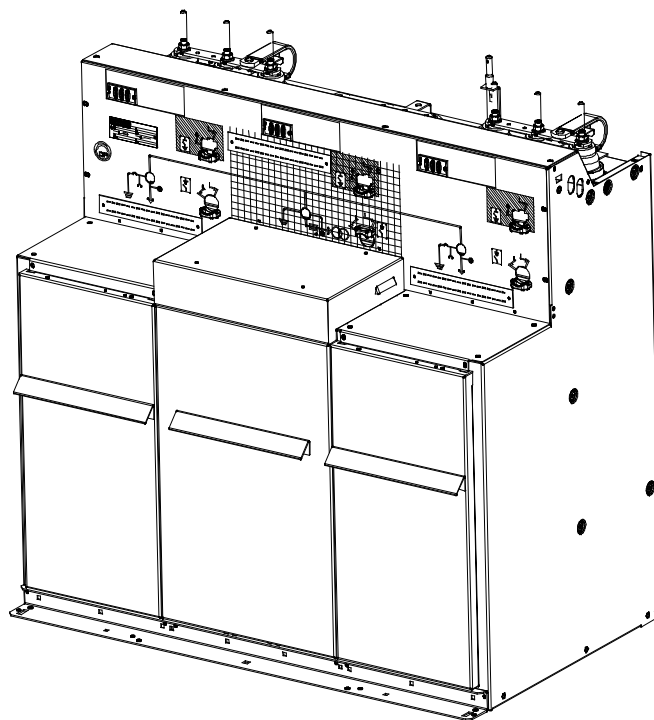


# RM6

MV distribution  
factory built assemblies  
at your service

ENGLISH

## instructions for use



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## symbols and conventions

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

as per iso 3864- 2



### DANGER

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



### AVERTISSEMENT

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



### ATTENTION

**CAUTION:** failure to follow this instruction may result in injuries.

This alert signal can also be used to indicate practices that could damage the SM6 unit.



### INFORMATION - ADVICE

We draw your attention to this specific point.

---

contact the Schneider  
Electric service unit for  
diagnosis and advice

You can log on to:

**[WWW.SCHNEIDER- ELECTRIC.COM](http://WWW.SCHNEIDER-ELECTRIC.COM)**

Call your sales representative who will put you in contact  
with the closest SCHNEIDER- ELECTRIC service centre.

## distribution rules



The aim of this publication is to enable the **RM6** unit to be installed correctly.



This document is not a commercial document. It is a strictly technical document drawn up by **Schneider Electric**.

## safety rules



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



Only undertake the work after having read and understood all the explanations given in this document.

If you have any difficulty complying with these rules, please contact **Schneider Electric**.



The contractor must be certified and authorised to manipulate and perform work on the **RM6** unit.

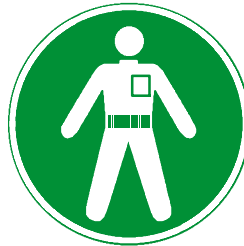
## protective equipment

For each operation, it is mandatory to use safety equipment appropriate:

- Personal Protective Equipment (PPE)
- Collective Protection Equipment (CPE)



*Eye protection must be worn*



*Safety overalls must be worn*



*Safety boots must be worn*



*Safety gloves must be worn*



*Safety helmet must be worn*



*Ear protection must be worn*

## maintenance rules

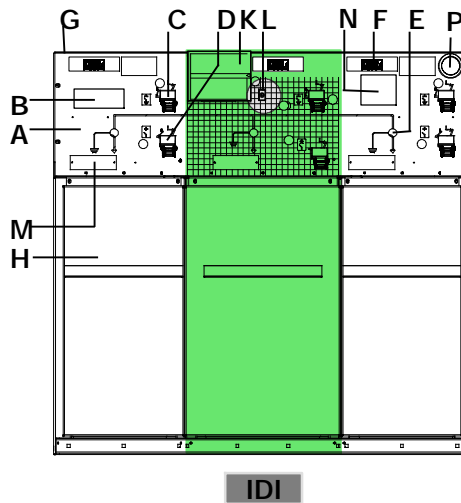


**NEVER USE SOLVENTS AND ALCOHOL**



**WE DRAW YOUR ATTENTION TO THE RISK OF USING HIGH PRESSURE CLEANING PROCESSES**

## circuit breaker and switch function

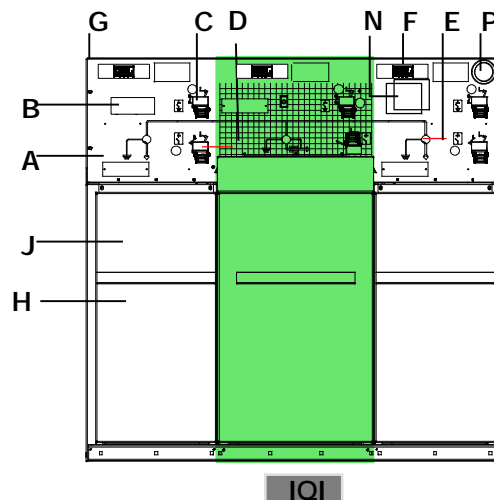


- A : operating mechanism front plate comprising the mimic diagram
- B : information plates
- C : earthing switch operating shaft
- D : switch operating shaft
- E : function position indicator

- F : voltage indicator
- G : LV connection access trunking
- H : connection bushing access panel
- K : **VIP30/35** and **VIP300** protection relays
- L : **D function** opening pushbutton

- M : rating plate
- N : pressure switch or gauge label
- P : pressure switch or gauge

## fuse- switch and switch function



- A : operating mechanism front plate comprising the mimic diagram
- B : information plate
- C : earthing switch operating shaft
- D : switch operating shaft

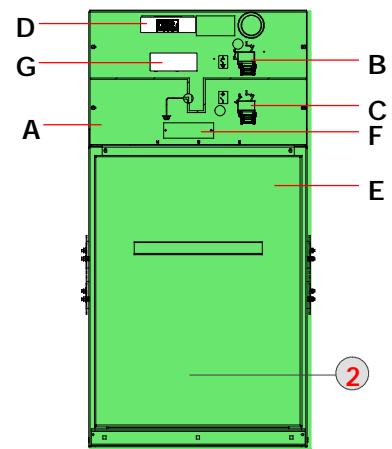
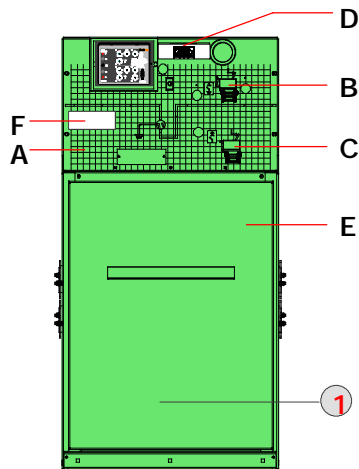
- E : function position indicator
- F : voltage indicator
- G : LV connection access trunking
- H : connection bushing access panel

- J : rating plate
- N : pressure switch or gauge label
- P : pressure switch or gauge

## "switchboard coupling" switch and circuit breakers

Example presented :

- 1: DE- BC station with earthing switch
- 2: DE- IC station with earthing switch



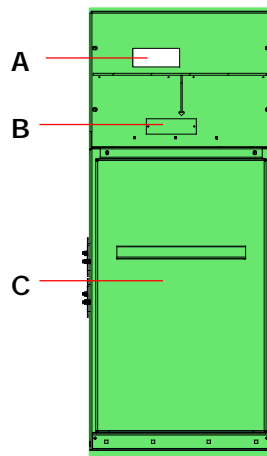
- A: control panel featuring the mimic panel  
 B: earthing switch operating shaft  
 C: switch operating shaft  
 D: voltage indicator  
 E: connection bushing access panel  
 F: rating plate  
 G: characteristics plates

- A: control panel featuring the mimic panel  
 B: earthing switch operating shaft  
 C: switch operating shaft  
 D: voltage indicator  
 E: connection bushing access panel  
 F: rating plate  
 G: characteristics plates

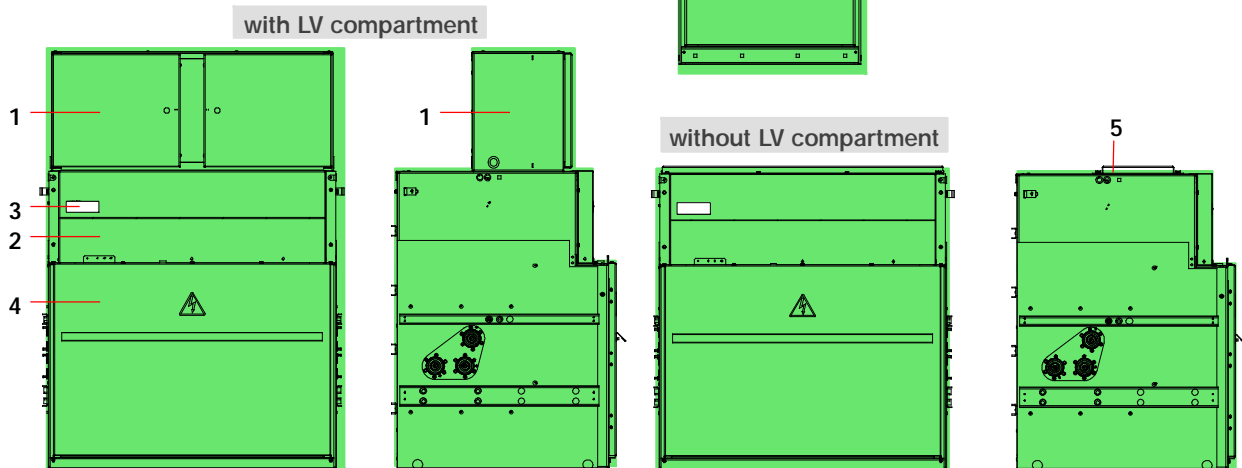
## cable connection function

Exemple presented : DE- O

- A: characteristics plate  
 B: rating plate  
 C: connection bushing access panel



## metering cubicle

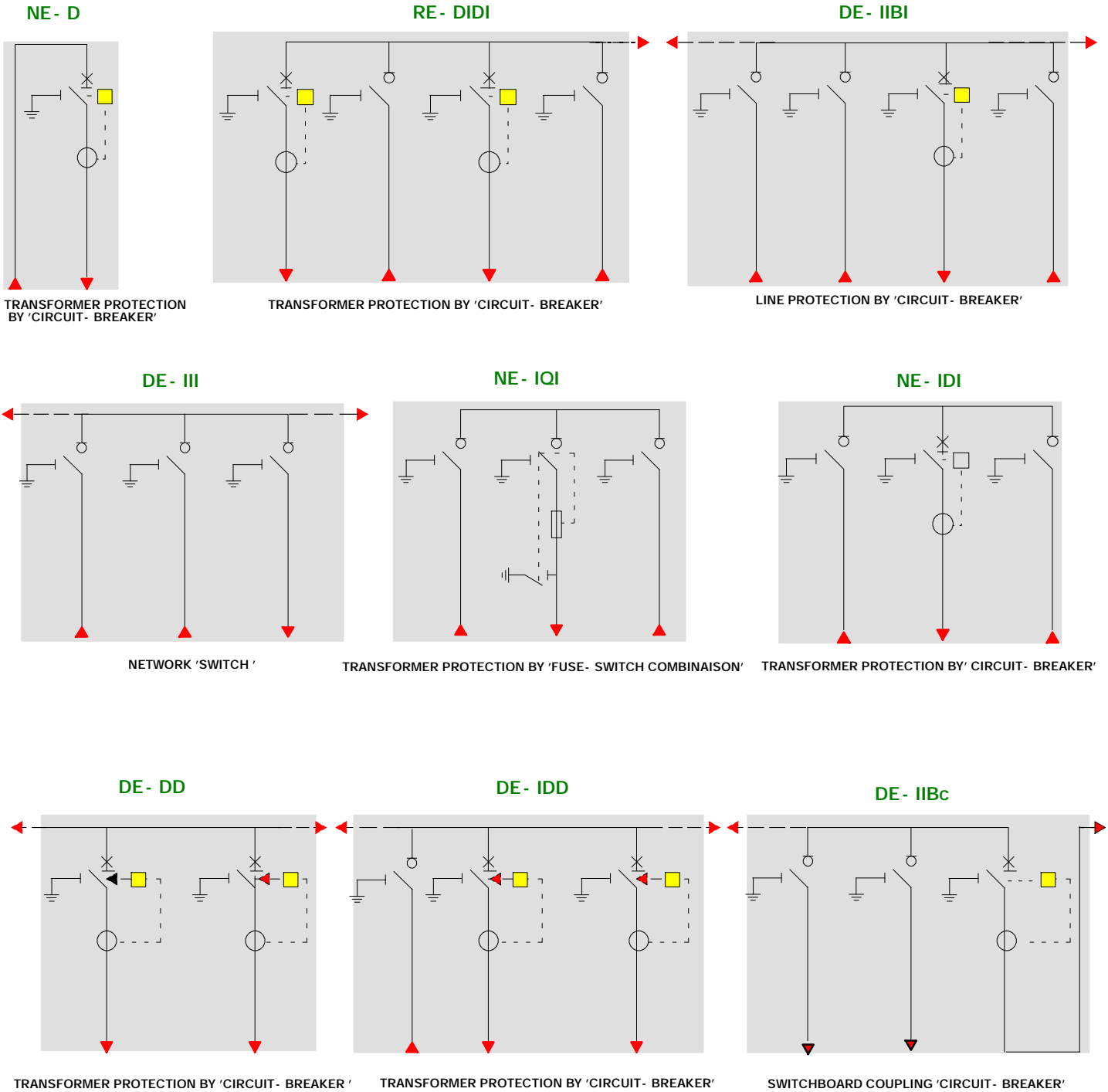


- 1: LV compartment  
 2: voltage transformer access panel  
 3: characteristics plate

- 4: access panel to current transformer  
 5: LV compartment

# single- line diagramms

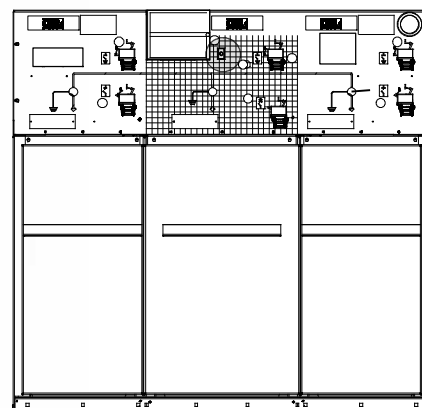
NE = No Extensible      LE = Left Extensible  
 DE = Double Extensible      RE = Right Extensible







## prior to energising



Check that the connection bushings are fitted with connectors or with insulating caps.

Check that the **RM6** is connected to the substation earth.

## pressure check of unit in operation

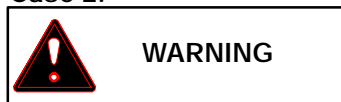


### unit with manometer

Case 1:  
needle in green zone

H The **RM6** unit is operating normally.

Case 2:



needle in red zone

H The **RM6** unit must be replaced urgently.

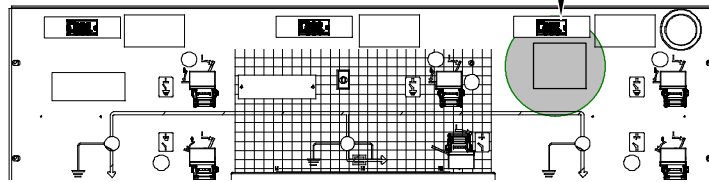
H It can remain energised until replacement.

H **All opening or closing operations are forbidden.**

H To replace the **RM6**, power off the unit.

## warning label

recalls the safety rules



## unit with pressure switch

### LCD display check

Press the "TEST" button. The LCD screen should display:



H If nothing is displayed, check that the 8- point connector on the pressure switch wiring harness at the rear of the LCD display is correctly connected.

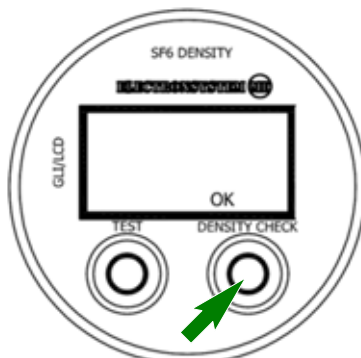
H Contact the after sales service. [www.schneider-electric.com](http://www.schneider-electric.com)

**Note:** The LCD display is self-powered by piezoelectric buttons ("TEST" and "DENSITY SWITCH"). Pressing on one of these buttons will turn on the display for a few seconds.

### pressure check

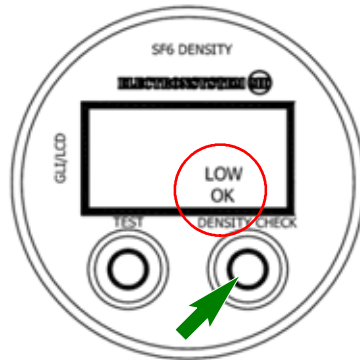
Press the "DENSITY CHECK" button. The LCD screen displays:

Case 1: OK



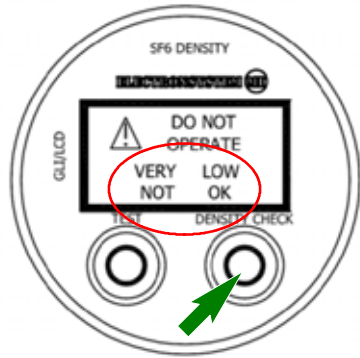
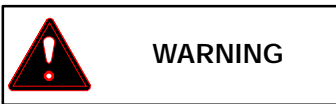
H The RM6 unit is operating normally.

Cas n° 2 : LOW / OK



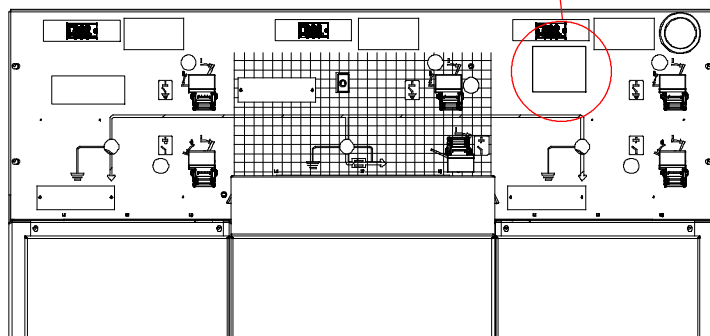
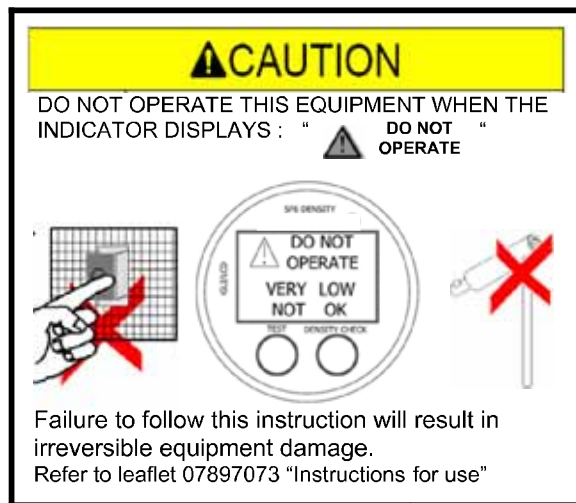
- H The **RM6** unit must be replaced.
- H It can remain energised until replacement.
- H All operations can be performed while energised.

Case 3: VERY LOW / NOT OK

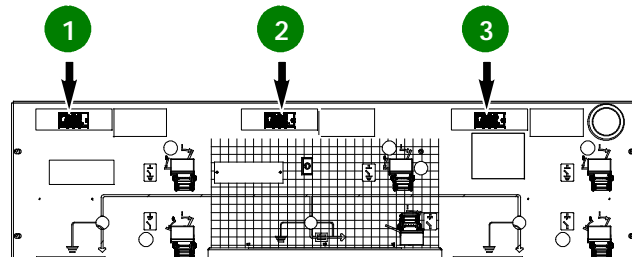


- H The **RM6** unit must be replaced urgently.
- H It can remain energised until replacement.
- H **All opening or closing operations are forbidden.**
- H To replace the RM6, power off the unit.

warning label recalls the safety rules



**position of the VPIS or VDS voltage indicator units (optional)**



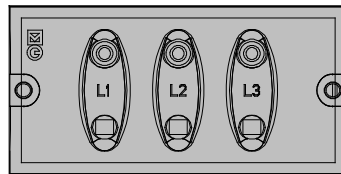
**1 and 3** : voltage presence on network cables.

**2** : voltage presence downstream of fuses for a switch combination or on the outgoing cable for a circuit - breaker.

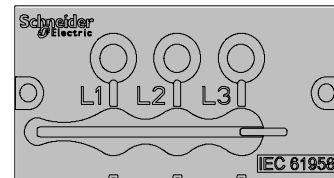
**VPIS**

**presentation of VPIS- V1 and VPIS- V2**

**VPIS** :Voltage Presence Indicating System, a case with 3 built - in lights.



**VPIS- V1** : production until February 2009.



**VPIS- V2** : production starting from March 2009.

**characteristics**

Conforming to **IEC 61958**, relative to voltage presence.

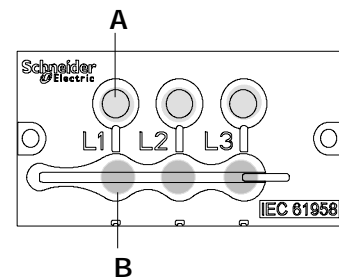
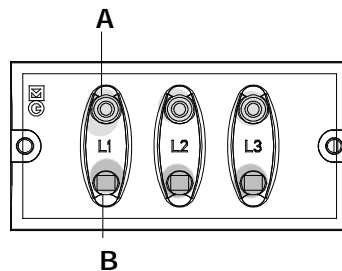
**operating instructions**



The indication provided by a **VPIS- V1** or **V2** alone is not sufficient to ensure that the system is de- energised.



When the ambient lighting is particularly bright, it may be necessary to improve visibility by protecting the indication.



