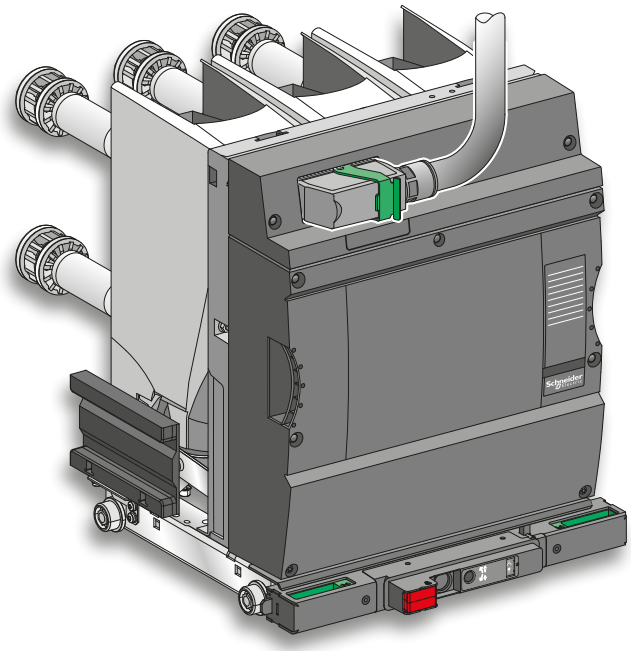
EasyPact EXE

USER

Medium Voltage Disconnecting Device (DD)
Up to 17.5 kV - 31.5 kA - 630 to 2500 A

User Guide

NVE1869401-01
01/2020



Schneider Electric

Legal Information

Contents

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. The safety alert symbol shall not be used with this signal word.

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 disconnecting device: 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 disconnecting device 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 disconnecting device before working on or inside the disconnecting device.
- Always use a properly rated voltage sensing device to confirm power is off.
- Check all devices, covers and doors are in correct position before turning on power to this disconnecting device.
- Use only genuine Schneider Electric specific tools (operating crank, extraction table, ...).
- Beware of potential hazards and carefully inspect the work area for tools and objects that may have been left inside the disconnecting device.
- Do not modify the mechanical or electrical parts.
- Do not operate the system with interlocks and safety barriers removed.

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

⚠ CAUTION

HAZARD OF DEGRADED EQUIPMENT PERFORMANCE

- Respect the handling rules and avoid any shocks to the device.
- Perform the maintenance and servicing operations described in the maintenance section of this guide.
- Observe the normal service conditions described in this manual.
- Respect the storage conditions of the Disconnecting Device.

Failure to follow these instructions can result in 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 disconnecting device, 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 disconnecting device. 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 disconnecting device.

Limitation of liability

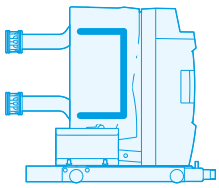
Schneider Electric cannot be held responsible for damage due to:

- 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

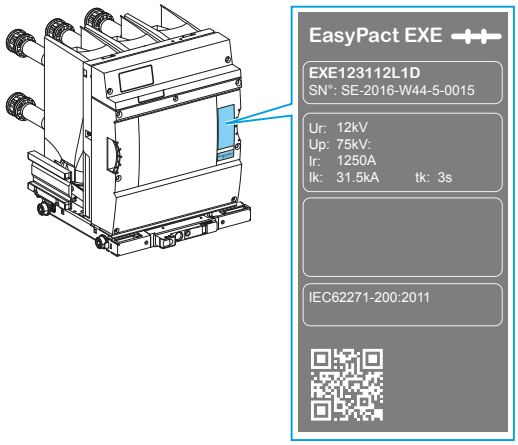
Presentation of Disconnecting Device (DD)

Function



The Disconnecting Device enables the upper and lower part of the cubicle to be connected using solid links.
It is installed instead of the circuit breaker and has the same interlock possibilities.

Nameplate



Commercial reference
SN : Serial number
Ur : Rated voltage
Up : Rated lightning impulse withstand voltage
Ir : Rated normal current
Ik : Rated short-time withstand current
tk : Rated duration of short circuit
Standard with date of issue

QR code

How to use the QR code

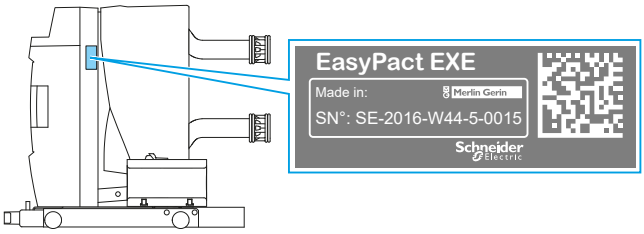
The serial number (SN) located on the nameplate is using 18 characters in order to be easy to understand.
Example: SE-2016-W44-5-0015.
To access to Safe Repository, enter the SN with its simplified 11 characters' format.
Example: SE164450015.
If you type the long description, it will be automatically convert in short description.
The QR code link implement the simplified format.

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

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

To access this information, flash 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



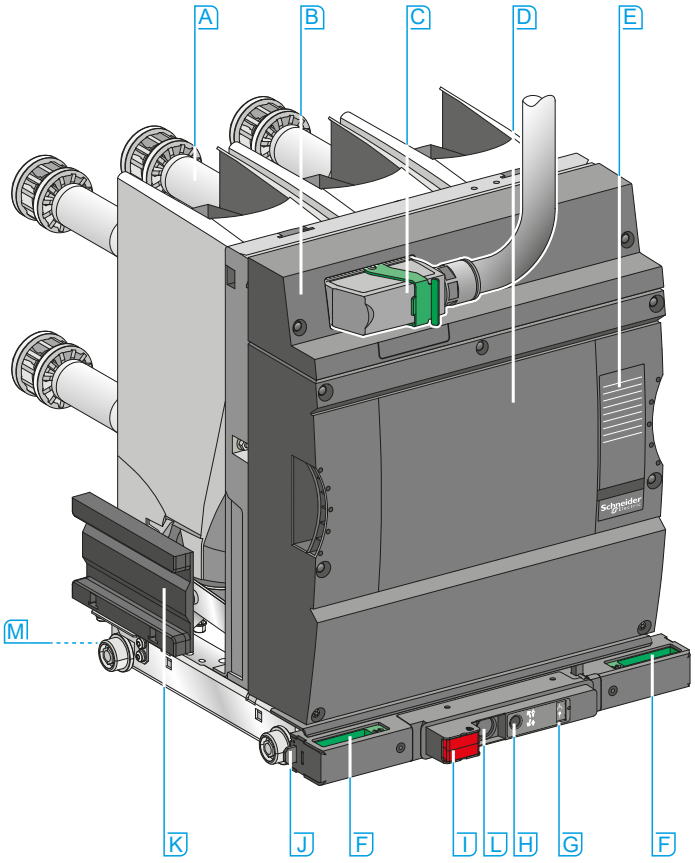
The serial number is also located on the right side of the disconnecting device.
This allows to associate the front covers to the device. The datamatrix is used for internal Schneider Electric traceability.

Reminder

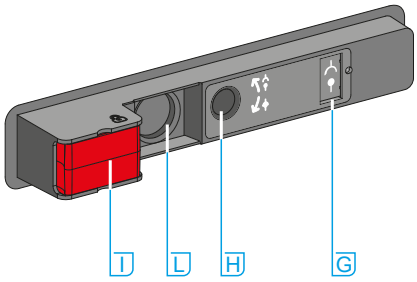
A disconnecting device, as any disconnector, is designed to operate a circuit with no current.

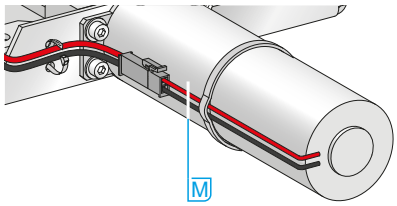
The disconnecting device is always interlocked with a circuit breaker ensuring the switching of the main circuit. This interlocking is done by a keylock or by an electromagnet.

