

<< Back

MASTERPACT NW08-63

Low Voltage Products

User manual



Merlin Gerin

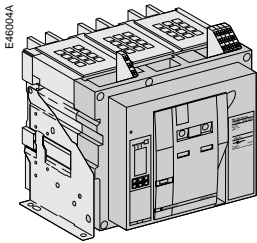
Modicon

Square D

Telemecanique

Masterpact NW08-63

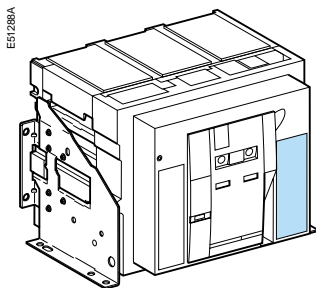
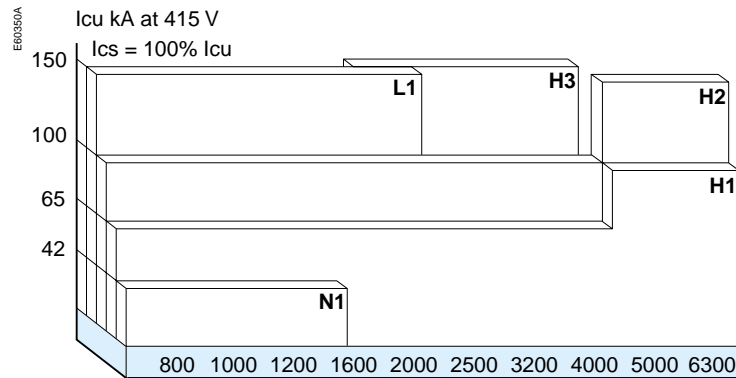
Discovering Masterpact	2
Using Masterpact	8
Understanding the controls and indications	8
Charging the circuit breaker	9
Closing the circuit breaker	10
Opening the circuit breaker	11
Resetting after a fault trip	12
Locking the controls	13
Using the Masterpact drawout chassis	16
Identifying the circuit breaker positions	16
Racking	17
Matching a Masterpact circuit breaker with its chassis	19
Locking the switchboard door	20
Locking the circuit breaker in position	21
Locking the safety shutters	24
Identifying the electrical auxiliaries	26
Identification of the connection terminals	26
Electrical diagrams	27
Operation	29
Discovering Masterpact's accessories	30
Micrologic control units	30
Indication contacts	31
Auxiliaries for remote operation	33
Device mechanical accessories	35
Chassis mechanical accessories	37
Inspecting and testing before use	40
Initial test	40
What to do when the circuit breaker trips	41
Maintaining Masterpact performance	42
Recommended maintenance program	42
Maintenance operations	43
Ordering replacement parts	45
Troubleshooting and solutions	46
Checking Masterpact operating conditions	48



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:

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



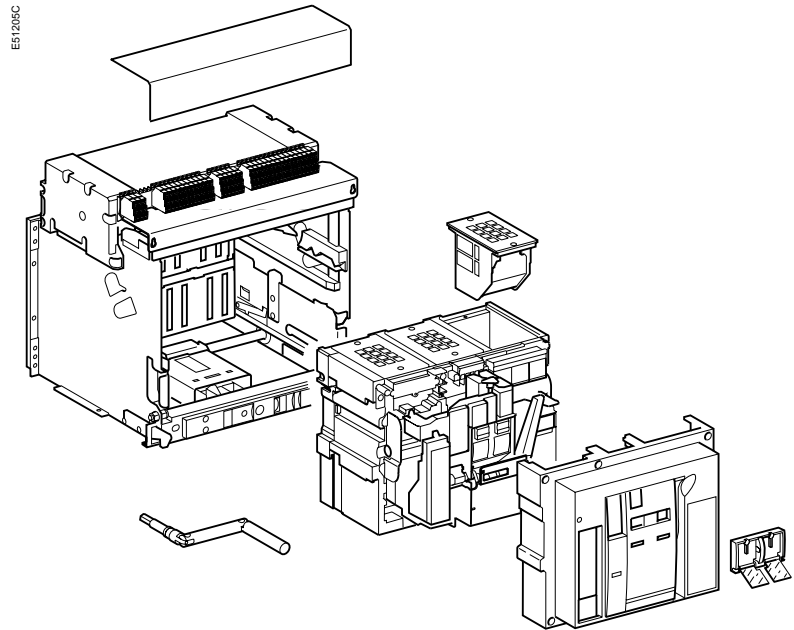
Rating plate

Parameter	Value	Description
Rated current x 100 A	800	Rated current x 100 A
Performance level	N1	Performance level
Suitability for isolation	X1	Suitability for isolation
Type of device: circuit breaker or switch-disconnector	CB	Type of device: circuit breaker or switch-disconnector
Rated insulation level	Ui 1000V	Rated insulation level
Impulse withstand voltage	Uimp 12kV	Impulse withstand voltage
Ultimate breaking capacity	Icu 42	Ultimate breaking capacity
Rated operational voltage	Ue 220/440 ~ 480/690	Rated operational voltage
Ics: rated service breaking capacity	Ics = 100% Icu	Ics: rated service breaking capacity
Icu: ultimate breaking capacity	Icu 42	Icu: ultimate breaking capacity
Rated short-time withstand current	Icw 42kA/1s cat.B	Rated short-time withstand current
Frequency	50/60Hz	Frequency
Standards	IEC 60947-2 UTE VDE BS CEI UNE AS NEMA	Standards

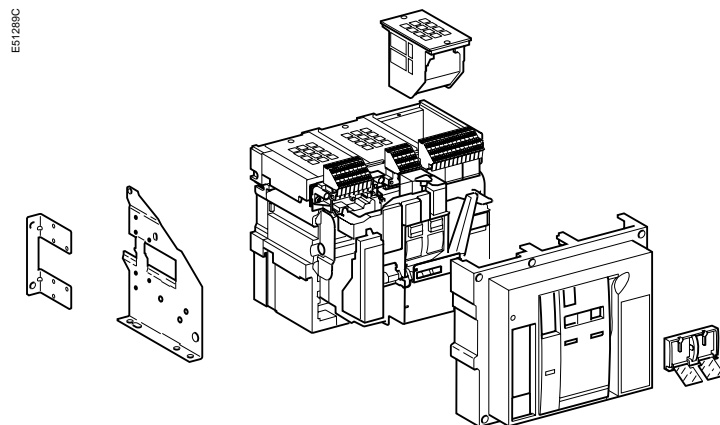


Masterpact circuit breakers are available in drawout and fixed versions. The drawout version is mounted on a chassis and the fixed version is installed using fixing brackets.

