125A or less (max. wire size 60mm^2)
*9 Applicable to circuit breakers with rating of 200A or less (max. wire size 100mm^2)
*10 Applicable to circuit breakers with rating of 250A or less (max. wire size 150mm^2) (Applicable to UL wire 300kcmil)
*11 For NF125-HEV, NF250-HEV, NV125-HEV and NV250-HEV with PAL, specify the model name with MP at the end.

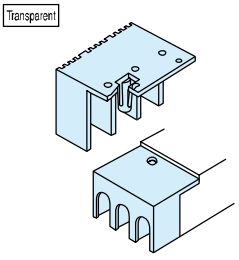
Remarks 1. The wire sizes shown in the above notes *8 to *11 are those of the 600V vinyl insulated wires.
2. Insulate the exposed live parts of crimp terminals with insulating tape or the like.
3. When protection from the power supply and load sides is necessary, separately consult us.

Table 6-25 Small terminal covers (TC-S)

Type name	Color	Number of poles of circuit breaker	Applicable model		Dimensions (mm)			Contents			Appearance	Remarks
			MCCB	ELCB	A	B	C	Number of covers	Cover mounting screw	Sealing plate		
TCS-05FA2 (*6)	White	2	NF30-FAU, NF50-FAU	NV30-FAU, NV50-FAU	40	7	55	2	–	–		
TCS-05FA3 (*6)	White	3			60	7	55	2	–	–		
TCS-05FH2 (*7)	White	2	NF50-FHU	NV50-FHU	50	5	55.5	2	–	–		
TCS-05FH3 (*7)	White	3			75	5	55.5	2	–	–		
TCS-05SV2 (*1)	White	2	NF32-SV, NF63-CV/SV/HV	–	50	5	65.5	2	–	2		
TCS-05SV3 (*2)	White	3	NF32-SV, NF63-CV/SV/HV	NV32-SV, NV63-HV	75	5	65.5	2	–	2		
	White	2, 3	–	NV63-CV/SV								
TCS-05SV4	White	4	NF63-SV/HV	–	100	5	65.5	2	–	2		
TCS-1SV2 (*2)	White	2	NF125-CV/SV	–	60	6.5	65.5	2	–	2		
TCS-1SV3	White	3	NF125-CV/SV	NV125-CV/SV/HV	90	6.5	65.5	2	–	2		
	White	2, 3	NF125-HV/UV	–								
TCS-1SV4	White	4	NF125-SV/HV/UV	NV125-SV/HV	120	6.5	65.5	2	–	2		
TCS-1FH3	White	3	NF100-FHU	NV100-FHU	75	5	55.5	2	–	2		
TCS-2SV3 (*2)(*3)	White	2, 3	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV NV250-SEV/HEV NV125-SEV/HEV	105	6.5	65.5	2	–	2		
TCS-2SV4 (*3)	White	4	NF125-SEV/HEV	NV125-SEV/HEV	140	6.5	65.5	2	–	2	Quick type The cover can be sealed with the sealing plate.	
			NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV	–								
			NF250-SV/HV/UV	NV250-SV/HV								
			NF250-SEV/HEV NF250-SGV/LGV/HGV	–								
TCS-05SRU2 (*2)	White	2	NF100-SRU	NV100-SRU	50	5	66	2	–	2		
	White		NF100-HRU	–			72					
TCS-05SRU3 (*2)	White	3	NF100-SRU	NV100-SRU	75	5	66	2	–	2		
	White		NF100-HRU	NV100-HRU			72					

Notes *1 For a circuit breaker with F type operating handle, specify the model name with F at the end.
(F type operating handle dedicated models, screws are used for fixing.)
*2 The standard models can be used in combination with F and V Type Operating Handles.
*3 For NF125-HEV, NF250-HEV, NV125-HEV and NV250-HEV with PAL, specify the model name with MP at the end.
*6 When a crimp terminal applicable to wires with a size of 16.78 to 22.66mm^2 (Model JST-22-5NS) used, TC-S cannot be fitted. Insulate with insulating tape or the like.
*7 When a crimp terminal applicable to wires with a size of 16.78 to 22.66mm^2 (Model JST-22-5S and BH-22) used, TC-S cannot be fitted. Insulate with insulating tape or the like.
Remark: 1. Insulate the exposed live parts of crimp terminals with insulating tape or the like.

Table 6-26 Transparent terminal covers (TTC)

Type name	Number of poles of circuit breaker	Applicable model		Dimensions (mm)			Contents			Appearance	Remarks
		MCCB	ELCB	A	B	C	Number of covers	Cover mounting screw	Sealing plate		
TTC-05SV2 (*1)	2	NF32-SV NF63-CV/SV/HV	–	50	25	65.5	2	–	2		
TTC-05SV3 (*2)	3	NF32-SV NF63-CV/SV/HV	NV32-SV, NV63-HV	75	25	65.5	2	–	2		
	2, 3	–	NV63-CV/SV								
TTC-05SV4	4	NF63-SV/HV	–	100	25	65.5	2	–	2		
TTC-1SV2 (*1)	2	NF125-CV/SV	–	60	40	65.5	2	–	2		
TTC-1SV3 (*2)	3	NF125-CV/SV	NV125-CV/SV/HV	90	40	65.5	2	–	2		
	2, 3	NF125-HV/UV	–								
TTC-1SV4	4	NF125-SV/HV/UV	NV125-SV/HV	120	40	65.5	2	–	2		
TTC-2SV3 (*2)(*3)(*5)(*6)	2, 3	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV NV250-SEV/HEV NV125-SEV/HEV	105	40	65.5	2	–	2		
TTC-2SV4 (*6)	4	NF125-SEV/HEV	NV125-SEV/HEV	140	40	65.5	2	–	2	Transparent Quick type The cover can be sealed with the sealing plate.	
		NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV	–								
		NF250-SV/HV/UV	NV250-SV/HV								
		NF250-SEV/HEV NF250-SGV/LGV/HGV	–								
TTC-4SW3	2, 3	NF400-CW/SW/SEW NF400-HEW/REW NF630-CW/SW/SEW NF630-HEW/REW	NV400-CW/SW/SEW NV400-HEW NV630-CW/SW/SEW NV630-HEW	171	110	104.5	2	4	–		
	3	NF400-SEW with MDU/HEW with MDU (*4)	–								
TTC-4SW4	4	NF400-SW/SEW/HEW NF630-SW/SEW/HEW NF400-SEW with MDU/HEW with MDU (*4)	NV400-SEW/HEW NV630-SEW	240	110	104.5	2	6	–	Transparent Screw type	Use in combination with insulating barrier.
TTC-8SW3	2, 3	NF800-CEW/SDW/SEW NF800-HEW/REW	NV800-SEW/HEW	224	155	103.5	2	4	–		
	3	NF800-SEW with MDU/HEW with MDU (*4)	–								
TTC-8SW4	4	NF800-SEW/HEW NF800-SEW with MDU/HEW with MDU (*4)	–	294	155	103.5	2	6	–		

