

RM6

MV distribution
factory built assemblies
at your service

Anglais

instructions for use

**group Schneider Electric service
centers are there for:**

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

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

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<http://www.schneider-electric.com>

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

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Technique T&D

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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.

**DANGER**

as per iso 3864–2

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

**WARNING**

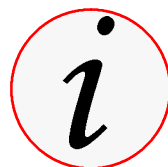
as per iso 3864–2

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

**CAUTION**

as per iso 3864–2

CAUTION: failure to follow this
instruction may result in injuries.
This alert signal can also be used to indicate
practices that could damage the RM6 unit.

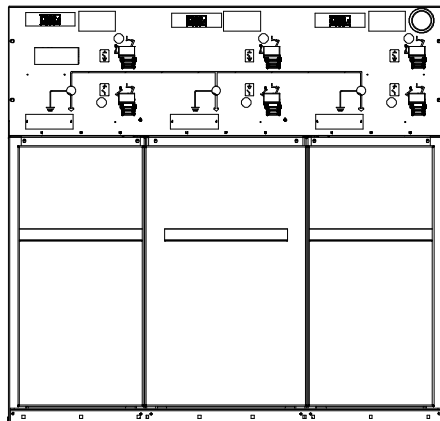


INFORMATION-ADVICE
We draw your attention to this specific point.

contact the Schneider
Electric service unit for
diagnosis and advice



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



distribution rules



**The aim of this publication
is to enable the 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.**



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



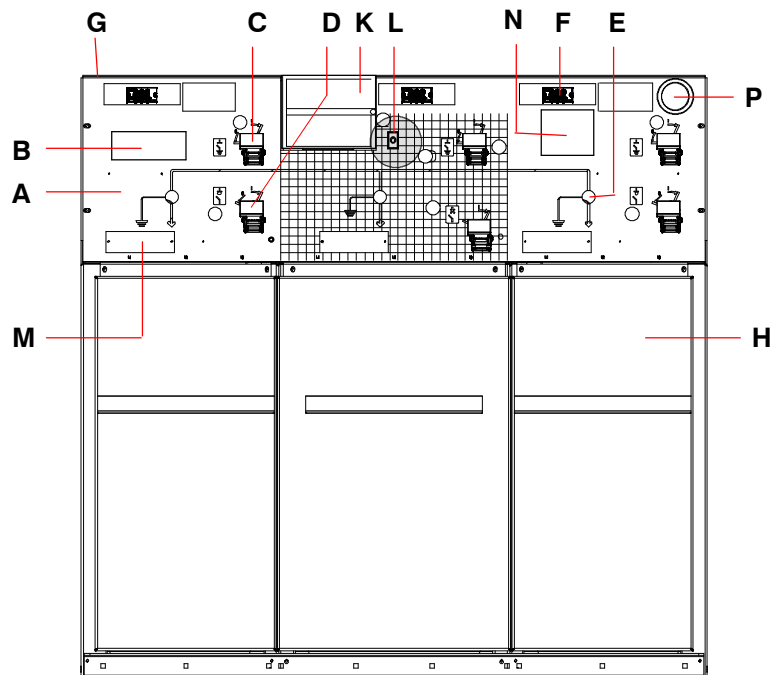
Only undertake the work after
having read and understood
all the explanations given in this
document.

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

“transformer protection” circuit–breaker

Example shown: IDI substation.

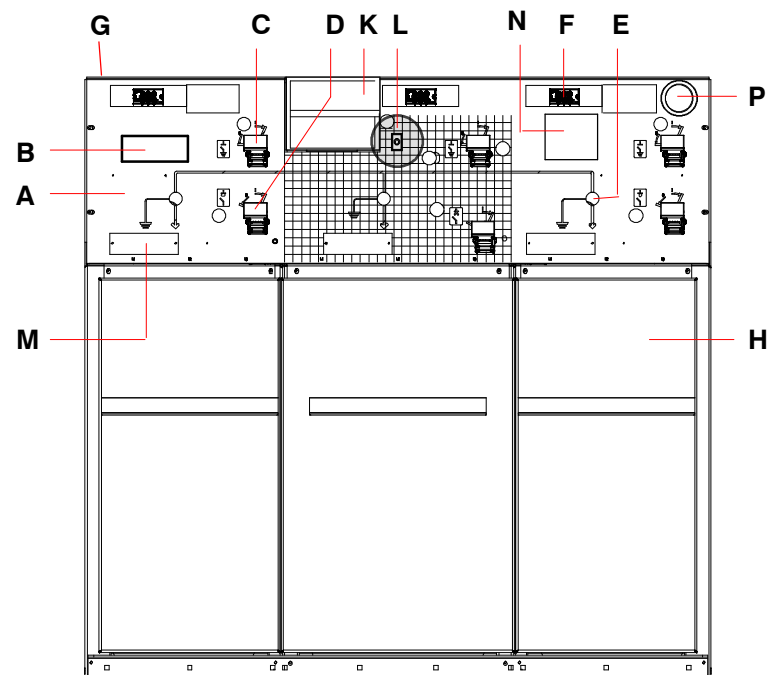
- A : operating mechanism front plate comprising the mimic diagram
- B : information plates
- C : earthing switch operating shaft
- D : switch operating shaft
- E : function position indicator
- F : voltage indicator
- G : LV connection access trunking
- H : connection bushing access panel
- K : **VIP30/35** and **VIP300** protection relays
- L : **D function** opening pushbutton
- M : rating plate
- N : pressure switch or gauge label
- P : pressure switch or gauge



“line protection” circuit–breaker

Example shown: IBI substation.

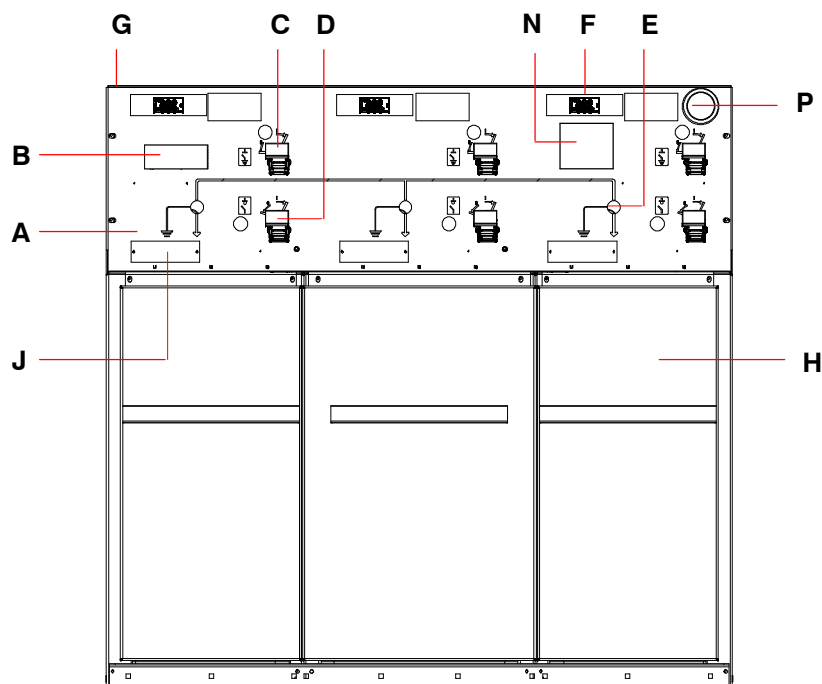
- A : operating mechanism front plate comprising the mimic diagram
- B : information plates
- C : earthing switch operating shaft
- D : switch operating shaft
- E : function position indicator
- F : voltage indicator
- G : LV connection access trunking
- H : connection bushing access panel
- K : **VIP300** protection relays
- L : **B function** opening pushbutton
- M : rating plate
- N : pressure switch or gauge label
- P : pressure switch or gauge



”network”switch

Example shown : III substation.

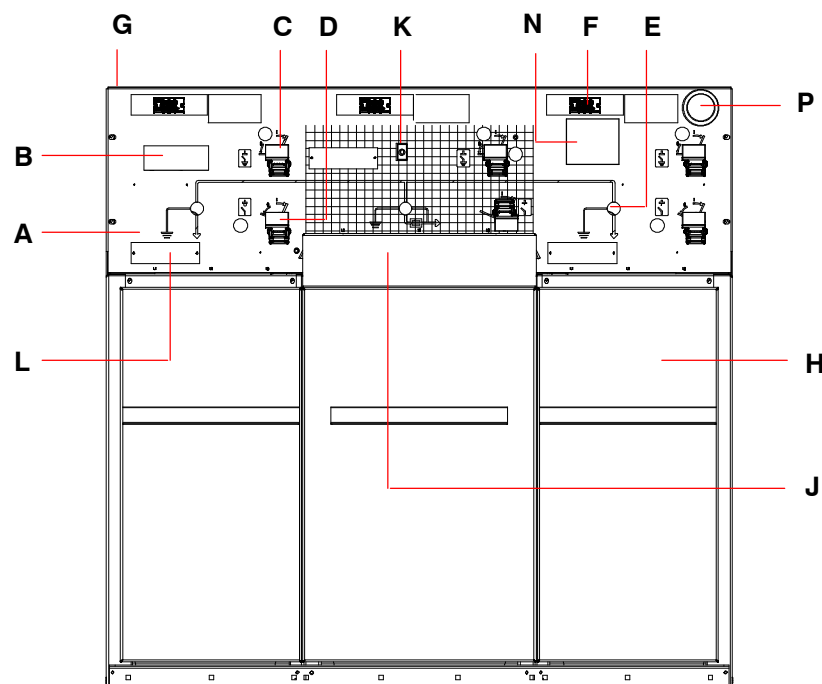
- A : operating mechanism front plate comprising the mimic diagram
- B : information plate
- C : earthing switch operating shaft
- D : switch operating shaft
- E : function position indicator
- F : voltage indicator
- G : LV connection access trunking
- H : connection bushing access panel
- J : rating plate
- N : pressure switch or gauge label
- P : pressure switch or gauge



“transformer protection” fuse–switch combination

Example shown : IQI substation.

- 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 : fuse compartment access cover
- K : **Q function** opening pushbutton
- L : 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

A : control panel
featuring the mimic panel
comportant le synoptique

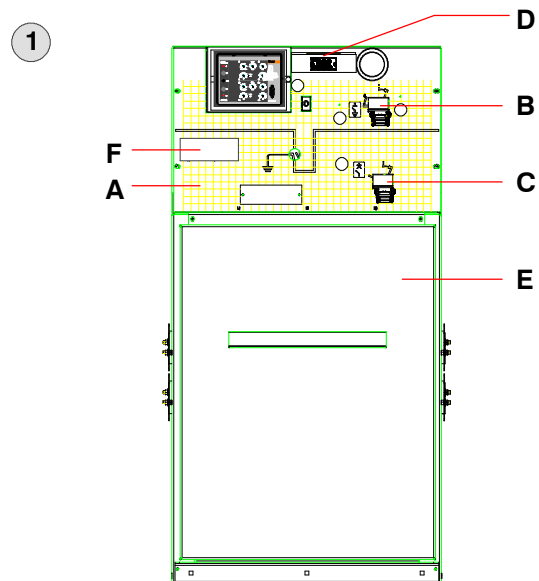
B : earthing switch
operating shaft

C : switch operating shaft

D : voltage indicator

E : access panel to controlled
field busbars

F : plate characteristics



Example presented :

2 : DE–BC station with earthing
switch

A : control panel
featuring the mimic panel

B : earthing switch operating
shaft

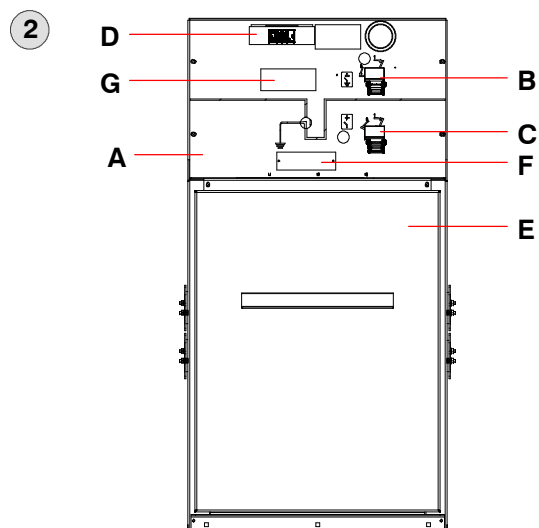
C : switch operating shaft

D : voltage indicator

E : access panel to controlled
field busbars

F : rating plate

G : characteristics plates



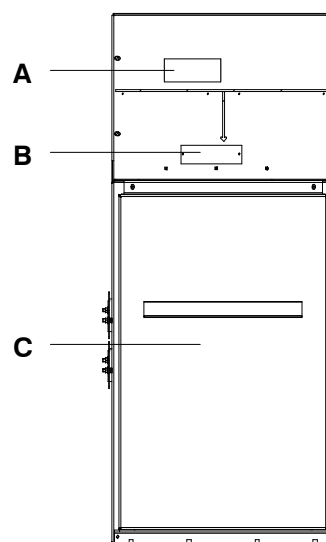
busbar connection function

Exemple presented : DE–O

A : characteristics plate

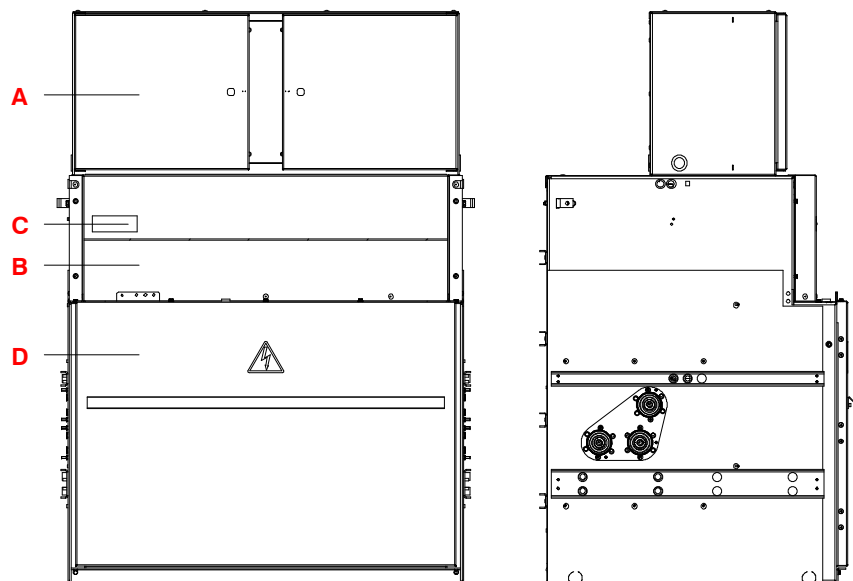
B : rating plate

C : access panel to controlled
field busbars



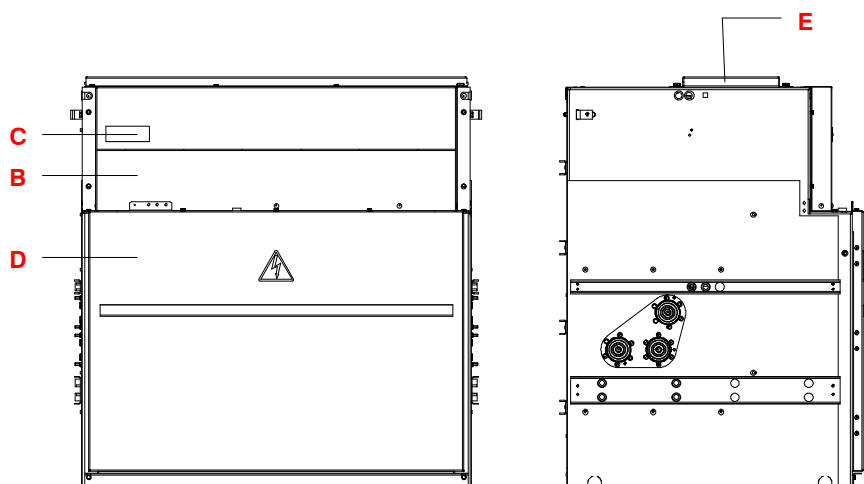
metering cubicle with LV compartment

- A** : LV compartment
B : voltage transformer access
panel
C : characteristics plate
D : access panel to current
transformer



without LV compartment

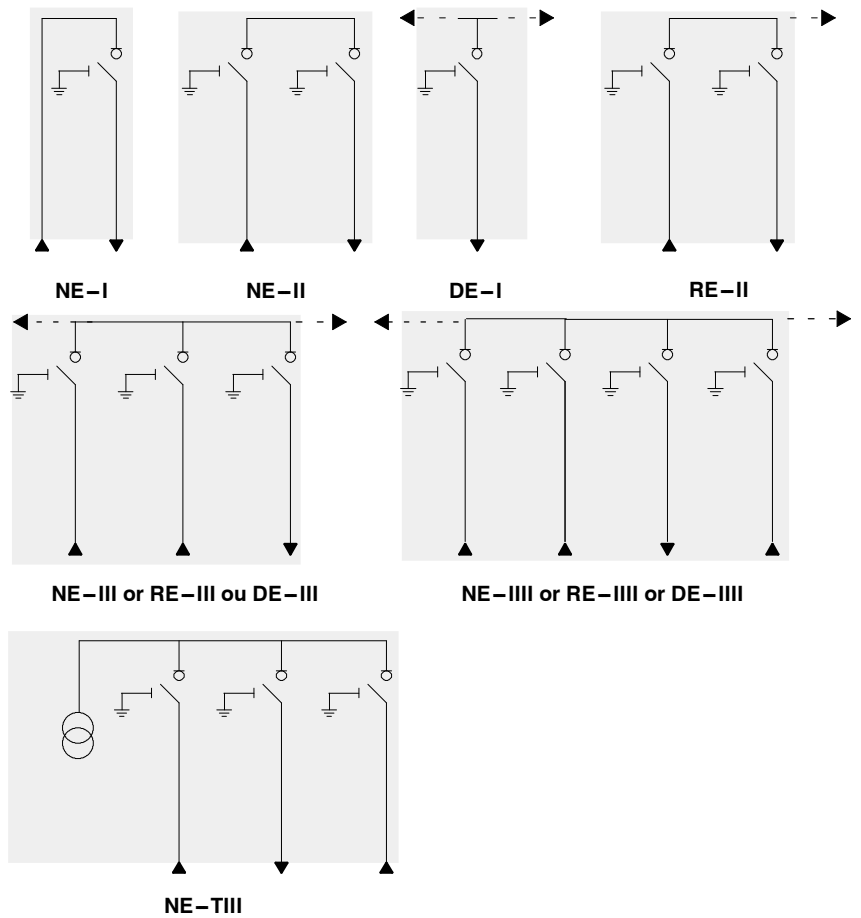
- B** : voltage transformer access
panel
C : characteristics plate
D : access panel to current
transformer
E : LV compartment



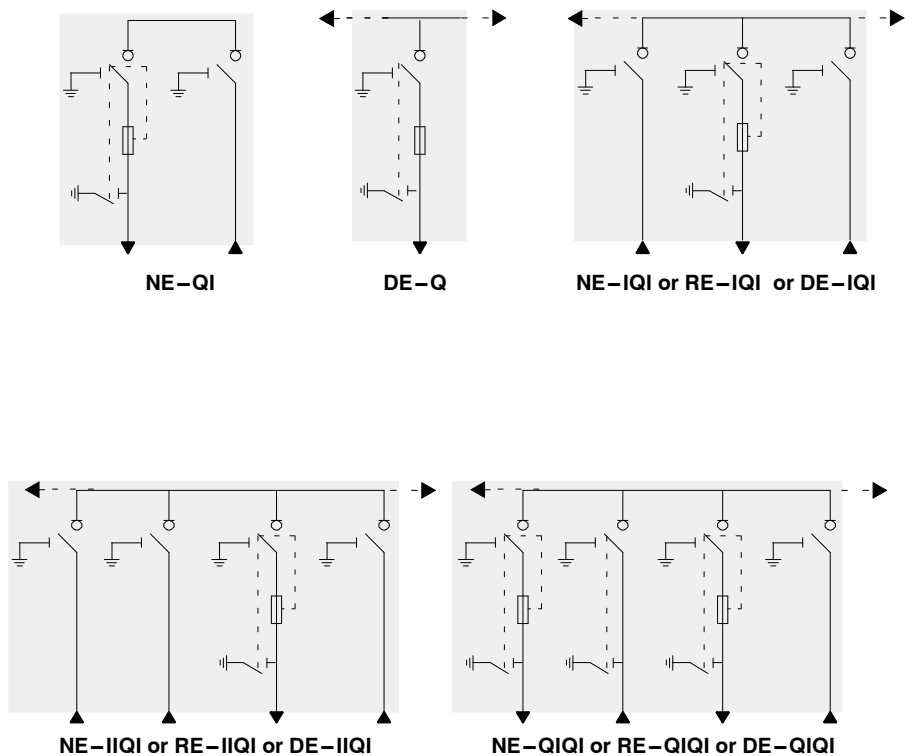
single-line diagrams

network switch

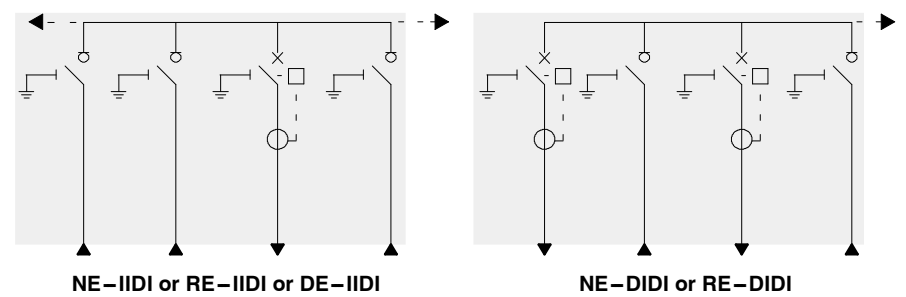
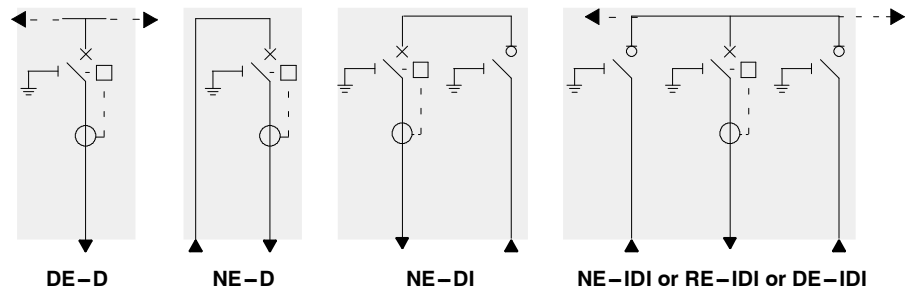
NE: no extensible
RE: right extensible
LE: left extensible
DE: double extensible



