

Ulusoy URING12-24 C - SF₆ Insulated Incoming&Outgoing RMU Switchgear with Vacuum Circuit Breaker

User Manual

24 kV / 630 A / 21 kA-3sec



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1. CAUTION

When medium-voltage equipment is operating, certain components are live, other parts may be in movement and some may reach high temperatures. Therefore, the use of this equipment poses electrical, mechanical and thermal risks.

Consequently, the equipment to which the present manual refers complies with the requirements of section 11.2 of Standard IEC 62271-1. It must therefore only be operated by appropriately qualified and supervised personnel, in accordance with the requirements of standard EN 50110-1 on the safety of electrical installations and standard EN 50110-2 on activities in or near electrical installations.

Personnel must be fully familiar with the instructions and warnings contained in this manual and in other recommendations of a more general nature which are applicable to the situation according to current legislation.

The above must be carefully observed, as the correct and safe operation of this equipment depends not only on its design but also on general circumstances which are in general beyond the control and responsibility of the manufacturer. More specifically:

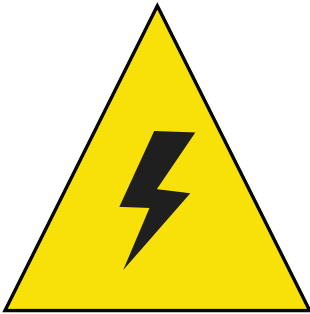
- The equipment must be handled and transported appropriately from the factory to the place of installation.
- All intermediate storage should occur in conditions which do not alter or damage the characteristics of the equipment or its essential components.
- Service conditions must be compatible with the equipment rating.
- The equipment must be operated strictly in accordance with the instructions given in the manual, and the applicable operating and safety principles must be clearly understood.
- Maintenance should be performed properly, taking into account the actual service and environmental conditions in the place of installation.

The manufacturer declines all liability for any significant indirect damages resulting from violation of the guarantee, under any jurisdiction, including loss of income, stoppages and costs resulting from repair or replacement of parts.

Warranty

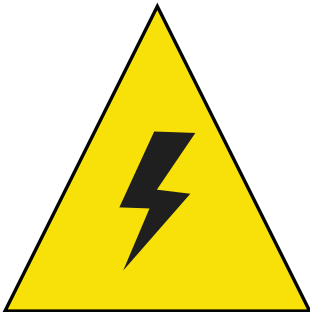
The manufacturer guarantees this product against any defect in materials and operation during the contractual period. In the event that defects are detected, the manufacturer may opt either to repair or replace the equipment. Improper handling of this equipment and its repair by the user shall constitute a violation of the guarantee.

Before performing work on the panels, it is essential that you comply with the following instructions:



Danger!

Mortal danger due to high voltage. Before performing assembly or maintenance work, the system must be isolated from high voltage, and earthed.



Danger!!

Mortal danger due to supply voltage. Before performing assembly or maintenance work, the system must be isolated from the supply voltage.



Warning!

Risk of injury from movable parts in mechanical drives. Before performing maintenance work,

- Isolate the system from the supply voltage
 - Release the circuit-breaker's energy storing device by OFF-ON-OFF operation and in case of a make-proof earthing switch, by the appropriate ON-operation.
-



Warning!

After the removal of covers from a switchgear, operator safety regarding internal arcs may be reduced unless the switchgear is isolated from the power supply. Optimum operator safety is only ensured if the switchgear is completely isolated from the power supply and earthed for assembly work.

2. HANDLING AND TRANSPORT



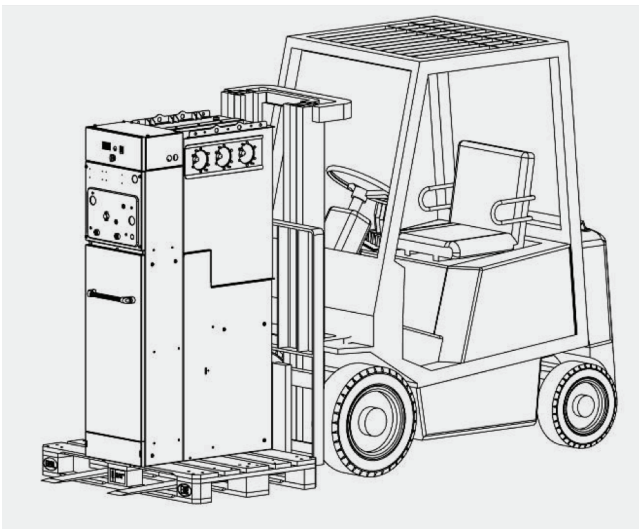
Important:

During transport, the switchgear must be perfectly seated and fixed so that it cannot move about and possibly damage the equipment.

The switchgear must always be kept upright, directly on the ground or on a pallet depending on the type of handling involved.

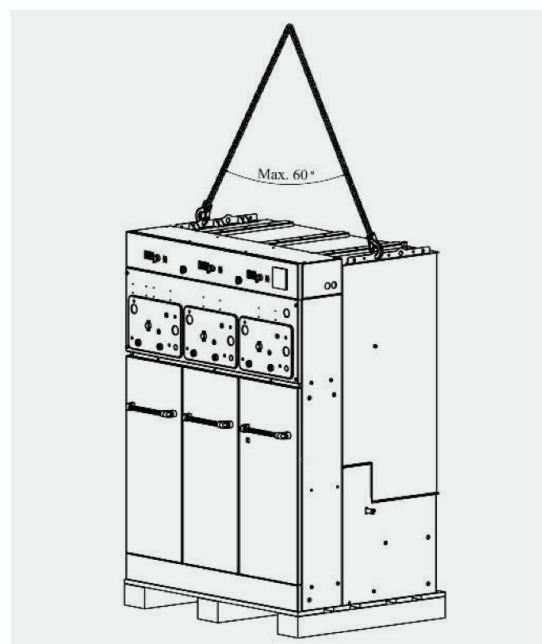
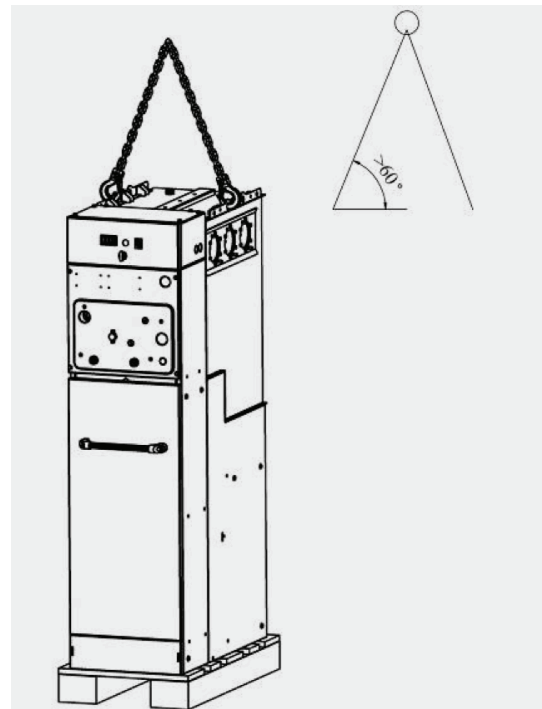
To handle assemblies of up to 5 functional units, one of the following methods must be used:-

- Using a forklift truck or pallet-jack.