**A** : voltage presence indicator light (one for each phase)

**B** : connection point designed for the connection of a phase concordance unit (one for each phase)

## phase concordance unit

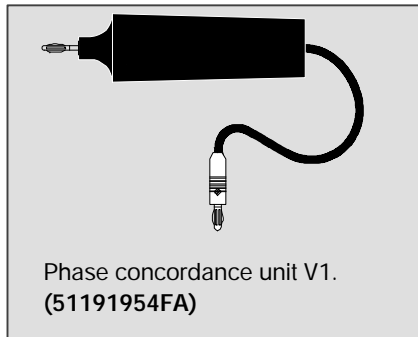
Phase concordance testing for VPIS- V1 and VPIS- V2 must be carried out each time a cable is connected to a functional unit.

It is a way of making sure that all three cables are each connected to the corresponding phase of the substation.

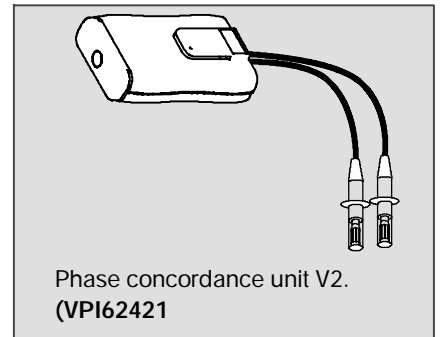
## principle

The principle of the phase concordance unit is that it allows a check of the phase concordance between 2 energised functional input units on the same substation.

## reminder of accessories that can be used for phase concordance test



Phase concordance unit V1.  
(51191954FA)



Phase concordance unit V2.  
(VPI62421)

## rules for the use of phase concordance unit



**WARNING**

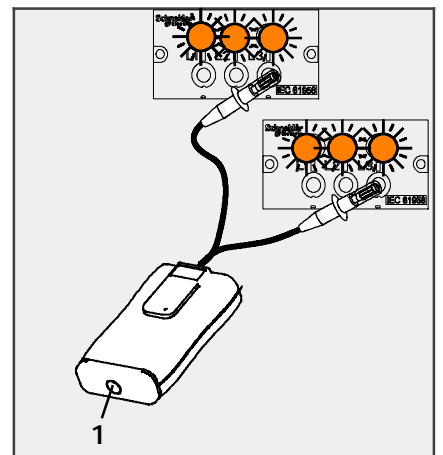
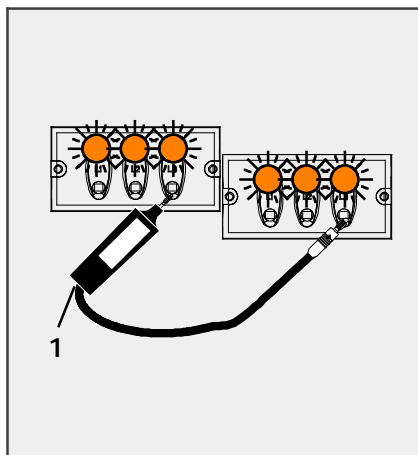
**IT IS IMPOSSIBLE TO CARRY OUT A PHASE CONCORDANCE TEST WITH 2 VPIS OF DIFFERENT TYPES**

### Balanced phases :





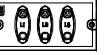
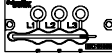



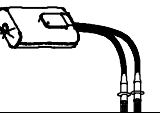


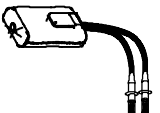


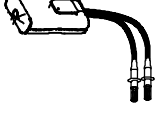


- the phase concordance unit light (1) is unlit.

### Unbalanced phases :

- the phase concordance unit light (1) is lit.

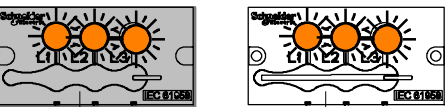
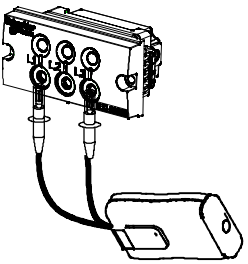


























rules for choosing phase concordance unit

phase concordance unit	functional unit 1	functional unit 2	compatibility result	corrective actions
	V1 	V1 	OK	
	V1 	V2 	<del>OK</del>	Replace VPIS- V1 by VPIS- V2. Use a phase concordance unit V2.
	V2 	V2 	<del>OK</del>	Use a phase concordance unit V2.
	V1 	V1 	<del>OK</del>	Replace VPIS- V1 units by VPIS- V2 units OR test with 1 phase concordance unit V1.
	V1 	V2 	<del>OK</del>	Replace VPIS- V1 with VPIS- V2.
	V2 	V2 	OK	

check before phase concordance test























































Please refer to the previous chapters in the event of test malfunctioning.

TEST	RESULT	ACTION										
 <p>1                      2</p> <p>Visual checking of the indicator lights on the VPIS units of functional unit 1 and of functional unit 2</p>	The 3 indicator lights of each VPIS are on.	The 2 functional units are energised, the VPIS units are operating and the check can continue.										
	The 3 indicator lights of the VPIS are off. The functional unit is not energised or the VPIS is defective.	Apply power to the functional unit. If VPIS- V1 remains unlit, replaced it by a VPIS- V2.										
	One or 2 indicator lights unlit.	The VPIS is probably defective. Replace by a VPIS- V2.										
<p>Phase concordance unit check choice</p>  <p>On each functional unit test phases 1 and 3.</p>	<table border="1"> <thead> <tr> <th>functional unit 1</th> <th>functional unit 2</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	functional unit 1	functional unit 2									You can test.
	functional unit 1	functional unit 2										
												
												
												
												
		<b>You cannot test them.</b> The choice of the phase concordance unit is wrong or it is not functioning correctly.										

### phase concordance test

The 3 indicator lights of the 2 VPIS are lit and the phase concordance unit is correct, meaning that phase concordance test can be performed.

lexique  or   phase concordance unit LED lit  LED unlit

Functional unit n° 2					
	L1	L2	L3	Conclusion regarding phase concordance	
Functional unit n° 1	L1				<u>Connection is satisfactory.</u>
	L2				
	L3				
	L1				Reverse the MV cables connected to L1 and L2 on one of the 2 functional units
	L2				
	L3				
	L1				Reverse the MV cables connected to L2 and L3 on one of the 2 functional units
	L2				
	L3				
	L1				Reverse the MV cables connected to L1 and L3 on one of the 2 functional units
	L2				
	L3				
	L1				Change the position of each MV cable on one of the 2 functional units
	L2				
	L3				
	L1				Change the position of each MV cable on one of the 2 functional units
L2					
L3					



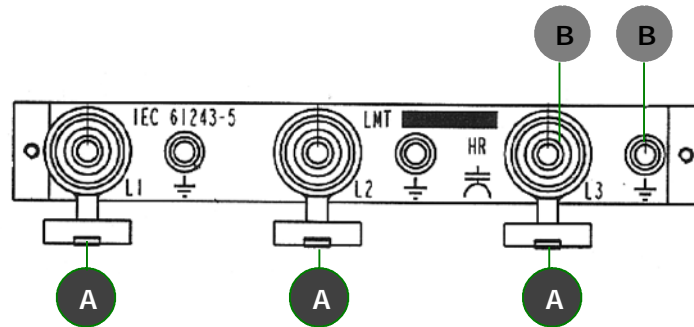
---

## RM6 equipped with VDS voltage detection units

**VDS: Voltage Detecting System**, unit with connectors used to plug in individual indicators.

**A:** protective covers.

**B:** connections points used to connect an individual indicator.



---

### characteristics



The voltage detector system equipping your **RM6** is of the separate VDS type, HR system.

It complies with standard **IEC 61243- 5**.

---

### instructions for using the interface



Each time the interface is used, put back the protective covers.

Do not use connectors enabling short-circuiting of the interface, in networks with unearthed or earthed neutral by resonant circuit.

---

### accessories usable at the interface

Individual voltage indicator for HR system.  
Universal phase concordance unit.



The reliability of the information provided is guaranteed only by use of accessories conform to standard **IEC 61243- 5**: to use them, follow the instructions of the accessory manufacturer.

Other devices must only be used at the interface if they exhibit the same dielectric strength as an indicator.

---

## choosing the HV fuses

The rating of the fuses to be fitted in the **RM6** protection function depends on the following factors (among others):

- H operating voltage.
- H transformer rating.
- H fuse technology (manufacturer).

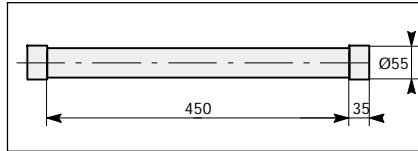
H Various fuse types with striker with average energy can be fitted :  
 - as per standard UTE NFC 13.100, UTE NFC 64.210 of the Soléfuse type.

- as per recommendation IEC 282.1 and dimensions DIN 43.625 of the Fusarc CF type.

**Example:** general case for protection of a 400 kVA – 10 kV transformer, 63 A Soléfuse fuses or 50A Fusarc CF fuses will be chosen.

For installation of fuses of other manufacturers, please consult us.

### Dimensions of the Soléfuse fuses (UTE)

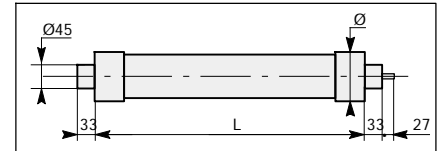


rated voltage rating (kV)	rating to (A)
7,2 à 24	6,3 à 63

**Our products are guaranteed only with the fuses mentioned in this document.**

**To install fuses of other brands, please ask "Schneider Electric" support.**

### Dimensions of the Fusarc CF fuses (DIN)



rating voltage (kV)	rating to (A)	length (mm)	diameter to (mm)
12	10 à 20	292	50,5
	25 à 40	292	57
	50 à 100	292	78,5
24	125	442	86
	10 à 20	442	50,5
	25 à 40	442	57
80 à 100	50 à 63	442	78,5
	80 à 100	442	86

**IEC & UTE standards require that all 3 fuses are to be replaced after the fusion of one fuse.**

## selection table

(rating in A, use without overload at  $-25^{\circ}\text{C} < \theta < 40^{\circ}\text{C}$ ).

(\*)SIBA types fuses at 160A/12kV  
 référence 30- 020- 13.

(\*) In the case of an external trip system (eg.:overcurrent relay).

A calculation must be carried out to guarantee coordination of fuse fuse- switches.

Please consult us.

For any values included in the table, please consult us.

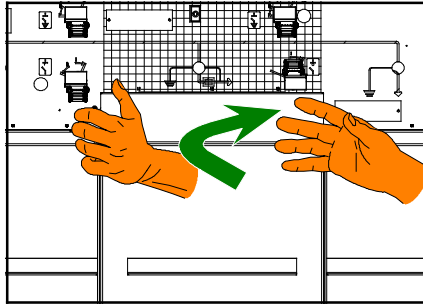
In this case of an overload beyond  $40^{\circ}\text{C}$ , please consult us.

fuse type	operating voltage (kV)	Transformer rating (kvA)																Rated voltage (kV)
		50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	
<b>Solefuse (norme UTE NFC : 130.100, 64.210)</b>																		
5,5	16			31,5	31,5	63	63	63	63	63								7,2
10				16	16	31,5	31,5	31,5	63	63	63	63						24
15				16	16	16	16	16	43	43	43	43	43	63				
20				16	16	16	16	16	16	43	43	43	43	43	63			
<b>Fusarc CF et SIBA (*) (General case, IEC 60282- 1, standard CEI62271- 105 (to replace IEC 60420) and DIN 43625 standard)</b>																		
3	20	31,5	40	50	50	63	80	100	125*	160*								
3,3	20	25	40	40	40	63	80	80	125*	125*	160*							
4,2	20	25	25	40	50	50	63	80	80	100	125*	160*						
5,5	16	20	25	25	40	40	50	63	80	80	100	125*	160*					12
6	16	20	25	25	31,5	40	50	50	63	80	100	125*	160*					
6,6	10	20	25	25	31,5	40	50	50	63	63	80	100	125*	160*				
10	10	10	16	20	25	25	31,5	40	50	50	63	80	100	125*				
11	10	10	16	20	20	25	25	40	40	50	50	63	80	100	125*			
13,8	10	10	10	16	16	20	25	31,5	40	40	50	50	63	100*				24
15	10	10	10	10	16	20	25	31,5	31,5	40	50	50	63	80	100*			
20	10	10	10	10	16	16	20	25	25	31,5	40	40	63	63	80	100*		
22	10	10	10	10	10	16	16	20	25	31,5	40	40	50	63	80	100*		

## fitting HV fuses

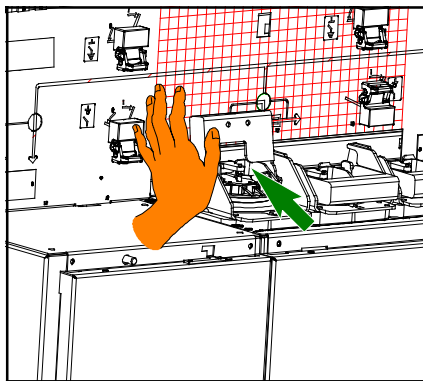


Before performing these operations, close the earthing switch.

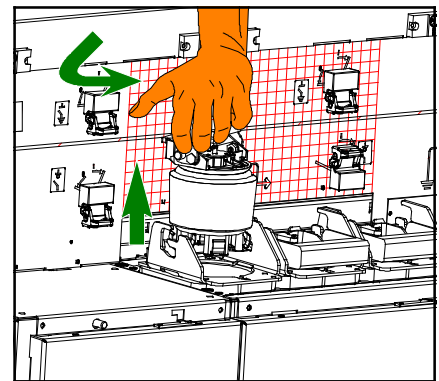


Repeat the operations below for all 3 fuses.

To remove the cover: lift it and pull it towards you.  
The instructions are visible on the cover.



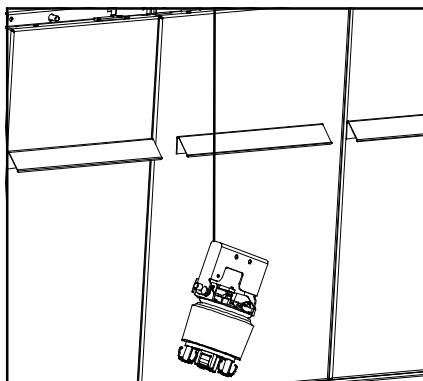
Release the plug and push the extraction handle manually to release the plug (tap with the palm of your hand to detach the plug seal if necessary).



Fit the plug as far as it will go and swivel it to the left to extract it.



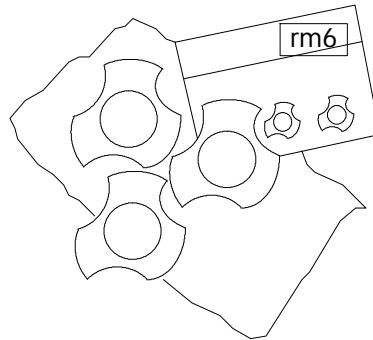
To clean the plugs, consult the preventive maintenance section.



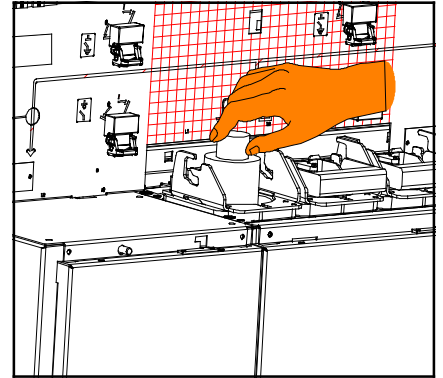
Let the plug hang.  
Ensure the plugs are clean before fitting them.

### fitting a DIN fuse (Fusarc CF)

On no account must a fuse that has been knocked be installed. A test prior to installation using a monitor is recommended.



Recover the centring devices in the bag supplied with the substation.

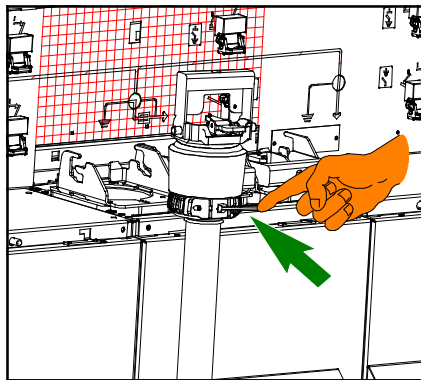


Insert the fuse in the compartment. Fit the centring device on the fuse. Insert the plug pins in the plinth and swivel it round to the right.

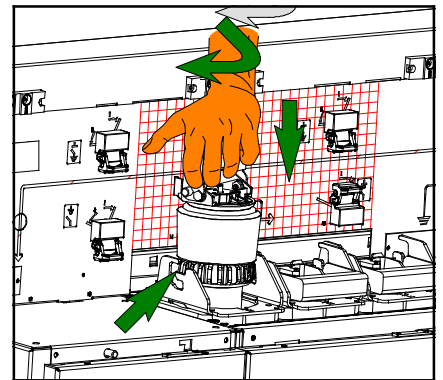
### fitting an UTE fuse (Solefuse)



On no account must a fuse that has been knocked be installed. A test prior to installation using a monitor is recommended.



Fix the fuse on the plug using a torque wrench with end BTR no. 5 and insert the fuse in the compartment.  
**Tightening torque: 15 Nm.**

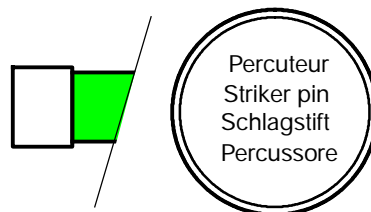


Insert the plug and fuse assembly in the compartment. Insert the plug pins in the plinth and swivel it round to the right. Press to insert the assembly in the downstream clamp.

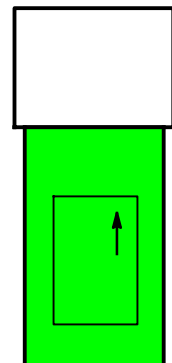
### direction for mounting a fuse with striker



Fuse blowing releases a striker that causes three-phase opening of the switch and prevents it from reclosing.

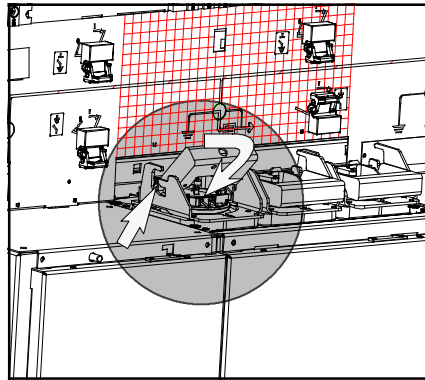


The end of the fuse equipped with the striker is marked.

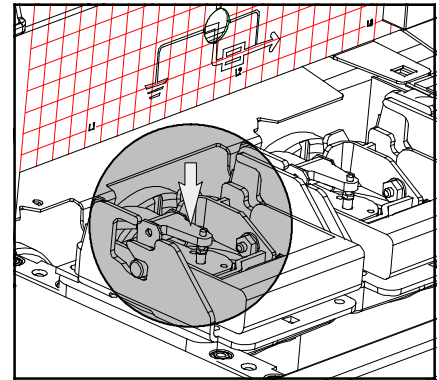


The technical data and mounting direction of the fuse are printed on the body. (striker facing upwards).

## locking the plug



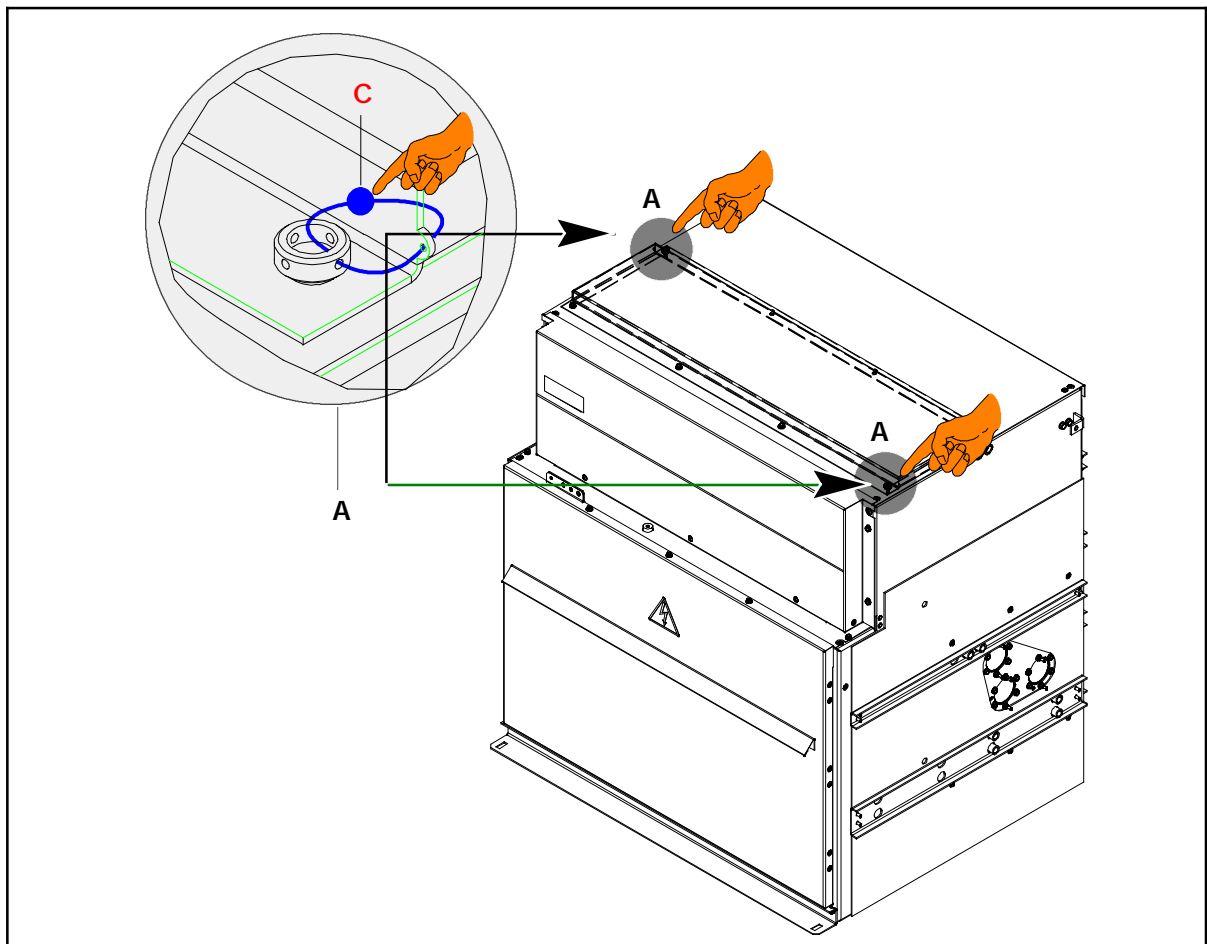
Make sure that the handle trunnions are inserted in the plinth slots and lock the plug manually by folding down the operating handle.



