instructions for use

ROLLARC
withdrawable in MCset
Caution: you will find all the symbols below throughout the document, indicating the hazard levels depending on the different types of situation.

**DANGER**

DANGER: failure to follow this instruction will result in death or serious injury.

**WARNING**

WARNING: failure to follow this instruction may result in death or serious injury.

**CAUTION**

CAUTION: failure to follow this instruction may result in injuries. This alert signal can also be used to indicate practices that could damage the SM6 unit.

**INFORMATION-ADVICE**

We draw your attention to this specific point.
contact the Schneider Electric service unit for diagnosis and advice

Call your sales representative who will put you in contact with the closest SCHNEIDER ELECTRIC group service centre. You can log on to: www.schneider–electric.com

distribution rules

The aim of this publication is to enable the SM6 unit to be installed correctly. This document is not a commercial document. It is a strictly technical document drawn up by Schneider Electric.

safety rules

CAUTION

All the operations described below must be performed in compliance with applicable safety standards, under the responsibility of a competent authority.

WARNING

The contractor must be certified and authorised to manipulate and perform work on the SM6 unit.

CAUTION

Only undertake the work after having read and understood all the explanations given in this document. If you have any difficulty complying with these rules, please contact Schneider Electric.
draw-out contactor

front face
A : LV connection cord
B : operation counter
C : extraction handle
D : fuse state mechanical indicator
E : contactor state mechanical indicator only in the mechanical latching version)
F : moving part position selector
G : opening for inserting the moving part operating crank shaft
H : mechanical indicator for signalling the moving part position
J : mechanical opening pushbutton
K : LV fuse
identification

Check:
- that the details marked on the information plates match those defined on the order form.
- that the wiring diagram is enclosed with the device.

location of the information plates
A: type and performance of the contactor
B: fuse characteristics
C: serial number and reference

contactor and auxiliaries rating plates
1: device type designation
2: rated voltage
3: rated lightning impulse withstand voltage
4: rated continuous operating current
5: rated breaking capacity for CC 3s
6: no-load breaking capacity
7: class
8: SF6 mass
9: reference standard
10: characteristics information plates

B(1) fuse characteristics information plates
B(2) series n°. and reference rating plates
storage

The ROLLARC contactors are dispatched in MCset FUs in the draw-out position.

Store the devices in their original packing.

prolonged storage

In the exceptional case in which the device is delivered separately from an MCset FU and for prolonged storage, the device must remain in its original packing.

Following prolonged storage, thoroughly clean all the insulating parts before putting into operation. The enclosure must be dusted using a dry, clean cloth.

unpacking and handling preparation

In the exceptional case in which the device is delivered separately from an MCset FU handling by lifting.

- unpack the devices on the installation site.
- avoid impacts

Once the device has been unpacked, it must be handled by lifting or rolling.

handling by lifting

Sling the device using the lifting lugs and place it on the ground.

Unhook the slings and remove the handling parts and their screws and bolts.

NB: the lifting lugs and screws and bolts must be kept in view of subsequent handling operations.

handling by rolling

The device is handled by means of the moving part extraction device (ERD) on a smooth floor. The device must be handled by the front face.

ATTENTION

never pull or push the device by the poles (the poles are pressurised).
overall dimensions

<table>
<thead>
<tr>
<th>devices</th>
<th>phase-to-phase dimensions</th>
<th>weight in Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROLLARC 250 A</td>
<td>A 145, B 492, C 749</td>
<td>159</td>
</tr>
</tbody>
</table>
fitting and extraction

To fit or extract a ROLLARC of an MCset SUP2 functional unit... refer to the functional unit user manual.

plug-in and plug-out

To plug in or out a ROLLARC in an MCset SUP2 functional unit... refer to the functional unit user manual.

removing the front plate

Remove the 6 screws fixing the front plate.
Remove the front plate.