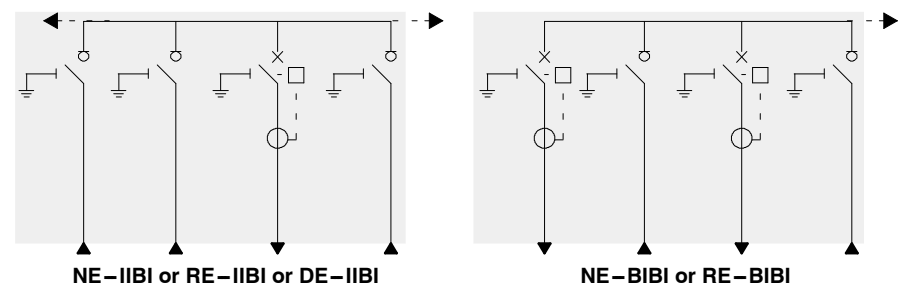
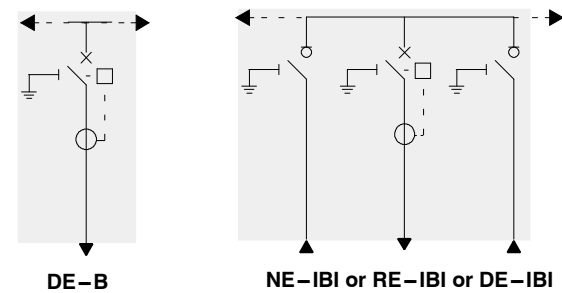
transformer protection by fuse-switch combination



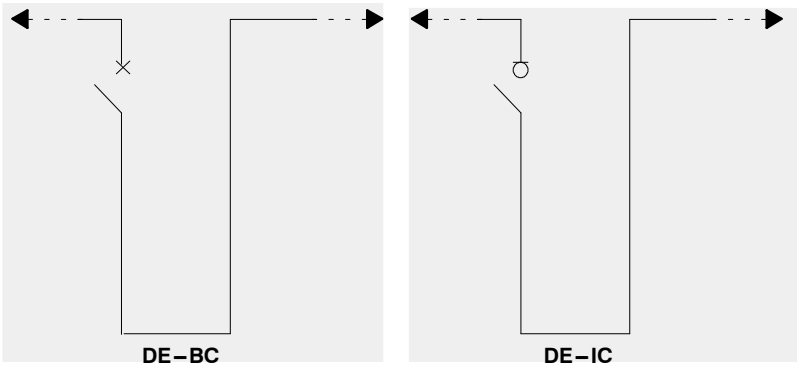
**transformer protection by
circuit-breaker**



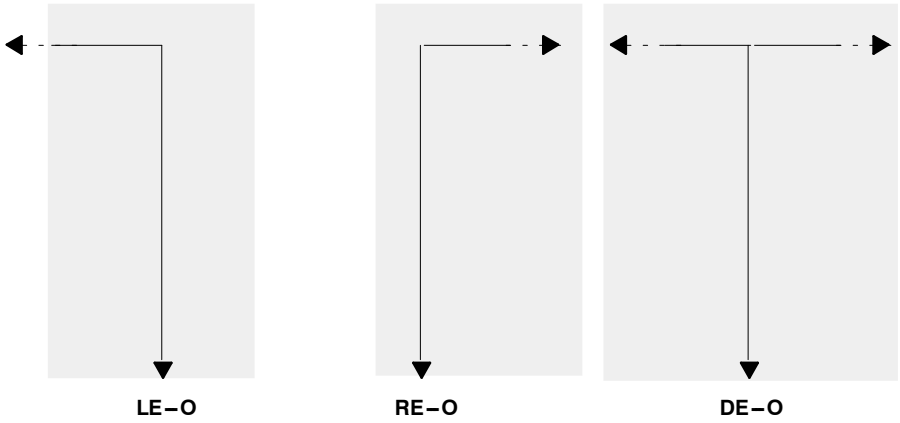
**line protection by
circuit-breaker**



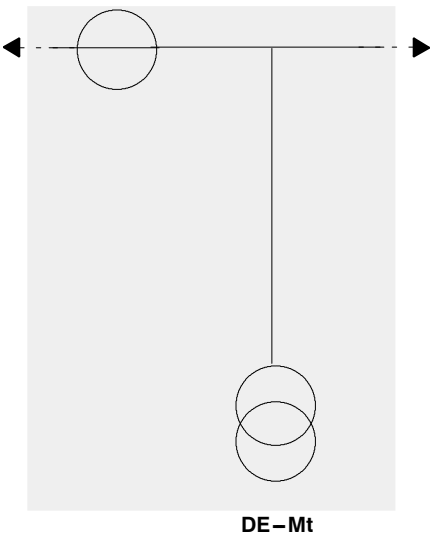
**"switchboard coupling"
switch and circuit breakers**



busbar connection

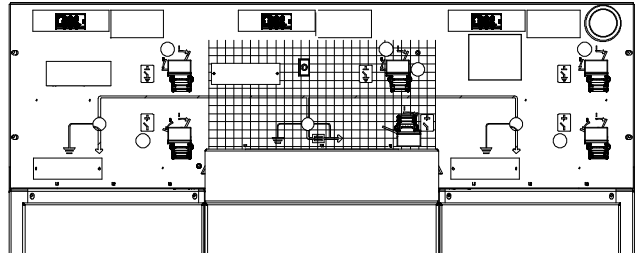


metering cubicle



instructions for putting the RM6 into operation

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



Energised RM6 unit.

unit with manometer

Case 1:
needle in green zone

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

Case 2:

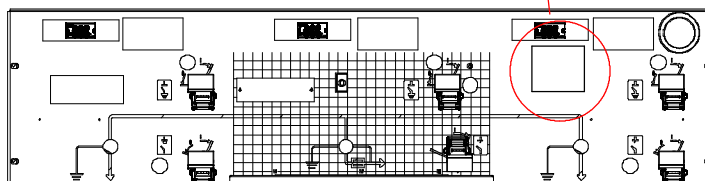
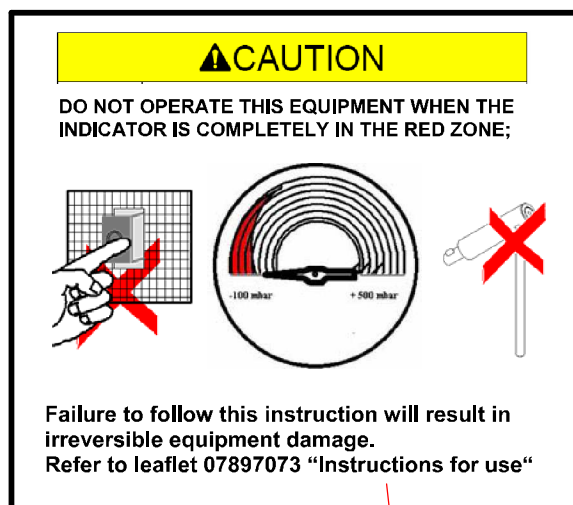


needle in red zone

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

warning label

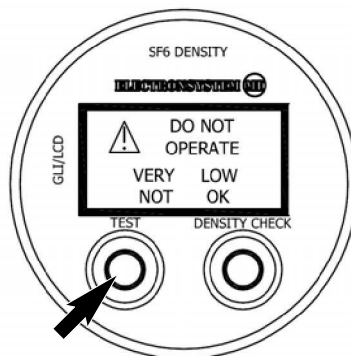
recalls the safety rules



unit with pressure switch

LCD display check

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



- 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.

- Contact the after sales service.

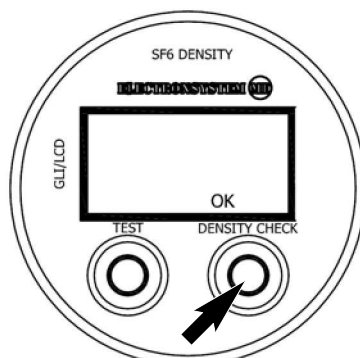
www.schneider-electric.com

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

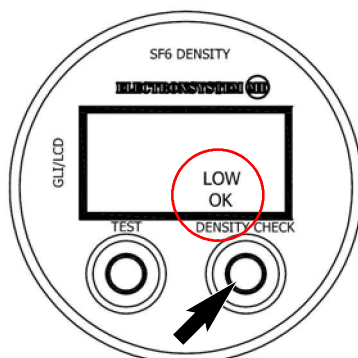
Press the "DENSITY CHECK" button. The LCD screen displays:

Case 1: OK



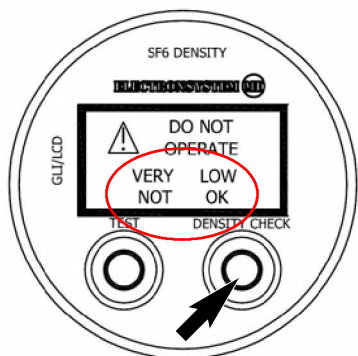
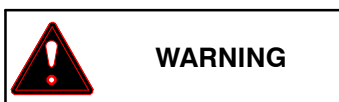
- The **RM6** unit is operating normally.

Cas n°2 : LOW / OK



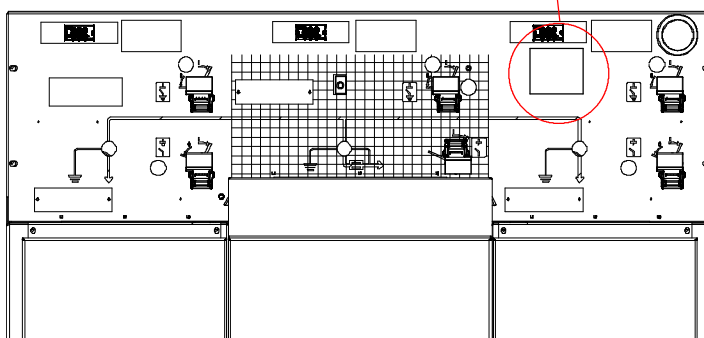
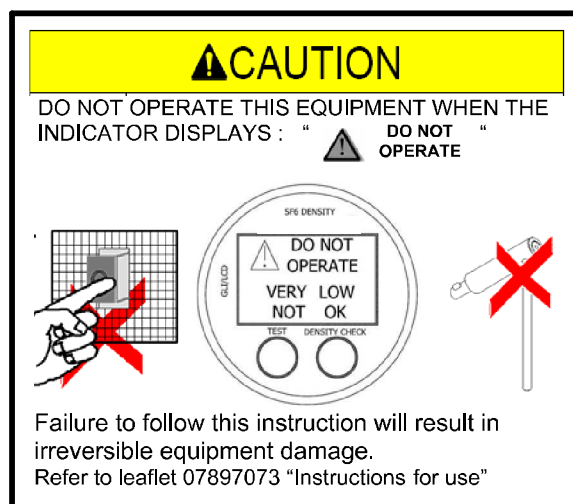
- The **RM6** unit must be replaced.
- It can remain energised until replacement.
- All operations can be performed while energised.

Case 3: VERY LOW / NOT OK

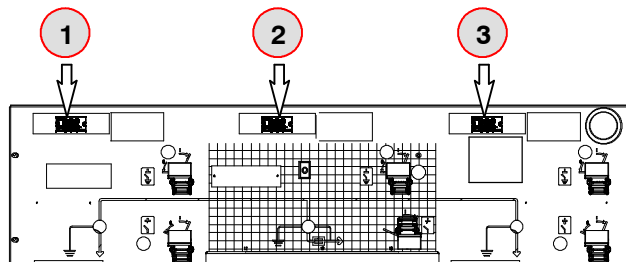


- The **RM6** unit must be replaced urgently.
- It can remain energised until replacement.
- **All opening or closing operations are forbidden.**
- To replace the RM6, power off the unit.

warning label
recalls the safety rules



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



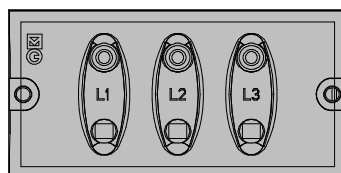
1 and 3 : voltage presence on network cables.

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

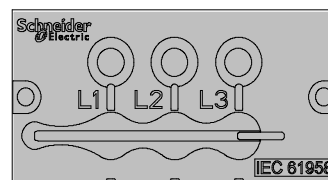
VPIS

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



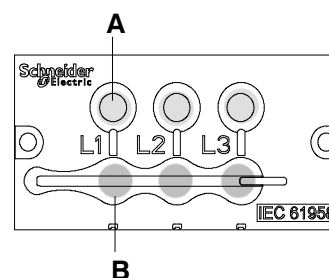
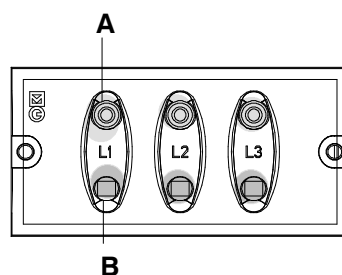
WARNING

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



INFORMATION

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

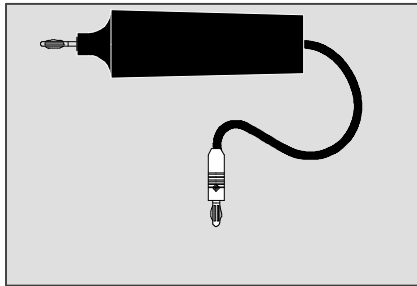
Phase concordance testing for VPIS–V1 and VPIS–V2 must be carried out each time a cable is connected to a functional unit.

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

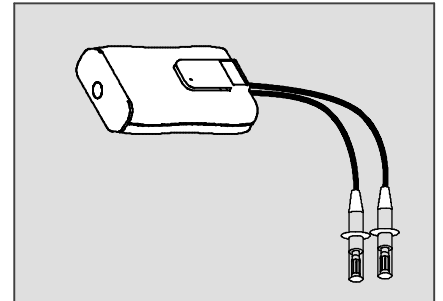
principle

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

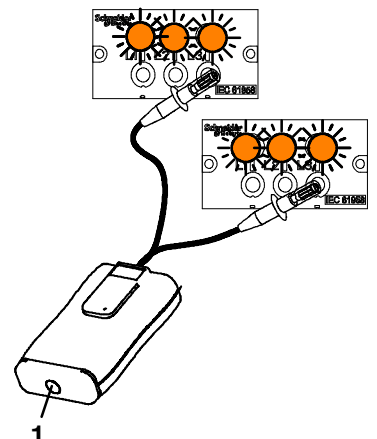
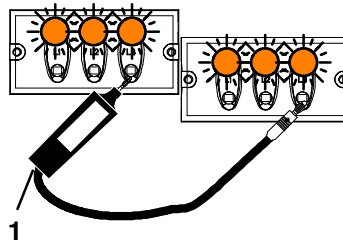
IT IS IMPOSSIBLE TO CARRY OUT A PHASE CONCORDANCE TEST WITH 2 VPIS OF DIFFERENT TYPES

Balanced phases :

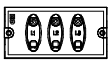
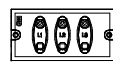
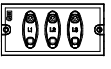
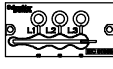
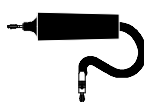
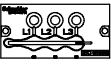
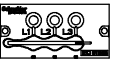
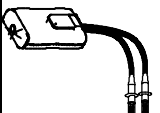
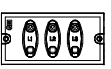
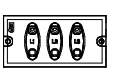
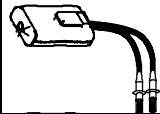
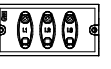
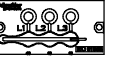
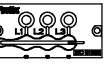
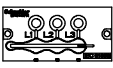
–the phase concordance unit light (1) is unlit.

Unbalanced phases :

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

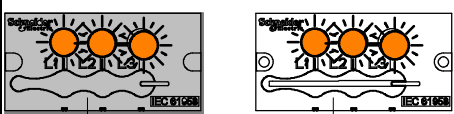
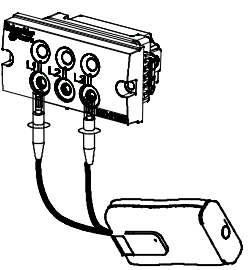


rules for choosing phase concordance unit

phase concordance unit	functional unit 1	functional unit 2	compatibility result	corrective actions
	V1 	V1 	OK	
	V1 	V2 	~~OK~~	Replace VPIS–V1 by VPIS–V2 . Use a phase concordance unit V2 .
	V2 	V2 	~~OK~~	Use a phase concordance unit V2 .
	V1 	V1 	~~OK~~	Replace VPIS–V1 units by VPIS–V2 units OR test with 1 phase concordance unit V1 .
	V1 	V2 	~~OK~~	Replace VPIS–V1 with VPIS–V2
	V2 	V2 	OK	

check before phase concordance test

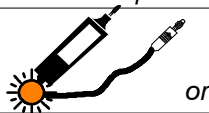
Please refer to the previous chapters in the event of test malfunctioning.

TEST	RESULT		ACTION
 1 Visual checking of the indicator lights on the VPIS units of functional unit 1 and of functional unit 2	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.
Phase concordance unit check choice  On each functional unit test phases 1 and 3.	functional unit 1 	functional unit 2 	You can test.
	  	  	You cannot test them. The choice of the phase concordance unit is wrong or it is not functioning correctly.

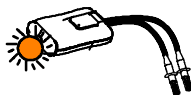
phase concordance test

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



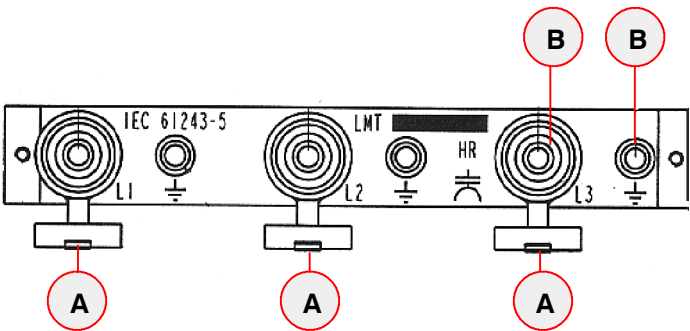
LED unlit

Functional unit n°2					
Functional unit n°1		L1	L2	L3	Conclusion regarding phase concordance
	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



instructions for using the
interface



accessories usable at the
interface

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

It complies with standard
IEC 61243-5.

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.

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



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.

The reliability of the information
provided is guaranteed only by
use of accessories conform to
standard **IEC 61243-5**:

choosing the HV fuses

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

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

- Various fuse types with striker with average energy can be fitted :

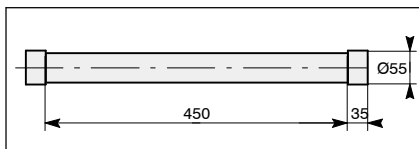
–as per standard UTE NFC 13.100, UTE NFC 64.210 of the Soléfuse type.

–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)

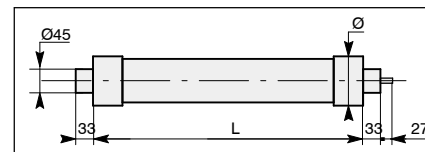


rated voltage rating (kV)	rating to (A)
7,2 à 24	6,3 à 63



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
	125	442	86
24	10 à 20	442	50,5
	25 à 40	442	57
	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
reference 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.