Plug with fuse blowing release, used to cause three-phase opening of the switch. Press the switch to position it.

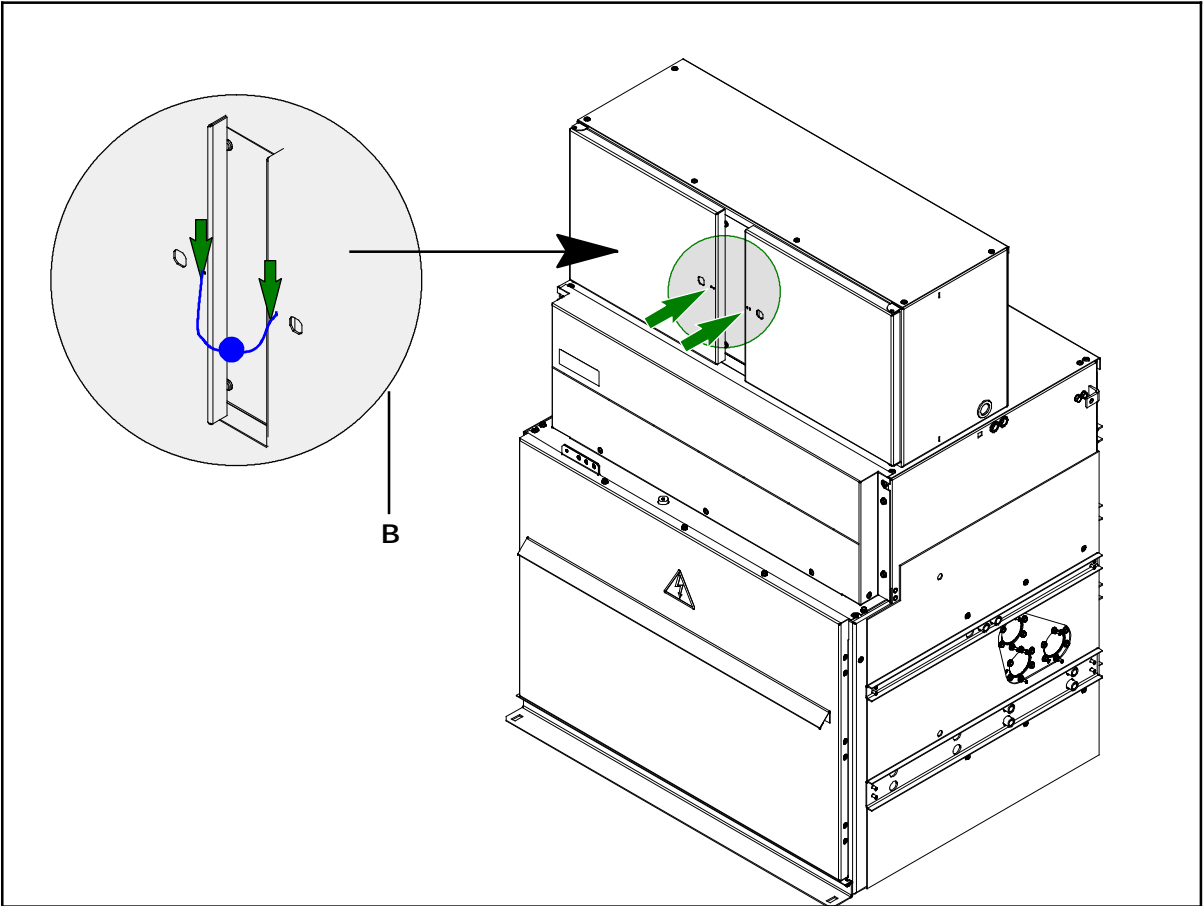
## sealing of DE- Mt cubicle without LV compartment

- A: rear sealing
- B: front sealing
- C: seal + wire; steel



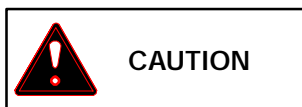
with LV compartment

- A: sealing of the LV compartment
- B: seal + wire steel





# instructions for putting into operation the protection relay for circuit- breaker

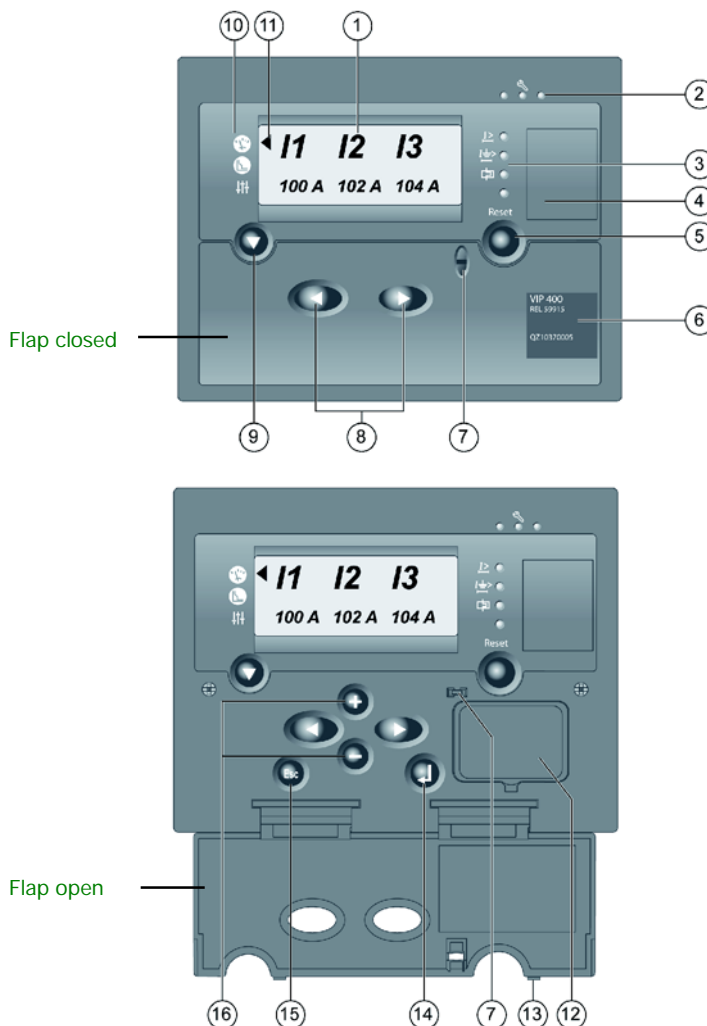


The VIP parameters must be set correctly in order for the circuit breaker function well.

## VIP400 / VIP410 presentation

The User- Machine Interface (UMI) on the front panel of **VIP** relays consists of a display, LEDs and keys. A sealable pivoting flap can prevent access to the setting keys by unauthorized persons.

- 1: Display
- 2: Status LEDs
- 3: Fault indication LEDs
- 4: Zone for a user- customizable label with pictograms of the fault indication LEDs
- 5: Acknowledgement key
- 6: Identification label
- 7: Sealing ring
- 8: Selection keys
- 9: Key for selecting menus and testing LEDs. When the **VIP** is not supplied with power, this key can also be used to start the **VIP** from the battery in order to enter settings
- 10: Menu pictograms
- 11: Menu selection pointer
- 12: Battery compartment and socket for connecting the pocket battery module
- 13: Settings protective flap
- 14: Confirm entry key
- 15: Abort entry key
- 16: Setting keys



## status LEDs

H The status LEDs provide information about the **VIP** general status:

Pictogram	Function	VIP400	VIP410
<b>Aux. Power</b>	<b>Green LED:</b> auxiliary power supply present	-	H
	<b>Red LED permanently on:</b> VIP unavailable (VIP in the fail- safe position).	H	H
	<b>Red LED flashing:</b> a failure has been detected but does not involve the VIP going into the fail- safe position.	H	H
	<b>Yellow LED flashing:</b> communication active	-	H

## INFORMATION - ADVICE

NRJED311206EN : reference manual is available on : [www.schneider- electric.com](http://www.schneider-electric.com)  
or call your sales representative who will put you in contact with the closet **SCHNEIDER- ELECTRIC** service center






---

## operation

### Fault Indication LEDs

VIP relays have fault indication LEDs. They flash to indicate a fault, as shown in the **table below** :

Pictogram	Fault	VIP400	VIP410
	Detection of a fault by the phase overcurrent protection or in the event of tripping by the temporary test mode	H	H
	Detection of a fault by the earth fault protection	H	H
	Detection of a fault by the thermal overload protection	H	H
<b>Ext.</b>	Tripping by a volt- free contact connected to the external trip input	-	H

---




After a trip, the fault indication LEDs are powered by the battery embedded in the VIP or by the VIP410 auxiliary power supply.

Fault indication by the LEDs can be stopped:

- H by pressing the Reset key
- H automatically by the reappearance of a current in the network higher than the pick- up current
- H automatically after 24 hours
- H by remote control order via the communication (VIP410)

---

For the first 3 LEDs, faster flashing may occur before the protection trips, to indicate the following information :

Pictogram	Overshoot
	Overshoot of the instantaneous set point for phase overcurrent protection (I> or I>> or I>>> pickup outputs)
	Overshoot of the instantaneous set point for earth fault protection (Io> or Io>> pick- up outputs)
	Overshoot of the alarm set point for thermal overload protection

## note

In custom mode, the protection set points may not be assigned to the Mitop trip unit output.

In this case, the fault indication LED may be active, without being associated with the **circuit breaker** trip.

Depending on the application, this can indicate the presence of a fault without tripping the **circuit breaker**

The fault indication LED pictograms can be customized by sticking a label to the right of the LEDs.

## display

The display is an LCD unit.

It is only back-lit on the VIP410, when the auxiliary power supply is present.



Each VIP function is presented in a screen consisting of the following items:


H **First line:** symbols for electrical values or function name


H **Second line:** displays the values of measurements or parameters associated with the function


H A menu pointer, on the left, it is pointing to the pictogram for the selected menu

## menu organization

All the data available in the VIP relay is divided between 3 menus:

H The metering menu  contains the current measurements, peak demand currents, load history, event records, fault trip counter and the breaking current history.








H The protection menu  contains the essential settings for setting up the protection functions

H The parameters menu  contains the parameters that are used to adapt VIP operation to particular applications.

When a **VIP** is new, all the parameters in this menu have a default value.

The protection functions are operational even with the parameters menu default values.

## selecting a screen in a menu

Etape	Action
1	<p>Press the  key to select one of the 3 menus</p> <p>The menu pointer  indicates the selected menu :</p> <p> : Metering menu</p> <p> : Protection menu</p> <p> : Parameters menu</p>
2	<p>Press the  or  keys to scroll through the screens in the select menu, until the desired screen displayed</p>

## default screen

A default screen is displayed automatically 3 minutes after the last keystroke.

This default screen is the screen displaying the phase currents.

## operation according to the power supply mode (VIP400)

The **VIP400** is a stand-alone protection relay powered by its current sensors.

When current is present in the medium-voltage (MV) network, the protections and the display work and it is possible to enter settings and view measurements.

The current in the MV network on which the **VIP** operates is called the 'pick-up current'.

When no current is flowing through the circuit breaker (for example circuit breaker open), or when the current in the MV network is too low, the **VIP** is off and nothing appears on its display.

If current appears, the protection functions are activated and trip the circuit breaker - or not - according to their settings.

The additional time taken by the **VIP** to start when current appears is called the 'pick-up time'.

More information on the value of the pick-up current and the pick-up time are available in the **VIP** Function Characteristics

Please consult the reference **NRJED311207EN**.

---

## operation according to the power supply mode (VIP410)

The VIP410 is a relay with a dual power supply. It is powered both autonomously by its sensors and by the auxiliary power supply. Like for the VIP400, the self-powered supply allow the protection functions to work even if the auxiliary power supply fails.

The auxiliary power supply is used to power functions that do not depend on the current being present in the MV network. These functions are marked in the function table (Please consult the reference **NRJED311207EN**). The auxiliary power supply must be present in order them to work.

---

## integral battery


The VIP has an integral battery. It is used to:

- activate the user-machine interface in order to enter settings when the VIP is not supplied with power

- illuminate the fault indication LEDs when the VIP is no longer supplied with power after giving the opening order to the circuit breaker

- power the internal calendar

When the **VIP** is not supplied with power:

Pressing and holding down the  key will activate battery-powered operation of the user-machine interface. It is then possible to access the menus in order to enter settings.

In this case, the display turns off automatically after 3 minutes of inactivity on the keypad.

- The protection functions are activated automatically if the current reappears.

The integral battery plays no part in operating the protection functions. The protection functions work even when there is no battery.

### NOTE :

- in battery operation mode, the **VIP** processor runs with a reduced clock frequency to ensure the battery life is maintained. As a result, the user-machine interface may be slower to react.

- during a setting operation with the **VIP** powered by its internal battery alone, the clock display is not refreshed on screen. However the internal clock increments normally.

---

## pocket battery module

The pocket battery module is an accessory that can be connected to the front panel of **VIP** relays. It contains a battery that can be used to power the **VIP** in order to:

- enter settings if the integral battery is missing and if the **VIP** is not powered by the current sensors

- test the **VIP**, please consult the reference **NRJED311207EN**.

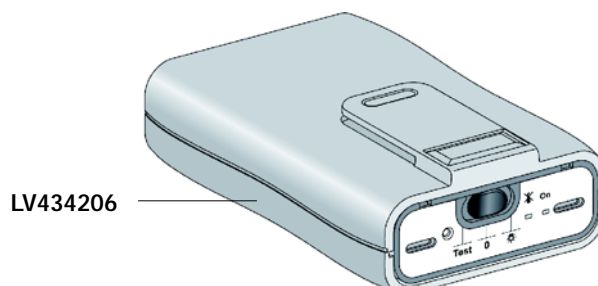
- display the cause of the last trip by the **VIP**, please consult the reference **NRJED311207EN**.

- more information on connecting the pocket battery module to the **VIP** is available in the Connection to the **VIP**, please consult the reference **NRJED311207EN**.

---

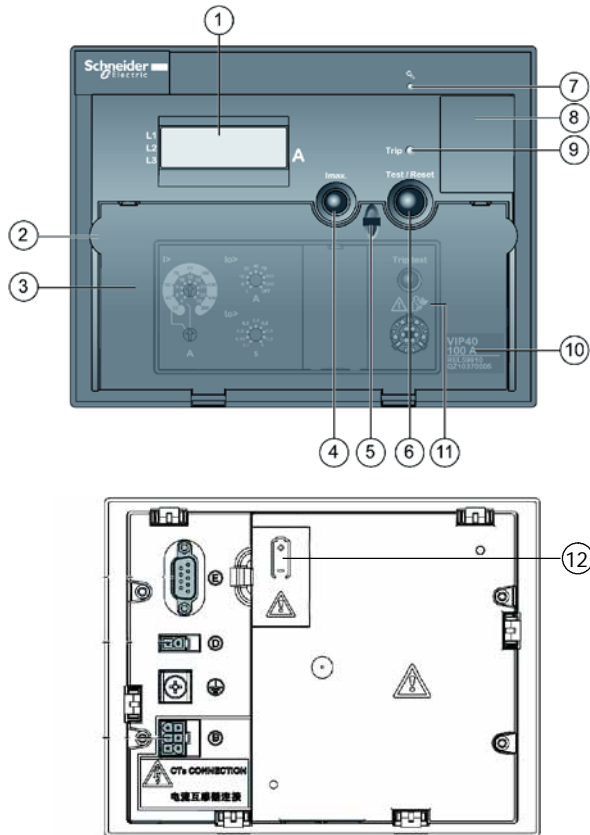
## battery module

The pocket battery module should only be used during maintenance or commissioning by qualified personnel and must never be left permanently connected to a running **VIP**.



## presentation of VIP40/45

- 1: Display
- 2: Lugs for opening the transparent protective flap
- 3: Transparent protective flap
- 4: I<sub>max.</sub> peak demand display button
- 5: Sealing ring
- 6: Test/Reset button
- 7: Status LED
- 8: Space for a user- customizable label
- 9: Trip fault indication LED
- 10: Identification label
- 11: Symbol indicating that it is necessary to read the manual
- 12: Battery



## display

H The display is an LCD unit  
 H During operation, the display indicates the value of the current on each phase in succession  
 Each phase remains displayed for 3 seconds before automatically changing to the next. The display is in amps, on three digits.

The display is in amps, on three digits.  
**NOTE:** If the phase current is less than the pick-up current (Please you consult the reference **NRJED311207EN**), the **VIP** is not activated and the display is off.

## lugs for opening the transparent protective flap

To open the flap, pull both lugs simultaneously.

The flap pivots open on its 2 bottom hinges.

## I<sub>max.</sub> button: peak demand display

Pressing the **I<sub>max.</sub>** button triggers a sequence displaying the peak demand currents for all 3 phases in succession.

After this sequence, the **VIP** automatically returns to displaying the phase currents.

## INFORMATION - ADVICE

NRJED311207EN : reference manual is available on : [www.schneider-electric.com](http://www.schneider-electric.com)  
 or call your sales representative who will put you in contact with the closet **SCHNEIDER- ELECTRIC** service center

---

## Test/Reset button


After a trip, pressing this button stops the flashing trip indication. This button can also be used to:

- test the built-in battery. When pressing the Test/Reset button, the fault indication LED lights up immediately to indicate that the battery is OK.

- perform the 'lamp test' if the relay is supplied with power. Pressing the Test/Reset button for 5 seconds causes all the display segments and the status LED to light up, and displays the software version number.

---

## voyant d'état

Pictogram	Color	Event
	Red	<ul style="list-style-type: none"><li>LED permanently on: the <b>VIP</b> has gone into the fail-safe position following detection by the embedded self-tests of the failure of one of its internal components, involving a risk of nuisance tripping. In this case, the <b>VIP</b> is no longer operational</li><li><b>NOTE:</b> This LED may light up briefly when the <b>VIP</b> is energized: this is normal and does not indicate a failure.</li><li>LED flashing: the <b>VIP</b> has detected a failure not involving a risk of nuisance tripping. In this case, the <b>VIP</b> has not gone into the fail-safe position. Intervention is required as soon as possible (Please you consult the reference <b>NRJED311207EN</b>.) The LED stops flashing as soon as the failure disappears.</li></ul>

---

## space for user- customizable label

There is a special space for a user- customizable label for the Trip LED.

---

## Trip LED: fault Indication

The fault indication LED flashes to indicate that the **VIP** has sent a trip order to the circuit breaker. After circuit breaker opening, when the **VIP** is no longer supplied with power by its sensor, the built-in battery makes the LED flash. The LED stops flashing:

- automatically after 24 hours
- when the current returns, on **circuit breaker** closing (if the current is higher than the pick-up current)

- when the Test/Reset button is pressed
- when the pocket battery module is connected then disconnected

**NOTE:** The **VIP** built-in battery only supplies power to the fault indication LED and displays the type of fault. It has no role in operating the protection functions.

---


## identification Label

The identification label on the front panel is used to identify the **VIP**:

- product name
- product reference
- serial number

---

## symbol : necessary reading of manual

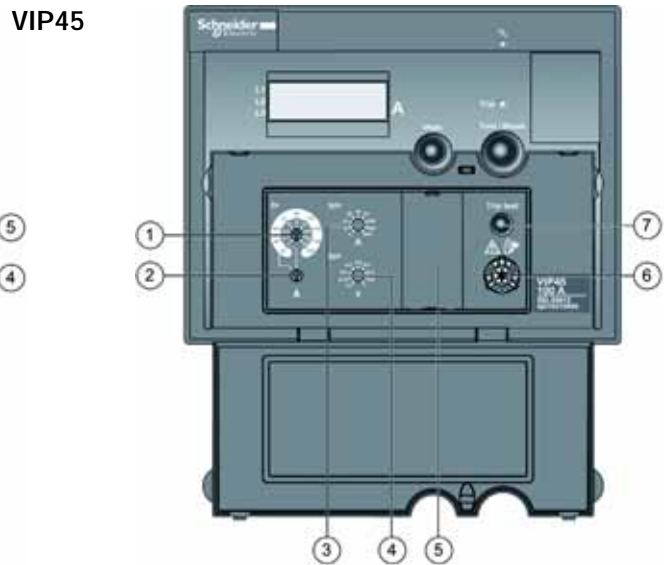
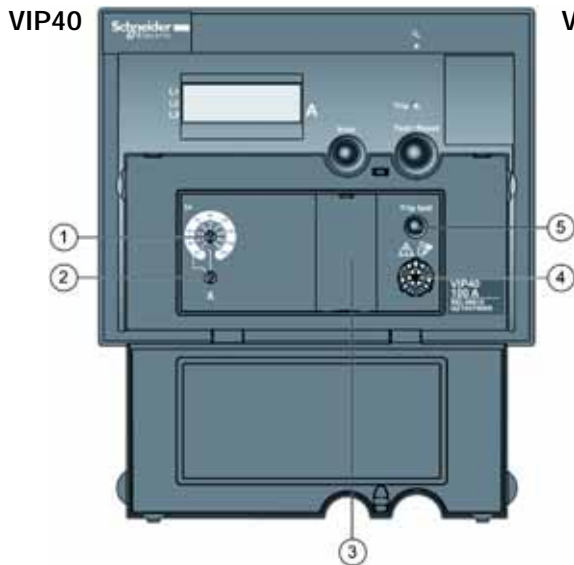
The  symbol indicates that it is necessary to read the **VIP** reference manual before working on the product.

---

**VIP40/45 settings front panel**

When the protective flap is opened, you can enter the protection settings by means of the rotary switches.

To do this, use a 3 mm flat blade screwdriver



- 1 Phase overcurrent protection adjustment dial
- 2 Setting range selector switch
- 3 Advanced settings protective cover
- 4 Connection port for the pocket battery module
- 5 Trip test button

- 1 Phase overcurrent protection adjustment dial
- 2 Setting range selector switch
- 3 Earth fault protection set point adjustment dial
- 4 Earth fault protection time delay adjustment dial
- 5 Advanced settings protective cover
- 6 Connection port for the pocket battery module
- 7 Trip test button

**phase overcurrent protection adjustment dial**

The setting is entered directly in Amps using the 9- position switch.(I>)  
The selector switch has 2 graduated rings.

