

Low voltage electrical distribution

# Masterpact NW

Circuit breakers and switch-disconnectors  
from 800 to 6300 A

User manual  
09/2009

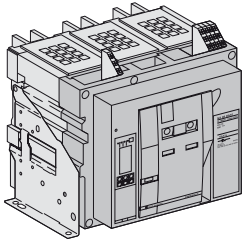




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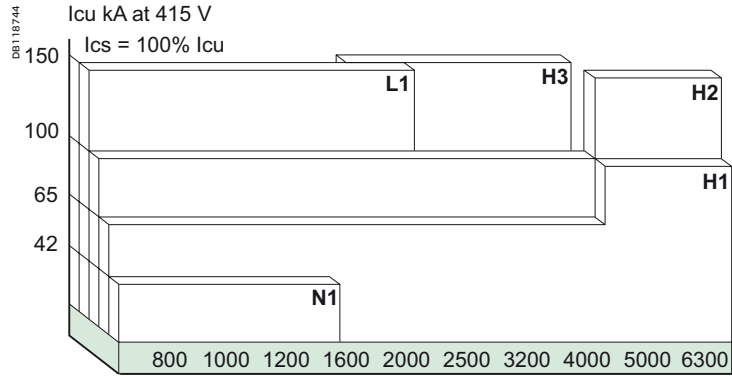
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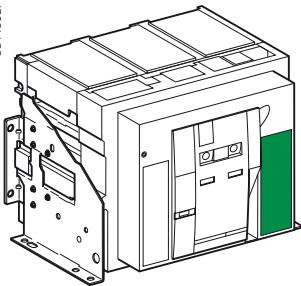
The Masterpact NW range of circuit breakers and switch-disconnectors offer current ratings from 800 A to 6300 A.

Five different performance levels are available:

- N1: standard with total discrimination
- H1: high performance with total discrimination
- H2: a compromise between current limiting and discrimination
- H3: high breaking capacity and discrimination, without current limiting
- L1: high level of current limiting, with some discrimination.



DB118327



## Rating plate

DB118743

**Masterpact**

**NW08 N1** → Rated current x 100 A

**Ui 1000V** → Rated insulation level

**Uimp 12kV** → Impulse withstand voltage

**Ue (V)** → Rated operational voltage

**Icu (kA)** → Ultimate breaking capacity

220/440 ~ 42

480/690 ~ 42

**Ics = 100% Icu** → Ics: rated service breaking capacity  
Icu: ultimate breaking capacity

**Icw 42kA/1s cat.B** → Rated short-time withstand current

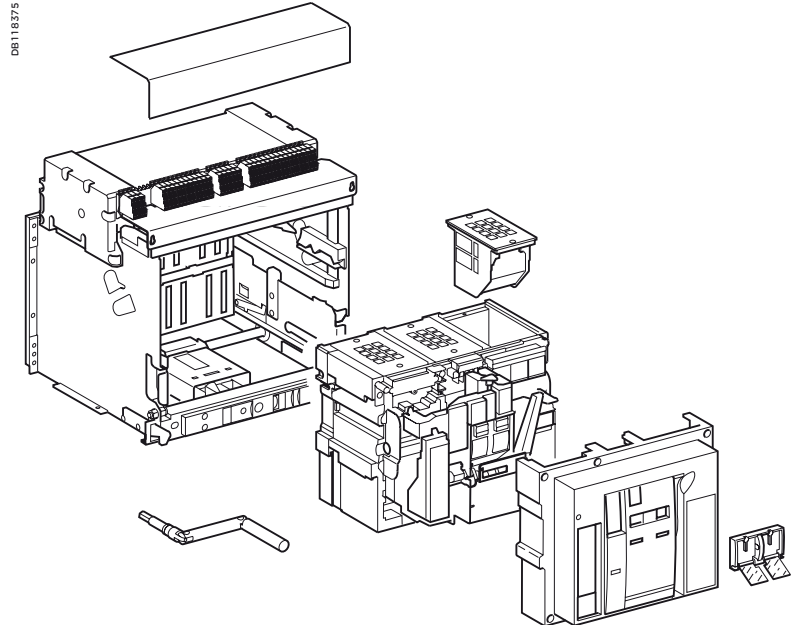
**IEC 60947-2 50/60Hz** → Frequency

UTE VDE BS CEI UNE AS NEMA → Standards

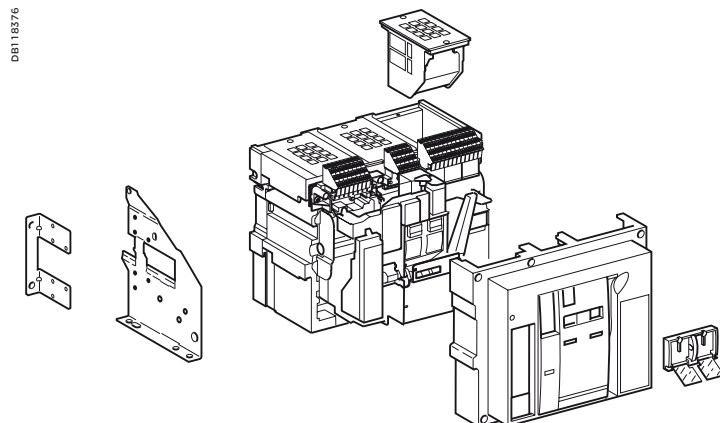


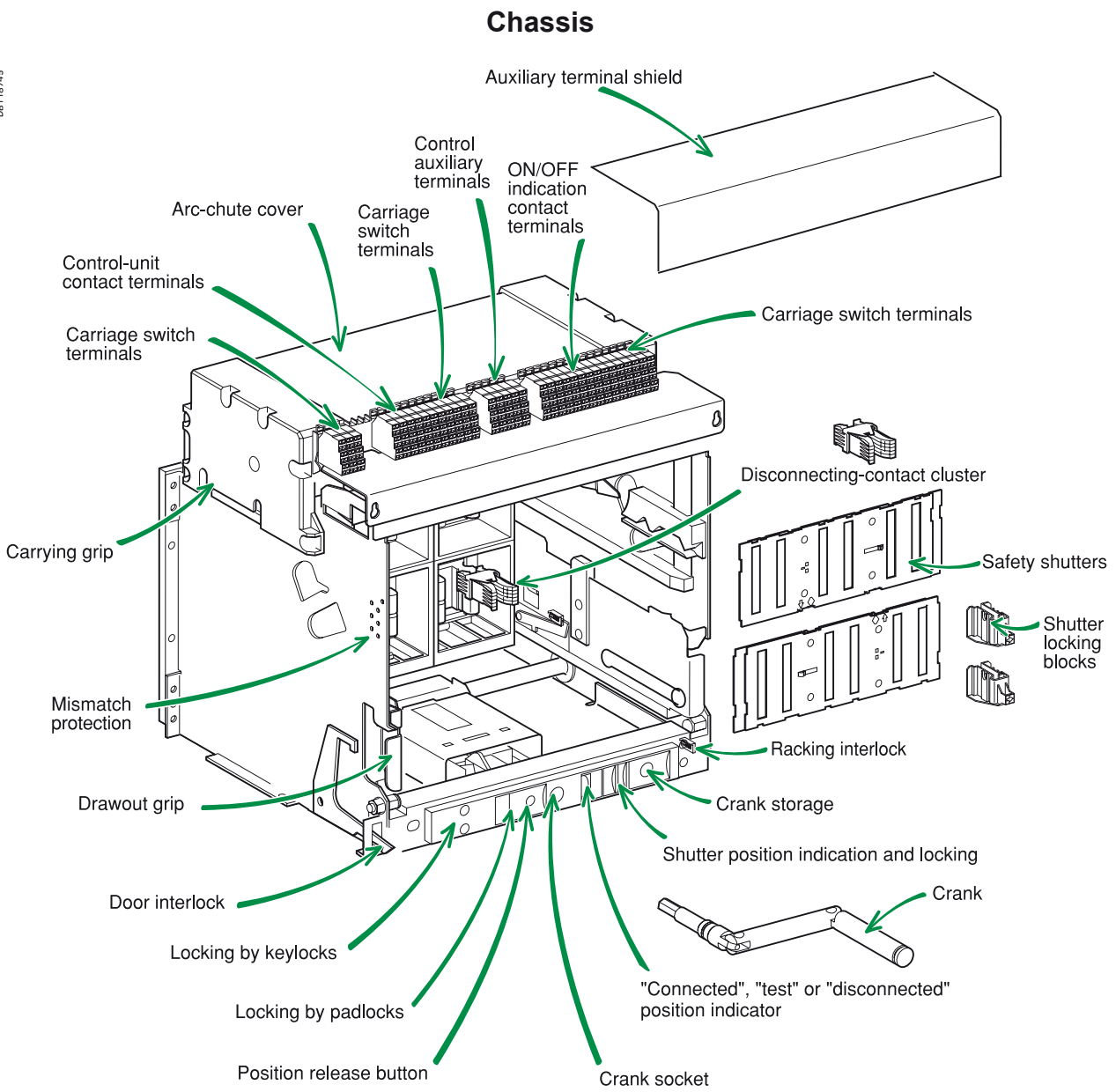
Masterpact circuit breakers are available in drawout and fixed versions. The drawout version is mounted on a chassis and the fixed version is installed using fixing brackets.

## Drawout version



## Fixed version

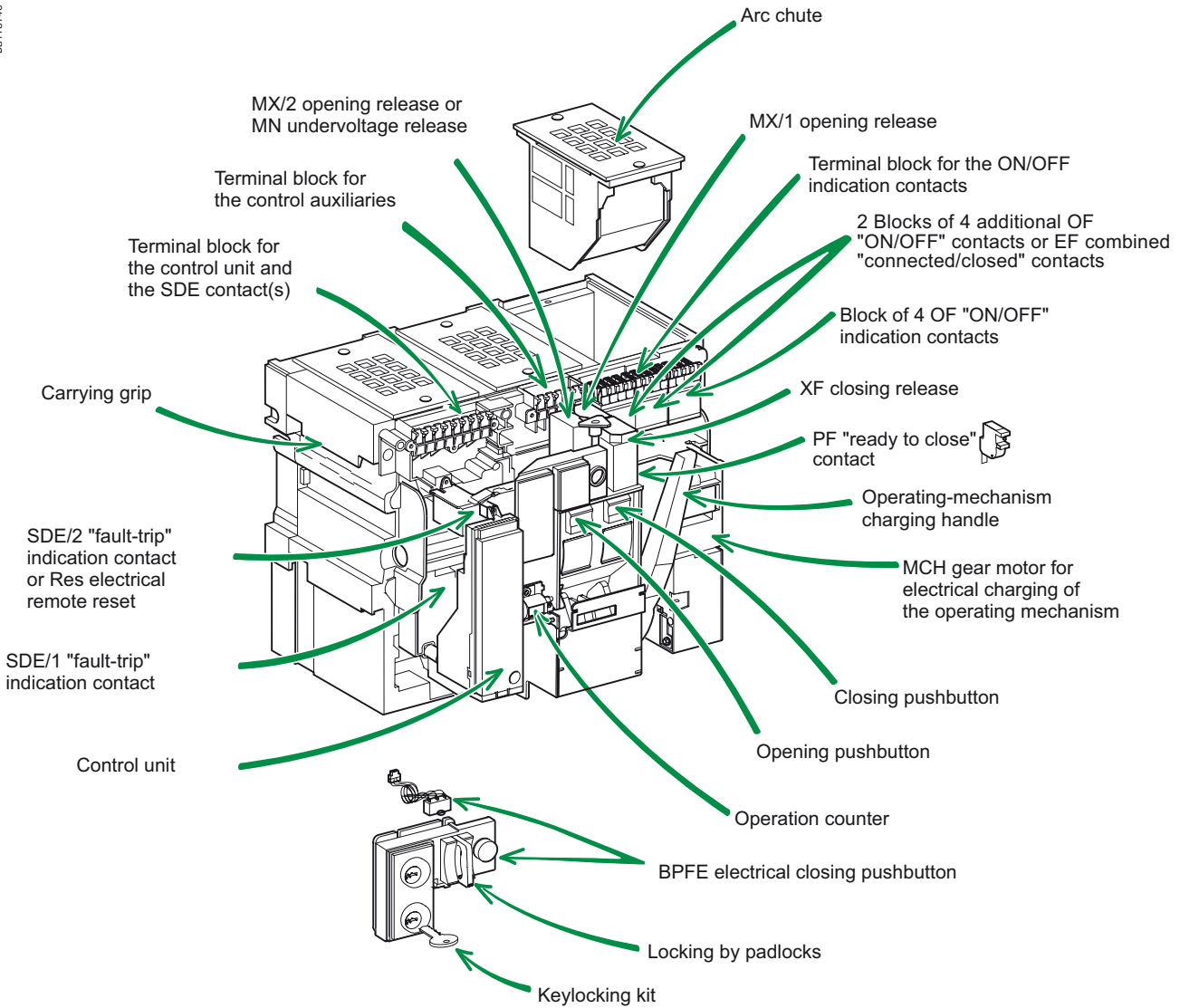




DE118745

## Circuit breaker / switch-disconnector

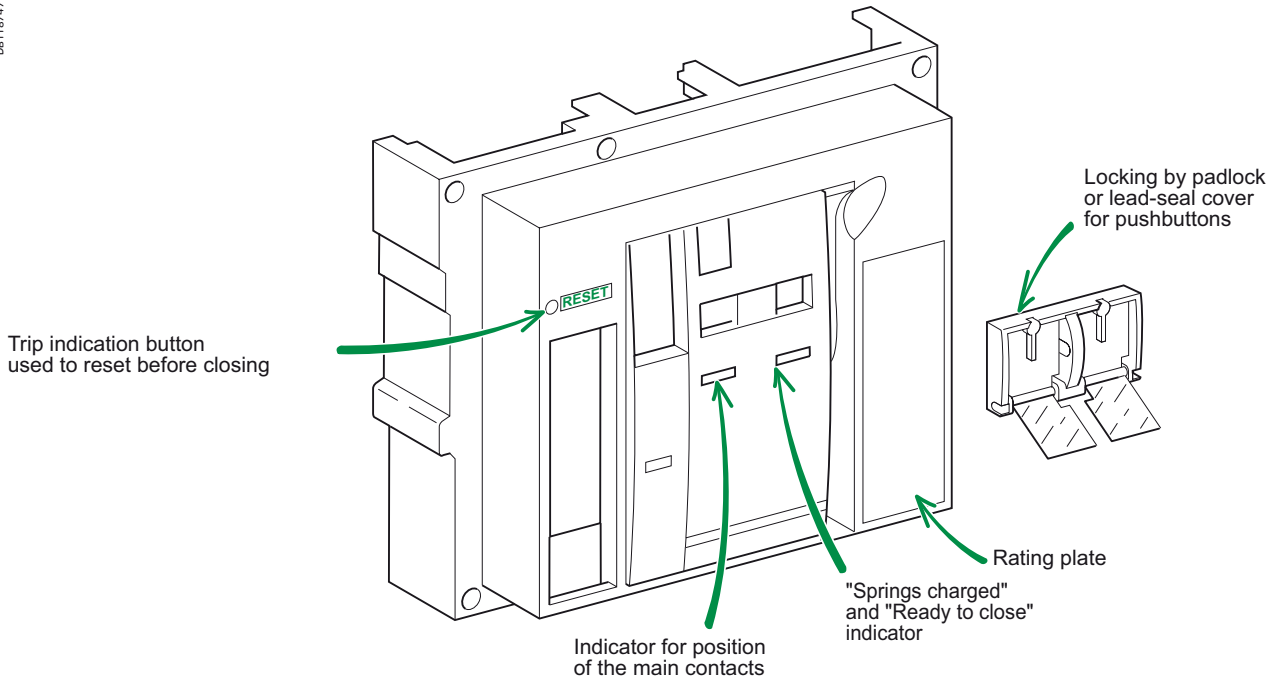
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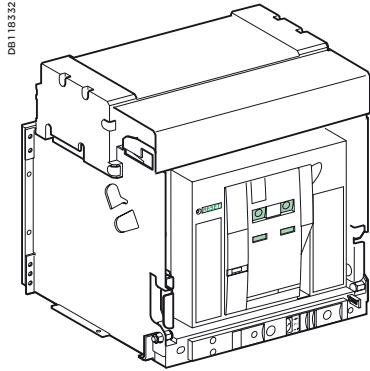


## Front

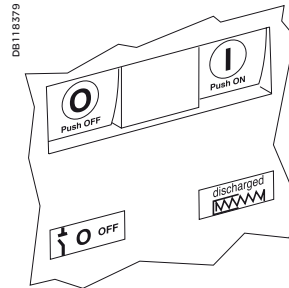
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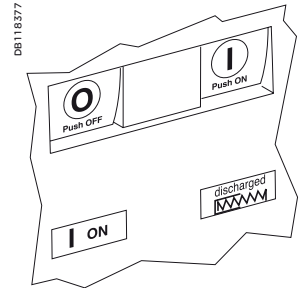
# Understanding the controls and indications



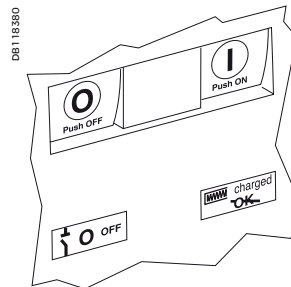
Circuit breaker open and discharged



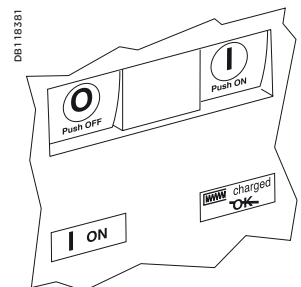
Circuit breaker closed and discharged



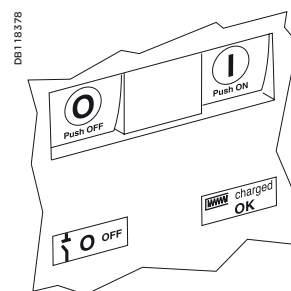
Circuit breaker open, charged and not "ready to close"



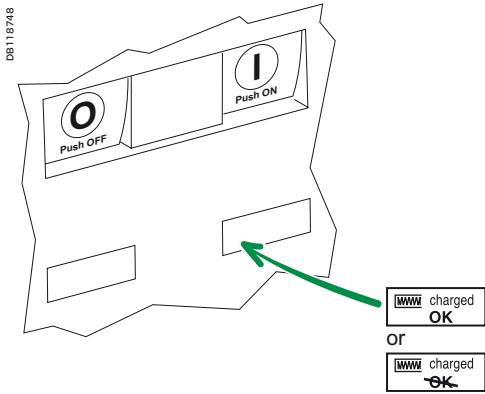
Circuit breaker closed, charged and not "ready to close"



Circuit breaker open, charged and "ready to close"

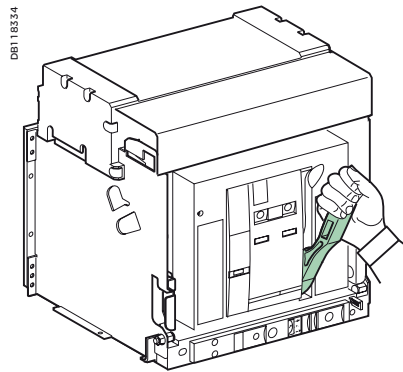


The charge status is indicated as follows.