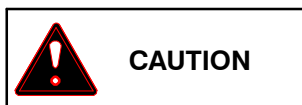
Please consult us.

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

In this case of an overload beyond 40°C , please consult us.

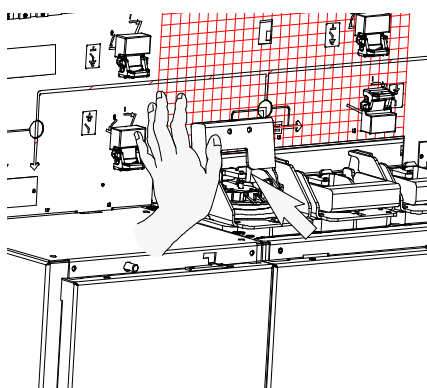
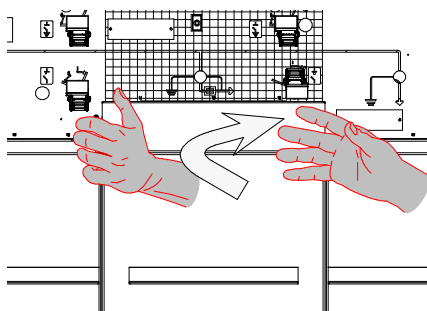
fuse type	operating voltage (kV)	Transformer rating (kVA)																Rated voltage (kV)
		50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	
Solefuse (norme UTE NFC : 130.100, 64.210)																		
	5,5	16		31,5	31,5	63	63	63	63	63								7,2
	10			16	16	31,5	31,5	31,5	63	63	63	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			
Fusarc CF et SIBA (*) (General case, IEC 60282 – 1, standard CEI62271 – 105 (to replace IEC 60420) and DIN 43625 standard)																		
	3	20	31,5	40	50	50	63	80	100	125*	160"							12
	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"				
	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

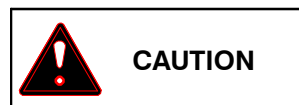


CAUTION

Before performing these operations, close the earthing switch.



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).

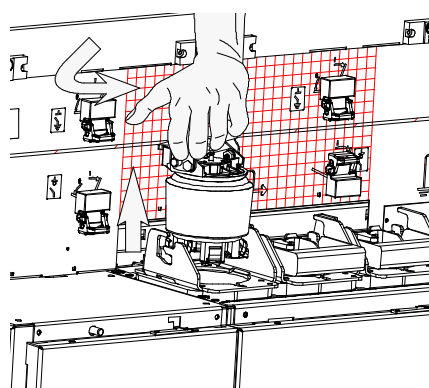


CAUTION

Repeat the operations below for all 3 fuses.

To remove the cover: lift it and pull it towards you.

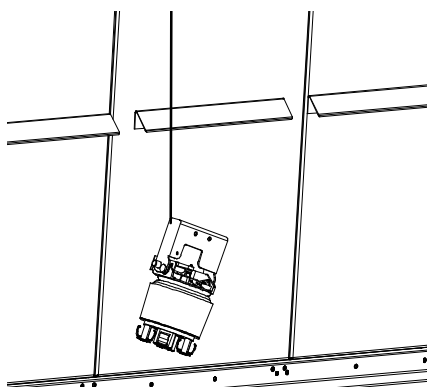
The instructions are visible on the cover.



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



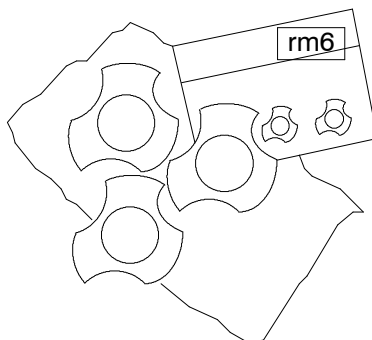
To clean the plugs, consult the **preventive maintenance** section.



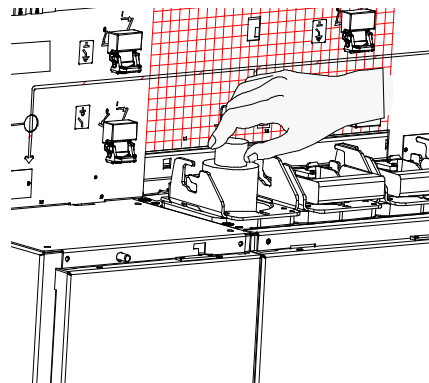
Let the plug hang.
Ensure the plugs are clean before fitting them.

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.



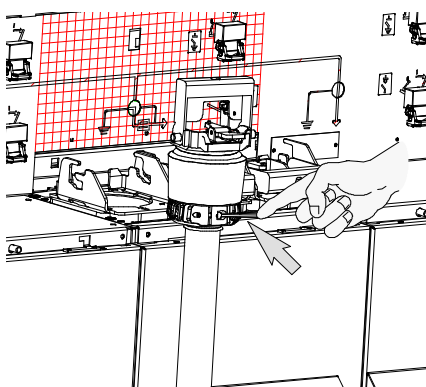
Insert the fuse in the compartment. Fit the centring device on the fuse. Insert the plug pins in the plinth and swivel it round to the right.

fitting an UTE fuse (Solefuse)



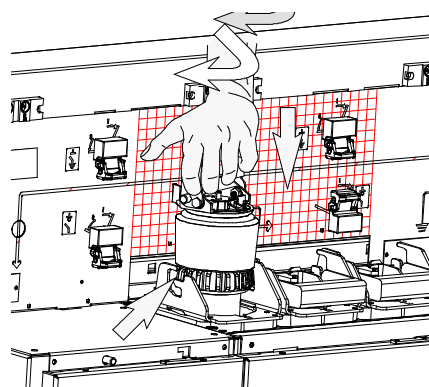
CAUTION

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.

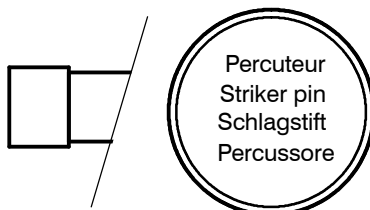
Press to insert the assembly in the downstream clamp.

direction for mounting a fuse with striker

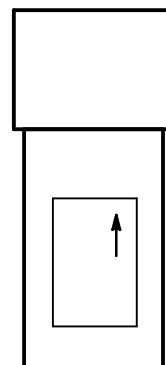


CAUTION

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

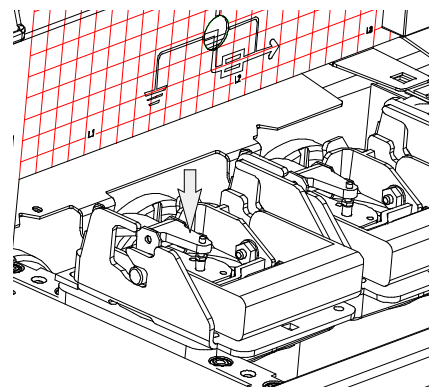
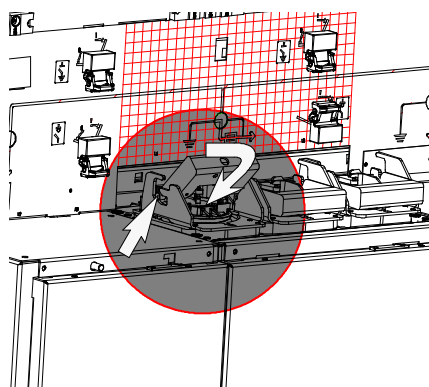


The end of the fuse equipped with the striker is marked.



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

locking the plug



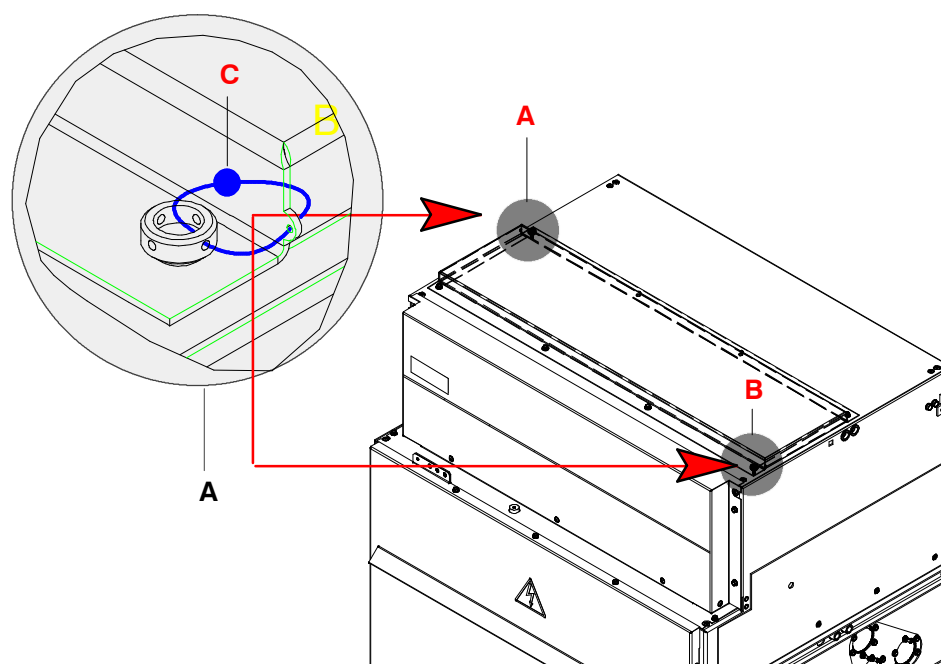
Plug with fuse blowing release,
used to cause three-phase
opening of the switch.

Press the switch to position it.

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

sealing of DE-Mt cubicle without LV compartment

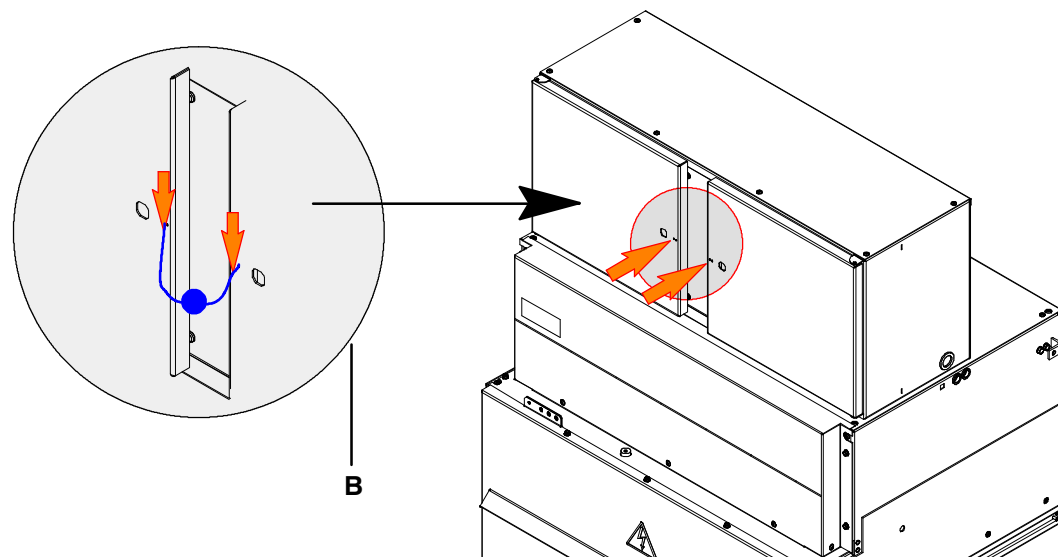
- A : rear sealing
- B : front sealing
- C : seal + wire; steel



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.

setting the VIP–30/VIP–35 relays

The RM6 circuit–breakers are equipped with a fully autonomous protection channel requiring no auxiliary source of supply.

Phase protection:

Phase protection is provided by an inverse time threshold which trips on 1.2 times operating current.

Is : operating current is directly set according to transformer rating and operating voltage.

Earth protection:

the earth fault protection is provided by measurement of residual current performed from the sum of the secondary currents of the sensors.

IO : earth current threshold is set according to the network technical data.

setting value of the phase operating current Is

operating voltage	power transformer (kVA)																		rated voltage (kV)
	50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2900	3000	
3	10	15	20	25	36	45	55	68	80	140	140	170	200						12
3,3	10	15	18	22	28	36	45	56	70	90	140	140	200						
4,2	8	12	15	18	22	28	36	45	56	70	90	140	140	200					
5,5		8	12	15	18	22	28	36	46	55	68	90	140	140	200				
6			10	12	18	20	25	36	46	55	68	80	140	140	200	200			
6,6			10	12	15	18	22	28	36	45	56	70	90	140	140	200			
10				8	10	12	15	20	25	30	37	55	68	80	140	140	170	200	
11					10	12	15	18	22	28	36	45	55	68	90	140	140	170	
13,8					8	10	12	15	18	22	28	36	46	55	68	90	140	140	24
15						8	10	15	18	20	25	36	45	55	68	80	140	140	
20							8	10	12	15	20	25	30	37	55	68	80	140	
22							8	10	12	15	18	22	28	36	45	55	68	80	

VIP 30 HV/LV transformer protection

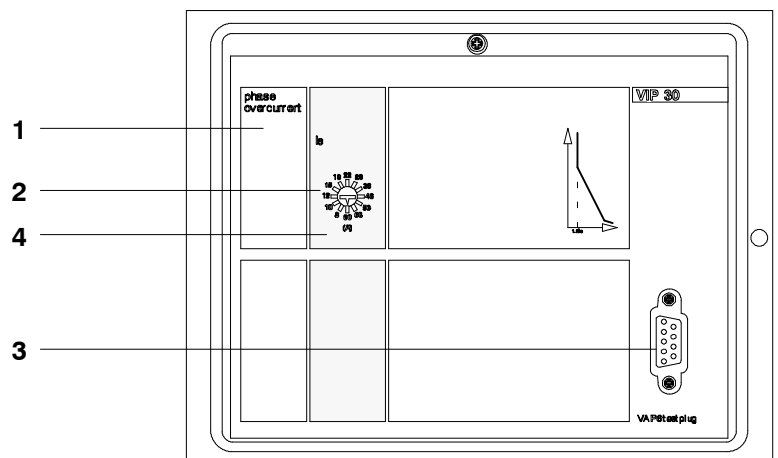
inverse time phase–to–phase fault protection

1 : phase protection zone.

The elements concerning phase protection are grouped in the top half of the front face.

2 : courant de service Is.

Setting is directly in amperes (primary current). Time delayed tripping takes place as from 1.2 times operating current Is.



3 : Test receptacle with the VP6 portable box.

This receptacle is used for simple, fast testing of the relay.

4 : Plate marked with the selector switch graduations Is.

(printed on both sides)

1) 8–80 A

2) 20–200 A

changing rating
of the VIP 30



CAUTION

Perform the suitable cabling
for the rating, as in the diagram
below.

The sensor used has two ratios
at its outlet.
– S1 – S2 ratio 200/1
– S1 – S3 ratio 500/1

Turn over the two–side graduated
plate of selector switch **Is**
(found behind the transparent part
of the front face) and extract it from
the top using the hole on its top
part.

cabling for 8 to 80 A
with ratio 200/1

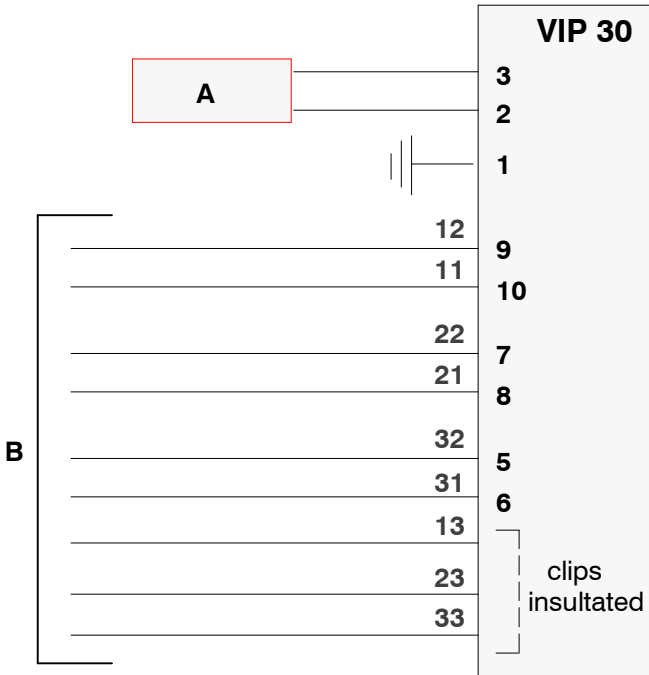
A : shutter release (mitop)
B : wiring coming from the sensors



CAUTION

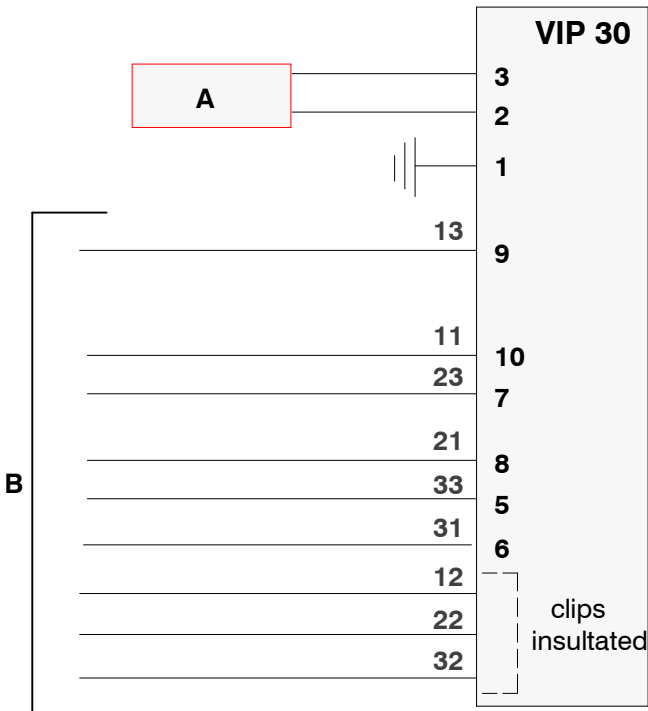
In order for the CB to work
correctly, choose the CT in
accordance with the VIP.

The **VIP30** and **VIP35** work
with the corresponding CT (CRc)
only.



cabling for 20 to 200 A
with ratio 500/1

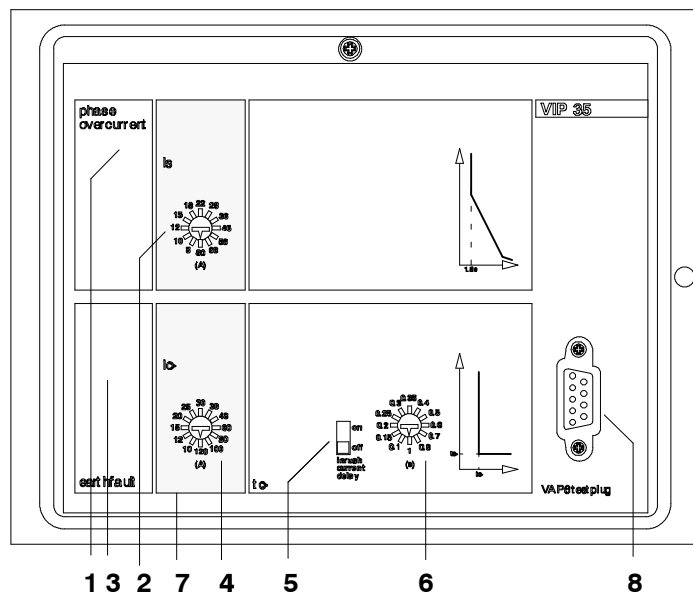
A : shutter release (mitop)
B : wiring coming from the sensors



VIP 35 HV/LV transformer protection

Inverse time phase-to-phase
fault protection.

Independent time earth fault
protection.



1 : phase protection zone:

The elements concerning phase protection are grouped in the top half of the front face.

2 : operating current I_s .

Setting is directly in amperes (primary current).

Time delayed tripping takes place as from 1.2 times operating current I_s .

3 : earth protection zone

The elements concerning earth protection are grouped in the bottom half of the front face.

4 : earth protection threshold I_o .

Setting is directly in amperes.

5 : Energising time delay.

This selector switch starts up an energising time delay (1s).

The purpose of this time delay is to prevent tripping by the earth protection on circuit-breaker closing. It is only active on the earth protection.

– in OFF position:

The energising time delay is not in operation. Earth protection operates as per the setting of selector switch (6).

– in ON position:

The energising time delay is in operation. In this case when the circuit-breaker closes, tripping by the earth protection is time delayed by 1s.

When the VIP 35 is supplied for more than one second, the protection is time delayed as per setting (6).

Starting up the energising time delay.

If the time delay setting is less than the values given in the table, start up the energising time delay.

threshold I_o > . time delay to > .