The range is selected using the setting range selector switch.

**earth fault protection adjustment dial**

The set point is set directly in Amps using the 9- position switch..(Io>)  
The time delay setting is entered directly in seconds using the 9- position switch.(to>)

**NOTE:** the earth fault protection adjustment dials are only found on the **VIP45**.

**temporary display of the changed setting**

When **VIP** relays are energized, they display temporarily the value of the setting after a switch has changed position.

**advanced settings**

To access the advanced settings, remove the advanced settings protective cover.

Both settings can be entered using a single selector switch:  
H discrimination with the LV CB  
H earth fault protection inrush current delay

---

## connection port for the pocket battery module

The connector is used to connect the pocket battery module so that the VIPs can be energized and tested.

Please consult the reference **NRJED311207EN**

**NOTE:**the pocket battery module should only be used during maintenance or commissioning by qualified personnel and must never be left permanently connected to a running VIP.

---

## Trip test button

The Trip test button is used for testing VIPs.

A 5 mm diameter pointed tool is needed to activate it.

More information is available in the section describing Commissioning.

Please consult the reference **NRJED311207EN**

---

## frequency

The network frequency (**50 Hz or 60 Hz**) is a parameter that must be known for operation of the **VIP40** and **VIP45** signal processing algorithms.

They therefore have an automatic frequency recognition system.

The recognized value

**(50 Hz or 60 Hz)** is stored and the VIP works permanently with this value.

This stored value will be used each time the **VIP** starts

For the **VIP** to recognize the network frequency and store it, it has to detect a current on phase 1 for a minimum period of 5 seconds in the range **50 Hz +/- 2 Hz or 60 Hz +/- 2 Hz**.

This detection happens when the **VIP** starts.

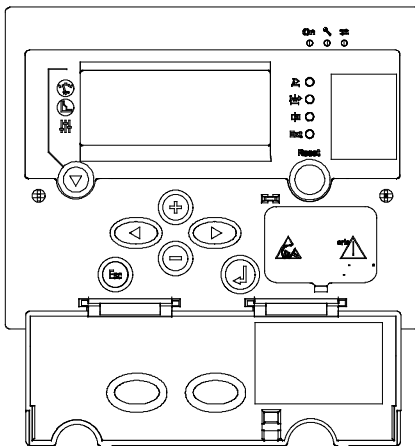
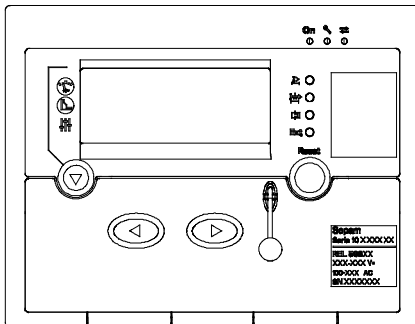


For further information on the **Sepam series 10**, download the reference manual from our web-site:

[www.schneider-electric.com](http://www.schneider-electric.com)

## Sepam series 10 protection of HV/LV trans- formers protection of HV networks

**Sepam 10** relays fitted to RM6 circuit breakers require an auxiliary power supply.



**Sepam 10A:**  
- provides protection against overloads (thermal overload protection), phase- phase faults and phase- earth faults.  
It has:  
- 4 logic inputs and 7 configurable relay outputs  
- a communication port

**Sepam 10B:**  
- provides protection against overloads (thermal overload protection), phase- phase faults and phase- earth faults.  
It has:  
- 3 configurable relay outputs

Functions	Code ANSI	Sepam série 10	
		B	A
<b>Protection types</b>			
Earth current maximum protection	Standard	<input type="checkbox"/>	<input type="checkbox"/>
	Very sensitive	<input type="checkbox"/>	<input type="checkbox"/>
Phase current maximum protection	50/51	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Thermal overload protection	49RMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cold load pickup (low sensitivity of phase and earth current maximum protection settings)			
Logic discrimination	Await logic emission	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Await logic reception		<input checked="" type="checkbox"/>
External tripping			<input checked="" type="checkbox"/>
<b>Measurements</b>			
Measurement of earth current		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Measurement of phase currents		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Phase current maximum readings		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Control and monitoring</b>			
Circuit breaker tripping and rearmament locking	86	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Trip signalling		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tripping circuit monitoring			<input checked="" type="checkbox"/>
Circuit breaker remote control			<input checked="" type="checkbox"/>
Recording of last fault		<input checked="" type="checkbox"/>	
Recording of last 5 events			<input checked="" type="checkbox"/>
<b>Communication</b>			
Modbus			<input checked="" type="checkbox"/>
IEC 60870- 5- 103			<input checked="" type="checkbox"/>

- Function available
- Function available depending of Sepam model

Inputs / Outputs (Number)	B	A
Earth current inputs	1	1
Phase current inputs	3	3
Relay logic outputs	3	7
Logic inputs	-	4
RS 485 communication port	-	1



---

### earth current (ANSI 50N- 51N)

Earth current maximum protection enables overcurrents due to phase- to- earth faults to be detected. It makes use of the measurement of the earth current's fundamental component.

### 2 independent thresholds ( $I_{0>}$ and $I_{0>>}$ )

H the lower threshold ( $I_{0>}$ ) can be set to either a definite time (DT) or an inverse time (IDMT) curve, with the choice of standardised curve (IEC, IEEE, RI) and the possibility of activating an inverse time duration.

H the upper threshold ( $I_{0>>}$ ) has only a definite time (DT) setting. The minimum setting gives instantaneous operation (ANSI 50 function).

Depending on the level of sensitivity required, there are 2 types of Sepam:

Sensitivity	Sensor
Standard	3 CT CRa 200/1 or CRb 1250/1
Very sensitive	CSH200 core balance CT

---

### phase current maximum protection (ANSI 50- 51)

Phase current maximum protection enables overcurrents due to phase- to- phase faults to be detected. It makes use of the measurement of the fundamental component of the currents from the 3 phase CTs.

### 2 independent thresholds ( $I_{>}$ and $I_{>>}$ )

H the lower threshold ( $I_{>}$ ) can be set to either a definite time (DT) or an inverse time (IDMT) curve, with the choice of standardised curve (IEC, IEEE, RI) and the possibility of activating an inverse time duration.

H the upper threshold ( $I_{>>}$ ) has only a definite time (DT) setting. The minimum setting gives instantaneous operation (ANSI 50 function).

---

### thermal overload protection (ANSI 49RMS)

This protection enables cables and HV/LV transformers to be protected against overloads based on the measurement of absorbed current.

This protection uses a thermal model based on current measurements to evaluate temperature rise. The current used for this protection is a 3- phase RMS current that takes into account up to 13th order harmonics.

### This protection has 2 settings:

H maximum allowable continuous current, which corresponds to the maximum thermal withstand of the equipment to be protected (this allowable continuous current corresponds to a temperature rise of 100%)

H heating/cooling time constant of the equipment.

---

**low sensitivity of phase and earth current maximum protection settings (Cold Load Pick- Up)**

The cold load pickup function avoids nuisance tripping when the equipment is powered- up, especially after a long break in operation. It allows the protection thresholds to be temporarily increased.

**High currents at cold load pickup may be due to:**

- H simultaneous powering- up of all the loads in an installation.
- H power transformer magnetising currents.
- H motor starting currents.

Protection concerned	Operating means
Phase current maximum protection	After circuit breaker closing, the tripping thresholds ( $I >$ or $I > >$ ) are increased or blocked for the set duration.
Earth current maximum protection	After circuit breaker closing, the tripping thresholds ( $I_0 >$ or $I_0 > >$ ) are increased or blocked for the set duration. Or The protection is restrained by the detection of sensor saturation (measurement of 2nd order harmonic level).

**logic discrimination (ANSI 68)**

**This function achieves:**

- H tripping discrimination in the event of a short- circuit between phases, or from phase to earth, for all network types
- H reduced tripping time of the circuit breaker that is closest to the source.

**All Sepam series 10B and 10A are able to emit an await logic order** should a fault be detected by the phase and earth current maximum protection functions.

**Only the Sepam series 10A is able to receive an await logic order** that blocks its tripping signal. A safety mechanism ensures the protection operates in the event of a fault with the blocking signal wiring.

**external tripping**

The **Sepam series 10A** enables, via a logic input, a tripping order from an external protection means to be taken into account.

**earth current measurement**

This measurement enables the value of the fundamental component of the earth current to be displayed.

**phase current measurements**

These measurements enable the RMS value of the phase currents to be displayed; it takes into account up to 13th order harmonics.

This function displays the 3 phase currents.

**phase current maximum readings**

This function enables the largest average current value of each of the 3 phases to be displayed, as well as giving the highest absorbed current during load peaks.

---

## latching / resetting ANSI 86

Output relay latching can be configured. Latch tripping orders are memorised and must be reset in order to put the equipment back into service.

Resetting can be done:

- by pressing the Reset button;
- via the **Sepam 10A** communication port.

---

## circuit breaker remote control - Sepam 10A

This function enables remote operation of the circuit breaker via the communication. A Sepam logic input allows the operating mode (local or remote) to be selected.

---

## recording of the last fault - Sepam 10B

This function enables the characteristics of the last fault to be displayed. The Sepam indicates the cause of the fault, the value of the phase currents and the earth current when the fault occurred, and the time and date of the fault. This information is memorised until the next fault occurs.

**Cause of faults recorded:** I>, I>>, Io>, Io>> and thermal protection.

---

## recording of the last 5 events - Sepam 10A

This function enables the characteristics of the last 5 events to be displayed. For each event, the Sepam indicates its cause, the value of the 3 phase currents and the earth current when the event occurred, and the time and date of the event. Events are numbered in the order they occur and the last 5 can be displayed.

**The following events are recorded:**

- H tripping due to I>, I>>, Io> or Io>>, thermal protection
  - H tripping by external input
  - H tripping circuit fault
  - H circuit breaker opening and closing via the communication
  - H tripping due to logic discrimination safety protection.
- 

## communication - Sepam 10A

One RS 485 communication port. 2 protocols available, chosen by configuration: Modbus, IEC 60870- 5- 103.

Communication enables the following functions to be carried out remotely:

- H measurement readings,
  - H status readings
  - H event readings and time-stamped measurements (2 tables of 100 events available)
  - H time setting and synchronisation
  - H remote control orders.
- 

## operating language

When delivered, the default language is English. The following languages can be selected: UK English, US English, Spanish, French, Italian, German, Turkish, Portuguese.

---

## standard assignment of inputs/outputs and customised configuration

The configuration is customised using the **Sepam** human-machine interface, without the need for a PC.

### Sepam 10A

Logic inputs	Standard assignment	Configurable
I1	Circuit breaker open	No
I2	Circuit breaker closed	No
I3	External tripping	Yes
I4	Local- Remote	Yes
Relay outputs	Standard assignment	Configurable
O1	Circuit breaker tripping	Yes
O2	Locking of circuit breaker latching	Yes
O3	Trip signalling	Yes
O4	Circuit breaker remote closing	Yes
O5	Await logic emission	Yes
O6	Trip circuit fault signalling	Yes
O7	Watchdog	No

### Sepam 10B

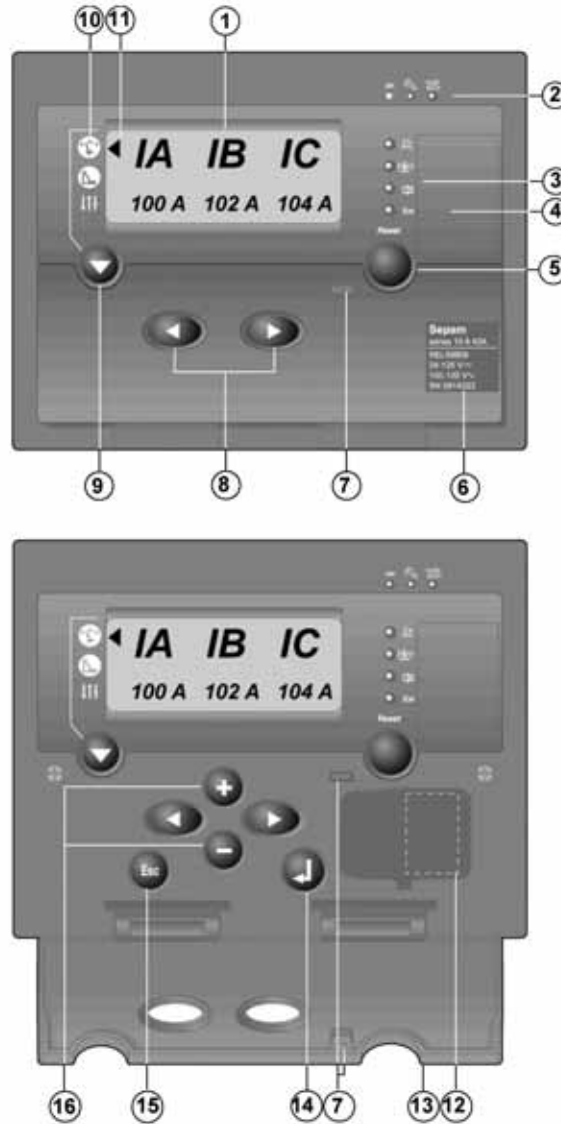
Relay outputs	Standard assignment	Configurable
O1	Circuit breaker tripping	Yes
O2	Locking of circuit breaker latching	Yes
O3	Trip signalling	Yes

## human- machine interface front panel

- 1: Display
- 2: Status indicator lamps
- 3: Fault indicator lamps
- 4: Zone for a customised pictogram label of fault indicator lamps
- 5: Button for resetting the Sepam and the maximum value readings
- 6: Identification zone
- 7: Lead sealing ring
- 8: Selection buttons
- 9: Menu selection and indicator lamp test button
- 10: Menu pictograms
- 11: Menu selection pointer
- 12: Battery compartment (Sepam series 10A)
- 13: Settings protection cover
- 14: Entry validation button
- 15: Entry abort button
- 16: Setting buttons

The Human- Machine Interface on the **Sepam** front panel is made up of a display, indicator lamps and buttons.

Access to the setting buttons by unauthorised personnel can be prohibited using the pivoting and lead- sealable cover. The illustrations below show the 2 positions of this cover.



## status indicator lamps

The status indicator lamps provide information on the **Sepam** status.

Pictogram	Function	Sepam series 10	
ON	Green lamp: Sepam powered- up	B	A
	Red lamp: Sepam unavailable (Sepam in fall- back position)	B	A
	Yellow lamp: communication active	-	A

## fault indicator lamps

The fault indicator lamps flash as described in the table below to signal a fault:

Pictogram	FThreshold exceeded	Sepam series 10	
	Phase current maximum protection instantaneous threshold exceeded (I> or I>> pickup output)	B	A
	Earth current maximum protection instantaneous threshold exceeded (Io> or Io>> pickup output)	B	A
	Thermal protection alarm threshold exceeded	B	A

The fault indicator lamp is latched in standard operating mode. If, when customising the operating mode (at the time of commissioning), the latching of a fault indicator lamp has been cancelled, the fault indicator lamp goes out as soon as the fault is no longer present.

For the first 3 lamps, they may flash at a faster rate before the protection trips to signal the following information:

Pictogram	Fault	Sepam series 10	
	Detection of a fault by the phase current maximum protection	B	A
	Detection of a fault by the earth current maximum protection	B	A
	Detection of a fault by the thermal protection	B	A
Ext	External tripping	-	A

## identification zone

The identification zone on the front panel enables a Sepam to be identified:

- 1 : Identification code
- 2 : Reference
- 3 : Supply voltage
- 4 : Serial number

### VIP400



### VIP410



Refer to the Identification section for the **identification** code key.

## identification

### identification code

The identification code of a **Sepam series10** is an alphanumeric code that defines the main functions of the Sepam. It is made up of several fields:

#### Sepam 10 family

##### Model

B: phase and earth current maximum protection settings

A: phase and earth current maximum protection settings, logic inputs and communication port

##### Number of current inputs

4: 3 phase current inputs + 1 earth current input

##### Sensitivity of earth current maximum protection

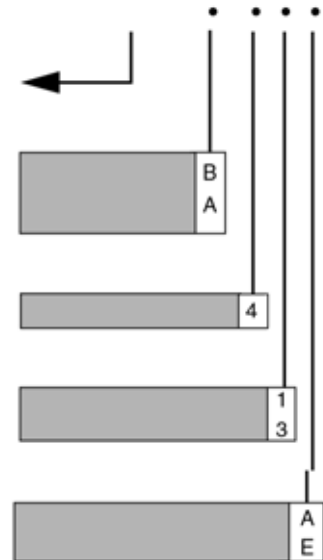
1: standard (0.1...24 In) CT

3: very sensitive (0.2...24 A and 2...240 A) CSH200

##### Supply voltage

A: 24...125 V DC and 100...120 V AC

E: 110...250 V DC and 100...240 V AC



## operating instructions

### accessing information

During operation, when the settings protection cover is closed, the user has access to the following:

- H reading of measurements, settings, protection types and parameters.
- H local fault signalling.
- H last fault resetting.
- H reading of last recorded faults.
- H resetting of maximum values.
- H testing of indicator lamps and the display.

## display



1. Press to select one of the 3 menus.

2. The pointer shows the selected menu:

- Measurements
- Protection types
- Parameters

3. Press and to select the information to be displayed.

---

## resetting



1. A fault detected by the Sepam is signalled by:

- a message on the display
  - a flashing indicator lamp
2. Press **Reset** to reset the fault.
3. The indicator lamp goes out and the message disappears

---

## setting instructions



Knowledge of electrical network protection is required for choosing appropriate settings.

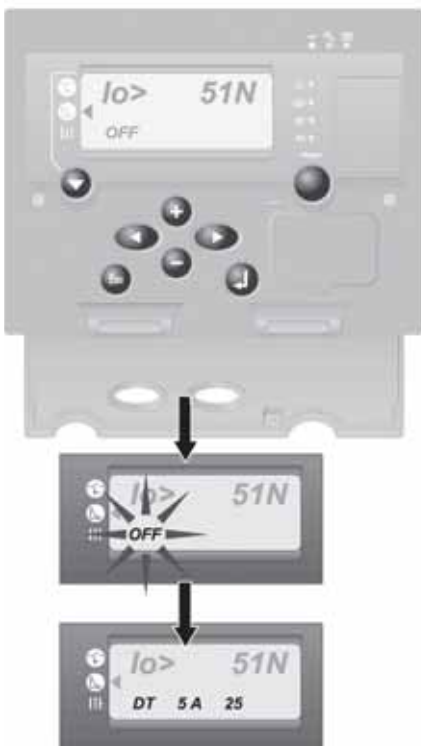
Only those people with the required skills are authorised to set the Sepam.

**Not abiding by this instruction may cause injury and damage to equipment and property.**

All protection is inhibited by default. To make the protection operational, it must be activated and set-up when commissioning the RM6.

---

## accessing parameters and settings



1. Open the settings protection cover.
2. Press **Enter** to select the protection or parameter menu.
3. Select the protection type or parameter to be set using **Left** and **Right**.
4. Enter the password if requested.
5. Press **Down** to select the value to be modified.
6. The selected value flashes.
7. Press **Up** or **Down** to increment or decrement the value.
8. Press **Down** to validate the new value or press **Esc** to cancel.
9. The value stops flashing.



## setting ranges

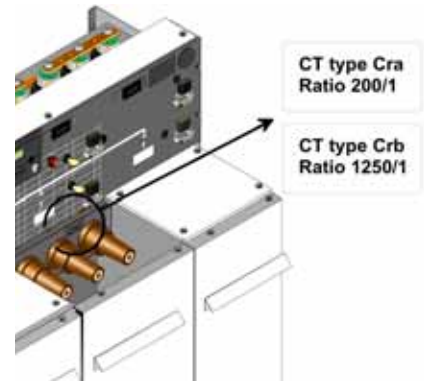
The setting ranges that can be used for the lower threshold depend on the circuit breaker type: **D** or **B**, and the type of sensors fitted to the RM6.

Circuit breaker type		D	B
Type of sensors		Cra 200/1	CRb 1250/1
<b>Functions</b>	<b>Code ANSI</b>		
Phase current	50- 51	20- 200A	125- 630A
Earth current	50N- 51N	20- 200A	125- 630A
Very sensitive earth current	50G- 51G	2- 240A 0,2- 24A	2- 240A 0,2- 24A

## factory set parameters

### Sepam 10A and 10B standard earth

The transformer ratios of the phase and earth CTs (I<sub>o</sub> by summing) are factory set. If by error you have deleted the settings, you can find the type of CT fitted to your RM6 in the inspection report supplied with the equipment and on the CT support, where a label with the information can be found (see image aside).



**TC PHASE**  
200A / 1A

**TC PHASE**  
1250A / 1A

**TC TERRE**  
200A / 1A

**TC TERRE**  
1250A / 1A

### Sepam 10A and 10B very sensitive earth

The factory set measurement range is 2- 240A; this can be changed.

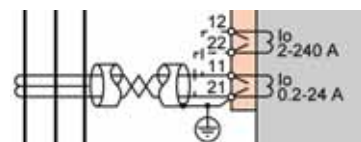
**CALIBRE I<sub>o</sub>**  
2 - 240A

To change to the 0.2- 24A range, you should:

1- Bring up I<sub>o</sub> 0.2- 24A in the RATING screen.

**CALIBRE I<sub>o</sub>**  
0.2 - 24A

2- Change the wiring at the CSH input, terminals 11- 21 on the Sepam connector marked B.



---

### configuring the logic inputs

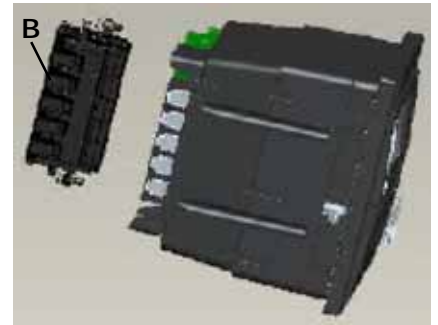
For the Sepam series10 A, logic input operation must be adapted to the type of voltage: **AC** or **DC**. The type of voltage must be configured in the **LOG INPUTS** screen of the parameter menu. The default value is **DC**.



---

### accessing phase current inputs

Connector **B** for connecting the current sensors is a short-circuiting connector. It can be disconnected on- load; disconnecting it does not open the sensors' secondary circuit. Remove the short-circuiting connector without disconnecting the wires connected to it. Use another connector to connect your generator.

