

TECHNICAL MANUAL

Switch disconnecter

PowerSwitch 160-3150A EKF

1 DESCRIPTION

The switch disconnectors PowerSwitch 160 A - 3150 A EKF are designed for non-automatic rare routine close/open operations of electrical distribution equipment in three-phase AC 50Hz networks at rated voltage of up to 660 V.

The mechanism of switch disconnector provides instantaneous (13,8 m/s) contact opening regardless of handle travel speed.

The fiberglass-reinforced unsaturated polyester resin envelope features excellent dielectric performance, fire-, impact-, and carbon dioxide resistance and ensures safe operation of the product when used as intended.

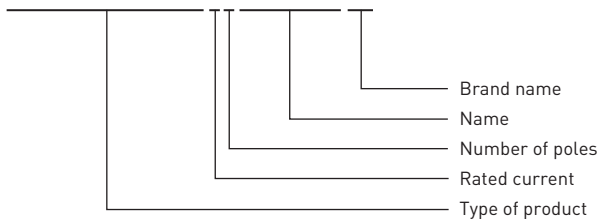
The switch disconnectors provide double opening to the pole.

All contact materials are silver-plated copper alloys with two separating contact surfaces, ensuring large insulation gap.

Handle can be padlocked to avoid erroneous activation.

Type code

Switch disconnector XX PowerSwitch EKF



2 TECHNICAL DATA

The main technical performances are listed in Tables 1 and 2.

Table 1 - Technical performances of switch disconnectors 160 A - 630 A

Parameters			Values							
Rated thermal current I _{th} , A			63		100		630			
Rated current I _n , A			125	160	200	250	315	400	500	630
Rated insulation voltage U _i , V			690	690	690	690	1000			
Dielectric strength, V			5000	5000	5000	5000	8000			
Rated impulse withstand voltage U _{imp} , kV			6							
Rated operating current I _e , A	380 V	AC-21V	125	160	200	250	315	400	500	630
		AC-22V	125	160	200	250	315	400	500	630
		AC-23V	125	160	200	250	315	400	500	630
	660 V	AC-21V	125	160	200	250	315	400	400	500
		AC-22V	125	160	160	160	315	315	315	315
		AC-23V	80	80	100	125	-	-	-	-
Motor power P, kW	380 V		63	80	100	132	160	220	280	315
	660 V		75	75	90	110	185	185	185	185
Rated short-time withstand current I _{cw} , kA RMS			8	8	12	12	25			
Rated breaking capacity, A RMS			1000	1000	1600	1600	2520	3200	4000	5040
Rated making capacity I _{cm} , A RMS			1250	1600	2000	2500	3150	4000	5000	6300
Short-circuit current, kA			13.6	13.6	17	17	40			
Mechanical endurance at 380V, O-C cycles			1400	1400	1400	1400	800			
Electrical endurance at 380V, O-C cycles			200	200	200	200	200			
Applied force on operating handle, N*m			6,5	6,5	10	10	14,5			
Weight, kg	3 poles		1,3	1,3	2,2	2,2	4,3		4,7	
	4 poles		1,5	1,5	2,6	2,6	5,4		6	

Table 2 - Technical performances of switch disconnectors 1000 A - 3150 A

Parameters			Values							
Rated thermal current I _{th} , A			1600			3150				
Rated current I _n , A			1000	1250	1600	2000	2500	3150		
Rated insulation voltage U _i , V			1000							
Dielectric strength, V			10000							
Rated impulse withstand voltage U _{imp} , kV			6							
Rated operating current I _e , A	380 V	AC-21V	1000	1250	1600	2000	2500	3150		
		AC-22V	1000	1250	1600	2000	2500	3150		
	660 V	AC-21V	1000	1000	1600	2000	2500	2500		
		AC-22V	800	800	800	1000	1250	1600		
Motor power P, kW	380 V		560			710				
	660 V		475			750				
Rated short-time withstand current I _{cw} , kA RMS			50							
Rated breaking capacity I _{cn} , A RMS			3000	3750	4800	6000	7500	9450		
Rated making capacity I _{cm} , A RMS			3000	3750	4800	6000	7500	9450		
Short-circuit current, kA			70			105				
Mechanical endurance (cycles) at 380 V			500			300				
Electrical endurance (cycles) at 380 V			100			100				
Applied force on operating handle, N*m			37		60		60			
Weight, kg	3 poles		10,5		16		25,5		25,5	31
	4 poles		13		20		37,5		37,5	51,5

The switch disconnectors correspond to the standards:

- IEC 60947-1:2020 «Low-voltage switchgear and controlgear - Part 1: General rules»;
- IEC 60947-3:2020 «Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units».