0,8 to 0,9 I_a	0,2 s
0,6 to 0,8 I_a	0,3 s
0,2 to 0,4 I_a	0,4 s
0,4 to 0,6 I_a	0,5 s

I_a : nominal current of the transformer to be protected.

6 : time delay of the earth protection to > .

The earth protection time delay is set in seconds.

7 : plate marked with selector switch graduations.

I_s and I_o (printed on both sides).

1) 8–80 A

1) 20–200 A

8 : Test receptacle with the VAP 6 box.

This receptacle allows simple, fast testing of the relay.

changing rating of the VIP 35



CAUTION

The sensor used has two ratios at its outlet.

- S1 – S2 ratio 200/1
- S1 – S3 ratio 500/1

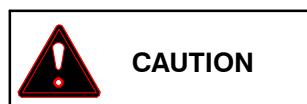
Turn over the two-side graduated plate of selector switch **Is** (found behind the transparent part of the front face) and extract it from the top using the hole on its top part.

Perform the suitable cabling for the rating, as in the diagram below.

cabling for 8 to 80 A with ratio 200/1

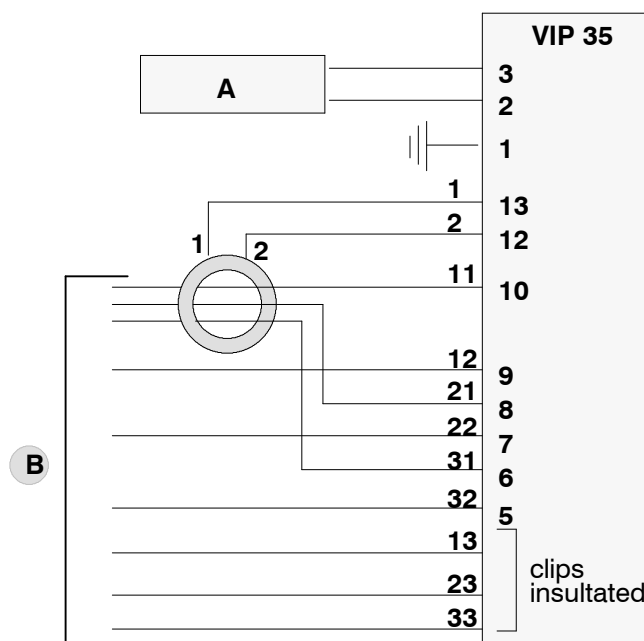
A : shutter release (mitop)

B : wiring coming from the sensors



CAUTION

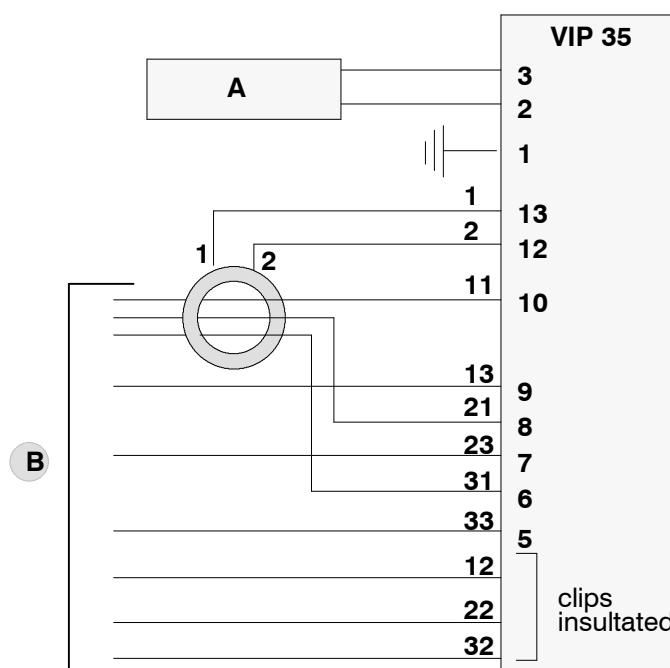
In order for the CB to work correctly choose the CT in accordance with the VIP.
The **VIP30** and **VIP35** work with the corresponding CT (cRc) only.



cabling for 20 to 200 A with ratio 500/1

A : shutter release (mitop)

B : wiring coming from the sensors



setting the VIP 300 relay

phase protection

Phase protection has two separately adjustable thresholds.

$I >$: low threshold can be chosen with independent or dependent time.

The dependent time curves comply with standard **IEC 255-3** and are of the inverse, very inverse and extremely inverse type.

$I > >$: high threshold is with independent time.

earth protection :

Earth fault protection is provided by measurement of residual current from the sum of the secondary currents of the sensors.

Just like phase protection, earth protection has two separately adjustable thresholds:

$I0 >$: low threshold

$I0 > >$: high threshold

VIP 300 HV network protection

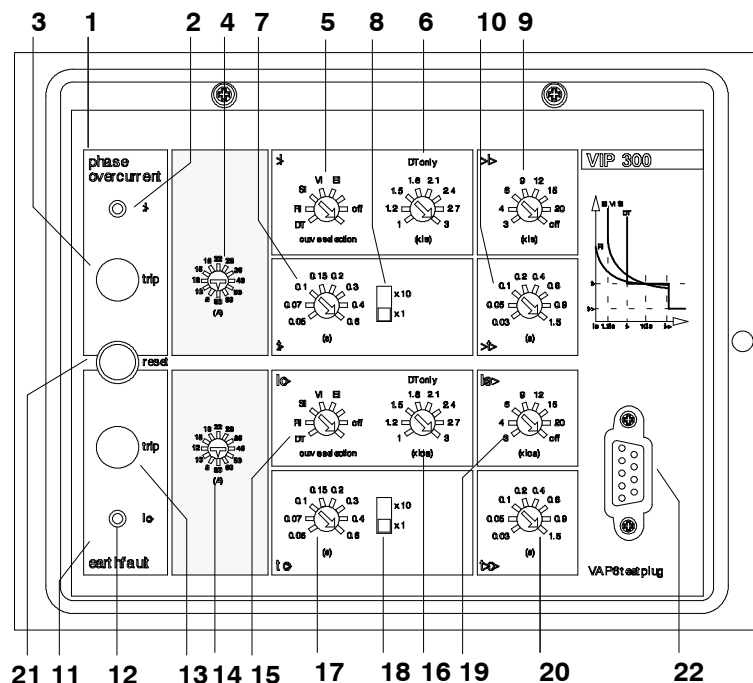
Phase-to-phase fault protection.

Earth fault protection.

Protections have two thresholds:

– low threshold with independent, dependent and specific time

– high threshold with independent time



1 : phase protection zone.

The elements concerning phase protection are grouped in the top half of the front face.

2 : threshold overshoot indicator.

When this red indicator flashes, then the time delay of the phase protection low threshold is in progress.

In this case, if the current does not decrease, the relay will trip.

– for curves with dependent time (**SI**, **VI**, **EI**), it comes on if the current is greater than 1.2 operating current I_s .

– for the curve with dependent time **RI**, it comes on if current is greater than the setting I_s .

– for the curve with independent time **DT**, it comes on when the low threshold is overshoot.

3 : tripping indicator.

It is normally black and turns yellow to indicate that the phase protection has tripped.

It maintains its status even when the relay is no longer supplied.

4 : choosing operating current I_s .

Setting is directly in amperes.

5 : choosing the type of low threshold curve.

DT (definite time)

SI (inverse time)

VI (very inverse time)

EI (extremely inverse time)

RI (specific curve)

OFF (low threshold is inhibited)

6 : choosing the low threshold $I >$.

The threshold is set in multiples of operating current. This setting is only active for the threshold with independent time (selector switch 5 on **DT**). For the other curves, this selector switch has no effect.

7 : setting the low threshold time delay $t >$.

If the tripping threshold is at independent time (**DT**), this selector switch sets the low threshold time delay.

If the curve is at dependent time for a current (**RI**, **SI**, **VI**, **EI**), the value displayed is the tripping time for a phase current equal to 10 times operating current.

8 : low threshold time delay multiplier.

In position x10, the time delay displayed on selector switch 7 is multiplied by 10.

**9 : setting the top threshold
I>>.**

The top threshold is chosen in multiples of operating current. In the "OFF" position, the top threshold is disabled.

**10 : setting the top threshold
time delay t>>.**

The time delay is set directly in s.

11 : earth protection zone.

The elements concerning earth protection are grouped in the bottom half of the front face.

**12 : threshold overshoot
indicator.**

When this red indicator flashes, then the time delay of the earth protection low threshold is in progress.

In this case, if the current does not decrease, the relay will trip.

– for curves with dependent time (**SI, VI, EI**), it comes on if the current is greater than 1.2 operating current **I_s**.

– for the curve with dependent time **RI**, it comes on if current is greater than the setting **I_s**.

– for the curve with independent time **DT**, it comes on when the low threshold is overshoot.

13 : tripping indicator.

It is normally black and turns yellow to indicate that the phase protection has tripped.

It maintains its status even when the relay is no longer supplied.

14 : choosing setting current I_{os}.

Setting is directly in amperes.

**15 : choosing the type of low
threshold curve.**

DT (definite time)

SI (inverse time)

VI (very inverse time)

EI (extremely inverse time)

RI (specific curve)

OFF (low threshold is inhibited)

**16 : choosing the low threshold
I₀>**

The threshold is set in multiples of setting current.

This setting is only active for the threshold with independent time

**17 : setting the low threshold
time delay to>.**

– If the tripping threshold is at independent time (**DT**), this selector switch sets the low threshold time delay.

– If the curve is at dependent time for a current (**RI, SI, VI, EI**), the value displayed is the tripping time for a phase current equal to 10 times operating current.

**18 : low threshold time delay
multiplier.**

In position x10, the time delay displayed on selector switch 17 is multiplied by 10.

**19 : setting the top threshold
I₀>>.**

The top threshold is chosen in multiples of setting current **I_{os}**.

In the "OFF" position, the top threshold is disabled.

**20 : setting the top threshold
time delay to>>;**

The time delay is set directly in s.

21 : resetting the indicators.

This button is accessible when the transparent cover is closed. Pressing this pushbutton triggers two actions.

1) It resets the 2 tripping indicators. If the relay is no longer supplied, the indicators can be reset for roughly 48 hours. Beyond this period, resetting is possible once the VAP6 has been plugged in.

2) It trips ignition of the 2 red indicators (**3s**).

This means that the relay is supplied.

The relay self-tests are satisfactory.

This function allows brief testing of the relay.

**22 : Test receptacle with
the VAP 6 portable box.**

This receptacle is used for simple, fast testing of the relay.

changing rating of the VIP 300



CAUTION

Perform the suitable cabling
for the rating, as in the diagram
below.

Two types of sensors are used:

- **CRa** ratio 200/1.
- **CRb** ratio 500/1.

These sensors are mounted in the
factory and are customised on
ordering.

To change rating :

- Cable according to the rating.
- Turn over the two-side
graduated plate of the selector
switch **Is** and **Ios**.

This plate is found behind the
transparent part of the front face.
Extract it from the top using the
hole in the top part.

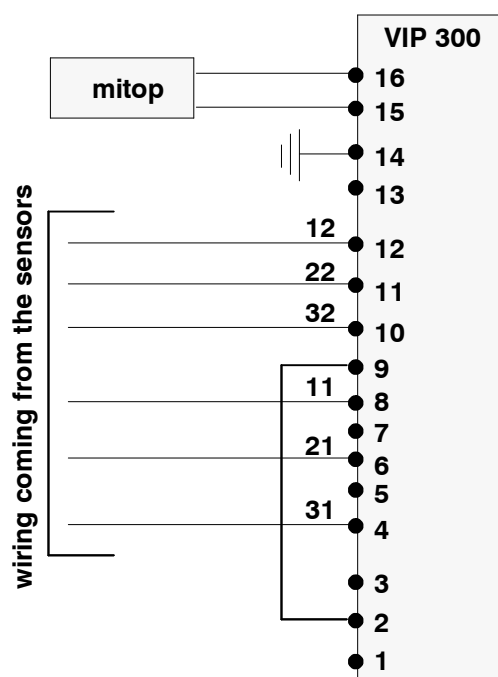
cabling for 10 to 50 A
with cRa sensors

cabling for 63 to 312 A
with cRb sensor



CAUTION

The **VIP300** works with
the corresponding CT
(cRa–cRb)only.
All incorrect association between
VIP/CT will cause the CB to
function incorrectly.

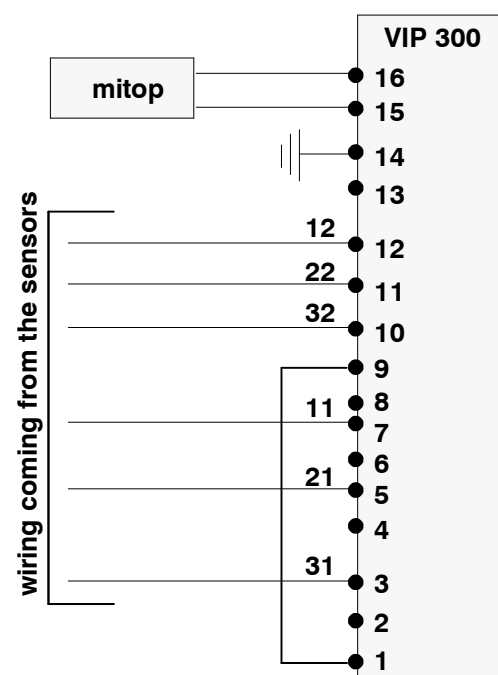


cabling for 40 to 200 A
with cRa sensors

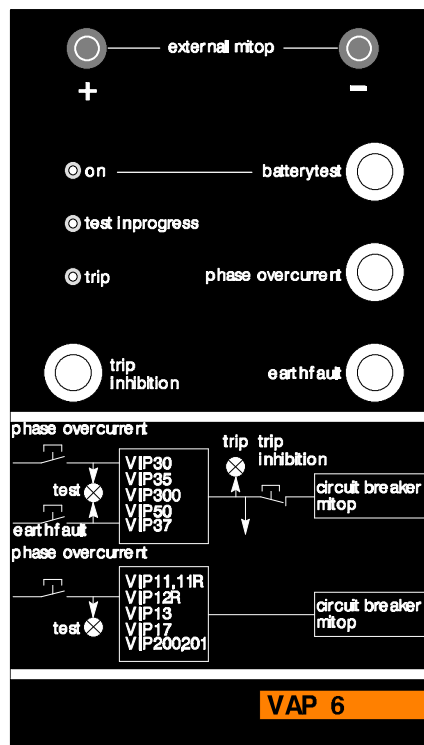
cabling for 250 A to 630 A
with cRb sensors



The VIP300 works with the
corresponding CT (cRa–cRb)
only.



VAP 6 test portable box



The portable box **VAP6** connected to the **VIP 30, 35 or 300** for simplified testing.

Testing is possible in the following 2 cases:

- the **VIP 30, 35 or 300** is already supplied by the sensors,
- the **VIP 30, 35 or 300** is not supplied.

In this case, the **VAP6** batteries supply the relay.

pushbuttons

battery test :

If the batteries are OK, the “on” indicator light comes on when this button is pressed.

trip inhibition :

Press this button if the **VIP** must be tested without tripping the circuit-breaker.

While this button is depressed, circuit-breaker tripping is inhibited, even if the tripping order is the result of a real fault.

phase overcurrent :

this ends the phase protection test stimulus.

Stimulus is equivalent to 20 times operating current I_s .

earth fault :

it sends the earth protection test stimulus.

Stimulus is equivalent to a current greater than the largest of the settings of threshold $I_{o>}$

(for the **VIP 30/35**) or 20 times the earth setting current I_{os} (for **VIP 300**).

indicator lights

on :

Indicates that the batteries are working.

Also comes on during the battery test by pressing “**battery test**”.

test in progress :

Confirms sending of test stimulus on the VIP.

trip :

Comes on when the **VIP 30/35** sends a tripping order (whether or not the circuit-breaker is inhibited).

Ignore this for the **VIP 300** test (it comes on intermittently when the **VIP 300** sends a tripping order, whether or not the circuit-breaker is inhibited).

sortie “external mitop”

This can be used to connect an auxiliary mitop, designed for example to stop a chronometer during operating tests.

This mitop is tripped at the same time as the circuit-breaker mitop. It is not inhibited by pressing on the “**trip inhibition**” button.

batteries

The batteries are normally put into and out of operation automatically when the **VAP6** is connected to a **VIP30, 35** or **300** as well as in the following cases:

- press the “**battery test**” pushbutton
- Open the box, to replace the batteries (4 screws on the bottom surface). Ensure you respect polarities (3 x 9V 6LR61 batteries).

VIP relay operating tests

test description

VIP 30/35 relays

- inject a stimulus to simulate a phase fault
- inject a stimulus to simulate an earth fault (**VIP 35**)
- check tripping

VIP 300 relay

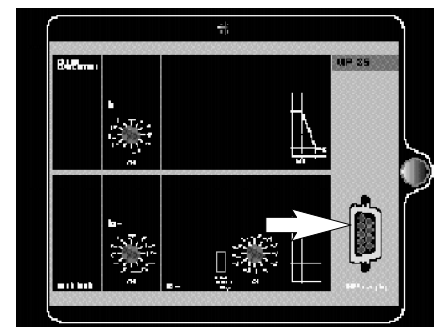
- start performing the self-tests on the **VIP 300** central processing unit
- inject a stimulus to simulate a phase fault
- inject a stimulus to simulate an earth fault
- check tripping.

performing the test

This test can be performed whether or not current is present in the sensors.

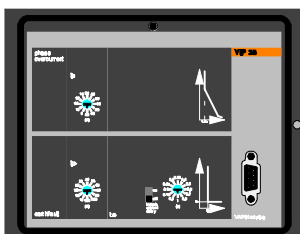
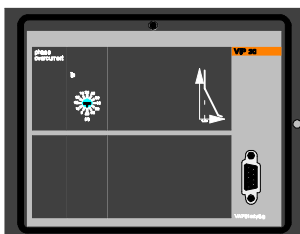
During test operations, all the settings of the **VIP 30/35 VIP 300** relays are performed. The relay should behave according to its settings.

During testing, the relay is always operational and will give a tripping order in event of a fault (except if the “*trip inhibition*” button is pressed;



Connect the **VAP6** to the “**VAP6 test plug**” connector. From then on, the **VAP6** batteries are working and its “on” indicator light is on.

testing the VIP30 and VIP35 relays



VAP 6

Press the “**trip inhibition**” button if the test has to be performed without circuit-breaker tripping.

Keep the “**trip inhibition**” button depressed throughout while the stimulus is being sent.

Press “**phase overcurrent**” to send the phase protection test stimulus.

- the “**test in progress**” indicator light on the **VAP6** comes on to confirm sending of the stimulus to the **VIP30/35** relay.

- the “**trip**” red indicator light of the **VAP6** comes on to indicate that the relay has tripped.

- the circuit-breaker trips if it is not inhibited.

If the “**phase overcurrent**” button is kept held down after tripping, the **VIP30/35** maintains its tripping order.

This operation is normal. In this case:

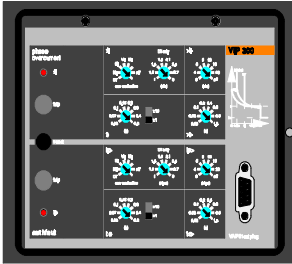
- the “**trip**” indicator light of the **VAP6** remains on.
- the circuit-breaker mitop is supplied by the tripping order.

Press “**earth fault**” to test the operation of the earth protection (**VIP35**).

The procedure is the same as for phase protection testing.

Unplug the **VAP6**. To save the batteries, do not leave it pointlessly plugged into the relay.

VIP300 relay test



VIP 300

Press “reset” on the **VIP300**.

- if the 2 “trip” indicators were yellow, they move to black.
- the 2 indicators I> and Io> come on for 3 seconds to indicate that the central processing unit has correctly performed its self-tests.

VAP 6

Press the “trip inhibition” button if the test has to be performed without the circuit-breaker tripping.

Keep the “trip inhibition” button depressed throughout while the stimulus is being sent.

Press “phase overcurrent” to send the phase protection test stimulus.

- keep the button depressed while the stimulus is being sent.
- the “test in progress” indicator light on the **VAP6** comes on to confirm sending of the stimulus to the **VIP300** relay.
- the red indicator light I> of the **VIP300** flashes during the time delay
- the “trip” phase tripping indicator of the **VIP300** moves to yellow.
- the circuit-breaker trips if it is not inhibited.

If the “phase overcurrent” button is kept held down after tripping, the **VIP300** resumes its time delay/tripping cycle.

This operation is normal :

- the “trip” red indicator light of the **VAP6** comes on briefly at each tripping
- the I> red indicator light of the **VIP300** may, according to the time delay setting, remain OFF or flash quickly.

Press “earth fault” to test earth protection operation.

The injected stimulus is equal 20 times setting current Ios.

the procedure is the same as for the phase protection test.

Unplug the **VAP6**. To save the batteries, do not leave it pointlessly plugged into the relay. operating instructions.

