EasyPact EXE

Medium Voltage Vacuum Circuit Breaker (VCB)
Up to 17.5 kV - 630 to 2500 A

User Guide

NVE1867701-04
05/2018
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Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.
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Safety Information

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

---

**DANGER**

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DANGER</strong> indicates a hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
</tbody>
</table>

---

**WARNING**

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WARNING</strong> indicates a hazardous situation which, if not avoided, could result in death or serious injury.</td>
</tr>
</tbody>
</table>

---

**CAUTION**

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAUTION</strong> indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.</td>
</tr>
</tbody>
</table>

---

**NOTICE**

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOTICE</strong> is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.</td>
</tr>
</tbody>
</table>

---

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.
Before You Begin

- This user guide is meant for qualified person who will operate the circuit breaker: panel builder, installer or end user. The generic term used in this guide for any such person is the USER.
- This user guide cannot be used to define or check the device’s compatibility with every single user’s application, nor its reliability within it. It is the duty of every user or panel builder to perform a complete risk analysis, evaluation and testing of the products in specific applications in accordance with applicable standards.
- In order to ensure the right functioning of the device installed in the equipment, refer to your equipment manufacturer documentation.
- When the products are used in applications with specific technical and safety rules, you must follow the integration and protection rules for the specific application.

⚠️ ⚠️ DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See standards or local equivalent.
- This circuit breaker must only be installed and serviced by qualified electrical personnel.
- Perform work only after reading and understanding all of the instructions contained in this guide.
- Turn off all power supplying this circuit breaker before working on or inside the circuit breaker. Turn off or trip the circuit breaker and discharge the mechanism.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, covers and doors before turning on power to this circuit breaker.
- Beware of potential hazards and carefully inspect the work area for tools and objects that may have been left inside the circuit breaker.
- Do not modify the mechanical or electrical parts.
- Do not operate the system with interlocks and safety barriers removed.

Failure to follow these instructions will result in death or serious injury.

⚠️ ⚠️ CAUTION
HAZARD OF DEGRADED EQUIPMENT PERFORMANCE
- Respect the handling rules and avoid any shocks to the device.
- Perform the maintenance and servicing operations described in the maintenance section of this guide.
- Observe the normal service conditions described in this manual.
- If the circuit breaker, or the equipment in which the circuit breaker is mounted, is stored before its final installation, observe the storage conditions.

Failure to follow these instructions can result in minor or moderate injury or equipment damage.
Overall information

Purpose of the document
This user guide is an integral part of the device. It describes the operation and use of the EasyPact EXE circuit breaker, as well as its storage and handling conditions. This document must be available at any times to those required to use or work on the circuit breaker. If the device is sold after installation, this document must be given to the new owner.

It is required to read this manual carefully and follow its recommendations. However, this manual cannot describe every single condition of use or every variant specific to the customer.

Access to the technical documentation
Visit our website www.schneider-electric.com:
- for downloading additional documents
- for contacting Schneider Electric customer support if you need information not contained in this document
- if you have any suggestions on how to improve this document.

Connect to https://saferepository.schneider-electric.com
Enter the reference number and the serial number of the device:
- for downloading "public documents" regarding EasyPact EXE
- for downloading "private documents" specific to the device.

You can access this information using the QR code located on the front cover of the circuit breaker.

Limitation of liability
Schneider Electric cannot be held responsible for damage due to:
- failure to follow the instructions in this guide and additional documents
- improper use of the device
- improper assembly, testing, installation, connection or misuse of the device
- use of components or spare parts other than those recommended by Schneider Electric.
Introduction to the EasyPact EXE

Presentation of Vacuum Circuit Breaker (VCB)

Nameplate

![Nameplate Image]

<table>
<thead>
<tr>
<th>EasyPact EXE</th>
<th>EXE123112L1B</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN°: SE-2016-W44-5-0014</td>
<td></td>
</tr>
<tr>
<td>Ur: 12kV</td>
<td></td>
</tr>
<tr>
<td>Up: 75kV</td>
<td></td>
</tr>
<tr>
<td>Ir: 1250A</td>
<td></td>
</tr>
<tr>
<td>Isc: 31.5kA</td>
<td></td>
</tr>
<tr>
<td>tk: 3s</td>
<td></td>
</tr>
<tr>
<td>Seq: O-0.3s-CO-15s-CO</td>
<td></td>
</tr>
<tr>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td>Classes: E2,M2,S1</td>
<td></td>
</tr>
<tr>
<td>IEC62271-100:2012</td>
<td></td>
</tr>
</tbody>
</table>

Commercial reference

- **SN**: Serial number
- **Ur**: Rated voltage
- **Up**: Rated lightning impulse withstand voltage
- **Ir**: Rated normal current
- **Isc**: Rated short-circuit breaking current
- **tk**: Rated duration of short circuit
- **Seq**: Rated operating sequence

Rated frequency

- **Classes**: Classes of electrical endurance, mechanical endurance and of system

Standard with date of issue

**QR code**

How to use the QR code

The serial number (SN) located on the nameplate is using 18 characters in order to be easy to understand. Example: SE-2016-W44-5-0014.

To access to Safe Repository, enter the SN with its simplified 11 characters' format. Example: SE164450014. If you type the long description, it will be automatically convert in short description.

The QR code link implement the simplified format.

The QR code located on the nameplate grants access to all data relating to your circuit breaker, from a Smartphone or a connected tablet:

- serial number
- operating characteristics
- user guide
- warranty period
- ...

To access this information, read the QR code with your Smartphone or your connected tablet; you will be directed to the website containing the data relating to your device. Follow the instructions to obtain personal access.

The serial number and the commercial reference also allow to access the information without Smartphone or connected tablets.

Identification plate

![Identification Plate Image]

The serial number is also located on the right side of the circuit breaker. This allows to associate the front covers to the device. The datamatrix is used for internal Schneider Electric traceability.
Front view of fixed circuit breaker

A. Elbow for auxiliary wiring (option)
B. Removable top cover
C. Knock-out provision for auxiliaries
  C1. Elbow for auxiliary wiring (option)
  C2. Auxiliary connection plug (option)
D. Main front cover
E. Nameplate
F. Pushbuttons and indicators
  F1. Opening pushbutton
  F2. Closing pushbutton
  F3. Spring charged and ready-to-close indicator
  F4. Main contact position indicator
G. Operating instructions

Front view of withdrawable circuit breaker

J. Power connections
K. Auxiliary connection plug
L. Locking handles
M. Racking position indicator
N. Hole for crank insertion
O. Opening pushbutton
P. Locking tabs
Q. Shutter ramp
Customization label

The customization label shows information on the motors and auxiliary control units installed on the device, and their operating voltages.

Operating instructions

Label of circuit breaker operating instructions

This label located on the circuit breaker front cover, recaps the use of the local mechanical controls (switching between the open and closed states and manual charging).
Label of racking device operating instructions, only for withdrawable circuit breaker

Label location on the circuit breaker compartment equipped with Schneider Electric kit. Label location on the single-door of the circuit breaker compartment.

