

Shanghai Liangxin Electrical Co., Ltd.

**P03011-NDG3A-250 Disconnecting Switch**

**Product Specification**

(IPD-ENG-DEV-T20 A1 2016-09-23)

**Product Name:** Disconnecting Switch

**Product Model:** NDG3A-250

|                  |                              |      |                 |
|------------------|------------------------------|------|-----------------|
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| Revision History |                         |                     |             |               |             |
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| 0                | New addition            | 20181126            | Zhang Jiang | Wang Hengyang | Tang Rui    |
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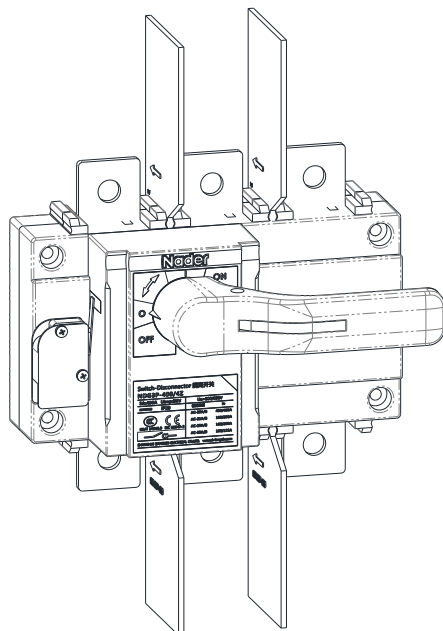
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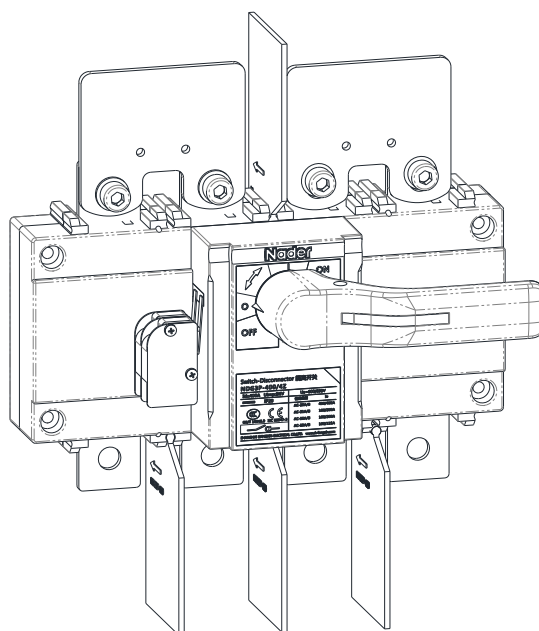
## 1. Application Scope and Purpose

NDG3A—250 disconnecting switches are applicable to the AC/DC power system and mainly installed in the low-voltage distribution circuit. The products can be used for infrequent making and breaking as well as to isolate and break the circuit in the energy storage, power, construction and other industries. With the frame current of 400A, the products are used in the power line with the rated voltage of AC690V (50/60Hz) and below, or DC500V and below.

## 2. Picture of the Product



NDG3A-250/3/K/C1



NDG3A-250/4Z/K/C2

## 3. Specifications and Models Description

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

| SN | Code name                                  | Code description                                                                                                                                                                       |
|----|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Enterprise code                            | ND “Nader” low-voltage apparatus                                                                                                                                                       |
| 2  | Product code                               | G Disconnecting switch                                                                                                                                                                 |
| 3  | Design code                                | 3A                                                                                                                                                                                     |
| 4  | Rated current (A)                          | In: 250, 200, 160, 125, 100                                                                                                                                                            |
| 5  | Number of poles                            | 3: 3P; 4: 4P                                                                                                                                                                           |
| 6  | Current Type                               | Uncoded: Normal product; Z: DC product                                                                                                                                                 |
| 7  | Handle type                                | K: Inside-cabinet handle; P: Handle outside a cabinet                                                                                                                                  |
| 8  | Connection square shaft Specification code | No square shaft code for the inside-cabinet handle.<br>150: Shaft length 150mm; 200: Shaft length 200mm; 250: Shaft length 250mm;<br>300: Shaft length 300mm; 400: shaft length 400mm. |
| 9  | Auxiliary contact                          | C1: A group of conventional contacts; C2: Two groups of conventional contacts;<br>W1: A group of micro-power contacts; W2: Two groups of micro-power contacts.                         |
| 10 | Terminal protection                        | No code: Phase partition; Z3: 3P terminal cover; Z4: 4P terminal cover                                                                                                                 |