Design.

Close/open operations shall be made with the rotary handle in the manual mode. The housing of the switch disconnector has windows to check the position of contacts visually.

The rotary handle to operate the switch disconnector inside the enclosure is included in the standard delivery scope. Use the external handle for PowerSwitch 160-630 A or 1000-3150 A EKF to operate the switch disconnector through the enclosure door.

Model features:

- Rated operating current of switch disconnectors: 160 A, 250 A, 630 A, 1000 A, 1250 A, 1600 A; 2000 A, 2500 A, 3150 A.
- two positions of the rotary handle;
- three- or four pole version;
- high electrical and mechanical endurance;
- operation with the rotary handle;
- indication of contact position (window for contact status);
- simple design and easy to install.

The handle can be installed either directly to the panel or with an extension shaft.

3 OVERALL AND INSTALLATION DIMENSIONS

For appearance and dimensions of switch disconnectors, refer to Figures 1-6.

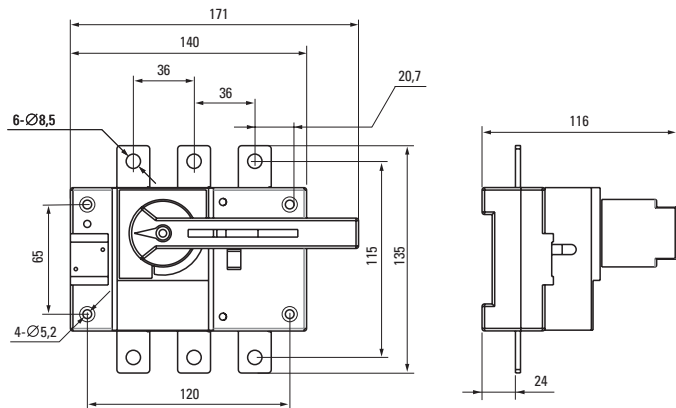


Figure 1a - Installation dimensions of three-pole switch disconnector PowerSwitch 160 A

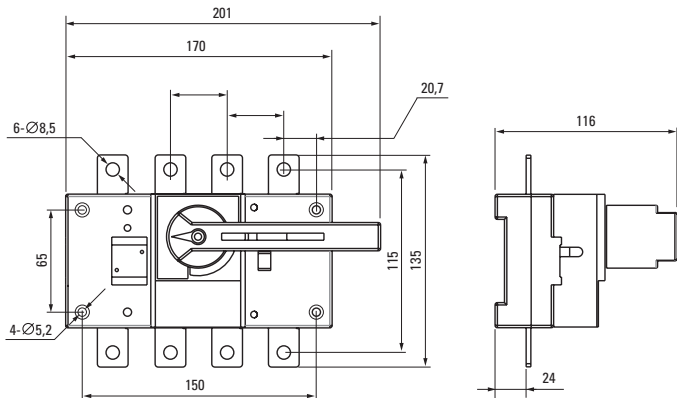


Figure 1b - Installation dimensions of four-pole switch disconnector
PowerSwitch 160 A

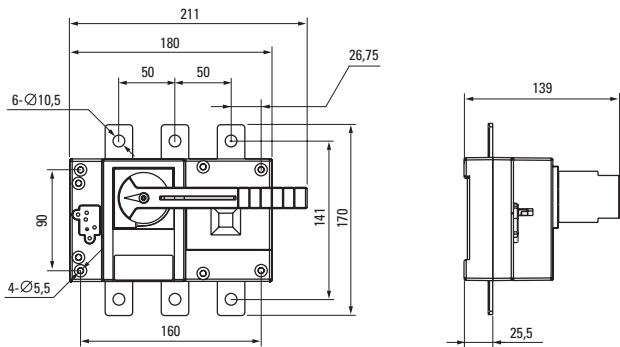


Figure 2a - Installation dimensions of three-pole switch disconnector
PowerSwitch 250 A