Notes *1 For a circuit breaker with F type operating handle, specify the model name with F at the end.
(F type operating handle dedicated models, screws are used for fixing.)
*2 The standard models can be used in combination with F and V Type Operating Handles.
*3 When a crimp terminal applicable to wires with a size of 117.2 to 152.05mm^2 (Model 2CR-150 or CB150-S8) is used, TTC cannot be fitted.
Use TCL-2SV3L. Or insulate the terminal from TC-S with insulating tube or taping.
*4 In the case of installation on the body, specify the model name with • MDU at the end.
*5 Applicable to circuit breakers with rating of 200A or less (max. wire size 100mm^2)
*6 For NF125-HEV, NF250-HEV, NV125-HEV and NV250-HEV with PAL, specify the model name with MP at the end.
Remark: 1. There is also a 4-poles product.

<BTC> Fig. 1

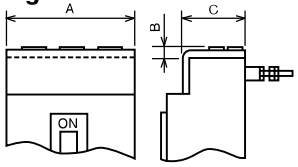
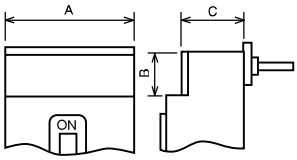


Fig. 2



<PTC>

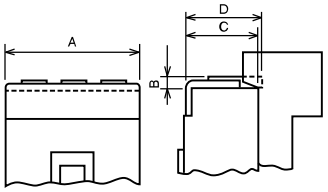
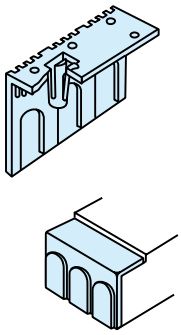
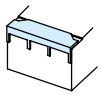
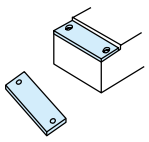


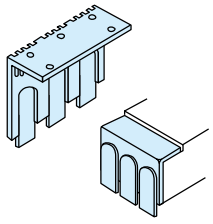
Table 6-27 Rear terminal cover (BTC)

Type name	Color	Number of poles of circuit breaker	Applicable model MCCB	Applicable model ELCB	Dimensions (mm) A	B	C	Contents Number of covers	Cover mounting screw	Sealing plate	Appearance	Remarks
BTC-05SV2	White	2	NF32-SV NF63-CV/SV/HV	– (*1)	50	5	65.5	2	–	2		Cover for stud connection block on back in the case of rear connection type
BTC-05SV3	White	3	NF32-SV NF63-CV/SV/HV	NV32-SV, NV63-HV	75	5	65.5	2	–	2		
	White	2, 3	–	NV63-CV/SV								
BTC-05SV4	White	4	NF63-SV/HV	–	100	5	65.5	2	–	2		
BTC-1SV2	White	2	NF125-CV/SV	–	60	6.5	65.5	2	–	2		
BTC-1SV3	White	3	NF125-CV/SV	NV125-CV/SV/HV	90	6.5	65.5	2	–	2		
	White	2, 3	NF125-HV/UV	–								
BTC-1SV4	White	4	NF125-SV/HV/UV	NV125-SV/HV	120	6.5	65.5	2	–	2		
BTC-2SV3 (*6)	White	2, 3	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV NV250-SEV/HEV NV125-SEV/HEV	105	6.5	65.5	2	–	2		
BTC-2SV4 (*6)	White	4	NF125-SEV/HEV	NV125-SEV/HEV	140	6.5	65.5	2	–	2		
			NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV	–								
			NF250-SV/HV/UV	NV250-SV/HV								
			NF250-SEV/HEV NF250-SGV/LGV/HGV	–								
BTC-4SW3	White	2, 3	NF400-CW/SW/SEW NF630-CW/SW/SEW	NV400-CW/SW/SEW NV630-CW/SW/SEW	140	42 (*2)	99.5	2	–	2	Quick type The cover can be sealed with the sealing plate. 	
	White	3	NF400-SEW with MDU (*5)	(*5)								
			NF400-UEW (*4)	–	140	42 (*2)	132.5/ 196.5	2	–			
BTC-4SW4 (*3)	Transparent	4	NF400-SW/SEW/HEW NF630-SW/SEW/HEW NF400-SEW with MDU/HEW with MDU (*5)	NV400-SEW/HEW NV630-SEW	185	42 (*2)	97.5	2	6	–	 Screw type	
BTC-8SW3 (*3)	Transparent	2, 3	NF800-CEW/SDW/SEW/HEW/REW	NV800-SEW/HEW	210	32 (*2)	97.5	2	8	–		
	Transparent	3	NF800-SEW with MDU/HEW with MDU (*5)	–								
			NF800-UEW (*4)	–	210	32 (*2)	146/ 194.5	2	4	–		
BTC-8SW4 (*3)	Transparent	4	NF800-SEW/HEW NF800-SEW with MDU/HEW with MDU (*5)	(*5)	280	32 (*2)	97.5	2	10	–		
			NF400-UEW, NF800-UEW (*4)	–	280	32 (*2)	146/ 194.5	2	6	–		

Notes *1 For 2-pole ELCB, use BTC for 3-pole circuit breaker.
*2 Dimension B in Fig. 2
*3 The covers can be used for plug-in type circuit breakers. Other models are designed only for rear connection type.
*4 The dimension C is the size on the power supply side and load side.
*5 In the case of installation on the body, it can be fitted only on the power supply side.
*6 For NF125-HEV, NF250-HEV, NV125-HEV and NV250-HEV with PAL, specify the model name with MP at the end.