## 4. Main Technical Parameters

|                                                                                                         |                            |               |                                                                |          |          |          |          |
|---------------------------------------------------------------------------------------------------------|----------------------------|---------------|----------------------------------------------------------------|----------|----------|----------|----------|
| Disconnecting switch                                                                                    |                            |               | NDG3A-250                                                      |          |          |          |          |
| Agreed thermal current I <sub>th</sub> (A)                                                              |                            |               | 250                                                            |          |          |          |          |
| Number of poles                                                                                         |                            |               | 3, 4                                                           |          |          |          |          |
| Rated insulation voltage U <sub>i</sub> (V)                                                             |                            |               | 800                                                            |          |          |          |          |
| Rated impulse withstand voltage U <sub>imp</sub> (kV)                                                   |                            |               | 8                                                              |          |          |          |          |
| No protection device for the rated short time withstand current I <sub>cw</sub> (1s.kA effective value) |                            |               | AC: 7; DC: 3                                                   |          |          |          |          |
| Rated short circuit making capacity I <sub>cm</sub> (kA peak value)                                     |                            |               | AC: 18; DC: 12I <sub>e</sub>                                   |          |          |          |          |
| Rated current I <sub>n</sub> (A) (at +40℃)                                                              |                            |               | 100(A/B)                                                       | 125(A/B) | 160(A/B) | 200(A/B) | 250(A/B) |
| Rated working current I <sub>e</sub> (A)                                                                | 380VAC<br>400VAC<br>415VAC | AC-20A/AC-20B | 100/100                                                        | 125/125  | 160/160  | 200/200  | 250/250  |
|                                                                                                         |                            | AC-21A/AC-21B |                                                                |          |          |          | 200/200  |
|                                                                                                         |                            | AC-22A/AC-22B |                                                                |          |          | 160/160  | 160/160  |
|                                                                                                         |                            | AC-23A/AC-23B |                                                                |          |          | 200/200  | 250/250  |
|                                                                                                         | 500VAC                     | AC-20A/AC-20B | 100/100                                                        | 125/125  | 160/160  | 200/200  | 250/250  |
|                                                                                                         |                            | AC-21A/AC-21B |                                                                |          |          | 160/160  | 160/160  |
|                                                                                                         |                            | AC-22A/AC-22B |                                                                |          |          | 125/125  | 125/125  |
|                                                                                                         |                            | AC-23A/AC-23B |                                                                | 100/100  | 100/100  | 100/100  |          |
|                                                                                                         | 660VAC<br>690VAC           | AC-20A/AC-20B | 100/100                                                        | 125/125  | 160/160  | 200/200  | 250/250  |
|                                                                                                         |                            | AC-21A/AC-21B |                                                                |          |          | 160/160  | 160/160  |
|                                                                                                         |                            | AC-22A/AC-22B |                                                                |          |          | 125/125  | 125/125  |
|                                                                                                         |                            | AC-23A/AC-23B |                                                                |          | 63/63    |          |          |
|                                                                                                         | 220VDC                     | DC-20A/DC-20B | 100/100                                                        | 125/125  | 160/160  | 200/200  | 250/250  |
|                                                                                                         |                            | DC-21A/DC-21B |                                                                |          |          | 160/160  | 160/160  |
|                                                                                                         |                            | DC-22A/DC-22B |                                                                |          | 125/125  | 125/125  |          |
|                                                                                                         |                            | DC-23A/DC-23B |                                                                |          | 125/125  | 125/125  |          |
|                                                                                                         | 400VDC                     | DC-20A/DC-20B | 100/100                                                        | 125/125  | 160/160  | 200/200  | 250/250  |
|                                                                                                         |                            | DC-21A/DC-21B |                                                                |          |          | 160/160  | 160/160  |
|                                                                                                         |                            | DC-22A/DC-22B |                                                                |          | 125/125  | 125/125  |          |
|                                                                                                         |                            | DC-23A/DC-23B |                                                                |          | 125/125  | 125/125  |          |
|                                                                                                         | 500VDC                     | DC-20A/DC-20B | 100/100                                                        | 125/125  | 160/160  | 200/200  | 250/250  |
|                                                                                                         |                            | DC-21A/DC-21B |                                                                |          | 125/125  | 125/125  | 125/125  |
|                                                                                                         |                            | DC-22A/DC-22B |                                                                |          |          |          |          |
|                                                                                                         |                            | DC-23A/DC-23B |                                                                |          |          |          |          |
| Mechanical life (times)                                                                                 |                            |               | 10000                                                          |          |          |          |          |
| Electrical life (times)                                                                                 |                            |               | 1000                                                           |          |          |          |          |
| Operating torque (N.m)                                                                                  |                            |               | 6.5                                                            |          |          |          |          |
| Installation mode                                                                                       |                            |               | Screw mounting                                                 |          |          |          |          |
| External dimensions 4P (length×width×height)                                                            |                            |               | 170×135×65                                                     |          |          |          |          |
| External dimensions 3P (length×width×height)                                                            |                            |               | 140×135×65                                                     |          |          |          |          |
| Applicable standards                                                                                    |                            |               | GB14048.1, GB14048.3, IEC60947-1, IEC60947-3                   |          |          |          |          |
| Product certification                                                                                   |                            |               | CCC, CE, TUV                                                   |          |          |          |          |
| Single-phase internal resistance (mΩ)                                                                   |                            |               | 0.8                                                            |          |          |          |          |
| Minimum copper cable cross section (mm <sup>2</sup> )                                                   |                            |               | 63A: 35; 100A: 50; 125A: 50;<br>160A: 95; 200A: 120; 250A: 150 |          |          |          |          |
| Minimum tightening torque of copper cable connection (N.m)                                              |                            |               | 12                                                             |          |          |          |          |

Note: 1) Refer to GB 14048.3 for other unspecified parameter requirements.