This label located on the front of the circuit breaker compartment recaps the racking-in and racking-out operations.
Service conditions

Normal service conditions

The device, including the auxiliary and control circuits which are part of it, is designed to operate according to its rated characteristics and the service conditions below:

<table>
<thead>
<tr>
<th>Indoor device</th>
<th>IEC 62271-100: 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient air temperature:</td>
<td>-25 °C ≤ 35 °C</td>
</tr>
<tr>
<td>• minimum value</td>
<td>+40 °C</td>
</tr>
<tr>
<td>• maximum value</td>
<td></td>
</tr>
<tr>
<td>• average measured over a 24-hour period</td>
<td></td>
</tr>
<tr>
<td>Average relative humidity:</td>
<td>≤ 95 % ≤ 90 %</td>
</tr>
<tr>
<td>• measured over a 24-hour period</td>
<td></td>
</tr>
<tr>
<td>• measured over a 1-month period</td>
<td></td>
</tr>
<tr>
<td>Average water vapor pressure:</td>
<td>≤ 2.2 kPa ≤ 1.8 kPa</td>
</tr>
<tr>
<td>• measured over a 24-hour period</td>
<td></td>
</tr>
<tr>
<td>• measured over a 1-month period</td>
<td></td>
</tr>
<tr>
<td>Altitude above sea level</td>
<td>≤ 1000 m</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>The ambient air is not significantly polluted by dust, smoke, corrosive and/or flammable gases, vapours or salt.</td>
</tr>
</tbody>
</table>

Other service conditions

If operated beyond the normal service conditions, the circuit breaker is submitted to accelerated aging.

The circuit breaker may only be used under conditions other than the normal service conditions with express written permission from Schneider Electric.
Storage conditions and arrangements

Storage conditions

⚠️ CAUTION

HAZARD OF DEVICE DAMAGE

- If the device is to be stored, observe all storage instructions. The device must remain in the packaging until the final installation.
- Never install the device if damaged.

Failure to follow these instructions can result in injury or equipment damage.

In order to preserve all of the device’s characteristics when stored for prolonged periods, we recommend to store the device in its original packaging, in dry conditions, and sheltered from the sun and rain at a temperature of between -40°C and +70 °C. The maximum storage period is 12 months.

If the device was stored:
- between 6 and 12 months, perform basic level preventive maintenance to ensure a correct device operation.
- beyond 12 month, contact your Schneider Electric Service local representative for device check-up.

After unpacking, check the device carefully for:
- absence of broken or damaged parts
- absence of condensation marks or droplets
- absence of visible degradation (color change, rust, deposits, etc.).

In case of any degradation detected, the circuit breaker must not be installed.

Devices must be stored in the open (O off) position with the charging springs discharged.

In addition, withdrawable circuit breakers must be stored in racked-out position.

Storage arrangements - Stacking

⚠️ NOTICE

HAZARD OF DEVICE DAMAGE

Do not place any heavy objects on the packaging that could either deform it or apply mechanical stress to the device’s structure.

Failure to follow this instruction can result in equipment damage.
Handling

⚠️ WARNING

HAZARD OF FALL OR TIPPING OF THE DEVICE DURING UNLOADING OR HANDLING

- Apply appropriate personal protective equipment (PPE) and provide collective protection equipment (CPE) whenever required. Follow all safe work practices.
- Do not try to catch the parcel if it falls.
- Use handling equipment suitable for the dimensions and weight of the device.
- Take into account the position of the center of gravity when handling the parcels or the device.

Failure to follow these instructions can result in death, serious injury or equipment damage.

⚠️ CAUTION

HAZARD OF DEVICE DAMAGE

Move the device with the utmost caution and avoid shocks.

Failure to follow this instruction can result in injury or equipment damage.

Mass

<table>
<thead>
<tr>
<th>Maximum mass (fixed version)</th>
<th>Maximum mass (withdrawable version)</th>
</tr>
</thead>
<tbody>
<tr>
<td>105 kg</td>
<td>90 kg</td>
</tr>
<tr>
<td>135 kg</td>
<td>120 kg</td>
</tr>
</tbody>
</table>

Position of center of gravity

How to use the lifting eyes

Label and its location on the circuit breaker
Fixed circuit breaker
Lift the device using the 3 lifting eyes. Never lift the circuit breaker by placing forklift bars beneath the circuit breaker frame.

When handling, guide the device by the front cover.

Withdrawable circuit breaker
Lift the device using the 3 lifting eyes. Never lift the circuit breaker by placing forklift bars beneath the circuit breaker frame.

When handling, guide the device by the front cover. Do not lift the withdrawable circuit breaker by the power connections. Do not move the circuit breaker by rolling it on the floor.
Before energizing for the first time

A general check of the device takes only a few minutes and reduces the risk of mistakes due to errors or negligence.

It must be carried out:
- before energizing following switchboard installation
- before re-energizing following an extended period during which the device has not been in service.

⚠️ DANGER
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
- Perform all the checks with the entire switchboard de-energized.
- Check on the switchboard that the circuit breaker’s clamping elements have been removed.
- According to your equipment manufacturer recommendation, remove the rear lifting eye.
- Check that the front lifting eyes have been put back in their down position.
- Check that nameplate data is compatible with that of electrical installation.
- Check the correct operation of the MX, XF and MN auxiliary releases.

Failure to follow these instructions will result in death or serious injury.

The installer of your equipment must deliver a commissioning report before the first energizing of your electrical installation.

Switchboard inspection

Check that the circuit breakers are installed in a clean cubicle in accordance with the service conditions, free of any installation scrap or items (tools, electrical wires, broken parts or shreds, metal objects, etc.).

When the withdrawable circuit breakers are shipped in their cubicle, the transport clamps must be removed before any operation on the switchboard. Refer to your equipment documentation to identify the location of the clamps.

The front lifting eyes must be put back to their down position.

If required by your equipment manufacturer the rear lifting eye must be removed and stored close to the device’s operating area.
Conformity with the installation electrical diagram

Check that the devices match the installation diagram:
- breaking capacities indicated on the nameplates
- presence of optional functions (electric control of charging mechanism, auxiliaries, meters and indicators, etc.) and conformity of their electrical characteristics
- identification of the protected circuit on the front of the devices or/and equipment.

Condition of power connections and auxiliaries

**WARNING**

HAZARD OF DEVICE MALFUNCTION
The assigned voltage for the control auxiliaries must be applied and checked directly on the auxiliary terminals.

Failure to follow this instruction can result in death, serious injury or equipment damage.

Check the device mounting in the switchboard and the tightening of the power connections: refer to your equipment installation guide.
Check that all auxiliaries and accessories are correctly installed:
- electrical auxiliaries
- terminal blocks
- connection of auxiliary circuits.

Operating

Refer to your equipment documentation and follow your switchboard commissioning rules.
The circuit breaker initial state is:

- **Initial state for fixed circuit breaker**
- **Initial state for withdrawable circuit breaker**

Check the mechanical operation of the devices in every control modes (local mechanical and electrical controls and remote control) and for every possible operation:
- close the device
- open the device
- close the device and perform an operation sequence OPEN - CLOSE - OPEN
- rack in and rack out your device (according to the configuration of your switchboard)
- check the operation of the locking and interlocking.

Place back the circuit breaker in its initial state waiting for the switchboard energizing.

Initialization of the maintenance information

Record the number of the circuit breaker operations (as displayed on the operation counter), date of observation and note this information in the maintenance log of your installation.
Using the EasyPact EXE

Understanding the circuit breaker controls and indicators

The different states

<table>
<thead>
<tr>
<th>Circuit breaker indicators</th>
<th>Electrical state</th>
<th>State description</th>
<th>Command available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts position indicator</td>
<td>Spring charged and ready-to-close indicator</td>
<td>Circuit breaker is OPEN and mechanism is discharged.</td>
<td>Charging the mechanism (refer to page 22)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circuit breaker is OPEN. Mechanism is charged but the circuit breaker cannot be CLOSED.</td>
<td>None Check conditions for &quot;ready to close&quot; state (refer to page 22)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circuit breaker is OPEN with mechanism charged and circuit breaker is &quot;ready to close&quot;.</td>
<td>Closing of the circuit breaker (refer to page 23)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circuit breaker is CLOSED and mechanism is discharged.</td>
<td>• Charging the mechanism (refer to page 22) • Opening the circuit breaker (refer to page 24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Circuit breaker is CLOSED and mechanism is charged.</td>
<td>Opening the circuit breaker (refer to page 24) Operation sequence OPEN - CLOSE - OPEN (refer to page 25)</td>
</tr>
</tbody>
</table>

Operation counter

The operation counter shows the number of opening/closing cycles performed by your device.