Front view of disconnecting device

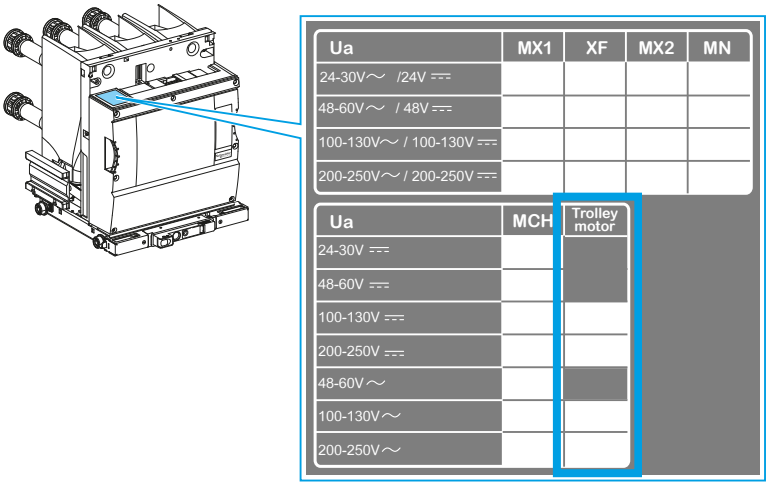


- A Power connections (Arms and Clusters)
- B Removable top cover
- C Auxiliary connection plug
- D Main front cover
- E Nameplate
- F Locking handles
- G Racking position indicator
- H Hole for insertion of racking handle
- I Opening pushbutton
- J Locking tabs
- K Shutter ramp
- L Keylock location (option)
- M Racking device motor (option)



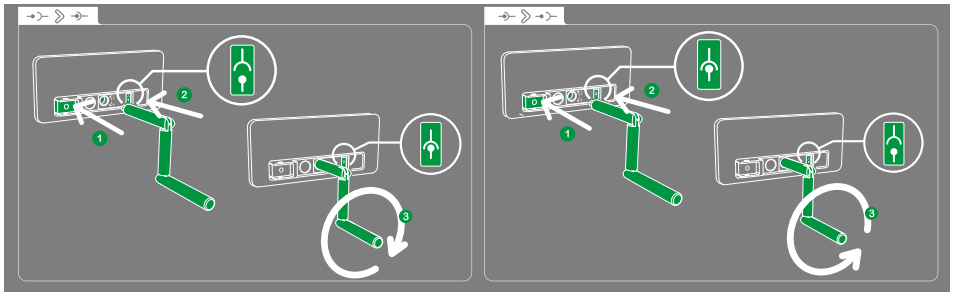


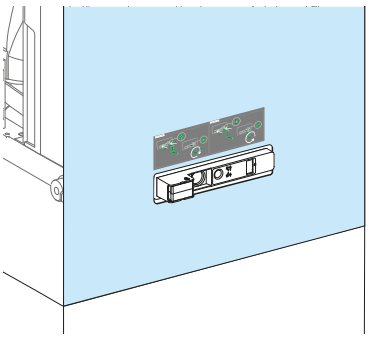
Customization label



As the customization label is the same for all EasyPact EXE devices, only the "Trolley motor" column will be useful for disconnecting device.

Operating instruction label





Label location on the compartment equipped with a single-door.

This label, located on the door, gives a pictorial guide to the manual racking-in/out operations..

Service conditions

Normal service conditions

The device is designed to operate according to its rated characteristics and the service conditions below:

Indoor device	
IEC 62271-1: 2017	
Ambient air temperature: • minimum value • maximum value • average measured over a 24-hour period	 -25 °C +40 °C ⩽ 35 °C
Average relative humidity: • measured over a 24-hour period • measured over a 1-month period	 ⩽ 95 % ⩽ 90 %
Average water vapor pressure: • 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

If operated beyond the normal service conditions, the disconnecting device is submitted to accelerated aging.

The disconnecting device may only be used under conditions other than the normal service conditions with express written permission from Schneider Electric.

Storage conditions and arrangements

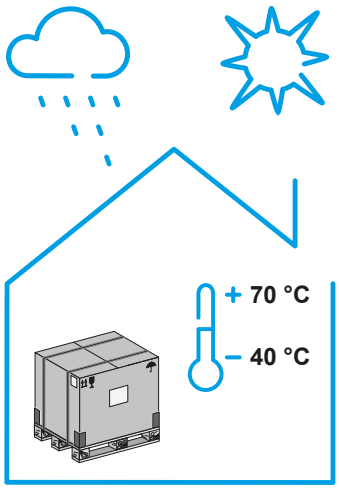
Storage conditions

⚠ CAUTION

HAZARD OF 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 -40°C and +70 °C. The maximum storage period is 12 months.

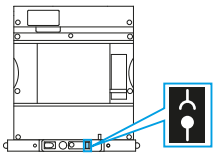
If the device was stored:

- between 6 and 12 months, perform basic level preventive maintenance to ensure a correct device operation.
- beyond 12 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, the device is not to be installed.



Devices is to be stored in racked-out position.

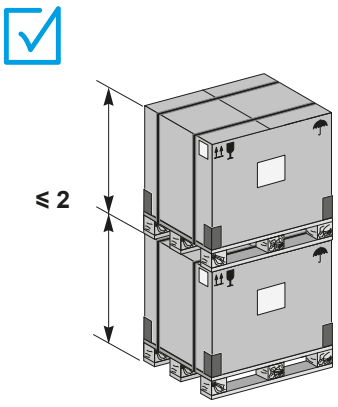
Storage arrangements - Stacking

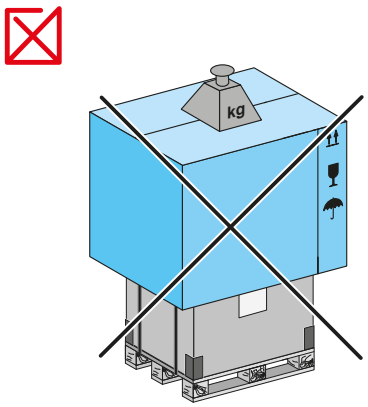
NOTICE

HAZARD OF HEAVY LOAD STACKING

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

Failure to follow this instruction can result in equipment damage.



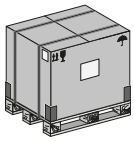
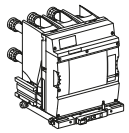


Handling

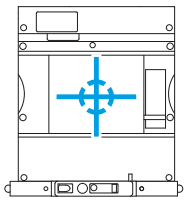
⚠ WARNING
HAZARD OF FALL OR TIPPING OF THE DEVICE DURING UNLOADING OR HANDLING • Apply appropriate personal protective equipment (PPE) and provide collective protection equipment (CPE) whenever required. Follow all safe work practices. • Do not try to catch the parcel if it falls. • Use handling equipment suitable for the dimensions and weight of the device. • Take into account the position of the center of gravity when handling the parcels or the device. **Failure to follow these instructions can result in death, serious injury or equipment damage.**

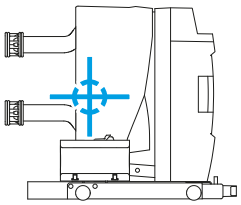
⚠ CAUTION
HAZARD OF INAPPROPRIATE HANDLING Move the device with the utmost caution and avoid shocks. **Failure to follow this instruction can result in injury or equipment damage.**

Mass

Maximum mass	
	
125 kg	110 kg

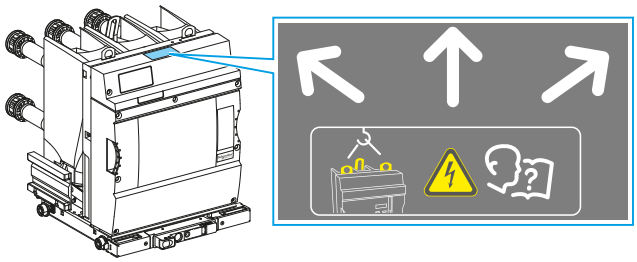
Position of center of gravity





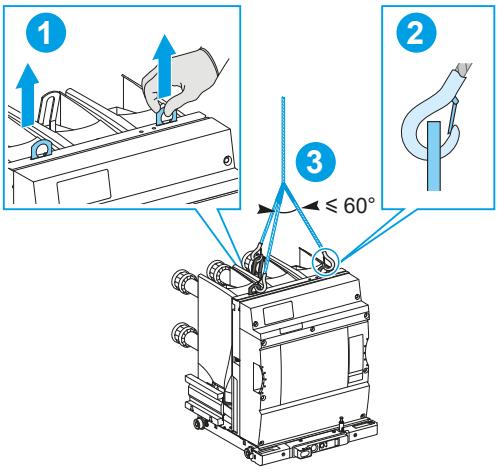
How to use the lifting eyes

It may be necessary to lift the device (for example in case of device delivery on pallet). In this case please follow the instructions below.

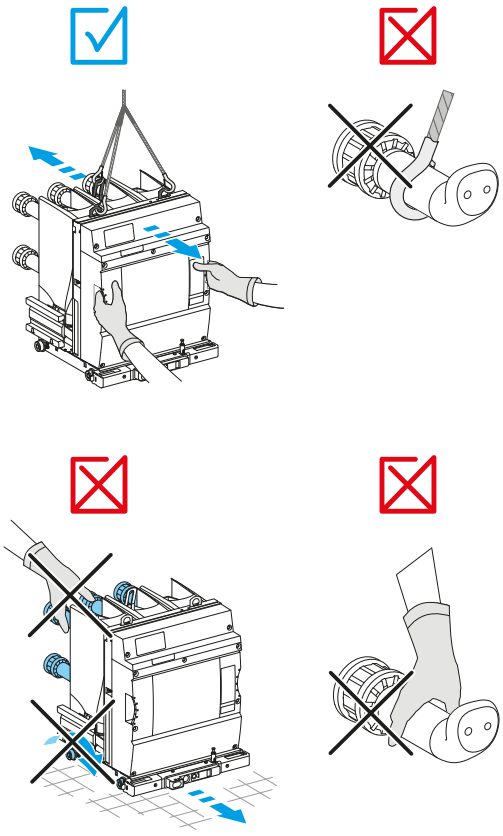


Label and its location on the disconnecting device

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.
Do not lift the disconnecting device by the power connections.
Do not move the disconnecting device 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

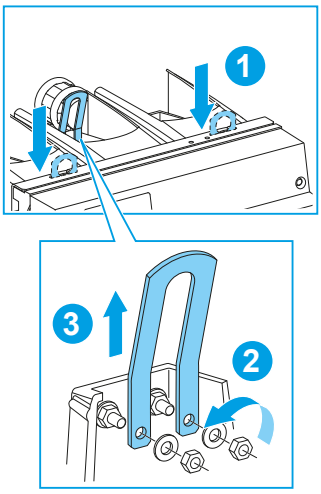
- Perform all the checks with the entire switchboard de-energized.
- Check on the switchboard that the disconnecting device's clamping elements have been removed.
- According to your equipment manufacturer recommendation, remove the rear lifting eye.
- Check that the rear lifting eye was removed and the front lifting eyes have been put back in their down position.
- Check that nameplate data is compatible with that of electrical installation.