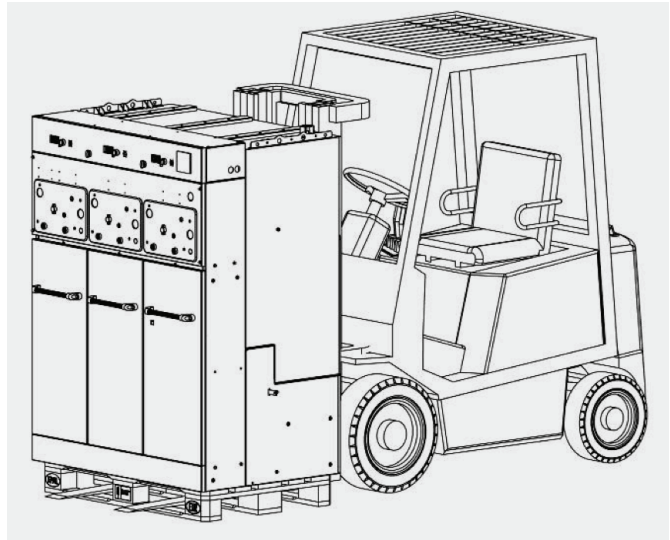
Lifting of a **URING** cubicle with a fork-lift truck

- Lifting using slings or chains fixed to the lifting supports on the sides of the top of the cubicle. The angle of pull should be as vertical as possible (with an angle greater than 60° from the horizontal).

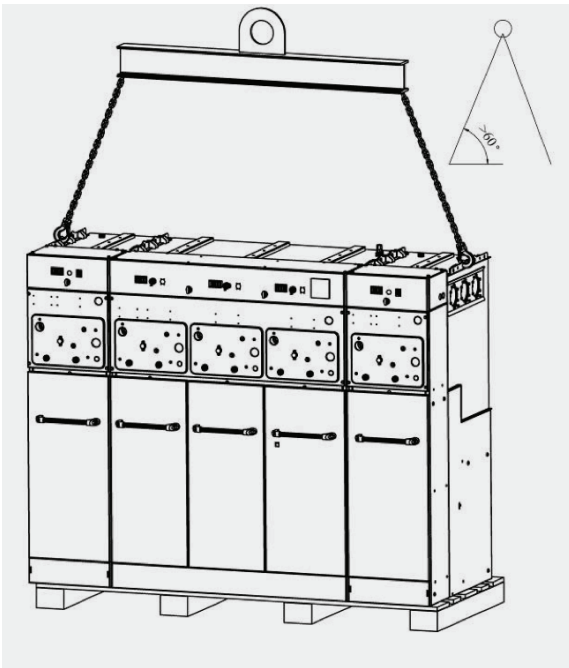


Lifting of **URING** cubicles with chains

- If it is not possible to lift using the aforementioned methods, rollers may be used underneath the switchgear. Another option is to slide the cubicles over rods (these same rods can be used to help get over the cable pit).
- To handle 5 functional unit assemblies (consisting of either coupled modules or compact assemblies associated with modules), use lifting systems (slings, lifting beam, etc.) with a pull angle greater than 65° and less than 115° in order to prevent possible damage to the cubicles during hoisting.



Lifting of a set of 3 **URING** functional units with a forklift truck



Lifting of a set of 5 **URING** functional units with lifting beam and chains

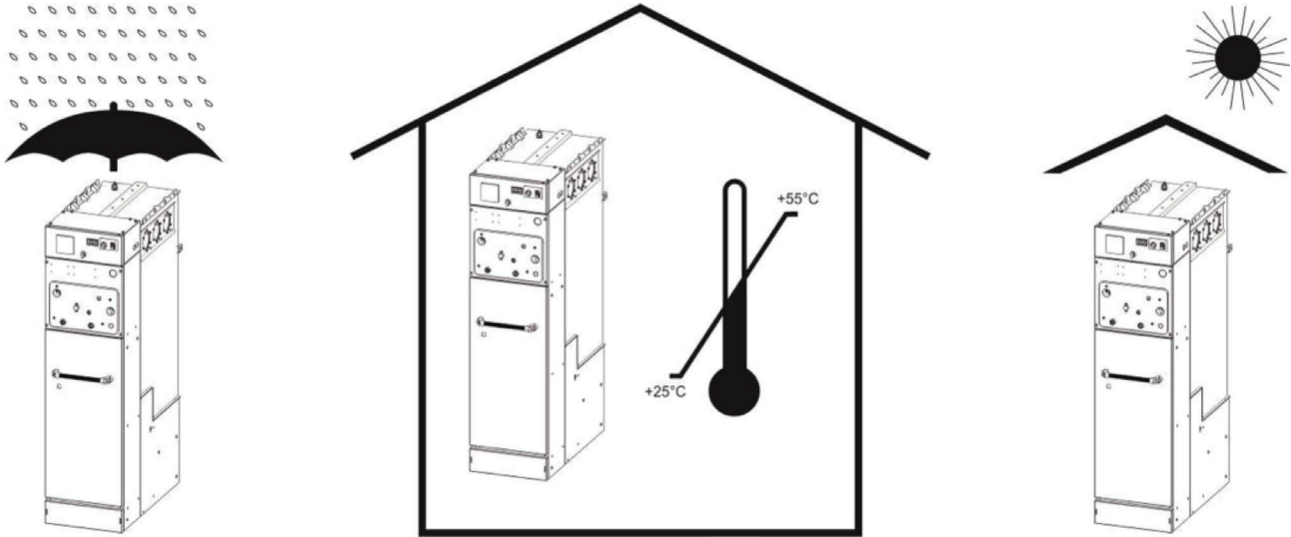


The use of lifting beams is required for cubicle assemblies with control boxes. As the sole exception, slings or chains may be used if the cubicles of the assembly have identical height control boxes installed.

3. STORAGE

If it needs to be stored, the equipment must be placed on dry ground or on top of damp-proof insulating material, still in its original packaging.

After prolonged storage, clean all the insulating parts carefully before commissioning the equipment. The enclosure should be cleaned with a clean, dry lint-free cloth.



Storage must always be INDOORS, with the following conditions recommended:

- Ambient air temperature should not exceed 40 °C and its mean value, measured in a period of 24 hours, should not exceed 35 °C.
- The ambient air temperature should not drop below - 5 °C. There are also cubicles with storage temperature up to - 40 °C.
- The switchgear must be protected from direct solar radiation.
- Maximum altitude is 2000 m.
- The environmental air must not have any significant contamination from dust, smoke, corrosive and/or inflammable gases, vapours or salt.