When the device is received, the number of cycles is not zero (around 100 cycles) due to functional tests and controls performed in the factory.
Local control

A control of an operation is performed at a point on or adjacent to the controlled device.

Mechanical control

A mechanical operation allows you to store the energy required to open or close your device. The handle located on the front face of the device enable the manual charging of this mechanism.

The pushbuttons on the front face of the circuit breaker control the position of the circuit breaker (OPEN or CLOSED).

Electrical control

In order to use the electrical control functions, either local or remote, the remote control auxiliaries must be installed.

The table below shows the possible configurations for electrical control of the device.

<table>
<thead>
<tr>
<th>Charging devices</th>
<th>Closing release</th>
<th>Opening releases</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCH</td>
<td>PF</td>
<td>XF</td>
</tr>
<tr>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
</tbody>
</table>

Refer to your equipment’s user guide to find out where the circuit breaker control buttons are located.

Remote electrical control

A control of an operation is performed at a point distant from the controlled device. In order to use the electrical control functions, the remote control auxiliaries must be installed (see table above).

Refer to your equipment’s and supervision system’s user guide to find out the available communication functions.
Charging the mechanism

**Manual charging**

Pull down the charging handle six times until you hear the sound indicating that the closing mechanism is charged.

The spring charged and ready-to-close indicator moves to one of the states shown opposite.

**Automatic charging**

If the electrical motor MCH for electrical charging is energized, automatic charging of the closing spring occurs when the spring is in the discharged state.

**PF "Ready to close" contact**

The "ready to close" state of the circuit breaker is shown by a mechanical indicator and a PF changeover contact. This state checks simultaneously that:

- the circuit breaker is OPEN
- the mechanism is charged
- no opening order is activated by:
  - an opening release (MX or MN)
  - a mechanical locking.
Closing the circuit breaker

Closing conditions

Closing is possible only if the device is "ready to close". The following conditions are fulfilled simultaneously:

- circuit breaker is OPEN
- mechanism is charged
- no opening order is activated by:
  - an opening release (MX or MN)
  - a mechanical locking.

Device "ready to close"

Device not "ready to close"

Manual closing (local)

Press the closing pushbutton.

The circuit breaker state indicators move to the state shown opposite.

If the electrical motor MCH for electrical charging is energized, the closing mechanism is automatically charged (< 7 seconds) and the circuit breaker state indicators will move to the state shown opposite.

Closing by electrical control

Using the XF closing release, the circuit breaker can be closed by electrical control.

**Local**
Refer to your equipment’s user guide to find out where the circuit breaker closing button is located.

**Remote**
Connect the remote control panel to the XF closing release. Refer to your equipment’s and supervisory system’s user guide.
Opening the circuit breaker

Opening conditions
The opening order has priority over any other command.

Manual opening (local)
Press the opening pushbutton.

The circuit breaker state indicators move to the state shown opposite.

If the MCH electrical motor for electrical charging is energized, the closing mechanism is automatically charged (< 7 seconds) and the circuit breaker state indicators will move to the state shown opposite.

Opening by electrical control
The circuit breaker can be opened by electrical control using the following auxiliaries:
• MX1 and MX2 opening releases
• MN undervoltage opening release.

Using the opening releases, the circuit breaker can be opened by electrical control.

Local
Refer to your equipment's user guide to find out where the circuit breaker opening button is located.

Remote
Connect the remote control panel to the opening releases of your circuit breaker.
Refer to your equipment's and supervisory system's user guides.

Discharging the mechanism
To discharge the mechanism:
• Turn off the auxiliary voltage supply or remove the auxiliary connection plug to disable automatic charging.
• Press alternately the opening and closing pushbuttons until the state indicators of the circuit breaker are O off / "Discharged" (state shown opposite).
Circuit breaker equipped with a MN undervoltage opening release

The MN undervoltage opening release is monitoring the presence of voltage: voltage on the auxiliary circuit of the switchboard or a voltage being an image of the voltage of the medium voltage network through a voltage transformer positioned on the grid.

When the MN undervoltage opening release is not energized, it forces mechanically the opening of the circuit breaker: it is then impossible to close the circuit breaker in local or remote control.

For commissioning of a circuit breaker equipped with a MN undervoltage opening release, the voltage monitored by the MN must be present at MN's terminals. Therefore, this circuit breaker must not supply power to the monitored point by the MN.

Refer to your equipment documentation to identify the voltage monitored and its position on the grid.

Operation sequence OPEN - CLOSE - OPEN

Your device mechanism is designed to perform an operation sequence OPEN-CLOSE-OPEN from the initial state described below, without any operation on the charging mechanism. The sequence speed is defined according to your application and is controlled by your protection, control and monitoring system.

Initial state of the circuit breaker:

Perform an operation sequence OPEN - CLOSE - OPEN using the opening and closing push buttons on the circuit breaker or using electrical controls.

The circuit breaker state indicators are moving successively:

After the first OPEN of the circuit breaker

After the CLOSE of the circuit breaker

After the second OPEN of the circuit breaker

After the CLOSE operation, if the MCH electrical motor for electrical charging is energized, the mechanism is automatically charged (< 7 seconds).
Locking the fixed circuit breaker controls

Locking the pushbuttons

The pushbutton locking cover is an optional accessory that must be installed on the circuit breaker to enable the pushbuttons to be locked.

Locking by padlock

Up to 3 padlocks Ø5 to 8 mm, not supplied.

Locking by lead sealing

Lead sealing system (ref. LV429375), not supplied.

Locking by screw

Two M3 x 7 Pozidriv screws, supplied.
**Locking the device in the open position**

The circuit breaker is locked in the open position by locking the opening pushbutton in the pressed position:
- with padlocks: 1 to 3 padlocks, not supplied
- with keylocks: 1 to 2 keylocks (2 different types), supplied as an option.

The locking system is an optional accessory that must be installed on the circuit breaker to enable the device to be locked in the OPEN position. Consignment and locking procedures must be defined by the end user.

**Padlocking**
Up to 3 padlocks Ø5 to 8 mm, not supplied.

**Lock**
Open the device.

**Check**
Push closing button to check circuit breaker does not close.

**Unlock**
Remove the padlock. Check the tab returns to the unlocked position.
**Locking by keylock**

Keylocks are optional accessories.

**Lock**
Open the device. Turn the key. Remove the key.

**Check**
Push closing button to check circuit breaker does not close.

**Unlock**
Insert the key. Turn the key. Captive key.

**Two types of keylock are available:**
- Flat key
- Cylindrical key
# Understanding the racking device controls and indicators

## The different states

<table>
<thead>
<tr>
<th>Racking position indicator</th>
<th>Circuit breaker position</th>
<th>State description</th>
<th>Command available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Removed</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The circuit breaker is extracted from the switchboard.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM103934.ai</td>
<td><strong>Disconnected/test</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM104393.ai</td>
<td>The circuit breaker is inside the circuit breaker compartment; its power connections are separated from the switchboard contacts by shutters, the LV auxiliary circuit is connected and it is possible to open the circuit breaker compartment door.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Racking-in</td>
<td><strong>Intermediate</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The circuit breaker is moving from the disconnected position to the service position or vice versa. The circuit breaker compartment door is closed and locked.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM104394.ai</td>
<td><strong>Service</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DM104395.ai</td>
<td>The circuit breaker connections are connected to the switchboard contacts, the LV auxiliary circuit is connected, and the circuit breaker compartment door is closed and locked.</td>
<td></td>
</tr>
</tbody>
</table>