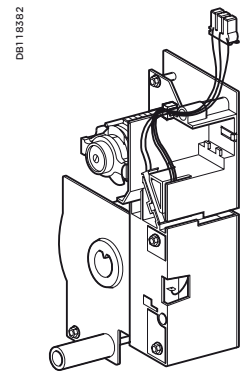


The springs in the circuit breaker operating mechanism must be charged to store the energy required to close the main contacts. The springs may be charged manually using the charging handle or the optional MCH gear motor.

**Manual charging:**  
Pull the handle down seven times until you hear a "clack".



**Automatic charging:**  
If the MCH gear motor is installed, the spring is automatically recharged after each closing.



Device "ready to close"



Device not "ready to close"



## Closing conditions

Closing (i.e. turning the circuit ON) is possible only if the circuit breaker is "ready to close".

The prerequisites are the following:

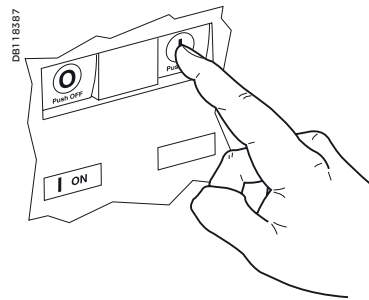
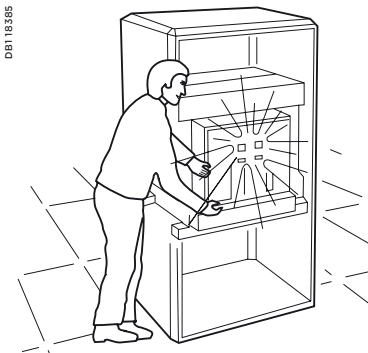
- device open (OFF)
- springs charged
- no opening order present.

If the circuit breaker is not "ready to close" when the order is given, stop the order and start again when the circuit breaker is "ready to close".

## Closing the circuit breaker

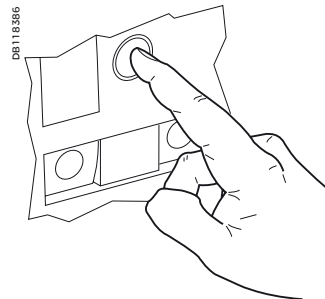
### Locally (mechanical)

Press the mechanical ON pushbutton.

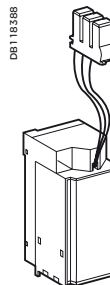


### Locally (electrical)

BPFE



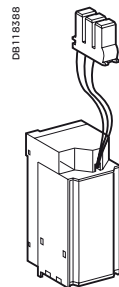
XF



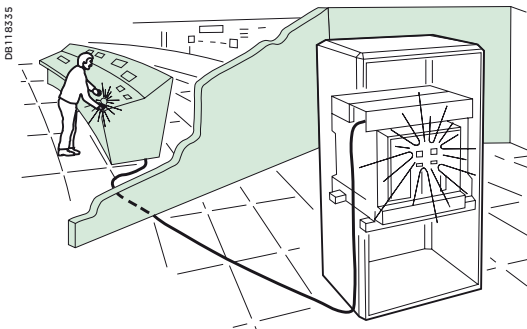
Press the electrical closing pushbutton. By adding an XF closing release, the circuit breaker can be closed remotely.

### Remotely

XF



When connected to a remote control panel, the XF closing release (0.85 to 1.1 Un) can be used to close the circuit breaker remotely.

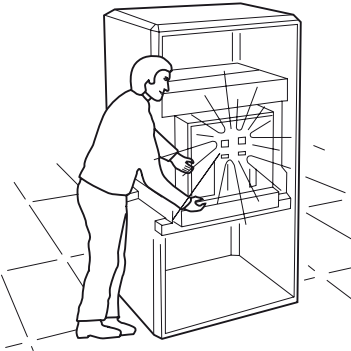


## Enabling or disabling the anti-pumping function

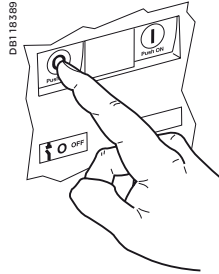
The purpose of the mechanical anti-pumping function is to ensure that a circuit breaker receiving simultaneous opening and closing orders does not open and close indefinitely.

If there is a continuous closing order, after opening the circuit breaker remains open until the closing order is discontinued. A new closing order then closes the circuit breaker. This function can be disabled by wiring the closing release in series with the PF "ready to close" contact.

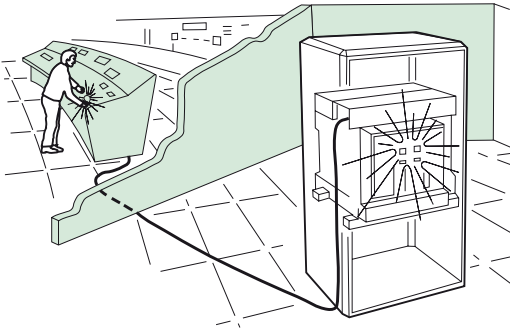
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**Locally**  
Press the OFF pushbutton.



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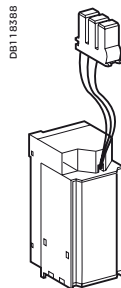
**Remotely**

Use one of the following solutions:

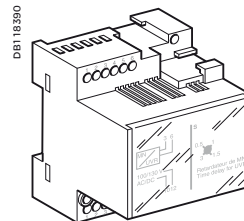
- one or two MX opening releases (MX1 and MX2, 0.7 to 1.1 Un)
- one MN undervoltage release (0.35 to 0.7 Un)
- one MN undervoltage release (0.35 to 0.7 Un) with a delay unit (R or Rr).

When connected to a remote control panel, these releases can be used to open the circuit breaker remotely.

MX1, MX2, MN



Delay unit

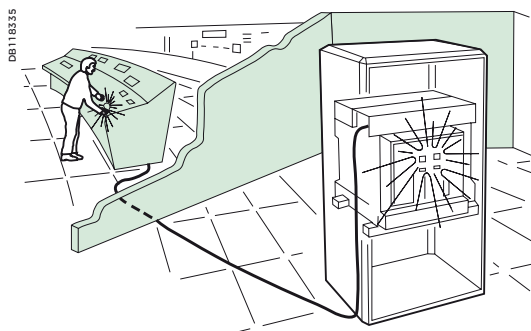
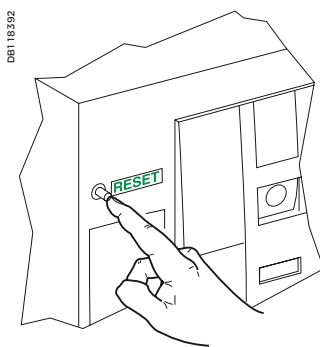
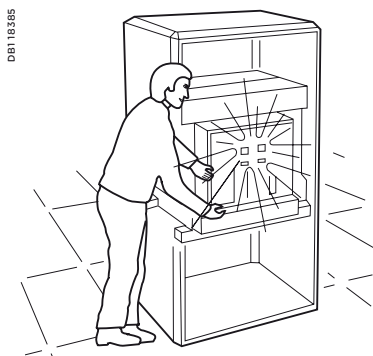


The circuit breaker signals a fault by:

- a mechanical indicator on the front panel
- one or two SDE "fault-trip" indication contacts (SDE/2 is optional).

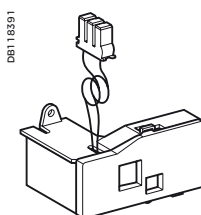
### Locally

If the circuit breaker is not equipped with the automatic reset option, reset it manually.



### Remotely

Use the Res electrical remote reset option (not compatible with an SDE/2).



# Locking the controls

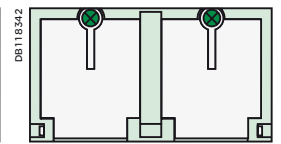
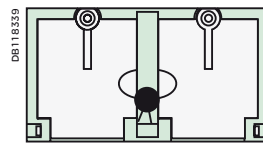
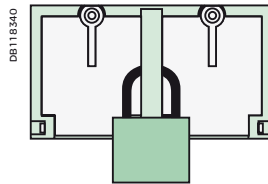
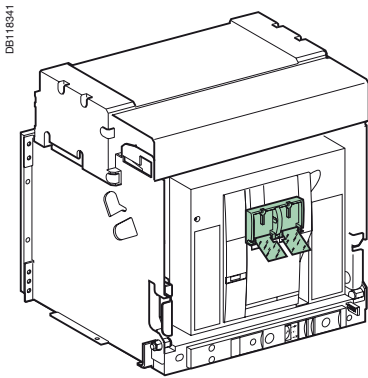
Disabling circuit-breaker  
local closing and opening

## Pushbutton locking using a padlock (shackle diameter 5 to 8 mm), a lead seal or screws.

Padlock

Lead seal

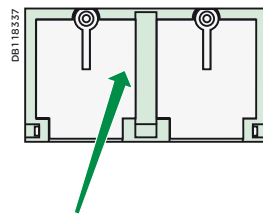
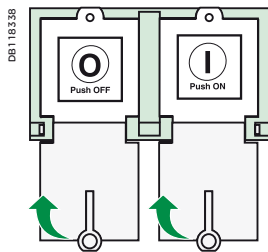
Screws



### Locking

Close the covers.

Insert the padlock  
shackle, lead seal  
or screws.

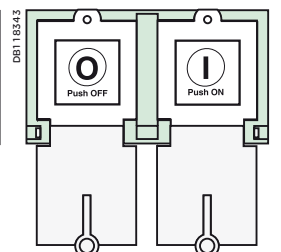
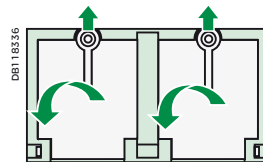
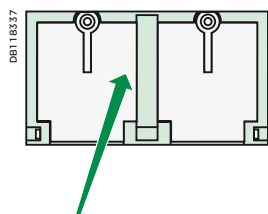


### Unlocking

Remove the padlock,  
lead seal or screws.

Lift the covers and swing  
them down.

The pushbuttons  
are no longer locked.



# Locking the controls

## Disabling local and remote closing

### Combination of locking systems

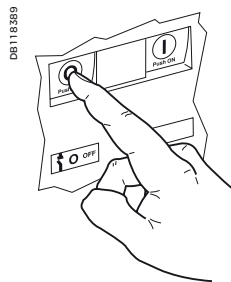
To disable circuit-breaker closing using the pushbuttons or remotely, use as needed:

- a padlock
- one or two keylocks
- a combination of the two locking system.

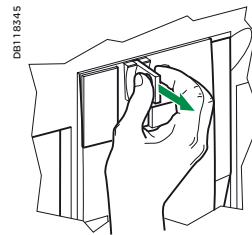
### Install a padlock (maximum shackle diameter 5 to 8 mm)

#### Locking

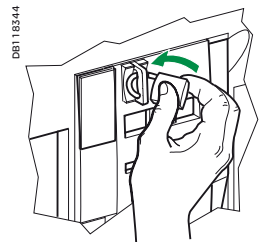
Open the circuit breaker.



Pull out the tab.

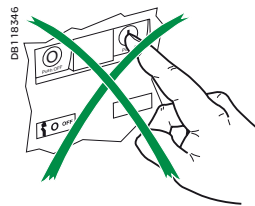


Insert the padlock shackle.



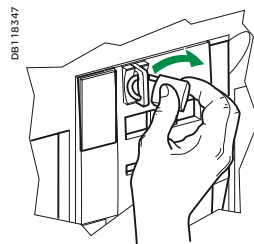
#### Check

The controls are inoperative.



#### Unlocking

Remove the padlock.





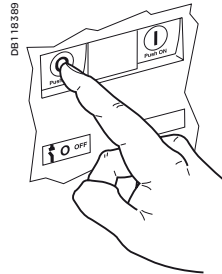
# Locking the controls

## Disabling local and remote closing

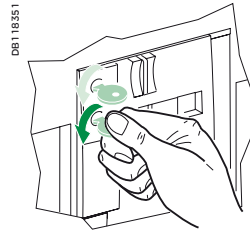
### Locking the controls with one or two keylocks

#### Locking

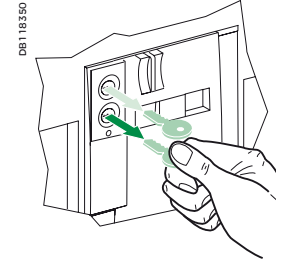
Open the circuit breaker.



Turn the key(s).

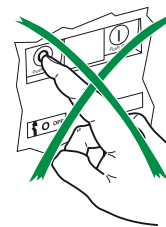
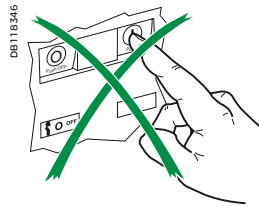


Remove the key(s).



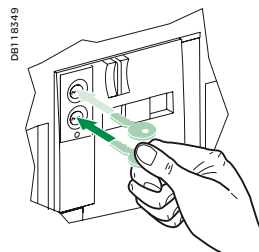
#### Check

The controls are inoperative.

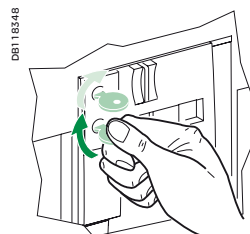


#### Unlocking

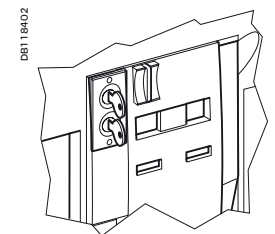
Insert the key(s).



Turn the key(s).

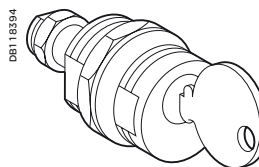


The key(s) cannot be removed.

