

EasyPact EXE

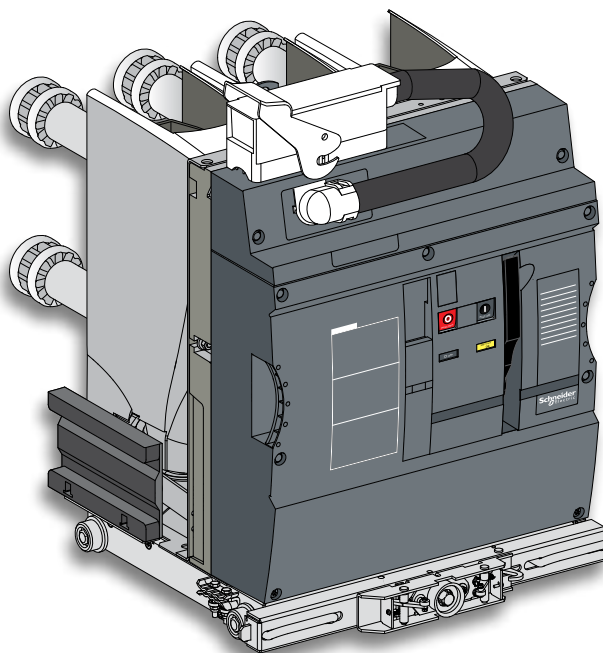
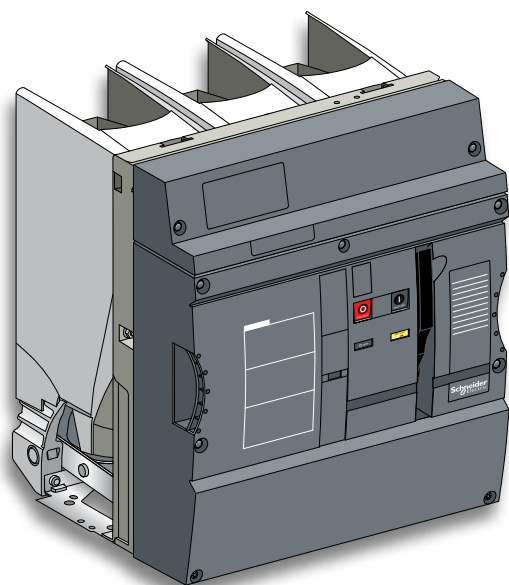


USER

Medium Voltage Vacuum Circuit Breaker (VCB) Up to 17.5 kV - 31.5 kA - 630 A to 2500 A

User Guide

NNZ5908501-03
02/2022



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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
DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING
WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION
CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE
NOTICE is used to address practices not related to physical injury.


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.
- When the products are used in applications with specific technical requirements, integration and protection rules relating to these requirements are to be used.

 **⚠ 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.
- Use only genuine Schneider Electric specific tools (operating crank, extraction table, ...).
- Check all devices, covers and doors are in correct position 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 protective 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.
- Respect the storage conditions of the Circuit Breaker.

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

 **⚠ WARNING**

HAZARD OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

- Change default passwords at first use to help prevent unauthorized access to device settings, controls, and information.
- Disable unused ports/services and default accounts to help minimize pathways for malicious attackers.
- Place networked devices behind multiple layers of cyber defenses (such as firewalls, network segmentation, and network intrusion detection and protection).
- Use cybersecurity best practices (for example, least privilege, separation of duties) to help prevent unauthorized exposure, loss, modification of data and logs, or interruption of services.

Failure to follow these instructions can result in death, serious 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, and its Basic Level Preventive Maintenance operations. This document should be available at any time to those required to use or work on the circuit breaker. If the device is sold after installation, this document should 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.se.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



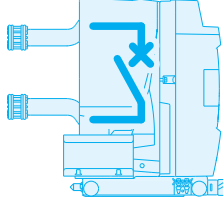
Schneider Electric cannot be held responsible for damage due to:

- 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 EasyPact EXE

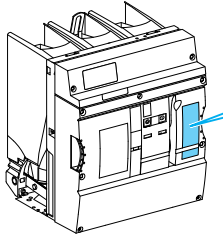
Presentation of Vacuum Circuit Breaker (VCB)

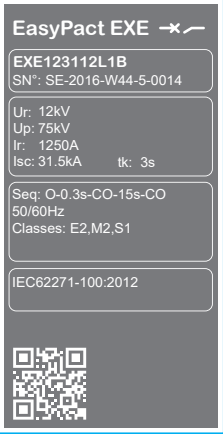
Function



EasyPact EXE Vacuum Circuit Breaker is a device enabling switching and protection of distribution networks. Installed in a Medium Voltage cubicle, it helps protecting all of the components situated downstream during a short circuit.

Nameplate





EasyPact EXE

EXE123112L1B
SN*: SE-2016-W44-5-0014

Ur: 12kV
Up: 75kV
Ir: 1250A
Isc: 31.5kA tk: 3s

Seq: O-0.3s-CO-15s-CO
50/60Hz
Classes: E2,M2,S1

IEC62271-100:2012

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 and of mechanical endurance

Standard with date of issue

QR code

How to Use the QR Code

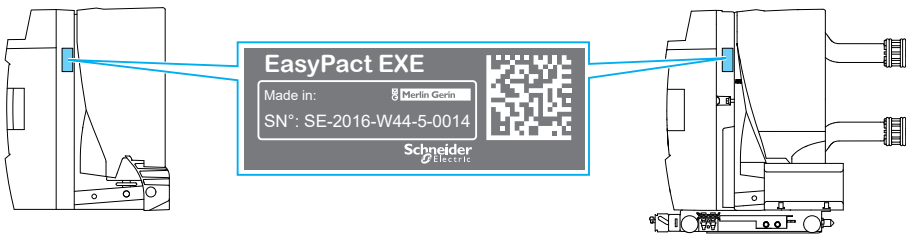
The serial number (SN) located on the nameplate is 18 characters.
Example: SE-2016-W44-5-0014.
To access to Safe Repository, enter the SN with its simplified 11 characters' format.
Example: SE164450014.
If you type the long description, it will be automatically converted in short description. The QR 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 and so on.

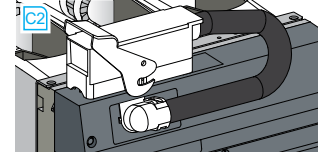
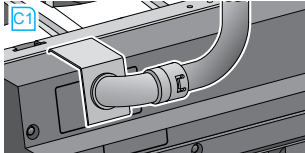
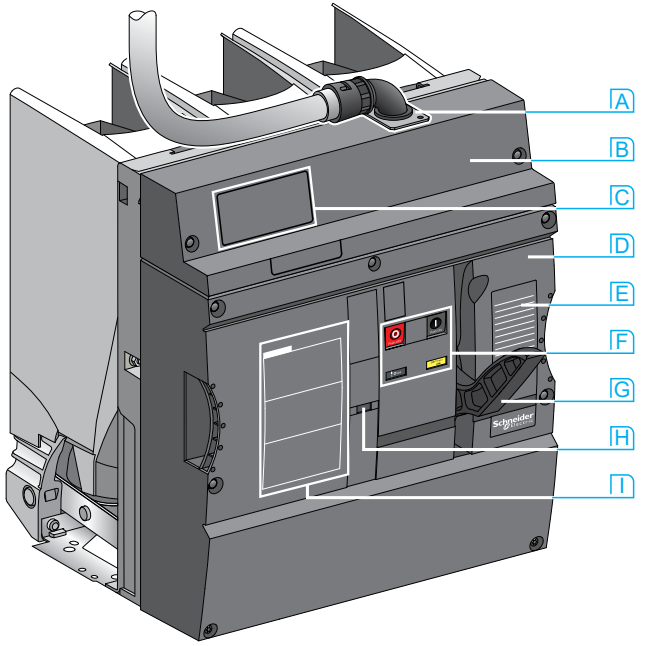
To access this information, scan the QR code with your Smartphone or your connected tablet. You will be directed to the website containing the data relating to your device. Follow the instructions to obtain personal access. The serial number and the commercial reference also allow to access the information without Smartphone or connected tablets.

Identification Plate



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

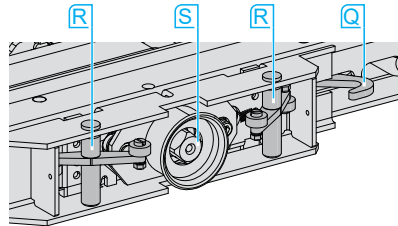
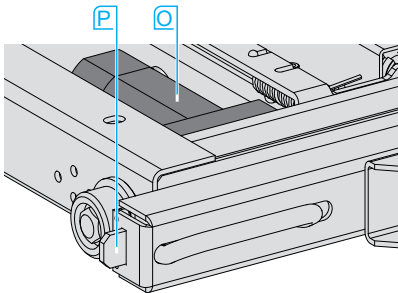
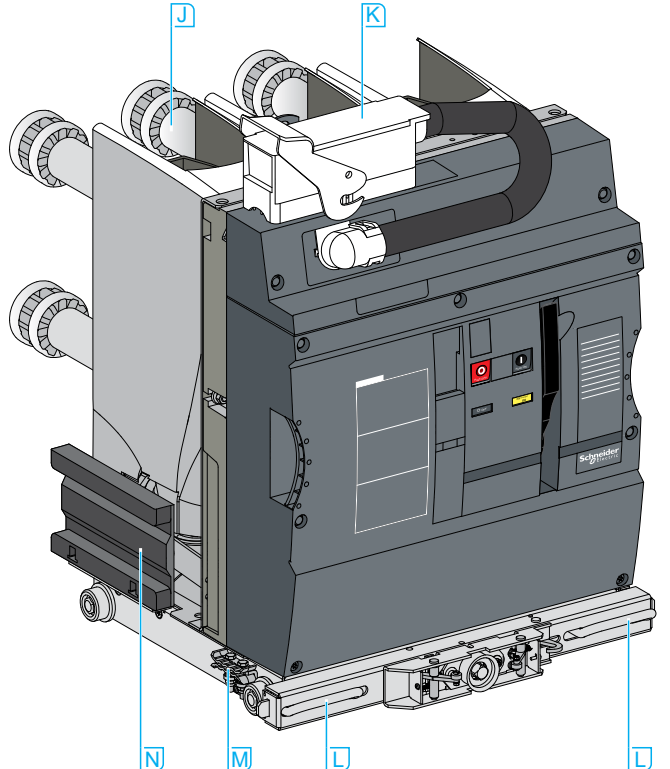
F4 Main contact position indicator

G Operating mechanism charging handle

H Operation counter

I Operating instructions

Front View of Withdrawable Circuit Breaker



J Power connections (Arms and Clusters)

K LV plug (58 pin)

L Locking handles

M Earthing contact (optional)

N Shutter ramp

O Racking device motor (optional)

P Locking tabs

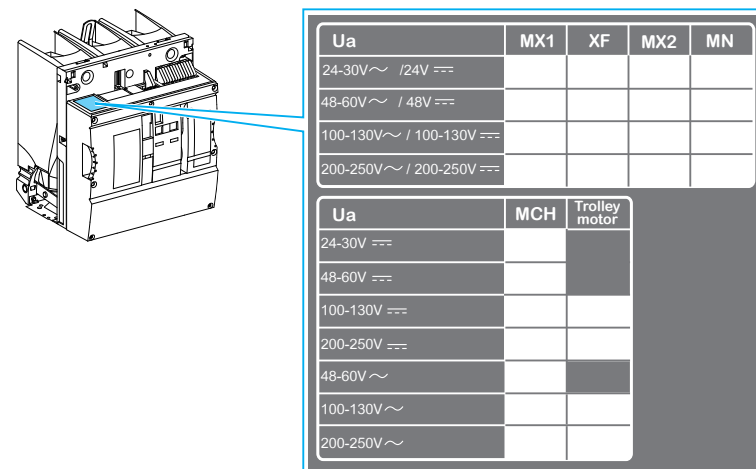
Q Hook to lock the CB compartment door

R Rollers for door interlocking

S Square pin for rack in/out handle

T Bottom Earthing Bar (optional)

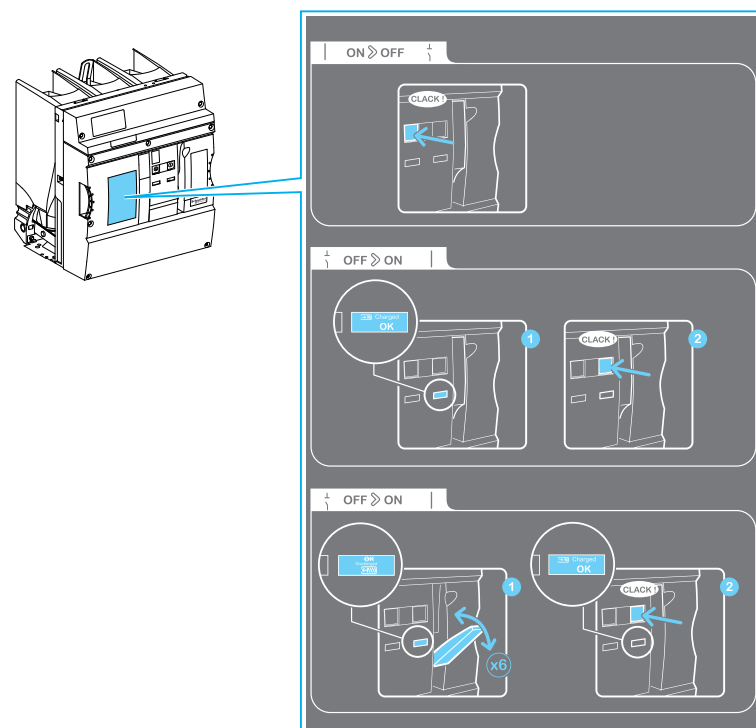
Customization Label



The customization label is used to show what accessories are fitted to the device and their voltages.