For further information on the Sepam series10, download the reference manual from our website:

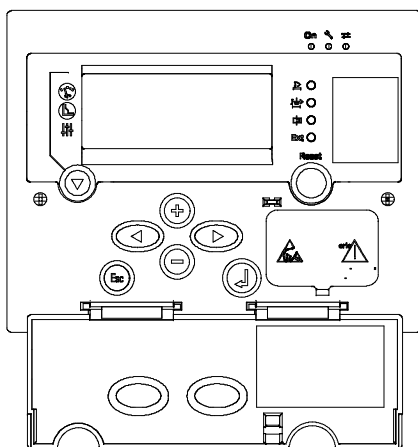
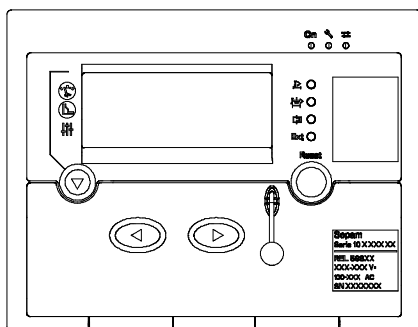
www.schneider-electric.com

Sepam series 10

protection of HV/LV transformers

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
Protection types				
Earth current maximum protection	Standard	50N/51N	☐	☐
	Very sensitive		☐	☐
Phase current maximum protection		50/51	☒	☒
Thermal overload protection		49RMS	☒	☒
Cold load pickup (low sensitivity of phase and earth current maximum protection settings)			☒	☒
Logic discrimination	Await logic emission	68	☒	☒
	Await logic reception		☒	
External tripping				☒
Measurements				
Measurement of earth current			☒	☒
Measurement of phase currents			☒	☒
Phase current maximum readings			☒	☒
Control and monitoring				
Circuit breaker tripping and rearmament locking		86	☒	☒
Trip signalling			☒	☒
Tripping circuit monitoring				☒
Circuit breaker remote control				☒
Recording of last fault			☒	
Recording of last 5 events				☒
Communication				
Modbus				☒
IEC 60870 – 5 – 103				☒

■ 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 ($I_{o>}$ and $I_{o>>}$)

- the lower threshold ($I_{o>}$) 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.
- the upper threshold ($I_{o>>}$) 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 $I_{>>}$)

- 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.
- 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:

- 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%)
- 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:

- simultaneous powering-up of all the loads in an installation.
- power transformer magnetising currents.
- 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 ($I_o >$ or $I_o >>$) 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:

- tripping discrimination in the event of a short-circuit between phases, or from phase to earth, for all network types
- 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:

- tripping due to I>, I>>, Io> or Io>>, thermal protection
 - tripping by external input
 - tripping circuit fault
 - circuit breaker opening and closing via the communication
 - 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:

- measurement readings,
 - status readings
 - event readings and time–stamped measurements (2 tables of 100 events available)
 - time setting and synchronisation
 - 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 10 A

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 10 B

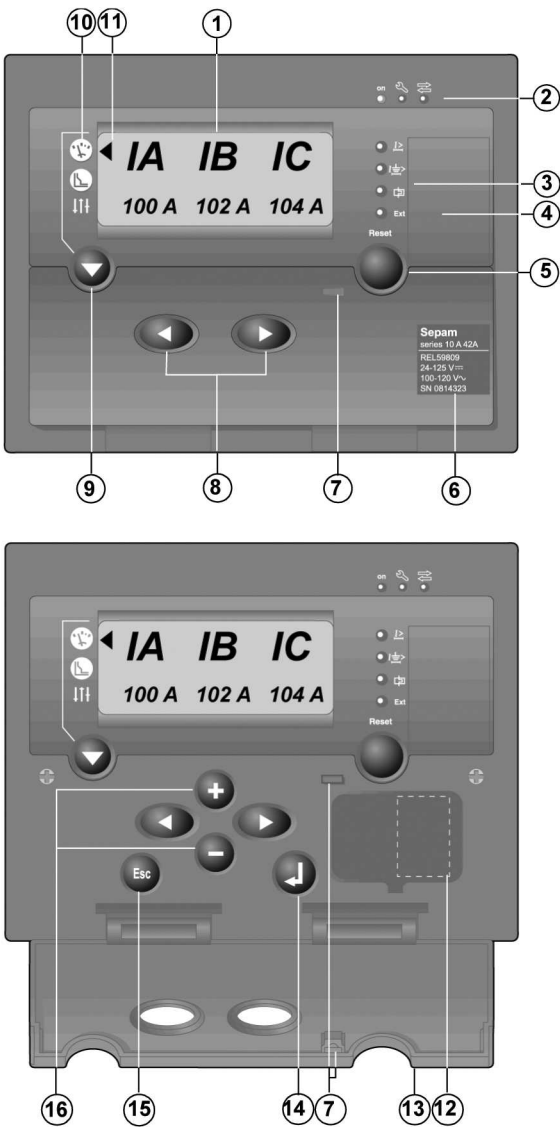
Relay outputs	Standard assignment	Configurable
O1	Circuit breaker tripping	Yes
O2	Locking of circuit breaker latching	Yes
O3	Trip signalling	Yes

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.

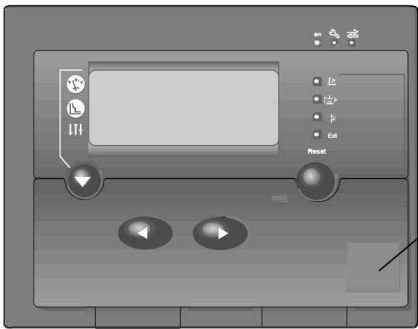
For the first 3 lamps, they may flash at a faster rate before the protection trips to signal the following information:

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



Sepam	
series 10 A 42A	①
REL59809	②
24-125V=	③
100-120V~	
SN 814323	④

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

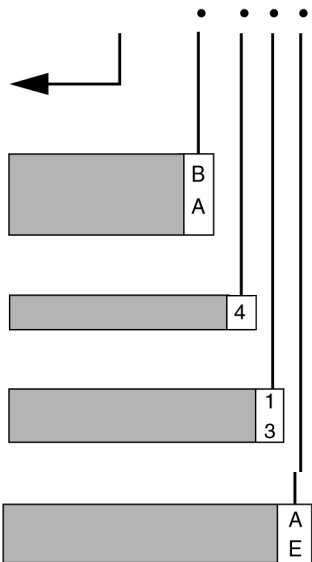
1: standard (0.1...24 In) CT

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

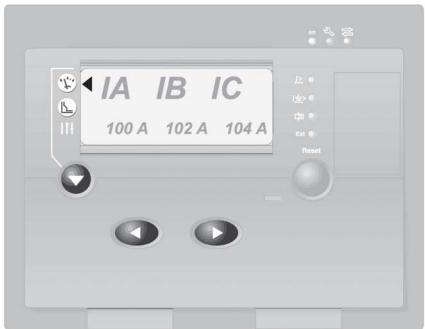


operating instructions
accessing information

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

- Reading of measurements, settings, protection types and parameters.
- Local fault signalling.
- Last fault resetting.
- Reading of last recorded faults.
- Resetting of maximum values.
- 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

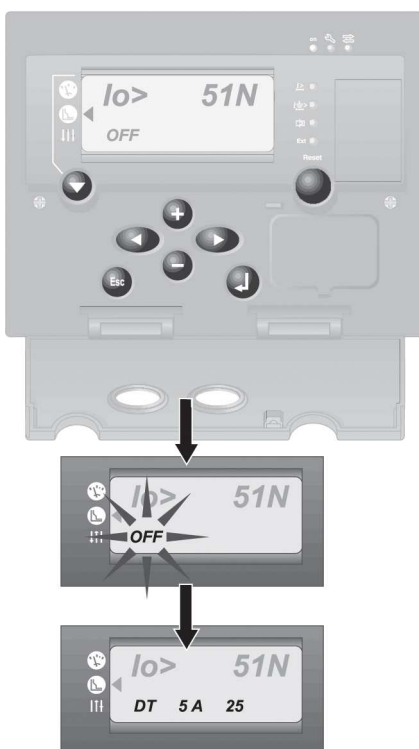


Knowledge of electrical network protection is required for choosing appropriate settings. Only those people with the required skills are authorised to set the Sepam.

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 **↓** to select the protection or parameter menu.

3. Select the protection type or parameter to be set using **←** and **→**.

4. Enter the password if requested.

5. Press **↓** to select the value to be modified.

6. The selected value flashes.

7. Press **+** or **-** to increment or decrement the value.

8. Press **↓** to validate the new value or press **Esc** to cancel.

9. The value stops flashing.

setting ranges

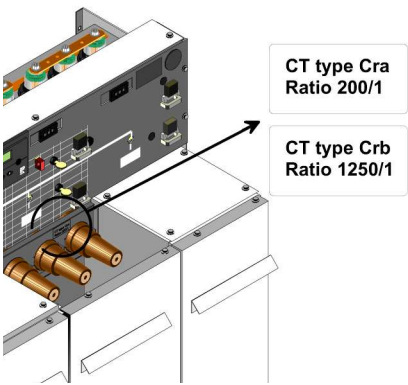
The setting ranges that can be used for the lower threshold depend on the circuit breaker type: **D** or **B**, and the type of sensors fitted to the RM6.

Circuit breaker type		D	B
Type of sensors		Cra 200/1	CRb 1250/1
Functions	Code ANSI		
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 (Io 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

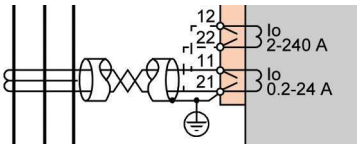
The factory set measurement range is 2–240A; this can be changed.

CALIBRE Io
2 - 240A

To change to the 0.2–24A range, you should:
1 – Bring up Io 0.2–24A in the RATING screen.

CALIBRE Io
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**.

ENTREES LOG

TENSION = DC

accessing phase current inputs

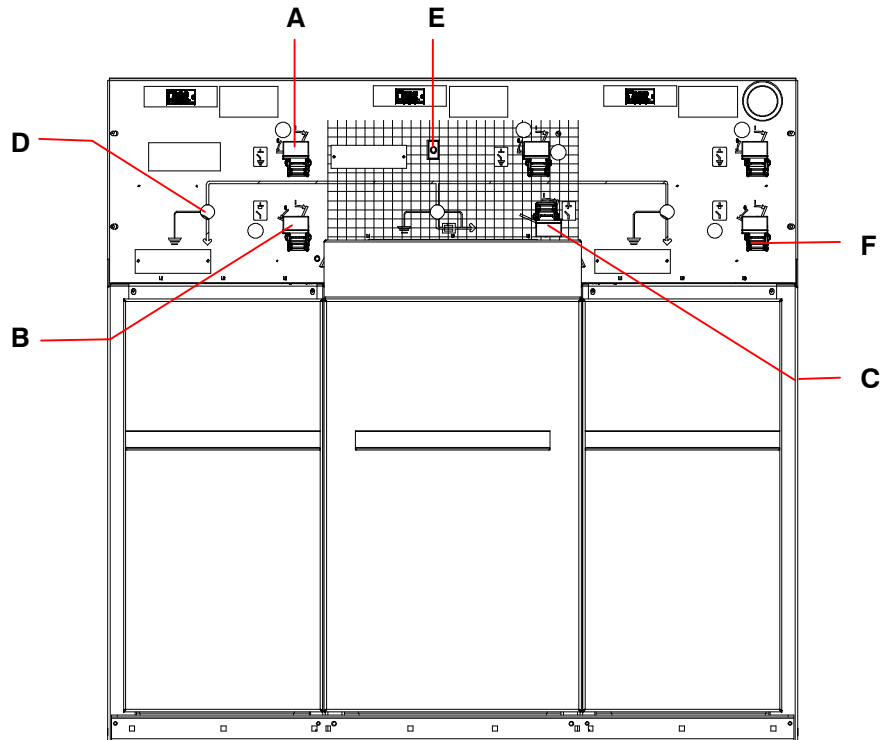
Connector **B** for connecting the current sensors is a short-circuiting connector. It can be disconnected on-load; disconnecting it does not open the sensors' secondary circuit. Remove the short-circuiting connector without disconnecting the wires connected to it. Use another connector to connect your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



operating and viewing substation condition

description

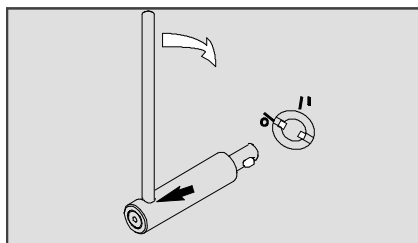
- A : earthing switch operating shaft
- B : switch function operating shaft
- C : fuse-switch combination function operating shaft
- D : position indicator
- E : fuse-switch combination function opening pushbutton
- F : padlocking handle



closing a switch

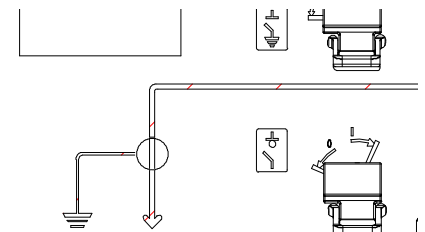
Initial state:

- switch open
- earthing switch open



Left the operating shaft protective cover.

Activate the switch operating mechanism to the right.

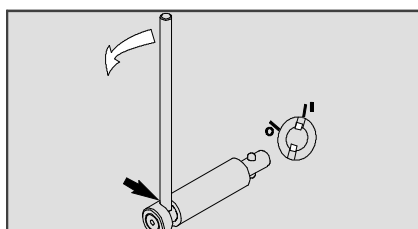


The indicator moves to the closed position, and access to the earthing switch operating shaft is blocked.

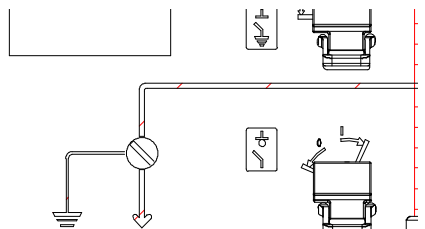
opening a switch

Initial state

- switch closed
- 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

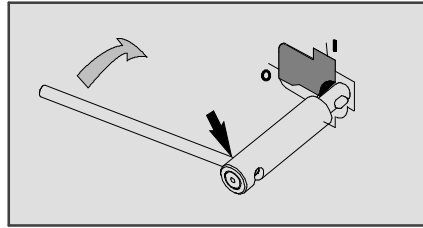
Initial state :

- earthing switch open
- switch or circuit-breaker open



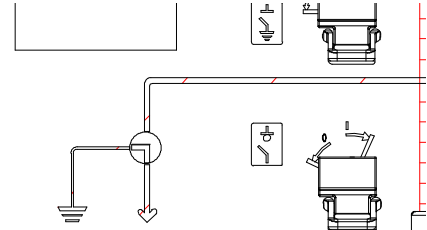
DANGER

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.

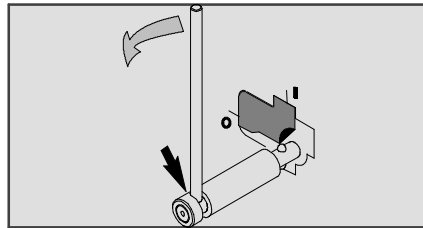


The indicator moves to the earth position and access to the earthing switch operating shaft is blocked.

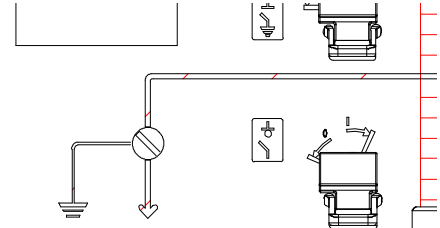
opening an earthing switch

Initial state :

- earthing switch closed
- switch or circuit-breaker open



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

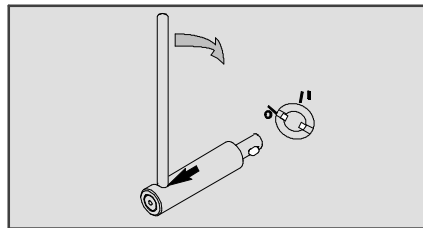


The indicator moves to the open position, and access to the switch or circuit-breaker operating shaft is freed.

closing a circuit-breaker or fuse-switch combination

Initial state :

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



Lift the operating shaft protective cover.

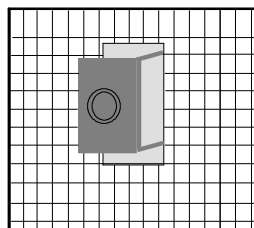
Activate the switch operating mechanism to the right.

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

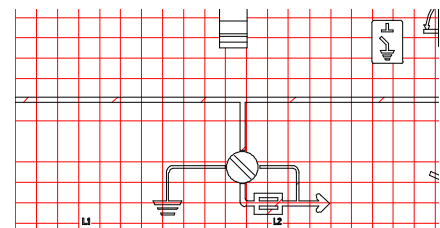
opening a circuit-breaker or fuse-switch combination

Initial state :

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

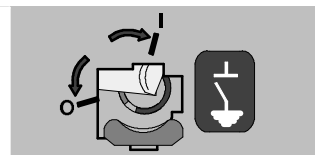
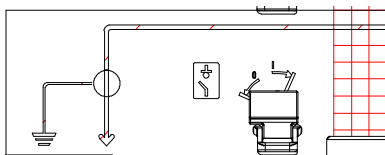


Press the opening pushbutton of the circuit-breaker or fuse-switch combination.



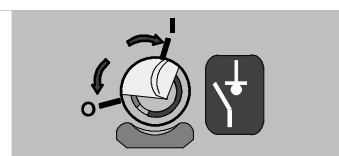
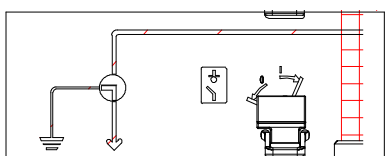
The indicator moves to the open position, and access to the earthing switch is freed.

operating safety



Switch or circuit-breaker closed...

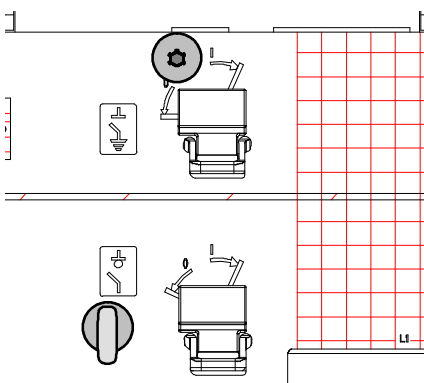
...the earthing switch is blocked.



Earthing switch closed...

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

key-locking (optional)

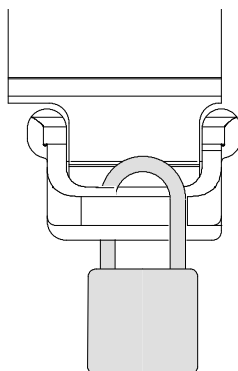


The switches and the circuit-breaker are locked in the open position. The earthing switches are locked in position :

- open
 - open/closed
- There are various possible locking diagrams.
- network switch and network outgoing circuit-breaker
 - semi-crossed locking
 - crossed locking
 - Transformer outgoer :
 - RM6/ transformer
 - RM6/ low voltage
 - RM6/ transformer/low voltage

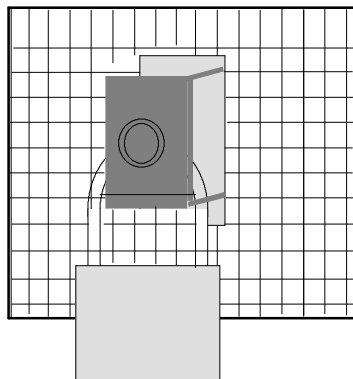
padlocking

operating shaft padlocking handle



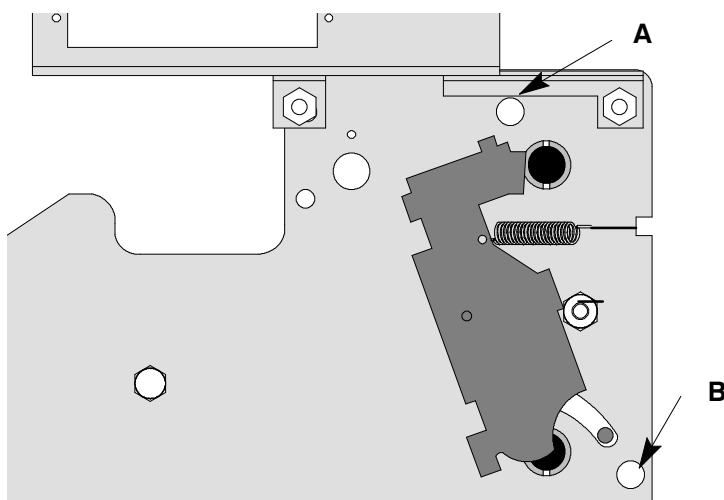
Switch and earthing switch with a degree of protection IP3X, fit a padlock
 $6\text{mm} < \text{handle diameter} < 8\text{ mm}$.