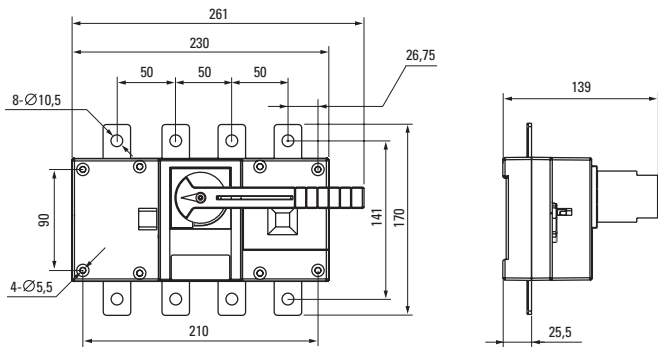


Figure 2b - Installation dimensions of four-pole switch disconnector
PowerSwitch 250 A

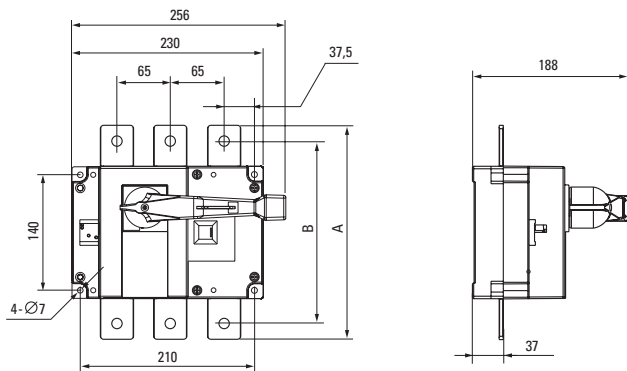


Figure 3a - Installation dimensions of three-pole switch disconnector
PowerSwitch 400-630 A

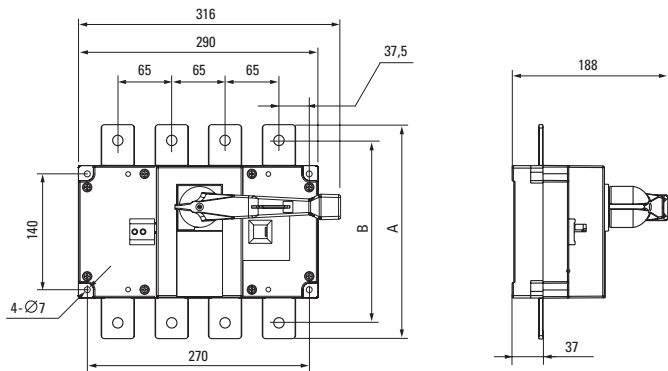


Figure 3b - Installation dimensions of three-pole switch disconnecter PowerSwitch 400-630 A

Table 3 - Dimensions

Dimensions, mm	A	B
PowerSwitch 400 A	241	208
PowerSwitch 630 A	258	220

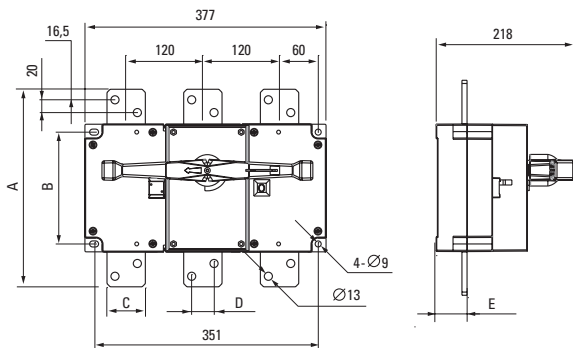


Figure 4a - Installation dimensions of three-pole switch disconnecter PowerSwitch 1000-1600 A

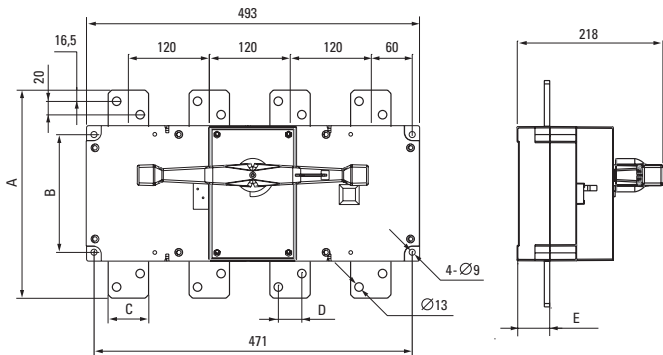


Figure 4b - Installation dimensions of four-pole switch disconnecter PowerSwitch 1000-1600 A

Table 4a, 4b - Dimensions

Dimensions, mm	A	B	C	D	E
PowerSwitch 1000 A 3P	310	175	60	35	49
PowerSwitch 1250 A 3P	336	175	80	40	49
PowerSwitch 1600 A 3P	336	175	80	40	50

Dimensions,mm	A	B	C	D	E
PowerSwitch 1000 A 4P	310	175	60	35	48
PowerSwitch 1250 A 4P	336	175	80	40	48
PowerSwitch 1600 A 4P	336	175	80	40	49

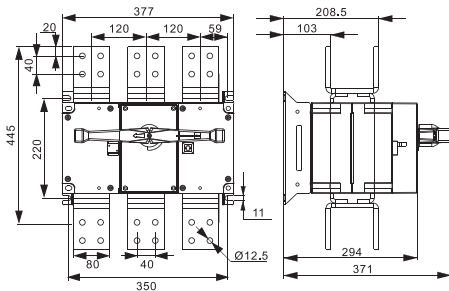


Figure 5a - Installation dimensions of three-pole switch disconnecter PowerSwitch 2000-2500 A

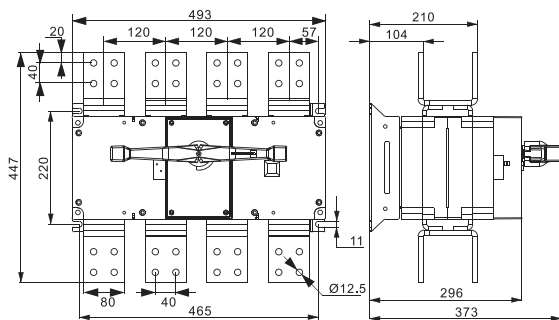


Figure 5b - Installation dimensions of four-pole switch disconnector PowerSwitch 2000-2500 A

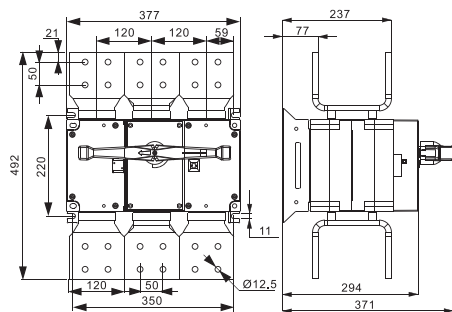


Figure 6a - Installation dimensions of three-pole switch disconnector PowerSwitch 3150

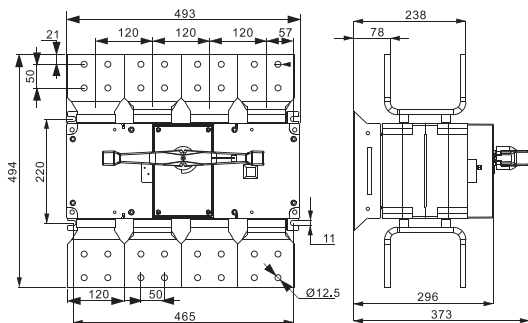


Figure 6b - Installation dimensions of four-pole switch disconnector PowerSwitch 3150 A

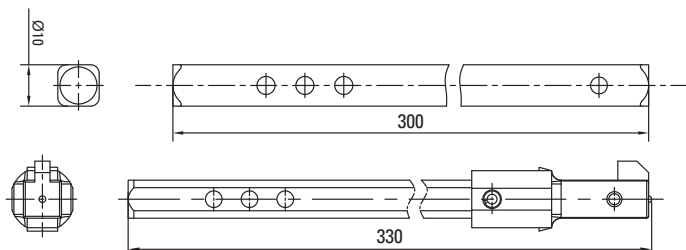


Figure 7a - Overall drawings of extension shaft (160-630A)

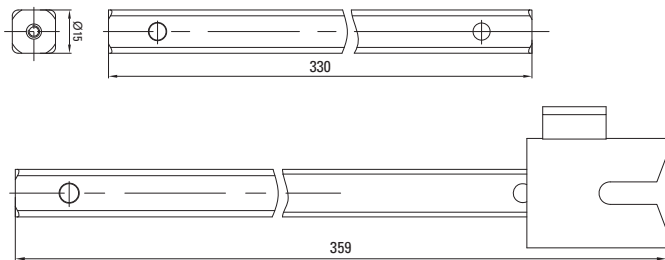


Figure 7b - Overall drawings of extension shaft
(800-3150A)

4 WIRING DIAGRAM

The typical wiring diagram of the switch disconnecter is given in figure 8.

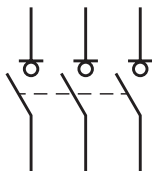


Figure 8

5 INSTALLATION

The switch disconnectors shall be installed and commissioned by qualified electrical personnel. The switch disconnectors shall be mounted onto the mounting plate. The operating position of the switch disconnectors is shown in figures 9a, 9b and 9 c.

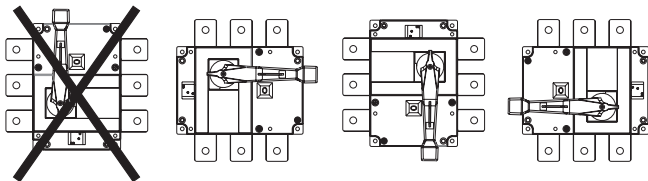


Figure 9a - Operating position of switch disconnectors PowerSwitch 160-630A

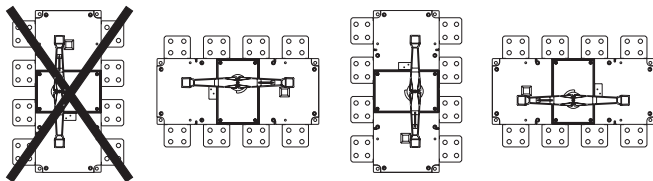


Figure 9b - Operating position of switch disconnectors PowerSwitch 1000-2500A

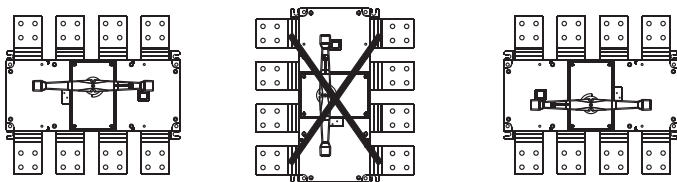


Figure 9c - Operating position of switch disconnectors PowerSwitch 3150A

Before installation make sure:

- the switch disconnector complies with intended purpose.
- there is no visible damage to the device.

For handle mounting and padlocking procedures, refer to Figures 10, 11, 12.

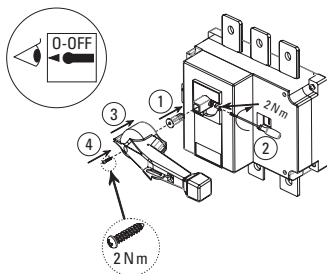


Figure 10a - Handle mount to the housing of switch disconnectors 160 - 630 A

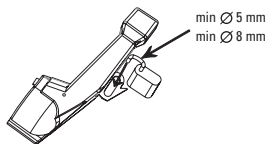


Figure 10b -Handle padlocking for switch disconnectors 160-630 A

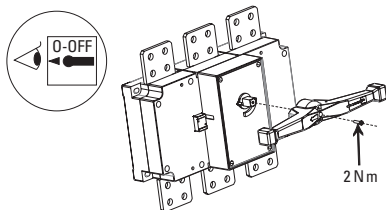


Figure 11a - Handle mount to the housing of switch disconnectors 1000 - 1600 A

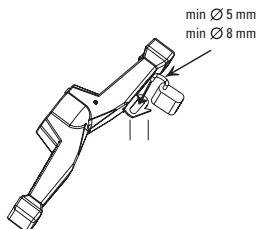


Figure 11b - Handle padlocking for switch disconnectors 1000-1600 A

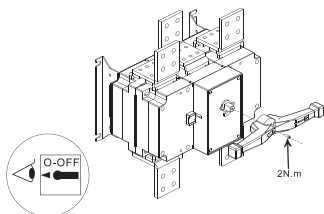


Figure 12a - Handle mount to the housing of switch disconnectors 2000 - 3150 A

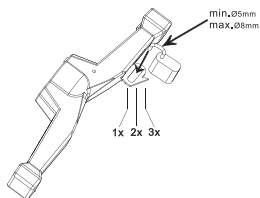


Figure 12b - Handle padlocking for switch disconnectors 2000-3150 A

See the external rotary handle mount to the door of the enclosure in figures 13, 14, 15.