Remarks 1. PTC-4SW3 can be used as the back terminal covers for NF400-HEW/REW, NF630-HEW/REW, NV400-HEW and NV630-HEW.
2. For terminal covers for 4-pole circuit breakers not listed above, consult us.

Table 6-28 Plug-in terminal covers (PTC)

Type name	Color	Number of poles of circuit breaker	Applicable model MCCB	Applicable model ELCB	Dimensions (mm) A	B	C	D	Contents Number of covers	Cover mounting screw	Sealing plate	Appearance	Remarks
PTC-05SV2	White	2	NF32-SV NF63-CV/SV/HV	–	50	6.5	65.5	72	2	2	–	 Screw type	Cover for stud connection block in the case of plug-in type
PTC-05SV3	White	3	NF32-SV NF63-CV/SV/HV	NV32-SV, NV63-HV	75	6.5	65.5	72	2	2	–		
	White	2, 3	–	NV63-CV/SV									
PTC-05SV4	White	4	NF63-SV/HV	–	100	6.5	65.5	72	2	2	–		
PTC-1SV2	White	2	NF125-CV/SV	–	60	6.5	65.5	–	2	4	–		
PTC-1SV3	White	3	NF125-CV/SV	NV125-CV/SV/HV	90	6.5	65.5	–	2	4	–		
	White	2, 3	NF125-HV/UV	–									
PTC-1SV4	White	4	NF125-SV/HV	NV125-SV/HV	120	6.5	65.5	–	2	2	–		
PTC-2SV3	White	2, 3	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV NV250-SEV/HEV NV125-SEV/HEV	105	6.5	65.5	78.5	2	4	–		
PTC-2SV4	White	4	NF125-SEV/HEV	NV125-SEV/HEV	140	6.5	65.5	78.5	2	2	–		
			NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV	–									
			NF250-SV/HV/UV	NV250-SV/HV									
			NF250-SEV/HEV NF250-SGV/LGV/HGV	–									
PTC-4SW3 (*2)	Transparent	2, 3	NF400-CW/SW/SEW NF630-CW/SW/SEW	NV400-CW/SW/SEW NV630-CW/SW/SEW	140	42	97.5	–	2	4	–	Same as screw type of BTC	
			NF400-HEW/REW (*1) NF630-HEW/REW (*1)	NV400-HEW (*1) NV630-HEW (*1)									

Notes *1 The covers can be used as back terminal covers.
*2 See Fig. 2 of BTC.

Table 6-29 List of terminal covers applicable to F and V Type Operating Handles

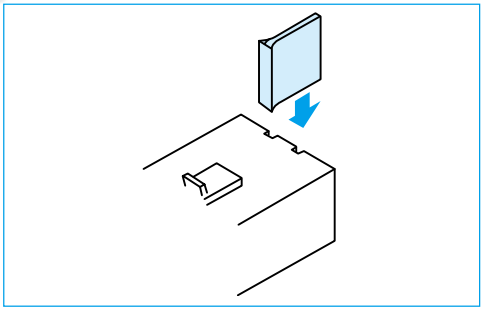
Type name			Applicable operating handles	Number of poles of circuit breaker	Applicable model	
Large terminal covers (TC-L)	Small terminal covers (TC-S)	Transparent terminal covers (TTC)			MCCB	ELCB
TCL-05SV2F (*2)(*3) TCL-05SV2LF (*2)(*4)	TCS-05SV2F (*2)	TTC-05SV2F (*2)	F-05SV2, V-05SV2	2	NF32-SV, NF63-CV/SV/HV	– (*1)
TCL-05SV3 (*3) TCL-05SV3L (*4)	TCS- 05SV3	TTC-05SV3	F-05SV, V-05SV	3	NF32-SV, NF63-CV/SV/HV	NV32-SV, NV63-HV
				2, 3	–	NV63-CV/SV
TCL-05SV4	–	–		4	NF32-SV, NF63-CV/SV/HV	–
TCL-1SV2F (*2)	TCS-1SV2F (*2)	TTC-1SV2F (*2)	F-1SV2, V-1SV2	2	NF125-CV/SV	–
TCL-1SV3	TCS-1SV3	TTC-1SV3	F-1SV, V-1SV	3	NF125-CV/SV	NV125-CV/SV/HV
				2, 3	NF125-HV/UV	–
TCL-1SV4	–	–		4	NF125-CV/SV/HV/UV	NV125-CV/SV/HV
TCL-2SV3 (*5) TCL-2SV3L (*6)(*7)	TCS-2SV3	TTC-2SV3	F-2SV, V-2SV	2, 3	NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV, NV250-SEV/HEV NV125-SEV/HEV
TCL-2SV4 (*7)	–	–		4	NF250-CV/SV/HV/UV, NF250-SEV/HEV NF125-SEV/HEV	NV250-CV/SV/HV, NV250-SEV/HEV NV125-SEV/HEV
TCL-4SW3 TCL-4SP3W	–	TTC-4SW3	F-4S V-4S	2, 3	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW
TCL-4SW4	–	TTC-4SW4		4	NF400-SW/SEW/HEW NF630-SW/SEW/HEW	NV400-SEW/HEW NV630-SEW
TCL-8SW3	–	TTC-8SW3	F-8S V-8S	2, 3	NF800-CEW/SDW/SEW/HEW/REW	NV800-SEW/HEW
TCL-8SW4	–	TTC-8SW4		4	NF800-SEW/HEW	–

