Nader Electrical · Foresee the Future

NDG2 series disconnecting switches

NDGR2 series disconnecting switch fuse combination

2016 Edition

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CONTENTS

1. Product features

1.1 Scope of application and purpose

NDG2 series disconnecting switches are applicable to work in the low-voltage distribution or motor networks with AC frequency of 50Hz, rated operating voltages of AC380V, AC690V, DC500V and DC1000V and rated operating current of 125V-1600A, for the use of infrequent connection, circuit breaking and circuit isolation;

NDG2 series disconnecting switch fuse combinations are applicable to work in the low-voltage distribution or motor networks with AC frequency of 50Hz, rated operating voltages of AC380V, AC690V and rated operating current of 63A-1250A, for the use of infrequent connection, circuit breaking and circuit isolation; Could provide protection functions for short circuiting and overload.

1.2 Design features

- Standardization, serialization, modularization;
- Fully enclosed structure with no flashover is adopted, with more reliable operation;
- Two contacts and multiple breakpoints with extremely strong breaking capacity;
- Integrate load and isolation for comprehensive overload and short circuiting protection;
- Unique rolling plug-in contact system could avoid fusion welding;
- Switch operation of multi-spring energy storage operating mechanism doesn't need manual intervention;
- It can inlet the wires up and down.

1.3 Meeting the following standards

- GB14048.1-2006 Low-voltage switchgear and controlgear Part 1: General rules
- GB14048.3-2008 Low-voltage switchgear and controlgear Part 3: Switches, disconnectors, switch disconnectors and fuse-combination units.
- IEC60947-1 Low-voltage switchgear and controlgear-Part 1
- IEC60947-3 Low-voltage switchgear and controlgear –Part 3

2. Application scope

2.1 Applicable environment

Temperature of the working environment/storage temperature

Temperature of the working environment: -25℃~+55℃; the 24h average does not exceed +35℃. When the ambient temperature is below -25℃ or above +55℃, the user should consult with the manufacturer.

Storage temperature: -50℃ ~ +80℃.

Altitude

Installation site altitude ≤2000 m.

Relative humidity for operation/Relative humidity for storage

The relative humidity of atmosphere is not more than 50% at the ambient air temperature of +40℃; at a lower temperature, a higher relative humidity is allowed, for example: 90% at 20℃. Special measures should be taken to deal with occasional condensation due to temperature change.

2.2 Pollution grade

Grade 3.

2.3 Installation category

Category III (power distribution and control level), CategoryⅣ (power level).

2.4 Installation requirements

They should be installed in a place without significant shake, shock vibration, and invasion by rain and snow, and there should be no media with explosive danger, or the media does not contain any gas or dust sufficient to corrode metal and damage the insulation.

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3. Technical characteristics of the product

3.1 Description of specifications and models

ND	□	2	-	□	/	□	/	□	-	□
1	2	3		4		5		6		7

Serial No.	Description of serial number	NDG2 NDGR2
1	Enterprise code	ND: Nader brand low-voltage apparatus
2	Model	G: Disconnecting switch, GR: Disconnecting switch fuse combination
3	Design serial No.	2
4	Specifications	Disconnecting switch: 125,160,200,400,630,1000,1250,1600; Disconnecting switch fuse combination: 63,125,160,250,400,630,800,1000,1250;
5	Number of poles	3: 3poles, 4: 4poles
6	Auxiliary switch type	No code: Without auxiliary switches F1: With one auxiliary switch (One normally open; one normally closed) F2: With two auxiliary switches (Two normally open; two normally closed)
7	Rated current for the equipped fuse link	This item applies to disconnecting switch fuse combinations

Note:
Disconnecting switches of 1250 and 1600 standard are without four-pole and cabinet operation; disconnecting switches of 1250 and 1600 standard are without four-pole and cabinet operation;

3.2 NDG2 series Disconnecting switch Technical parameters

Specifications	NDG2 -125	NDG2 -160	NDG2 -200	NDG2 -400	NDG2 -630	NDG2 -1000	NDG2 -1250	NDG2 -1600
Number of poles	3、4	3、4	3、4	3、4	3、4	3、4	3	3
Rated insulation voltage Ui V	1000	1000	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage Uimp kV	12	12	12	12	12	12	12	12
Rated operational voltage UeV								
AC 50Hz	400/690	400/690	400/690	400/690	400/690	400/690	400/690	400/690
DC				500	500	1000		
Rated operating current Ie (A) / power AC								
400V AC-23B A/kW	125/75	160/90	200/110	400/200	630/355	1000/500	1250/515	1600/660
690V AC-23B A/kW	125/110	160/150	160/150	250/375	400/375	800/710	1000/890	1250/1110
690V AC-22B A/kW	125	160	200	400	630	1000	1250	1600
Rated operating current Ie (A) /DC								
500V L/R=15ms DC-23B（A）				400	630			
1000V L/R=2.5ms DC-22B（A）						500		
Rated short-circuit making capacity: AC 690V kA	20	20	20	50	50	85	85	85
Rated short-time withstand current: AC 690V kA/1s	4	4	4	15	15	50	50	50
Rated short-circuit making capacity: DC 500V kA				50	50			
Rated short-time withstand current: DC 500V kA/1s				15	15			
Rated short-circuit making capacity: DC 1000V kA						50		
Rated short-time withstand current: DC 1000V kA/1s						15		

Specifications	NDG2 -125	NDG2 -160	NDG2 -200	NDG2 -400	NDG2 -630	NDG2 -1000	NDG2 -1250	NDG2 -1600
Rated capability of switching								
Rated making capacity 690V AC-23B(A)	1250	1600	1600	4000	4000	8000	12500	12500
Rated breaking capacity AC-23B (A)	1000	1280	1280	3200	3200	6400	10000	10000
Rated load capability of switching capacitance 400V kVAr	131	131	131	251	251	540	820	820
Mechanical property								
Mechanical life	15000	15000	12000	3000	3000	3000	1000	1000
Electrical life	1000	1000	1000	300	300	150	100	100
Operating torque Nm	7.5	7.5	7.5	16	16	30	38	38
Allowable load								
When the ambient temperature is 40℃ A	125	160	200	400	630	1000	1250	1600
When the ambient temperature is 45℃ A	125	150	180	395	600	960	1220	1550
When the ambient temperature is 50℃ A	125	145	160	390	570	920	1180	1500
When the ambient temperature is 55℃ A	125	140	140	380	540	880	1140	1445
Linkage								
Minimum cross-section of copper cable mm^2	70	120	150	240	2x150	2x240	-	-
Maximum cross-section of copper cable mm^2	20x5	40x16	40x16	40x16	40x16	40x16	70x14	70x14
Maximum density of copper cable mm	20	20	20	25	25	40	70	70
Terminal fastening torque Nm	7-10	15-22	15-22	35-45	35-45	35-45	50-65	50-65
Others								
Neutral pole current A/A	125/125	160/160	200/200	400/400	400/400	630/630	1000/1000	1000/1000
Auxiliary switch 380V AC-15 A	4	4	4	4	4	6	6	6
Auxiliary switch 220V DC-13A	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6

3.3 Technical parameters of NDGR2 series disconnecting switch fuse combinations

Specifications	NDGR2 -63	NDGR2 -125	NDGR2 -160	NDGR2 -250	NDGR2 -400	NDGR2 -630	NDGR2 -800	NDGR2 -1000	NDGR2 -1250
Number of poles	3、4	3、4	3、4	3、4	3、4	3、4	3、4	3	3
Size of equipped fuse link	000	00	00	1-2	1-2	3	3	4	4
The largest fuse	100	160	160	400	400	800	800	1250	1250
Rated insulation voltage Ui V	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage Uimp kV	12	12	12	12	12	12	12	12	12
Rated operational voltage Ue V									
AC 50Hz	400/690	400/690	400/690	400/690	400/690	400/690	400/690	400/690	400/690
Rated operating current Ie(A) / power AC									
400V AC-23B A/kW	63/30*	125/75	160/90	250/132	400/200	630/333	800/425	1000/515	1250/660
690V AC-23B A/kW	63/55*	125/110	160/150	250/220	400/375	630/560	800/710	1000/910	1250/1110
Rated limited short-circuit current kA									
400V	100	100	100	100	100	100	100	100	100
690V	50	50	50	50	50	50	50	50	50
Rated capability of switching									
Rated making capacity 690V AC-23B(A)	630*	1250	1600	2500	4000	6300	8000	10000	12500
Rated breaking capacity: AC-23B (A)	504*	1000	1280	2000	3200	5040	6040	8000	10000
Rated load capability of switching capacitance 400V kVAr	131	131	251	251	251	540	540	830	830
Mechanical property									
Mechanical life	15000	15000	12000	12000	12000	3000	3000	1000	1000
Electrical life	1000	1000	300	300	300	200	150	100	100
Minimum operating torque Nm	7.5	7.5	16	16	16	30	30	38	38

Specifications	NDGR2 -63	NDGR2 -125	NDGR2 -160	NDGR2 -250	NDGR2 -400	NDGR2 -630	NDGR2 -800	NDGR2 -1000	NDGR2 -1250
Allowable load									
When the ambient temperature is 40℃ A	63	125	160	250	400	630	800	1000	1250
When the ambient temperature is 45℃ A	63	125	150	250	380	610	770	970	1200
When the ambient temperature is 50℃ A	63	125	145	250	360	590	740	940	1150
When the ambient temperature is 55℃ A	63	125	140	240	340	570	710	910	1100
Linkage									
Minimum cross-section of copper cable mm^2	35	70	120	150	240	2x150	2x240	2x240	-
Maximum cross-section of copper cable mm^2	20x5	20x5	40x16	40x16	40x16	40x16	70x14	70x14	70x14
Maximum density of copper cable mm	20	20	20	25	25	40	40	70	70
Terminal fastening torque Nm	7-10	7-10	15-22	15-22	35-45	35-45	35-45	35-45	35-45
Others									
Neutral pole current A/A	63/63	125/125	160/160	250/250	400/400	630/630	800/800	1000/1000	1250/1000
Auxiliary switch 380V AC-15A	4	4	4	4	4	6	6	6	6
Auxiliary switch 220V DC-13A	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.6

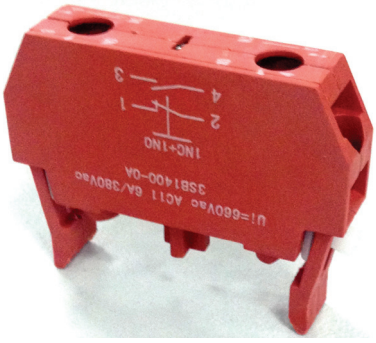
* Note: $\cos\varphi = 0.45$

4. Accessories

- H-type handle (Operating handle outside cabinet, in conjunction with H-type revolving shaft and coupling)
- H type revolving shaft (Lengths of shaft include L, L1 and L2, in conjunction with H-type handle and coupling)
- Coupling (In conjunction with H-type handle and H-type revolving shaft)
- B-type handle (Operating handle outside cabinet, in conjunction with H-type revolving shaft and coupling)
- B-type revolving shaft (Lengths of shaft include L, L1 and L2, in conjunction with b-type handle and coupling)
- Handle inside the cabinet (Handle and shaft have been installed, and the lengths of shaft include L, L1 and L2)
- Protective covers (Applicable to NDG2-125~1000 products, with each product equipped with three)
- Auxiliary switches (One product can be equipped with 1 or 2; F1 represents 1 and F2 represents 2)
- Fuse link (Applicable to NDGR2, with each product equipped with three)
- Flash barrier (Applicable to NDGR2 and NDGR2-63~400 with one product equipped with five pieces, NDGR2-630~1250 with one product equipped with four)
- Shaft sleeve

Note:

For NDG2-125~630 products operated inside cabinets, it cannot be equipped with auxiliary switches if the installation depth is too low.



Auxiliary switch

Protective covers

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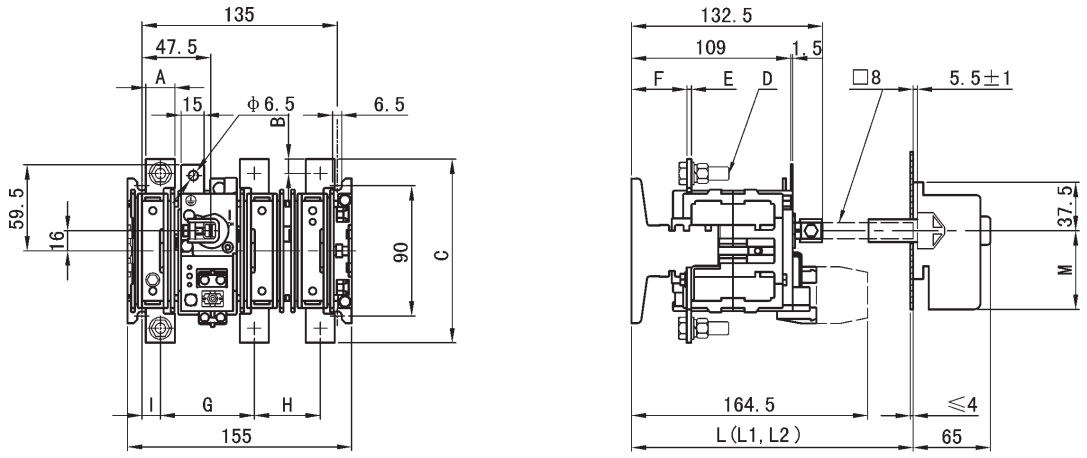
5. Appearance and installation dimension

5.1 Outline and installation dimension（3P）

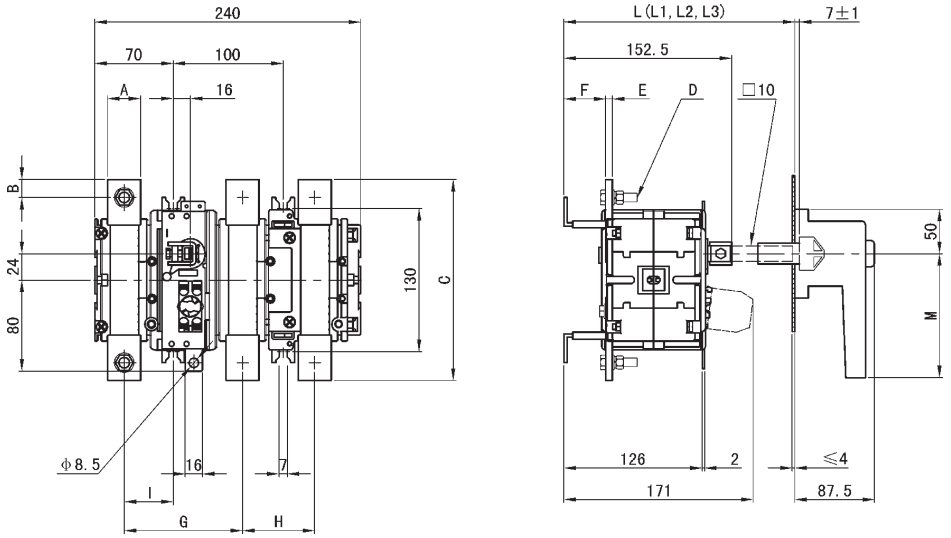
5.1.1 NDG2-125~200/3



Model	A	B	C	D	E	F	G	H	I	L*	L1*	L2*	M
NDG2-125	15	7.5	116	M6	3	38.5	70	40.5	10	155~275	276~360	361~410	62
NDG2-160	20	10	127	M8	3	38.5	65	40.5	13	155~275	276~360	361~410	62
NDG2-200	20	10	127	M8	3	38.5	65	40.5	13	155~275	276~360	361~410	62

*: See “Ordering instructions”. ▲: 170 for the mounting of auxiliary switches.

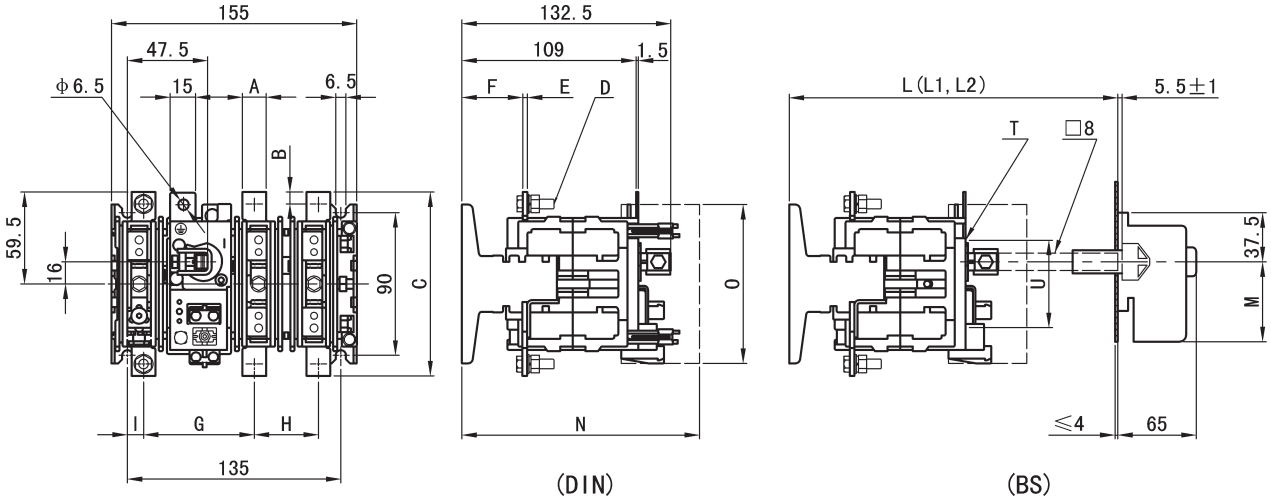
5.1.2 NDG2-400~630/3



Model	A	B	C	D	E	F	G	H	I	L*	L1*	L2*	M
NDG2-400	25	12.5	160	M10	4	40	107	65	43.5	180~320	321~370	371~420	140
NDG2-630	30	15	180	M10	6	38	107	65	43.5	180~320	321~370	371~420	140

*: See “Ordering instructions”.

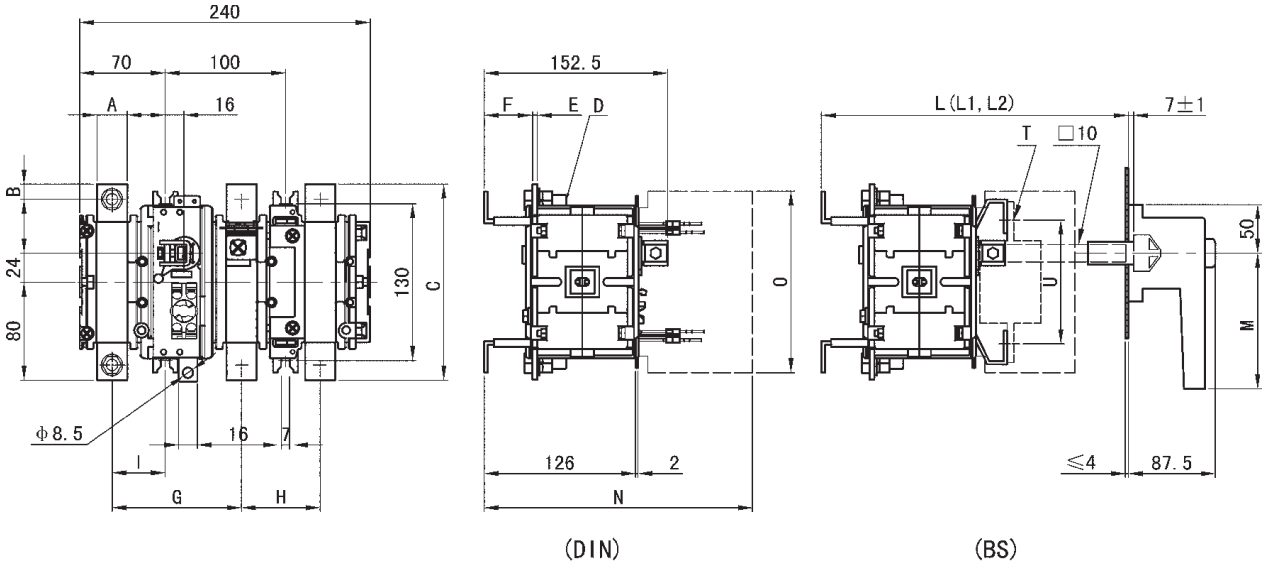
5.1.3 NDGR2-63~125/3



Model	A	B	C	D	E	F	G	H	I	L*	L_1*	L_2*	M	N	O	T	U
NDGR2-63	12	6	100	M5	2	39.5	72	38.5	9	180~275	276~360	361~410	62	170	95	M8	73
NDGR2-125	15	7.5	116	M6	3	38.5	70	40.5	10	180~275	276~360	361~410	62	170	95	M8	73

*: See “Ordering instructions”.

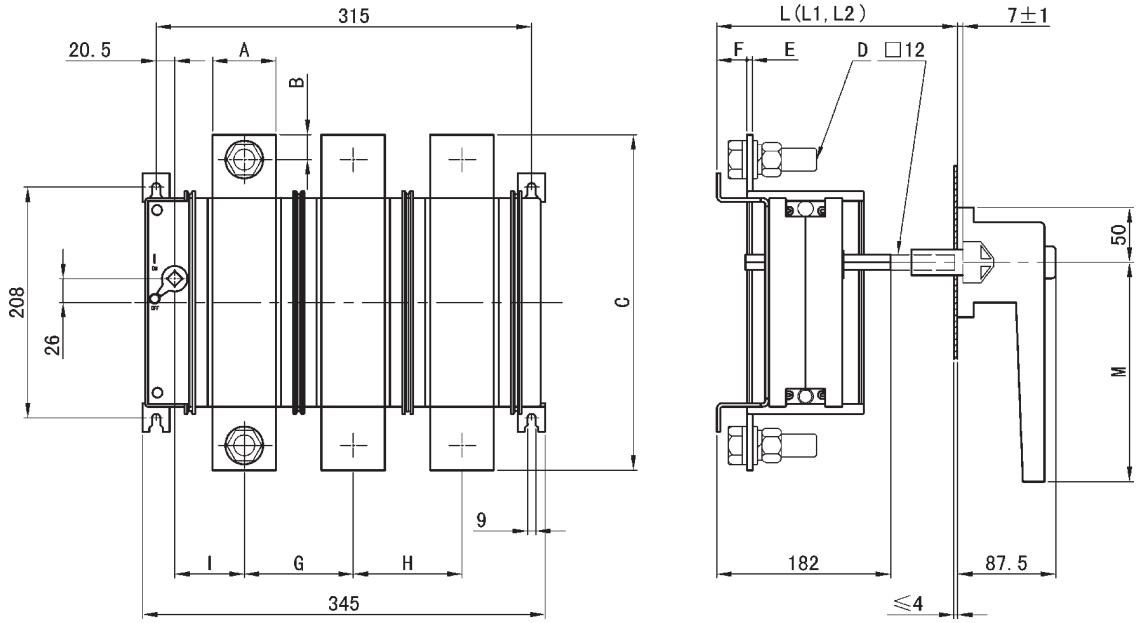
5.1.4 NDGR2-160~400/3



Model	A	B	C	D	E	F	G	H	I	L*	L_1*	L_2*	M	N	O	T	U
NDGR2-160	20	10	146	M8	4	44	107	65	46	210~320	321~370	371~420	140	189	120	M8	111
NDGR2-250	25	12.5	160	M10	4	40	107	65	43.5	230~320	321~370	371~420	140	209	160	M8	111
NDGR2-400	25	12.5	160	M10	6	40	107	65	43.5	230~320	321~370	371~420	140	209	160	M8	111

*: See “Ordering instructions”.

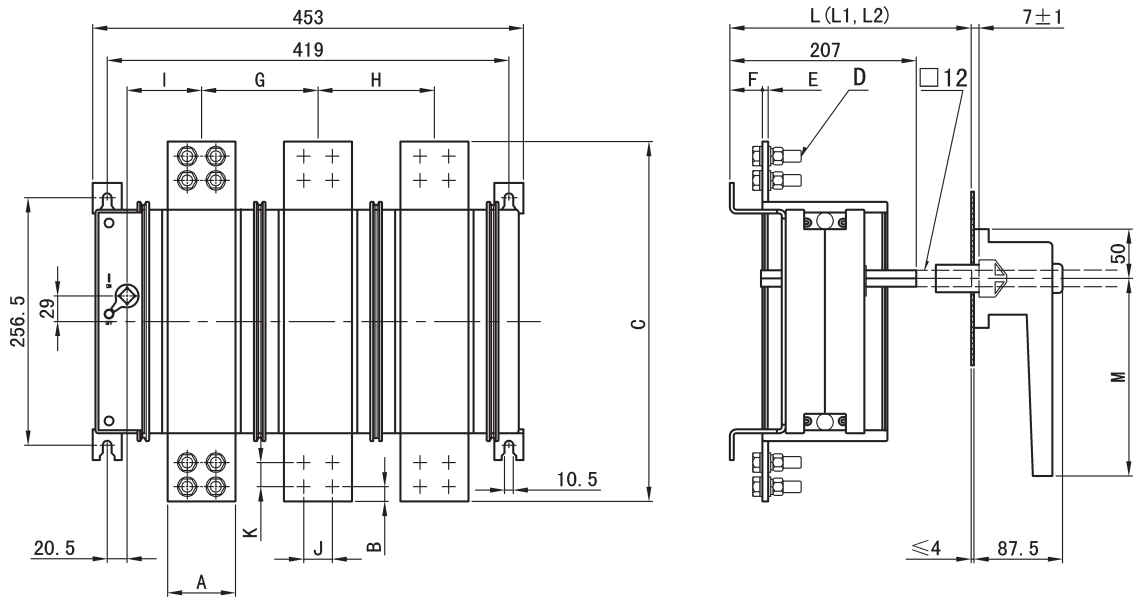
5.1.5 NDG2-1000/3



Model	A	B	C	D	E	F	G	H	I	L*	L1*	L2*	M
NDG2-1000	40	20	270	M12	6	33	87	87	60	245~390	391~490	491~555	200

*: See “Ordering instructions”.

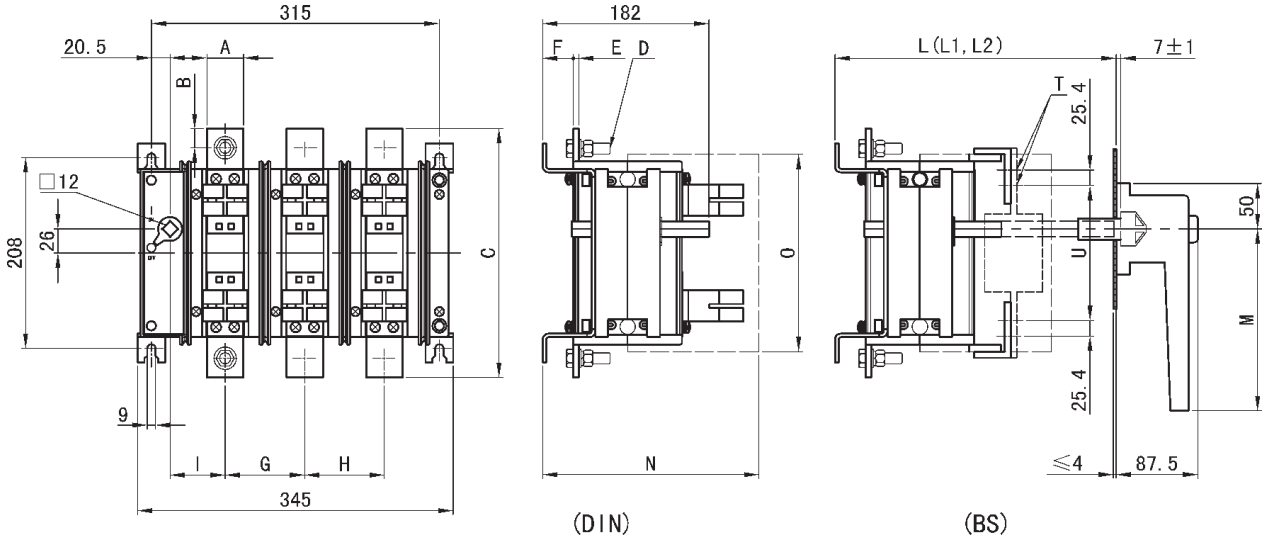
5.1.6 NDG2-1250~1600/3



Model	A	B	C	D	E	F	G	H	I	J	K	L*	L1*	L2*	M
NDG2-1250	70	17	370	M10	8	50	120	120	80	30	25	270~415	416~515	516~580	200
NDG2-1600	80	17	380	M10	8	50	120	120	80	40	30	270~415	416~515	516~580	200

*: See “Ordering instructions”.

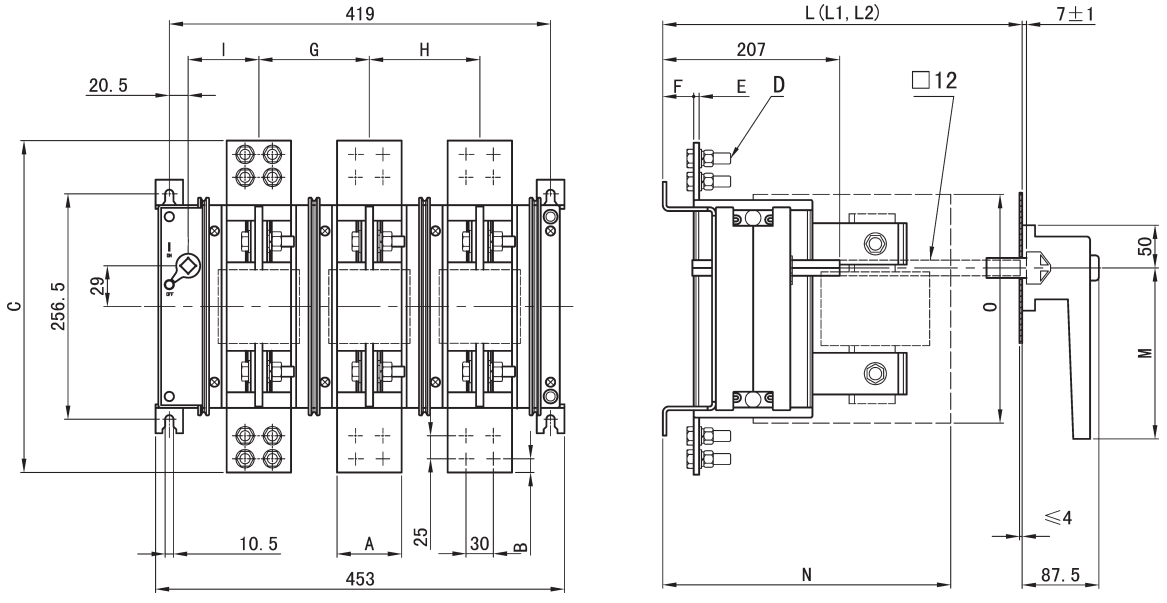
5.1.7 NDGR2-630~800/3



Model	A	B	C	D	E	F	G	H	I	L*	L_1*	L_2*	M	N	O	T	U
NDGR2-630	40	20	270	M12	5	33	87	87	60	260~390	391~490	491~555	200	250	205	M8	133
NDGR2-800	40	20	270	M12	6	32	87	87	60	260~390	391~490	491~555	200	250	205	M8	133

*: See “Ordering instructions”.

5.1.8 NDGR2-1000~1250/3

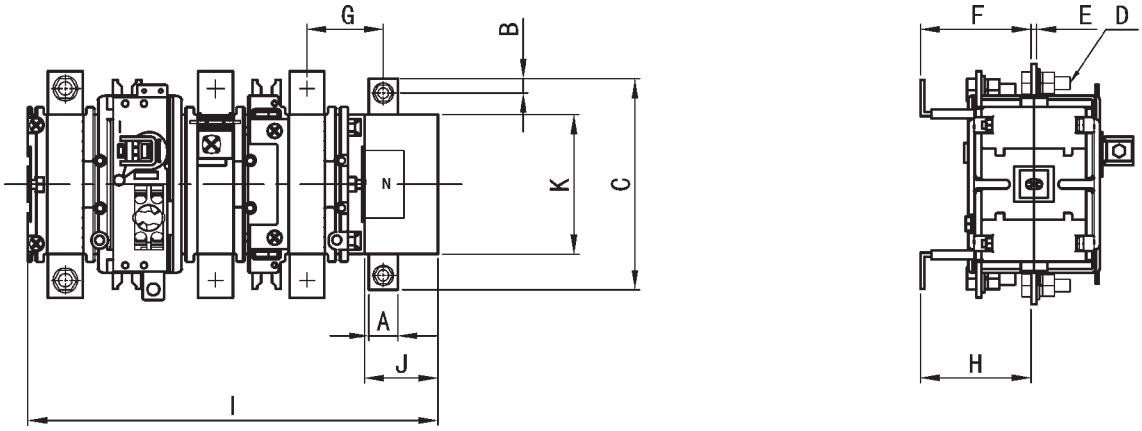


Model	A	B	C	D	E	F	G	H	I	L*	L_1*	L_2*	M	N	O
NDGR2-1000	70	17	370	M10	8	50	120	120	80	350~415	416~515	516~580	200	329	253
NDGR2-1250	70	17	370	M10	8	50	120	120	80	350~415	416~515	516~580	200	329	253

*: See “Ordering instructions”.

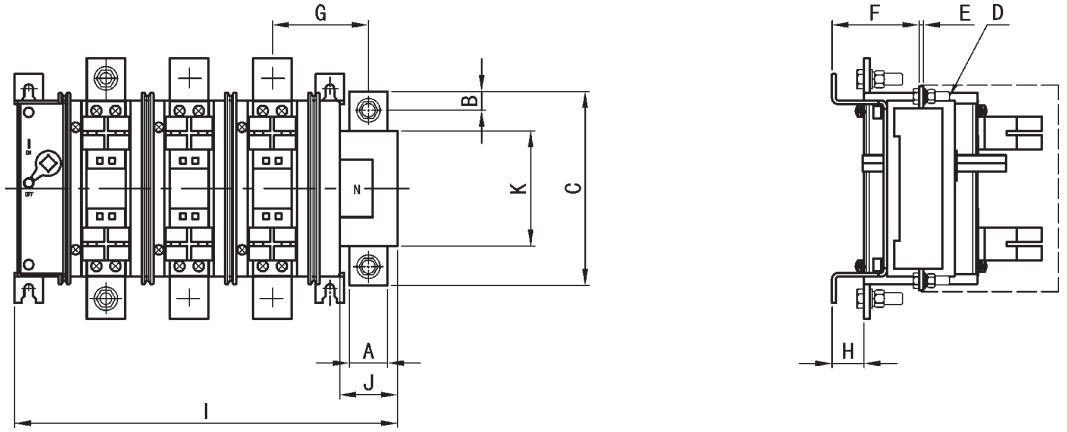
5.2 Outline and installation dimension（4P）

5.2.1 NDG2、NDGR2-63~630/4



Model	A	B	C	D	E	F	G	H	I	J	K
NDGR2-63/4	12	6	99	M5	2	63.5	36	63.5	200	45	73
NDGR2-125/4	15	7.5	105	M6	4.5	61	35	63.5	200	45	73
NDGR2-160/4	25	10	146	M8	4	79	58.5	79	299	53	100
NDGR2-250/4	25	12.5	160	M10	4	79	56	79	299	53	100
NDGR2-400/4	25	12.5	160	M10	4	79	56	79	299	53	100
NDG2-125/4	15	7.5	105	M6	4.5	61	35	63.5	200	45	73
NDG2-160/4	20	10	115	M8	4.5	61	35	63.5	200	45	73
NDG2-200/4	20	10	115	M8	4.5	61	35	63.5	200	45	73
NDG2-400/4	25	12.5	160	M10	4	79	56	79	299	53	100
NDG2-630/4	25	12.5	160	M10	4	79	56	79	299	53	100

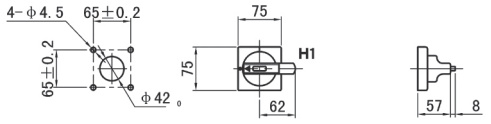
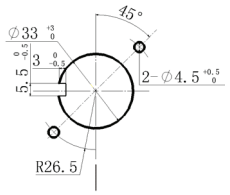
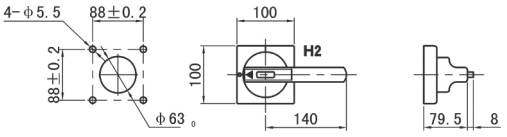
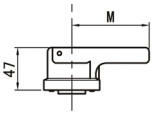
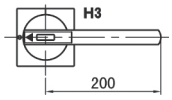
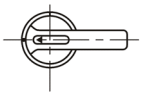
5.2.2 NDG2、NDGR2-630~1000/4



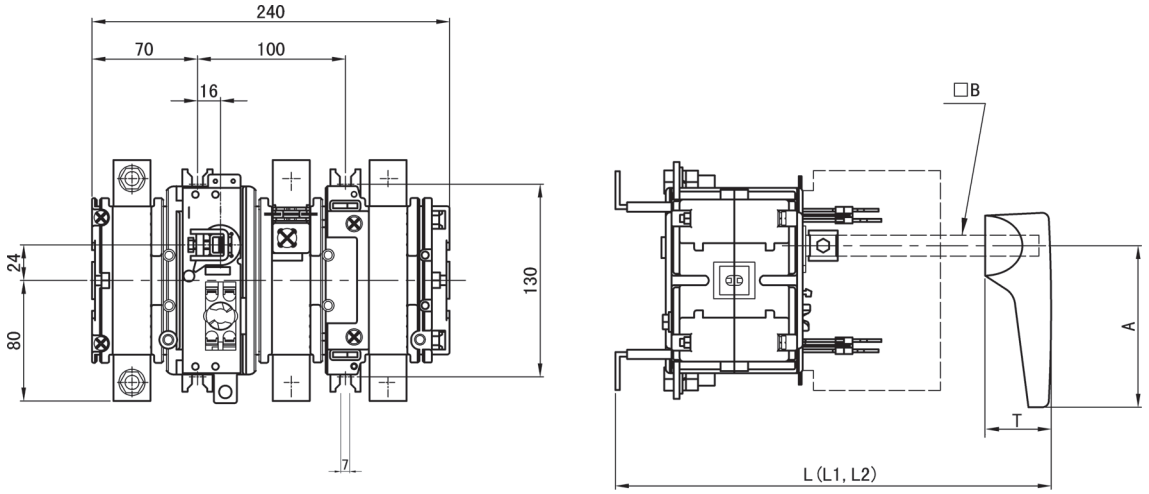
Model	A	B	C	D	E	F	G	H	I	J	K
NDGR2-630/4	40	20	192	M12	4	81	96	33	399	53	100
NDGR2-800/4	40	20	192	M12	4	81	96	33	399	53	100
NDGR2-1000/4	40	20	192	M12	4	81	96	33	399	53	100

5.3 Mounting dimensions of the handle

5.3.1 Opening size of handle mounting panel

Model	Panel opening dimension and handle outline dimension			
	H series H handle		B series B handle	
NDGR2-63、125 NDG2-125、160 NDG2-200	H1			M=65
NDGR2-160、250 NDGR2-400 NDG2-400、630	H2			M=126
NDGR2-630、800 NDGR2-1000、1250 NDG2-1000 NDG2-1250、1600	H3			M=180

5.3.2 Cabinet handle outline and installation dimension



Model	L	L_1*	L_2*	A	B	T
NDGR2-63，NDGR2-125	220~280	281~365	366~415	70	8	50
NDGR2-125，NDG2-160，NDG2-200	190~280	281~365	366~415	70	8	50
NDGR2-160，NDGR2-250，NDGR2-400	260~325	326~375	376~425	120	10	55
NDG2-400，NDG2-630	205~325	326~375	376~425	120	10	55
NDGR2-630，NDGR2-800	305~410	411~510	511~575	180	12	60
NDG2-1000	260~410	411~510	511~575	180	12	60

*: See “Ordering instructions”.
Note: For installation inside the cabinet, protective cover should be installed.

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6. Specifications for ordering or selection

Order specifications (Tick √ in □)

User unit		Number of units ordered:	Date of order:
Frame grade	□NDG2-125 □NDG2-160 □NDG2-200 □NDG2-400 □NDG2-630 □NDG2-1000 □NDG2-1250 □NDG2-1600	□NDGR2-63 □NDGR2-125 □NDGR2-160 □NDGR2-250 □NDGR2-400 □NDGR2-630 □NDGR2-800 □NDGR2-1000 □NDGR2-1250	
Number of poles	□3 □4 (NDG2-1250/1600, NDGR2-1000/1250 without four-pole)		
Auxiliary switch type	□No code: Without auxiliary switches □F1: With one auxiliary switch (One normally open; one normally closed) □F3: With two auxiliary switches (Two normally open; two normally closed)		
Handle Type	□Cabinet: Handle inside the cabinet □Type H:Handle outside the cabinet (Square, padlock allowed) □Type B:Handle outside the cabinet (Square, padlock allowed)		
Revolving shaft type	□L □L1 □L2		
Protective covers	This item applies to NDG2 (No applicable to NDG2-1250/1600)		
Fuse	This item applies to NDG2		

Note:

1. For operation inside the cabinet, additional protective cover accessories should be added; if the operating height in the cabinet is sufficient, such addition may not be done; please confirm before placing an order.
2. The switch can meet different installation depth requirements. The square shaft lengths L, L1 and L2 in the Model Description correspond respectively to the installation depth range of L*, L1* and L2* of the samples, and the required installation depth should be made clear before placing an order.
3. The square shaft length of switches before leaving the factory may only be L, L1 or L2, and afterward manufacturer may cut based on the need later.
4. If the matching fuse link must be ordered separately for NDGR2 series disconnecting switch fuse combinations, a product shall be equipped with three, and the size and specifications of the fuse link shall be given. The square shaft length of switches before leaving the factory may only be L, L1 or L2, and afterward manufacturer may cut based on the need later.
5. For example:
   NDG2-1000/3/F1 (Cabinet + L + protective cover) represents NDG2-1000, 3P, 1 auxiliary switch, cabinet handle, square shaft length L, and 3 protective covers; NDGR2-1000/4/F1 (H type + L1+ fuse link: 4/1000A) represents NDGR2-1000, 4P, 1 auxiliary switch, H-type handle outside the cabinet, square shaft length L1, and 3 fuse links with rated current of 1000A.