Drawout version

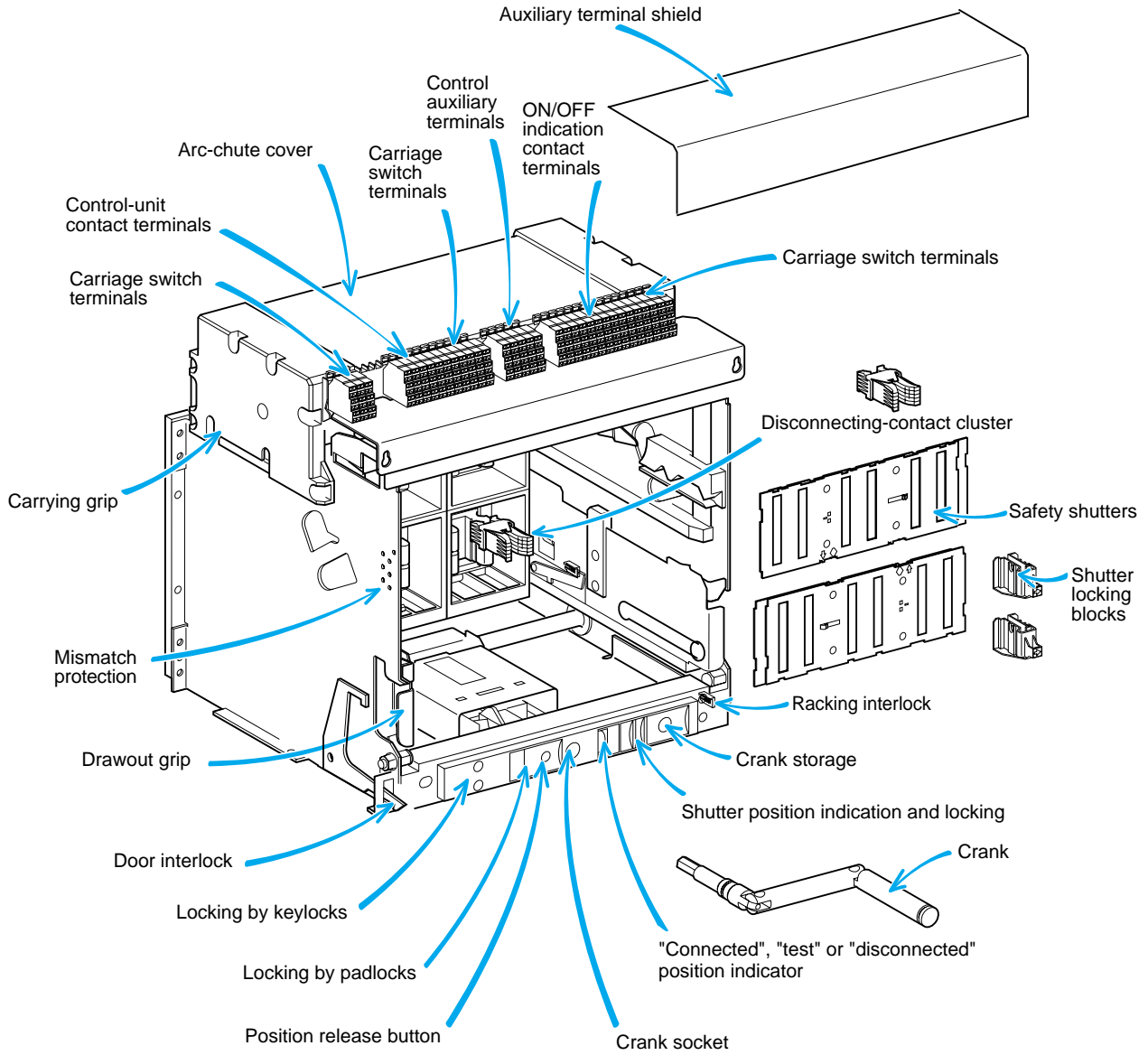


Fixed version



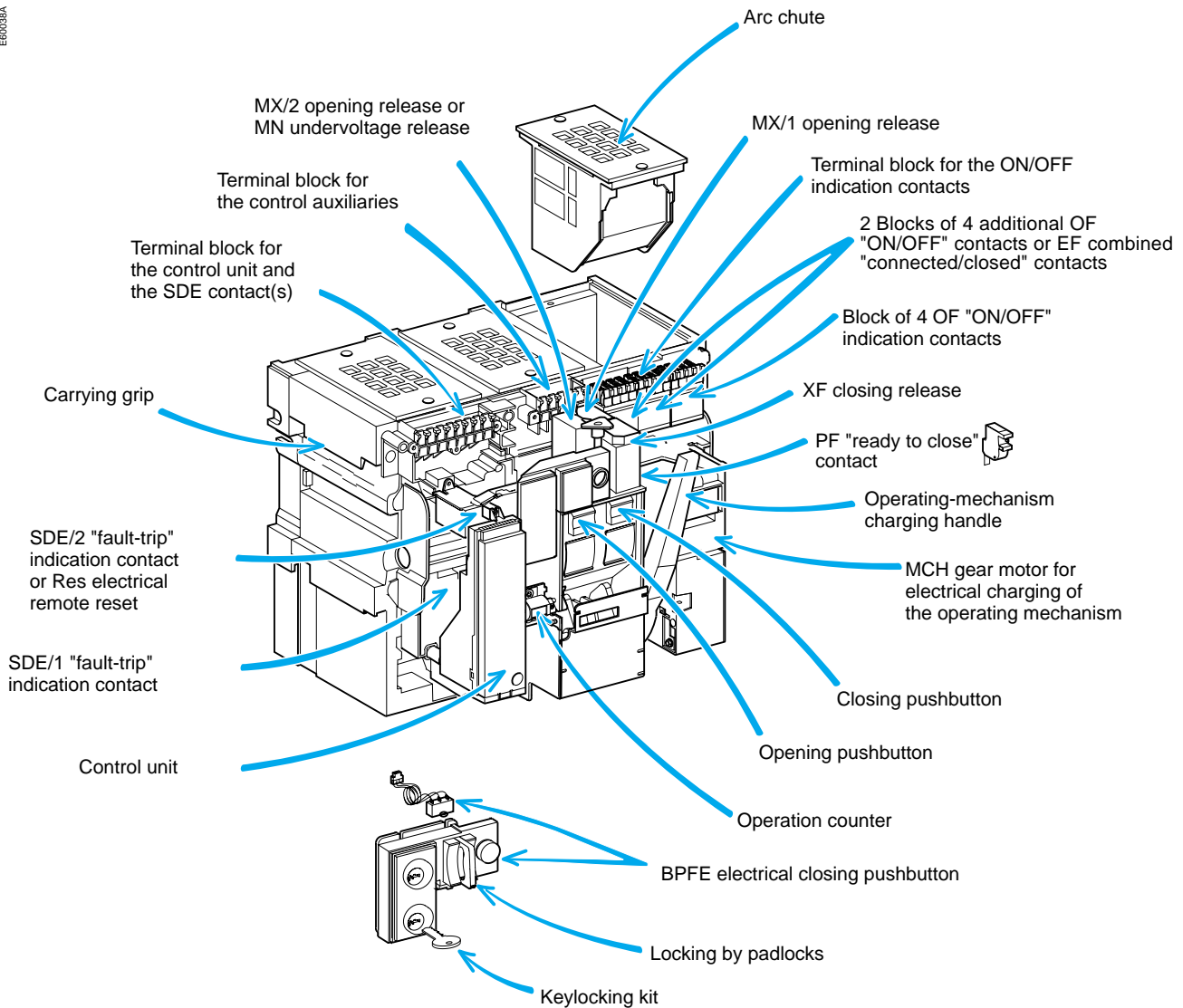
Chassis

ER6037A



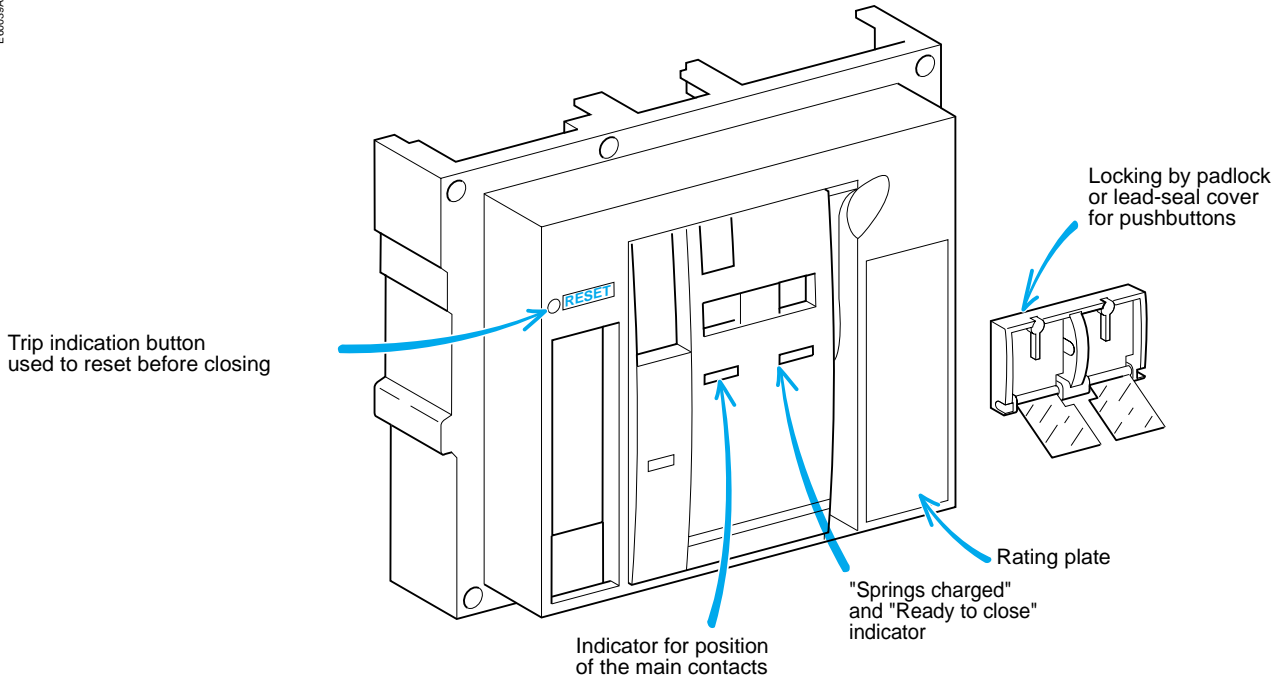
Circuit breaker / switch-disconnector

EGP0038A

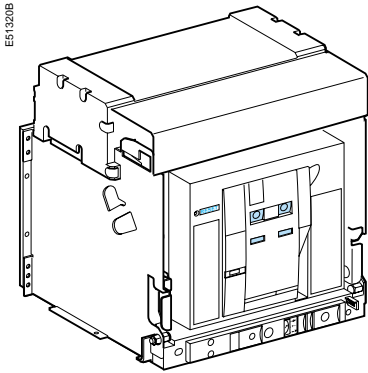


Front

E60039A

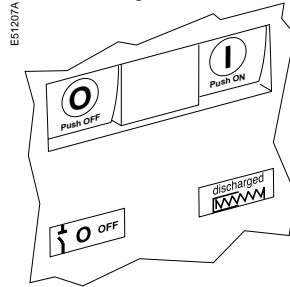


Understanding the controls and indications



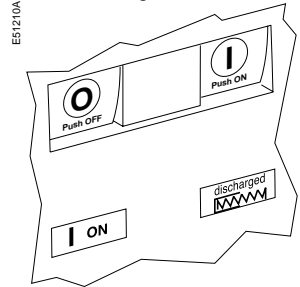
E51320B

Circuit breaker open and discharged



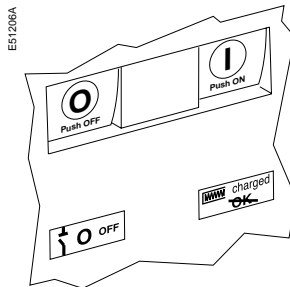
E51207A

Circuit breaker closed and discharged



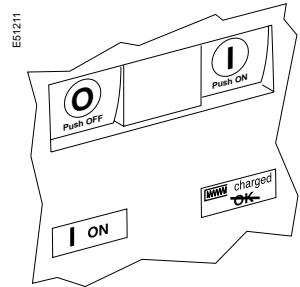
E51210A

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



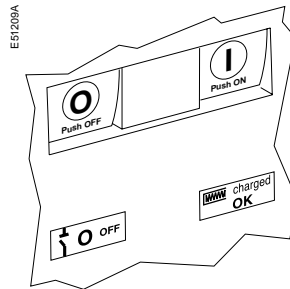
E51208A

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



E51211

Circuit breaker open, charged and "ready to close"

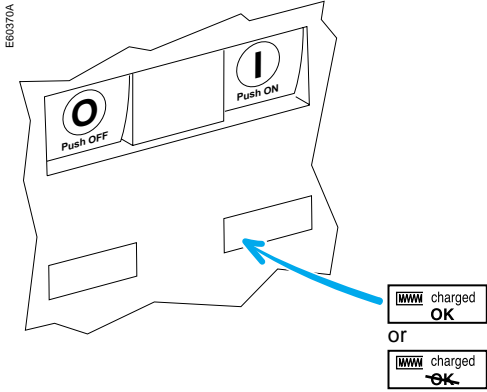


E51209A

Charging the circuit breaker

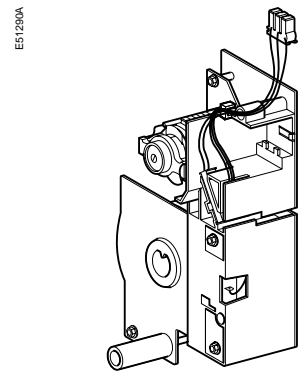
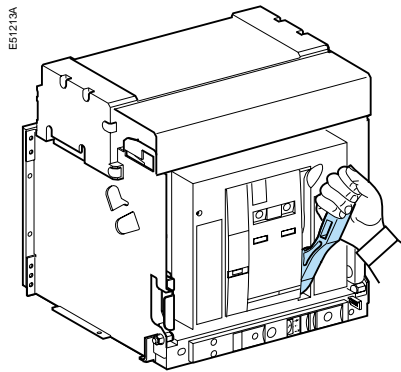
The charge status is indicated as follows.

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 six 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:

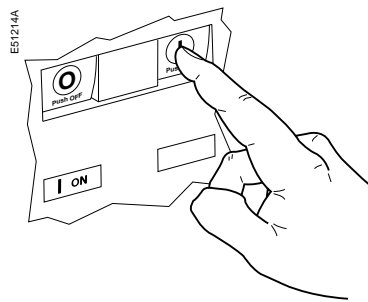
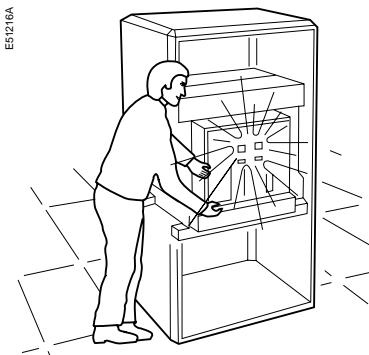
- c device open (OFF);
- c springs charged;
- c no opening order present.

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

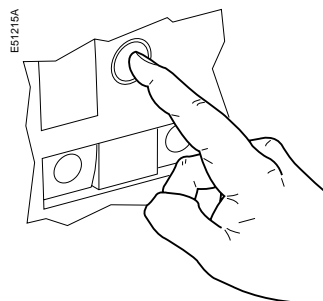
Locally (mechanical)

Press the mechanical ON pushbutton.

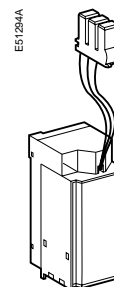


Locally (electrical)

BPFE



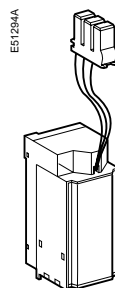
XF



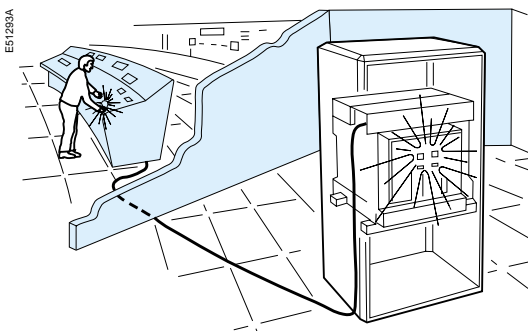
Press the electrical closing pushbutton. By adding an XF closing release, the circuit breaker can be closed remotely.

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

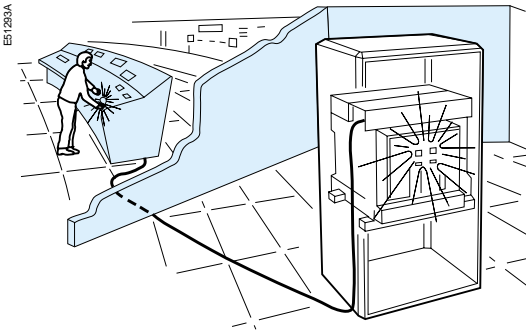
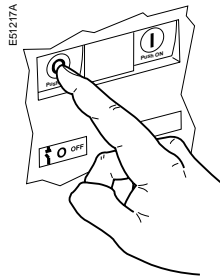
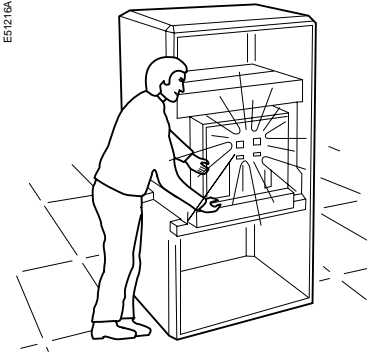
The purpose of the mechanical anti-pumping function is to ensure that a circuit breaker receiving simultaneous opening and closing orders does not open and close indefinitely.

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.

Opening the circuit breaker

Locally

Press the OFF pushbutton.



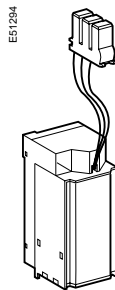
Remotely

Use one of the following solutions:

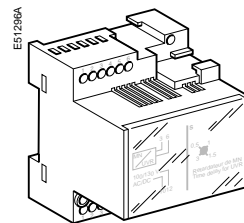
- c one or two MX opening releases (MX1 and MX2, 0.7 to 1.1 Un);
- c one MN undervoltage release (0.35 to 0.7 Un);
- c one MN undervoltage release (0.35 to 0.7 Un) with a delay unit (R or Rr).

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

MX1, MX2, MN



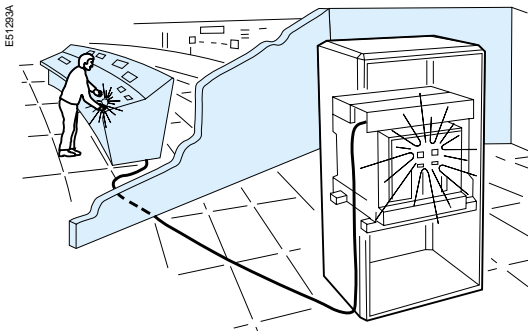
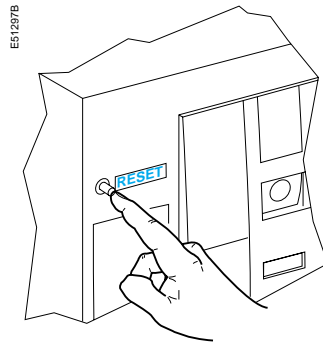
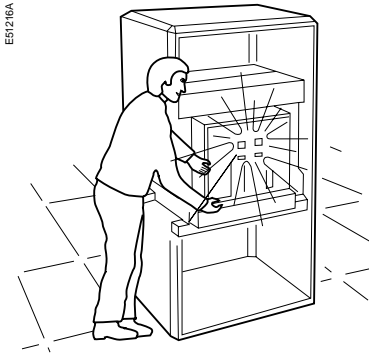
Delay unit



The circuit breaker signals a fault by:
c a mechanical indicator on the front panel;
c one or two SDE "fault-trip" indication contacts (SDE/2 is optional).

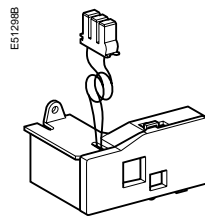
Locally

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

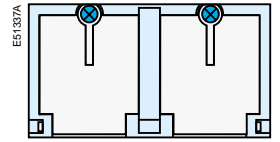
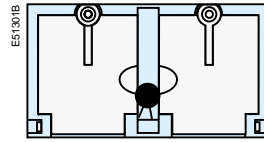
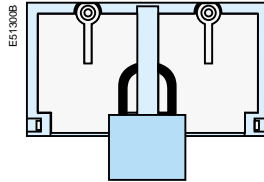
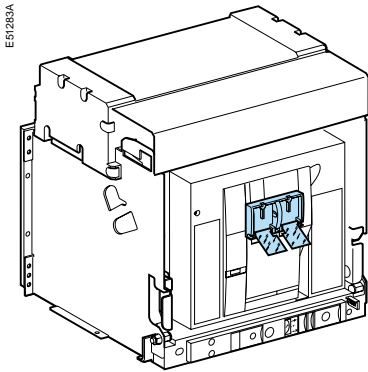
Disabling circuit-breaker local closing and opening

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

Padlock

Lead seal

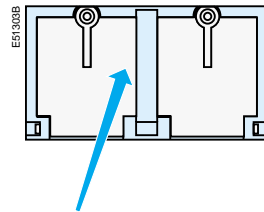
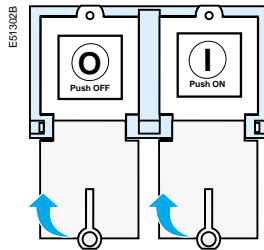
Screws



Locking

Close the covers.

Insert the padlock shackle, lead seal or screws.

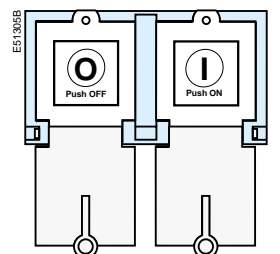
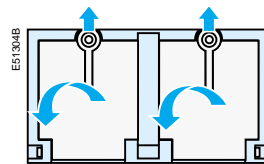
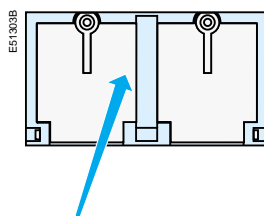


Unlocking

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:

- c a padlock;
- c one or two keylocks;
- c a combination of the two locking systems.

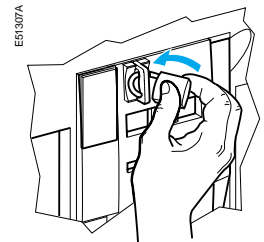
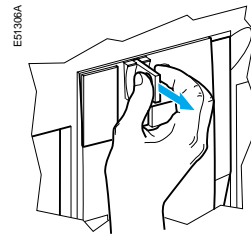
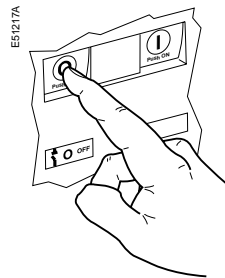
Install a padlock (maximum shackle diameter 5 to 8 mm)

Locking

Open the circuit breaker.