Notes *1 For 2-pole NV, use a terminal cover for 3-pole circuit breaker.
*2 Only for F and V Type Operating Handles (screw type)
*3 Applicable to circuit breakers with rating of 75A or less (max. wire size 25mm^2)
*4 Applicable to circuit breakers with rating of 125A or less (max. wire size 60mm^2)
*5 Applicable to circuit breakers with rating of 200A or less (max. wire size 100mm^2)
*6 Applicable to circuit breakers with rating of 250A or less (max. wire size 150mm^2)
*7 For NF125-HEV, NF250-HEV, NV125-HEV and NV250-HEV with PAL, specify the model name with MP at the end.

Remark: 1. The terminal covers for UL 489 Listed Circuit Breakers can be normally combined with F Type Operating Handles.

5. Insulating Barriers

The insulating barrier enhances the insulation between the phases of circuit breaker terminals. It also prevents accidents due to conductive foreign matter and dust, and secondary accidents when isolating a fault current.



●The insulating barrier is available for the models listed in the table below.

Table 6-30

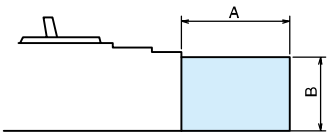
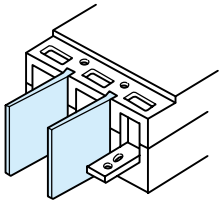
("●" denotes optional)

Applicable model		Connecting method			
MCCB	ELCB	Front	Rear	Flush plate	Plug-in
NF32-SV, NF63-CV NF125-CV, NF100-CVFU NF100-SRU	NV32-SV, NV63-CV NV125-CV, NV100-CVFU NV100-SRU	●	–	–	–
NF63-SV/HV NF125-SV/HV NF100-HRU	NV63-SV/HV NV125-SV/HV NV100-HRU	Standard attachment	–	–	–
NF125-SEV/HEV NF250-CV/SV/HV/SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NF250-SEV/HEV with MDU	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV NV250-SEV/HEV with MDU	Standard attachment	–	–	Standard attachment
NF125-SVU NF125-HVU NF250-SVU NF250-HVU NF250-CVU	NV125-SVU NV125-HVU NV250-SVU NV250-HVU NV250-CVU	Standard attachment	–	–	–
NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW	Standard attachment	●	●	Standard attachment
NF400-UEW(4P) NF800-CEW/SEW/HEW/REW/SDW	NV800-SEW/HEW	Standard attachment	●	●	●
NF800-UEW	–	Standard attachment	●	●	–
NF400-SWU/HWU NF630-SWU/HWU	–	Standard attachment	–	–	–
NF1000-SEW, NF1250-SEW/SDW	–	Standard attachment	–	–	Standard attachment
NF1600-SEW/SDW	–	Standard attachment	–	–	–

Always mount the insulating barrier when it comes with the circuit breaker.

●Insulating Barrier-Front (BA-F)

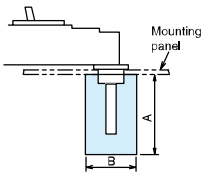
Table 6-31 Summary of dimensions

Type name	Applicable model		Dimensions (mm)		Quantity per breaker			Reference diagram
	MCCB	ELCB	A	B	2P	3P	4P	
BAF-05SRU	NF100-SRU/HRU	NV100-SRU/HRU	50	59.5	1	2	–	
BAF-05SV	NF32-SV NF63-CV NF125-CV	NV32-SV NV63-CV NV125-CV	50	59.5	1 (*2)	2	3	
	NF63-SV/HV NF125-SV/HV/UV	NV63-SV/HV NV125-SV/HV						
BAF-2SV	NF125-SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV/UV/SEV/HEV NF250-SGV/LGV/HGV/RGV NF250-SEV/HEV with MDU	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV NV250-SEV/HEV with MDU	100	59.5	2	4	6	
BAF-05SVU	NF100-CVFU	NV100-CVFU	50	59.5	2	4	–	
	NF125-SVU NF125-HVU	NV125-SVU NV125-HVU						
BAF-2SVU	NF250-SVU NF250-HVU NF250-CVU	NV250-SVU NV250-HVU NV250-CVU	100	59.5	–	4	–	
BAF-4SW	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW	110	98.5	2	4	6	
BAF-4UW (*1)	NF400-UEW(3P)	–	110	132/ 98.5	–	4	–	
BAF-8SW	NF800-CEW/SEW/SDW/HEW/REW	NV800-SEW/HEW	110	98.5	1	2	3	
BAF-10SW	NF400-UEW(4P) NF800-UEW, NF1000-SEW NF1250-SEW/SDW	–	110	132	1	2	3	
BAF-4SWU	NF400-SWU/HWU	–	110	98.5	–	4	–	
	NF630-SWU/HWU(less than 600A)	–	110	98.5	–	2	–	
BAF-6SWU	NF630-SWU/HWU(630A)	–	150	98.5	–	4	–	
BAF-16SW	NF1600-SEW/SDW	–	185	132	1	2	3	

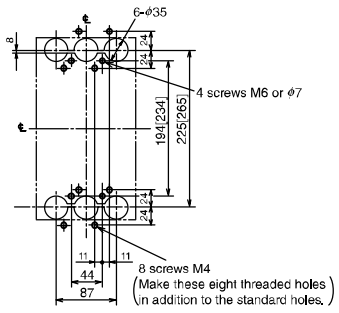
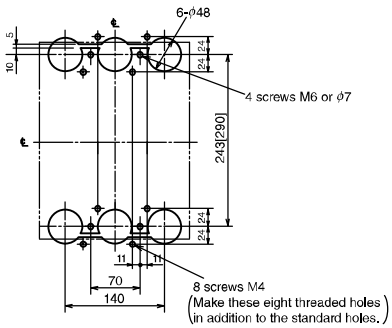
Notes *1 The barriers BAF-4UW for the power supply and load sides vary in the dimension B.
*2 Not supplied with ELCB.

