兴机电器集团
XING JI ELECTRICAL GROUP
· 卓 越 品 质　兴 机 智 造 ·

XINGJI ELECTRICAL APPARATUS GROUP CO ., LTD

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RING MAIN UNIT MECHANISM SELECTION MANUAL

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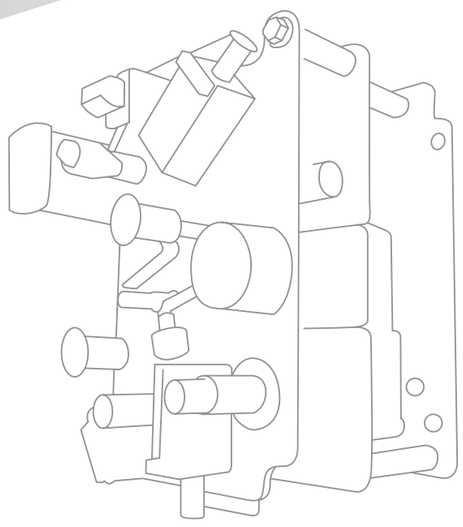

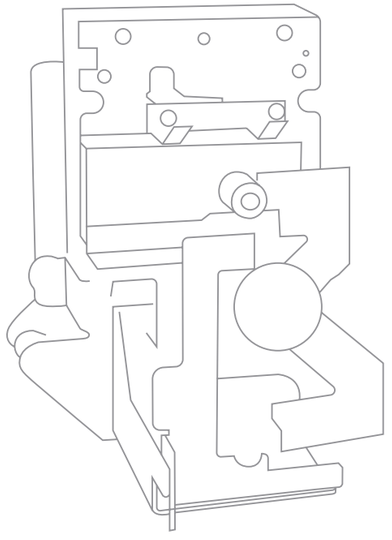

XING JI ELECTRICAL APPARATUS GROUP CO.,LTD.

COMPANY INTRODUCTION
公司介绍

兴机电器集团有限公司成立于 1989 年，是研发、生产、销售配电开关元器件及提供专业整体解决方案的高新技术企业。现拥有国家授权专利 178 项，其中发明专利 28 项。公司先后获得国家专精特新“小巨人”企业、浙江省隐形冠军企业和温州市领军企业等荣誉称号，建有省级企业研究院、省级博士后工作站和 CNAS 实验室。

兴机电器集团历经三十多年的发展，环网开关操动机构技术领先、中压开关柜配件占市场主导地位。公司服务超过2000家客户，产品出口覆盖 4 大洲 14 个国家，已与世界 500 强跨国电气巨头建立了忠诚的合作关系，成为电器配件行业的领导品牌。

公司秉承 " 脚踏实地，稳步发展 " 的经营理念，紧跟技术趋势，不断研发创新，坚持“绿色、智能、自动、数字”的发展理念，已全面实施 ERP 系统管理，全力建设引领新智造发展的智慧工厂，精心“打造中国一流电器配套件专业制造商”，努力于“让中国开关产品达到世界领先水平”。

Established in 1989，XING JI ELECTRICAL GROUP CO.,LTD. is a high-tech enterprise that develops， produces and sells power distribution switch components and provides professional overall solutions. Currently， it has 178 state-authorized patents， including 28 invention patents. The company has successively won the honorary titles of "Little Giant" Enterprise of National Specialization and Specialization， Hidden Champion Enterprise of Zhejiang Province and Leading Enterprise of Wenzhou City， and has built provincial enterprise research institute， provincial postdoctoral workstation and CNAS laboratory.

After more than 30 years of development， XING JI ELECTRICAL GROUP has taken the lead in the technology of the operating mechanism of the ring network switch， and the accessories of the medium-voltage switch cabinet occupy the leading position in the market. The company serves more than 2000 customers and exports products to 14 countries on 4 continents. It has established loyal cooperative relations with the world's top 500 multinational electrical giants and has become a leading brand in the electrical accessories industry.

The company adheres to the business philosophy of "down-to-earth and steady development"， follows the technological trend， keeps developing and innovating， and adheres to the development philosophy of "green， intelligent， automatic and digital". It has fully implemented ERP system management， made every effort to build a smart factory that leads the development of new intelligent manufacturing， focused on "building a first-class professional manufacturer of electrical accessories in China"， and worked hard to "make China's switch products reach the world's leading level".

配套开关柜
SUPPORTING SWITCHGEAR CABINET

配套环网柜
SUPPORTING RING MAIN UNIT (RMU)

配套低压柜
SUPPORTING LOW-VOLTAGE CABINET

兴机电器集团
XING JI ELECTRICAL GROUP

企业愿景
成为电力开关行业机械构件最专业及一站式解决方案的制造商

企业使命
为中国开关行业提供先进及可靠的机械操作机构及配件，
协助中国开关行业发展让中国开关产品保持世界领先地位

核心价值观
诚信、务实、创新、高效

经营理念
脚踏实地，稳步发展

发展理念
绿色、智能、自动、数字

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CONTENT

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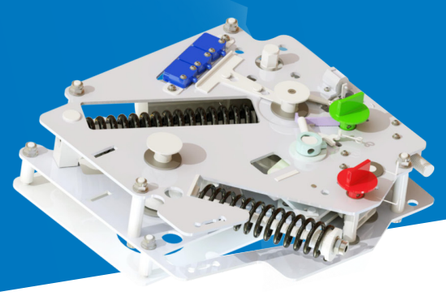
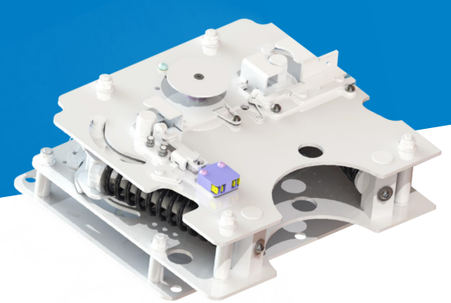
XINGJI ELECTRICAL APPARATUS GROUP CO.,LTD.

Thin-Type Operating Mechanism

Compatible with 12kV Normal-Pressure Sealed Cabinet

12kV 630A SF6 & SF6-FREE RMU mechanism





Product Introduction

SPD31 circuit breaker mechanism and SPE31 three-position mechanism are slimline operating mechanisms independently developed by Xingji. Despite their reduced overall thickness, they retain all functions of conventional mechanisms and are suitable for use in SF6-Free and SF6 RMUs. Compared to traditional mechanisms, they offer greater main circuit chamber space, enhancing the stability and reliability of RMUs.

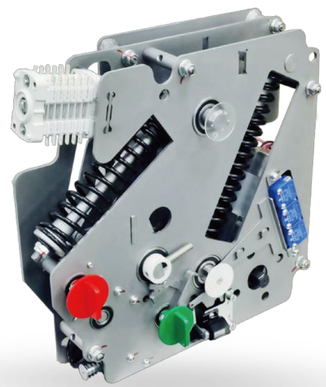
Model Composition and Meaning

SPE □ 31 □□ □□ □□

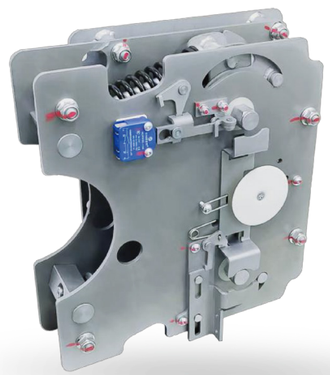
- Operating Voltage
- Surface coating code
- Configuration Code
- Product Model
- Type Code: D-CB Mech., E-Three-Position Mech.
- Code Name

兴机电器集团 XING JI ELECTRICAL GROUP

SPD □ Series Operating Mechanism



SPD31 Circuit Breaker Mechanism



SPE31 Three-Position Switch Mechanism

Standards

GB/T 11022 Common specifications for high-voltage switchgear and controlgear standards

GB/T 3906 Alternating-current metal-enclosed switchgear and controlgear for rated voltages above 3.6 kV and up to and including 40.5 kV

GB/T 1984 High-voltage alternating-current circuit-breakers

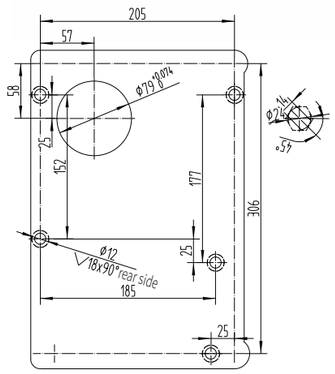
GB/T 1985 High-voltage alternating-current disconnectors and earthing switches

Product Features

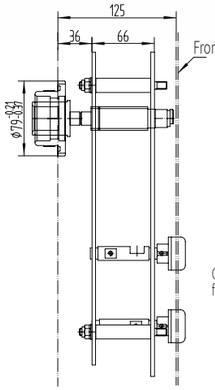
- Mechanism thickness ≤ 125mm, providing greater space within the compartment and effectively ensuring a substantial insulation distance.
- Designed for mainstream 12kV switchgear torque requirements: 90° output for the circuit breaker mechanism and 80° output for the three-position mechanism.
  Mechanical endurance: Circuit breaker mechanism ⩾ 10000 operations, Three position disconnector mechanism ⩾ 3000 operations
- With zinc-nickel alloy electroplating, the salt spray test duration reaches ⩾ 300 hours

Overall and Installation Dimensions

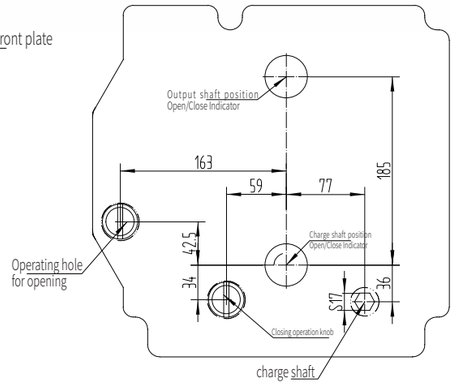
Circuit Breaker Mechanism Dimensions



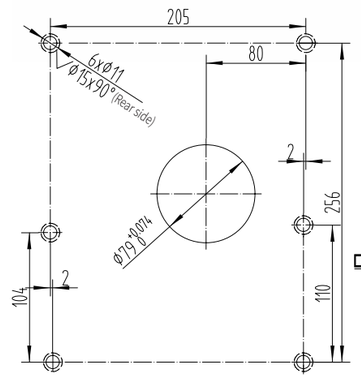
Mechanism install dimensions



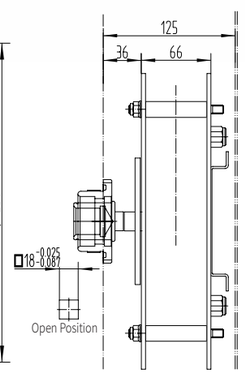
Mechanism height



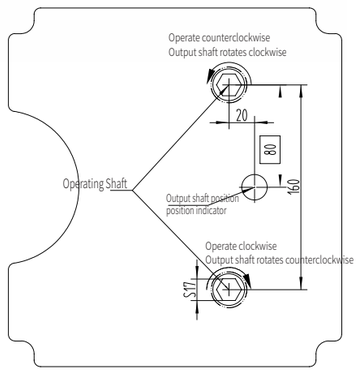
Three-position Switch Mechanism Dimensions



Mechanism install dimensions



Mechanism height



Hole dimensions

Main Technical Parameters

No.	ITEM		UNIT	PARAMETERS
1	Operating voltage		V	DC:220V/110V/48V/24/
2	Electric operation (energy storage) time		S	⩽ 10
3	Average closing speed (circuit breaker)		m/s	0.6 ± 0.2
4	Average opening speed (circuit breaker)			1.1±0.2
5	closing/opening speed (three-position)			⩾ 3
6	Circuit Breaker Reclosing Sequence			O-0.3S-CO-180s-CO
7	Mechanical endurance	Circuit breaker	operation cycles	⩾ 10000
		Disconnector		⩾ 3000
		Earthing switch		⩾ 3000
8	Circuit breaker closing time (with switch)		ms	⩽ 80
9	Circuit breaker opening time (with switch)			⩽ 50

Operating Condition

Ambient temperature:

Upper limit +40° C, lower limit -25° C

Ambient humidity:

Daily average relative humidity not exceeding 95%, monthly average relative humidity not exceeding 90%

Altitude:

Maximum altitude at installation site: 1000m

Seismic conditions:

Seismic intensity not exceeding 8 degrees

The surrounding air shall be free from significant contamination by corrosive or combustible gases, water vapour, etc. There shall be no persistent severe vibration.

Operating Instructions

SPD31 Circuit Breaker Mechanism Instructions

Energy Storage Operation	Secure the mechanism to the switch. Using the dedicated operating handle, insert it onto the operating shaft head of the mechanism's manual energy storage shaft. Rotate clockwise to complete spring energy storage for the mechanism, or energise the electric motor for energy storage during electric operation.
Closing Operation	Rotate the closing knob anticlockwise or energise the closing coil for electric operation. The closing spring of the mechanism releases, driving the switch into the closed position whilst simultaneously storing energy in the tripping spring.
Secondary Energy Storage operation	Repeat the energy storage operation steps.
Opening Operation	Rotate the opening knob or energise the electric opening coil; the switch, under the action of the release spring, moves into the opening position.

SPE31 Three-Position Switch Mechanism Instructions

Disconnector Operation	Insert handle into isolation shaft hole, turn clockwise to store energy. After spring passes midpoint, energy releases to close switch. Opening is reverse.
Earthing Switch Operation	Insert handle into isolation shaft hole, turn counterclockwise to store energy. After spring passes midpoint, energy releases to close earthing switch. Opening is reverse.

Installation and Commissioning Instructions

Before installation, please read the manual carefully and complete the following:

- Check the appearance for damage. If any damage is found, do not use the product.
- Clean any dirt from the product surface caused by transportation or other factors.
- Confirm the load switch is in the open position before connecting the mechanism (the mechanism is shipped in the open position). Connect the mechanism to the switch securely. Ensure the mechanism connector is firmly attached to the switch' operating disk and shaft hole. Perform several opening/closing and earthing operations according to the operating instructions. Only when these manual operations are normal can the mechanism with electric functions be operated electrically according to the corresponding procedures.

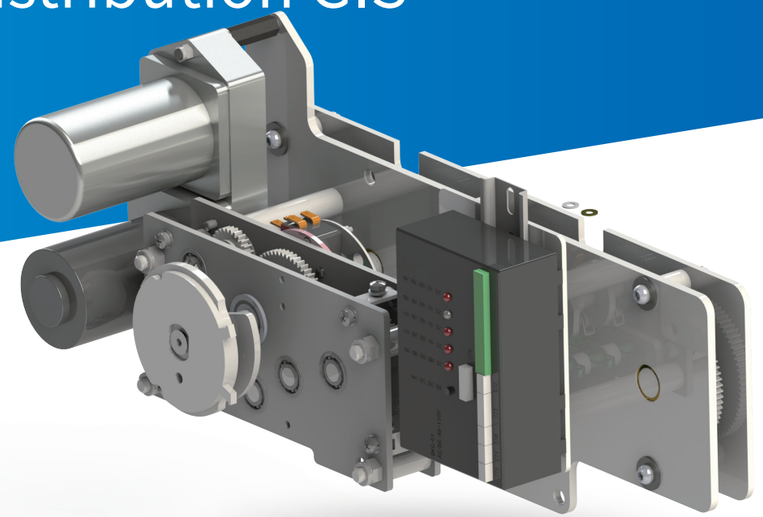
Maintenance and Servicing

The equipment operates under normal usage conditions where the environment meets the requirements of the installation and instruction manual. However, due to environmental variations, necessary inspection and maintenance of the load switch and operating mechanism are still required. Lubrication and operational checks shall be performed on the operating mechanism 1 to 2 times per year to ensure normal operation.

Three-Position Mechanism
Compatible with 12~40.5kV C-GIS

SPE28 Series

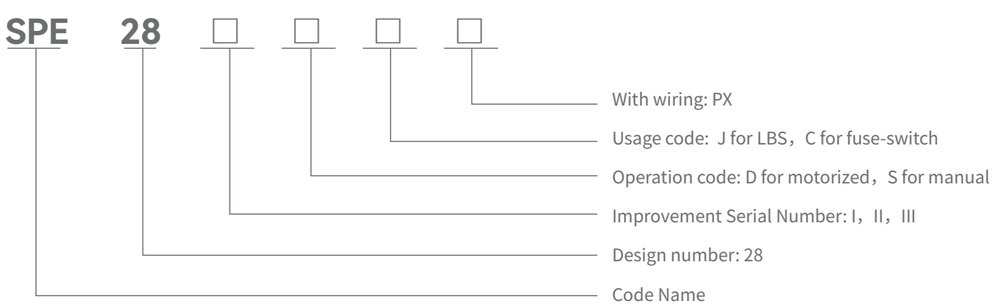
Three-position Mechanism For Primary Distribution GIS



Product Introduction

The SPE28 mechanism is controlled by a gearbox and features three positions: Closed, Open, and Earthed. A mechanical interlock is integrated between the Closed and Earthed positions to prevent incorrect operation. The product is designed to be compact, easy to install and use, and highly adaptable.

Model Composition and Meaning



Product Features

- Used for primary distribution Gas-insulated Switchgear
- Features three positions: Closed, Open, and Earthed
- Compact, easy installation and high practicality
- Manual and motorized operation available
- Mechanical endurance: Close ⩾ 5000, Open ⩾ 5000

Operating Instructions

Manual Operation

Disconnect Operation

Disconnect Close

Mount the mechanism on the switch. Insert the operating handle into the upper part of the mechanism (close operation shaft) and turn clockwise approximately 90°. The main circuit closes under spring force. For motorized operation, press the close button to energize the motor.

Disconnect Open

Insert the operating handle into the upper part of the mechanism (close operation shaft) and turn counterclockwise approximately 90°. The main circuit opens under spring force. For motorized operation, press the open button to energize the motor

Earthing Operation

Earthing Close

Move the lever to the "Earthing" position. Insert the crank into the earthing operation and turn clockwise 17 turns until the crank disengages, then remove it.

Earthing Open

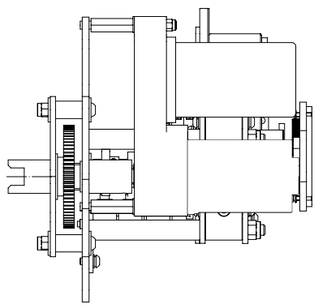
Move the lever to the "Earthing" position. Insert the crank into the earthing operation and turn counterclockwise 17 turns until the crank disengages, then remove it.