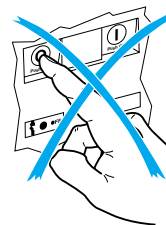
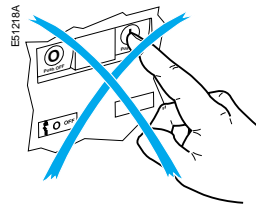
Pull out the tab.

Insert the padlock shackle.



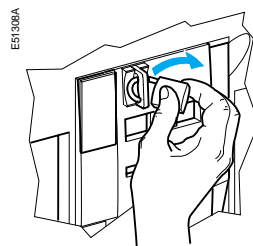
Check

The controls are inoperative.



Unlocking

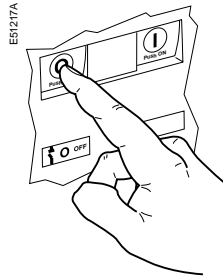
Remove the padlock.



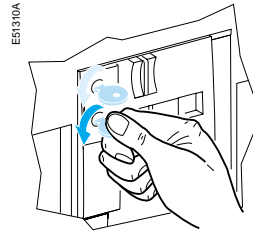
Locking the controls with one or two keylocks

Locking

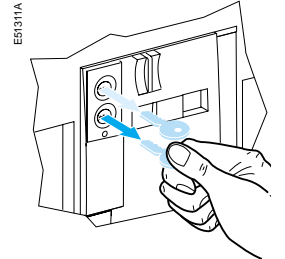
Open the circuit breaker.



Turn the key(s).

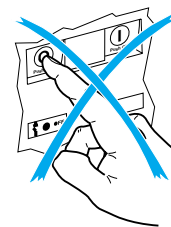
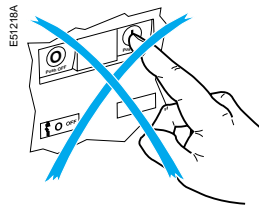


Remove the key(s).



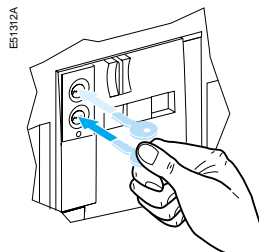
Check

The controls are inoperative.

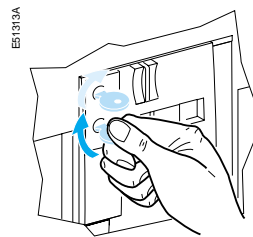


Unlocking

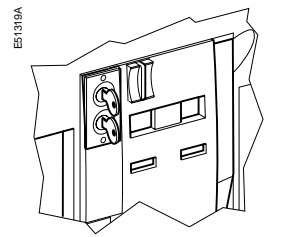
Insert the key(s).



Turn the key(s).

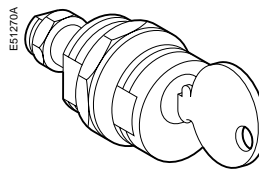


The key(s) cannot be removed.

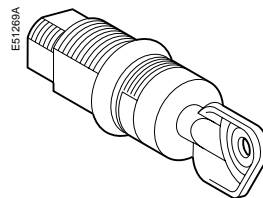


Four types of keylocks are available.

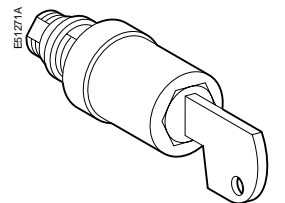
RONIS



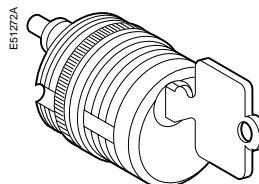
PROFALUX



CASTELL

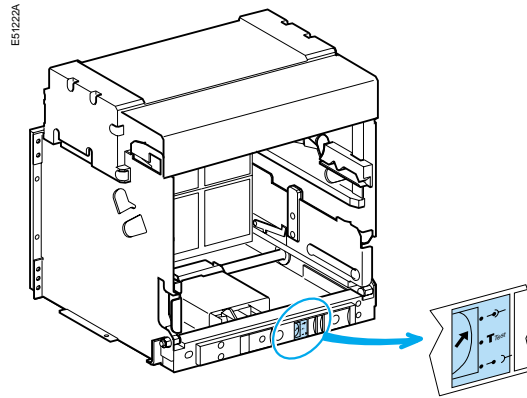


KIRK

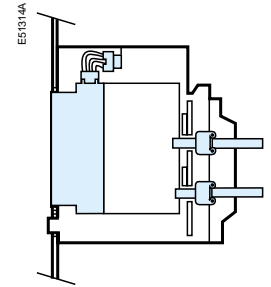
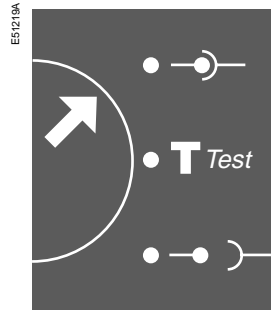


Identifying the circuit breaker positions

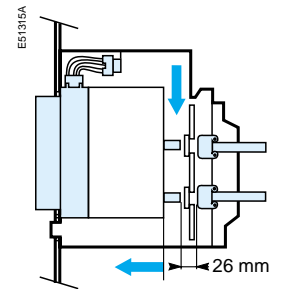
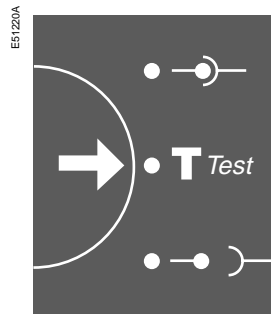
The indicator on the front signals the position of the circuit breaker in the chassis.



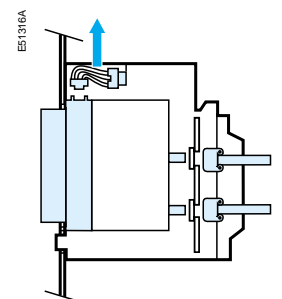
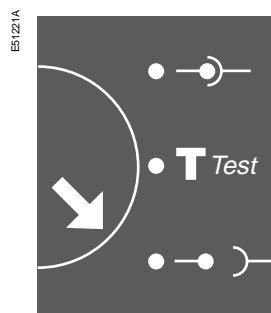
c "connected" position



c "test" position



c "disconnected" position



Racking

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

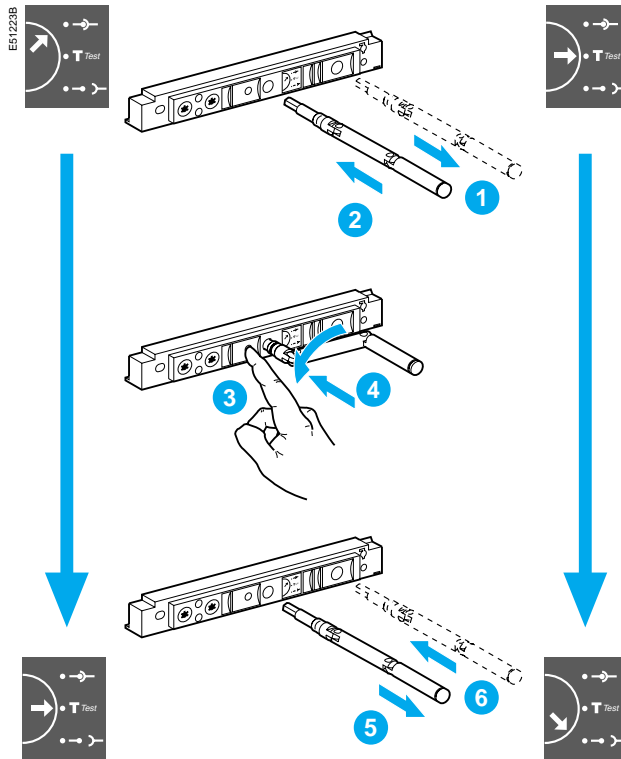
Prerequisites

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

The circuit breaker is in "connected" position.

The circuit breaker is in "test" position.



The circuit breaker is in "test" position. Remove the crank or continue to "disconnected" position.

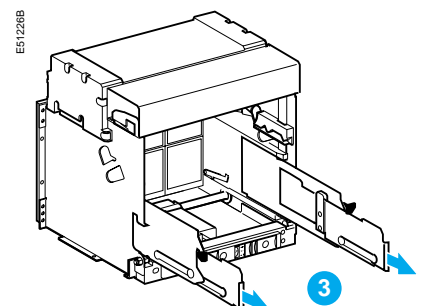
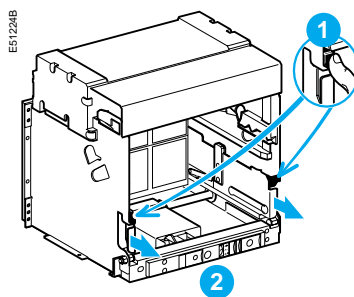
The circuit breaker is in "disconnected" position.

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).

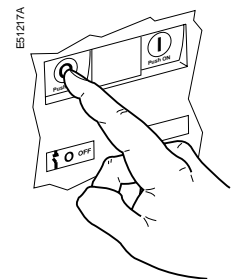
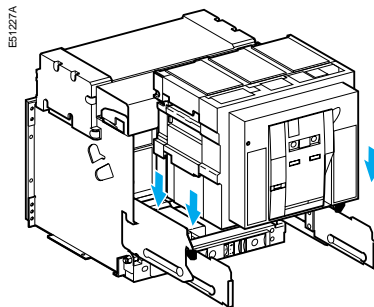
Before mounting the circuit breaker, make sure it matches the chassis.

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.

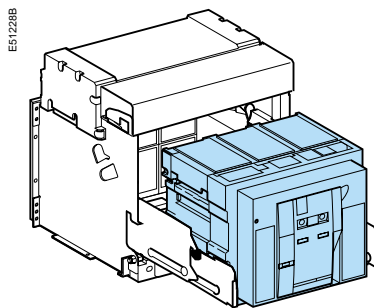
Inserting Masterpact

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).



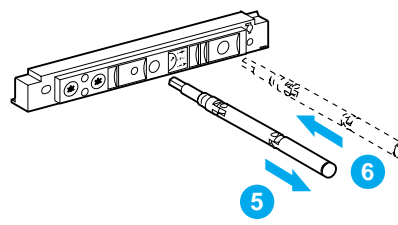
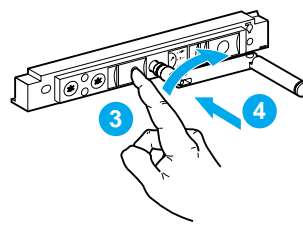
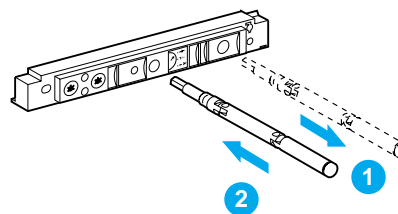
Push the circuit breaker into the chassis, taking care not to push on the control unit.



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.

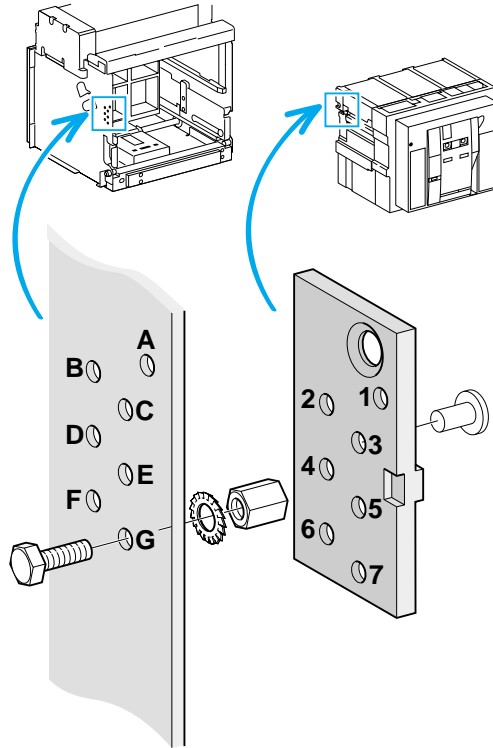
Matching a Masterpact circuit breaker with its chassis





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.

E51317B

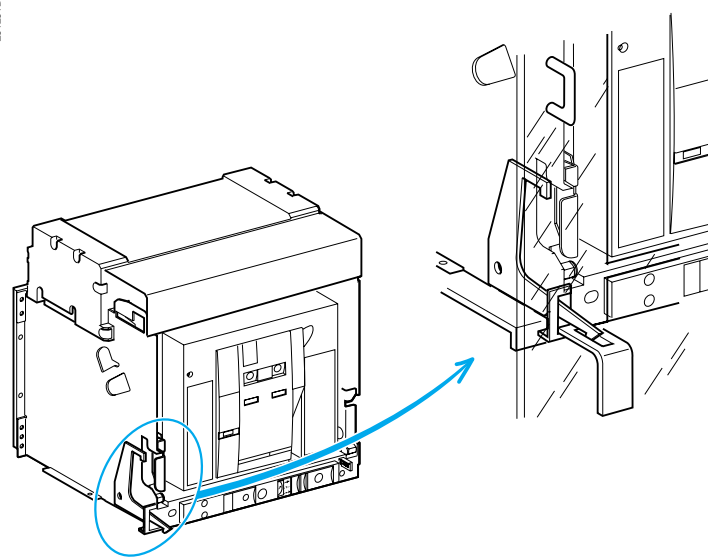


			
ABCD	567	BCDE	167
ABCE	467	BCDF	157
ABCF	457	BCDG	147
ABCG	456	BCEF	146
ABDE	367	BCEG	137
ABDF	357	BDEF	136
ABDG	356	BDEG	135
ABEF	347	BDFG	134
ABEG	346	CDEF	127
ABFG	345	CDEG	126
ACDE	267	CEFG	124
ACDF	257	DEFG	123
ACDG	256		
ACEF	247		
ACEG	246		
ACFG	245		
ADEF	237		
ADEG	236		
ADFG	235		
A EFG	234		

Locking the switchboard door

The locking device is installed on the left or right-hand side of the chassis:
 c when the circuit breaker is in "connected" or "test" position, the latch is lowered and the door is locked
 c when the circuit breaker is in "disconnected" position, the latch is raised and the door is unlocked.

E51231B



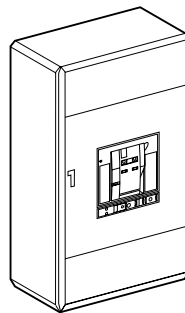
Disabling door opening

Close the door.

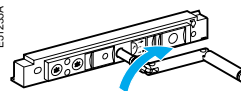
Put the Masterpact in "test" or "connected" position.

The door is locked.