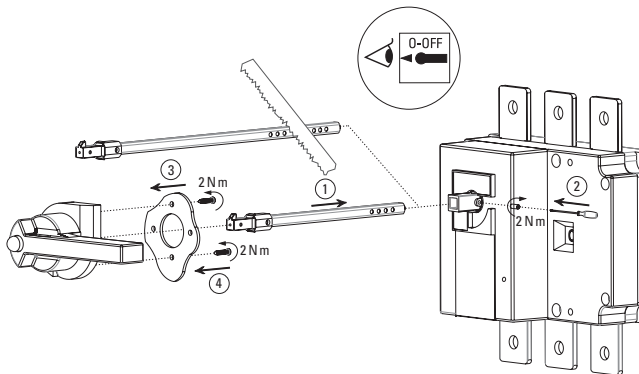


Figure 13a - Procedure of external handle mount for switch disconnectors 160-630 A

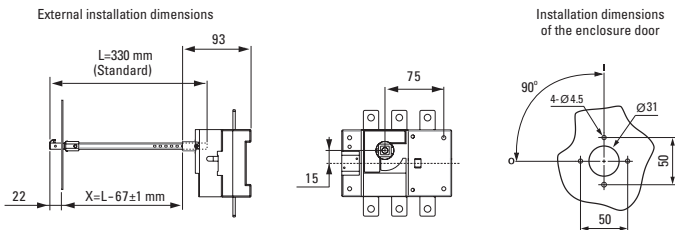


Figure 13b - Installation dimensions.
Enclosure door mount for switch disconnectors 160 A

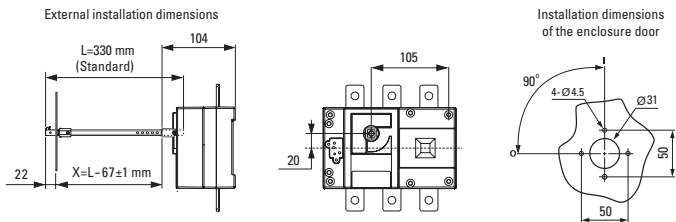


Figure 13c - Installation dimensions.
Enclosure door mount for switch disconnectors 250 A

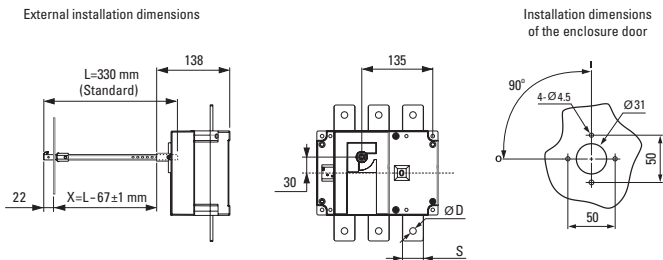


Figure 13d - Installation dimensions.
Enclosure door mount for switch disconnectors 400-630 A

Table 5 - Dimensions

Dimensions, mm	S	D
PowerSwitch 400 A	31,5	11
PowerSwitch 630 A	40	13

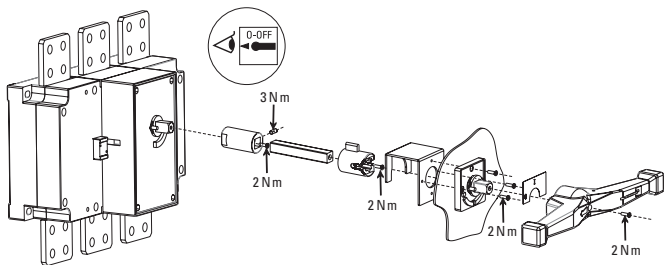


Figure 14a - External rotary handle mount for switch disconnectors 1000 - 1600A

External installation dimensions

Installation dimensions of the enclosure door

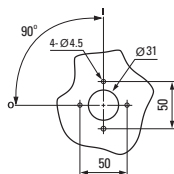
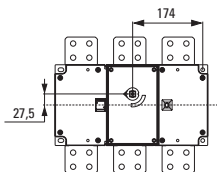
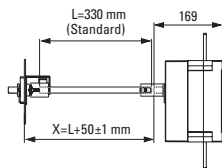