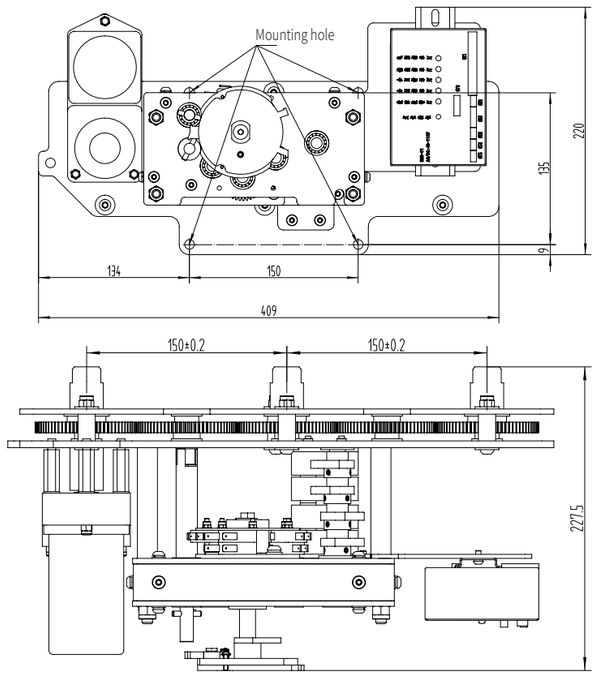
Interlock between disconnect and earthing operations. When the mechanism is in the open position, both disconnect close and earthing close operations are permitted. During cranking, the crank cannot be removed due to the interlock; it can only be removed after the operation is successfully completed. At this time, the other operation port cannot accept insertion.

Electric Operation

Once powered, the mechanism displays its current position. Each position can be operated via buttons.
If the mechanism is not in any of the three positions when powered, the module will report an error. Manually adjust the mechanism to any position and press reset — normal operation can then resume.

Dimensions





Operating Conditions

Ambient air temperature:

Maximum temperature +70° C,minimum temperature -40° C

Humidity:

Average daily relative humidity ⩽ 95%; Average monthly relative humidity <90%.

Altitude:

Suitable for use below 3000 metres;

Seismic requirement:

Seismic intensity ⩽ 8 degrees

The surrounding air shall be free from significant contamination by corrosive or flammable gases, water vapor, etc. Frequent violent vibrations shall not exist.

Unless otherwise specified, the mechanism is designed for normal service conditions. If the actual service conditions differ from the normal service conditions, this shall be subject to agreement between the user and the manufacturer.

Lifting and Transport

Keep the center of gravity downward — do not tilt or turn over. Protect the module surface from damage. Use anti-vibration measures during transport.

Unpacking Inspection

Check the packaging for damage before opening. Inspect the appearance for damage, check connections and fasteners. Verify the nameplate matches the order. Ensure all documents (certificate, manual, test report) are included.

Installation and Commissioning

The SPE28 is factory-tested — no adjustment is needed. Contact us if any issue is found.

Assembly Precautions

Do not stress or scratch insulating parts. Use the operating handle. The handle disengages when operation is complete — do not force it.

Storage

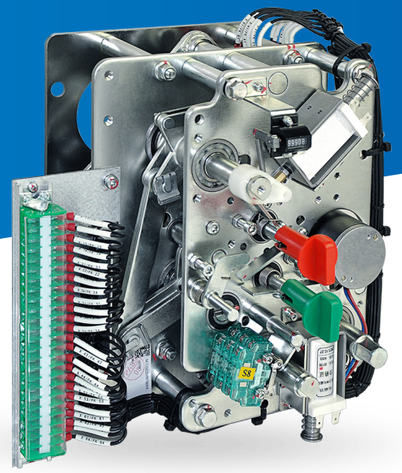
The product shall be stored in a place protected from impact, dry, well-ventilated, and free from corrosive gases. The storage period is 20 years.

Maintenance

When operating under normal conditions as specified in the installation and operating instructions, periodic inspection and maintenance of the switch and operating mechanism are still required due to environmental variations.

THREE POSITION FULL SEALING MECHANISM

XGN-12/630-20 Circuit Breaker
Motorized mechanism



Product Introduction

SPD 07 (S for Manual, M for Motorized) spring operating mechanism complies with GB1984-2003 for high-voltage AC circuit-breakers, is compatible with XGN-12/630-20 series products, features auto-reclosing function and compact design, with rated voltage of DC220V/110V/48V/24V, output angle of approx. 83° , average opening speed of 1.2 ± 0.2 m/s, average closing speed of 0.8 ± 0.2 m/s, and mechanical endurance of 10,000 operations.

External Dimensions

Model Composition and Meaning

SPD 07 □ □ □

- With wiring: PX
- Operation code: D-motorized, S-manual
- Improvement Serial Number: I，II，III
- Design number: 07
- CB mechanism name code

Motorized Spring Mechanism: SPD 07(FZ)PX Accessories

Baffle
DK-10

Green knob
8XJ.253.058

Red knob
8XJ.253.053

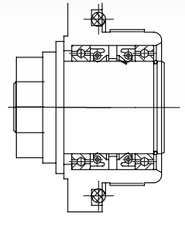
Limit plate
8XJ.271.066

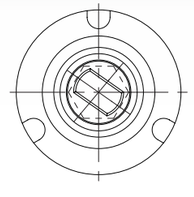
Extension spring
8XJ.288.186

Interlock plate
8XJ.141.063

Motorized Spring Mechanism: SPD 07(FZ)PX Accessories

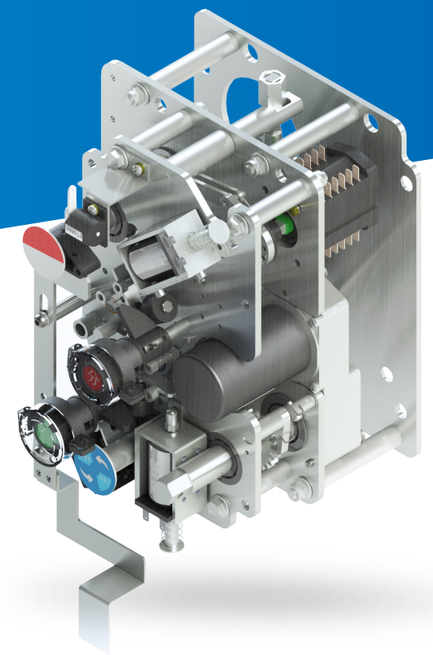
Sealed shaft sleeve assembly
5XJ.210.169



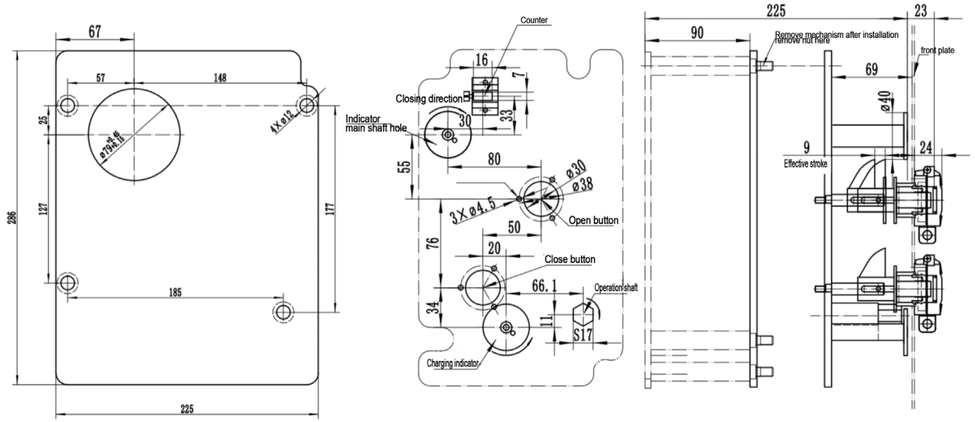


Note: For transmission between SPD-07 mechanism and the switch

SPD 2 Series 07 Circuit Breaker Operating Mechanism



External Dimensions



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Product Features

- Opening trip time: ⩽ 28ms at rated voltage
- Reliable tripping at 48% rated voltage
- No tripping at 30% rated voltage
- Mechanical endurance: ⩾ 10,000 operations
- Zinc-nickel alloy plating, salt spray resistance ⩾ 300 hours

Model Composition and Meaning

SPD 2 07 □ □ □

- With wiring: PX
- Operation code: D-motorized, S-manual
- Improvement serial number: e.g. 1, 2, 3
- Company serial number
- 2: second generation; 3: third generation
- CB mechanism name code

Operating Instructions

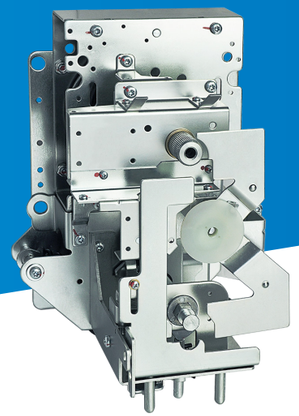
Charging Operation Check for transport damage. Mount mechanism on switch. Insert handle into lower right part, turn clockwise (or energize motor) until a "click" is heard — charging complete.

Closing Operation Press close button — main circuit closes under spring force. For electric operation, energize closing coil. Mechanism closes and charges opening spring. Recharging allowed, but closing again is interlocked.

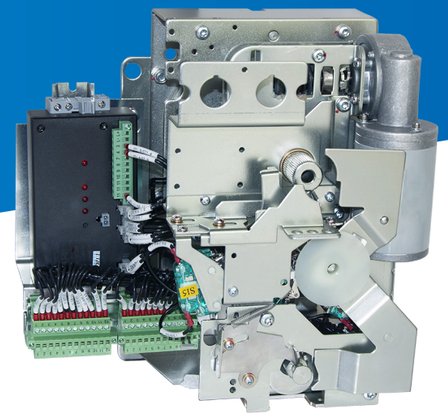
Opening Operation Press open button — main circuit opens under spring force. For electric operation, energize opening coil.

SPE 03 □ J Spring Operating Mechanism

Gas-insulated switchgear: XGN-12D switchgear accessory — SPE 03 operating mechanism



XGN □ -12(C type) Manual mechasnism
Model type: SPE 03SJ



XGN □ -12(C type) Motorized mechasnism
Model type: SPE 03DJPX

Product Introduction

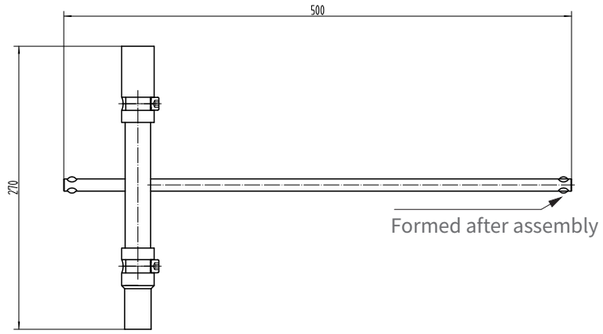
XGN-12D equipped with SPE type spring operating mechanism is accessory equipment for 12kV AC metal-enclosed switchgear. This series of mechanisms uses a planar spiral spring to control load switch operation, and earthing operation is controlled by a compression spring over-center mechanism. The working positions include closed, open, and earthed — mechanical interlock between closed and earthed positions prevents incorrect operation. Mechanism output angle is approx. 80 ° , average closing and opening speed ⩾ 3 m/s, mechanical endurance: 5000 operations for closing, 3000 for earthing. The mechanism features a compact design, easy installation and operation, and strong adaptability.

This product complies with GB3804-2004 "3.6kV ~ 40.5kV AC high-voltage load switches" and GB16926-1997 "AC high-voltage load switch-fuse combination apparatus".

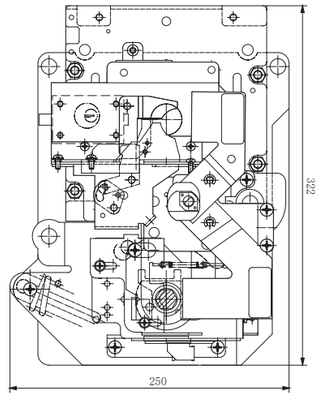
Operating Handle

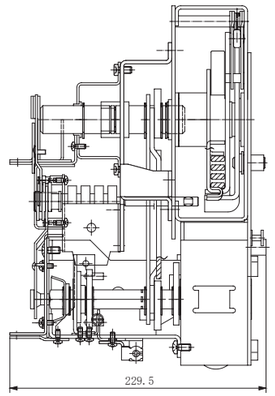
Dimensions

SPE03 Mechanism handle
Drawing：XGN.5XJ.253.030



Overall Dimensions





SPE 03SJ/DJ Instructions and Operation Specifications

Mount mechanism on switch. Insert handle into upper part (closing shaft), turn clockwise approx. 90° — main circuit closes under spring force. Electric operation: press close button to energize motor.

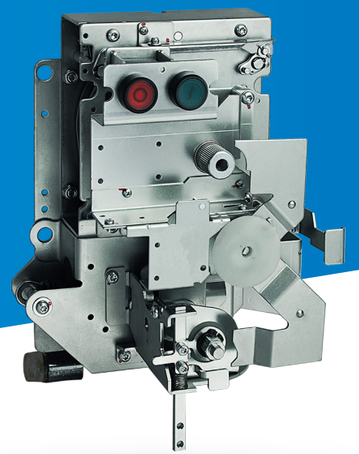
Opening Operation — Insert handle into upper mechanism (closing shaft), rotate counterclockwise by approximately 90°. Main circuit opens via spring force of mechanism. Press open button for electric operation, the motor drives the mechanism to complete the opening operation.

Earthing Close — Insert handle into lower mechanism (earthing shaft), rotate clockwise by approximately 90° . Earthing circuit closes via spring force of mechanism.

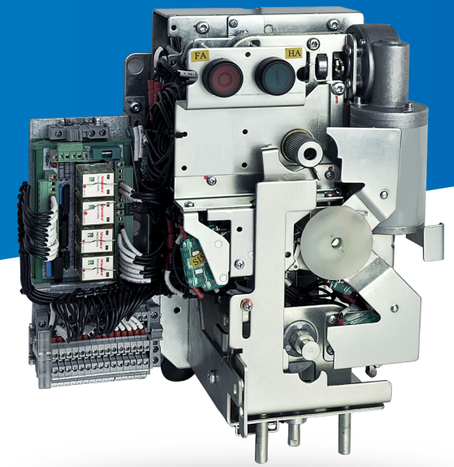
Earthing Open — Insert handle into lower mechanism (earthing shaft), rotate counterclockwise by approximately 90° . Earthing circuit opens via spring force of mechanism.

SPE 03 □ C Spring Operating Mechanism

Gas-insulated switchgear: XGN-12D switchgear accessory — SPE 03 operating mechanism



XGN □ -12(F type) Manual mechasnism
Model type: SPE 03SC



XGN □ -12(F type)Motorized mechasnism
Model type: SPE03DC PX

Model Composition and Meaning

Note: This mechanism has fuse trip function.

SPE 03 □ □ □ □

- With wiring PX
- Usage code: J for LBS, C for fuse-switch
- Operation mode code: D - motorized operation, S - manual operation
- Improvement serial number: e.g., I, II, III
- Design serial number
- Code name

SPE 03SC/DC Mechanism Operating Instructions

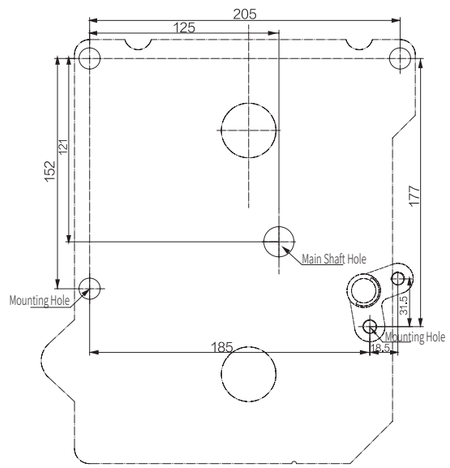
Mechanism Charging
Install and fix the mechanism onto the switch, insert the dedicated operating handle into the upper part of the mechanism (closing operation shaft), rotate clockwise by approximately 120° to complete mechanism spring charging, or energize the motor for electric operation charging.

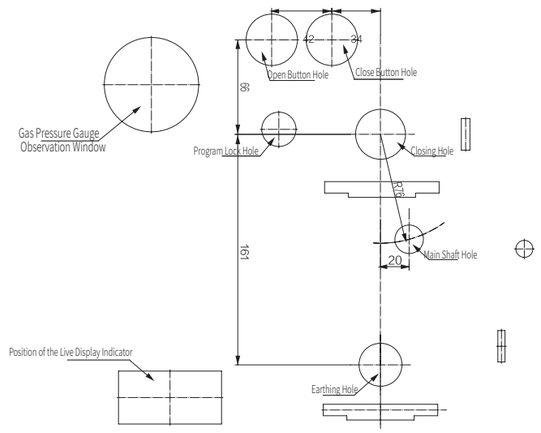
Closing Operation
Press the closing button or energize the closing coil for electric operation (the energy storage spring). The spring energy releases, the mechanism drives the switch to close, and the main circuit conducts.

Earthing Close
Insert the operating handle into the lower part of the mechanism (earthing operation shaft), rotate clockwise by approximately 90°. The earthing circuit closes under the spring force of the mechanism.

Earthing Open
Insert the operating handle into the lower part of the mechanism (earthing operation shaft), rotate counterclockwise by approximately 90°. The earthing circuit opens under the spring force of the mechanism.