Operating Instructions Label

Label of circuit breaker operating instructions



This label located on the front cover gives a reminder of how local manual controls are used (switching between Open and Closed states and manual spring charging).

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:

Indoor device	
IEC 62271-1: 2017	
Ambient air temperature: <ul style="list-style-type: none"> • minimum value • maximum value • average measured over a 24-hour period 	-25 °C +40 °C ≤ 35 °C
Average relative humidity: <ul style="list-style-type: none"> • measured over a 24-hour period • measured over a 1-month period 	≤ 95 % ≤ 90 %
Average water vapor pressure: <ul style="list-style-type: none"> • measured over a 24-hour period • measured over a 1-month period 	≤ 2.2 kPa ≤ 1.8 kPa
Altitude above sea level	≤ 1000 m
Atmosphere	The ambient air is not significantly polluted by dust, smoke, corrosive and/or flammable gases, vapours or salt.

Other Service Conditions

NOTICE

HAZARD OF INOPERABLE EQUIPMENT

Do not use the circuit breaker beyond the normal service conditions unless express written permission taken from the manufacturer for other service condition.

Failure to follow this instruction can result in equipment damage.

Storage Conditions and Arrangements

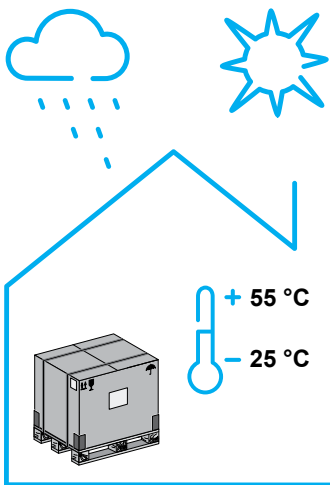
Storage Conditions

⚠ CAUTION

HAZARD OF INAPPROPRIATE STORAGE CONDITIONS

- If the device is to be stored, observe all the storage instructions.
- The device is to be kept in the original packaging until 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 -25 °C and +55 °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 months, 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 on the device then do not install.



The device is to be stored in the open and discharged position.

In addition, for withdrawable devices, the racking device is to be in "disconnected/test" position.

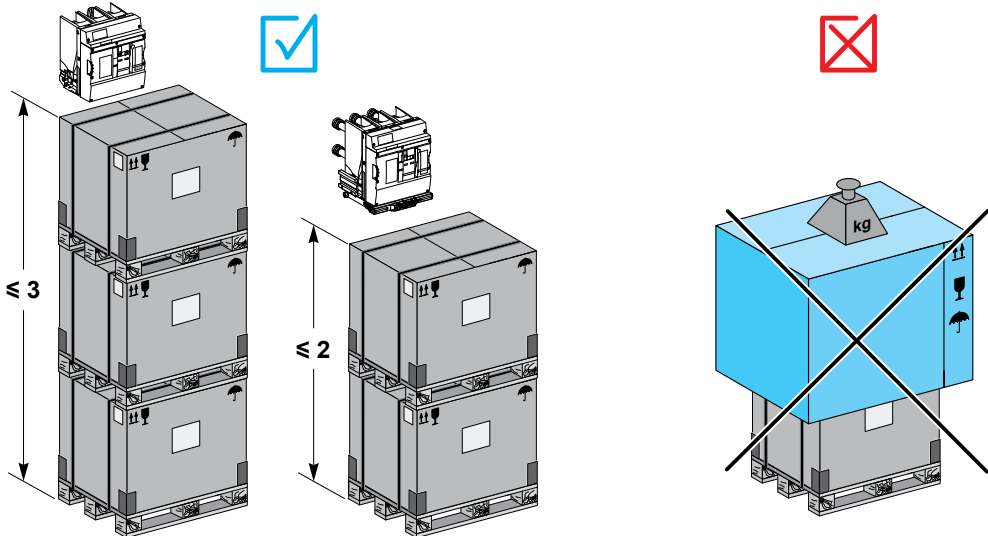
Storage Arrangements - Stacking

NOTICE

HAZARD OF HEAVY LOAD STACKING

- Do not place heavy objects on the packaging.
- Follow stacking limit which is specified on packing box.

Failure to follow these instructions 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.

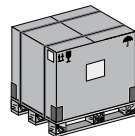

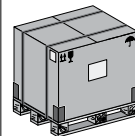

⚠ CAUTION

HAZARD OF INAPPROPRIATE HANDLING

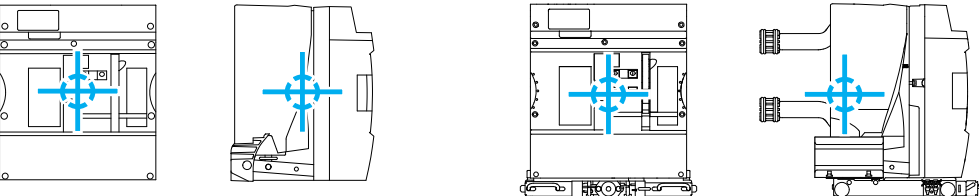
- Move the device with the utmost caution and avoid shocks.
- Lift and handle the device using only dedicated points.

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

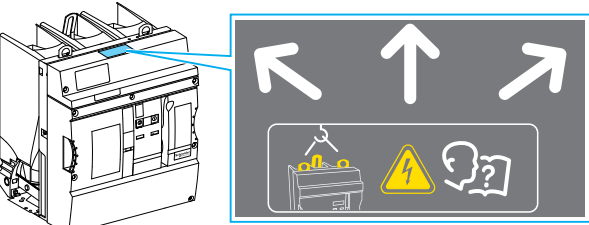
Mass

Maximum mass (fixed version)		Maximum mass (withdrawable version)	
 200 kg	 90 kg	 220 kg	 180 kg

Position of Center of Gravity



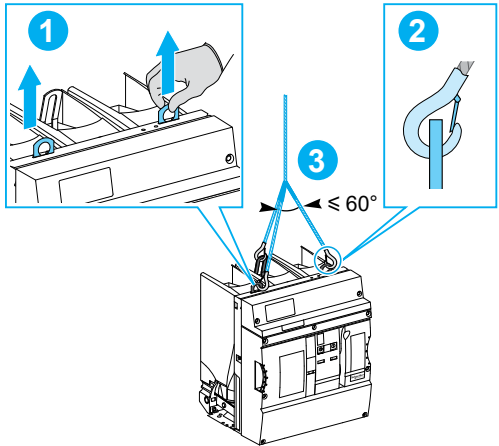
How to Use the Lifting Eyes



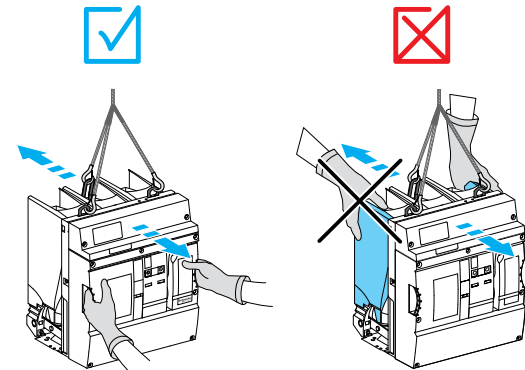
Label and its location on the circuit breaker.

Fixed circuit breaker

Lift the device using the 3 lifting eyes.
Never lift using a forklift from below the device.

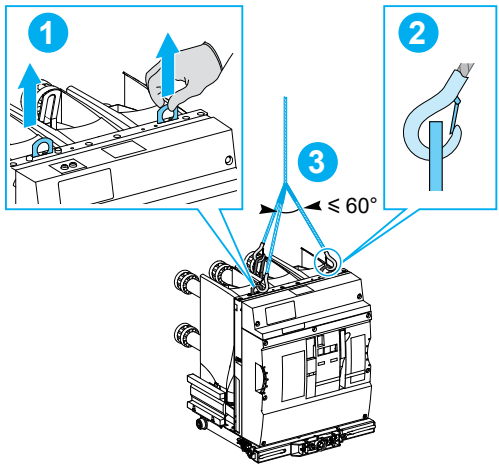


When handling, guide the device by the recessed handles of the front cover.

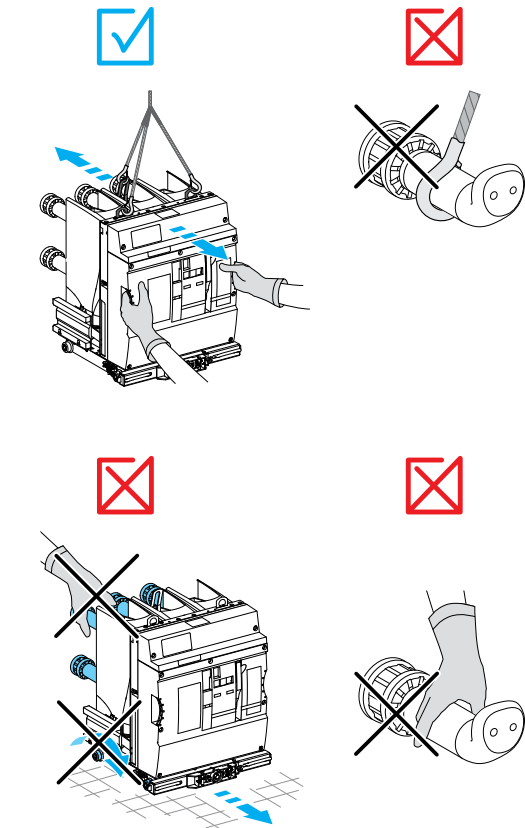


Withdrawable circuit breaker

Lift the device using the 3 lifting eyes.
Never lift using a forklift from below the device.



When handling, guide the device by the recessed handles of the front cover.
The device should not be lifted by the power connections, arms or dragged 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.
Before energizing after installation or before re-energizing after an extended shut down, a general inspection of devices is to be performed.

⚠️ ⚠️ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

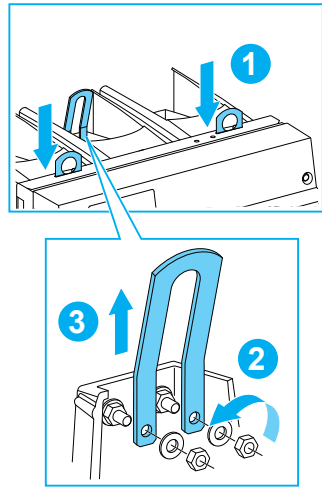
- Perform all the checks with the entire switchboard de-energized.
- Check on the switchboard that the circuit breaker's clamping elements have been removed.
- According to your equipment manufacturer recommendation, remove the rear lifting eye.
- Check that the switchboard and devices are in good serviceable condition.
- 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 should deliver a commissioning report before the first energizing of your electrical installation.

Switchboard Inspection

Ensure the switchboard and device are clean and free from scrap and foreign objects such as: tools, electrical cable, broken parts, metal objects and so on.



The front lifting eyes are to be returned to the stowed position.

The rear lifting eye is to be removed and stored near the installation.

Conformity with the Installation Electrical Diagram

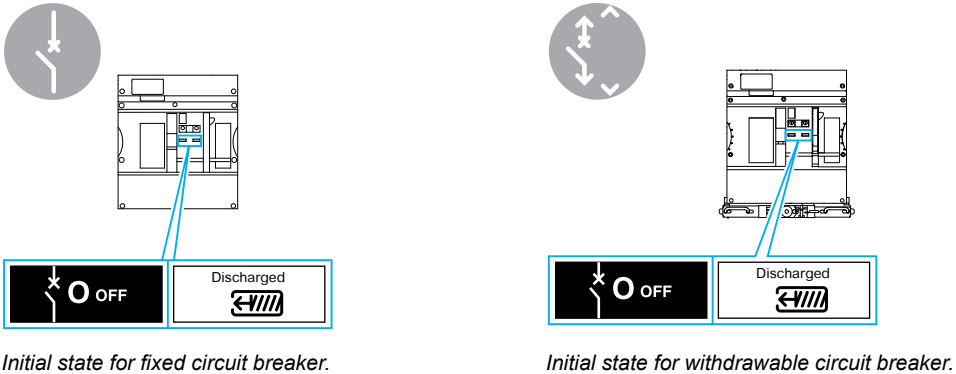
⚠ WARNING

HAZARD OF NON-COMPLIANT VOLTAGE
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 that the devices match the installation diagram:
- breaking capacities indicated on the nameplates
 - presence of optional functions (electric control of charging mechanism, racking device motor control, auxiliaries, meters, blocking magnet and indicators, etc.) and conformity of their electrical characteristics
 - identification of the protected circuit on the front of the devices or/and equipment.

Operating

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



- Check the mechanical operation of the devices in every control modes (local mechanical, 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)
 - In case of racking device motor control:
 - Energize the motorization from the LV cabinet
 - Rack-in and rack-out your device (according to the configuration of your switchboard)
 - De-energize the motorization from the LV cabinet
 - Check the operation of the locking and interlocking
- Return the circuit breaker to 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 EasyPact EXE



Understanding the Circuit Breaker Controls and Indicators

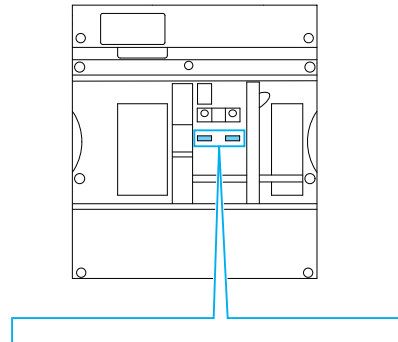
Different States

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Installation, repair, and maintenance work on the device must only be carried out by qualified personnel.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.