**padlocking the opening
pushbutton**



Fit the padlock on the opening
pushbutton
6mm < handle diameter < 8 mm.

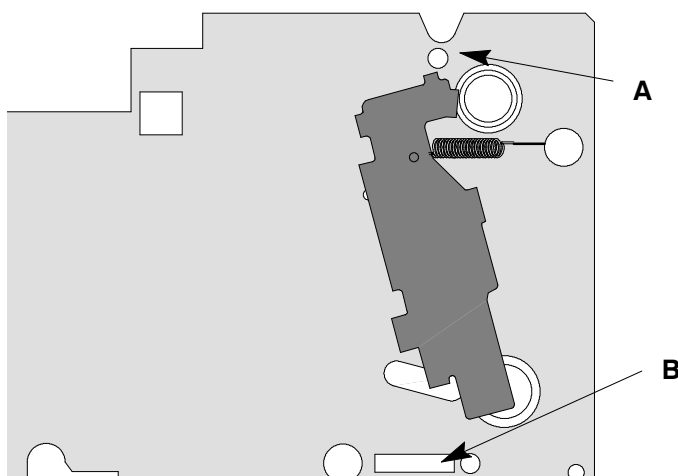
**padlocking the operating
shafts of the switch with the
operating mechanism front
plate removed**



fit a padlock
6mm < handle diameter < 8 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**



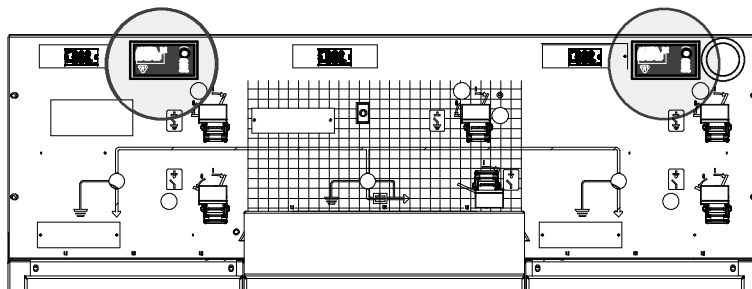
fit a padlock
6mm < handle diameter < 8 mm.
in one of the 2 marked holes.

A : padlocking the earthing switch
in the open or closed position
B : padlocking the
circuit-breaker 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

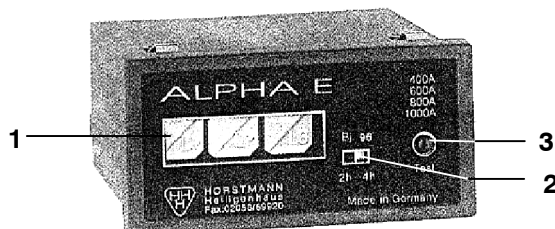


operation

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

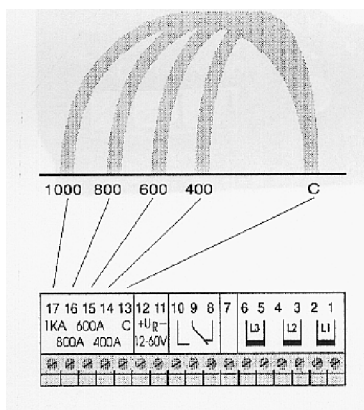
If the reaction current exceeds the pre-set threshold, the indicator will send an optical signal on the faulty phase. The signal will remain visible for a time that can be pre-set.
2 hours or 4 hours.
Manual resetting is possible.

- 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



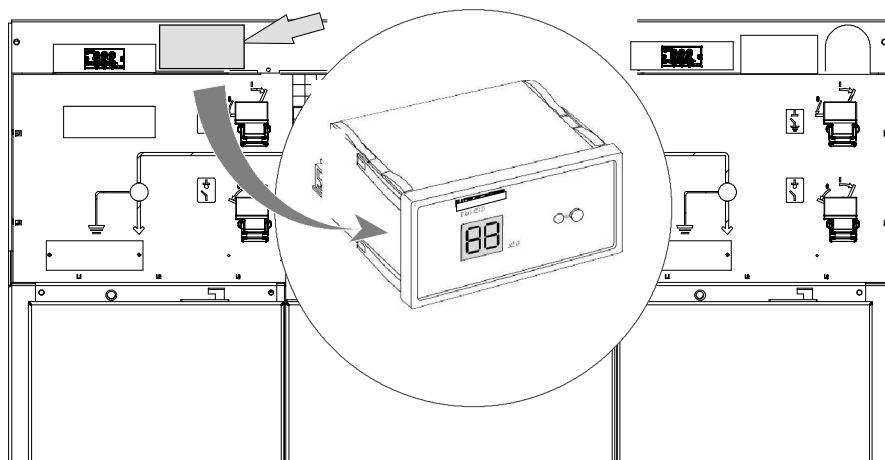
To change threshold, cable appropriately according to the diagram opposite. The terminal block is placed behind the device.



fault current indicators

Flair 21D without power supply

may be fitted as an option on each line switch

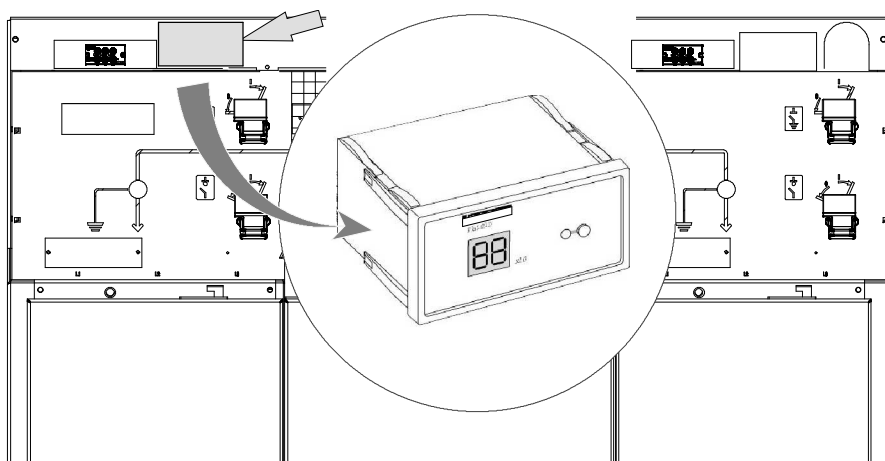


Flair 21DT without power supply

with optional remote control

may be fitted as an option on each line switch

Flair 21DT can also be connected to a remote control system

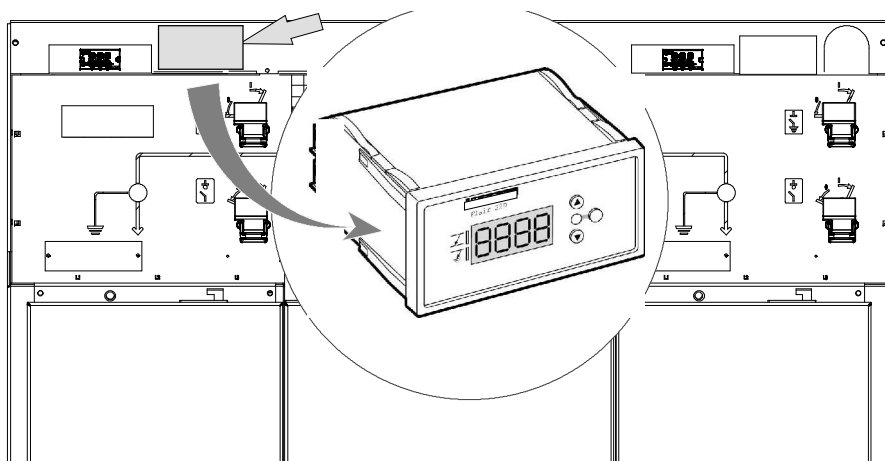


Flair 22D without power supply

with backup battery

may be fitted as an option on each line switch

Flair 22D permits advanced settings from the front keyboard.



power supply

Flair 21D and **Flair 21DT** are self powered using the measurement sensors.

To detect faults as well as to switch on the LCD display the line load current must be over 3A.

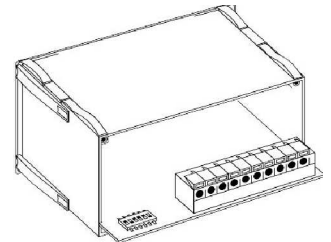
Full charge in the battery takes 30mm.

A fully charged battery gives an autonomy over 4 hours.

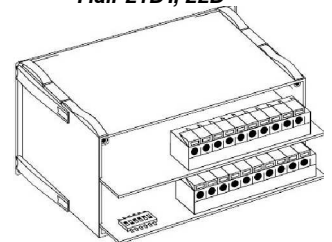
The Flair 22D battery guarantees permanent operation.

The battery will give over 10 years autonomy.

Flair 21D



Flair 21DT, 22D



fault sensor in standby mode

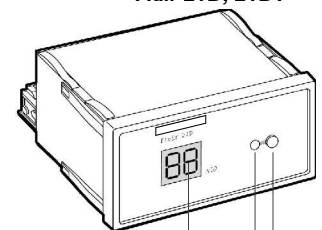
Ammeter function

In standby mode (no fault detected), the load current is display (2).

The current of each phase scrolls preceded by its tag : **L1 - L2 - L3**.

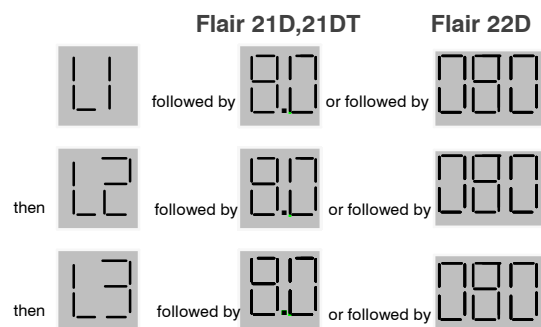
The current readings displayed must be multiplied by 10 for the **Flair 21D**

Flair 21D, 21DT

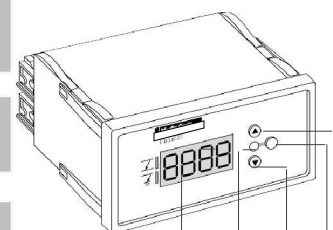


2 3 1

Example for a load current balanced at 80A:



Flair 22D

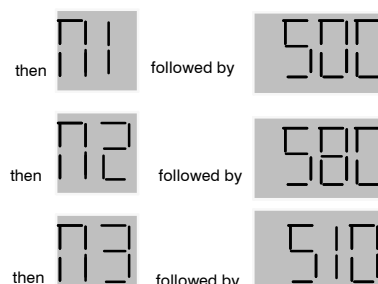


2 3 5 1

maximeter function

Only on the Flair 22D

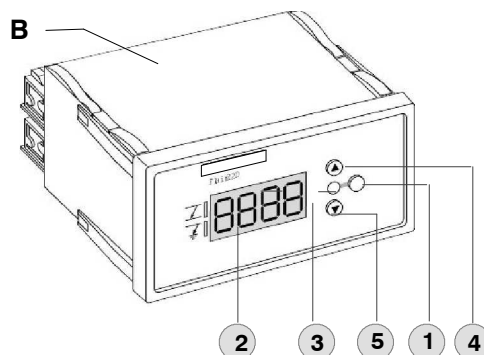
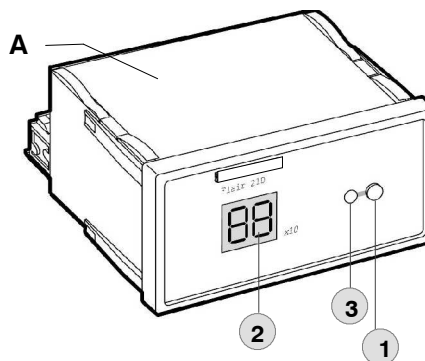
A reading for the maximum charge for each phase is displayed.



failure signalling sensor

A : Flair 21D and 21DT relays

B : Flair 22D relay



When the current exceeds one of the adjusted thresholds, indicator 3 on the display flashes....

.....and the earth failure phase is shown on screen 2: **L1 – L2 – L3**

■ threshold $I_{0>}$ exceeded in phase 2 : **L2**

in fixed mode with indicator 3 flashing (1 flash every 3 seconds)
The signal remains visible until it is automatically reset by the current return, or manually by pressing button 1.

■ threshold I_{Max} exceeded **OC** (Over Current)

Fixed mode with indicator 3 flashing (2 flashes every 6 seconds)
The signal remains visible until it is reset :
– automatically by current return,
– manually by pressing button
– by an external reset to zero
– timer reset (21DT and 22D)

maintenance



- **Flair 21D and Flair 21DT** need no maintenance (no battery to change periodically)
- The lithium backup battery of the Flair 22D should be changed every 10 years.

- **BVP** option (outdoor lamp with battery): battery life for Flair 21D and Flair 21DT is 10 years.

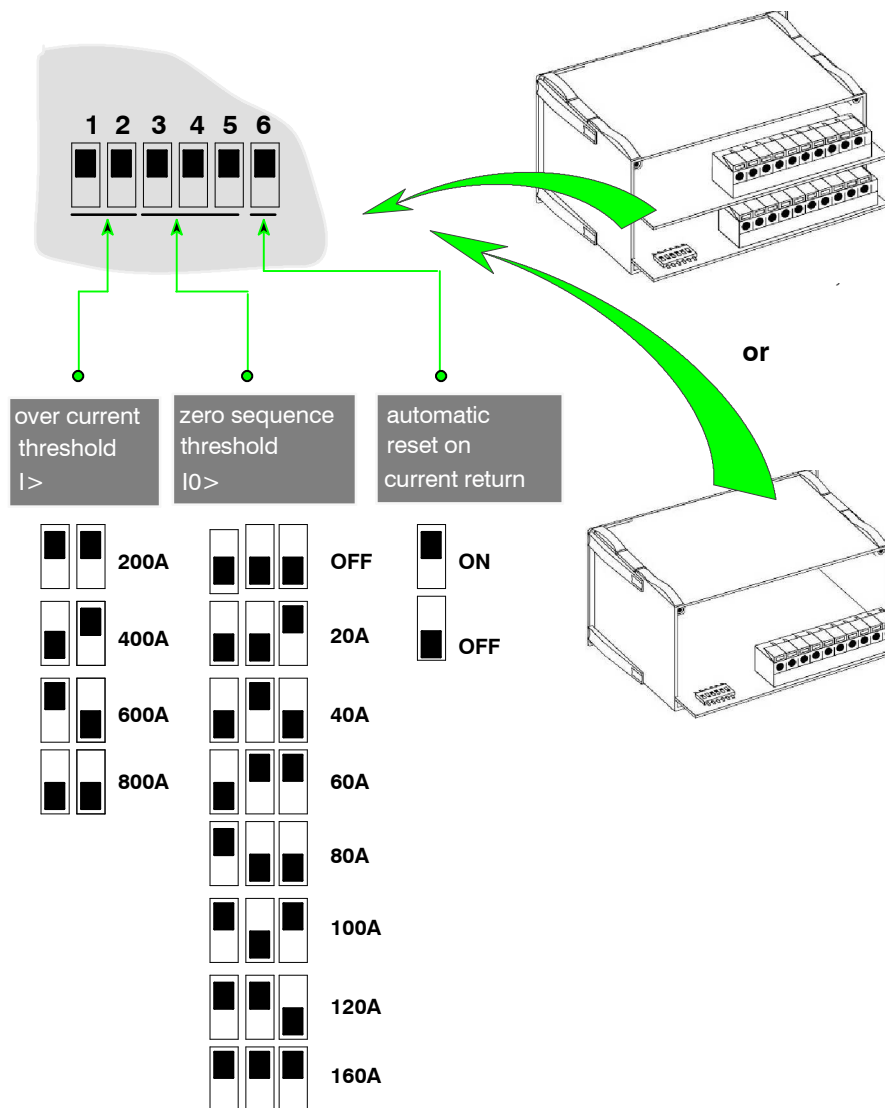
settings

Settings are carried out using micro-switches.....

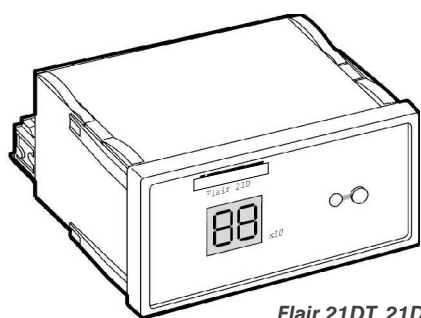
....(Flair 21D and Flair 21DT)
and by means of the front buttons
(Flair 22D).

recommended settings in case of modifications

- reset on current return
It is possible to de-activate this function if transient failures must be located.
- $I_{0>}$ threshold should be set immediately below protection $I_{0>}$ on feeder
- $I_{>}$ threshold (I_{max}) should be set immediately below that of protection $I_{>}$ on feeder.



displays and settings

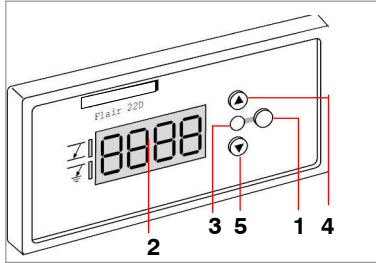


Flair 21DT and 21D :

press button 1 to enter settings
display "mode and to scroll
settings' readings down.
Indicator 3 of the display flashes.
After 2 display cycles, settings'
display mode is cancelled
and the setting indicator switches
to load current display.

display settings

Flair 22D



Flair 22D :

press button **1** to enter display settings mode

Indicator 3 on the display flashes.

Move from one setting to another using button 4 or 5.

- Automatic reset automatic restore (Ar)

Ar followed by 00 (Reset on current return) or Ar followed by 0F (no auto Reset)

- zero sequence failure threshold $I_{0>}$, Earth Fault (EF)

ex : 80A setting

EF followed by 80 on Flair 21D and Flair 21DT 180 on Flair 22D

press button one minute

EF followed by 0F on Flair 21D and Flair 21DT 10F if the micro-switches are on OFF

- over current threshold ($I_{>}$), Over Current (OC)

ex : 600A setting

00 followed by 600 on Flair 21D and Flair 21DT 1600 on Flair 22D

- Only on Flair 22D:

ex : setting 2hr

Reset timer 1024 Reset after a period of 2 hours (2.4.8.16hr)

fitting CTs 000 (3 phased CTs) 001 (2 phase CTs + zero sequence CT)

ex : 50HZ setting

network frequency F50 (50–60HZ)

setting on the front

Flair 22D

Using the display settings" mode it is possible to define a more exact settings which will replace the ones preset by the microswitches.