• The switchgear must be protected from the rain, and the humidity conditions should be as follows:

- o the mean relative humidity value, measured over a period of 24 hours, must not exceed 95%.
- o The mean water steam pressure value, measured in a period of 24 hours, must not exceed 2.2 kPa.
- o the mean relative humidity value, measured over a period of one month, must not exceed 90%.
- o The mean water steam pressure value, measured in a period of 1.8 hours, must not exceed 1.8 kPa.
- During transport, vibrations caused by external factors or seismic movements must be insignificant.



Any other conditions must be notified beforehand, since the equipment must be factory-adjusted to the atmospheric pressure at the final destination or during transport.

Otherwise, the manometer needle may indicate an incorrect value, even if the equipment's internal gas pressure is correct.

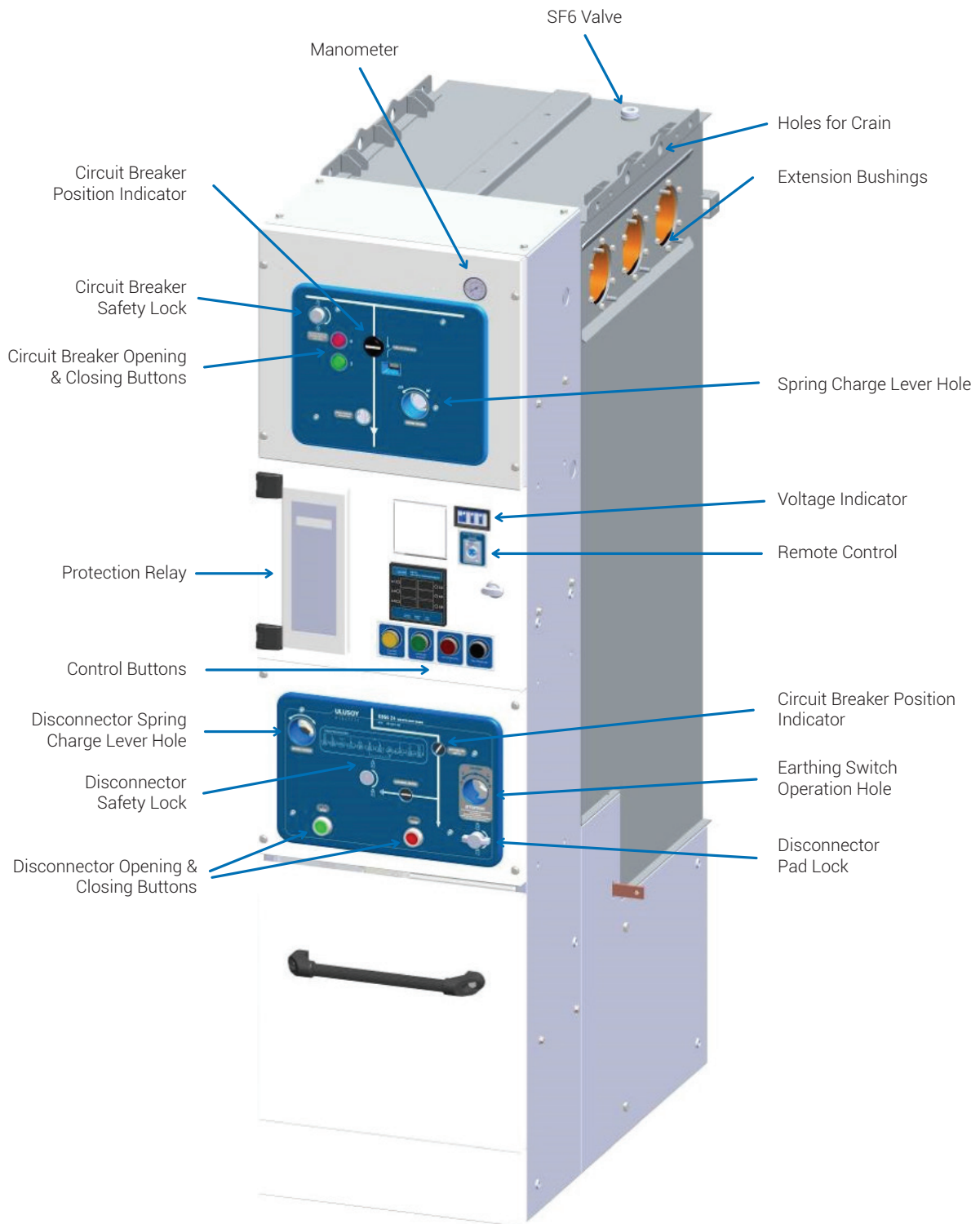
4. MAIN FEATURES

URING-24 RMU is a SF6 insulated ring main unit for the secondary distribution networks. Uring-24 can be supplied in a number of different configurations suitable for most switching applications in 12/24 kV distribution networks.