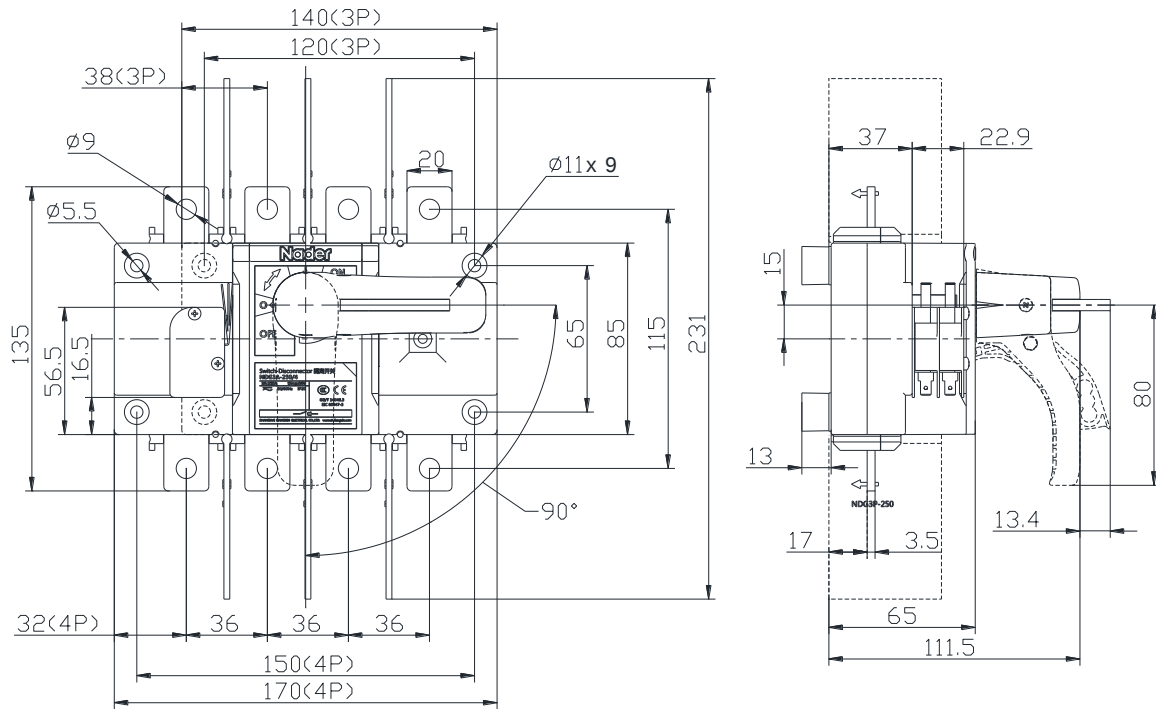
2) For 4P, DC products are used in series with positive and negative polarities per 2 poles.

## 5. Normal Working Environment

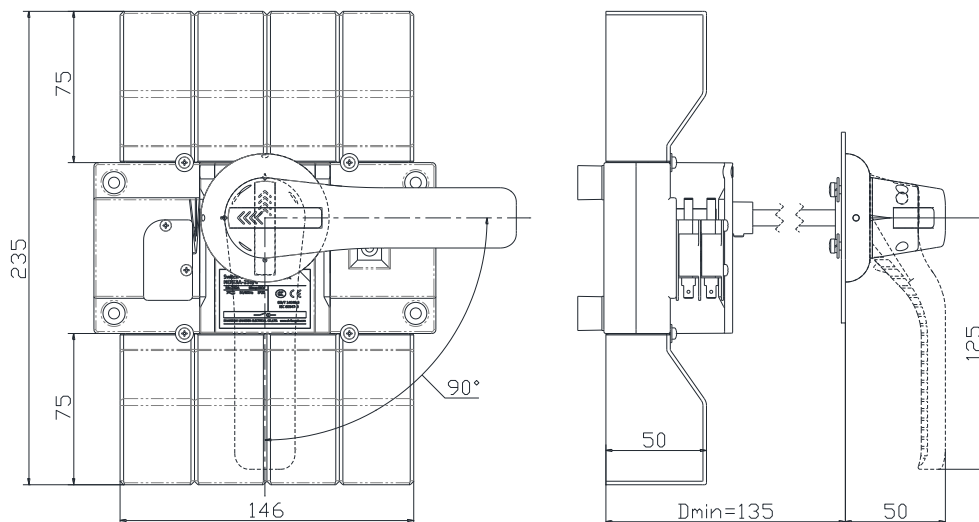
- 1) Altitude: Below 2,000m
- 2) Operating ambient temperature:  $-25^{\circ}\text{C} \sim 55^{\circ}\text{C}$  (the testing ambient temperature of UPS is  $40^{\circ}\text{C}$ )
- 3) Operating/storage relative humidity: The relative humidity at an ambient temperature of  $+40$  should not exceed 50%. A higher relative humidity is allowed at a lower humidity.
- 4) The product can be disposed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust. The product should be avoided from snow and rain.
- 5) Protection class: IP20 for the complete appliance, handle outside a cabinet: IP65.
- 6) Storage environment:  $-50^{\circ}\text{C} \sim +80^{\circ}\text{C}$
- 7) Pollution level: Level 3
- 8) Installation category: III and IV.