- when the setting to be changed has been selected, press buttons **4** and **5** simultaneously

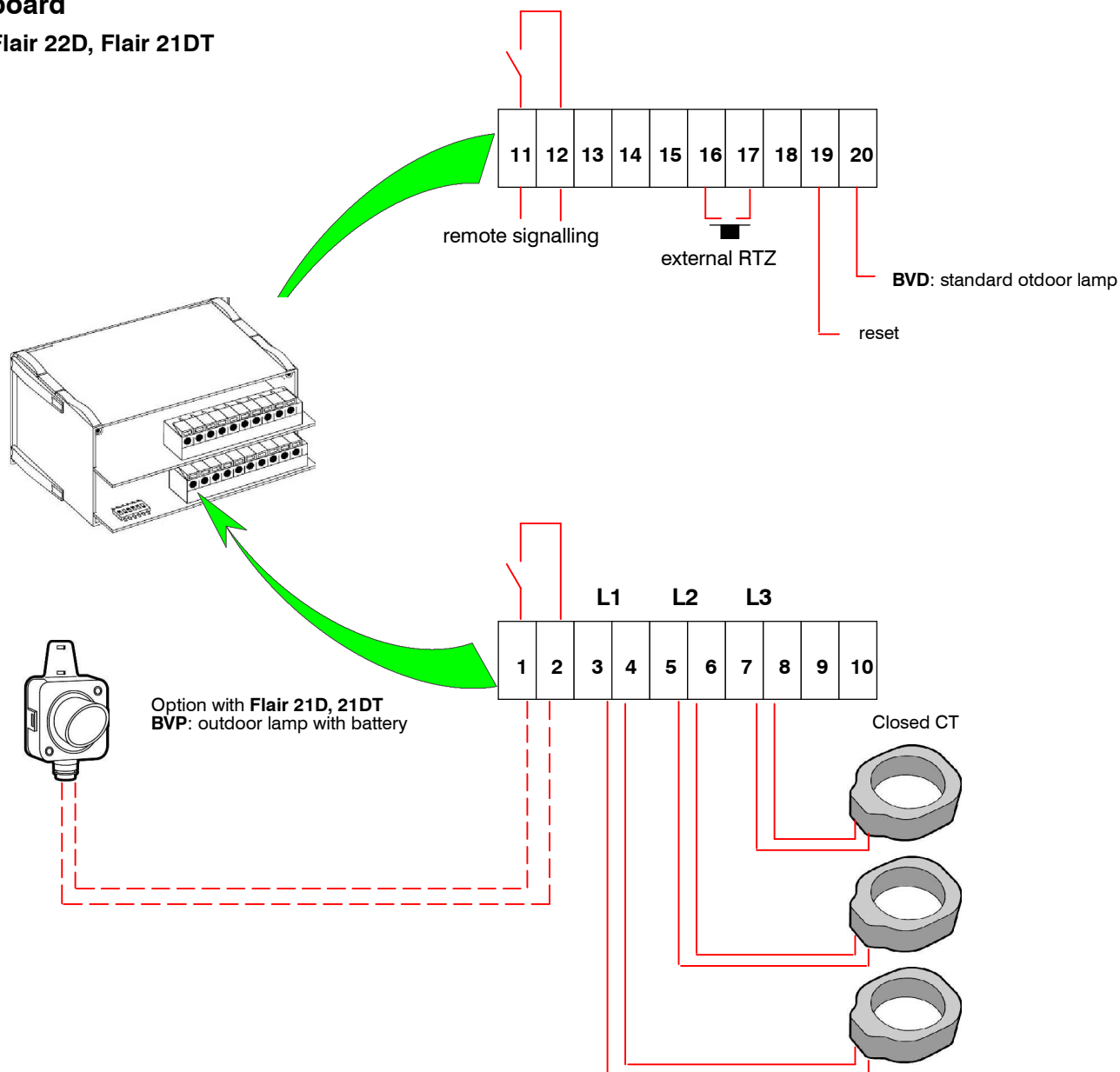
- the display flashes
- select a setting using button **4** or **5**
- validate by pressing buttons **4** and **5** simultaneously

connection

If the medium Voltage switch has not been supplied with the CT installed, fit the three CT in the same direction on the 3 MV bushings.

remote control interface board

Flair 22D, Flair 21DT



installation method

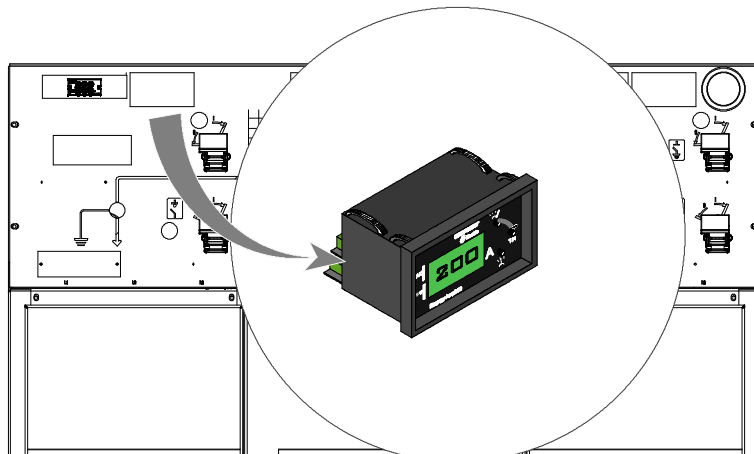
- refer to the instructions manual 07897624FE of RM6's range.

ampermeter

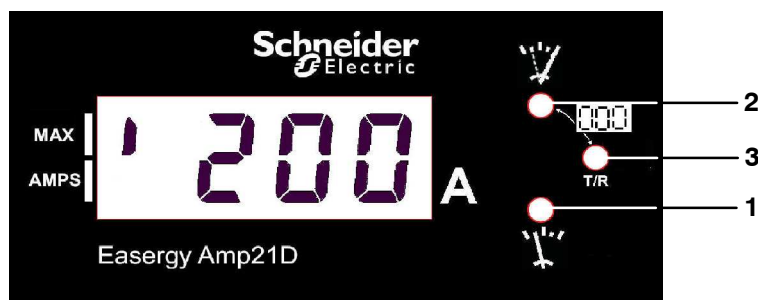
Amp 21D

Can be fitted as an option, on a line switch, in place of a Flair fault current indicator.

Shows the load current flowing in the medium voltage network.



Functions



1 – load and residual currents

- By pressing BP1 on the front panel
- Displays the 3 phase currents I1, I2, I3
Scale: 2 to 800A
- Displays the residual current I0
Scale: 0 to 300A

2 – maximum value readings

- By pressing BP2 on the front panel
- Displays the maximum values of the 3 phase currents I1, I2, I3
Scale: 2 to 800A
- Displays the maximum value of residual current I0
Scale: 0 to 300A

Pressing BP2 and BP3 simultaneously resets all maximum value readings.

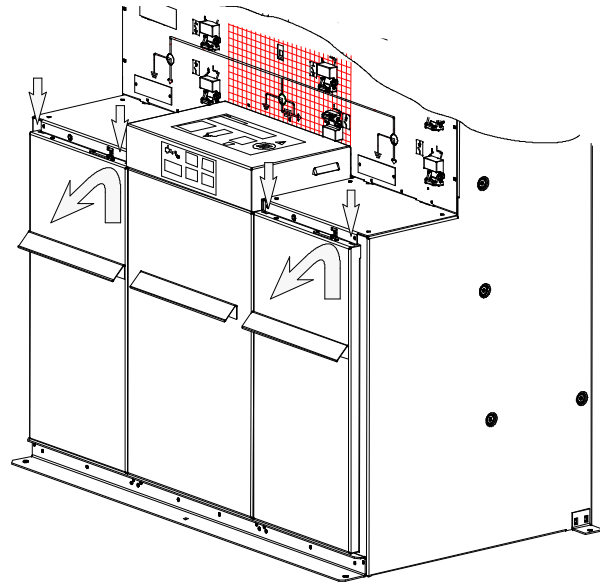
access to the cable compartments

access to the cable connection compartments without interlocking



CAUTION

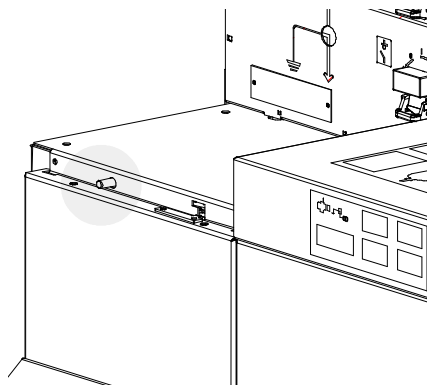
The HV cables must be de-energised for access to the compartments.



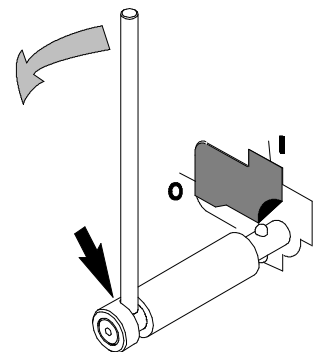
Open the switch and **close the earthing switch.**

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

access to the cable connection compartments with interlocking (optional)



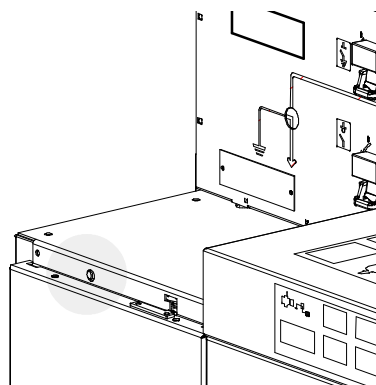
Functional unit in operation, switch closed.
The access panel is locked.



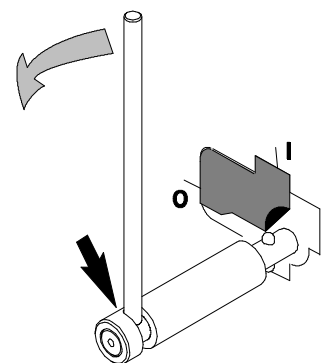
Open the switch.
The access panel remains locked.

Optionally.

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

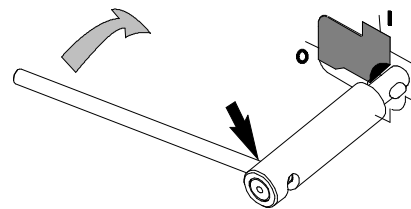
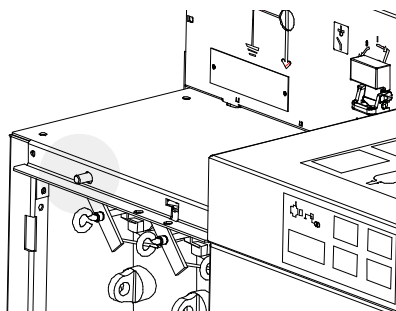


Close the earthing switch.
The access panel is released.

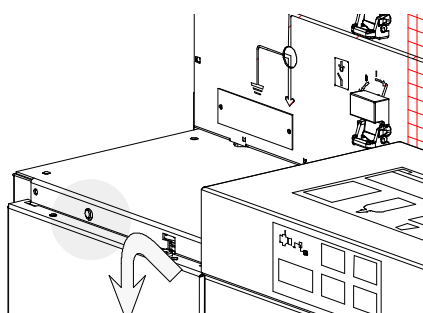


Access panel removed, the earthing switch can now be re-opened.

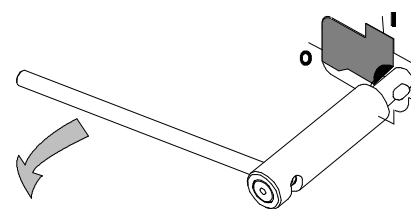
Earthing switch open: the access panel cannot be put back.
If the connectors so allow, DC current can be injected to monitor cable insulation or search for faults.



Close the earthing switch.



Put back the access panel.



Open the earthing switch.

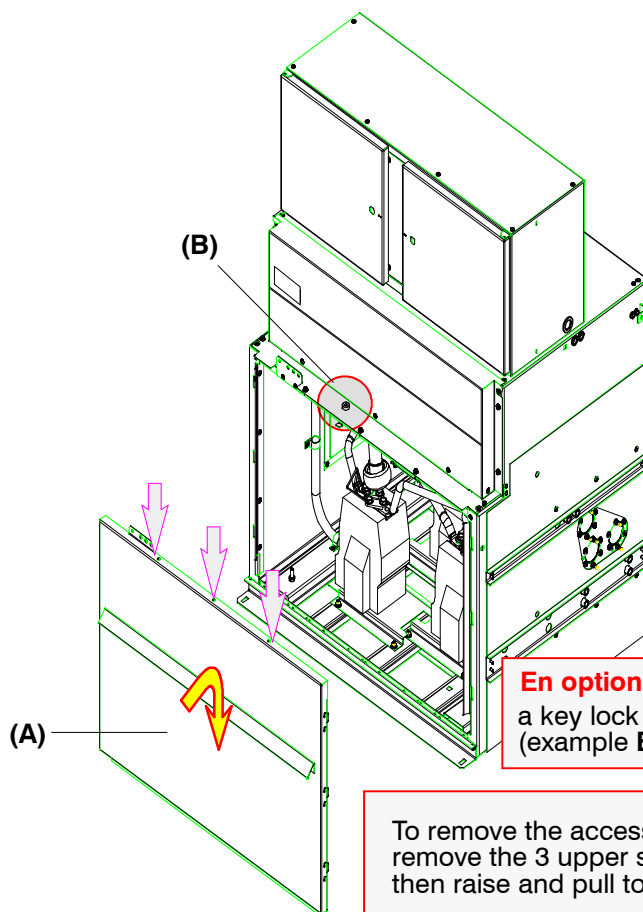
access to the MV compartment of the DE-Mt cubicle



- 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).



En optional :
a key lock exists (example B)

To remove the access panel (A), remove the 3 upper screws, then raise and pull toward yourself.

standard operating conditions

maintenance summarising table



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

device panelling

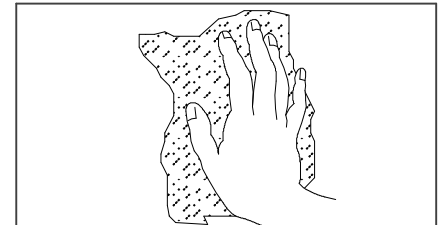
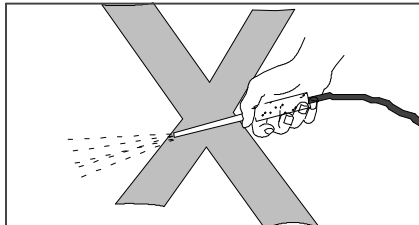


We draw your attention to the risk of using high pressure cleaning processes.

Schneider Electric cannot therefore guarantee the reliability of equipment that have been cleaned in this manner, even if cleaning was followed by lubrication.

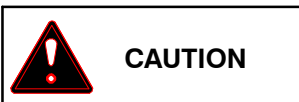
The main drawbacks of this process are:

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



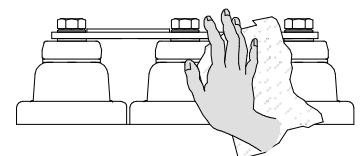
Clean using a dry cloth.

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 **CEI 694**.

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 Identifier : 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 Identifiers : earthing covers

symptoms : humidity, dust

check : surface cleanliness

solutions :

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

3 Identifiers : 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 Identifiers : MV socket and cable

symptoms : presence of corona discharge or odours

check : connections (may be damaged)

solutions :

- fit new sockets

5 Identifiers : 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

6 Identifiers : 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

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:

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

maintenance summarising table

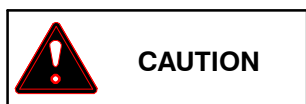
description	réalisation
replacing a voltage indicator	=S= or Customer
replacing a fuse (MV)	=S= or Customer
replacing the charging motor	=S= or Customer
replacing a printed circuit	=S= or Customer
replacing the indicating contact	=S= or Customer

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

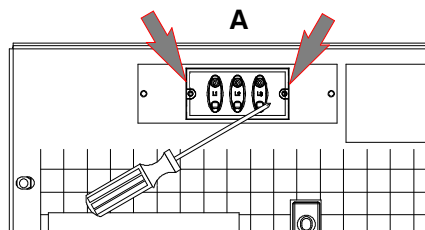
VPIS–V1: production until
February 2009

VPIS–V2: production from
March 2009 onwards

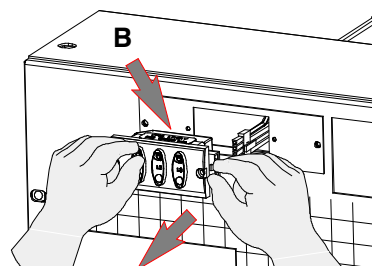
removing the VPIS–V1 voltage presence unit



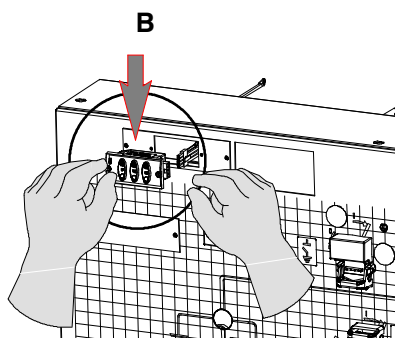
The screws (A) must be retained.



Unscrew the 2 self–tapping
screws (A).



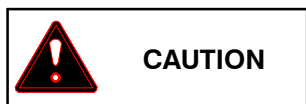
Remove the **VPIS 1** voltage
presence box (B).



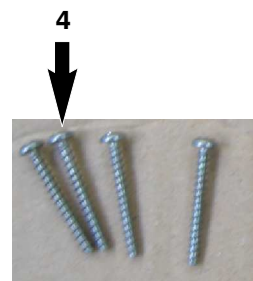
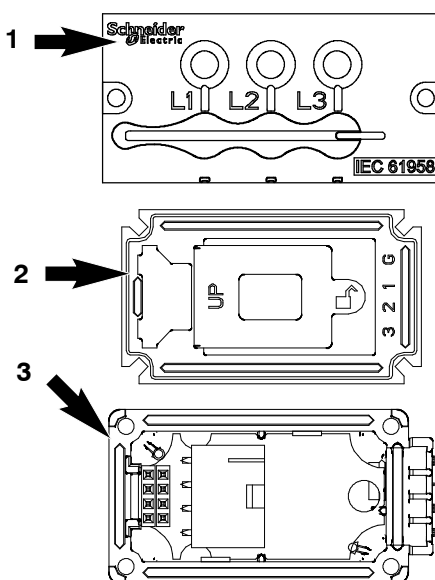
Disconnect the **VPIS1** voltage
presence unit (B).

contents of the kit VPIS–V2

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

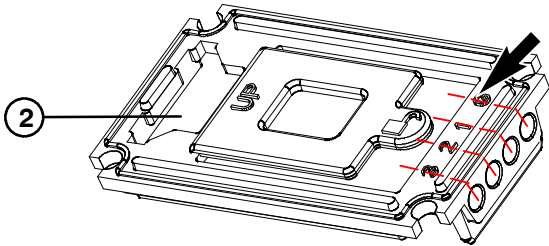


The screws removed earlier are
reused. (2 self–tapping screws)



preparation of the cable gland seal before mounting the voltage presence unit (VPIS 2)

— — Follow the dotted line to cut the cable gland

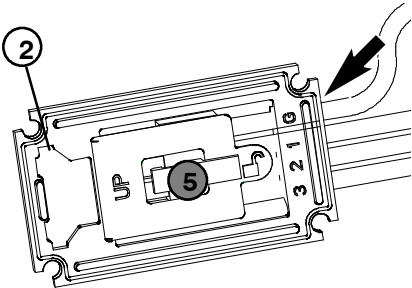


To integrate the cable gland seal (2) onto the wiring harness, the hole must be cut open using a Stanley knife.

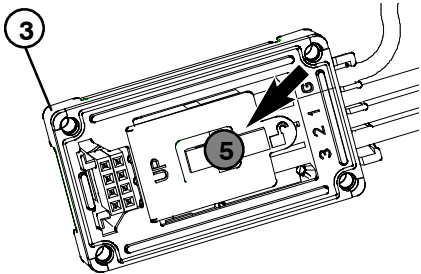


Cut the cable glands in one place **ONLY** per hole to slide the wires inside.

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

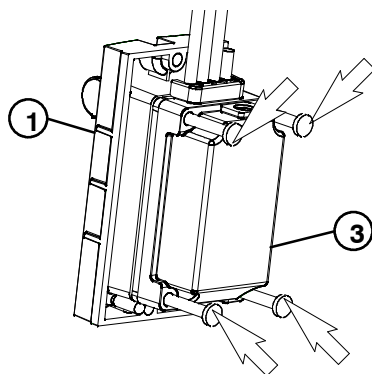
tool (**VPI62420**) (**not included in the kit**) or see correspondence table below.

RM6		VPI62403 7,4 MUA		VPI62404 10,7 MUA		VPI62406 22,4 MUA		VPI62408 47,2 MUA	
		Min	Max	Min	Max	Min	Max	Min	Max
RM6 50–60Hz all types	Un : network voltage	2,5 kV	3,2 kV	3,3 kV	7,7 kV	8,8 kV	16 kV	16,1 kV	23 kV

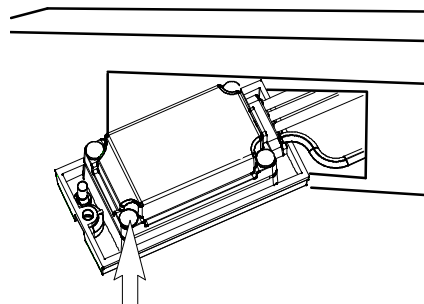
Key

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

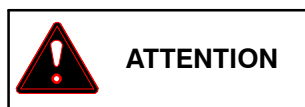
Please refer to the chapter entitled "contents of the kit"



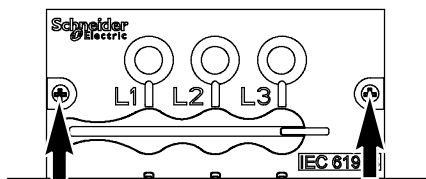
Screw the indicator unit (1) onto the **VPIS** surge arrester (3) using the 4 screws.



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



The screws removed earlier are reused.



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

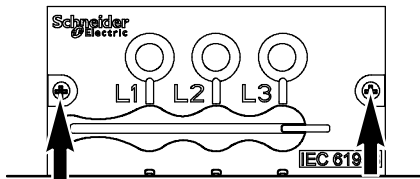
**replacement of the
voltage presence unit
(VPIS) type VPIS–V2 by
type VPIS–V2**

The indicator unit should be
changed at least every 15 years.

**removing the VPIS 2
voltage presence unit**

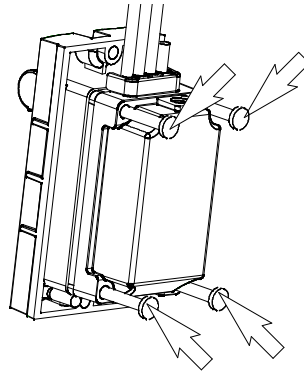


The screws must be retained.

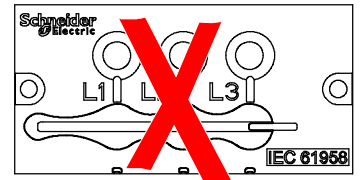


Remove the 2 screws from the
front panel.