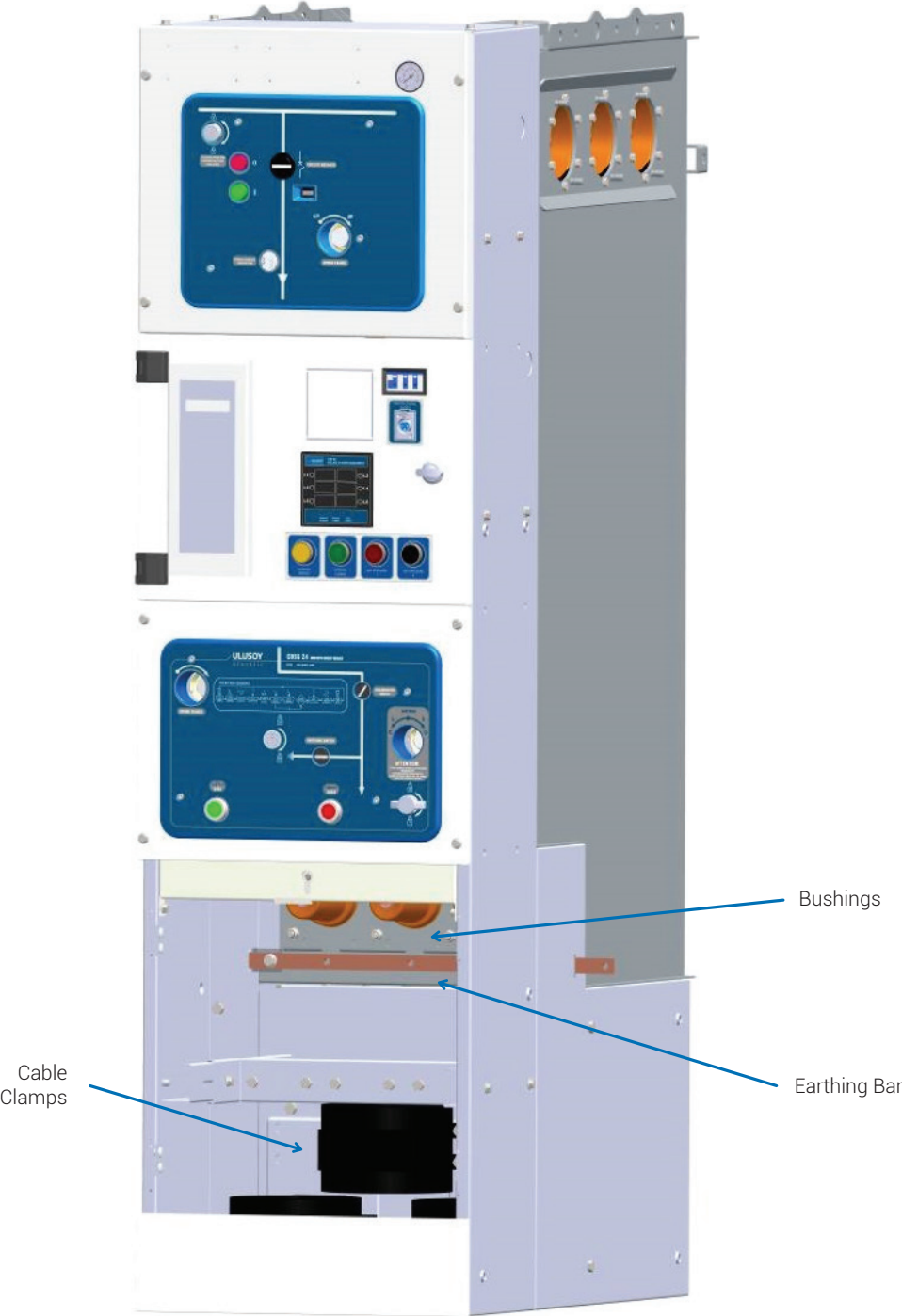
The Uring-24 RMU has a completely sealed system with a stainless steel tank containing all the live parts and switching functions with SF6 gas. A sealed steel tank with constant atmospheric conditions ensures a high level of reliability as well as personal safety and a virtually maintenance-free system



