

Low-voltage Circuit Breakers

For more than 50 years, Mitsubishi's Low Voltage Circuit breakers and earth leakage circuit breakers continued to deliver market needs.

Our complete lineup, including the WS-V series built with a new breaking technology, is designed to respond to the individual market needs of the receiving and distribution and machineries.

Molded Case Circuit Breakers



Circuit breaker for protection against overload and short circuit

Detailed Specifications P.672	Installation and Connection P.716	Characteristics and Dimensions P.760
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Earth Leakage Circuit Breakers



Circuit breaker for protection against overload, short circuit, and electrification

Detailed Specifications P.682	Installation and Connection P.716	Characteristics and Dimensions P.800
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Motor Protection Breakers



Circuit breaker for protection of motor and against short circuit

Detailed Specifications P.688

UL 489 Listed Circuit Breakers



Circuit breaker compliant with UL 489 America

Detailed Specifications P.689	Installation and Connection P.716	Characteristics and Dimensions P.818
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Measuring Display Unit Breakers



Circuit breaker with measuring and display function

Detailed Specifications P.693	Installation and Connection P.716	Characteristics and Dimensions P.832
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Miniature Circuit Breakers



Circuit breaker for protection against overload and short circuit of branch circuit

Detailed Specifications P.702	Characteristics and Dimensions P.838
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Product Line-up



Classification		Frame (A)	20 30 32	40 50 60 63	70 100 125	160	225 250
Molded Case Circuit Breakers	NF-C Economy class	NF30-CS		NF63-CV	NF125-CV		NF250-CV
	NF-S Standard class	NF32-SV		NF63-SV	NF125-SV NF125-SGV NF125-SEV	NF160-SGV	NF250-SV NF250-SGV NF250-SEV
	NF-H/L High-performance class			NF63-HV	NF125-HV NF125-LGV NF125-HEV NF125-HGV	NF160-LGV NF160-HGV	NF250-HV NF250-LGV NF250-HEV NF250-HGV
	NF-R/U Ultra current-limiting class				NF125-RGV NF125-UV		NF250-RGV NF250-UV
Earth Leakage Circuit Breakers	NV-C Economy class			NV63-CV	NV125-CV		NV250-CV
	NV-S Standard class	NV32-SV		NV63-SV	NV125-SV NV125-SEV		NV250-SV NV250-SEV
	NV-H/R High-performance class			NV63-HV	NV125-HV NV125-HEV		NV250-HV NV250-HEV
Motor Protection Breakers	NF-MB			NF63-CV (*1) NF63-SV (*1)	NF125-SV (*1)		NF250-SV (*1)
		NF32-SV (*1)					
UL 489 Listed Circuit Breakers	UL 489 Listed MCCB			NF50-SVFU	NF100-CVFU NF125-SVU NF125-HVU		NF225-CWU NF250-SVU NF250-HVU
	UL 489 Listed ELCB			NV50-SVFU	NV100-CVFU NV125-SVU NV125-HVU		NV250-SVU NV250-HVU
Measuring Display Unit Breakers	MDU Breakers						NF250-SEV with MDU NF250-HEV with MDU
Miniature Circuit Breakers		BH-DN		BH-D6 BH-D10	BH BH-P		
Residual Current Circuit Breaker				BV-D			
Residual Current Circuit Breaker with Overload Protection				BV-DN			
Isolating Switch				KB-D			
Circuit Protectors		CP30-BA CP-S					
Air Circuit Breakers	AE-SW						
Related Components	Earth Leakage Relays	NV-ZBA, NV-ZSA, NV-ZHA, NV-ZLA					

Note: *1 When placing an order, specify "MB."

WS-V Series (New models)

Detailed Specifications

●NV-C (Economy class) Harmonic Surge Ready

Frame (A)		50		60		63		100			125		
Model		NV63-CV										NV125-CV	
Image													
Rated current In (A)		(5) (10) (15) (16) (20) (25)		(60)		63		(60) (63) (75) (80) (100)			125		
Rated ambient temperature 40°C		(30) (32) (40) (50)											
Number of poles		2 3		2 3		2 3		3			3		
Phase line (*1)		1φ2W 3φ3W, 1φ3W, 1φ2W		1φ2W 3φ3W, 1φ3W, 1φ2W		1φ2W 3φ3W, 1φ3W, 1φ2W		3φ3W, 1φ3W, 1φ2W			3φ3W, 1φ3W, 1φ2W		
Rated operational voltage Ue (V) (*2)		AC 100-240 100-440		100-240 100-440		100-240 100-440		100-440			100-440		
High-speed type	Rated current sensitivity (mA)	30 30,100/200/500 selectable		30 30,100/200/500 selectable		30 30,100/200/500 selectable		30,100/200/500 selectable			30,100/200/500 selectable		
	Max. operating time (s)	at IΔn 0.1 at 5IΔn 0.04		0.1 0.04		0.1 0.04		0.1 0.04			0.1 0.04		
Time-delay type	Rated current sensitivity (mA)	-		-		-		(100/200/500 selectable)			(100/200/500 selectable)		
	Max. operating time (s) (*3)	-		-		-		(0.45/1.0/2.0 selectable)			(0.45/1.0/2.0 selectable)		
	Internal non-operating (s) (or more)	-		-		-		(0.1/0.5/1.0)			(0.1/0.5/1.0)		
Earth leakage indication system		Mechanical type (button)		Mechanical type (button)		Mechanical type (button)		Mechanical type (button)			Mechanical type (button)		
Rated short-circuit breaking capacity (kA)	440V	-		2.5/2.5		-		2.5/2.5		10/5			
	415V	-		2.5/2.5		-		2.5/2.5		10/5			
	400V	-		5/5		-		5/5		10/5			
	230V	7.5/7.5		7.5/7.5		7.5/7.5		7.5/7.5			30/15		
	200V	7.5/7.5		7.5/7.5		7.5/7.5		7.5/7.5			30/15		
	100V	7.5/7.5		7.5/7.5		7.5/7.5		7.5/7.5			30/15		
Rated impulse withstand voltage Uimp (kV)		6		6		6		6			6		
Current		AC		AC		AC		AC			AC		
Suitability for isolation		Compatible		Compatible		Compatible		Compatible			Compatible		
Reverse connection (below 230VAC)		Possible		Possible		Possible		Possible			Possible		
Number of operating cycles	Without current	10,000		10,000		10,000		10,000			10,000		
	With current	6,000		6,000		6,000		6,000			6,000		
Utilization category		A		A		A		A			A		
Pollution degree		2		2		2		2			2		
EMC environment condition (environment A or B)		A		A		A		A			A		
Overall dimensions (mm)	a	75		75		75		90			90		
	b	130		130		130		130			130		
	c	68		68		68		68			68		
	ca	90		90		90		90			90		
Mass of front-face type (kg)		0.7 0.75		0.7 0.75		0.7 0.75		1.0			1.0		
Installation and connections	Front connection (F)	Page		●Screw terminal		●Screw terminal		●Screw terminal			●Screw terminal		
	Solderless (BOX) terminal (SL)	-		-		-		-			-		
	Rear (B)	716		●Round stud		●Round stud		●Bar stud			●Bar stud		
	Plug-in (PM)	-		-		-		-			-		
	Alarm switch (AL)	725		●(*4)		●(*4)		●(*4)			●(*4)		
	Auxiliary switch (AX)	-		●(*4)		●(*4)		●(*4)			●(*4)		
	Shunt trip (SHT)	-		●(*4)		●(*4)		●(*4)			●(*4)		
	Undervoltage trip (UVT)	-		●(*4)		●(*4)		●(*4)			●(*4)		
	Earth leakage alarm switch (EAL)	-		-		-		-			-		
	With lead-wire terminal block (SLT)	737		●		●		●			●		
Cassette-type accessories	Test button module (TBM)	738		●(*5)		●(*5)		●(*5)			●(*5)		
	Enclosure	Closed (S)	753		-		-		-			-	
		Dustproof (I)	-		-		-		-			-	
		Waterproof (W)	-		-		-		-			-	
	Electrical operation device (NFM)	756		-		-		●			●		
	Mechanical interlock (MI) (*7)	Panel mounting	752		●		●		●			●	
		Breaker mounting	-		●		●		●			●	
	Handle lock device	LC	750		●		●		●			●	
		HL	-		●		●		●			●	
		HL-S	-		●		●		●			●	
External operating handle	(F)	740		●		●		●			●		
	(V)	-		●		●		●			●		
Terminal cover (TC-L, TC-S, TTC, BTC, PTC)	744		●		●		●			●			
Rear stud (B-ST)	718		-		-		-			-			
Plug-in (PM)	-		-		-		-			-			
IEC 35mm rail mounting adapters	759		-		-		-			-			
CE marking		Self-declaration		Self-declaration		Self-declaration		Self-declaration			Self-declaration		
CCC recognition		-		Recognition in process		-		Recognition in process			Recognition in process		
Marine use approval (NK, LR, ABS, GL)		-		-		-		-			-		
Automatic tripping device		Thermal-magnetic		Thermal-magnetic		Thermal-magnetic		Thermal-magnetic			Thermal-magnetic		
Trip button		Equipped		Equipped		Equipped		Equipped			Equipped		
Page of Characteristics and dimensions		800		800		800		802			802		

Notes: *1 If using a 3-pole earth leakage circuit breaker as a 1-pole 2-phase device, connect the left and right poles and not the central pole. When wiring to single-phase 3-wire, connect the neutral line to the central pole.
 *2 In case of time delay type, rated voltage is 200-440VAC.
 *3 When the operating time are 0.45, 1.0 and 2.0 seconds, the Earth Leakage circuit breaker operates between 0.15 and 0.45 seconds, between 0.6 and 1.0 seconds and between 1.2 and 2.0 seconds respectively.
 *4 The cassette type design makes it easy for customer to install. Available for installation on side below 250A frame (excluding UVT).
 *5 Standard type is SLT equipped.
 *6 Place an order of other models in conjunction with the circuit breaker.
 *7 Not isolation compatible, excluding 400 to 630A frame.
 *8 AC100V does not acquire the CCC certification.

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Installation and connections

Cassette-type accessories

External accessories

UL 489 Listed Circuit Breakers

Earth Leakage Circuit Breakers

Measuring Display Unit Breakers

Other

Connection Types

Table 1 Connection

Connection type (Code address)		Front connection (F)			Rear (B)		
		Screw terminal (AMP-N)	Busbar terminal (BAR)	Solderless (BOX) terminal (SL)	Bar stud (B-ST)	Round stud (B-ST)	
Image							
		Please refer to page 720.					
MCCB	C	NF30-CS	●	-	-	●	
	S	NF32-SV • NF63-CV • NF63-SV • NF63-HV	●	●	-	-	●
		NF125-CV • NF125-SV • NF125-HV	●	●	-	-	●
		NF125-SEV • NF125-SGV • NF125-LGV • NF125-HEV • NF125-HGV	●	●	●	●	-
	H	NF160-SGV • NF160-LGV • NF160-HGV • NF250-CV • NF250-SV • NF250-HV • NF250-SEV • NF250-HEV • NF250-SGV • NF250-LGV • NF250-HGV	●	●	●	●	-
		NF400-SW • NF400-SEW • NF400-HEW • NF400-REW • NF400-CW	-	●	-	●	-
		NF630-SW • NF630-SEW • NF630-HEW • NF630-REW • NF630-CW	-	●	-	●	-
	M	NF800-SEW • NF800-HEW • NF800-REW • NF800-SDW • NF800-CW	-	●	-	●	-
		NF1000-SEW • NF1250-SEW • NF1600-SEW	-	●	-	●	-
			-	●	-	●	-
	R	NF125-UV	●	●	●	●	-
		NF125-RGV • NF250-RGV • NF250-UV	●	●	●	●	-
		NF400-UEW	-	●	-	●	-
		NF800-UEW	-	●	-	●	-
			-	●	-	●	-
UL	NF50-SVFU	●	●	-	-	-	
	NF100-CVFU	●	●	●	-	-	
	NF125-SVU	●	●	●	-	-	
	NF125-HVU	●	●	●	-	-	
	NF250-SVU	●	●	●	-	-	
	NF250-HVU	●	●	●	-	-	
	NF225-CWU	●	●	-	-	-	
BH	NF-SKW • NF-SLW	●	●	●	-	-	
	BH-K • BH-C1 • BH-C2 • BV-C1 • BV-C2	●	-	-	-	-	
	BH-P	●(Only load side)	-	-	-	-	
ELCB	C	NV32-SV • NV63-CV • NV63-SV • NV63-HV	●	●	-	●	
	S	NV125-CV • NV125-SV • NV125-HV • NV125-SEV • NV125-HEV	●	●	-	●	
		NV250-CV/SV/HV • NV250-SEV/HEV	●	●	-	●	
		NV400-SW • NV400-SEW • NV400-HEW • NV400-REW • NV400-CW	-	●	-	●	
	H	NV630-SW • NV630-SEW • NV630-HEW • NV630-CW	-	●	-	●	
		NV800-SEW • NV800-HEW	-	●	-	●	
Shape	Kind of terminal screw (A) (Circuit breakers having frame size of 1000A and more are not provided with terminal screws (A).)						
Screw size	M5		M8		M8, 2xM8, M10		
	NF32-SV 63-CV 63-SV 63-HV 50-SVFU(*1)	BH-P NV32-SV 63-CV 63-SV 63-HV	NF 63-CV(60, 63A) 63-SV(60, 63A) 63-HV(60, 63A) 125-CV 125-SV 125-HV 125-SEV 125-HEV 100-CVFU 125-SVU 125-HVU 125-UV	NV 63-CV(60, 63A) 63-SV(60, 63A) 63-HV(60, 63A) 125-CV 125-SV 125-HV 125-SEV 125-HEV	NF 125-SEV 125-HEV 125-RGV 125-SGV 125-LGV 125-HGV 160-SGV 160-LGV 160-HGV 250-CV 250-SV 250-HV 250-SEV 250-HEV 250-SGV 250-LGV 250-HGV 250-RGV 250-UV 225-CWU 250-SVU 250-HVU NV 125-SEV 125-HEV 250-CV 250-SV 250-HV 250-SEV 250-HEV	NF 400-UEW (4P) 800-CEW 800-SEW 800-HEW 800-REW 800-UEW 800-SDW	NF 800-SEW 800-HEW 400-CW 400-SW 400-SEW 400-HEW 400-REW 400-UEW(3P) 630-CW 630-SW 630-SEW 630-HEW 630-REW NV 400-CW 400-SW 400-SEW 400-HEW 400-REW 630-CW 630-SW 630-SEW 630-HEW
Type	In case of clamp connection (*3)						
	<p>① When the wire size is 5.5 mm² or more, divide the wires, and connect them. ② When connecting wires differing in size, for example, φ1.6 wires and 5.5-mm² wires, connect the two kinds of wires together to a crimp terminal because the thinner wires easily come off. ③ Do not tighten directly solid wires and cords consisting of thin copper wires used as strands, for example φ1.6 and 1.25-mm² wires, together.</p>						
●With insulating base (tube) for installation of metallic board ●The bar stud installation position can be turned 90° on all models (except NF800-UEW). The current-carrying capacity of a vertically installed bus bar is larger than that of a horizontally installed bus bar even if the bus bars have the same dimensions.							

Note *1 It is impossible to directly connect the wires of 40- and 50-A, NF/NV 50-SVFU.



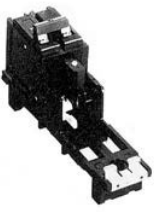
	Plug-in (PM)		Plug-in type for distribution board For distribution board for electric lamps (BPA)
	Bar stud (PM)	Screw terminal (PM)	
			
	-	-	-
	-	●	-
	-	●	-
	●	-	-
	●	-	-
	● (Except for NF1600-SEW)	-	-
	-	●(Except for 4P)	-
	●(Except for 4P)	-	-
	● (Except for NF800-UEW)	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	●
	-	●	-
	-	●	-
	●	-	-
	●	-	-
The circuit breaker can be connected only by pushing it onto the preliminarily wired terminal block. Install it tightening the supplied screws through the mounting holes.			Mounting base for distribution board for electric lamps.

Table 2 List of terminal screws (B)

Model		Connection type	Front	Rear	Plug-in
MCCB	C	NF400-CW • NF400-SW • NF400-SEW • NF400-HEW • NF400-REW • NF630-CW • NF630-SW • NF630-SEW		M12 bolt	
		NF630-HEW • NF630-REW • NF800-CEW • NF800-SEW • NF800-HEW • NF800-REW • NF800-SDW • NF-SKW • NF-SLW		M12 bolt	
		NF1000-SEW • NF1250-SEW		M12 bolt	
	H	NF1600-SEW	M10 bolt		—
U	NF400-UEW		M12 bolt		
	NF800-UEW		M12 bolt		—
ELCB I(400)	C	NV400-SW • NV400-SEW • NV400-HEW • NV400-REW • NV400-CW • NV630-SW • NV630-SEW • NV630-HEW • NV630-CW • NV-SKW		M12 bolt	
		NV800-SEW • NV800-HEW		M12 bolt	

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

Connecting Parts

For the connection shown in the table on the previous page, the following parts are available as connecting parts.

Table 3 Studs on rear surface (B-ST)

Type name	Number of poles	Applicable models		Set of order	Stud shape and major included parts	Remarks
		MCCB	ELCB			
ST-05SV2	2	NF32-SV, NF63-CV, NF63-SV	NV32-SV, NV63-CV	sets	★Round studs ●Round studs (with insulating tube) (2-pole: 4 pcs, 3-pole: 6 pcs, 4-pole: 8 pcs) ●Bolts and nuts	One set includes the parts for one unit. Please place an order for the number of circuit breakers.
ST-05SV3	3	NF63-HV	NV63-SV, NV63-HV			
ST-05SV4	4	NF63-SV, NF63-HV	—			
ST-1SV2	2	NF125-CV, NF125-SV NF125-HV(3, 4P)	—	sets	★Bar studs ●Bar studs (with insulating tube) (2-pole: 4 pcs, 3-pole: 6 pcs, 4-pole: 8 pcs) ●Bolts and nuts	
ST-1SV3	3		NV125-CV, NV125-SV			
ST-1SV4	4		NV125-HV			
ST-1HV2	2	NF125-HV(2P)	—	sets	★Bar studs ●Bar studs (with insulating tube) (2-pole: 4 pcs, 3-pole: 6 pcs, 4-pole: 8 pcs) ●Bolts and nuts	
ST-2SV2	2	NF125-SEV, NF125-HEV, NF125-RGV NF125-SGV, NF125-LGV, NF125-HGV	—			
ST-2SV3	3	NF160-SGV, NF160-LGV, NF160-HGV NF250-SGV, NF250-LGV, NF250-HGV	—			
ST-2SV4	4	NF250-CV, NF250-SV NF250-LGV/HGV, NF250-HV NF250-SEV, NF250-RGV NF250-HEV, NF125-SGV/HGV NF125-LGV, NF160-SGV NF160-LGV/HGV	NV125-SEV, NV125HEV NV250-CV, NV250-SV NV250-HV, NV250-SEV NV250-HEV	sets	★Bar studs ●Bar studs (with insulating tube) (2-pole: 4 pcs, 3-pole: 6 pcs, 4-pole: 8 pcs) ●Bolts and nuts	
ST-4SW2	2	—	—			
ST-4SW3	3	NF400-CW, NF400-SW NF400-SEW, NF400-HEW NF400-REW	NV400-CW, NV400-SW NV400-SEW NV400-HEW NV400-REW			sets
ST-4SW4	4	—	—			
ST-6SW2	2	NF630-CW, NF630-SW NF630-SEW, NF630-HEW NF630-REW	NV630-CW, NV630-SW NV630-SEW, NV630-HEW			
ST-8SW2	2	NF800-SDW, NF800-CEW NF800-SEW, NF800-HEW NF800-REW	—	sets	★Bar studs ●Insulating base (2 pcs) ●Bar studs (2-pole: 4 pcs, 3-pole: 6 pcs, 4-pole: 8 pcs) ●Mounting screws, bolts and nuts	
ST-8SW3	3		NV800-SEW, NV800-HEW			
ST-8SW4	4		—			

Table 4 Plug-in type terminal blocks (PM)

Type name	Number of poles	Applicable models	Set of order	Major included parts
PMDN-05SV2L	2	NF32-SV NF63-CV/SV/HV (3A-50A)	sets	Plug-in type terminal block (1 pc) Crip terminals (2-pole: 4pcs, 3-pole: 6 pcs, 4-pole: 8 pcs)
PMDN-05SV3L	3	NF32-SV NF63-CV/SV/HV (3A-50A)		
PMDN-05SV4L	4	NV32-SV NV63-CV/SV/HV (5A-50A)		
PMDN-05SV2H	2	NF63-CV/SV/HV (60A, 63A)		
PMDN-05SV3H	3	NF63-CV/SV/HV (60A, 63A)	sets	Plug-in type terminal block (1 pc) Crip terminals (2-pole: 4 pcs, 3-pole: 6 pcs, 4-pole: 8 pcs)
PMDN-05SV4H	4	NV63-CV/SV/HV (60A, 63A)		
PMDN-1SV2	2	NF125-CV/SV		
PMDN-1HV2	2	NF125-HV		
PMDN-1SV3	3	NF125-CV/SV/HV	sets	Plug-in type terminal block (2 pc) Crip terminals (2-pole: 4pcs, 3-pole: 6 pcs)
PMDN-1SV4	4	NV125-CV/SV/HV		
PMDN-1UV2	2	NF125-UV		
PMDN-1UV3	3			
PMDN-2SV2	2	NF125-SEV/HEV/SGV/LGV/HGV	sets	Plug-in type terminal block (1 pc) Plug-in type barriers (2-pole: 2 pcs, 3-pole: 4 pcs, 4-pole: 6 pcs) Tulip terminals (2-pole: 4 pcs, 3-pole: 6 pcs, 4-pole: 8 pcs)
PMDN-2SV3	3	NF160-SGV/LGV/HGV NF250-CV/SV/HV/SEV/HEV/SGV/LGV/HGV		
PMDN-2SV4	4	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV		
PMDN-2SV2	2	NF125-RGV, NF250-RGV		
PMDN-2SV3	3			
PMDN-2UV2	2		NF250-UV	
PMDN-2UV3	3			
PMDN-4SW2	2	NF400-CW/SW	sets	Plug-in type terminal block (2 pcs) Plug-in type barriers (4 pcs) Tulip terminals (3-pole: 6 pcs)
PMDN-4SW3	3	NF400-CW/SW/SEW NV400-CW/SW/SEW		
	3	NF400-HEW/REW NV400-HEW/REW		
PMDN-4SW4	4	NF400-SW/SEW NV400-SEW		
	4	NF400-HEW		
PMDN-8SW2	2	NF800-SDW	sets	Plug-in type terminal block (2 pcs) Tulip terminals (3-pole: 6 pcs)
PMDN-8SW3	3	NF800-CEW/SEW NV800-SEW		
	3	NF800-HEW/REW NV800-HEW		
PMDN-8SW4	4	NF800-SEW		
	4	NF800-HEW		

Note In addition to the circuit breakers shown above, 4-pole and 2-pole circuit breakers are available. We are ready to manufacture such circuit breakers to order. Please consult us.