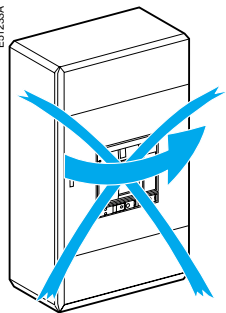
E51232A



E51236A



E51233A

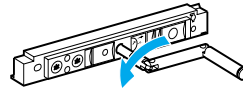


Enabling door opening

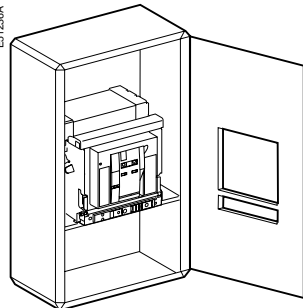
Put the Masterpact in "disconnected" position.

The door is unlocked.

E51234A



E51236A



Locking the circuit breaker in position

Padlocks and keylocks may be used together.

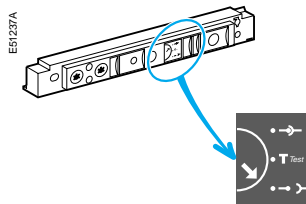
Combination of locking systems

To disable local or remote opening or closing of the circuit breaker, use as needed:
c one to three padlocks;
c one or two keylocks;
c a combination of the two locking systems.

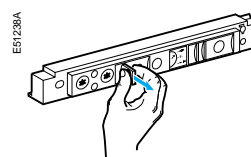
Disabling connection when the circuit breaker is in "disconnected" position, using one to three padlocks (maximum shackle diameter 5 to 8 mm)

Locking

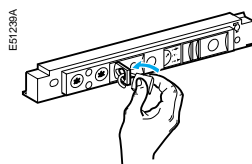
Circuit breaker in "disconnected" position.



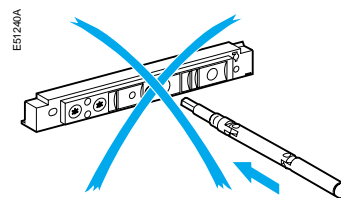
Pull out the tab.



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

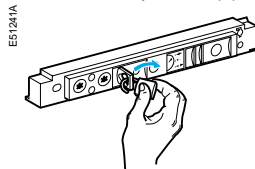


The crank cannot be inserted.

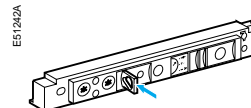


Unlocking.

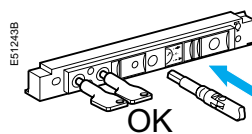
Remove the padlock(s).



Release the tab.



The crank can be inserted.

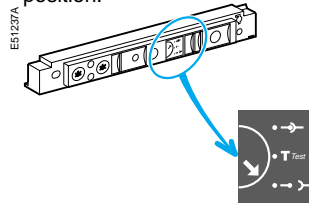


Locking the circuit breaker in position

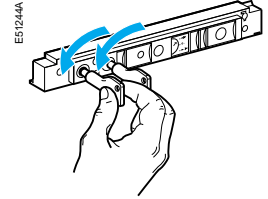
Padlocks and keylocks may be used together. **Disabling connection when the circuit breaker is in "disconnected" position, using one or two keylocks.**

Locking

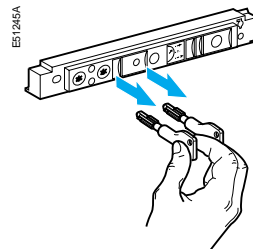
Circuit breaker in "disconnected" position.



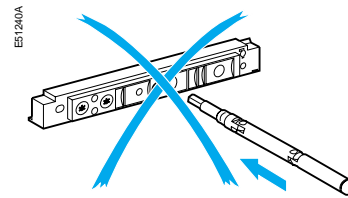
Turn the key(s).



Remove the key(s).

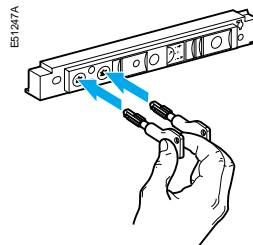


The crank cannot be inserted.

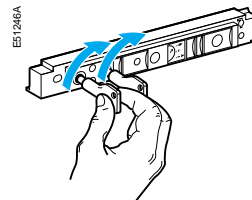


Unlocking

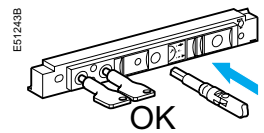
Insert the key(s).



Turn the key(s).

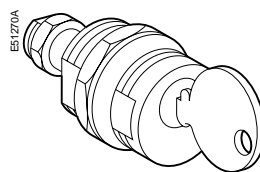


The crank can be inserted.

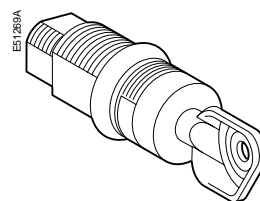


Four types of keylocks are available

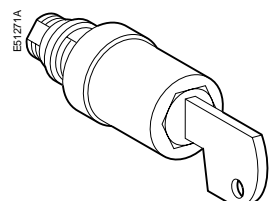
RONIS



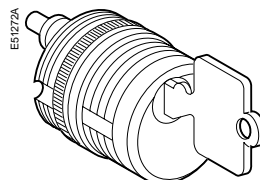
PROFALUX



CASTELL



KIRK

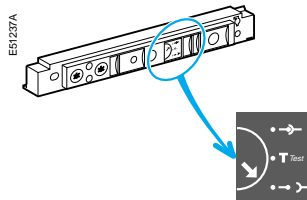


For this operation, the circuit breaker must be removed from the chassis.

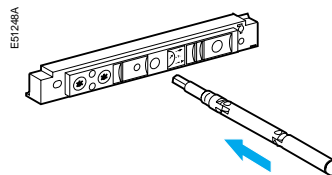
Disabling use of the crank in all positions

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.

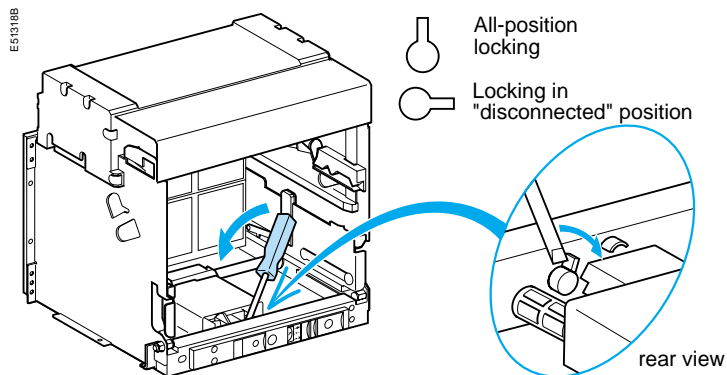
Set the circuit breaker to "disconnected" position. Remove the circuit breaker from the chassis.



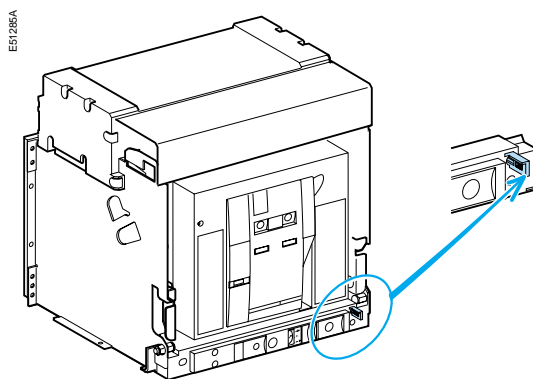
Insert the crank.



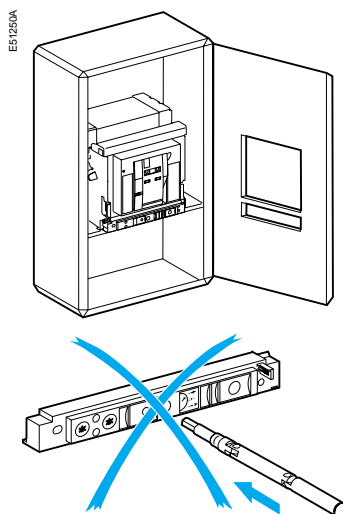
Turn the catch to the left. The circuit breaker can now be locked in all positions.



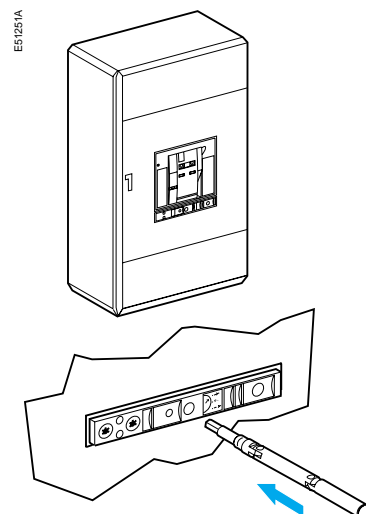
Locking the circuit breaker when the door is open



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



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

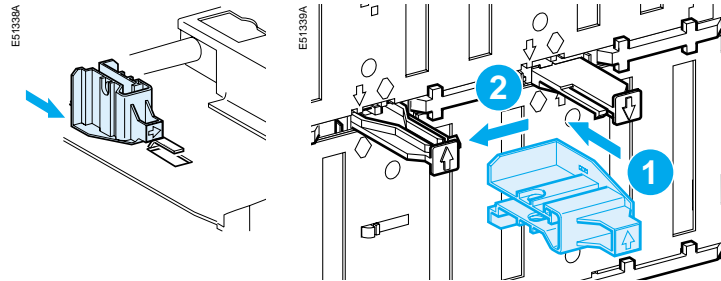


Locking the safety shutters Padlocking inside the chassis

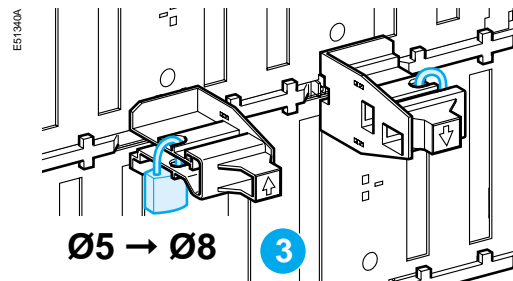
Using the shutter locking blocks

Remove the block(s) from their storage position.

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



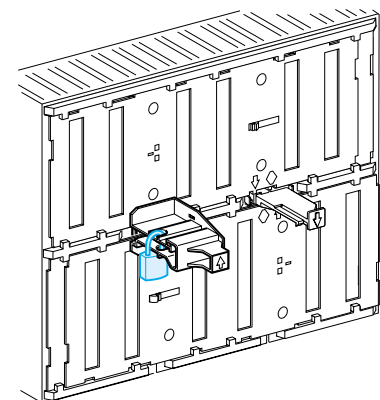
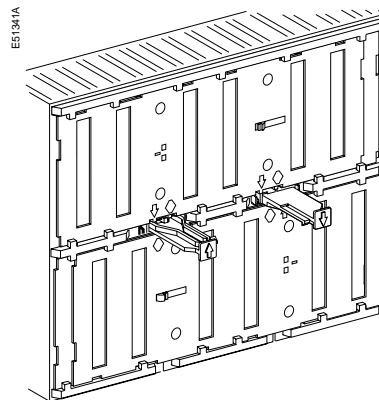
Lock the block(s) using a padlock.



Four locking possibilities

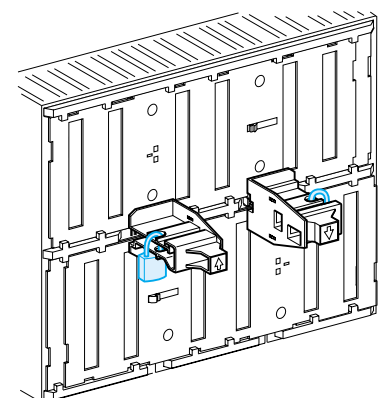
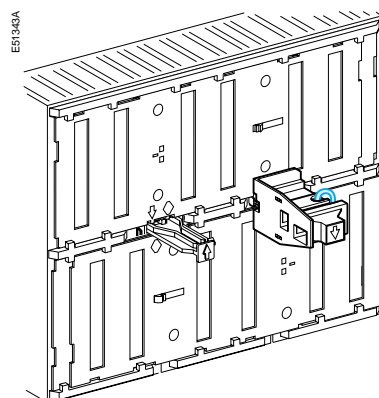
Top and bottom shutters not locked.

Top shutter locked,
Bottom shutter not locked.



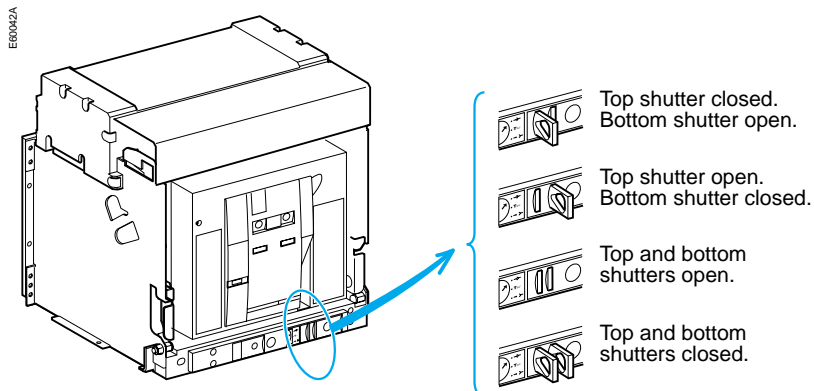
Top shutter not locked,
Bottom shutter locked.

Top and bottom shutters
locked.



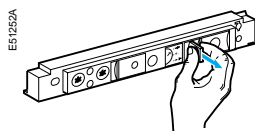
Padlocking or position indication on the front

This system offers two functions:
c padlocking of the top or bottom shutters;
c indication of the position of each shutter:
v shutter open;
v shutter closed.

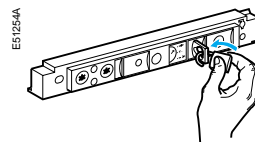


Locking

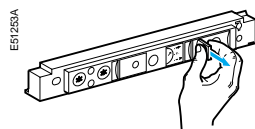
Pull out the left-hand tab to lock the top shutter.



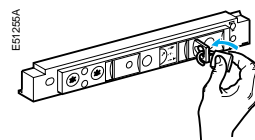
Insert a padlock (shackle 5 to 8 mm).



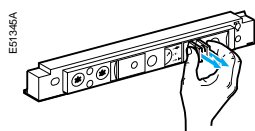
Pull out the right-hand tab to lock the bottom shutter.



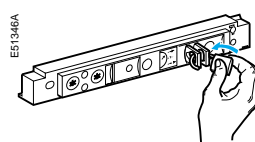
Insert a padlock (shackle 5 to 8 mm).



Pull out both tabs to lock both shutters.

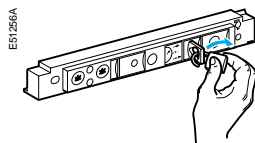


Insert a padlock (shackle 5 to 8 mm).