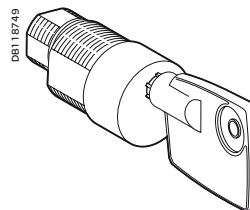


### Four types of keylocks are available.

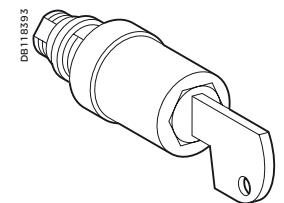
#### RONIS



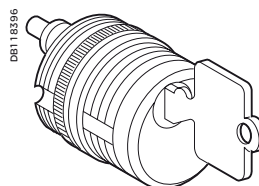
#### PROFALUX



#### CASTELL

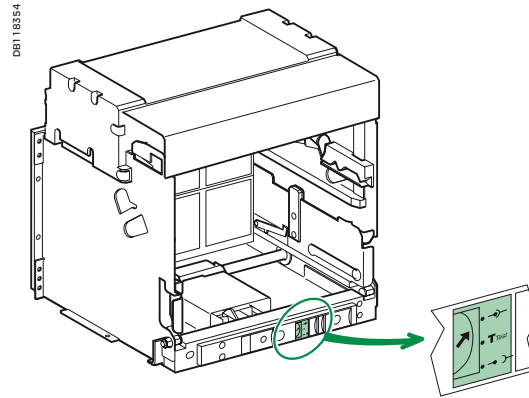


#### KIRK

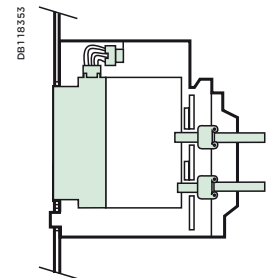
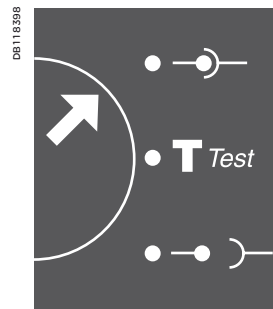


# Identifying the circuit breaker positions

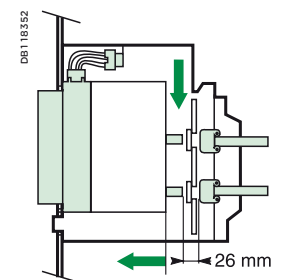
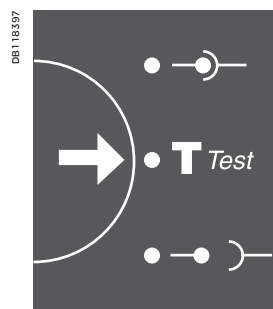
The indicator on the front signals the position of the circuit breaker in the chassis.



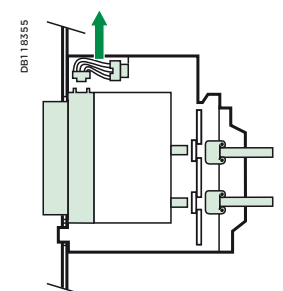
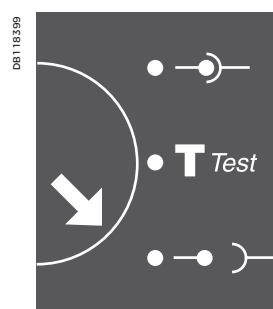
■ "connected" position



■ "test" position



■ "disconnected" position

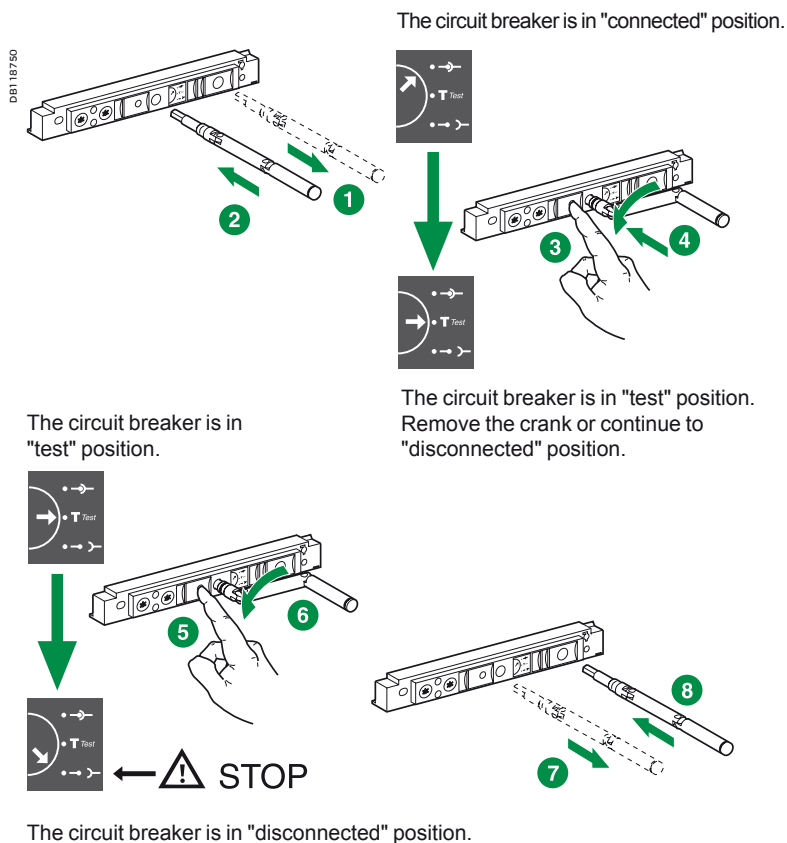


These operations require that all chassis-locking functions be disabled (see page 21).

## Prerequisites

To connect and disconnect Masterpact, the crank must be used. The locking systems, padlocks and the racking interlock all inhibit use of the crank.

## Withdrawing the circuit breaker from the "connected" to "test" position, then to "disconnected" position

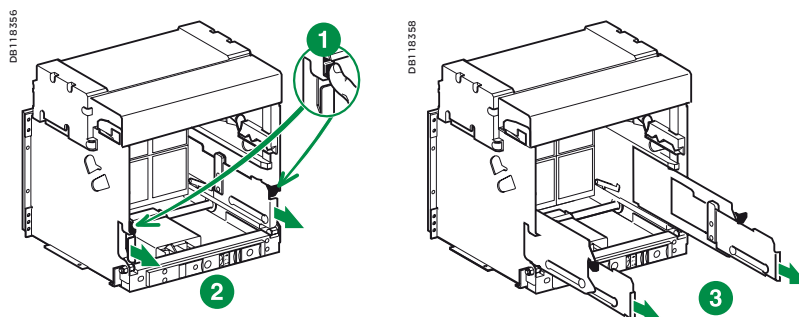


**Caution.** The right-hand rail cannot be removed if the crank has not been removed or if the circuit breaker is not fully disconnected.

## Removing the rails

Press the release tabs and pull the rails out.

To put the rails back in, press the release tabs and push the rails in.



For complete information on Masterpact handling and mounting, see the installation manual(s).

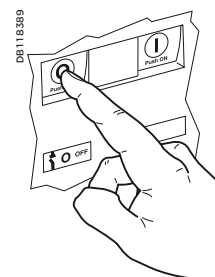
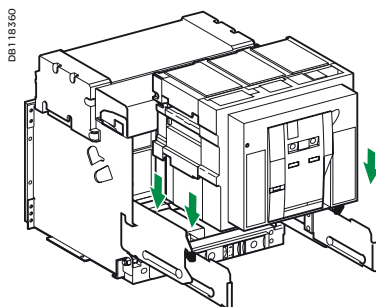
Before mounting the circuit breaker, make sure it matches the chassis.

If you cannot insert the circuit breaker in the chassis, check that the mismatch protection on the chassis corresponds to that on the circuit breaker.

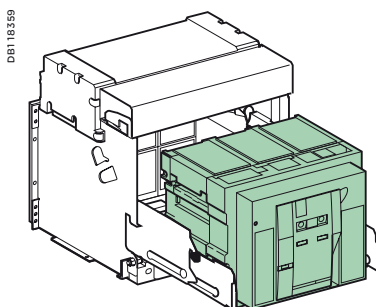
## Inserting Masterpact

Position the circuit breaker on the rails. Check that it rests on all four supports.

Open the circuit breaker (in any case, it opens automatically during connection).

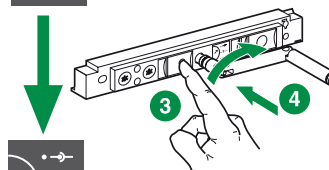
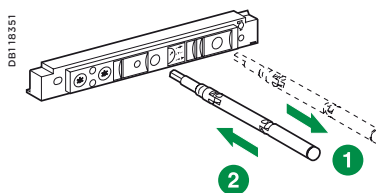


Push the circuit breaker into the chassis, taking care not to push on the control unit.



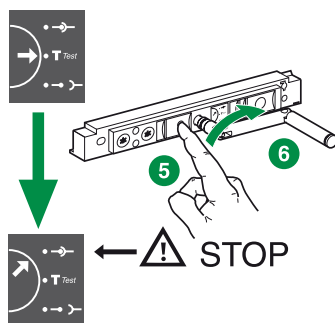
## Racking the circuit breaker from the "disconnected" to "test" position, then to "connected" position

The device is in "disconnected" position.

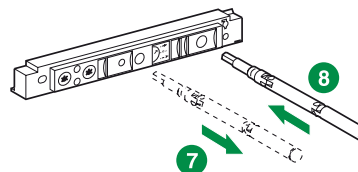


The device is in "test" position.

The device is in "test" position. Remove the crank or continue to "connected" position.



The device is in "connected" position.

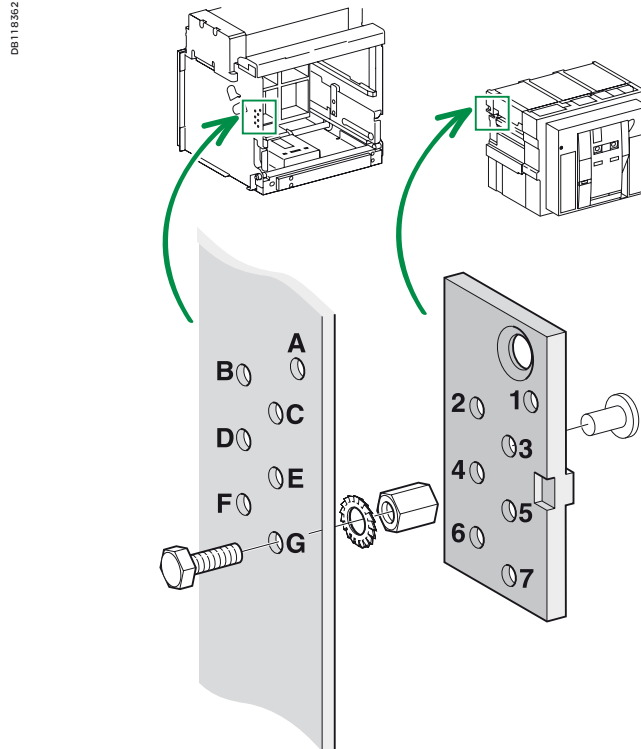


# Matching a Masterpact circuit breaker with its chassis

To set up a mismatch-prevention combination for the circuit breaker and the chassis, see the mismatch-prevention installation manual.

The mismatch protection ensures that a circuit breaker is installed only in a chassis with compatible characteristics.

The possible combinations are listed below.

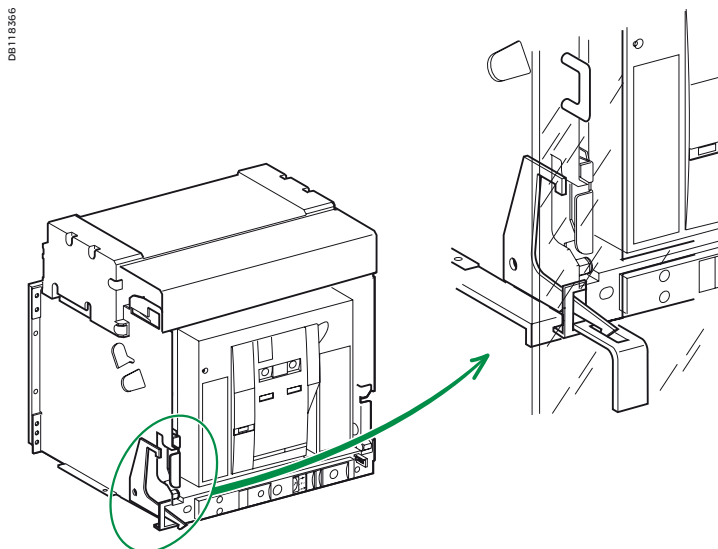


<b>A B C D</b>	<b>5 6 7</b>	<b>B C D E</b>	<b>1 6 7</b>
<b>A B C E</b>	<b>4 6 7</b>	<b>B C D F</b>	<b>1 5 7</b>
<b>A B C F</b>	<b>4 5 7</b>	<b>B C D G</b>	<b>1 4 7</b>
<b>A B C G</b>	<b>4 5 6</b>	<b>B C E F</b>	<b>1 4 6</b>
<b>A B D E</b>	<b>3 6 7</b>	<b>B C E G</b>	<b>1 3 7</b>
<b>A B D F</b>	<b>3 5 7</b>	<b>B D E F</b>	<b>1 3 6</b>
<b>A B D G</b>	<b>3 5 6</b>	<b>B D E G</b>	<b>1 3 5</b>
<b>A B E F</b>	<b>3 4 7</b>	<b>B D F G</b>	<b>1 3 4</b>
<b>A B E G</b>	<b>3 4 6</b>	<b>C D E F</b>	<b>1 2 7</b>
<b>A B F G</b>	<b>3 4 5</b>	<b>C D E G</b>	<b>1 2 6</b>
<b>A C D E</b>	<b>2 6 7</b>	<b>C E F G</b>	<b>1 2 4</b>
<b>A C D F</b>	<b>2 5 7</b>	<b>D E F G</b>	<b>1 2 3</b>
<b>A C D G</b>	<b>2 5 6</b>		
<b>A C E F</b>	<b>2 4 7</b>		
<b>A C E G</b>	<b>2 4 6</b>		
<b>A C F G</b>	<b>2 4 5</b>		
<b>A D E F</b>	<b>2 3 7</b>		
<b>A D E G</b>	<b>2 3 6</b>		
<b>A D F G</b>	<b>2 3 5</b>		
<b>A E F G</b>	<b>2 3 4</b>		

# Locking the switchboard door

The locking device is installed on the left or right-hand side of the chassis:

- when the circuit breaker is in "connected" or "test" position, the latch is lowered and the door is locked
- when the circuit breaker is in "disconnected" position, the latch is raised and the door is unlocked.

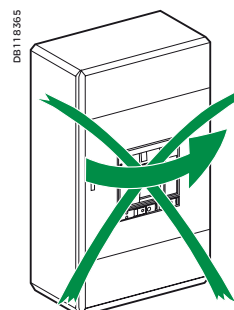
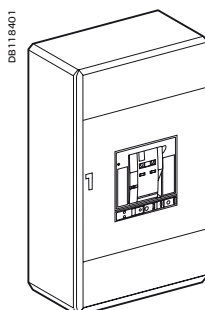


## Disabling door opening

Close the door.

Put the Masterpact in  
"test" or "connected"  
position.

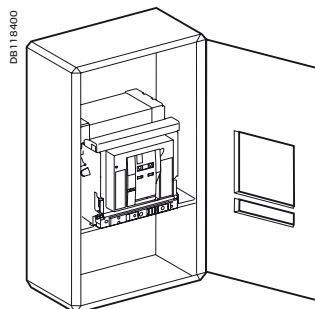
The door is locked.



## Enabling door opening

Put the Masterpact in  
"disconnected" position.

The door is unlocked.



# Locking the circuit breaker in position

Padlocks and keylocks may be used together.

## Combination of locking systems

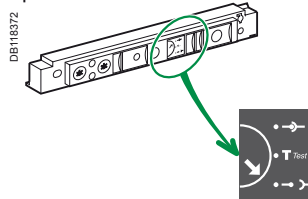
To disable local or remote opening or closing of the circuit breaker, use as needed:

- one to three padlocks
- one or two keylocks
- a combination of the two locking systems.

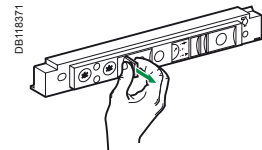
## Disabling connection when the circuit breaker is in "disconnected" position, using one to three padlocks (maximum shackle diameter 5 to 8 mm)

### Locking

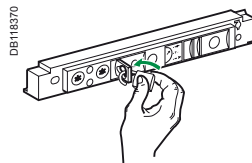
Circuit breaker in "disconnected" position.



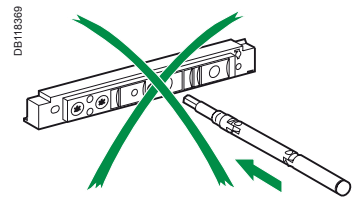
Pull out the tab.



Insert the shackle (max. diameter 5 to 8 mm) of the padlock(s).

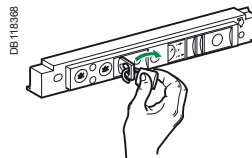


The crank cannot be inserted.

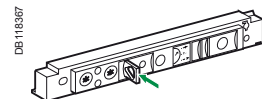


### Unlocking.

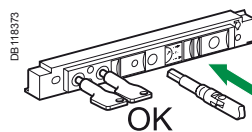
Remove the padlock(s).



Release the tab.



The crank can be inserted.



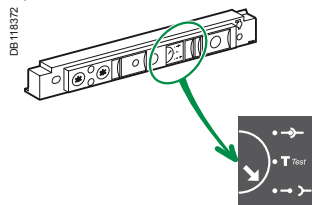
# Locking the circuit breaker in position

Padlocks and keylocks may be used together.

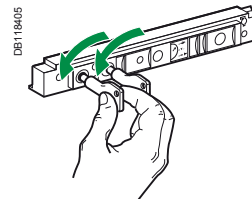
## Disabling connection when the circuit breaker is in "disconnected" position, using one or two keylocks.

### Locking

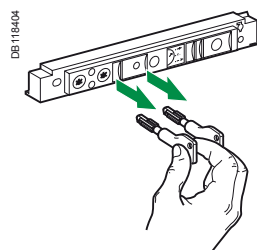
Circuit breaker in "disconnected" position.



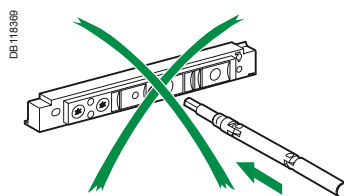
Turn the key(s).



Remove the key(s).

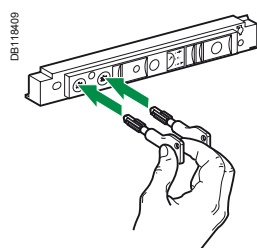


The crank cannot be inserted.

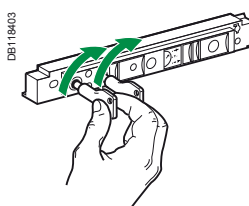


### Unlocking

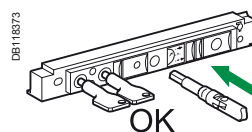
Insert the key(s).



Turn the key(s).

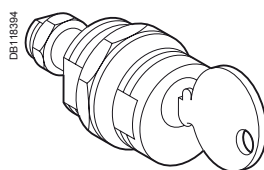


The crank can be inserted.

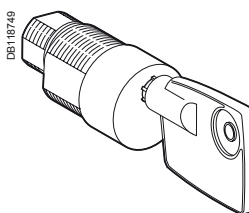


## Four types of keylocks are available

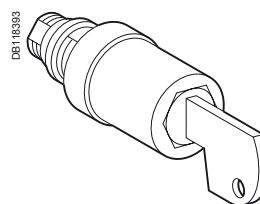
**RONIS**



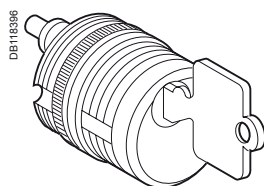
**PROFALUX**



**CASTELL**



**KIRK**





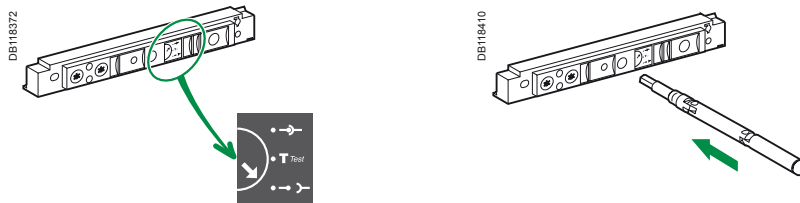
# Locking the circuit breaker in position

For this operation, the circuit breaker must be removed from the chassis.

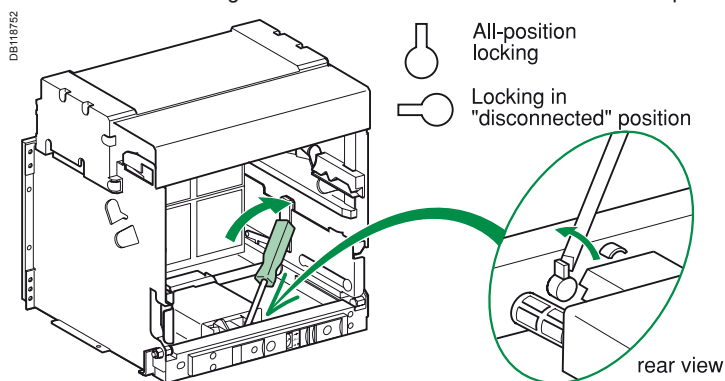
## Disabling use of the crank in all positions

It is possible to modify the padlock and keylock locking function. Instead of locking only in "disconnected" position, it is possible to lock the circuit breaker in all positions

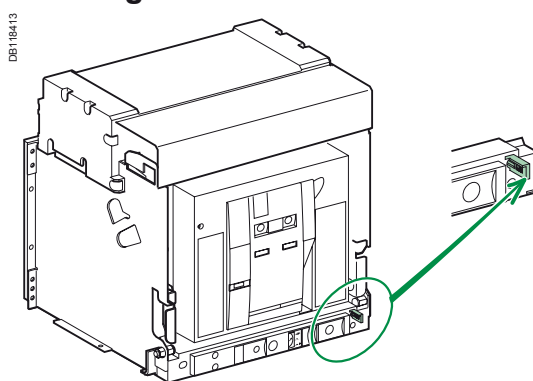
Set the circuit breaker to "disconnected" position. Insert the crank. Remove the circuit breaker from the chassis.



Turn the catch to the right. The circuit breaker can now be locked in all positions.

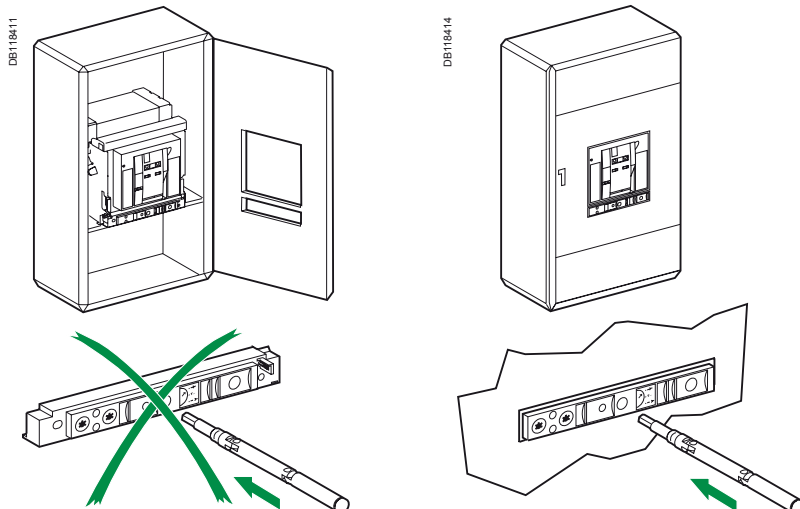


## Locking the circuit breaker when the door is open



When the door is open, the crank cannot be inserted.

When the door is closed, the crank can be inserted.



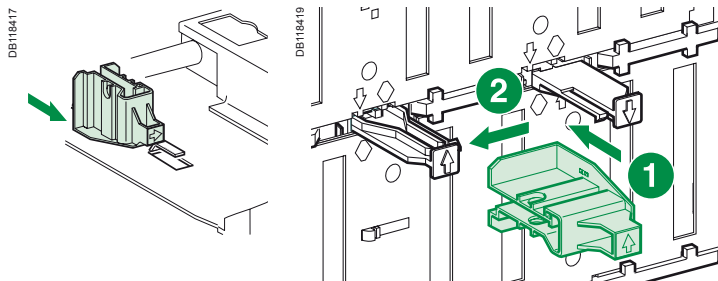
# Locking the safety shutters

## Padlocking inside the chassis

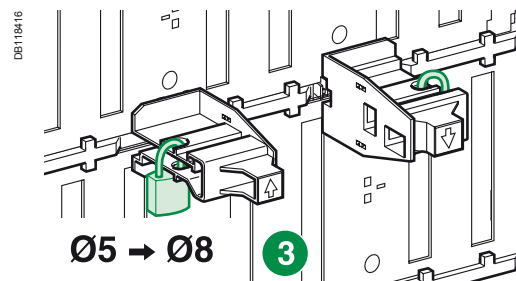
### Using the shutter locking blocks

Remove the block(s) from their storage position.

Position the block(s) on the guide(s).



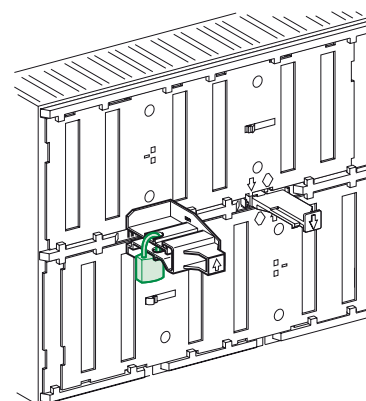
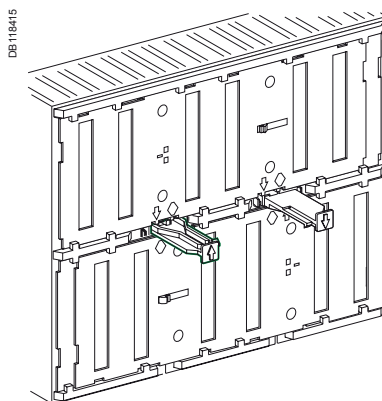
Lock the block(s) using a padlock.



### Four locking possibilities

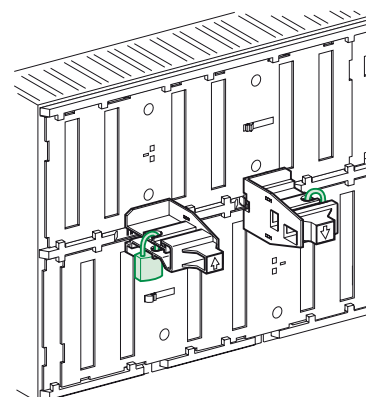
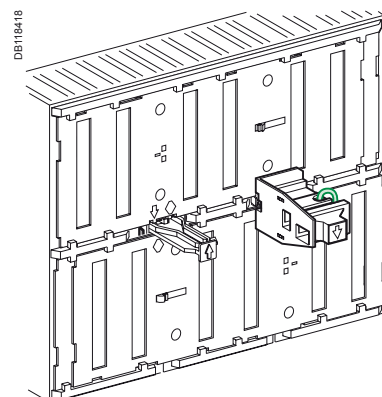
Top and bottom shutters not locked.

Top shutter locked,  
Bottom shutter not locked.



Top shutter not locked,  
Bottom shutter locked.

Top and bottom shutters  
locked.

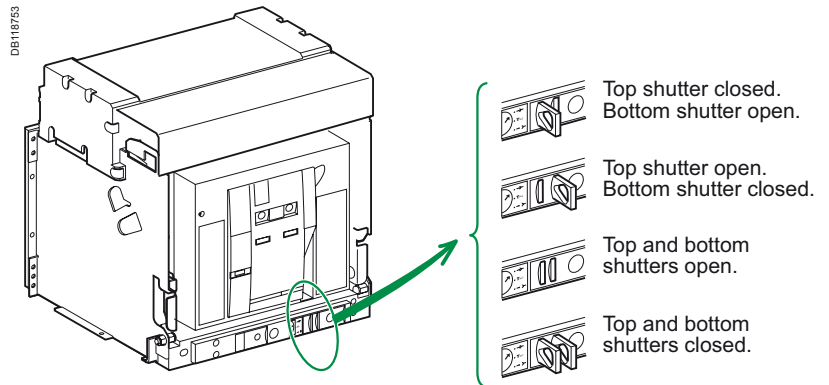


# Locking the safety shutters

## Padlocking or position indication on the front

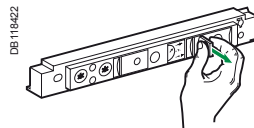
This system offers two functions:

- padlocking of the top or bottom shutters
- indication of the position of each shutter:
  - shutter open
  - shutter closed.

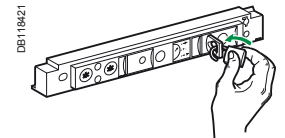


### Locking

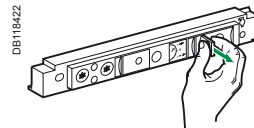
Pull out the left-hand tab to lock the top shutter.



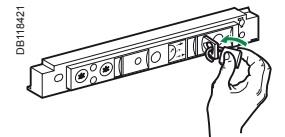
Insert a padlock (shackle 5 to 8 mm).



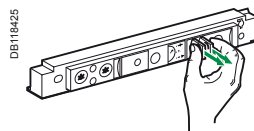
Pull out the right-hand tab to lock the bottom shutter.



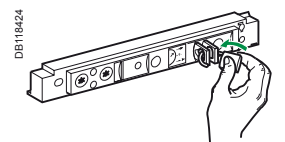
Insert a padlock (shackle 5 to 8 mm).



Pull out both tabs to lock both shutters.

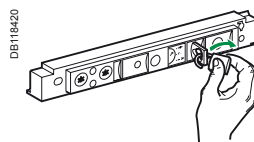


Insert a padlock (shackle 5 to 8 mm).

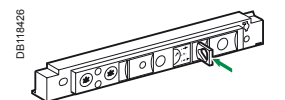


### Unlocking

Remove the padlock.



Release the tab(s).

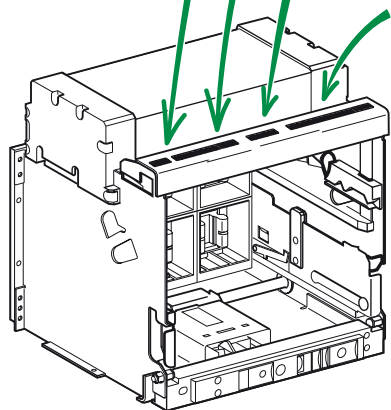


DB119170

<b>CD3</b>	<b>CD2</b>	<b>CD1</b>	or	<b>CE6</b>	<b>CE5</b>	<b>CE4</b>
834	824	814		364	354	344
832	822	812		362	352	342
831	821	811		361	351	341

<b>Com</b>	<b>UC1</b>	<b>UC2</b>	<b>UC3</b>	<b>UC4</b>	<b>M2C/M6C</b>	<b>SDE2/Res.</b>	<b>SDE1</b>	<b>CE3</b>	<b>CE2</b>	<b>CE1</b>
E5 E6	Z5 M1	M2 M3	F2 +	V3	484/Q3	184/K2	84	334	324	314
E3 E4	Z3 Z4	T3 T4	VN	V2	474/Q2	182	82	332	322	312
E1 E2	Z1 Z2	T1 T2	F1 -	V1	471/Q1	181/K1	81	331	321	311

<b>MN/MX2</b>	<b>MX1</b>	<b>XF</b>	<b>PF</b>	<b>MCH</b>
D2/C12	C2	A2	254	B2
/C13	C3	A3	252	B3
D1/C11	C1	A1	251	B1



<b>OF24</b>	<b>OF23</b>	<b>OF22</b>	<b>OF21</b>	<b>OF14</b>	<b>OF13</b>	<b>OF12</b>	<b>OF11</b>	<b>OF4</b>	<b>OF3</b>	<b>OF2</b>	<b>OF1</b>	<b>CT3</b>	<b>CT2</b>	<b>CT1</b>
244	234	224	214	144	134	124	114	44	34	24	14	934	924	914
242	232	222	212	142	132	122	112	42	32	22	12	932	922	912
241	231	221	211	141	131	121	111	41	31	21	11	931	921	911

<b>EF24</b>	<b>EF23</b>	<b>EF22</b>	<b>EF21</b>	<b>EF14</b>	<b>EF13</b>	<b>EF12</b>	<b>EF11</b>
248	238	228	218	148	138	128	118
246	236	226	216	146	136	126	116
245	235	225	215	145	135	125	115

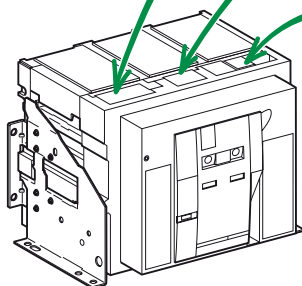
<b>CE9</b>	<b>CE8</b>	<b>CE7</b>
394	384	374
392	382	372
391	381	371

<b>CD6</b>	<b>CD5</b>	<b>CD4</b>
864	854	844
862	852	842
861	851	841

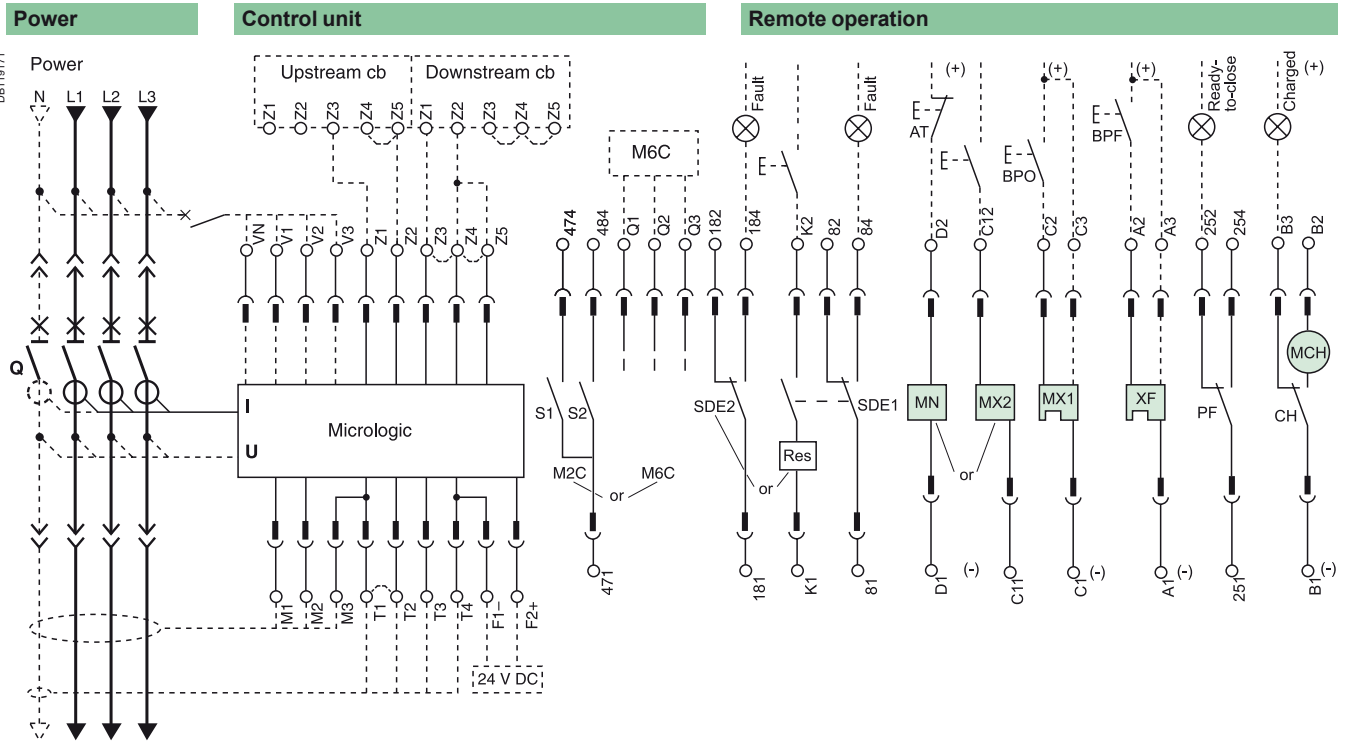
<b>Com</b>	<b>UC1</b>	<b>UC2</b>	<b>UC3</b>	<b>UC4</b>	<b>M2C/M6C</b>	<b>SDE2/Res.</b>	<b>SDE1</b>
E5 E6	Z5 M1	M2 M3	F2 +	V3	484/Q3	184/K2	84
E3 E4	Z3 Z4	T3 T4	VN	V2	474/Q2	182	82
E1 E2	Z1 Z2	T1 T2	F1 -	V1	471/Q1	181/K1	81

<b>MN/MX2</b>	<b>MX1</b>	<b>XF</b>	<b>PF</b>	<b>MCH</b>
D2/C12	C2	A2	254	B2
/C13	C3	A3	252	B3
D1/C11	C1	A1	251	B1

<b>OF24</b>	<b>OF23</b>	<b>OF22</b>	<b>OF21</b>	<b>OF14</b>	<b>OF13</b>	<b>OF12</b>	<b>OF11</b>	<b>OF4</b>	<b>OF3</b>	<b>OF2</b>	<b>OF1</b>
244	234	224	214	144	134	124	114	44	34	24	14
242	232	222	212	142	132	122	112	42	32	22	12
241	231	221	211	141	131	121	111	41	31	21	11



The diagram is shown with circuits de-energised, all devices open, connected and charged and relays in normal position.



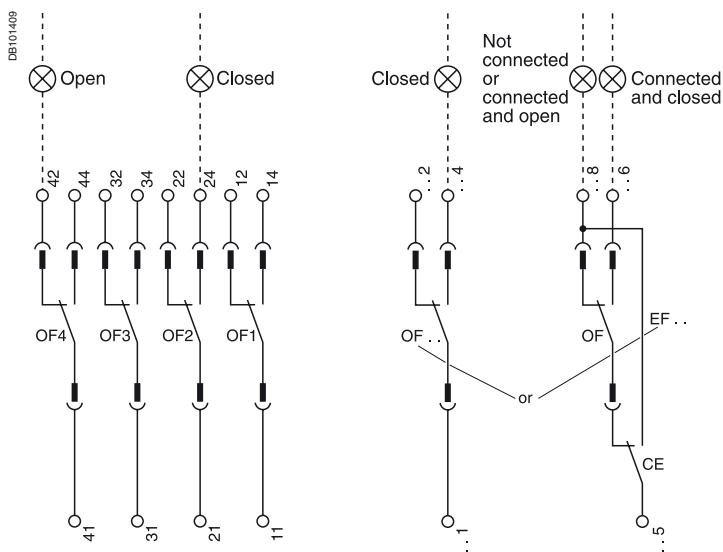
Control unit						
Com	UC1	UC2	UC3	UC4	M2C / M6C	
E5 E6	Z5 M1	M2 M3	F2+ V3	V3	484 / Q3	
E3 E4	Z3 Z4	T3 T4	VN	V2	474 / Q2	
E1 E2	Z1 Z2	T1 T2	F1- V1	V1	471 / Q1	

Remote operation						
SDE2 / Res	SDE1	MN / MX2	MX1	XF	PF	MCH
184 / K2	84	D2 / C12	C2	A2	254	B2
182	82		C3	A3	252	B3
181 / K1	81	D1 / C11	C1	A1	251	B1

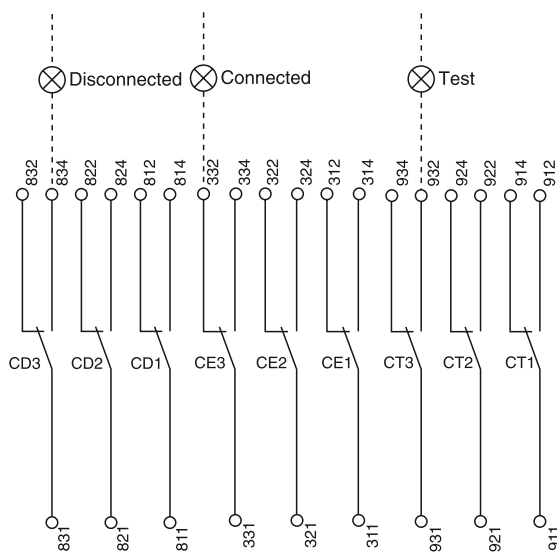
A	P	H	Control unit	Remote operation
■	■	■	<b>Com:</b> E1-E6 communication	<b>SDE2:</b> Fault-trip indication contact <b>or</b> <b>Res:</b> Remote reset
■	■	■	<b>UC1:</b> Z1-Z5 zone selective interlocking; Z1 = ZSI OUT SOURCE Z2 = ZSI OUT; Z3 = ZSI IN SOURCE Z4 = ZSI IN ST (short time) Z5 = ZSI IN GF (earth fault) M1 = Vigi module input (Micrologic 7)	<b>SDE1:</b> Fault-trip indication contact (supplied as standard)
■	■	■	<b>UC2:</b> T1, T2, T3, T4 = external neutral; M2, M3 = Vigi module input (Micrologic 7)	<b>MN:</b> Undervoltage release <b>or</b> <b>MX2:</b> Shunt release
■	■	■	<b>UC3:</b> F2+, F1- external 24 V DC power supply VN external voltage connector	<b>MX1:</b> Shunt release (standard or communicating)
■	■	■	<b>UC4:</b> V1, V2, V3 optional external voltage protector	<b>XF:</b> Closing release (standard or communicating)
■	■	■	<b>M2C:</b> 2 programmable contacts (internal relay); <b>or</b> ext. 24 V DC power supply required	<b>PF:</b> "Ready to close" contact
■	■	■	<b>M6C:</b> 6 programmable contact (external relay); 24 V DC power supply required	<b>MCH:</b> Gear motor.
				<b>Note:</b> When communicating MX or XF releases are used, the third wire (C3, A3) must be connected even if the communications module is not installed.

A : Digital ammeter  
P : A + power meter + programmable protection  
H : P + harmonics

## Indication contacts



## Chassis contacts



## Indication contacts

OF4	OF3	OF2	OF1	OF24	OF23	OF22	OF21	OF14	OF13	OF12	OF11
44	34	24	14	244	234	224	214	144	134	124	114
42	32	22	12	242	232	222	212	142	132	122	112
41	31	21	11	241	231	221	211	141	131	121	111
<b>or or or or or or or or</b>											
EF24	EF23	EF22	EF21	EF14	EF13	EF12	EF11				
248	238	228	218	148	138	128	118				
246	236	226	216	146	136	126	116				
245	235	225	215	145	135	125	115				

## Chassis contacts

CD3	CD2	CD1	CE3	CE2	CE1	CT3	CT2	CT1	
834	824	814	334	324	314	934	924	914	
832	822	812	332	322	312	932	922	912	
831	821	811	331	321	311	931	921	911	
<b>or</b>						<b>or</b>			
CE6	CE5	CE4					CE9	CE8	CE7
364	354	344					394	384	374
362	352	342					392	382	372
361	351	341					391	381	371

## Indication contacts

**OF4:** ON/OFF indication contacts

**OF3:** indication contacts

**OF2:** ON/OFF indication contacts

**OF1:** Combined "connected/closed" indication contacts

**OF24 or EF24:** ON/OFF indication contacts

**OF23 or EF23:** Combined "connected/closed" indication contacts

**OF22 or EF22:** ON/OFF indication contacts

**OF21 or EF21:** Combined "connected/closed" indication contacts

**OF14 or EF14:** ON/OFF indication contacts

**OF13 or EF13:** Combined "connected/closed" indication contacts

**OF12 or EF12:** ON/OFF indication contacts

**OF11 or EF11:** Combined "connected/closed" indication contacts

## Chassis contacts

**CD3:** Disconnected position contacts

**CD2:** Disconnected position contacts

**CD1:** Disconnected position contacts

**CE3:** Connected position contacts

**CE2:** Connected position contacts

**CE1:** Connected position contacts

**CT3:** Test-position contacts

**CT2:** Test-position contacts

**CT1:** Test-position contacts

**or**

**CE6:** Connected position contacts

**CE5:** Connected position contacts

**CE4:** Connected position contacts

**CE9:** Connected position contacts

**CE8:** Connected position contacts

**CE7:** Connected position contacts

**or**

**CD6:** Disconnected position contacts

**CD5:** Disconnected position contacts

**CD4:** Disconnected position contacts

Key:

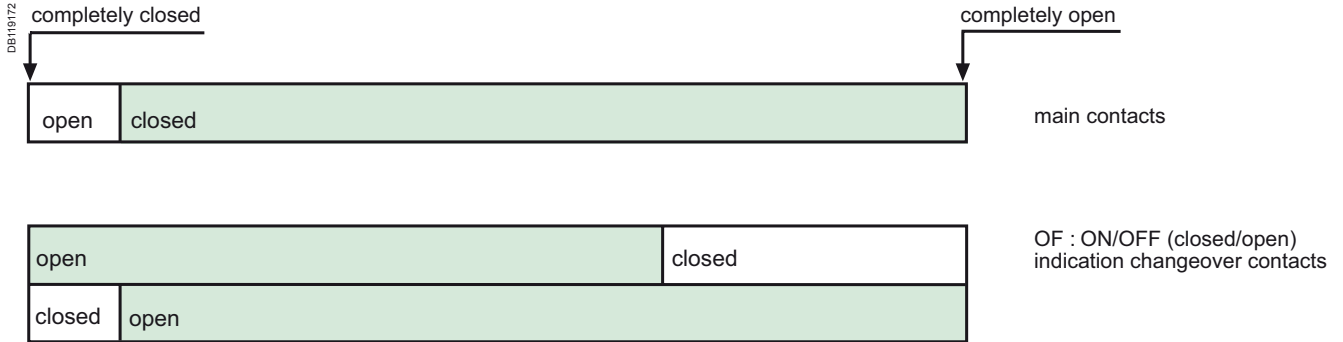
Drawout device only

SDE1, OF1, OF2, OF3, OF4 supplied as standard

Interconnected connections (only one wire per connection point)

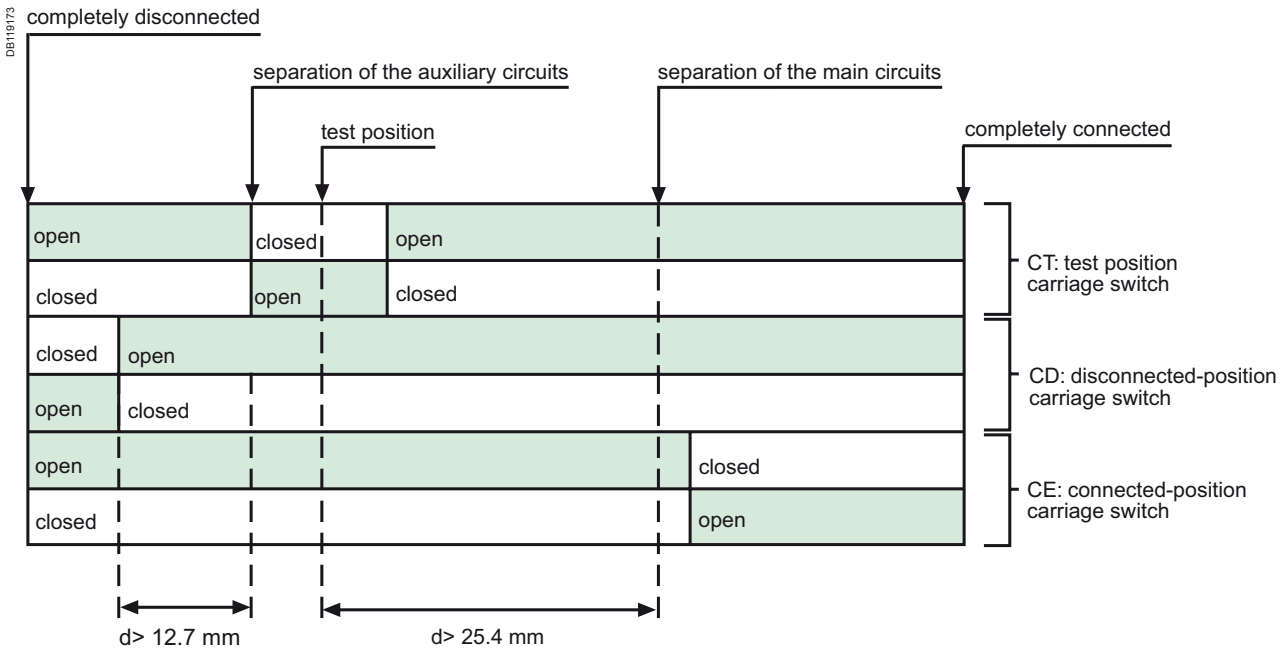
The ON/OFF indication contacts signal the status of the device main contacts.

## Circuit breaker



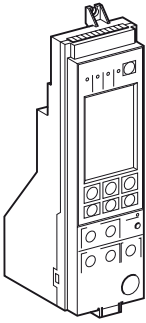
The carriage switches indicate the "connected", "test" and "disconnected" positions.

## Chassis

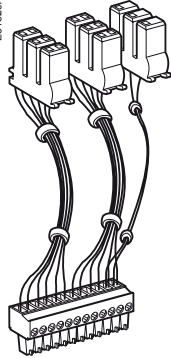


For more in-depth information, see the control-unit user manual.

E46108AA



E5F1328AA



## Micrologic control units

- Standard equipment, one per device.
- Long-time rating plug and connection cables not included, see below:
  - Micrologic 2.0
  - Micrologic 5.0
  - Micrologic 2.0 A
  - Micrologic 5.0 A
  - Micrologic 6.0 A
  - Micrologic 7.0 A
  - Micrologic 5.0 P
  - Micrologic 6.0 P
  - Micrologic 7.0 P
  - Micrologic 5.0 H
  - Micrologic 6.0 H
  - Micrologic 7.0 H
- Connection cables:
  - for fixed device
  - for drawout device.
- Depending on the model, control units offer in addition:
  - fault indications
  - measurement of electrical parameters (current, voltage, power, etc)
  - harmonic analysis
  - communication.

## Long-time rating plugs

- Standard equipment, one per control unit.
  - 0.4 to 1 x I<sub>r</sub> setting
  - 0.4 to 0.8 x I<sub>r</sub> setting
  - 0.8 to 1 x I<sub>r</sub> setting
  - Off (no long-time protection).
- The plugs determine the setting range for the Long-time protection.

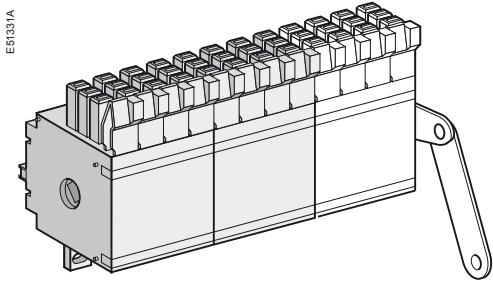
## M2C and M6C programmable contacts

- Optional equipment, used with Micrologic P and H control units.
- Connection cables not included, see below:
  - 2 M2C contacts
  - 6 M6C contacts
- Connection cables:
  - for fixed device
  - for drawout device.
- Contacts can be programmed using the keypad on the control unit or via the COM option.
- They indicate:
  - the type of fault
  - instantaneous or delayed threshold overruns.
- M2C: 2 contacts (6 A-240 V)
- M6C: 6 contacts (6A-240V).
- Permissible load on each of the M6C relay outputs;
  - 240 V AC: 5 A where p.f = 0.7
  - 380 V AC: 3 A where p.f = 0.7
  - 24 V DC: 8 A where L/R = 0
  - 48 V DC: 1.5 A where L/R = 0
  - 125 V DC: 0.4 A where L/R = 0
  - 250 V DC: 0.15 A where L/R = 0
- M6C supply voltage: 24 V DC ± 5%
- M6C maximum consumption: 100 mA



## ON/OFF indication contacts (OF)

- Standard equipment: 4 OF per device.
- OF contacts indicate the position of main contacts
- They trip when the minimum isolation distance between the main contacts is reached.
- 4 changeover contacts
- Rated current: 10 A.
- Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
  - 480 V: 10 A (rms)
  - 600 V: 6 A (rms).
- Breaking capacity for DC power (DC12 as per 947-5-1): 250 V: 3 A.



## Additional ON/OFF indication contacts (OF)

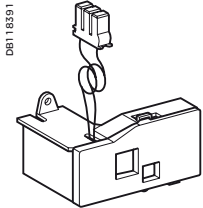
- Optional equipment, two blocks of 4 OF contacts per device
- Connection cables not included, see below: one block of 4 OF contacts
- Connection cables:
  - for fixed device
  - for drawout device.
- OF contacts indicate the position of the main contacts
- They trip when the minimum isolation distance between the main contacts is reached
- Changeover contacts
- Rated current: 10 A
- Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
  - 480 V: 10 A (rms)
  - 600 V: 6 A (rms)
- Breaking capacity for DC power (DC12 as per 947-5-1): 250 V: 3 A.

## Combined "connected/closed" contacts (EF)

- Optional equipment, 8 EF contacts per device
- Each contact is mounted in place of the connector of an additional OF contact
- One EF contact.
- The contact combines the "device connected" and the "device closed" information to produce the "circuit closed" information.
- Changeover contacts
- Rated current: 10 A
- Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
  - 240 V: 10 A (rms)
  - 380 V: 10 A (rms)
  - 480 V: 10 A (rms)
  - 600 V: 6 A (rms)
- Breaking capacity for DC power (DC12 as per 947-5-1):
  - 48 V: 2.5 A
  - 130 V: 0.8 A
  - 250 V: 0.3 A.

## "Fault-trip" indication contact (SDE/1)

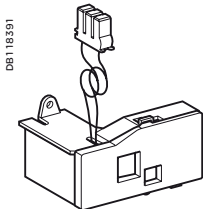
- Standard equipment on circuit breakers, one SDE/1 contact per device
- Not available for switch-disconnector versions.
- The contact provides a remote indication of device opening due to an electrical fault.
- Changeover contact
- Rated current: 10 A
- Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
  - 240 V: 10 A (rms)
  - 380 V: 5 A (rms)
  - 480 V: 5 A (rms)
  - 600 V: 3 A (rms)
- Breaking capacity for DC power (DC12 as per 947-5-1):
  - 48 V: 3 A
  - 125 V: 0.3 A
  - 250 V: 0.15 A.



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## Additional "fault-trip" indication contact (SDE/2)

- Optional equipment for circuit breakers, one additional SDE/2 contact per device
- Not available for switch-disconnector versions
- Not compatible with the Res option
- Connection cables not included, see below:
  - Connection cables:
    - for fixed device
    - for drawout device.
- The contact remotely indicates device opening due to an electrical fault.
- Changeover contact
- Rated current: 10 A
- Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
  - 240 V: 10 A (rms)
  - 380 V: 5 A (rms)
  - 480 V: 5 A (rms)
  - 600 V: 3 A (rms)
- Breaking capacity for DC power (DC12 as per 947-5-1):
  - 48 V: 3 A
  - 125 V: 0.3 A
  - 250 V: 0.15 A.



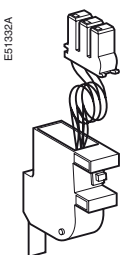
DB118391

## Electrical reset after fault trip (Res)

- Optional equipment, one Res per device
- Not compatible with the SDE/2 option
- Connection cables not included, see below:
  - 110/130 V AC
  - 220/240 V AC
  - Connection cables:
    - for fixed device
    - for drawout device.
- The contact remotely resets the device following tripping due to an electrical fault.

## "Springs charged" limit switch contact (CH)

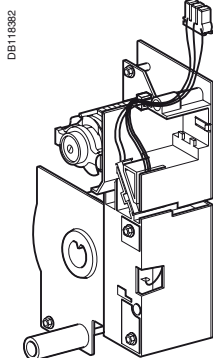
- Standard equipment, one CH contact per device.
- The contact indicates the "charged" status of the operating mechanism (springs charged).
- Changeover contact
- Rated current: 10 A
- Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
  - 240 V: 10 A (rms)
  - 380 V: 5 A (rms)
  - 480 V: 5 A (rms)
  - 600 V: 3 A (rms)
- Breaking capacity for DC power (DC12 as per 947-5-1):
  - 48 V: 3 A
  - 125 V: 0.3 A
  - 250 V: 0.25 A.



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## "Ready to close" contact (PF)

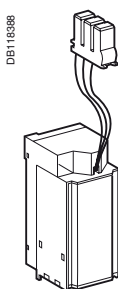
- Optional equipment, one PF contact per device
- Connection cables not included, see below:
  - one PF contact
  - Connection cables:
    - for fixed device
    - for drawout device.
- The contact indicates that the device may be closed because all the following are valid:
  - circuit breaker is open
  - spring mechanism is charged
  - a maintained closing order is not present
  - a maintained opening order is not present.
- Changeover contact
- Rated current: 10 A
- Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
  - 240 V: 10 A (rms)
  - 380 V: 5 A (rms)
- Breaking capacity for DC power (DC12 as per 947-5-1):
  - 48 V: 3 A
  - 125 V: 0.3 A
  - 250 V: 0.15 A.



DB116382

## Moto-réducteur MCH

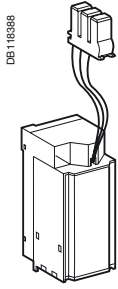
- Optional equipment, one MCH gear motor per device
- Connection cables not included, see below:
  - 100/130 V AC
  - 200/240 V AC
  - 277 V AC
  - 380/415 V AC
  - 400/440 V AC
  - 480 V AC
  - 24/30 V DC
  - 48/60 V DC
  - 100/125 V DC
  - 200/250 V DC
- Connection cables:
  - for fixed device
  - for drawout device.
- The gear motor automatically charges and recharges the spring mechanism.
- Charging time: 4 seconds max.
- Consumption:
  - 180 VA AC
  - 180 W DC
- Inrush current: 2 to 3 In for 0.1 second
- Operating rate: maximum 3 cycles per minute.



DB116386

## Opening releases MX/1 and MX/2, closing release XF

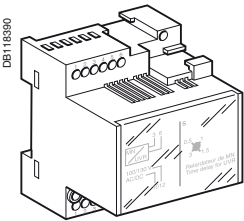
- Optional equipment, 1 or 2 MX releases per device, 1 XF per device
- The function (MX or XF) is determined by where the coil is installed
- Connection cables not included, see below:
  - standard version:
    - 12 V AC
    - 50/60 Hz / DC
    - 24/30 V AC
    - 50/60 Hz / DC
    - 48/60 V AC
    - 50/60 Hz / DC
    - 100/130 V AC
    - 50/60 Hz / DC
    - 200/250 V AC
    - 50/60 Hz / DC
    - 277 V AC
    - 50/60 Hz / DC
    - 380/480 V AC
    - 50/60 Hz / DC.
  - communicating version (with COM option):
    - 12 V AC
    - 50/60 Hz / DC
    - 24/30 V AC
    - 50/60 Hz / DC
    - 48/60 V AC
    - 50/60 Hz / DC
    - 100/130 V AC
    - 50/60 Hz / DC
    - 200/250 V AC
    - 50/60 Hz / DC
    - 240/277 V AC
    - 50/60 Hz / DC
    - 380/480 V AC
    - 50/60 Hz / DC.
- Connection cables:
  - for fixed device
  - for drawout device
- The MX release instantaneously opens the circuit breaker when energised
- The XF release instantaneously closes the circuit breaker when energised, if the device is "ready to close".
- Device response time:
  - MX: 50 ms ± 10
  - XF: 70 ms +10 / -15
  - > 3200 A: 80 ms ± 10
- Operating threshold:
  - MX: 0.7 to 1.1 x Un
  - XF: 0.85 to 1.1 x Un
- The supply can be maintained
- Consumption:
  - pick-up (80 ms): 200 VA
  - hold: 4.5 VA.



DB1 18388

## Instantaneous undervoltage releases (MN)

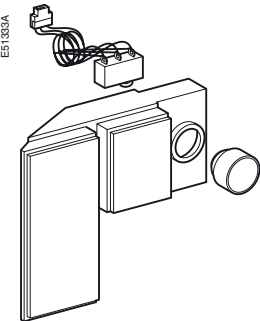
- Optional equipment, 1 MN per device
- Not compatible with the MX/2 opening release
- Connection cables not included, see below:
  - 24/30 V AC 50/60 Hz / DC
  - 48/60 V AC 50/60 Hz / DC
  - 100/130 V AC 50/60 Hz / DC
  - 200/250 V AC 50/60 Hz / DC
  - 380/480 V AC 50/60 Hz / DC
- Connection cables:
  - for fixed device
  - for drawout device.
- The MN release instantaneously opens the circuit breaker when its supply voltage drops.
- Device response time: 90 ms  $\pm$ 5
- Operating threshold:
  - opening: 0.35 to 0.7 x Un
  - closing: 0.85 x Un
- Consumption:
  - pick-up (80 ms): 200 VA
  - hold: 4.5 VA.



DB1 18390

## Delay unit for MN releases

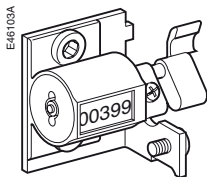
- Optional equipment, 1 MN with delay unit per device.
- Delay-unit (must be ordered in addition to the MN):
  - 48/60 V AC 50/60 Hz / DC
  - 100/130 V AC 50/60 Hz / DC
  - 200/250 V AC 50/60 Hz / DC
  - 380/480 V AC 50/60 Hz / DC.
- The unit delays operation of the MN release to eliminate circuit-breaker nuisance tripping during short voltage dips
- The unit is wired in series with the MN and must be installed outside the circuit breaker.
- Device response time: 0.5, 1, 1.5, 3 seconds
- Operating threshold:
  - opening: 0.35 to 0.7 x Un
  - closing: 0.85 x Un
- Consumption:
  - pick-up (80 ms): 200 VA
  - hold: 4.5 VA.



E51 1835A

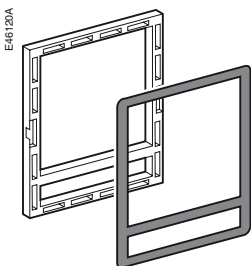
## Electrical closing pushbutton (BPFE)

- Optional equipment, 1 BPFE per device
- Connection cables not included, see below:
  - for fixed device
  - for drawout device.
- Located on the front face of the device, this pushbutton carries out electrical closing of the circuit breaker via the XF release, taking into account all the safety functions that are part of the control/monitoring system of the installation.



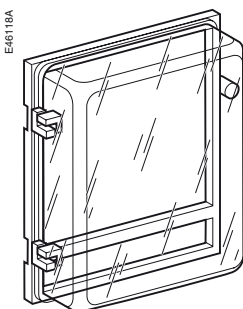
## Operation counter (CDM)

- Optional equipment, one CDM per device.
- The operation counter sums the number of operating cycles.



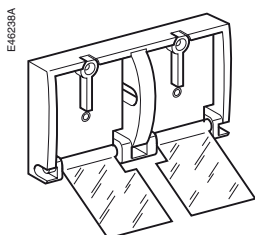
## Escutcheon (CDP)

- Optional equipment, one CDP per device
  - for fixed device
  - for drawout device.
- The CDP increases the degree of protection to IP 40 and IK 07 (fixed and drawout devices).



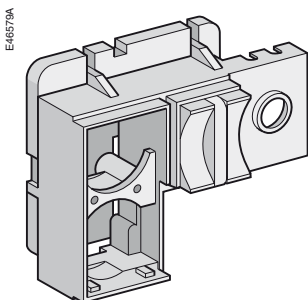
## Transparent cover (CCP)

- Optional equipment, one CP per device equipped with a CDP (for fixed and drawout devices).
- Mounted with a CDP, the CP increases the degree of protection to IP 55 and IK 10 (fixed and drawout devices).



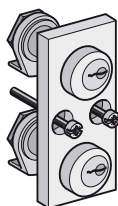
## Transparent cover for pushbutton locking using a padlock, lead seal or screws

- Optional equipment, one locking cover per device.
- The transparent cover blocks access (together or separately) to the pushbuttons used to open and close the device
- Locking requires a padlock, a lead seal or two screws.



## Device locking in the OFF position using a padlock

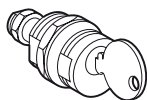
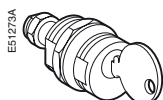
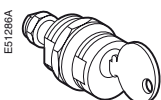
- Optional equipment, one locking system per device.
- The unit inhibits local or remote closing of the device
- Up to three padlocks may be used for locking.



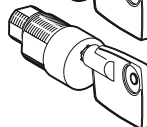
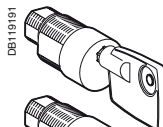
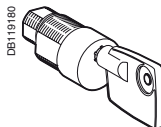
## Device OFF position locking kit for keylocks

- Optional equipment, one locking kit per device
- Locks not included:
  - for Profalux or Ronis keylocks
  - for Castell keylocks
  - for Kirk keylocks.
- The kit inhibits local or remote closing of the device.

### Ronis



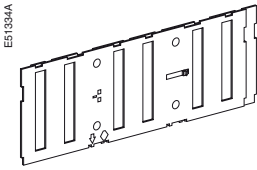
### Profalux



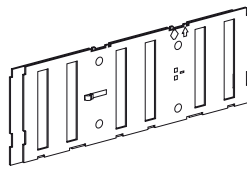
## Keylocks required for the device locking kit

- One or two keylocks per locking kit
- Ronis:
  - 1 keylock
  - 2 keylocks.
- Profalux:
  - 1 keylock
  - 2 keylocks.

Top shutter closed

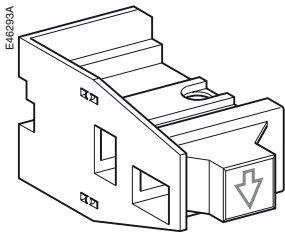


Bottom shutter closed



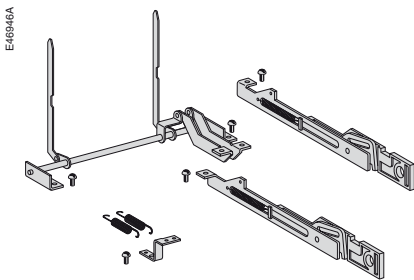
## Safety shutters

- Optional equipment
- Set of shutters for top and bottom:
  - NW08/NW40  
3 poles  
4 poles
  - NW40b/NW63  
3 poles  
4 poles.
- Mounted on the chassis, the safety shutters automatically block access to the disconnecting contact cluster when the device is in the "disconnected" or "test" positions.
- IP20.



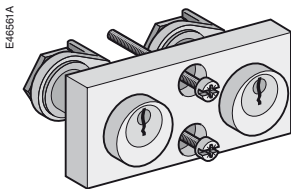
## Shutter locking blocks

- Optional equipment:
  - 2 blocks for NW08 to NW40
  - 4 blocks for NW40b to NW63.
- The block may be padlocked. It:
  - prevents connection of the device
  - locks the shutters in the closed position.