The panel is put back in reverse order to disassembly.
Rollarc 400

diagram 03406765

<table>
<thead>
<tr>
<th>Option / Optional</th>
<th>Connecting block</th>
</tr>
</thead>
<tbody>
<tr>
<td>FF</td>
<td>Auxiliary switches</td>
</tr>
<tr>
<td>F0</td>
<td>Auxiliary switches</td>
</tr>
<tr>
<td>RD</td>
<td>Bridge rectifier</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Un (V)</th>
<th>48</th>
<th>60–72</th>
<th>100–127</th>
<th>220–250</th>
<th>48</th>
<th>110</th>
<th>220</th>
</tr>
</thead>
<tbody>
<tr>
<td>la (A)</td>
<td>10</td>
<td>3,15</td>
<td>2,5</td>
<td>1,25</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>cos</td>
<td>0,4</td>
<td>1,1</td>
<td>0,4</td>
<td>0,24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L/R</td>
<td>40 ms</td>
<td>0,8</td>
<td>0,3</td>
<td>0,18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil power</td>
<td>3 W</td>
<td>4 VA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Auto operation (contact)**

**Hold in (contact)**

**Notes**
- Connecting block
- Auxiliary switches
- Bridge rectifier
- Pressure switch
- Multi-plug connector
- Power contact
- Solenoid coil contact
- Motor
- 24V
- 30W
- 40A
- 1150W
- Capacitor
- 1.1kΩ
- Resistance
- 8 ohm/150W
- Relay
- Fuse 1 A/5 2,5 1,25
- 8 digits (LCD)
- Optoelectric counter
- Contactor connecting block
- Fuse 1 A 250mm or 450mm
- 24VA

**Characteristics**

**Designation**
Rollarc 400D

diagram 03406766

Un (V)  48  60–72  100–127  220–250  48  110  220
Ia (A)  10  3,15  2,5  1,25  10  10  10

\[ \cos = 0,4 \]

L/R = 40 ms  \[ \frac{3}{4} \] (A)

Coil power  \[ \frac{3}{4} \] 3 W  \[ \frac{3}{4} \] –4 VA

---

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FF</td>
<td>Connecting block</td>
</tr>
<tr>
<td>F1</td>
<td>Auxiliary switches</td>
</tr>
<tr>
<td>F2</td>
<td>Auxiliary switches</td>
</tr>
<tr>
<td>RD</td>
<td>0,3A - 500V</td>
</tr>
<tr>
<td>VM</td>
<td>Bridge rectifier</td>
</tr>
<tr>
<td>SP</td>
<td>0-4 - 72V</td>
</tr>
<tr>
<td>X20</td>
<td>Pressure switch</td>
</tr>
<tr>
<td>YD</td>
<td>600V</td>
</tr>
<tr>
<td>SC1</td>
<td>Sheet trip</td>
</tr>
<tr>
<td>SQ1</td>
<td>Pre-1 coil contact</td>
</tr>
<tr>
<td>YW</td>
<td>Sheet-in coil contact</td>
</tr>
<tr>
<td>YF</td>
<td>Sheet-in coil contact</td>
</tr>
<tr>
<td>C</td>
<td>400kV</td>
</tr>
<tr>
<td>R</td>
<td>7kΩ - 1M</td>
</tr>
<tr>
<td>F</td>
<td>180-220V - type G600V</td>
</tr>
<tr>
<td>FUB</td>
<td>LV fuse</td>
</tr>
<tr>
<td>PE1</td>
<td>LV fuse</td>
</tr>
<tr>
<td>PE2</td>
<td>LV fuse</td>
</tr>
<tr>
<td>X61</td>
<td>Pre-1 coil contact</td>
</tr>
<tr>
<td>K1</td>
<td>04000</td>
</tr>
</tbody>
</table>

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07896865EN revision : 02
mechanical opening of the contacteur

Only for the ROLLARC contactor version with mechanical latching.

Press the red button.

This operation causes a reaction and displays...

…the “O” device status.

**MV fuse blowing indication**

⚠️ CAUTION

All three fuses MUST be replaced.

The indicator light shows that the fuses are in proper operating order.

The indicator light shows that one or more fuses are no longer in proper operating order.
foreword
safety instructions

All the operations described below must be carried out according to current safety standards, under the responsibility of a competent authority.

The pressure switch must be connected to obtain pressure level information.

CAUTION

Before all operations:
- open the contactor and isolate it from the mains.
- cut the supply to the auxiliary circuits and the main circuit.
- avoid impacts (pressurised enclosure).

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general rules

Our devices are designed to guarantee optimum service provided that the maintenance operations described in this document are complied with.

Using the ERD, extract the contactor from the cubicle. (see the MCset user manual).
- place the device on a support at working height in order to perform the maintenance operation.

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maintenance operations and cycle

The 400 type contactor is designed to perform 300,000 mechanical operations, without maintenance of live parts (100,000 operations for type 400 D).

The following are recommended:
- wear monitoring of the arcing contacts every 50,000 operations.
- replacement of the LV printed circuit and auxiliary contact module is recommended every 100,000 operations.
- perform an overall external cleaning operation.
- lubricate using grease for low temperatures.
- the two guides of the electromagnet magnetic circuit.
- the moving part of the auxiliary contacts.
- the latching mechanism of type 400 D.