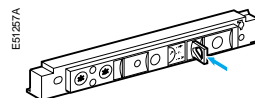


Unlocking

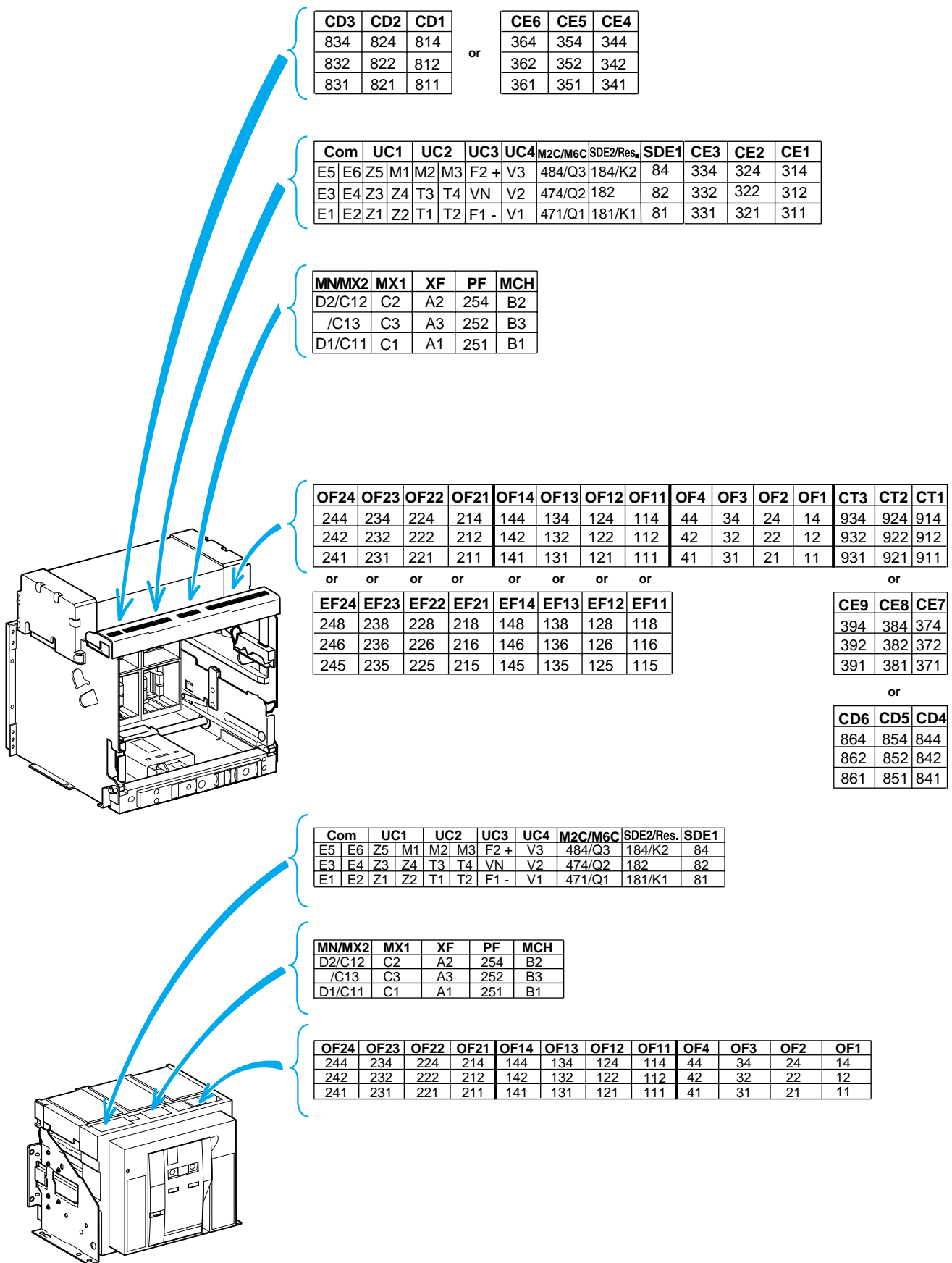
Remove the padlock.



Release the tab(s).



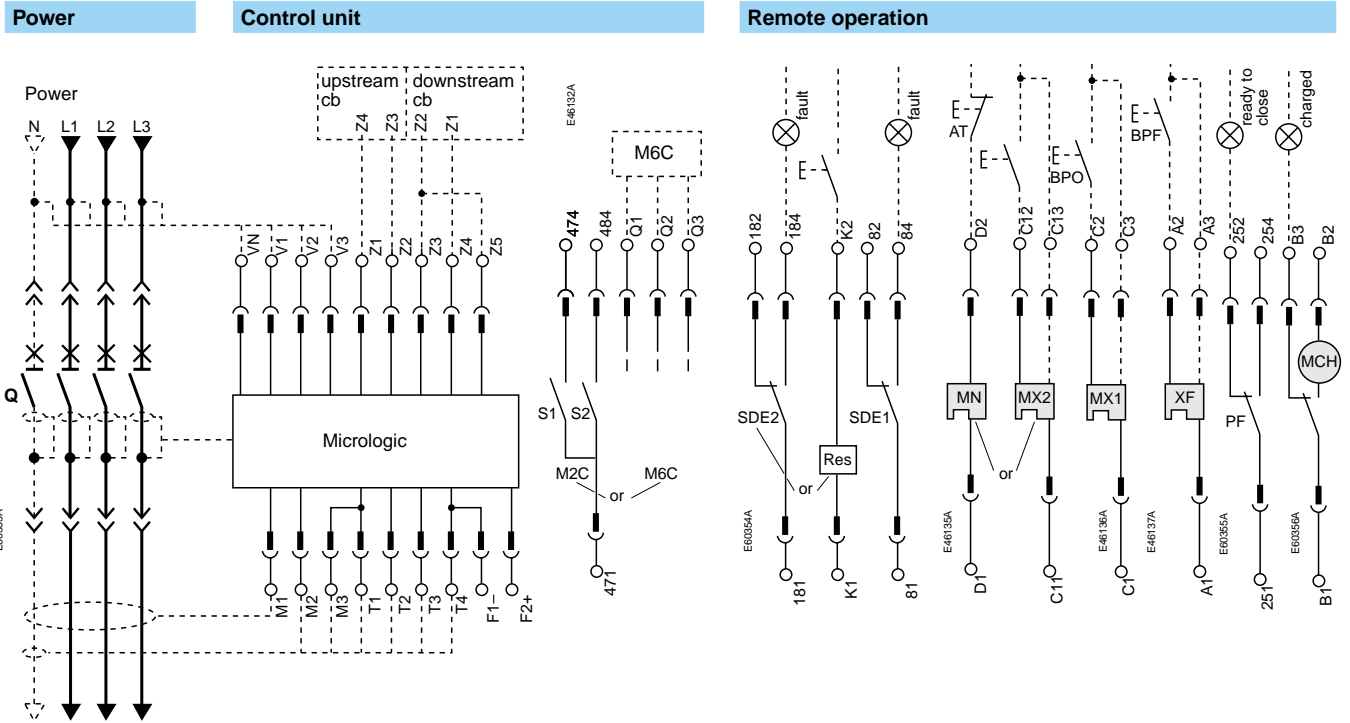
E60352A



Electrical diagrams

Fixed and drawout devices

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	484 / Q3	
E3 E4	Z3 Z4	T3 T4	VN V2	474 / Q2	
E1 E2	Z1 Z2	T1 T2	F1- V1	471 / Q1	

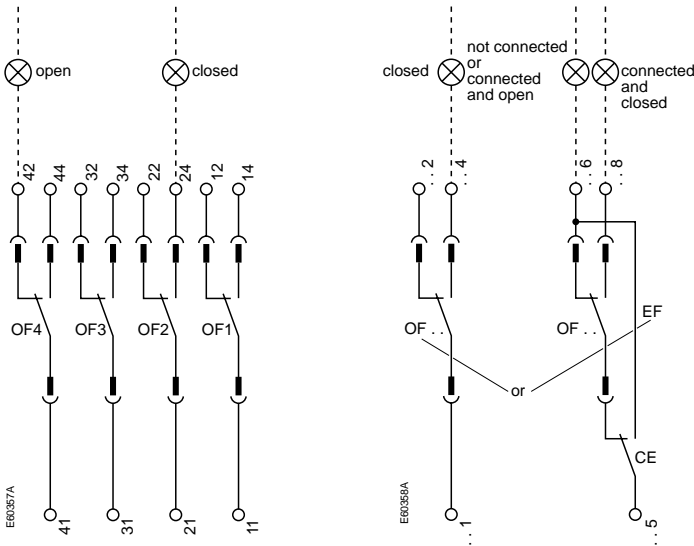
Remote operation						
SDE2 / Res	SDE1	MN / MX2	MX1	XF	PF	MCH
184 / K2	84	D2 / C12	C2	A2	254	B2
182	82		C3	A3	252	B3
181 / K1	81	D1 / C11	C1	A1	251	B1

A	P	H	Control unit	Remote operation
c	c	c	Com: E1-E6 communication	SDE2: Fault-trip indication contact or Res: Remote reset
c	c	c	UC1: 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)	SDE1: Fault-trip indication contact (supplied as standard)
c	c	c	UC2: T1, T2, T3, T4 = external neutral; M2, M3 = Vigi module input (Micrologic 7)	MN: Undervoltage release or MX2: Shunt release
c	c	c	UC3: F2+, F1- external 24 V DC power supply VN external voltage connector	MX1: Shunt release (standard or communicating)
c	c	c	UC4: V1, V2, V3 optional external voltage protector	XF: Closing release (standard or communicating)
c	c	c	M2C: 2 programmable contacts (internal relay); or ext. 24 V DC power supply required	PF: "Ready to close" contact
c	c	c	M6C: 6 programmable contacts (external relay); 24 V DC power supply required	MCH: Gear motor.

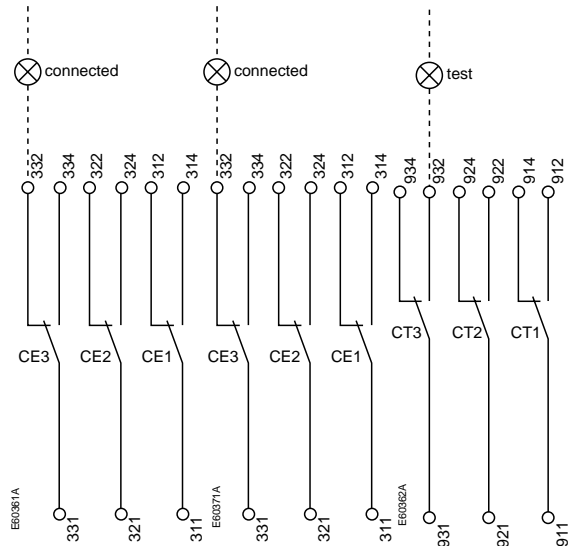
Note:
When communicating MX or XF releases are used, the third wire (C3, A3) must be connected even if the communications module is not installed.

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

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
or or or or or or or or								
CE6	CE5	CE4	CE6	CE5	CE4	CE9	CE8	CE7
364	354	344	364	354	344	394	384	374
362	352	342	362	352	342	392	382	372
361	351	341	361	351	341	391	381	371

Indication contacts

- OF4:** ON/OFF indication contacts
- OF3:** ON/OFF indication contacts
- OF2:** ON/OFF indication contacts
- OF1:** ON/OFF indication contacts
- OF 24 or EF 24:** ON/OFF indication contacts
- OF 23 or EF 23:** ON/OFF indication contacts
- OF 22 or EF 22:** ON/OFF indication contacts
- OF 21 or EF 21:** ON/OFF indication contacts
- OF 14 or EF 14:** ON/OFF indication contacts
- OF 13 or EF 13:** ON/OFF indication contacts
- OF 12 or EF 12:** ON/OFF indication contacts
- OF 11 or EF 11:** ON/OFF 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
- CE6:** Connected position contacts
- CE5:** Connected position contacts
- CE4:** Connected position contacts
- CE9:** Connected position contacts
- CE8:** Connected position contacts
- CE7:** Connected position contacts
- CD6:** Disconnected -position contacts
- CD5:** Disconnected -position contacts
- CD4:** Disconnected -position contacts

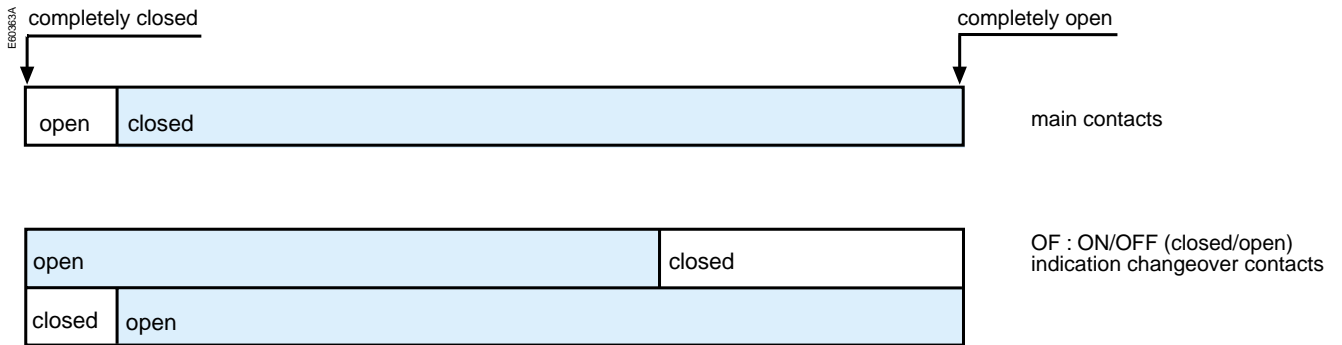
Key:

- Drawout device only
- SDE1, OF1, OF2, OF3, OF4 supplied as standard
- Interconnected connections (only one wire per connection point)

Operation

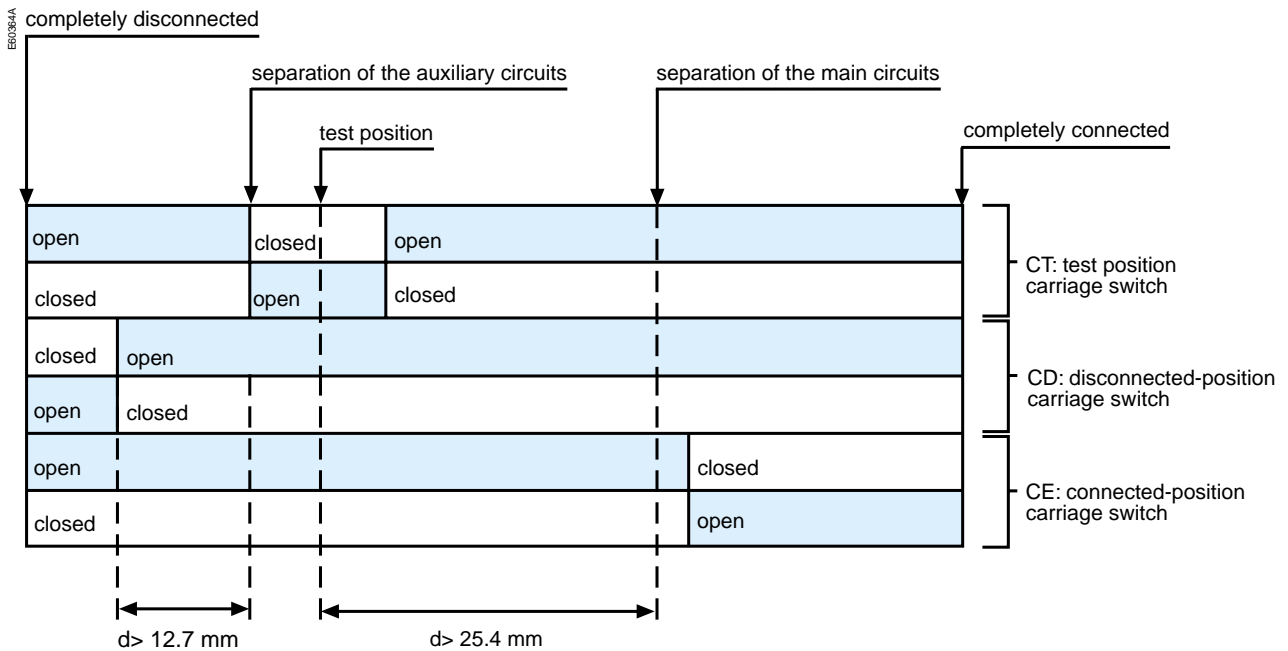
The ON/OFF indication contacts signal the status of the device main contacts.