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

The installer of your equipment should deliver a commisioning report before the first energizing of your electrical installation.

Switchboard inspection

Check that the switchboard and devices are in good serviceable condition. Ensure the switchboard and device are clean and free from scrap and foreign objects such as: tools, electrical cable, broken parts, metal objects...



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.**

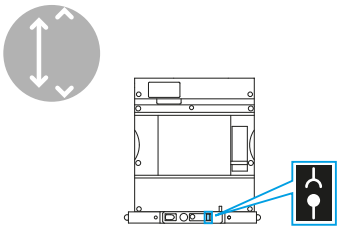
Check that the devices match the installation diagram:

- ratings indicated on the nameplates.
- presence of optional functions (racking device motor control, blocking magnet, etc.) and conformity of their electrical characteristics.

Operating

Refer to your equipment documentation and follow your switchboard commissioning rules.

The disconnecting device initial state is:



Initial state for disconnecting device

Check the mechanical operation of the devices in every control modes (local mechanical and electrical controls and remote control) and for every possible operation:

- 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.

Place back the disconnecting device in its initial state waiting for the switchboard energizing.

Initialization of the maintenance information

Initialize the maintenance information in the maintenance log of your installation.

Using the EasyPact EXE

Understanding the disconnecting device controls and indicators

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

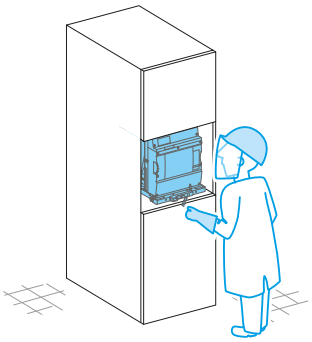
- Installation, repair and maintenance work on the device must only be carried out by qualified personnel.
- Beware of potential danger, apply appropriate personal protective equipment and take appropriate safety precautions.

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

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 racking device allows you:

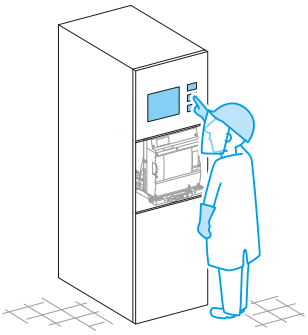
- to perform the disconnecting device racking-in/racking-out
- to operate the red pushbutton of the racking device.

Electrical control

In order to use the electrical control functions, either local or remote, install the rack-in/rack-out motorization option.

Possible configurations for electrical control of the device:

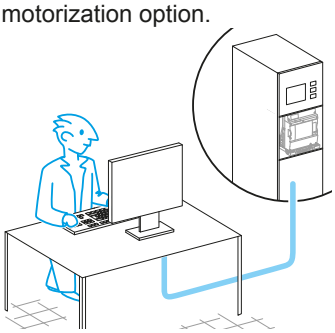
- racking device motorization: optional
- electromagnet padlocking: optional



Refer to your equipment's user guide to find out where the disconnecting device control buttons are located.

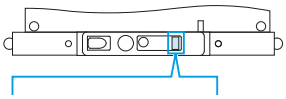
Remote electrical control

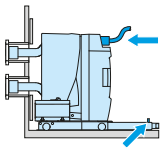
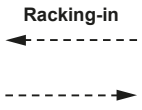
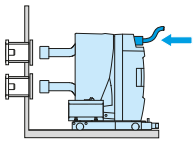
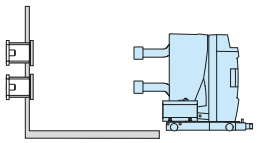
A control of an operation is performed at a point distant from the controlled device.
In order to use the electrical control functions, install the rack-in/rack-out motorization option.



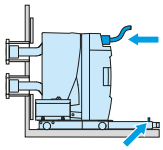
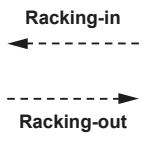
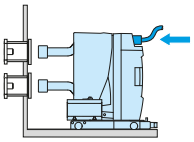
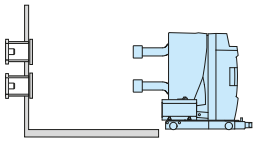
Refer to your equipment's and supervision system's user guide to find out the available communication functions.

The different states

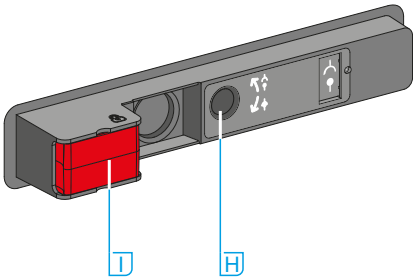


Racking position indicator	Disconnecting device position	State description	Command available
		**Service** The disconnecting device connections are connected to the switchboard contacts, the LV auxiliary circuit is connected, and the compartment door is closed and locked.	• Racking-out (refer to page 25)
		**Intermediate** The disconnecting device is moving from the disconnected position to the service position or vice versa. The compartment door is closed and locked and the LV auxiliary circuit is connected.	• Racking-in (refer to page 24) • Racking-out (refer to page 25)
		**Disconnected/test** The disconnecting device is inside the 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 compartment door.	• Racking-in (refer to page 24)
		**Removed** The disconnecting device is extracted from the switchboard using the extraction table.	

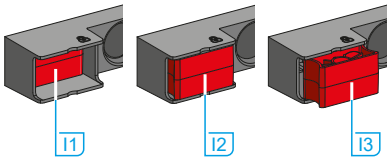
The following table describes the functions available on EasyPact EXE disconnecting device:

	Disconnecting Device 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
Racking device keylocking	Key removal possible to allow lockout	Key removal impossible	Key removal impossible	Key removal impossible
Earthing Switch mechanical link position	Earthing Switch OPEN	Earthing Switch OPEN	Earthing Switch OPEN	Earthing Switch OPEN
			Earthing Switch CLOSED	Earthing Switch CLOSED
Shutters	OPEN	OPERATING	CLOSED	CLOSED

Opening pushbutton



The red opening pushbutton of the racking device I allows clearing the access to the crank hole H .

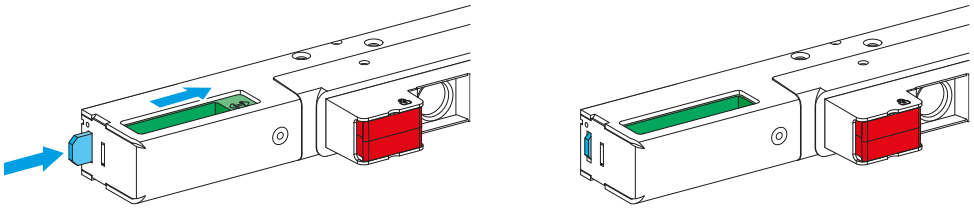


The three positions of the red opening pushbutton are shown opposite:

- I1 pressed-in position after the button was pushed or while the crank is inserted in the racking device
- I2 resting position
- I3 pulled-out position for the device padlocking ; this position interrupt the motor power supply and forbid the access to the crank hole.

Operation of locking tabs

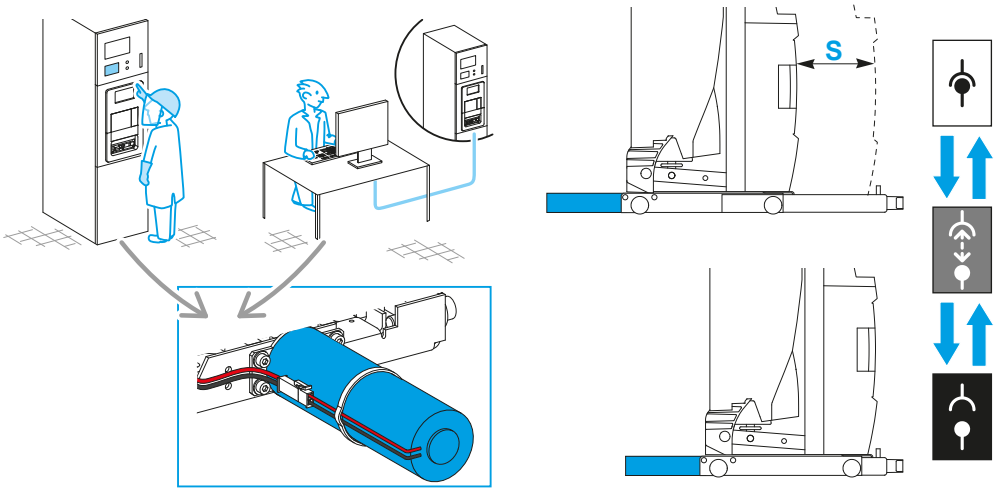
The locking tabs allow the locking of the disconnecting device inside the compartment or on the extraction table.
At rest (without any manual action on the locking handles), the locking tabs are out.
To unlock the disconnecting device, manually push the locking handle to pull in the locking tabs.