●Insulating Barrier-Rear (BA-B)

Table 6-32 Summary of dimensions

Type name	Applicable model		Dimensions (mm)		Quantity per breaker			Reference diagram
	MCCB	ELCB	A	B	2P	3P	4P	
BAB-4SW	NF400-CW/SW/SEW/HEW/REW NF400-UEW(3P) NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW	140	74.5	–	4	6	
BAB-8SW	NF800-CEW/SEW/SDW/HEW/REW NF400-UEW(4P) NF800-UEW	NV800-SEW/HEW	140	74.5	–	4	6	

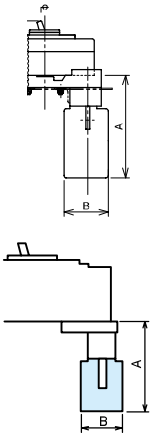
Drilling size for use of BA-B (in the case of 3-pole circuit breaker)

NF400-CW, NF400-SW, NF400-SEW, NF400-HEW, NF400-REW, NF400-UEW NV400-CW, NV400-SW, NV400-SEW, NV400-HEW NF630-CW, NF630-SW, NF630-SEW, NF630-HEW, NF630-REW NV630-CW, NV630-SW, NV630-SEW, NV630-HEW	**NF800-CEW, NF800-SEW, NF800-HEW, NF800-REW, NF800-UEW NV800-SEW, NV800-HEW**
Power supply side Note The dimensions in brackets are those for NF400-UEW.  Load side	Note The dimensions in brackets are those for NF800-UEW. 

The drilling size drawings show the dimensions viewed from the rear side.

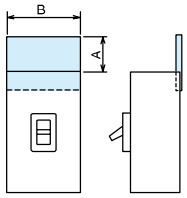
●Insulating Barrier-Plug-in (BA-P)

Table 6-33 Summary of dimensions

Type name	Applicable model		Dimensions (mm)		Quantity per breaker			Reference diagram
	MCCB	ELCB	A	B	2P	3P	4P	
BAP-2SV	NF125-SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV NF250-SGV/LGV/HGV/RGV NF250-SEV/HEV	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV	172	74.5	4	4	6	
BAP-4SW	NF400-CW/SW NF400-SEW/HEW/REW/UEW NF630-CW/SW NF630-SEW/HEW/REW	NV400-CW/SW NV400-SEW/HEW NV630-CW/SW NV630-SEW/HEW	178	74.5	–			
BAP-8SW	NF800-CEW/SEW NF800-HEW/REW	NV800-SEW/HEW	172	74.5				
	NF1000-SEW NF1250-SEW	–	215	74.5				

●Earth fault preventing barriers (BA-G)

Table 6-34 Summary of dimensions

Type name	Applicable model		Dimensions (mm)		Quantity per breaker	Reference diagram
	MCCB	ELCB	A	B	3P	
BAG-05SV3	NF32-SV NF63-CV/SV/HV	NV32-SV NV63-CV/SV/HV	30	75	1	 Earth fault preventing barrier (3 poles)
BAG-1SV3	NF125-CV/SV/HV	NV125-CV/SV/HV	40	90		
BAG-2SV3	NF125-SEV/HEV NF250-CV/SV/HV/SEV/HEV NF250-SEV/HEV with MDU	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV NV250-SEV/HEV with MDU	63	105		
BAG-4SW3	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW	63	164		
BAG-4UW3	NF400-UEW	–	63	164		
BAG-8SW3	NF800-CEW/SEW/SDW/HEW/REW	NV800-SEW/HEW	110	210		
BAG-8UW3	NF800-UEW	–	110	210		
BAG-10SW3	NF1000-SEW NF1250-SEW/SDW	–	98	210		
BAG-16SW3	NF1600-SEW/SDW	–	150	300		

Also the earth fault preventing barriers for 2- and 4-pole circuit breakers are available.

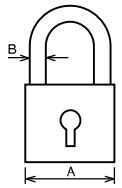
6. Handle Lock Devices, Lock Covers, Auxiliary Handles, Card Holders

(1) Handle Lock Devices (HL and HL-S)

These devices are used to lock the circuit breakers in the ON or OFF position. If overcurrent flows while the circuit breaker is locked, it will trip. Model HL (red resin moldings) to be fitted to handles and Model HL-S to be secured on circuit breaker covers are available. (Use a commercially available padlock having the nominal size shown in the right table. If a padlock in another size is used, the device may not lock correctly.)

Padlock size (mm)