Circuit breaker

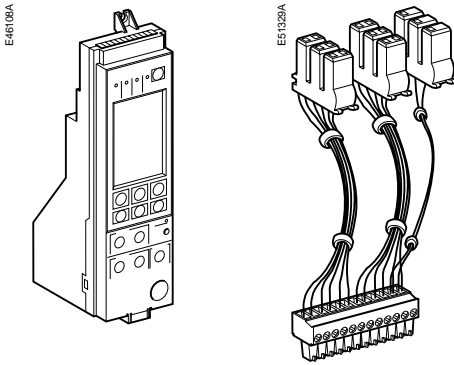


The carriage switches indicate the "connected", "test" and "disconnected" positions.

Chassis



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



Micrologic control units

- c standard equipment, one per device
 - c part numbers: (long-time rating plug and connection cables not included, see below)
 - Micrologic 2.0: 33069
 - Micrologic 5.0: 33070
 - Micrologic 2.0A: 33071
 - Micrologic 5.0A: 33072
 - Micrologic 6.0A: 33073
 - Micrologic 7.0A: 33074
 - Micrologic 5.0P: 47058
 - Micrologic 6.0P: 47059
 - Micrologic 7.0P: 47060
 - Micrologic 5.0H: 47061
 - Micrologic 6.0H: 47062
 - Micrologic 7.0H: 47063
 - c part numbers for connection cables: 47065
 - for drawout device: 47805.
- c depending on the model, control units offer in addition:
 - v fault indications;
 - v measurement of electrical parameters (current, voltage, power, etc.);
 - v harmonic analysis;
 - v communication.

Long-time rating plugs

- c standard equipment, one per control unit.
 - c part numbers:
 - 0.4 to 1 x I_r setting: 33542
 - 0.4 to 0.8 x I_r setting: 33543
 - 0.8 to 1 x I_r setting: 33544
 - Off (no long-time protection): 33545.
- c the plugs determine the setting range for the Long-time protection.

M2C and M6C programmable contacts

- c optional equipment, used with Micrologic P and H control units.
 - c part numbers (connection cables not included, see below):
 - 2 M2C contacts: 47086 + 47087
 - 6 M6C contacts: 47066
 - c part numbers for connection cables:
 - for fixed device: 47074
 - for drawout device: 47849.
- c contacts can be programmed using the keypad on the control unit or via the COM option.
 - c they indicate:
 - v the type of fault
 - v instantaneous or delayed threshold overruns.
- c M2C: 2 contacts (6 A-240 V)
 - c M6C: 6 contacts (6A-240V).
 - c permissible load on each of the M6C relay outputs:
 - v 240 V AC: 5 A where p.f = 0.7
 - v 380 V AC: 3 A where p.f = 0.7
 - v 24 V DC: 8 A where L/R = 0
 - v 48 V DC: 1.5 A where L/R = 0
 - v 125 V DC: 0.4 A where L/R = 0
 - v 250 V DC: 0.15 A where L/R = 0
 - c M6C supply voltage: 24 V DC ± 5%
 - c M6C maximum consumption: 100 mA

Indication contacts

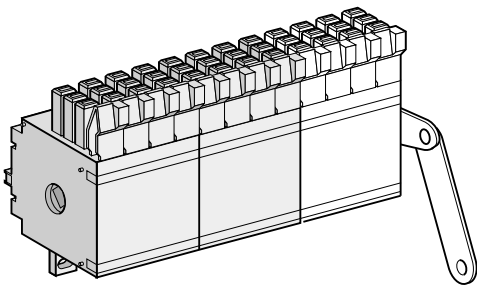
ON/OFF indication contacts (OF)

c standard equipment:
4 OF per device.

c OF contacts indicate the position of main contacts
c they trip when the minimum isolation distance between the main contacts is reached

c 4 changeover contacts
c rated current: 10 A
c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
v 480 V: 10 A (rms)
v 600 V: 6 A (rms)
c breaking capacity for DC power (DC12 as per 947-5-1):
250 V: 3 A.

E51331A



Additional ON/OFF indication contacts (OF)

c optional equipment, two blocks of 4 OF contacts per device
c part numbers (connection cables not included, see below):
one block of 4 OF contacts: 47887
c part numbers for connection cables:
for fixed device: 47074
for drawout device: 47849

c OF contacts indicate the position of the main contacts
c they trip when the minimum isolation distance between the main contacts is reached

c changeover contacts
c rated current: 10 A
c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
v 480 V: 10 A (rms)
v 600 V: 6 A (rms)
c breaking capacity for DC power (DC12 as per 947-5-1):
250 V: 3 A.

Combined "connected/closed" contacts (EF)

c optional equipment, 8 EF contacts per device
c each contact is mounted in place of the connector of an additional OF contact
c part number:
one EF contact: 48477

c the contact combines the "device connected" and the "device closed" information to produce the "circuit closed" information

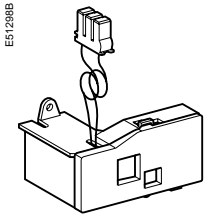
c changeover contacts
c rated current: 10 A
c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
v 240 V: 10 A (rms)
v 380 V: 10 A (rms)
v 480 V: 10 A (rms)
v 600 V: 6 A (rms)
c breaking capacity for DC power (DC12 as per 947-5-1):
v 48 V: 2.5 A
v 130 V: 0.8 A
v 250 V: 0.3 A.

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

c standard equipment on circuit breakers, one SDE/1 contact per device
c not available for switch-disconnector versions

c the contact provides a remote indication of device opening due to an electrical fault

c changeover contact
c rated current: 10 A
c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
v 240 V: 10 A (rms)
v 380 V: 5 A (rms)
v 480 V: 5 A (rms)
v 600 V: 3 A (rms)
c breaking capacity for DC power (DC12 as per 947-5-1):
v 48 V: 3 A
v 125 V: 0.3 A
v 250 V: 0.15 A.



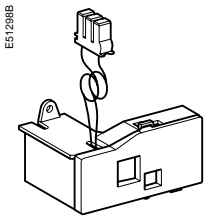
E51298B

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

c optional equipment for circuit breakers, one additional SDE/2 contact per device
 c not available for switch-disconnector versions
 c not compatible with the Res option
 c part numbers (connection cables not included, see below):
 one SDE/2 contact: 47915
 c part numbers for connection cables:
 for fixed device: 47074
 for drawout device: 47849

c the contact remotely indicates device opening due to an electrical fault

c changeover contact
 c rated current: 10 A
 c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
 v 240 V: 10 A (rms)
 v 380 V: 5 A (rms)
 v 480 V: 5 A (rms)
 v 600 V: 3 A (rms)
 c breaking capacity for DC power (DC12 as per 947-5-1):
 v 48 V: 3 A
 v 125 V: 0.3 A
 v 250 V: 0.15 A.



E51298B

Electrical reset after fault trip (Res)

c optional equipment, one Res per device
 c not compatible with the SDE/2 option
 c part numbers (connection cables not included, see below):
 110/130 V AC: 47901
 220/240 V AC: 47902
 c part numbers for connection cables:
 for fixed device: 47074
 for drawout device: 47849

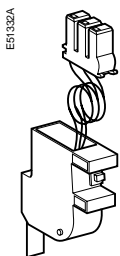
c the contact remotely resets the device following tripping due to an electrical fault

"Springs charged" limit switch contact (CH)

c standard equipment, one CH contact per device

c the contact indicates the "charged" status of the operating mechanism (springs charged)

c changeover contact
 c rated current: 10 A
 c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
 v 240 V: 10 A (rms)
 v 380 V: 5 A (rms)
 v 480 V: 5 A (rms)
 v 600 V: 3 A (rms)
 c breaking capacity for DC power (DC12 as per 947-5-1):
 v 48 V: 3 A
 v 125 V: 0.3 A
 v 250 V: 0.25 A.



E51332A

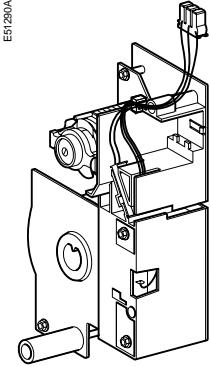
"Ready to close" contact (PF)

c optional equipment, one PF contact per device
 c part numbers (connection cables not included, see below):
 one PF contact: 47080
 c part numbers for connection cables:
 for fixed device: 47074
 for drawout device: 47849

c the contact indicates that the device may be closed because all the following are valid:
 v circuit breaker is open
 v spring mechanism is charged
 v a maintained closing order is not present
 v a maintained opening order is not present

c changeover contact
 c rated current: 10 A
 c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1):
 v 240 V: 10 A (rms)
 v 380 V: 5 A (rms)
 c breaking capacity for DC power (DC12 as per 947-5-1):
 v 48 V: 3 A
 v 125 V: 0.3 A
 v 250 V: 0.15 A.

Auxiliaries for remote operation



Gear motor (MCH)

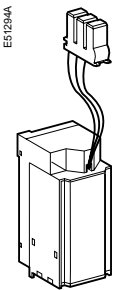
c optional equipment, one MCH gear motor per device

c part numbers (connection cables not included, see below):
100/130 V AC: 47893
200/240 V AC: 47894
277 V AC: 47895
380/415 V AC: 47896
400/440 V AC: 47897
480 V AC: 47898
24/30 V DC: 47888
48/60 V DC: 47889
100/125 V DC: 47890
200/250 V DC: 47891.

c part numbers for connection cables:
for fixed device:
47074
for drawout device:
47849

c the gear motor automatically charges and recharges the spring mechanism

c charging time: 4 seconds max.
c consumption:
v 180 VA AC
v 180 W DC
c inrush current: 2 to 3 In for 0.1 second
c operating rate: maximum 3 cycles per minute.



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

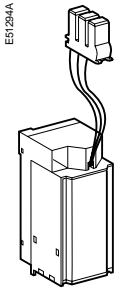
c optional equipment, 1 or 2 MX releases per device, 1 XF per device
c the function (MX or XF) is determined by where the coil is installed
c part numbers (connection cables not included, see below):

v standard version:
12 V AC
50/60 Hz / DC: 33658
24/30 V AC
50/60 Hz / DC: 33659
48/60 V AC
50/60 Hz / DC: 33660
100/130 V AC
50/60 Hz / DC: 33661
200/250 V AC
50/60 Hz / DC: 33662
277 V AC
50/60 Hz / DC: 33663
380/480 V AC
50/60 Hz / DC: 33664
500/550 V AC
50/60 Hz / DC: 33665.
v communicating version (with COM option):
12 V AC
50/60 Hz / DC: 33032
24/30 V AC
50/60 Hz / DC: 33033
48/60 V AC
50/60 Hz / DC: 33034
100/130 V AC
50/60 Hz / DC: 33035
200/250 V AC
50/60 Hz / DC: 33036
240/277 V AC
50/60 Hz / DC: 33037
380/480 V AC
50/60 Hz / DC: 33038

c part numbers for connection cables:
for fixed device:
47074

for drawout device:
47849
c the MX release instantaneously opens the circuit breaker when energised
c the XF release instantaneously closes the circuit breaker when energised, if the device is "ready to close"

c device response time:
v MX: 50 ms ± 10
v XF: 70 ms +10 / -15
> 3200 A: 80 ms ± 10
c operating threshold:
v MX: 0.7 to 1.1 x Un
v XF: 0.85 to 1.1 x Un
c the supply can be maintained
c consumption:
v pick-up (80 ms): 200 VA
v hold: 4.5 VA.

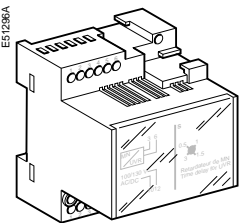


Instantaneous undervoltage releases (MN)

c optional equipment, 1 MN per device
 c not compatible with the MX/2 opening release
 c part numbers (connection cables not included, see below):
 24/30 V AC
 50/60 Hz / DC: 33668
 48/60 V AC
 50/60 Hz / DC: 33669
 100/130 V AC
 50/60 Hz / DC: 33670
 200/250 V AC
 50/60 Hz / DC: 33671
 380/480 V AC
 50/60 Hz / DC: 33673
 500/550 V AC
 50/60 Hz / DC: 33674
 c part numbers for connection cables:
 for fixed device:
 47074
 for drawout device:
 47849

c the MN release instantaneously opens the circuit breaker when its supply voltage drops

c device response time: 90 ms ±5
 c operating threshold:
 v opening: 0.35 to 0.7 x Un
 v closing: 0.85 x Un
 c consumption:
 v pick-up (80 ms): 200 VA
 v hold: 4.5 VA

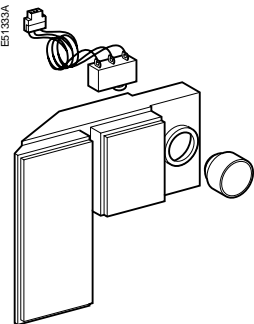


Delay unit for MN releases

c optional equipment, 1 MN with delay unit per device.
 c delay-unit part numbers (must be ordered in addition to the MN):
 48/60 V AC
 50/60 Hz / DC: 33680
 100/130 V AC
 50/60 Hz / DC: 33681
 200/250 V AC
 50/60 Hz / DC: 33682
 380/480 V AC
 50/60 Hz / DC: 33683.

c the unit delays operation of the MN release to eliminate circuit-breaker nuisance tripping during short voltage dips
 c the unit is wired in series with the MN and must be installed outside the circuit breaker

c device response time: 0.5, 1, 1.5, 3 seconds
 c operating threshold:
 v opening: 0.35 to 0.7 x Un
 v closing: 0.85 x Un
 c consumption:
 v pick-up (80 ms): 200 VA
 v hold: 4.5 VA

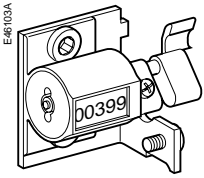


Electrical closing pushbutton (BPFE)

c optional equipment, 1 BPFE per device
 c part numbers (connection cables not included, see below): 48534
 c part numbers for connection cables:
 for fixed device:
 47074
 for drawout device:
 47849

c 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.