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



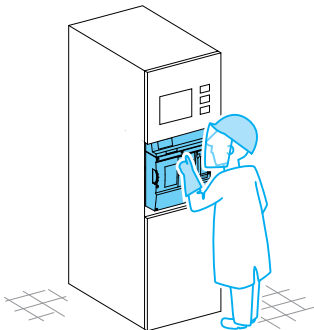
Circuit breaker indicators		Electrical state	State description	Command available
Main contacts position indicator	Spring and ready-to-close indicator			
			Circuit breaker is OPEN and mechanism is discharged.	Charging the operating mechanism (refer to page 21)
			Circuit breaker is OPEN. Mechanism is charged but the circuit breaker cannot be CLOSED (opening order is maintained).	None Check conditions for "ready to close" state (refer to page 22)
			Circuit breaker is OPEN with mechanism charged and circuit breaker is "ready to close".	Closing of the circuit breaker (refer to page 22)
			Circuit breaker is CLOSED and mechanism is discharged.	<ul style="list-style-type: none">• Charging the operating mechanism (refer to page 21)• Opening the circuit breaker (refer to page 23)
			Circuit breaker is CLOSED and mechanism is charged.	<ul style="list-style-type: none">• Opening the circuit breaker (refer to page 23)• Operation sequence Open - Close - Open (refer to page 24)

Spring and ready-to-close indicator	Description
	Mechanism closing spring is discharged
	Mechanism closing spring is charged Circuit breaker is not ready to close
	Mechanism closing spring is charged Circuit breaker is ready to close

Local Control

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

Mechanical control



- A mechanical operation on the circuit breaker allows you:
- To store the energy required to open or close your device ; the handle located on the front face of the device enables the manual charging of this mechanism.
 - To control the state of the device (OPEN or CLOSED) with the pushbuttons located on the front face of the circuit breaker.

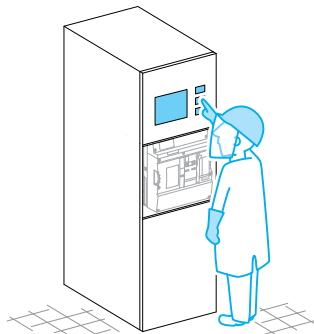
- A mechanical operation on the racking device allows you:
- To perform the circuit breaker racking-in/racking-out.
 - To operate the racking device.

Electrical control

In order to use the electrical control functions, either local or remote, install the remote control auxiliaries with associated pushbutton and commutators.

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

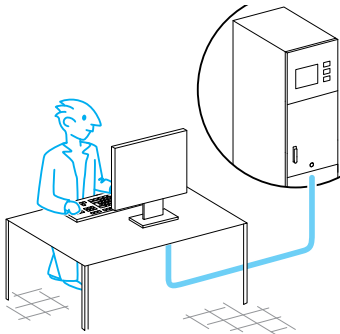
Charging devices		Closing release	Opening releases			Racking device motorization	Electromagnet locking
MCH	PF	XF	MX1	MX2	MN		
■	■	■	■			Optional	Optional
■	■	■	■	■		Optional	Optional
■	■	■	■		■	Optional	Optional



Refer to your equipment's documentation to find out where the circuit breaker control buttons are located.

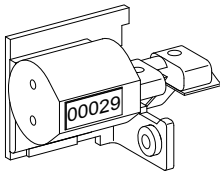
Remote Electrical Control

A control of an operation is performed at a point distant from the controlled device. In order to use the electrical control functions, install the remote control auxiliaries with associated push button and commutators (see table above).



Refer to your equipment's and supervision system's documentation to find out the available communication functions.

Operation Counter

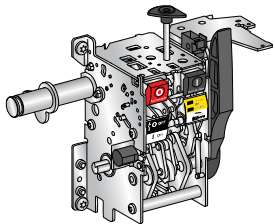


Operation counter.

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 due to functional tests and controls performed in the factory.

Understanding the P2 Operating Mechanism

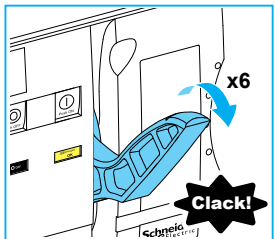
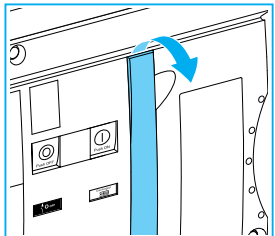


EasyPact EXE uses a stored energy type operating mechanism that is independent of operator input helps ensuring correct opening and closing speeds.

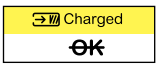
Principle of operation:
The closing spring is charged, either manually or using the electrical motor MCH.
The energy stored in the closing spring is released using the XF coil or closing pushbutton. As the mechanism closes the circuit breaker, the opening spring is charged using the closing spring energy and the circuit breaker is latched closed. To open the circuit breaker, the opening spring energy has to be released, this is done via the opening push button or the MX coil or the MN coil.

Charging the Mechanism

Manual charging



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



Device not "ready to close".

or

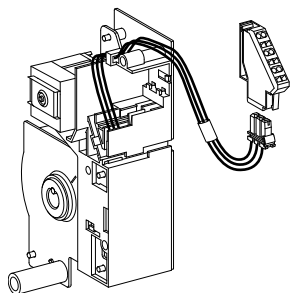


Device "ready to close".

The mechanism charge indicator moves to one of the states shown opposite:
Charged not Ok: Activation MN; permanent Opening Order; intermediate position of racking device.

Charged Ok: The circuit breaker can be closed

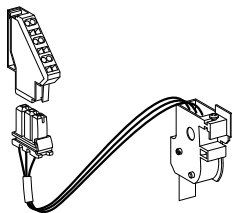
Automatic charging



Electrical motor MCH.

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



"Ready to close" contact PF.

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



Device "ready to close".

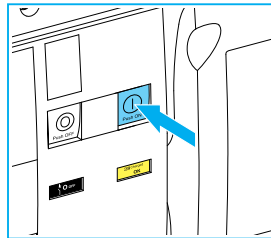


Device not "ready to close".

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.

Manual closing (local)



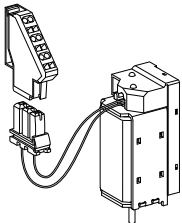
Press the closing pushbutton.



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



XF closing release.

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

Local

Refer to your equipment's documentation to find out where the circuit breaker closing button is located.

Remote

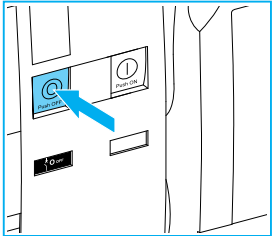
Connect the remote control panel to the XF closing release. Refer to your equipment's and supervision system's documentation.

Opening the Circuit Breaker

Opening conditions

The opening order has priority over any other command.

Manual opening (local)



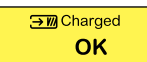
Press the opening pushbutton.

With no electrical motor MCH or MCH not energized



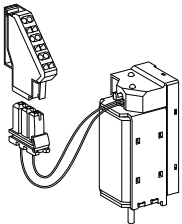
The circuit breaker state indicators move to the state shown opposite.

With electrical motor MCH energized



The closing spring mechanism is already charged due to motorization of mechanism.

Opening by electrical control



Opening releases MX1, MX2, MN

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 documentation 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 supervision system's documentation.

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 of the auxiliary circuit or main circuit. Voltage of auxiliary circuit is given directly and main circuit voltage is given using 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 should be present at the MN's terminals. Therefore, this circuit breaker should 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.

OPEN – CLOSE – OPEN without Electrical Motor MCH or MCH not Energized

Your device mechanism is designed to perform an operation sequence OPEN-CLOSE-OPEN from the initial state described below, without recharging the closing spring. 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 pushbuttons 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

OPEN – CLOSE – OPEN with Electrical Motor MCH Energized

Initial state of the circuit breaker:



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

The circuit breaker state indicators are moving successively:



Press OPEN pushbutton - The circuit breaker opens and the Charged state indicator changes to Charged Ok as the circuit breaker is ready to close.



Press CLOSE pushbutton - The circuit breaker closes and the Charged state indicator changes to Discharged until the electrical motor recharges the spring (less than 7 seconds). The indicator then changes to Charged Not Ok.

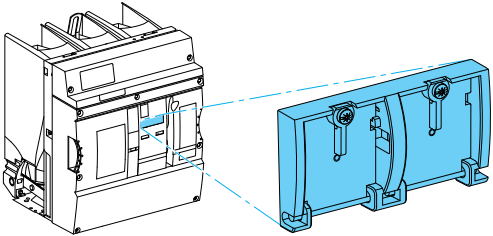


Press OPEN pushbutton - The circuit breaker opens and the Charged state changes to Charged Ok as the circuit breaker is now ready to close.

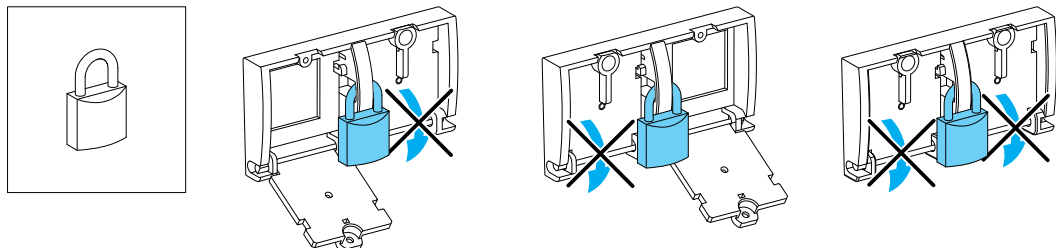
Locking the Fixed Circuit Breaker Controls

Locking the Pushbuttons

The pushbutton locking cover is an optional accessory that is installed on the circuit breaker to enable locking of the push buttons via padlock, lead seal or screws.

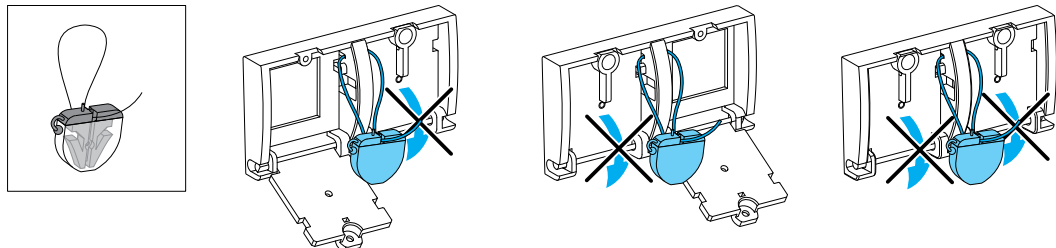


Locking by padlock



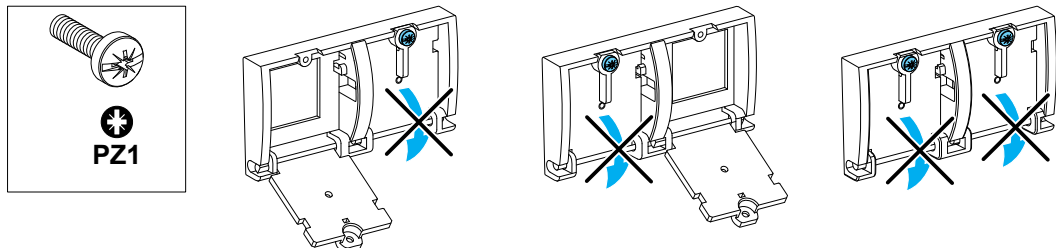
Up to 3 padlocks Ø5 to 8 mm, not supplied.

Locking by lead sealing



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

Locking by screw

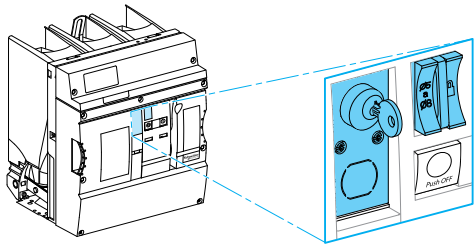


Two M3 x 7 Pozidriv screws, supplied.

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.



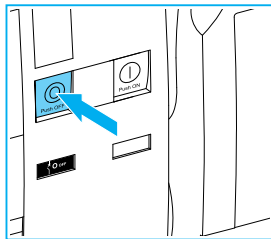
Install the locking system (Optional accessory) on the circuit breaker to enable the device to be locked in the OPEN position.
The Lock Out Tag Out procedures is defined by end user.

Padlocking

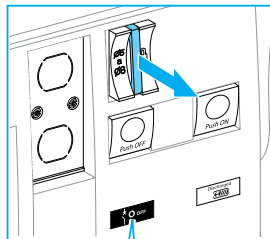
Up to 3 padlocks Ø5 to 8 mm, not supplied.

Lock

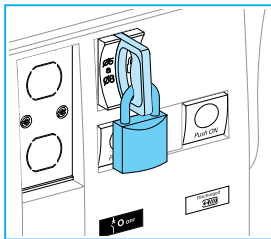
Open the device.



Pull out the locking tab.

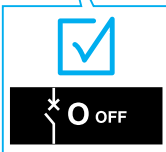
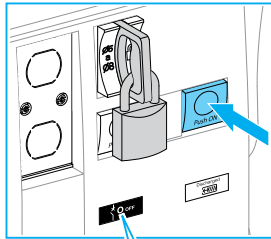


Lock the padlock.



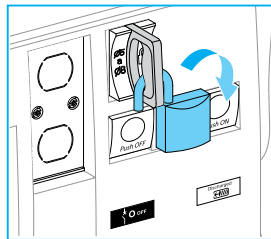
Check

Push closing button to check circuit breaker does not close.



Unlock

Remove the padlock. Check the tab returns to the unlocked position.

