1 Applicable Scope and Purpose

The NDM5G-400V series of molded case switch-disconnector with the rated insulation voltage of 1500V,for power distribution and moyor circuits rated working voltage DC1500V,400A are applicable to the distribution circuit and motor circuit, which are used as power switches, disconnecting switches and emergency switches. The product can also be used for the accidental making or breaking the motor as well as infrequent making and breaking.

The products have isolation function, and the symbol for this is 

Comply with standards: IEC 60947-3, GB/T 14048.3.

The switch disconnector can reversely connect in main circuit.

2 Picture of the Product

Fig.1 Product

3 Specifications and Model Description

ND 1	M 2	5 3	G------□ 4 5	□ 6	□ 7	/ □ / 8	□ 9	□ 10	□ 11

SN	Item	NDM5G
1	Enterprise code	ND: “Nader” low-voltage apparatus
2	Product code	M: Molded case circuit breaker (MCCB)
3	Design SN	5
4	Series derived code	G: switch-disconnector
5	Current of the frame size	400
6	Type derived code	V
7	Rated current(A)	400
8	Number of poles	2
9	Operation method	Null: directly handle operation Z1A150:rotary handle with round center hole and square axis length 150 mm Z1A200: rotary handle with round center hole and square axis length 200 mm Z1A300:rotary handle with round center hole and square axis length 300 mm Z1A350:rotary handle with round center hole and square axis length 350 mm Z1A650:rotary handle with square center hole and square axis length 650 mm Z1F150:rotary handle with square center hole and square axis length 150 mm Z1F200:rotary handle with square center hole and square axis length 200 mm Z1F300:rotary handle with square center hole and square axis length 300 mm

9		Z1F350:rotary handle with square center hole and square axis length 350 mm Z1F650:rotary handle with square center hole and square axis length 650 mm M02:motor operation DC24V M11:motor operation AC110V/DC110V M22:motor operation AC230V/DC220V M40:motor operation AC400V
10	Accessory code	See Table 1
11	Other code	Customer name or special needs

Table 1

Accessory code	Accessory name	Installation Position
Null	No accessories	—
10	Shunt release	
21	Single auxiliary contact	
41	Shunt release + single auxiliary contact	

Note: ◧ Single auxiliary contact; ● Shunt release;

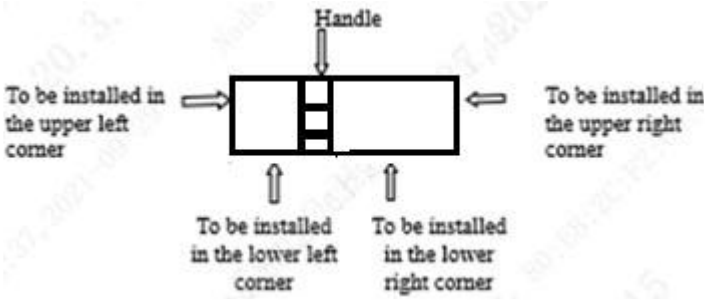
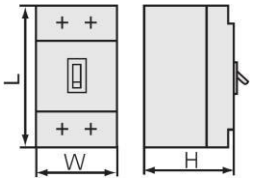


Figure 1 diagram for accessories installation

4 Main technical parameters

Table 2 Main technical parameters

Conventional thermal current Ith (A)			400
Rated voltage Ue (V)			DC1500
Number of poles			2
Utilization category			DC-22A DC-PV2
Rated impulse withstand voltage Uimp (V)			8000
Rated insulation voltage Ui (V)			1500
Rated short-time withstand current Icw (kA)			5/1s
Rated short circuit making capacity Icm (kA)			5
Operating performance (times)	Electrical life		1000
	Mechanical life	Without maintenance	10000
		With maintenance	20000
Outline dimensions:		L(mm)	250
		W(mm)	140
		H(mm)	131
Flashover distance(mm)			≤50

Note 1：Ir:30kA，DC1500V/400A. Rated limiting short-circuit current: DC1300V/30kA, time constant: 5ms, photovoltaic fuse: Ir: 30kA, DC1500V/400A.