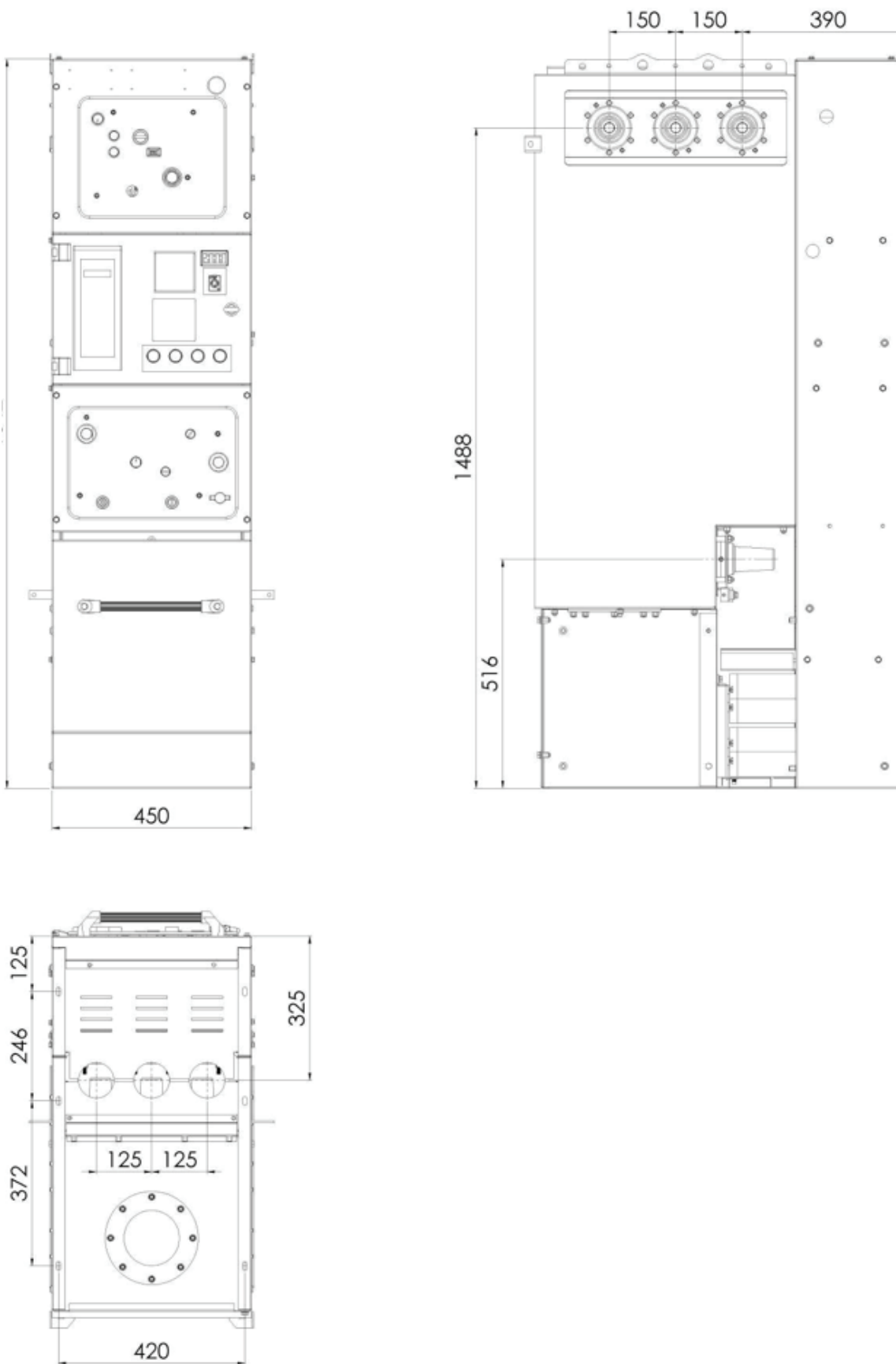
5. SWITCHGEAR MAIN EQUIPMENTS



URING 12-24-C SF6 INSULATED INCOMING & OUTGOING RMU SWITCHGEAR WITH VACUUM CIRCUIT BREAKER



6. DIMENSIONS



7. ACCESORIES

Remote Controller



Lever

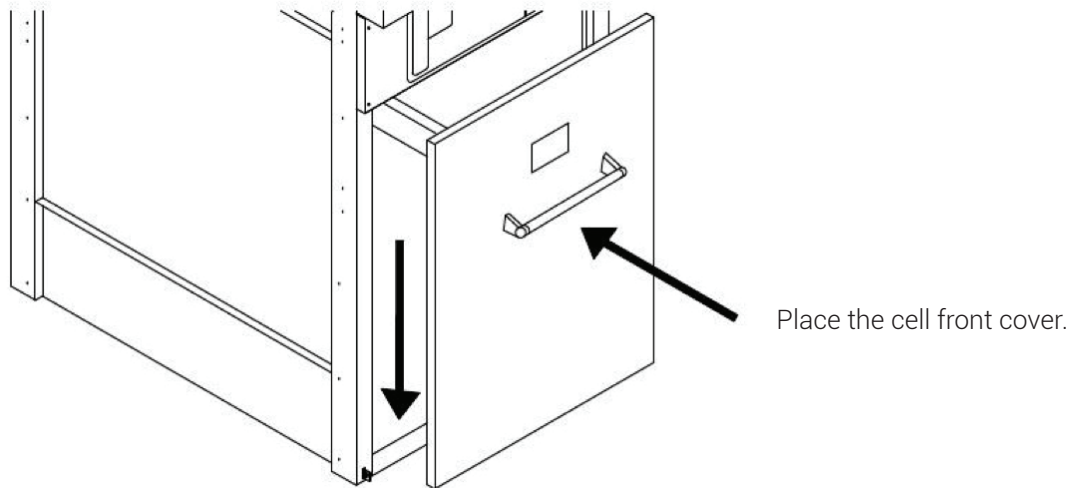


8. OPERATION INSTRUCTIONS

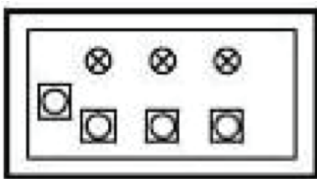
8.1 ENERGIZING CIRCUIT BREAKER UNIT

Checks before powering

Check if there are foreign objects in the cells. Check the connections of the cells.



Voltage Indicator



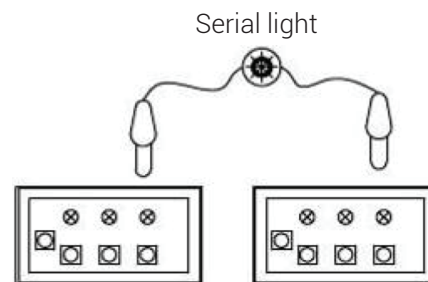
Input cell:

When input cables are powered, voltage indicator lights must be on.

Output cell:

When the disconnecter and breaker are off, voltage indicator lights must be on.

Phase Conformity Test



If the phases conform, light is off.

If the phases do not conform, light is on.

(Test device cannot be delivered with cells.)

Cable Test

In Output Cells

To check cable faults.

Turn the breaker on.

Turn the disconnecter on.

Turn the earthing disconnecter off.

Open the cell front cover.

Place the cable test device.

Turn the earthing disconnecter on.

Perform the required measurements.

In Input Cells

To check cable faults.

Turn the breaker on.

Turn the disconnecter on.

Break the power of the cell from previous center and perform the earthing of the cables.

Turn the earthing disconnecter off.

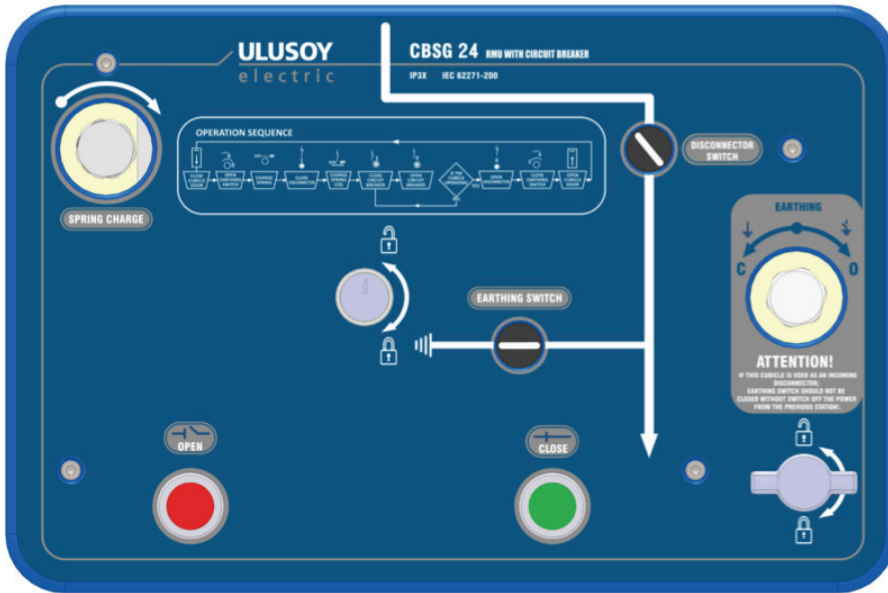
Open the cell front cover.

Place the cable test device.

Turn the earthing disconnecter on from both sides.

Perform the required measurements.

8.1.1 CLOSING THE SWITCHGEAR DOOR



Earthing switch must be closed for closing/opening the switchgear door!
In the first step, the door is open, disconnector switch is open and the earthing switch is closed



Put the bottom side of the door to the switchgear and push the door towards the switchgear.