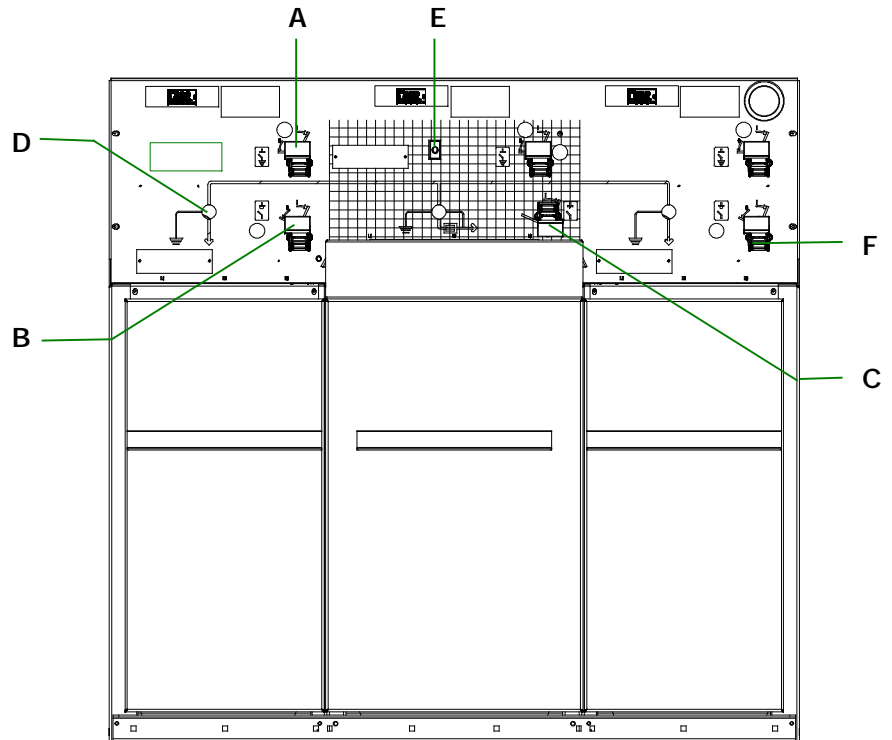




## operating and viewing substation condition

### description

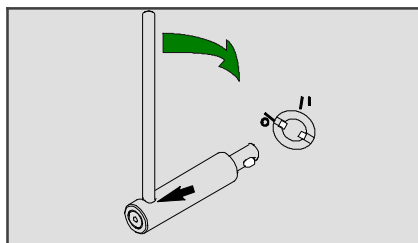
- A: earthing switch operating shaft
- B: switch function operating shaft
- C: fuse- switch combination function operating shaft
- D: position indicator
- E: fuse- switch combination function opening pushbutton
- F: padlocking handle



## closing a switch

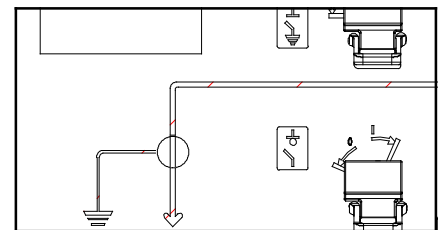
### Initial state:

- H switch open
- H earthing switch open



Left the operating shaft protective cover.

Activate the switch operating mechanism to the right.

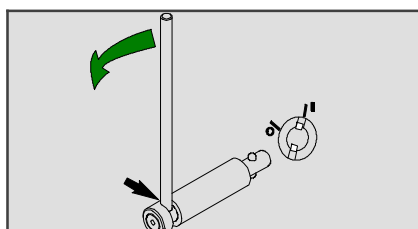


The indicator moves to the closed position, and access to the earthing switch operating shaft is blocked.

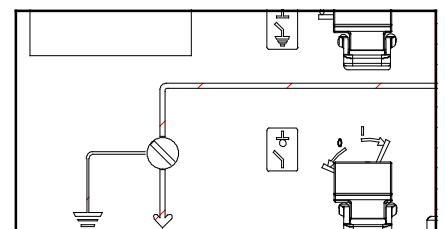
## opening a switch

### Initial state

- H switch closed
- H earthing switch open



Activate the switch operating mechanism to the left.



The indicator moves to the open position, and access to the earthing switch operating shaft is freed.

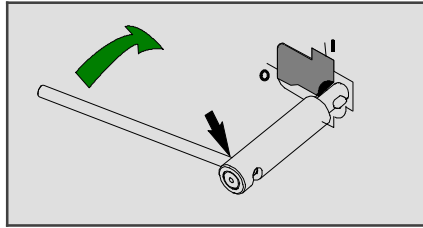
## closing an earthing switch

### Initial state:

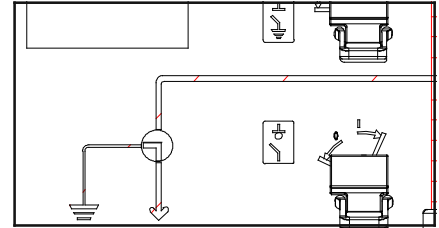
- H earthing switch open
- H switch or circuit- breaker open



If the incoming line is powered on, do not close the earthing switch.



Lift the operating shaft protective cover.  
Separate the pallet with the end of the lever, then activate the earthing switch operating mechanism to the right.

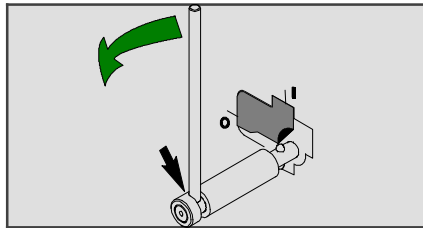


The indicator moves to the earth position and access to the earthing switch operating shaft is blocked.

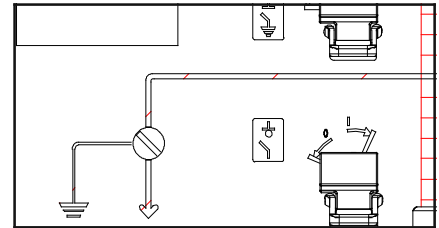
## opening an earthing switch

### Initial state :

- H earthing switch closed
- H switch or circuit- breaker open



Separate the pallet with the end of the lever, then activate the switch operating mechanism to the left.

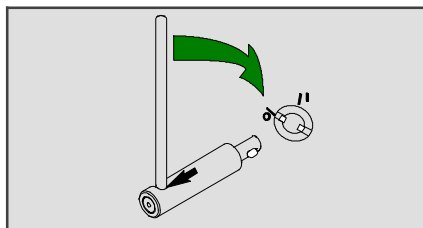


The indicator moves to the open position, and access to the switch or circuit- breaker operating shaft is freed.

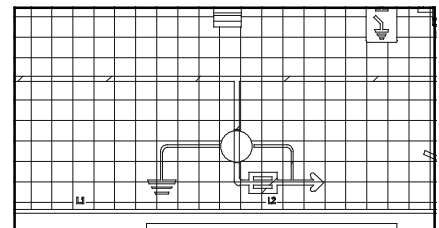
## closing a circuit- breaker or fuse- switch combination

### Initial state :

- H circuit- breaker or fuse- switch open
- H earthing switch open



Lift the operating shaft protective cover.  
Activate the switch operating mechanism to the right.

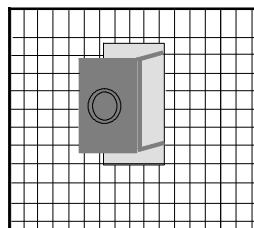


The indicator moves to the closed position, and access to the earthing switch is blocked.

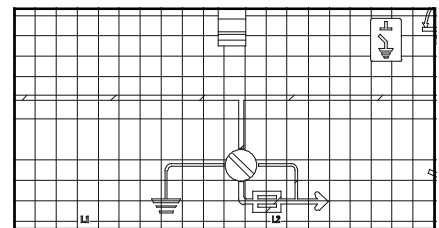
## opening a circuit- breaker or fuse- switch combination

### Initial state :

- H circuit- breaker or fuse- switch open
- H earthing switch open

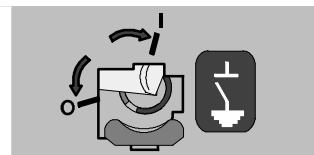
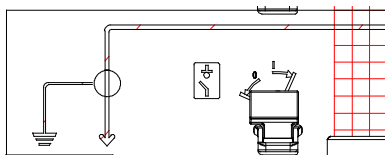


Press the opening pushbutton of the circuit- breaker or fuse- switch combination.



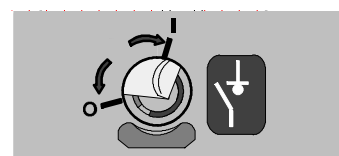
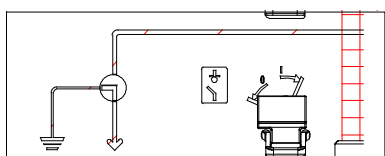
The indicator moves to the open position, and access to the earthing switch is freed.

## operating safety



Switch or circuit- breaker closed...

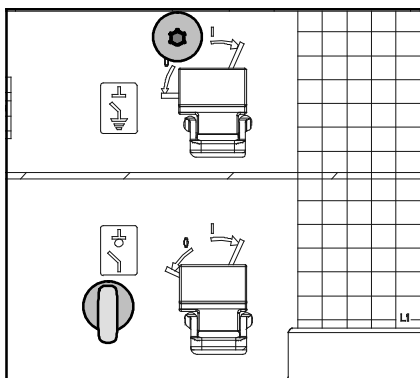
...the earthing switch is blocked.



Earthing switch closed...

...the switch or circuit- breaker is blocked.

## key- locking (optional)



The switches and the circuit- breaker are locked in the open position. The earthing switches are locked in position :

H open

H open/closed

There are various possible locking diagrams.

H network switch and network outgoing circuit- breaker

- semi- crossed locking

- crossed locking

H Transformer outgoer :

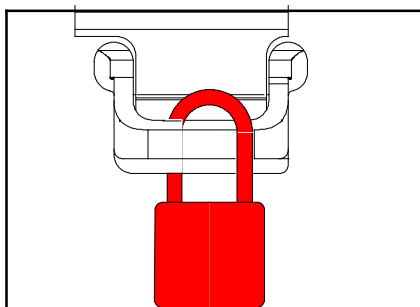
- **RM6/** transformer

- **RM6/** low voltage

- **RM6/** ransformer/low voltage

## padlocking

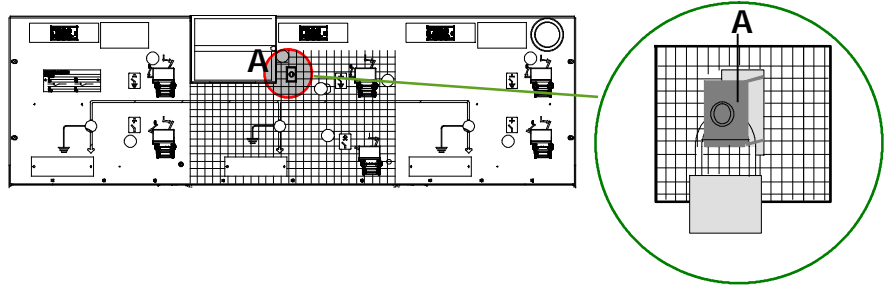
operating shaft padlocking handle



Switch and earthing switch with a degree of protection IP3X, fit a padlock  
6mm < handle diameter < 8 mm.

### padlocking the opening pushbutton

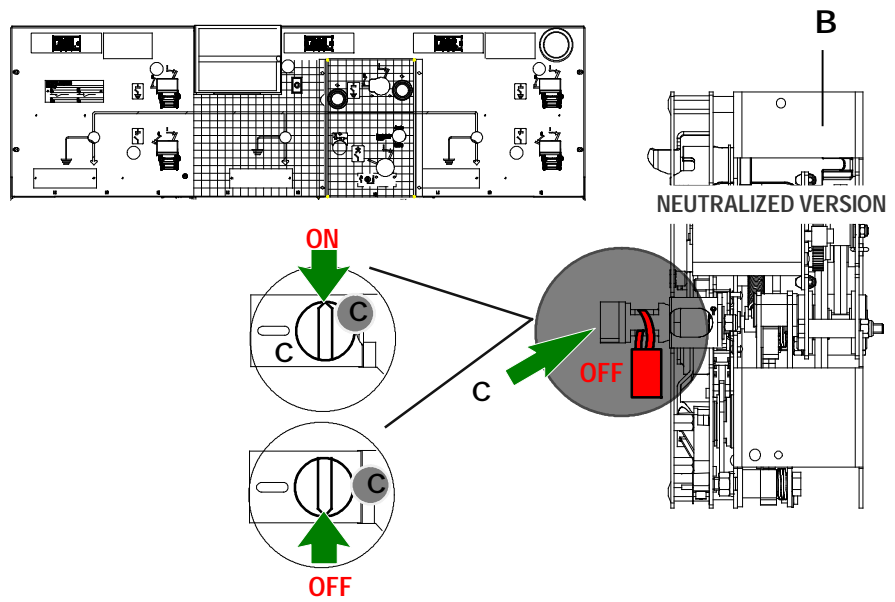
Fit the padlock on the opening pushbutton  
 $6\text{mm} < \text{handle diameter} < 8\text{ mm}$ .  
**A:** fuse- switch combined function or circuit breaker opening push button.



### with motorization lock option

**B:** circuit- breaker motorized  
**C:** position of the switch

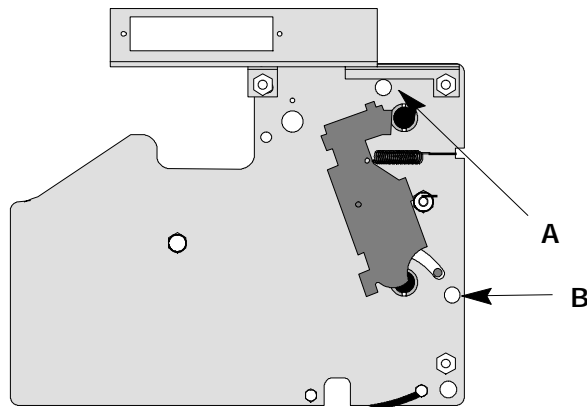
**ON :** AUTHORIZED ENGINE  
**OFF :** LOCKED ENGINE



### padlocking the operating shafts of the switch with the operating mechanism front plate removed

fit a padlock  
 $6\text{mm} < \text{handle diameter} < 8\text{ mm}$ .  
 in one of the 2 marked holes.

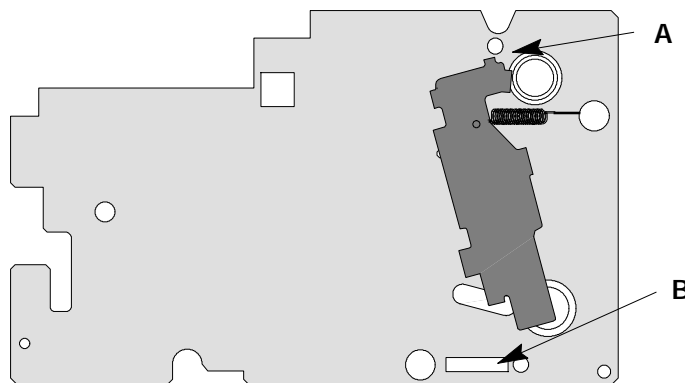
**A:** padlocking the earthing switch in the open or closed position  
**B:** padlocking the switch in the open or closed position



### padlocking the operating shafts of the circuit- breaker with the operating mechanism front plate removed

fit a padlock  
 $6\text{mm} < \text{handle diameter} < 8\text{ mm}$ .  
 in one of the 2 marked holes.

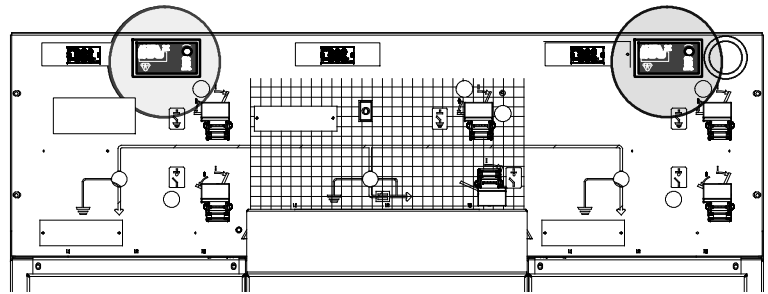
**A:** padlocking the earthing switch in the open or closed position  
**B:** padlocking the switch in the open or closed position



## overcurrent indicator

An overcurrent indicator of the **Alpha M** or **Alpha E** type can be optionally fitted one of the line switch.

4 detection thresholds are possible  
 – 400 A, 600 A, 800 A, 1000 A.



## Alpha M type indicator



## operation

If the reaction current exceeds the pre- set threshold, the indicator will send an optical signal on the faulty phase. The signal will remain visible until it is manually reset.

- 1) Threshold overshoot optical signal, one for each phase.
- 2) Rotary resetting and operating test button (turn quickly).

## Alpha E type indicator

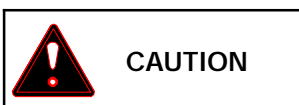


## operation

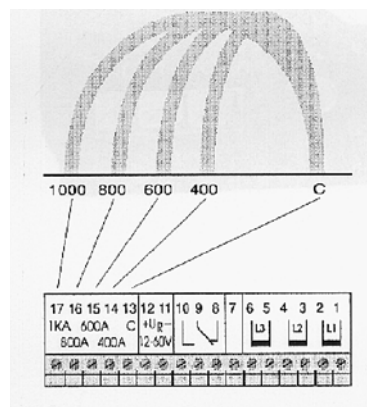
If the reaction current exceeds the pre- set threshold, the indicator will send an optical signal on the faulty phase. The signal will remain visible for a time that can be pre- set.  
 2 hours or 4 hours.  
 Manual resetting is possible.

- 1) Threshold overshoot optical signal, one for each phase.
- 2) Time during which the signal remains visible. Resetting is automatic.
- 3) Resetting and operating test pushbutton.

## threshold change for Alpha M and Alpha E type indicator

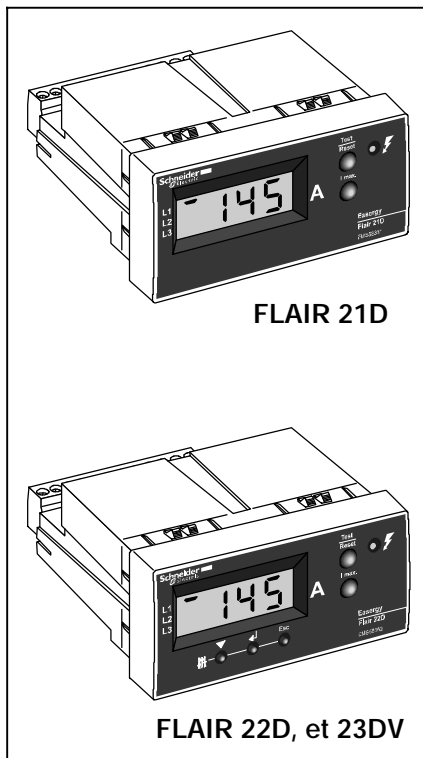
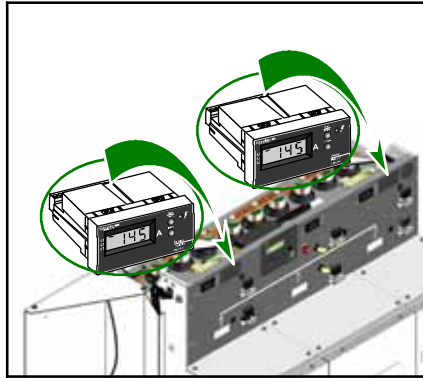


To change threshold, cable appropriately according to the diagram opposite. The terminal block is placed behind the device.





## LV connection indicator Flair 2xD



The **Flair 21D, 22D and 23DV** fault passage indicator is self-powered by the measurement sensors.

A minimum 2A current is required in the MV cable to start up the **Flair 21D** display, an energy storage guarantees a 4 hours minimum autonomy.

The Flair devices have an output contact for interfacing with a SCADA system.

**Flair 22D/23DV** can be connected to a voltage presence indicating system (VPIS) provided with a voltage output (VPIS- VO). In this case, for greater reliability, fault detection is confirmed by voltage absence without taking into account the current.

**Flair 23DV** has to be supplied from 24Vdc to 48 Vdc for a permanent display operating and for the outdoor lamp supply. (With a single zero sequence CT, self powering is not possible).

## detector pending fault ammeter mode

In the absence of a fault, a load current indication is displayed.

The amperage of each phase L1 - L2 - L3 is displayed in succession with its reference on the left of the display.

Example,

For a load current of 80 A : - 80 for L1  
then - 80 for L2  
and - 80 for L3

When Flair 22D/23DV is provided with an earth CT (B type mounting), display of M2 and M3 only.

For each phase: if  $I > 720A$  display: 888  
if  $I \pm 2A$  display: L. P. (Low Power).

---

## maximeter mode

To access the maximeter function, press once the "Imax." button.

For each phase, an indication of the maximum load currents since the last reset is displayed.

Example:

for a max. current of 500 A in phase 1: **01** then **500** , followed by M2 and M3.

The maximeters scroll only once.

All the maximeter values are reset by simultaneous actuation of the "Test/Reset" and "Imax." buttons during scrolling.

When Flair 22D is provided with an earth CT (B type mounting), display of M2 and M3 only.

---

## detector in fault indication

### Event A :

the current exceeds one of the thresholds set for a period <sup>2</sup> acknowledge time.


### Event B :

the line current disappears (or absence of U with VPIS- VO option, on Flair 22D/23DV)

Fault indication is active when **A** is followed by **B** within a lapse of time of less than 70 s.


### H **Phase- to- earth fault detected :**

display of **L1** or **L2** or **L3** (or **10** if earth CT).

the indicator lamp  flashes (1 flash every 3 s) and the output contact is activated.

### H **Phase- to- phase fault detected:**

display of **OC** (Over current),

the indicator lamp  flashes (2 flashes every 6 s) and the output contact is activated.

For these 2 types of faults, the indicator lamp remains flashing until it is reset (Reset), which can be achieved by:

H current recovery > 70 s, configurable time delay on Flair 22D/23DV (Reset active if "Automatic reset" is not on "OFF")

H U recovery, if VPIS- VO option on Flair 22D/23DV (Reset active if "Automatic reset" is not on "OFF")

H end of the time delay, (4 hours on Flair 21D, configurable on Flair 22D/23DV)

H a press on external Reset

H manual actuation of the "Test/Reset" button.