2. The overall dimension does not include the dimension of terminal cover.

4.1 Recommendations of cross-section area of cables or busbars for the switch disconnector

Table 3 Choice of cross-section area of the conductors

Rated current (A)	400
Cross-section area (mm^2)	240

4.2 Tighten torques of connecting and installation screws for the switch disconnector

Table 4 tighten torques of connection and installation screws for the switch disconnector

Model type	Screw usage	Thread specification	Torque(N • m)
NDM5G-400V	Wire connection	M10	50
	Installation	M5	2

4.3 Derating coefficient according to ambient temperature for the switch disconnector

Table 5 Derating coefficient according to ambient temperature for the switch disconnectors

Model type	Ambient temperature and corresponding derating coefficient							
NDM5G-400V	temperature(℃)	40	45	50	55	60	65	70
	Derating factor	1.0	1.0	1.0	0.95	0.91	0.86	0.8

Note 1. If the temperature is lower than 50℃, products can come into use normally without derating.

2. All the derating coefficients above are measured and derived under rated current.

4.4 Derating coefficient at high elevation for the Switch Disconnector

Table 6 Derating coefficient at high elevation for the Switch Disconnector

Elevation (m)	Working current correction coefficient	Maximum working current correction coefficient	Power frequency withstand voltage correction coefficient	Isolation voltage correction coefficient
2000	1	1	1	1
2500	1	1	1	1
3000	0. 98	1	1	1
3500	0. 95	1	1	1
4000	0. 93	1	1	1
4500	0. 91	1	1	1
5000	0. 89	1	1	1

4.5 Power dissipation of switch Disconnector

Table 7 Current specification power dissipation at single phase of NDM5G-400V products

Model type	Current specification(A)	Power dissipation at single phase(W)
NDM5G-400V	400	19.8
Note：the datum above is measuerd in 40℃ ambient temperature and in rated current for power dissipation at single phase.		

5 Normal working environments

1) Elevation of installation site should be no more than 2500m, see Table 6 Derating coefficient at high elevation for the switch disconnector for derating coefficient at high elevation

2) Ambient temperature should be within the range of -35℃～+70℃, meanwhile the mean temperature over 24hours should no more than 35℃. If the ambient temperature is higher than 50℃, the products should put into use with deration.

See Table 5 Derating coefficient according to ambient temperature for the switch disconnector for Derating coefficient according to ambient temperature.

3) The relative humidity should no more than 50%, when the ambient temperature is 40°C. Somehow relatively high humidity is acceptable if the temperature is relatively low. For instance, 90% humidity is acceptable when temperature is 20°C. Actions should be taken to deal with the condensation result from the temperature changes.
4) The product can withstand the effects of wet air, salt mist, oil mist and mould.
5) Installation category if switch disconnector connecting to the main circuit: III (power distribution and control level.). Installation category if switch disconnector not connecting to the main circuit: II (load level)
6) Pollution level: 3;
7) Protection class: IP20;
8) The product can be disposed in places that are free from explosive media, metal-corrosive or insulation-damaging gas, or conductive dust. And should avoid using in places invaded by rain or snow.
9) If customers are intending to deploy the products in the harsher condition than mentioned above, please talk to manufacturer first.