## 6. Outline and Installation Dimensions

### 6.1 Body+Partition+Inside-cabinet handle

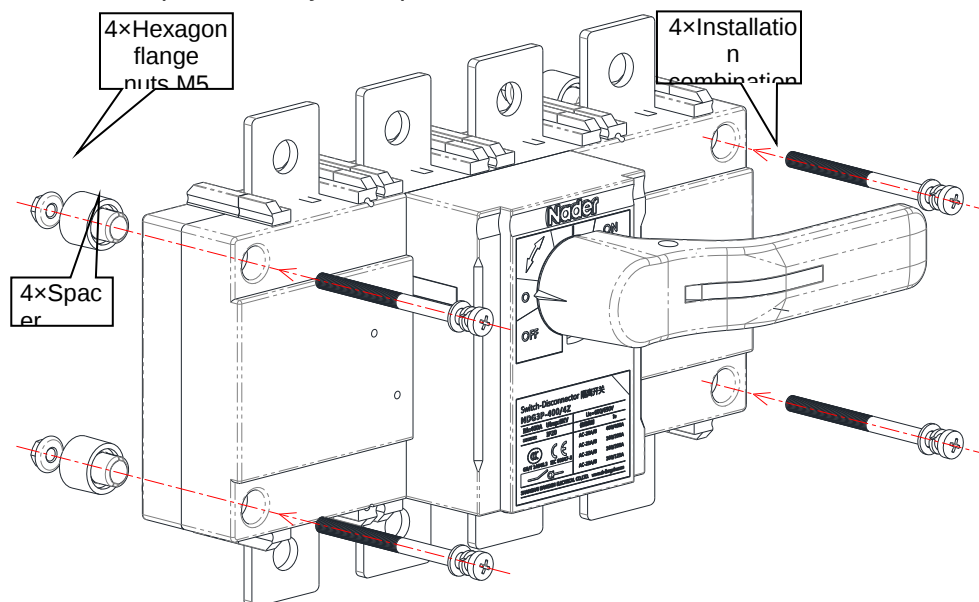


## 6.2 Body+Housing+Handle outside a cabinet



## 7. Installation Mode

### 7.1 Installation of the product body and spacer block

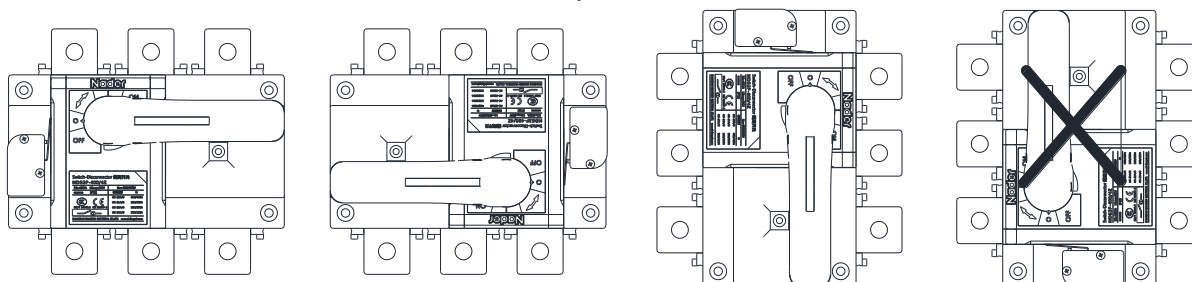


### 7.2 Product installation position description

Products can be installed vertically and horizontally.

In case of vertical installation, the contact inspection window shall not position upward, as the 4th method shown in the figure below.

The inclination of the vertical installation plane shall not be more than 5° .



## 8. Packaging and Storage

The products are packaged with cartons and pearl wool. With the terminal protected with an anti-oxidation sleeve, the product is covered with a moisture-proof bag and a pearl wool liner in the box. Each box contains a single unit. Dropping test is in accordance with *LXWI8.203-15 Product Drop Experiment Inspection Speculation A1*.

## 9. Environmental Compliance

The product complies with the RoHs2.0 environmental standards.