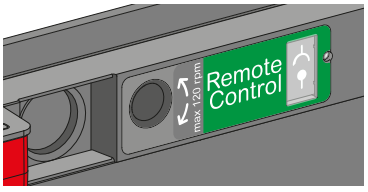


When the device is in intermediate or service positions the locking tabs are blocked and cannot be operated.

Motorization of racking device (option)

The racking-in and racking-out operations can be done manually using the genuine Schneider Electric racking crank or remotely if the racking device is equipped with a motor.
The motor is mounted at the rear of the racking device and its power supply is positioned in the LV cabinet.





Door interlocking mechanism

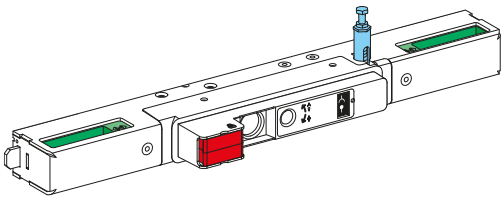
⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Perform Racking in Racking out operation only with door closed.
- Perform Disconnecting Device operations 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 locking mechanism interacts mechanically with the racking device mushroom and enables the racking-in movement.
During the racking-in or the racking-out, the door handle is locked to prevent the door opening. The door handle 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.

Interchange stop mechanism

⚠⚠ DANGER

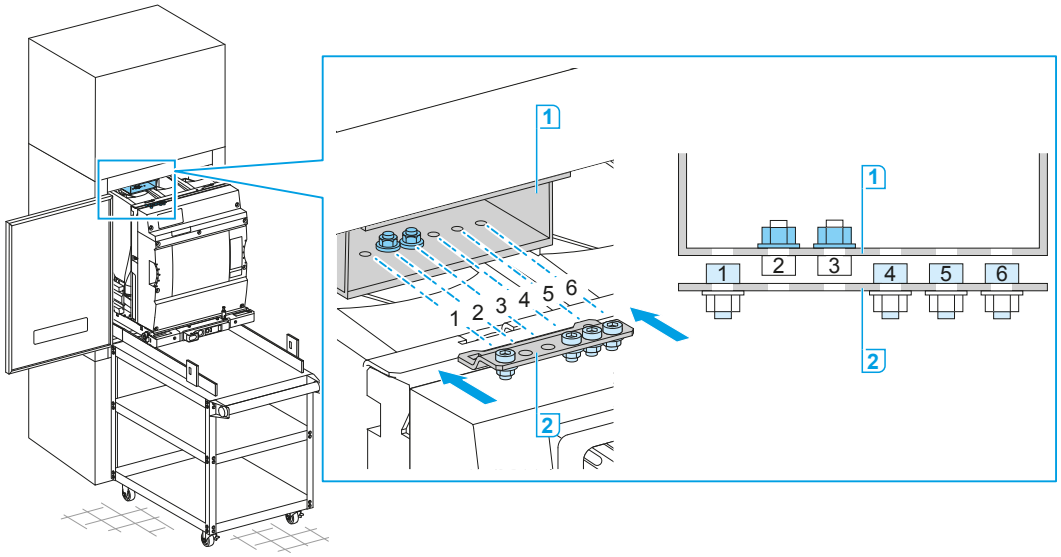
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Make sure you have installed the correct disconnecting device in the correct cubicle.

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

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

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



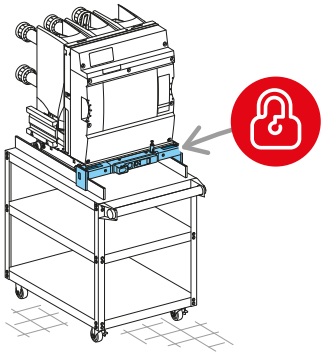
Example of a rating interchange stop.

1 Fixed part on the cubicle
2 Mobile part on the disconnecting device top

Insertion and extraction of a withdrawable device

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

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

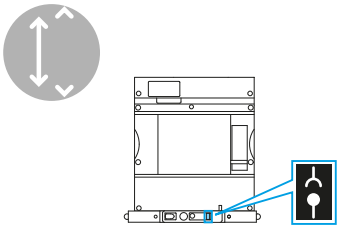


In order to enable an easy insertion of the device in the compartment of your cubicle, Schneider Electric recommends the use of an extraction table designed to carry the device, locked in position, to its insertion point and adapted to your equipment configuration. Refer to your manufacturer's documentation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

Insertion of a device

Before insertion, check:

- the correspondence of the device with the cubicle performances
- the front lifting eyes are returned to the stowed position
- the rear lifiting eye has been removed.



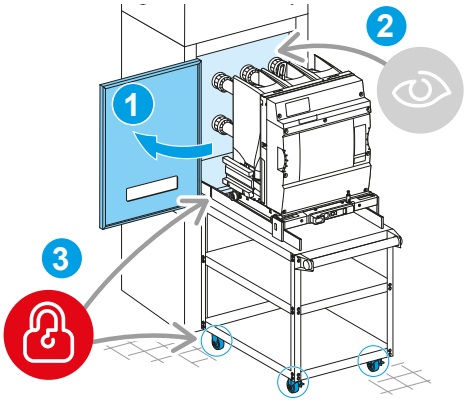
1. Open the compartment door.

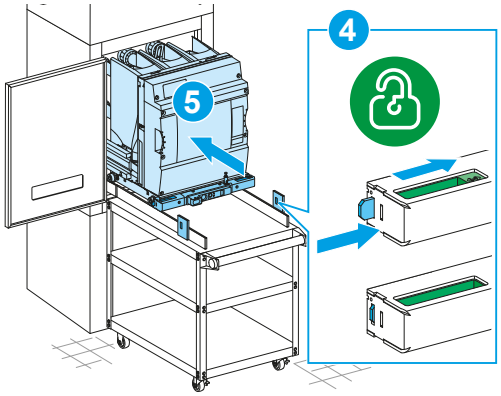
2. Check the compartment cleanliness in accordance with the service conditions and that no installation scraps or items have been left inside (tools, electrical wires, broken parts or shreds, metal objects, etc.)

3. Lock the extraction table in position in reference with the compartment.

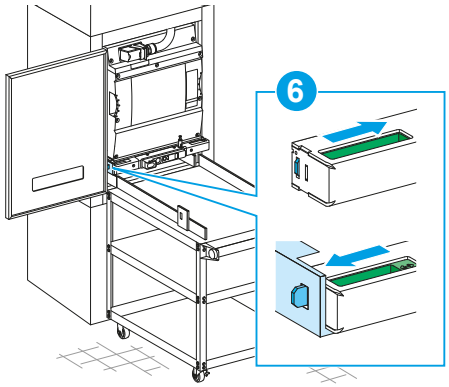
4. Unlock the device from the extraction table.

5. Push the device into the circuit compartment.





6. Lock the device in position inside the compartment using the locking tabs.

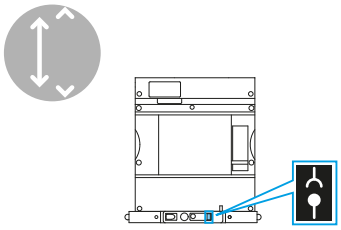


7. Remove the extraction table.
8. Connect the LV auxiliary connection plug on the device. For electrical control, ensure the LV auxiliary connection plug is connected and locked in position and that the LV circuit is energised.
9. Close the compartment door.

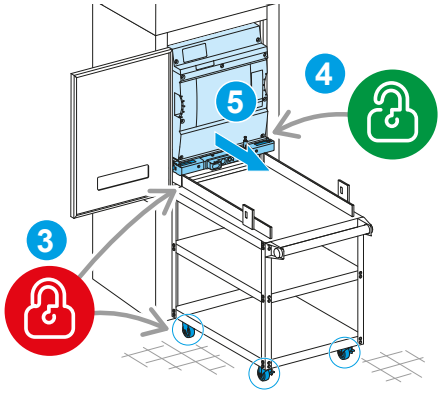
Extraction of a device

Before extraction, check that the device is in "Disconnected/test" position.

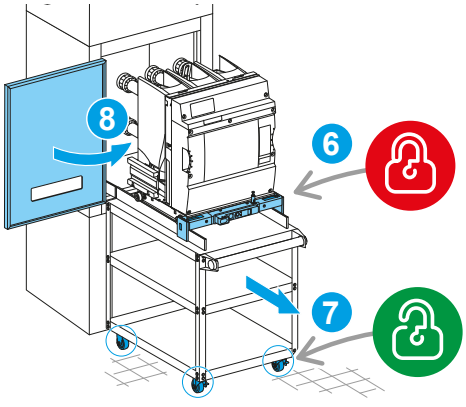
1. Open the compartment door.
2. Disconnect LV auxiliary connection plug of the device.



3. Lock the extraction table in position in reference with the compartment.
4. Unlock the device from its position inside the compartment.
5. Pull the device out on the extraction table.



6. Lock the device in position on the extraction table.
7. Unlock and remove the extraction table.
8. Close the compartment door.