Application	A (Nominal size)	B
a	25	4 or less
b	35	5 or less
c	40	6 or less



Padlock

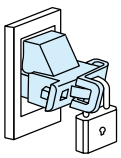


Fig. 1

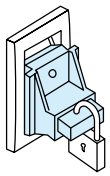


Fig. 2

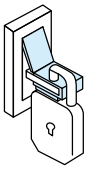


Fig. 3

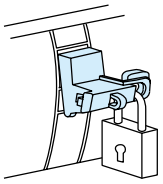


Fig. 4

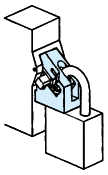


Fig. 5

Table 6-35 HL

Type name	Applicable model MCCB	Applicable model ELCB	Reference diagram	Padlock
HL-05FH	NF50-FHU, NF100-FHU	NV50-FHU, NV100-FHU	Fig. 4	a
HL-05FA	NF30-FA/FAU, NF50-FA/FAU	NV30-FA/FAU, NV50-FA/FAU		
HLF-05BHD	BH-D6, BH-D10	–	Fig. 5	
HLF-05SMU (*1)	NF50-SMU	–		
HLF-05SRU	NF100-SRU/HRU	NV100-SRU/HRU	–	
HLN-05SV	NF32-SV, NF63-CV/SV/HV NF125-CV/SV/HV/UV, NF125-SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF250-SGV/LGV/HGV/RGV	NV32-SV, NV63-CV/SV/HV NV125-CV/SV/HV, NV125-SEV/HEV NV250-CV/SV/HV, NV250-SEV/HEV	Fig. 1	
HLF-05SV	NF32-SV, NF63-CV/SV/HV NF125-CV/SV/HV/UV, NF125-SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF250-SGV/LGV/HGV/RGV	NV32-SV, NV63-CV/SV/HV NV125-CV/SV/HV, NV125-SEV/HEV NV250-CV/SV/HV, NV250-SEV/HEV		
HLF-05SVU	NF125-SVU/HVU NF250-SVU/HVU/CVU	NV125-SVU/HVU NV250-SVU/HVU/CVU		
HL-4CW (*1)	NF400-CW	NV400-CW	Fig. 2	c
HL-4SW (*1)	NF400-SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW/UEW	NV400-SW/SEW/HEW NV630-CW/SW/SEW/HEW NV800-SEW/HEW		
HL-4SWU	NF400-SWU/HWU, NF630-SWU/HWU	–		
HL (*2)	NF1000-SEW, NF1250-SEW/SDW, NF1600-SEW/SDW	–	Fig. 3	

Notes *1 When a padlock is not used, the device can be used as a lock cover (LC).
*2 Place an order for a circuit breaker body combined with the device.

Remarks 1. One lot of HL-4CW and HL-4SW contains one piece, and one lot of others contains 10 pieces.
2. HLF types are used for OFF lock, and HLN types for ON lock.

Table 6-36 HL-S

Type name	Applicable model MCCB	Number of poles	ELCB	Number of poles	Dimensions (mm) A	B	C	D	E	F	Reference diagram	Padlock
HLS-05SV2 (*1)	NF32-SV, NF63-CV, NF63-SV NF63-HV	2P	–	–	32	75	50	–	63	32	Fig. 5	b
	NF125-CV, NF125-SV	2P	–	–			57					
HLS-05SV (*1)	NF32-SV, NF63-CV, NF63-SV NF63-HV	3P	NV32-SV, NV63-CV, NV63-SV, NV63-HV	3P			75					
	NF63-SV,NF63-HV	4P	–	–				23				
	NF125-CV, NF125-SV	3P	NV125-CV, NV125-SV, NV125-HV	3P			86	–				
	NF125-HV	2P, 3P	–	–								
	NF125-SV, NF125-HV	4P	NV125-SV, NV125-HV	4P				28				
	NF125-UV	2P, 3P	–	–	62.5			–		1.5		
		4P	–	–				28				
HLS-2SV (*1)	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV, NF250-SV, NF250-HV NF250-SGV/LGV/HGV/RGV	2P	NV125-SEV, NV125-HEV NV250-CV, NV250-SV, NV250-HV NV250-SEV, NV250-HEV	3P	32	84	100	–		32		
	NF125-SEV, NF125-HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV, NF250-SV, NF250-HV NF250-SEV, NF250-HEV NF250-SGV/LGV/HGV/RGV	3P										
	NF125-SEV, NF125-HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SV, NF250-HV, NF250-SEV, NF250-HEV NF250-SGV/LGV/HGV/RGV	4P	NV125-SEV, NV125-HEV NV250-SV	4P				33				
	NF250-UV	2P, 3P	–	–	69.5			–		-5.5		
		4P	–	–				33				
HLS-03SVU (*1)	NF50-SVFU	2P, 3P	NV50-SVFU	2P, 3P	–	–	–	–			Fig. 8	
HLS-05SVU2 (*1)	NF100-CVFU	2P	–	–	32	75	50	–		32	Fig. 5	
HLS-05SVU (*1)	NF100-CVFU	3P	NV100-CVFU	3P			75					
	NF125-SVU/HVU	2P, 3P	NV125-SVU/HVU	3P			86					
HLS-05SVU (*2)	NF125-SVU/HVU	2P, 3P	NV125-SVU/HVU	3P	32	75	86	–		32	Fig. 5	
HLS-2SVU (*1)	NF250-SVU/HVU/CVU	3P	NV250-SVU/HVU/CVU	3P		84	100					
HLS-4SW (*3)	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	2P, 3P, 4P	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW	3P, 4P	–	–	–	–	–	–	Fig. 6	
HLS-4UW (*3)	NF400-UEW	3P	–	–	–	–	–	–	–	–		
HLS-8SW (*3)	NF800-CEW/SDW/SEW/HEW/REW	2P, 3P, 4P	NV800-SEW/HEW	3P, 4P	–	–	–	–	–	–	Fig. 7	
HLS-8UW (*3)	NF400-UEW	4P	–	–	–	–	–	–	–	–		
	NF800-UEW	3P, 4P										

Notes *1 For locking in OFF position
*2 A, B, C and D in Figs. 5 and 6 are drilling sizes in front plate.
*3 Terminal covers cannot be fitted.

