

Medium Voltage Distribution

MODULARC

up to 36 kV - 1250 A - 25 kA

Operation Maintenance Instructions



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Operations and maintenance may only be carried out by personnel who have received suitable authorisation for the operations and manoeuvres they are responsible for performing

If this is not the case, please refer to our Service Unit or Training Centre

All locking out operations must be performed according to the safety regulations currently being in force.

Our Service Unit: our specialists, and suitably adapted services

- Guarantee extension contracts in relation to the selling of new equipment,
- Supervision of switchgear installation,
- Technical advice, diagnoses of the facilities, expertise,
- Maintenance contracts adapted to operational constraints,
- Systematic or conditional preventive maintenance,
- Corrective maintenance in case of partial or complete failure,
- Supply of spare parts.

Contact the Schneider Electric Service Unit for diagnoses and advice:

Phone No: +39 0377 417 351 (office hours)

Fax: +39 0377 451133



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Responsibilities

Our devices are quality controlled and tested at the factory in accordance with the standards and the regulations currently in force. Apparatus efficiency and apparatus life depend on the compliance with the installation, commissioning and operation instructions described in this user manual. Non respect of these instructions is likely to invalidate any guarantee. Local requirements especially about safety and which are in accordance with the indications given in this document, must be observed. Schneider Electric declines any responsibility for the consequences:

- due to the non respect of the recommendations in this manual which make reference to the international regulations in force.
- due to the non respect of the instructions by the suppliers of cables and connection accessories during installation and fitting operations,
- of any possible aggressive climatic conditions (humidity, pollution, etc.) acting in the immediate environment of the materials that are neither suitably adapted nor protected for these effects.

This user manual does not list the locking out procedures that must be applied. The interventions described are carried out on de energized equipment (in the course of being installed) or locked out (non operational).


Particular instructions for operations and interventions on energized equipment

When commissioning and operating the equipment under normal conditions, the General safety instructions for electrical applications must be respected, (protective gloves, insulating stool, etc.), in addition to standard operating instructions. All operation must be completed once started. The durations (for completing the operations mentioned) given in the maintenance tables are purely an indication and depend on on site conditions.


Other technical notices to be consulted


- - Products-L4PS-Modularc-72043-V1-EN - Technical Characteristics

Tools (not supplied) required for the operations described in this user manual


- Flat, thin screwdriver (4) + medium 
- Leather gloves


Symbols & conventions


 Code for a product recommended and marketed by Schneider Electric

 Tightening torque value
Example: 1.6 daN.m

 Mark corresponding to a key

 CAUTION! Remain vigilant!
Precautions to be taken in order to avoid accidents or injury

 FORBIDDEN! Do not do it!
Compliance with this indication is compulsory, non compliance with this stipulation may damage the equipment

 INFORMATION – ADVICE
Your attention is drawn to a specific point or operation

Functional mechanical interlocks

The MODULARC switchgear is equipped with internal mechanical interlocks, called "functional", intended to avoid any kind of operating error. It is necessary to know these interlocks in order to operate the switchgear correctly.

Interlocks for function CB

Position		Circuit breaker	Disconnecter	Earthing switch	Access door to cable compartment
Circuit breaker	Closed	-	Locked (closed or open)	Locked open	Locked closed
	Open	-	Free	Dependant on the position of the disconnector switch	Dependant on the position of the earthing switch
Disconnecter	Closed	Free	-	Locked open	Locked closed
	Open	Locked open	-	Free	Dependant on the position of the earthing switch
Earthing switch	Closed	Locked open	Locked open	-	Free
	Open	Dependant on the position of the disconnector	Dependant on the position of the circuit breaker	-	Locked closed
Access panel to the cable compartment	Open	Locked open	Locked open	Locked closed	-

KJAJ0003



Circuit-breaker closing spring
loading lever (CB unit)

KJAJ0004




Operating lever

Reminder for Manual Operations

All movements of the lever must be frank and complete.