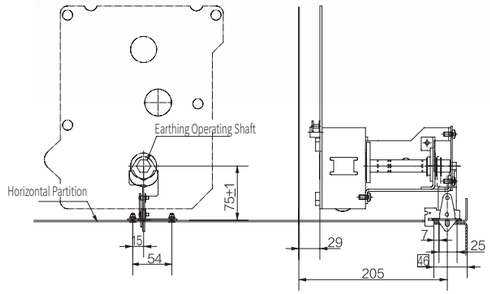
Overall and Installation Dimensions

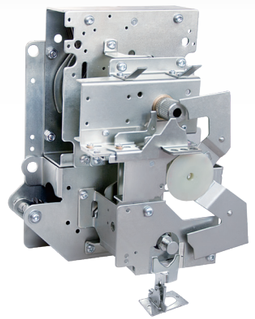




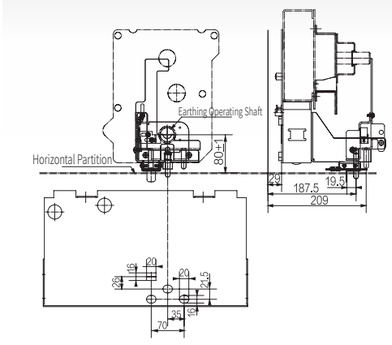
Interlocked SPE03 Operating Mechanism

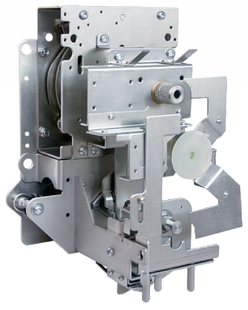
IV Type Mechanism



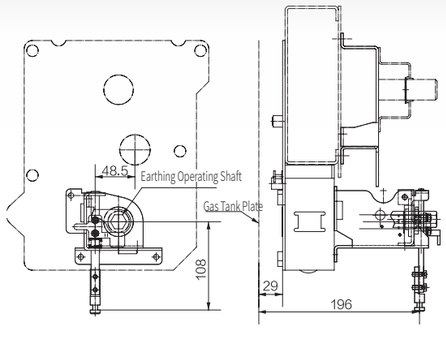


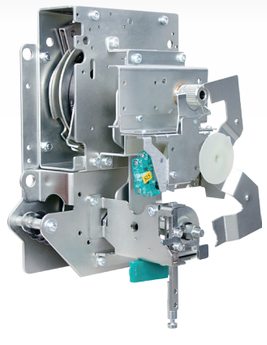
V Type Mechanism



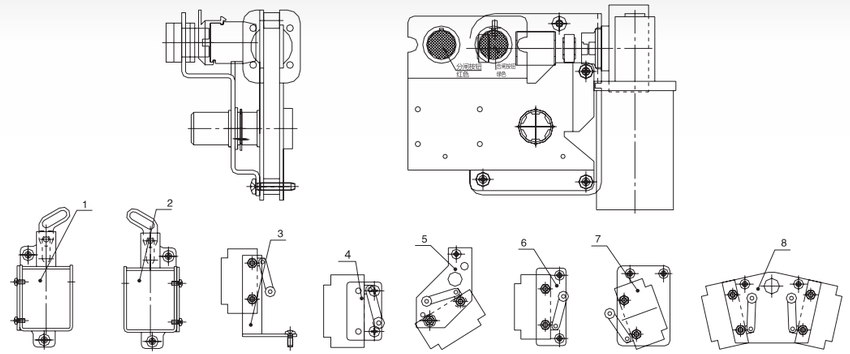


VII Type Mechanism





SPE 03 □ C Mechanism Motor Assembly



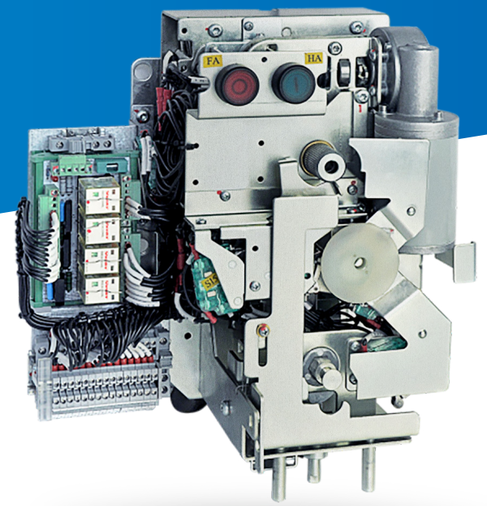
SPE03 Mechanism Motor Accessories

No.	Name	Model Type	Qty	Note
1	Opening coil assembly	XGN.6XJ.610.002	1	
2	Closing coil assembly	XGN.6XJ.610.001	1	
3	Mounting plate (fuse contact) assembly	XGN.5XJ.062.010	1	For cabinet
4	Mounting plate (manual/electric switch) assembly	XGN.5XJ.062.013	1	
5	Mounting plate (charging indicator) assembly	XGN.5XJ.062.008	1	
6	Mounting plate (charging switch) assembly	XGN.5XJ.062.011	1	
7	Mounting plate (cable compartment door) assembly	XGN.5XJ.062.009	1	For cabinet
8	Mounting plate (position switch) assembly	XGN.5XJ.062.012	1	

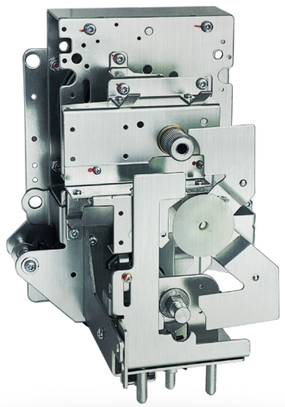
SPE03 Mechanism Accessories and Other Components

Picture	Model Type	Name	Note
	XGN.5XJ.271.005	Limit Block Assembly	Controls the interlock that prevents mechanism closing operation when the lower door is not installed
	XGN.5XJ.261.013	Door Slide Assembly	Controls the interlock that allows the lower door to be opened when the mechanism is in the grounded position
	XGN.5XJ.885.001	Door Latch Assembly	Controls that the front panel of the SPE 03 □ C mechanism can only be opened when the mechanism is in the grounded state
	XGN.5XJ.271.004	Limit part Assembly	Used for connection between mechanism and cabinet, mounting and fixing the mechanism onto the cabinet

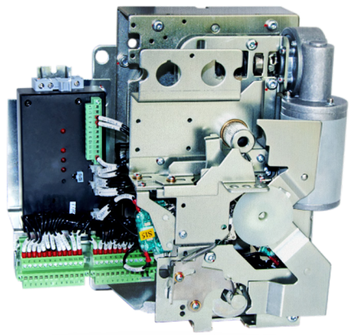
SPE203 Series
Three-Position Mechanism



SPE203 Fuse switch Mechanism



SPE203 Disconnector Mechanism



SPE203 Load Break Switch Mechanism

Product Features

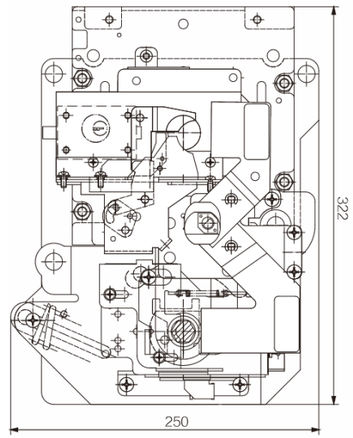
- Features new materials and advanced processes. Stability and reliability.
- Mechanical Endurance ⩾ 5,000 operations
- Plating options available, up to ⩾ 400h salt spray resistance.
- Front-access controls for easy maintenance.
- Compact structure with ample materials, easy installation.
- Rigid or flexible interlocking available, customizable.

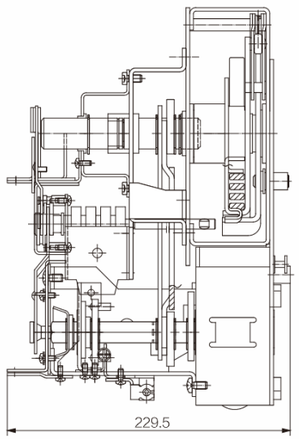
Model Composition and Meaning

SPD 2 03 □ □ □ □

- With wiring PX
- Usage code: J for LBS，C for Fuse switch
- Operation code: D-motorized, S-manual
- Improvement serial number: e.g. 1, 2, 3
- Company serial number
- 2: second generation
- Mechanism code name

Dimensions





Main Technical Parameters

No.	ITEM	UNIT	PARAMETERS
1	Rated voltage (Motor)	V	DC:220V/110V/48V/24V
2	Electric operation (Charging) time	S	⩽ 15
3	Average closing speed (with switch)	m/s	⩾ 3
4	Average opening speed (with switch)	m/s	⩾ 4
5	Maximum manual operating torque	N.m	⩽ 120
6	Opening time triggered by release	ms	⩽ 60
7	Tripping energy	J	2-5
8	Load break switch position	Operation cycles	5000
	Earhing switch position		5000

Disconnector and Motorized LBS Mechanism Operation Instructions

Closing Operation — Mount the mechanism onto the switch. Insert the handle into the upper shaft (closing shaft) and rotate clockwise about 90° — the main circuit closes via spring force. For electric operation, press the closing button to energize the motor, which completes closing.

Open Operation — Insert the handle into the upper shaft (closing shaft) and rotate counterclockwise about 90° — the main circuit opens via spring force. For electric operation, press the opening button to energize the motor, which completes opening.

Earthing Close — Insert handle into lower shaft (earthing shaft), rotate clockwise about 90° — earthing circuit closes via spring force.

Earthing Open — Insert handle into lower shaft, rotate counterclockwise about 90 ° — earthing circuit opens via spring force.

Fuse-Switch Mechanism Operation Instructions

Charge — Mount mechanism onto switch. Insert handle into upper shaft (closing shaft), rotate clockwise about 120° to charge spring. For electric operation, motor charges.

Closing Operation — Press closing button or energize closing coil — closing spring closes switch.

Opening Operation — Main circuit disconnects. Press opening button (or simulate fuse trip) or energize opening coil — spring releases, mechanism opens switch.

Earthing Close — Insert handle into lower shaft (earthing shaft), rotate clockwise ~90° — earthing circuit closes via spring force.

Earthing Open — Insert handle into lower shaft, rotate counterclockwise about 90 ° — earthing circuit opens via spring force. Mechanical interlock between close/open and earthing. In open (isolated) position, either closing or earthing can be operated. Once one succeeds, the other is blocked.

Operating Conditions

Ambient Temperature:

Upper limit: +40° C, Lower limit: -25° C

Ambient Humidity:

Daily average relative humidity ⩽ 95%; Monthly average relative humidity ⩽ 90%

Altitude:

Maximum altitude for installation site: 2000m

Seismic conditions:

Seismic intensity not exceeding 8 degrees

The surrounding air shall be free from significant contamination by corrosive or combustible gases, water vapour, etc. There shall be no persistent severe vibration.

Installation and Commissioning Instructions

Before installation, please read the manual carefully and complete the following:

- Check the appearance for damage. If any damage is found, do not use the product.
- Clean any dirt from the product surface caused by transportation or other factors.
- Confirm the load switch is in the open position before connecting the mechanism (the mechanism is shipped in the open position). Connect the mechanism to the switch securely. Ensure the mechanism connector is firmly attached to the switch' operating disk and shaft hole. Perform several opening/closing and earthing operations according to the operating instructions. Only when these manual operations are normal can the mechanism with electric functions be operated electrically according to the corresponding procedures.

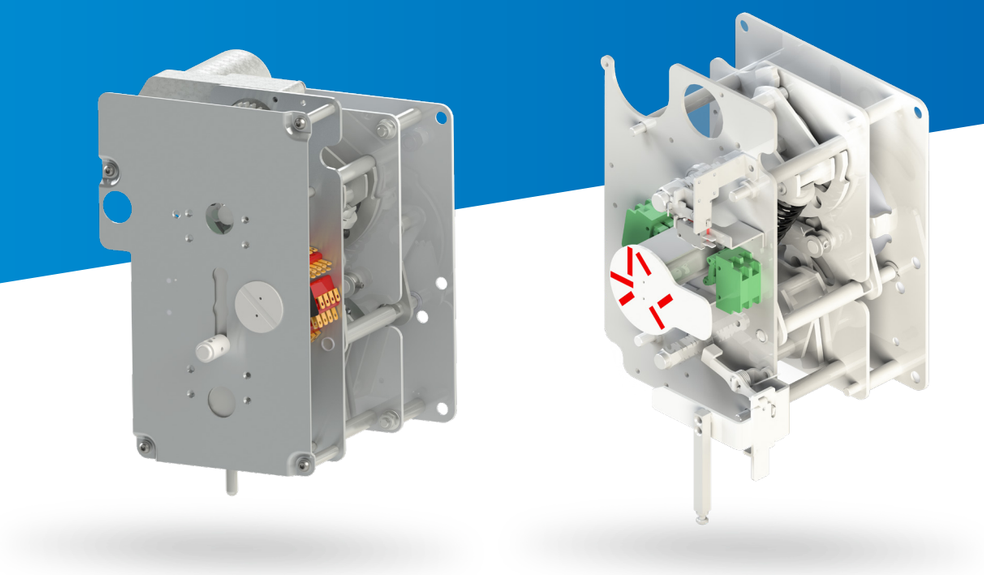
Maintenance and Servicing

The equipment operates under normal usage conditions where the environment meets the requirements of the installation and instruction manual. However, due to environmental variations, necessary inspection and maintenance of the load switch and operating mechanism are still required. Lubrication and operational checks shall be performed on the operating mechanism 1 to 2 times per year to ensure normal operation.

Mechanism Selection Table for SF6 and SF6-FREE RMU

No.	Name	Model Type		Note
1	Circuit Breaker Mechanism	SPD207		DC:220V/110V/48V/24/
2		SPD307		⩽ 15
3	Manual Three-Position Mechanism	SPE203SG		⩾ 3
4	Motorized Load Break Switch Mechanism	SPE203 V DJ		⩾ 4
5	Motorized Fuse Switch Mechanism	SPE203 V DC		⩽ 120

SPE T Series Three-Position Operating Mechanism



Product Introduction

SPE Spring Operating Mechanism uses compression spring over-travel control. Three positions: close, open, earth. Mechanical interlock between close and earth prevents misoperation. Compact size, easy installation.

Complies with GB/T3804-2017, GB/T16926-2009, and references GB/T11022-2020, GB/T3309-1989.

Product Features

- Single compression spring, dual-shaft design, simple and stable.
- Mechanical interlock prevents misoperation
- Compact, easy to install, strong adaptability
- Mechanical endurance ⩾ 5000 operations

The SPE spring operating mechanism is used with SF6 load break switch and fuse-switch in AC metal-enclosed switchgear. The spring operating mechanism (commonly divided into Type C and Type F) is equipped with indoor high-voltage AC load break switch with Type C mechanism, mainly for incomer line control units. Fuse-swtich with Type F mechanism is mainly for transformer protection units, also known as outgoing line control units.

Model Composition and Meaning

SPE □ □ □ □ □

- With wiring PX
- Usage code: J for LBS, C for fuse-switch
- Operation mode: S for manual, D for motorzied
- Improvement number: e.g., I, II
- Company serial number
- Code Name

Operating Instructions

Closing Operation

Fix mechanism to switch. Insert handle into upper shaft (closing shaft), turn clockwise. Main circuit closes via spring force.

Opening Operation

Insert handle into upper shaft, turn counterclockwise. Main circuit opens via spring force.

Electric Closing:

Motor drives spring for closing.

Earthing Operation

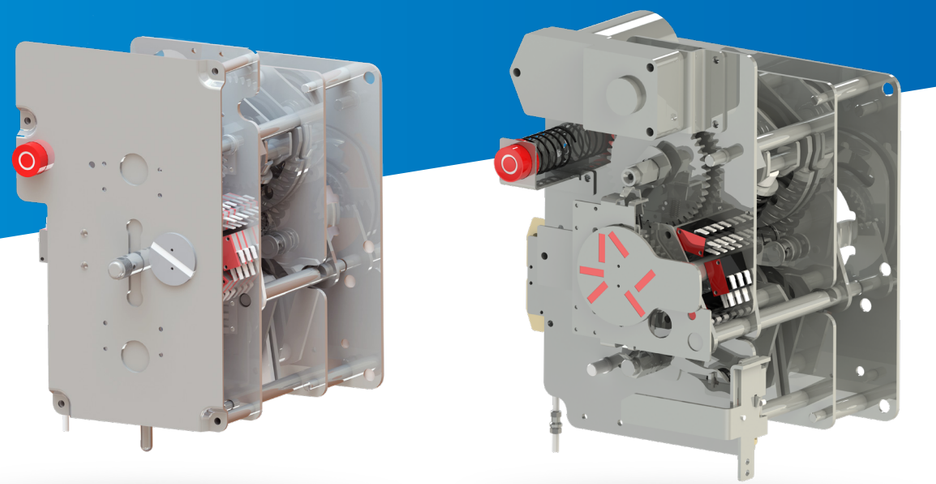
Earthing Close:

Insert handle into lower shaft (earthing shaft), turn clockwise. Earthing circuit closes via spring force.

Earthing Open:

Insert handle into lower shaft, turn counterclockwise. Earthing circuit opens via spring force.

SPE T Three-Position Operating Mechanism (For Fuse-Switch)



Product Introduction

SPE spring operating mechanism is designed for 12kV AC metal-enclosed switchgear. It uses compression spring over-travel control with three positions: close, open, and earth. Mechanical interlock between close and earth prevents misoperation. Compact size, easy installation, strong adaptability.

This mechanism complies with GB/T3804-2017, GB16926-2009, and references GB/T11022-2020, GB/T3309-1989.

Operating Conditions

- Ambient Temperature: Upper limit +40° C, lower limit -25° C
- Altitude: Maximum installation altitude ⩽ 1000m
- Humidity: Daily average relative humidity ⩽ 95%, monthly average ⩽ 90%
- Seismic Intensity: ⩽ 8 degrees. Air must be free from corrosive or flammable gases, water vapor, and other obvious pollution. No frequent violent vibrations.

Main Technical Parameters

ITEM	UNIT	PARAMETERS
Rated voltage (motor)	V	DC:220V/110V/48V/24/
Electric operation (charging) time	S	10
Average closing speed (with switch)	m/s	⩾ 3
Average opening speed (with switch)	m/s	⩾ 4
Maximum manual operating torque	N.m	⩽ 120
Opening time triggered by release	ms	50-65
Trip actuator impact energy	J	2-5
Load break switch mechanical endurance	Operation cycles	5000
Earthing switch mechanical endurance	Operation cycles	3000

Operating Instructions

Closing Operation

Install mechanism on switch. Insert handle into upper shaft (closing shaft), turn clockwise to charge spring, or use motor. Auto-closes after charging.

Opening (Fuse Trip)

Press open button (or simulate fuse trip) or energize opening coil. Spring releases, switch opens, circuit disconnects.

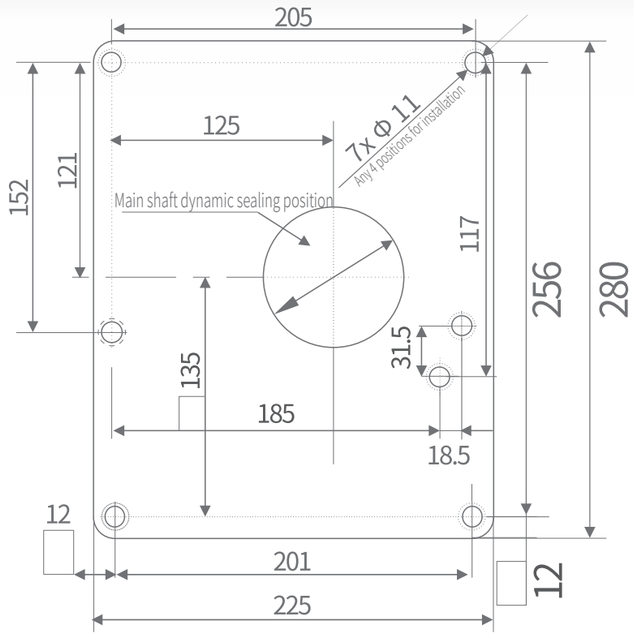
Earthing Operation

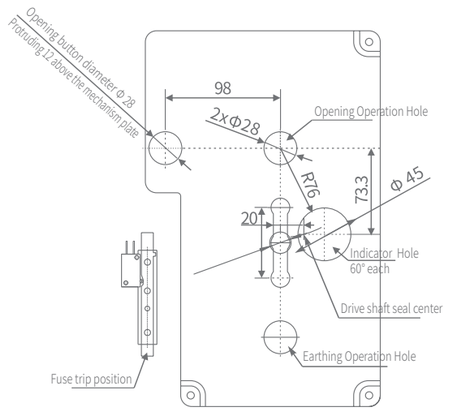
Earthing Close:
Insert handle into lower shaft (earthing shaft), turn clockwise. Earthing circuit closes.

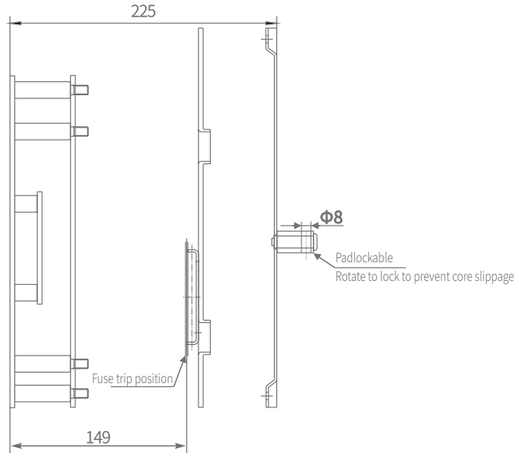
Earthing Open:
Insert handle into lower shaft, turn counterclockwise. Earthing circuit opens. Mechanical interlock between closing and earthing. In open position, only one operation possible; the other hole is blocked.

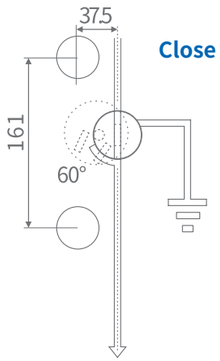
Mechanism Dimensions

Base plate mounting positions and external dimensions mounting holes (choose any four positions for installation)



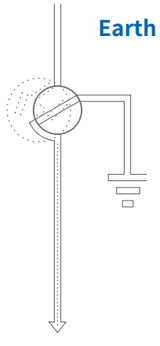






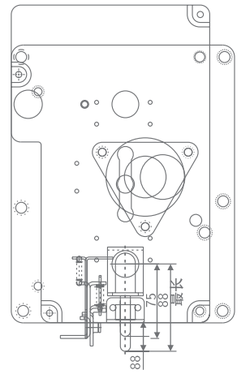
Close Position

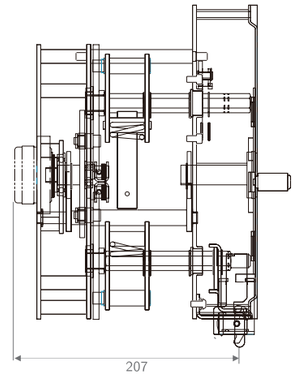
Open Position

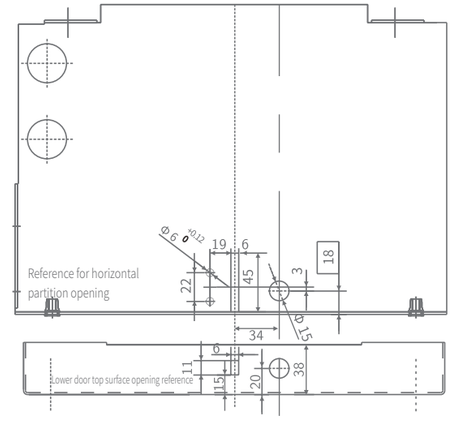


Earth Position

Lower Door Interlock Solution 1



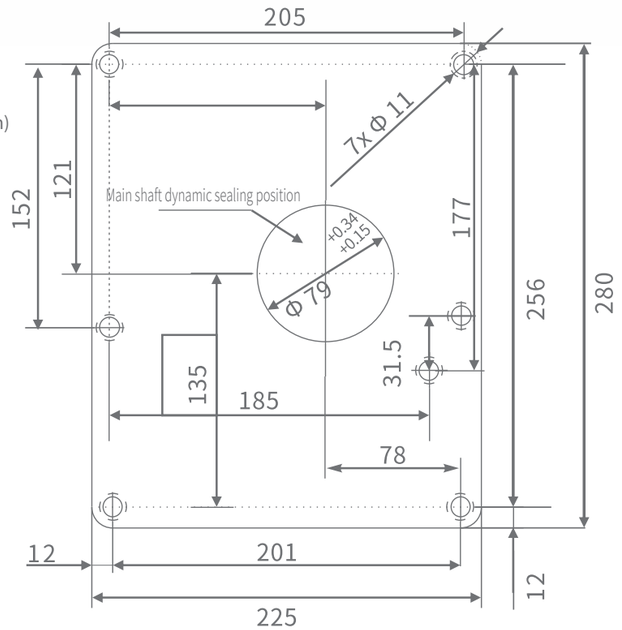


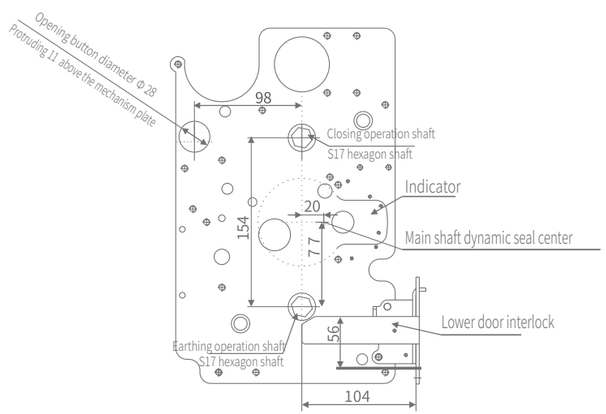


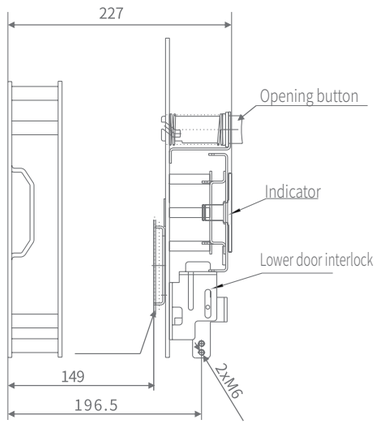
After the mechanism is earthed, close the operating handle hole (with the handle in the intermediate position) to open the lower door. Once the lower door is open, no operating holes can be opened. Simultaneously, the operating holes for the main circuit and the earthing/grounding circuit have an interlocking function.

Mechanism Dimensions

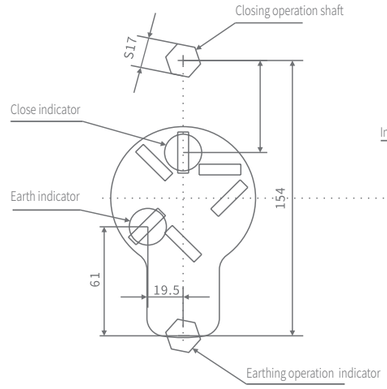
Base plate mounting positions and external dimensions mounting holes (choose any four positions for installation)



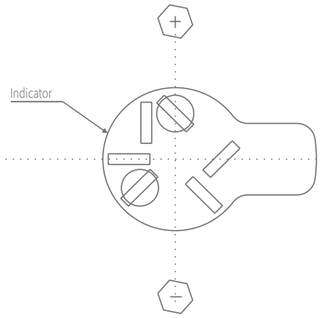




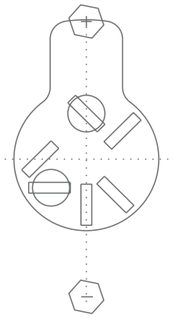
Close Position

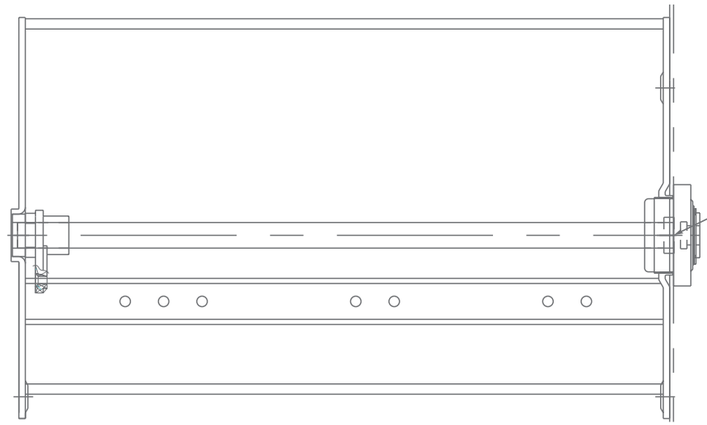


Open Position



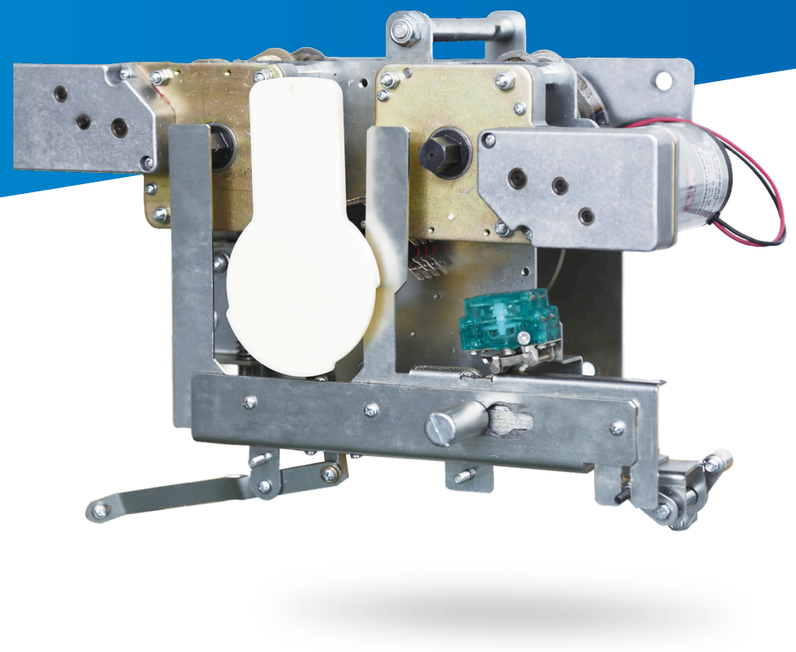
Earth Position





The square shaft must not protrude beyond the box surface. After dynamic seal assembly, the square shaft must have axial clearance.

SPE17 Series Three-Position Mechanism 60° angle



Product Introduction

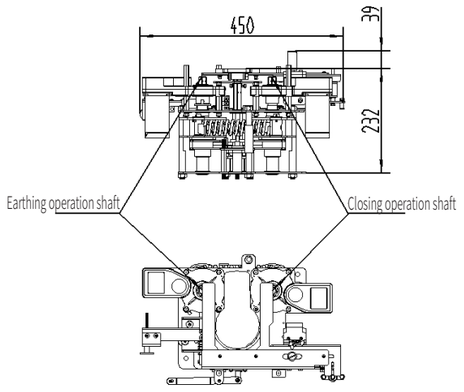
The SPE17 Type ±60 ° Three-Position Mechanism is designed for 12kV AC metal-enclosed switchgear, featuring compression spring over-travel control and three positions (closed, open, grounded). A mechanical interlock between closed and grounded prevents misoperation. It offers compact size, easy installation, and wide applicability, complying with GB/T 3804-2017, GB/T 11022-2020, and GB/T 3309-1989.

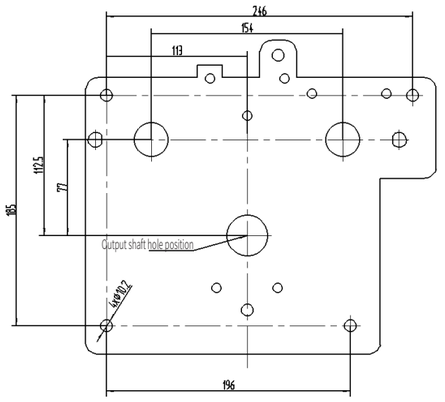
兴机电器集团 XING JI ELECTRICAL GROUP

Product Features

- Single compression spring, dual operating shafts — simple, stable.
- Mechanical interlock between earthing and closing prevents misoperation.
- Front-mounted motor for easy maintenance.
- Mechanical endurance ⩾ 5000 operations

Overall and Installation Dimensions





Model Composition and Meaning

SPE 17 □ □ □

- With wiring PX
- Operation mode: S - manual, D - motorized
- Improvement serial number: e.g., I, II, III
- Company design serial number: 17
- Three-position mechanism code name

Main Technical Parameters

No	ITEM NAME	UNIT	PARAMETERS
1	Rated voltage (Motor)	V	DC:220V/110V/48V/24/
2	Electric operating (charging) time	S	⩽ 10
3	Average closing speed (with switch)	m/s	⩾ 3
4	Average opening speed (with switch)	m/s	⩾ 4
5	Maximum manual operating torque	N.m	⩽ 120
6	Load break switch position	Operation cycles	5000
	Earthing switch position		3000

Operating Conditions

Ambient Temperature:

Upper limit: +40° C, Lower limit: -25° C

Ambient Humidity:

Daily average relative humidity ⩽ 95%; Monthly average relative humidity ⩽ 90%

Altitude:

Maximum altitude for installation site: 2000m

Seismic conditions:

Seismic intensity not exceeding 8 degrees

The surrounding air shall be free from significant contamination by corrosive or combustible gases, water vapour, etc. There shall be no persistent severe vibration.

Installation and Commissioning Instructions

Before installation and commissioning of the SPE17 Type ±60° Three-Position Operating Mechanism, which has undergone strict factory inspection and complies with product technical requirements, carefully read the operating instructions and prepare as follows:

1：Check for any external damage. Do not use damaged products.

2：Clean any contamination on the product surface caused by transportation or other factors.

3：When assembling the mechanism with the switch, ensure the load break switch is in the open position before connecting (the mechanism is also open at factory). The connection must be secure. After installation, insert the handle and perform several closing, opening, and earthing operations as instructed. Only then should electric operation be performed if applicable.

Maintenance and Servicing

Under normal operating conditions where the environment meets the requirements of the installation and operating instructions, regular inspection and maintenance of the load break switch and operating mechanism are still necessary due to environmental variations. Lubricate and check the operating mechanism 1–2 times per year to ensure proper operation.

Operating Instructions

Closing Operation

Mount the mechanism onto the switch body. Insert the special operating handle into the right side of the mechanism (closing operating shaft) and rotate counterclockwise — the main circuit closes under the spring force of the mechanism.

Opening Operation

Insert the operating handle into the right side of the mechanism (closing operating shaft) and rotate clockwise — the main circuit opens under the spring force of the mechanism.

Earthing Operation

Earthing Closing Operation:

Insert the operating handle into the left side of the mechanism (earthing operating shaft) and rotate clockwise — the earthing circuit closes under the spring force of the mechanism.

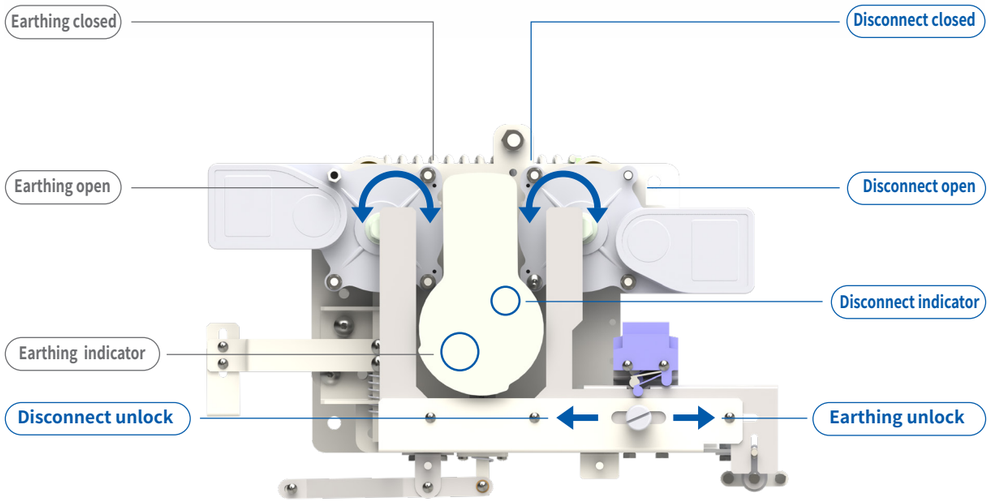
Earthing Opening Operation:

Insert the operating handle into the lower part of the mechanism (earthing operating shaft) and rotate counterclockwise — the earthing circuit opens under the spring force of the mechanism.

Electric Closing Operation:

The motor rotates forward and reverse to drive the mechanism spring, completing the closing operation.

Operating Diagram



Note: Press lock knob inward to unlock and slide. After operation, slide to locked position — it will pop out automatically.

Manual Operating Instructions

1. Operate only when the circuit breaker is open.

2. Press lock knob inward, slide to disconnect/earthing position, insert handle into hole, and turn as indicated.

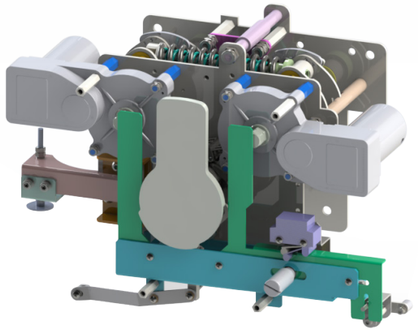
3. Indicator arrow points to hole center.

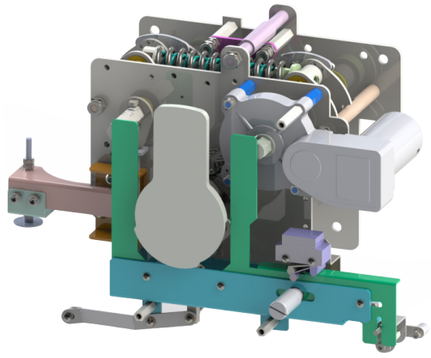
4. After operation, slide lock knob to locked position until it pops out — then circuit breaker can close or motorized operation can be used.

Mechanism model options

Mechanism Name:
Dual-Motor Three-Position Mechanism

Model: SPE17/2DPX3332-DR20
Motor options: DR30-24V
DR40-48V
DR10-110V
DR20-220V



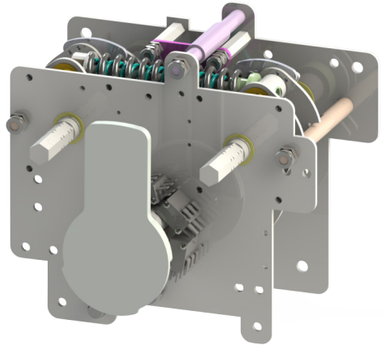


Mechanism Name:
single -Motor Three-Position Mechanism

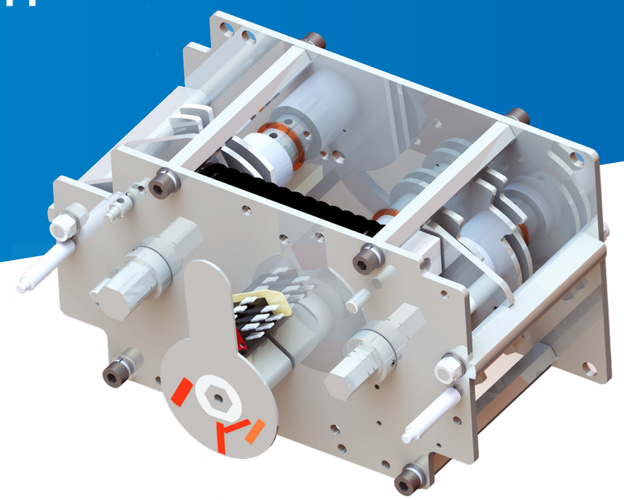
Model: SPE17DPX3332-DR20
Motor options: DR30-24V
DR40-48V
DR10-110V
DR20-220V

Mechanism Name:
Manual Three-Position Mechanism

Model: SPE17SGPX333-DR



SPE29 Series Three-Position Mechanism



Product Introduction

This series of mechanisms uses compression spring over-center control and features three operating positions: closed, open, and earthed. All ferrous metal parts are treated with anti-corrosion processes. In accordance with GB/T 2423.17-2008, the mechanism shows no significant rust after 96 hours or more of neutral salt spray testing (up to 168 hours for coastal areas).