The following table describes the functions available on the withdrawable version of EasyPact EXE:

## Withdrawable circuit breaker positions

<table>
<thead>
<tr>
<th>Parts</th>
<th>Service</th>
<th>Intermediate</th>
<th>Disconnected/test</th>
<th>Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking tabs</td>
<td>Locked</td>
<td>Locked</td>
<td>Locked / Unlocked</td>
<td></td>
</tr>
<tr>
<td>LV connection plug</td>
<td>Connected</td>
<td>Connected</td>
<td>Connected / Disconnected</td>
<td>Disconnected</td>
</tr>
<tr>
<td>Compartment door</td>
<td>Closed and Locked</td>
<td>Closed and Locked</td>
<td>Unlocked</td>
<td></td>
</tr>
<tr>
<td>Circuit Breaker main contacts position</td>
<td>OPEN / CLOSED</td>
<td>OPEN</td>
<td>OPEN / CLOSED</td>
<td>OPEN / CLOSED</td>
</tr>
<tr>
<td>Racking device keylocking</td>
<td>Key removal impossible</td>
<td>Key removal impossible</td>
<td>Key removal possible to allow consignment</td>
<td>Key removal possible to allow consignment</td>
</tr>
<tr>
<td>Earthing switch mechanical link position</td>
<td>Earthing Switch OPEN</td>
<td>Earthing Switch OPEN</td>
<td>Earthing Switch OPEN</td>
<td>Earthing Switch CLOSED</td>
</tr>
<tr>
<td>Shutters</td>
<td>OPEN</td>
<td>OPERATING</td>
<td>CLOSED</td>
<td></td>
</tr>
</tbody>
</table>
Opening pushbutton

The red opening pushbutton of the racking device allows:
- opening the circuit breaker if it is not in the open (O off) position
- and clearing the access to the crank hole N.

Operation of locking tabs

The locking tabs allow the locking of the circuit breaker inside the circuit breaker compartment or on the extraction table.
At rest (without any manual action on the locking handles), the locking tabs are out.
To unlock the circuit breaker, manually push the locking handle to pull in the locking tabs.

Insertion and extraction of a withdrawable device

This section is describing the insertion and extraction operations of your device that can be used during installation or maintenance phases.

Depending on your equipment manufacturer, your device will be shipped inside or outside of your equipment. Refer to your equipment installation documentation to identify the case you are facing.

In order to enable an easy insertion of the device in the circuit breaker compartment of your cubicle, Schneider Electric recommends the use of an extraction table designed to carry the device, locked in position, to its insertion point and adapted to your equipment configuration. Refer to your manufacturer’s documentation to use the extraction table adapted to your equipment.
**Insertion of a device**

Before insertion, check:

- the correspondence of the device with the cubicle performances
- the front lifting eyes must be put back to their down position
- if required by your equipment manufacturer the rear lifting eye must be removed and stored close to the device's operating area
- the device is \textit{O Off / Discharged}.

1. Open the circuit breaker compartment door.
2. Check that the circuit breakers are installed in a clean cubicle in accordance with the service conditions, free of any installation scrap or items (tools, electrical wires, broken parts or shreds, metal objects, etc.).
3. Lock the extraction table in position in reference with the circuit breaker compartment.
4. Unlock the device from the extraction table.
5. Push the device into the circuit breaker compartment.
6. Lock the device in position inside the circuit breaker compartment using the locking tabs.
7. Remove the extraction table.
8. Connect the LV auxiliary connection plug on the device. If necessary you can perform test operations as described on refer to pages 20-25 of this user guide.
9. Close the circuit breaker compartment door.

To use the electrical control mode, the LV auxiliary connection plug must be connected to the device and auxiliary circuit must be energized.
**Extraction of a device**

Before extraction, check:

- the device is in disconnected/test position
- the device is OPEN.

1. Open the circuit breaker compartment door.
2. Disconnect LV auxiliary connection plug of the device.
3. Check the device indicators and, if necessary, operate the circuit breaker mechanically to place it in the **O OFF / Discharged** position.

4. Lock the extraction table in position in reference with the circuit breaker compartment.
5. Unlock the device from its position inside the circuit breaker compartment.
6. Pull the device out on the extraction table.
7. Lock the device in position on the extraction table.
8. Unlock and remove the extraction table.
9. Close the circuit breaker compartment door.
Door interlocking mechanism

**DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

- Always keep the circuit breaker compartment door closed when racking the device from one position to another.
- When the circuit breaker is connected to the main power circuit, always use the controls with the circuit breaker compartment door closed.

**Failure to follow these instructions will result in death or serious injury.**

The door locking mechanism must interact mechanically with the racking device in order to confirm the door is closed and locked before enabling the racking-in movement.

Refer to your equipment's documentation to find more information on this function.

Interchange stop mechanism

**DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

Make sure you have installed the correct circuit breaker in the correct cubicle.

**Failure to follow these instructions will result in death or serious injury.**

If the device and the cubicle are equipped with rating interchange stop mechanism, the insertion of a device not fitting the cubicle performance will be limited. However, Schneider Electric recommends a visual check of the performance of the device.

The interchange stop mechanism is made of a mechanical arrangement that prevent the insertion of a device in a circuit breaker compartment not corresponding to the device rating.

Refer to your equipment manufacturer documentation to check interchange stop rules applicable to your equipment.

*Example of a rating interchange stop*

1. Fixed part on the cubicle
2. Mobile part on the circuit breaker top
Manual racking-in

**NOTICE**

**HAZARD OF RACKING DEVICE DAMAGE**
Operate the racking device only with the original racking crank, provided by Schneider Electric.
Failure to follow this instruction can result in equipment damage.

1. Pressing the racking device pushbutton will apply an opening order to the circuit breaker.

   ![Image of racking device pushbutton](DM104402.ai)

   ![Image of racking device](DM104403.ai)

   ![Image of racking device](DM104404.ai)

   If all interlocks are implemented, the following conditions are needed for the insertion hole of the crank to be opened:
   - the racking device is locked in position
   - the LV auxiliary connection plug is connected and locked
   - the door is closed and locked
   - the device is OPEN
   - if any, the earthing switch is opened.

2. Maintain the effort on the pushbutton and insert the crank.

   ![Image of racking device](DM104405.ai)

   ![Image of racking device](DM104406.ai)

3. Turn the crank clockwise until the racking device state indicator move to the position below.

   ![Image of racking device](Device stroke [1] (mm) Nos. of crank turns)

<table>
<thead>
<tr>
<th>Device stroke [1] (mm)</th>
<th>Nos. of crank turns</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>33</td>
</tr>
<tr>
<td>230</td>
<td>38</td>
</tr>
<tr>
<td>325</td>
<td>53</td>
</tr>
</tbody>
</table>

   [1] The racking stroke depends on your integration environment. Refer to your equipment’s user guide to find the stroke of your circuit breaker.

Note: The crank can be extracted from the hole at any time prior the end of the racking-in, but this action stops the operation. Operation can be resumed by reinserting the crank after pushing the racking device pushbutton.

4. Remove the crank.

   ![Image of racking device](DM104407.ai)

   The device is in the service position.
Manual racking-out

**NOTICE**

HAZARD OF RACKING DEVICE DAMAGE
Operate the racking device only with the original racking crank, provided by Schneider Electric. Failure to follow this instruction can result in equipment damage.

1. Open electrically the device.

2. Pressing the racking device pushbutton will apply an opening order to the circuit breaker.

If all interlocks are implemented, the following conditions are needed for the insertion hole of the crank to be opened:
- the LV auxiliary connection plug is connected and locked
- the door is closed and locked
- the device is OPEN.