 The procedures here following described refer to a line switchgear with manual closing and opening controls. It will be necessary to shift the door-es (earthing switching) interlock, in order to insert the lever.

- Act on the DOOR-ES interlock, by shifting it downwards.



Opening the earthing switch

- Insert the operating lever into the earthing switch control.

- Grasp the lever with both hands.
- Turn the lever counterclockwise, up to reach the end of stroke. The mimic diagram indicator will turn from the closed earth position  to the opened earth position .
- Extract the operating lever.

Closing the earthing switch

- Act on the ES-D (earth switching disconnecter) interlock, by shifting it upwards.

- Insert the operating lever into the earthing switch control.
- Grasp the lever with both hands.
- Turn the lever clockwise, up to reach the end of stroke. The mimic diagram indicator will turn from the opened earth position  to the earth close position .
- Extract the operating lever.

- Act on the DOOR-ES interlock, by shifting it upwards. Now it is possible to open the door.

Closing the disconnecter

- Act on the ES-D (earth switching disconnecter) interlock, by shifting it downwards.



- Insert the operating lever into the disconnecter control.



- Grasp the lever with both hands.
- Turn the lever clockwise, up to reach the end of stroke.
- Extract the operating lever.



Opening the disconnecter


- Move the CB-D (circuit breaker disconnecter) interlock in the close position (left) and insert the operating lever into the disconnecter control.



- Grasp the lever with both hands.
- Turn the lever counterclockwise, up to reach the end of stroke.
- Extract the operating lever



Closing the circuit-breaker

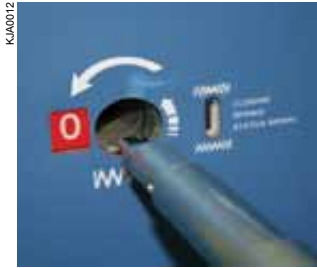
 The step here following described, relevant to the loading of the closing spring.

- Verify that the CB-D interlock is automatically moved in the open position (right).



Use of the CB function

(contd.)



- Charge the closing spring, by inserting the lever into the relevant seat and by turning it counter-clockwise, up to hear an acoustic click sound.



- The charged/discharged spring indicator will get positioned with the arrow looking downwards.
- Extract the operating lever.



- Close the circuit-breaker, by acting on the closing pushbutton (I).



- The "OFF" (open) position indicator will change to "ON" (closed).



Opening the circuit-breaker

- Open the circuit-breaker, by acting on the opening pushbutton (O). The indicator will change from position "ON" (closed) to position "OFF" (open).

Levels of maintenance

Description	Levels
Operations recommended in the instructions manual "installation - operation - maintenance", carried out by suitably qualified personnel having received training allowing them to intervene whilst respecting the safety rules.	1
Complex operations, requiring specific expertise and the implementation of support equipment in accordance with Schneider Electric's procedures. These must be carried out by Schneider Electric or by a specialised technician trained by Schneider Electric when starting the procedures, with the appropriate specific equipment.	2
All preventive and corrective maintenance, all renovation and reconstruction work is carried out by Schneider Electric.	3

Preventive maintenance

Preventive Maintenance	Frequency	Levels		
Recommended operations	6 years	1	2	3
Verification of the presence and condition of accessories (levers, etc.)	■	■	■	■
Visual inspection of the exterior (cleanliness, absence of oxidation, etc.)	■	■	■	■
Cleaning of external elements, with a clean, dry cloth	■	■	■	■
Verification of the positioning of the status indicators (open and closed)	■	■	■	■
Verification of the functioning of the mechanical control mechanism by making several manoeuvres	■	■	■	■
Visual surveillance of the general appearance of connections	■	■	■	■

Corrective maintenance

Corrective Maintenance	Levels		
Replacements or modifications	1	2	3
Replacement of a signal lamp assembly	■	■	■

Replacement of a signal lamp assembly

Locking out the Functional Unit


- Not required

Tools required:

- No tools required

Parts required:

- Signal lamp assembly

 Before proceeding to carry out the removal/ installation operations of the parts composing the MODULARC switchgear, be sure that the voltage was cut off both to the primary circuit and to the auxiliary one.