Manual racking-in

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Ensure before racking operation, that no current can flow through the disconnecting device.
- Ensure to reach the complete rack-in or rack-out position.
- 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 will result in death or serious injury.

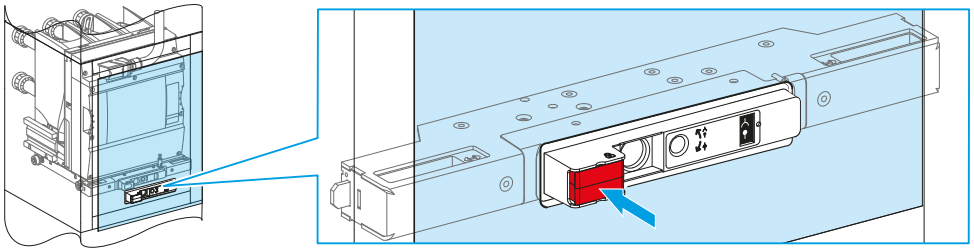
NOTICE

HAZARD OF EXCESSIVE ROTATION SPEED

For motorized racking device, don't exceed 120 rev/mn when performing racking-in or racking-out in manual mode.

Failure to follow these instructions can result in equipment damage.

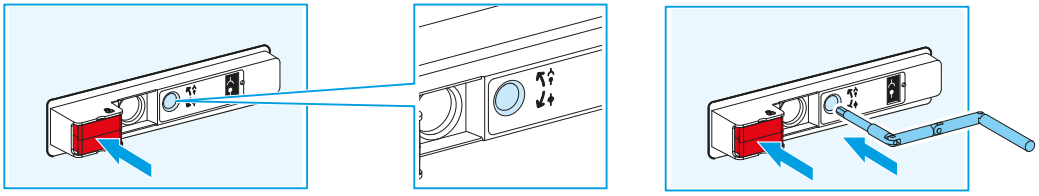
1. If racking device control motor is installed, de-energize the motor.
2. If any, remove the padlock from the racking device red pushbutton.
3. If any, unlock electrically the electromagnet.
4. Press the racking device red pushbutton.



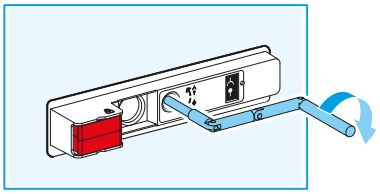
If all interlocks are implemented, the following conditions are needed to open the crank insertion hole:

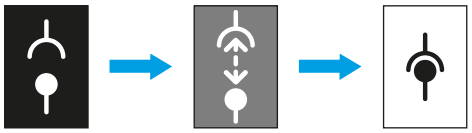
- the racking device is locked in position
- the LV auxiliary connection plug is connected and locked
- the door is closed and locked
- if any, the Earthing Switch is open.

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



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



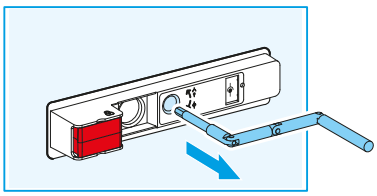


Device stroke [1] (mm)	Nos. of crank turns
200	33

[1] The racking stroke depends on your integration environment. Refer to your equipment's user guide to find the stroke of your disconnecting device.

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

7. Remove the crank. The device is in the "Service" position.



Manual racking-out

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Ensure before racking operation, that no current can flow through the disconnecting device.
- Ensure to reach the complete rack-in or rack-out position.
- 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 will result in death or serious injury.

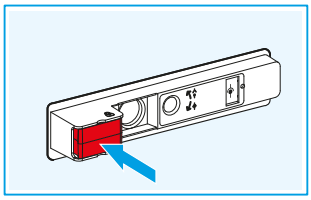
NOTICE

HAZARD OF EXCESSIVE ROTATION SPEED

For motorized racking device, don't exceed 120 rev/mn when performing racking-in or racking-out in manual mode.

Failure to follow these instructions can result in equipment damage.

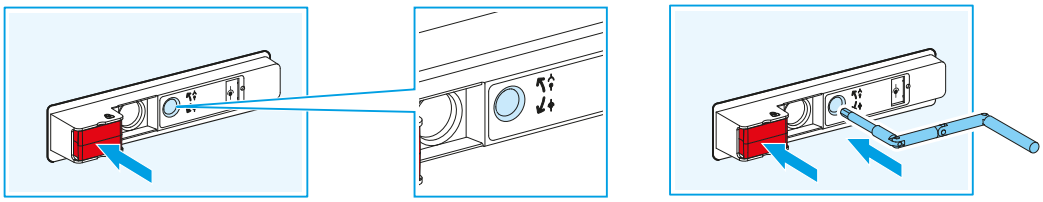
1. If a racking device motor control is installed, de-energize the motor.
2. If any, remove the padlock from the racking device red pushbutton and unlock the keylock.
3. Press the racking device pushbutton.



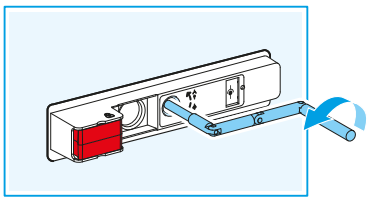
If all interlocks are implemented, the following conditions are needed to open the crank insertion hole:

- the LV auxiliary connection plug is connected and locked
- the door is closed and locked.

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



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

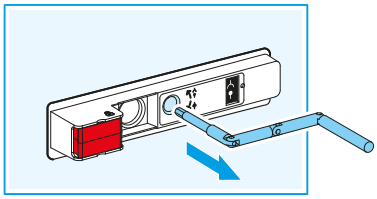


Device stroke [1] (mm)	Nos. of crank turns
200	33

[1] The racking stroke depends on your integration environment. Refer to your equipment's user guide to find the stroke of your disconnectingW device.

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 after pushing the racking device pushbutton.

6. Remove the crank. The device is in the "Disconnected/test" position.



Remote racking-in

⚠ CAUTION

HAZARD OF UNEXPECTED EQUIPMENT OPERATION

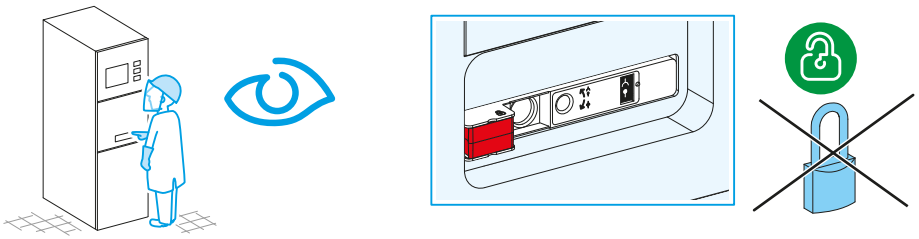
Remove the crank to allow rack-in / rack-out with racking device motor control.

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

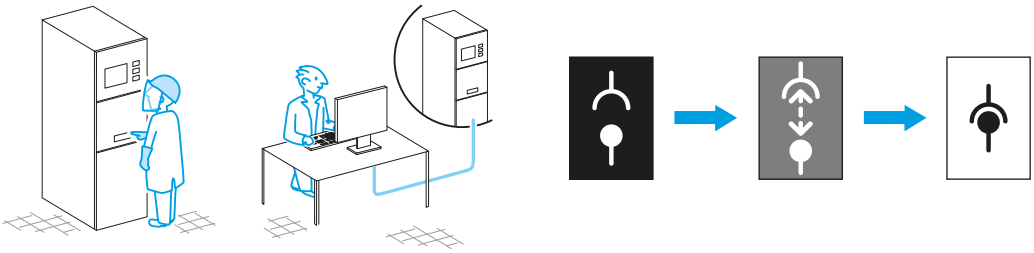
Operation is done by local electrical control or by remote electrical control.

Electrical racking-in is permitted only when the following conditions are met:
- Racking handle not present.
- Auxiliary plug connected and locked on the Disconnecting Device.
- MV door is closed and locked.
- Red push button not padlocked.

1. Remove Red push button padlock.

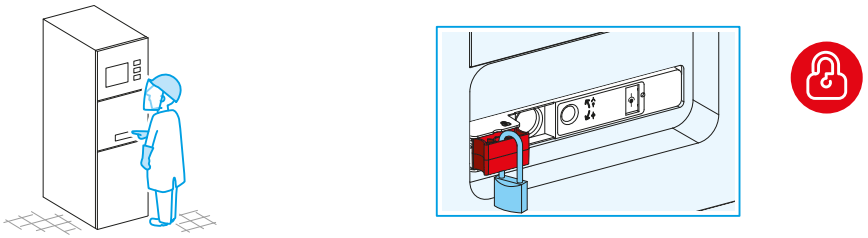


2. Launch racking-in order. Racking-in will automatically stop. Position indication feedback is given mechanically by the indicator on the truck or electrically.



