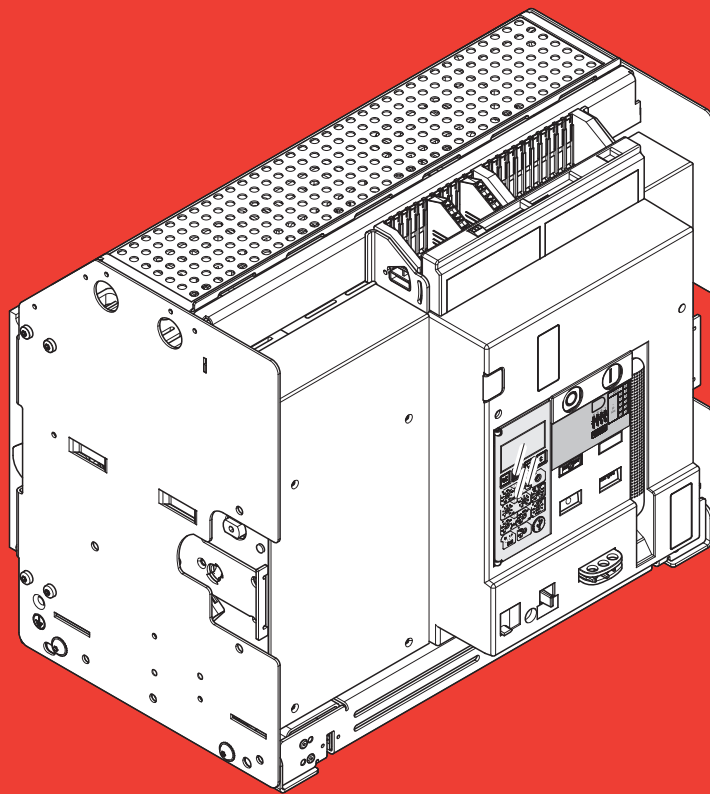


DMX-SP 4000



October 20

legrand®
LE11404AA

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DMX-SP 4000

1. Weights

It is important to know the weight of the breaker for proper selection of handling equipment. Net Weight.

Circuit breakers

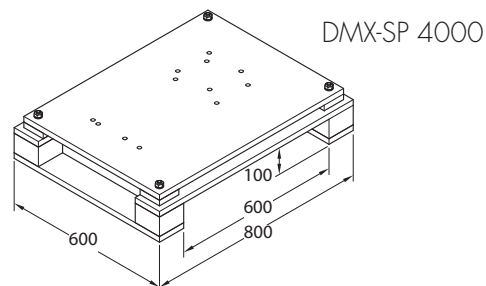
	Rating (A)	3200/4000
Fixed	3P	59 kg
	4P	76 kg
Draw-out	3P	66 kg
	4P	84 kg

Switch disconnectors

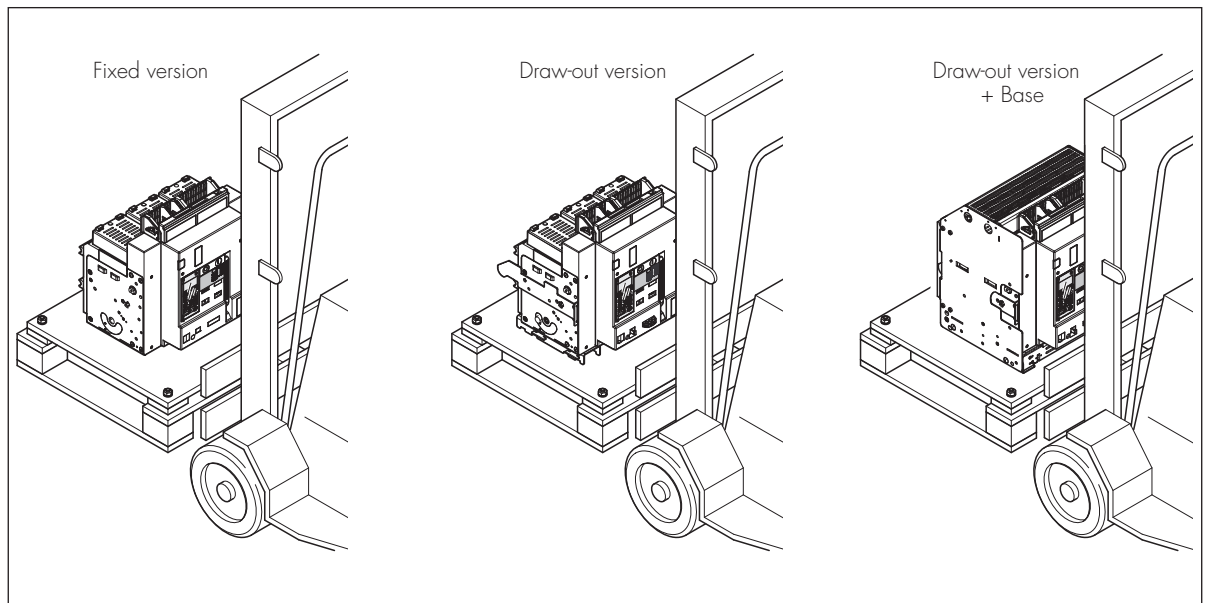
	Rating (A)	3200/4000
Fixed	3P	57 kg
	4P	73 kg
Draw-out	3P	64 kg
	4P	81 kg

2. Handling and unpacking

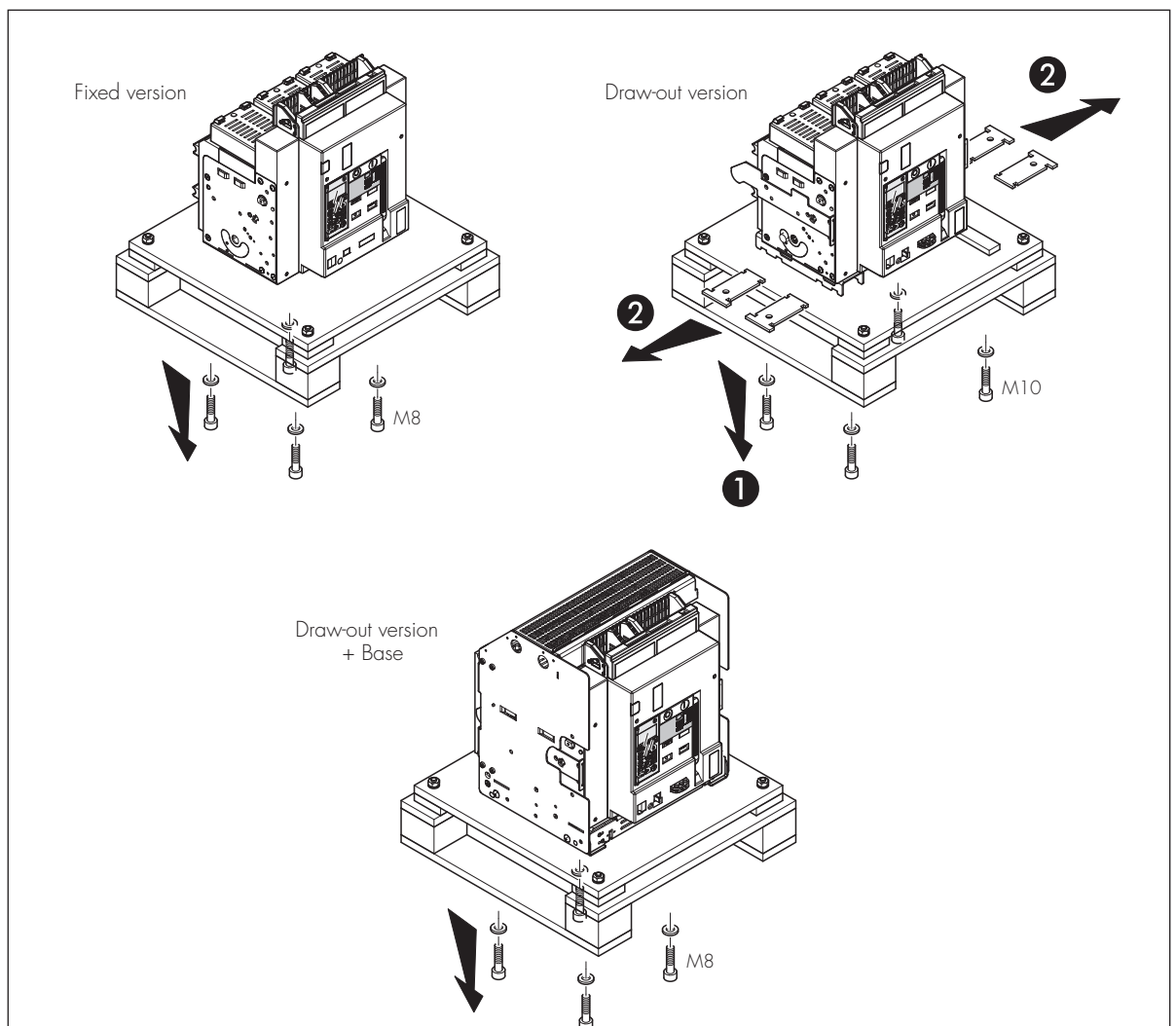
The breaker can be transported using a fork lift.



DMX-SP 4000



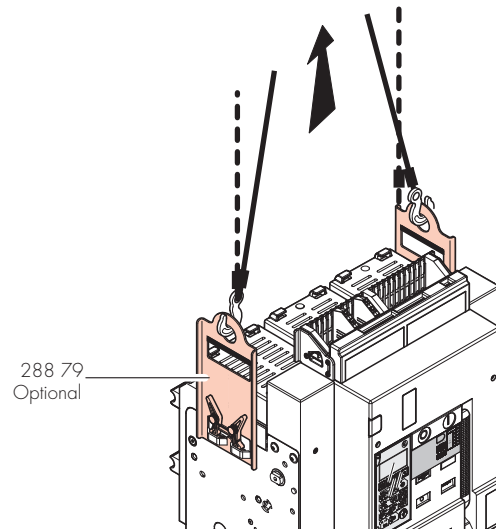
Remove breaker mounting screws.



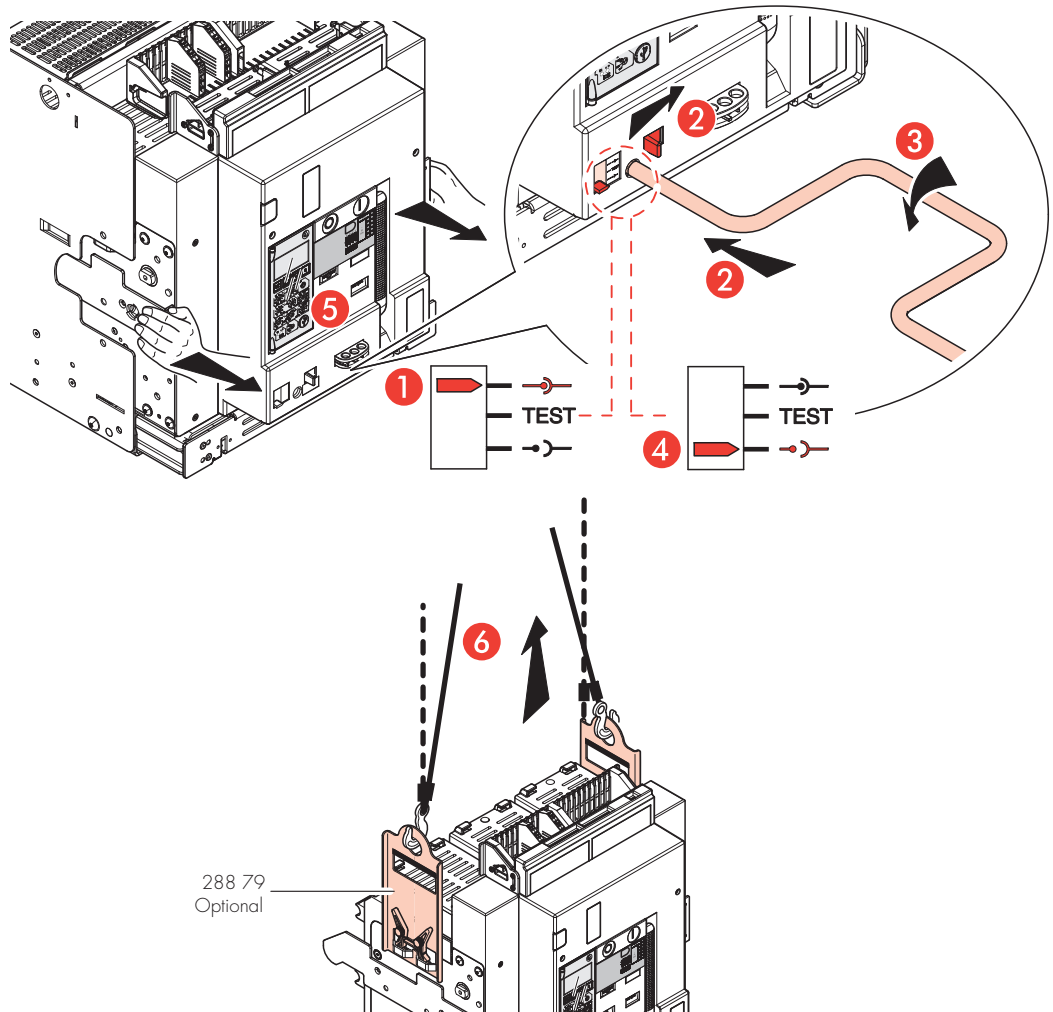
DMX-SP 4000

A special lifting handle are available (optional 0 288 79) to facilitate handling.

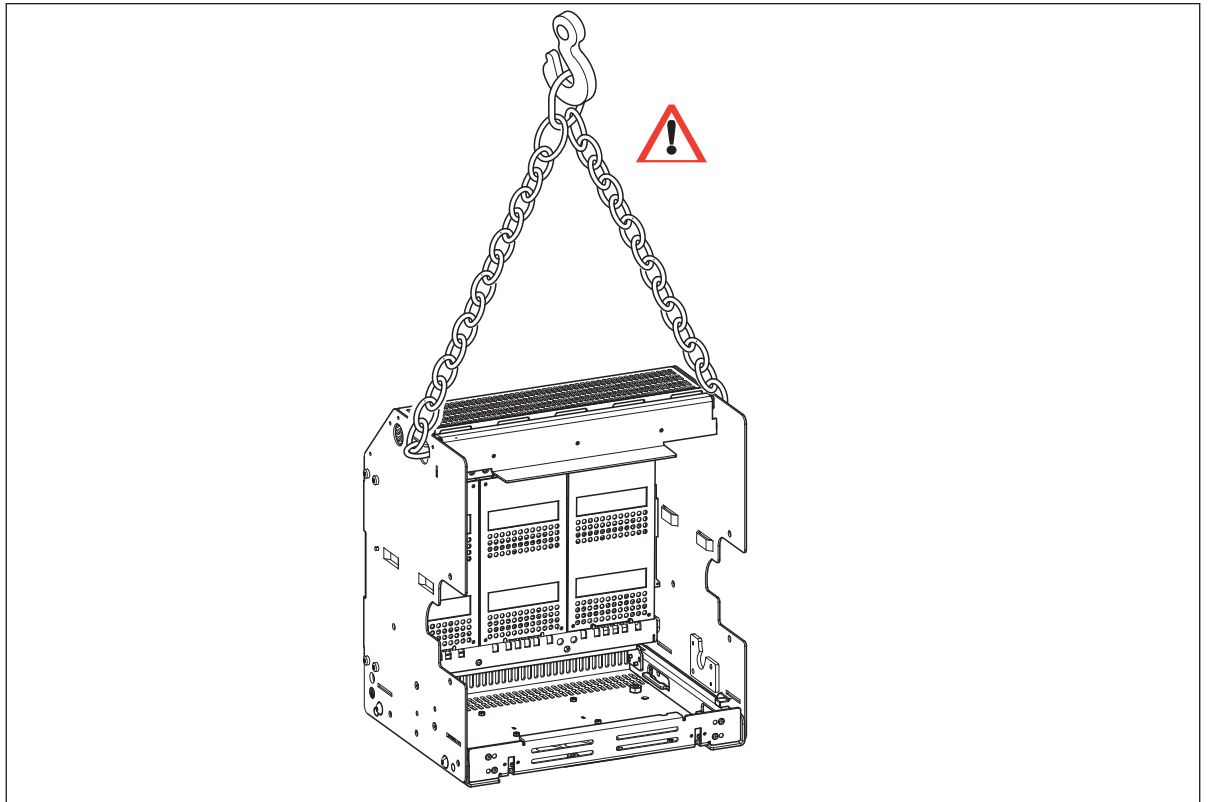
Fixed version



Draw-out version



DMX-SP 4000



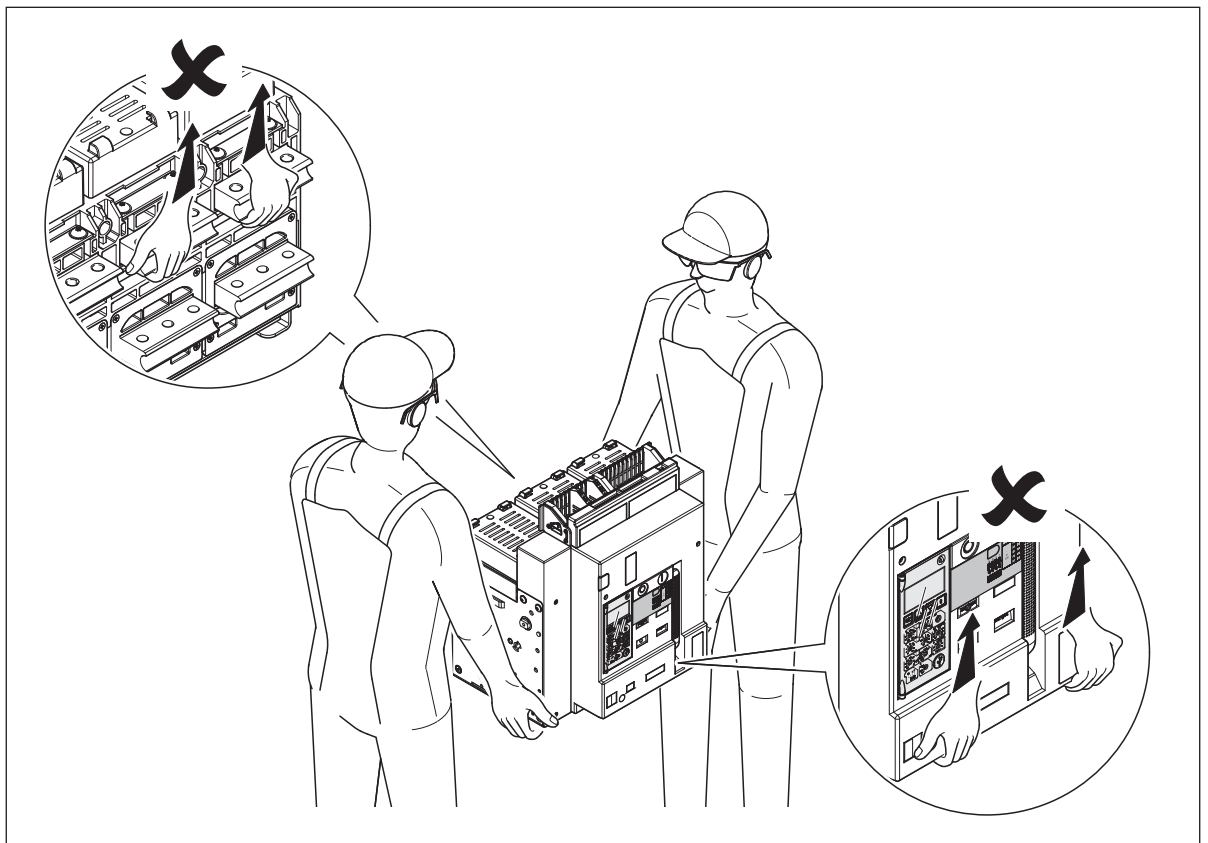
DMX-SP 4000 3P breakers (fixed and draw-out version) can also be transported by 2 persons.



Heavy equipment.
Exercise proper care to avoid personal injury and equipment damage.



Do not lift the breaker using front face or Terminals



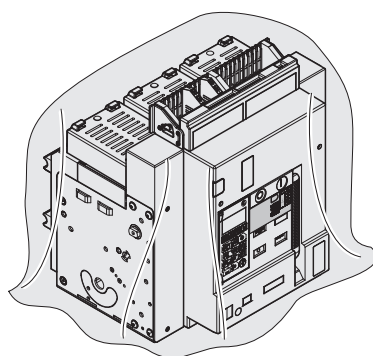
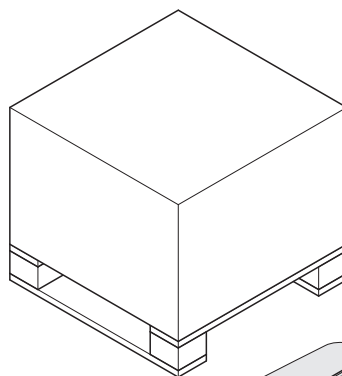
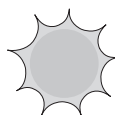
DMX-SP 4000

3. Storage for fixed and draw-out breakers

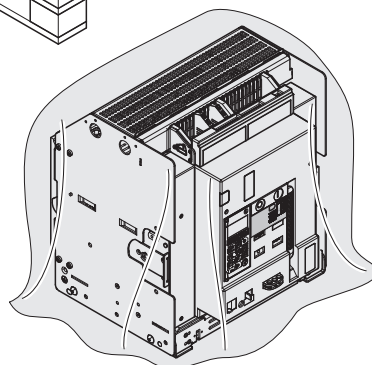
When Base and Breaker are not being used for a long time, pack them.



Store the breaker in a cool, dry place, away from dusty/corrosive environment.



Fixed version

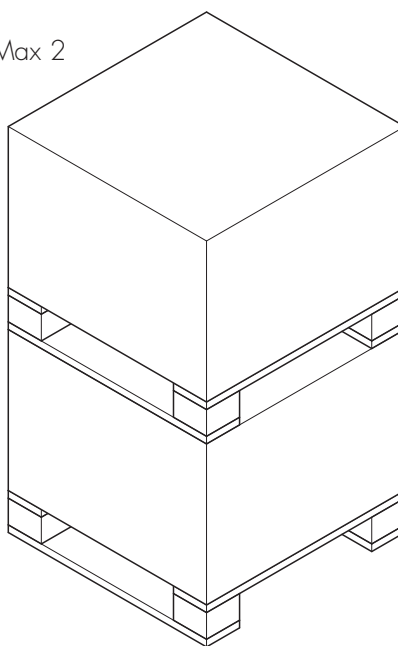


Draw-out version



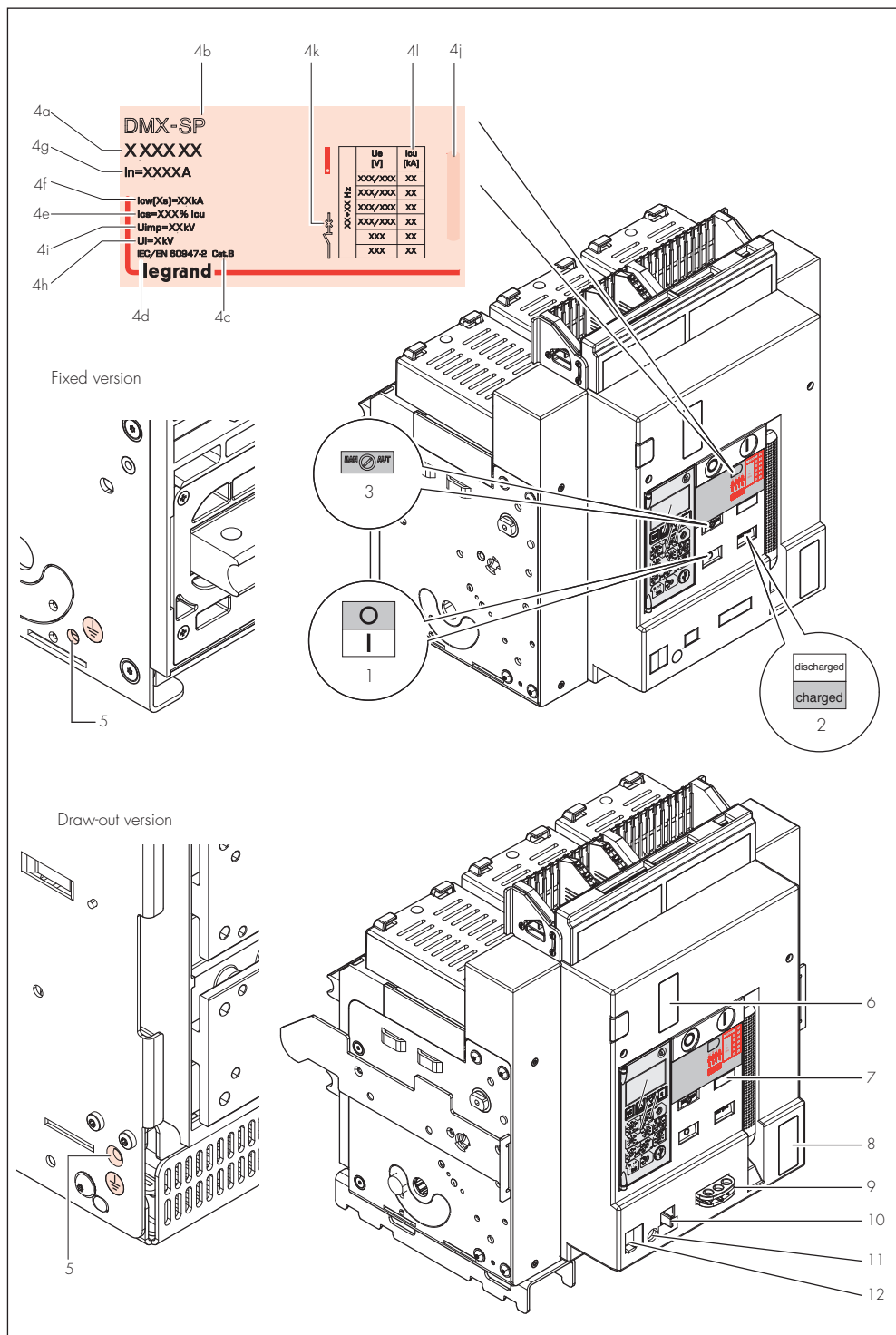
Do not stack more than 2 breakers one above the other.

Max 2



4. Identification

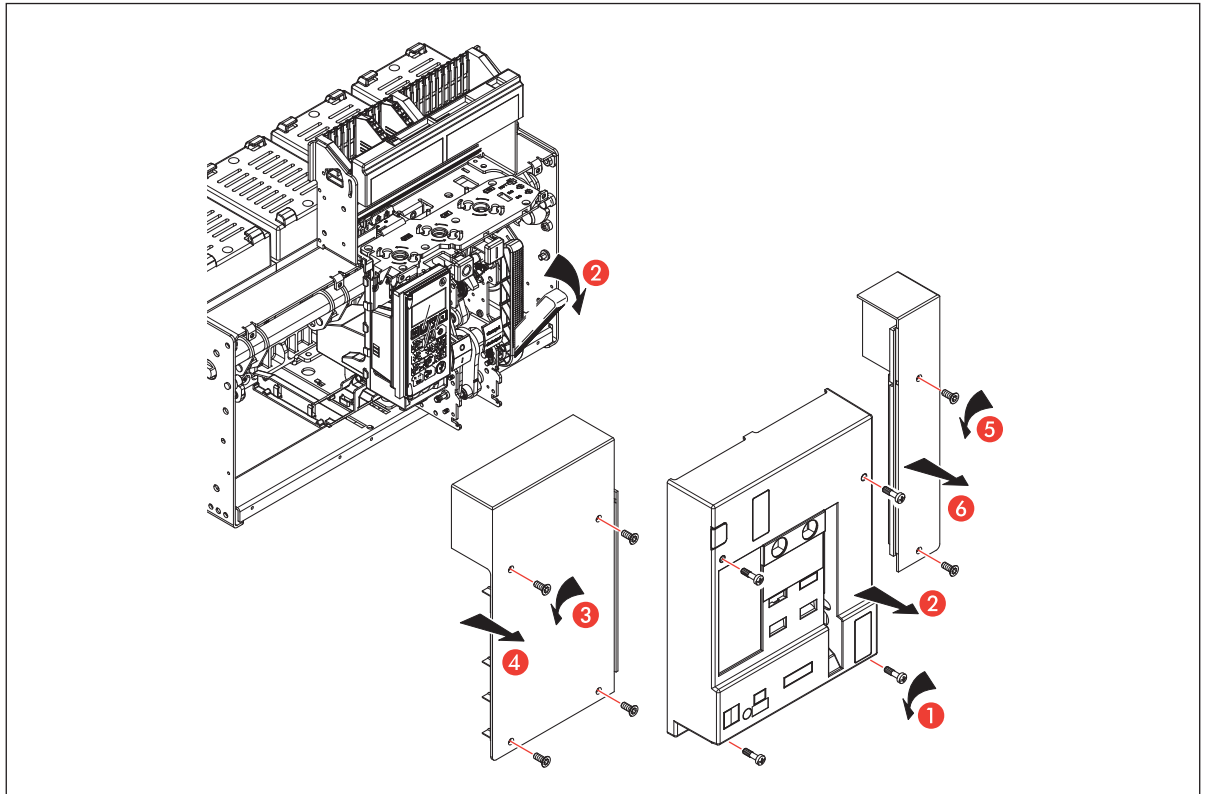
- 1 Main contacts status indication
- 2 Spring status indication
- 3 Reset button for tripping device
- 4a Product reference
- 4b Product type
- 4c Utilization Category
- 4d Standards compliance
- 4e Rated service short-circuit breaking capacity
- 4f Rated short-time withstand current
- 4g Rated Current
- 4h Rated insulation voltage
- 4i Rated impulse with stand voltage
- 4j Coloured label for breaking capacity
- 4k Identification symbol of the device
- 4l Rated ultimate short-circuit breaking capacity according to the rated operational voltage U_e
- 5 Earth connection
- 6 Place for key lock or padlock in open position
- 7 Place for operation counter
- 8 Place for key lock in in draw-out and test position
- 9 Pad Lock of draw-out window
- 10 Racking shutter: Bring to the right in order packing to insert the draw-out bar (operation disabled if the breaker is closed)
- 11 Draw-out Bar insertion
- 12 Draw-out position indication: inserted/test/draw-out



DMX-SP 4000

5. Racking-out frontal cover

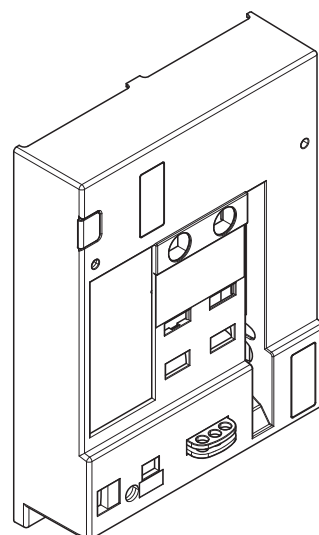
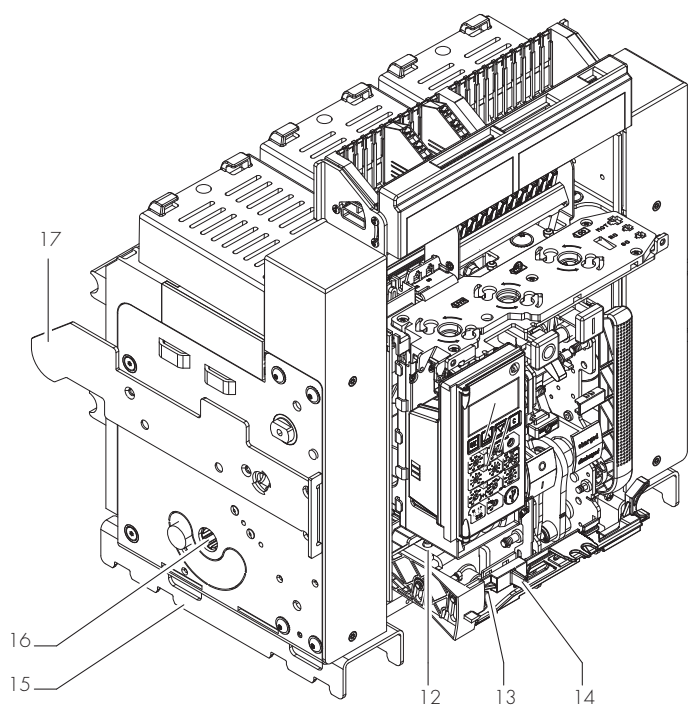
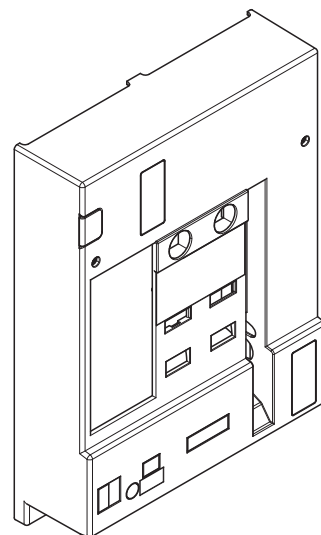
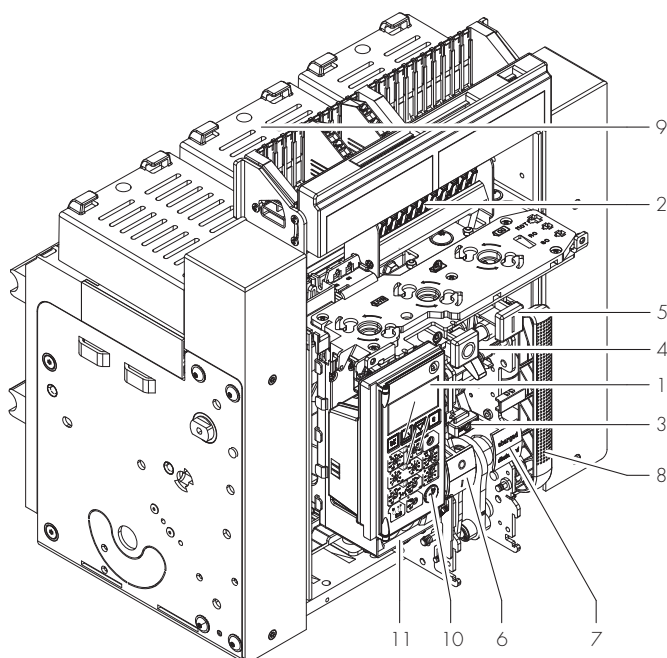
For fix and draw-out breakers.



DMX-SP 4000

6. Exploring

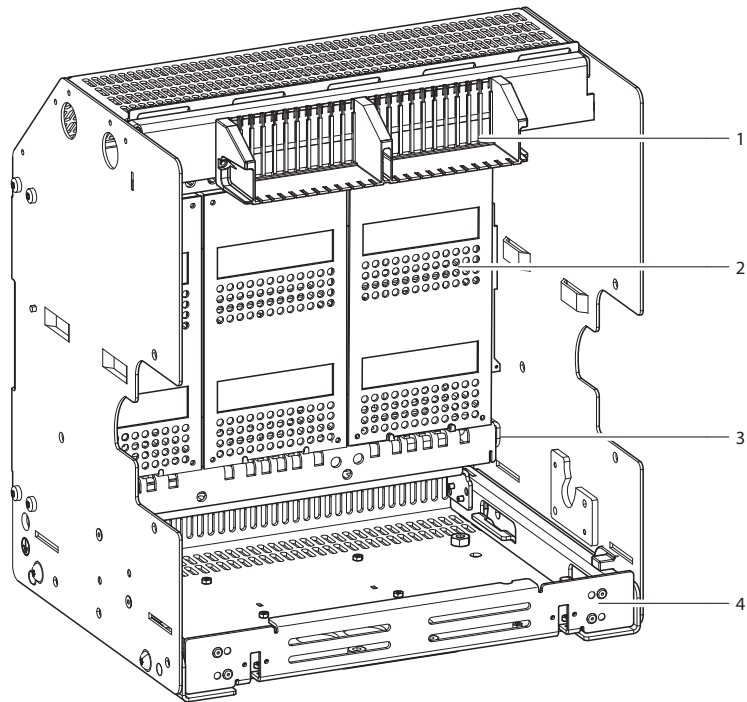
- 1 Protection Unit
- 2 Auxiliary Contacts
- 3 Reset button
- 4 OFF button
- 5 ON button
- 6 ON-OFF Indication
- 7 Spring Status Indication
- 8 Charging handle
- 9 Dejon cell
- 10 Mini USB cover
- 11 Battery cover
- 12 Draw-out mechanish
- 13 Draw-out bar insertion
- 14 Racking shutter
- 15 Support to place the breaker in draw-out cassette
- 16 Draw-out main shaft
- 17 Insertion guide



DMX-SP 4000

- 1 Aux terminal block
- 2 Safety shutter
- 3 Earth terminal
- 4 Removable cassette

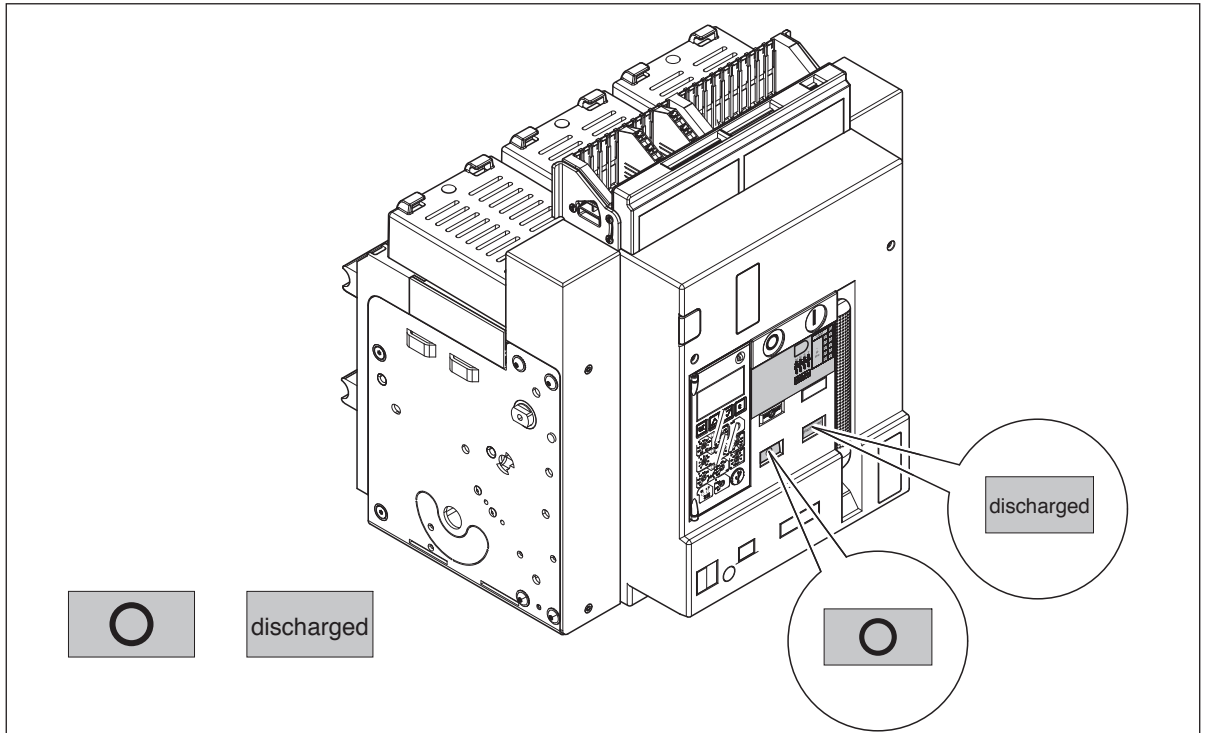
Base
Draw-out version





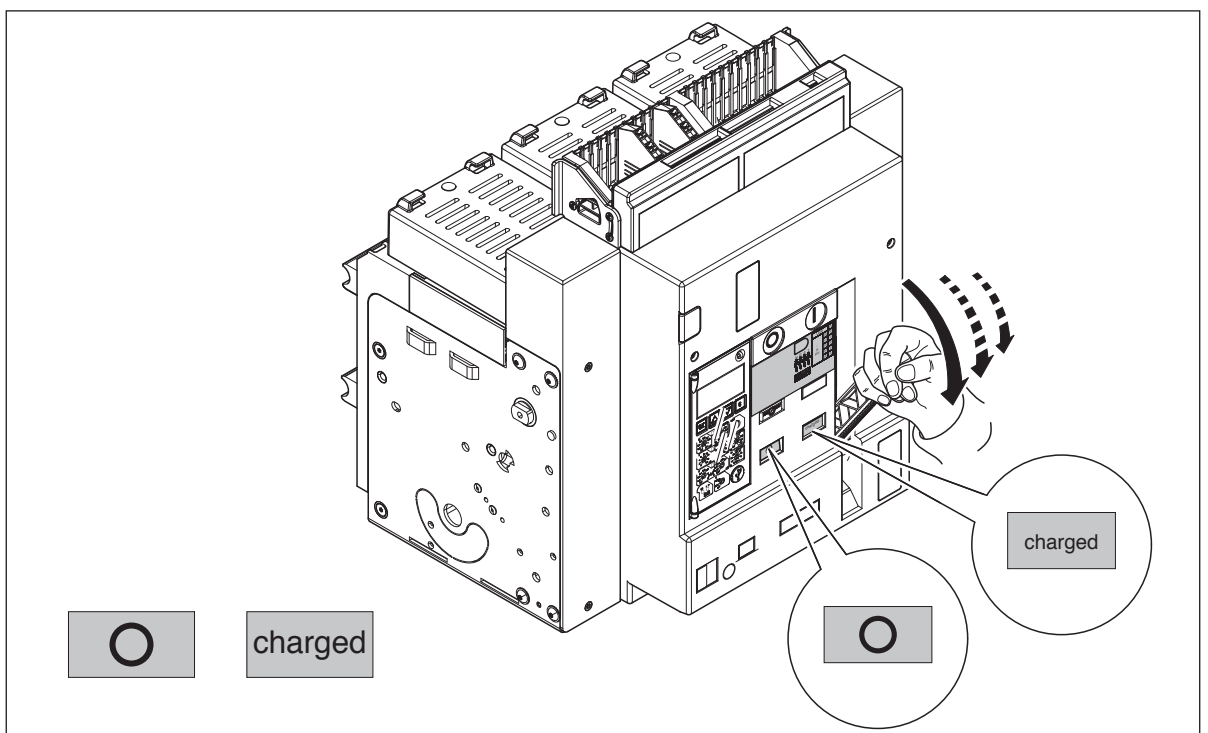
DMX-SP 4000

7. Operating

Before installing the breaker, follow the following operations.
Initially, the Breaker is  and Spring is .

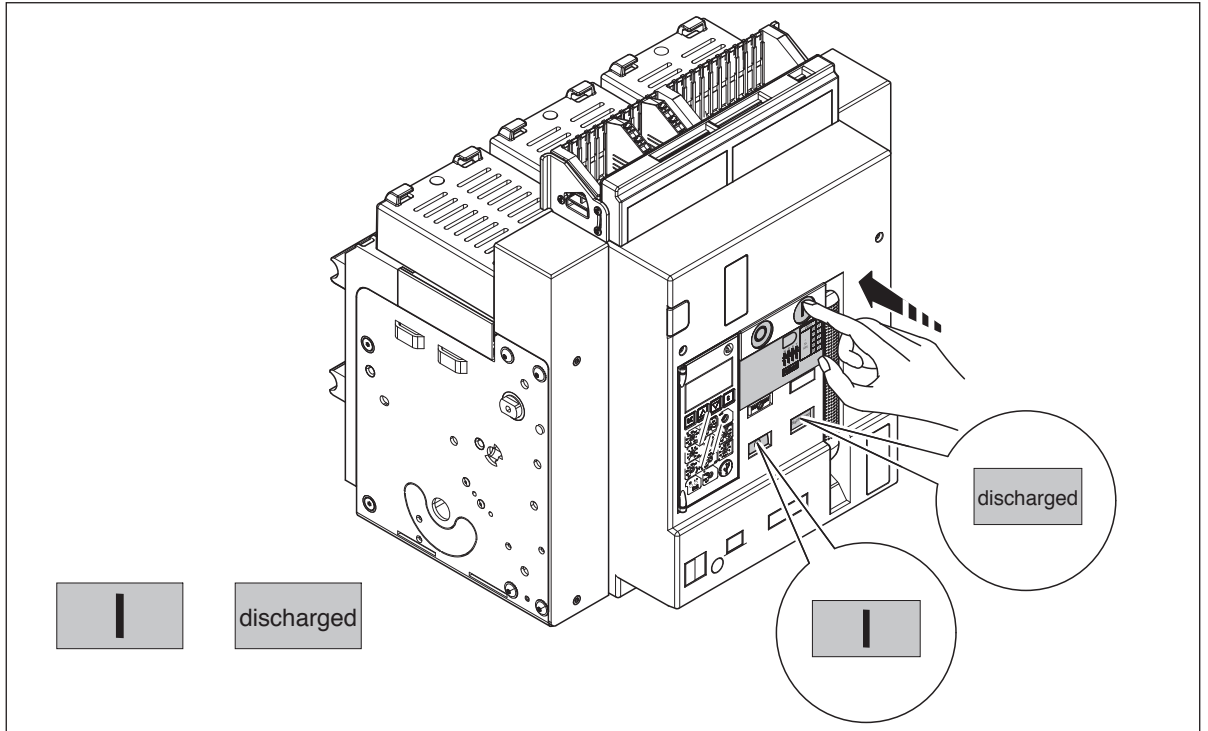


Charge the Main spring through multiple strokes of charging handle.
Now the breaker is  and spring is .

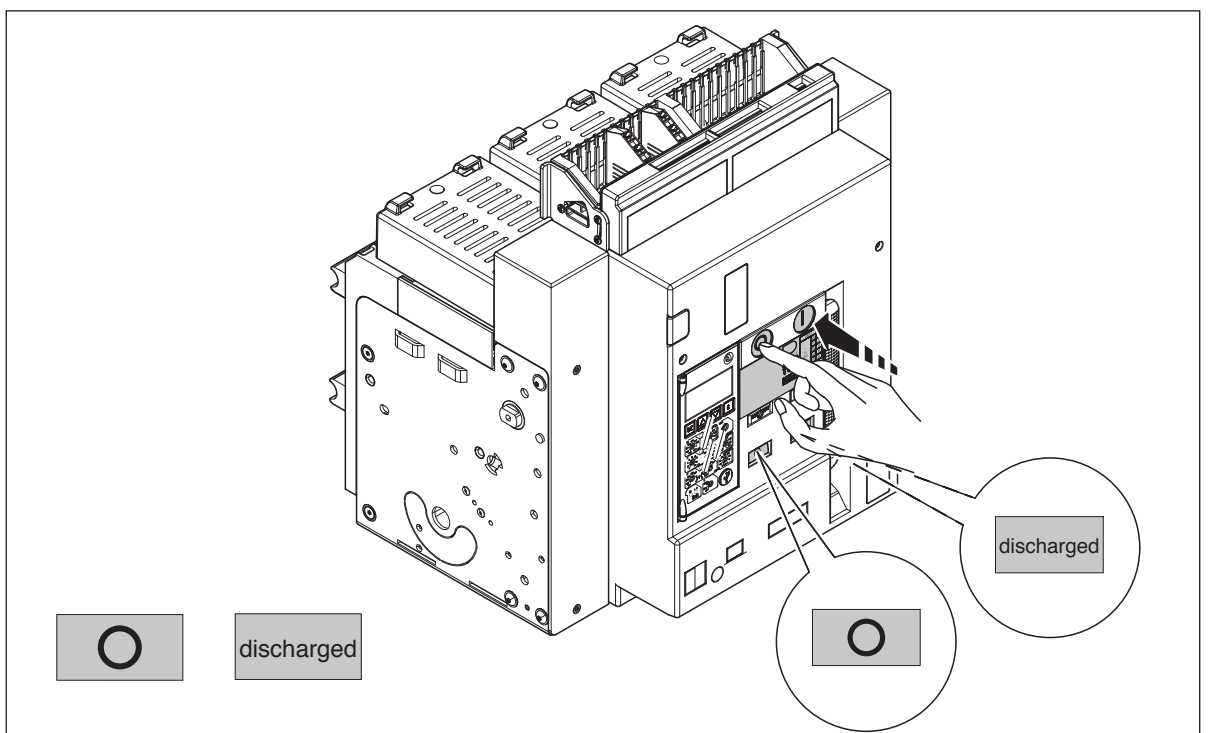


DMX-SP 4000

Push 'ON' button to close the breaker. Now, the breaker is **I** and spring is **discharged**.
In this situation, spring can be charged again for next operation.



Push 'OFF' button to trip the breaker.
Now, the Breaker is **O** and Spring is **discharged**.



DMX-SP 4000

8. Technical specifications

8.1 General features

CIRCUIT BREAKERS			
According to IEC 60947-2			
Poles number		3P-4P	
Rated uninterrupted current (In) [A]		3200-4000	
Isolation voltage (Ui) [V]		1000	
Rated impulsive voltage (Uimp) [kV]		12	
Service voltage at 50÷60Hz (Ue) [V]		690	
Type		N	H
Rated ultimate breaking capacity (Icu) [kA]	220V÷500Va.c.	50	65
	600Va.c.	42	50
	690Va.c.	42	50
Rated service breaking capacity Ics (% Icu)		100	100
Rated short circuit making capacity (kA)	220V÷500Va.c.	105	143
	600Va.c.	88	105
	690Va.c.	88	105
Rated short-time withstand current Icw (kA) t=1s	220V÷500Va.c.	50	65
	600Va.c.	42	50
	690Va.c.	42	50
Rated short-time withstand current Icw (kA) t=3s	220V÷500Va.c.	36	40
	600Va.c.	36	40
	690Va.c.	36	40
Neutral protection (%)		0-50-100	
Utilization category		B	
Isolation capability		yes	
Endurance (cycles)	mechanical	without maintenance	5000
		with maintenance	10000
	electrical	without maintenance	3000
Opening time		15 ms	
Closing time		30 ms	
Visualization of contacts position		S	
Visualization of charged/discharged springs		S	
Auxiliary contacts		S*/O	
Trip contact		O (factory fitted ONLY)	
Shunt trip		O	
Closing coil		O	
Undervoltage release		O	
Undervoltage release with time delay		O	
Motor operator		O	
Mechanical counter		O	
Mechanical interlock		O	

* Standard version with n° 1 NO/NC (max n° 9 optional contacts 288 15).

S=Standard O=Optional

DMX-SP 4000

SWITCH DISCONNECTORS			
According to IEC 60947-3			
Poles number			3P-4P
Rated uninterrupted current (In) [A]			3200-4000
Isolation voltage (Ui) [V]			1000
Rated impulsive voltage (Uimp) [kV]			12
Service voltage at 50÷60Hz (Ue) [V]			690
Utilization category			AC23A
Rated short circuit making capacity (kA)	220V÷500Va.c.		143
	600Va.c.		105
	690Va.c.		105
Rated short-time withstand current Icw (kA) t=1 s	220V÷500Va.c.		65
	600Va.c.		50
	690Va.c.		50
Rated short-time withstand current Icw (kA) t=3 s	220V÷500Va.c.		40
	600Va.c.		40
	690Va.c.		40
Isolation capability			yes
Endurance (cycles)	mechanical	without maintenance	5000
		with maintenance	10000
	electrical	without maintenance	3000
Opening time			15 ms
Closing time			30 ms
Visualization of contacts position			S
Visualization of charged/discharged springs			S
Auxiliary contacts			S*/O
Shunt trip			O
Closing coil			O
Undervoltage release			O
Undervoltage release with time delay			O
Motor operator			O
Mechanical counter			O
Mechanical interlock			O

* Standard version with n° 1 NO/NC (max n° 9 optional contacts 288 15).
S=Standard O=Optional

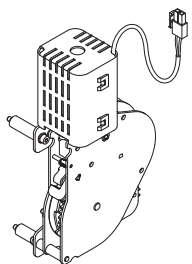
DMX-SP 4000

8.2 Real dimensions of the device

Dimensions - fixed version 3P	
Width	408 mm
Depth	354 mm
Height	419 mm
Dimensions - fixed version 4P	
Width	538 mm
Depth	354 mm
Height	419 mm
Dimensions - draw-out version 3P	
Width	425 mm
Depth	433 mm
Height	473 mm
Dimensions - draw-out version 4P	
Width	555 mm
Depth	433 mm
Height	473 mm

DMX-SP 4000

9. Features of the main electrical accessories



Motor operator

Technical features

Rated operating voltage U_c (V.a.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V-400V÷440V - 480V
(V.d.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V

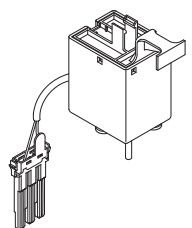
Voltage range (% U_c): 85÷110

Maximum power consumption (W/VA): 180/180

Maximum peak current for about 80ms: 2÷3 I_n

Charging time (s): 5

Operating frequency (n°/min): 2



Closing coil

Technical features

Rated operating voltage U_c (V.a.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V -415V/440V/480V
(V.d.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V

Voltage range (% U_c): 85÷110

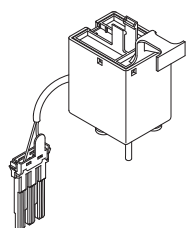
Pick-up consumption (W/VA): 500/500

Pick-up time (ms): 180

Hold consumption (W/VA): 5/5

Closing time (ms): 50

Isolation voltage (kV): 2,5



Shunt trip

Technical features

Rated operating voltage U_c (V.a.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V -415V/440V/480V
(V.d.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V

Voltage range (% U_c): 70÷110

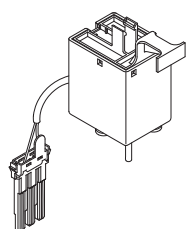
Pick-up consumption (W/VA): 500/500

Pick-up time (ms): 180

Hold consumption (W/VA): 5/5

Opening time (ms): 30

Isolation voltage (kV): 2,5



Undervoltage release

Technical features

Rated operating voltage U_c (V.a.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V -415V/440V/480V
(V.d.c.) 50/60Hz: 24V-48V-110V÷130V-220V÷250V

Voltage range (% U_c): 85÷110

Pick-up consumption (W/VA): 500/500

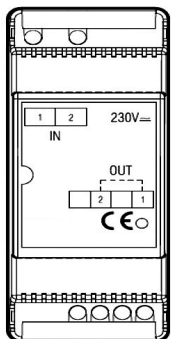
Pick-up time (ms): 180

Hold consumption (W/VA): 5/5

Opening time (ms): 60

Isolation voltage (kV): 2,5

DMX-SP 4000



Time delayer for undervoltage release

Technical features

Case: 2 modules

Rated operating voltage U_c (Va.c. - Vd.c.): 110V-230V

Input supply:

110Vdc 85% - 110%

110Vac 85% - 110% 50/60 Hz

Pick-up consumption: 16,5 VA -W

Hold consumption: 5 VA-W

230Vdc 85% - 110%

230Vac 85% - 110%, 50 - 60 Hz

Pick-up consumption: 34,5 VA -W

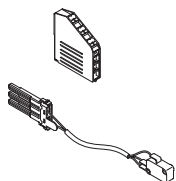
Hold consumption: 10 VA-W

Opening threshold: $0,35 \pm 0,7 U_c$

Closing threshold: $0,85 U_c$

Time-delay for each module: 1 s at U_n (is possible to connect up to 3 modules - 1s of delay for each one module installed)

Operating temperature: $(-10) - (+55) ^\circ\text{C}$

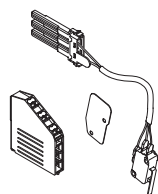


Signal contact for auxiliaries

Technical features

Rated operating voltage U_c (Va.c.): 250V 16A

(Vd.c.): 250V 0,3A

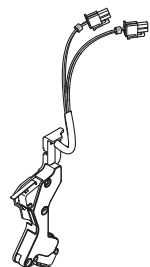


Additional signalling contact

Technical features

Rated operating voltage U_c (Va.c.): 250V 16A

(Vd.c.): 250V 0,3A

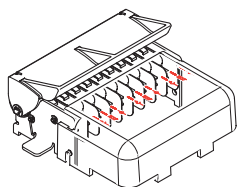


Contact ready to close with charged springs

Technical features

Rated operating voltage U_c (Va.c.): 250V 16A

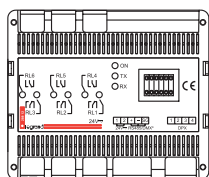
DMX-SP 4000



Inserted/test/draw-out contacts

Technical features

Rated operating voltage U_c (Va.c.): 250V 16A
(Vd.c.): 250V 0,3A



Module programmable output

Technical features

Case: 9 modules

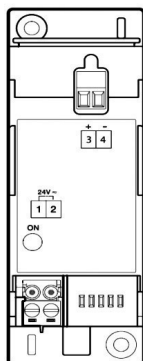
Input supply: 50/60 Hz; 24 Va.c. +/- 10%; 24 Vd.c. +/- 10%

Contact rated current:

AC 250V 8A

DC 30V - 8A; 110V - 0,3A; 220V - 0,12A

Operating temperature: (-10) – (+55) °C



External auxiliary supply

Technical features

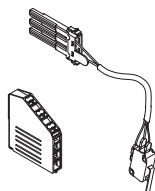
Case: 2 modules

Input supply : 50– 60 Hz; 24 Va.c. +/- 10%; 24 Vd.c. +/- 10%

Input power supply (W/VA) ≥ 5

Operating temperature: (-10) – (+55) °C

N°1 module is suitable to supply no more than n°4 MP2/MP4 protection unit.



Trip contact (factory fitted only)

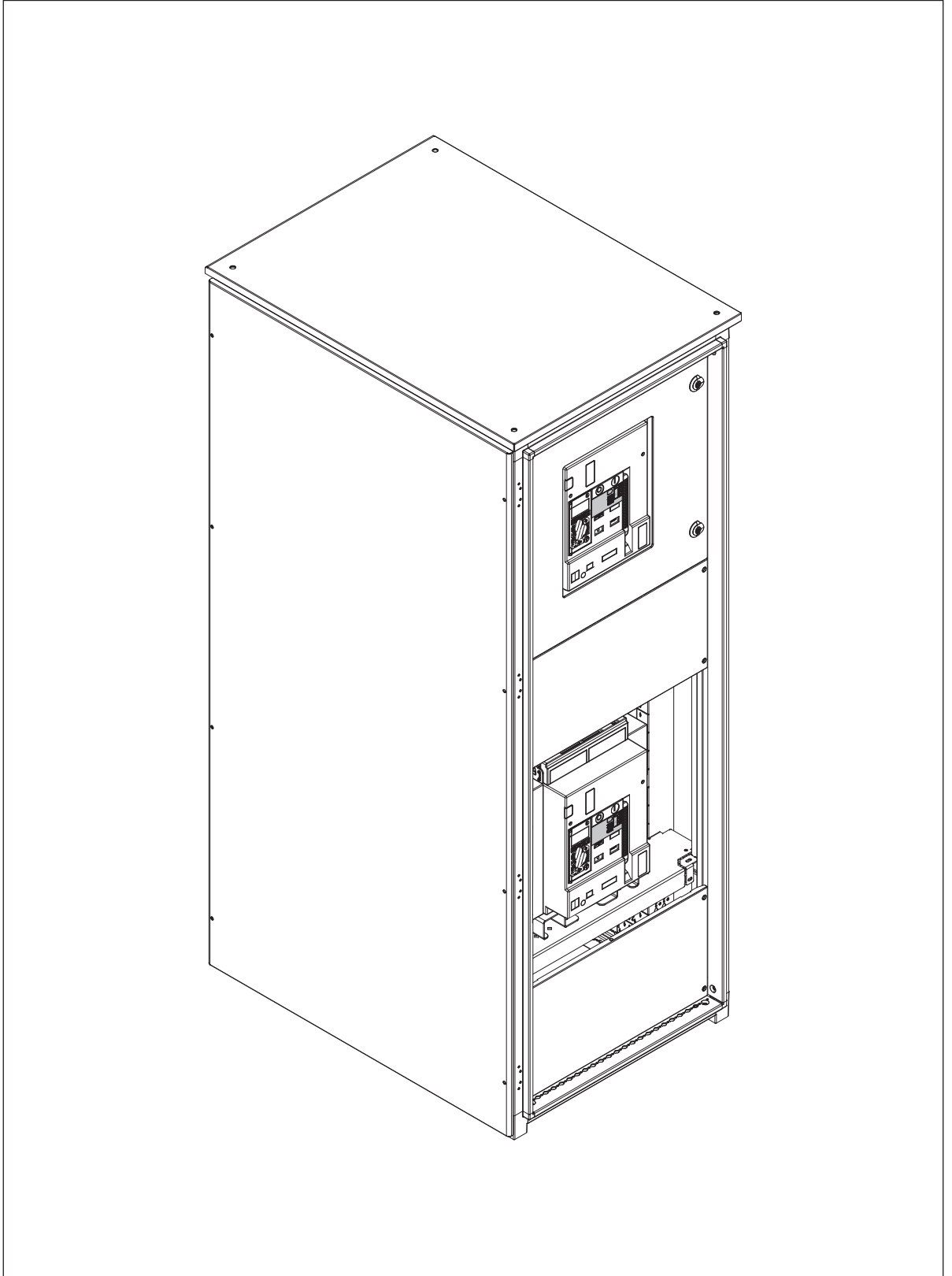
Technical features

Rated operating voltage U_c (Va.c.): 250V 6A

DMX-SP 4000

10. Installation and door cut-out

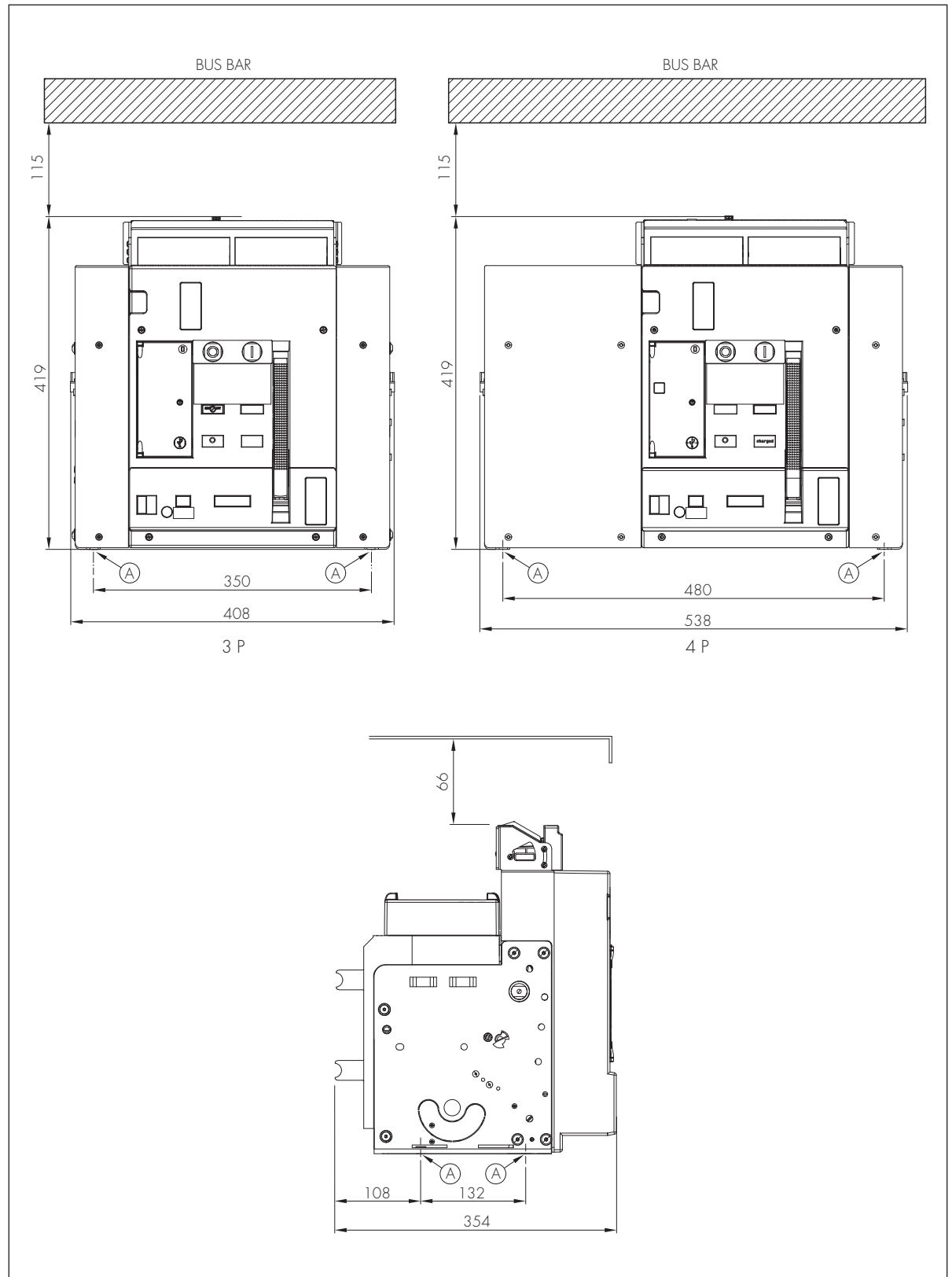
Typical installation of DMX-SP 4000 breakers in an enclosure.

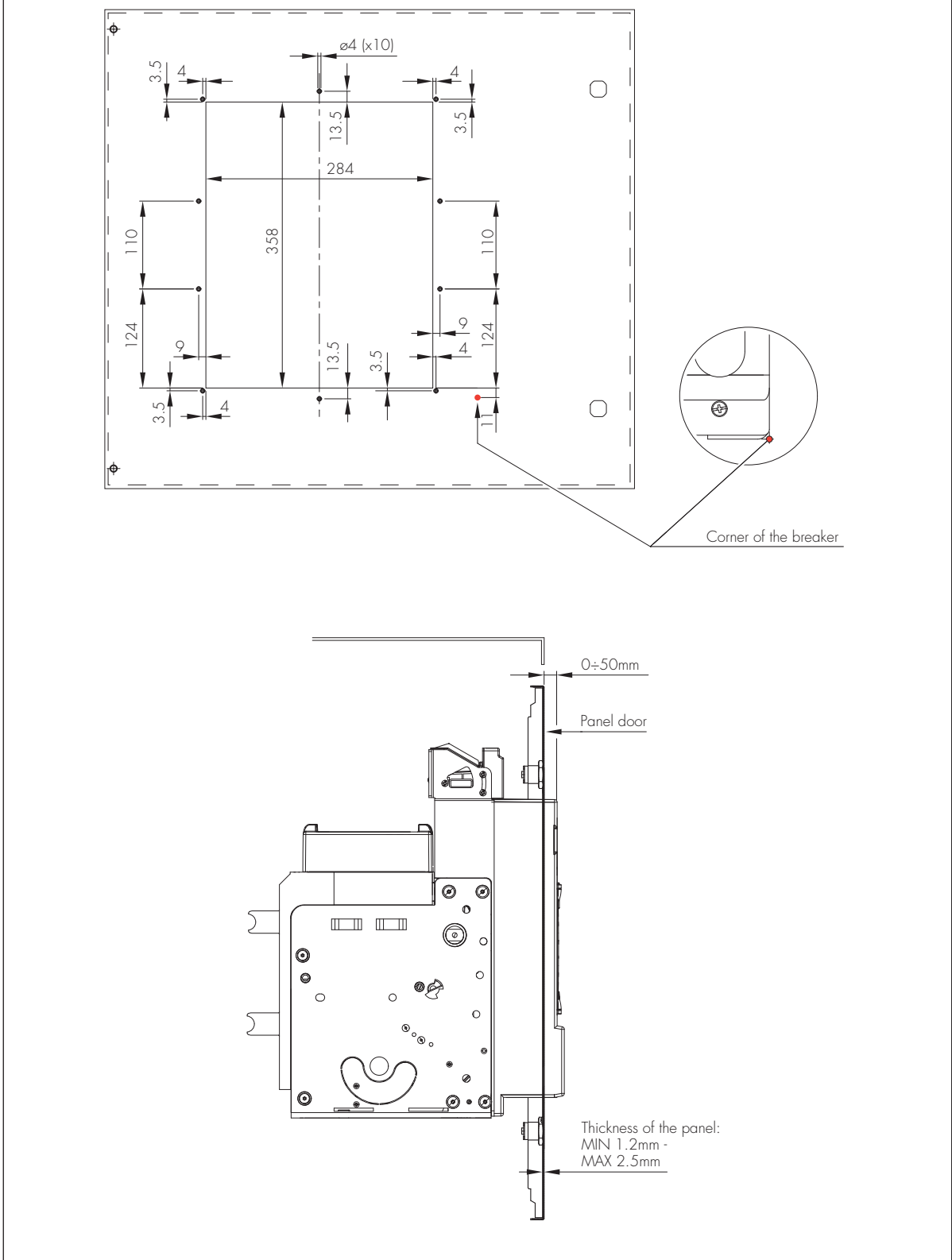
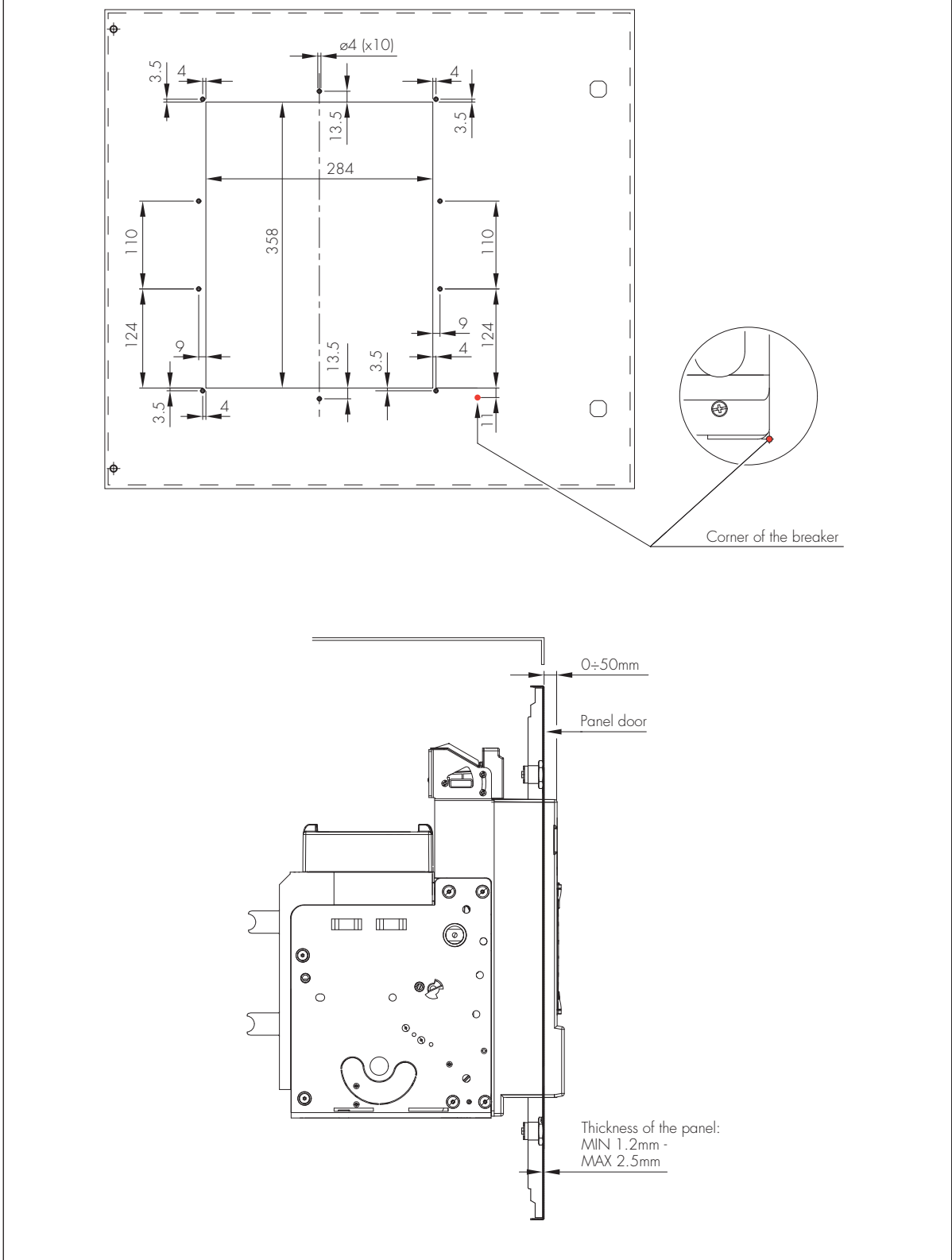


DMX-SP 4000

10.1 Installation of breaker DMX-SP 4000 fixed version

Mounting details.



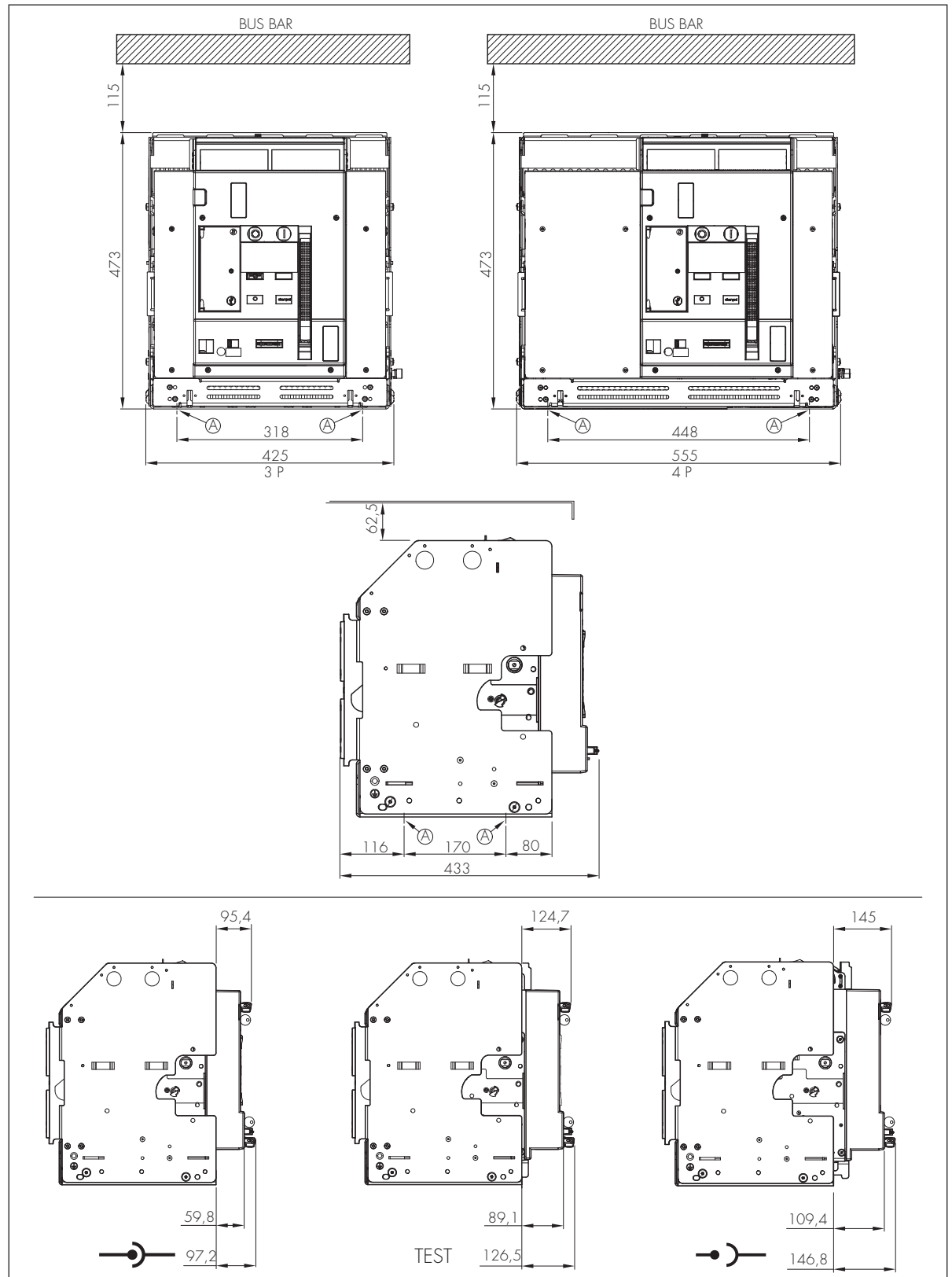


DMX-SP 4000

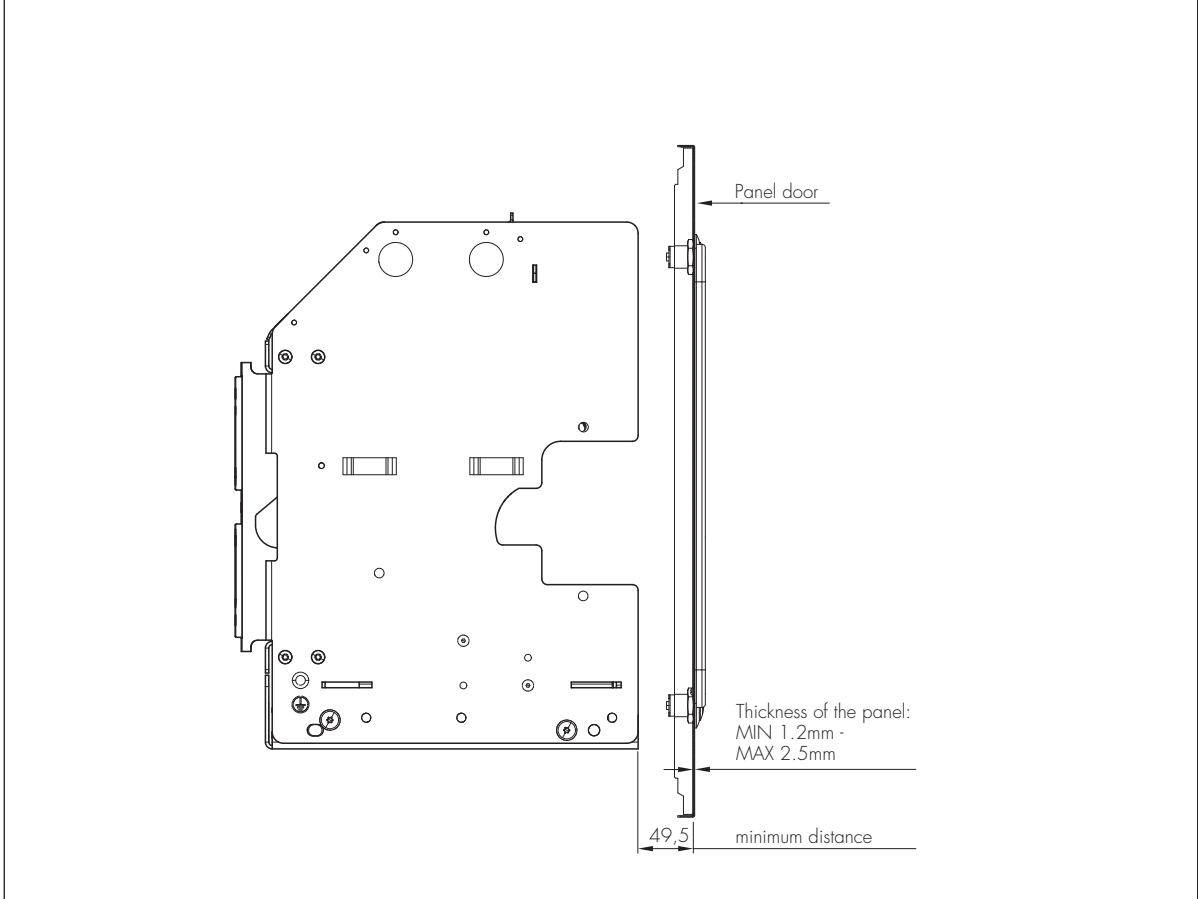
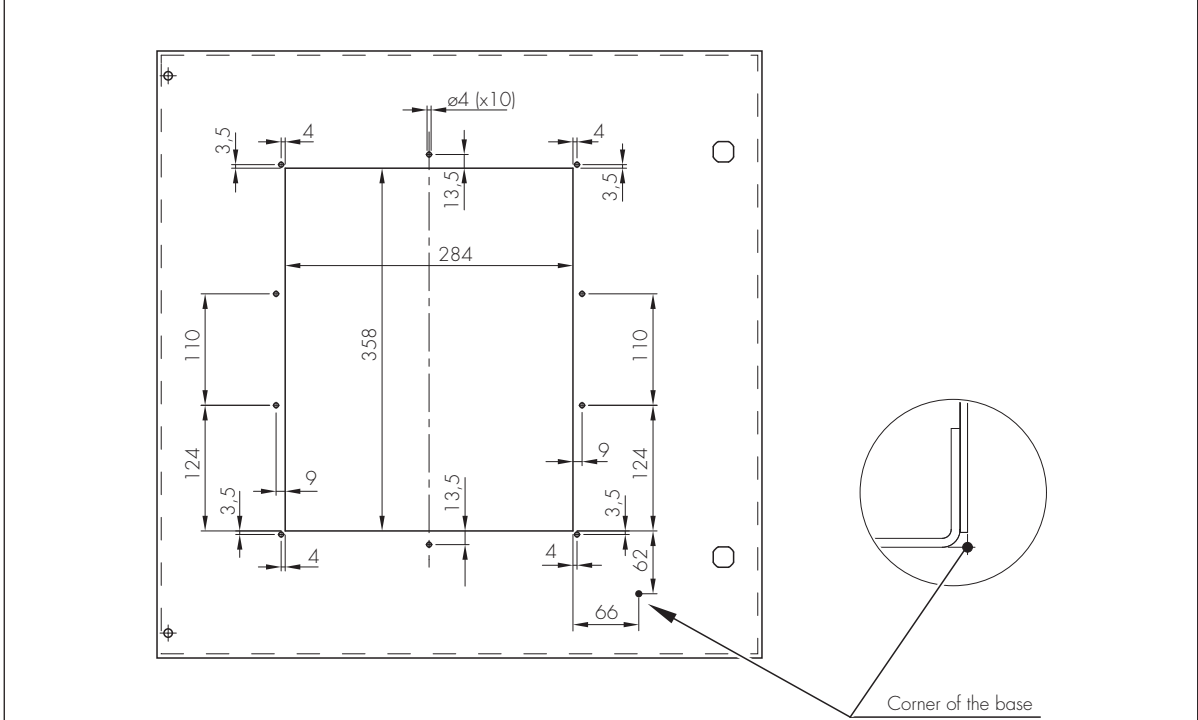
10.3 Installation of breaker DMX-SP 4000 draw-out version

Mounting details.

Ⓐ = Fixing
point on plate
of enclosure



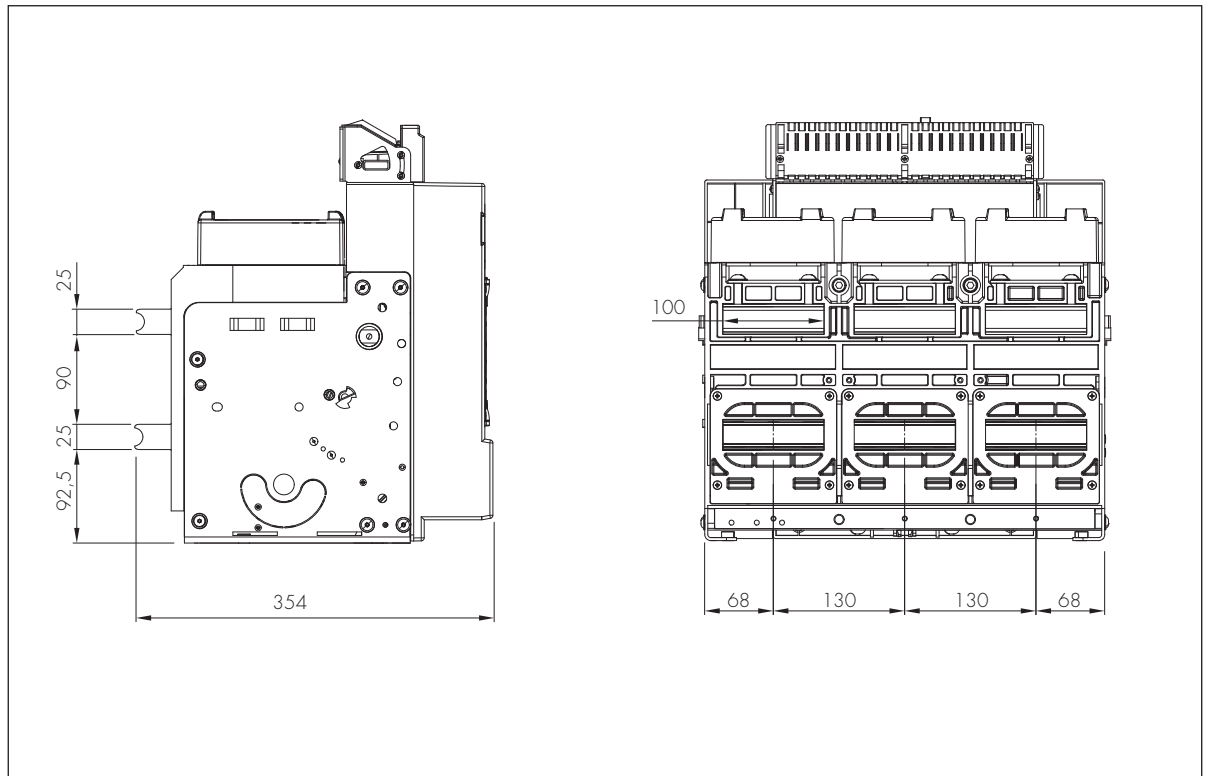
Mounting details



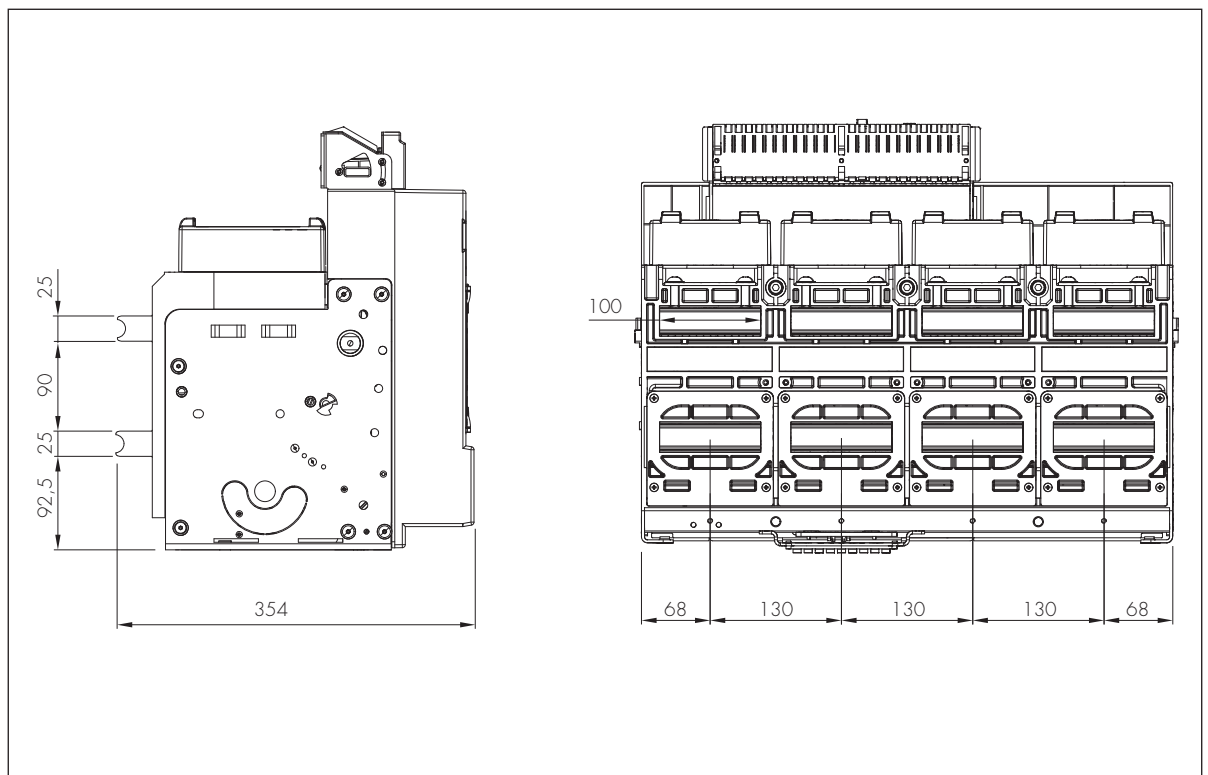
DMX-SP 4000

11. Termination - Fixed Breakers

3 poles.



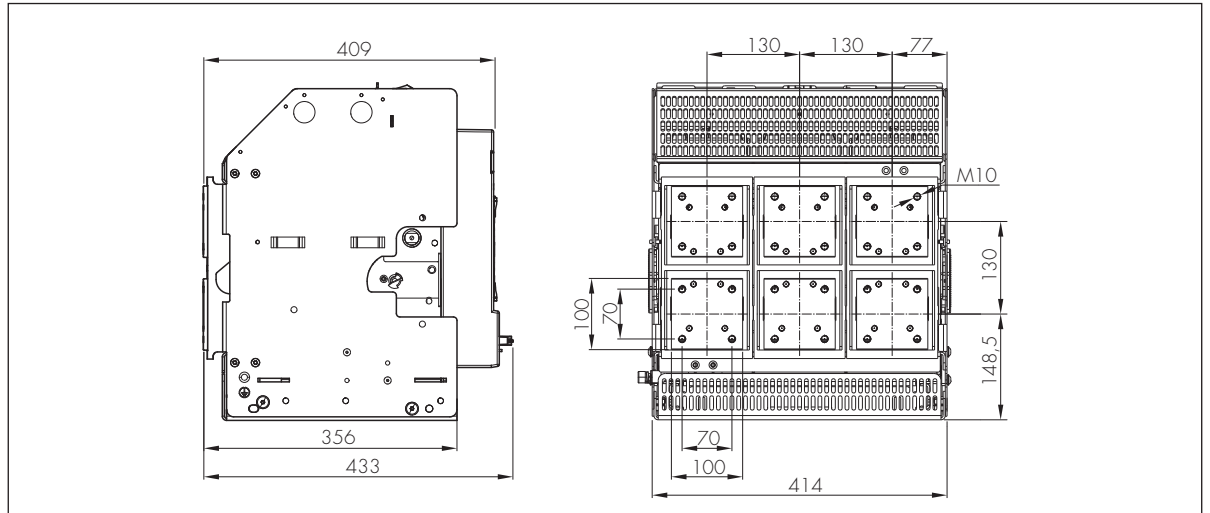
4 poles.



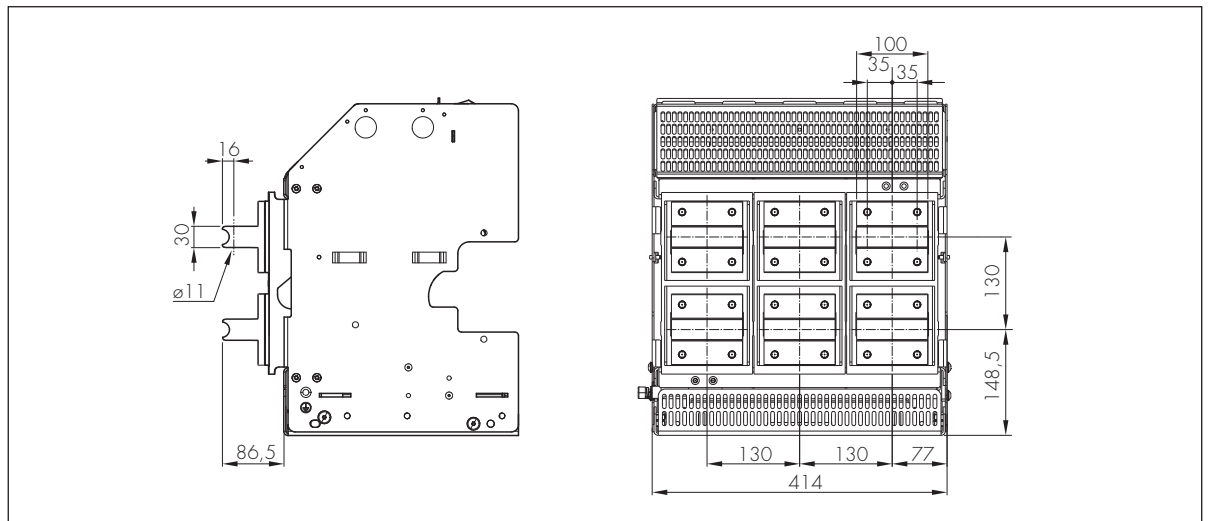
DMX-SP 4000

12. Termination - Draw-out breakers

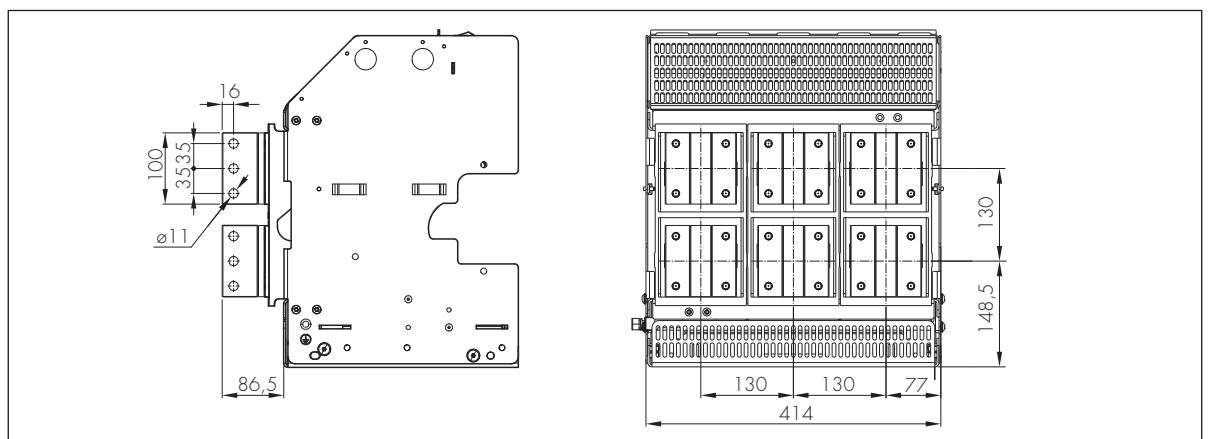
3 poles flat terminals.



Horizontal Terminals.

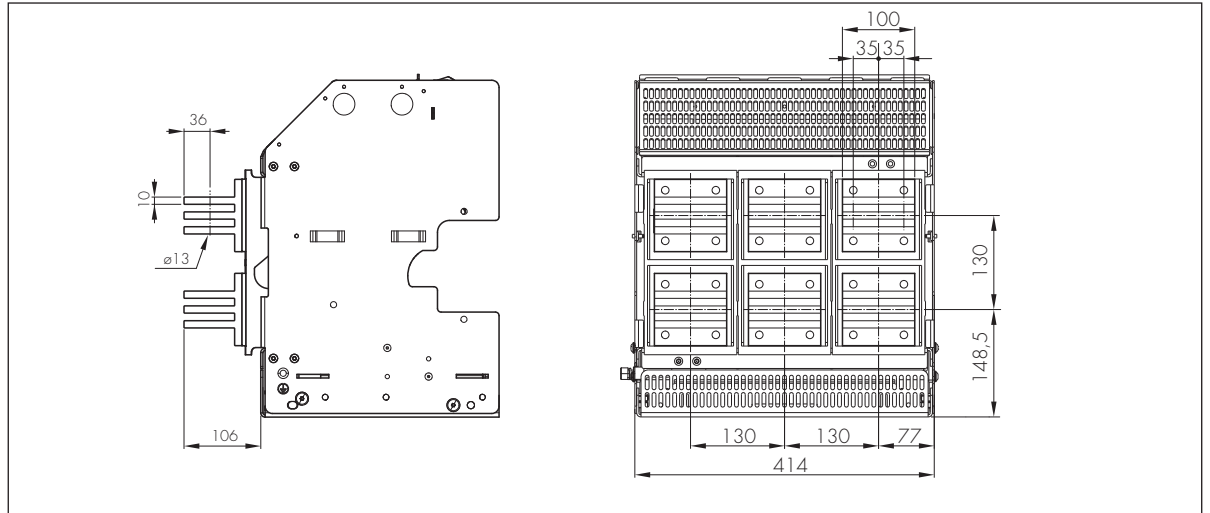


Vertical Terminals.

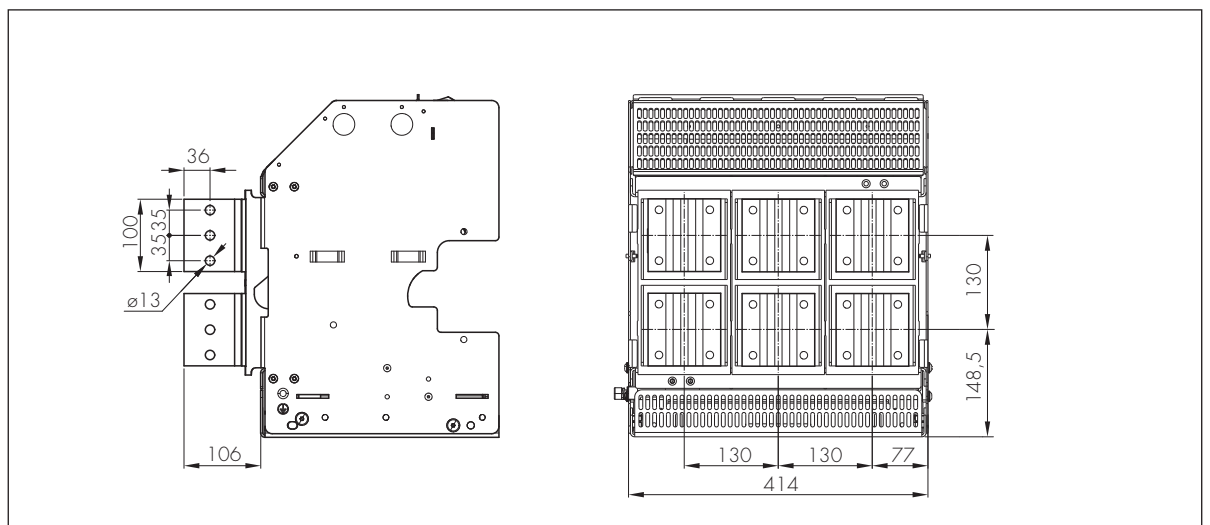


DMX-SP 4000

Horizontal COMB terminals.

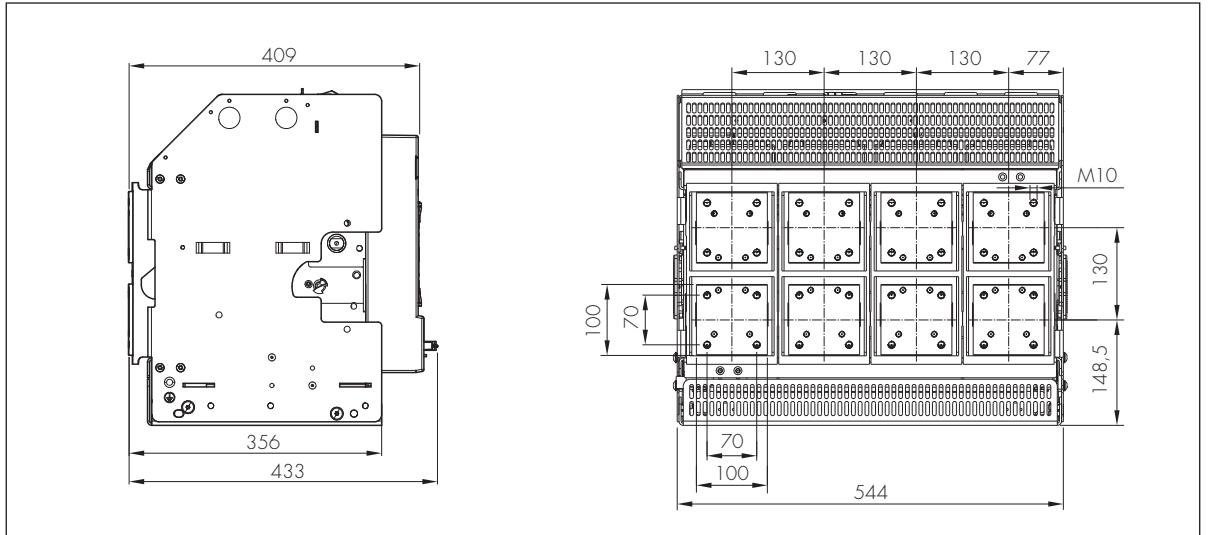


Vertical COMB terminals.

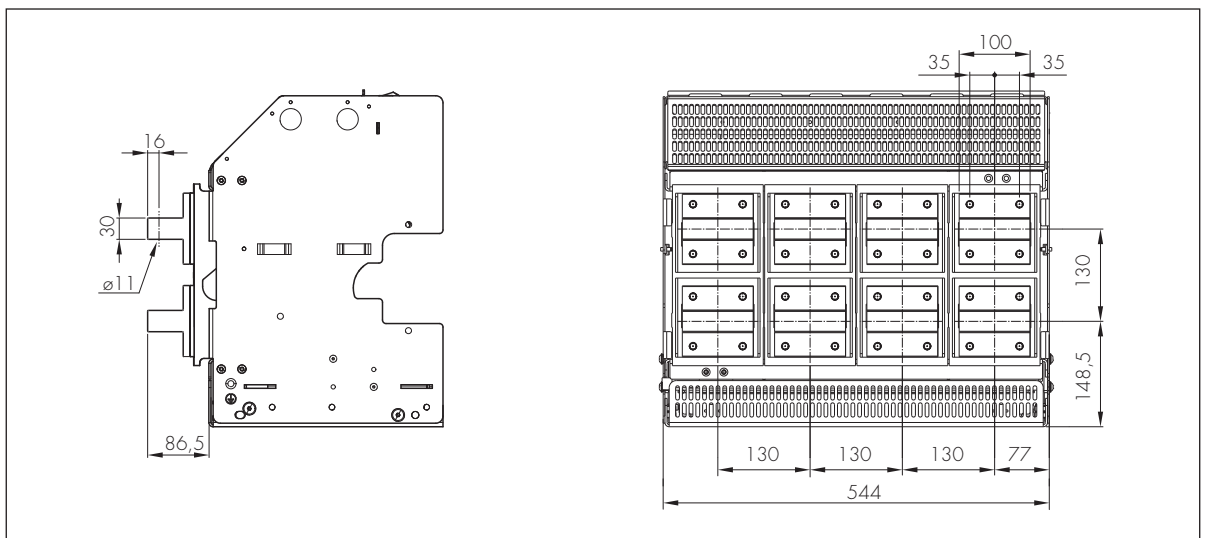


DMX-SP 4000

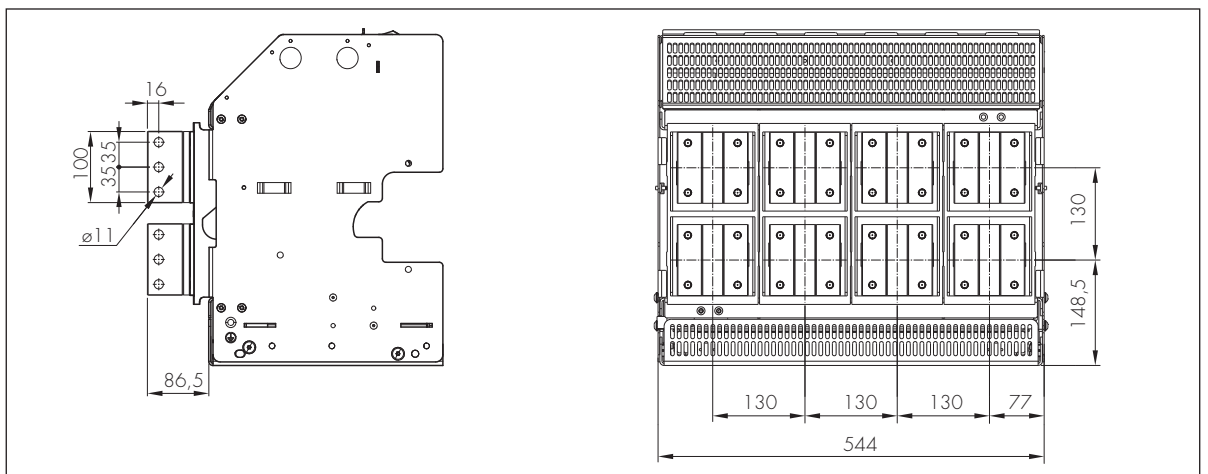
4 poles flat terminals.



Horizontal Terminals.

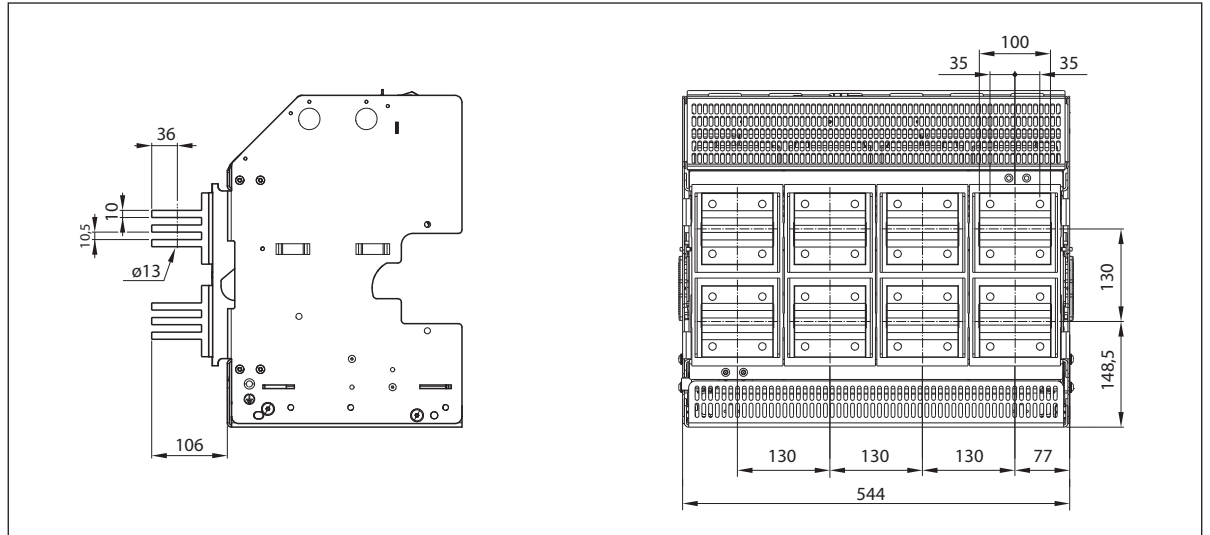


Vertical Terminals.

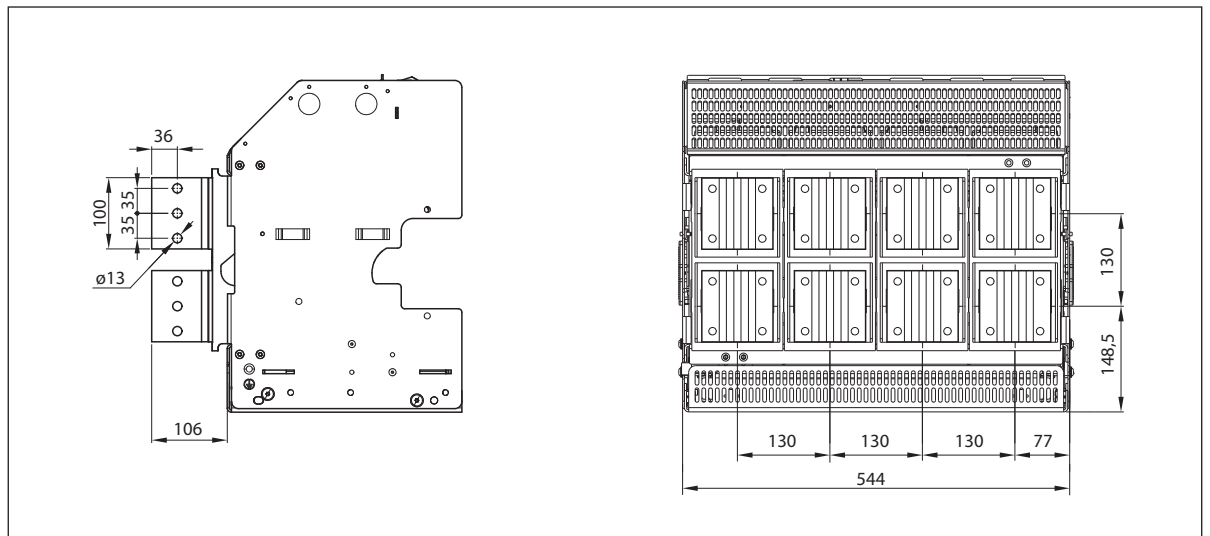


DMX-SP 4000

Horizontal COMB terminals.



Vertical COMB terminals.



DMX-SP 4000

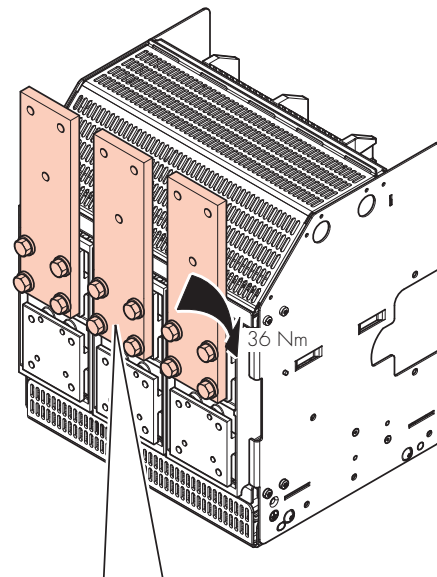
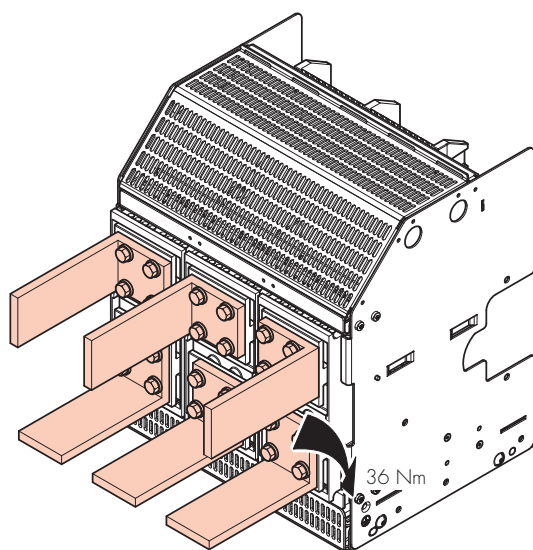
14. Possible connections for draw-out version

DMX-SP 4000's terminals offer more contact area to accept Aluminium links.
DMX-SP 4000's Universal Flat terminals greatly facilitate termination.

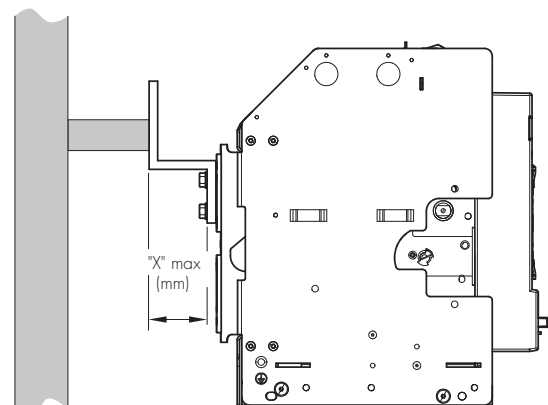
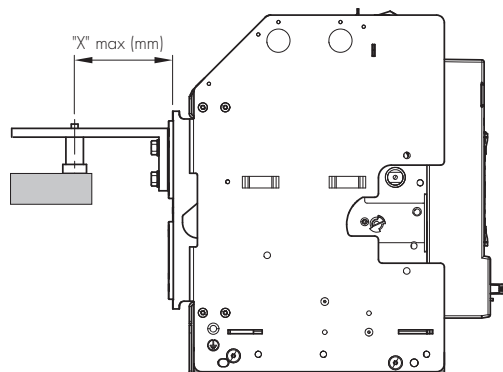
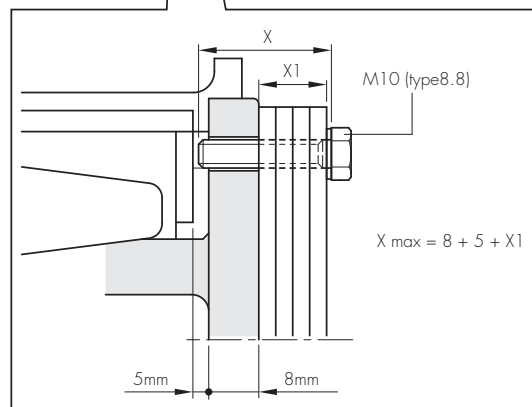
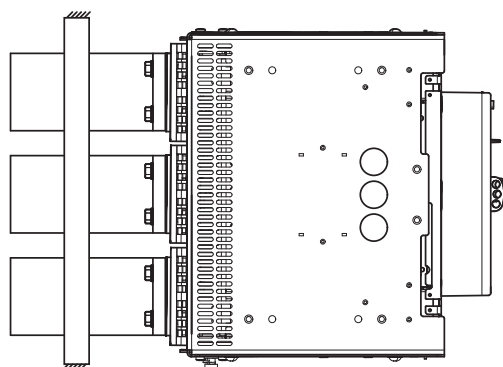
These terminals directly support all commonly used types of termination as shown in adjoining figure.



Termination support must be made of isolating material and sized according to the bars in order to avoid excessive stresses during short circuit conditions.



I _{cc} (kA)	≤ 50	≤ 65
"X" max (mm)	300	250

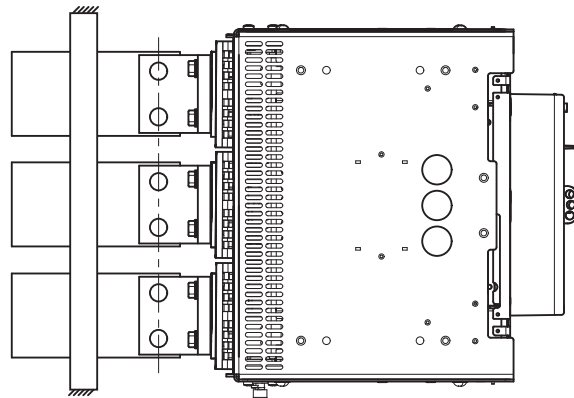
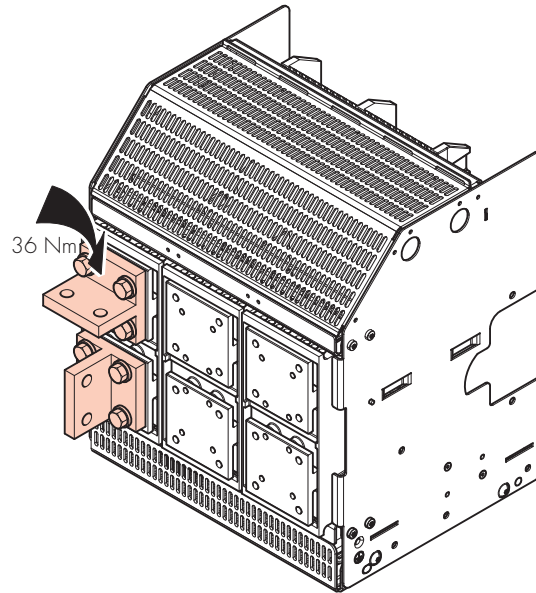


DMX-SP 4000

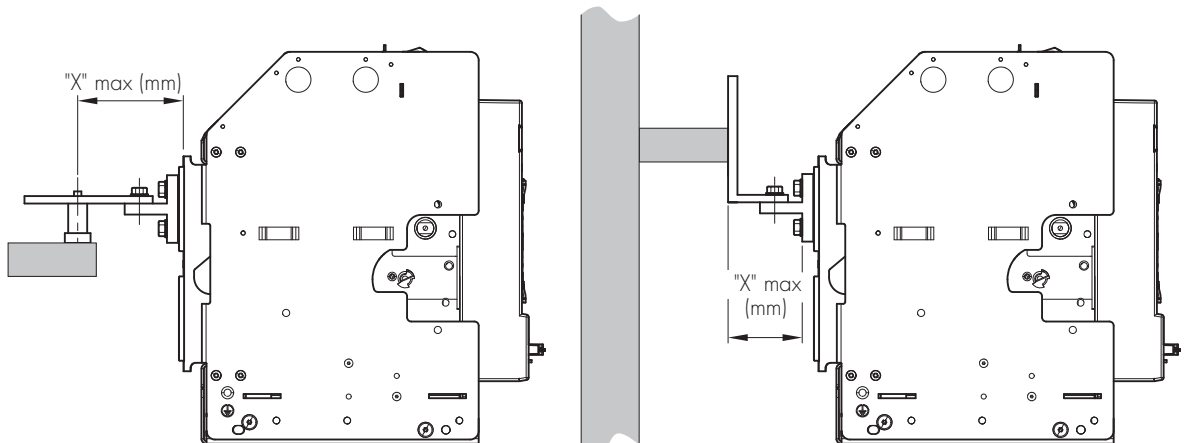
Installation of Terminal Adaptor available as an accessory.



Termination support must be made of isolating material and sized according to the bars in order to avoid excessive stresses during short circuit conditions.



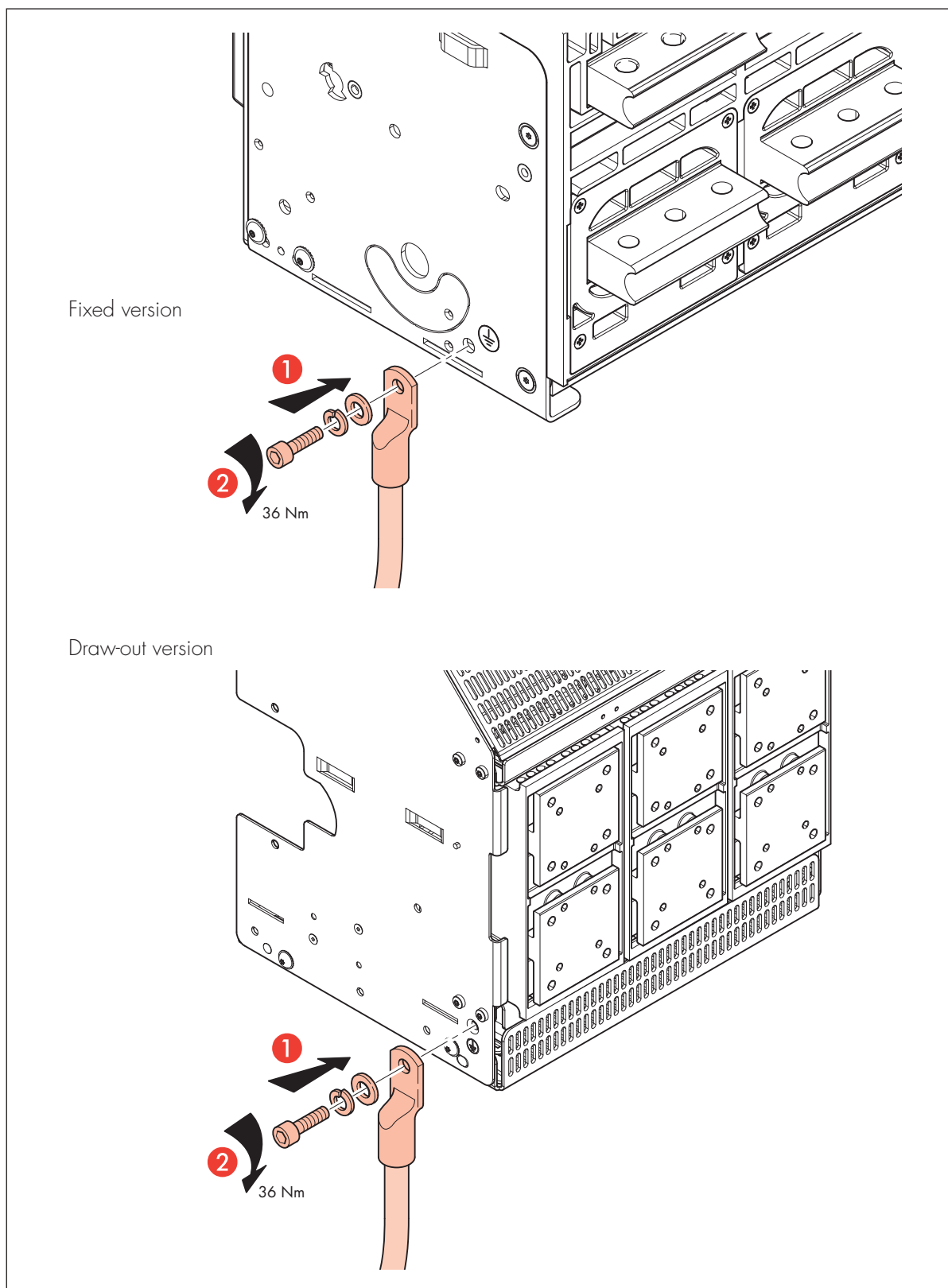
I_{cc} (kA)	≤ 50	≤ 65
"X" max (mm)	300	250



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15. Ground connection

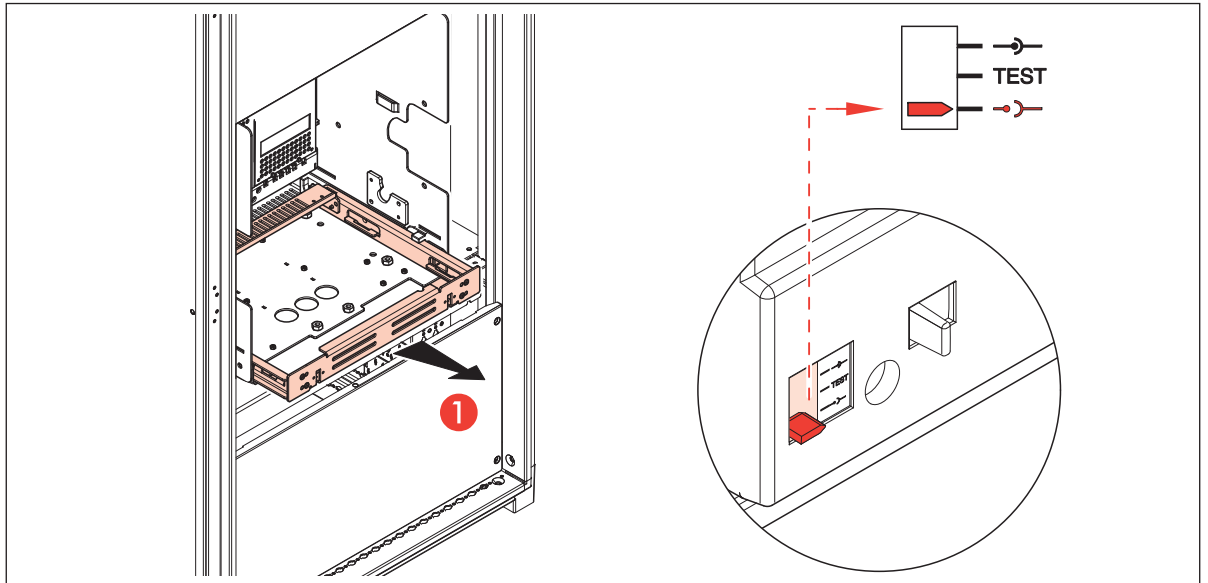
To realize ground connection, use suitable hole, fixing the cable lug with the bolt M10 delivered with the breaker.



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16. Insertion on switchboard

Pull-out the Base Rail and ensure that the breaker is in isolated position (see position indicator).

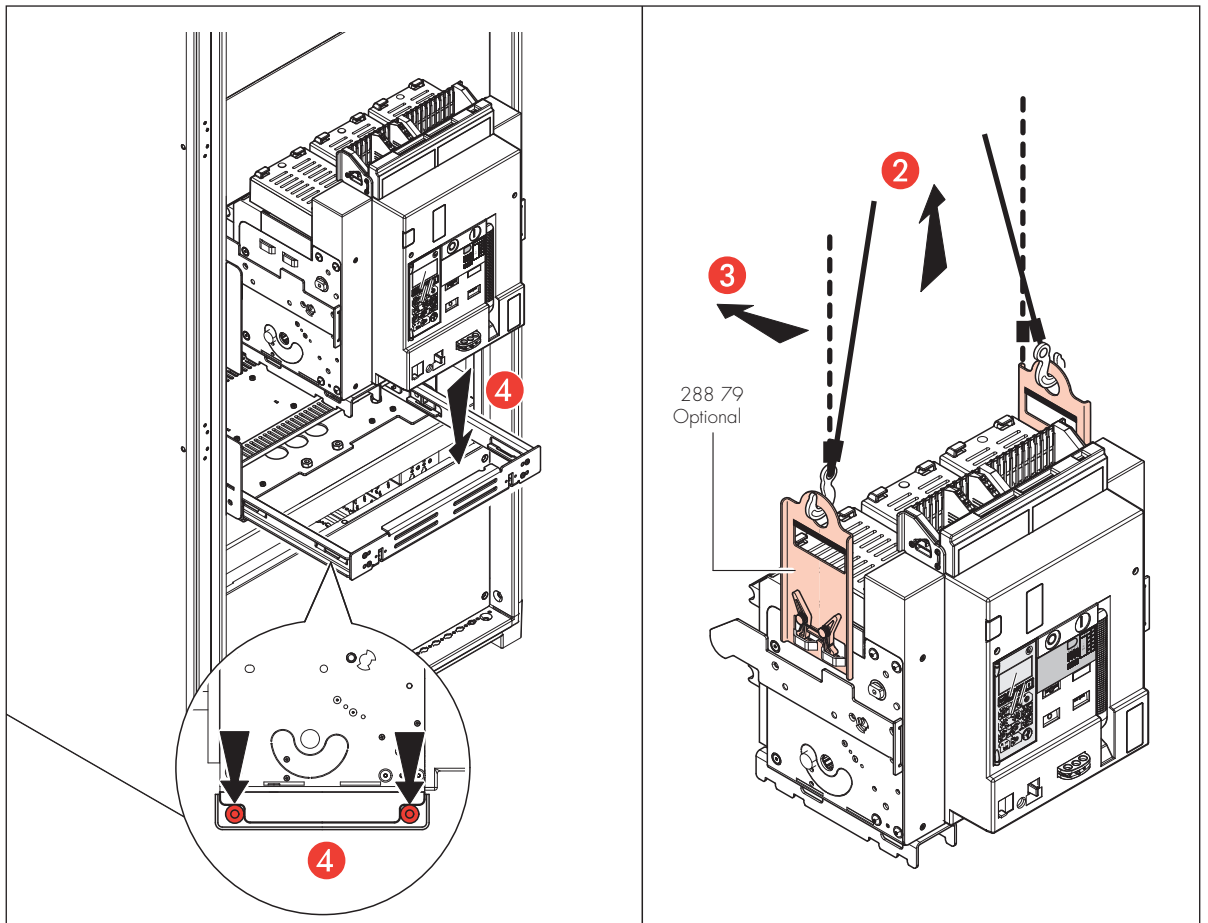


A special lifting handle are available (optional 0 288 79) to facilitate handling. Only DMX-SP 4000 - 3P breakers

can also be transported by 2 persons. Ensure that Breaker rests correctly in 2 slots on either side of cradle rail.

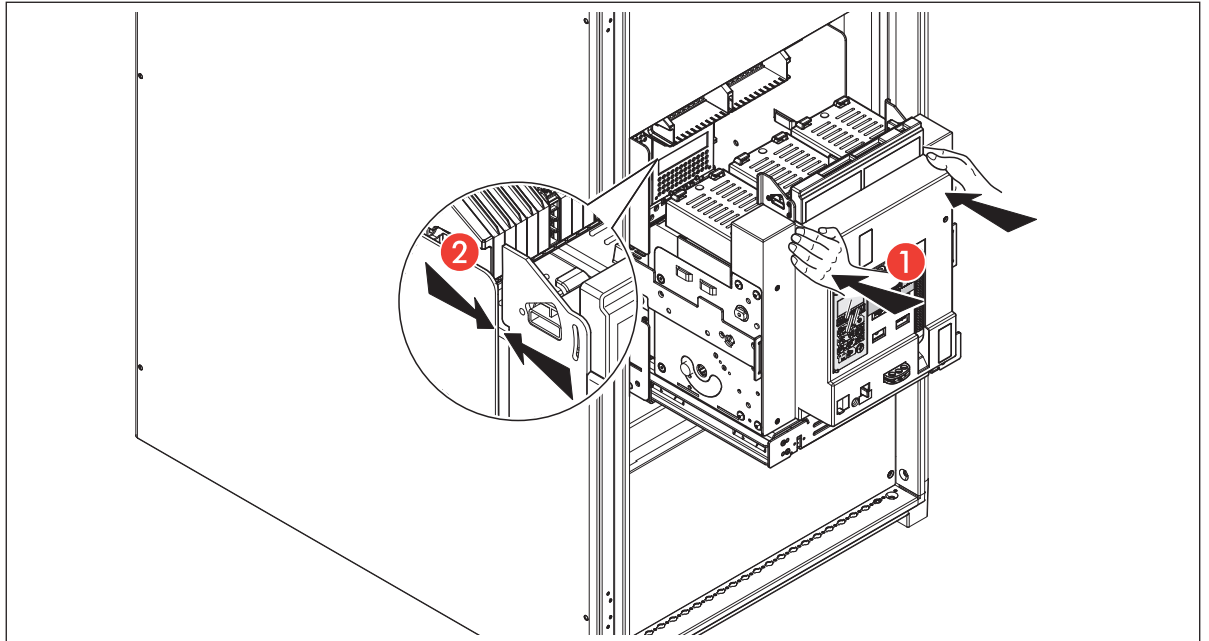


Improper loading of breaker may lead to personal injury and damage to product.



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Gently push the breaker to Isolated position and close the Panel door. If equipped with Rating Mis insertion device (optional 0 288 25), base will not accept breaker of different rating.



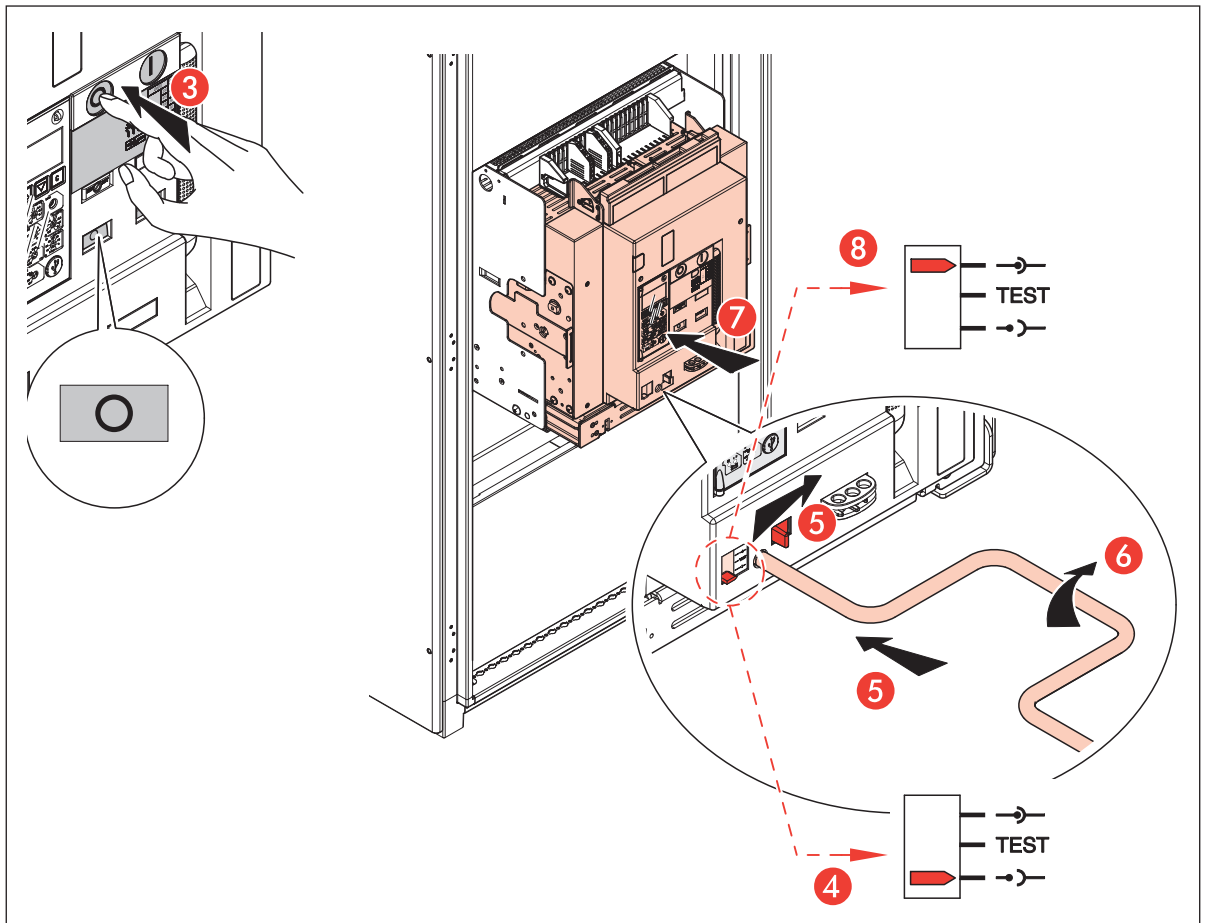
Press the OFF button and then open the Racking Shutter.



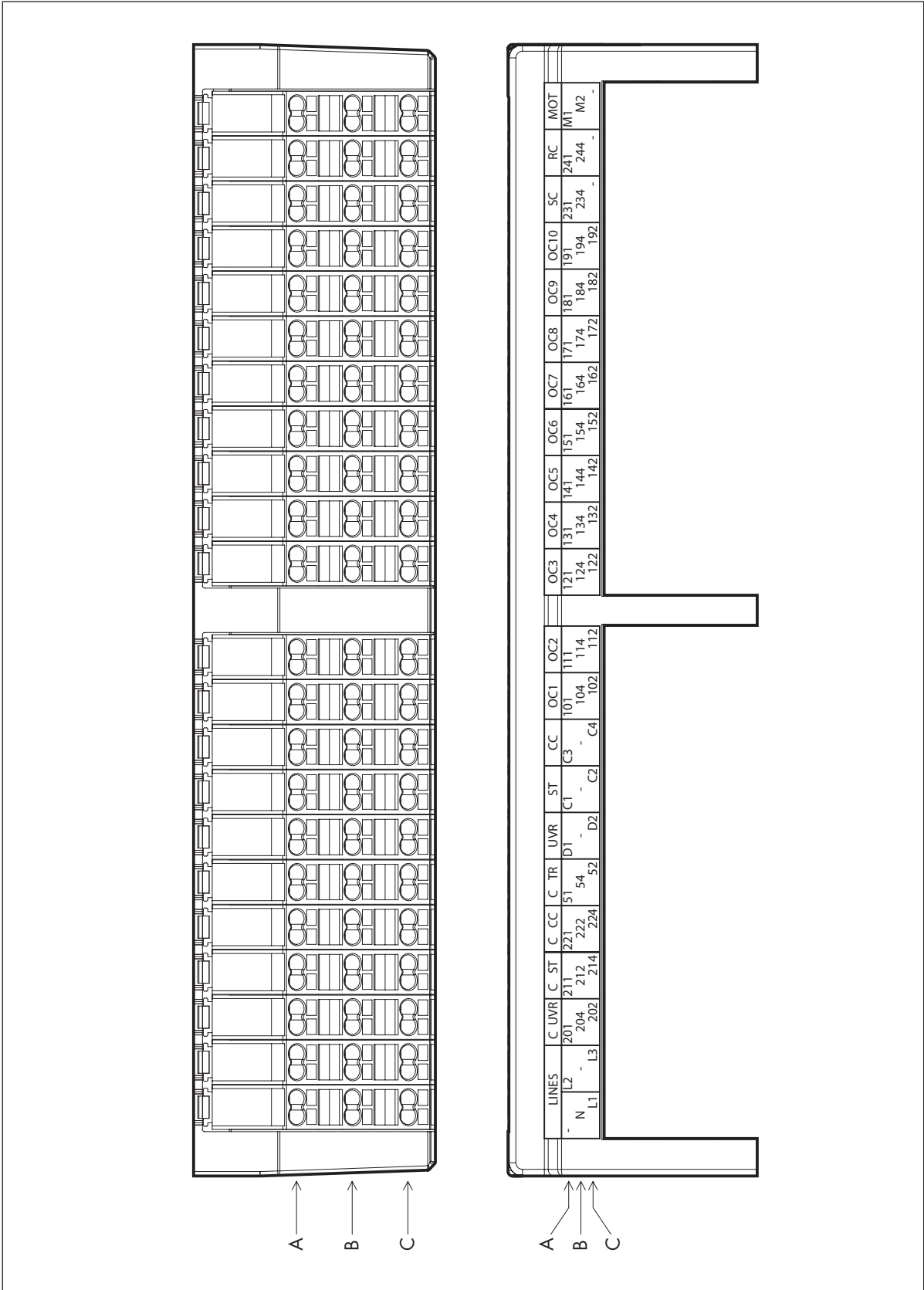
When the breaker is connected to live bus, the racking-out operation must be done only by specialized personnel.



Excessive forceful racking-in beyond Service position may lead to product damage.