3. Maintain the effort on the pushbutton and insert the crank.

4. Turn the crank counterclockwise until the racking device state indicator move to the position below.

<table>
<thead>
<tr>
<th>Device stroke (mm)</th>
<th>Nos. of crank turns</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>33</td>
</tr>
<tr>
<td>230</td>
<td>38</td>
</tr>
<tr>
<td>325</td>
<td>53</td>
</tr>
</tbody>
</table>

[1] The racking stroke depends on your integration environment. Refer to your equipment’s user guide to find the stroke of your circuit breaker.

Note: The crank can be extracted from the hole at any time prior to the end of the racking-out, but this action stops the operation. Operation can be resumed by reinserting the crank after pushing the racking device pushbutton.

5. Remove the crank.

The device is in the disconnected/test position and can be operated for test operations (refer to pages 20-25 and 29).
Locking the racking device controls

Locking the racking device pushbutton

The racking device can be locked in service or disconnected positions by using a padlock (not supplied, refer to the drawing for dimensions). When the pushbutton is locked, the electrical control of the racking device is still possible.

This locking prevents any unwanted opening of the device or any manual racking-in/racking-out movement.

Multiple padlock lockout

A multiple locking system can be placed in the specially-provided hole A of the racking device pushbutton. Make sure that the multiple locking system fits properly through the door extrusion (refer to the dimensions below).
Locking the device in disconnected/test position

When the racking device is key locked, the circuit breaker is locked in disconnected/test position. Consignment and locking procedures must be defined by the operating company.

**Lock**
The key is free after locking (disconnected/test position only).

**Check**
Insert and turn the key. The key is captive and the circuit breaker is ready for racking-in.

**Unlock**
Insert and turn the key. The key is captive and the circuit breaker is ready for racking-in.

Two types of key lock are available:

**Flat key**

**Cylindrical key**
Protection, control and monitoring

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH</td>
</tr>
<tr>
<td>Never close a circuit breaker connected to the main power circuit unless the tripping chain voltage is energized and the protection, control and monitoring controllers are connected and operable.</td>
</tr>
<tr>
<td>Failure to follow these instructions will result in death or serious injury.</td>
</tr>
</tbody>
</table>

To enable the electrical protection of your installations, the EasyPact EXE must be coupled with a protection, control and monitoring system set according to the specific requirements of your installation.

Refer to the user guides for your equipment, protection relay and supervisory system.
Anti-pumping function

**WARNING**

HAZARD OF ANTI-PUMPING DYSFUNCTION

The XF closing release must not be wired in series with an auxiliary contact.

Failure to follow these instructions can result in death, serious injury or equipment damage.

The purpose of the mechanical anti-pumping function is to prevent reclosing after a CLOSE-OPEN operation as long as the device initiating closing is maintained in the position for closing.

The anti-pumping function is realized by a mechanical device included in the spring mechanism. The opening order may come from a protection relay in case of closing on a fault, and the anti-pumping function prevents from immediate re-closing on the fault.

If there is a continuous closing order, after its opening the circuit breaker remains open until the closing order is discontinued. A new closing order then closes the circuit breaker, if there is not continuous opening order.

---

**Important note**

It is forbidden to use auxiliary contact in series with the XF closing release.

Such auxiliary contact would impair the anti-pumping function. The XF closing releases are able to withstand a sustained order.
**Electrical diagrams for fixed circuit breaker**

The following electrical diagrams show a standard application for fixed circuit breaker using the number of pins available in the Schneider Electric offer. Refer to your equipment's user guide to find out the proper electrical diagrams corresponding to your circuit breaker.

**Example of wiring diagram customized for fixed circuit breaker**

<table>
<thead>
<tr>
<th>Connections available on terminal blocks</th>
<th>Connections available on the terminal blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MN / MX2</strong></td>
<td><strong>OF24</strong></td>
</tr>
<tr>
<td>D2 / C12</td>
<td>244</td>
</tr>
<tr>
<td>D1 / C11</td>
<td>242</td>
</tr>
</tbody>
</table>

[1] LV plug pin number (if applicable)

[2] Contact number of circuit breaker terminal blocks

**Option**

- MN : undervoltage opening release
- MX1 / MX2 : opening releases
- XF : closing release
- PF : “ready to close” contact
- MCH : motor for electrical charging
- OF1-OF24 : indication contacts
- : Interconnected connection points on terminal block (only one wire per connection point)
Electrical diagrams for withdrawable circuit breaker

Without motorization

The following electrical diagrams show a standard application for withdrawable circuit breaker using the number of pins available in the Schneider Electric offer. Refer to your equipment's user guide to find out the proper electrical diagrams corresponding to your circuit breaker.

**Example of wiring diagram customized for withdrawable circuit breaker**

### Connections available on terminal blocks

<table>
<thead>
<tr>
<th>MN / MX2</th>
<th>MX1</th>
<th>XF</th>
<th>PF</th>
<th>MCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2 / C12</td>
<td>C2</td>
<td>A2</td>
<td>254</td>
<td>B2</td>
</tr>
<tr>
<td>D1 / C11</td>
<td>C1</td>
<td>A1</td>
<td>251</td>
<td>B1</td>
</tr>
</tbody>
</table>

**Option**

[1] LV plug pin number (if applicable)

[2] Contact number of circuit breaker terminal blocks

### Connections available on the terminal blocks

OF1-OF24 : interconnected connection points on terminal block (only one wire per connection point)

- MN : undervoltage opening release
- MX1 / MX2 : opening releases
- XF : closing release
- PF : "ready to close" contact
- MCH : motor for electrical charging
- OF1-OF24 : indication contacts

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RACKING DEVICE POSITION CONTACTS

Service position switches (Rack-In)  Disconnected position switches (Rack-Out)

<table>
<thead>
<tr>
<th>A40</th>
<th>A30</th>
<th>A20</th>
<th>A10</th>
<th>C40</th>
<th>C30</th>
<th>C20</th>
<th>C10</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI41</td>
<td>RI31</td>
<td>RI21</td>
<td>RI11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RI42</td>
<td>RI32</td>
<td>RI22</td>
<td>RI12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B40</td>
<td>B30</td>
<td>B20</td>
<td>B10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO41</td>
<td>RO31</td>
<td>RO21</td>
<td>RO11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO42</td>
<td>RO32</td>
<td>RO22</td>
<td>RO12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>C3</td>
<td>C2</td>
<td>C1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D4</td>
<td>D3</td>
<td>D2</td>
<td>D1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1] : LV plug pin number
[3] : Racking position block designation

RI1-4: Racking-in position contacts, closed when the circuit breaker is in the service position.

RO1-4: Racking-out position contacts, closed when the circuit breaker is in disconnected/test position.
Maintaining the performance of the EasyPact EXE

After tripping

Take into account the tripping

Medium voltage electrical network faults detected by your protection, control and monitoring system will trip your device.
Refer to this user guide and that of your equipment or your protection, control and monitoring unit to find out the available fault signaling means.

Identify the cause of the tripping

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH</td>
</tr>
<tr>
<td>Do not reclose a circuit (locally or remotely) before the root cause of the fault has been identified and cleared.</td>
</tr>
<tr>
<td>Failure to follow this instruction will result in death or serious injury.</td>
</tr>
</tbody>
</table>

A device tripping may have a number of causes:
- Troubleshooting assistance may be available, depending on the type of protection, control and monitoring unit.
- Depending on the type of fault and the criticality of the loads, a number of precautionary measures must be taken, in particular the insulation and dielectric tests on all or part of the installation. These checks and tests must be directed and carried out by qualified personnel. Maintenance people must be qualified and need to be trained on EasyPact EXE circuit breakers.

Refer to the “Troubleshooting and solutions” section of this user guide.