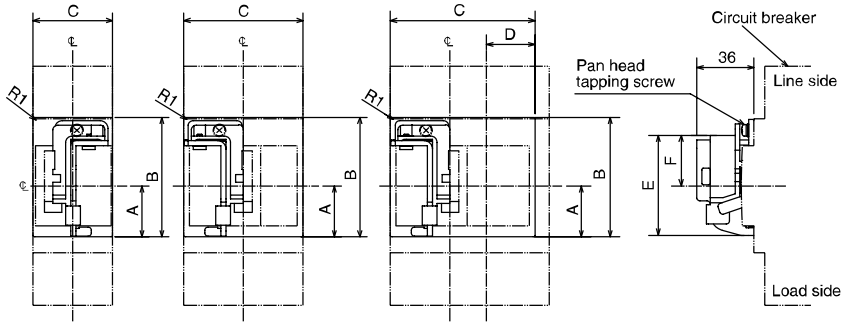


Fig. 5

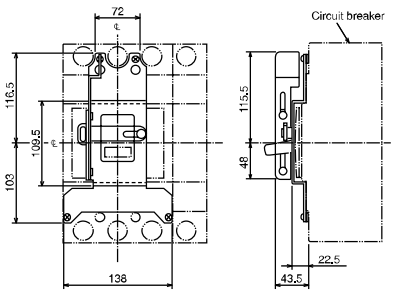


Fig. 6

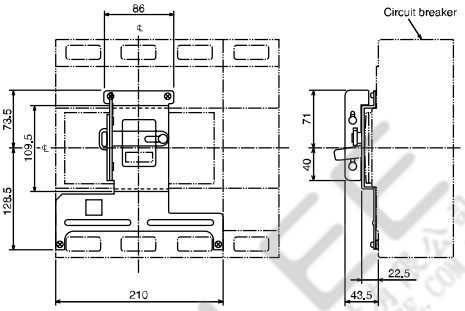


Fig. 7

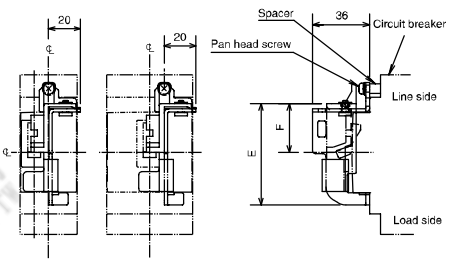
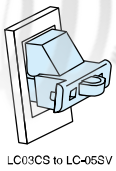


Fig. 8

(2) Lock Covers (LC)

Lock Cover is a plug-in lock for indicating easily without using padlocks that it is prohibited to operate the circuit breaker.
A "Caution" tag can be hung on it.
The covers are red resin moldings.



LC03CS to LC-05SV

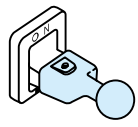
Table 6-37 LC

Type name	Applicable model	
	MCCB	ELCB
LC03CS	NF50/100-FHU	NV50/100-FHU
LC-05SV	NF32-SV NF63-CV/SV/HV NF125-CV/SV/HV/UV NF125-SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV/UV NF250-SEV/HEV NF250-SGV/LGV/HGV/RGV	NV32-SV NV63-CV/SV/HV NV125-CV/SV/HV NV125-SEV/HEV NV250-CV/SV/HV NV250-SEV/HEV
LC05FA	NF30-FAU NF50-FAU	NV30-FAU NV50-FAU

Remark: 1. One lot of and LC-NVL contains 50 pieces, and one lot of other models contains 10 pieces.

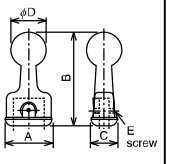
(3) Auxiliary Handles (HT)

These handles facilitate opening and closing circuit breakers.



Auxiliary Handles

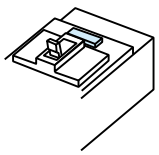
Table 6-38 HT

Type name	Applicable model	Dimensions					Outline dimension drawing
		A	B	C	D	E	
HT-4CW (*1)	NF400-CW, NV400-CW	59	77.5	32	38	M4	
HT-4SW (*1) (*2)	NF400-SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW NF800-REW/UEW NV400-SW/SEW/HEW NV630-CW/SW/SEW/HEW NV800-SEW/HEW		81				
HT-10SW (*3)	NF1000-SEW NF1250-SEW/SDW NF1600-SEW/SDW	62	118	34	45	M4	

Notes *1 HT can be supplied separately. The user can fit it to the circuit breaker. (One lot contains 1 piece.)
*2 4-pole circuit breakers with 800A frame and 4-pole NF400-UEW come with auxiliary handles as standard accessories.
*3 HT is standard accessory.

(4) Card Holders (CH)

Cards showing the circuit breaker name and circuit number can be inserted to the card holder.
Fit the card holder to the circuit breaker body or the flush plate in the flush frame. (Although a card holder is supplied with each circuit breaker body, the card holder is available as an optional part.)



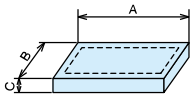


Table 6-39 Card holder size (mm)

Applicable model	Type name	A	B	C	Card size
NF250-SV or below NV250-SV or below	CH-P No.5	44	12	5	39×9
NF400-SW or above NV400-SW or above	CH-P No.3	38	22	5	33×20

7. Mechanical Interlocks (MI)

This mechanical interlock device is used to enable one of two circuit breakers to turn on. Install the device on the panel.
Mechanical interlocks to be installed directly to circuit breaker bodies can be manufactured.
Consult us for details.