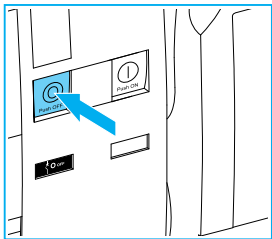


Locking by keylock

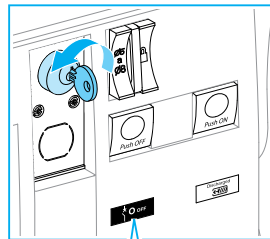
Keylocks are optional accessories.

Lock

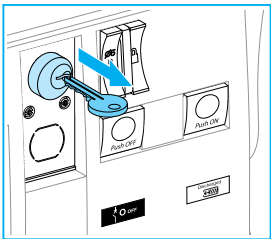
Open the device.



Turn the key

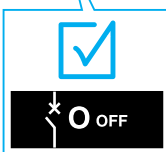
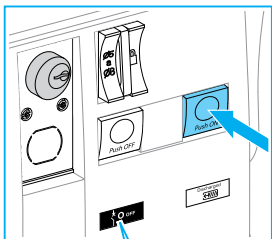


Remove the key.



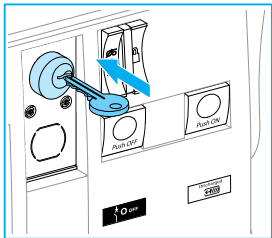
Check

Push closing button to check circuit breaker does not close.

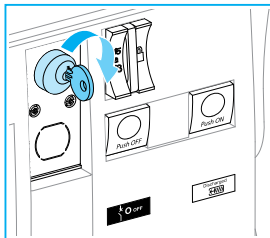


Unlock

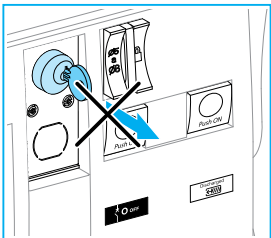
Insert the key



Turn the key

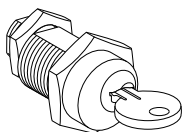


Captive key

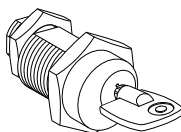


Two types of keylock are available:

Flat key

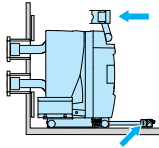
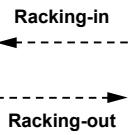
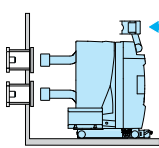
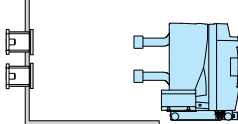


Cylindrical key

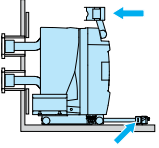
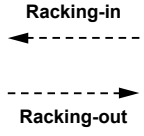
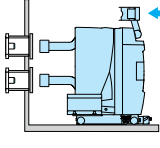
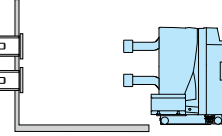


Understanding the Racking Device Controls and Indicators

Different states

Circuit breaker position	State description	Command available
	Service 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.	<ul style="list-style-type: none">• Circuit breaker operations (refer to pages 19-24)• Racking-out (Manual) (refer to page 37)• Racking-out (Remote) (refer to page 39)
	Intermediate 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. An opening order is maintained during racking in/out operation.	<ul style="list-style-type: none">• Racking-in (Manual) (refer to page 36)• Racking-out (Manual) (refer to page 37)• Racking-in (Remote) (refer to page 38)• Racking-out (Remote) (refer to page 39)
	Disconnected/test 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.	<ul style="list-style-type: none">• Circuit breaker operation (refer to pages 19-24)• Racking-in (Manual) (refer to page 36)• Racking-in (Remote) (refer to page 38)
	Removed The circuit breaker is extracted from the switchboard using the extraction table.	

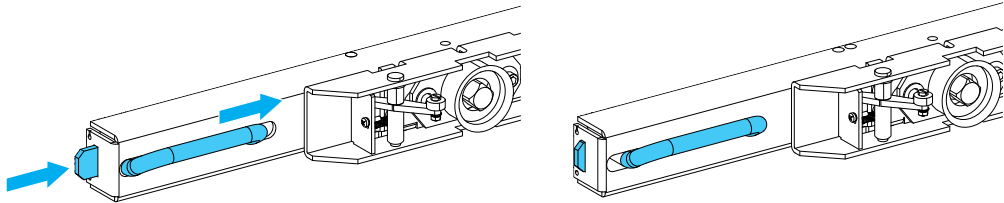
The following table describes the functions available on the withdrawable version of EasyPact EXE:

Withdrawable circuit breaker positions				
				
Parts	Service	Intermediate	Disconnected/test	Removed
Locking tabs	Locked	Locked	Locked/Unlocked	
LV connection plug	Connected	Connected	Connected/Disconnected	Disconnected
Compartment door	Closed and Locked	Closed and Locked	Unlocked	Unlocked
Circuit breaker VI contacts position	OPEN/CLOSED	OPEN	OPEN/CLOSED	OPEN/CLOSED
Earthing Switch mechanical link position ^[1]	Earthing Switch OPEN	Earthing Switch OPEN	Earthing Switch OPEN Earthing Switch CLOSED	Earthing Switch OPEN Earthing Switch CLOSED
Shutters	OPEN	OPERATING	CLOSED	CLOSED

[1] For details, please refer to your equipment manufacturer documentation.

Operation of Locking Tabs

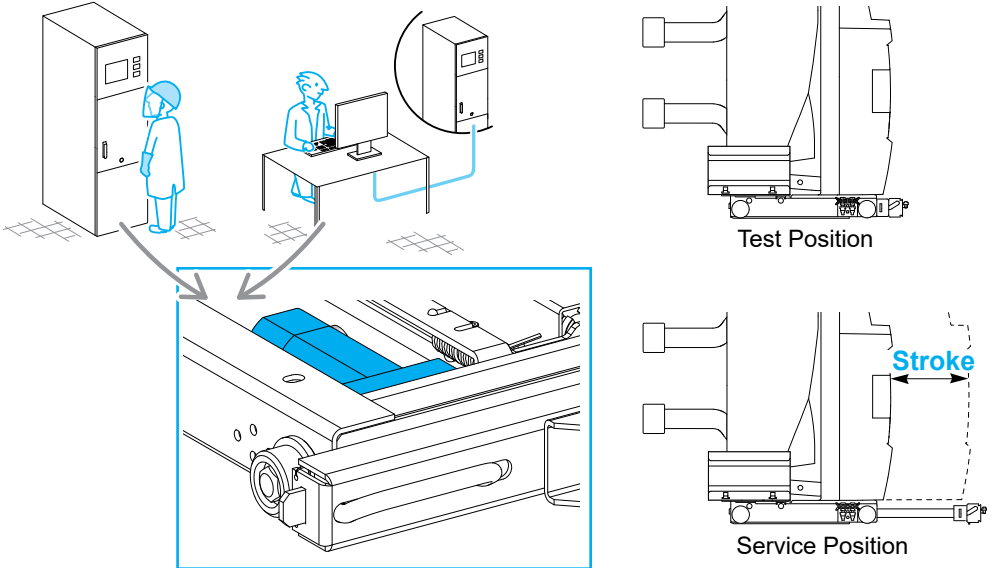
The locking tabs allow the locking of the circuit breaker inside the circuit breaker compartment or on the extraction table.
At rest (without any manual action on the locking handles), the locking tabs are out.
To unlock the circuit breaker, manually push the locking handle to pull in the locking tabs.



When the device is in intermediate or service positions the locking tabs are blocked and cannot be operated.

Motorization of Racking Device (Option)

The racking-in and racking-out operations can be done remotely if the racking device is equipped with a motor.
The motor is mounted inside the racking device and its controller is positioned in the LV cabinet.



Door Interlocking Mechanism

⚠ ⚠ DANGER

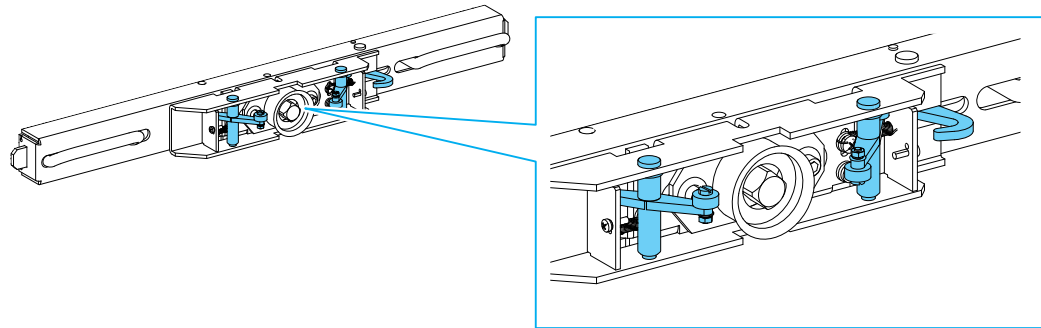
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Perform racking-in and racking-out operation only with door closed and locked.
- Perform circuit breaker operation in service position only with door closed.

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

When the door of the circuit breaker compartment is closed and locked, the door interacts mechanically with the racking device interlock which enables the racking-in movement.

During the racking-in or the racking-out, the door gets locked to helps preventing the door opening. The door can be unlocked only if the circuit breaker is in the "Disconnected/test" position.



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

Closed Door Interlock

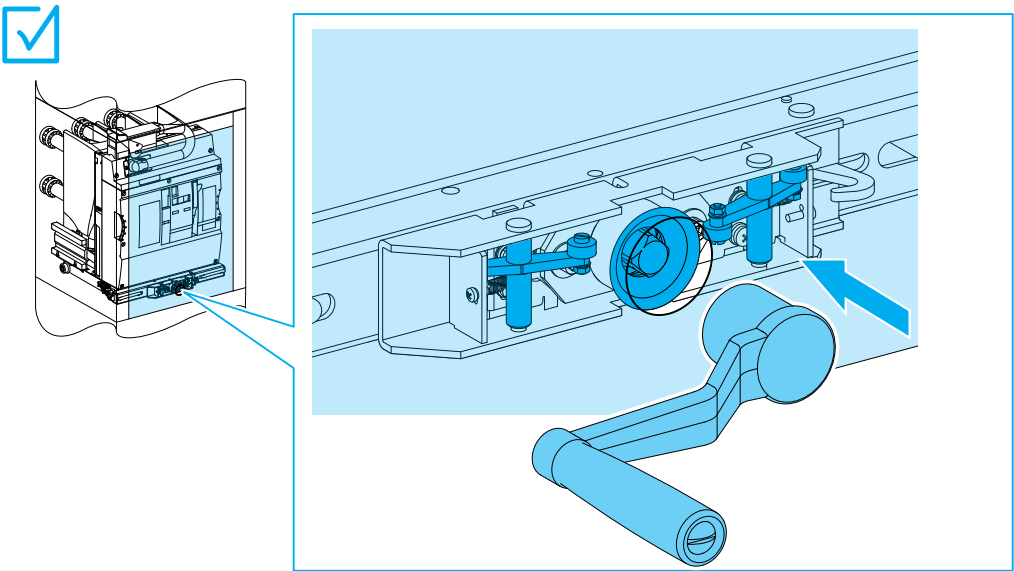
⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

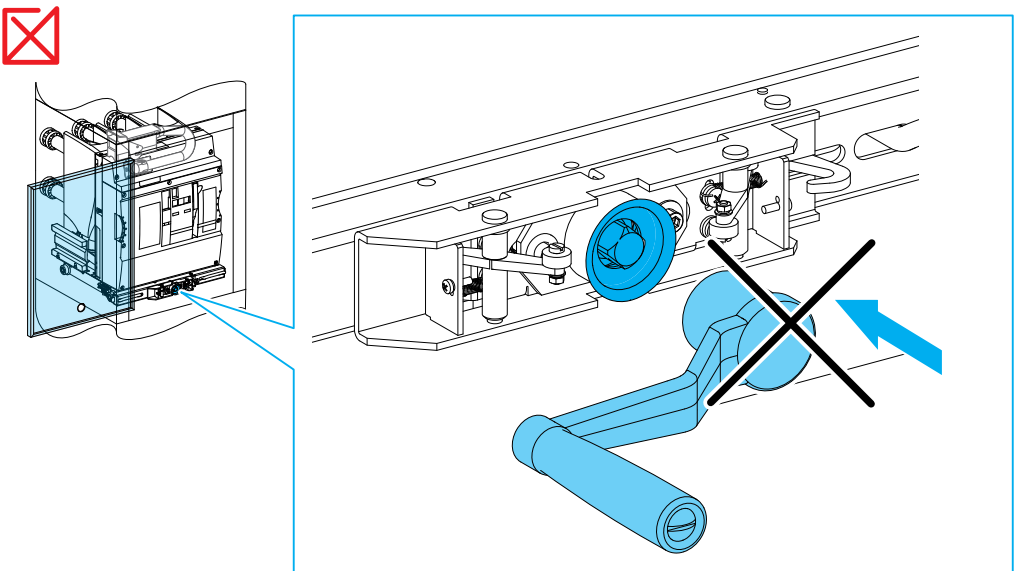
- Perform racking-in and racking-out operation only with door closed.
- Perform circuit breaker operation only with door closed.

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

Rack-in or rack-out is possible only when the door is in closed condition.



Rack-in or rack-out not possible when door is not closed.