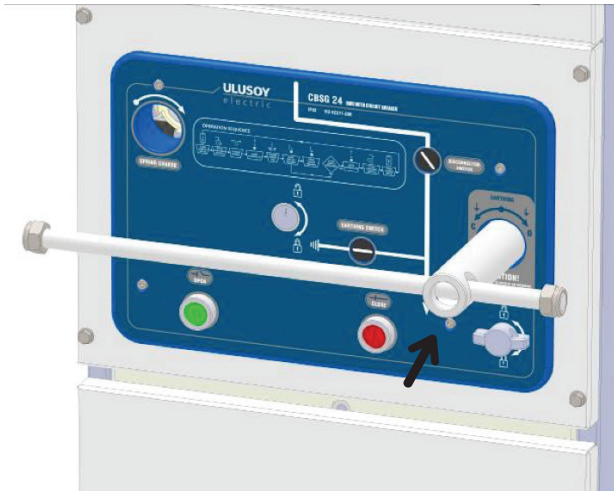


Pull the door down

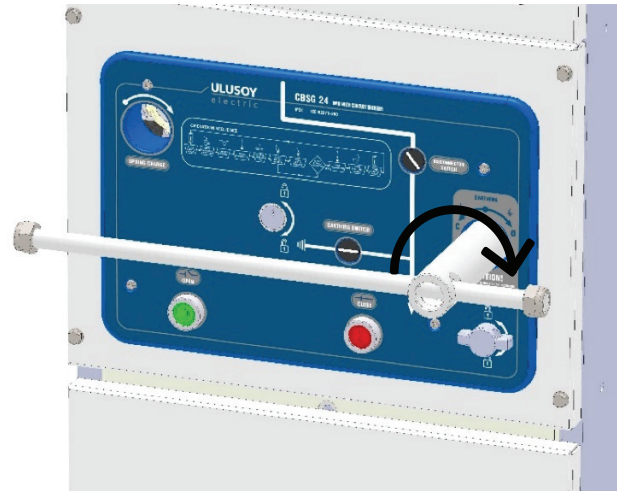


The door is closed

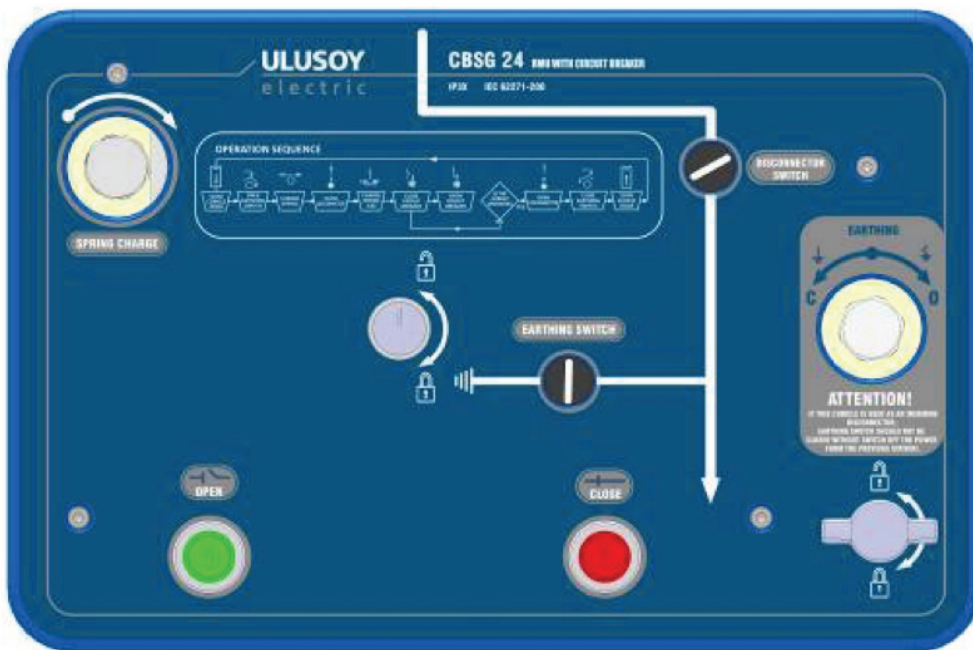
8.1.2. OPENING THE EARTHING SWITCH



Put the lever into the earthing switch lever hole



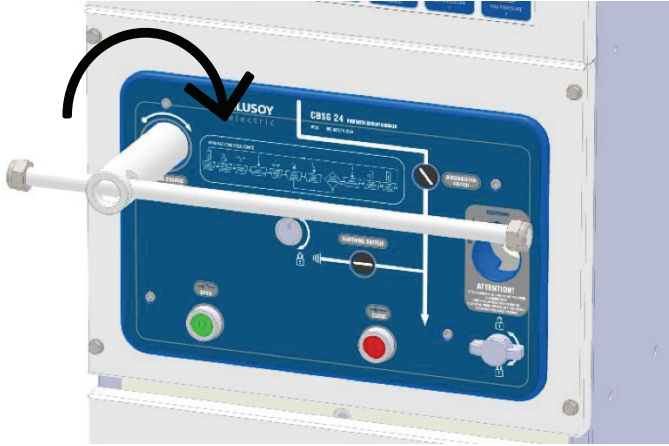
Rotate the lever in the direction of the arrow. **(Clockwise)**



Remove the handle from earthing switch lever hole.

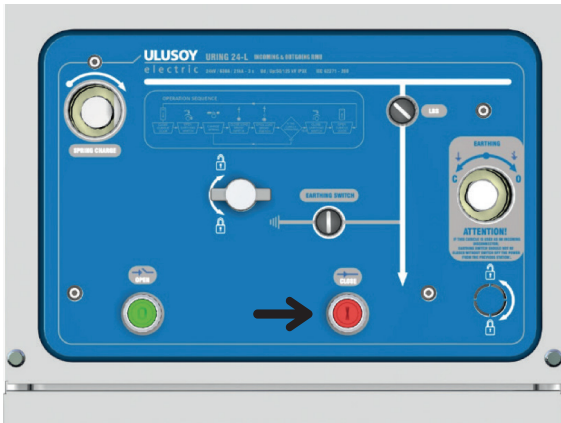
Check the position of the earthing switch. It must be in open position now.

8.1.3 CHARGING AND CLOSING THE DISCONNECTOR

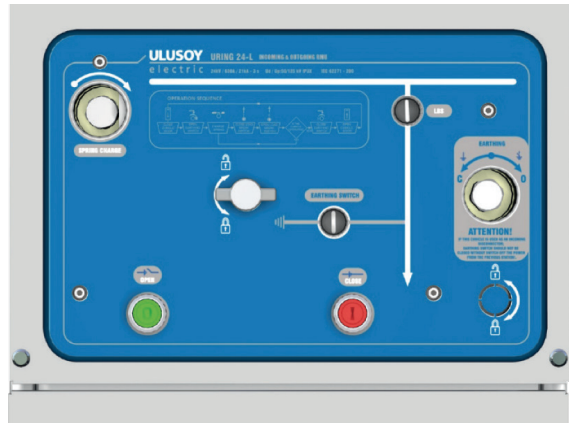


Insert the lever into spring charge lever hole and rotate in the direction of arrow. (Clockwise)

If there is DC on the auxiliary contacts, turn the manual-motor switch button to the motor selection. Then the spring will be automatically charged by the motor.

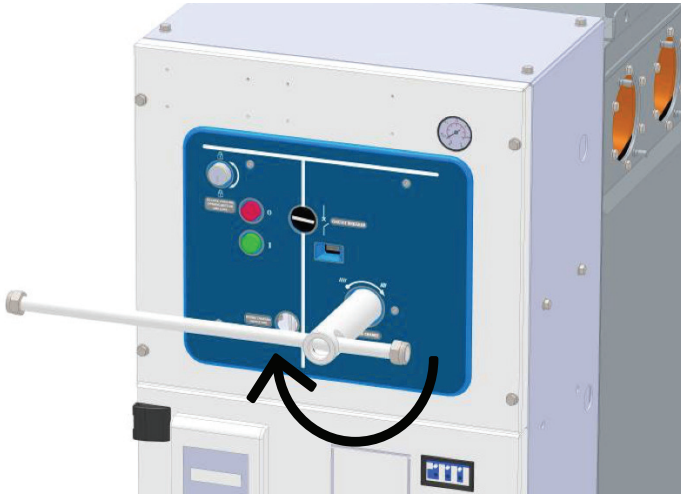


Push the closing (I) button to close load break switch.



Check the position indicator for close position and remove the key from disconnector safety lock.

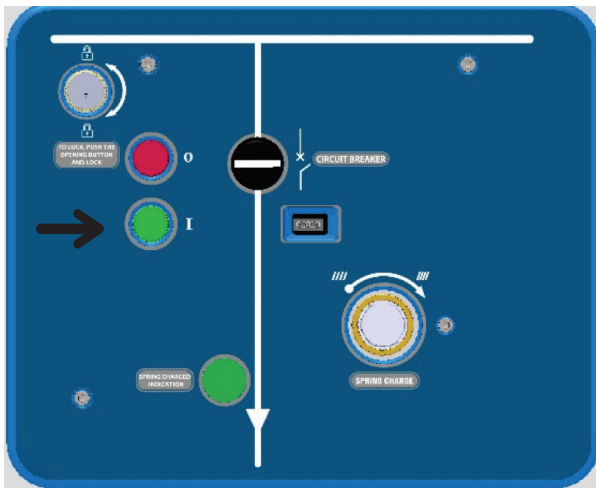
8.1.4 CHARGING AND CLOSING THE CIRCUIT BREAKER



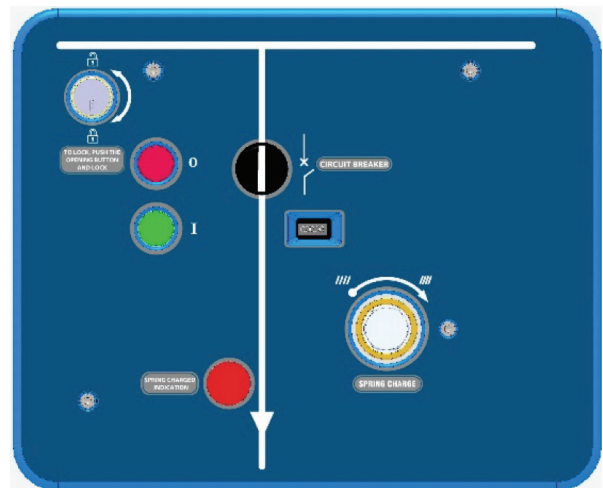
Insert the lever into spring charge lever hole and rotate in the direction of arrow. (Clockwise).

If there is DC on the auxiliary contacts, turn the manual-motor switch button to the motor selection. Then the spring will be automatically charged by the motor.

Then put the key removed from the disconnecter to circuit breaker safety lock.



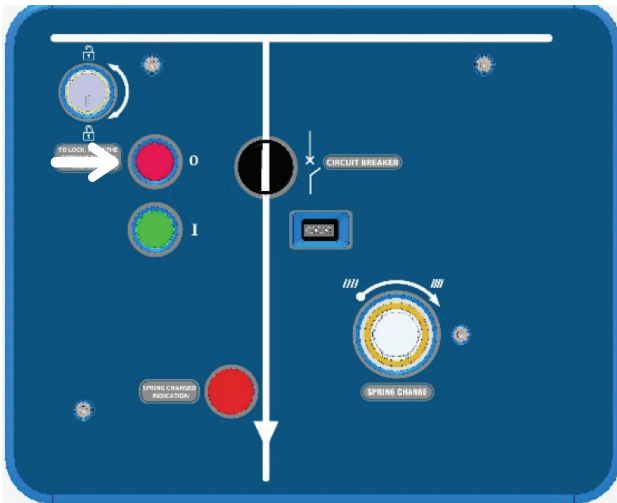
Push the closing (I) button to close load break switch.



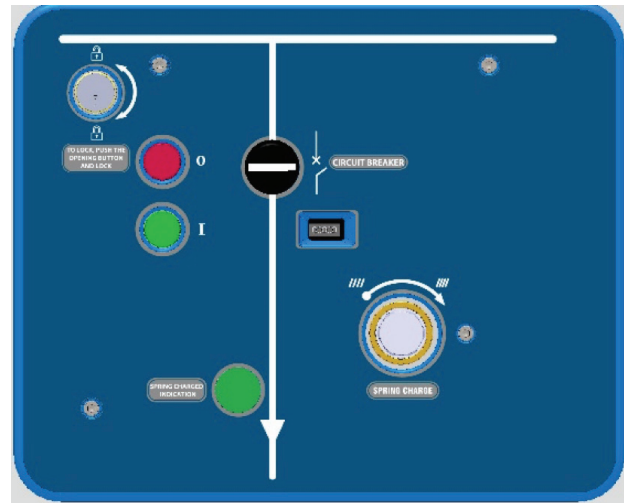
Check the position indicator for close position.

8.2 CUTTING CIRCUIT BREAKER UNIT'S ENERGY

8.2.1 OPENING THE CIRCUIT BREAKER

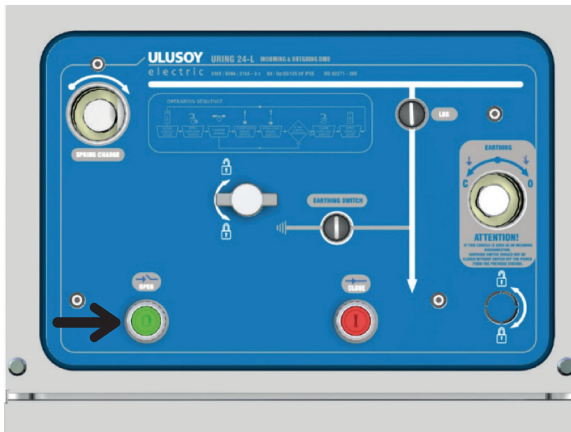


Push the opening (O) button to close load break switch.

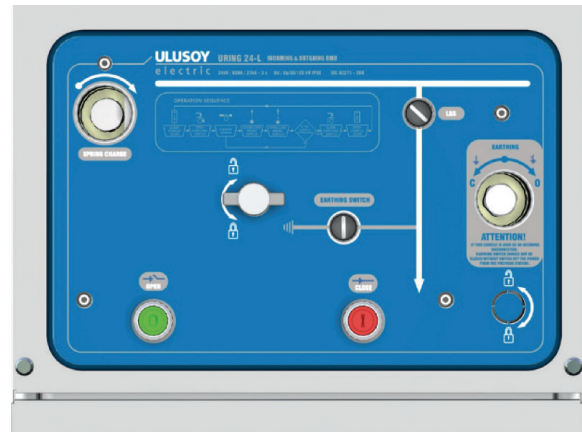


Check the position indicator for open position. Then remove the key from circuit breaker safety lock.

8.2.2 OPENING THE DISCONNECTOR

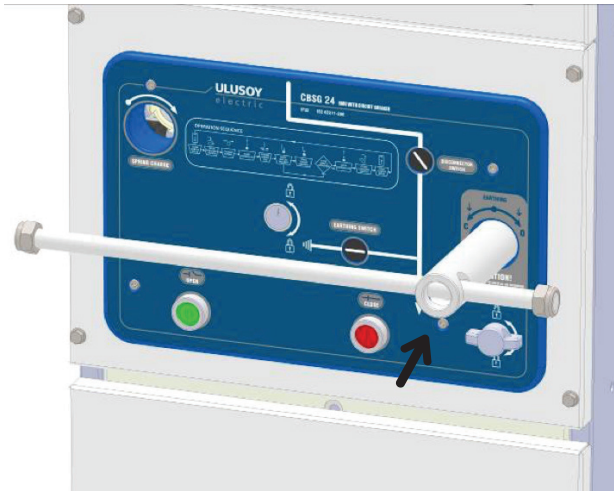


Put the key removed from the circuit breaker to disconnect safety lock.
Push the opening (O) button to open load break switch.

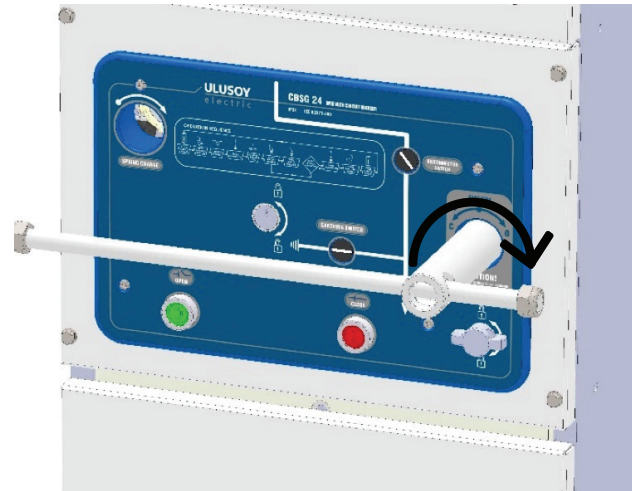


Check the position indicator for open position.

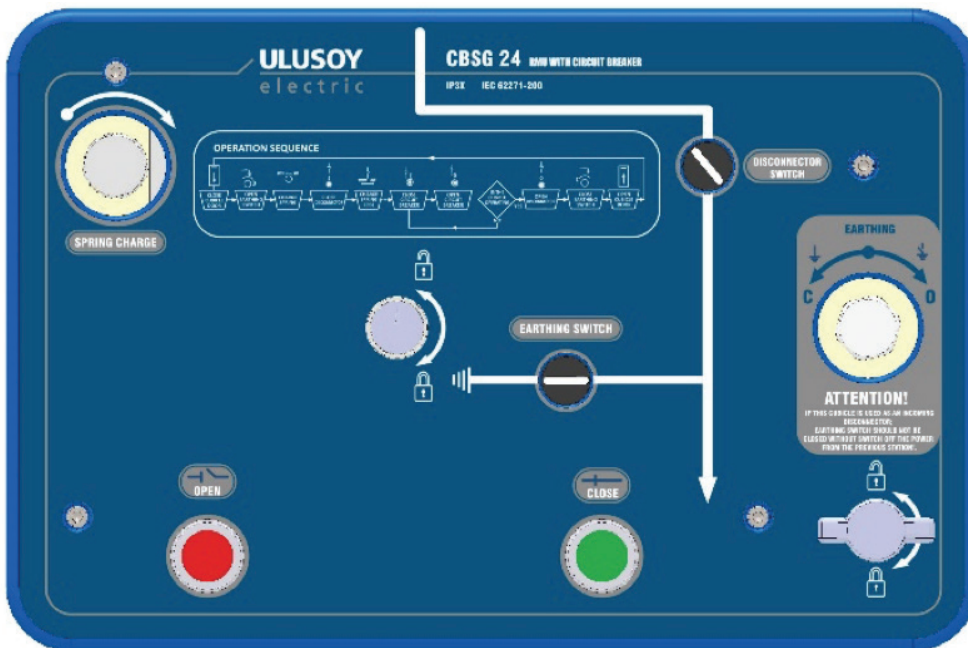
8.2.3 CLOSING EARTHING SWITCH



Put the lever into the earthing switch lever hole.



Rotate the lever in the direction of the arrow.
(Counter clockwise)



Remove the handle from earthing switch lever hole.
Check the position of the earthing switch. It must be in close position now.

8.2.4 OPENING THE SWITCHGEAR DOOR



Push the door upwards.

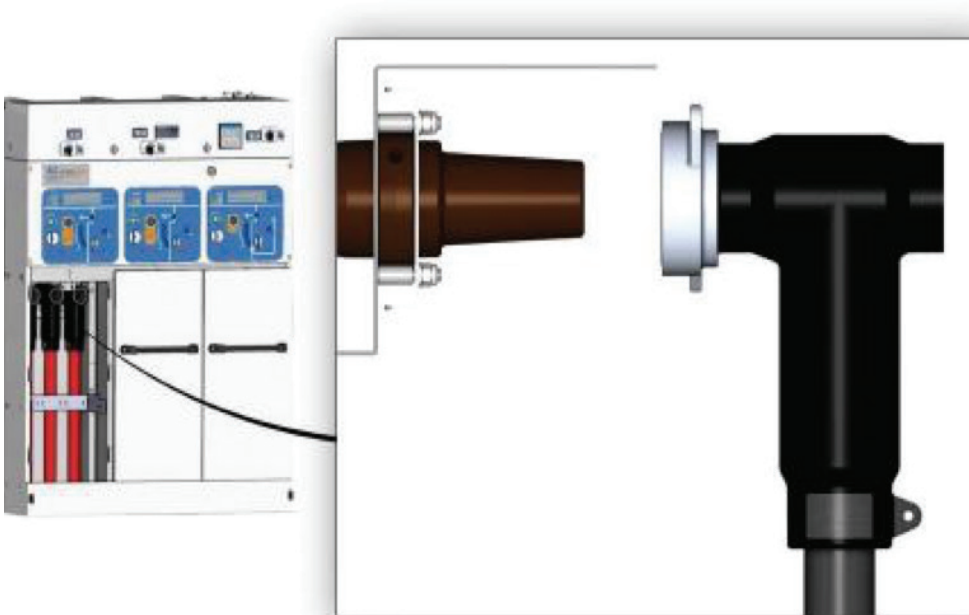


Pull the door towards yourself.



The door is opened.

9. CABLE CONNECTION



T connector (interface C) for incoming-outcoming connection.

10. OVER PRESSURE FLAP POSITION



11. COMBINING MODULAR CUBICLES



Modular Cubicles are combined by using 6 pieces of M8x30 bolt. Prior to assembly, silicon crossing bushings and contact holes must be cleaned well.

Eaton's mission is to improve the quality of life and the environment through the use of power management technologies and services. We provide sustainable solutions that help our customers effectively manage electrical, hydraulic, and mechanical power - more safely, more efficiently, and more reliably.

Eaton's 2019 revenues were \$21.4 billion, and we sell products to customers in more than 175 countries. We have approximately 95,000 employees.

For more information, visit Eaton.com

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