## Shutter position indication and locking on front face

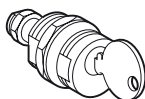
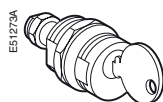
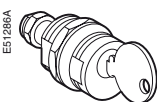
- Optional equipment
  - NW08/NW040  
3 and 4 poles
  - NW40b/NW63  
3 poles  
4 poles.
- This option located on the front of the chassis:
  - indicates that the shutters are closed
  - can be used to independently or simultaneously padlock the two shutters (top and bottom).



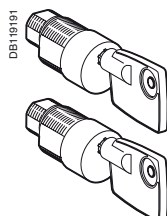
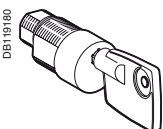
## Circuit breaker locking in "disconnected" position

- Optional equipment, one locking system per device
  - for Profalux or Ronis keylocks
  - for Castell keylocks
  - for Kirk keylocks.
- Mounted on the chassis and accessible with the door closed, this system locks the circuit breaker in "disconnected" position using one or two keylocks
- The "disconnected" position locking system may be modified to lock the circuit breaker in all three positions.

Ronis



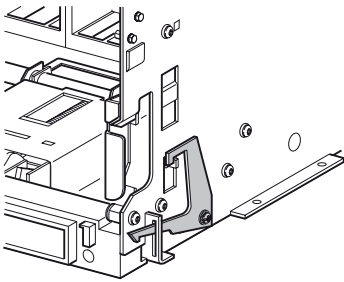
Profalux



## Keylocks required with the "disconnected" position locking system

- One or two keylocks per locking system
  - Ronis:
    - 1 keylock
    - 2 keylocks
  - Profalux:
    - 1 keylock
    - 2 keylocks.

E46852A



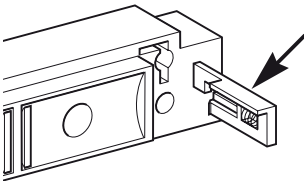
## Door interlock

- Optional equipment, one door interlock per chassis.

- This device inhibits opening of the cubicle door when the circuit breaker is in "connected" or "test" position.

- It may be mounted on the left or right-hand side of the chassis.

E46124A



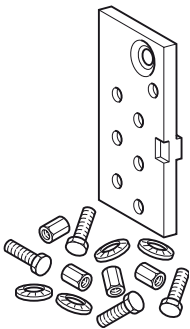
## Racking interlock

- Optional equipment, one racking interlock per chassis.

- This device prevents insertion of the racking handle when the cubicle door is open.

- It is mounted on the right-hand side of the chassis.

E46111A

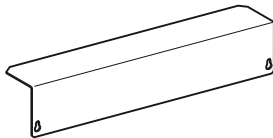


## Mismatch protection

- Optional equipment, one mismatch protection device per chassis.

- Mismatch protection offers twenty different combinations that the user may select to ensure that only a compatible circuit breaker is mounted on a given chassis.

E51351A

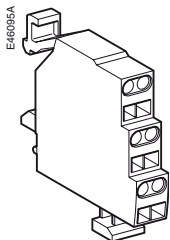


## Auxiliary terminal shield (CB)

- Optional equipment, one CB shield per chassis
  - NW08/NW040  
3 poles  
4 poles
  - NW40b/NW63  
3 poles  
4 poles.

- The shield prevents access to the terminal block of the electrical auxiliaries.





## "Connected", "disconnected" and "test" position carriage switches (CE, CD, CT)

- Optional equipment, one to nine carriage switches
  - Standard configuration, 0 to 3 CE, 0 to 3 CD, 0 to 3 CT
  - Other configurations (by ordering additional actuators):
    - 0 to 9 CE, 0 CD, 0 CT
    - 0 to 6 CE, 0 to 3 CD, 0 CT
    - 0 to 6 CE, 0 CD, 0 to 3 CT
  - Connection cables not included, see below:
    - 1 carriage switch
    - 1 set of actuators for additional carriage switches
  - Connection cables (per carriage switch).
- The carriage switches indicate the three positions:
    - CE: connected position
    - CD: disconnected position (when the minimum isolation distance between the main contacts and the auxiliary contacts is reached)
    - CT: test position.
- Changeover contact
  - Rated current: 10 A
  - Breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
    - 240 V: 10 A (rms)
    - 380 V: 5 A (rms)
  - Breaking capacity for DC power (DC12 as per 947-5-1):
    - 250 V: 0.3 A.

These operations must be carried out in particular before using a Masterpact device for the first time.

A general check of the circuit breaker takes only a few minutes and avoids any risk of mistakes due to errors or negligence.

A general check must be carried out:

- Prior to initial use
- Following an extended period during which the circuit breaker is not used.

Toute A check must be carried out with the entire switchboard de-energised.

In switchboards with compartments, only those compartments that may be accessed by the operators must be de-energised.

## Electrical tests

Insulation and dielectric-withstand tests must be carried out immediately after delivery of the switchboard. These tests are precisely defined by international standards and must be directed and carried out by a qualified expert.

Prior to running the tests, it is absolutely necessary to:

- Disconnect all the electrical auxiliaries of the circuit breaker (MCH, MX, XF, MN, Res electrical remote reset)
- Remove the long-time rating plug on the 7.0 A, 5.0 P, 6.0 P, 7.0 P, 5.0 H, 6.0 H, 7.0 H control units. Removal of the rating plug disconnects the voltage measurement input.

## Switchboard inspection

Check that the circuit breakers are installed in a clean environment, free of any installation scrap or items

(tools, electrical wires, broken parts or shreds, metal objects, etc.).

## Conformity with the installation diagram

Check that the devices conform with the installation diagram:

- Breaking capacities indicated on the rating plates
- Identification of the control unit (type, rating)
- Presence of any optional functions (remote ON/OFF with motor mechanism, auxiliaries, measurement and indication modules, etc.)
- Protection settings (long time, short time, instantaneous, earth fault)
- Identification of the protected circuit marked on the front of each circuit breaker.

## Condition of connections and auxiliaries

Check device mounting in the switchboard and the tightness of power connections.

Check that all auxiliaries and accessories are correctly installed:

- Electrical auxiliaries
- Terminal blocks
- Connections of auxiliary circuits.

## Operation

Check the mechanical operation of the circuit breakers:

- Opening of contacts
- Closing of contacts.

## Check on the control unit

Check the control unit of each circuit breaker using the respective user manuals.

# What to do when the circuit breaker trips

## Note the fault

Faults are signalled locally and remotely by the indicators and auxiliary contacts installed on circuit breakers (depending on each configuration). See page 12 in this manual and the user manual of the control unit for information on the fault indications available with your circuit breaker.

## Identify the cause of tripping

A circuit must never be reclosed (locally or remotely) before the cause of the fault has been identified and cleared.

A fault may have a number of causes:

- depending on the type of control unit, fault diagnostics are available. See the user manual for the control unit.
- depending on the type of fault and the criticality of the loads, a number of precautionary measures must be taken, in particular the insulation and dielectric tests on a part of or the entire installation. These checks and test must be directed and carried out by qualified personnel.

## Inspect the circuit breaker following a short-circuit

- Check the arc chutes (see page 43).
- Check the contacts (see page 43).
- Check the tightness of connections (see the device installation manual).
- Check the disconnecting-contact clusters (see page 44).

## Reset the circuit breaker

The circuit breaker can be reset locally or remotely.  
See page 12 in this manual for information on how the circuit breaker can be reset.

Recommended program for devices used under normal operating conditions:  
Ambient temperature: -5° C / +60°C  
Normal atmosphere

## Periodic inspections required

Interval	Operations	Procedure
Each year	<ul style="list-style-type: none"> <li>■ Open and close the device locally and remotely, successively using the various auxiliaries</li> <li>■ Test the operating sequences</li> <li>■ Test the control unit using the mini test kit.</li> </ul>	<ul style="list-style-type: none"> <li>□ see pages 10 and 11.</li> <li>□ see page 8.</li> <li>□ see the user manual of the control unit.</li> </ul>
Every two years or when the control-unit maintenance indicator reaches 100	<ul style="list-style-type: none"> <li>■ Check the arc chutes</li> <li>■ Check the main contacts</li> <li>■ Check the tightness of connections</li> <li>■ Check the disconnecting-contact clusters</li> </ul>	<ul style="list-style-type: none"> <li>□ see page 43</li> <li>□ see page 43</li> <li>□ see the device installation manual</li> <li>□ see page 44</li> </ul>

## Parts requiring replacement, depending on the number of operating cycles.

The following parts must be replaced periodically to lengthen the service life of the device (maximum number of operating cycles).

Part	Intervening entity	Description or procedure
Arc chutes	■ User.	□ see page 43.
Main contacts	<ul style="list-style-type: none"> <li>■ Inspection: user</li> <li>■ Replacement: Schneider After Sales Support.</li> </ul>	□ see page 43.
MCH gear motor	■ User.	□ see page 9.
Mechanical interlocks	■ User.	
Connecting-rod springs	■ Schneider After Sales Support.	
MX/MN/XF	■ User.	□ see page 10, 11.

Part replacement must be programmed on the basis of the data below, listing the service life of the various parts in numbers of O/C cycles at the rated current.

## Number of O/C cycles at the rated current

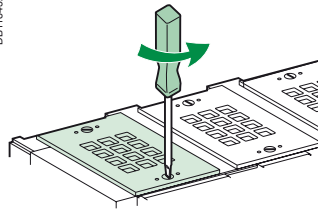
Type of circuit breaker	Maximum service life	Service life of various parts			
		Arc chutes chutes	Main contacts MCH	Connecting-rod springs	MX/XF releases
NW08 to NW16 types N1/H1/H2	25000	10000	10000	12500	12500
NW08 to NW16 type L1	25000	3000	10000	12500	12500
NW20 types H1/H2	20000	440 V: 8000 690 V: 6000	440 V: 8000 690 V: 6000	10000	12500
NW20 to NW25 type H3	20000	2000	440 V: 8000 690 V: 6000	10000	12500
NW20 type L1	20000	3000	10000	10000	12500
NW25 to NW40 types H1/H2	20000	440 V: 5000 690 V: 2500	440 V: 5000 690 V: 2500	10000	12500
NW32 to NW40 type H3	20000	1250	440 V: 5000 690 V: 2500	10000	12500
NW40b to NW63 types H1/H2	10000	1500	1500	5000	12500

Before undertaking any maintenance work, de-energise the installation and fit locks or warnings in compliance with all applicable safety standards.

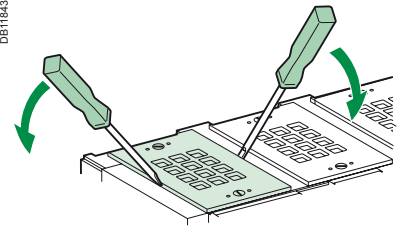
## Arc chutes

- Remove the fixing screws:
  - types N1, H1 and H2 ≤ NW 40: two screws
  - types H1 and H2 ≥ NW 40b, type H3: three screws
  - type L1: four screws.

DB118432



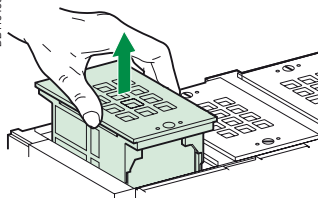
DB118431



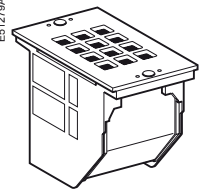
- Check the arc chutes:
  - chamber not cracked
  - separators not corroded.

If necessary, replace the arc chutes.

DB118430



ES1279A



If the control unit has a maintenance indicator, there is no need to systematically check the contacts.

If the contacts are worn, have the concerned poles replaced by the Schneider Service centre.

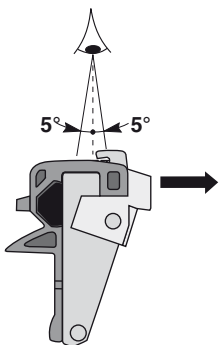
## Wear of main contacts

- Remove the arc chutes.
- Close the device and check the contacts.

Note: It is normal to see variations of the wear indication between the poles of a single device that is new or used. A new device does not have a pole in the indication area of contacts worn.

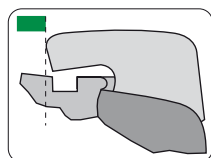
### Type A

DB125643



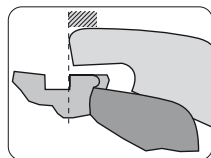
Contacts OK

DB125644



Contacts worn

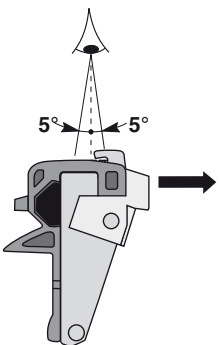
DB125645



NW	08-40	NA, HA, H1, H2, HA10, H10, NAVY CEI
NW	08-20	N1 CEI
NW	20-40	H3 CEI
NW	10-40	NDC, HDC
NW	08-20	N UL
NW	08-30	H UL
NW	08-40	H2, H3 ANSI
NW	40	EARTHING SWITCH

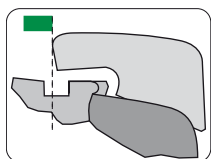
### Type B

DB125643



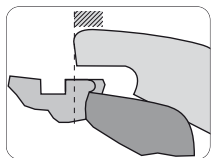
Contacts OK

DB125646



Contacts worn

DB125647



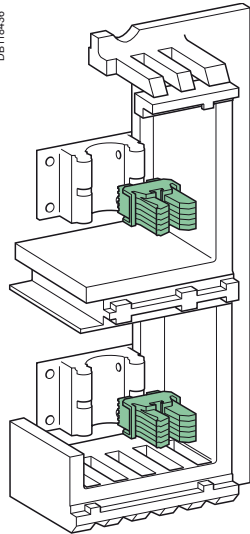
NW	40b-63	H1, H2, NA, HACEI
NW	08-20	L1 CEI
NW	50-60	L UL
NW	08-60	L1 ANSI
NW	08-40	H1 ANSI
NW	10-40	HADC

## Disconnecting-contact clusters

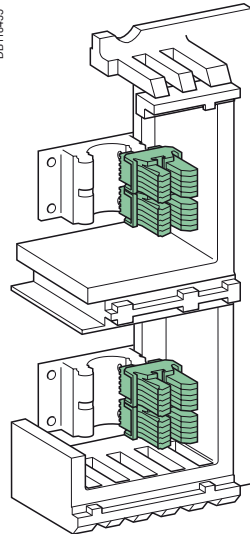
- Grease the contacts using the grease listed on page 45, supplied by Schneider Electric
- Check the contacts as follows:
  - Open the circuit breaker
  - De-energise the busbars
  - Disconnect the circuit breaker
  - Remove the circuit breaker
  - Check the contact fingers (no sign of copper should be visible)
- Replace any worn clusters.
- The position of the clusters must correspond to the table below.

Rating Type	NW08	NW10 NW12	NW16	NW20	NW25	NW32	NW40	NW40b NW50	NW63
N1	layout n° 1 2 clusters/pole								
H1	layout n° 2 4 clusters/pole			layout n° 3 8 clusters/pole		layout n° 4 12 clusters/pole	layout n° 5 14 clusters/pole	layout n° 4 24 clusters/pole	
H2									
H3									
L1	layout n° 3 8 clusters/pole			layout n° 5 14 clusters/pole					
corrosion protection	layout 2' 4 "GOLDEN" clusters/pole		layout 3' 8 "GOLDEN" clusters/pole	layout 5 14 "GOLDEN" clusters/pole				layout 4 24 "GOLDEN" clusters/pole	

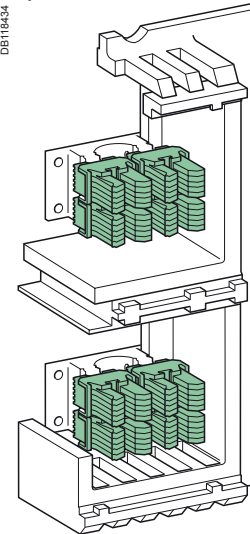
layout n° 1



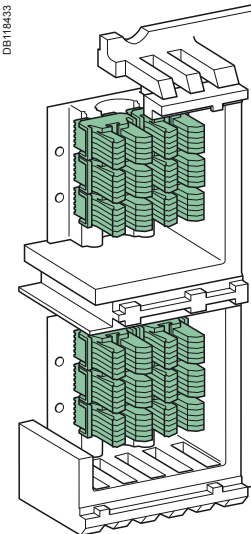
layout n° 2



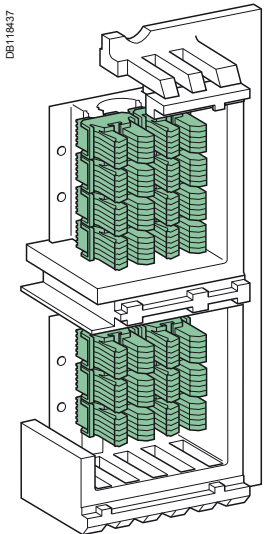
layout n° 3



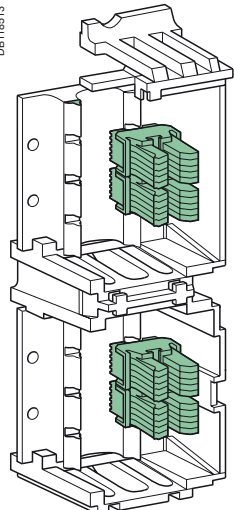
layout n° 4



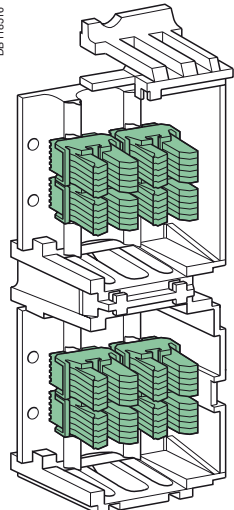
layout n° 5



layout 2'



layout 3'



## Electrical accessories

The electrical accessories that may require replacement are the following:

- MCH gear motor
- MX opening release(s)
- XF closing release
- MN undervoltage release.