In the event of a short circuit, inspect the device

- Check the general condition of the circuit breaker.
- Check the general condition of the clusters for withdrawable version.

Reset the installation

Refer to the user guide of your equipment or your protection, control and monitoring unit.
After you have identified and cleared the causes of tripping, you can reset the installation.
Before working on the device

1. Turn off all power supplying this device before working on or inside the device.
2. Turn off or trip the circuit breaker before working on the device.
3. Make sure the circuit breaker is OPEN and the mechanism is discharged.

**Fixed circuit breaker**

![Fixed circuit breaker image]

**Withdrawable circuit breaker**

In addition, for the withdrawable circuit breaker:

4. Rack out the circuit breaker and make sure it is in the racked-out position.
5. Remove the circuit breaker from the switchboard.
Maintenance

General information

**DANGER**

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Electrical equipment may only be maintained by qualified personnel.
- The circuit breaker must not be completely disassembled for maintenance work, except of those accessories described in this maintenance section.

Failure to follow these instructions will result in death or serious injury.

As Medium-Voltage devices contribute to safety functions, they must be installed in accordance with appropriate professional practices. Similarly, preventive maintenance operations must be strictly and regularly observed.

Your Maintenance Guide contains general instructions for:

- reducing equipment wear and tear (and/or failure),
- ensuring that the equipment is safe during all installation, repair and servicing operations.

Certain maintenance operations can be carried out independently by the User.

Two skills are essential:

- electrical qualifications,
- knowledge of the equipment to be maintained.

This user guide is not intended to be used by anyone who has not completed the relevant training.

Other very complex operations are however exclusively the responsibility of Schneider Electric. This allows our customers to benefit from optimized maintenance with regards of the economic perspective, the security and the availability of electric power:

- Schneider Electric’s engineers are highly qualified and have a thorough knowledge of Schneider Electric’s equipment and its various technical levels; they have all the methods and procedures specific to the different types of devices at their disposal, as well as the advantage of feedback from the whole company,
- they have the relevant diagnostic tools and equipment for the system they are working on,
- they carry with them the appropriate consumables and spare parts for each device, which are available from local or regional stocks.

On request, Schneider Electric will be able to provide at any time:

- an installation diagnosis,
- if required, an appropriate maintenance programme,
- an appropriate maintenance contract,
- adjustments, where necessary.

Maintenance definitions

**Preventive**

Preventive maintenance consists in carrying out, at predetermined intervals or according to prescribed criteria, checks intended to reduce the probability of a failure or deterioration in the operation of a system.

**Corrective**

Corrective maintenance repairs a system in view of fulfilling a required function.
Intervention levels

Different skill levels have been established to define the persons who are qualified to work on Medium-Voltage equipment.

**Level 1**
Maintenance operations that can be carried out by actors with basic electrician skills doing operations according to instructions provided with the device by Schneider Electric (Open, Close, Racking-in/out...)

**Level 2**
Preventive maintenance operations requiring simple procedures and / or support equipment that can be carried by professional electrical actors performing actions according to Schneider Electric documentation.

**Level 3**
Preventive or curative maintenance operations that can be carried out by an authorized person performing actions delegated by Schneider Electric.

**Level 4**
Preventive or curative maintenance operations that may affect the device performances that can be carried out by Schneider Electric local entities, either in charge of adaptation or Services.

**Level 5**
Curative maintenance operations that can be carried out by the Schneider Electric global entities. The device will generally have to be returned to the factory.

Trainings

Schneider Electric offers a wide choice of training courses on how to operate or maintain its equipment. Level 1-2 operations require training on the equipment. This training is delivered in our training centres by Schneider Electric's accredited qualified staff.
Adaptation of the device and component replacement

End Users (Level 2) are only allowed to replace the components listed below. These kit components must only be assembled, installed, used, tested, repaired or maintained by qualified personnel.

Schneider Electric shall not be held responsible for damage which occurs if:

- the instructions provided in the instruction document were not followed,
- any other component than genuine Schneider Electric was installed.

Quality and performances of final assembly is under the End User responsibility. After each operation, conduct electric tests according to the standards in force.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Replace imperatively following accessories, in case of parts replacement: Nylstop (self-stopping nut), contact washer, stop ring and mechanical pin.

Failure to follow these instructions will result in death or serious injury.

Component replacement

<table>
<thead>
<tr>
<th>Release: MX,XF,MN</th>
<th>NVE1808201</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Motor MCH</td>
<td>NVE1810301</td>
</tr>
<tr>
<td>Additional Blocks 4 NO/NC Contacts</td>
<td>NVE1810201</td>
</tr>
<tr>
<td>Padlock Device Open Position + Keylocks and Keys</td>
<td>NVE1839101 + NVE1843101</td>
</tr>
<tr>
<td>Pushbutton Padlock Device</td>
<td>NVE1839001</td>
</tr>
<tr>
<td>LV terminal Block</td>
<td>-</td>
</tr>
<tr>
<td>Removable top cover</td>
<td>-</td>
</tr>
<tr>
<td>Main front cover</td>
<td>-</td>
</tr>
<tr>
<td>Racking device front cover</td>
<td>-</td>
</tr>
<tr>
<td>Cam for VCB Racking device</td>
<td>NVE1843901</td>
</tr>
</tbody>
</table>

Schneider Electric supplies original spare parts and can provide assistance with identifying the spare parts required for your electrical distribution equipment.

To order spare parts, please contact your Schneider Electric local representative or your equipment manufacturer.

For any modification or upgrade of the circuit breaker, contact Schneider Electric or your equipment manufacturer.

Products and consumables

<table>
<thead>
<tr>
<th>Products and consumables</th>
<th>Designation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCHNEIDER ELECTRIC</td>
<td>Electrical lubricant Amblygon TA 15/2</td>
<td>18327916</td>
</tr>
<tr>
<td>SCHNEIDER ELECTRIC</td>
<td>Mechanical lubricant Isoflex Topas L 152</td>
<td>18315110</td>
</tr>
<tr>
<td>LOCAL</td>
<td>Chloride free degreasing agent</td>
<td>-</td>
</tr>
<tr>
<td>LOCAL</td>
<td>Lint-free wipe</td>
<td>-</td>
</tr>
<tr>
<td>LOCAL</td>
<td>Brush for lubricant application</td>
<td>-</td>
</tr>
<tr>
<td>LOCAL</td>
<td>3M green Scotch-Brite GP-SH</td>
<td>-</td>
</tr>
</tbody>
</table>

[1] To order products, please contact your Schneider Electric local representative.
Recommended maintenance program

Preventive maintenance operations

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAZARD OF DEVICE DAMAGE</td>
</tr>
<tr>
<td>• Comply with specified maintenance intervals.</td>
</tr>
<tr>
<td>• Perform maintenance according to the actual operating and ambient conditions.</td>
</tr>
<tr>
<td>• Contact your Schneider Electric local representative or your equipment manufacturer for any queries.</td>
</tr>
<tr>
<td>Failure to follow this instruction can result in injury or equipment damage.</td>
</tr>
</tbody>
</table>

Different maintenance program must be carried out:

• Basic level of preventive maintenance
  - to be performed every year \[^1\]
  - by level 1 and level 2.

• Advanced level of preventive maintenance
  - to be performed every two years \[^1\]
  - by level 3.

• Exclusive level of preventive maintenance
  - to be performed every five years \[^1\]
  - by level 4, using ProDiag Breaker diagnostic tool.

[^1] Recommended under normal operating conditions. However, this recommended frequency should be increased according to the level of criticality (low, major, critical) and the severity of environment conditions.

To define appropriate Maintenance program for your equipment, contact your Schneider Electric Maintenance Service local representative.

EasyPact EXE installed in normal service condition and with preventive maintenance program is designed up to:

<table>
<thead>
<tr>
<th>Circuit breaker</th>
<th>Racking device</th>
<th>MCH</th>
<th>MX/XF/MN release</th>
<th>Mechanical interlocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000 operation cycles/30 years</td>
<td>2000 operation cycles</td>
<td>10000 operations</td>
<td>10000 operations</td>
<td>2000 operation cycles</td>
</tr>
</tbody>
</table>
Basic level preventive maintenance program to be performed every year

Basic level preventive maintenance tasks

Basic preventive maintenance corresponds to maintenance levels 1 and 2.
Basic preventive maintenance tasks such as operational checks, as well as repairs by standard exchange of certain assemblies can be carried out by qualified customer personnel with basic training. There is no dismounting of parts of the circuit breaker.

<table>
<thead>
<tr>
<th>Part</th>
<th>Check</th>
<th>Frequency: every year[1]</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device</td>
<td>Check the general condition of the device (Cover, Frame, Poles, Racking device and Shutter Ramp, MV connection &amp; Cluster, LV Connection)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanism</td>
<td>Operate (Open/Close) the device manually and electrically</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charge the device electrically and check the charging time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the complete closing of the device poles</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the number of operation cycles of device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breaking Device</td>
<td>Check the cleanliness of the device (Chair, Insulating cover, VI sleeve)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliaries</td>
<td>Check auxiliary wiring and insulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device Locking for Fixed Circuit Breaker</td>
<td>Operate device keylocking</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operate device padlocking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racking Device for Withdrawable Circuit Breaker</td>
<td>Check the device racking interlock (operation of the red opening pushbutton)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the Racking-In &amp; Racking-Out position contacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the operation of Shutter Ramp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operate the racking device manually</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operate the racking device electrically for motorized circuit breaker</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the number of racking operating cycles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racking Device Padlocking</td>
<td>Operate keylocking system</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operate padlocking system</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1] every fifth year diagnostic checks is carried out by Schneider Electric Services

Tools
Performing the procedure of the maintenance program requires the following:
- a standard toolbox with electrical tools and equipment for an electrician
- specific tools, detailed in the Instruction Sheet and Maintenance Procedure.

Time Required
The global time required to perform this maintenance program is as follows:
- 30 minutes typically for a fixed device with all accessories installed
- 45 minutes typically for a withdrawable device with all accessories installed.

Safe Repository
Upload your Maintenance Reports in Safe Repository.
Operating limits for EasyPact EXE
Before reaching 10000 operations contact your Schneider Electric Service Local representative.

Performing diagnosis on your EasyPact EXE with Schneider Electric
Schneider Electric offers a large portfolio of proprietary diagnostic services for electrical distribution (ED) equipment. These services are based on long-term experience, using manufacturing data gathered over many years and analytics supported by the expert diagnostic tool ProDiag Breaker for low and medium voltage (LV/MV) circuit breakers. The ProDiag Breaker diagnostic tool deliver a formal report with technical results, clear analyses, and expert recommendations, giving you the ability to anticipate any downtime and improve availability of your installation.

ProDiag Breaker diagnostic tool
ProDiag Breaker monitors opening, closing, and spring-loading operations drifts.

Customer needs
A quick and reliably opening MV circuit breaker is now a strategic function for evaluating the full operating chain. Its fault detection rate and reaction speed stops short circuits from developing. Regular diagnosis of the complete operating chain performance in accordance with the manufacturer recommendations is necessary to secure ED equipment protection and service continuity. MV ED equipment used to run the ProDiag Breaker diagnostic service are MV circuit breakers that have not received any maintenance intervention in the last four years (under normal operating conditions, and less if operating in severe environments). The aim of ProDiag Breaker (hardware-software proprietary solution) is to mitigate the risks of circuit breaker full operating chain kinematic drifts and contacts simultaneity causing of unwanted effects. The result of extra low/high speed opening/closing/spring-loading of operating mechanisms can create stress on internal moving parts with consequent accelerated wear and tear, overheating and/or resulting internal fires, total destruction of the circuit breaker and switchboard, even the complete destruction of the electrical room.

Customer benefits
ProDiag Breaker helps customers visualize, discover, and understand circuit breaker performance and equipment wear and tear as compared to original performance. This solution monitors the opening, closing, spring-loading operations, and deviations (de-energized circuit breakers) in order to anticipate potential failures. Thanks to ProDiag Breaker, customer can implement, manage, and enrich their maintenance plans. Schneider Electric field service representatives conclude their on-site intervention with an exhaustive report on ED equipment conformity. If the MV circuit breaker is non-conforming, the Schneider Electric field service representatives suggest the corrective action (including spare parts to be replaced) required to get correct operation of circuit breaker and service continuity.

End of life
Schneider Electric is concerned about issues that impact the environment. We offer complete end-of-life recycling solutions to our customers to safely dispose of equipment. Contact your Schneider Electric Service team for further information.
# Troubleshooting and solutions

## Circuit breaker installed as fixed or withdrawable

**Diagnose the problem**

**Identify the probable causes**

**Find the solutions**

### Charging in Service position

<table>
<thead>
<tr>
<th>Problem Description</th>
<th>Probable Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic electrical charging of the mechanism does not occur but the device can be mechanically charged</td>
<td>Missing or insufficient supply voltage for the electrical motor MCH</td>
<td>Check the voltage and the supply circuit conformity (U &gt; 0.85 Ua). If the problem persists, replace the MCH.</td>
</tr>
</tbody>
</table>

### Closing in Service position

<table>
<thead>
<tr>
<th>Problem Description</th>
<th>Probable Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device cannot be closed locally or remotely</td>
<td>Device padlocked or keylocked in the &quot;open&quot; position</td>
<td>Bring installation into compliance to release locked state.</td>
</tr>
<tr>
<td>Device interlocked mechanically</td>
<td></td>
<td>Check the position of the other device</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bring installation into compliance to release locked state.</td>
</tr>
<tr>
<td>Device not completely connected</td>
<td></td>
<td>Complete the device racking in procedure.</td>
</tr>
<tr>
<td>Closing mechanism is not charged</td>
<td></td>
<td>Proceed to a manual charging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If the device is equipped with an electrical motor MCH: check the voltage and the supply circuit conformity (U &gt; 0.85 Ua). If the problem persists, replace the electrical motor MCH.</td>
</tr>
<tr>
<td>MX opening release permanently supplied with power</td>
<td>There is an opening order</td>
<td>Determine the origin of the order. This order must be canceled before the device can be closed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the voltage and the supply circuit conformity (U &gt; 0.85 Ua). If the problem persists, replace the MX opening release.</td>
</tr>
<tr>
<td>MN undervoltage opening release not supplied with power</td>
<td>There is an opening order</td>
<td>Determine the origin of the order.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the voltage and the supply circuit conformity (U &gt; 0.85 Ua). If the problem persists, replace the MN undervoltage release.</td>
</tr>
<tr>
<td>Device is not ready to close</td>
<td>Determine the condition blocking the device's &quot;ready to close&quot; state</td>
<td>Resend the closing order.</td>
</tr>
<tr>
<td>XF closing release continuously supplied with power</td>
<td>Determine the origin of the closing order.</td>
<td>Resend the closing order.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the device is ready to close</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resend the closing order.</td>
</tr>
</tbody>
</table>

### Tripping in Service position

<table>
<thead>
<tr>
<th>Problem Description</th>
<th>Probable Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexpected tripping of the device</td>
<td>Insufficient supply voltage of the MN undervoltage release</td>
<td>Check the voltage and the supply circuit conformity (U &gt; 0.85 Ua).</td>
</tr>
<tr>
<td>Unexpected opening order from the MX opening release</td>
<td></td>
<td>Determine the origin of the order</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to the user guide for your protection, control and monitoring unit.</td>
</tr>
<tr>
<td>One of the following cause occurs:</td>
<td>Determine and eliminate the tripping causes</td>
<td>Check the condition of the device before putting it back into service.</td>
</tr>
<tr>
<td>overload</td>
<td></td>
<td></td>
</tr>
<tr>
<td>earth insulation fault</td>
<td></td>
<td></td>
</tr>
<tr>
<td>short circuit detected by the protection relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instantaneous tripping after each attempt to close the device</td>
<td>Transient overcurrent when closing</td>
<td>Check your distribution system or the settings of your protection relay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the condition of the device before putting it back into service.</td>
</tr>
<tr>
<td>Closing on a short circuit</td>
<td>Determine and eliminate the tripping causes</td>
<td>Check the condition of the device before putting it back into service.</td>
</tr>
</tbody>
</table>
## Diagnose the problem Identify the probable causes Find the solutions

### Opening in Service position

<table>
<thead>
<tr>
<th>Device cannot be opened mechanically or electrically</th>
<th>Operating mechanism malfunction or welded contacts</th>
<th>Contact a Schneider Electric representative.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device cannot be opened electrically, but can be opened mechanically using the opening pushbutton located on the device</td>
<td>Opening order not executed by the MX opening release</td>
<td>Check the voltage and the supply circuit conformity (0.7 - 1.1 Ua for DC supply) and (0.85 - 1.1 Ua for AC supply). If the problem persists, replace the MX opening release.</td>
</tr>
<tr>
<td></td>
<td>Opening order not executed by the MN undervoltage opening release</td>
<td>Drop in voltage insufficient or residual voltage across the terminals of the undervoltage release &gt; 0.35 Ua. If the problem persists, replace the MN undervoltage release.</td>
</tr>
</tbody>
</table>

### Complement only for withdrawable circuit breaker

<table>
<thead>
<tr>
<th>Racking-in or Racking-out</th>
<th>Diagnose the problem</th>
<th>Identify the probable causes</th>
<th>Find the solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impossible to insert the crank in &quot;Disconnected/Test&quot; or &quot;Service&quot; position</td>
<td>A padlock or keylock is present on the racking trolley</td>
<td>Bring installation into compliance to release locked state.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The device is closed</td>
<td>Open the device.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The auxiliaries connection plug is not locked in the correct position</td>
<td>Lock the auxiliaries connection plug in the correct position.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The racking device is not properly locked in the correct position in the cubicle</td>
<td>Lock the racking device in the correct position in the cubicle.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>An interlock with earthing switch is present</td>
<td>Bring installation into compliance to release locked state.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The pushbutton located on the racking device is locked</td>
<td>Check the condition of pushbutton located on the racking device and disable this lock.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The door is open or the &quot;open door&quot; interlock is ineffective</td>
<td>Close the cubicle door or check the operation of the &quot;open door&quot; interlock.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Main contacts are welded</td>
<td>Contact your Schneider Electric representative.</td>
<td></td>
</tr>
</tbody>
</table>

| Impossible to press the pushbutton located on the racking device | The auxiliaries connection plug is not locked in the correct position | Lock the auxiliaries connection plug in the correct position. |
| | The racking device is not properly locked in the correct position in the cubicle | Lock the racking device in the correct position in the cubicle. |
| | An interlock with earthing switch is present | Bring installation into compliance to release locked state. |
| | The pushbutton located on the racking device is locked | Check the condition of pushbutton located on the racking device and disable this lock. |
| | The door is open or the "open door" interlock is ineffective | Close the cubicle door or check the operation of the "open door" interlock. |

<table>
<thead>
<tr>
<th>Impossible to turn the crank</th>
<th>Wrong direction of rotation</th>
<th>Check the direction of rotation.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Device cannot be racked in &quot;Service&quot; position</th>
<th>Mechanical problem on the shutters</th>
<th>Check the operation of the shutters.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clusters are incorrectly positioned</td>
<td>Replace clusters.</td>
</tr>
<tr>
<td></td>
<td>A lock is present on the racking device in the &quot;Disconnected/Test&quot; position</td>
<td>Bring installation into compliance to release locked state.</td>
</tr>
<tr>
<td></td>
<td>The device is closed</td>
<td>Open the device.</td>
</tr>
<tr>
<td></td>
<td>The auxiliaries connection plug is not locked in the correct position</td>
<td>Lock the auxiliaries connection plug in the correct position.</td>
</tr>
<tr>
<td></td>
<td>The racking device is not properly locked in the correct position in the cubicle</td>
<td>Lock the racking device in the correct position into the cubicle.</td>
</tr>
<tr>
<td></td>
<td>An interlock with earthing switch is present</td>
<td>Open earthing switch.</td>
</tr>
<tr>
<td></td>
<td>The pushbutton located on the racking device is locked</td>
<td>Check the condition of the pushbutton located on the racking device and remove the lock.</td>
</tr>
<tr>
<td></td>
<td>The door is open or the &quot;open door&quot; interlock is ineffective</td>
<td>Close the cubicle door or check the operation of the &quot;open door&quot; interlock.</td>
</tr>
</tbody>
</table>

<p>| Device cannot be pulled out | Device is not in the &quot;Disconnected/Test&quot; position | • Turn the crank until the device reaches the &quot;Disconnected/Test&quot; position  • Check device to cubicle lock is disengaged on both sides. |</p>
<table>
<thead>
<tr>
<th>Diagnose the problem</th>
<th>Identify the probable causes</th>
<th>Find the solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawable device cannot be inserted into the cubicle</td>
<td>An interchange stop system between the cubicle and the device is present.</td>
<td>Check concordance between the cubicle and the device.</td>
</tr>
<tr>
<td></td>
<td>A lock is present on the shutters</td>
<td>Bring installation into compliance to release locked state.</td>
</tr>
<tr>
<td>Device cannot be locked in the &quot;Service&quot; or &quot;Disconnected/Test&quot; position</td>
<td>Device is not in the correct position.</td>
<td>Turn the crank until the device reaches the wanted position (&quot;Service&quot; or &quot;Disconnected/Test&quot; position).</td>
</tr>
<tr>
<td></td>
<td>Crank remains in the racking device</td>
<td>Remove crank and store it.</td>
</tr>
<tr>
<td>Cubicle door cannot be opened</td>
<td>The racking trolley is not in the &quot;Disconnected/Test position&quot;</td>
<td>Rack out to disconnect the device.</td>
</tr>
<tr>
<td>Cubicle door cannot be closed</td>
<td>The racking device is not properly locked in the correct position in the cubicle.</td>
<td>Lock the racking device in the correct position in the cubicle.</td>
</tr>
<tr>
<td></td>
<td>The &quot;open door&quot; interlock is ineffective</td>
<td>Check the operation of the &quot;open door&quot; interlock.</td>
</tr>
</tbody>
</table>
Circuit breaker operation in a nutshell

Circuit breaker states possible evolution

- **Discharged**
- **Charged**

**Charge closing spring**

**Meet closing conditions**

**Close the circuit breaker**

**Open the circuit breaker**

**Note:** possible lockings sequences are not illustrated in this synopsis

= motorized operation
Racking operation for withdrawable circuit breaker

With auxiliary voltage

Circuit breaker electrical operation only

Without auxiliary voltage

No possible electrical operation of the circuit breaker

Service position

Open the circuit breaker

Push OFF

Discharged

or

Charged

Push OFF

Rack-in

or

Rack-out

Disconnected/test position

With auxiliary voltage

Electrical or mechanical (1) operation

Without auxiliary voltage

Mechanical (1) operation only

[1] if door is opened

= motorized operation