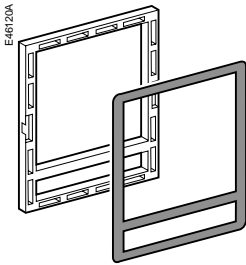
Device mechanical accessories



Operation counter (CDM)

c optional equipment,
one CDM per device
c part number: 48535

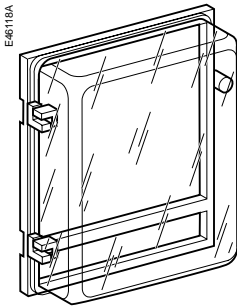
c the operation counter
sums the number of
operating cycles.



Escutcheon (CDP)

c optional equipment,
one CDP per device
c part numbers:
for fixed device:
48601
for drawout device:
48603

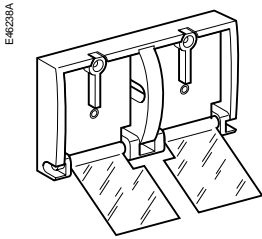
c the CDP increases the
degree of protection to IP
40 and IK 07 (fixed and
drawout devices).



Transparent cover (CCP)

c optional equipment,
one CP per device
equipped with a CDP
c part number: 48604
(for fixed and drawout
devices)

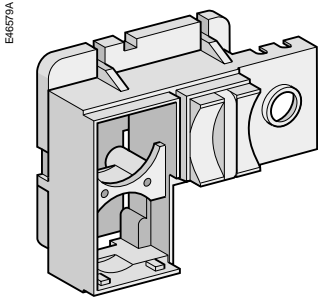
c mounted with a CDP,
the CP increases the
degree of protection to IP
55 and IK 10 (fixed and
drawout devices).



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

c optional equipment, one locking cover per device
 c part number: 48536

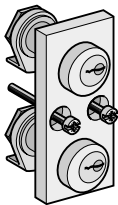
c the transparent cover blocks access (together or separately) to the pushbuttons used to open and close the device
 c locking requires a padlock, a lead seal or two screws.



Device locking in the OFF position using a padlock

c optional equipment, one locking system per device
 c part number: 48539

c the unit inhibits local or remote closing of the device
 c up to three padlocks may be used for locking.

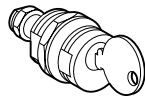
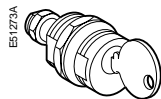
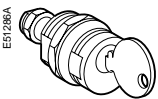


Device OFF position locking kit for keylocks

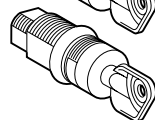
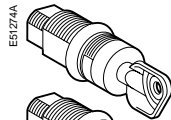
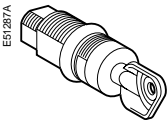
c optional equipment, one locking kit per device
 c part numbers (locks not included):
 for Profalux or Ronis keylocks: 48541
 for Castell keylocks: 48543
 for Kirk keylocks: 48542

c the kit inhibits local or remote closing of the device.

Ronis



Profalux

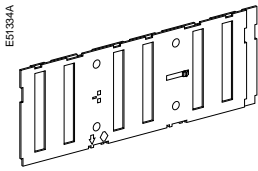


Keylocks required for the device locking kit

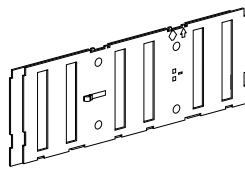
c one or two keylocks per locking kit
 c part numbers:
 v Ronis:
 1 keylock: 41940
 2 keylocks: 41950.
 v Profalux:
 1 keylock: 42888
 2 keylocks: 42878.

Chassis mechanical accessories

Top shutter closed



Bottom shutter closed

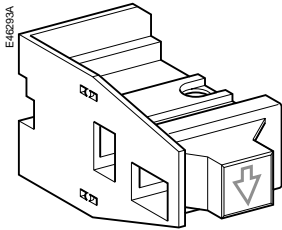


Safety shutters

c optional equipment
 c part numbers
 (set of shutters for top
 and bottom):
 v NW08/NW40:
 3 poles: 48587
 4 poles: 48589
 v NW40b/NW63
 3 poles: 48588
 4 poles: 48590

c 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.

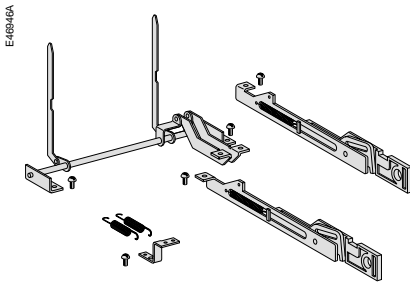
c IP20.



Shutter locking blocks

c optional equipment:
 2 blocks for NW08 to
 NW40
 4 blocks for NW40b to
 NW63
 c part number (2 blocks):
 48591

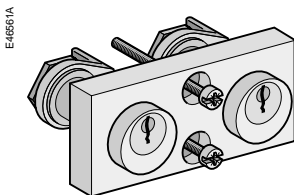
c the block may be
 padlocked. It:
 v prevents connection
 of the device
 v locks the shutters in the
 closed position.



Shutter position indication and locking on front face

c optional equipment
 c part numbers:
 v NW08/NW040:
 3 and 4 poles: 48592
 v NW40b/NW63
 3 poles: 48593
 4 poles: 48594

c this option located on
 the front of the chassis:
 v indicates that the
 shutters are closed
 v can be used to
 independently or
 simultaneously padlock
 the two shutters
 (top and bottom).

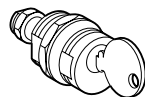
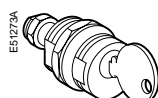
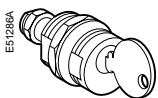


Circuit breaker locking in "disconnected" position

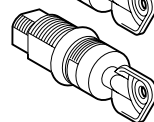
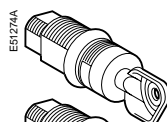
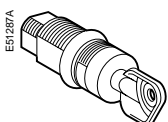
c optional equipment,
 one locking system
 per device
 c part numbers
 for Profalux or Ronis
 keylocks: 48564
 for Castell keylocks:
 48566
 for Kirk keylocks: 48565

c mounted on the
 chassis and accessible
 with the door closed, this
 system locks the circuit
 breaker in "disconnected"
 position using one or two
 keylocks
 c the "disconnected"
 position locking system
 may be modified to lock
 the circuit breaker in
 all three positions.

Ronis

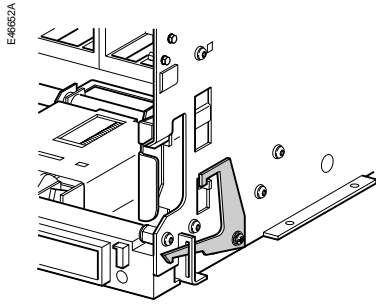


Profalux



Keylocks required with the "disconnected" position locking system

c one or two keylocks per
 locking system
 c part numbers:
 v Ronis:
 1 keylock: 41940
 2 keylocks: 41950
 v Profalux:
 1 keylock: 42888
 2 keylocks: 42878.

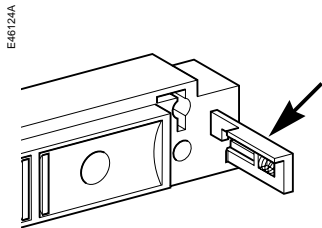


Door interlock

c optional equipment, one door interlock per chassis
 c part number: 47914

c this device inhibits opening of the cubicle door when the circuit breaker is in "connected" or "test" position

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

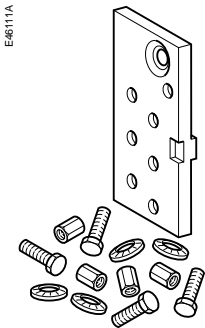


Racking interlock

c optional equipment, one racking interlock per chassis
 c part number: 48582

c this device prevents insertion of the racking handle when the cubicle door is open

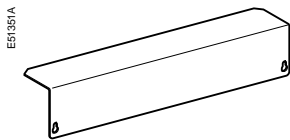
c it is mounted on the right-hand side of the chassis



Mismatch protection

c optional equipment, one mismatch protection device per chassis
 c part number: 33767

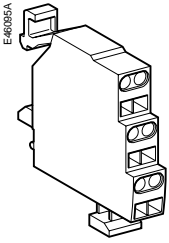
c mismatch protection offers twenty different combinations that the user may select to ensure that only a compatible circuit breaker is mounted on a given chassis.



Auxiliary terminal shield (CB)

c optional equipment, one CB shield per chassis
 c part numbers:
 v NW08/NW040
 3 poles: 48595
 4 poles: 48596
 v NW40b/NW63
 3 poles: 48597
 4 poles: 48598

c the shield prevents access to the terminal block of the electrical auxiliaries.



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

- c optional equipment, one to nine carriage switches
- c standard configuration, 0 to 3 CE, 0 to 3 CD, 0 to 3 CT
- c 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
- c part numbers (connection cables not included, see below):
 - v 1 carriage switch: 33170
 - v 1 set of actuators for additional carriage switches: 48560
 - c part number for connection cables (per carriage switch): 47849
- c 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
- c changeover contact
- c rated current: 10 A
- c breaking capacity 50/60 Hz for AC power (AC12 as per 947-5-1): 240 V: 10 A (rms)
- 380 V: 5 A (rms)
- c 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:

- c prior to initial use;
- c following an extended period during which the circuit breaker is not used.

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:

- c disconnect all the electrical auxiliaries of the circuit breaker (MCH, MX, XF, MN, Res electrical remote reset);
- c 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:

- c breaking capacities indicated on the rating plates;
- c identification of the control unit (type, rating);
- c presence of any optional functions (remote ON/OFF with motor mechanism, auxiliaries, measurement and indication modules, etc.);
- c protection settings (long time, short time, instantaneous, earth fault);
- c 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:

- c electrical auxiliaries;
- c terminal blocks;
- c connections of auxiliary circuits.

Operation

Check the mechanical operation of the circuit breakers:

- c opening of contacts;
- c 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.

- c depending on the type of control unit, fault diagnostics are available. See the user manual for the control unit.

- c 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

- c check the arc chutes (see page 43).

- c check the contacts (see page 43).

- c check the tightness of connections (see the device installation manual).

- c 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"> c open and close the device locally and remotely, successively using the various auxiliaries c test the operating sequences c test the control unit using the mini test kit 	<ul style="list-style-type: none"> v see pages 10 and 11 v see page 8 v see the user manual of the control unit
every two years or when the control-unit maintenance indicator reaches 100	<ul style="list-style-type: none"> c check the arc chutes c check the main contacts c check the tightness of connections c check the disconnecting-contact clusters 	<ul style="list-style-type: none"> v see page 43 v see page 43 v see the device installation manual v see page 44

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	c user	v see page 43.
main contacts	<ul style="list-style-type: none"> c inspection: user c replacement: Schneider After Sales Support 	v see page 43.
MCH gear motor	c user	v see page 9.
mechanical interlocks	c user	
connecting-rod springs	c Schneider After Sales Support	
MX/MN/XF	c user	v see pages 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

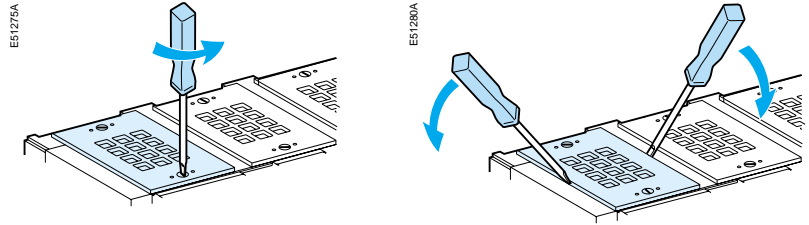
Type of circuit breaker	Maximum service life	Service life of various parts			
		Arc chutes	Main contacts	Connecting-rod springs, MCH	MX/XF releases
NW08 to NW16 types N1/H1/H2	25000	10000	10000	12500	12500
NW08 to NW16 type L1	25000	3000	10000	12500	12500
NW20 to NW25 types H1/H2	20000	440 V: 8000 690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

Maintenance operations

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

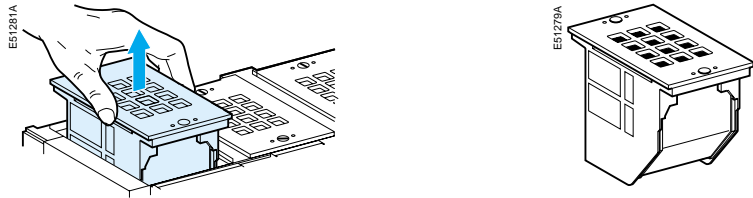
Arc chutes

- c remove the fixing screws:
 - v types N1, H1 and H2 \leq NW 40: two screws
 - v types H1 and H2 \geq NW 40b, type H3: three screws
 - v type L1: four screws



- c check the arc chutes:
 - v chamber not cracked
 - v separators not corroded.

If necessary, replace the arc chutes.



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

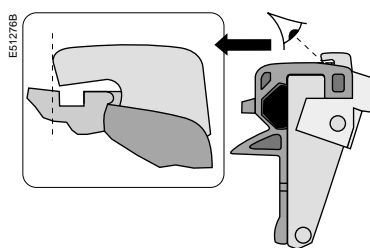
If the contacts are worn, have the concerned poles replaced by the Schneider service centre.