- To remove the signal lamp assembly take it by two hands and detach it from the switchgear. To install the new signal lamp assembly fit the terminals to the proper holes of the switchgear and press till complete insertion.



The spare part

Describes a part that is designed to replace a corresponding one with a view to re-establishing the original function.



The replacement of these parts can only be carried out by a person who is suitably qualified and trained for this operation.



For an explanation of the levels of maintenance, please refer to levels of maintenance.

Non-Programmed replacement	Denomination	Levels		
		1	2	3
Describes spare parts whose replacement intervenes in the course of corrective maintenance.	Signal lamp assembly	■	■	■

Exceptional replacement	Denomination	Levels		
		1	2	3
Describes the spare parts or assemblies whose foreseeable service life is at least equal to that of the equipment. Use: Spare parts or subassemblies conserved in a safety stock.	Operation counter	■	■	■
	Undervoltage release (UVR)	■	■	■
	Undervoltage release control card	■	■	■
	Loaded or unloaded closing springs signalling contact	■	■	■
	Shunt closing release	■	■	■
	Shunt opening release	■	■	■
	Demagnetisation opening solenoid	■	■	■
	Geared motor for loading springs	■	■	■
	Auxiliary contacts	■	■	■
	Voltage presence signal lamp	■	■	■
	Key locks	■	■	■

Identification of materials



For all orders for spare parts, it is necessary to enclose the equipment characteristics form.

Storage conditions

The components should be stored away from dust, humidity or direct sun. In order to facilitate the search, they must be marked by the Schneider Electric reference number.

Certain components are fragile, they must be stored in their original packaging.

Characteristics and Volumes of SF₆ gas

General characteristics

Type of Insulating Gas:

Sulphur Hexafluoride (SF₆) – IEC 60376.

Each switchgear comprises a tank, filled with SF₆ gas, designed as a pressurised, sealed-unit system in accordance with the requirements of IEC 60694.

During the expected operating life and under normal operating conditions the gas should not need topping up.

The GWP (Global Warming Potential) of the SF₆ gas is 22,200.



Never pierce the pressurised tank!

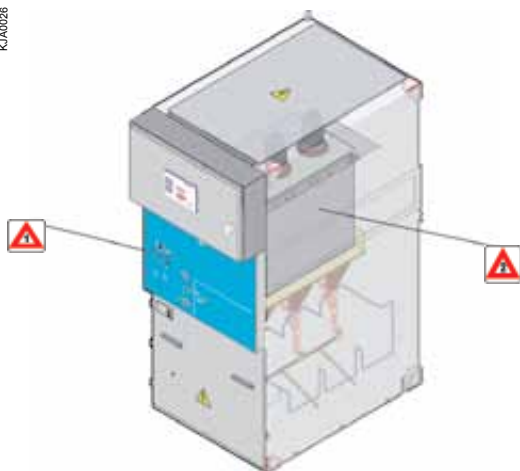


Never attempt to open the tank.



Filling pressure

At 20°C the filling pressure is 0.030 MPa.

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Safety instructions

-  Do not dismantle the mechanical control mechanism springs without releasing the device.
-  Never attempt to open the sealed tank of a Functional Unit.

Dismantling of the equipment service

Consult Schneider Electric for all decommissioning services.

- Remove all electrical equipment (coils, motors, etc.).
- On disassembly, the materials must be sorted and sent on via the appropriate recycling channels.

Schneider Electric
35, rue Joseph Monier
CS 30323
92506 Rueil-Malmaison Cedex, France

RCS Nanterre 954 503 439
Capital social 896 313 776 €
www.schneider-electric.com

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