## 10. List of Accessories and Installation

### 10.1 Model interpretation

#### 10.1.1 Handle model interpretation:

SB 1 - □ / □  
1 2 3 4

| SN | SN description          | Code description                                                                                                                                                                                                                                                                              |
|----|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Function code           | SB handle                                                                                                                                                                                                                                                                                     |
| 2  | Design SN               | 1                                                                                                                                                                                                                                                                                             |
| 3  | Handle type             | K: Inside-cabinet handle<br>P: Handle outside a cabinet                                                                                                                                                                                                                                       |
| 4  | Applicable switch model | Applicable switch model for the inside-cabinet handle:<br>G3A-400: Apply to NDG3A-400, 315, 250H;<br>G3A-250: Apply to NDG3A-250, 200, 160, 125, 100.<br><br>Applicable switch model for the handle outside a cabinet:<br>G3A-400:<br>Apply to NDG3A-400, 315, 250H, 250, 200, 160, 125, 100. |

#### 10.1.2 Square shaft model interpretation:

FZ 1 - □ / □  
1 2 3 4

| SN | SN description                  | Code description                                                                                                                |
|----|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 1  | Function code                   | FZ square shaft                                                                                                                 |
| 2  | Design SN                       | 1                                                                                                                               |
| 3  | Square shaft specification code | 150: Shaft length 150mm; 200: Shaft length 200mm; 250: Shaft length 250mm;<br>300: Shaft length 300mm; 400: shaft length 400mm. |
| 4  | Applicable switch model         | G3A-400: Apply to NDG3A-400, 315, 250H;<br>G3A-250: Apply to NDG3A-250, 200, 160, 125, 100.                                     |

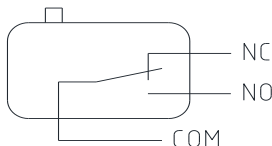
#### 10.1.3 Auxiliary contact model interpretation

F 1 - 11 □ □ / G3A-400  
1 2 3 4 5 6

| SN | SN description    | Code description   |
|----|-------------------|--------------------|
| 1  | Function code     | Auxiliary contact  |
| 2  | Design SN         | 1                  |
| 3  | Pairs of contacts | 11: One NO, one NC |

|   |                         |                                                                       |
|---|-------------------------|-----------------------------------------------------------------------|
| 4 | Specification           | C: AC250V/10A, DC220V/0.2A<br>W: AC125V/0.1A, DC30V/0.1A (micro-load) |
| 5 | Installed quantity      | 1: 1 unit to be installed per set, 2: 2 units to be installed per set |
| 6 | Applicable switch model | G3A-400:<br>Apply to NDG3A-400, 315, 250H, 250, 200, 160, 125, 100.   |

Note: Rated parameters of the auxiliary contact

| Auxiliary contact specifications     | F1-11C                                                                              | F1-11W                    |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------|
| Voltage specifications/rated current | AC250V/10A<br>DC220V/0.2A                                                           | AC125V/0.1A<br>DC30V/0.1A |
| Contact material                     | Silver alloy                                                                        | Gold alloy                |
| Minimum applicable load of contact   | DC8V/160mA                                                                          | DC5V/1mA                  |
| Internal resistance                  | <30 mΩ                                                                              | <50 mΩ                    |
| Life                                 | 30000 times                                                                         |                           |
| Operation frequency                  | 120 times/hour                                                                      |                           |
| Terminal specifications              | #4.8 (#187 inch)                                                                    |                           |
| Contact type: Switching              |  |                           |

#### 10.1.4 Short-circuit block model interpretation

MX 1 - □ / □  
1 2 3 4

| SN | SN description          | Code description                                                                          |
|----|-------------------------|-------------------------------------------------------------------------------------------|
| 1  | Function code           | Short-circuit block                                                                       |
| 2  | Design SN               | 1                                                                                         |
| 3  | Number of poles         | 4                                                                                         |
| 4  | Applicable switch model | G3A-400: Apply to NDG3A-400, 315, 250H<br>G3A-250: Apply to NDG3A-250, 200, 160, 125, 100 |

#### 10.1.5 Terminal cover model interpretation

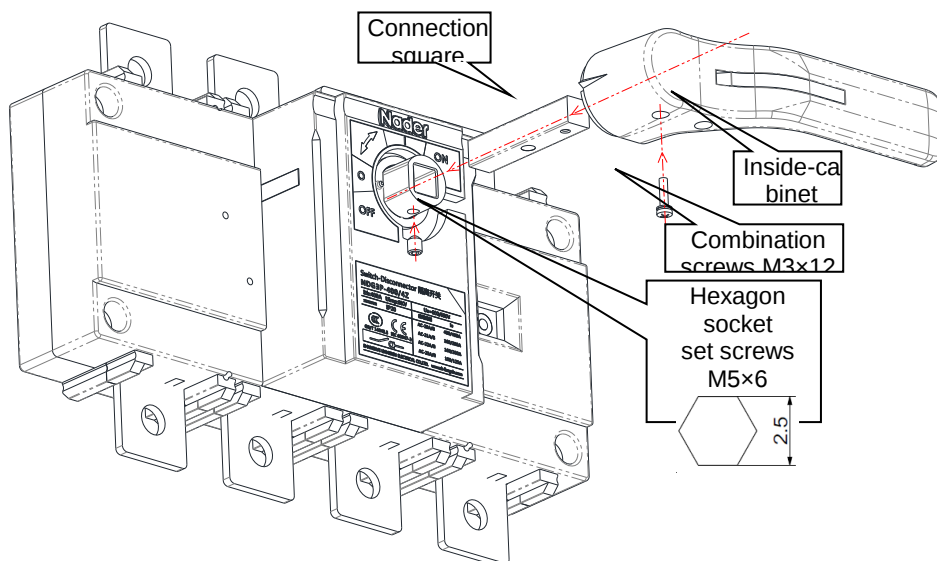
Z 1 - □ / □  
1 2 3 4

| SN | SN description          | Code description                                                                          |
|----|-------------------------|-------------------------------------------------------------------------------------------|
| 1  | Function code           | Terminal cover                                                                            |
| 2  | Design SN               | 1                                                                                         |
| 3  | Number of poles         | 3, 4                                                                                      |
| 4  | Applicable switch model | G3A-400: Apply to NDG3A-400, 315, 250H<br>G3A-250: Apply to NDG3A-250, 200, 160, 125, 100 |

## 10.2 Installation mode

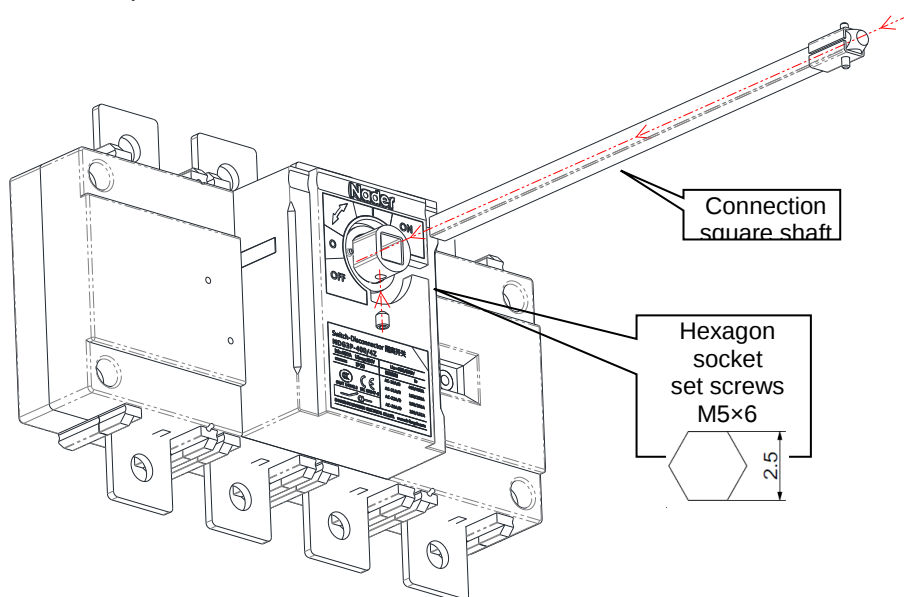
### 10.2.1 Installation of the inside-cabinet handle

First insert the connection square shaft into the body and fix it with hexagon socket set screws M5x6, then insert the inside-cabinet handle into the connection square shaft and fix it with combination screws M3x12.

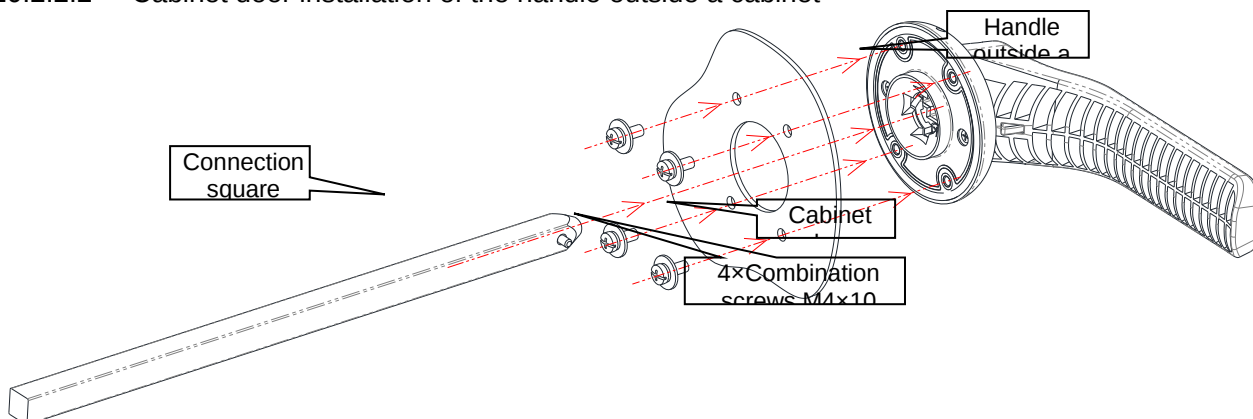


### 10.2.2 Installation of the handle outside a cabinet

#### 10.2.2.1 Connection square shaft installation of the handle outside a cabinet



### 10.2.2.2 Cabinet door installation of the handle outside a cabinet

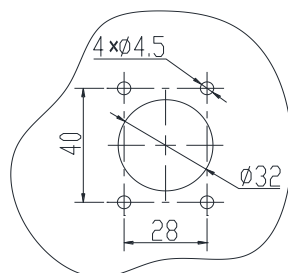


Note: Handle ON/OFF position corresponds to the product ON/OFF position.

### 10.2.2.3 Cabinet door mounting hole dimensions of the handle outside a cabinet

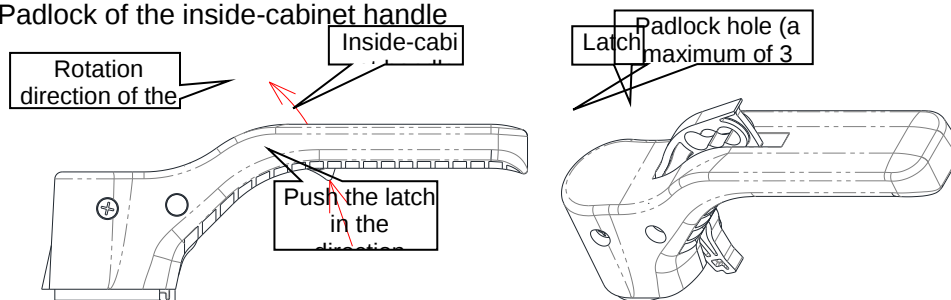
ON

OF



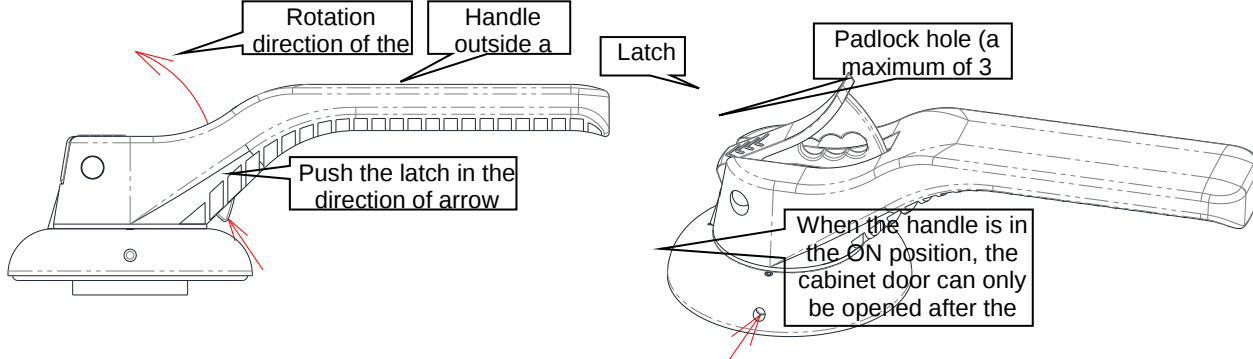
### 10.2.3 Handle's padlock

#### 10.2.3.1 Padlock of the inside-cabinet handle



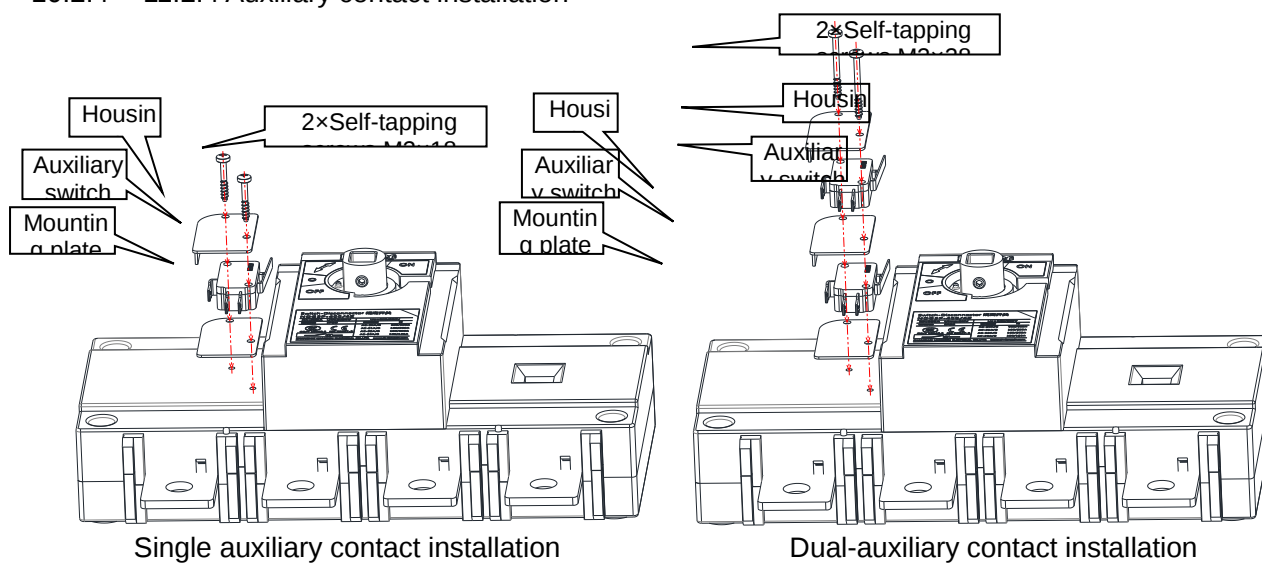
Note: Padlock is only available when the handle is in the OFF position

#### 10.2.3.2 Padlock of the handle outside a cabinet

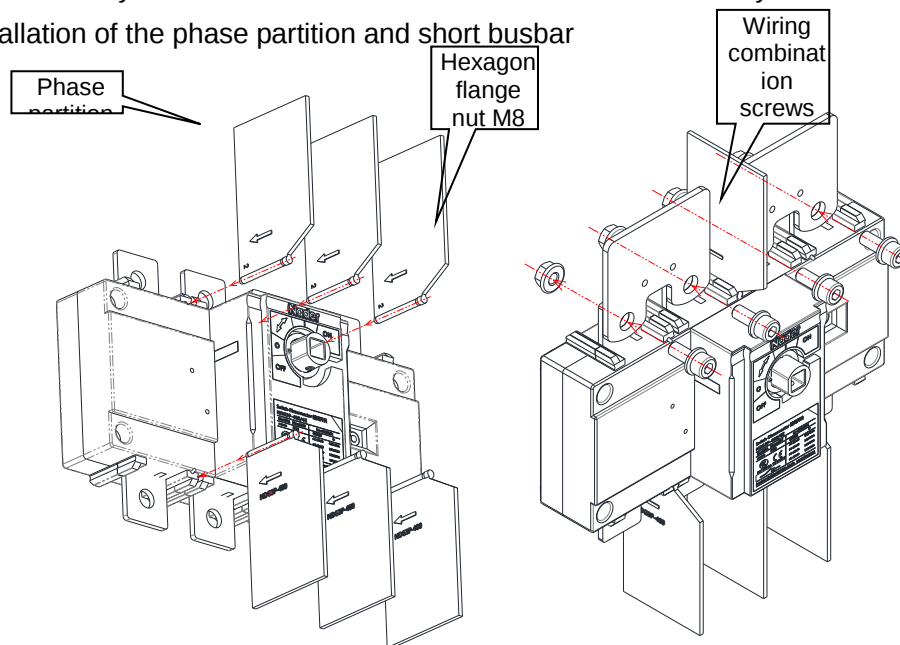


Note: Padlock is only available when the handle is in the OFF position

## 10.2.4 11.2.4 Auxiliary contact installation



## 10.2.5 Installation of the phase partition and short busbar

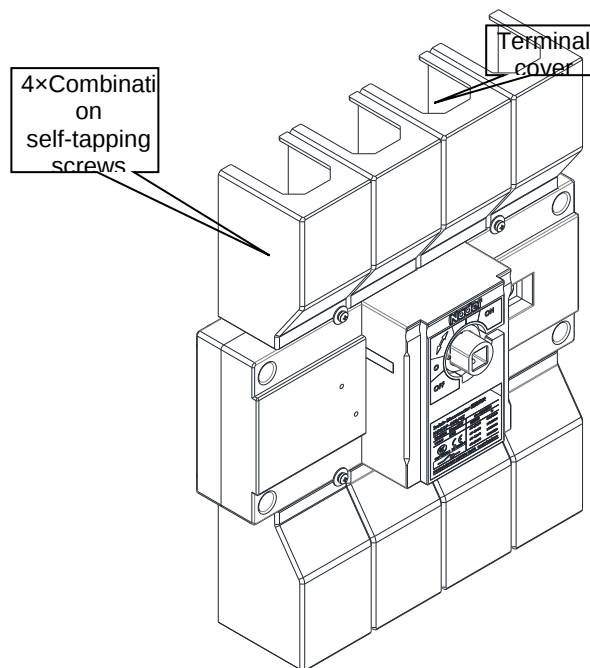


Installation of the phase partition for the basic product

Installation of the phase partition for the product with short busbar

Note: Insert the phase partition into the slot in the direction of arrow and do not stop pressing on its way.

## 10.2.6 Terminal cover installation



Note: Insert the terminal cover into the installation slot of the phase partition and press it evenly, and then tighten with combination self-tapping screws.

**11. Precautions**

- 1) A user must be responsible for addressing a product issue that occurs because the user disassembles the product without approval;
- 2) Do not touch the non-insulated exposed parts of the disconnecting switch when it is connected to a power supply;
- 3) The connecting conductor shall be fastened onto the frame of the power distribution cabinet. The switch shall not undertake the weight of the conductor. Before fastening the conductor, it is required to make the plane of the busbar or cable terminal in parallel to that of the wiring terminal of the switch. After the conductor is connected with the wiring terminal of the switch by using the bolts, the switch shall not undertake any mechanical stress;
- 4) Reliable cabling is required to prevent the terminals from being burnt out due to abnormal heat at the terminals.