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

3. Lock the device in the "Service" position by padlocking the Red push button.



Remote racking-out

⚠ CAUTION

HAZARD OF UNEXPECTED EQUIPMENT OPERATION

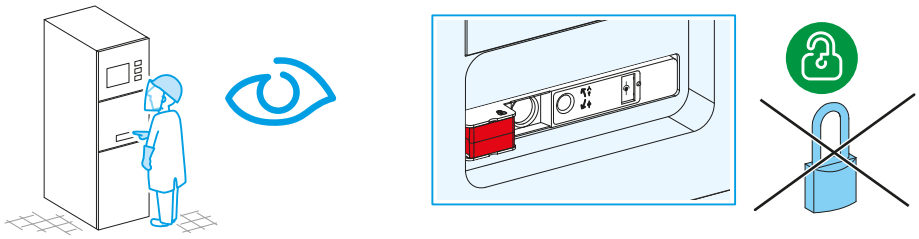
Remove the crank to allow rack-in / rack-out with racking device motor control.

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

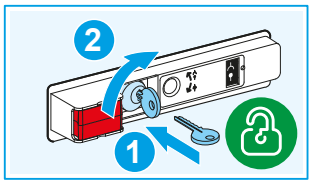
Operation is done by local electrical control or by remote electrical control.

Electrical racking-out is permitted only when the following conditions are met:
- Racking handle not present.
- Red push button not padlocked.
- Racking interlock key is present and captive (if present).

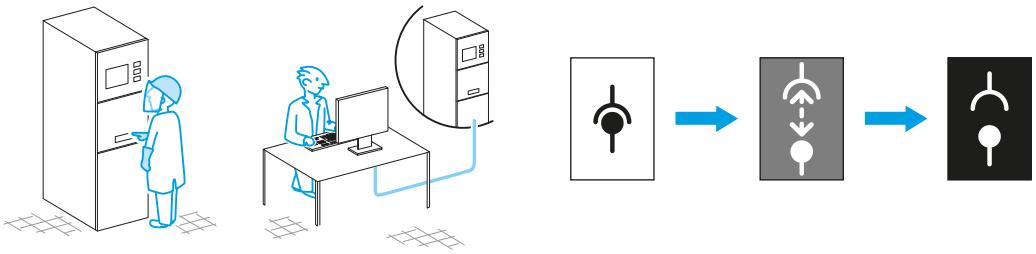
1. Remove Red push button padlock.



2. Insert the key used for locking in service position into the keylock.



3. Launch racking-out order. Racking-out will automatically stop. Position indication feedback is given mechanically by the indicator on the truck or electrically.



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

Locking the Disconnecting Device

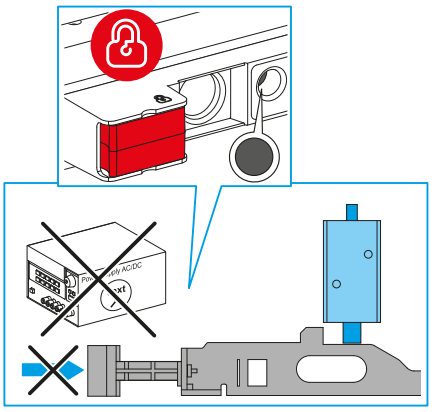
Schneider Electric recommands that the disconnecting device has been locked during service.

Electromagnetical locking of the racking device

This function is achieved using a coil which blocks racking-in operation.
When the electromagnet is energized, the red pushbutton can be activated and the racking device can be manually racked-in. When the electromagnet is not energized or the power supply is lost, the red pushbutton can't be activated and the racking device can't be racked in manually.
Lock out and tag out procedures are to be defined by the end user.

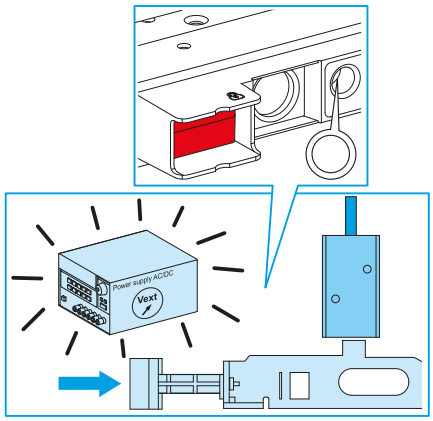
Lock

When the coil is not energized, the red pushbutton is blocked and cannot be pushed.

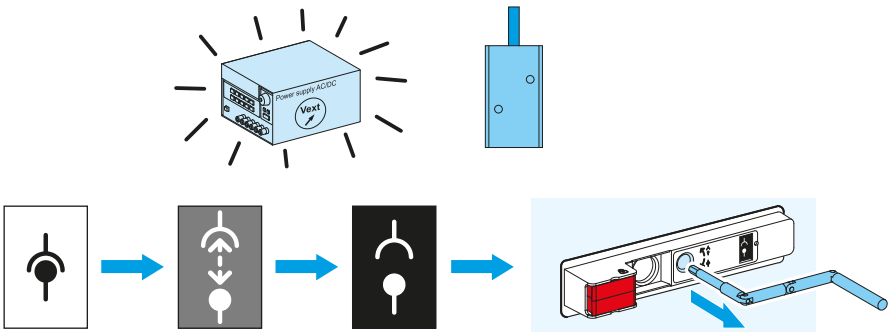


Unlock

When the coil is energized, the red pushbutton is unlocked and can be pushed.



Racking-out operations with Electromagnetical locking.
The electromagnet has to be energized during the complete racking-out operation, including removal of the racking handle, to ensure correct operation of the racking device.



Locking the Disconnecting Device positions

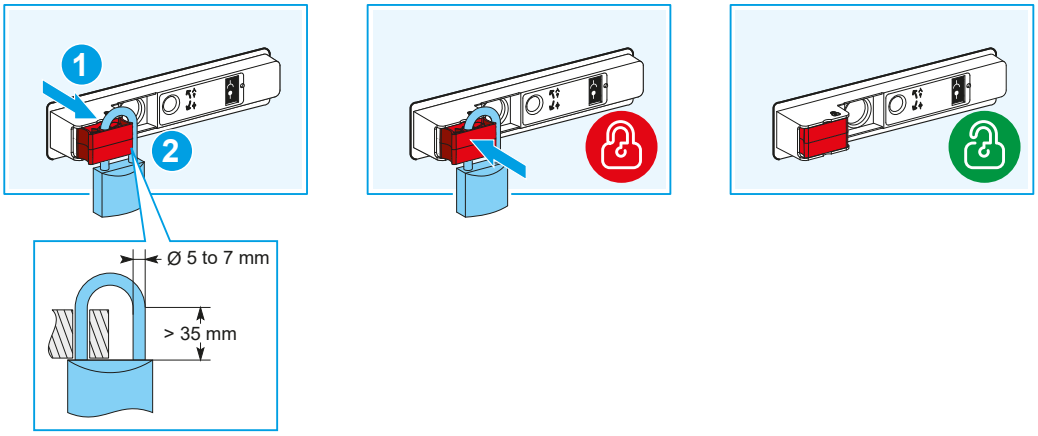
The racking device can be locked in service or disconnected positions: pull out the red pushbutton and then place in the provided hole an adapter or a multiple locking system with one or several padlocks (not supplied, refer to the drawing for dimensions). Make sure that the multiple locking system fits properly through the door extrusion.
When the pushbutton is locked:

- the manual racking-in or racking-out is not possible
- the electrical racking-in or racking-out is not possible.

Lock
Pull-out the red pushbutton and padlock it.

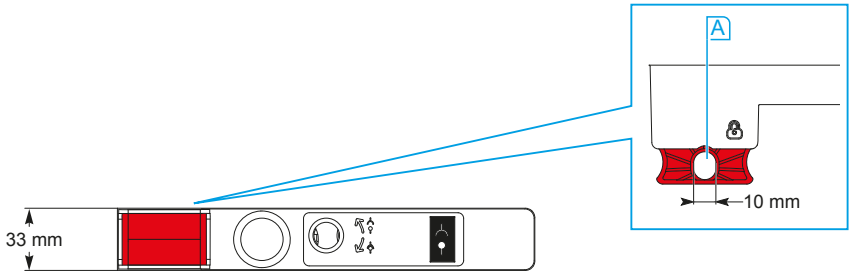
Check
The red pushbutton is blocked.

Unlock
Remove the padlocking elements to release the red pushbutton.



Multiple padlock

A multiple locking system can be placed in the provided hole A of the racking device pushbutton. Make sure that the multiple locking system fits properly through the red pushbutton (refer to the dimensions below).



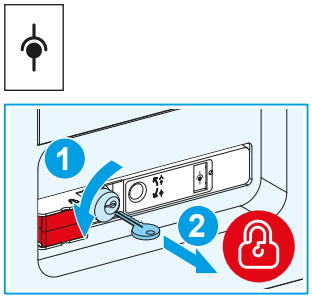
Example of a compartment door using Schneider Electric Kit.

Locking the device in service position

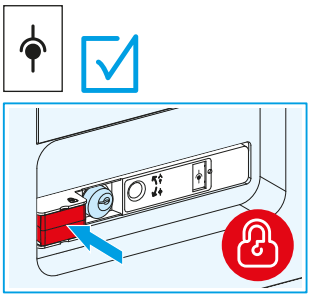
When the racking device is key locked, the disconnecting device is locked in service position. When locked, the mechanical and electrical rack-in/rack-out of the device is impossible.

Lock out and tag out procedures are to be defined by the end user.