---

## maintenance

H The Flair 21D fault passage indicator requires no maintenance (no electric cells or batteries to be changed regularly)

H The lithium battery of the Flair 22D indicator should be changed about every 15 years. **(for the battery replacement process, call your sales representative who will put you in contact with the closest : SCHNEIDER- ELECTRIC group service centre. You can log on to : [www.schneider-electric.com](http://www.schneider-electric.com))**

H The lithium battery of the BVP option (external indicator unit with incorporated battery) is to be changed every 15 years.

## settings

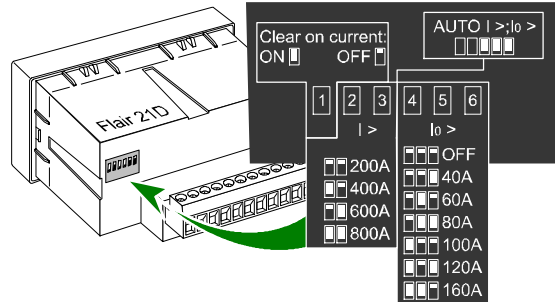
The Flair devices (>2010) are a fault passage indicator without settings (automatic mode).

However, it is possible to perform specific override settings.

In manual mode, settings are made :

- using the 3 buttons located under the display, (Flair 22D/23DV).


- by micro- switches (drawing opposite). (Flair 21D) The changes are taken into account after a press on the "Test/Reset" button.



In AUTO mode I>; Io>, the manual settings are not active.

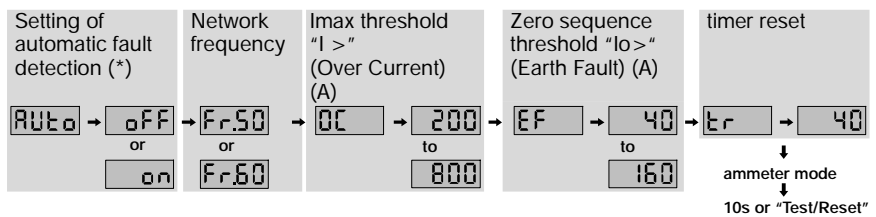
## Test mode

- A press on the "Test/Reset" button activates Test mode.

- The indicator lamp  flashes, and the BVP and the "OUT" output are activated until the end of the test.

- The display successively shows `TEST` an `F21d` an `100` (software version)

## setting parameter scrolling sequence in Test mode for Flair 21D (automatic on test mode)



When "Auto" is "ON":

Flair 21D uses the following values for fault detection:

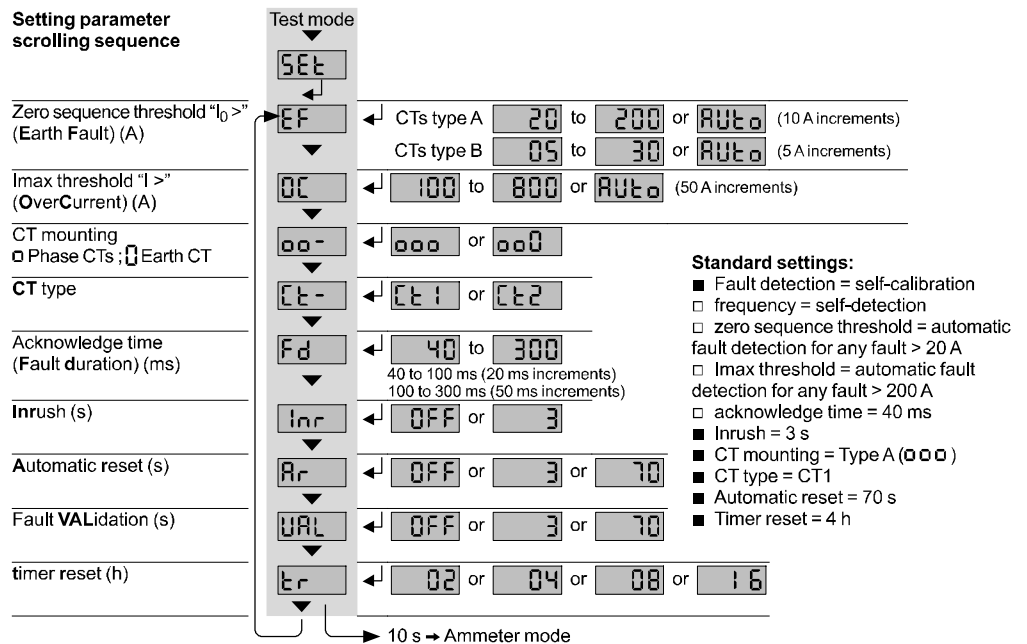
- frequency = self- detection
- zero sequence threshold = automatic fault detection for any fault > 20 A
- Imax threshold = automatic fault detection for any fault > 200 A
- acknowledge time = 40 ms
- Inrush= 3s
- CT type = CT1 ( can be changed to CT2 by actualing the buttoms)
- Automatic reset = 70s (if automatic reset =on)
- Timer reset= 4h

## settings mode (Flair 22D and Flair 23DV)

During the Test mode, a press on the  $\blacktriangledown$  button provides access to Settings mode (display **SEt** ).

- 1) A press on the  $\blacktriangleleft$  button displays the first parameter to be set
- 2) Several presses on the  $\blacktriangledown$  button scroll the parameters in a loop.  
At this stage, with no actuation of  $\blacktriangledown$  or  $\blacktriangleleft$  during 10 s, the indicator returns to ammeter mode.
- 3) Press the  $\blacktriangleleft$  button to display the current value of the selected parameter
- 4) Press the  $\blacktriangleleft$  button again to activate setting of this value: the display flashes for 5 s
- 5) During flashing, press  $\blacktriangledown$  successively to display the desired value
- 6) Confirm by pressing the  $\blacktriangleleft$  button; without confirmation within a period of 15 s, return to display of the parameters without change in the value.

Each press on the "Esc" (Return) button takes you back to the preceding stage.



## connection

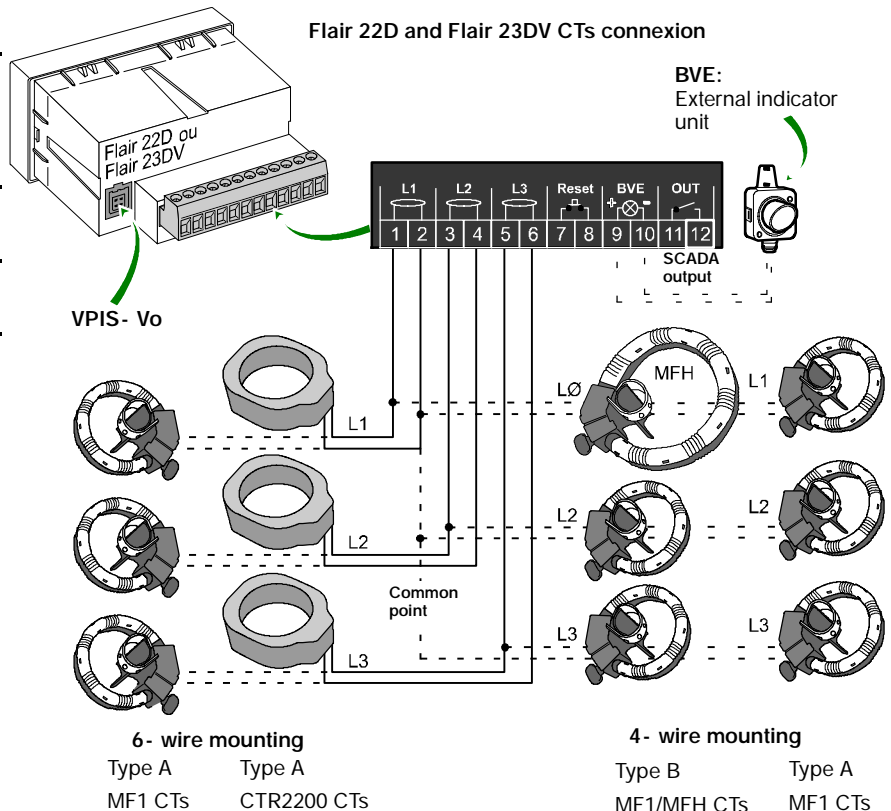
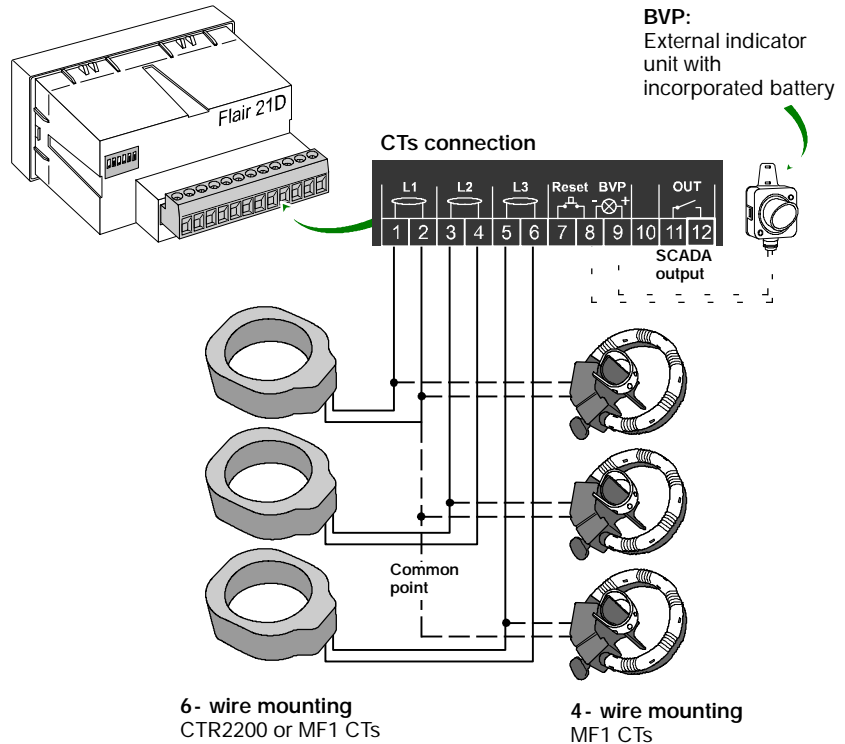
### Connection of CTs to the 3 MV cables

- H Cable Length : 3 m max.
- H Cross section: max. 1.5 mm<sup>2</sup>
- H CTR2200 : mounting without common point (6 wires)
- H MF1 : mounting with or without common point (4 or 6 wires)

**⚠ Important note**  
(for MF1 split core CTs):

- H Mount the 3 CTs facing in the same direction
- H Run the screen earth braid of the MV cable back inside the CT.

Type	Réf.	Product	Description
	EMS58351	Flair 21D	Fault passage indicator
	EMS58352	Flair 22D	
	EMS58353	Flair 23DV	
CT1	59925	CTR2200	Phase CT for RM6 cubicle bushing
CT2	59963	MF1	Phase CT for cable (split toroidal core)
	59928	MFC3 (pour MF1)	3 crimp-on connectors for 6-wire mounting (wires not supplied)
	59962	Faisceau MF1 or MFH	CT connector cable for 4-wires mounting (A or B type)
	59922	Flair 21D BVP	External indicator unit
	59988	Flair 22D BVE	
	59927	MFH2200	Earth CT (split toroidal core)

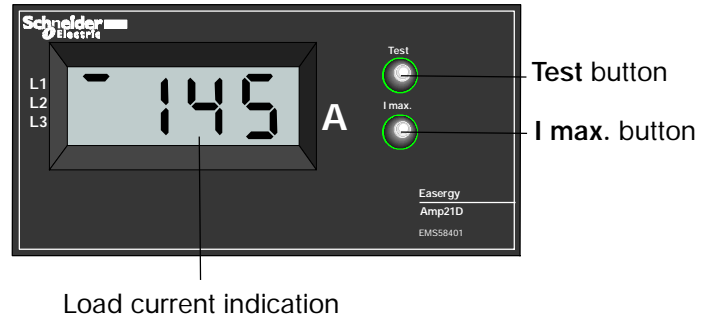


*Type C mouting 'single zero sequence CT' possible only with flair 23DV*

## ammeter

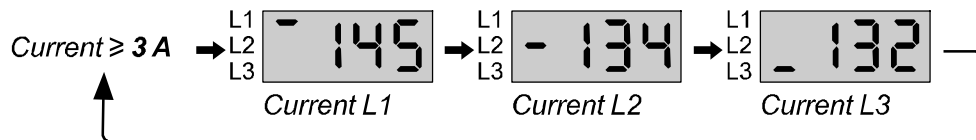
The Amp 21D is an ammeter, for cubicle, **automatic** and **self-powered**.

The Amp 21D comes into operation whenever the current is greater than 3 A on the network.



## standard operating measuring mode

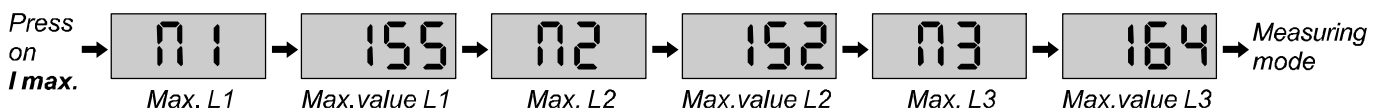
Equipment's standard operating mode. The AMP 21D ammeter displays in succession, by scrolling, the currents on phases L1, L2 and L3, and saves to memory the maximum values.



## maximeter mode

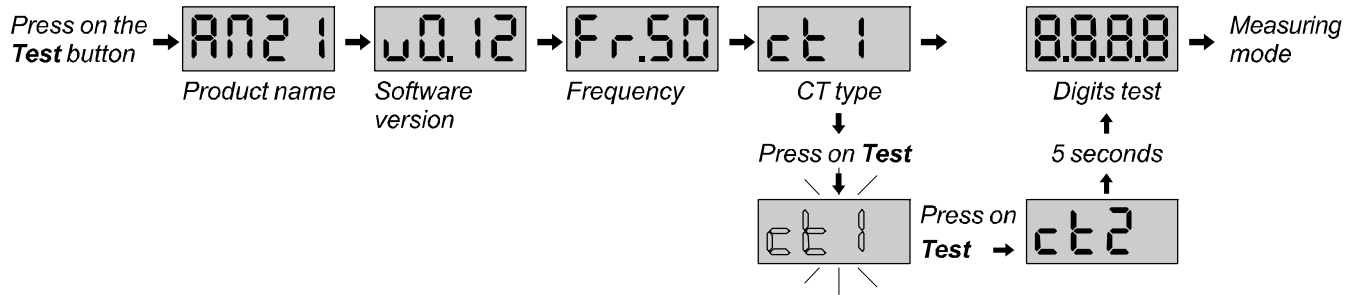
Maximeter mode (I max.) A press on the "I max." button activates the Maximeter mode.

This mode allows display of the I maximum values occurring on the three network phases since the previous initialization.



At the end of the maximeters' display cycle, the Amp 21D automatically returns to Measuring mode. The maximeter is reset by simultaneously pressing the "Test" and "I max." buttons.

## Test mode



Choice of CT type:

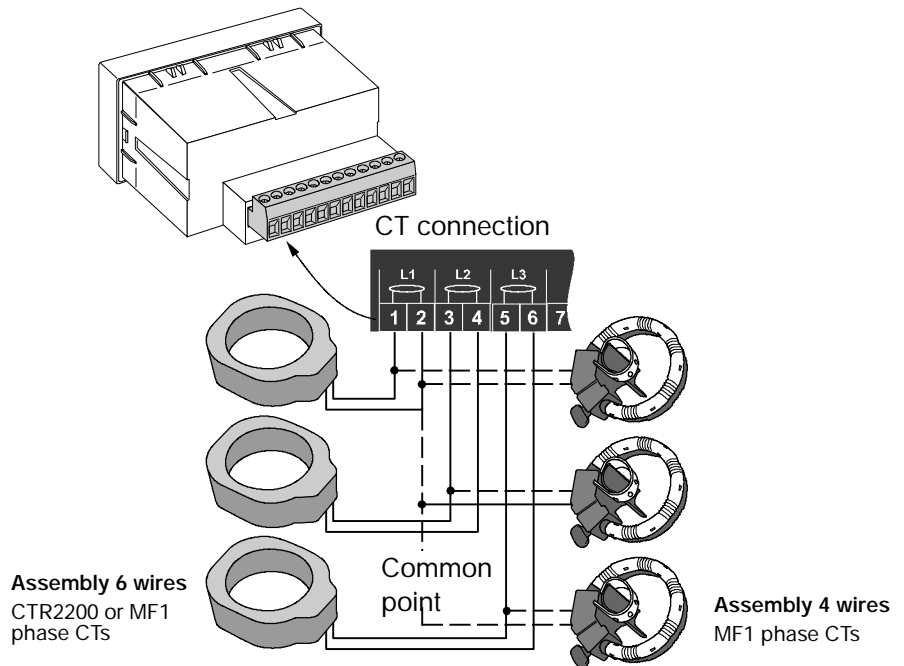
- H The CT1 option corresponds to (ref.59925) phase CTs
- H The CT2 option corresponds to (ref.59963) phase CTs
- H Factory setting: CT1.

## connection of CTs to the 3 MV cables

- H Cable length: max. 3 m
- H Cross section: max. 1.5 mm<sup>2</sup>
- H 3 phase CTs without common point on a screw- on terminal block (6 wires)
- H MF1: mounting with or without common point (4 or 6 wires)



- (for MF1 split core CTs)
- H Mount the 3 CTs facing in the same direction
  - H Run the earth braid of the MV cable screen back inside the CT.

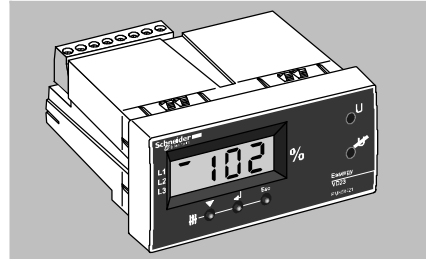


## references

Type	Ref.	Product	Description
	EMS58401	Amp21D	MV ammeter
CT1	59925	CTR2200	Phase CT for RM6 cubicle
CT2	59963	MF1	Phase CT for cable (split toroid)
	59928	Set of 3 connectors for MF1	3 crimp- on connectors (wires not supplied)
	59962	CONNECTING HARNESS FOR MF1	Connecting harness for MF1 for assembly 4 wires (A or B type)

## voltage detection relay

The **VD23** is a voltage presence and absence detection relay. It uses the **VPIS V2-V0** as sensor, and operates with a **24 or 48 Vdc** external power supply.



## operation

### Calibration:

At power up, the **VD23** automatically detects voltage presence and the network frequency, and then performs self-calibration.



: automatic frequency detection

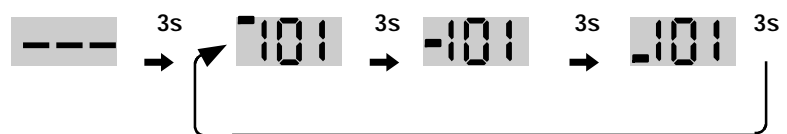


: calibration performed

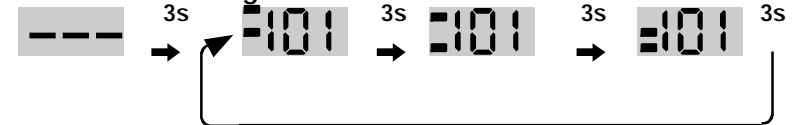
### Measuring mode:

3 seconds after calibration, the **VD23** displays, by scrolling, the percentages of the nominal voltage detected on each phase

#### Line- to- neutral voltages



#### Line- to- line voltages



### Detection of Voltage presence:

When the voltage percentage becomes greater than the set threshold for all the configured phases, then the **VD23** lights the voltage presence indicator and activates (or releases in inverted mode) **relay R1**.

### Detection of Voltage absence:

When the voltage percentage becomes less than the set threshold for all the configured phases, then the **VD23** lights the voltage absence indicator and activates (or releases in inverted mode) **relay R2**.