17. Auxiliary terminals block



DMX-SP 4000

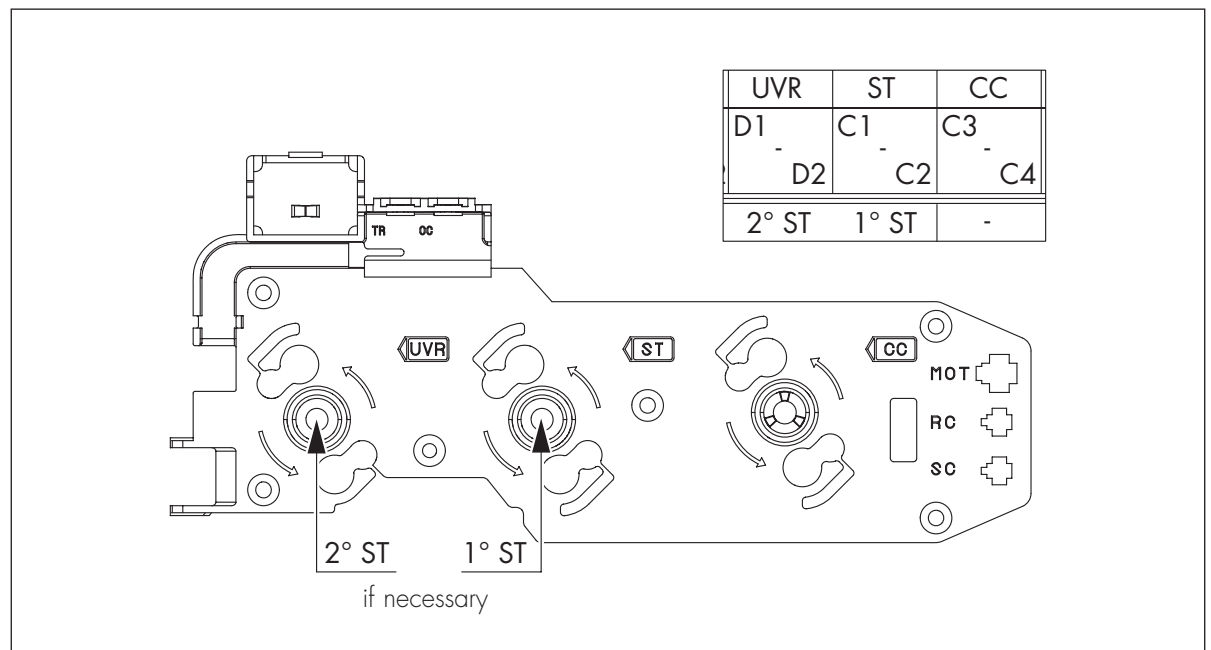
17.1 Shunt trip (ST)

Allows to open the breaker with an electrical signal. According to the features of the device, it's always possible to open the breaker (when closed). The shunt trip can work (depending on type) both on AC and DC current.

This device can work with an instantaneous supply, but works also with a continuous one.

If always supplied, the device is like an electrical lock in open position.

Some applications need an high safety on the open command, and , particularly, the duplication of the command circuit by a double shunt trip. In that cases the second shunt trip can be placed instead of the UVR device.



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18. New cabling system

New automatic "Cage Clamps".

Constant press on cable guarantee maximum contact during time.

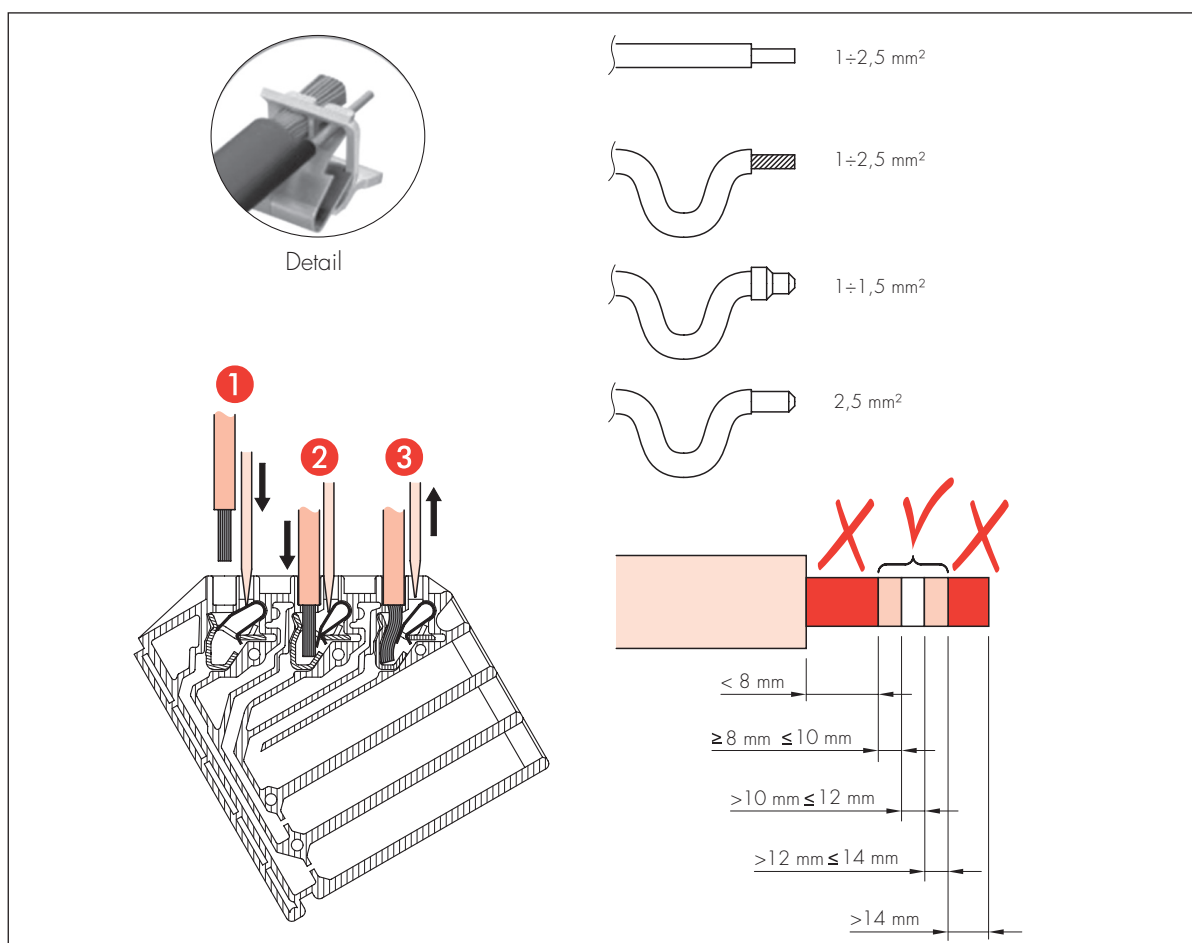
This is the solution to the problem of screw with 1/2 turn. Shape form of spring avoid the problem of incision of insulation.

1. Put the screw: the clamp open.

2. Put the cable.

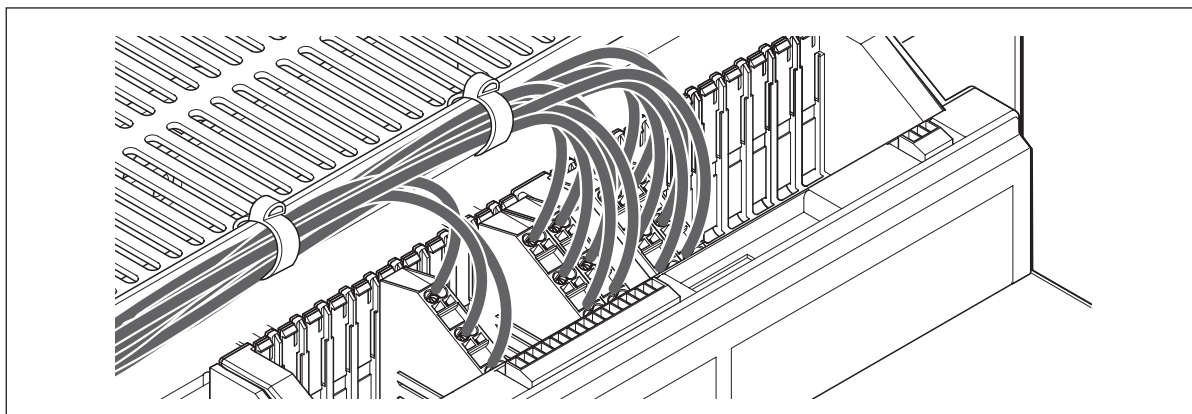
3. Extract the screw: clamp automatically lock the cable.

Detail: Electrical contact is guaranteed with max flexible cable diameter up to 2,5 mm², also with two cable of different sections.



To have a major order and safety when cabling operations are done, the draw-out version of the

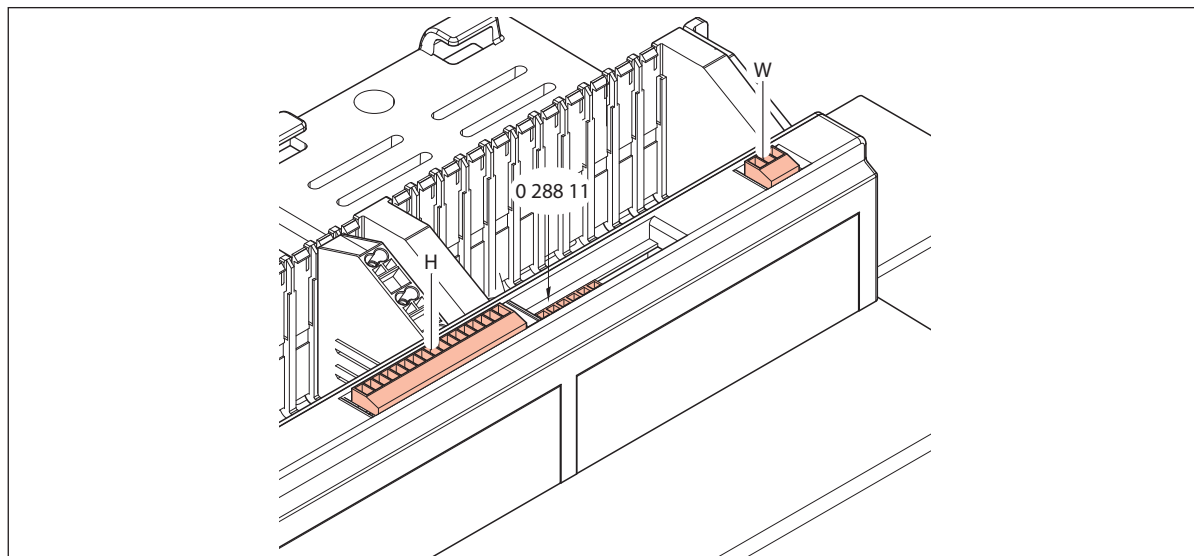
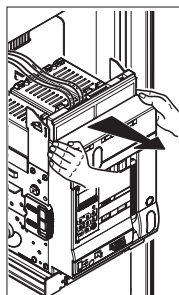
DMX-SP 4000 has several buttonholes usefull to collect all the cables with cable ties as shown.



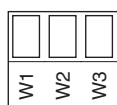
DMX-SP 4000



Only for draw-out version:
cable the breaker in
completely
draw-out
position.



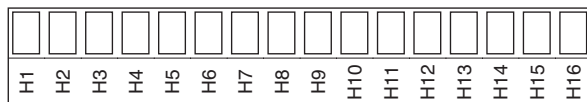
W) Local programmable output (4A-230V a.c. max)



W1: Normal Open
W2: Normal Close
W3: Common

0 288 11) External neutral 6-way terminal

H)



H1: } External auxiliary supply 0 288 06
H2: }

H3: "Programmable output module"
Serial Port - RS485 (-)

H4: "Programmable output module"
Serial Port - RS485 (+)

H5: GND RS485

H6: Supervision Serial port - RS485 (-)

H7: Supervision Serial port - RS485 (+)

H8: -

H9: -

H10: -

H11: Logic Selectivity Input

H12: Logic Selectivity Input

H13: -

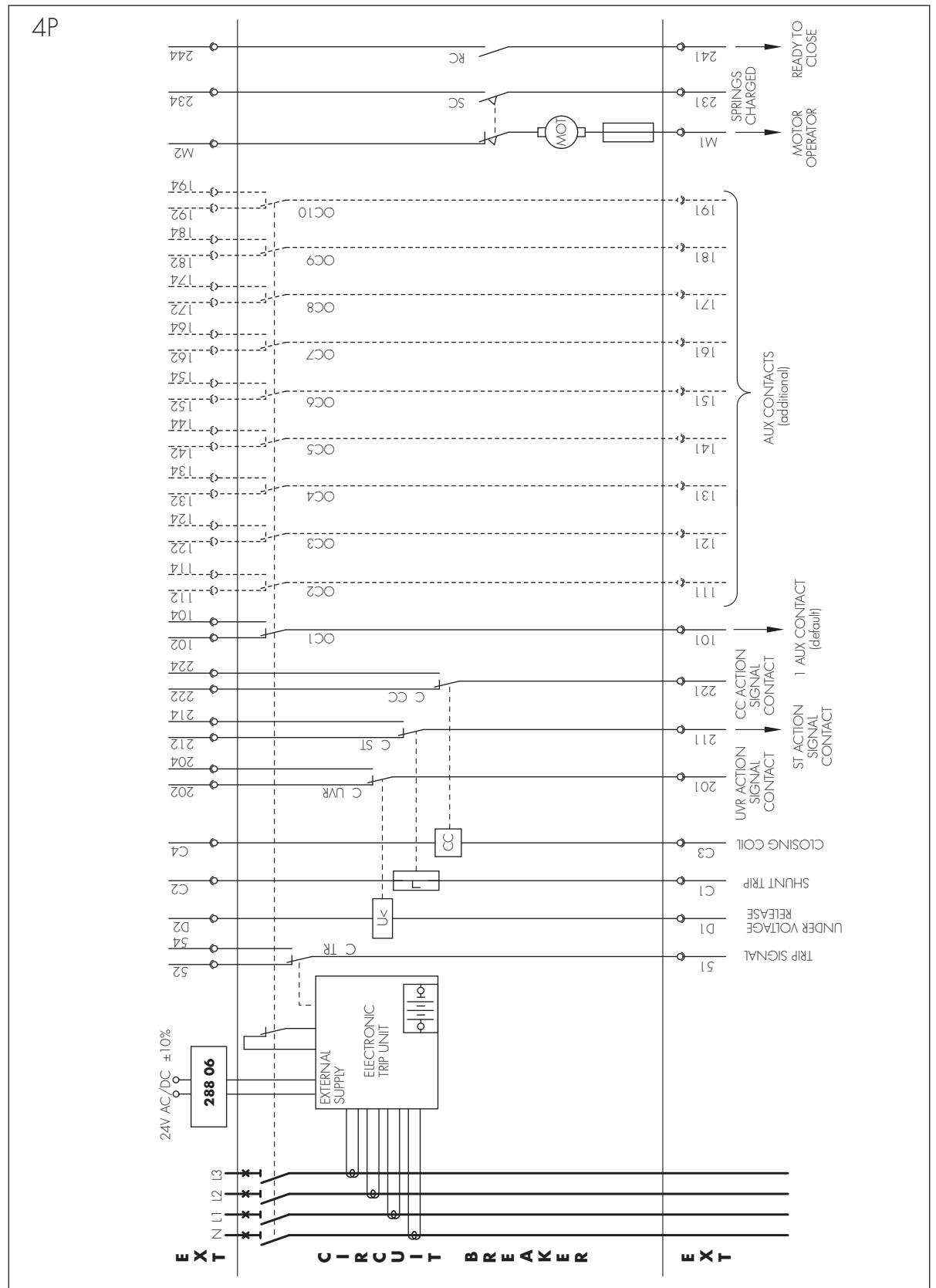
H14: -

H15: Logic Selectivity Output

H16: Logic Selectivity Output

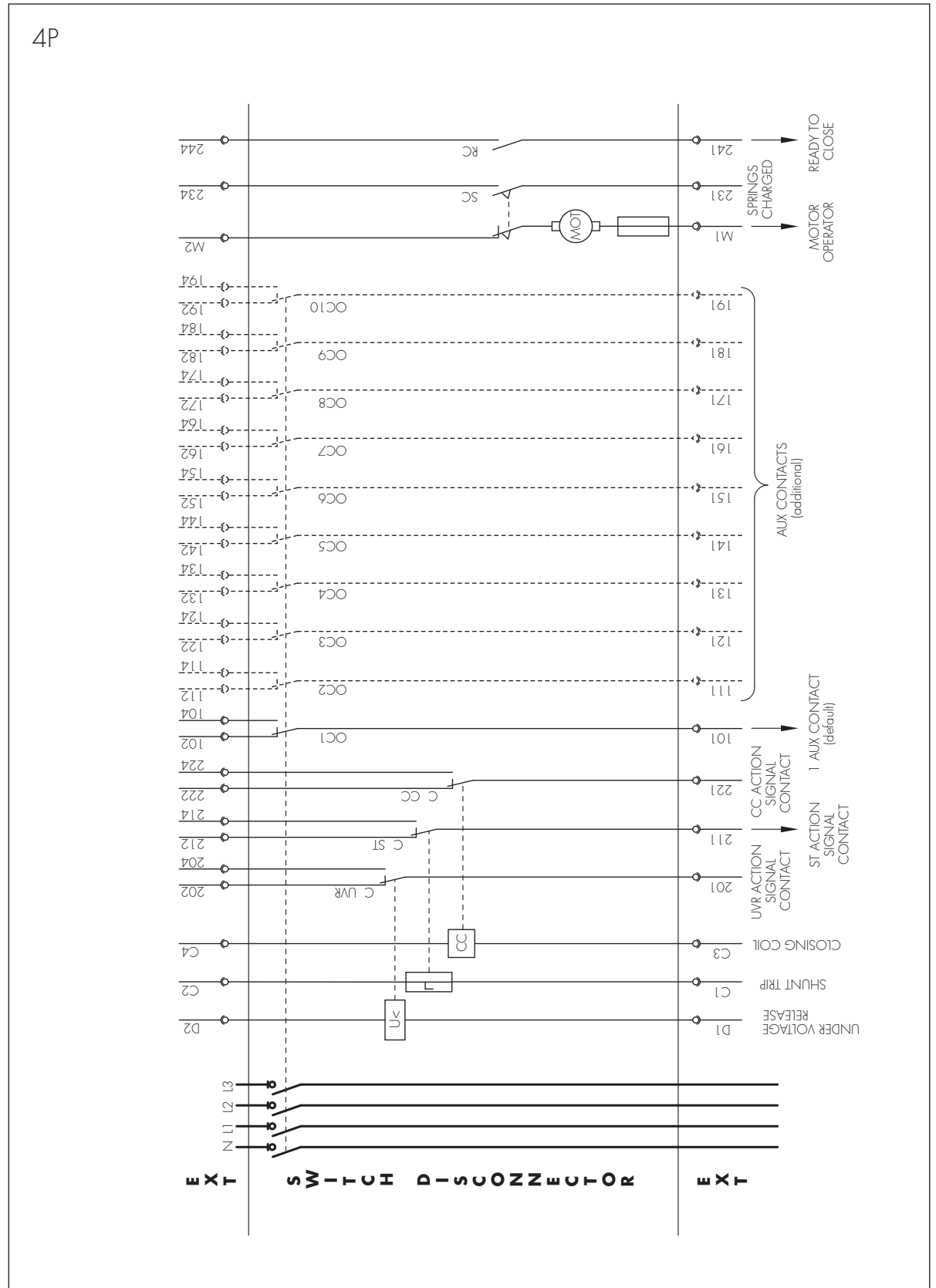
3P

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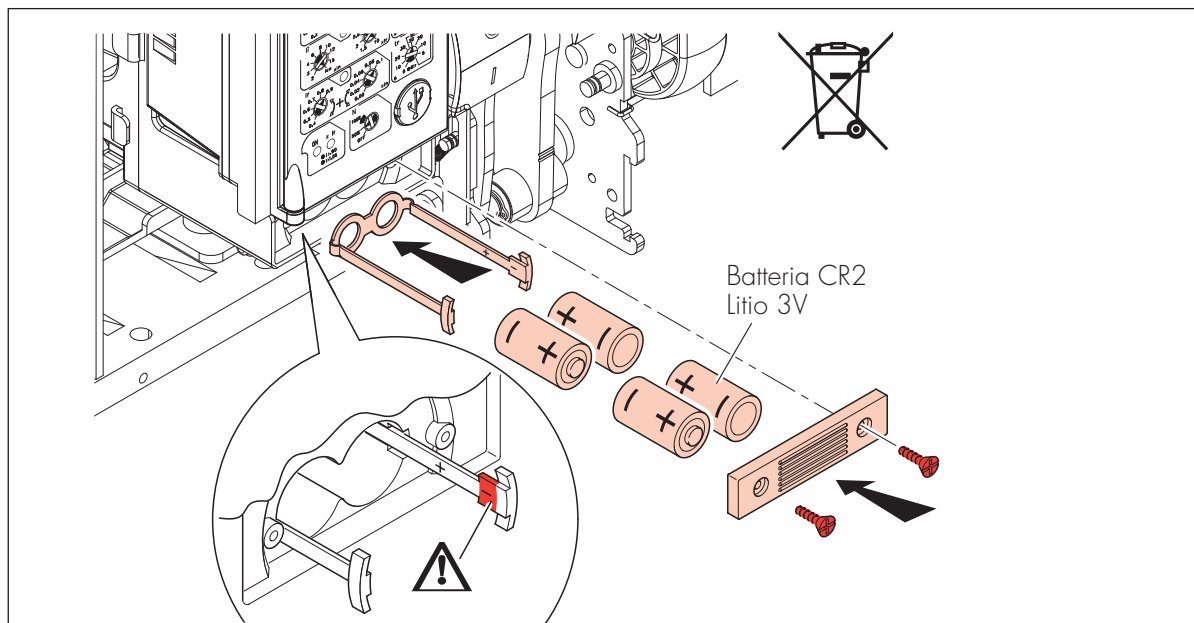


20. Setting protection unit

20.1 Insertion/substitution battery

Remove frontal cover of the breaker. Insert the 4 batteries on the lower part of the protection unit

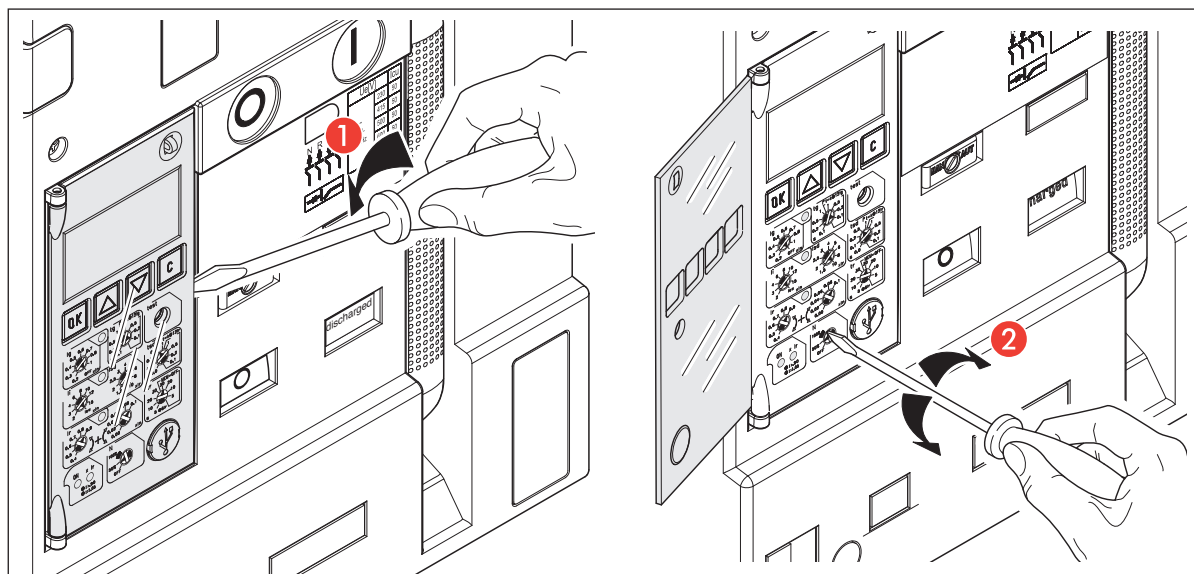
keeping polarity and mounting order like shown on picture. Batteries are delivered outside the breaker.