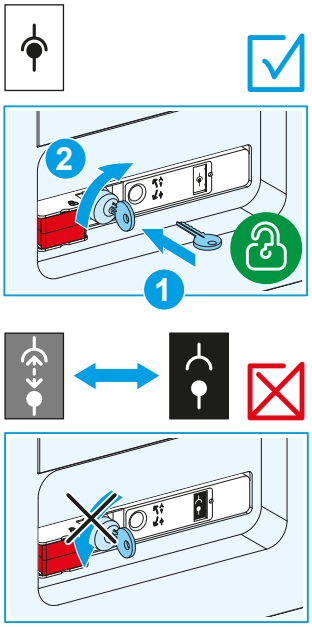
Lock
The key is free after locking of the device in racked-in position (service position only).



Check
Push the red pushbutton and check that it is blocked.

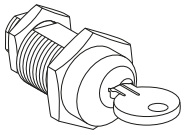


Unlock
Insert and turn the key.
The key is captive and the disconnecting device is ready for racking-out.

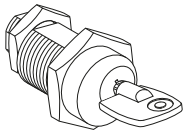


Two types of key lock are available.

Flat key

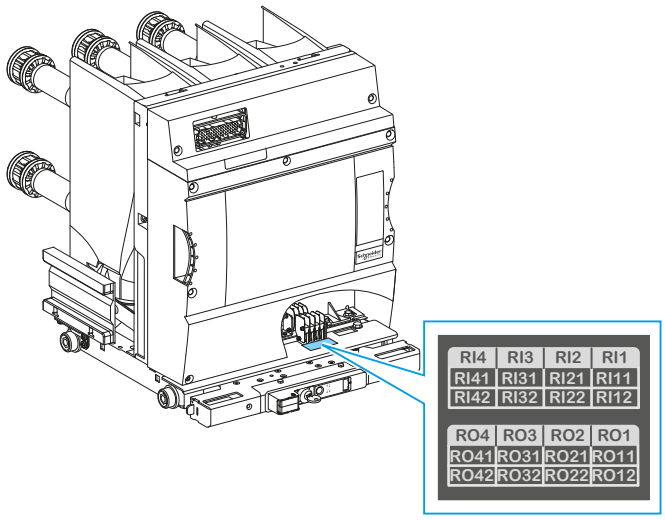


Cylindrical key



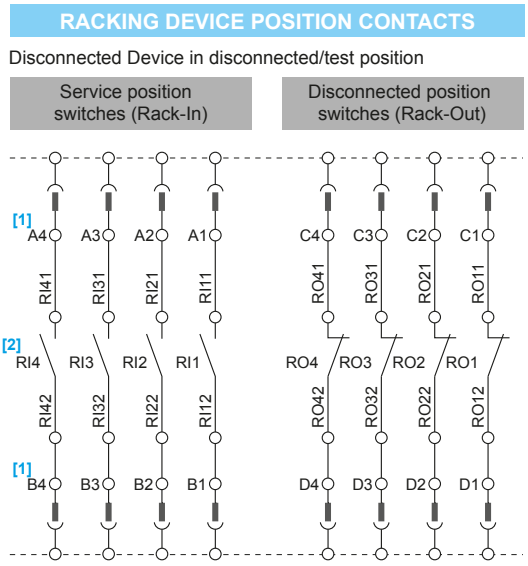
Discovering the electrical auxiliaries

Identification of auxiliary labels



Label of racking device position contacts.

Electrical diagrams for disconnecting device



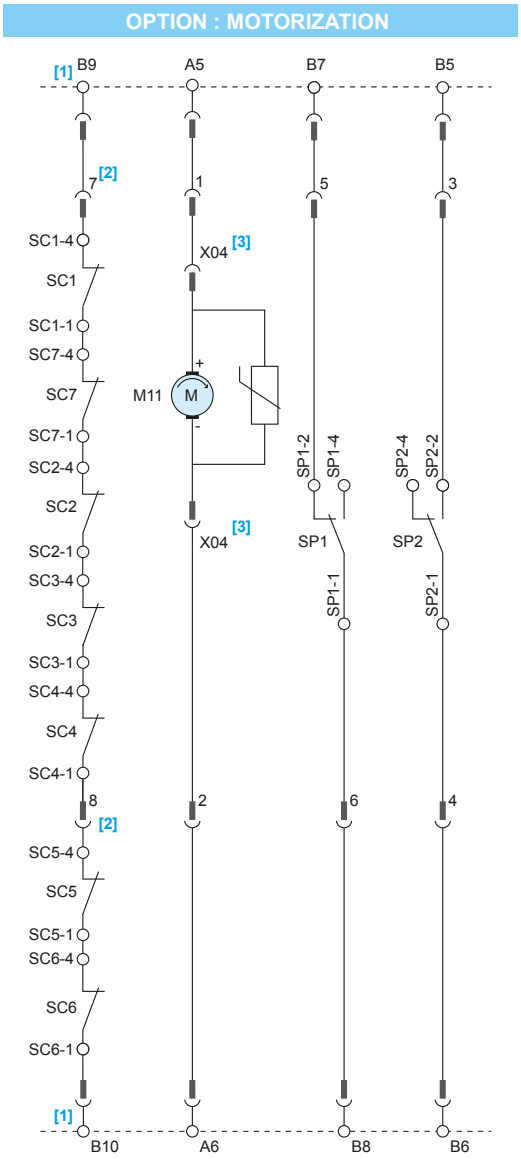
[1] : LV plug pin number

[2] : Racking position block designation

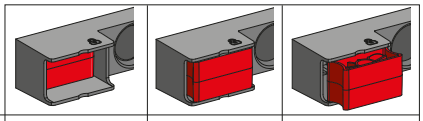
RI1-4: Racking-in position contacts, closed when the circuit breaker is in the service position.

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

Motorized option

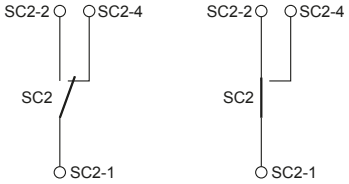


[1]: LV plug pin number (if applicable)
[2]: 12 pin connector
SC1: Pushing of the red pushbutton opens microswitch
SC2: Key lock detection opens microswitch (option)
SC3: Door not closed opens microswitch
SC4: Earthing Switch in closed position opens microswitch
SC5: VI not open opens microswitch (not actuated for DD)
SC6: No LV plug detection opens microswitch
SC7: Pulling of the red pushbutton opens microswitch
[3]: 2 pin motor connector
M11: Motor for Rack-in/Rack-out.
SP1: Microswitch for Rack-in motor stop
SP2: Microswitch for Rack-out motor stop



SC1	Open	Close	Close
SC7	Close	Close	Open

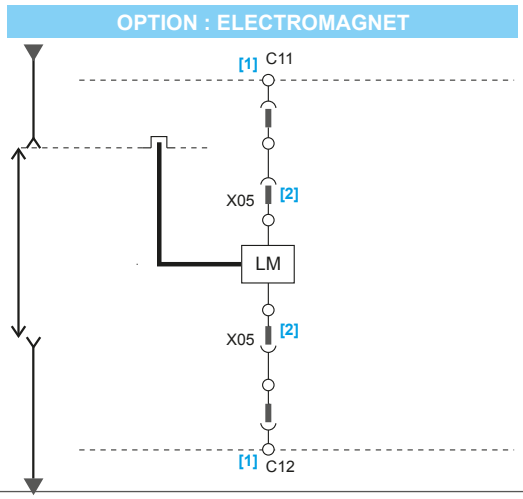
Key lock detection



Reminder

Motor monitoring is to be carried out only by SP1 and SP2 microswitches.
RI1-4 & RO1-4 are only used for position information and not for racking device motor control.

Electromagnet option



[1] : LV plug pin number (if applicable)
LM: Locking Magnet (Electromagnetic locking)
[2]: 2 pin connector for locking magnet

Maintaining the performance of EasyPact EXE

Maintenance

General information

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

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

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

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

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

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

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

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

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

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

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

Maintenance definitions

Preventive

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

Corrective

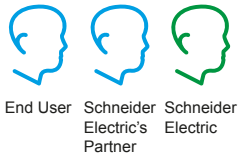
Corrective maintenance repairs a system in view of fulfilling a required function.

Intervention levels

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

Level 1

Maintenance operations that can be carried out by 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

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

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

- the instructions provided in the instruction document were not followed,
- any other component 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 these instructions will result in death or serious injury.

Component replacement	Instructions
Removable Top Cover	NVE1860701
Main Front Cover	NVE1862101
Racking Device Front Cover	NVE1862201
Cam for Racking Device Keylock	NVE1857801
LV 64-pin Plug Withdrawable	NVE1810501
Racking Device Locking Magnet	NVE1849101

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 disconnecting device, contact Schneider Electric or your equipment manufacturer.

Products and consumables

Products and consumables		
Supplier	**Designation**	**Reference** [1]
SCHNEIDER ELECTRIC	Electrical lubricant Amblygone TA 15/2	18327916
SCHNEIDER ELECTRIC	Mechanical lubricant Isoflex Topas L 152	18315110
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.
- Contact your Schneider Electric local representative or your equipment manufacturer for any queries.

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

Different maintenance programs should be carried out:

- Basic preventive maintenance
  - to be performed every year [1]
  - by level 1 and level 2.
- Advanced preventive maintenance
  - to be performed every two years [1]
  - by level 3.
- Exclusive preventive maintenance
  - to be performed every five years [1].
  - by level 4.