Figure 14b - Installation dimensions.
Enclosure door mount for switch disconnectors 400-630 A

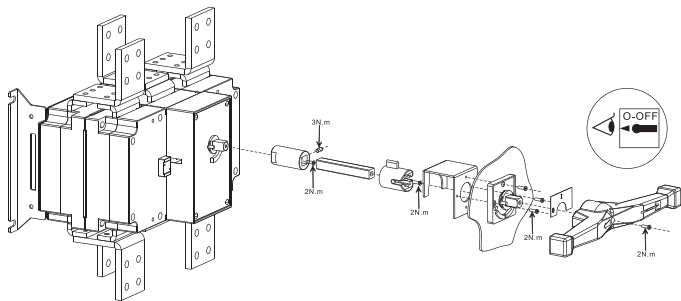


Figure 15a - External rotary handle mount for switch disconnectors 3000 - 3150A

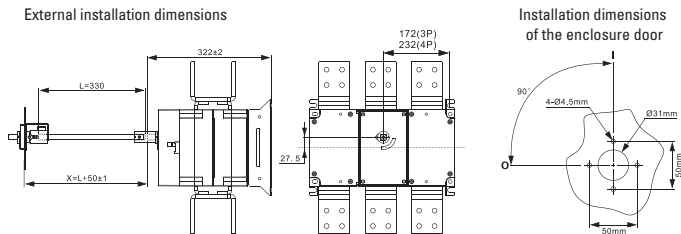


Figure 15a - External rotary handle mount for switch disconnectors 3000 - 3150A

6 OPERATION

Perform all installation and maintenance works when the power is off!
Under normal operating conditions, visually inspect the switch disconnectors once a year and after every short-circuit currents impact.

The inspection shall include:

- dust and dirt removal;
- screw tightening torque test;
- no load on/off operations of the switch disconnector.

Do not touch clamps and non-insulated live conductors when operating the switch disconnectors.

7 OPERATION CONDITIONS

The ambient temperature: from -5°C to $+40^{\circ}\text{C}$ and relative humidity is max. 95% indoors.

Altitude above sea level is max. 2000 m.

Do not operate switch disconnectors in corrosive environment.

Do not operate the switch disconnectors in Ex-zone!

8 DELIVERY SCOPE

The switch disconnectors PowerSwitch 160 A - 3150 A EKF are supplied in the group package. For all available documentation, scan the QR-code on the insert or on the inside of the package.

9 TRANSPORTATION AND STORAGE

The switch disconnectors can be transported by any means of enclosed transport that ensures protection of packed products from mechanical and atmospheric impacts.

The switch disconnectors shall be stored indoors in the original package at the ambient temperature from - 40°C to + 55°C and relative humidity of max. 50% at +40°C.

10 DISPOSAL

Life-expired and failed switch disconnectors shall be disposed of in compliance with the national and local laws and regulations in force.

11 MANUFACTURER'S WARRANTY

The manufacturer guarantees that the switch disconnectors comply with the requirements of IEC 60947-1:2020, IEC 60947-3:2020, provided that the consumer follows the operation, transportation and storage conditions.

Warranty period: 7 years from the date of sale specified in the sales receipt.

Shelf life: 7 years from the date of manufacture specified on the product package or housing.

Service life: 10 years.

Manufacturer: for information, refer to the product package.

Importer and EKF trademark service representative: EKF ELECTRICAL SOLUTION – FZCO, Dubai Silicon Oasis, DDP, Building A2, Dubai, United Arab Emirates.

Importer and EKF trademark service representative on the territory

of the Russian Federation: OOO «Electroresheniya», Otradnaya st., 2b bld. 9, 5th floor, 127273, Moscow, Russia. Tel.: +7 (495) 788-88-15.

Importer and EKF trademark service representative on the territory of the

Republic of Kazakhstan: TOO «Energoresheniya Kazakhstan», Kazakhstan, Almaty, Bostandyk district, Turgut Ozal st., 247, apt 4.

12 CERTIFICATE OF ACCEPTANCE

The switch disconnectors PowerSwitch 160 A - 3150 A EKF have been approved for operation.

Date of manufacture:

For information, refer to the product package.

Technical control stamp



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