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

Standard Tightening Torque

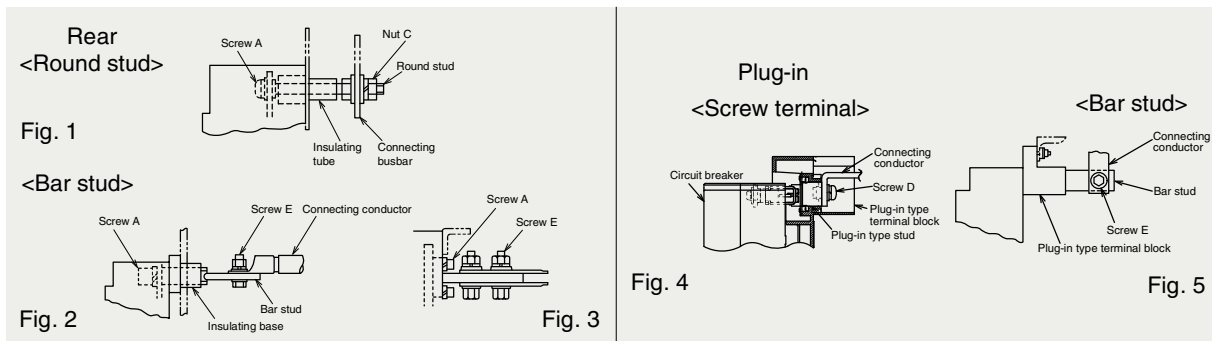


Table 5 Standard tightening torque (*1)

Model		Connection type		Tightening torque N·m									
				Rear				Plug-in					
				Round stud		Bar stud		Screw terminal		Bar stud			
				Fig.1		Fig. 2, Fig.3		Fig.4		Fig.5			
MCCB	ELOCB	Screw A		Nut C		Screw A		Screw E		Screw D		Screw E	
		Size	Tightening torque	Size	Tightening torque	Size	Tightening torque	Size	Tightening torque	Size	Tightening torque	Size	Tightening torque
NF30-CS	-	M4x0.7	1	M6	2	-	-	-	-	-	-	-	-
NF32-SV, NF63-CV NF63-SV, NF63-HV	NV32-SV, NV63-CV NV63-SV, NV63-HV	M4x0.7	1	M6	2	-	-	-	-	M6	3	-	-
NF125-CV, NF125-SV NF125-HV, NF125-UV	NV125-CV, NV125-SV NV125-HV	-	-	-	-	M6	4	M8	12	M8	6	-	-
NF125-SEV, NF125-HEV, NF125-RGV NF250-CV, NF250-SV, NF250-HV, NF250-SEV NF250-HEV, NF250-RGV, NF250-UV NF250-LGV/HGV, NF250-RGV, NF125-SGV/HGV NF125-LGV, NF160-SGV, NF160-LGV/HGV NF125-SGV, NF125-LGV, NF125-HGV NF160-SGV, NF160-LGV, NF160-HGV NF250-SGV, NF250-LGV, NF250-HGV	NV125-SEV, NV125-HEV NV250-CV, NV250-SV NV250-HV, NV250-SEV NV250-HEV	-	-	-	-	M6	10	M8	12	-	-	M8	12
NF400-CW, NF400-SW, NF400-SEW NF400-HEW, NF400-REW NF400-UW (3P)	NV400-CW, NV400-SW NV400-SEW, NV400-HEW NV400-REW	-	-	-	-	M8	20	M12	45	-	-	M12	45
NF400-UW (4P)	-	-	-	-	-	M10	30	M12	45	-	-	M12	45
NF630-CW, NF630-SW NF630-SEW NF630-HEW, NF630-REW	NV630-CW, NV630-SW NV630-SEW NV630-HEW	-	-	-	-	M8	20	M12	45	-	-	M12	45
NF800-CEW, NF800-SDW NF800-SEW, NF800-HEW, NF800-REW NF800-UW (*2)	NV800-SEW NV800-HEW	-	-	-	-	M10	30	2-M12	45	-	-	2-M12	45
NF1000-SEW NF1250-SEW	-	-	-	-	-	4-M8	12	2-M12	45	-	-	2-M12	45
NF1600-SEW	-	-	-	-	-	4-M8	12	4-M10	25	-	-	-	-

Notes *1 The appropriate range of tightening torque is $\pm 20\%$ of each value (standard tightening torque) shown in the above table. Please refer to the supplied assembly manual and instruction manual for more information.
*2 The plug-in type is not available.

Crimp Terminal Type

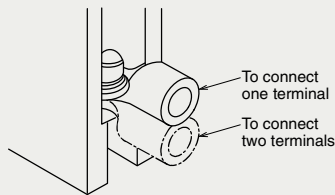
As the terminals in , commercially available crimp terminals can be used. Please purchase the terminals at an electric material store.
 For others, the crimp terminals for MCCB must be used. Place an order with us.
 For the connection types shown in Fig. a and Fig. b, only crimp terminals will be delivered.

Table 6 List of applicable crimp terminals

Frame (A)	Nominal sectional area mm ²		2	5.5	8	14	22
	Allowable current (600 V, IV wire at 30°C, not in conduit) (*4)		27A	49A	61A	88A	115A
Model	Size of mm ²		1.04 to 2.63	2.63 to 6.64	6.64 to 10.52	10.52 to 16.78	16.78 to 26.66
	MCCB	ELCB					
30	BH-P	-	R-2-5	R-5.5-5	R-8-5	R-14-5	BH-22 (L330T459-23)
50							
100	BH-P100	-			R-8-8	R-14-8	R-22-8
30	NF30-CS, NF32-SV, NF63-CV*, NF63-SV*	NV32-SV, NV63-CV*, NV63-SV*	R-2-5	R-5.5-5	R-8-5	R-14-5	JST22-S5
32	NF63-HV*	NV63-HV*	*(R-2-6)	*(R-5.5-6)			BH-22 (L330T459-23)
50	*50A or below	*50A or below					
60	NF63-CV, NF63-SV, NF63-HV	NV63-CV, NV63-SV, NV63-HV	R-2-8	R-5.5-8	R-8-8	R-14-8	R-22-8
63	60, 63A	60, 63A					
125	-	-	R-2-5 (R-2-6)	R-5.5-5 (R-5.5-6)	R-8-5	R-14-5	JST22-S5 (L330T459-23)
	NF125-CV, NF125-SV, NF125-HV, NF125-UV	NV125-CV, NV125-SV, NV125-HV	R-2-8	R-5.5-8	R-8-8	R-14-8	R-22-8
	60A or more	60A or more					
125	NF125-SEV, NF125-HEV, NF125-RGV	NV125-SEV, NV125-HEV				R-14-8	R-22-8
225	NF250-CV, NF250-SV, NF250-HV, NF250-UV	NV250-CV, NV250-SV, NV250-HV					
250	NF250-SEV, NF250-HEV, NF250-RGV	NV250-SEV, NV250-HEV					
	NF125-SGV, NF160-SGV, NF250-SGV						
	NF125-LGV, NF160-LGV, NF250-LGV						
	NF125-HGV, NF160-HGV, NF250-HGV						
400	NF400-CW, NF400-SW, NF400-SEW	NV400-CW, NV400-SW					
600	NF400-HEW, NF400-REW, NF400-UW	NV400-SEW, NV400-HEW					
630	NF630-CW, NF630-SW, NF630-SEW	NV400-REW, NV630-CW					
	NF630-HEW, NF630-REW	NV630-SW, NV630-SEW					
		NV630-HEW					
800	NF800-CEW, NF800-SEW, NF800-HEW						
1000	NF800-REW, NF800-UW, NF800-SDW	NV800-SEW, NV800-HEW					
1200							
1250	NF1000-SEW, NF1250-SEW						

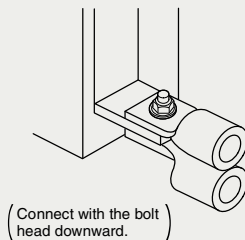
Reference drawings of connection types

Method of connecting directly to terminal(s) of body

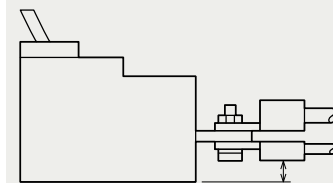


(Fig. a)

Method of connecting to front bar terminal



(Fig. b)



Carefully check the insulating distance between the connecting bus bar, crimp terminal and tightening bolt and the ground and the phase-to-phase insulating distance.

- Detailed Specifications
- Installation and Connection
- Characteristics and Dimensions
- Accessories
- Molded Case Circuit Breakers
- Earth Leakage Circuit Breakers
- UL 489 Listed Circuit Breakers
- Measuring Display Unit Breakers
- Other

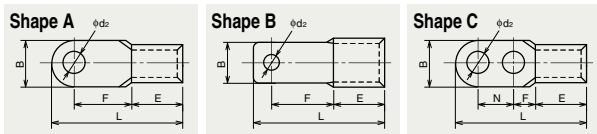
<Explanation of abbreviations> R Product specified by JIS
 CB..... Product specified by JEM 1399
 AMP..... Product made by Nippon AMP
 JST Product made by J.S.T. Mfg. Co., Ltd.
 NTK..... Product made by Nippon Tanshi Co., Ltd.
 NTM..... Product made by Nichifu Co., Ltd.
 DST..... Product made by Daido Solderless Terminal Mfg. Co., Ltd.

	38	60	100	150	200	325	Crimp terminal tightening screw			Remarks	Reference drawing of connection type
	162A	217A	298A	395A	469A	650A	Screw size	Tightening torque N·m	Shape		
	26.66 to 42.42	42.42 to 60.57	96.3 to 117.2	117.2 to 152.05	192.6 to 242.27	242.27 to 325	M5	2 to 3		When connecting two crimp terminals, set the terminals as shown below if the *-marked terminals are used. (Fig. a)	
AMP #322870 JST 38-S8 NTK R38-8S	1AF-60 (L330T459-12) CB60-S8						M8	5 to 7			
							M5	2 to 3			
AMP #322870 JST 38-S8 NTK R38-8S	1AF-60 (L330T459-12) CB60-S8						M8	5 to 7			
							M5	2 to 3			
AMP #322870 JST 38-S8 NTK R38-8S	1AF-60 (L330T459-12) CB60-S8						M8	5 to 7			
R-38-8	R-60-8	2AF (LN300T920-20) CB100-S8	2CR-150(*1) (LN300T920-21) (*1)CB150-S8				M8	8 to 13		When using 2AF, use a crimp tool having a nominal size of 100.	
R-38-12	R-60-12	R-100-12	R-150-12	R-200-12	JST325-12		M12	40 to 50		Fit to a front type bar terminal. Up to two pieces can be fitted to one terminal.	(Fig. b)
R-38-12	R-60-12	R-100-12	RD150-12 SD150-12	RD200-12 SD200-12	RD325-12 SD325-12						

Notes *1 When using 2CR-150 or CB150-S8, insulate it from TC-S with insulating tube or tape. When using CB150-SB for a 2- or 3-pole circuit breaker, TCL-2SV3L is applicable.
 *2 On the power supply side, pan-head screws M5 are used.
 *3 When tightening a terminal screw without connecting a wire, crimp terminal or bar, tighten the screw to 20 to 30% of the torque shown in the above table (to prevent damage to the threads).
 *4 The table shows not the allowable current values of circuit breakers, but those of wires applicable to crimp terminals.
 Remark: 1. For the crimp terminals for UL listed circuit breakers, refer to the page of the characteristics and external dimensions of UL 489 Listed Circuit Breakers.

● Dimensions of crimp terminals <extracted from catalog of JST>

Part number	Shape	Applicable screw size	External dimensions						Applicable wire mm ²	Part number	Shape	Applicable screw size	External dimensions						Applicable wire mm ²	
			φd2	B	L	F	E	Thickness					φd2	B	L	F	E	Thickness		
R2-5	A	M5	5.3	9.5	16.8	7.3	4.8	0.8	1.04 to 2.63	LN300T920-21	B	M8	8.4	22.5	70.0	33.0	27.0	3.2	117.2 to 152.05	
R2-6		M6	6.4	12.0	21.8	11.0			L330T402-8	M8		8.4	25.3	61.5	23.0					
R2-8		M8	8.4	12.0	21.8	11.0			R150-12	A	M12	13.0	36.0	66.0	21.0					
R5.5-5	A	M5	5.3	9.5	19.8	8.3	6.8	1.0	2.63 to 6.64	R200-12	A	M12	13.0	44.0	78.0	24.5	31.5	4.0	192.6 to 242.27	
R5.5-6		M6	6.4	12.0	25.8	13.0			325-12	A	M12	13.0	50.5	88.0	33.5	35.5	4.5	242.27 to 325		
R5.5-8		M8	8.4	15.0	28.0	13.7			CB60-S8	B	M8	8.4	16.0	46.7	20.7	18.0	2.0	42.42 to 60.57		
R8-5	M5	5.3	12.0	23.8	9.3	8.5	1.2	6.64 to 10.52	CB100-S8		M8	8.4	22.0	52.5	20.5	21.0	2.6	96.3 to 117.2		
R8-5NS	M5	5.3	9.0	22.3				CB150-S8	M8		8.4	22.0	61.0	23.0	27.0	3.2	117.2 to 152.05			
R8-6	M6	6.4	12.0	23.8																
R8-8	M8	8.4	15.0	29.8	13.8															
8-5SC-9	M5	5.3	9	23.8	9.3	8.5	1.2	6.64 to 10.52												
R14-5	A	M5	5.3	12.0	29.8	10.5	1.5	10.52 to 16.78	RD60-12	C	M12	14.0	22.0	89.0	20.0	18.0	40	2.0	42.42 to 60.57	
14-5NS		M5	5.3	9.0	28.3			13.3	RD100-12			14.0	28.5	95.5	20.3	21.0		2.6	96.3 to 117.2	
R14-6		M6	6.4	12.0	29.8				RD150-12			14.0	36.0	106.0	21.0	27.0		3.2	117.2 to 152.05	
R14-8		M8	8.4	16.0	32.8			14.5	RD200-12			14.0	44.0	116.5	23.0	31.5		4.0	192.6 to 242.27	
L330T459-23	A	M5	5.3	12.0	30.0	12.0	1.8	16.78 to 26.66	RD325-12	C	M12	14.0	50.5	123.8	23.0	35.5	32	4.5	242.27 to 325	
22-5NS		M5	5.3	9.5	28.7				SD150-12			14.0	36.0	107.0	29.0	28.0		3.2	117.2 to 152	
22-S6		M6	6.4	12.0	30.0				SD200-12			14.0	44.0	108.0	36.0	32.0		4.0	192.6 to 242.2	
R22-8		M8	8.4	16.5	33.7			13.5	SD325-12			14.0	50.5	125.0	38.0	37.0		4.5	242.2 to 325	
R22-12	M12	13.0	22.0	42.5	19.5															
38-S8	A	M8	8.4	15.5	38.0	16.0	14.0	1.8	26.66 to 42.42											
R38-8		M8	8.4	22.0	42.7	17.7														
R38-12		M12	13.0																	
L330T459-12		M8	8.4	16.0	46.7	20.7														
R60-8	A	M8	8.4	22.0	49.7	20.7	18.0	2.0	42.42 to 60.57											
R60-12		M12	13.0																	
LN300T920-20	B	M8	8.4	22.5	51.0	20.0	21.0	2.6	96.3 to 117.2											
R100-12	A	M12	13.0	28.5	55.6	20.4														



Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Unit

Other

Busbar

The size of the conductor can be connected is shown on the outline drawing of each model. The following special busbars are available. Use them as needed. When using any busbar, isolate it from the bare busbar on the circuit breaker power supply side with an insulating barrier.

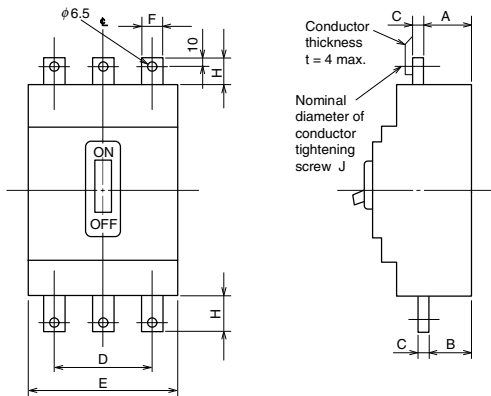


Fig. 1

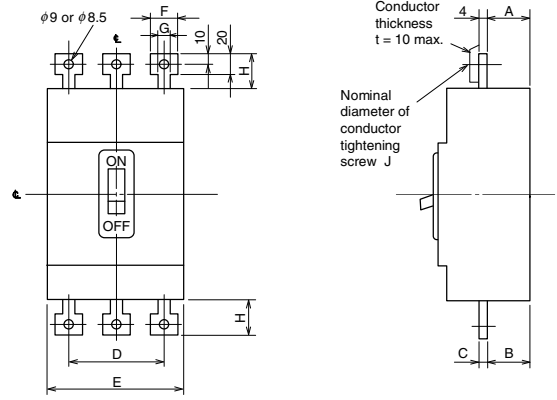


Fig. 2

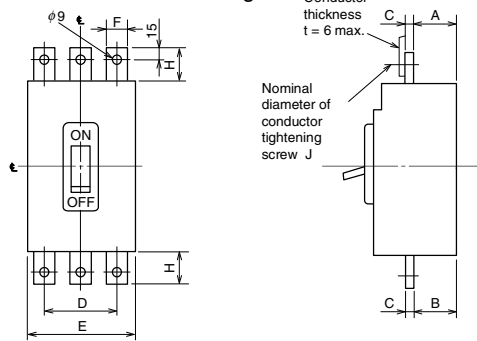


Fig. 3

Table 7 Table of variable dimensions

Type name	Applicable models		Outline and dimensions	Busbar									
	MCCB	ELCB		Fig.	A	B	C	D	E	F	G	H	J
FB-05SV	NF32-SV NF63-CV (50A or below) NF63-SV (50A or below) NF63-HV (50A or below)	NV32-SV NV63-CV (50A or below) NV63-SV (50A or below) NV63-HV (50A or below)		1	24	24	2	50	75	11.5	-	25	M5x0.8
FB-1SV	NF125-CV, NF125-SV NF125-HV, NF125-UV	NV125-CV NV125-SV NV125-HV		2	24	24	4	60	90	18	15	29	M8
FB-2SV	NF125-SEV NF125-HEV, NF125-RGV NF250-CV, NF250-SV, NF250-HV NF250-UV, NF250-SEV NF250-HEV, NF250-RGV NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV	NV125-SEV NV125-HEV NV250-CV, NV250-SV NV250-HV, NV250-SEV NV250-HEV		3	24	24	6	70	105	20	-	37	M8

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

Insulation Distance on Power Source Side

●Basic concept

Insulation distance (distance indicated in standards)

Be sure to at least secure the insulation distances (spatial distance and creeping distance) specified by the codes and standards of the relevant equipment and facilities where the circuit breakers are installed.
It is recommended that insulation barriers and insulation tape be used to enhance the electrical insulation between bare-live parts and between bare-live parts and ground to avoid accidents otherwise caused by a loose metal piece, conductive dust, abnormal surge voltage in the circuit or a similar event so as to improve the reliability of panels.

Arc Space (insulation space)

At the exhaust outlet side of breaker, arc space is necessary. When the actual load circuit is opened, especially when a large current such as overload or short-circuit is interrupted, ionized gas is emitted from the exhaust outlet. This gas can cause a short circuit between bare, live parts such as busbars, and also can cause grounding faults between conductive installation metal panels.
Therefore, it is important to secure enough arc space at the exhaust outlet side of the breaker and to strengthen insulation of parts exposed to the gas. In addition, securing enough space at the front of the exhaust outlet is necessary, because when the gas emission is blocked, failures such as deterioration of breaking performance can be caused.

●Insulation required part

With regard to insulation of bear, live parts of the line side of the breaker, please make sure to insulate at least C part C indicated in the diagram above with insulation tape, a tube or a terminal cover.