20.2 Setting levels protection

Setting of levels protection is possible with rotary switches. Execute setting with a plate screwdriver.

For informations about setting protection unit see the related instruction sheet.



20.3 Setting data/time (if available)

Important: in order to archive data concerning possible faults, we suggest to set up the date/time

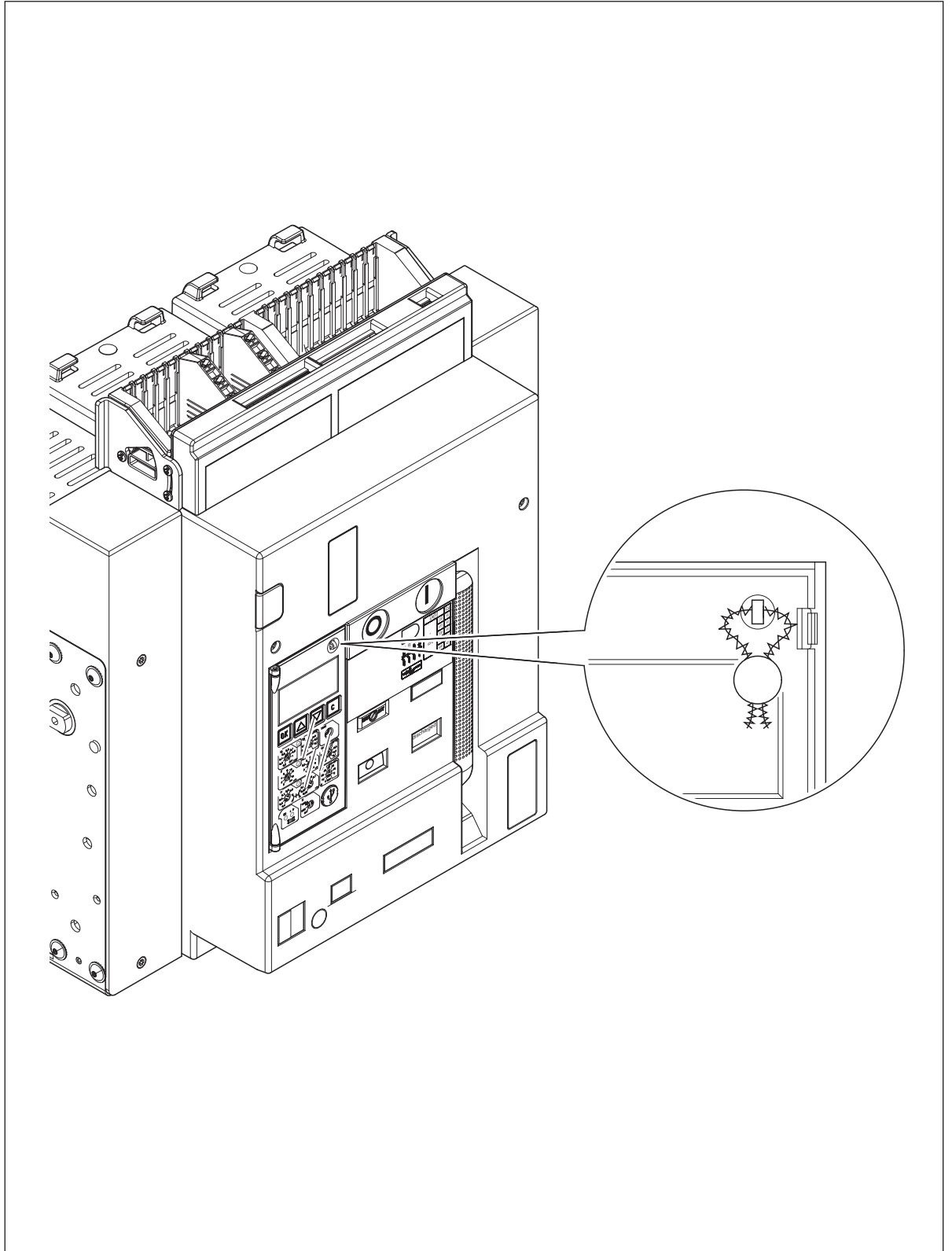
of protection unit. For setting, consult the protection unit manual.

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20.4 Seal of protection unit

Check settings through the display menu (if available).

Close the cover of the protection unit, this can be sealed through a normal plumbing.



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21. Standard functions of the breaker



For use with automatic change over systems (with feedback function) set the reset button in MAN position.

21.1 Reset button

MAN position.

Default setting for a new product.

In this position it's possible to prevent the closing after a trip commanded by protection unit (button ejected).

When this function is selected, the operator must insert the button before to close again the breaker.

AUT position.

Mostly used in monitoring systems.

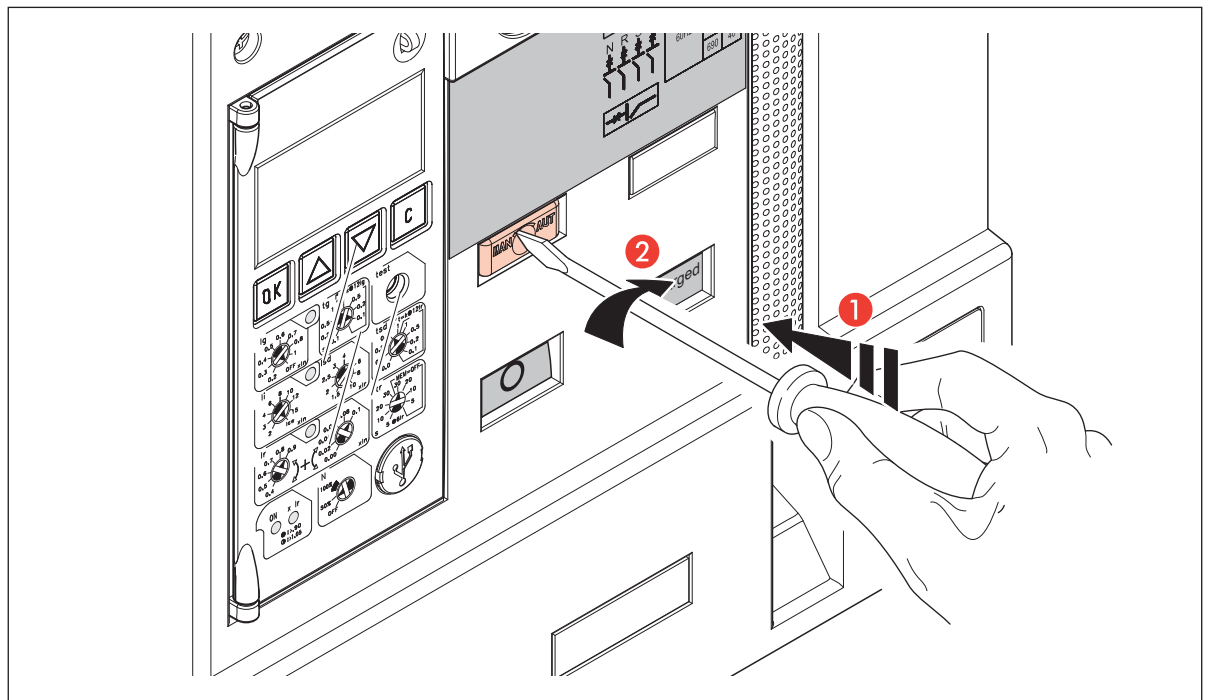
In this position the breaker can be always closed after a trip commanded by protection unit (button remains inserted).

Breaker will be always ready to close when its status is like this:



NB: In order to set the button in AUT position:

1. Push the button until the end with a flat screwdriver.
2. Pushing, turn the selector 90° in AUT position.



The trip contact ("C TR" in auxiliary terminals block) (AUT/MAN), as shown in the following diagram:
working depends on reset button mode setting

The diagram illustrates the timing requirements for the CTR pin. It shows four horizontal signal traces with various transitions. Key features include:

- Top Trace:** Shows a high-to-low transition (indicated by a downward arrow) and a low-to-high transition (indicated by an upward arrow). Small rectangular pulses are shown above the trace.
- Second Trace:** Shows a high-to-low transition (indicated by a downward arrow) and a low-to-high transition (indicated by an upward arrow). A small rectangular pulse is shown above the trace.
- Third Trace:** Shows a high-to-low transition (indicated by a downward arrow) and a low-to-high transition (indicated by an upward arrow). A small rectangular pulse is shown above the trace.
- Bottom Trace:** Shows a high-to-low transition (indicated by a downward arrow) and a low-to-high transition (indicated by an upward arrow). A small rectangular pulse is shown above the trace.
- Timing Annotations:**
 - A small rectangular pulse is shown above the bottom trace, labeled with a duration of $<20^* \text{ ms}$.
 - A small rectangular pulse is shown above the bottom trace, labeled with a duration of $<20^* \text{ ms}$.
- Input Signals:**
 - CTR:** A square wave signal with a high-to-low transition (indicated by a downward arrow) and a low-to-high transition (indicated by an upward arrow).
 - TRIP!** A square wave signal with a high-to-low transition (indicated by a downward arrow) and a low-to-high transition (indicated by an upward arrow).
 - RAM / AUT:** A square wave signal with a high-to-low transition (indicated by a downward arrow) and a low-to-high transition (indicated by an upward arrow).
- Physical Diagrams:**
 - Top left: A schematic diagram of the device showing the CTR pin location.
 - Top right: A photograph of the device with a hand pointing to the CTR pin.
 - Bottom right: A photograph of the device with a hand pointing to the CTR pin.

21.2 Padlock for racking shutter

When is isolated position \rightarrow is possible to lock the

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22. DMX-SP 4000 start up

Operator checks

The operator must verify that the device has been properly installed inside the distribution cabinet and that all the installation conditions are correct without any mistake due to negligence or not proper objects inside, according to the current standards.

Start up checks are classified in:

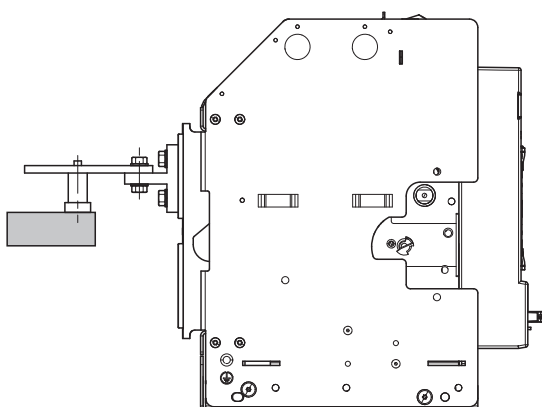
- Without voltage checks
- Under voltage checks

Without voltage checks

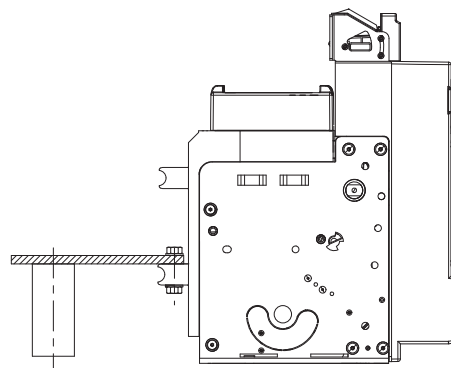
Distribution center inspection:

- To verify that the device installation is performed according to the instructions of this user manual.
- To verify the device wiring using proper screws and terminals.
- To verify that no metallic parts, tools and manufacturing scraps are close to the device.

Recommended tightening torque



Fastening torque of the terminals
Ø Nominal (mm): 10 (screw M10)
Ø Hole (mm): 11
Fastening torque (Nm) with plate or split washers: 37.5
Fastening torque (Nm) with contact washers: 50

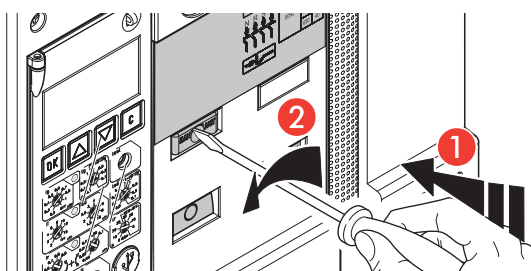


Fastening torque of the terminals
Ø Nominal (mm): 10 (screw M10)
Ø Hole (mm): 11
Fastening torque (Nm) with plate or split washers: 37.5
Fastening torque (Nm) with contact washers: 50

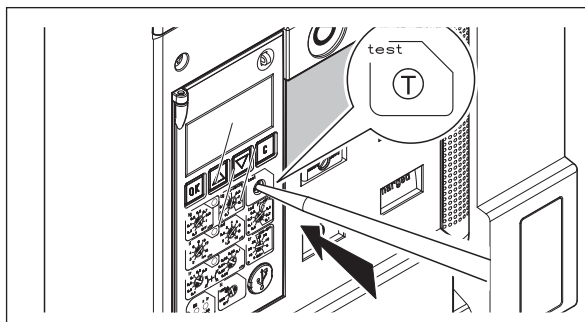
- To verify that the device is not damaged outside and there are not missing parts that can be the cause of wrong working.

Check of installed components correspondence to the electric diagram:

- To verify that the device specifications are according to the technical requests.
- To verify that the protection unit specifications (where it is needed) are according to the technical requests and all the settings are correct. To check the protection unit setting parameters, please see the specific user manual.
 - Insert /verify the batteries and their level
 - Set the protection unit
 - Perform the TEST procedure through the T button on the protection unit
 - Set back the reset button in MAN position



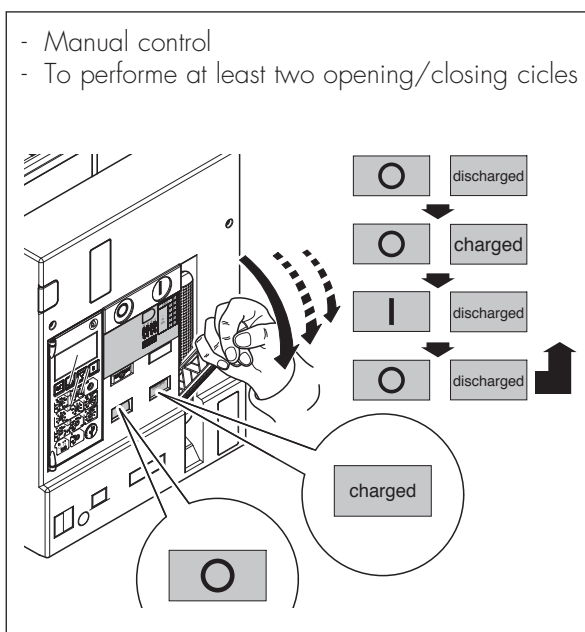
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- Tripping test check
 - keep pushing T button longer than 2 sec and verify that:
 - all leds light on for 1 second (ON LED on orange, the others on red);
 - the device trips;
 - the display shows that the device has tripped;
 - RESET button has been released.
 - To reset the device, push RESET button and set it back (see protection unit user manual)
- To verify that all the accessories specifications are consistent with the auxiliary circuit voltage and the electric diagram

Functioning check

- To verify the device mechanical functioning, contacts opening and closing
- In case of devices with mechanical interlock, to verify that the functioning logic is according to the needs based on the interlock diagram



- To verify the lock systems, if any (open position, draw-out position...)

Auxialiries wiring and installation check

- To verify the auxiliary circuits proper installation
- To verify the correspondence of the terminals wiring
- To verify the correspondence of the auxiliary circuit wiring.

How to resume the device after tripping

In case during the functioning the breaker trips, the assigned personnel must respect the following procedure:

- To indentify the reason of the release and if it is related to a protection event or an external circuit
- To check the protection unit history log (see the protection unit user manual).
- To verify the position of MAN/AUT button. If it is in MAN position after the protection unit tripping, the RESET button is released and, to assure more safety, it's impossible to close the breaker. In this case the personnel must understand the reason of the fault and set back the RESET button before start working again.
- If the button is in AUT position the device is able to close even after a protection tripping, without any on site intervention of personnel, allowing the closing by remote if needed by the system manager. In this case an automatic and remote system is needed.

Identification of the fault

The fault is shown locally on the protection unit and/or by the auxiliary contacts installed on the device. In case of fault it is strongly suggested to inspect the device (see Maintenance guide).

Reasons fault

The device shouldn't be closed again before checking and solving the cause of the fault (locally or by remote).

The reasons may be various:

the reasons may be classified in two main types

- fault protection (see the hystory log of the protec-tion unit)
- ST and UVR intervention

After checking the reason of the fault, before closing the device again, it's suggested to check the device conditions, and above all, to check the dielectric and insulation conditions of one part or the whole device depending on the nature of the tripping event.

Those checks and tests must be requested and managed by qualified personnel according to this user manual.

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In case of short circuit, device inspection

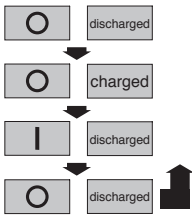
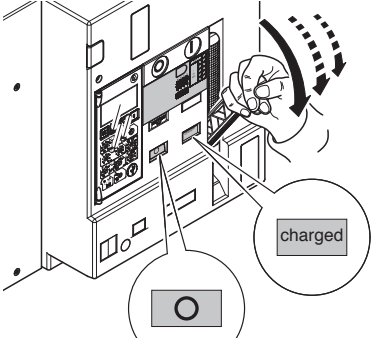
In case of short circuit protection, go to Maintenance guide and check the following conditions:

- to check the arc chamber conditions and the wear status
- to check the contacts status
- to check the clamping of the power connections and the auxiliary circuit connections as shown in the Start UP chapter
- in case of draw-out version device, take out the breaker and check the insertion clamps and the inside conditions

Device closing

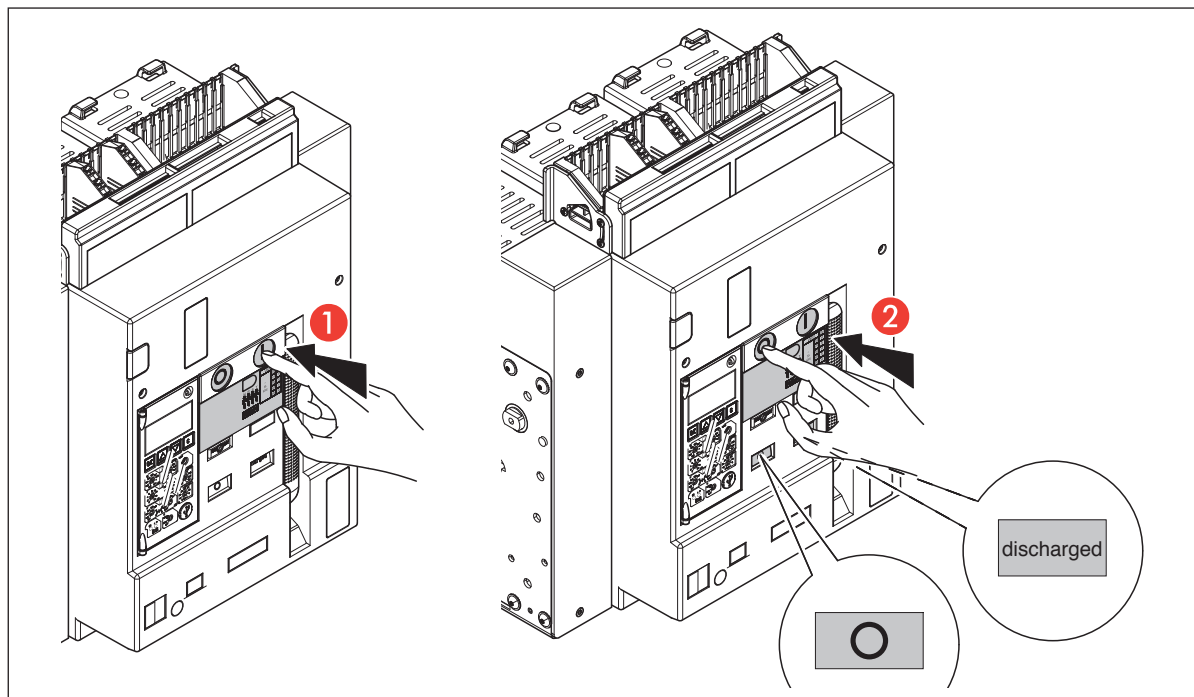
The closing of the breaker can be performed locally or by remote only after checking that the system and the device conditions are consistent with the safety procedure.

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Object	Check	Remark
Manual control	<p>To perform at least two opening/closing cycles</p> 	
Draw-out cell	To perform at least one cycle insert/test/draw out position	
Motor operator	Supply the motor operator and perform at least 2 cycles opening/closing. The motor operator must load the springs after each opening/closing event and stop when the springs are ready	
Aux contacts and alarms	To verify the correct signals	
Insert/draw-out contacts	To verify the correct signals	
Shunt trip coil	Close the breaker Supply the coil and verify the tripping	
Closing coil	Open the breaker Supply the coil and verify the closing	
UVR coil	Cut the UVR power and check the breaker tripping. To verify that it's impossible to close the breaker without UVR power.	
Key lock/pad lock	To verify the proper functioning	
Cable interlock	Adjust and verify the proper functioning	

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23. Ordinary maintenance



An ordinary maintenance, performed with its respective frequency, is important in order to:

- check and maintain the efficiency of the product;
- identify parts/accessories damaged;
- prevent emergencies.

Periodical check and maintenance is recommended on the following parts:

- mechanism;
- anti-shock opening spring;
- arc chutes;

- main contacts;
- draw-out system (if present);
- terminals;
- auxiliary;
- mechanical accessories (if present);
- electrical accessories (if present);
- trip unit.

For more details concerning maintenance procedures and their frequencies, consult the DMX-SP 4000 maintenance guide.

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24. Basic trouble shooting

Situation	Probability	Solution
ACB does not close on pressing "ON" button	U/V release is present but not energized	Energize U/V release
	Mechanism spring is not charged	Charge the mechanism spring manually till a distinct sound is heard & indicator turns yellow
	Reset button ejected	Press reset button
	Racking Shutter is open	Close Racking Shutter
	Mechanical Interlock disables closing	Re-check before attempting to close the breaker
Racking shutter does not re-close automatically after racking handle is pulled out	Breaker is in-between Service/Test/Isolated position. Position indicator is not aligned with any of the positions	Rack in or out the breaker to any of the distinct positions
Draw-out version breaker cannot be racked-in after isolated position	Breaker & Mis-insertion device ratings do not match	Put correct breaker
Racking Shutter does not open	ACB is closed	Keep on pushing the OFF button
ACB does not close electrically	Electrical antipumping is active	Interrupt 'OPEN' command once
	"Ready to close"(RTC) conditions are not met	Check all RTC conditions
ACB trips after closing	Overload fault exists if tripping is after several seconds or minutes. Other fault(s) exist if tripping is within a second	Check the unit protection and identify the fault then clear the cause
	Shunt Release is getting command continuously	Check the source of command

For a more detailed trouble shooting, consult the DMX-SP 4000 maintenance guide

[illegible]