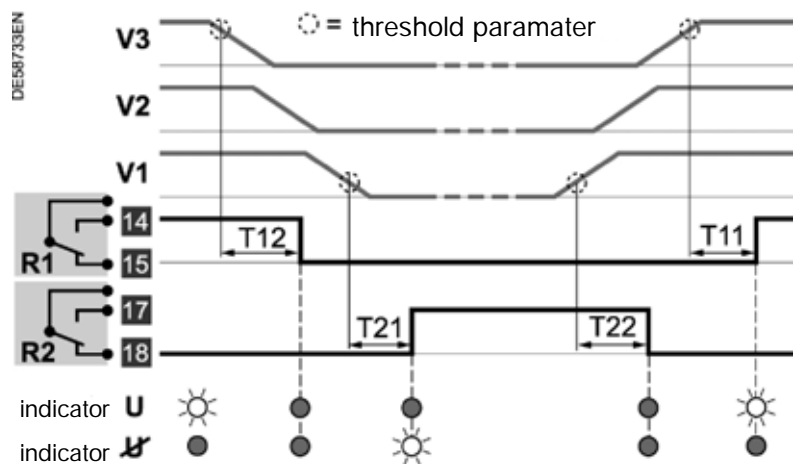
## detection sequence

Configuration: voltages V1,V2,V3, direct mode

R1: terminal **15** = relay rest position: voltage loss on at least one of the phases

R2: terminal **18** = relay rest position: voltage presence on at least one of the phases

A configurable time delay is applied for control of R1 and R2: T12 = time delay for R1 changeover upon voltage loss  
T11 = time delay for R1 changeover upon voltage recovery  
T21 = time delay for R2 changeover upon voltage loss  
T22 = time delay for R2 changeover upon voltage recovery





## Mode selection

Test mode

Measuring mode

Configuration mode  
Parameters defined by micro switches

Parameters setup mode  
To set the parameter values, see the section below

Calibration mode

**Test mode**

Product name: ud23 3s | Software version: v1.00 3s | Network frequency: Fr.50 or Fr.60 3s | Digits test: 8888 3s

---

**Configuration mode**

Type of measurement: LL | Relay output: OUT | Phase 1: L1 | Phase 2: L2 | Phase 3: L3 | Residual voltage: LO

line- to- line | inverted | measured | measured | measured | measured

LL 0 | OUT 0 | L1 0 | L2 0 | L3 0 | LO 0

line- to- neutral | direct | not measured | not measured | not measured | not measured

---

**Parameters setup mode**

PREs | S-V | Phase voltage threshold: 40 to 90 % of nominal voltage (10% increments)

Voltage presence | S-V0 | Residual voltage threshold: 30 to 60 % of nominal voltage (10% increments)

E11 | Activation time delay R1 (direct): 0 to 3 0 to 1 s (0.1s increments) 1 to 21 s (2s increments)

E12 | Release time delay R1 (direct): 0 to 3 0 to 1 s (0.1s increments) 1 to 3 s (0.5s increments)

---

**Parameters setup mode**

ABS | S-A | Phase voltage threshold: 10 to 30 % of nominal voltage (10% increments)

Voltage absence | E21 | Activation time delay R2 (direct): 0 to 21 0 to 1 s (0.1s increments) 1 to 21 s (2s increments)

E22 | Release time delay R2 (direct): 0 to 21 0 to 1 s (0.1s increments) 1 to 3 s (0.5s increments)

---

**Calibration mode**

AUTO | Automatic calibration: OFF or On | Set to OFF to retain the last calibration performed

d0 | Forced calibration: d0 1s | done | Calibration performed normally

Err | Error in calibration: voltage levels too low

## configuration of thresholds and time delays

The parameter values (white screen in the above diagram) can be modified as follows:

H when the value of the parameter is displayed, a press on the key causes the display to flash for 5 s

H during flashing, press successively to display the desired value

H confirm this value by pressing the button; without confirmation within a period of 15 s, return to display of the parameters without change in the value. **Each press on the "Esc" button takes you back to the preceding stage.**

## suggested choice for VD23 settings

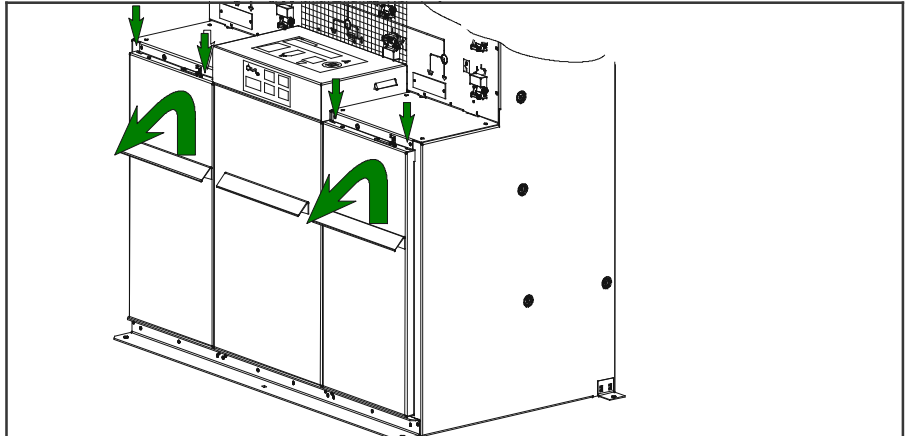
VOLTAGE DETECTOR	EARTHED OR IMPEDANT GROUNDING	ISOLATED NEUTRAL	COMPENSATED NEUTRAL
VD23	SW 1 $\bar{V1} + \bar{V2} + \bar{V3} + \bar{V0}$ $V1.V2.V3.\bar{V0}$ R1	 $\bar{U12} + \bar{U13} + \bar{U23}$ $U12.U13.U23.$ R1	 $\bar{U12} + \bar{U13} + \bar{U23}$ $U12.U13.U23.$

**access to the cable compartments**

**access to the cable connection compartments without interlocking**



The HV cables must be de- energised for access to the compartments.



Open the switch and **close the earthing switch.**

To remove an access panel, remove the 2 upper screws, lift and pull towards you.

**connection on busbar (O function and T function)**

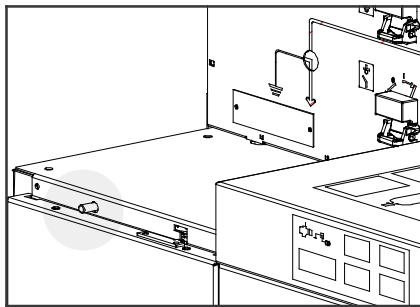


**WARNING**

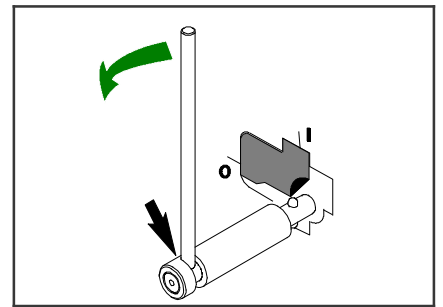
**THE COMPLETE SWITCHBOARD (ALL THE RM6 CONNECTED TOGETHER) MUST BE DE- ENERGISED**

**OPEN ALL SWITCHES CONNECTED TO THE BUSBAR**  
**CLOSE ALL ASSOCIATED EARTHING SWITCHES**

**access to the cable connection compartments with interlocking (optional)**



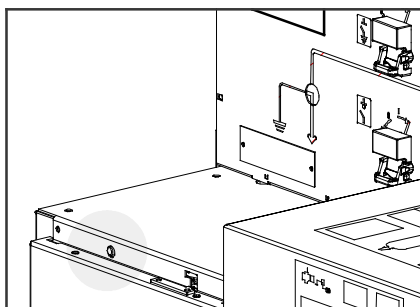
Functional unit in operation, switch closed.  
The access panel is locked.



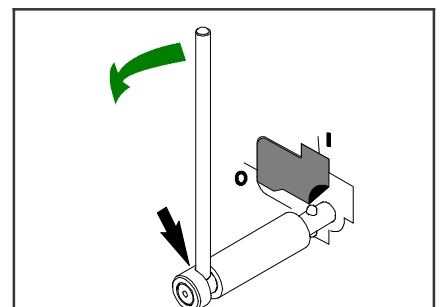
**Open the switch.**  
The access panel remains locked.

**Optionally**

Switch and circuit- breaker closing is inhibited if the access panel is removed.

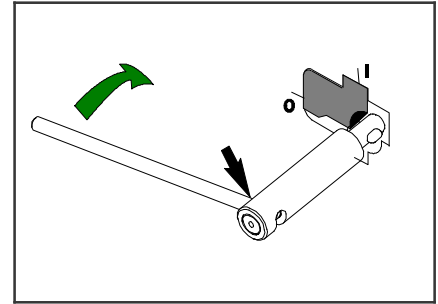
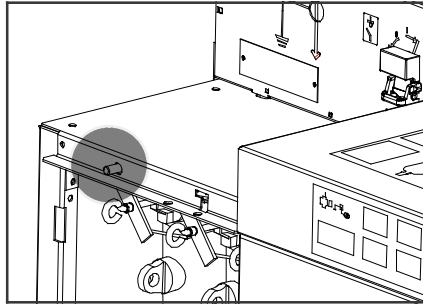


**Close the earthing switch.**  
The access panel is released.

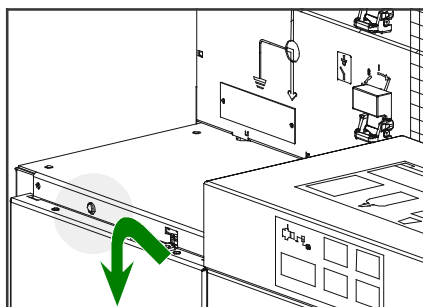


Access panel removed, the earthing switch can now be re- opened.

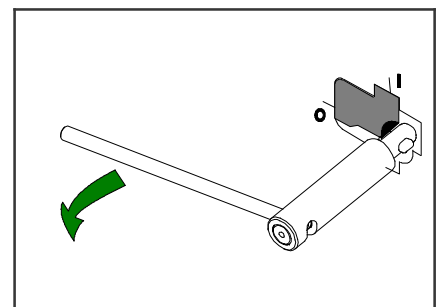
Earthing switch open: the access panel cannot be put back. If the connectors so allow, DC current can be injected to monitor cable insulation or search for faults.



Close the earthing switch.



Put back the access panel.



Open the earthing switch.

## access to the MV compartment of the DE- Mt cubicle

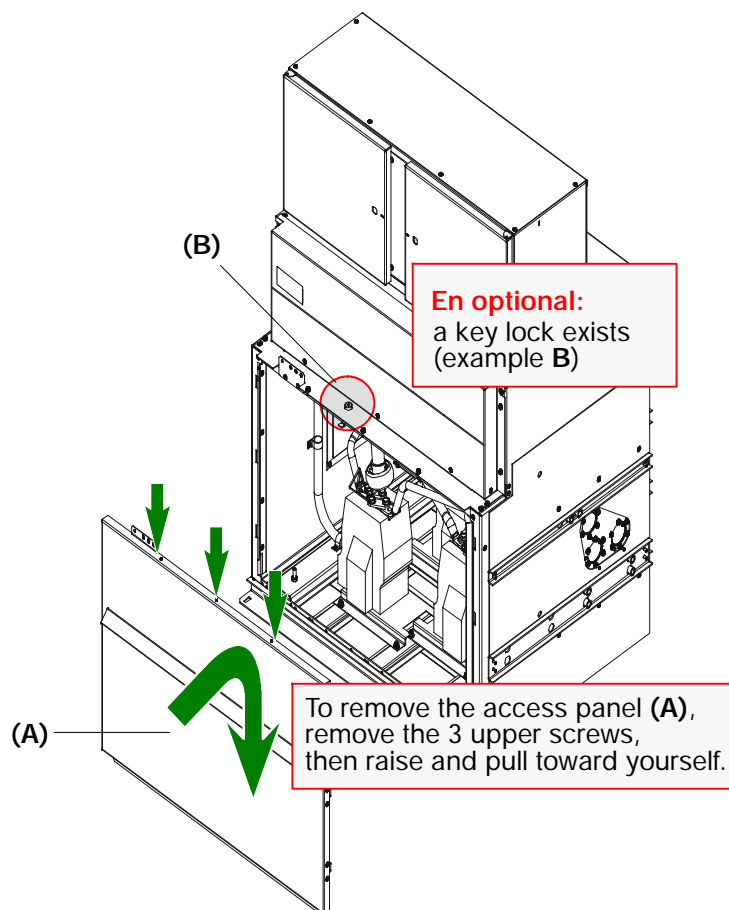


Opening of panel (A) authorized only if :

- all upstream connection(s) locked- out in OPEN position
- all downstream connection(s) locked- out in OPEN position.



Intervention inside the DE- Mt cubicle is authorised only if: the 3 busbars are grounded, via a temporary connection or via an earthing switch (upstream or downstream).



## standard operating conditions

maintenance summarising table



description	operation	material
panelling	cleaning	cloth
earthing covers	cleaning	sponge, clear water

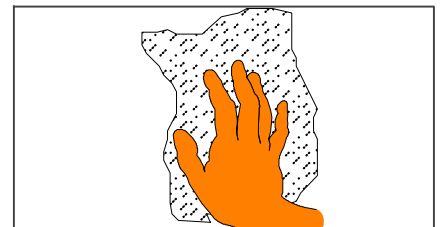
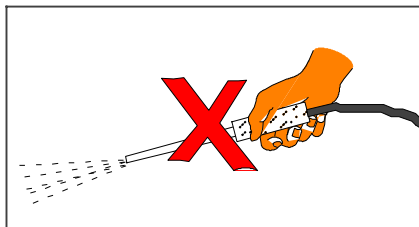
## device panelling



We draw your attention to the risk of using high pressure cleaning processes.  
**Schneider Electric cannot therefore guarantee the reliability of equipment that have been cleaned in this manner, even if cleaning was followed by lubrication.**

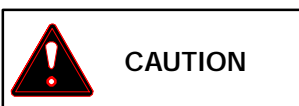
The main drawbacks of this process are:

- H deterioration due to jet pressure and impossibility of relubricating the inaccessible fixing points
- H risk of overheating due to presence of solvent on the contact zones.
- H elimination of special protections.



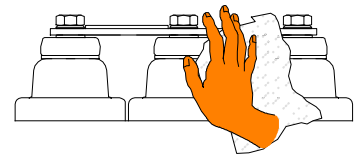
Clean using a dry cloth.

## earthing covers



**This operation can be performed in event of excessive soiling.**

Clean using a sponge and clear water. Do not use alcohol or other solvents to clean.



## maintenance cycle and operations



This device is designed to operate for 30 years or for 1000 operations in normal conditions of use as per standard **IEC 62271- 1**.

**The following are recommended:**

- an O/C operation every 6 years for motorised functional units and/or functional units with a latching mechanism (Q and D/B function)
- replacement of batteries is recommended every 4 years
- inspection every 5 years of the condition of the mechanisms (pollution, corrosion) and the cleanliness of the earthing covers (pollution).

## harsh operating conditions

To ensure proper operation of the RM6 in harsh operating conditions, we strongly recommend regular maintenance of the cubicle and its installation.

Recommended inspection frequency: at least once a year

During the inspection, check the 6 following points:

### 1 LV compartment

**symptoms:** condensation, presence of humidity

**check:** for rust on the LV electric and electronic parts

**solutions:**

- dry the environment
- replace the damaged parts
- fit heating resistances (optional)

### 2 earthing covers

**symptoms:** humidity, dust

**check:** surface cleanliness

**solutions:**

- dry the environment
- clean using a clean cloth and water (no alcohol or solvent)

### 3 mechanical operating mechanisms

**symptoms:** humidity, condensation on live parts

**check:** for red rust on moving parts

**solutions:**

- find and treat the origin of condensation phenomena
- follow up the damage
- replace the operating mechanism if required (refer to reference: 07897270)

### 4 MV socket and cable

**symptoms:** presence of corona discharge or odours

**check:** connections (may be damaged)

**solutions:**

- fit new sockets

### 6 trench

**symptoms:** humidity

**check:** for presence of water in the trench

**solutions:**

- pump out water
- drain the trench (if necessary add sand)

In case sand is added in the trench, take care that the cables are still fixed correctly and that no additional stress is added to the bushings

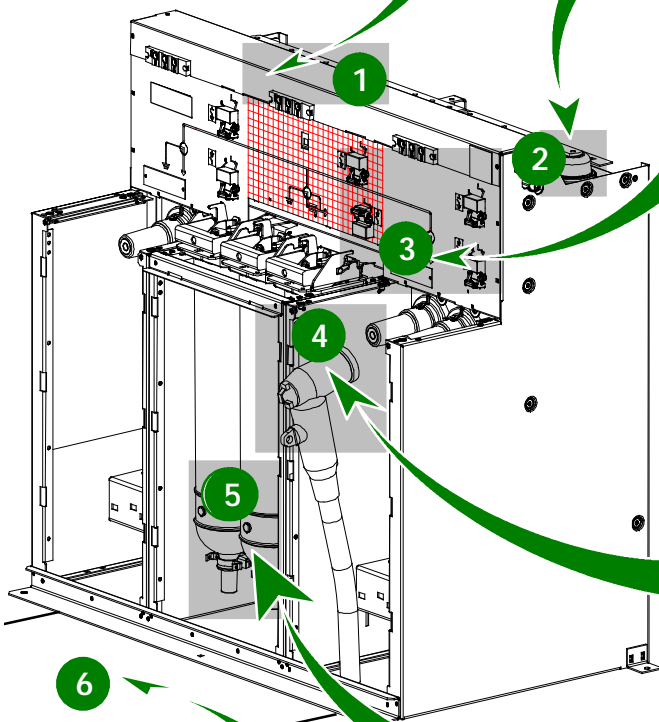
### 5 fuse compartments

**symptoms:** humidity + dust

**check:** proper operation of the VPIS

**solutions:**

- clean the outside surface of the fuse compartments using a cloth and clear water



## foreword

The corrective maintenance operations enable replacement of subassemblies.

The operations quoted in the following summarising table can be performed by the customer or by **Schneider Electric's** after-sales representatives.

**For any other maintenance operations, contact the representatives of your nearest Groupe Schneider.**

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



On replacement, all the accessories below must be replaced with new equipment.

- Nylstop (self-locking nut)
- Contact washer
- Locking rings
- Mechanical pin

To access the various devices:

- H open the switches
- H close the earthing switches
- H cut the supply to the LV circuits

## maintenance summarising table

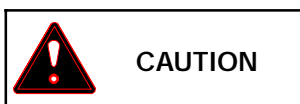
description	réalisation
replacing a voltage indicator	<b>SCHNEIDER ELECTRIC</b> or Customer
replacing a fuse (MV)	<b>SCHNEIDER ELECTRIC</b> or Customer
replacing the charging motor	<b>SCHNEIDER ELECTRIC</b> or Customer
replacing a printed circuit	<b>SCHNEIDER ELECTRIC</b> or Customer
replacing the indicating contact	<b>SCHNEIDER ELECTRIC</b> or Customer

## replacement of the voltage presence unit (VPIS) type VPIS- V1 by type VPIS- V2

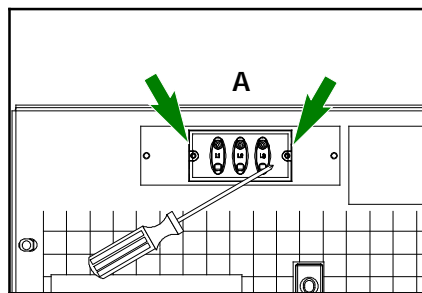
**VPIS- V1:** production until February 2009

**VPIS- V2:** production from March 2009 onwards

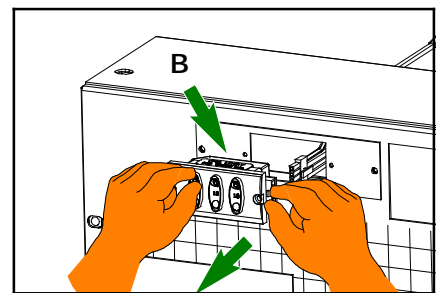
### removing the VPIS- V1 voltage presence unit



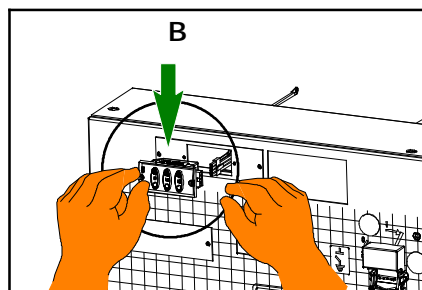
The screws (A) must be retained.



Unscrew the 2 self-tapping screws (A).



Remove the **VPIS 1** voltage presence box (B).

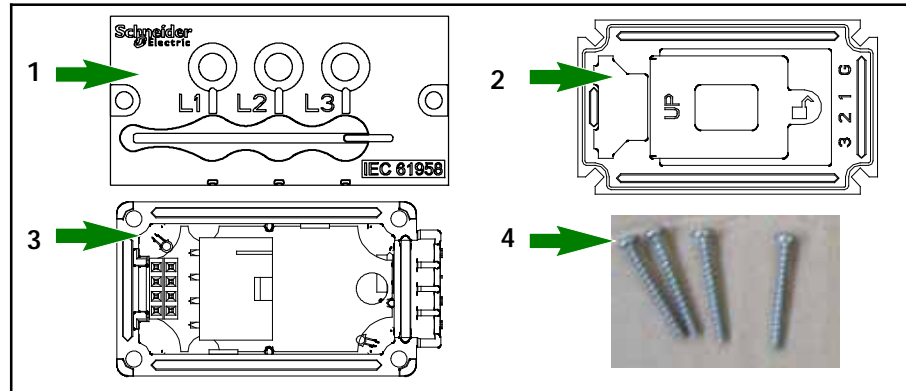


Disconnect the **VPIS1** voltage presence unit (B).

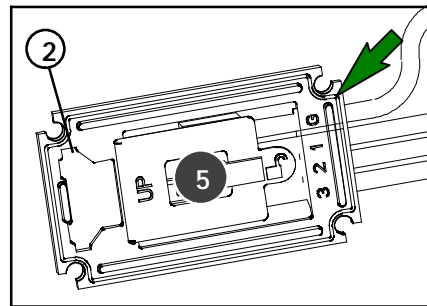
## contents of the kit VPIS- V2

- 1: indicator unit
- 2: cable gland seals
- 3: surge arrester
- 4: screws (x4)

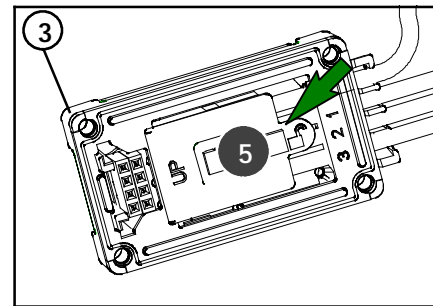
The screws removed earlier are reused. (2 self- tapping screws)



## mounting the voltage presence unit (VPIS- V2)



Position the cable gland seal (2) on the voltage presence connection (5). Check that the seal is in the correct position.



Clip the cable harness connector (5) onto the **VPIS** protection (3) and fit the seal

## checks to be made before continuing with the operation

Check the condition of the wiring harness (5) and the **VPIS 2** rating using the **optional** diagnostic

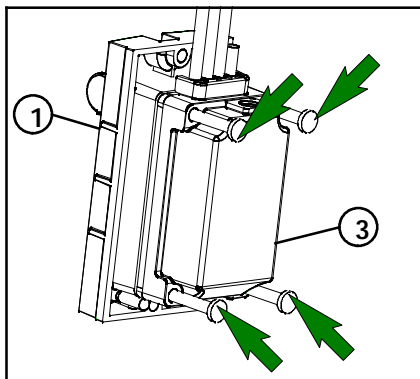
tool (**VPI62420**) (**not included in the kit**) or see correspondence table below.

RM6		VPI62403 7,4 $\mu$ A		VPI62404 10,7 $\mu$ A		VPI62406 22,4 $\mu$ A		VPI62408 47,2 $\mu$ A	
		Min	Max	Min	Max	Min	Max	Min	Max
RM6 50- 60Hz standard	Un : network voltage	2,5 kV	3,2 kV	3,3 kV	7,7 kV	8,8 kV	16,0 kV	16,1 kV	23,0 kV
RM6 50- 60Hz BUSHING WELL <u>only</u>		5.3 kV	10.6 kV	7.6 kV	15.4 kV	16 kV	32.5 kV		

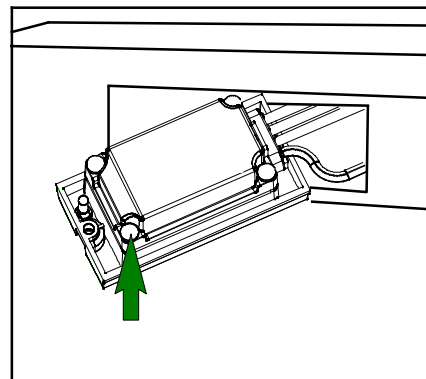
Key

Minimum and maximum network voltage in 50Hz and 60Hz.