**mounting the new
VPIS 2 voltage presence
unit**



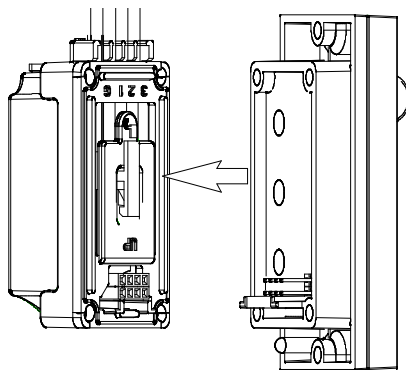
Remove the unit.
Remove the 4 screws from the
indicator unit.



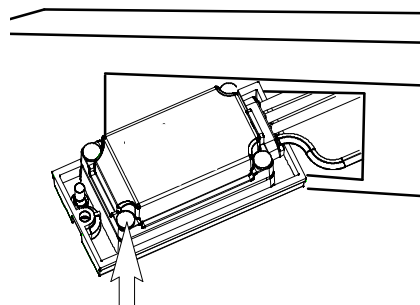
Discard the faulty indicator unit.
Leave the existing surge arrester
and seal.



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



Install the new voltage presence indicator unit.



Screw up the 4 screws.



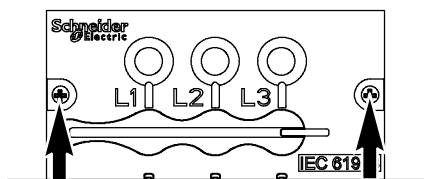
CAUTION

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

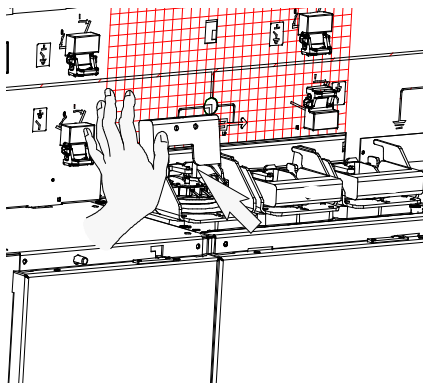
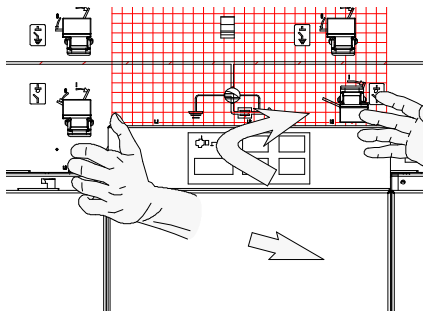
Standard IEC 252 paragraph 23.2 recommends replacement of the 3 HV fuses after blowing of one of the fuses.

removal



CAUTION

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



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).

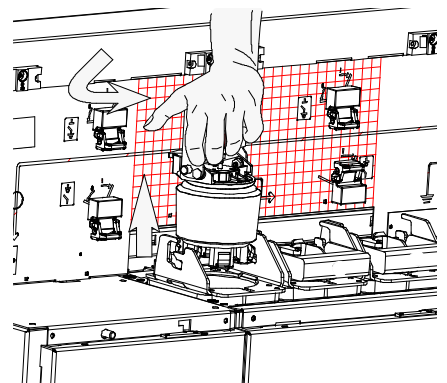


CAUTION

Repeat the following operations for all 3 fuses.

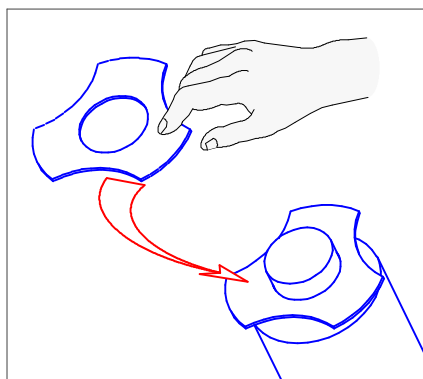
To remove the cover: lift it and pull it towards you.

The instructions are visible on the cover.



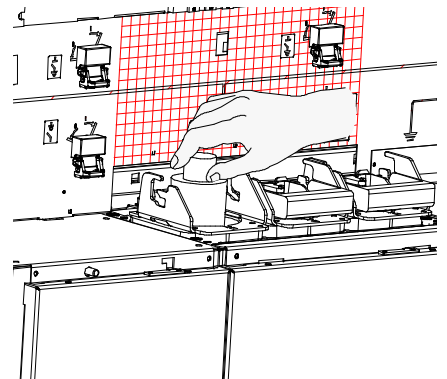
Move the plug up to the limit stop, swivel it towards the left to remove it.

removing a DIN fuse (Fusarc CF)



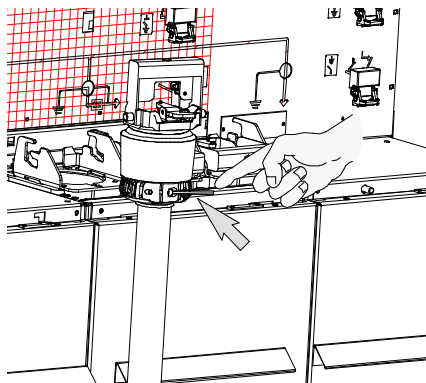
Recover the centring device at the top of the fuse.

Released for Manufacturing
Printed on 2009/06/23

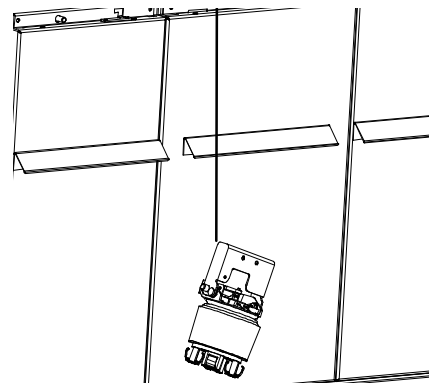


Extract the fuse.

removing a UTE fuse (Solefuse)

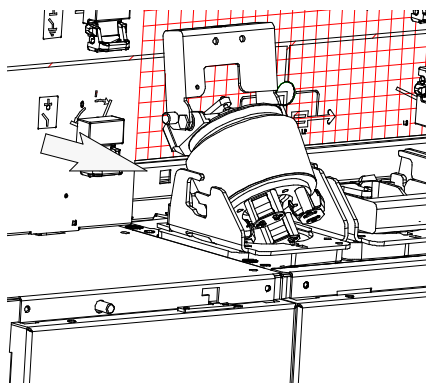


Loosen the fuse using a wrench
with end BTR n°. 5.



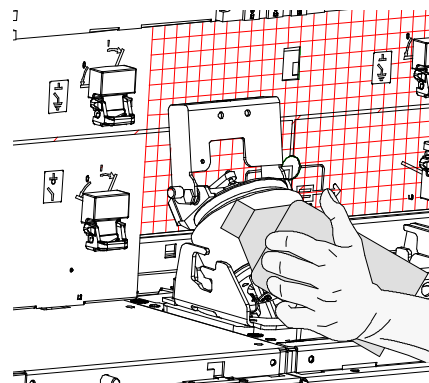
Let the plug hang down from
its supporting string.

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.

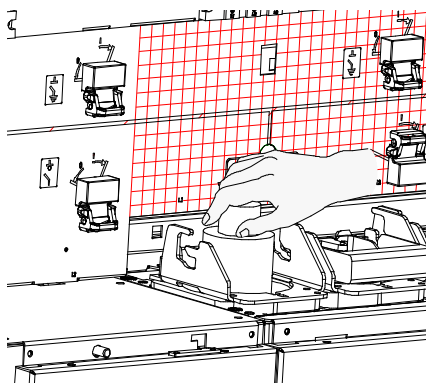
TALC : westmin 8.
Distributed by Ets Ledoux
Bordeaux **FRANCE**

fitting a DIN fuse



CAUTION

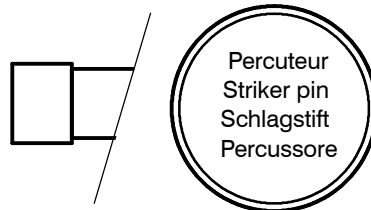
On no account must a fuse that
has been knocked be installed.
A test prior to installation using
a monitor is recommended.



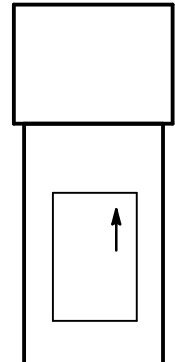
Insert the fuse in the compartment.
Fit the centring device on the fuse.
Insert the plug pins in the plinth
and swivel it round to the right.

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.

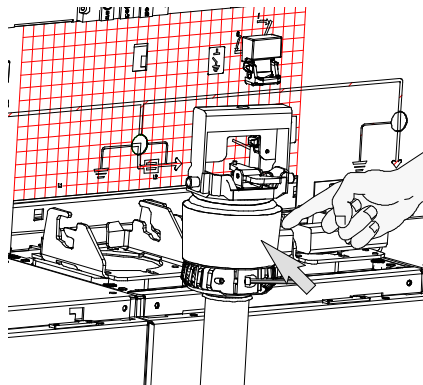


The technical data and mounting direction of the fuse are printed on the body. (striker facing upwards).

fitting a UTE fuse

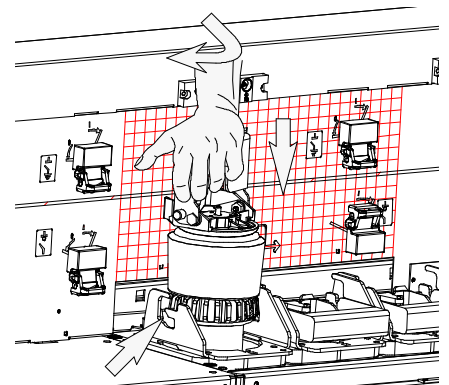


On no account must a fuse that has been knocked be installed. A test prior to installation using a monitor is recommended.



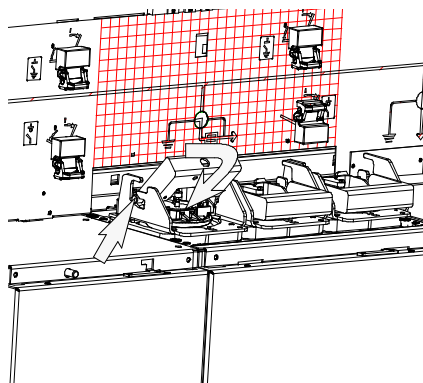
Fix the fuse on the plug using a torque wrench with end BTR n°. 5 and insert the fuse in the compartment.

Tightening torque: 15 Nm.

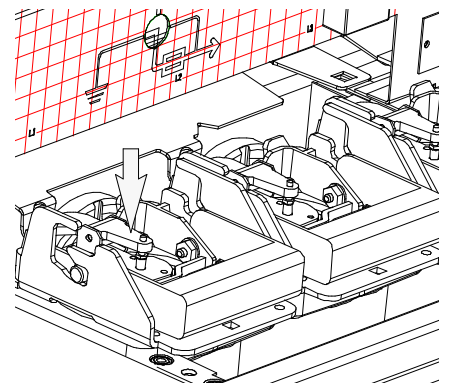


Insert the plug and fuse assembly in the compartment. Insert the plug pins in the plinth and swivel it round to the right.

locking the plug

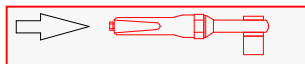


Make sure that the handle trunnions are inserted in the plinth slots and lock the plug. Never use the operating lever to lock the plug.

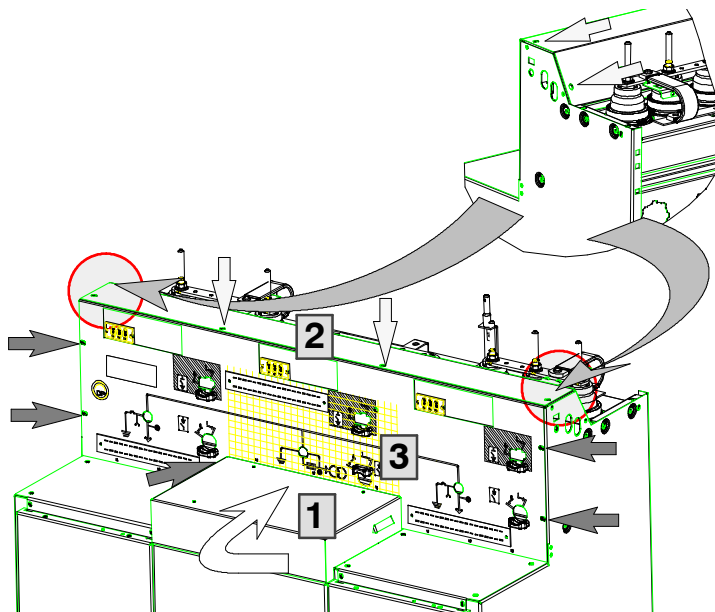


For replacement of a fuse that has struck, press the switch to put it back in position.

access to the LV compartment dismantling



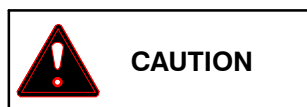
- 1 – Remove the fuse compartment cover
(pull towards you)
- 2 – Remove the LV cable trough
6 screws (HM6x16)
- 3 – Remove the self-cutting
screws



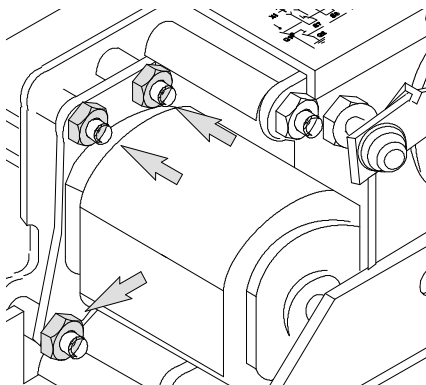
reassembling

- Reassemble in opposite order
to disassembly.

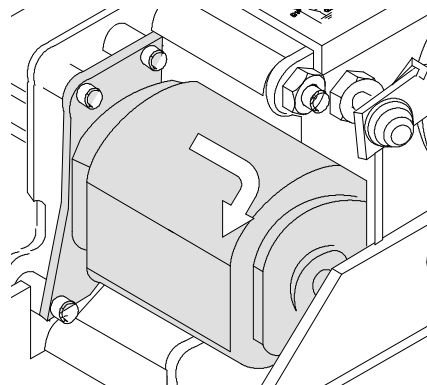
replacing a motor removal



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

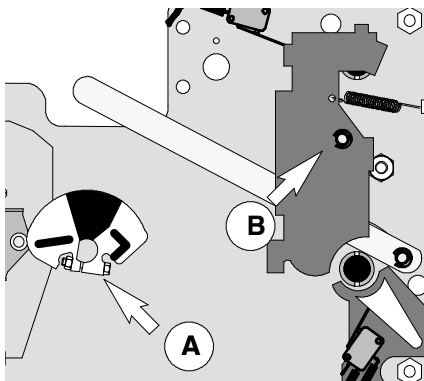
Disassemble the pilot light support.

removal

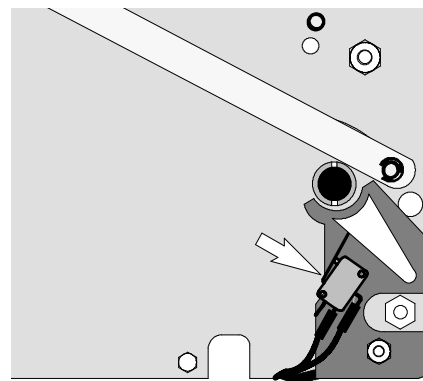


CAUTION

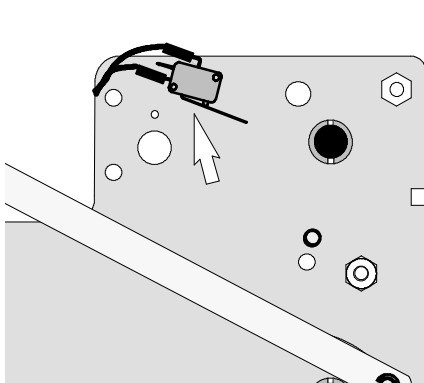
LV circuit de-energized



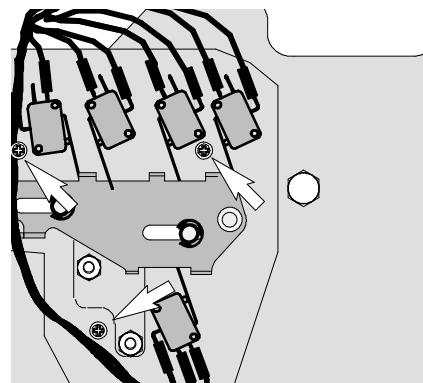
Remove the position indicator **A**.
Remove interlocking **B**.
(elastic ring and spring)



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

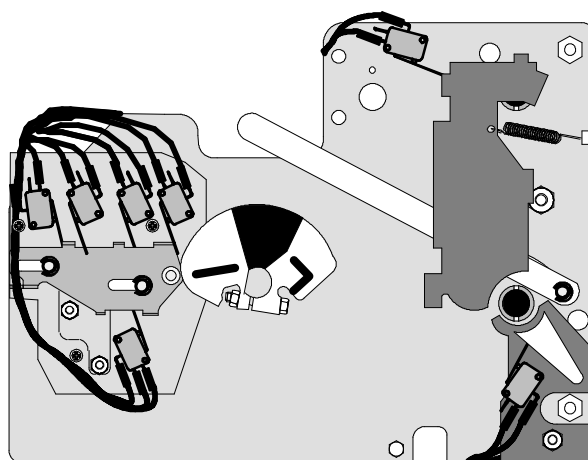


Remove contact **S3** without
disconnecting the wiring.



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.

Tightening torque: 13 Nm.

Fit the position indicator and
interlocking.

Disconnect the contact wiring
S1 disassembled, and connect
it to the new contact.

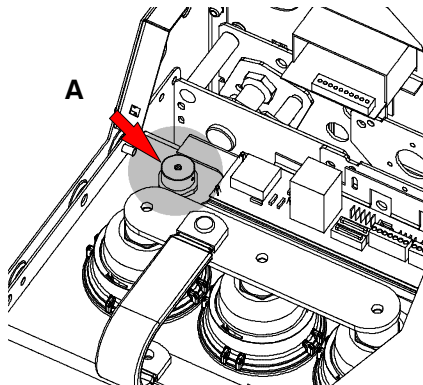
Repeat this operation for all
the contacts (**S2 to S7**).

processing of SF6 gas when dismantling the equipment

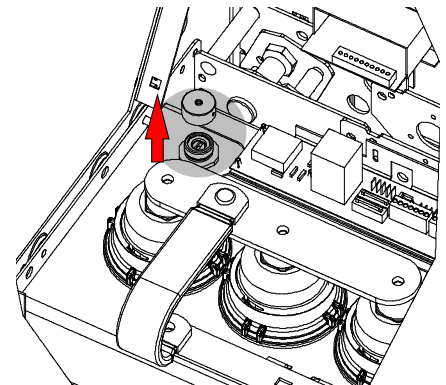
conformity rules

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**.

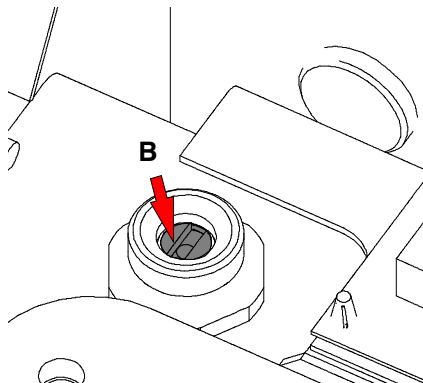
processing method



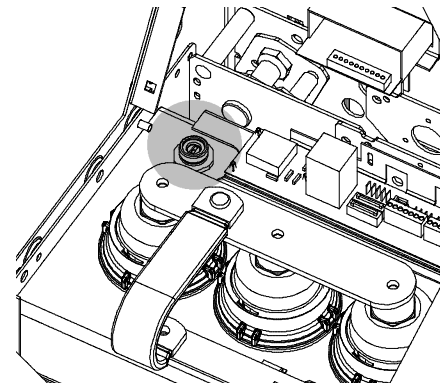
Unscrew the vacuum/filling plug (A).



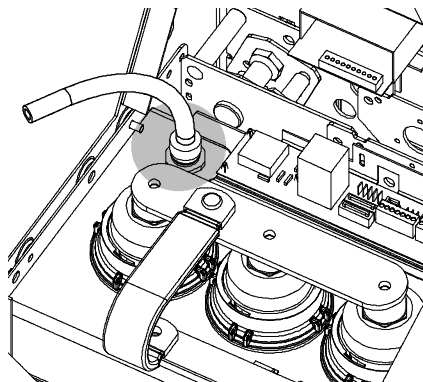
Remove the plug (A).



Don't remove the valve (B) which allows to slow gas discharge.



Plug removed.



Connect the SF6 vacuum/filling device (M24 x 1,5).



Empty unit absolute pressure will be 0,1 bar