In event of very frequent operations or an extremely corrosive environment, please consult your nearest Groupe Schneider Electric service centre.

At least once a year:
- perform an overall external cleaning operation.

At least twice a year:
- or every 20,000 operations.
## summarising table

<table>
<thead>
<tr>
<th>description</th>
<th>Maintenance operations</th>
<th>supplies</th>
<th>tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>pole enclosure</td>
<td>dust the enclosure</td>
<td>cloth</td>
<td></td>
</tr>
<tr>
<td>arcing contact degree of wear</td>
<td>measure the degree of wear</td>
<td>lamp, bell</td>
<td></td>
</tr>
<tr>
<td>operating mechanism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moving part of the auxiliary contacts</td>
<td>clean with a degreasing agent</td>
<td>non-chlorinated solvent degreasing agent</td>
<td>cloth</td>
</tr>
<tr>
<td></td>
<td>lubricate</td>
<td>isoflex Topas L152 grease</td>
<td>brush</td>
</tr>
<tr>
<td>latching mechanism of type 400 D</td>
<td>clean with a degreasing agent</td>
<td>non-chlorinated solvent degreasing agent</td>
<td>cloth</td>
</tr>
<tr>
<td></td>
<td>lubricate, oil</td>
<td>vacuoline oils 133 oil</td>
<td>brush, oiler</td>
</tr>
<tr>
<td></td>
<td></td>
<td>isoflex Topas L152 grease</td>
<td></td>
</tr>
<tr>
<td>electromagnet magnetic circuit guides</td>
<td>clean with a degreasing agent</td>
<td>non-chlorinated solvent degreasing agent</td>
<td>cloth</td>
</tr>
<tr>
<td></td>
<td>lubricate, oil</td>
<td>vacuoline oils 133 oil</td>
<td>brush, oiler</td>
</tr>
<tr>
<td></td>
<td></td>
<td>isoflex Topas L152 grease</td>
<td></td>
</tr>
<tr>
<td>propulsion guide</td>
<td>clean with a degreasing agent</td>
<td>non-chlorinated solvent degreasing agent</td>
<td>cloth</td>
</tr>
<tr>
<td></td>
<td>lubricate</td>
<td>Isoflex Topas L152 grease</td>
<td>brush</td>
</tr>
<tr>
<td>cam</td>
<td>clean with a degreasing agent</td>
<td>non-chlorinated solvent degreasing agent</td>
<td>cloth</td>
</tr>
<tr>
<td></td>
<td>lubricate</td>
<td>Isoflex Topas L152 grease</td>
<td>brush</td>
</tr>
</tbody>
</table>

## preventive maintenance and cleaning instructions

The pressurised SF6 gas inside the pole retains all its dielectric properties after breaking. Electrical durability is limited by contact wear. This wear depends on device use. We draw your attention to the risk of cleaning processes, consisting of spraying solvents at high pressure.

The main drawbacks of such processes are:
- damage due to jet pressure and impossibility of re-lubricating inaccessible fixing points.
- risk of overheating due to solvent presence on contact areas.
- elimination of special protections.

### CAUTION

Never use solvents and alcohol.

If the insulating parts are dusty, it is recommended that you remove the dust using a dry cloth.
monitoring arcing
contact wear
monitoring

NB:
In event of repeated short-circuit current breaks, the user can check contact wear without disassembling the contactor.

Unscrew the two self-locking nuts.

Remove the metal and neoprene washers and replace them...

...with counternuts (∅14 mm) or washers (roughly 8mm thick) which will act as spacers.

Screw in standard nuts (∅12 mm) in place of the self-locking nuts (so as not to weaken them).

Connect an indicator lamp or “bell” between the input and output connections of pole no.1.
Simultaneously screw in the two nuts until the lamp or bell is lit.

Form a thickness gauge made up of a bent wire, of Ø 3 mm.
Position the gauge on the electromagnet magnetic circuit guides.

Measure the coil air gap using the gauge.
Record this measurement.
Repeat the procedure for poles 2 and 3.
If, for one or more measurements, the air gap value is less than or equal to 3mm, the contactor must be replaced (on a new device, the air gap is 5.1 mm +0.5).

For reassembly, remove the standard nuts...

...put back the original washers and self-locking nuts (do not fit and remove the self-locking nuts more than twice).
Form a thickness gauge made up of a bent wire, of $\varnothing$ 12.4 mm.
Position the gauge on the electromagnet magnetic circuit guides.