Product performance meets the technical requirements for operating mechanisms specified in GB 1985-2014 High-Voltage AC Disconnectors and Earthing Switches and the relevant State Grid bidding technical specifications.

Operating Conditions

Ambient Temperature:

Upper limit: +55° C, Lower limit: -25° C

Ambient Humidity:

Daily average relative humidity ⩽ 95%; Monthly average relative humidity ⩽ 90%

Altitude:

Maximum altitude for installation site: 1000m

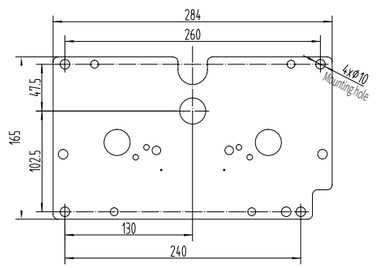
Seismic conditions:

Seismic intensity not exceeding 8 degrees

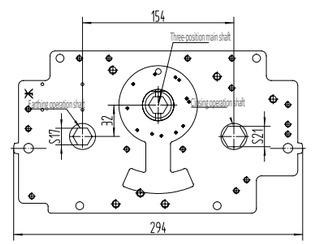
Product Features

- Dual-angle mechanism to meet different customer angle requirements
- Single-spring, dual-operating-shaft design
- Compact size, easy installation, and wide applicability
- Disconnect circuit ⩾ 5000 operations, earthing circuit ⩾ 3000 operations

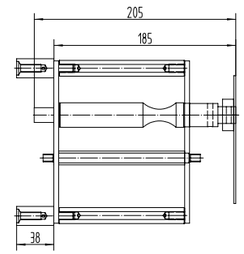
Overall and Installation Dimensions



Base plate mounting position and overall dimensions



Mechanism front plate



Height dimension

Operating Instructions

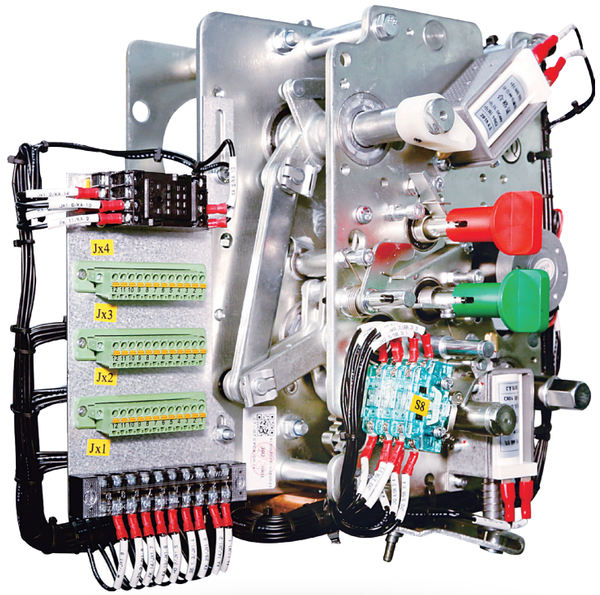
Main Circuit Close and Open Operation

Insert the special operating handle into the mechanism S21 operating shaft. Turn the handle clockwise approximately 90° to close the main circuit under the spring force of the mechanism. Turn the handle counterclockwise approximately 90° to open the main circuit under the spring force of the mechanism.

Disconnector Open

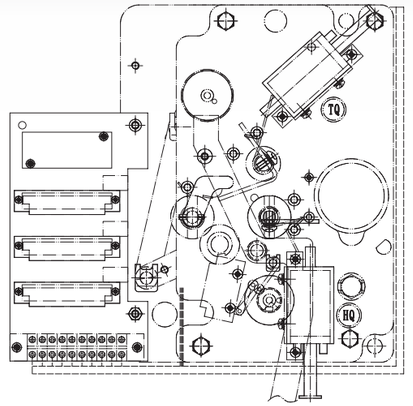
Insert the special operating handle into the mechanism S17 operating shaft. Turn the handle counterclockwise approximately 90° to close the earthing circuit under the spring force of the mechanism. Turn the handle clockwise approximately 90° to open the earthing circuit under the spring force of the mechanism.

SECONDARY CIRCUIT



Overall and Installation Dimensions

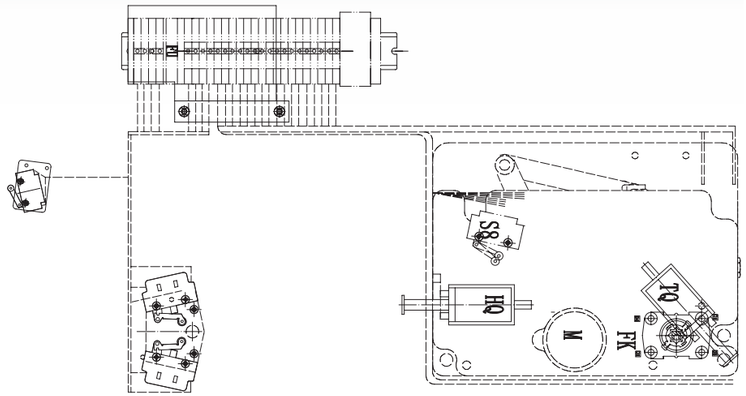
Secondary Control Circuit XGN.5XJ.512.014



Notes

1.SPD 07 □ PCX-DR □ □ wiring：Refer to the drawing for the specific circuit.
2.Relays are not included with SPD 07 □ PCX-DR □□ wiring; if relays are required, they must be purchased separately.
3.If disconnect wiring is needed, it must be purchased separately.

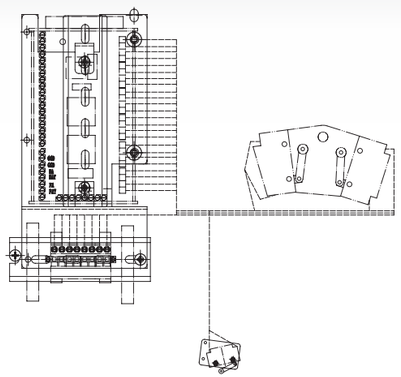
Secondary Control Circuit 5XJ.512.033/038

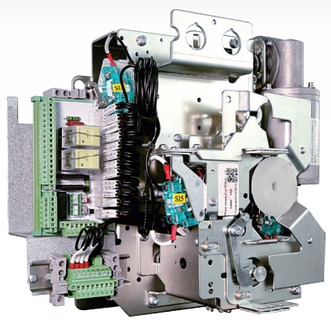


Notes

1.SPD 07 □ PDG-DR □□ wiring: This wiring configuration includes disconnector auxiliary contacts — 2 NO + 2 NC.
2.Relays are not included with SPD 07 □ PDG-DR □□ wiring； if relays are required, they must be purchased separately.
3.Double-layer terminals are provided externally as reserved terminals for the customer.

Secondary Control Circuit XGN.5XJ.512.059

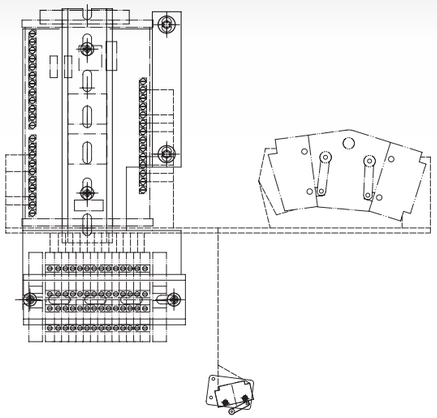


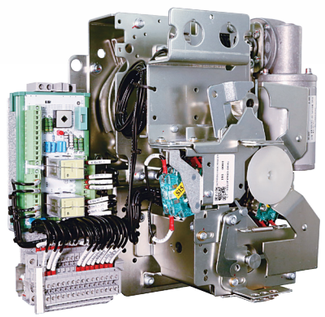


Notes

1. SPE 03 □ DJ(JY)PXM □□ wiring; Load and earthing auxiliary contacts support up to 4 NO + 4 NC (must be specified); standard is 3 NO + 3 NC.
2. SPE 03 □ DJ(JY)PXM □□ wiring is the same for all voltage levels; only the relay needs to be changed for different voltages.
3. External spare contacts use plug-in terminals.
4. Module has reserved interlock for customer use.

Secondary Control Circuit XGN.5XJ.512.001

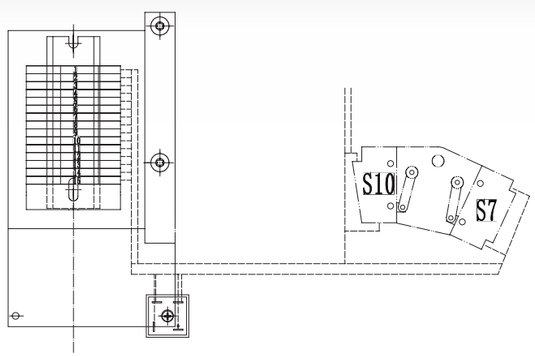


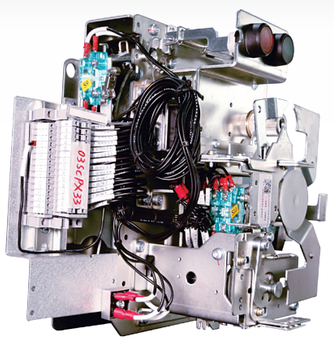


Notes

1. SPE 03 □ DJPXM □□ wiring; Load and earthing auxiliary contacts support up to 4 NO + 4 NC (must be specified); standard is 3 NO + 3 NC.
2. SPE 03 □ DJPXM □□ wiring is the same for all voltage levels; only the relay needs to be changed for different voltages.
3. External spare contacts use double-layer terminals.

Secondary Control Circuit 5XJ.512.014

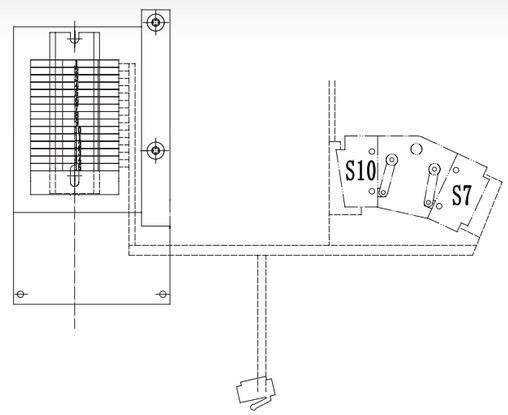


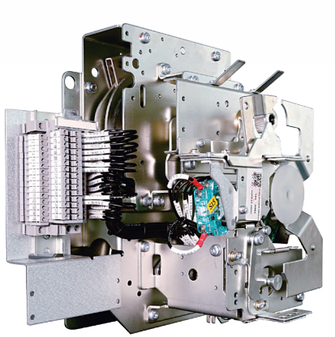


Notes

1. SPE 03SCPX-DR □ □ wiring: This wiring configuration includes a rectifier bridge when manual operation with an opening coil is used.
2. Load position and earthing position micro switches: up to 3 NO + 3 NC.
3. Double-layer terminals are provided externally.

Secondary Control Circuit 5XJ.512.044

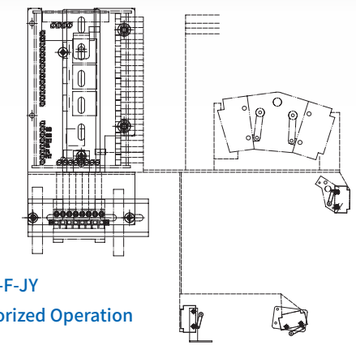




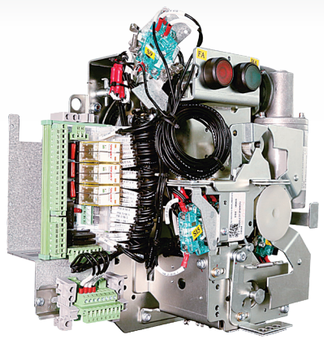
Notes

1. SPE 03SG(J)PX-DR □□ wiring: This wiring configuration is suitable for manual disconnect and manual LBS mechanism wiring.
2. Load position micro switches: up to 4 NO + 4 NC (must be specified); earthing position micro switches: up to 3 NO + 3 NC.
3. Double-layer terminals are provided externally. For isolation mechanism wiring, the manual operation micro switch is standard; the cable compartment door micro switch is optional.

Secondary Control Circuit XGN.5XJ.512.060



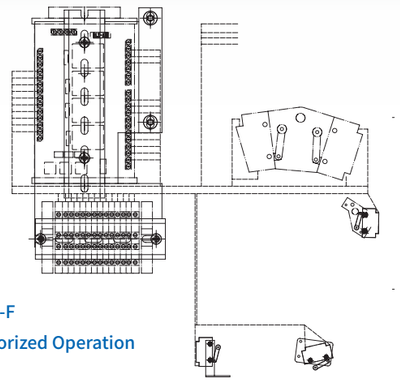
PCB-F-JY
Motorized Operation



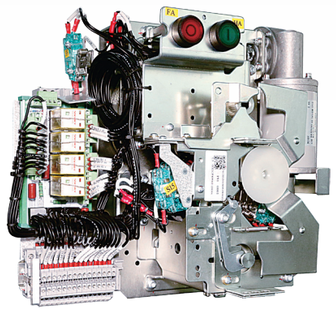
Notes

1. SPE 03 □ DC(JY)PXM □ □ wiring: Load and earthing auxiliary contacts support up to 4 NO + 4 NC (must be specified); standard is 3 NO + 3 NC.
2. SPE 03 □ DC(JY)PXM □□ wiring is the same for all voltage levels; only the relay needs to be changed for different voltages.
3. External spare contacts use plug-in terminals.
4. Module has reserved interlock for customer use.

Secondary Control Circuit XGN.5XJ.512.002



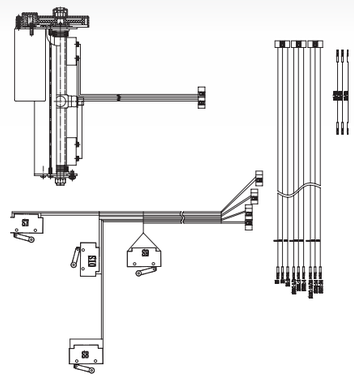
PCB-F
Motorized Operation

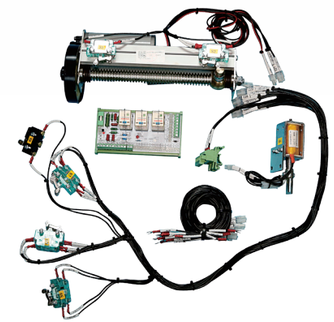


Notes

1. SPE 03 □ DCPXM □□ wiring: Load position auxiliary contacts support up to 4 NO + 4 NC (must be specified); earthing position auxiliary contacts support up to 3 NO + 3 NC.
2. SPE 03 □ DCPXM □ □ wiring is the same for all voltage levels; only the relay on the module needs to be changed for different voltages.
3. External spare contacts use double-layer terminals.

Dual-Spring Electric Wiring Part XJ-A DC □□

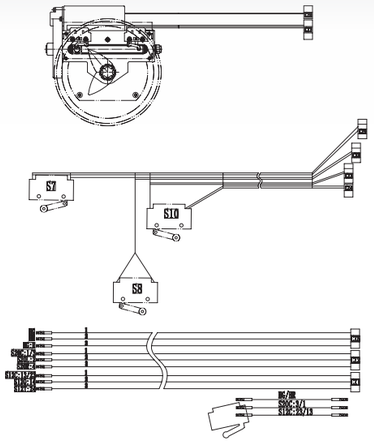


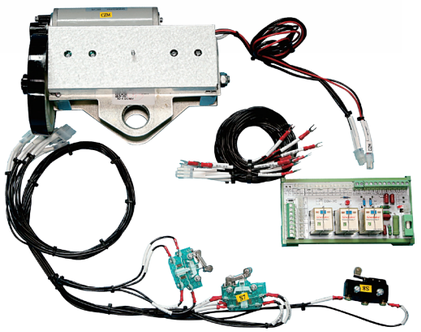


Notes

1. XJ-A wiring: This wiring configuration is adapted from the original ABB manual dual-spring mechanism to an electric dual-spring mechanism.
2. Modular installation mode is adopted.

Single-Spring Electric Wiring Part XJ-K DC □□

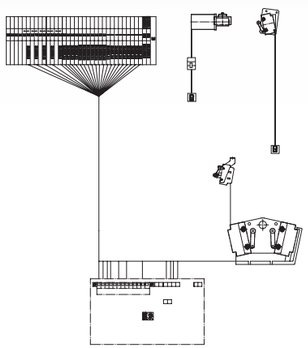


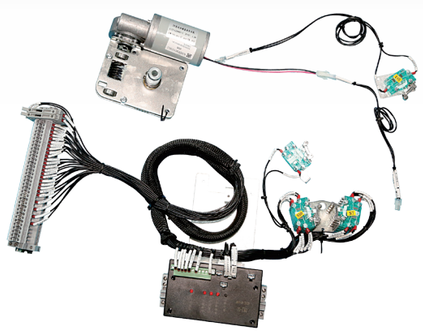


Notes

1.XJ-K wiring: This wiring configuration is adapted from the original ABB manual single-spring mechanism to an electric single-spring mechanism.
2. Modular installation mode is adopted.

Motorized LBS wiring Part 5XJ.512.047.1

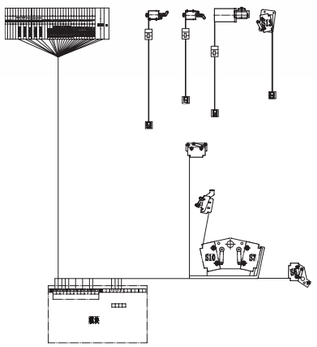


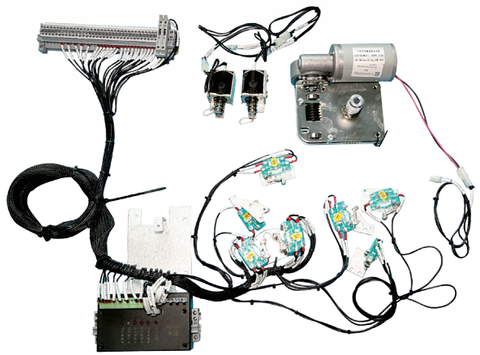


Notes

1. XJG-C wiring: This wiring configuration is adapted from the original ABB manual incoming line mechanism to an electric incoming line mechanism.
2. When installing the X3 terminal block, the original cabinet mounting must be removed and replaced.
3. The module features anti-condensation and motor close/open protection functions.

Motorized Fuse-Switch wiring Part 5XJ.512.048.1

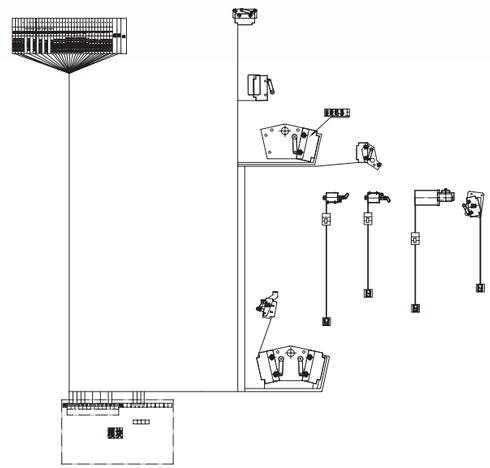


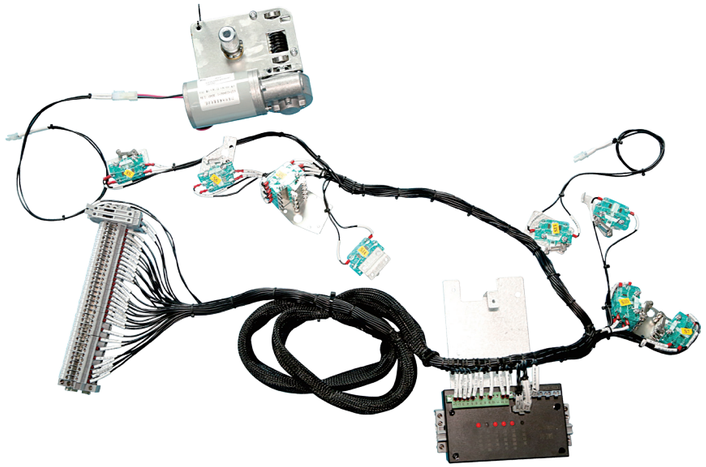


Notes

1.XJG-F wiring: This wiring configuration is adapted from the original ABB manual outgoing line mechanism to an electric outgoing line mechanism.
2. When installing the X3 terminal block, the original cabinet mounting must be removed and replaced.
3. The module features anti-condensation, motor charging, and closing/opening coil protection functions.

Motorized Circuit Breaker Wiring Part XGN.5XJ.512.049.1





Notes

1. XJG-V wiring: This wiring configuration is adapted from the original ABB manual circuit breaker mechanism to an electric circuit breaker mechanism.
2. When installing the X3 terminal block, the original cabinet mounting must be removed and replaced.
3. The module features anti-condensation, motor charging, and closing/opening coil protection functions.

SPD07 Series Circuit Breaker Sealed Mechanism

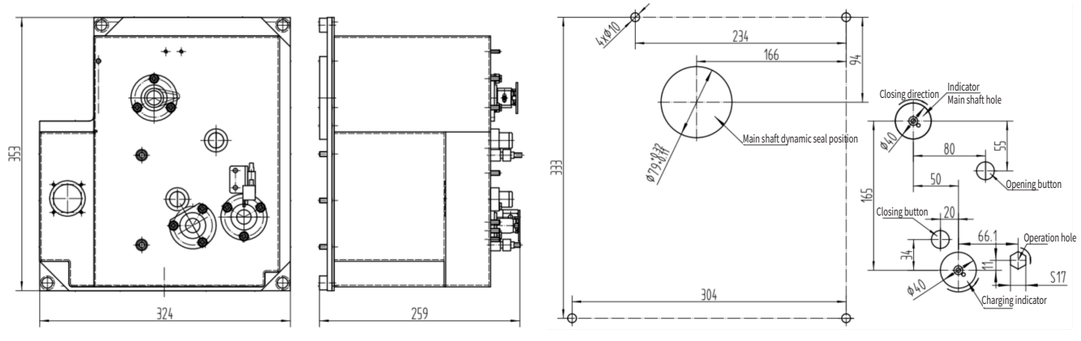
Product Introduction

XGN-12D/T630 with SPD Type Spring Operating Mechanism is designed for 12kV AC metal-enclosed switchgear circuit breakers. The mechanism uses a tension spring for closing and a compression spring for opening. Features include compact size, wide output angle, reliable performance, long life, easy installation, and strong adaptability. The fully sealed enclosure meets IP67 protection rating.

Complies with GB/T 1984-2014 High-Voltage AC Circuit Breakers.

Standards:
- GB/T 11022-2011 Common specifications for high-voltage switchgear and controlgear standards
- GB/T 3309-1989 Mechanical tests for high-voltage switchgear under normal conditions

Overall and Installation Dimensions



Model Composition and Meaning

SPD 07 □□ (MF)

- (MF): Sealed mechanism
- □□: Operation mode: D- electric, S - manual
- 07: Company design serial number: 07
- SPD: Mechanism code: SPD

Operating Instructions

Charging Operation — Mount the mechanism onto the switch body. Insert the special operating handle into the manual charging shaft and rotate clockwise to charge the mechanism spring. For electric operation, the motor energizes to charge.

Closing Operation — Press the closing button or energize the closing coil — the closing spring releases, driving the switch to the closed position, while the opening spring is charged.

Second Charge — Repeat the charging operation steps.

Opening Operation — Press the opening button or energize the opening coil— the switch moves to the open position under the release force of the opening spring.
The closing and opening buttons use a split structure for easy commissioning and installation.

Main Technical Parameters

No	ITEM		UNIT	PARAMETERS
1	Operating rated voltage	Closing coil	V	DC220,110,48,24
		Opening coil		
2	Coil power	Closing coil	W	230
		Opening coil		
3	Charging motor power		W	40
4	Charging motor rated voltage		V	DC220,110,48,24
5	Charging time		V	⩽ 10
6	Average closing speed (with switch)		m/s	0.6 ± 0.2
7	Average opening speed (with switch)		m/s	1.1 ± 0.2
8	Rated operating sequence			O - 0.3s - CO - 180s - CO
9	Mechanical Endurance		Operation cycles	10000

SPE29 Series Sealed Three-Position Mechanism

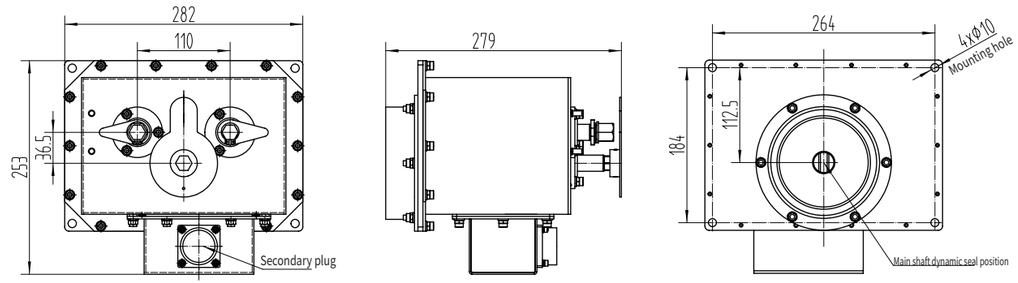
Product Introduction

Designed for 12kV AC metal-enclosed switchgear, this mechanism features a compression spring structure to control the operation of the disconnector and earthing switch. It has three operating positions: closed, open, and grounded. A mechanical interlock between the closed and grounded positions prevents misoperation. The product offers moderate size, easy installation, and strong adaptability. Its fully sealed stainless steel enclosure meets IP65 protection rating.

The mechanism complies with the relevant requirements of GB/T 1985 High-Voltage AC Disconnectors and Earthing Switches.

Standards
- GB/T 11022-2020 | Common specifications for high-voltage AC switchgear and controlgear standards
- GB/T 3309-1989 | Mechanical tests for high-voltage switchgear under normal conditions

Overall and Installation Dimensions



Model Composition and Meaning

SPE 29 □ □ (MF)

- (MF): Sealed mechanism
- □: Operation mode: D - motorized, S - manual
- □: Improvement model: e.g., I, II, III, IV
- 29: Company design serial number: 29
- SPE: Three-position mechanism code

Operating Conditions

Ambient Temperature:

Upper limit: +40° C, Lower limit: -25° C

Ambient Humidity:

Daily average relative humidity ⩽ 95%; Monthly average relative humidity ⩽ 90%

Altitude:

Maximum altitude for installation site: 2000m

Seismic conditions:

Seismic intensity not exceeding 8 degrees

The surrounding air shall be free from significant contamination by corrosive or flammable gases, water vapor, etc. Frequent violent vibrations shall not exist.

Operating instructions

The SPE29 spring operating mechanism is designed for use with the SF6 load switch in the XGN-12D (MASS-C) AC metal-enclosed switchgear. The XGN-12D indoor high-voltage AC load switch, equipped with a C-type spring operating mechanism, is primarily used for incomer line control units.

Closing Operation

Insert the operating handle into the upper part of the mechanism (closing operating shaft) and rotate counterclockwise approximately 90 ° — the main circuit closes under the spring force of the mechanism.

Earthing Close

Insert the operating handle into the lower part of the mechanism (earthing operating shaft) and rotate clockwise approximately 90° — the earthing circuit closes under the spring force of the mechanism.

Earthing Open

Insert the operating handle into the lower part of the mechanism (earthing operating shaft) and rotate counterclockwise approximately 90° — the earthing circuit opens under the spring force of the mechanism.

A mechanical interlock is provided between closing/opening and earthing operations. In the open (disconnect) position, either closing or earthing can be operated. Once one operation succeeds, the other is blocked.

Main Technical Parameters

No	ITEM		UNIT	PARAMETERS
1	Average closing speed (with switch)		m/s	⩾ 3
2	Average opening speed (with switch)		m/s	⩾ 3
3	Mechanical endurance	Load Break Switch position	Cycles	3000
		Earthing swtich position		3000
4	Maximum manual operating torque		N.m	⩽ 120

Accompanying Documents

- Product Certificate of Conformity
- Installation and Operating Instructions
- Packing List
- Product descriptions and illustrations are for reference only and may be subject to change over time. For matters not covered, please contact our company.

Sealed RMU Mechanism Installation and Commissioning Instructions

Before installation and commissioning, the mechanism has undergone strict factory inspection and complies with product technical requirements. Carefully read the operating instructions and prepare as follows:

- Check for any external damage. Do not use damaged products.
- Clean any contamination on the product surface caused by transportation or other factors.
- When assembling the mechanism with the switch, ensure the load break switch is in the open position before connecting (the mechanism is also open at factory). The connection must be secure. After installation, insert the handle and perform several closing, opening, and earthing operations. Only then should electric operation be performed if applicable.

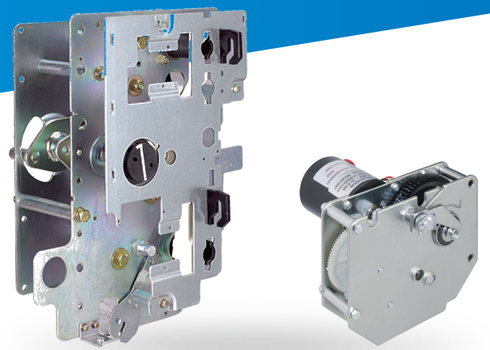
Maintenance and Servicing

Under normal operating conditions where the environment meets the requirements of the installation and operating instructions, regular inspection and maintenance of the load switch and operating mechanism are still necessary due to environmental variations. Lubricate and check the operating mechanism 1–2 times per year to ensure proper operation.

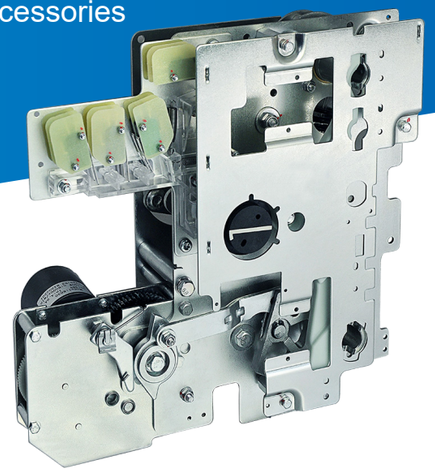
Operating Mechanism
Compatible with 12~40.5kV Semi-insulated Gas-filled Cabinets

SPE 02
Three-Position Mechanism For Load Break Switch

SF6 Switch: FL(R)N36-12D Switchgear Accessories



Manual Operating Mechanism (For LBS)
Model: SPE02 -SJ
Drawing No.: 3WXJ.085.001



Motorized Operating Mechanism (For LBS)
Model: SPE02-DJ
Drawing No.: 3WXJ.085.001+3WXJ.085.002(Motor part)

Note: If the user needs to order the motor part separately, the drawing number is 3WXJ.085.002.

Product Introduction

SPE 02 Spring Operating Mechanism is designed for FLRN36-12D/T100-31.5 and FLN36-12D/630-20 indoor 12KV SF6 load break switches. It uses a compression spring over-center release principle and has three positions: close, open, and earth. Output angle: approx. 60°. Avg. closing/opening speed: ⩾ 3 m/s. Mechanical endurance: 5000 close operations, 3000 earthing operations. Features fuse trip function and optional shunt trip coil. Complies with GB3804-1990 and GB16926-1997.

Model Composition and Meaning

SPE 02 – □ □ □

- Product Code
- Usage: J for Load Break switch, C for Fuse-switch
- Operation: S for manual, D for motorized
- Design Number 02
- Code Name

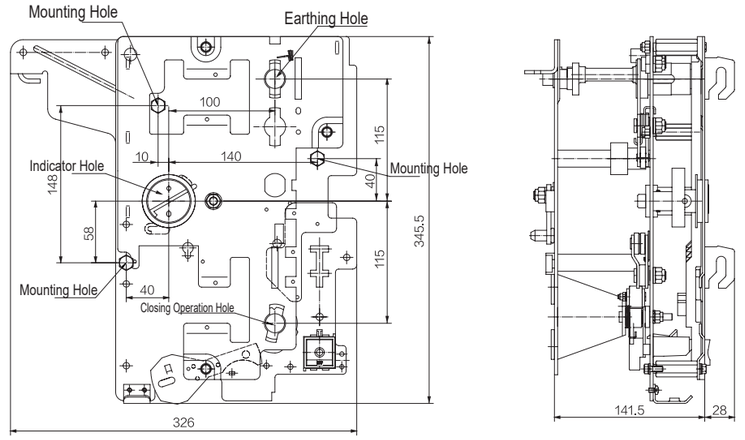
SPE02- □ J Type Mechanism Operating Instructions

Load Break Switch Closing Operation
Insert the operating handle into the lower hole of the closing operation shaft (bottom right corner) and rotate 180° clockwise. The mechanism drives the contacts to quickly perform the load switch closing operation.

Load Break Switch Opening Operation
Rotate the operating handle 180° counterclockwise to complete the operation.

Load Break Switch Earthing Operation
Insert the operating handle into the earthing operation shaft hole (top right corner) and rotate 180° clockwise. The mechanism drives the contacts to quickly perform earthing closing. To perform the earthing switch opening operation, simply insert the operating handle into the earthing operation shaft and rotate 180° counterclockwise.

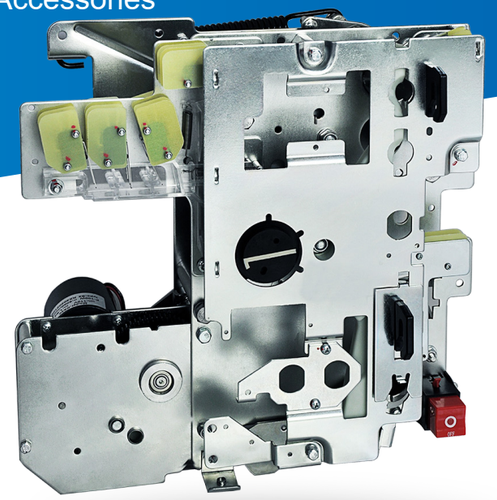
Dimensions



Note: All holes (mounting, earthing operation, closing operation, indicator) have identical dimensions for both incoming and outgoing mechanisms.

SPE 02
Three-Position Mechanism For Fuse-Switch

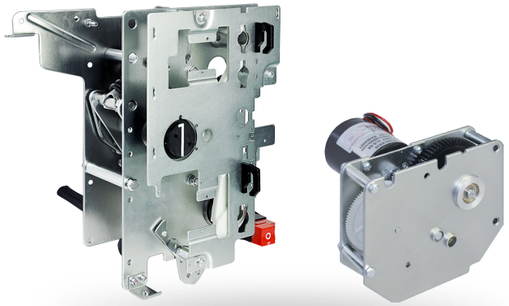
SF6 Switch: FL(R)N36-12D Switchgear Accessories



Motorized Operating Mechanism (For Fuse-Switch)

Model type: SPE 02 □ -DC

Drawing No.: 3WXJ.084.001+3WXJ.084.002(Motor part)



Manual Operating Mechanism (For Fuse-Switch)

Model type: SPE 02 □ -SC

Drawing No.: 3WXJ.084.001

Note: If the user needs to order the motor part separately, the drawing number is 3WXJ.085.002.

SPE02- □ A Type Mechanism Operating Instructions

Load Break Switch Closing Operation

Insert the operating handle into the closing operation shaft hole (bottom right corner) and rotate 180 ° clockwise. The mechanism drives the contacts to quickly perform the load switch closing action, while the spring charges in preparation for opening.

Load Break Switch Opening Operation

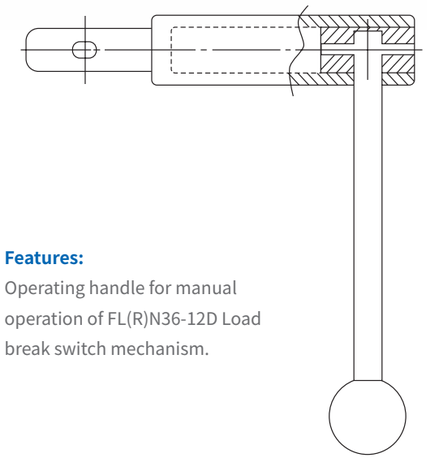
Press the opening button to trigger the trip, releasing the energy in the opening spring. The mechanism drives the main shaft to complete the rapid opening operation

Load Break Switch Earthing Operation

The earthing operation of the CT □ - □ C/XJ(For Fuse-Switch) is same as the CT □ - □ C(For LBS).

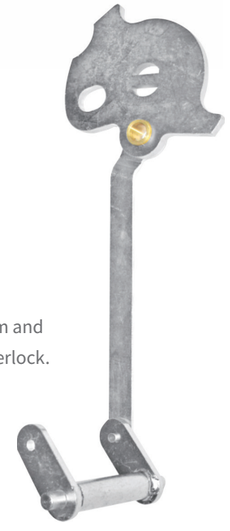
Note:
1. Fuse-switch mechanism has a fuse trip and manual opening button fuctions, and can be equipped with a shunt trip coil as an option.
2、When ordering the electric spring operating mechanism, please specify the voltage rating (e.g., DC220V, DC110V, DC48V, DC24V, etc.).
3、If a shunt trip is required, please indicate it when ordering and specify the voltage rating (e.g., DC220V, DC110V, DC48V, DC24V, etc.). If not specified, it will be considered the same as the voltage rating of the electric operating mechanism motor.

Operating Handle 5WXJ.253.027



Features:
Operating handle for manual operation of FL(R)N36-12D Load break switch mechanism.

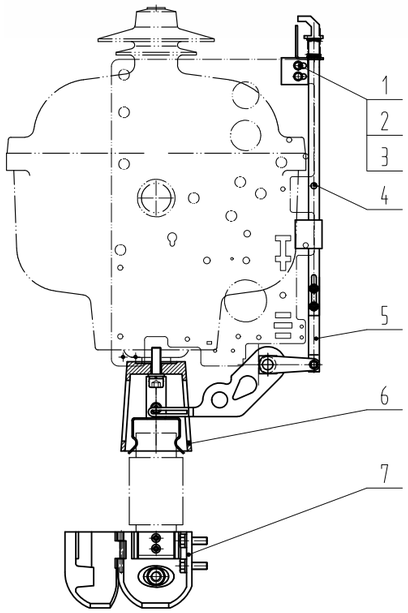
Lower Door Interlock 5WXJ.362.007

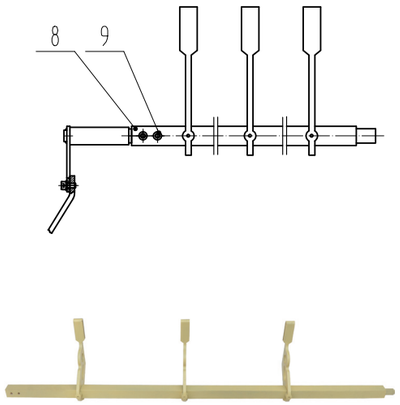


Features:
For connecting mechanism and switch and lower door interlock.

Fuse Trip Device

Fuse Trip Device: FLN.5XJ.174.080





Features:

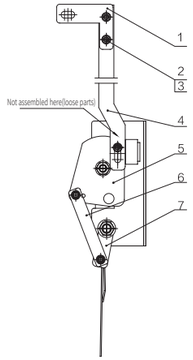
When the fuse blows, the fuse device triggers the Fuse-switch mechanism to open.

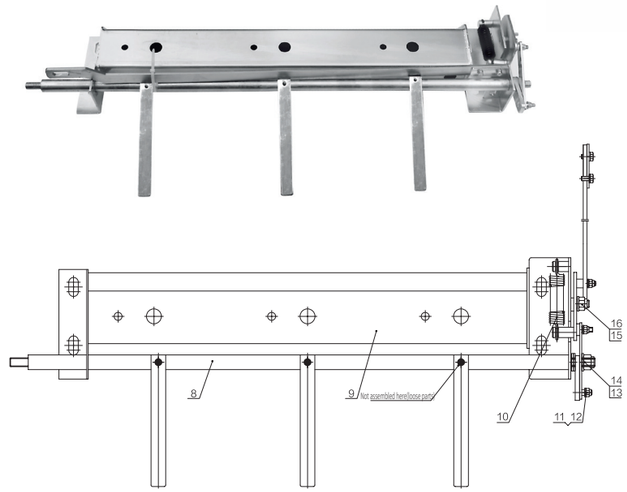
FLN.5XJ.174.080 Fuse Trip Device Matching List

No.	Name	Model Type	Qty	Note
1	Return Spring	8XS.288.083F	1	
2	Upper Fixing Plate	FLN.8XJ.100.081	1	
3	Connecting Plate	FLN.8XJ.174.078	1	
4	Washer 5	GB93-1987	5	
5	Hexalobular Socket Pan Head Screw M5X12	GB/T 2672 -2004	5	
6	Plain Washer	GB/T97.1-2002	5	
7	Trip Indicator Plate	FLN.8XJ.174.079	1	
8	Trip Rod Set	5XS.233.002F	1	
9	Upper Fuse Base Assembly	FLN.5XJ.045.005	3	
10	Lower Outlet Base Assembly	5XS.104.010F	3	
11	Bushing	8XS.263.017F	2	
12	Trip Rod Assembly	FLN.5XJ.174.079	1	
13	Hexagon Socket Head Cap Screw M5X20	GB/T 70.1-2000	2	

Lower Earthing Interlock

Lower Earthing Interlock: FLN.5XJ.363.016





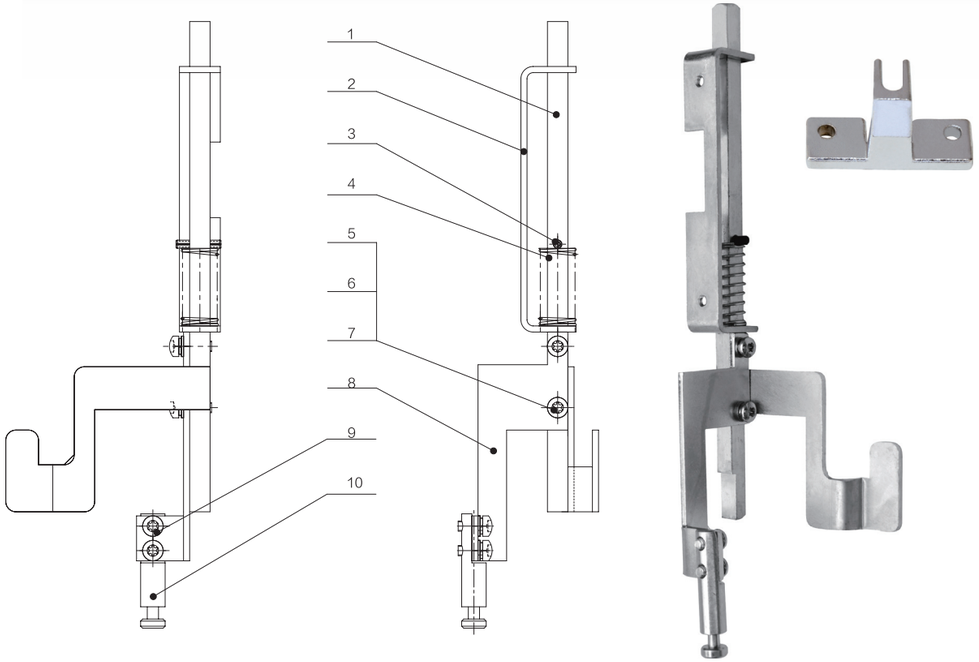
Features:

Cooperates with the mechanism to discharge residual charge at the lower outlet terminal

FLN.5XJ.363.016 Lower Earthing Interlock Components List

No.	Name	Model Type	Qty	Note
1	Connecting Plate	FLN.8XJ.135.082	1	
2	Hexagon Head Bolt - Full Thread M5X12	GB/T5783-2000	2	
3	Plain Washer - Grade A 5	GB/T97.1-2002	2	
4	Earthing Pull Bar Strip	FLN.8XJ.137.010	1	
5	Lower Earthing Interlock Block Welding	FLN.5XJ.143.001	1	
6	Lower Earthing Pull Bar 2	FLN.8XJ.137.012	1	
7	Lower Earthing Plate Welding	FLN.5XJ.150.038	1	
8	Lower Earthing Contact	FLN.5XJ.566.002	1	
9	Mounting Frame Welding	FLN.5XJ.042.001	1	
10	Earthing Interlock Spring Tube	FLN.8XJ.288.055	1	
11	Type 1 Non-Metallic Insert Hexagon Lock Nut M6	GB/T889.1-2000	3	
12	Plain Washer - Grade A 6	GB/T97.1-2002	3	
13	Type 1 Non-Metallic Insert Hexagon Lock Nut M12	GB/T889.1-2000	1	
14	Plain Washer - Grade A 12	GB/T97.1-2002	3	
15	Type 1 Non-Metallic Insert Hexagon Lock Nut M10	GB/T 889.1-2000	1	
16	Plain Washer - Grade A 10	GB/T97.1-2002	1	

Two-Position Interlock Assembly (For Fuse-Switch) FLN.5XJ.363.296



Two-Position Interlock Assembly (For Fuse-Switch) FLN.5XJ.363.296 Matching List

No.	Name	Model Type	Qty
1	Connecting Rod Welding	FLN.5XJ.206.294	1
2	Guide Rail	FLN.8XJ.260.051	1
3	Elastic Cylindrical Pin - Straight Slot - Heavy Duty 4X22	GB/T 879.1-2000	1
4	Return Spring	FLN.8XJ.282.095	1
5	Hexalobular Socket Pan Head Screw M5X16	GB/T 2672-2004	2
6	Standard Type Spring Washer 5	GB/T 93-1987	4
7	Pull Plate	GB/T97.1-2002	4
8	Pull Plate	FLN.8XJ.137.009	1
9	Hexalobular Socket Pan Head Screw M5X12	GB/T 2672-2004	2
10	Pull Rod	FLN.8XJ.174.082	1

适配 12~40.5kV 半绝缘充气柜操动机构
Operating Mechanism Compatible with 12~40.5kV Semi-insulated Gas-filled Cabinets

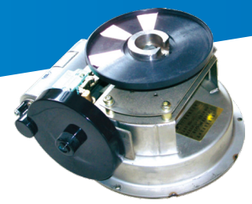
兴机电器集团 XING JI ELECTRICAL GROUP

SS2 Spring Operating Mechanism

SF6 Switch: FLN36B(48) -12D Switchgear Accessory

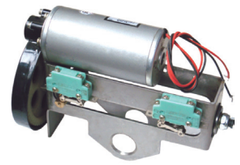
SS2-SD

Manual Single-Spring Mechanism



SS2-DD

Motorized Single-Spring Mechanism



3XS.822.002F

Single-Spring Motor Part

Product Introduction

SS2-D □ is the mechanism for FLN36B-120D/T630-25. It is suitable for XGN15-12AC metal-enclosed switchgear load break swtich unit. Mechanism provides an output angle of approximately 80 ° ,average closing and opening speeds ⩾ 3M/S, Mechanism endurance 5000 operations for closing， 3000 operations for earthing.

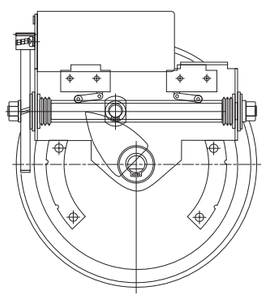
Model Composition and Meaning

SS 2 – □ □

- Charge mode: D-single spring, S-double spring
- Operation mode: D-motorzied, S-manual
- Design series number
- Mechanism code

Overall Dimensions

Note: Motor part drawing number is 3WXJ.084.002

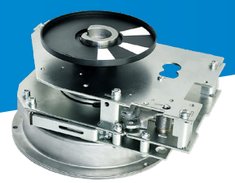


Operating Instructions

The single-spring mechanism controls closing, opening, and earthing for the load break switch. The output shaft rotation angle is "80° + 80° ". In the open position, turning 80° clockwise closes the load break switch; conversely, turning 80° counterclockwise closes the earthing switch.

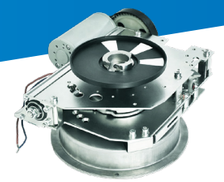
SS2 New-type Spring Mechanism

SF6 Switch: FLN36B (48)-12D Switchgear Accessory



SS2-SD

Manual Single-Spring Mechanism



SS2-DS

Motorized Single-Spring Mechanism

3XS.822.001F

Single-Spring Motor Part

Product Introduction

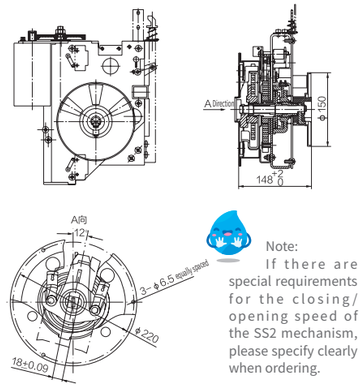
SS2-□S is the mechanism for FLRN36B(48)-12D/T100-25. It is suitable for XGN15-12 AC metal-enclosed switchgear fuse-switch unit. Mechanism provides an output angle of approximately 80 ° ,average closing and opening speeds ⩾ 3M/S, Mechanism endurance 5000 operations for closing , 3000 operations for earthing.

Operating Procedures

The dual-spring mechanism has the same functions as the SS2-□D single-spring type, plus a fuse tripping mechanism for integrated switchgear— opening the load switch when the fuse blows.

Note: When replacing a blown fuse, insert the handle into the operating hole and turn counterclockwise to reset the mechanism. Then operate as normal.

Overall Dimensions



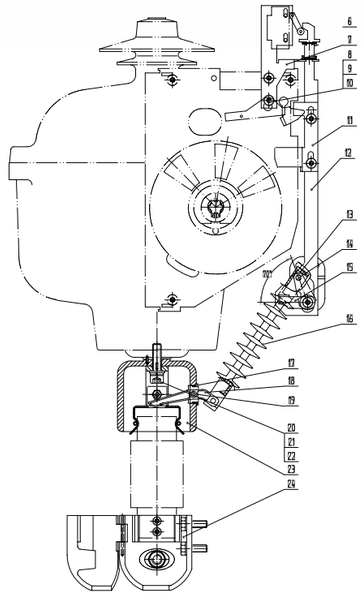
Note:
If there are special requirements for the closing/opening speed of the SS2 mechanism, please specify clearly when ordering.

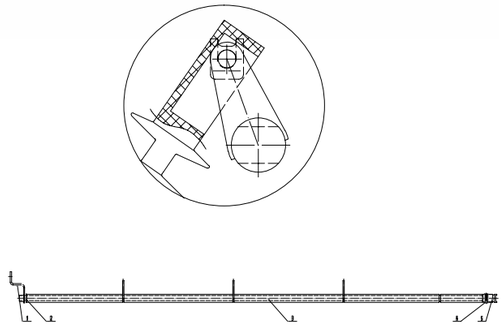
Main Technical Parameters

No	ITEM	UNIT	PARAMETERS
1	Rated voltage (motor)	V	DC220V、110V、48V、24V
2	Motorized operation (charging) time	s	⩽ 10
3	Average closing speed (with switch)	m/s	4.5±1.5
4	Average opening speed (with switch)	m/s	4.5±1.5
5	Maximum manual operating torque	N.m	⩽ 130
6	Opening time triggered by release	ms	50-60
7	Tripping energy	J	2-5
8	Load break switch mechanical endurance	Operation cycles	5000
9	Earthing switch mechanical endurance	Operation cycles	2000
10	Maximum altitude for installation	m	2000
11	Maximum ambient temperature	℃	40
12	Minimum ambient temperature	℃	-25

Fuse Trip Upper And Lower Base (New Type) Overall Dimensions

3XS.084.003F





Features:

The new fuse tripping upper/lower base (3XS.084.003F) features enhanced strength of the tripping drive shaft and increased creepage distance of the insulated pull rod, making it suitable for Class III pollution environments. It is designed for use with the new SS2 series manual and electric dual-spring operating mechanisms in the upper unit of new switchgear.

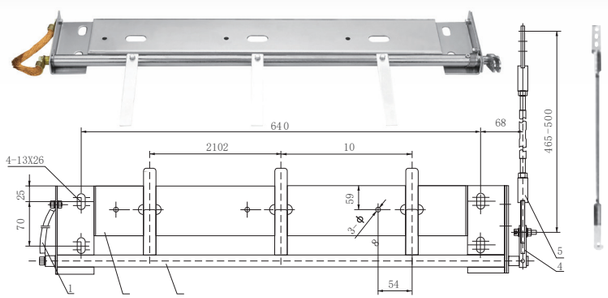
FLN.5XJ.363.296 Two-Position Interlock (outgoing line) Matching List

No	Name	Part Number	QTY (pcs/set)
1	Bracket	8XS.043.052F	1
2	Bearing sleeve	8XS.263.025F	1
3	Tripping shaft assembly	5XS.206.078F	1
4	Pin 6X18	GB/T879.1-2000	1
5	Tripping shaft head	8XS.205.027F	1
6	Return spring tube	8XS.288.083F	1
7	Upper fixing plate	8XS.100.059F	1
8	Screw M6X12	GB2672-1986	4
9	Washer 6	GB93-1987	11
10	Washer 6	GB/T97.3-2000	11
11	Trigger plate	8XS.150.034F	1
12	Connecting plate	8XS.135.077F	1
13	Clip DK-6	DK-6	6
14	Pin shaft	8XS.205.028F	3
15	Crank arm	8XS.151.060F	1

No	Name	Part Number	QTY (pcs/set)
16	Screw M6X16	GB2672-1986	7
17	Insulated pull rod	8XS.743.004F	3
18	Pin 3X8	GB/T119.1-2000	6
19	Screw M10X40	GB/T70.1	3
20	Washer 10	GB93-1987	3
21	Washer 10	GB/T97.3-2000	3
22	Conductor plate	8XS.150.033F	3
23	Pin 5X12	GB/T119.1-2000	3
24	Fixing frame	8XS.087.001F	3
25	Crank arm	8XS.151.059F	3
26	Nut M6	GB/T6170-2000	6
27	Lower outlet base assembly	5XS.104.010F	3
28	Tulip contact	8XS.559.010F	3
29	Contact spring	8XS.288.036F	3
30	Fuse upper contact holder	8XS.045.005F	3

Charge Discharge Device (Earthing Switch)

Charge Discharge Device (Earthing Switch)
2XS.099.004F



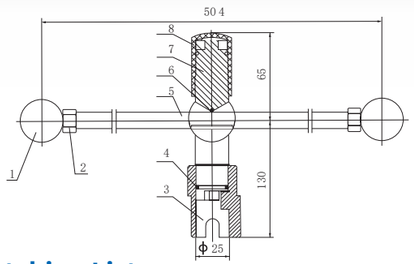
Note: SS2 dual-spring mechanism — common parts

Charge Discharge Device (Earthing Switch) Accessory List

No	Drawing Number	Name	QTY	Note
1	5XS.503.001F	Flexible earthing cable	1	Length 240
2	5XS.099.004F	Sensor mounting base	1	
3	5XS.566.001F	Earthing switch assembly	1	
4	8XS.235.006F	Linkage clamp plate	1	
5	5XS.230.001F	Adjustable earthing linkage	1	

SS2 Operating Handle Overall and Installation Dimensions

SS2 Operating Handle
5XS.235.004F

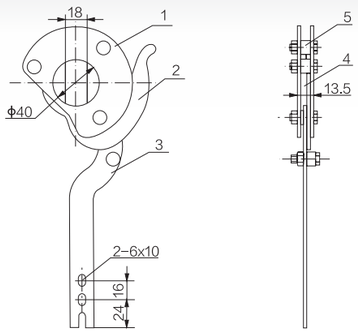


SS2 Operating Handle: 5XS.235.004F Matching List

No.	Name	Part Number	QTY	Material
1	Handle ball M10X32	GB4141.11-84	2	
2	Type 1 hexagon nut M10	GB6170-86	2	
3	Drive sleeve	8XS.211.090F	1	
4	Spring retaining ring	8XS.953.004F	1	
5	Operating rod	8XS.235.022F	1	
6	O-ring rubber seal	JB/ZQ4224-86	1	16X3 Rubber 1-4
7	Drive shaft	8XS.205.013F	1	
8	Sleeve	8XS.211.100F	1	

Interlock Plate Assembly 5xs.362.011f Overall Dimensions

Interlock Plate Assembly
5XS.362.011F



Note: Common part for SS2 dual-spring mechanism, used for connecting the SS2 series operating mechanism with the charge discharge device.

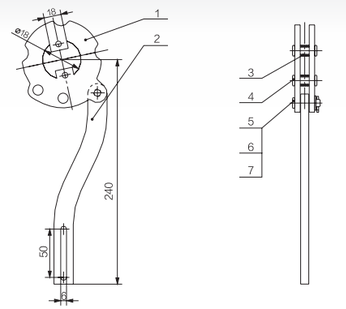
Interlock Plate Assembly 5XS.362.011F Matching List

No.	Name	Part Number	QTY
1	Holder	8XS.043.007F	2
2	Interlock plate	8XS.362.012F	1
3	Connection plate	8XS.135.018F	1
4	Spacer	8XS.156.014F	1
5	Washer	8XS.950.016F	4

Interlock Plate Assembly 5XS.362.013F Schematic Diagram

Interlock Plate Assembly
5XS.362.013F

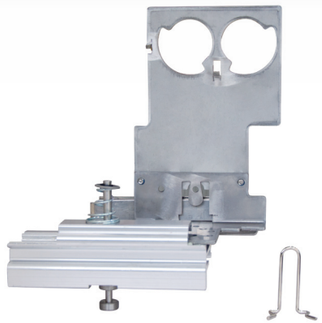
Features:
This device, when connected to the charge discharge device and the operating mechanism, enables interlocking between the charge discharge device and the load switch.