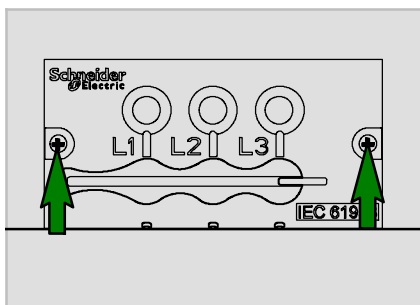
Please refer to the chapter entitled "contents of the kit"



Screw the indicator unit (1) onto the VPIS surge arrester (3) using the 4 screws.



Tighten the screws to exert slight pressure on the cable gland seal without distorting it.



Install the voltage presence unit in the correct position using the 2 self-tapping screws removed earlier.

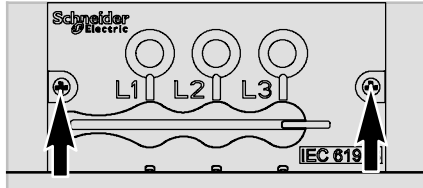


The screws removed earlier are reused.



replacement of the voltage presence unit (VPIS) type VPIS- V2 by type VPIS- V2

removing the VPIS 2 voltage presence unit



Remove the 2 screws from the front panel.



**CAUTION**

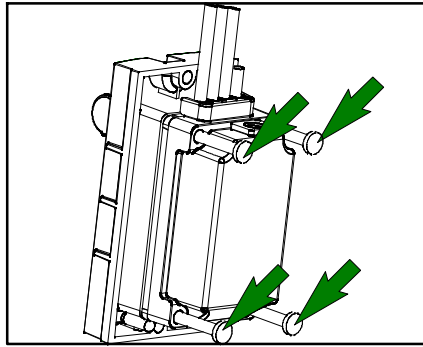
The screws must be retained.

mounting the new VPIS 2 voltage presence unit

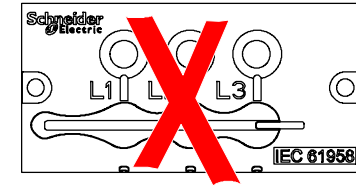


**ATTENTION**

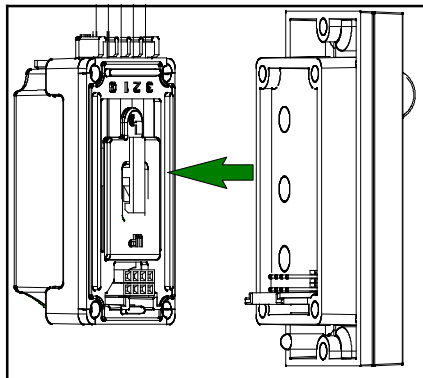
Only the indicator unit is to be changed.  
Contact the **Schneider Electric** administration for recycling products at the end of their service life.



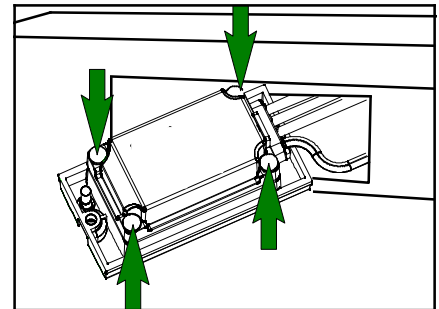
Remove the unit.  
Remove the 4 screws from the indicator unit.



Discard the faulty indicator unit.  
Leave the existing surge arrester and seal.



Install the new voltage presence indicator unit.

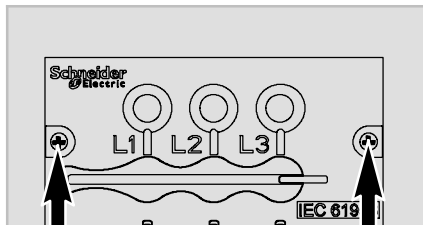


Screw up the 4 screws.  
Tighten the screws to exert slight pressure on the cable gland seal without distorting it.



**CAUTION**

The screws removed earlier are reused.



Install the voltage presence unit in the correct position using the 2 self-tapping screws removed earlier.

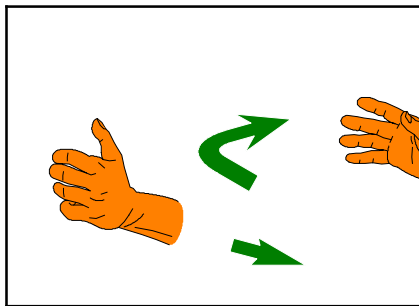
## replacing a fuse

Standard IEC 252 paragraph 23.2 recommends replacement of the 3 HV fuses after blowing of one of the fuses.

### removal

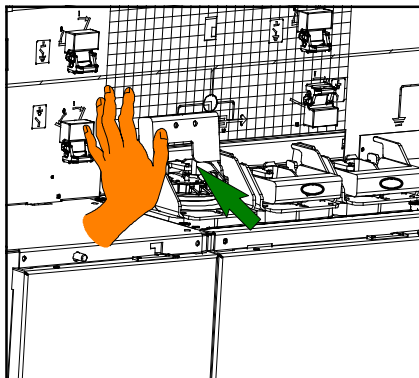


Before performing these operations, remember that you close the earthing switch.

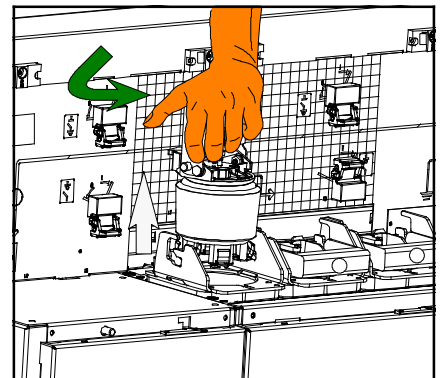


Repeat the following operations for all 3 fuses.

To remove the cover: lift it and pull it towards you. The instructions are visible on the cover.

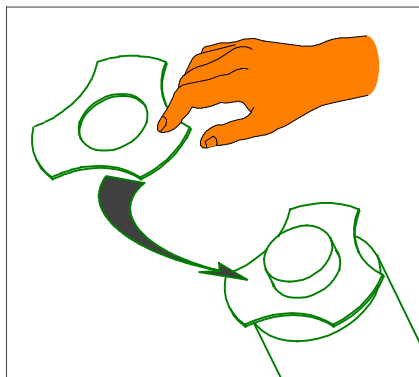


Release the plug and push the extraction handle manually to unlock the plug (tap with the palm of your hand to separate the seal from the plug if necessary).

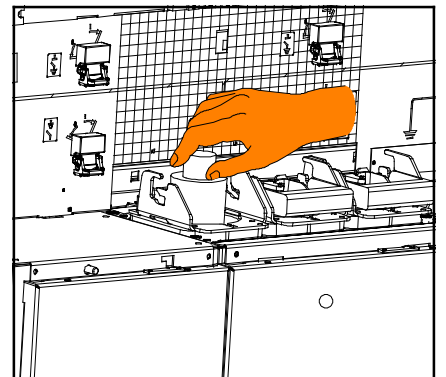


Move the plug up to the limit stop, swivel it towards the left to remove it.

### removing a DIN fuse (Fusarc CF)

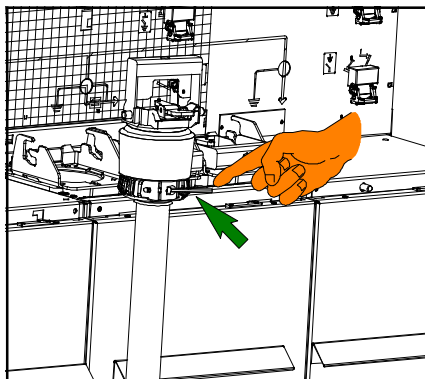


Recover the centring device at the top of the fuse.

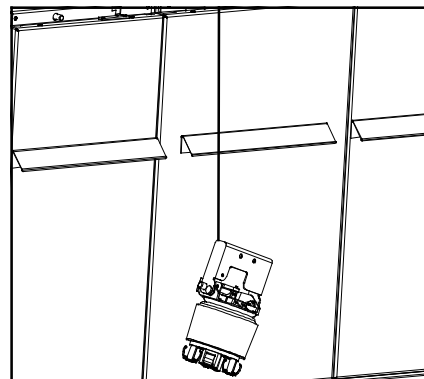


Extract the fuse.

## removing a UTE fuse (Solefuse)

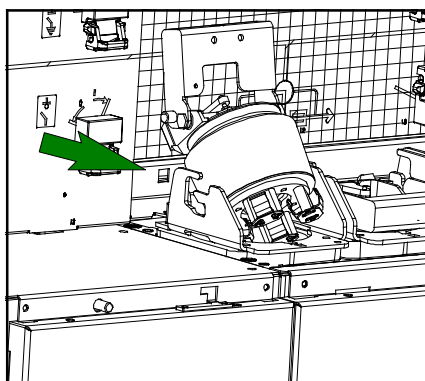


Loosen the fuse using a wrench with end BTR n° . 5.



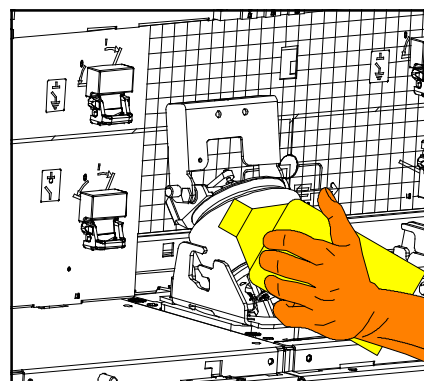
Let the plug hang down from its supporting string.

## cleaning the plugs



If the fuse plugs are dirty, clean the conical surface using silicon oil. Then wipe it down with a clean cloth to dry it.

**Huile Rhodorsil 47V50.**  
Distributed by Rhone Poulenc  
(chimie Lyon) **FRANCE**



Talc the clean surface with natural talc to avoid clinging between the plug and fuse compartment. The surface must appear smooth without lumps.

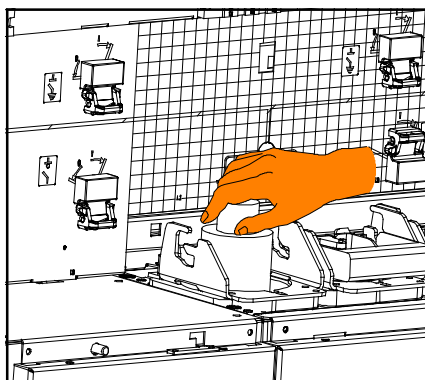
**TALC : westmin 8.**  
Distributed by Ets Ledoux  
Bordeaux **FRANCE**

## fitting a DIN fuse



**CAUTION**

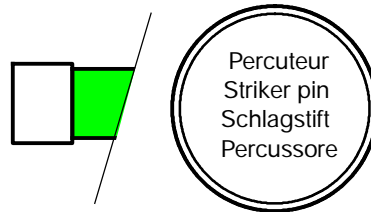
On no account must a fuse that has been knocked be installed. A test prior to installation using a monitor is recommended.



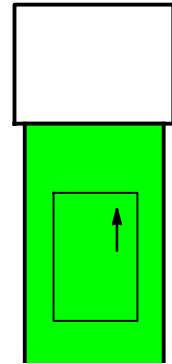
Insert the fuse in the compartment. Fit the centring device on the fuse. Insert the plug pins in the plinth and swivel it round to the right.

## fitting a fuse with striker

Fuse blowing releases a striker that causes three- phase opening of the switch and prevents it from reclosing.



The end of the fuse equipped with the striker is marked.



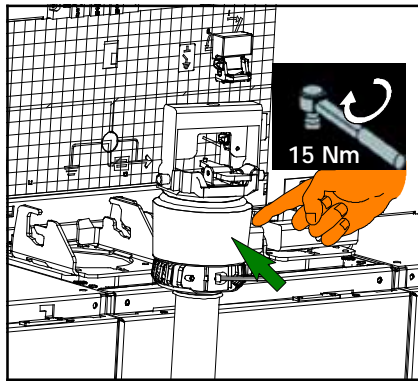
The technical data and mounting direction of the fuse are printed on the body.

(striker facing upwards).

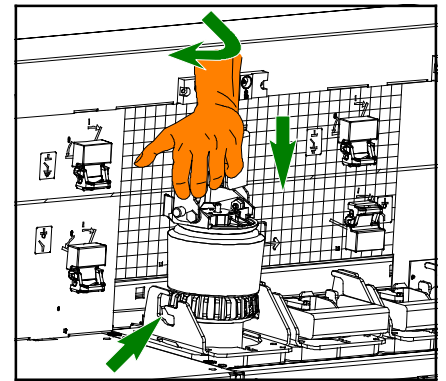
## fitting a UTE fuse



On no account must a fuse that has been knocked be installed. A test prior to installation using a monitor is recommended.

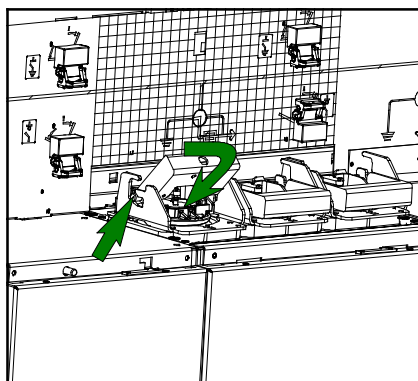


Fix the fuse on the plug using a torque wrench with end BTR n°. 5 and insert the fuse in the compartment.



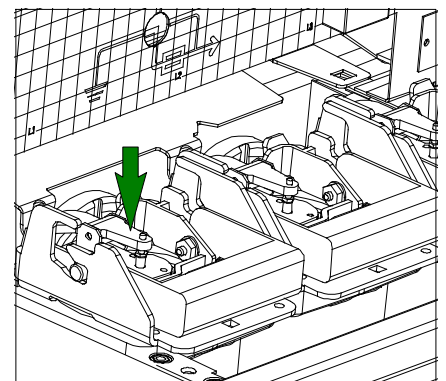
Insert the plug and fuse assembly in the compartment.  
Insert the plug pins in the plinth and swivel it round to the right.

## locking the plug



Make sure that the handle trunnions are inserted in the plinth slots and lock the plug.

**Never use the operating lever to lock the plug.**

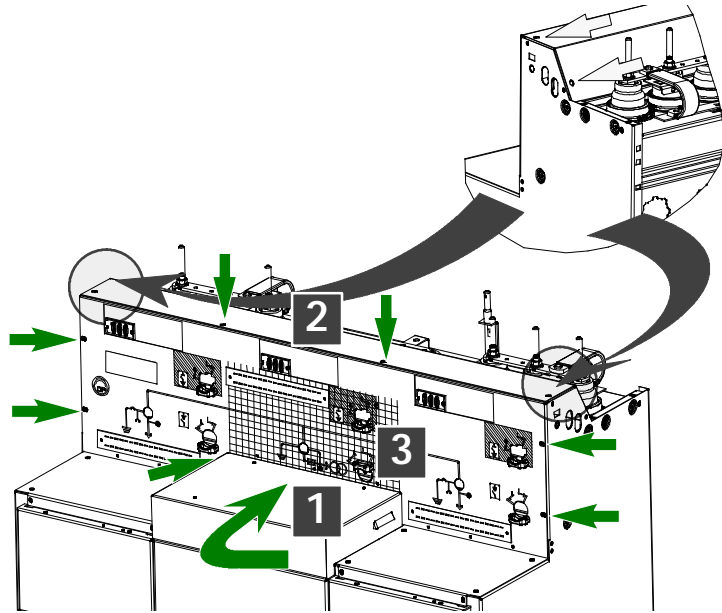


For replacement of a fuse that has struck, press the switch to put it back in position.

## access to the LV compartment dismantling



- 1- Remove the fuse compartment cover (pull towards you)
- 2- Remove the LV cable trough 6 screws (HM6x16)
- 3- Remove the self-cutting screws



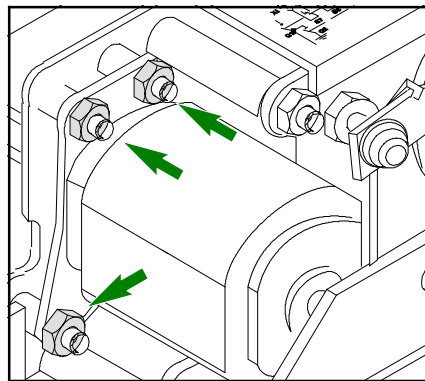
## reassembling

H Reassemble in opposite order to disassembly.

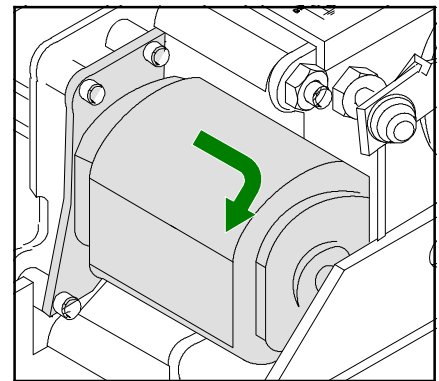
## replacing a motor removal



LV circuit de-energized.



Remove the 3 nuts fixing the motor support. Disconnect the motor supply wiring.



Remove the motor support by pulling it backwards.

## fitting

Fit the new motor in the opposite order to removal.  
Tightening torque: 28 Nm.

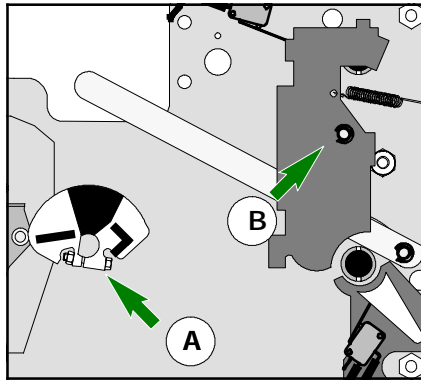
Fit the trunking and the cover.

## replacing the LV contacts

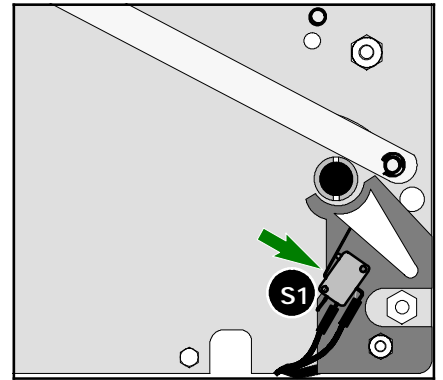
Disassemble the pilot light support.  
removal



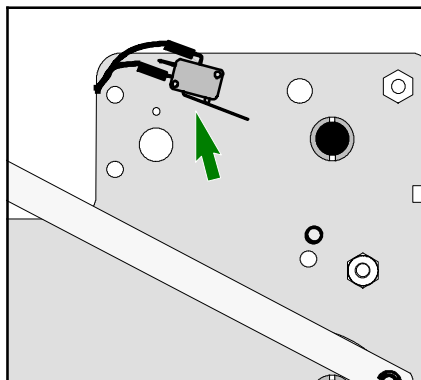
LV circuit de- energized



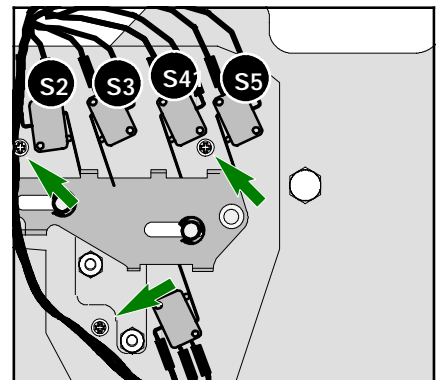
Remove the position indicator **A**.  
Remove interlocking **B**.  
(elastic ring and spring)



Remove contact support **S1**  
without disconnecting the wiring.

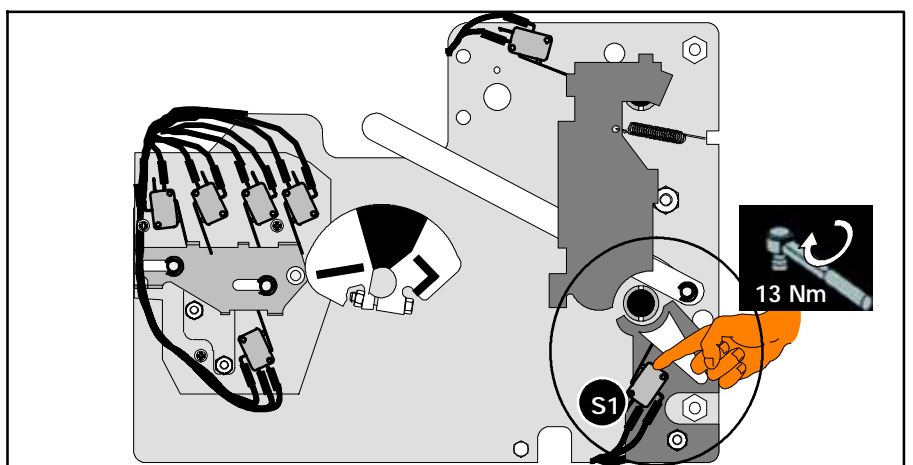


Remove contact **S3** without  
disconnecting the wiring.



Remove the contact support  
**S2, S4, S5, S6** and **S7** without  
disconnecting the wiring.

## fitting the contacts and wiring connection



Fit contacts **S1** to **S7** to replace the  
former contacts.  
Fit the position indicator and  
interlocking.

Disconnect the contact wiring  
**S1** disassembled, and connect  
it to the new contact.  
Repeat this operation for all  
the contacts (**S2** to **S7**).

# processing when dismantling the equipment

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## processing of SF6 gas when dismantling the equipment conformity rules

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

The after sales of **SCHNEIDER ELECTRIC** can propose a complete offer.

- dismantling and recycling of the **RM6 units**
- treatment of the SF6 gas.

Finally a certificate will be provided to you.

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