With the contactor open, insert the $\varnothing$ 12.4mm shim in the air gap.
Simultaneously tighten the 2 self-locking nuts until the electromagnet touches the shim.
Slightly loosen the nuts so that the shim can freely slide in the air gap of the two coils.

At least twice a year:
or every 20 000 operations,
lubricate using grease for low temperatures.
- the moving part of the auxiliary contacts.
latching mechanism of type 400 D

At least twice a year:
or every 20,000 operations,
lubricate using grease for low temperatures.
- the latching mechanism.

electromagnet magnetic circuit guides

At least twice a year:
or every 20,000 operations,
lubricate using grease for low temperatures.
- the two guides of the electromagnet magnetic circuit.
corrective maintenance

foreword

The corrective maintenance operations enable replacement of defective subassemblies. The operations quoted in the summarising table below can be performed by the customer or by the After-Sales representatives of the groupe Schneider Electric.

For all other maintenance work, contact the representatives of your nearest groupe Schneider Electric centre.

After each operation, perform the electrical tests according to current standards

CAUTION

when replacing, all the accessories listed below must be replaced with new devices.
- Nylstop (self-locking nut)
- Contact washer
- Locking pins
- Mechanical pin

summarising table

<table>
<thead>
<tr>
<th>description</th>
<th>performed by</th>
<th>comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV fuses or closing printed circuit.</td>
<td>Schneider Electric or Customer</td>
<td>Place the device on a support at working height in order to make the replacement.</td>
</tr>
<tr>
<td>LV fuses</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>disconnection contact (yoke position)</td>
<td>Schneider Electric or Customer</td>
<td>Place the device on a support at working height in order to make the replacement.</td>
</tr>
<tr>
<td>shunt release (400 D)</td>
<td>Schneider Electric</td>
<td></td>
</tr>
<tr>
<td>holding winding insertion contacts</td>
<td>Schneider Electric</td>
<td></td>
</tr>
<tr>
<td>closing coil</td>
<td>Schneider Electric</td>
<td></td>
</tr>
<tr>
<td>arcing contact degrees of wear</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>plug—in position contact Printed circuit + STPI relay support</td>
<td>Schneider Electric or Customer</td>
<td>Refer to the MCset user manual.</td>
</tr>
<tr>
<td>fuse blowing contact</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>operation counter</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>mechanical position indicator</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>MV fuses of same dimensions</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>MV fuses of different dimensions</td>
<td>Schneider Electric</td>
<td></td>
</tr>
<tr>
<td>VT fuse</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>voltage Transformer</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
<tr>
<td>contacteur 400 or 400D</td>
<td>Schneider Electric</td>
<td></td>
</tr>
<tr>
<td>plug—in probes</td>
<td>Schneider Electric or Customer</td>
<td></td>
</tr>
</tbody>
</table>
replacing the LV fuse

**CAUTION**

fuses with large time delay

Use fuses of the same type as those contactor.

LV fuse choice table

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Frequency</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>48–50 VDC</td>
<td>50–60 Hz</td>
<td>10 A</td>
</tr>
<tr>
<td>60–72 VDC</td>
<td>50–60 Hz</td>
<td>3.15 A</td>
</tr>
<tr>
<td>100–127 VDC</td>
<td>50–60 Hz</td>
<td>2.5 A</td>
</tr>
<tr>
<td>220–250 VDC</td>
<td>50–60 Hz</td>
<td>1.25 A</td>
</tr>
</tbody>
</table>

removal

Push and turn in an anti-clockwise direction. Pull to open the rack and extract the fuse.

fitting

Reassemble by performing the opposite operations to removal.

replacing the disconnection contacts (yoke position)
removal

Remove the fixing screws. Remove the contacts and isolating screens.

Mark and disconnect wiring.

fitting

Proceed in reverse order. Fit new isolating screens.

- Lock the contact fixing screws.
  
  **Tightening torque: 0.7 Nm.**

replacing the fuse blowing contact

Remove the screws and protection front plate.

removal

Remove the protective plate. Mark and disconnect wiring.
Remove the fixing screws. Remove the contacts and isolating screens.

fitting

Proceed in reverse order
Fit new isolating screens.

■ Lock the contact fixing screws.
Tightening torque: 0.7 Nm.

replacing the operation counter

Remove the screws and protection front plate.

removal

1 : unclip the counter
2 : extract it from the front of the device.