6 Product Outline and Installation Dimensions

6.1 External dimensions of products

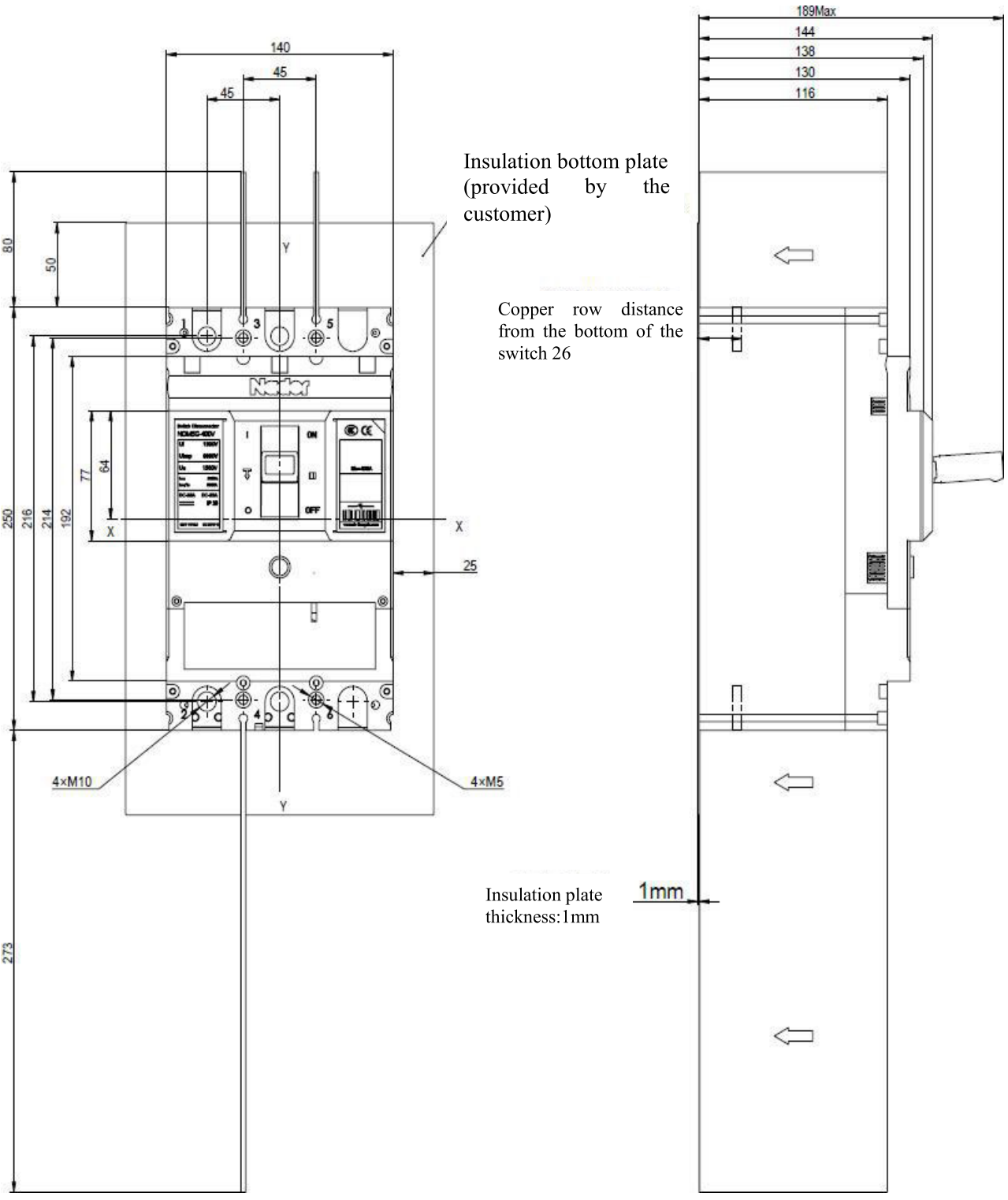


Figure 2 outline dimensions of front-plate connection product

Note: Unlabeled tolerance level should follow GB/T 1804-c

6.2 Product installation dimensions