Wear of main contacts

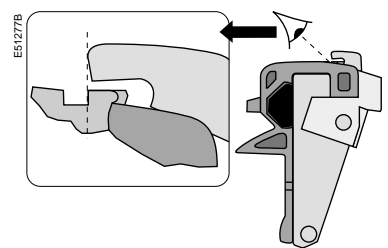
- c remove the arc chutes
- c close the device and check the contacts

Type N1, H1, H2, H3 (\leq 4000 A)

Contacts OK

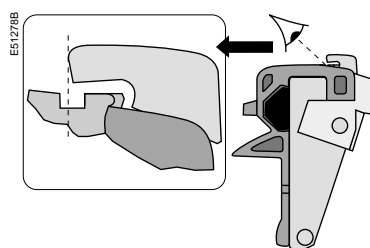


Contacts worn

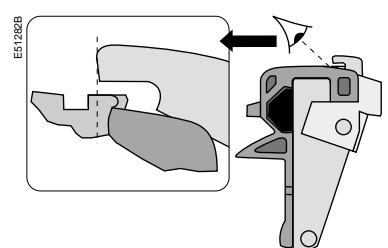


Type H1, H2 (\geq 4000b A), L1

Contacts OK



Contacts worn

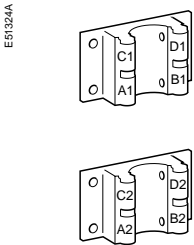


Disconnecting-contact clusters

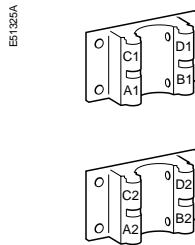
- c grease the contacts using the grease listed on page 45, supplied by Schneider Electric
- c check the contacts as follows:
 - v open the circuit breaker;
 - v de-energise the busbars;
 - v disconnect the circuit breaker;
 - v remove the circuit breaker;
 - v check the contact fingers (no sign of copper should be visible);
- Replace any worn clusters.
- c 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					

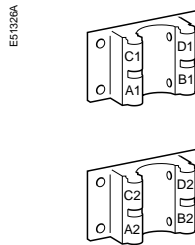
layout n° 1



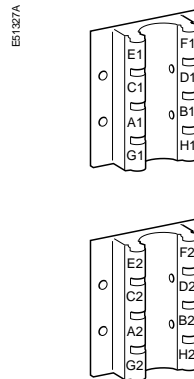
layout n° 2



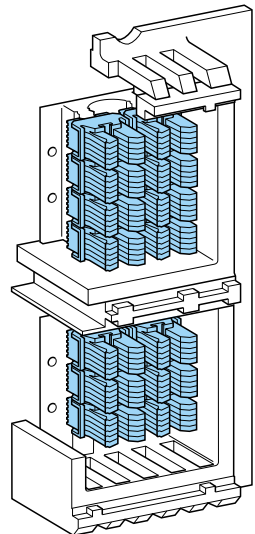
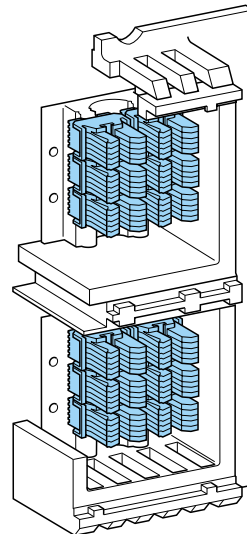
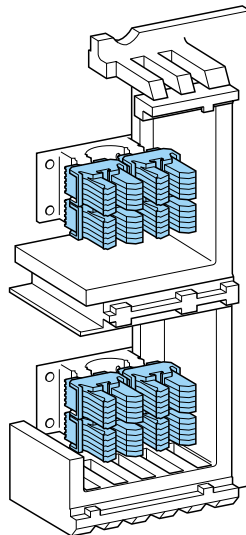
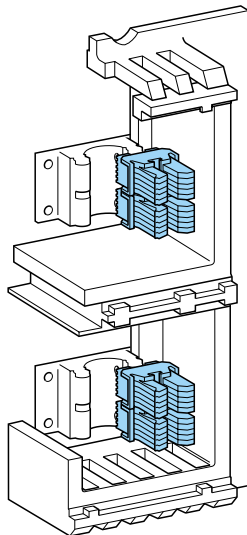
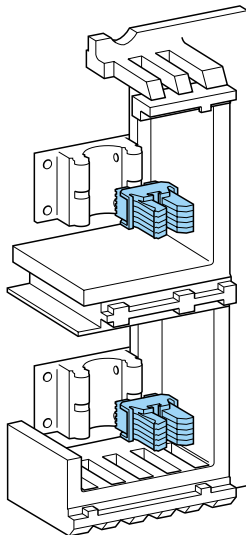
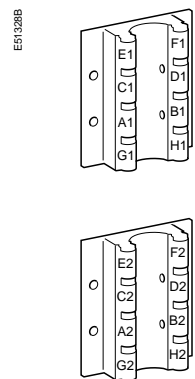
layout n° 3



layout n° 4



layout n° 5



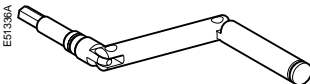
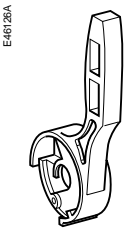
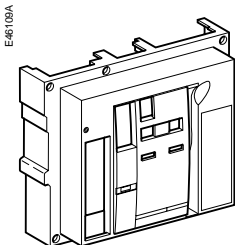
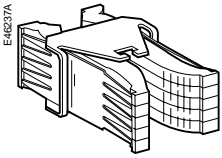
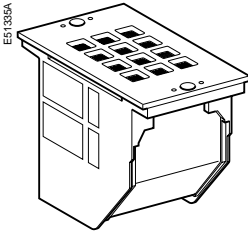
Ordering replacement parts

Electrical accessories

The electrical accessories that may require replacement are the following:

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

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



Arc chutes

- | | |
|---|---|
| c part numbers
(1 arc chute):
v NW type N1
NW08 to NW40 types H1
and H2: 47935
v NW40b to NW63 types
H1 and H2
NW type H3: 47936
v NW type L1: 47937. | c NW08 to NW40:
one chute per pole
NW40b to NW63:
two chutes per pole. |
|---|---|

Disconnecting-contact clusters

- | | |
|-------------------------------------|--|
| c part number (1 cluster):
33166 | c number per circuit
breaker, see table page
44. |
|-------------------------------------|--|

Grease for disconnecting-contact clusters

- c part number (1 can):
33160.

Front

- | | |
|--|-----------------|
| c part number (1 front for
3- or 4-pole devices):
47939. | c 1 per device. |
|--|-----------------|

Charging handle

- | | |
|-------------------------------------|-----------------|
| c part number (1 handle):
47940. | c 1 per device. |
|-------------------------------------|-----------------|

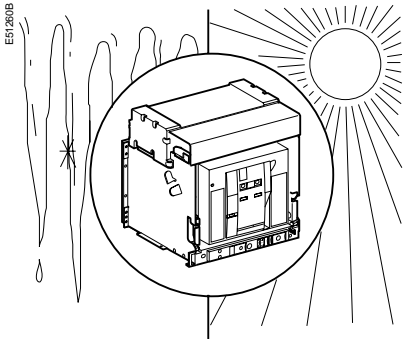
Crank

- | | |
|------------------------------------|-----------------|
| c part number (1 crank):
47944. | c 1 per device. |
|------------------------------------|-----------------|

Problem	Probable causes	Solutions
opening of device not indicated by the pushbutton indicator signalling a fault trip	<ul style="list-style-type: none"> c the supply voltage for the MN undervoltage release is too low or equal to zero. c the MN release is faulty. c load-shedding order sent by another device. c transient presence of the voltage across the terminals of the MX shunt release. 	<ul style="list-style-type: none"> v check the voltage. Implement corrective action v replace the faulty device v check the overall load on the distribution system. If necessary, modify the settings of devices in the installation. v determine the origin of the order.
instantaneous opening after each attempt to close the circuit breaker (indicated by the pushbutton indicator signalling a fault trip)	<ul style="list-style-type: none"> c closing on a short-circuit. c transient overcurrent when closing. c thermal memory. 	<ul style="list-style-type: none"> v clear the fault. Check the condition of the Masterpact device before putting it back into service v modify the distribution system or the control-unit settings Check the condition of the Masterpact device before putting it back into service v see the user manual of the control unit.
circuit breaker cannot be opened remotely can be opened locally	<ul style="list-style-type: none"> c insufficient supply voltage for the MX shunt release(s) $U < 0.7 U_n$. c faulty electrical circuit for the MX shunt release(s). c drop in voltage across the terminals of the MN release(s) to less than $0.35 U_n$. 	<ul style="list-style-type: none"> v check the supply voltage. Apply a voltage between 0.7 and $1.1 U_n$. v remove the front face v check the MX shunt release(s) v completely cut the supply voltage of the release to be checked. The circuit breaker should open. <ul style="list-style-type: none"> - If it does not open replace the tested release - If it opens, resupply the tested release with power and reclose the circuit breaker. Slowly reduce the voltage and check that the release opens the circuit breaker between 0.35 and $0.7 U_n$. If there is a problem, replace the tested release.
circuit breaker cannot be opened locally	<ul style="list-style-type: none"> c faulty operating mechanism or welded main contacts. 	<ul style="list-style-type: none"> v contact a Schneider service centre.

Problem	Probable causes	Solutions
circuit breaker cannot be closed remotely or locally	c closing on a short-circuit.	v clear the fault. Check the condition of the Masterpact device before putting it back into service.
	c pushbutton indicator signalling a fault trip has not been reset (only if reset is not automatic).	v reset the pushbutton indicator.
	c circuit breaker not completely connected.	v terminate racking in (connection) of the circuit breaker.
	c anti-pumping function.	v cut the supply of power to the XF closing release, then resupply it.
	c circuit breaker not charged (spring mechanism).	v check the supply of power to the MCH gear motor. Check the supply circuits. Check that manual charging is possible. If necessary, replace the MCH gear motor.
	c the XF closing release continuously supplied with power.	v 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".
circuit breaker cannot be closed remotely, can be closed locally.	c MX shunt release(s) supplied with power.	v determine why the MX release(s) are supplied with power. Cut the supply of power to the concerned MX release(s), then attempt to close via the XF.
	c MN release not supplied with power or faulty.	v supply the MN with voltage greater than 0.85 Un, then attempt to close via the XF. If the circuit breaker does not close, remove the front face and check that the pick-up voltage of the MN is correct If not, replace the auxiliary.
	c circuit breaker locked in the "open" position.	v disable the locking function.
	c circuit breaker interlocked.	v check the situation, it may be normal.
	c XF closing release not supplied with enough power or faulty.	v check the power supply (voltage should be between 0.85 and 1.1 Un)
circuit breaker cannot be recharged electrically.	c insufficient supply voltage for the MCH gear motor.	v check the supply voltage. Check the supply circuit for the MCH gear motor. Attempt to recharge the mechanism manually. If there is a problem, the mechanism is faulty. Contact a Schneider service centre. If the mechanism can be charged manually, the MCH gear motor is faulty and must be replaced.
the crank cannot be inserted to connect or disconnect the circuit breaker.	c system is padlocked, a "connected" or "disconnected" position locking function is enabled or the racking interlock is enabled.	v remove the padlock and/or disable the locking function(s).
circuit breaker or right-hand rail of chassis (circuit breaker removed) cannot be removed.	c chassis rails not completely pushed in.	v push the rails in completely.
	c the crank has not been removed from the circuit breaker. c the circuit breaker is not completely disconnected.	v remove the crank and store it. v completely disconnect the circuit breaker.
circuit breaker cannot be connected (racked in).	c system is padlocked, a "connected" or "disconnected" position locking function is enabled or the racking interlock is enabled.	v remove the padlock and/or disable the locking function(s).
	c the circuit breaker and chassis do not match.	v check the match between the two. If OK, check the mismatch protection installed on the circuit breaker and chassis.
	c the disconnecting-contact clusters are incorrectly positioned.	v check the position of the disconnecting-contact clusters.
	c the safety shutters are locked (locked inside chassis or on front face).	v remove the lock(s).

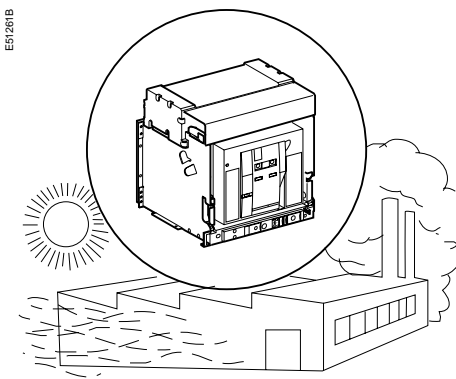
Checking Masterpact operating conditions



Ambient temperature

Masterpact NW devices can operate under the following temperature conditions:

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



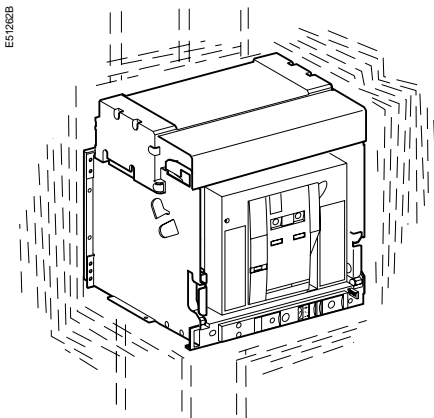
Extreme atmospheric conditions

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

- c IEC 68-2-1: dry cold at -55°C ;
- c IEC 68-2-2: dry heat at $+85^{\circ}\text{C}$;
- c IEC 68-2-30: damp heat (temperature $+55^{\circ}\text{C}$, relative humidity 95%);
- c 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.



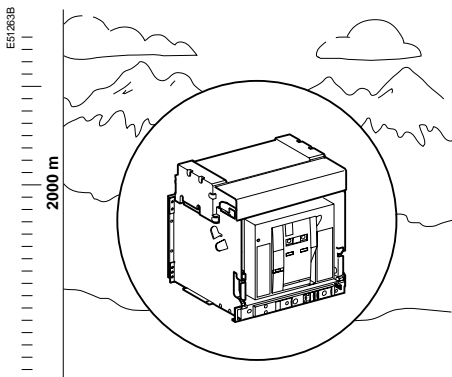
Vibrations

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.):

- c 2 to 13.2 Hz: amplitude $\pm 1\text{ mm}$;
- c 13.2 to 100 Hz: constant acceleration 0.7 g.

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

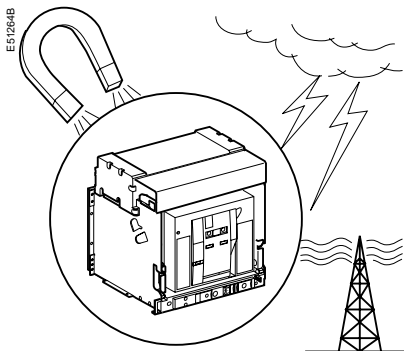


Altitude

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	3500	3150	2500	2100
voltage (V)				
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 I _n	0.99 x I _n	0.96 x I _n	0.94 x I _n



Electromagnetic disturbances

Masterpact NW devices are protected against:

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

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

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

The above tests guarantee that:

- c no nuisance tripping occurs;
- c tripping times are respected.

Schneider Electric Industries SA

5, rue Nadar
92506 Rueil-Malmaison Cedex
France
Tel: +33 (0)1 41 29 82 00
Fax: +33 (0)1 47 51 80 20

<http://www.schneiderelectric.com>

As standards, specifications and designs develop from time, always ask for confirmation of the information given in this publication.



This document has been printed on ecological paper.

Designed by: HeadLines
Printed by: