

Shanghai Liangxin Electrical Co., Ltd.

NDM3G-250(V)

Product Specification

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

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Revision History					
Version	Revision Reason/Content	Implementati on Date	Prepared by	Reviewe d by	Approve d by
0	Newly added	5/8/2020	Wang Hu	Peng Haorang	Hu Qi
1	Update the product appearance picture and product dimension outline drawing	30/9/2021	Sun Lanping	Xu Fuping	Ding Fei
2	Add attachment information	2023.09.10	Yang rong rong	Xu Fuping	Ding Fei
3	Logo change; Type A handle upgraded to Type B	2026.07.02	Yang rong rong	Xu Fuping	Ding Fei

1. Applicable Scope and Purpose of Circuit Breaker

The NDM3G-250(V) molded case disconnecting switch (hereinafter referred to as switch) applies to infrequent switching of circuits with the AC 50/60Hz, the working voltage of AC 690V、DC1000V and AC1140V, and the working current of 250A, with the load capacity. They can achieve effective isolation between the electric equipment and the power supply to guarantee the safe and reliable maintenance.

The circuit breaker has an isolating function with the corresponding symbol of  ;

Comply with standards: IEC60947-3, GB/T 14048.3.

Products comply with CCC、CE、TUV and CB certification.

2. Product Picture of Circuit Breaker (The picture is for reference only; the specific kind prevail)



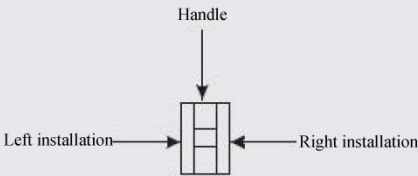
Picture of the Product

3. Specification and Model Description of Circuit Breaker

ND	M	3	G	-	250			/				
1	2	3	4	5	6	7	8	9	10	11	12	
SN	SN name		NDM3G									
1	Enterprise code		ND: "Nader" low-voltage apparatus									
2	Product code		M: Molded case circuit breaker (MCCB)									
3	Design SN		3									
4	Derived code of the series		G: Disconnecting switch									
5	Shell frame level		250									
6	Operation mode		No code: Direct handle-operated mode									
			P: Motor-operated									
			Z: Rotary operation									
7	Number of poles		20:2P; 30:3P; 40:4P									
8	Release code		0: Release (none)									
9	Accessory code		See Table 1									
10	Rated current		See Table 2									
11	Cabling type		No code: Normal product									
			P: Connection busbar									
12	Other code		CS1-B/150: Circular center hole rotary handle + shaft length 150mm									
			CS1-B/200: Circular center hole rotary handle + shaft length 200mm									
			CS1-B/300: Circular center hole rotary handle + shaft length 300mm									
			CS1-B/350: Circular center hole rotary handle + shaft length 350mm									
			CS1-B/650: Circular center hole rotary handle + shaft length 650mm									
			CS1-F/150: Square center hole rotary handle + shaft length 150mm									
			CS1-F/200: Square center hole rotary handle + shaft length 200mm									
			CS1-F/300: Square center hole rotary handle + shaft length 300mm									
			CS1-F/350: Square center hole rotary handle + shaft length 350mm									
			CS1-F/650: Square center hole rotary handle + shaft length 650mm									
			CS2-B/150: Circular eccentric hole rotary handle + shaft length 150mm									
			CS2-B/200: Circular eccentric hole rotary handle + shaft length 200mm									
			CS2-B/300: Circular eccentric hole rotary handle + shaft length 300mm									
			CS2-B/350: Circular eccentric hole rotary handle + shaft length 350mm									
			CS2-B/650: Circular eccentric hole rotary handle + shaft length 650mm									
			CS2-F/150: Square eccentric hole rotary handle + shaft length 150mm									

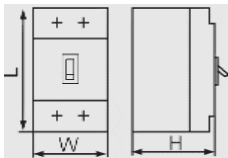
	CS2-F/200: Square eccentric hole rotary handle + shaft length 200mm
	CS2-F/300: Square eccentric hole rotary handle + shaft length 300mm
	CS2-F/350: Square eccentric hole rotary handle + shaft length 350mm
	CS2-F/650: Square eccentric hole rotary handle + shaft length 650mm
	CS1-IP65/150: IP65 Square center hole rotary handle + shaft length 150mm
	CS1-IP65/200: IP65 Square center hole rotary handle + shaft length 200mm
	CS1-IP65/300: IP65 Square center hole rotary handle + shaft length 300mm
	CS1-IP65/350: IP65 Square center hole rotary handle + shaft length 350mm
	CS1-IP65/650: IP65 Square center hole rotary handle + shaft length 650mm
	DC1 24V: Electric operation voltage DC24V
	DC1 110V: Electric operation voltage AC/DC110V
	DC1 220V: Electric operation voltage AC230V/DC220V
	DC1 380V: Electric operation voltage AC380/400V
	AC230V: Shunt release operation voltage AC220/230V
	AC380V: Shunt release operation voltage AC380/400V
	DC24V: Shunt release operation voltage DC24V
	DC220V: Shunt release operation voltage DC220/230V
	Z: Terminal housing
	MS2: MS2 lock

Table 1: Comparison Table of Accessory Code:

				Legend  Single auxiliary contact  Dual-auxiliary contact  Alarm contact  Shunt release  Under-voltage release  Auxiliary alarm contact (a single accessory features the auxiliary and alarm functions)		
Accessory code	Accessory name	Installation Position	Model	NDM3G-250		
				2	3	4
00	N/A		Number of poles			
20	Dual-auxiliary contact					
21	Single auxiliary contact					

4. Main Technical Parameters of Circuit Breaker

Table 2 Main Technical Parameters of Circuit Breaker

Model			NDM3G-250			NDM3G-250V
Rated current of frame Inm (A)			250			250
Rated current In (A)			250			250
Rated insulation voltage Ui (AC V)			1000			1250
Rated impulse withstand voltage Uimp (V)			8000			8000
Rated working voltage Ue (V)			AC380/400/415 AC500, AC660/690 DC500	AC380/400/415 AC500, AC660/690 DC750	AC380/400/415 AC500, AC660/690 DC1000	AC1140
Power frequency withstand voltage U (1min) (V)			3000			3500
Utilization category			AC-21A/22A/23A, DC-21B/22B			AC-21B
Number of poles			2	3	4	3
Rated short circuit making capacity Icm (kA)			3	3	3	3
Rated short-time withstand current Icw (kA/1s)			3	3	3	3
Operating performance (times)	Electrical life		5000			1000
	Mechanical life	Maintainable free life	10000			10000
		Maintainable life	20000			20000
Outline Dimensions			L (mm)	165	165	165
			W (mm)	107	107	142
			H (mm)	105	105	105
Flashover distance (mm)			50			

Note: The overall dimension does not include the dimension of terminal cover.

4.1 Selection of the circuit breaker connecting bus or cable cross-section area:

Table 3 Selection of the NDM3G-250 (V) Connecting Bus or Cable Cross-section Area

Rated current (A)	250
Wire cross-section area (mm ²)	120

4.2 Tightening Torque of the Circuit Breaker Terminal and Mounting Screw

Table 4 Tightening Torque of the Circuit Breaker Terminal and Mounting Screw

Model	Thread Thread specification	Torque (N·m)
NDM3G-250(V)	M8	12
	M4	1.5

4.3 Derating factor of temperature change for the circuit breaker

Table 5 Derating Factor Table of Temperature Change for the disconnecting switch

Model	Derating factor of product temperature change							
NDM3G-250V	Temperature (°C)	40	45	50	55	60	65	70
	Derating factor	1	1	1	0.95	0.93	0.91	0.88

Note: When the operating ambient temperature is below +40°C, the product can be used normally without derating capacity.

2: The above derating factors are measured at the frame current.

4.4 High-altitude derating factor for the disconnecting switch

Table 6 Altitude Derating Factor Table for the disconnecting switch

Altitude (m)	Correction factor of the working current	Maximum working voltage		power Frequency withstand voltage	Insulation voltage	
2000	1	1000	1140	3500	1250	1000
2500	1	1000	1140	3500	1250	1000
3000	0.98	900	1140	3500	1250	900
3500	0.97	850	1140	3500	1250	850
4000	0.95	810	1140	3500	1250	810
4500	0.94	770	877	2650	962	770
5000	0.93	730	832	2500	912	730

5. Normal Working Environment of Circuit Breaker

- 1) The altitude of the installation site doesn't exceed 2,500m. See the "High-altitude Derating Factor Table of Circuit Breaker" for the derating factor at the altitude;
- 2) The ambient temperature is $-35^{\circ}\text{C} \sim +70^{\circ}\text{C}$; the average within 24 h shall not be more than $+35^{\circ}\text{C}$. If the ambient temperature is higher than $+50^{\circ}\text{C}$, the user needs to reduce the capacity. See the "Derating Factor Table of Temperature Change for the Circuit Breaker" for the derating factor;
- 3) Its relative humidity at an ambient temperature of $+40^{\circ}\text{C}$ should not exceed 50%. A higher relative humidity is allowed at a lower temperature. For example, the relative humidity at 20°C can reach 90%; for frost due to temperature change, the corresponding measures should be taken;
- 4) The product can withstand the effects of wet air, salt mist, oil mist and mould;
- 5) The installation category of the circuit breaker connected to the main loop is: Category III (power distribution and control level), The installation category of the circuit breaker not connected to the main loop is: Category II (load level);
- 6) The pollution level is Level 3;
- 7) The product should be installed in places that are free from explosive media, media corrosive to metal, insulation damaging gas, and conductive dust, which should be also avoided from snow and rain;
- 8) In case of stricter user conditions than the above description, negotiate with the manufacturer.

Table 8 Minimum Center Distance between Rowed Circuit Breakers (Unit: mm)

Model	Width of circuit breaker		I Center distance	
	2/3 poles	4 poles	2/3 poles	4 poles
NDM3G-250(V)	107	142	137	172

Note: Check the connected busbar or cable during rowing or stacking of the circuit breaker to ensure that the air insulation distance won't be reduced.

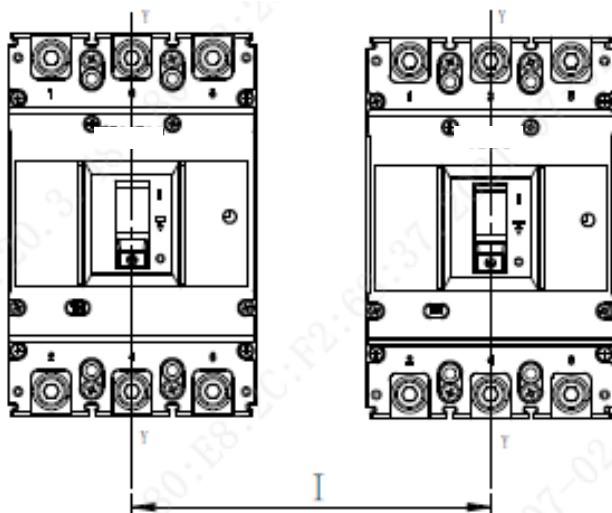
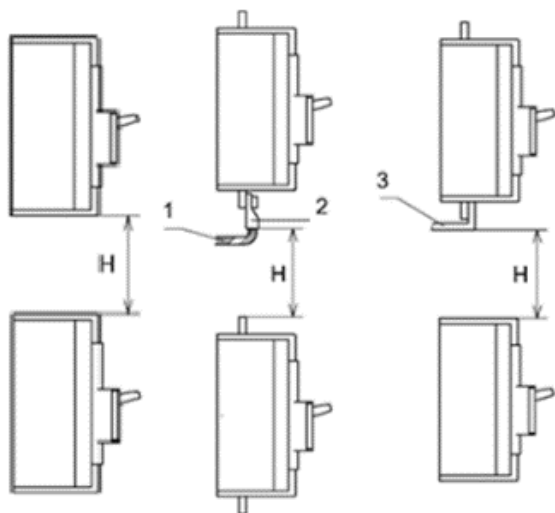


Table 9 Minimum Distance between Stacked Circuit Breakers (Unit: mm)

Model	H (distance of circuit breaker from bottom)	
	With a terminal cover	Without a terminal cover
NDM3G-250(V)	/	93

- Note: 1) Insulated cable
2) Cable terminal
3) Connection without insulation

Requirements: Check whether the terminal cover or phase partition is assembled properly before products are energized.



7、Attachment function description

7.1 Auxiliary contact

The circuit breaker is in the "open" and "free tripping" positions	Dual-auxiliary contact	
	Single auxiliary contact	
the circuit breaker is in the "close" position	"close" to "open"、" open " to " close "	

7.1.1 Current parameters of auxiliary contact

Table 11 Current parameters of auxiliary contact

Model	Conventional thermal current Ith (A)	Rated working current Ie(A)	
		AC400V	DC220V
NDM3G-250(V)	3	0.3	0.15
Note :minimum applicable load: 5V, 160mA。			

7.1.2 Electrical life of auxiliary contact

Table 12 Electrical life of auxiliary contact

Ues category	On			Off			Times	Frequency	Power on time
	I/Ie	U/Ue	cosφ	I/Ie	U/Ue	cosφ			
AC-15	10	1	0.3	1	1	0.3	6050	360	≥0.05s
DC-13	1	1	6Pe	1	1	6Pe			≥T0.95ms

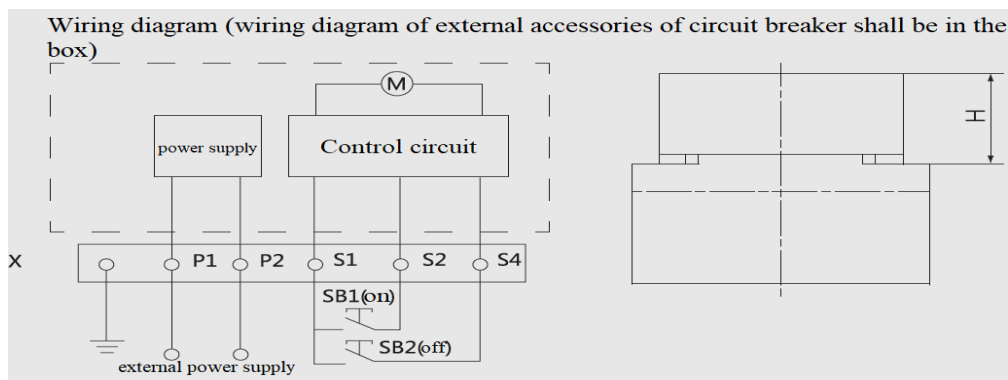
7.1.3 Making and breaking capacity of auxiliary contact

Table 13 Making and breaking capacity of auxiliary contact

Ues category	On			Off			Times	Frequency	Power on time
	I/Ie	U/Ue	cosφ	I/Ie	U/Ue	cosφ			
AC-15	10	1.1	0.3	10	1.1	0.3	10	360	≥0.05s
DC-13	1.1	1.1	6Pe	1.1	1.1	6Pe			≥T0.95ms

Note: Shunt release, auxiliary contact and alarm contact wiring standard wire length is 0.7m, 1m、2m、4m can be customized according to demand 。

7.2 Electric operating mechanism



Symbol description: SB1、SB2: Operation button (provided by the customer)

X: Terminal block

P1、P2: External power supply

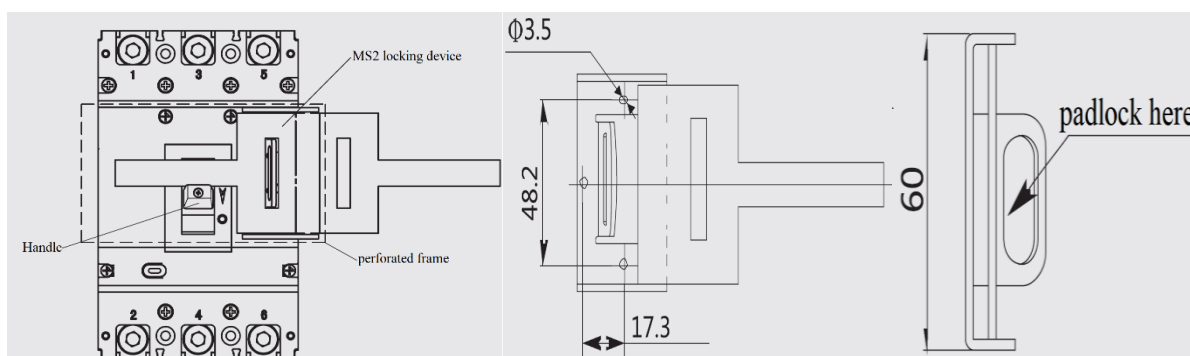
Voltage specification: AC 50Hz AC110V、AC220V、AC400V、DC24V、DC110V、DC220V

Table 15 Main technical parameters of electric operating mechanism

Equipped with circuit breaker	Electric power(W)				service life / time	Operating mechanism height H(mm)
	AC/DC220V	AC/DC110	AC380V	DC24V		
NDM3G-250(V)	180	180	350	80	10000	92

7.3 MS2 locking device

MS2 is a split locking device (i.e. the device is installed on the left or right side of the circuit breaker cover, and the default is installed on the right side if there are no special requirements). It is used for NDM2 series products to prevent manual closing and opening (the dotted line part is the circuit breaker part).

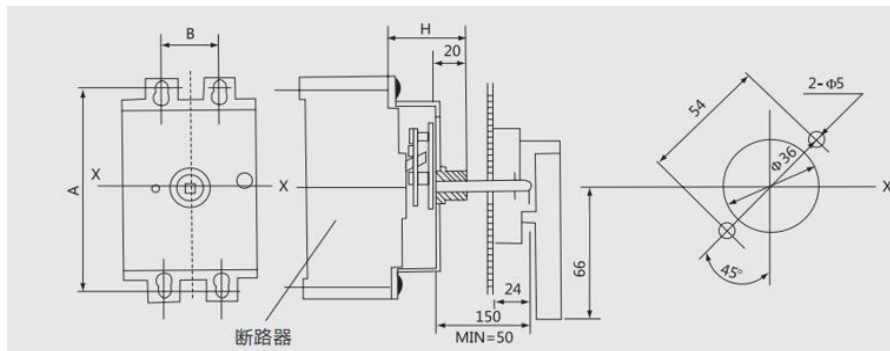


Note 1: After MS2 accessories are selected, other internal and external accessories cannot be installed on the same side;

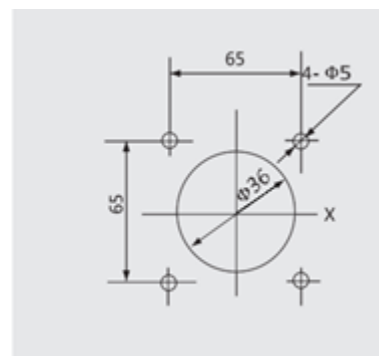
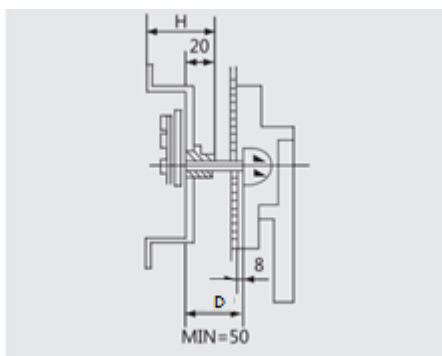
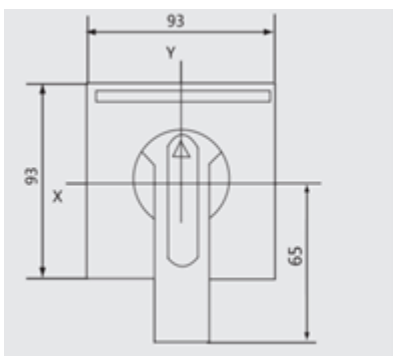
2: The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

7.4 Manual operating mechanism

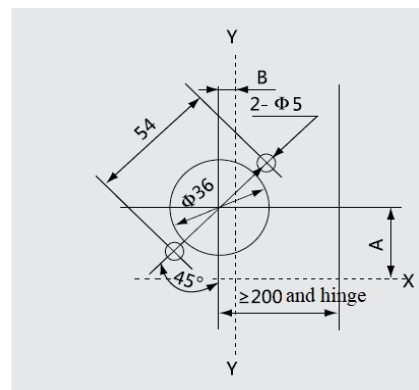
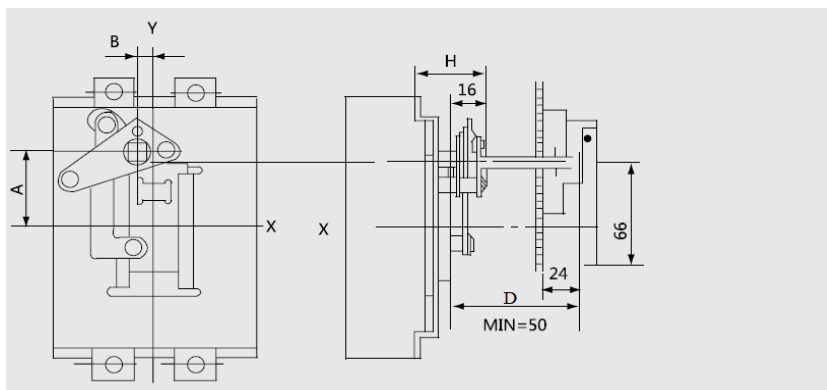
7.4.1 Manual operating mechanism and CS1-A handle



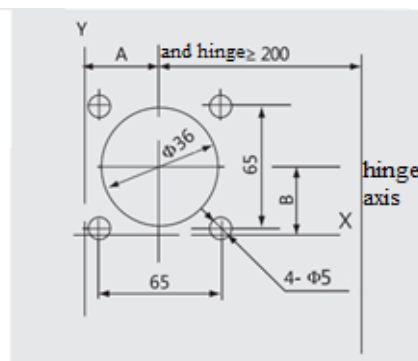
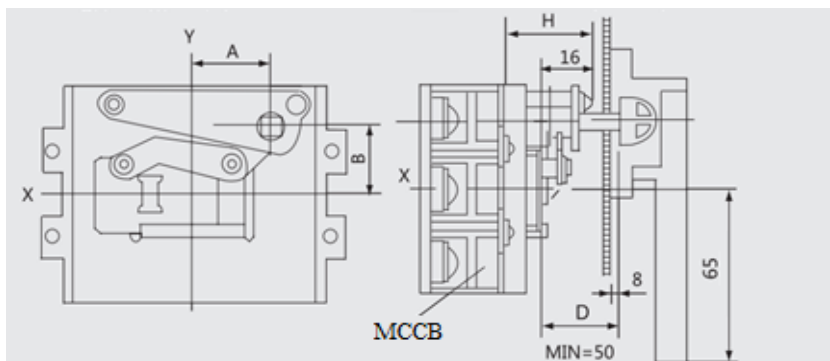
7.4.2 Manual operating mechanism and CS1-F handle



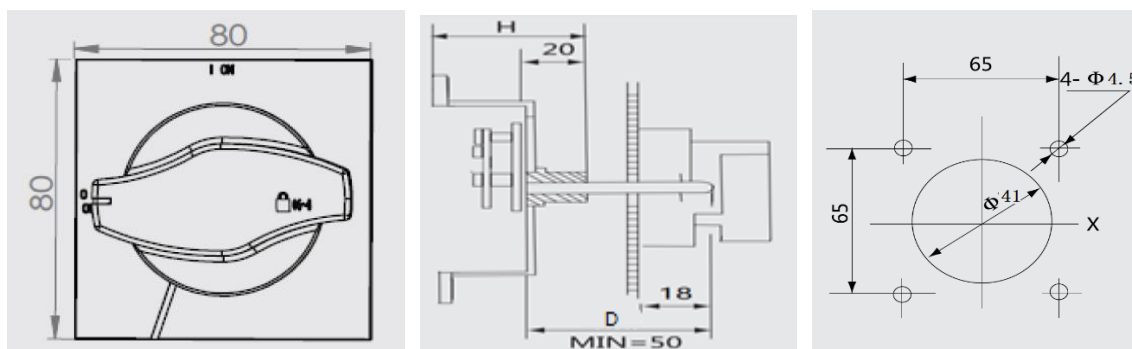
7.4.3 Manual operating mechanism and CS2-B handle



7.4.4 Manual operating mechanism and CS2-F handle



7.4.5 Manual operating mechanism and CS1-IP65 handle



7.4.6 Manual operating mechanism and CS2-IP65 handle

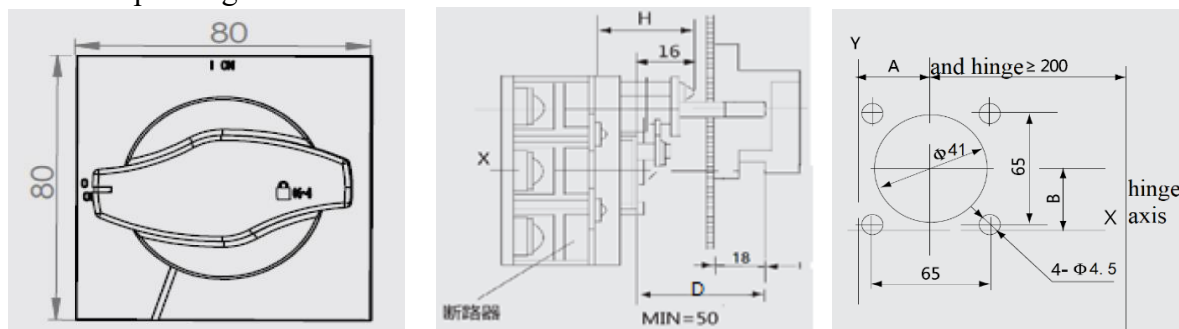


Table 16 Installation dimension of manual operating mechanism (Unit: mm)

Manual operation type	Equipped with circuit breaker	Installation dimension of manual operating mechanism			Installation mode
		H	A	B	
CS1-225	NDM3G-250(V)	55	143	35	Vertical installation
CS2-225	NDM3G-250(V)	48	35	31	

注：1) B type is round handle, F type is square handle;

2) The length of B-type handle is 66mm and that of F-type handle is 65mm;

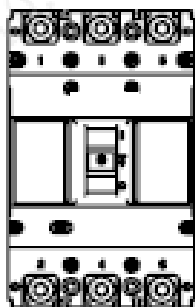
3) The D dimension in the drawing is 150mm by default, and the customizable length is 200 / 300 / 350 / 650mm;

4) The limit deviation not indicated with the tolerance dimensions is as per GB/T 1804-c.

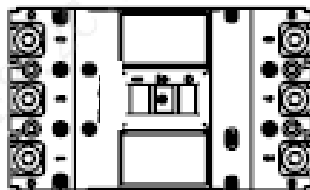
8. Installation Direction of Circuit Breaker

For vertical installation of the product, the gradient between the installation surface and the vertical plane is no more than $\pm 22.5^\circ$.

Horizontal installation of the product.



Vertical Installation



Horizontal Installation

9. Packaging and Storage of Circuit Breaker

Minimum packaging quantity: 1 piece/box. The packaged products should be stored in a warehouse with the air ventilation and the relative humidity no more than 80% when the ambient temperature is $-40^{\circ}\text{C}\sim+75^{\circ}\text{C}$. No acidic alkaline or other corrosive gas exists in the ambient air in the warehouse. Under the conditions above, the storage period shall be no more than three years since the manufacturing date.

10. Installation Direction of Circuit Breaker

SN	Name	Specification	2P Quantity/Set	3P Quantity/Set	4P Quantity/Set
1	Cross small pan-head screw	M4×45	4	4	4
2	Hexagon nut	M4	4	4	4
3	Plain washer	4	4	4	4
4	Phase partition	--	4	4	4
5	Hexagon socket cylindrical head combination	M8×22	4	6	8
6	NDM3G-250(V)	--	1	1	1

11. Circuit Breaker Notes

- 1) Various characteristics and accessories of the circuit breaker are set in the factory. The circuit breaker, tripping unit or other accessories can only be adjusted, installed and maintained by the trained or qualified professionals according to the parameter requirements of the line design;
- 2) Ensure that the power supply is off before installing or removing any device;
- 3) The circuit breaker handle can be located in three positions, indicating three states: on, off and

free tripping. When the handle is in the free tripping position, pull the handle in the off direction when the circuit breaker is connected and on.