Mark and disconnect wiring. Remove the fixing part and counter.
fitting

Insert the wire strand in the fixing part.
Connect the wires.

1: rest the counter on the plate.
2: clip on the counter.

replacing the position indicator module

Remove the screws and protection front plate.

removal

Position indicator module.
Remove the fixing screws on the front panel of the device.
Remove the fixing screws inside the device. Release the module.

**fitting**

Proceed in reverse order.
- Lock the module fixing screws.

**Tightening torque: 13 Nm.**
Fit the front plate and screws.

**setting**

Ensure that the indicator light is in the right position.

Otherwise, adjust this screw…

… so that the indicator light is in the right position.
replacing MV fuses of the same dimensions

removal

Release the fuse fixing system.

Extract the fuse.

fitting

Fit the fuse on the striker side into the pole annular socket.

Fit the fuse in the fuse fixing system.
replacing the VT fuses

removal

**CAUTION**

Use fuses of the same type as those delivered with the contactor.

Extract the fuse

fitting

Proceed in reverse order.

**CAUTION**

A pin is located on one of the fuse plugs: it must be directed to the VT on mounting.
replacing the Voltage Transformer

removal

Remove the fuses.
Mark and disconnect wiring.
Disconnect the earth circuit.

Remove the screws and the VT.

Remove the connection pads and store them for reassembly.
fitting

Fit and lock the connection pads... respecting the mounting direction.
Tightening torque: 13 Nm.

Fitting the VT
Proceed in reverse order.
- lock the fixing screws.

Tightening torque: 13 Nm.

remove the probes

Slightly unscrew the nut holding the probe in place.
Press the edge of the probe to extract it.

CAUTION
Mark the direction and orientation of the screws.
**SF6 gas recovery**  
**conformity rules**

The SF6 must be removed before any dismantling operation can be carried out in compliance with the procedures described in IEC–61634 and according to the following instructions. The gas must be treated in compliance with IEC–60480.

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**intervention method**

Tool necessary for the operation

Unscrew the plug (A).

Plug dismounted.

Connect the vacuum/filling device.

Vacuum/filling device connected.

Wait until the pressure gauge shows 0 (15 min to empty the tank) before removing the connection.
### Anomaly, Probable Causes and Solutions

The information given below ensures minimum interruption of operation.

If the solutions proposed are not effective, consult your nearest Groupe Schneider Electric service centre.

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Defective Devices</th>
<th>Probable Causes and Solutions</th>
</tr>
</thead>
</table>
| Closing impossible | LV supply source | Nominal supply voltage insufficient (less than 85%) on pick-up current.  
  - restore voltage to its nominal value.  
  - Protection fuse blowing.  
  - remove the fault.  
  Incorrect connection of electro coils on replacement.  
  Rectifier in event of an AC source.  
  - see series connection diagram instead of parallel connection.  
  - Rectifier defective.  
  - replace the printed circuit. |
| Beating the device does not remain closed | Supply source | Supply voltage insufficient (less than 85% of nominal voltage on pick-up current).  
  - restore voltage to its nominal value.  
  400 D type contactor trip unit (with mechanical latching) | Trip unit supplied.  
  - see cause of trip unit excitation.  
  Incorrect connection of electro coils on replacement.  
  - see series connection diagram instead of parallel connection. |
| Abnormal temperature rise of closing electrode coils. | Energy source | Supply voltage exceeding 110% of nominal voltage.  
  - restore voltage to its nominal value.  
  **NB:** the contractor must provide a protection fuse. |
| Opening impossible on 400D type contactor (with mechanical latching). | Voltage shunt release | No voltage at release terminals.  
  - check the circuit to restore power supply (and auxiliary contact).  
  - Coil damaged.  
  - replace the release.  
  - Release incorrectly set.  
  - reset position.  
  - Auxiliary contacts damaged.  
  - replace contacts. |
| Difficult breaking of holding winding insertion contact on type 400 standard contactor. | Insertion contact | Contact incorrectly adjusted.  
  - reset.  
  - Capacitor defective.  
  - replace the printed circuit.  
  Capacitor | |
| Fuse blowing | Fuse | Supply voltage too weak, causing incomplete closing of coil.  
  - restore voltage to its nominal value.  
  - Holding coil insertion contact incorrectly set.  
  - set the insertion contact. |
group Schneider Electric service centers are there for:

engineering and technical assistance
start-up
training
preventive and corrective maintenance
adaptation work
spare parts

Call your sales representative who will put you in touch with your nearest group Schneider Electric service centers.