See pages 33 and 34 in the "Auxiliaries for remote operation" section for their characteristics.

## Arc chutes

- 1 arc chute:
- NW type N1  
NW08 to NW40 types H1 and H2
- NW40b to NW63 types H1 and H2  
NW type H3
- NW type L1.
- NW08 to NW40:  
one chute per pole
- NW40b to NW63:  
two chutes per pole.

## Disconnecting-contact clusters for standard NW

- 1 cluster.
- Number per circuit breaker, see table page 44.

## Grease for disconnecting-contact clusters

- 1 can for standard NW.
- 1 can for NW with corrosion protection.

## Front

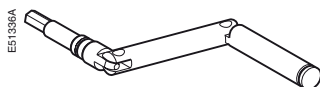
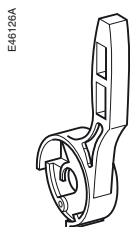
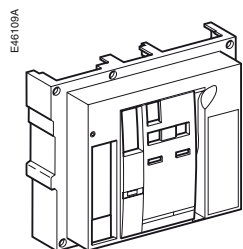
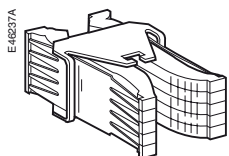
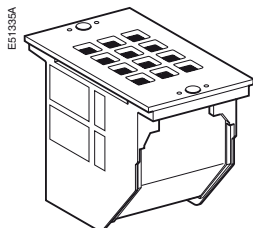
- 1 front for 3- or 4-pole devices.
- 1 per device.

## Charging handle

- 1 handle per device.

## Crank

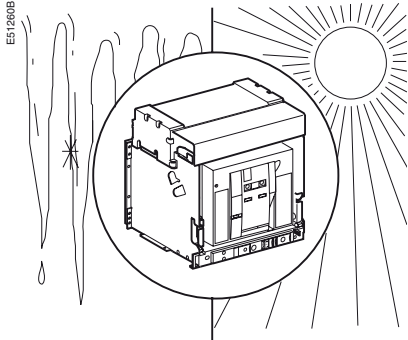
- 1 crank per device.



Problem	Probable causes	Solutions
Circuit breaker cannot be closed locally or remotely	<ul style="list-style-type: none"> <li>■ Circuit breaker padlocked or keylocked in the "open" position</li> <li>■ Circuit breaker interlocked mechanically in a source changeover system</li> <li>■ Circuit breaker not completely connected</li> <li>■ The reset button signalling a fault trip has not been reset</li> <li>■ Stored energy mechanism not charged</li> <li>■ MX opening shunt release permanently supplied with power</li> <li>■ MN undervoltage release not supplied with power</li> <li>■ XF closing release continuously supplied with power, but circuit breaker not "ready to close" (XF not wired in series with PF contact)</li> <li>■ Permanent trip order in the presence of a Micrologic P or H control unit with minimum voltage and minimum frequency protection in Trip mode and the control unit powered</li> </ul>	<ul style="list-style-type: none"> <li>□ disable the locking fonction</li> <li>□ check the position of the other circuit breaker in the changeover system</li> <li>□ modify the situation to release the interlock</li> <li>□ terminate racking in (connection) of the circuit breaker</li> <li>□ clear the fault</li> <li>□ push the reset button on the front of the circuit breaker</li> <li>□ charge the mechanism manually</li> <li>□ if it is equipped with a an MCH gear motor, check the supply of power to the motor. If the problem persists, replace the gear motor (MCH)</li> <li>□ there is an opening order. Determine the origin of the order. The order must be cancelled before the circuit breaker can be closed</li> <li>□ there is an opening order. Determine the origin of the order.</li> <li>□ check the voltage and the supply circuit (<math>U &gt; 0.85 U_n</math>). If the problem persists, replace the release</li> <li>□ cut the supply of power to the XF closing release, then send the closing order again via the XF, but only if the circuit breaker is "ready to close"</li> <li>□ Disable these protection functions on the Micrologic P or H control unit</li> </ul>
Circuit breaker cannot be closed remotely but can be opened locally using the closing pushbutton	<ul style="list-style-type: none"> <li>■ Closing order not executed by the XF closing release</li> </ul>	<ul style="list-style-type: none"> <li>□ check the voltage and the supply circuit (<math>0.85 - 1.1 U_n</math>). If the problem persists, replace the XF release</li> </ul>
Unexpected tripping without activation of the reset button signalling a fault trip	<ul style="list-style-type: none"> <li>■ MN undervoltage release supply voltage too low</li> <li>■ Load-shedding order sent to the MX opening release by another device</li> <li>■ Unnecessary opening order from the MX opening release</li> </ul>	<ul style="list-style-type: none"> <li>□ check the voltage and the supply circuit (<math>U &gt; 0.85 U_n</math>)</li> <li>□ check the overall load on the distribution system</li> <li>□ if necessary, modify the settings of devices in the installation</li> <li>□ determine the origin of the order</li> </ul>
Unexpected tripping with activation of the reset button signalling a fault trip	<p>a fault is present :</p> <ul style="list-style-type: none"> <li>■ overload</li> <li>■ earth fault</li> <li>■ short-circuit detected by the control unit</li> </ul>	<ul style="list-style-type: none"> <li>□ determine and clear the causes of the fault</li> <li>□ check the condition of the circuit breaker before putting it back into service</li> </ul>
Instantaneous opening after each attempt to close the circuit breaker with activation of the reset button signalling a fault trip	<ul style="list-style-type: none"> <li>■ Thermal memory</li> <li>■ Transient overcurrent when closing</li> <li>■ Closing on a short-circuit</li> </ul>	<ul style="list-style-type: none"> <li>□ see the user manual of the control unit</li> <li>□ press the reset button</li> <li>□ modify the distribution system or the control-unit settings</li> <li>□ check the condition of the circuit breaker before putting it back into service</li> <li>□ press the reset button</li> <li>□ clear the fault</li> <li>□ check the condition of the circuit breaker before putting it back into service</li> <li>□ press the reset button</li> </ul>



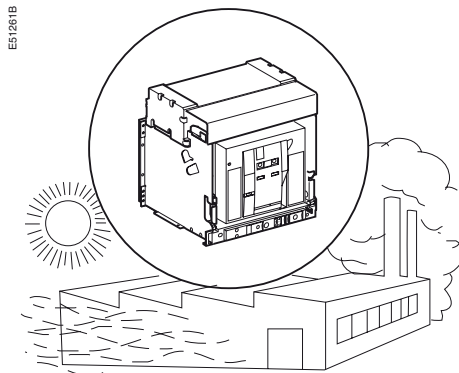
Problem	Probable causes	Solutions
Circuit breaker cannot be opened remotely, but can be opened locally	<ul style="list-style-type: none"> <li>■ Opening order not executed by the MX opening release</li> <li>■ Opening order not executed by the MN undervoltage release</li> </ul>	<ul style="list-style-type: none"> <li>□ check the voltage and the supply circuit (0.7 - 1.1 Un). If the problem persists, replace the MX release</li> <li>□ drop in voltage insufficient or residual voltage (&gt; 0.35 Un) across the terminals of the undervoltage release. If the problem persists, replace the MN release</li> </ul>
Circuit breaker cannot be opened locally	<ul style="list-style-type: none"> <li>■ Operating mechanism malfunction or welded contacts</li> </ul>	<ul style="list-style-type: none"> <li>□ contact a Schneider service centre</li> </ul>
Circuit breaker cannot be reset locally but not remotely	<ul style="list-style-type: none"> <li>■ Insufficient supply voltage for the MCH gear motor</li> </ul>	<ul style="list-style-type: none"> <li>□ check the voltage and the supply circuit (0.7 - 1.1 Un). If the problem persists, replace the MCH release</li> </ul>
Nuisance tripping of the circuit breaker with activation of the reset button signalling a fault trip	<ul style="list-style-type: none"> <li>■ Reset button not pushed-in completely</li> </ul>	<ul style="list-style-type: none"> <li>□ push the reset button in completely</li> </ul>
Impossible to insert the crank in connected, test or disconnected position	<ul style="list-style-type: none"> <li>■ A padlock or keylock is present on the chassis or a door interlock is present</li> </ul>	<ul style="list-style-type: none"> <li>□ disable the locking function</li> </ul>
Impossible to turn the crank	<ul style="list-style-type: none"> <li>■ The reset button has not been pressed</li> </ul>	<ul style="list-style-type: none"> <li>□ press the reset button</li> </ul>
Circuit breaker cannot be removed from chassis	<ul style="list-style-type: none"> <li>■ Circuit breaker not in disconnected position</li> </ul>	<ul style="list-style-type: none"> <li>□ turn the crank until the circuit breaker is in disconnected position and the reset button out</li> </ul>
Circuit breaker cannot be connected (racked in)	<ul style="list-style-type: none"> <li>■ The rails are not completely out</li> <li>■ Cradle/circuit breaker mismatch protection</li> <li>■ The safety shutters are locked</li> <li>■ The disconnecting-contact clusters are incorrectly positioned</li> <li>■ Cradle locked in disconnected position</li> <li>■ The reset button has not been pressed, preventing rotation of the crank</li> <li>■ The circuit breaker has not been sufficiently inserted in the cradle</li> </ul>	<ul style="list-style-type: none"> <li>□ pull the rails all the way out</li> <li>□ check that the cradle corresponds with the circuit breaker</li> <li>□ remove the lock(s)</li> <li>□ reposition the clusters</li> <li>□ disable the cradle locking function</li> <li>□ press the reset button</li> <li>□ insert the circuit breaker completely so that it is engaged in the racking mechanism</li> </ul>
Circuit breaker cannot be locked in disconnected position	<ul style="list-style-type: none"> <li>■ The circuit breaker is not in the right position</li> <li>■ The crank is still in the cradle</li> </ul>	<ul style="list-style-type: none"> <li>□ check the circuit breaker position by making sure the reset button is out</li> <li>□ remove the crank and store it</li> </ul>
Circuit breaker cannot be locked in connected, test or disconnected position	<ul style="list-style-type: none"> <li>■ Check that locking in any position is enabled</li> <li>■ The circuit breaker is not in the right position</li> <li>■ The crank is still in the cradle</li> </ul>	<ul style="list-style-type: none"> <li>□ contact a Schneider service centre</li> <li>□ check the circuit breaker position by making sure the reset button is out</li> <li>□ remove the crank and store it</li> </ul>
The crank cannot be inserted to connect or disconnected the circuit breaker	<ul style="list-style-type: none"> <li>■ The rails are not completely in</li> </ul>	<ul style="list-style-type: none"> <li>□ push the rails all the way in</li> </ul>
The right-hand rail (chassis alone) or the circuit breaker cannot be drawn out	<ul style="list-style-type: none"> <li>■ The crank is still in the chassis</li> </ul>	<ul style="list-style-type: none"> <li>□ remove the crank and store it</li> </ul>



### Ambient temperature

Masterpact NW devices can operate under the following temperature conditions:

- the electrical and mechanical characteristics are stipulated for an ambient temperature of -5 °C to +70 °C
- circuit-breaker closing is guaranteed down to -35 °C
- Masterpact NW (without the control unit) can be stored in an ambient temperature of -40 °C to +85 °C
- the control unit can be stored in an ambient temperature of -25 °C to +85 °C.



### Extreme atmospheric conditions

Masterpact NW devices have successfully passed the tests defined by the following standards for extreme atmospheric conditions:

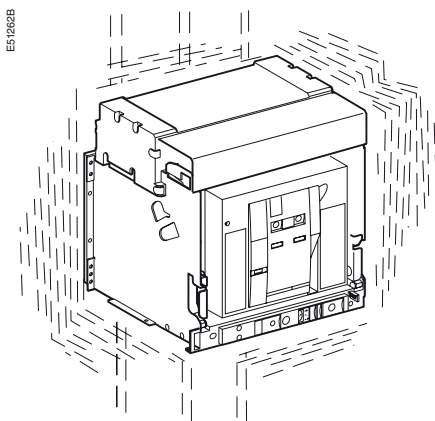
- IEC 68-2-1: dry cold at -55 °C
- IEC 68-2-2: dry heat at +85 °C
- IEC 68-2-30: damp heat (temperature +55 °C, relative humidity 95%)
- IEC 68-2-52 level 2: salt mist.

Masterpact NW devices can operate in the industrial environments defined by standard IEC 947 (pollution degree up to 4).

It is nonetheless advised to check that the devices are installed in suitably cooled switchboards without excessive dust.

Masterpact NW devices with corrosion protection have successfully passed the tests defined by the following standards for extreme atmospheric conditions:

- IEC 68-2-42: atmospheres containing sulphur dioxide (SO<sub>2</sub>)
- IEC 68-2-43: atmospheres containing hydrogen sulphide (H<sub>2</sub>S).



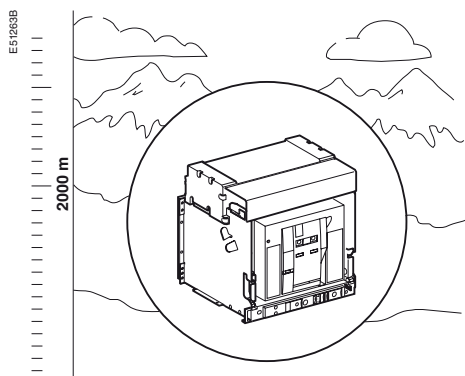
### Vibrations

Masterpact NW devices resist electromagnetic or mechanical vibrations.

Tests are carried out in compliance with standard IEC 68-2-6 for the levels required by merchant-marine inspection organisations (Veritas, Lloyd's, etc.):

- 2 to 13.2 Hz: amplitude ±1 mm
- 13.2 to 100 Hz: constant acceleration 0.7 g.

Excessive vibration may cause tripping, breaks in connections or damage to mechanical parts.

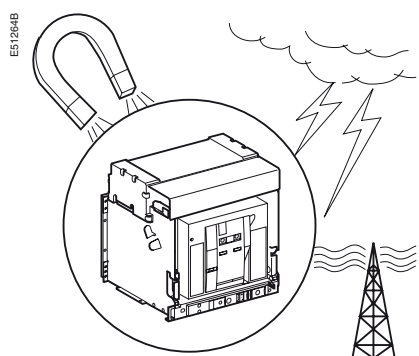


## Altitude

Masterpact NW devices are designed for operation at altitudes under 2000 metres.

At altitudes higher than 2000 metres, the modifications in the ambient air (electrical resistance, cooling capacity) lower the following characteristics.

Altitude (m)	2000	3000	4000	5000
Dielectric resistance voltage (V)	3500	3150	2500	2100
Average insulation level (V)	1000	900	700	600
Maximum utilisation voltage (V)	690	590	520	460
Average thermal current (A) at 40 °C	1 x In	0.99 x In	0.96 x In	0.94 x In



## Electromagnetic disturbances

Masterpact NW devices are protected against:

- overvoltages caused by devices that generate electromagnetic disturbances
- overvoltages caused by an atmospheric disturbances or by a distribution-system outage (e.g. failure of a lighting system)
- devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- electrostatic discharges produced by users.

Masterpact NW devices have successfully passed the electromagnetic-compatibility tests (EMC) defined by the following international standards:

- IEC 947-2, appendix F
- IEC 947-2, appendix B (trip units with earth-leakage function).

The above tests guarantee that:

- no nuisance tripping occurs
- tripping times are respected.

## Cleaning

- Non-metallic parts:  
never use solvent, soap or any other cleaning product. Clean with a dry cloth only
- Metal parts:  
clean with a dry cloth whenever possible. If solvent, soap or any other cleaning product must be used, make sure that it does not come into contact with non-metallic parts.

# Notes

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# Notes

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