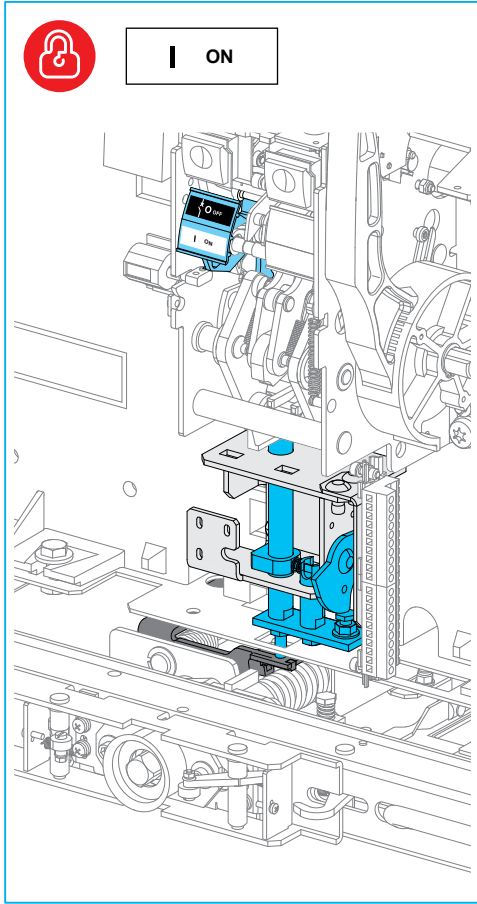
Refer to your equipment’s documentation to find more information on this function.

Interlocking of the Racking Device

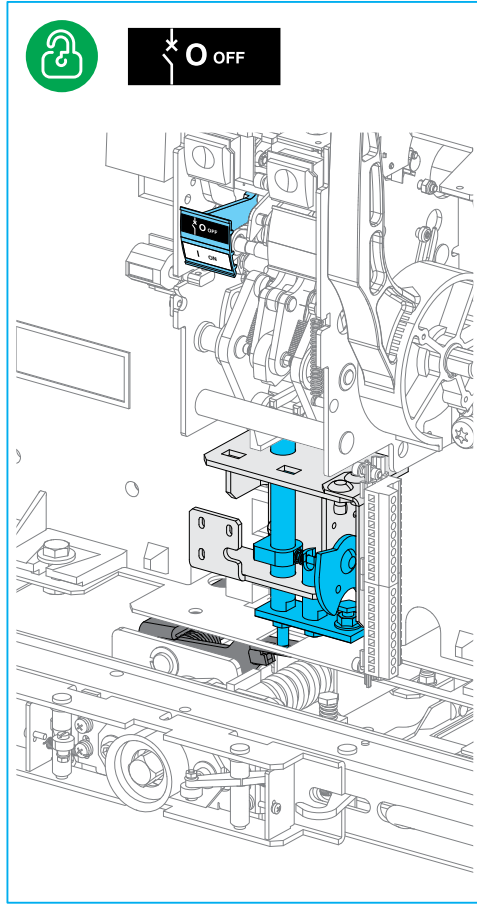
Mechanical Interlocking of the Racking Device

This interlock blocks racking-in or racking-out operation, when circuit breaker is in ON condition.

Circuit Breaker ON
When the circuit breaker is in ON condition, the racking handle rotation is blocked.



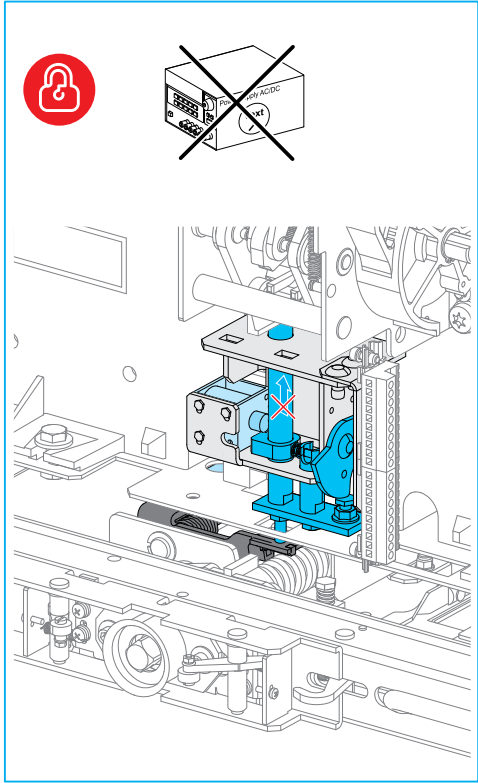
Circuit Breaker OFF
When the circuit breaker is in OFF condition, rotation of racking handle is possible.



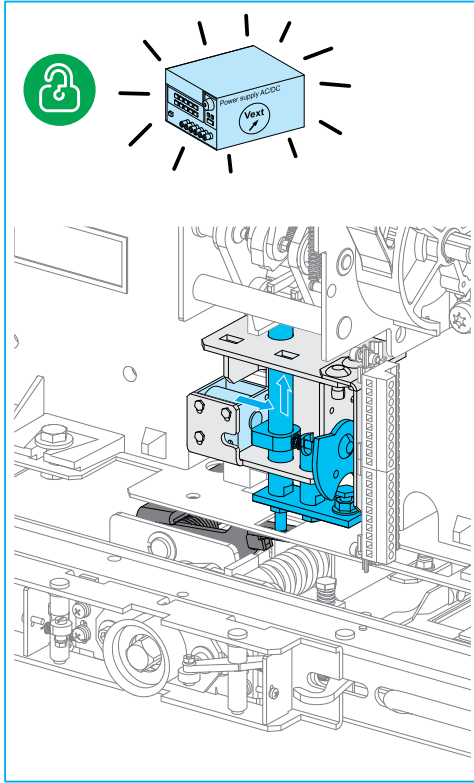
Electromagnetical Interlocking of the Racking Device (Optional)

This interlock blocks racking-in or racking-out operation, when electromagnet is NOT energized.

Lock
When the coil is not energized, the racking handle rotation is blocked.



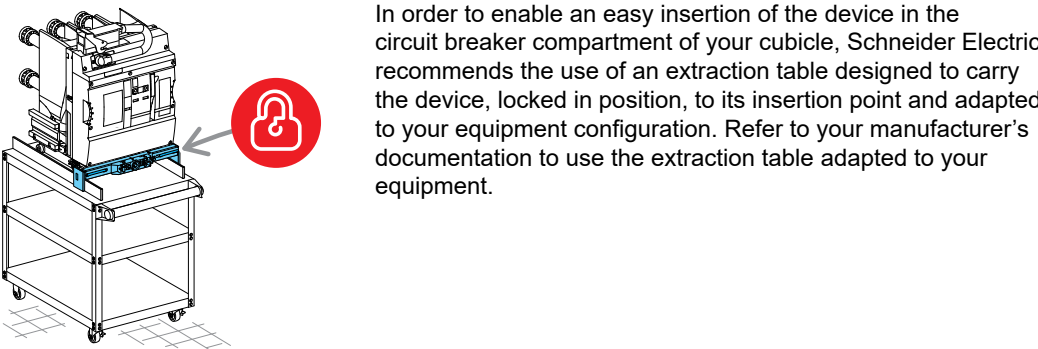
Unlock
When the coil is energized, and circuit breaker is in OFF condition, rotation of racking handle is possible.



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.

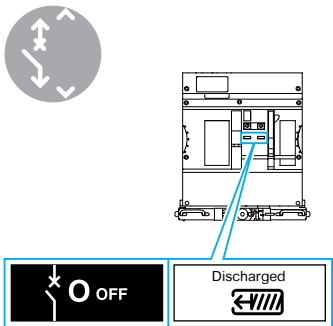
Depending on your equipment manufacturer, your device will be shipped inside or outside of your equipment. Refer to your equipment installation documentation.



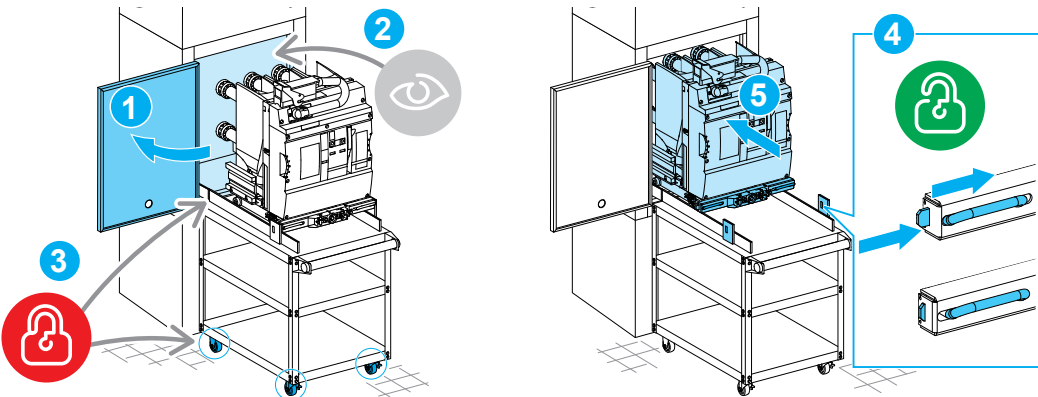
Insertion of a device

Before insertion, check:

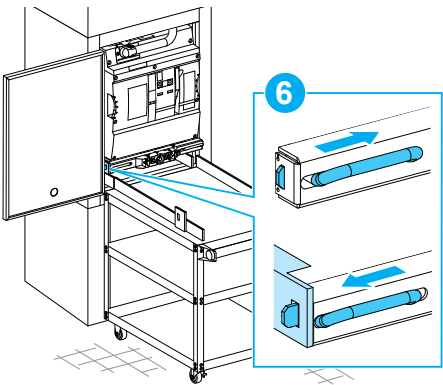
- the correspondence of the device with the cubicle performances
- the front lifting eyes are returned to the stowed position
- the rear lifting eye has been removed
- the device is O_{OFF}/Discharged and in "disconnected/test" position
- the cubicle shutters are not padlocked.



1. Open the circuit breaker compartment door.
2. Check the compartment cleanliness in accordance with the service conditions and that no installation scraps or items have been left inside (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.

<p>NOTICE</p> <p>HAZARD OF EQUIPMENT DAMAGE & INOPERABLE EQUIPMENT</p> <ul style="list-style-type: none">• LV plug must be connected.• LV plug must be locked. <p>Failure to follow these instructions can result in equipment damage.</p>
--

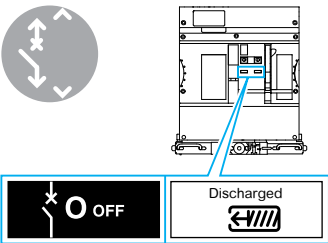
8. If necessary you can perform test operations as described on [refer to pages 19-24](#) of this user guide.
9. Close the circuit breaker compartment door.

Extraction of a device

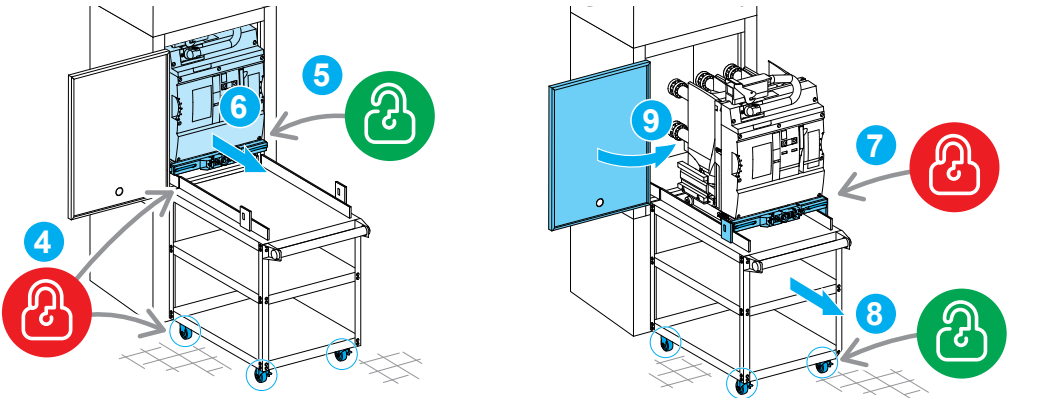
Before extraction, check:

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

1. Open the circuit breaker compartment door.
2. Disconnect LV auxiliary connection plug from the LV cabinet.
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.



Manual Racking-in

⚠ CAUTION

HAZARD OF INAPPROPRIATE RACKING PROCEDURE

- Operate the racking device, only with the genuine Schneider Electric racking crank.
- Turn off the power supplying the motor of the racking device before performing a manual racking-in or racking-out using the crank.

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

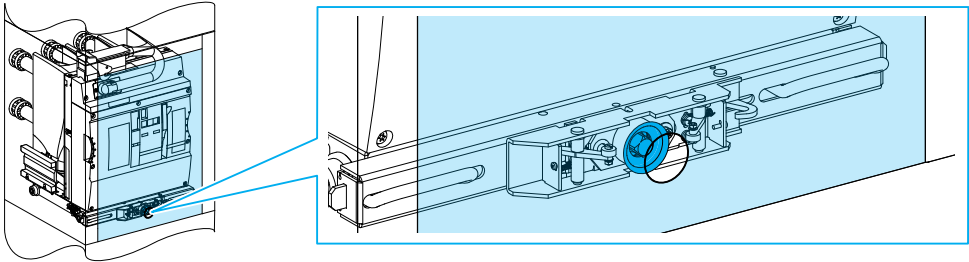
NOTICE

HAZARD OF EXCESSIVE ROTATION SPEED

For motorized racking device, do not exceed 120 rev/min when performing racking-in or racking-out in manual mode.

Failure to follow these instructions can result in equipment damage.

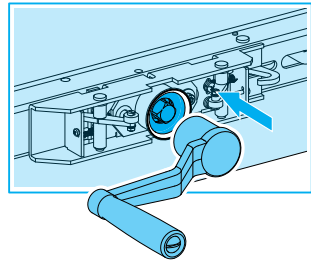
1. If racking device control motor is installed, de-energize the motor.
2. Open the circuit breaker if it is in closed position.



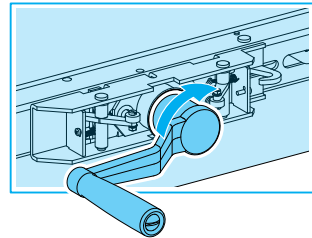
If all interlocks are implemented, the following conditions are needed to allow racking-in operation:

- the racking device is locked in position
- the electromagnet is energized (if present)
- the door is closed and locked
- the device is OPEN
- the Earthing Switch is opened (if present)

3. Insert the crank.



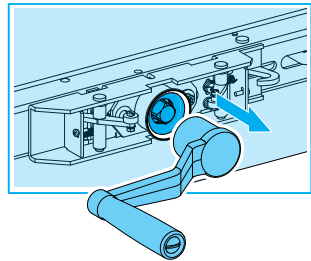
4. Turn the crank clockwise and maintain it pushed until the racking device reaches to the service position.



Device stroke (mm)	Nos. of crank turns
200	20

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.

5. Remove the crank when the device is in the "Service" position.



Manual Racking-out

⚠ CAUTION

HAZARD OF INAPPROPRIATE RACKING PROCEDURE

- Operate the racking device, only with the genuine Schneider Electric racking crank.
- Turn off the power supplying the motor of the racking device before performing a manual racking-in or racking-out using the crank.

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

NOTICE

HAZARD OF EXCESSIVE ROTATION SPEED

For motorized racking device, do not exceed 120 rev/mm when performing racking-in or racking-out in manual mode.

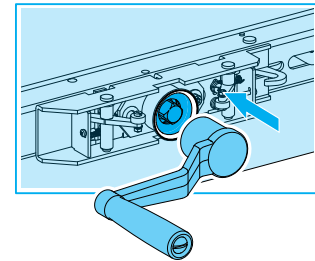
Failure to follow this instruction can result in equipment damage.

1. If a racking device motor control is installed, de-energize the motor.
2. Open electrically the circuit breaker if it is in closed position.

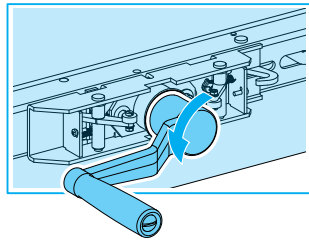
If all interlocks are implemented, the following conditions are needed to allow racking-out operation:

- the electromagnet is energized (if present)
- the door is closed and locked
- the device is OPEN.

3. Insert the crank.



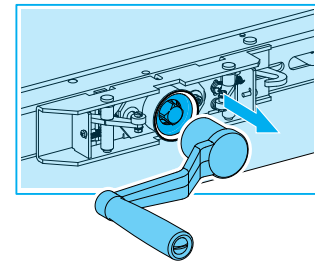
4. Turn the crank counter clockwise and maintain it pushed until the racking device reaches to the test position



Device stroke (mm)	Nos. of crank turns
200	20

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

5. Remove the crank when the device is in the "test" position.



The device is in the "Disconnected/test" position and can be operated for test operations (refer to pages 19-24 and 28).

Remote Racking-in

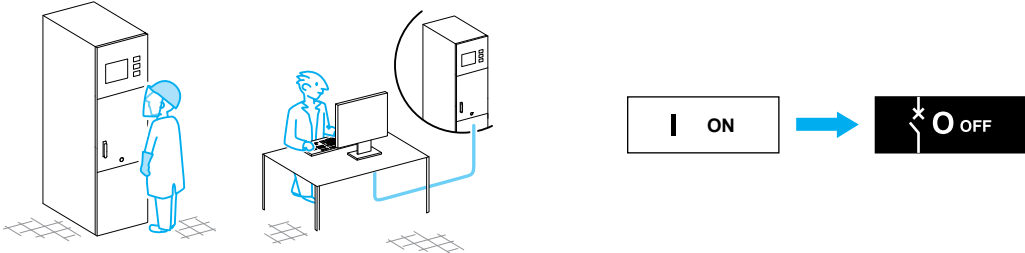
⚠ CAUTION

HAZARD OF UNEXPECTED EQUIPMENT OPERATION
Remove the crank to allow rack-in/rack-out with racking device motor control.
Failure to follow this instruction can result in injury or equipment damage.

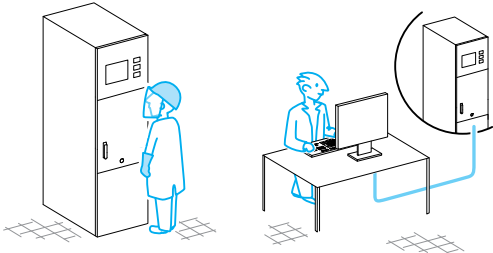
Operation is done by local electrical control or by remote electrical control.
Electrical racking-in is permitted only when the following conditions are met:

- Racking handle not present
- Auxiliary plug connected and locked with LV cabinet
- MV door is closed and locked
- Circuit breaker is OPEN
- Earthing switch is OPEN (if present)
- Electromagnet is energized (if present).

1. Open the circuit breaker.



2. Launch racking-in order. Racking-in will automatically stop. Position indication feedback is given electrically.



Device stroke (mm)	Duration (s)
200	< 60

Remote Racking-out

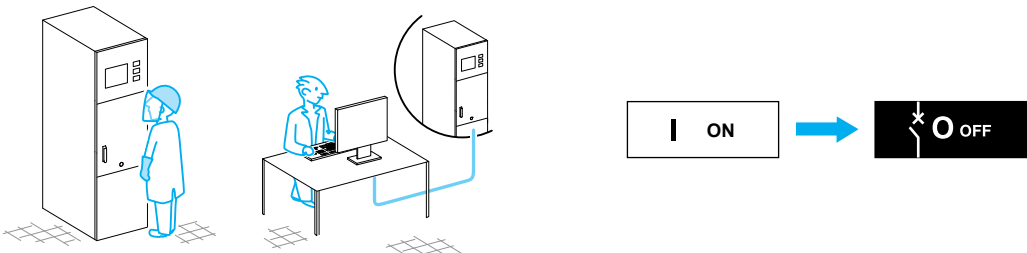
⚠ CAUTION

HAZARD OF UNEXPECTED EQUIPMENT OPERATION
Remove the crank to allow rack-in/rack-out with racking device motor control.
Failure to follow this instruction can result in injury or equipment damage.

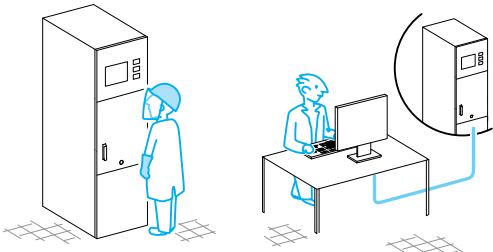
Operation is done by local electrical control or by remote electrical control.
Electrical racking-out is permitted only when the following conditions are met:

- Racking handle not present
- Circuit breaker is OPEN
- Electromagnet is energized (if present)
- MV door is closed and locked.

1. Open the circuit breaker.



2. Launch racking-out order. Racking-out will automatically stop. Position indication feedback is given electrically.



Device stroke (mm)	Duration (s)
200	< 60

Protection, Control and Monitoring

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
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.
Failure to follow this instruction will result in death or serious injury.

To enable the maximum performance of your installation, EasyPact EXE should be used with a corresponding protection, control and monitoring system that is configured to the requirements of your installation.

Refer to the user guides for your equipment, protection relay and supervisory system.

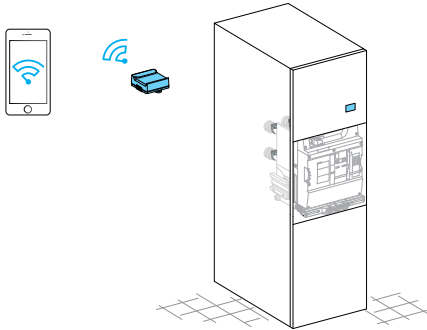
Thermal Application for Local Monitoring



Thermal Application for Local Monitoring

Thermal Monitoring System has TH110 sensors installed for the connection temperature monitoring of a switchboard.

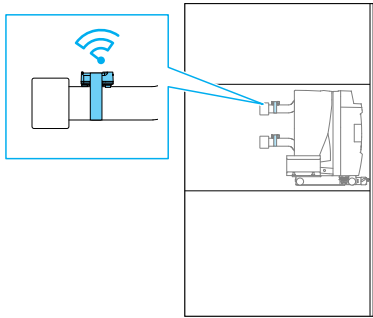
Easergy TH110 is a wireless thermal sensor enabling energy harvesting and battery less functions. It is intended to be used within indoor high and low voltage electrical distribution products or assemblies to monitor the temperatures of any energized connection. The sensor shall be used with a Schneider-Electric access point having the function of concentrator of sensors, using Zigbee Green Power wireless communication protocol. This data is readable through Easergy Thermal Connect, which has the alarm monitoring. The sensors can be paired with the Thermal application using a ZigBee dongle.



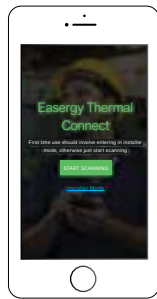
Before You Get Started

Pre-requisites

- Download and install the necessary softwares according to the Application /Document Links
- Easergy Thermal Connect
 - ZigBee Dongle
 - Android OS 5.0 (Minimum)

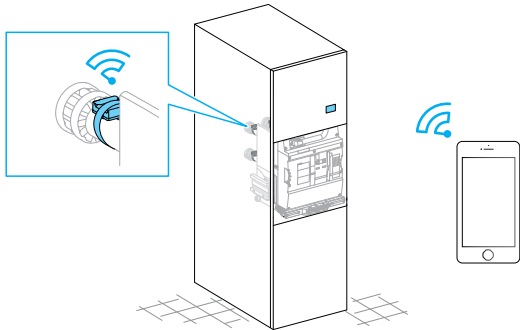


Application Details



Application	Login Details	Default Password
Easergy Thermal Connect	Schneider and Social Login	Thermal-1

Easergy Thermal Application for Local Monitoring



1. Install the sensors in the respective locations of VCB and switchgear. Refer to instruction sheet (GDE9993700) and update the RFID in Traceability document, if required.

2. Install NFC tag on respective LV cabinet door of switchgear.

3. Connect the Zigbee Dongle to the mobile/tab.

4. Open the Easergy Thermal Connect and discover the sensors.

5. Configure the pre-alarms and alarms.

6. Save the configuration to NFC Tag/Safe Repository.
- NOTE: All the devices and software should be aligned with latest firmware.

Easergy Thermal Connect Application

Overview

- The Easergy Thermal Connect allows the user to:
- locally monitor the temperature of different connection points

• be notified of the alarms.

Downloading Easergy Thermal Connect

- Follow the steps to install the Easergy Thermal Connect on your mobile device:
1. Launch Google Play Store on your mobile device.

2. In the Search box, type Easergy Thermal Connect.
Result: Suggestion list is displayed.

3. Select Easergy Thermal Connect from the suggestion list.

4. Download the application.

5. Install the application.

Registering the User


⚠ WARNING

HAZARD OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

Use cybersecurity best practices to help prevent unauthorized access to the software.

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

1. Launch Easergy Thermal Connect on your mobile device.
Result: The Registration or Login screen is displayed.

2. Register and log in through a social media account like Facebook, Twitter, LinkedIn, or Google+.
NOTE: Only Schneider Electric employees can use  icon to directly log in.




3. For a new user, click Register Now.
Result: The User Registration screen is displayed. Follow the instructions to complete the registration.

4. For a returning user, click Login.
Result: In the Login screen, enter the registered user name and password.

5. Select the Terms and Conditions checkbox and click Next.

Using Easergy Thermal Connect

To learn more about using Easergy Thermal Connect, refer to the links below:

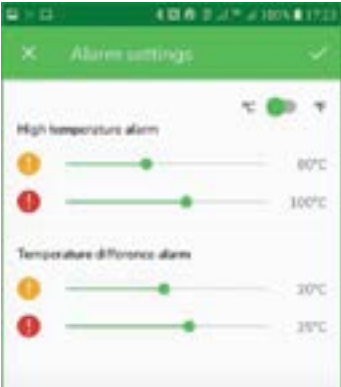
Youtube video title	Weblink	QR code
How to Use the Easergy Thermal Sensors Connect App Schneider Electric Support	https://www.youtube.com/watch?v=4wZoQLxQnNk	
How to Configure the Easergy Thermal Sensors Connect App Schneider Electric Support	https://www.youtube.com/watch?v=3c6r3G6LFKg	
How to Install Thermal Sensors TH110 Schneider Electric Support	https://www.youtube.com/watch?v=zhQdq6olRn8	


Configuration Export to NFC


Refer to instruction sheet (MFR7128801).

Alarm Settings for Easergy Thermal Connect

Pre-alarm and Alarm settings can be customized for each substation.



- Note:
- Pre-alarm (): Follow-up for any quick increase in temperature with frequent scanning.

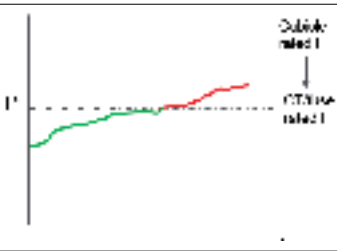
Alarm (): Schedule an immediate intervention/maintenance for identifying the cause in temperature rise or contact SE CCC team by clicking headphone symbol on the Thermal app for technical support or report an issue.

⚠ WARNING

HAZARD OF OVER TEMPERATURE EVENTS

- Default values in the thermal app can be used as Pre-alarm & Alarm settings.
- Customize the alarm settings based on rated current or CT/fuses rated current & temperature rise test results of your switchgear.
- Do not exceed the alarm settings for maximum high temperature as defined in IEC 62271-1:2017.
- Do not exceed setting of temperature difference alarm beyond 25 °C.
- Regularly monitor the temperature values by scanning the respective cubicle NFC tag.

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



Note: “Installer mode” is in limited access. For more information and access, contact your Schneider Electric representative.

User Acceptance Tests

Overview

The component communication and connectivity of all the subsystems of the Thermal monitoring system can be verified through the acceptance tests. The two acceptance tests are:

- Factory Acceptance Test (FAT)
- Site Acceptance Test (SAT)

Factory Acceptance Test (FAT)

Factory Acceptance Test process is used to verify the intra-component communication and helps to ensure optimum working condition of the components involved in the Thermal Monitoring solution.

Monitoring methods using Easergy Thermal Connect with the respective steps to be verified:

1. Power on the TH110 sensors.
2. Pair TH110 sensors with Easergy Thermal Connect and measure the temperature of the measured points.

Site Acceptance Test (SAT)

Site Acceptance Test process is used for validating the solution after the final installation.

Monitoring using Easergy Thermal Connect can be done as listed below:

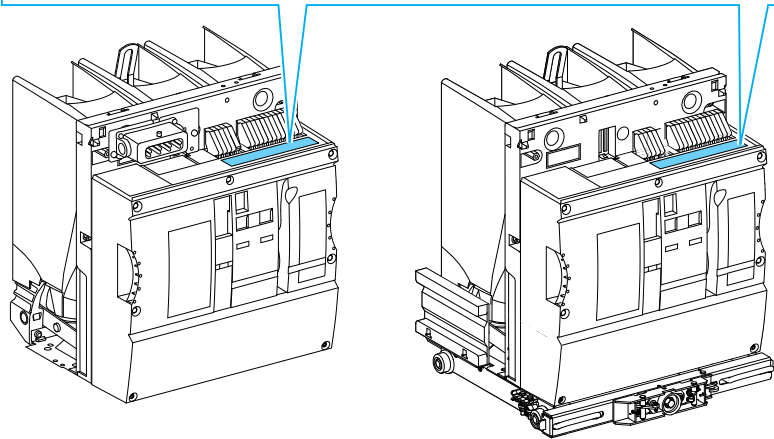
1. Install TH110 sensors at appropriate locations in the switchboard.
2. Pair TH110 sensors with ZigBee dongle and monitor the temperature of the measured points through Thermal app.

Discovering the Electrical Auxiliaries



Identification of Auxiliary Labels

MN/MX2	MX1	XF	PF	MCH	OF24	OF23	OF22	OF21	OF14	OF13	OF12	OF11	OF4	OF3	OF2	OF1
D2/C12	C2	A2	254	B2	244	234	224	214	144	134	124	114	44	34	24	14
C13	C3	A3	252	B3	242	232	222	212	142	132	122	112	42	32	22	12
D1/C11	C1	A1	251	B1	241	231	221	211	141	131	121	111	41	31	21	11



Connection terminal label

Anti-pumping Function

⚠ WARNING

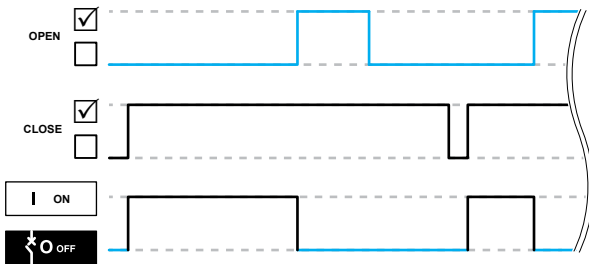
HAZARD OF ANTI-PUMPING DYSFUNCTION

The XF closing release must not be wired in series with an auxiliary contact as this will impair the correct operation of the anti-pumping function.

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

The purpose of the anti-pumping function is to help ensuring that the circuit breaker does not re-close after an opening operation if a closing order is maintained electrically or mechanically. This function avoids - cycling onto a fault (open close cycle). This anti-pumping function is realized mechanically in the operating mechanism.

The closing order has to be cancelled and then re-applied in order to close the circuit breaker. Opening orders have priority. The XF closing release is able to withstand a sustained order.



Operation scheme of a circuit breaker with anti-pumping function.

Electrical Diagrams for Fixed Circuit Breaker

Refer to your equipment's user guide to find out the proper electrical diagrams corresponding to your circuit breaker.

Typical wiring diagram for Fixed circuit breaker with LV plug: NNZ7536800 (Only for reference).

Electrical Diagrams for Withdrawable Circuit Breaker

Refer to your equipment's user guide to find out the proper electrical diagrams corresponding to your circuit breaker.

Typical wiring diagram for circuit breaker with manual or motorized racking device: NNZ7536700 (Only for reference).

Maintaining the Performance of 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.

Identifying the Tripping Causes

  **DANGER**

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Do not re-close a circuit (locally or remotely) before the root cause of the fault has been identified and cleared.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See related standards or local equivalents.
- Turn off all power supplying this circuit breaker before working on or inside the circuit breaker. Lock the circuit breaker in the open and racked-out position.
- Always use a properly rated voltage sensing device to confirm that the power is off.
- Replace all devices, covers and doors before turning on power to this equipment.
- Beware of potential hazards and carefully inspect the work area for tools and objects that may have been left inside the device.

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

A fault may have a number of causes, refer to "Troubleshooting and solutions" on page 55 of this user guide.

NOTICE

HAZARD OF INOPERABLE EQUIPMENT

- Troubleshooting assistance is 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 test on all or part of the installation. These checks and tests must be directed and carried out by qualified personnel.

Failure to follow these instructions can result in equipment damage.

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

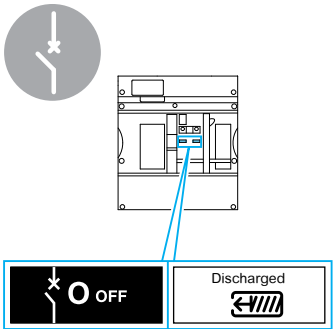
Fixed circuit breaker

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

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

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



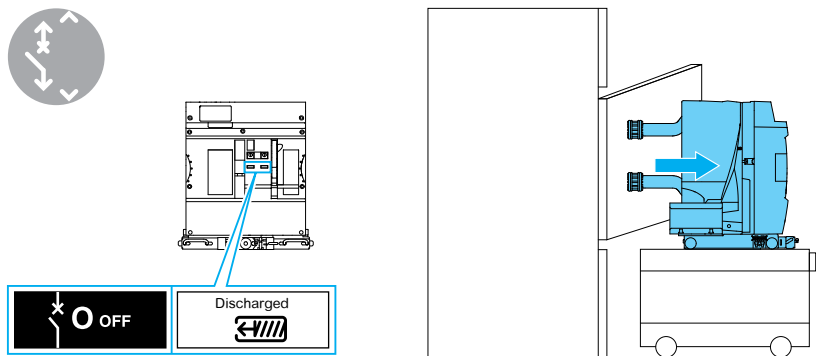
Withdrawable circuit breaker

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Turn off all power supplying the circuit breaker before working on or inside the device.
- Turn off or trip the circuit breaker before working on the device.
- Make sure the circuit breaker is OPEN and the mechanism is discharged.
- Rack out the circuit breaker and make sure it is in the test or disconnected position.
- Remove the circuit breaker from the switchboard.

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



Maintenance

General Information

Certain maintenance operations can be carried out independently by the user. Two skills are essential:

- Electrical qualifications
- Knowledge of the equipment to be maintained

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

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

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

Medium voltage devices are to be installed in accordance with appropriate professional practices. Similarly, preventive maintenance operations are to be strictly and regularly observed.

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
- an appropriate maintenance program, if required
- 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.

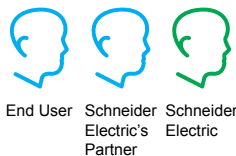
Corrective
Corrective maintenance repairs a system in view of fulfilling a required function.

Intervention Levels

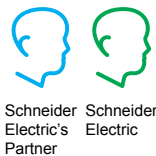
Different skill levels have been established to define the persons who are qualified to work on Medium voltage equipment.



Level 1
Maintenance operations that can be carried out by persons 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 persons 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

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

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

Failure to follow this instruction will result in death or serious injury.

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 other 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 this instruction will result in death or serious injury.

Component replacement	Instructions
Release: MX,XF,MN	NVE1808201
Electrical Motor MCH	NVE1810301
Additional Blocks 4 NO/NC Contacts	NVE1810201
Padlocking Device Open Position + Keylocks and Keys	NVE1839101 + NVE1843101
Pushbutton Padlocking Device	NVE1839001
LV Terminal Block	NVE1810201
Removable top cover	NVE1860701
Main front cover	NVE1862101
LV 58-pin plug Withdrawable	NNZ6069700
Racking Device Locking Magnet	NNZ7856100

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

Products and consumables		
Supplier	Designation	Reference ^[1]
SCHNEIDER ELECTRIC	Electrical lubricant Amblygon TA 15/2	18327916
SCHNEIDER ELECTRIC	Mechanical lubricant Isoflex Topas L 152	18315110
SCHNEIDER ELECTRIC	Mechanical lubricant Mobilith SHC 100	1LUB009455
LOCAL	Chloride free degreasing agent	-
LOCAL	Lint-free wipe	-
LOCAL	Brush for lubricant application	-
LOCAL	3M green Scotch-Brite GP-SH	-

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

Recommended Maintenance Program

Preventive Maintenance Operations

⚠ WARNING

HAZARD OF INSUFFICIENT MAINTENANCE

- Comply with specified maintenance intervals.
- Perform maintenance according to the actual operating and ambient conditions.
- Maintenance frequency must be increased according to the level of criticality and the severity of environment conditions.

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

Recommended frequencies described below correspond to normal operating conditions.

Different maintenance program should be carried out as described below.

- 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.

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

Operating Limits for EasyPact EXE

EasyPact EXE installed in normal service condition and with preventive maintenance is designed for a maximum of:

Circuit breaker	MCH	MX/XF/MN release	Mechanical interlocks	Racking device
10 000 operating sequences/30 years	10 000 operating sequences	10 000 operating sequences/15 years	2000 operating cycles	2000 operating cycles ^[2]

^[2] The number of racking operation can be monitored by relay positioned in LV cabinet.

Before reaching these operating limits contact your Schneider Electric Service representative in order to put in place the relevant maintenance.

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 dismantling of parts of the circuit breaker.

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

^[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:

- 45 minutes typically for a withdrawable circuit breaker without racking motorization and with all accessories installed
- 60 minutes typically for a withdrawable circuit breaker with racking motorization and all accessories installed.

Safe Repository

For better follow-up of your equipment, upload your Maintenance Reports in Safe Repository.

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. Customer can enrich their preventive maintenance plans with this corrective action for the most convenient time for each circuit breaker. It helps customers implement, manage, plan, and smooth annual maintenance budgets, and minimize Preventive maintenance, including regular diagnostics, is what is called On-site condition maintenance. It helps customers implement, manage, plan, and smooth annual maintenance budgets, and minimize the total cost of ownership.

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		
Automatic electrical charging of the mechanism does not occur but the device can be mechanically charged	Missing or insufficient supply voltage for the electrical motor MCH	Check the voltage and the supply circuit conformity (U > 0.85 Ua). If the problem persists, replace the MCH.
Closing in Service position		
Device cannot be closed locally or remotely	Device padlocked or keylocked in the "open" position	<ul style="list-style-type: none">• Check possibility to release the lock, padlock, electromagnetic lock in accordance with the status of the installation.• Bring installation into compliance to release locked state.
	Device interlocked mechanically	<ul style="list-style-type: none">• Check the position of the other device.• Bring installation into compliance to release locked state.
	Device not completely connected	Complete the device racking in procedure.
	Closing mechanism is not charged	<ul style="list-style-type: none">• Proceed to a manual charging.• If the device is equipped with an electrical motor MCH: check the voltage and the supply circuit conformity (U > 0.85 Ua). If the problem persists, replace the electrical motor MCH.
	MX opening release permanently supplied with power	<ul style="list-style-type: none">• There is an opening order.• Determine the origin of the order. This order is to be canceled before the device can be closed.
	MN undervoltage opening release not supplied with power	<ul style="list-style-type: none">• There is an opening order. Determine the origin of this order• Check the voltage and the supply circuit conformity (U > 0.85 Ua). If the problem persists, replace the MN undervoltage release.
	Device is not ready to close	<ul style="list-style-type: none">• Determine the condition blocking the device's "ready to close" state.• Resend the closing order.
	XF closing release continuously supplied with power, while device was not "ready to close"	<ul style="list-style-type: none">• Determine the origin of the closing order. This order is to be canceled before the device can be closed.• Check the device is ready to close.• Resend the closing order.
Device cannot be closed electrically, but can be closed mechanically using the closing pushbutton located on the device	Closing order not executed by the XF closing release	Check the voltage and the supply circuit conformity (0.85 - 1.1 Ua). If the problem persists, replace the XF closing release.
	"Local/Remote" switch located on the cubicle is on "Local" position	<ul style="list-style-type: none">• Change position of the "Local/Remote" switch located on the cubicle to "Remote" position.• Resend the closing order.
Tripping in Service position		
Unexpected tripping of the device	Insufficient supply voltage of the MN undervoltage release	Check the voltage and the supply circuit conformity (U > 0.85 Ua).
	Unexpected opening order from the MX opening release	<ul style="list-style-type: none">• Determine the origin of the order.• Refer to the user guide for your protection, control and monitoring unit.
	One of the following cause occurs: <ul style="list-style-type: none">• overload• earth insulation fault• short circuit detected by the protection relay	<ul style="list-style-type: none">• Determine and eliminate the tripping causes.• Check the condition of the device before putting it back into service.
Instantaneous tripping after each attempt to close the device	Transient overcurrent when closing	<ul style="list-style-type: none">• Check your distribution system or the settings of your protection relay.• Check the condition of the device before putting it back into service.
	Closing on a short circuit	<ul style="list-style-type: none">• Determine and eliminate the tripping causes.• Check the condition of the device before putting it back into service.