- ①A : Distance from the circuit breaker to the ceiling plate
 - ②B1 : Distance from the circuit breaker to the uncovered conducting part of the upper circuit breaker terminal (front connection)
 - ③B2 : Distance from the lower circuit breaker to the end face of the upper circuit breaker (rear connection)
 - ④D1 : Distance from the side of the breaker to the side plate
 - ⑤C : Insulated length of the power source terminal of the circuit breaker (front connection)
- Please secure insulation using insulating tape, insulating tubing, insulation barrier, or a terminal cover, between bare charge parts within this size range. Please refer to a table a necessary size must.
- ◇When using insulation tape and insulation tubing together with insulation barriers and terminal covers, make them overlap with the other by at least 10 mm.
 - ◇For the models with insulation barriers supplied as standard, please make sure to use the barriers.
 - a : clearance specified in standard
 - ⑥D2 : Side-to-side spacing of breakers
- While the circuit breakers can basically be installed together without a clearance in between, be sure to observe the following instructions.
- ◇It is desirable to install an insulation barrier between the adjacent circuit breakers or insulate the bare-live parts considering the effect of cutoff gas.
 - ◇Be sure to secure the insulation distance (dimension a) as the minimum, indispensable requirement.
 - ◇With a leakage circuit breaker and a leakage alarm circuit breaker installed in close contact with the other, a current of 2,500A or higher flowing through one of the circuit breakers could cause the other to operate falsely.
 - Be sure to secure a distance of at least 50 mm in between.
 - ◇A circuit breaker of 400-ampere frame or larger with an SHT or a UVT could operate falsely if a current of 50 kA or higher flows through the adjacent circuit breaker. Be sure to secure a distance of at least 50 mm in between.

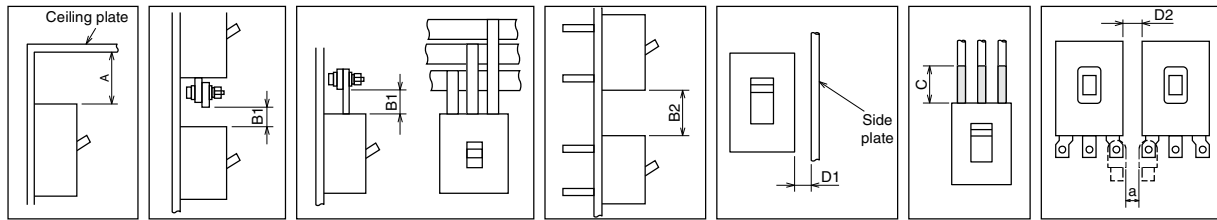


Table 8 Insulation distance (mm) (440VAC or below) *Figures in parentheses are for 230VAC or below.

Class • Series	Model		Ceiling plate			Vertical spacing		Horizontal spacing	
	MCCB	ELCB	A		Insulated plate, coated plate	Without terminal cover	With terminal cover	C	D1
			Without terminal cover	With terminal cover					
C • S • H • R • MB	NF30-CS	-	10	10	10	20	20	(*1)	20
	NF32-SV, NF63-CV	NV63-CV	5	5	5	20	20	(*1)	20
	NF63-SV, NF63-HV	NV32-SV, NV63-SV, NV63-HV	10	10	10	30	30	30	25
	NF125-CV	NV125-CV	50(30)	40(30)	10	50	50	(*1)	25
	NF125-SV	NV125-SV	50(10)	30(10)	10	50	50	50	25
	NF125-HV	NV125-HV	50	40	40	80	80	80	40
	NF250-CV	NV250-CV	40	40	40	50	50	50	50
	NF125-SEV, NF250-SV, NF250-SEV	NV125-SEV, NV250-SV, NV250-SEV	70(40)	40	40	70(50)	50	70(50)	50
	NF125-SGV, NF160-SGV, NF250-SGV								
	NF125-HEV, NF250-HV, NF250-HEV								
	NF125-LGV, NF160-LGV, NF250-LGV	NV125-HEV, NV250-HV, NV250-HEV	80	60	60	80	80	80	60
	NF125-HGV, NF160-HGV, NF250-HGV								
	NF400-CW	NV400-CW	60	60	60	60	60	60	40
	NF400-SW, NF400-SEW	NV400-SW, NV400-SEW	70	70	70	70	70	70	70
	NF400-HEW, NF400-REW	NV400-HEW, NV400-REW	200	200	200	200	200	200	150
NF630-SW, NF630-SEW, NF630-CW	NV630-CW, NV630-SW, NV630-SEW	70	70	70	70	70	70	70	
NF630-HEW, NF630-REW	NV630-HEW	200	200	200	200	200	200	150	
NF800-SEW, NF800-CEW	NV800-SEW	80	80	80	80	80	80	80	
NF800-HEW, NF800-REW	NV800-HEW	200	200	200	200	200	200	150	
NF1000-SEW, NF1250-SEW									
NF1600-SEW									
R • U	NF125-RGV, NF250-RGV	-	30 (*6)	30 (*6)	30 (*6)	50 (*9)	50 (*9)	50	5
	NF125-UV, NF250-UV	-	(*1)	(*1)	(*1)	(*1)	(*1)	(*1)	25
	NF400-UEW	-	70	70	70	70	70	70	70
	NF800-UEW	-	80	80	80	80	80	80	80
	NF1000-UEW	-	80	80	80	80	80	80	80
BH	BH-K, BH-K100	-	(*1)	-	(*1)	(*1)	(*1)	(*1)	20
	NF225-CWU	-	(40)	-	(40)	(50)	-	(50)	(50)
UL	NF50-SVFU	-	10 (*6)	10 (*6)	10 (*6)	20 (*7)	20 (*7)	30	10
	NF100-CVFU	-	50(25)	40(25)	10	50	50	50	25(15)
	NF125-SVU(*4)	-	40(10)	30(10)	10	50	50	50	25(20)
	NF125-HVU(*5)	-	40	40	40	80	80	80	25(20)
	NF250-SVU(*4)	-	40	40	40	70(50)	50	70(50)	50(20)
	NF250-HVU(*5)	-	40	40	40	80	80	80	50(20)
	NF400-SWU, NF400-HWU(*5)	-	70	70	70	70	70	70	70
NF630-SWU, NF630-HWU(*5)	-	70	70	70	70	70	70	70	

Remark: 1. The table shows the dimensions in the case of the use of a large terminal cover (TC-L).

Notes *1 It is not necessary to provide an insulation distance (an arc space) on the power supply side. However, if a grounding metal piece or the like comes in close contact with the terminal, be sure to completely insulate the terminals or the bare-live parts of the cable conductors.

*2 At more than 440 V AC, the distance shall be 10 mm.

*3 For 480Y/277V AC.

*4 For 480V AC.

*5 For 600Y/347V AC.

*6 An exhaust port is provided also on the circuit breaker load side. Secure the dimension A both on the power supply side and on the load side.

*7 When any of the circuit breakers NF125-RGB to NF250-RGV is used on the upstream side, an exhaust port is provided also on the circuit breaker load side. Secure the larger distance of the dimension B1 of NF125-RGV, NF250-RGV or NF50-SVFU and the dimension B1 of the downstream circuit breaker.

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

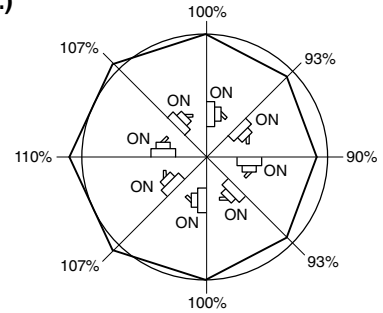
Other

Effect of Installation Orientation

Installation orientation does not affect the operating characteristics of circuit breakers of electronic or thermo-magnetic operation types. However, the installation orientation affects the operating current of fully magnetic type circuit breakers as the iron core in the oil dash pot is under gravitational force. It is generally suggested they be installed vertically.

●Hydraulic-magnetic (The same applies to other models of hydraulic-magnetic type.)

MCCB	
Class	Model
C	NF30-CS



Rate of change of rated current by mounting angle

Connection of Line and Load

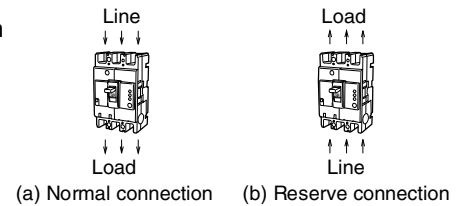
The standard wiring of line and load on the circuit breaker is as shown in (a) normal connection on the right.

Avoid the wiring shown in (b) reverse connection. This may lead to a decrease in breaking performance.

However, the reverse connection is allowed for the following models (excluding MDU breakers).

NF-C, NF-S, NF-H, NF-R and NF-U class
BH-P, CP30-BA, NV-C, S, H and R class of 400 to 800AF, NF100-CVFU, NF125-SVU, NF125-HVU, NF250-SVU, NF250-HVU

Reverse connection is allowed for the standard models.



Connection methods

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Modded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

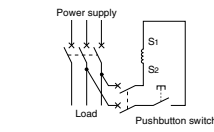
Other

Internal Accessories

The accessories to be installed in circuit breakers include the followings. For the numbers of the accessories which can be installed. The standard internal accessories have lead wires (450 mm long) 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 8 mm 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.)

SHT (Shunt trip)

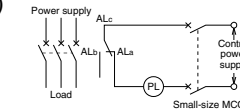
Device to electrically trip a circuit breaker from a distance. The allowable operating voltage range is 70 to 110% of the rated voltage. (JIS C 8201-2-1 Ann.1, Ann.2)



Connection diagram

AL (Alarm switch)

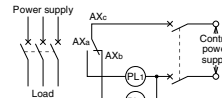
Switch to electrically display the tripping status of circuit breaker



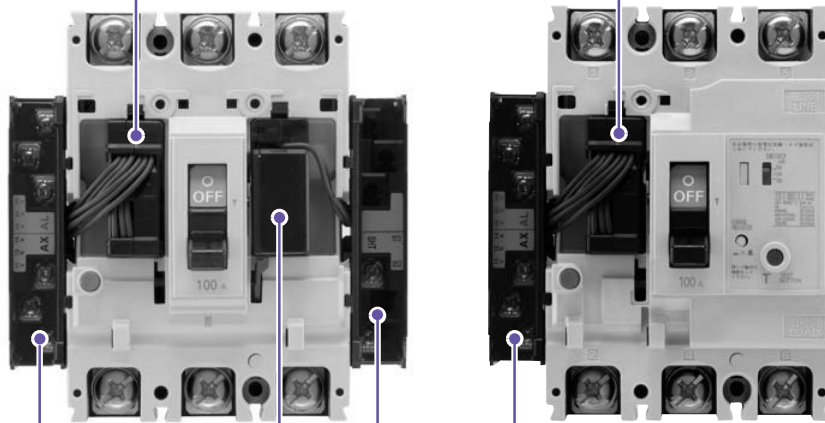
Connection diagram

AX (Auxiliary switch)

Switch to electrically display the ON-OFF status of circuit breaker



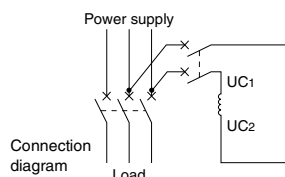
Connection diagram



UVT (Undervoltage trip)

Device to automatically trip a circuit breaker when the voltage drops. The operating voltage is 70 to 35% of the UVT rated voltage. (JIS C 8201-2-1 Ann.1)

When the voltage recovers at least to 85% or more, the circuit breaker can be turned on after the device is manually reset.



Connection diagram

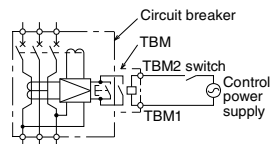
SLT (Lead wire terminal block)

Terminals for connecting with internal accessories. The terminal block will be manufactured to order. For the detailed dimensions. (The dimensions of SLT slightly vary depending on the number of installed accessories and the model.)

However, circuit breakers with a frame size of 400A and above having an electrical operation device are normally provided with SLT.

TBM (Test button module)


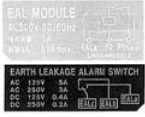



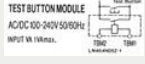
Unit to perform test under voltage from a distance. TBMs can be connected in parallel. (The standard TBMs are provided with SLT. In the case of the flush plate type, the external dimensions are partially different from those of the standard type.)



TBM circuit diagram

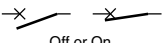
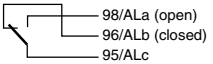
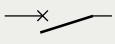
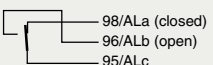
Kinds of Internal Accessories

Table 1

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

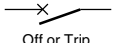
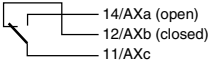
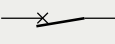
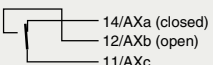
Operations and Ratings of Switches

Table 2 Operations of AL switch

Status of circuit breaker	Contact status of AL switch
 Off or On	
 Trip	

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

Table 3 Operations of AX switch

Status of circuit breaker	Contact status of AX switch
 Off or Trip	
 On	

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

Table 4 Ratings of AL and AX switches

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

Remark: 1. The ratings in parentheses do not conform to UL.

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

Maximum Number of Internal Accessories

MCCB and Motor Protection Breakers

Table 5 Table of maximum number of internal accessories

● AL ○ AX ▣ SHT or UVT ■ PAL — Outgoing direction of lead wires

Left pole → ← Right pole are cassette type accessories. (Some of UVT are not provided with cassettes.)

Model	C	NF30-CS	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
Number of poles AL and AX (standard) switches	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	
Accessory	S							V
	AL							
AX								
SHT or UVT								
AL + AX	 3-pole product only							
SHT AL or UVT								
SHT AX or UVT								
AL + AX + SHT or UVT								
PAL (contact output)								

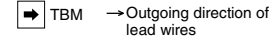
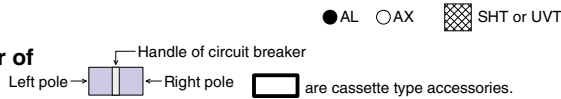
Notes *1 When UVT is provided, the UVT voltage module will come in the vertical lead wire terminal block type. (SHT does not have a voltage module.)
 *2 The second AX can be installed in place of the AL on the left pole side. When placing an order, specify the incorporation of the switches in the body.
 *3 Although the lead wires are normally drawn out laterally, those with lead wires drawn out toward load are available. (Only for front connection type)
 *4 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 200 V AC) is necessary.
 *5 SHT and UVT can be installed on the left side.
 *6 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 reset preventing UVT must be installed on the left pole side.)
 *7 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.
 *8 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.
 *9 SLT is provided as standard. A control power supply (100 to 200 V AC) 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.

Low-Voltage Power Distribution Product

- Installation and Connection
- Characteristics and Dimensions
- Accessories
- Molded Case Circuit Breakers
- Earth Leakage Circuit Breakers
- UL 489 Listed Circuit Breakers
- Measuring Display Unit Breakers
- Other

ELCB

Table 6 Table of maximum number of internal accessories



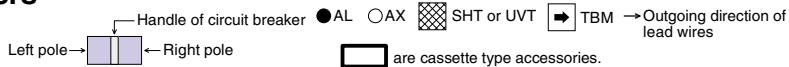
Model	C	NV63-CV NV125-CV NV250-CV	NV400-CW NV630-CW	
	S	NV32-SV NV63-SV NV125-SV NV125-SEV NV250-SV NV250-SEV	NV400-SW NV400-SEW NV630-SW NV630-SEW	NV800-SEW
H • R	NV63-HV NV125-HV NV125-HEV NV250-HV NV250-HEV	NV400-HEW NV400-REW NV630-HEW		NV800-HEW
U				
Number of poles	2, 3, or 4 poles		3 poles	
Switch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

- Notes
- *1 The standard type is provided with SLT. Only in the case of 24 V DC, 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.

- Detailed Specifications
- Installation and Connection
- Characteristics and Dimensions
- Accessories
- Molded Case Circuit Breakers
- Earth Leakage Circuit Breakers
- UL 489 Listed Circuit Breakers
- Measuring Display Unit Breakers
- Other

UL 489 Listed Circuit Breakers

Table 7 Table of maximum number of internal accessories



Model	MCCB	NF50-SVFU NF100-CVFU	NF50-SVFU NF100-CVFU	NF125-SVU NF125-HVU NF250-SVU NF250-HVU	NF225-CWU	NF400-SWU NF400-HWU	NF630-SWU NF630-HWU			
	ELCB							NV50-SVFU	NV50-SVFU NV100-CVFU	NV125-SVU NV125-HVU NV250-SVU NV250-HVU
Number of poles AL and AX (standard) switches		2 poles	3 poles	2 or 3 poles	3 poles	3 poles	3 poles	2 poles	3 poles	3 poles
Accessory		S								
AL										
AX										
SHT or UVT										
AL + AX										
AL + SHT or UVT										
AX + SHT or UVT										
AL + AX + SHT or UVT										
TBM										

- 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 SHT, 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 24 V DC, specify the control voltage.
- 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.)

Low-Voltage Power Distribution Product

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

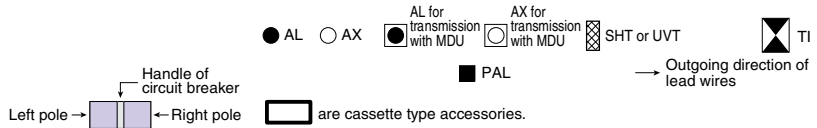
UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

MDU Breakers

Table 8-1 Table of maximum number of internal accessories



Model	NF400-SEP with MDU NF400-HEP with MDU	NF600-SEP with MDU NF600-HEP with MDU NF800-SEP with MDU NF800-HEP with MDU
Number of poles switch	3 or 4 poles	
Accessory	S	
AL		(*1)
AX		(*1)
SHT	(*2)	(*2)
UVT	(*3) (*4)	(*3) (*4)
AL + AX	(*1)	(*1)
AL + SHT	(*1) (*2)	(*1) (*2)
AX + SHT	(*1) (*2)	(*1) (*2)
AL + AX + SHT	(*1) (*2)	(*1) (*2)
AL + UVT	(*1) (*3) (*4) (*5)	(*1) (*3) (*4) (*5)
AX + UVT	(*1) (*3) (*4) (*5)	(*1) (*3) (*4) (*5)
AL + AX + UVT	(*1) (*3) (*4) (*5)	(*1) (*3) (*4) (*5)
PAL	(*6)	(*6)
EPAL	—	—
TI	(*6) <small>With contact outputs for PAL and OAL</small>	(*6) <small>With contact outputs for PAL and OAL</small>

- Notes
- *1 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.
 - *2 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 reset preventing UVT must be installed on the left pole side.)
 - *3 The UVT voltage module is installed externally. UTV is not provided with a cassette.
 - *4 UVT is normally installed on the right pole. If you intend to install it on the left pole, specify so.
 - *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 The standard model has a terminal block. A 5-VA control power supply (compatible with 100 to 240 V AC/DC) is required. (In this case, another internal accessory cannot be installed on the right pole.)

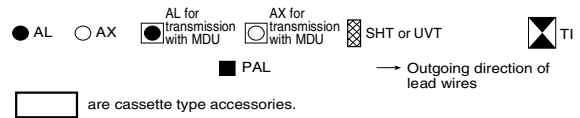
Remark: 1. The encircled numbers indicate the order of installation.

Detailed Specifications
Installation and Connection
Characteristics and Dimensions
Accessories
Molded Case Circuit Breakers
Earth Leakage Circuit Breakers
UL 489 Listed Circuit Breakers
Measuring Display Unit Breakers
Other

Table 8-2 Table of maximum number of internal accessories

Model	NF400-SEP with MDU NF400-HEP with MDU	NF600-SEP with MDU NF600-HEP with MDU NF800-SEP with MDU NF800-HEP with MDU
Number of poles switch	3 or 4 poles	
Accessory	S	
AL for transmission with MDU (*1)		
AX for transmission with MDU (*1)		
AL + AX for transmission with MDU (*1)		
AL + AX + AL for transmission with MDU (*1)		
AL + AX + AX for transmission with MDU (*1)		
AL + AX + AL + AX for transmission with MDU (*1)		

Note *1 To transmit signals from AL, AX or AL and AX, AL and/or AX for transmission with the MDU are installed on the left pole side. In this case, the lead wires of AL and/or AX for transmission with the MDU installed on the left pole side cannot be drawn out to the outside or fitted to the terminal block.



Model	NF250-SEV with MDU NF250-HEV with MDU
Number of poles switch	3 or 4 poles
Accessory	S
AL	
AX	
AL + AX	(*1)
SHT or UVT	(*2)
AL + SHT	(*2)
AX + SHT	(*2)
AL + AX + SHT	(*2)
AL + UVT	(*2)
AX + UVT	(*2)
AL + AX + UVT	(*2)
AL for transmission with MDU (*3)	
AL for transmission with MDU AX (*3)	
AL for transmission with MDU AL + AX (*3)	
AL for transmission with MDU AL + AX + AL (*3)	
AL for transmission with MDU AL + AX + AX (*3)	
AL for transmission with MDU AL + AX + AL + AX (*3)	

Notes *1 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.
*2 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.)
*3 To transmit signals from AL, AX or AL and AX, AL and/or AX for transmission with the MDU are installed on the left pole side. In this case, the lead wires of AL and/or AX for transmission with the MDU installed on the left pole side cannot be drawn out to the outside or fitted to the terminal block. In the case of 225A frame circuit breakers, AL for transmission with the MDU must be installed for fault current measurement.

Remark: 1. The encircled numbers indicate the order of installation.



Cassette Type Accessories

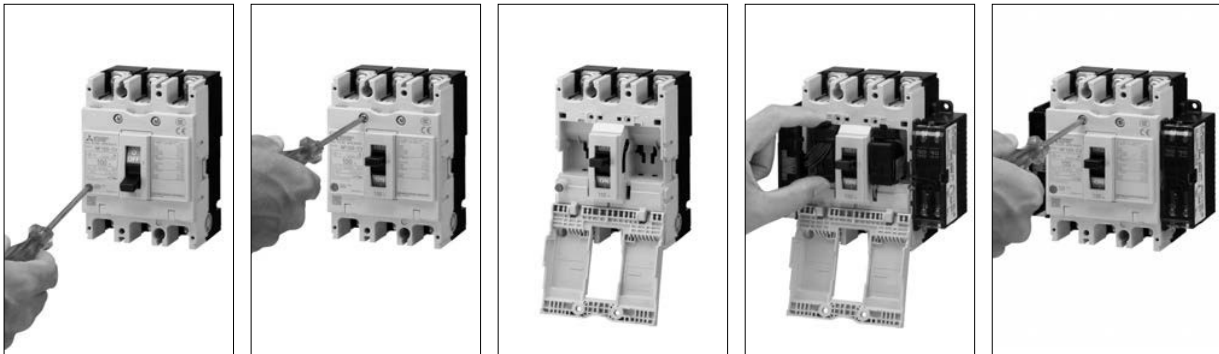
The internal accessories for major models having a frame size from 30 to 800 A come in cassettes, and they can be installed to and removed from circuit breakers by the user.

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 250 A or by 1 piece for frame size from 400 to 800 A.)

Applicable models and kinds of cassette type accessories

	Model	Alarm switch (AL)	Auxiliary switch (AX)	Shunt tripping device (SHT)	Undervoltage tripping device (UVT)
MCCB	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-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	NV63-CV-NV250-CV, NV32-SV-NV250-SV NV63-HV-NV250-HV NV125-SEV, NV250-SEV, NV125-HEV, NV250-HEV NV100-CVFU, NV125-SVU/HVU, NV250-SVU/HVU	○	○	○	○
	NV50-SVFU, NV400-CW, NV630-CW NV400-SW, NV630-SW, NV400-SEW-NV800-SEW NV400-HEW-NV800-HEW, NV400-REW	○	○	○	-

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

NV250-SV, NV250-HV

NF125-SVU, NF125-HVU, NV125-SVU, NV125-HVU

NF250-SVU, NF250-HVU, NV250-SVU, NV250-HVU

NF250-SEV, NF250-HEV, NF250-UV

NV250-HEV

NF125-SEV, NF125-HEV

NV125-SEV, NV125-HEV

NF400-REW, NF400-UEW

NF630-REW, NV400-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 800 A, secure the lead wires along the circuit breaker side face with the supplied lead wire retainers.

Type name

Table 9-1

Model		Installation pole	AL	AX	AL+AX	SHT	UVTN or UVTS	
MCCB	ELCB							
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	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	NV50-SVFU	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 UVTNA250-05SVR UVTNA480-05SVR UVTNAD130-05SVRS UVTNA250-05SVRS UVTNA480-05SVRS	UVTSAD130-05SVR UVTSA250-05SVR UVTSA480-05SVR UVTSAD130-05SVRS UVTSA250-05SVRS UVTSA480-05SVRS
		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 UVTNA250-05SVL UVTNA480-05SVL UVTNAD130-05SVLS UVTNA250-05SVLS UVTNA480-05SVLS	UVTSAD130-05SVL UVTSA250-05SVL UVTSA480-05SVL UVTSAD130-05SVLS UVTSA250-05SVLS UVTSA480-05SVLS
NF100-CVFU NF125-SVU/HVU NF250-SVU/HVU	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 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 UVTNA250-05SVUR UVTNA480-05SVUR UVTNAD130-05SVURS UVTNA250-05SVURS UVTNA480-05SVURS	UVTSAD130-05SVUR UVTSA250-05SVUR UVTSA480-05SVUR UVTSAD130-05SVURS UVTSA250-05SVURS UVTSA480-05SVURS
		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 UVTNA250-05SVUL UVTNA480-05SVUL UVTNAD130-05SVULS UVTNA250-05SVULS UVTNA480-05SVULS	UVTSAD130-05SVUL UVTSA250-05SVUL UVTSA480-05SVUL UVTSAD130-05SVULS UVTSA250-05SVULS UVTSA480-05SVULS
NF400-CW, NF400-SW, NF400-SEW NF400-HEW, NF400-REW, NF400-UWU NF630-CW, NF630-SW, NF630-SEW NF630-HEW, NF630-REW NF800-CEW, NF800-SDW, NF800-SEW NF800-HEW, NF800-REW, NF800-UWU	NV400-CW, NV400-SW NV400-SEW, NV400-HEW NV400-REW NV630-CW, NV630-SW NV630-SEW, NV630-HEW NV800-SEW, NV800-HEW	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	-	
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-4SWUL	AX-4SWUL	ALAX-4SWUL	SHT-4SWU	-	

- Remarks: 1. For the possibility of installation of accessories and the installation pole, refer to the tables of maximum numbers on pages 727 to 731.
 2. AL and AX for minute load can be manufactured to order.
 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. Cassette type accessories (AL, AX and SHT) cannot be installed to circuit breakers with MG.
 7. 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.
 8. It is impossible to install the cassette type AL or AX to the pole to which UVT has been installed.
 9. AX and SHT with lead wires drawn out for frame size from 400 to 800 A can be installed to any of the right and left poles.
 10. When installing more than one AL or AX with lead wires drawn out for frame size from 400 to 800 A 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.
 11. Install the cassette accessories for frame size from 400 to 800 A starting from the outside of the installation positions. For the installation positions, see the installation positions shown in the following table.
 12. When three pieces of more of AL and AX are installed on a circuit breaker with a frame size 400 to 800 A, the AL and AX with SLT are manufactured to order.

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

Installation positions

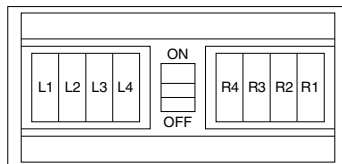


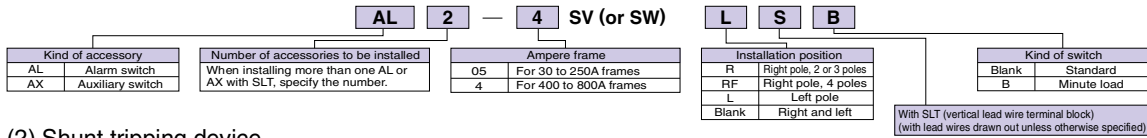
Table 9-2 Installation positions of cassette type accessories

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

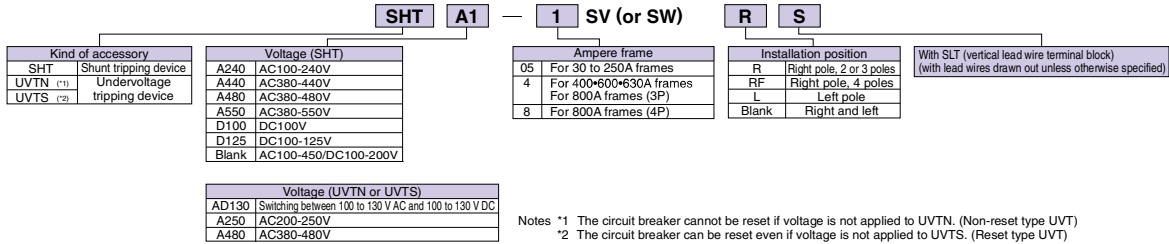
* Accessories only for Earth Leakage Circuit Breakers (NV-C, S and H), Earth Leakage Alarm Breakers (NF-Z) and single-phase 3-wire circuits (NF-N and NV-N) cannot be installed to R1, R2, R3 or R4.
 Note *1 It is impossible to simultaneously install AX on R2 and SHT on R3 or R4.

Interpretation of type name

(1) Alarm switch • Auxiliary switch



(2) Shunt tripping device
Undervoltage tripping device



Shunt Trip (SHT)

Coil ratings (standard)

Table 10-1

Model	Provision of coil burnout preventing switch	Voltage (V)		Input (VA) (*1)		Operating time (*2) (ms)
		AC	DC	AC	DC	
NF50-SVFU NV50-SVFU	Provided	AC100-240 380-440 DC100			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-SVU/HVU NV100-CVFU, NV125-SVU/HVU, NV250-SVU/HVU		AC100-240 380-550 DC100-125	120	50		
NF225-CWU		AC100-240 380-480 DC100-125		60		
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		Compatible with 100 to 450 V AC and 100 to 200 V DC	100V 20 200V 50 380V 120 450V 170	100V 10 200V 35	5-15	
NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW		AC100-120 200-240 380-450 DC100	200 300	70 100	7-15 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.
Remark: 1. The accessory is usable at 50 Hz and 60 Hz.

Coil ratings (list of available special voltage coils)

Table 10-2

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
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-SVU/HVU NV100-CVFU, NV125-SVU/HVU, NV250-SVU/HVU	-	-	○	-	-	-	-	-	-	-	○	-	○	-	○	-	-	-	-	-	○	-	-
NF225-CWU	-	-	○	-	-	○	-	-	-	○	-	○	-	○	-	○	-	-	-	-	○	-	-
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	○	-	-	○	-	-	○	-	-	○	○	-	-	-	○	-	○	○	-	-	-	-	-

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Modded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

Undervoltage Trip (UVT)

(1) Specifications for UVT and coil ratings

Table 11

Model	Specification		Coil ratings		Input (VA)	Operating time (*2) (ms)
	Reset type	Non-reset type	Voltage (V)			
			Standard voltage	Special voltage (*1)		
NF50-SVFU NV50-SVFU	—	○	AC/DC100-130V AC200-250V AC380-480V	AC/DC24V AC/DC48V	5	30 or less
NF32-SV, NF63-CV/SV/HV/HRV NF125-CV/SV/HV/RGBV/SEV/HEV/UV NF125-SGV/LGV/HGV, NF160-SGV/LGV/HGV NF250-CV/SV/HV/RGBV/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-SVU/HVU NV100-CVFU, NV125-SVU/HVU, NV250-SVU/HVU	○	○		AC/DC24V AC/DC48V AC500-600V		
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	○ (*4)	○ (*5)	(*3) Switching between 100 to 110 and 120 to 130 AC Switching between 200 to 220 and 230 to 250 AC Switching between 380 to 415 and 440 to 480 AC Switching between 100 and 110 DC	(*3) Switching between 24/48 AC Switching between 500 to 550/600 AC Switching between 24/48DC Switching between 110/125DC	5	5-30
NF1000-SEW, NF1250-SEW NF1600-SEW	○	○		Switching between 24/48DC Switching between 110/125DC		5-35
NF400-SWU/HWU, NF630-SWU/HWU	○(*4)	—		Switching between 24/48DC Switching between 110/125DC		5-30
NF225-CWU	—	○		Switching between (*3) 24/48 AC Switching between 24/48DC Switching between 110/125DC		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 50 Hz and 60 Hz.

*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 12.)

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 12.)

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 12

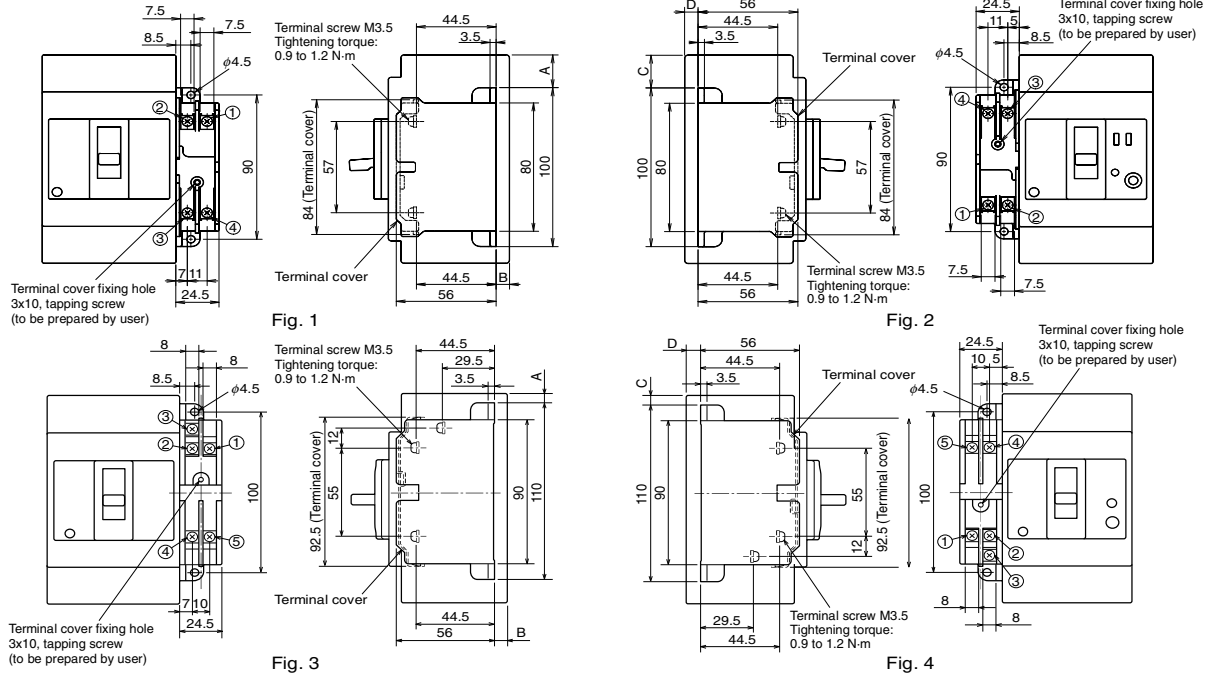
UVT module type name	Time delay	Voltage (V)	
		Standard voltage	Special voltage
		U-05W	Switching among 0.1, 0.3 and 0.5 s
U-30W	Switching among 0.5, 1 and 3 s	AC100-120/200-240/380-450 AC220-250/380-450/460-550 (Compatible with 50 Hz and 60 Hz)	—

(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



●Examples of connection

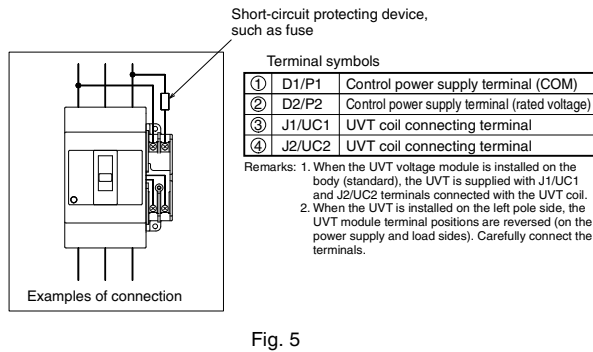


Fig. 5

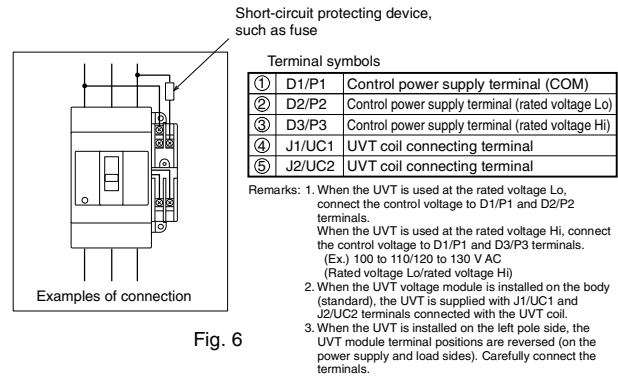


Fig. 6

Table 13 Installation on right pole side

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		Fig. 3 Fig. 6	38	7.5
NF125-SGV/LGV/HGV, NF160-SGV/LGV/HGV				
NF250-SVU/HVU			48	7.5
NF250-UV			113	7.5
NF225-CWU	25.5		7.5	
NF400-CW/SW/SEW/HEW/REW		67.5	41.5	
NF630-CW/SW/SEW/HEW/REW, NF400-SWU/HWU				
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 14 Installation on left pole side

Model	Reference drawing	Variable dimensions			
		C	D		
NV125-CV/SV/HV	Fig. 2	20.5	7.5		
NV125-SEV/HEV, NV250-CV/SV/HV/SEV/HEV	Fig. 5	38	7.5		
NF400-CW/SW/SEW/HEW/REW	Fig. 4 Fig. 6	67.5	41.5		
NF630-CW/SW/SEW/HEW/REW					
NV400-CW/SW/SEW/HEW/REW					
NV630-CW/SW/SEW/HEW					
NF400-ZCW/ZSW/ZEW					
NF400-SWU/HWU		107.5	138.5		
NF400-UEW(3P)					
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

Lead Wire Drawing

Lead wire lateral drawing ... Available to all models

Note *1 Except for BH, BH-P, BH-S, BH-PS, 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.)

Lead wires drawing to load

Table 15

Model applicable to lead wire drawing to load (only front connection type)
NF30-CS

Specifications for lead wires

Table 16

Applicable model	Kind of lead wire	Lead wire thickness	Lead wire length	Example of ring mark
NF30-CS	Heat-resistant wire	0.4mm ²	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)
1000A frame or above		0.75mm ²		
30 to 800A frames except above models		0.5mm ²		

A terminal symbol is indicated on each lead wire with a ring mark.

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-SVU/HVU,
NF225-CWU
NF100-CVFU, NV125-SVU/HVU
NV250-SVU/HVU

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

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

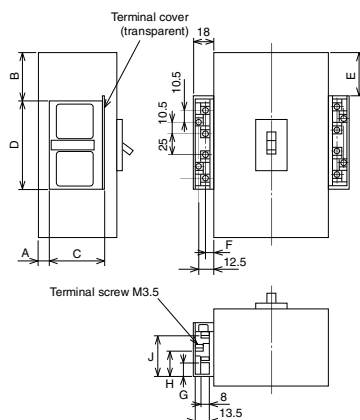


Table 17-1 Table of variable dimensions

Model	A	B	C	D	E	F	G	H	J
NF30-CS	(*1) 4	4.5	44.5	86.5	4.5	7	10	22	34
NF32-SV, NF63-CV/SV/HV	7	26.5	54	86.5	26.5	7	14	26	38
NF125-CV/SV/HV	7	26.5	54	86.5	26.5	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/RGV, NF250-CV/SV/HV/SEV/HEV/RGV NF125-SGV/LGV/HGV, NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV	7	44	54	86.5	44	7	14	26	38
NF50-SVFU	7	27.5	54	86.5	27.5	7	14	26	38
NF100-CVFU	7	28.5	54	86.5	28.5	7	14	26	38
NF125-SVU/HVU	7	47.5	54	86.5	47.5	7	14	26	38
NF225-CWU	7	37	54	86.5	37	7	14	26	38
NF400-CW/SW/SEW/HEW/REW, NF400-SWU/HWU NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW, NF630-SWU/HWU	41	79.5	54	86.5	79.5	7	14	26	38
NF1000-SEW, NF1250-SEW, NF1600-SEW	62.5	173	54	86.5	173	7	14	26	38
NF400-UEW(3P)	(*1) 138	119.5	54	86.5	119.5	7	14	26	38
NF400-UEW(4P), NF800-UEW	(*1) 138	135.5	54	86.5	135.5	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 ... 0.9 to 1.2 N·m

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Unit Breakers

Other

ELCB

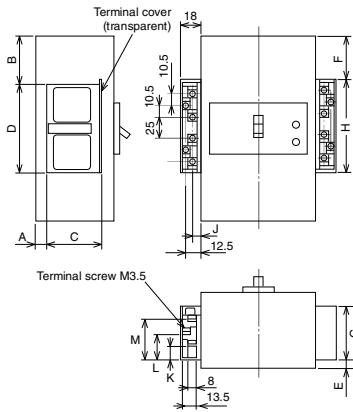


Table 17-2 Table of variable dimensions

Model	A	B	C	D	E	F	G	H	J	K	L	M	
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-SVU/HVU	7	54	54	86.5	7	54	54	86.5	7	14	26	38	
NV400-CW/SW/SEW/HEW/REW	41	79.5	54	86.5	26.5	79.5	52	92	7	14	26	38	
NV630-CW/SW/SEW/HEW													
NV800-SEW/HEW	(*1)	41	88.5	54	86.5	26.5	88.5	52	92	7	14	26	38

Note *1 The terminal positions are different from those shown in the left figure. Consult us for details.
 Remarks: 1. Terminal screw tightening torque: M3.5 ... 0.9 to 1.2 N·m
 2. The lead wire terminal block for TBL is provided on the right pole side. However, the lead wire terminal blocks for TBL of NV30-FA and NV50-FA are provided on the left pole side.

14-terminal SLT

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

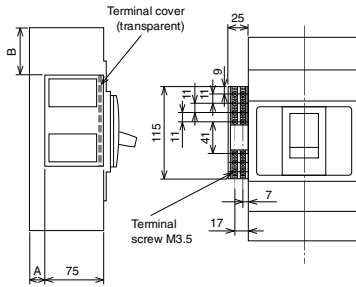


Table 17-3

Model	MCCB	ELCB	A	B
NF400-CW/SW/SEW		NV400-CW/SW/SEW	20	60
NF400-HEW/REW		NV400-HEW/REW		
NF630-CW/SW/SEW		NV630-CW/SW/SEW/HEW		
NF630-HEW/REW				
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

Remark: 1. The terminal positions are different from those shown in the left figure. Consult us for details.

Test Button Module (TBM)

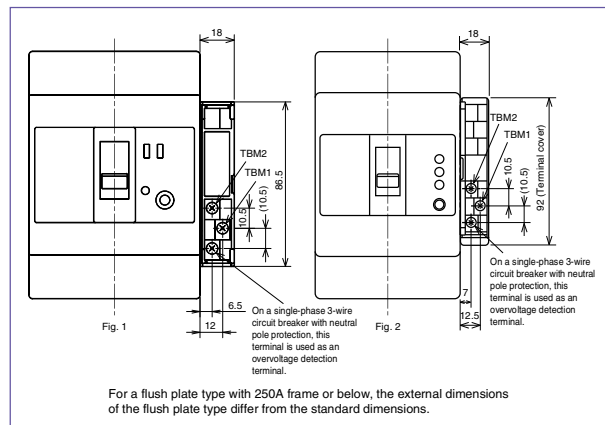
- The test button is kept pressed while control input voltage is applied to the button. (When ELCB of time delay type is used, apply voltage for 2 seconds or more.)
- The test button module is supplied with voltage through a circuit isolated from the main circuit. It can share the control sequence with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

Table 18

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-SVU/HVU	NV400-CW/SW NV630-CW/SW NV400-SEW-NV800-SEW NV400-HEW-NV800-HEW NV400-REW
Control input	Compatible with 100 to 240 AC and 100 to 240 DC	
Rated voltage (V)	(DC24) (*1)	
Control input (VA)	1.5 VA or less	1 VA or less
Reference drawing	Fig. 1	Fig. 2

Note *1 Unless otherwise specified, the module will be manufactured for 100 to 240 V AC and 100 to 240 V DC.
 In the case of 24 V DC, specify the voltage.

Remark: 1. The length of the lead wires to be connected to TBM1 and 2 shall be 100 m or more.



For a flush plate type with 250A frame or below, the external dimensions of the flush plate type differ from the standard dimensions.

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

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 1600 A.

■ 125 and 250 A frames

● Pre-alarm module (PAL module)

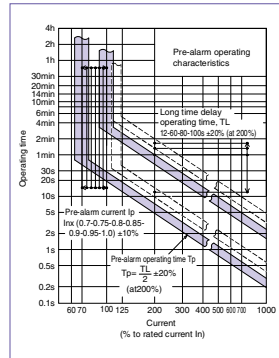
The standard modules have SLT. Other internal accessories cannot be installed on the right pole side.

A control power supply (compatible with 100 to 240 V AC and DC) is necessary. The control power supply voltage range is 85 to 246 V AC/DC, and the required volt-ampere is 5 VA.

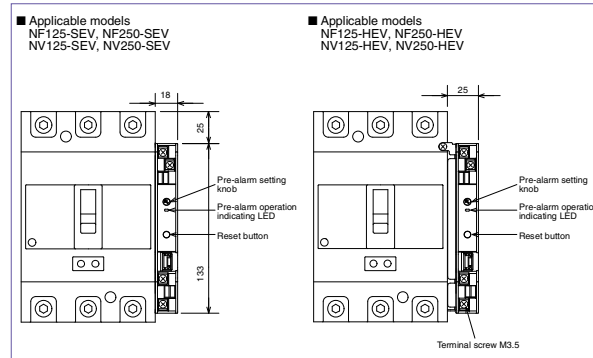
Table 19-1

Model	Switching capacity	Contact output (1a)	Resetting method
NF125-SEV NF125-HEV NF250-SEV NF250-HEV	AC125V 2A	DC 30V 2A	Press the reset button, or turn off the control power supply.
NV125-SEV NV125-HEV NV250-SEV NV250-HEV	AC250V 2A	DC100V 0.3A	

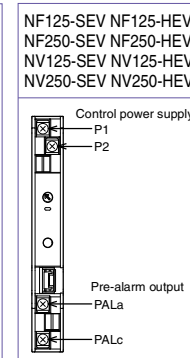
Pre-alarm characteristics



Dimensional drawing of pre-alarm module



Terminal arrangement



● 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 $I_n \times 0.7, 0.75, 0.8, 0.85, 0.9, 0.95$ or 1.0 with the knob on the pre-alarm module front panel.

■ 400 A 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 19-2

Model	Switching capacity	Resetting method
NF400-SEW NF400-HEW NF400-REW NF400-UWV NF630-SEW NF630-HEW NF630-REW NF800-CEW NF800-SEW NF800-HEW NF800-REW NF800-UWV NF1000-SEW NF1250-SEW NF1600-SEW NV400-SEW NV400-HEW NV400-REW NV630-SEW NV630-HEW NV800-SEW NV800-HEW	Solid state relay (SSR) – Non-contact output AC/DC24 to 240V 20mA	When the load current becomes lower than the preset current value, the alarm is reset.

● Pre-alarm module (PAL module)

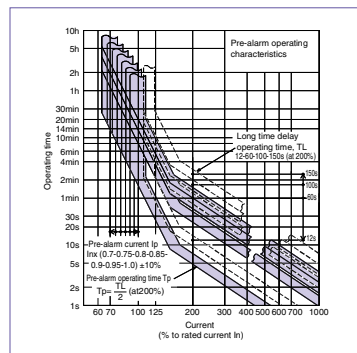
The standard modules have SLT. Other internal accessories cannot be installed on the right pole side.

A control power supply (compatible with 100 to 200 V AC) is necessary except for NF-ZEW. The control power supply voltage range is 80 to 242 V AC, and the required volt-ampere is 10 VA.

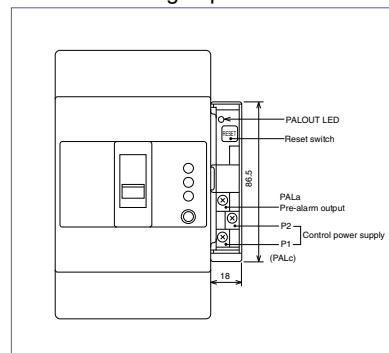
Table 19-3

Model	Switching capacity	Resetting method
NF400-SEW NF400-HEW NF400-REW NF400-UWV NF630-SEW NF630-HEW NF630-REW NF800-CEW NF800-SEW NF800-HEW NF800-REW NF800-UWV NF1000-SEW NF1250-SEW NF1600-SEW NV400-SEW NV400-HEW NV400-REW NV630-SEW NV630-HEW NV800-SEW NV800-HEW	100 V AC or 200 V AC, 2 A	Press the reset button, or turn off the control power supply.

Pre-alarm characteristics



Detailed drawing of pre-alarm module



Pre-alarm module output rating

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

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

● 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.

● Pre-alarm current setting (IP setting)

The pre-alarm current can be set to the rated current $I_n \times 0.7, 0.75, 0.8, 0.85, 0.9, 0.95$ or 1.0 with the knob on the circuit breaker front panel.

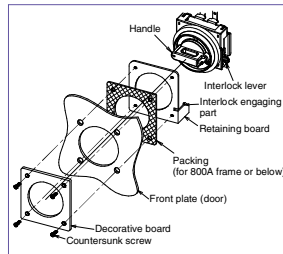
● **Installation procedure** For details, please refer to Operating Handle Installation Manual supplied with the product.

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

	250A frame and below	400 to 1600A frames
Installation procedure		
	<p>Note *1 In the case of F-05SRUL2, the center of the operating handle is the same as the center of the circuit breaker.</p>	

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 F-10SW, 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.

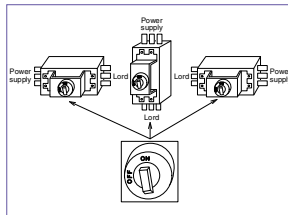
Lockout hasps (scissors locks) can be used.

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 35-mm padlock (weighing 70 g or less) is used]
 [F-4S or above: Only when one 40-mm padlock (weighing 100 g or less) is used]
 To 800A frame or below, padlocks with dimension C of 3 mm to 8 mm can be applied.

For 1000A or above, padlocks with dimension of 3 mm to 6 mm can be applied. (When using padlocks of 3 mm or less, please consult us.)

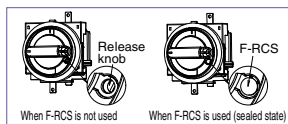
● **Circuit breaker installation direction (except UL 489 listed circuit breakers)**

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**

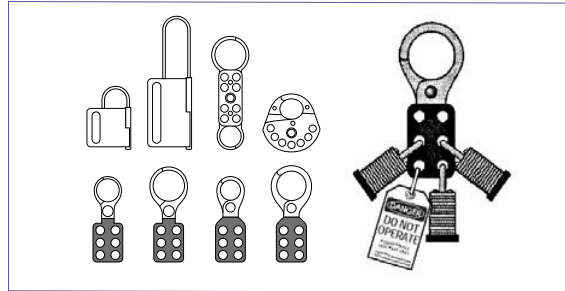
(1) Padlock

Padlock Dimensions
Use commercially available padlocks. (mm)

Applicable model	A (Nominal size)	B	C
All models	35	19	5
	40	22 or 23	5.5

Dimension C: 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

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

V-Type Operating Handle

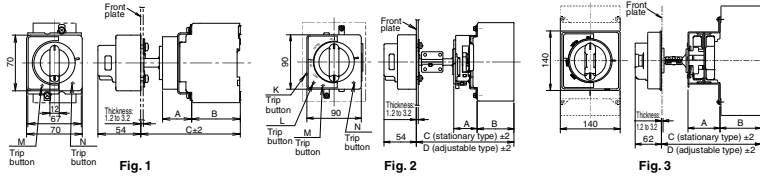
Operating handle of door mount type consisting of operating section to be mounted on circuit breaker body and operating handle on panel door

● Appearance (Color: Munsell N1.5)



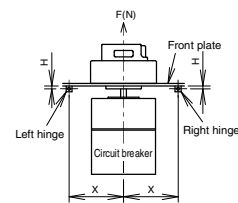
- The handle provides an isolation function in combination with the circuit breaker body.
- Conforming to the safety regulations of EN Standard (EN 60204-1)
- Protection class (IEC 60529) IP65 as standard
- The handle can be locked only in the OFF position with up to three commercially available padlocks (35 mm or 40 mm).
- 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.

● Outline drawings



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

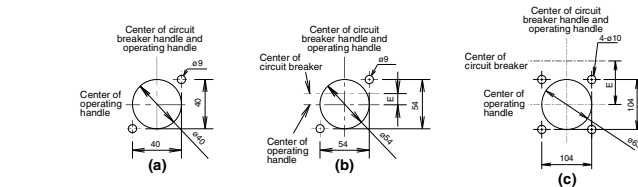
● Center of hinge and breaker



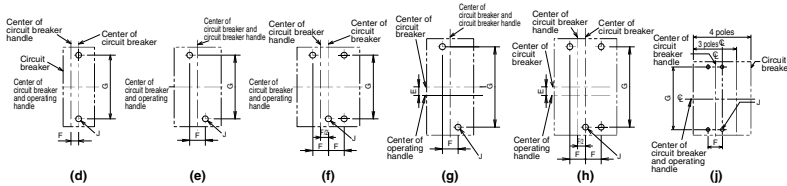
	H	X
For 30 to 250 A frames	0 or more	5H+100 or more
For 400 to 800 A frames		8H+150 or more

* 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 21 Summary of dimension

Type name		Applicable model		Reference drawing	Dimensions (mm)																	
Stationary type	Adjustable type	MCCB	Number of poles	ELCB	Number of poles	Dimensional drawing	Drilling plan	A	B	Stationary type C	Adjustable type(2)		E	F	G	J	Trip button position (*5)					
											D (min)	D (max)										
V-05SV2 V-05SVE2		NF32-SV NF63-CV, NF63-SV, NF63-HV	2P	-	-	Fig. 2	d	39	61	125	-	-	12.5	111	201	M4 screw or ø5	N					
V-05SV V-05SVE		NF32-SV NF63-CV, NF63-SV, NF63-HV	3P 4P	NV32-SV NV63-CV, NV63-SV, NV63-HV	2P, 3P 4P		e				162	300	-				25	L				
V-1SV2, V-1SVE2		NF125-CV, NF125-SV	2P	-	-		d				-	-	15				111	N				
V-1SV V-1SVE	(*)1 Adjusting unit V-AD3S is mounted on stationary type.	NF125-CV, NF125-SV	3P 4P	NV125-CV, NV125-SV NV125-HV	3P 4P		e f				-	-	30				L					
V-1UV V-1UVE		NF125-HV	2P, 3P 4P	-	-		f g h				39	61	125				30.5	172	M4 screw or ø5			
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 4P	NV125-SEV, NV125-HEV NV250-CV, NV250-SV, NV250-HV NV250-SGV, NV250-HEV	3P 4P		e f				41	-	35				126	K				
V-2UV V-2UVE		NF250-UV	2P, 3P 4P	-	-		g h				-	-	37.5				201	-				
V-03SVUL2 V-03SVUL		NF50-SVFU	2P 3P	NV50-SVFU	2P 3P		a				39	61	125				-	-	9 18	82.5	M4 screw or ø5	M N
V-05SVUL2 V-05SVUL	(*)1 Adjusting unit V-AD3S is mounted on stationary type.	NF100-CVFU	2P 3P	-	-		d e				39	61	125				-	-	12.5 25	111	M4 screw or ø5	N L
V-1SVUL V-2SVUL		NF125-SVU, NF125-HVU NF250-SVU, NF250-HVU	3P 3P	NV125-SVU, NV125-HVU NV250-SVU, NV250-HVU	3P 3P		g 39				61	125	162				300	6	30	123	126	-
V-4S V-4SE	(*)1 Adjusting unit V-AD3L is mounted on stationary type.	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	2P, 3P, 4P	NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW	3P, 4P	j	97	191	233	300	-	44	194	M6 screw or ø7	-							
V-4UE V-8S V-8SE		NF400-UEW	3P	-	-	h	194	288	330	397	20	234	243	-	-							
V-4SUL V-6SUL		NF400-SWU/HWU NF630-SWU/HWU	3P 3P	-	-	j	97	191	233	300	-	44	194	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 35-mm rails.

Remarks: 1. The products whose model names contain E are designed for emergency stop. The delivery category is ●. That of V-05SVE is ●.
 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).

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

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.

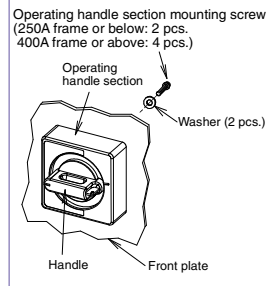
	250A frame and below	400 to 800A frames
Installation procedure	<p>(Installation procedure)</p> <p>① Operating handle for 3- or 4-pole circuit breaker Set the rotary plate of the operating section to the OFF (symbol O) position, and fit the plate to the circuit breaker with the supplied operating section mounting screws and nuts. Install the circuit breaker to the panel with the circuit breaker mounting screws (2 pcs.).</p> <p>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.).</p>	<p>(Installation procedure)</p> <p>① Remove the circuit breaker cover screws (4 pcs.) in the same positions as the operating handle mounting holes.</p> <p>② Install the circuit breaker with the circuit breaker mounting screws (4 pcs.).</p> <p>③ Fit the supplied operating section mounting spacers (4 pcs.) between the circuit breaker and operating handle.</p> <p>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.</p>

2 Installation of operating handle section

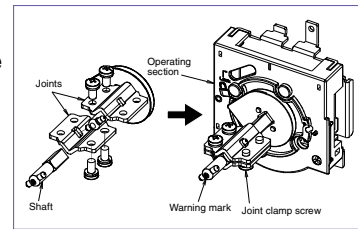
Drill a hole in the door according to the dimensional drawing for front plate drilling given on the previous page, and install the operating handle section in accordance with the following procedure.

- Tighten the operating handle section from the back of the front plate. Temporarily tighten the screws to center the section in the hole.
- Set the handle of the operating handle section to the OFF state, tighten the front plate, and make sure that the handle can be smoothly turned to the ON and OFF positions.

Turn the handle to the right and left in the OFF state, and make sure that OFF is displayed. If OFF is not displayed, move the operating handle section up and down and to the right and left for adjustment. (Take care that the operating handle section is in parallel with the circuit breaker.) Then, open the front plate, and finally tighten the screws.

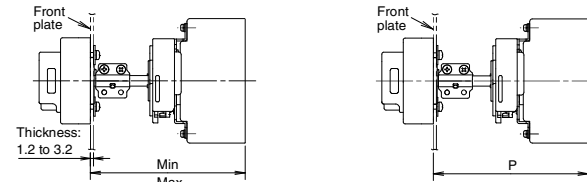


Note The adjusting unit is not applicable to 2-pole external type circuit breakers. If it is used on a 2-pole external type circuit breaker, the positions may not be correctly displayed.



Make adjustments with the adjusting unit as stated below.

- ① External dimension drawing ② Calculation of shaft cutting allowance

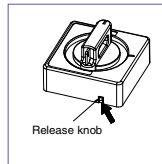


Type name	Dimensions (mm)		Cutting allowance	Calculation
	Min	Max		
V-05SV V-05SVUL V-1SV V-1SVUL V-1SUL	162	300		(Cutting allowance)(P max)(panel size) $X = 300 \text{ mm} - P$
V-2SV V-2SVUL V-2SUL	180	318		
V-4S	233	300		
V-8S				
V-4SUL V-6SUL				

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

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 (3 mm wide and 1.8 mm thick).



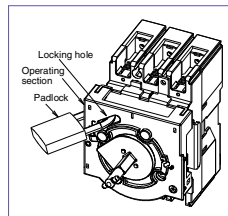
Operation locking mechanism

1 Operating handle section

Operation lock can be set only in the OFF Position. Up to three commercially available padlocks (A = 35 or 40 mm) 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.

Padlocks

The user must prepare padlocks. The dimensions of the padlocks are the same as those shown on page 752.

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

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

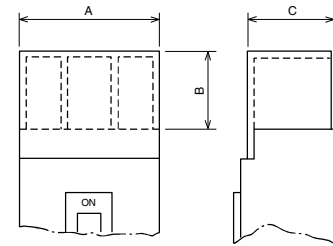
Other

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.)

Quick terminal covers

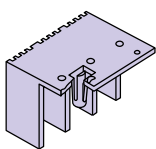
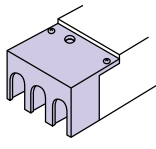
These covers are very convenient because they can be fitted only by inserting them into the mounting holes in the circuit breaker body. To remove the terminal cover, shift the projections of the terminal cover with the tip of a slotted screwdriver or finger, and draw it out.



TC-L TC-S TTC

Table of variable dimensions

Table 22 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-03CS2W	White	2	NF30-CS	-	43.5	25	30.5	2	-	2	 The cover can be sealed with the sealing plate.	
TCL-03CS3W	White	3	-	-	67	25	30.5	2	-	2		
TCL-05SV2 (*2)(*8)	White	2	NF32-SV NF63-CV/SV/HV	-	50	25	65.5	2	-	2		
TCL-05SV2L (*2)(*9)	White	2	NF32-SV NF63-CV/SV/HV	-	50	40	65.5	2	-	2		
TCL-05SV3 (*3)(*8)	White	3	NF32-SV NF63-CV/SV/HV	NV32-SV, NV63-HV	75	25	65.5	2	-	2		
TCL-05SV3L (*3)(*9)	White	3	NF32-SV, NF63-CV/SV/HV	NV32-SV, NV63-HV	75	40	65.5	2	-	2		
TCL-05SV4 (*3)	White	4	NF63-SV/HV	-	100	25	65.5	2	-	2		
TCL-1SV2 (*2)	White	2	NF125-CV/SV	-	60	40	65.5	2	-	2		
TCL-1SV3 (*3)	White	3	NF125-CV/SV	NV125-CV/SV/HV	90	40	65.5	2	-	2		
TCL-1SV4 (*3)	White	4	NF125-SV/HV/UV	NV125-SV/HV	120	40	65.5	2	-	2		
TCL-2SV3 (*3)(*10)	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	 Screw type The cover can be sealed with the sealing plate.	
TCL-2SV3L (*3)(*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 (*3)(*5)	White	4	NF250-SV/HV/UV NF250-SEV/HEV NF125-SEV/HEV NF225-SW/M (*6)	NV250-SV/HV NV250-SEV/HEV NV125-SEV/HEV	140	40	65.5	2	-	2		
TCL-4SW3 (*3)	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		
	White	3	NF400-SEP with MDU (*7) NF400-U EW (*4)	-	171	110	132.5/196.5	2	-	2		
TCL-4SW4 (*3)	White	4	NF400-SW/SEW/HEW NF630-SW/SEW NF400-SEP with MDU (*7)	NV400-SEW/HEW NV630-SEW	240	110	105	2	6	-		
TCL-8SW3 (*3)	White	2, 3	NF800-CEW/SDW/SEW/HEW/REW NF800-SEP with MDU/HEP with MDU (*7) NF800-SEP with MDU/HEP with MDU (*7)	-	224	155	103.5	2	4	-		
TCL-8UW3	Transparent	3	NF800-U EW (*4)	-	220	155	146/194.5	2	4	-		
TCL-8SW4 (*3)	White	4	NF800-SEP with MDU/HEP with MDU (*7) NF800-SEP with MDU/HEP with MDU (*7)	-	294	155	103.5	2	6	-		
TCL-8UW4	Transparent	4	NF400-U EW, NF800-U EW (*4)	-	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-03SVU2 (*3)	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 (*3)	White	3	NF50-SVFU	NV50-SVFU	54	30	65.5	2	-	-		
TCL-05SVU2 (*2)(*8)	White	2	NF100-CV/FU	-	50	25	65.5	2	2	-	Screw type	
TCL-05SVU2L (*2)(*9)	White	2	NF100-CV/FU	-	50	40	65.5	2	2	-		
TCL-05SVU3 (*3)(*8)	White	3	NF100-CV/FU	NV100-CV/FU	75	25	65.5	2	2	-		
TCL-05SVU3L (*3)(*9)	White	3	NF100-CV/FU	NV100-CV/FU	75	40	65.5	2	2	-		
TCL-1SVU3 (*3)	White	2, 3	NF125-SVU NF125-HVU	NV125-SVU/HVU	90	40	65.5	2	2	-	Screw type (Remove the existing cover from the body, and fit the terminal cover.)	
TCL-2SVU3 (*3)(*10)	White	3	NF250-SVU/HVU	NV250-SVU/HVU	105	40	65.5	2	2	-		
TCL-2SVU3L (*3)(*11)	White	3	NF250-SVU/HVU	NV250-SVU/HVU	105	50	65.5	2	2	-	Screw type (Remove the existing cover from the body, and fit the terminal cover.)	
TCL-2SVU3 (*10)	White	3	NF225-CWU	-	105	40	65.5	2	-	-		
TCL-2SVU3L (*3)(*11)	White	3	NF225-CWU	-	105	50	65.5	2	-	-	Quick 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		
TCL-6SWU	Transparent	3	NF630-SWU/HWU	-	224	155	103.5	2	4	-	Screw type Use in combination with insulating barrier.	

Notes *1 For 2-pole NV, use TC-L for 3-pole circuit breaker.

*2 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.)

*3 The standard models can be used in combination with F and V Type Operating Handles.

*4 The dimension C is the size on the power supply side and load side.

*5 When a crimp terminal applicable to wires with a size of 117.2 to 152.05 mm² (Model 2CR-150 or CB150-SB) is used, TC-L cannot be fitted. Insulate the terminal from TC-S with insulating tube or taping.

*6 In the case of installation on the body, specify the model name with-MDU at the end.

*7 It cannot be installed in the case of installation on the body.

*8 Applicable to circuit breakers with rating of 75A or less (max. wire size 25 mm²)

*9 Applicable to circuit breakers with rating of 125A or less (max. wire size 60 mm²)

*10 Applicable to circuit breakers with rating of 200A or less (max. wire size 100 mm²)

*11 Applicable to circuit breakers with rating of 250A or less (max. wire size 150 mm²)

(Applicable to UL wire 300MCM)

- Remarks: 1. The wire sizes shown in the above notes *10 to *13 are those of the 600-V 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.

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

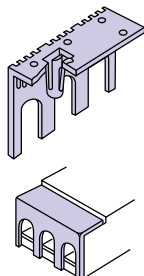
Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

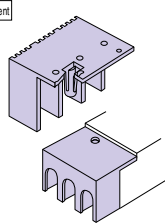
Table 23 Small terminal covers (TC-S)

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-03CS2W	White	2	NF30-CS	-	43.5	5	30.5	2	-	2	 <p>Quick type The cover can be sealed with the sealing plate.</p>	
TCS-03CS3W	White	3		-	67	5	30.5	2	-	2		
TCS-05SV2	(*1) White	2	NF32-SV, NF63-CV/SV/HV	-	50	5	65.5	2	-	2		
TCS-05SV3	White	3	NF32-SV, NF63-CV/SV/HV	NV32-SV, NV63-HV	75	5	65.5	2	-	2		
	(*2) White	2, 3	-	NV63-CV/SV								
TCS-1SV2(*2)	White	2	NF125-CV/SV	-	60	6.5	65.5	2	-	2		
TCS-1SV3(*3)	White	3	NF125-CV/SV	NV125-CV/SV/HV	90	6.5	65.5	2	-	2		
	White	2, 3	NF125-HV/UV	-								
TCS-2SV3	(*2) 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		

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.

Remarks: 1. Small terminal covers for 4-pole circuit breakers are available.
2. Insulate the exposed live parts of crimp terminals with insulating tape or the like.

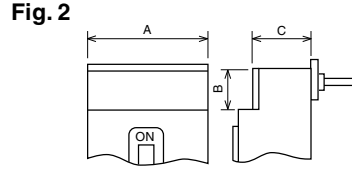
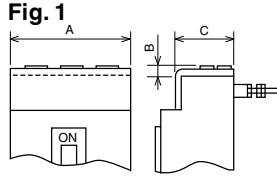
Table 24 Transparent terminal covers (TTC)

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-03CS2	2	NF30-CS	-	43.5	25	30.5	2	-	2	 <p>Quick type The cover can be sealed with the sealing plate.</p>	
TTC-03CS3	3		-	67	25	30.5	2	-	2		
TTC-05SV2	(*1) 2	NF32-SV NF63-CV/SV/HV	-	50	25	65.5	2	-	2		
TTC-05SV3	3	NF32-SV NF63-CV/SV/HV	NV32-SV, NV63-HV	75	25	65.5	2	-	2		
	(*2) 2, 3	-	NV63-CV/SV								
TTC-1SV2	(*1) 2	NF125-CV/SV	-	60	40	65.5	2	-	2		
TTC-1SV3	3	NF125-CV/SV	NV125-CV/SV/HV	90	40	65.5	2	-	2		
	(*2) 2, 3	NF125-HV/UV	-								
TTC-2SV3	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		
	(*2)(*3)(*5) 3	-	-								
TTC-4SW3	2, 3	NF400-CW/SW/SEW NF400-HEW/REW NF630-CW/SW/SEW NF630-HEW/REW	NV400-CW/SW/SEW NV400-HEW/REW NV630-CW/SW/SEW NV630-HEW	171	110	104.5	2	4	-		
	3	NF400-SEP with MDU/HEP with MDU(*4)	-								
TTC-4SW4	4	NF400-SW/SEW/HEW NF630-SW/SEW/HEW NF400-SEP with MDU/HEP with MDU(*4)	NV400-SEW/HEW NV630-SEW	240	110	104.5	2	6	-		
	3	NF800-SEP with MDU/HEP with MDU(*4)	-								
TTC-8SW3	2, 3	NF800-CW/SDW/SEW NF800-HEW/REW	NV800-SEW/HEW	224	155	103.5	2	4	-		
	3	NF600-SEP with MDU/HEP with MDU(*4) NF800-SEP with MDU/HEP with MDU(*4)	-								
TTC-8SW4	4	NF800-SEP with MDU/HEP with MDU(*4) NF800-SEP with MDU/HEP with MDU(*4)	-	294	155	103.5	2	6	-		
	3	NF800-SEP with MDU/HEP with MDU(*4)	-								

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 152.05 mm² (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 100 mm²)

<BTC>



<PTC>

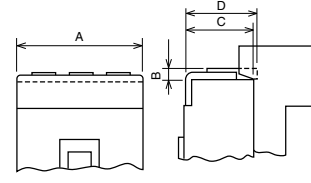


Table 25 Rear terminal cover (BTC)

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		
BTC-03CS2W	White	2	NF30-CS	-	43.5	6.5	30.5	2	-	2		Cover for connection block in the case of simple rear connection
BTC-03CS3W	White	3		-	67	6.5	30.5	2	-	2		
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		
BTC-1SV2	White	2	-	NV63-CV/SV	60	6.5	65.5	2	-	2		Cover for stud connection block on back in the case of rear connection type
BTC-1SV3	White	3	NF125-CV/SV	NV125-CV/SV/HV	90	6.5	65.5	2	-	2		
BTC-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	2	-	2		Cover for stud connection block on back in the case of rear connection type
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		
BTC-4SW3	White	3	NF400-SEP with MDU (*5) NF400-UEW (*4)	-	140	42 (*2)	132.5/ 196.5	2	-	2	Quick type The cover can be sealed with the sealing plate.	
BTC-4SW4	(*3) Transparent	4	NF400-SW/SEW/HEW NF630-SW/SEW/HEW NF400-SEP with MDU/HEP 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 NF800-SEP with MDU/HEP with MDU (*5)	NV800-SEW/HEW	210	32 (*2)	97.5	2	8	-		
BTC-8SW3	(*3) Transparent	3	NF800-SEP with MDU/HEP with MDU (*5) NF800-UEW (*4)	-	210	32 (*2)	146/ 194.5	2	4	-		Screw type
BTC-8SW4	(*3) Transparent	4	NF800-SEP with MDU/HEP with MDU (*5) NF800-SEP with MDU/HEP with MDU (*5) NF400-UEW, NF800-UEW (*4)	- (*5)	280	32 (*2)	97.5	2	10	-		

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.

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

Table 26 Plug-in terminal covers (PTC)

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

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

Table 27 List of terminal covers applicable to F and V Type Operating Handles

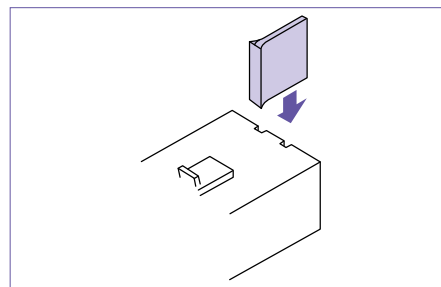
Type name			Applicable operating handles	Number of poles of circuit breaker	Applicable model	
Large terminal covers (TC-L)	Small terminal covers (TC-S)	Transparent terminal covers (TTC)			MCCB	ELCB
TCL-05SV2F (*2)(*3) TCL-05SV2LF (*2)(*4)	TCS-05SV2F (*2)	TTC-05SV2F (*2)	F-05SV2, V-05SV2	2	NF32-SV, NF63-CV/SV/HV	- (*1)
TCL-05SV3 (*3) TCL-05SV3L (*4)	TCS-05SV3	TTC-05SV3	F-05SV, V-05SV	3 2, 3	NF32-SV, NF63-CV/SV/HV -	NV32-SV, NV63-HV 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 2, 3	NF125-CV/SV NF125-HV/UV	NV125-CV/SV/HV -
TCL-1SV4	-	-	-	4	NF125-CV/SV/HV/UV	NV125-CV/SV/HV
TCL-2SV3 (*5) TCL-2SV3L (*6)	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	-	-	-	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	2, 3	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW
TCL-4SW4	-	TTC-4SW4	V-4S	4	NF400-SW/SEW/HEW NF630-SW/SEW/HEW	NV400-SEW/HEW NV630-SEW
TCL-8SW3	-	TTC-8SW3	F-8S	2, 3	NF800-CEW/SDW/SEW/HEW/REW	NV800-SEW/HEW
TCL-8SW4	-	TTC-8SW4	V-8S	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 25 mm²)
*4 Applicable to circuit breakers with rating of 125A or less (max. wire size 60 mm²)
*5 Applicable to circuit breakers with rating of 200A or less (max. wire size 100 mm²)
*6 Applicable to circuit breakers with rating of 250A or less (max. wire size 150 mm²)

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

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 28

(*●) denotes optional

Applicable model	Connecting method					
	MCCB	ELCB	Front	Rear	Flush plate	Plug-in
NF32-SV, NF63-CV NF125-CV, NF100-CVFU		NV32-SV, NV63-CV NV125-CV, NV100-CVFU	●	-	-	-
NF63-SV/HV NF125-SV/HV		NV63-SV/HV NV125-SV/HV	Standard attachment	-	-	-
NF125-SEV/HEV, NF125-ZEV NF250-CV/SV/HV/SEV/HEV NF125-SGV/LGV/HGV/SGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/SGV NF250-SEV/HEV/ZEV 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 NF225-CWU		NV125-SVU NV125-HVU NV250-SVU NV250-HVU NV100-SWU	Standard attachment	-	-	-
NF400-CW/SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF400-UEW(4P) NF800-CEW/SEW/HEW/REW/SDW		NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW NV800-SEW/HEW	Standard attachment	●	●	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 29 Summary of dimensions

Type name	Applicable model		Dimensions (mm)		Quantity per breaker			Reference diagram
	MCCB	ELCB	A	B	2P	3P	4P	
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/ZEV with MDU	NV125-SEV/HEV NV250-CV/SV/HV/SEV/HEV NV250-SEV/HEV with MDU	100	59.5	2	4	6	
	NF100-CVFU	NV100-CVFU						
BAF-05SVU	NF125-SVU NF125-HVU	NV125-SVU NV125-HVU	50	59.5	2	4	-	
	NF250-SVU NF250-HVU	NV250-SVU NV250-HVU						
BAF-2SVU	NF250-SVU NF250-HVU	NV250-SVU NV250-HVU	100	59.5	-	4	-	
BAF-2SWU	NF225-CWU	-	100	59.5	-	4	-	
BAF-4SW	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW	110	98.5	2	4	6	
	BAF-4UW (*1)	NF400-UEW(3P)						
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 NF630-SWU/HWU(less than 600A)						110
BAF-6SWU	NF630-SWU/HWU(630A)	-	150	98.5	-	4	-	
	BAF-16SW	NF1600-SEW/SDW						185

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 30 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/REW NV630-CW/SW/SEW/HEW	140	74.5	-	4	6	
	NF800-CEW/SEW/SDW/HEW/REW NF400-UEW(4P) NF800-UEW	NV800-SEW/HEW						
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)

Model	Power supply side	Load side
NF400-CW, NF400-SW, NF400-SEW, NF400-HEW, NF400-REW, NF400-UEW NV400-CW, NV400-SW, NV400-SEW, NV400-HEW, NV400-REW NF630-CW, NF630-SW, NF630-SEW, NF630-HEW, NF630-REW NV630-CW, NV630-SW, NV630-SEW, NV630-HEW	Note The dimensions in brackets are those for NF400-UEW.	
NF800-CEW, NF800-SEW, NF800-HEW, NF800-REW, NF800-UEW NV800-SEW, NV800-HEW	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 31 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			
BAP-4SW	NF400-CW/SW NF400-SEW/HEW/REW/UEW NF630-CW/SW NF630-SEW/HEW/REW	NV400-CW/SW NV400-SEW/HEW/REW NV630-CW/SW NV630-SEW/HEW	178	74.5		4	6	
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 32 Summary of dimensions

Type name	Applicable model		Dimensions (mm)		Quantity per breaker	Reference diagram
	MCCB	ELCB	A	B		
BAG-05SV3	NF32-SV NF63-CV/SV/HV	NV32-SV NV63-CV/SV/HV	30	75	1	<p>Earth fault preventing barrier (3 poles)</p>
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/ZEV 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/REW 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.

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	C
a	25	11	4
b	35	19	5
c	40	22 or 23	5.5

Table 33 HL

Type name	Applicable model		Reference diagram	Padlock
	MCCB	ELCB		
HL-05FH	NF30-CS	-	Fig. 4	
HLN-05SV	NF32-SV, NF63-CV/SV/HV NF125-CV/SV/HV/UV, NF125-SEV/HEV NF125-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	a
	NF160-SGV/LGV/HGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF250-SGV/LGV/HGV/RGV			
HLF-05SV	NF32-SV, NF63-CV/SV/HV NF125-CV/SV/HV/UV, NF125-SEV/HEV NF125-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	a
	NF160-SGV/LGV/HGV NF250-CV/SV/HV/UV, NF250-SEV/HEV NF250-SGV/LGV/HGV/RGV			
HLF-05SVU	NF125-SVU/HVU NF250-SVU/HVU	NV125-SVU/HVU NV250-SVU/HVU		
HLF-2SWU	NF225-CWU	-		
HL-4CW (*)	NF400-CW	-		
HL-4SW (*)	NF400-SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW/REW/UEW	NV400-SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW NV800-SEW/HEW	Fig. 2	c
	NF400-SWU/HWU, NF630-SWU/HWU	-		
HL	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.

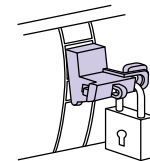
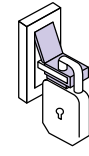
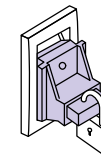
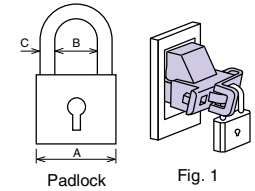


Fig. 4

Table 34 HL-S

Type name	Applicable model				Dimensions (mm)						Reference diagram	Padlock	
	MCCB	Number of poles	ELCB	Number of poles	A	B	C	D	E	F			
HLS-05SV2 (*)	NF32-SV, NF63-CV, NF63-SV NF63-HV	2P	-	-	32	75	50	-	-	32	Fig. 5	b	
	NF125-CV, NF125-SV	2P	-	-			57						
HLS-05SV (*)	NF32-SV, NF63-CV, NF63-SV NF63-HV	3P	NV32-SV, NV63-HV	3P	62.5	75	75	23	-	32	Fig. 5	b	
	NF63-SV, NF63-HV	4P	-	-			86						
	NF125-CV, NF125-SV	3P	NV125-CV, NV125-SV, NV125-HV	3P			86						
	NF125-HV	2P, 3P	-	-			28						
HLS-2SV (*)	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	3P	32	84	100	-	63	32	Fig. 5	b	
	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	NV125-SEV, NV125-HEV NV250-SV, NV250-SEV, NV250-HEV	3P									33
	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	-	-									33
	NF250-UV	2P, 3P	-	-									69.5
	NF250-UV	4P	-	-									33
HLS-03SVU (*)	NF50-SVFU	2P, 3P	NV50-SVFU	2P, 3P	-	-	-	-	-	-	Fig. 9		
HLS-05SVU2 (*)	NF100-CVFU	2P	-	-	32	75	50	-	-	32	Fig. 5	b	
HLS-05SVU (*)	NF100-CVFU	3P	NV100-CVFU	3P			75						
	HLS-05SVU (*)	NF125-SVU/HVU	2P, 3P	NV125-SVU/HVU	3P	32	75	86	-	-	32	Fig. 5	b
NF125-SVU/HVU		2P, 3P	NV125-SVU/HVU	3P	86								
HLS-2SVU (*)	NF250-SVU/HVU	3P	NV250-SVU/HVU	3P	32	84	100	-	-	32	Fig. 5		
HLS-2SWU (*)	NF225-CWU	3P	-	3P	32	84	100	-	-	32	Fig. 6		
HLS-4SW (*)	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	2P, 3P, 4P	NV400-CW/SW/SEW/ HEW/REW NV630-CW/SW/SEW/ HEW	3P, 4P	-	-	-	-	-	-	Fig. 7		
HLS-4UW (*)	NF400-UEW	3P	-	-	-	-	-	-	-	-			
HLS-8SW (*)	NF800-CEW/SDW/SEW/HEW/REW	2P, 3P, 4P	NV800-SEW/HEW	3P, 4P	-	-	-	-	-	-			
HLS-8UW (*)	NF400-UEW	4P	-	-	-	-	-	-	-	-	Fig. 8		
	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.

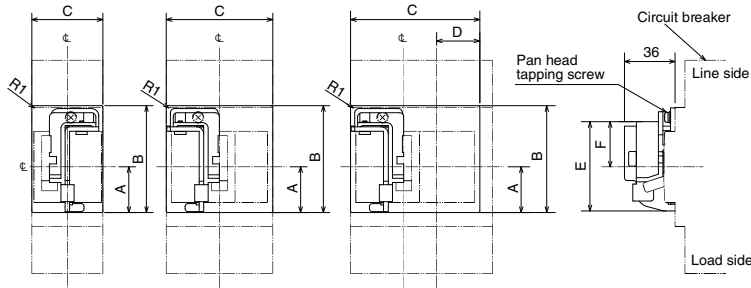


Fig. 5

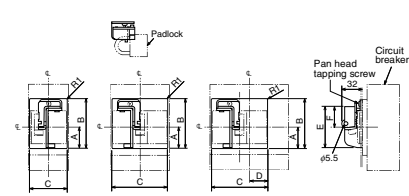


Fig. 6

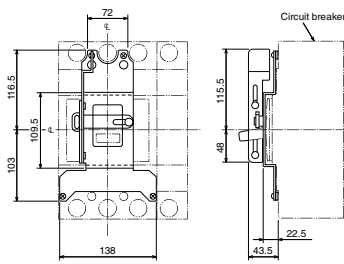


Fig. 7

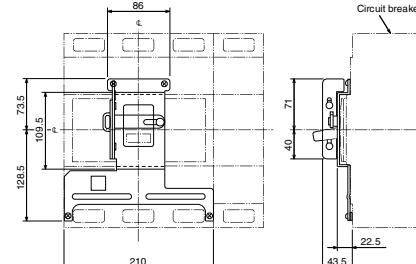


Fig. 8

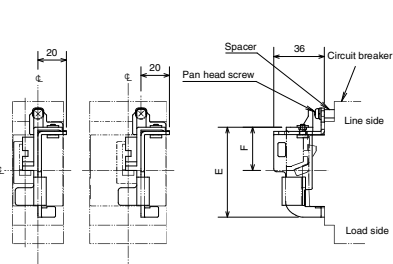
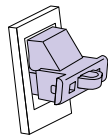


Fig. 9

(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.



LC-05SW to LC-2SW

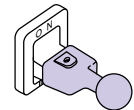
Table 35 LC

Type name	Applicable model	
	MCCB	ELCB
LC03CS	NF30-CS	-
LC-05SV	NF32-SV	NV32-SV
	NF63-CV/SV/HV	NV63-CV/SV/HV
	NF125-CV/SV/HV/UV	NV125-CV/SV/HV
	NF125-SEV/HEV	NV125-SEV/HEV
	NF160-SGV/LGV/HGV/RGV	NV160-SGV/LGV/HGV/RGV
LCBH1R (red)	BH-P(1P)	-
		-
		-
LCBH1Y (yellow)	BH-P(2P)	-
LCBH2R (red)		-
LCBH2Y (yellow)		-
LCBH3R (red)	BH-P(3P)	-
LCBH3Y (yellow)		-

Remark: 1. One lot of LCBH, LCBL and LCNVL 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 36 HT

Type name	Applicable model	Dimensions					Outline dimension drawing
		A	B	C	D	E	
HT-4CW (*1)	NF400-CW, NV400-CW		77.5				
HT-4SW (*1)	NF400-SW/SEW/HEW/REW/UEW NF630-CW/SW/SEW/HEW/REW NF800-CEW/SDW/SEW/HEW	59	81	32	38	M4	
	NF800-REW/UEW (*2) NV400-SW/SEW/HEW/REW NV630-CW/SW/SEW/HEW NV800-SEW/HEW						
HT-10SW	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 1-pole circuit breakers with 800A frame and 4-pole NF400-UEW come with auxiliary handles as standard accessories.

(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.)

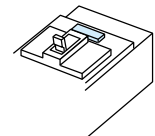
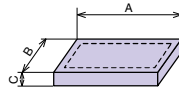


Table 37 Card holder size (mm)

Applicable model	Type name	A	B	C	Card size
NF250-SV or below NV250-SV or below	CH-P No.5	44	12	5	39x9
NF400-SW or above NV400-SW or above	CH-P No.3	38	22	5	33x20



Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

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

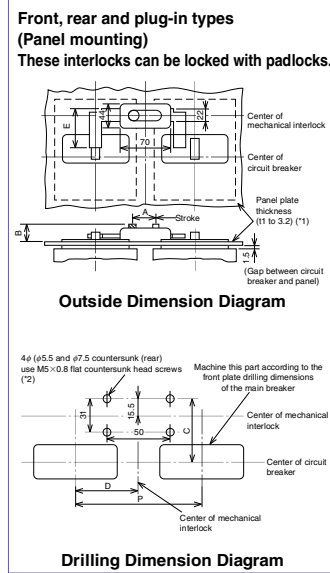


Fig. 1

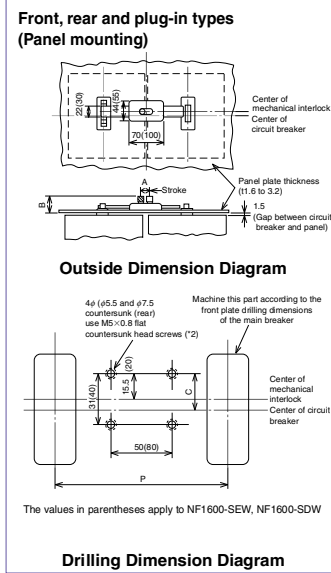


Fig. 2

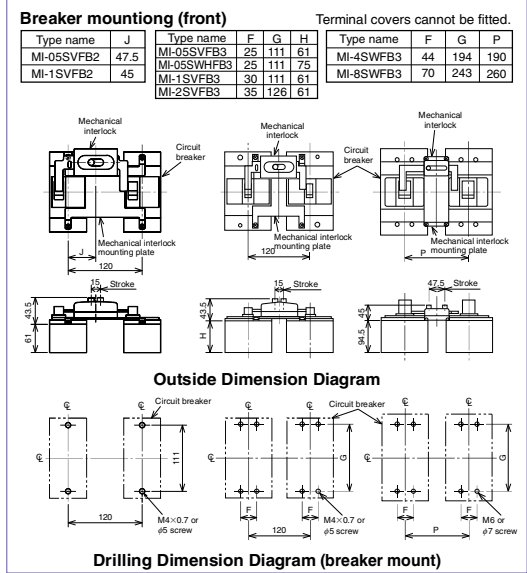


Fig. 3

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 $\phi 9.5$ for the four $\phi 5$ holes.

Table 38 Table of variable dimensions

Applicable model	Pitch (P) (*1)						Dimensions (mm)					Reference diagram	Breaker mount (*3)	Reference diagram (Fig. 3)	
	MCCB	ELCB (*6)	Standard		Semi-standard	Standard	t	A	B	C	D				E
			Type name	2P	3P	3P									
NF32-SV, NF63-CV/SV/HV	-	-	120	-	-	-	-	15	33	63	47.5	58	MI-05SVFB2	(Fig. 3)	
NF32-SV, NF63-CV/SV/HV	NV32-SV, NV63-CV/SV/HV	MI-05SV3	-	120	-	130	MI-05SV4	120 (*4)	-	-	-	58	MI-05SVFB3		
NF125-CV/SV	-	MI-05SV3	120	-	-	-	-	15	33	63	45	58	MI-1SVFB2		
NF125-CV/SV/HV	NV125-CV/SV/HV	MI-05SV3	-	120	130	150	MI-1SV4	130 (*4)	-	-	-	58	MI-1SVFB3		
NF125-SV/HEV	-	-	-	-	-	-	-	15	33	63	-	58	MI-2SVFB3	(Fig. 3)	
NF125-SGV/LGV/HGV/RGV	NV125-SEV/HEV	MI-05SV3	120 (*4)	150	180	MI-2SV4	150 (*4)	25.5	-	-	-	-	-	-	
NF125-SGV/LGV/HGV/RGV	NV250-CV/SV/HV														
NF250-CV/SV/HV	NV250-SEV/HEV	-	-	-	-	-	-	-	-	-	-	-	-	-	
NF250-SV/HEV	NV250-SGV/LGV/HGV/RGV	-	-	-	-	-	-	-	-	-	-	-	-	-	
NF250-UV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
NF225-CWU	-	MI-05SWU3	-	120 (*4)	-	-	-	15	33	63	-	58	-	-	
NF400-CW/SW/SEW/HEW/REW	NV400-CW/SW/SEW/HEW/REW	MI-4SW3	190	-	210	MI-4SW4	250	47.5	33	83.5	-	74	MI-4SWFB3	(Fig. 3)	
NF630-CW/SW/SEW/HEW/REW	NV630-CW/SW/SEW/HEW														
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	60	-	74	-	
NF400-UEW (4P)	-	-	-	220	-	-	-	-	-	-	-	-	-	-	
NF800-UEW	-	-	-	220	-	-	-	-	-	-	-	-	-	-	
NF1000-SEW, NF1250-SEW/SDW	-	MI-10SW3	220	-	-	MI-10SW4	290	2.3	47.5	47	37.5	-	-	(Fig. 2)	
NF1600-SEW/SDW	-	MI-16SW3	315	-	-	MI-16SW4	426	(*5)	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).
*6 For NV with TBL, use a circuit breaker with MG.

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.

Boxes for Circuit Breakers and Boxed Circuit Breakers

(1) Kinds and specifications

Table 39

		Closed type (S)		Dust-proof type (I)	Water-proof type (W)					
Appearance										
		(*1)	(*1)							
MCCB (*2)	NF30-CS	2, 3P	NFS-03CS	-	-					
	NF32-SV, NF63-CV/SV/HV	2P	NFS-05SV2 (*5)	-	-					
		3P	NFS-05SV	NFI-05SV	NFW-05SV					
	NF125-CV/SV	2P	NFS-1SV2 (*5)	-	-					
		3P	NFS-1SV	NFI-1SV	NFW-1SV					
	NF125-HV	2, 3P	NFS-1SV	-	NFW-1HV					
	NF125-SGV/LGV	2, 3P	NFS-2SV	NFI-2SV	NFW-2SV					
	NF160-SGV/LGV									
	NF250-SGV/LGV									
	NF250-CV/SV, NF125/250-SEV									
	NF125/160/250-HGV									
	NF250-HV, NF125/250-HEV									
NF400-CW										
NF400-SW/SEW										
NF630-CW/SW/SEW										
NF800-CEW/SDW/SEW										
ELCB (*2)	NV32-SV, NV63-CV/SV/HV	2P	NFS-05SV	-	-					
		3P	NFS-05SV	NFI-05SV	NFW-05SV					
	NV125-CV/SV	3P	NFS-1SV	NFI-1SV	NFW-1SV					
	NV125-HV									
	NV250-CV/SV, NV125/250-SEV									
	NV250-HV, NV125/250-HEV									
	NV400-CW									
	NV400-SW/SEW									
	NV630-CW/SW/SEW									
	NV800-SEW									
	Operating method					Direct operation of circuit breaker handle	Operation through operating handle mechanism			
	Standard paint color					Box: Munsell 5Y7/1 Operating handle: Munsell N1.5				
Protection class (IEC 60529)		IP3X	IP4X (*3)	IP65 (*4)						

Notes *1 The window frame varies depending on the model.

*2 For 1-pole circuit breakers, boxes are not manufactured.

*3 The protection class of NFI-1SV and NFI-2SV is IP3X.

*4 The protection class of NFW-4CW, NFW-4SW, NFW-6SW and NFW-8SW is IP54.

*5 The circuit breaker body is a 2-pole external type.

Remarks: 1. Only internal accessories with lead wires drawn out can be fitted. (However, LT and SLT can be fitted on the right pole side.)

2. The dust-proof type (I) models do not provide an isolation function.

● Selection of rated current

When selecting the rated current of circuit breaker, it is necessary to consider the temperature in the box. When the rated current is carried, the temperature in the box increases by 10 to 20K. Correct the rated current with the temperature correction curve. Determine the maximum working current to be 80% or less of the rated current.

● Locking

Type I and W boxed circuit breakers can be provided with locks in the following parts. Locking can prevent unnecessary operation.

① Cover and case

② ON or OFF position of operating handle

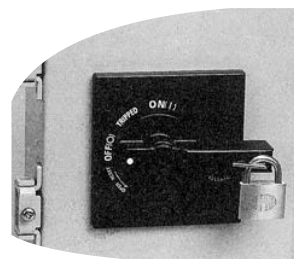
(Padlocks must be prepared by the user.)
(The dimensions of the padlocks are shown on page 739.)

● Interlock (only for Dust-proof type)

The cover cannot be opened while the circuit breaker is in the ON state. However, if the interlock release screw is turned, the cover is released from the locked state and can be opened even in the ON state.

● Handle operation and display

The ON, OFF or trip state of the body is displayed on each position on the decorative board.



Example of Type I operating handle block

(2) External dimensions

MCCB

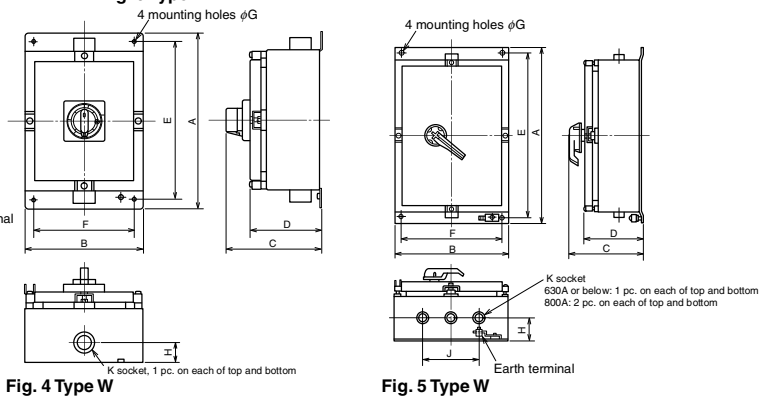
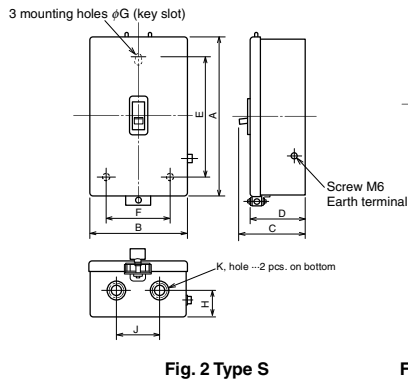
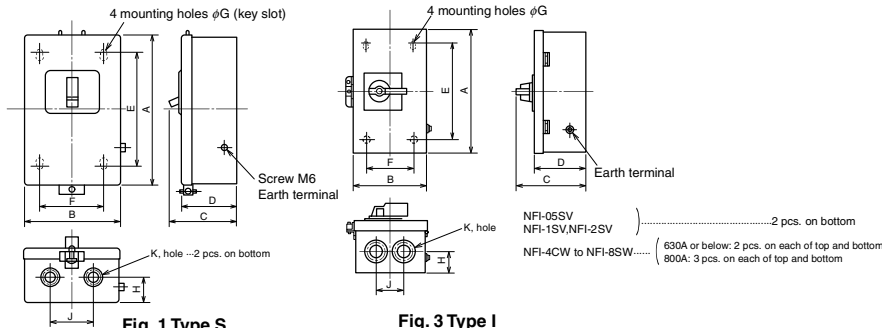


Table 40 Table of variable dimensions (Boxes for 4-pole circuit breakers are not manufactured.) Note) The sockets are applicable to thick steel duct (JIS C 8305) and conduit tube thread.

Box type	Type name	Applicable Model	Variable dimensions										
			Fig.	A	B	C	D	E	F	G	H	J	K
S	NFS-03CS	NF30-CS	2	188	158	69	58	150	78	6	25	100	20, 28
	NFS-05SV2	NF32-SV, NF63-CV/SV/HV	1	260	178	98	78	202	100	7	34	100	28, 35, 44
	NFS-05SV												
	NFS-1SV2	NF125-CV/SV	1	310	178	98	78	252	100	7	34	100	28, 35, 44
	NFS-1SV	NF125-CV/SV/HV											
I	NFS-2SV	NF250-CV/SV, NF125/250-SEV NF125-SGV/LGV NF160-SGV/LGV NF250-SGV/LGV	1	440	247	137	116	373	170	9	52	120	50, 62, 78
	NFI-05SV	NF32-SV, NF63-CV/SV/HV	3	350	186	155.5	117	286	120	7	42	100	28, 35, 44
	NFI-1SV	NF125-CV/SV/HV	3	352	188	155.5	118	286	120	7	42	100	28, 35, 44
	NFI-2SV	NF250-CV/SV/HV, NF125/250-SEV/HEV NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV	3	442	248	162	124	373	170	9	54	120	50, 62, 78
	NFI-4CW	NF400-CW	3	730	320	244	191	650	240	11	87	120	50, 62, 78
W	NFI-4SW	NF400-SW/SEW	3	730	320	244	191	650	240	11	65	120	50, 62, 78
	NFI-6SW	NF630-CW/SW/SEW	3	940	433	260	207	856	350	15	90	150	92
	NFI-8SW	NF800-CEW/SDW/SEW	3	1353	543	304	251	1270	460	15	90	320	104
	NFW-05SV	NF32-SV, NF63-CV/SV/HV	4	390	265	214	160	350	225	9.5	45	-	28
	NFW-1SV	NF125-CV/SV	4	390	265	214	160	350	225	9.5	50	-	36
Other	NFW-1HV	NF125-HV	4	480	265	239	186	440	225	9.5	60	-	36
	NFW-2SV	NF250-CV/SV/HV, NF125/250-SEV/HEV NF125-SGV/LGV/HGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV	4	550	355	264	210	510	315	11	75	-	54
	NFW-4CW	NF400-CW	5	800	355	257	220	760	315	11	85	-	70
	NFW-4SW	NF400-SW/SEW	5	800	355	257	220	760	315	11	85	-	70
	NFW-6SW	NF630-CW/SW/SEW	5	800	355	257	220	760	315	11	85	-	82
	NFW-8SW	NF800-CEW/SDW/SEW	5	1435	550	339	265	1395	515	15	100	180	104

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Molded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

■ ELCB

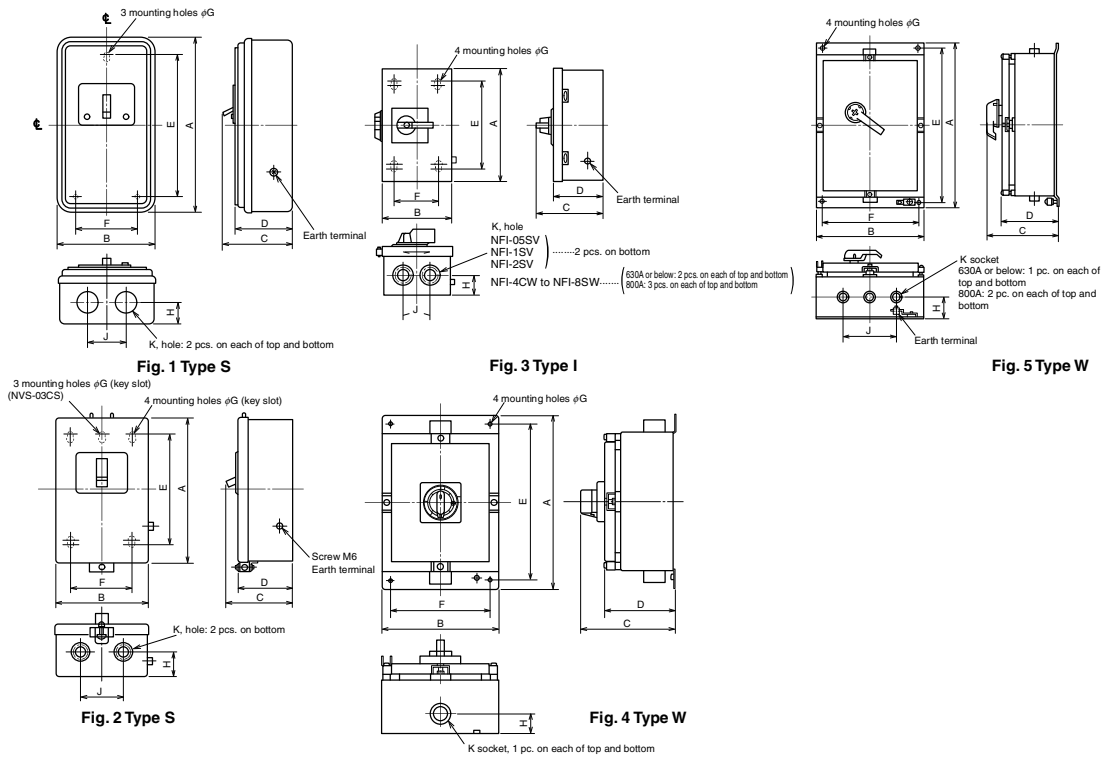


Table 41 Table of variable dimensions (Boxes for 4-pole circuit breakers are not manufactured.) Note) The sockets are applicable to thick steel duct (JIS C 8305) and conduit tube thread.

Box type	Type name	Applicable Model	Variable dimensions										
			Fig.	A	B	C	D	E	F	G	H	J	K
S	NFS-05SV2	NV32-SV, NV63-CV/SV/HV	2	260	178	98	78	202	100	7	34	100	28, 35, 44
	NFS-05SV												
	NFS-1SV2	NV125-CV/SV	2	310	178	98	78	252	100	7	34	100	28, 35, 44
	NFS-1SV												
I	NFS-2SV	NV250-CV/SV, NV125/250-SEV	2	440	247	137	116	373	170	9	52	120	50, 62, 78
	NFI-05SV	NV32-SV, NV63-CV/SV/HV	3	350	186	155.5	117	286	120	7	42	100	28, 35, 44
	NFI-1SV	NV125-CV/SV/HV	3	352	188	155.5	118	286	120	7	42	100	28, 35, 44
	NFI-2SV	NV250-CV/SV/HV, NV125/250-SEV/HEV	3	442	248	162	124	373	170	9	54	120	50, 62, 78
	NFI-4CW	NV400-CW	3	730	320	244	191	650	240	11	87	120	50, 62, 78
	NFI-4SW	NV400-SW/SEW	3	730	320	244	191	650	240	11	65	120	50, 62, 78
	NFI-6SW	NV630-CW/SW/SEW	2	940	433	260	207	856	350	15	90	150	92
	NFI-8SW	NV800-SEW	3	1353	543	304	251	1270	460	15	90	320	104
W	NFW-05SV	NV32-SV, NV63-CV/SV/HV	4	390	265	214	160	350	225	9.5	45	-	28
	NFW-1SV	NV125-CV/SV	4	390	265	214	160	350	225	9.5	50	-	36
	NFW-1HV	NV125-HV	4	480	265	239	186	440	225	9.5	60	-	36
	NFW-2SV	NV250-CV/SV/HV, NV125/250-SEV/HEV	4	550	355	264	210	510	315	11	75	-	54
	NFW-4CW	NV400-CW	5	800	355	257	220	760	315	11	85	-	70
	NFW-4SW	NV400-SW/SEW	5	800	355	257	220	760	315	11	85	-	70
	NFW-6SW	NV630-CW/SW/SEW	5	800	355	257	220	760	315	11	85	-	82
	NFW-8SW	NV800-SEW	5	1435	550	339	265	1395	515	15	100	180	104

Electrical Operated Circuit Breakers and Electrical Operation Devices



Spring charge type (1)



Spring charge type (2)
Standard paint color: Munsell 5Y7/1



Motor-drive type (2)
Standard paint color: Munsell 5Y7/1

(1) Specifications

Electrically operated circuit breakers

Table 42

Specify the electrical operation device together with the circuit breaker body.

Electrically operating method		Spring charge type (1)	Spring charge type (2)		Motor-drive type (2)			
MCCB	Class S, H and R	NF125-SV, NF125-HV 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 NF125-RV, NF250-RV	NF400-SW, NF400-SEW NF400-HEW, NF400-REW NF630-SW, NF630-SEW NF630-HEW, NF630-REW NF800-SDW, NF800-SEW NF800-HEW, NF800-REW	NF1000-SEW NF1250-SEW NF1250-SDW NF1600-SEW NF1600-SDW	NF400-SW, NF400-SEW NF400-HEW, NF400-REW NF630-SW, NF630-SEW NF630-HEW, NF630-REW NF800-SDW, NF800-SEW NF800-HEW, NF800-REW	NF1000-SEW NF1250-SEW NF1250-SDW NF1600-SEW NF1600-SDW		
	Class C	NF125-CV NF250-CV	NF400-CW NF630-CW NF800-CEW	-	NF400-CW NF630-CW NF800-CEW	-		
	Class U	NF125-UV NF250-UV	NF400-UW NF800-UW	-	NF400-UW NF800-UW	-		
	Motor breakers	NF125-SV, NF250-SV	-	-	-	-		
ELCB	Class S, H and R	NV125-SV, NV125-HV NV125-SEV, NV125-HEV NV250-SV, NV250-HV NV250-SEV, NV250-HEV	NV400-SW, NV400-SEW NV400-HEW, NV400-REW NV630-SW, NV630-SEW NV630-HEW, NV800-SEW NV800-HEW	-	NV400-SW, NV400-SEW NV400-HEW, NV400-REW NV630-SW, NV630-SEW NV630-HEW, NF800-SEW NV800-HEW (*3)	-		
	Class C	NV125-CV NV250-CV	NV400-CW NV630-CW	-	NV400-CW(*3) NV630-CW	-		
	Motor breakers	NV125-SV, NV250-SV	-	-	-	-		
Rated operating voltage (V) (Allowable operating voltage range: 85 to 110%)		Compatible with 100 to 240 V AC and 100 to 250 V DC 24 V DC, 48 to 60 V DC (*1)	DC100-110, AC100-110 AC200-220(DC125, AC240)		DC100-110, AC100-110, AC200-220 (DC125, AC240)			
Operating current (Ams) Values in (): Starting current	DC	100/110V	ON OFF	0.5 (1.5)	8 1.0 (3.0)	10 1.0 (4.0)	3.0(8.0)	5.0(13.5)
		100/110V	ON OFF	0.6 (3.0)	10 1.0 (3.0)	10 1.0 (3.0)	4.0(8.0)	5.0(10.0)
	AC	200/220V	ON OFF	0.5 (2.5)	8 0.5 (1.5)	8 0.5 (1.5)	2.0(4.5)	3.5(7.0)
		Operating time	s	ON OFF Charge	0.05-0.1(*2) 0.6 or less (self-holding type) 1.2 or less (self-holding type)	0.05 3 or less (self-holding type)	0.07 3 or less (self-holding type)	0.3 or less (self-holding type)
Required transformer capacity VA		150	700		400	700		
Endurance voltage		1500V	1500V					

Notes *1 When the rated operating voltage is 24 V DC or 48 to 60 V DC, specify the voltage. If the voltage is not specified, the circuit breaker will be manufactured for 100 to 240 V AC and 100 to 250 V DC.

*2 For 24-V DC circuit breakers, the operating time at a voltage of 100% or more is shown.

*3 Models for special voltage (125 V DC or 240 V AC) are not provided with the test button.

Remarks: 1. Flush plate type circuit breakers can be manufactured to order.

2. The models with voltage in parentheses are special voltage products.

3. For the spring charge type (1), use an ON-OFF operating switch for minute load.

4. For the spring charge type (1) The circuit breaker of 3 pole can be used TC-S, TC-L, TTC, BTC and PTC.

In case of 125A frame 4 pole can be used only TC-L.

In case of 250A frame 4 pole can be used TC-S, TC-L, TTC, BTC and PTC.

5. When the body of the spring charge type (1) breaker is an earth leakage alarm breaker, the reset button cannot be pressed. Provide such a circuit breaker with an external reset or automatic reset system (except for the electronic type).

6. When the body of the motor-drive type (2) or spring charge type (2) has internal accessories, they are normally provided with lead wire terminal blocks.

7. The types other than the spring charge type (1) do not provide an isolation function.

8. When placing an order for a CE marked product of the spring charge type (1) or spring charge type (2), specify the model name with CE.

9. The switching durability of electrically operated circuit breakers conforms to JIS.

Electrical operation devices

The following models of Electrical Operation Devices are supplied also as separate devices. The user can install them to the circuit breaker body.
(Front connection, rear connection and plug-in types)
(When requiring a motor breaker or a CE marked product, place an order for it together with the circuit breaker body.)

Table 43

Electrically operating method	Spring charge type (1)				
Applicable models	NF125-CV/SV/HV	NV125-CV/SV/HV	NF125-SEV/HEV/SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-CV/SV/HV/UV/SEV/HEV/SGV/LGV/HGV/RGV NF250-UV	NV250-CV/SV/HV	NV125-SEV/HEV NV250-SEV/HEV
Rated operating voltage					
Compactible to 100-240VAC/100-250VDC	MDSAD240-NF1SVE	MDSAD240-NV1SVE	MDSAD240-NF2SVE	MDSAD240-NV2SVE	MDSAD240-NVE2SVE
24VDC	MDS024-NF1SVE	MDS024-NV1SVE	MDS024-NF2SVE	MDS024-NV2SVE	MDS024-NVE2SVE
48-60VDC	MDS060-NF1SVE	MDS060-NV1SVE	MDS060-NF2SVE	MDS060-NV2SVE	MDS060-NVE2SVE

Detailed Specifications

Installation and Connection

Characteristics and Dimensions

Accessories

Modded Case Circuit Breakers

Earth Leakage Circuit Breakers

UL 489 Listed Circuit Breakers

Measuring Display Unit Breakers

Other

NV125-CV
NV125-SV
NV125-HV

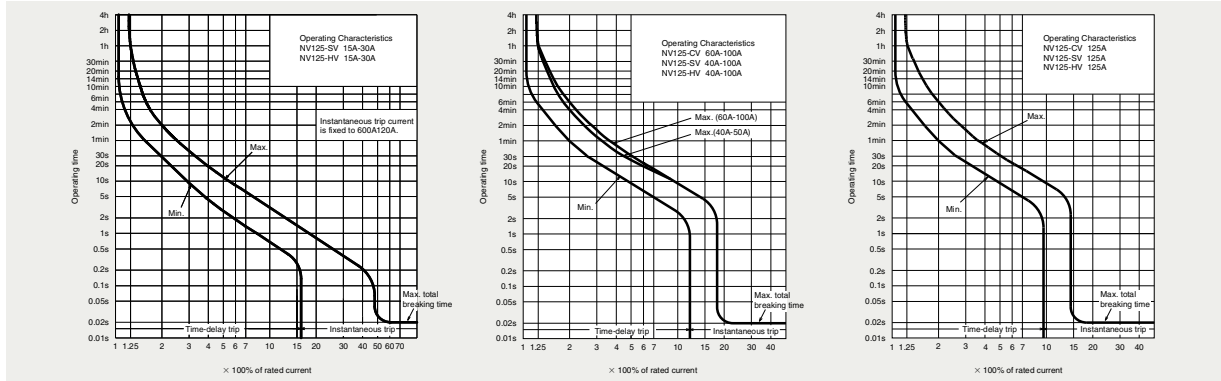


NV125-SV

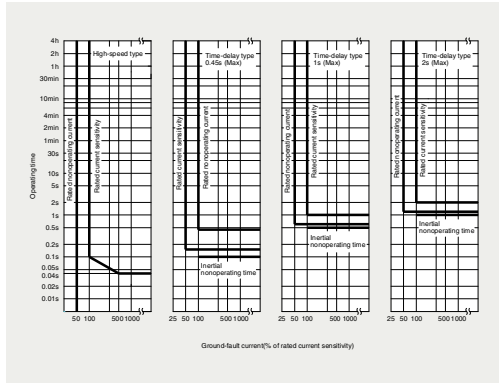
Model		NV125-CV		NV125-SV		NV125-HV	
Rated current In (A)		(60) 63 (75) 80 100 125		(15) 16 20 30 32 40 50 (60) 63 (75) 80 100 125 (*2)		(15) 16 20 (30) 32 40 50 (60) 63 75 80 100 125 (*2)	
Number of poles		3		3	4	3	4
Phase line		3φ3W, 1φ2W		3φ3W, 1φ2W	3φ4W	3φ3W, 1φ2W	3φ4W
Rated operational voltage Ue (V)		AC 100-440		100-440	200-440	100-440	200-440
High-speed type	Rated current sensitivity (mA)	(15) 30 100/200/500 selectable		30 100/200/500 selectable		(30) 100/200/500 selectable	
	Max operating time (s) at 1Δn at 5Δn	0.1 0.04		0.1 0.04		0.1 0.04	
Time-delay type	Rated current sensitivity (mA)	(100/200/500 selectable)		(100/200/500 selectable)		(100/200/500 selectable)	
	Max operating time (s)	(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)		(0.45/1.0/2.0 selectable)	
	Inertial operating time (s) (or more)	(0.1/0.5/1.0)		(0.1/0.5/1.0)		(0.1/0.5/1.0)	
Earth-leakage indication system		Mechanical type (button)		Mechanical type (button)	Mechanical type (button)	Mechanical type (button)	Mechanical type (button)
Rated short-circuit breaking capacity (kA)	IEC 60947-2 (Icu/Ics)	AC	440V	10/5	25/25	50/38	
			415V	10/5	30/30	50/38	
			400V	10/5	30/30	50/38	
			230V	30/15	50/50	100/75	
			200V	30/15	50/50	100/75	
			100V	30/15	50/50	100/75	
Standard attached parts (Front connection)		Mounting screw: M4×0.7×55 (3P: 2pcs, 4P: 4pcs) (*1)		Insulation barrier: (3P: 2pcs, 4P: 3pcs)			

Notes *1 Attached to NV125-SV and NV125-HV.
*2 In case of time delay type, rated current is produced with 20 amp. or more.

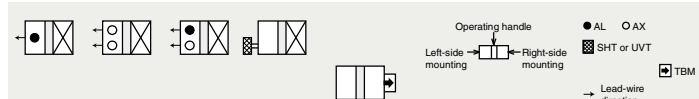
Operating Characteristics



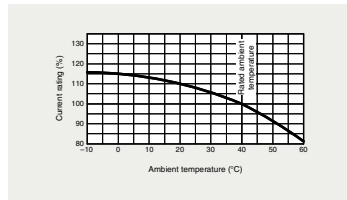
Earth leakage Tripping Characteristics



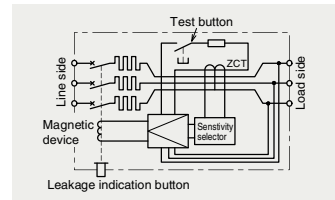
Internal Accessories



Temperature Compensation Curve



Internal Wiring Diagram



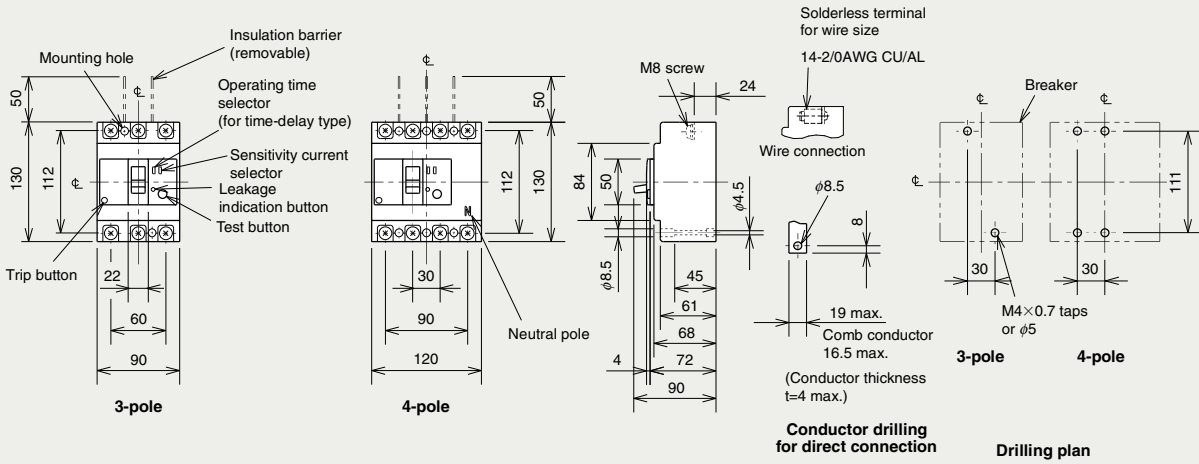
External Accessories

Accessories		Type name	Accessories		Type name
Operating handle	F	F-1SV	Mechanical interlock	3P	MI-05SV3
	V	V-1SV		4P	MI-1SV4
Handle lock device	LC	LC-05SV	Terminal cover	Small	TC-S
	HL (*1)	HLF-05SV		3P	TCL-1SV3
		HLN-05SV		4P	TCL-1SV4
	HL-S	HLS-05SV		Skeleton	TTC
			Rear	BTC	BTC-1SV3
			Plug-in	PTC	PTC-1SV3
Electrical operation device			(*2)		

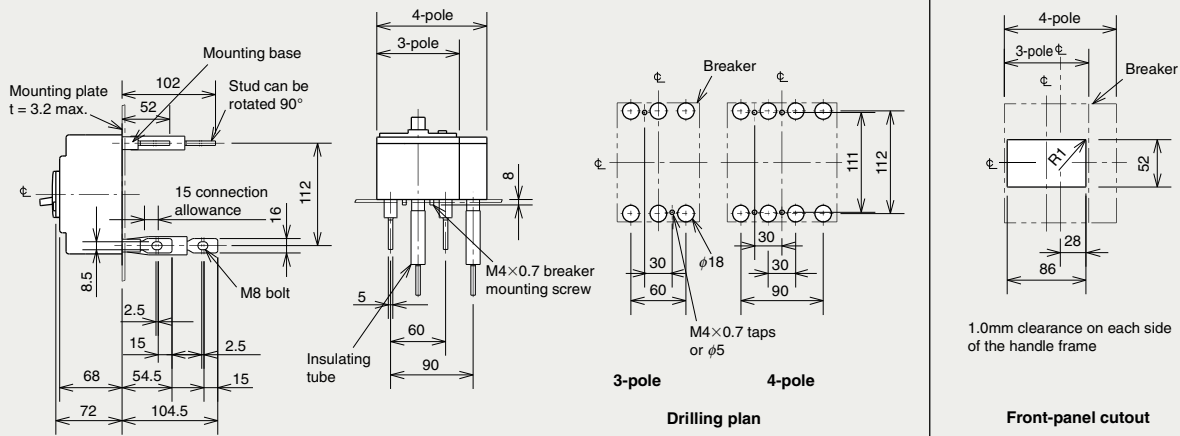
Notes *1 HLF types are used for OFF lock and HLN types for ON lock.
*2 Specify the working voltage.

Outline Drawing

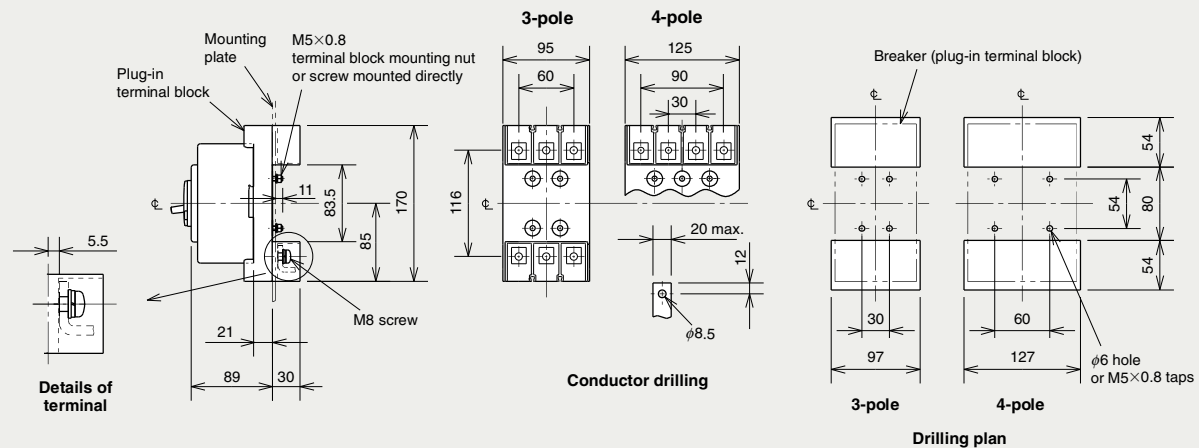
Front connection



Rear connection



Plug-in



Remark: 1. Only 3-pole models are available for NV125-CV.

(1) Dimensions of electrical operated circuit breakers

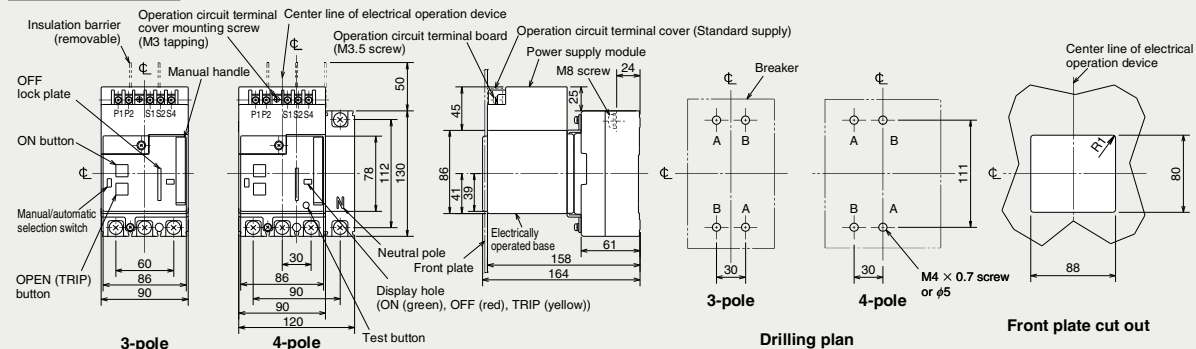
The following concept is applied for the dimensions of the electrical operated circuit breaker. Please understand this before using this type of breaker.

Connection method	Outline dimensions listing method				
	Model	Listed page	Model	Listed page	
Front connection (Rear connection)	NF125-CV/SV/HV NV125-CV/SV/HV	845	NF400-CW/SW/SEW/HEW/REW NF630-CW/SW/SEW/HEW/REW	846	
	NF125-UV	767	NF400-UJEW (3P) NV400-CW/SW/SEW/HEW/REW NF400-UJEW (4P) NV630-CW/SW/SEW/HEW		
	NF125-SEV/HEV/RV/ZEV NF250-CV/SV/HV/SEV/HEV NF250-RV	845	NF800-CEW/SEW/HEW/REW/SDW NF800-UJEW NV800-SEW/HEW		847
	NF125-SGV/LGV/HGV/RGV NF160-SGV/LGV/HGV NF250-SGV/LGV/HGV/RGV NV125-SEV/HEV	771	NF1000-SEW, NF1250-SEW/SDW NF1600-SEW/SDW	848	
	NV250-CV/SV/HV/SEV/HEV NF250-UV				
	Rear connection Plug-in	The drilling dimensions and connection related dimensions are the same as the dimensions for the breaker body. Refer to the dimension drawings of each model. Note that for the rear connection type, four mounting holes are required even for the 2-pole or 3-pole types.			

(2) Front connection (Rear connection)

NF125-CV, NF125-SV, NF125-HV
NV125-CV, NV125-SV, NV125-HV

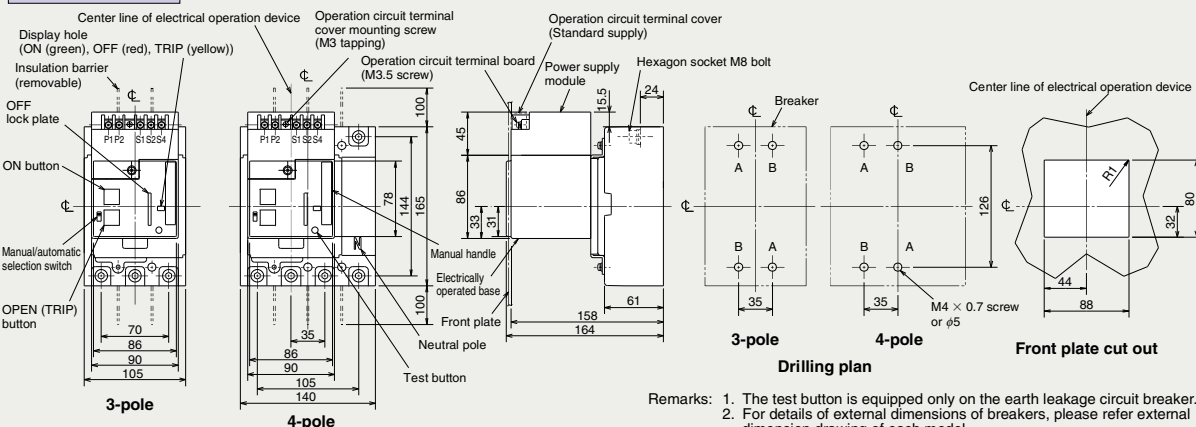
Front connection



Remarks: 1. This cannot be mounted on the 2-pole breaker.
2. The test button is equipped only on the earth leakage circuit breaker.

NF125-SEV, NF125-HEV, NF125-RV
NF250-CV, NF250-SV, NF250-HV, NF250-SEV, NF250-HEV, NF250-RV
NV125-SEV, NV125-HEV
NV250-CV, NV250-SV, NV250-HV, NV250-SEV, NV250-HEV
NF125-SGV/LGV/HGV/RGV
NF160-SGV/LGV/HGV
NF250-SGV/LGV/HGV/RGV

Front connection



Remarks: 1. The test button is equipped only on the earth leakage circuit breaker.
2. For details of external dimensions of breakers, please refer external dimension drawing of each model.