Interlock Plate Assembly Matching List

No.	Name	Drawing Number	QTY(Pcs/Set)
1	Interlock plate	8XS.362.013F	2
2	Connecting plate	8XS.135.023F	1
3	Sleeve	8XS.966.001F	2
4	Rivet 8X10	GB875	2
5	Pin B8X12	GB/T882	1
6	Washer 8	GB/T97.3	1
7	Split pin ∮ 2.5X12	GB/T91	1

Central Interlock Device 5XS.363.014/015

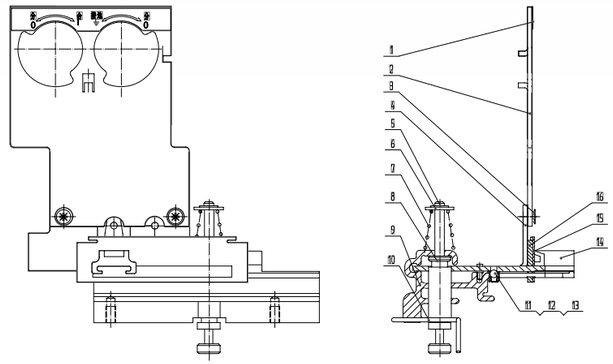


Central Interlock Device 5XS.363.014

Central Interlock Device 5XS.363.015

Overall and Installation Dimensions

Note: Suitable for new type.
The corresponding door latch 8WXJ.885.004



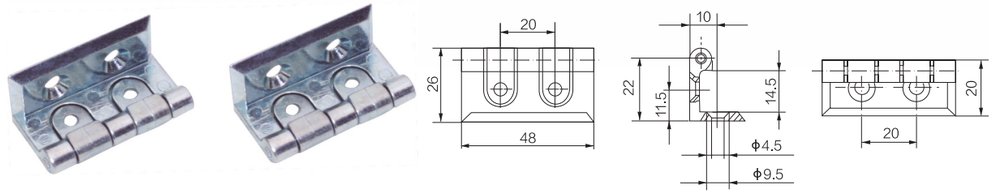
Central Interlocking Device 5XS.363.014/015 Matching List

No.	Name	Part Number	QTY (PCS/SET)
1	Indicator plate	8XS.869.012F	1
2	Cover plate	8XS.310.055/034	1
3	Cross countersunk head screw M5X8	GB/T819.1-2000	2
4	Cover plate riveting	5XS.310.033	1
5	Snap ring 5	GB/T896-86	1
6	Washer	8XS.950.013F	1
7	Tapered Compression Spring	8XS.282.013F	1
8	Retaining rod	8XS.234.022F	1

No.	Name	Part Number	QTY (PCS/SET)
9	Bracket	8XS.043.034F	1
10	Limit spring plate	8XS.113.104F	1
11	Steel ball 5	GB308-89	1
12	Compression spring	8XS.282.012F	1
13	Guide sleeve	8XS.211.099F	1
14	Handle	8XS.253.005F	1
15	Guide plate	8XS.151.132F	1
16	Stop plate	8XS.135.019F	1

Hinge 5WXJ.256.001 Overall and Installation Dimensions

Hinge 5WXJ.256.001

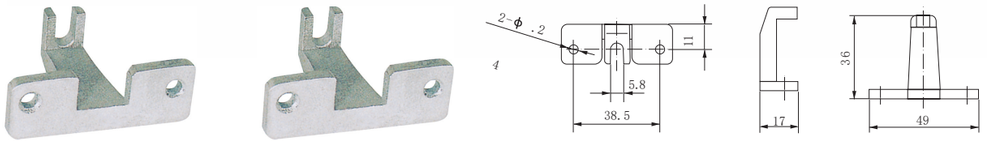


Door lock MS4-2 Overall and Installation Dimensions

Door lock MS4-2

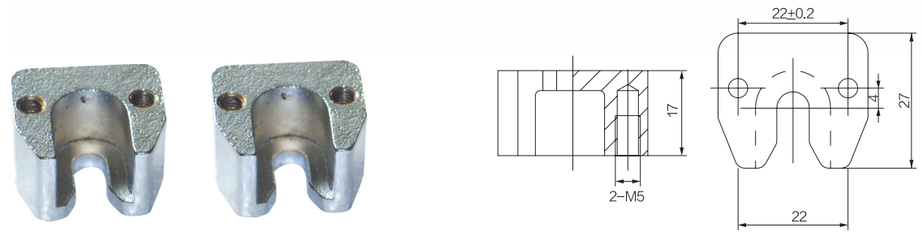
Door Latch 8WXJ.885.001 Overall and Installation Dimensions

Door Latch 8WXJ.885.001

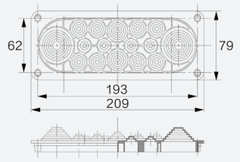
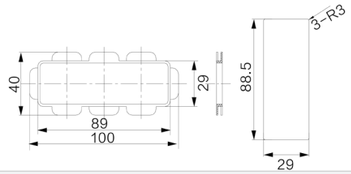
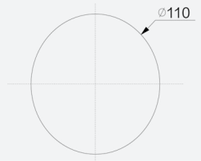
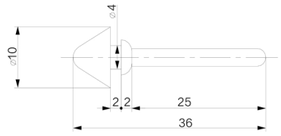
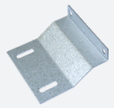
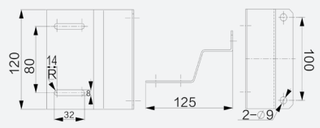
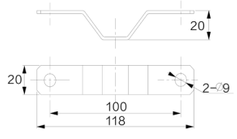
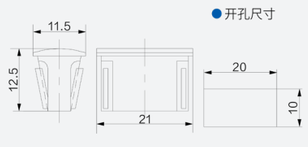


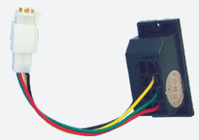
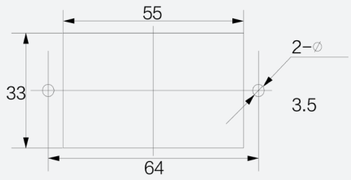
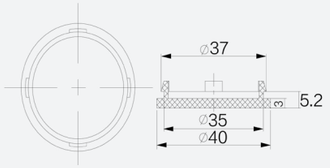
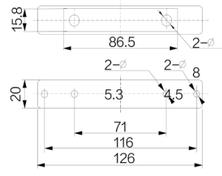
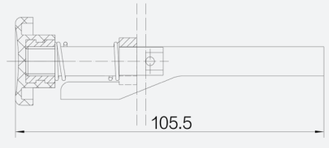
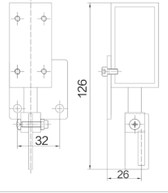
Door Latch 8WXJ.885.004 Overall and Installation Dimensions

Door latch 8WXJ.885.004



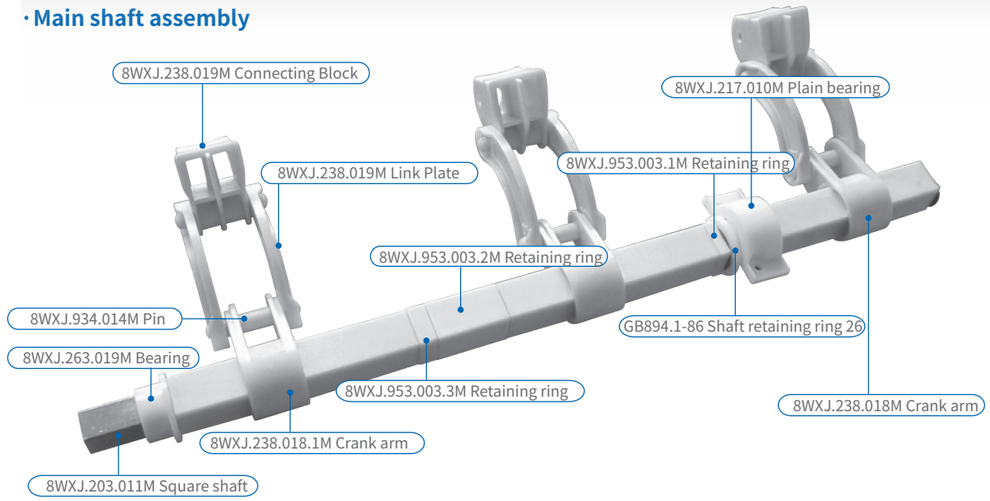
SF6 Ring Main Unit Accessories

No	Name	Code Name	Note
1	 Outcoming box: 8WXJ.354.010.M		Secondary wiring for top outgoing of protection cabinet
2	 Secondary wire sleeve 8WXJ.211.092M		Secondary wiring protecting the outgoing line
3	 Tapered sealing ring		Protecting incomer and outgoing cables
4	 Bumper pad 8WXJ.764.010M		Provides cushioning between door and cabinet to prevent damage
5	 Cable bracket mounting plate 8WXJ.161.093M		For mounting the cable bracket
6	 Cable bracket 8WXJ.161.090M		For fixing the cable bracket
7	 Indicator viewing window 8WXJ.402.013M		For observing switch open/close status

No	Name	Code Name	Note
8	 Live indicator		Mounted on instrument door,switch open/close indication
9	 Panel header 8WXJ.860.034M	XGN15-12	
10	 Viewing window 8WXJ.402.291M		For observing moving contact position
11	 Handle 5WXJ.253.017		Lower door handle
12	 Manual opening button assembly 5XS.732.003F		SS2 - OS Accessory
13	 Type 48 shunt release coil assembly		When ordering, please specify: Coil voltage: DC220V, 110V, 48V, 24V

FLN36B Switch Accessory

·Main shaft assembly

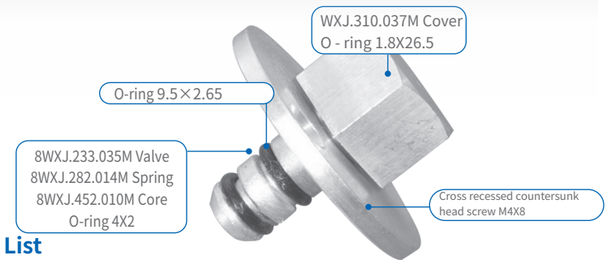


Main Shaft Assembly Matching List

No	Name	Drawing No.	QTY(PCS/SET)
1	Square shaft	8WXJ.203.011M	1
2	Bearing	8WXJ.263.019M	1
3	Crank arm	8WXJ.238.018.1M	2
4	Retaining ring	8WXJ.953.003.3M	1
5	Retaining ring	8WXJ.953.003.2M	1
6	Crank arm	8WXJ.238.018M	1

No	Name	Drawing No.	QTY(PCS/SET)
7	Connecting block	8WXJ.238.019M	3
8	Link plate	8WXJ.135.017M	6
9	Pin	8WXJ.934.014M	3
10	Retaining ring	8WXJ.953.003.1M	1
11	Plain bearing	8WXJ.217.010M	1
12	Shaft retaining ring 26	GB894.1-86	2

·Gas Filling Valve Assembly



Gas Filling Valve Assembly Matching List

No	Name	Drawing No.	QTY(PCS/SET)
1	Square shaft	8WXJ.203.011M	1
2	Bearing	8WXJ.263.019M	1
3	Crank arm	8WXJ.238.018.1M	2
4	Retaining ring	8WXJ.953.003.3M	1
5	Retaining ring	8WXJ.953.003.2M	1
6	Crank arm	8WXJ.238.018M	1

No	Name	Drawing No.	QTY(PCS/SET)
7	Connecting block	8WXJ.238.019M	3
8	Link plate	8WXJ.135.017M	6
9	Pin	8WXJ.934.014M	3
10	Retaining ring	8WXJ.953.003.1M	1
11	Plain bearing	8WXJ.217.010M	1
12	Shaft retaining ring 26	GB894.1-86	2

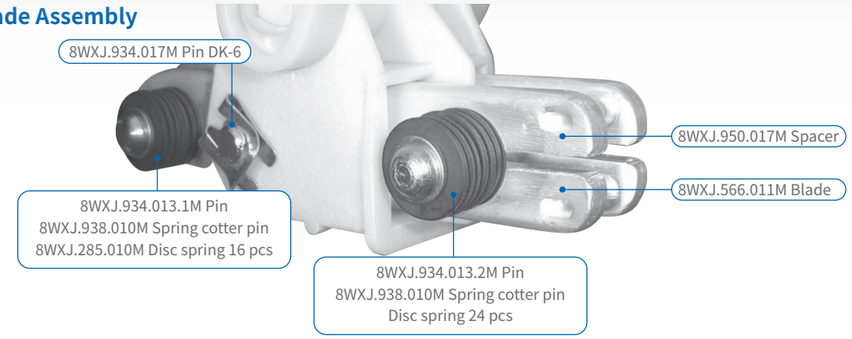
FLN36B Switch Accessory

·Arc Chute 5WXJ.330.010M

Arc Chute Assembly 5WXJ.330.010M Matching List

No	Name	Drawing Number	QTY(PCS/SET)
1	Arc chute plate	8WXJ.588.009M	14X3
2	Arc chute bracket	8WXJ.774.010M	1X3
3	Spring pin 8X20	GB879.1	1X3

·Moving Blade Assembly



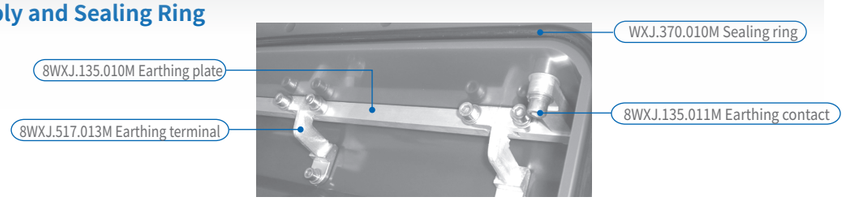
Movable Blade Assembly Matching List

No	Name	Drawing No.	QTY(PCS/SET)
1	Pin	8WXJ.934.013.1M	1X3
2	Pin	8WXJ.934.013.2M	1X3
3	Spring cotter pin	8WXJ.938.010M	1X3
4	Disc spring	8WXJ.285.010M	40X3

No	Name	Drawing No.	QTY(PCS/SET)
5	Retaining clip	DK-6	2X3
6	Pin	8WXJ.934.017M	1X3
7	Moving blade	8WXJ.566.011M	2X3
8	Spacer sleeve	8WXJ.950.017M	1X3

FLN36B Switch Accessory

·Blade Assembly and Sealing Ring



Matching List

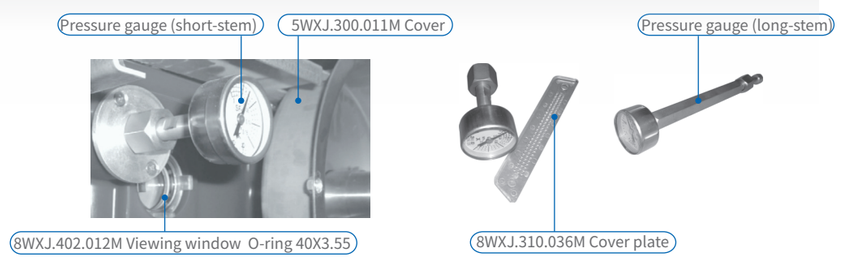
No	Name	Drawing Number	QTY(PCS/SET)
1	Earthing terminal	8WXJ.517.013M	3
2	Earthing plate	8WXJ.135.010M	1
3	Earthing contact	8WXJ.135.011M	1
4	Sealing ring	8WXJ.370.010M	1

·Mechanism and Main Shaft Coupling Assembly

Matching List

No	Name	Drawing Number	QTY(PCS/SET)
1	Shaft retaining ring 40		1
2	Rotating shaft	8WXJ.205.011M	1
3	Oil seal FB40-526D		2
4	Shaft sleeve	8WXJ.211.095M	1
5	O-ring 50X4		2

·Accessories



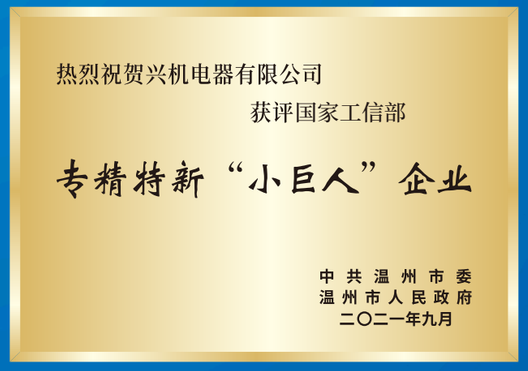
Accessories Matching List

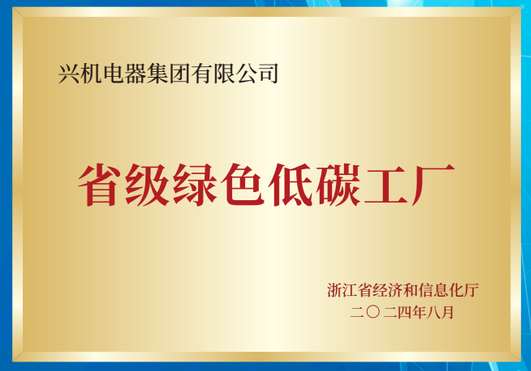
No	Name	Drawing Number	QTY(PCS/SET)
1	Viewing window	8WXJ.517.013M	1X2
2	O-ring	8WXJ.135.010M	2X2
3	Cover	8WXJ.135.011M	1

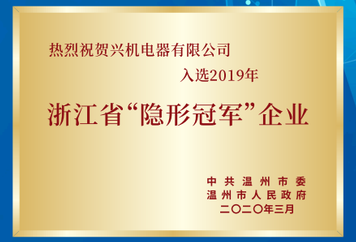
No	Name	Drawing Number	QTY(PCS/SET)
4	Cover plate	8WXJ.370.010M	1
5	Pressure gauge (short-stem)		1(Optional)
6	Pressure gauge (long-stem)		1(Optional)

XING JI HONOR

公司荣誉







资质认证 · Qualification Certification

01	02	03	04
中国机械工业科学技术奖 China machinery industry science and Technology Award	浙江省服务型制造示范企业 Zhejiang service-oriented manufacturing demonstration enterprise	企业信用评价AAA级信用企业 Enterprise Credit Evaluation AAA credit enterprise	温州市关键技术攻坚示范企业 Wenzhou key technology demonstration enterprise

05	06	07
温州市级研发投入优秀企业 Wenzhou credit management demonstration enterprise	浙江省级工业互联网平台优秀企业 Excellent enterprise of Zhejiang Provincial Industrial Internet platform	温州市信用管理示范企业 Wenzhou Municipal R & D investment excellent enterprise