Diagnose the problem	Identify the probable causes	Find the solutions
Opening in Service position		
Device cannot be opened mechanically or electrically	Operating mechanism malfunction or welded contacts	Contact a Schneider Electric representative.
Device cannot be opened electrically, but can be opened mechanically using the opening pushbutton located on the device	Opening order not executed by the MX opening release	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.
	Opening order not executed by the MN undervoltage opening release	Drop in voltage insufficient or residual voltage across the terminals of the undervoltage release > 0.35 Ua. If the problem persists, replace the MN undervoltage release.

Complement Only for Withdrawable Circuit Breaker

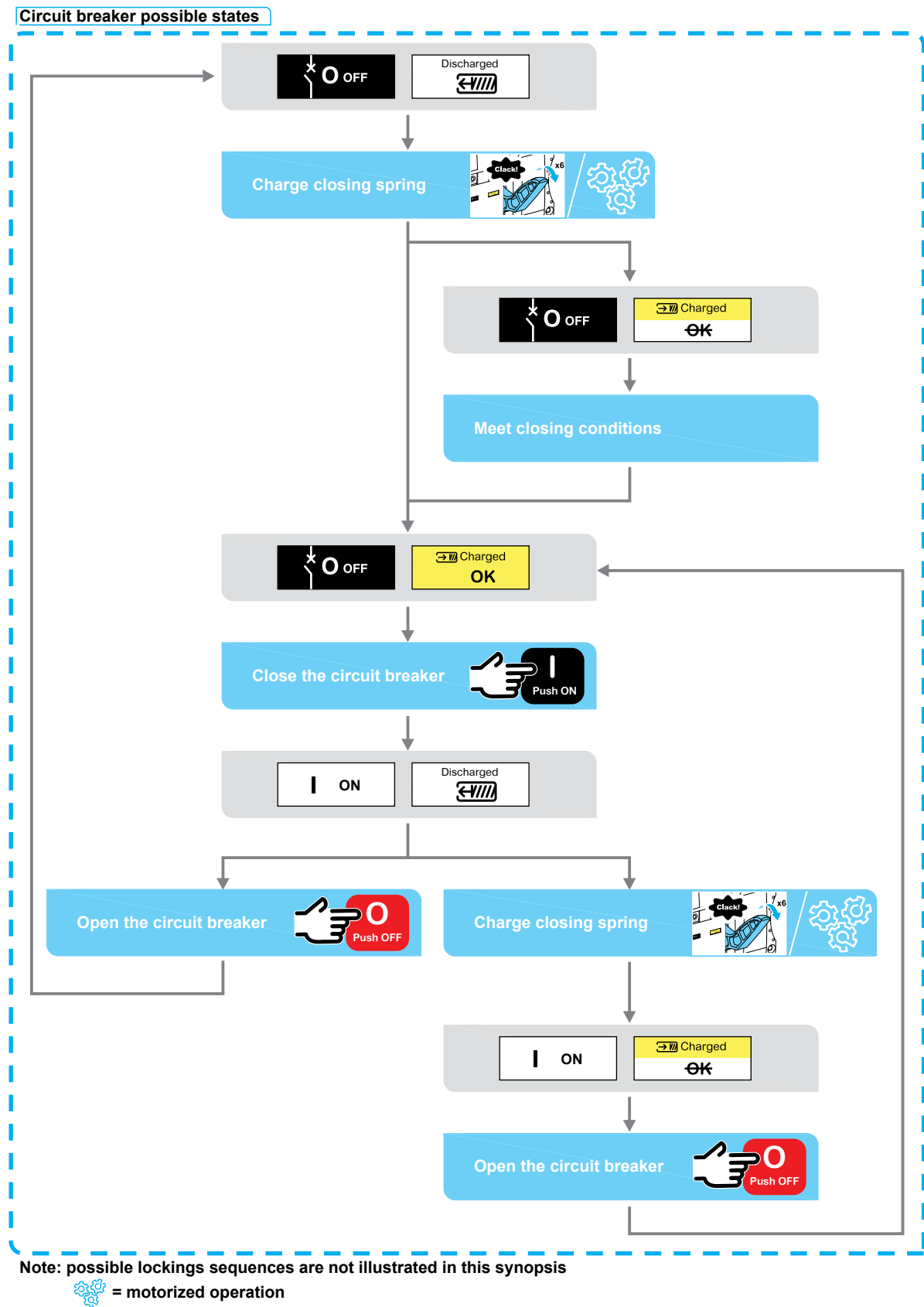
Diagnose the problem	Identify the probable causes	Find the solutions
Racking-in or Racking-out		
Not possible to insert the crank in "Disconnected/test" or "Service" position	A padlock or keylock is present on the cubicle door	<ul style="list-style-type: none">• Check possibility to release the lock, padlock, in accordance with the status of the installation.• Bring installation into compliance to release locked state.
	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.
	The door is open or the door interlock is ineffective	Close the cubicle door or check the operation of the door interlock.
Device cannot be racked to "Service" position	The door is open or the door interlock is ineffective	Close the cubicle door or check the operation of the door interlock.
	Wrong direction of crank rotation	Check the direction of rotation.
	Mechanical problem on the shutters	Check the operation of the shutters.
	Clusters are incorrectly positioned	Re-adjust/Replace clusters.
	Electromagnet not activated	<ul style="list-style-type: none">• Lock the auxiliaries connection plug in the correct position.• Activate electromagnet.• Refer to Electromagnet troubleshooting.
	The device is closed	Open the device.
	The racking device is not properly locked in the correct position in the cubicle	Lock the racking device in the correct position into the cubicle.
	An interlock with Earthing Switch is present	<ul style="list-style-type: none">• Check the position of the Earthing Switch.• Check the condition of the switchgear before opening the Earthing Switch.• Bring installation into compliance to release locked state.
Device cannot be racked out to "Test/Disconnected" position	Electromagnet not activated	<ul style="list-style-type: none">• Lock the auxiliary connection plug in the correct position.• Activate electromagnet.• Refer to Electromagnet troubleshooting.
	The device is closed	Open the device.
Device insertion or extraction		
Cubicle door cannot be opened	The racking device is not in the "Disconnected/test position"	Turn the crank until the device reaches the "Disconnected/ Test" position.
Cubicle door cannot be closed	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.
	The door interlock is ineffective	Check the operation of the door interlock.
Device cannot be pulled out	Device is not in the "Disconnected/Test" position	<ul style="list-style-type: none">• Turn the crank until the device reaches the "Disconnected/Test" position.• Check device to cubicle lock is disengaged on both sides.
Device motorization		
No complete racking-in with motorization	Motor fault during racking-in	De-energize the motorization from the LV cabinet. Rack-out manually the racking device.
No complete racking-out with motorization	Motor fault during racking-out	De-energize the motorization from the LV cabinet. Rack-out manually the racking device.

Diagnose the problem	Identify the probable causes	Find the solutions
Electromagnet		
Impossible to turn the crank of racking device despite electromagnet activation	Electromagnet is not supplied or power supply value is inadequate	<ul style="list-style-type: none">• Check the electromagnet power supply (connection, wiring continuity, supply voltage value).• If the electromagnet is correctly supplied, contact Schneider Electric to replace it.
	The electromagnet is mechanically locked	Contact your Schneider Electric representative to replace the electromagnet.
Crank of racking device can be turned despite electromagnet is powered off	Electromagnet shaft is blocked and does not lock anymore the crank rotation	Check the shaft movement obstruction, and if needed contact your Schneider Electric representative to replace the electromagnet.

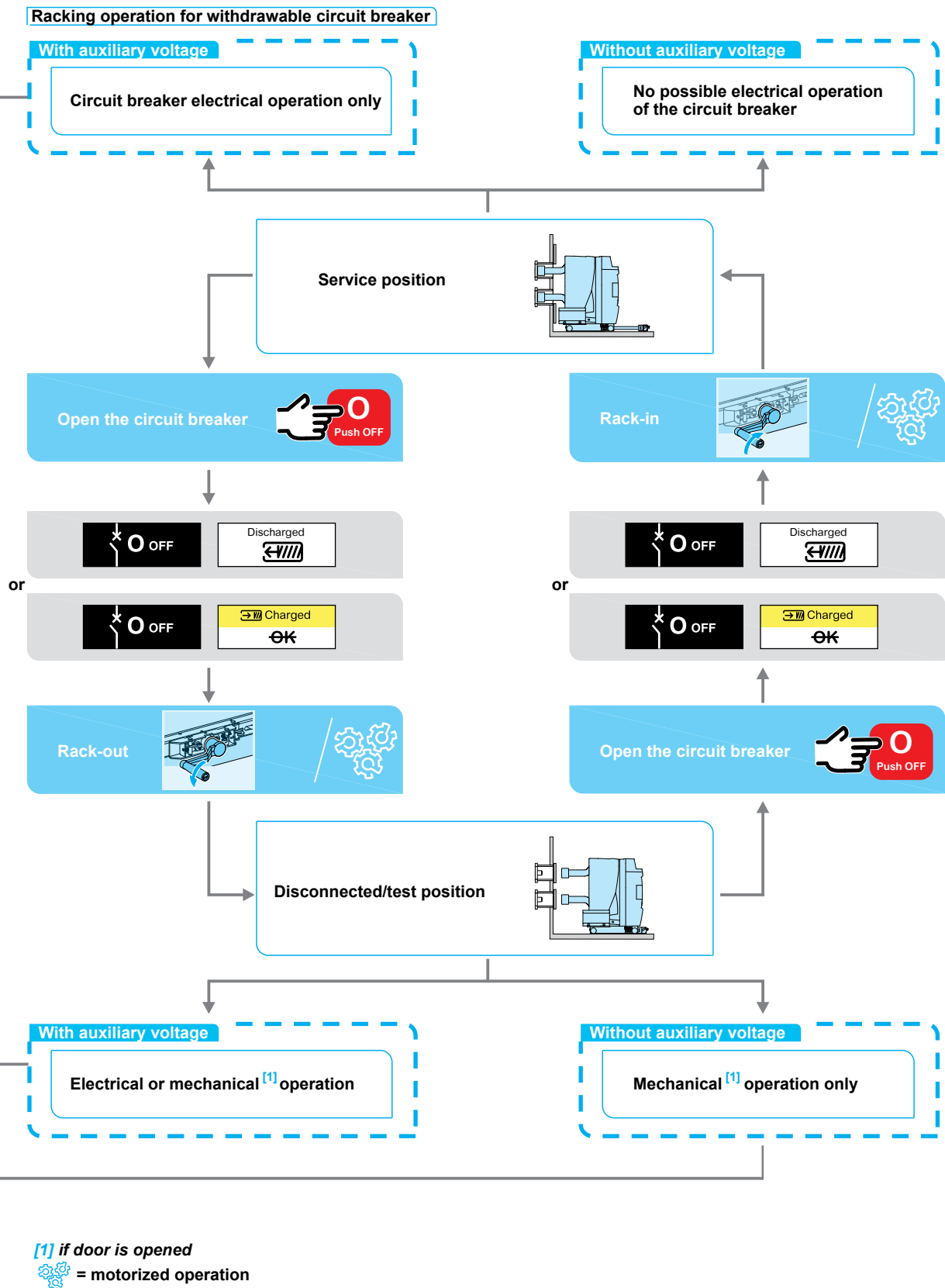
Enabled Circuit Breaker with Local Thermal Monitoring

Diagnose the problem	Identify the probable causes	Find the solutions
Enabled EasyPact EXE		
TH110 Sensor	Sensor is not pairing	Verify from any of the below steps to pair the sensor by checking if: <ul style="list-style-type: none">• Precise sensor installation with ferromagnetic strip and with recommended tightness.• Current injection of the sensor (min. 15 A).• Unpair with any other ZigBee gateway.• Sensor is deleted from previous gateway rediscovering.• Distance between the sensor and the access point is according to the number of enclosure layers.
	Sensor displays negative temperature value	Replace the sensor.
	Measurement not received by the access point	Check if the sensor is paired with the access point.
	Abnormal measurement compared to adjacent phase measurement	Check if the associated phase is loaded and balanced with the adjacent phase, and all sensors are placed at same distance.
	Measurement exceeds the limits	Verify from any of the below steps to rectify the measurement by checking if: <ul style="list-style-type: none">• Ambient temperature is lower than the maximum limit of the service conditions.• Load of the equipment is lower than the rated current of the monitored equipment.• Check the measured part, applying safety procedure.
	In the cubicle, no LV layout is displayed for configuration	Verify that the app is inline with latest baseline version provided in the document.
Thermal app	Unable to discover the sensors	Verify that the ZigBee dongle connection is properly connected and dongle LED is ON. Verify that the ZigBee dongle version is aligned to given baseline version.
	App not displaying the connection point temperature values	Verify that the TH110 sensors are powered on.
	App not working when history page is selected	Restart the app.
	Configuration Export to Safe Repository is failing	Logout from the app. Clear the cache and log into the app.
	Connection point texts description are not clear in mobile.	Click on the connection point to view the description.

Circuit Breaker Operation in a Nutshell



This diagram does not describe the usage of padlocking, keylocking and electromagnetic locking; please refer to associated pages.



This diagram does not describe the usage of padlocking, keylocking and electromagnetic locking; please refer to associated pages.

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NNZ5908501-03