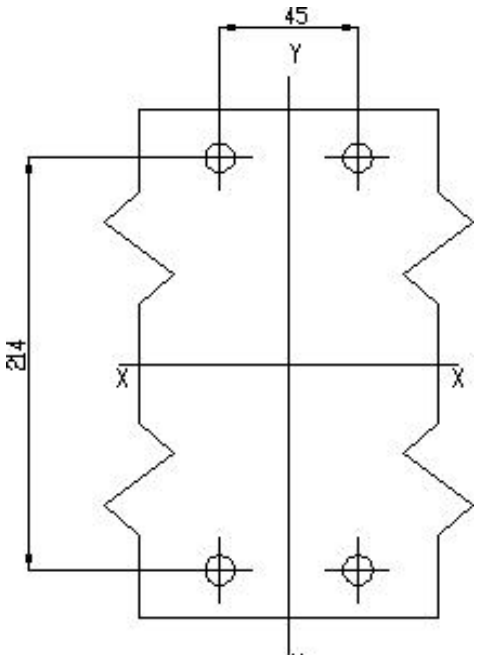
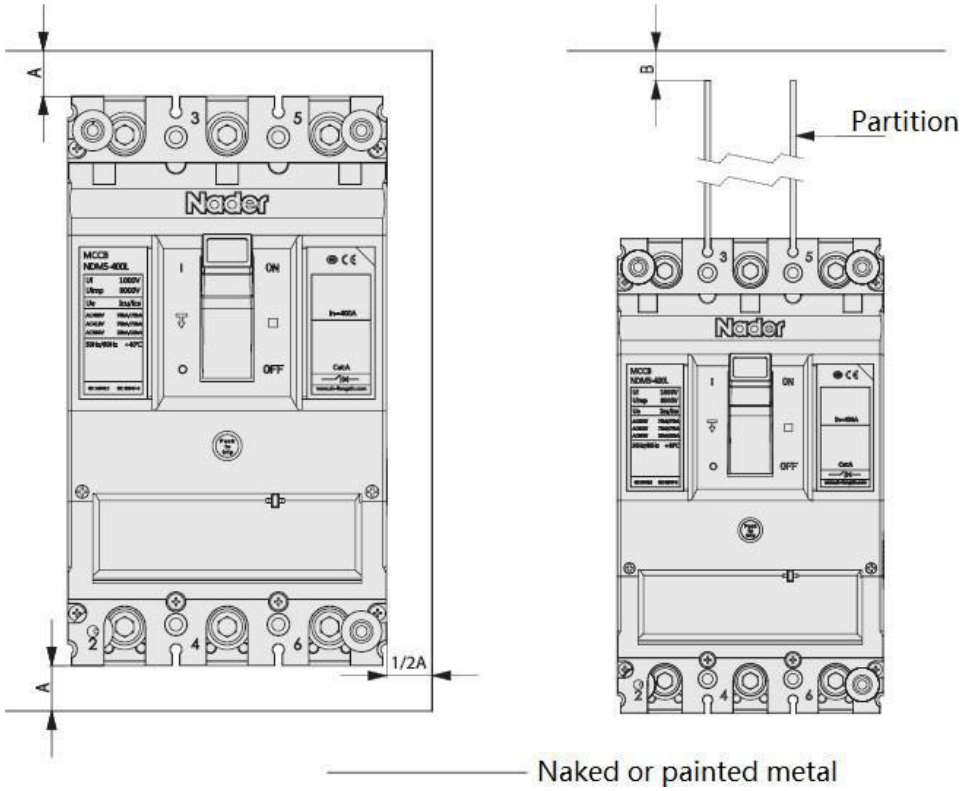


Figure 3 mounting holes dimensions

6.2 Spacing for safety

When switch disconnector installation, see table 8 and figures below for minimum spacing of upper, bottom and flank