[1] Recommended under normal operating conditions. However, this recommended frequency should be increased according to the level of criticality (low, major, critical) and the severity of environment conditions. To define appropriate Maintenance program for your equipment, contact your Schneider Electric Maintenance Service local representative.

Operating limits for EasyPact EXE

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

Racking device	Mechanical interlocks
2000 operating cycles [2]	2000 operating cycles

[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 dismounting of parts of the disconnecting device.

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) • Check the cleanliness of the device (Chair, Insulating cover)	■ ■ ■ ■ ■
Auxiliaries	Check auxiliary wiring and insulation	■
Racking Device for Disconnecting Device	Check the device racking operation (Rack In/Rack Out)	■
	Check the device racking interlock (operation of the red opening pushbutton)	■
	Operate the racking device manually	■
	Operate the racking device electrically for motorized disconnecting device	■
Racking Device Padlocking	Operate keylocking system	■
	Operate padlocking system	■
	Operate the electomagnet	■

[1] Every fifth year diagnostic checks is carried out by Schneider Electric Service.

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:

- 15 minutes typically for a disconnecting device without racking motorization
- 30 minutes typically for a disconnecting device with racking motorization.

Safe Repository

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

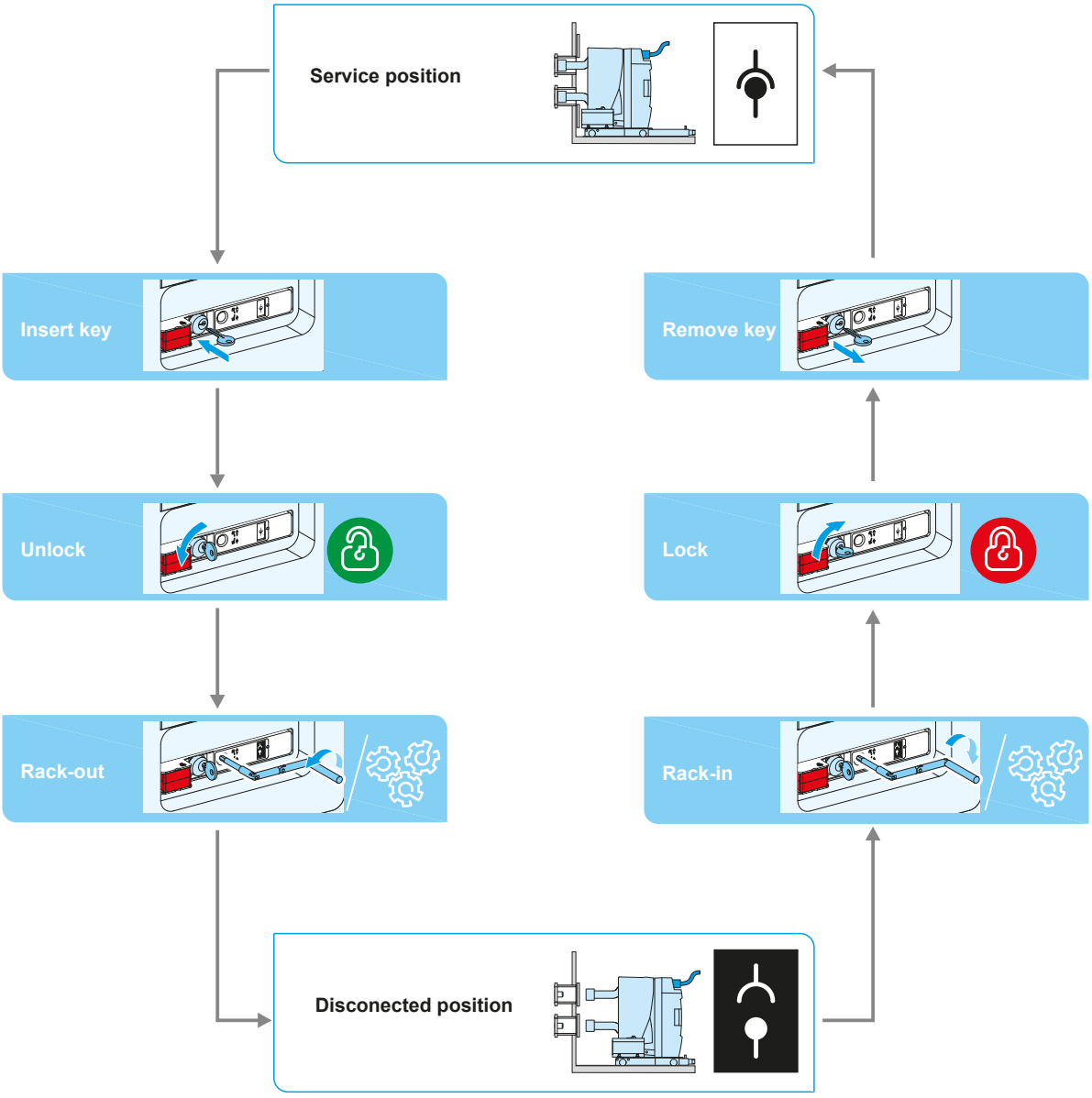
Troubleshooting and solutions

Diagnose the problem	Identify the probable causes	Find the solutions
Racking-in or Racking-out		
Impossible to insert the crank in "Disconnected/test" or "Service" position	Device padlocked or locked in "Disconnected/ test" or "Service" position	• Check possibility to release the padlock, electromagnetic lock in accordance with the status of the installation. • Bring installation into compliance to release locked state.
	A lock is present on the racking device in the "Service" position	• Check possibility to release the lock in accordance with the status of the installation. • Bring installation into compliance to release locked state.
	The auxiliaries connection plug is not locked in the correct position	Lock the auxiliaries connection plug in the correct position.
	The racking device is not properly locked in the correct position in the cubicle	Lock the racking device in the correct position in the cubicle.
	An interlock with Earthing Switch is present	• 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.
	The pushbutton located on the racking device is padlocked	Check the condition of pushbutton located on the racking device and remove the padlock.
	The door is open or the "door interlock" is ineffective	Close the cubicle door or check the operation of the "door interlock".
Impossible to press the pushbutton located on the racking trolley	The auxiliaries connection plug is not locked in the correct position	Lock the auxiliaries connection plug in the correct position.
	The racking trolley is not properly locked in the correct position in the cubicle	Lock the racking device in the correct position in the cubicle.
	An interlock with Earthing Switch is present	Bring installation into compliance to release locked state.
	The pushbutton located on the racking device is locked	Check the condition of the pushbutton located on the racking device and disable the lock
	Electromagnet not activated	Activate electromagnet. Refer to Electromagnet troubleshooting.
	The door is open or the "open door" interlock is ineffective	Close the switchboard door or check the operation of the "open door" interlock
Impossible to turn the crank	Wrong direction of rotation	Check the direction of rotation according to the "position indicator".
Device cannot be racked to "Service" position	Mechanical problem on the insulating shutters	Check the operation of the insulating shutters.
	Clusters are incorrectly positioned	Replace clusters.
	The auxiliaries connection plug is not locked in the correct position	Lock the auxiliaries connection plug in the correct position.
	The racking device is not properly locked in the correct position in the cubicle	Lock the racking device in the correct position into the cubicle.
	An interlock with Earthing Switch is present	• 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.
	The pushbutton located on the racking device is padlocked	Check the condition of the pushbutton located on the racking device and remove the lock.
	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 out	A keylock is present on the racking device in the "Service" position	• Check possibility to release the keylock in accordance with the status of the installation. • Bring installation into compliance to release locked state.

Diagnose the problem	Identify the probable causes	Find the solutions
Device cannot be pulled out	Device is not in the "Disconnected/test" position	• Turn the crank until the device reaches the "Disconnected/Test" position • Check device to cubicle lock is disengaged on both sides.
Device insertion or extraction		
Withdrawable device cannot be inserted into the cubicle	An interchange stop system between the cubicle and the device is present	Check concordance between the cubicle and the device.
	A lock is present on the shutters	• Check possibility to release the lock in accordance with the status of the installation. • Bring installation into compliance to release locked state
Device cannot be locked in "Service" or "Disconnected/ test" position	Device is not in the correct position	Turn the crank until the device reaches the wanted position ("Service" or "Disconnected/test" position).
	Crank remains in the racking device	Remove crank and store it.
Cubicle door cannot be opened	The racking device is not in the "Disconnected/test position"	Turn the crank until the device reaches the wanted position ("Service" or "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 motorization		
Inverse voltage at connection terminal	Racking-in without de-energizing the racking device motorization	De-energize the motorization from the LV cabinet. This may damage the permanent magnet of the motor.
	Racking-out without de-energizing the racking device motorization	De-energize the motorization from the LV cabinet. This may damage the permanent magnet of the motor.
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-in manually the racking device.
Electromagnet		
Impossible to press red pushbutton of racking device despite electromagnet activation	Electromagnet is not supplied or power supply value is inadequate	• 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.
Red pushbutton of racking device can be operated despite electromagnet is powered off	Electromagnet shaft is blocked and does not lock anymore the red pushbutton	Check the shaft movement obstruction, and if needed contact your Schneider Electric representative to replace the electromagnet.

Disconnecting Device operation in a nutshell

Disconnecting Device operation



= motorized operation

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

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