●Front, rear and plug-in types

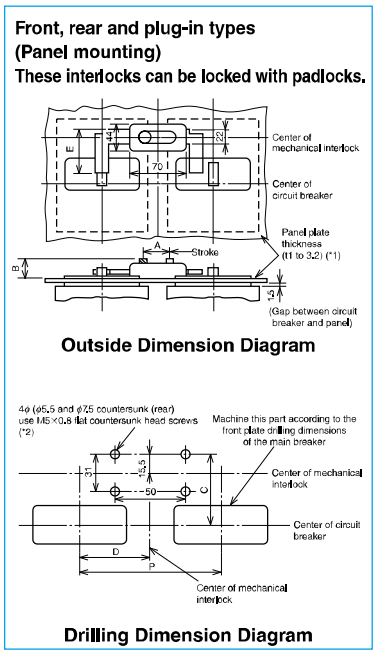


Fig. 1

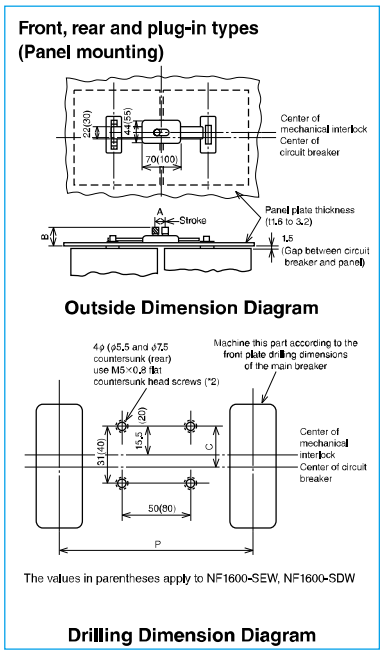
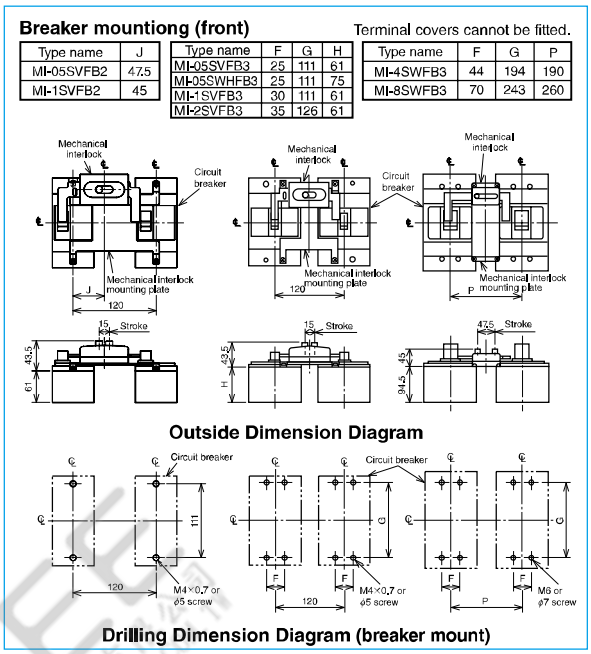


Fig. 2



Type name	J
MI-05SVFB2	47.5
MI-1SVFB2	45

Type name	F	G	H
MI-05SVFB3	25	111	61
MI-05SWHFB3	25	111	75
MI-1SVFB3	30	111	61
MI-2SVFB3	35	126	61

Type name	F	G	P
MI-4SWFB3	44	194	190
MI-8SWFB3	70	243	260

Fig. 3

Notes *1 For 400A frame or above, use a panel 1.6 to 3.2 thick.
*2 When the panel is 2.3 or more thick, countersink the panel (rear side) in φ9.5 for the four φ5.5 holes.

Table 6-40 Table of variable dimensions

Applicable model		Pitch (P) (*1)						Dimensions (mm)						Reference diagram	Breaker mount (*3)	Reference diagram (3P)
MCCB	ELCB	Standard			Semi-standard		Standard								Type name	
		Type name	2P	3P	3P		Type name	4P	t	A	B	C	D	E	2P•3P	
NF32-SV, NF63-CV/SV/HV	–	MI-05SV3	120	–	–	–	–	–	(*2) –	15	33	63	47.5	58	(Fig. 1)	MI-05SVFB2	(Fig. 3)
NF32-SV, NF63-CV/SV/HV	NV32-SV, NV63-CV/SV/HV		–	120	–	130	MI-05SV4	120 (*4)		15	33	63	–	58		MI-05SVFB3	
NF125-CV/SV	–	MI-05SV3	120	–	–	–	–	–		15	33	63	45	58		MI-1SVFB2	
NF125-CV/SV/HV	NV125-CV/SV/HV		–	120	130	150	MI-1SV4	130 (*4)		15	33	63	–	58		MI-1SVFB3	
NF125-UV	–									15	33	32.5		58		–	–
NF125-SEV/HEV NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV, NF250-SEV/HEV NF250-SGV/LGV/HGV/RGV	NV125-SEV/HEV NV250-CV/SV/HV NV250-SEV/HEV	MI-05SV3	120 (*4)		150	180	MI-2SV4	150 (*4)		15	33	63	–	58		MI-2SVFB3	(Fig. 3)
NF250-UV	–											25.5				–	–
NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW NV630-CW/SW/SEW/HEW	MI-4SW3	190		–	210	MI-4SW4	250	(*2) –	47.5	33	83.5	–	74		MI-4SWFB3	(Fig. 3)
NF400-UEW (3P)	–		–	190			–	–				83.5				–	
NF800-CEW/SDW/SEW/HEW/REW	NV800-SEW/HEW	MI-8SW3	220		–	240	MI-8SW4	290		47.5	33	83.5	–	74		MI-8SWFB3	
NF400-UEW (4P) NF800-UEW	–		–	220								60				–	
NF1000-SEW, NF1250-SEW/SDW	–	MI-10SW3	220		–	–	MI-10SW4	290	2.3 (*5)	47.5	47	37.5	–	–	(Fig. 2)	–	–
NF1600-SEW/SDW	–	MI-16SW3	315		–	–	MI-16SW4	426		65	54.5	39	–	–		–	

Notes *1 Specify the circuit breaker mounting pitch (P).
*2 No need to specify the panel thickness (t). (Usable panel thickness range: t = 1~3.2mm. Above 400AF, use panel thickness t = 1.6~3.2mm)
*3 Terminal covers cannot be fitted. (However, TCL-4SW3 can be fitted.)
*4 When UVT is provided, separately install the module.
*5 If the thickness is not 2.3, specify the panel thickness (t).

Remarks 1. When a mechanical interlock is installed on the panel, screw type terminal covers cannot be installed.
2. These devices do not provide an isolation function. However, 400, 600, 630 and 800A frame circuit breakers can be made conforming to it. (See Note 3.)
3. On a 2-pole circuit breaker obtained by removing the neutral pole conductor from a 3-pole circuit breaker, the mechanical interlock can be installed in the same manner as on a 3-pole circuit breaker.