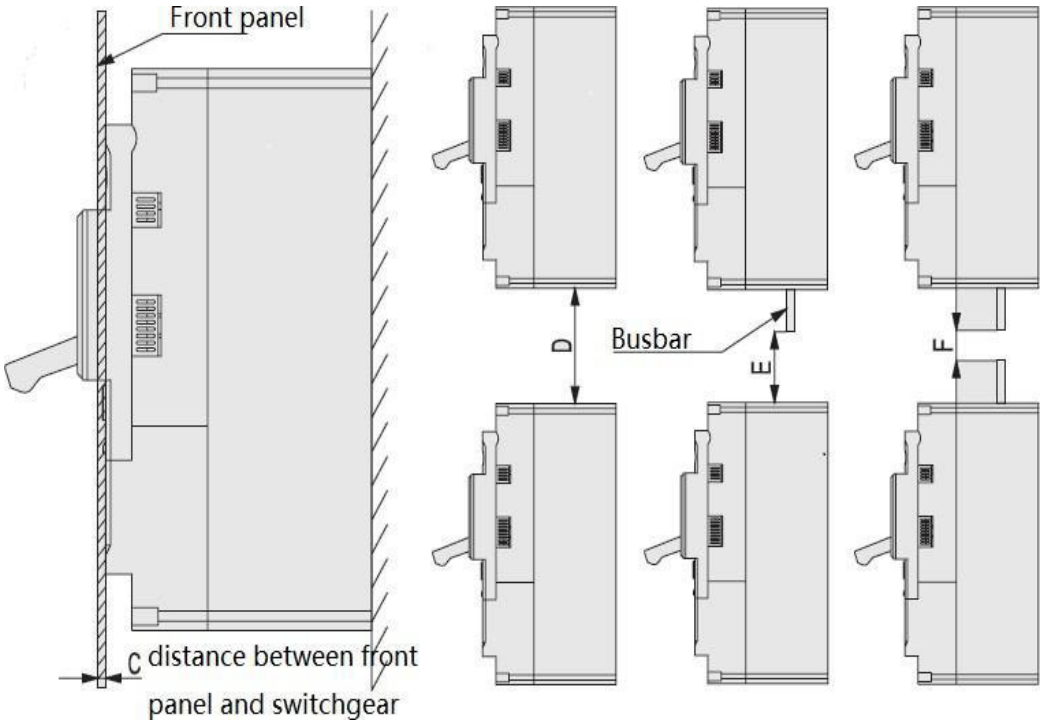


Figure 4 safety spacing

Table 8 minimum safety spacing for installation (mm)

Model type	Distance A	Distance B	Distance C	Distance D	Distance E	Distance F
NDM5G-400V	⩾50	⩾0	⩾0	⩾160	⩾120	⩾80

Note: Unlabeled tolerance level should follow GB/T 1804-c

7 Illustration of accessory function

7.1.2 Shunt release

When the external voltage of the shunt release is between 70% and 140% of the rated control power voltage, the release can break the disconnecting switch reliably.

Table 9 voltage specification and power dissipation of shunt release

Shunt release	Power dissipation of shunt release（W）	Tighten torque of connecting screw
	22	
	AC230/DC250	
M5-400	19	1.2N.m

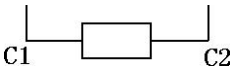


Figure 5 wiring diagram of shunt release

Note Working principle of the shunt releases: a single pulse action. If another action is needed, the shunt releases need to power off, and then energized to act.

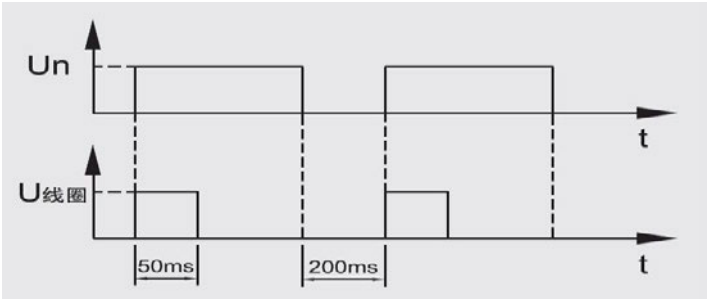
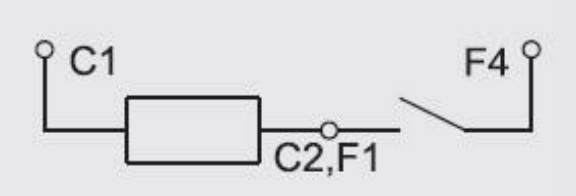


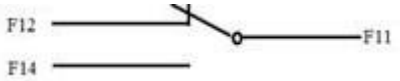
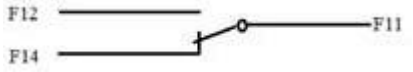
Figure 6 working principle diagram of shunt release

If long-term power supply is required so that the circuit breaker cannot be closed normally, one auxiliary contact can be connected in series as shown in the figure below.



7.2 Rated parameters of the auxiliary contact

Table 10

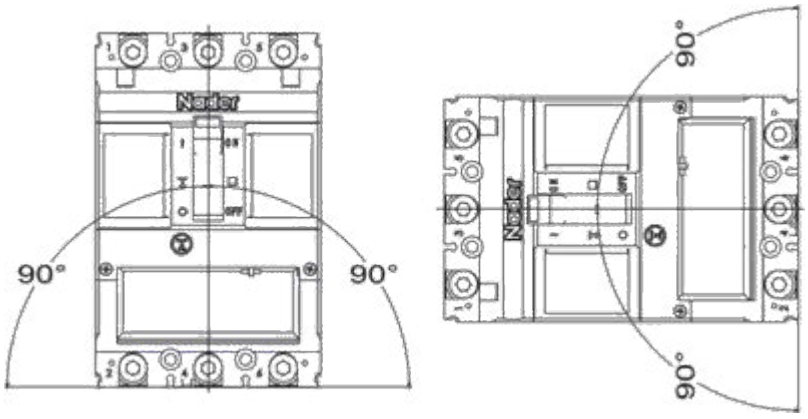
Accessory name		Auxiliary contact (normally)	Auxiliary contact (low-power dissipation)
Voltage specifications (V)/conventional (Ith)		AC250V/10A、DC220V/0.2A	DC30V/0.1A
Wiring diagram	On, off		
	Free tripping		
Internal resistance		＜30mΩ	＜50mΩ

Note1: If need DC30V/0.1A Auxiliary contact, please explain when ordering.
2: Auxiliary harness is identified as F11 (red), F12 (white), F14 (yellow).

8 Installation direction

For vertically installed product (upright)，inclination of installation plane and perpendicular plane should no more than±22.5°.

Horizontally installed product (level)



Vertical installation (upright) Horizontal installation (level)

Figure 7 diagram of installation direction

9 Packaging and Storage

Minimum packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with the ambient temperature of -40℃~75℃ and relative humidity below 80% without acidic, alkali or other corrosive gas in the surrounding air. Under the conditions above, the storage period shall be no more than 36 months since the manufacturing date.

10 Environment conformance

RoHS compliant

11 Accessory list and installation

Table11 accessory list

SN	Name	Specification	Quantity
1	Cross recessed small pan head screw	M5×120	4
2	Plain washer	5	4
3	Spring washer	5	4
4	Hexagon nut	M5	4
5	Phase partition (short)	——	2
6	Phase partition (long)	——	1
7	Hexagon socket cylindrical head combination	M10×30	4

12 Precautions

1) The performance parameters of this specification are set by the manufacturer. Only trained or certified professional personnel can adjust, install or maintain the switch disconnectors, release units and other accessories according to the wring design parameter.
2) Ensure that the power supply is off before installing or removing any device.
3) The handle of the switch disconnector can be at one of the three positions, which indicate the situation of ON OFF and TRIPPED respectively. When at the TRIPPED position, to close the switchgear, handle should be drawn toward OFF position to re-latch the switchgear and then close it.