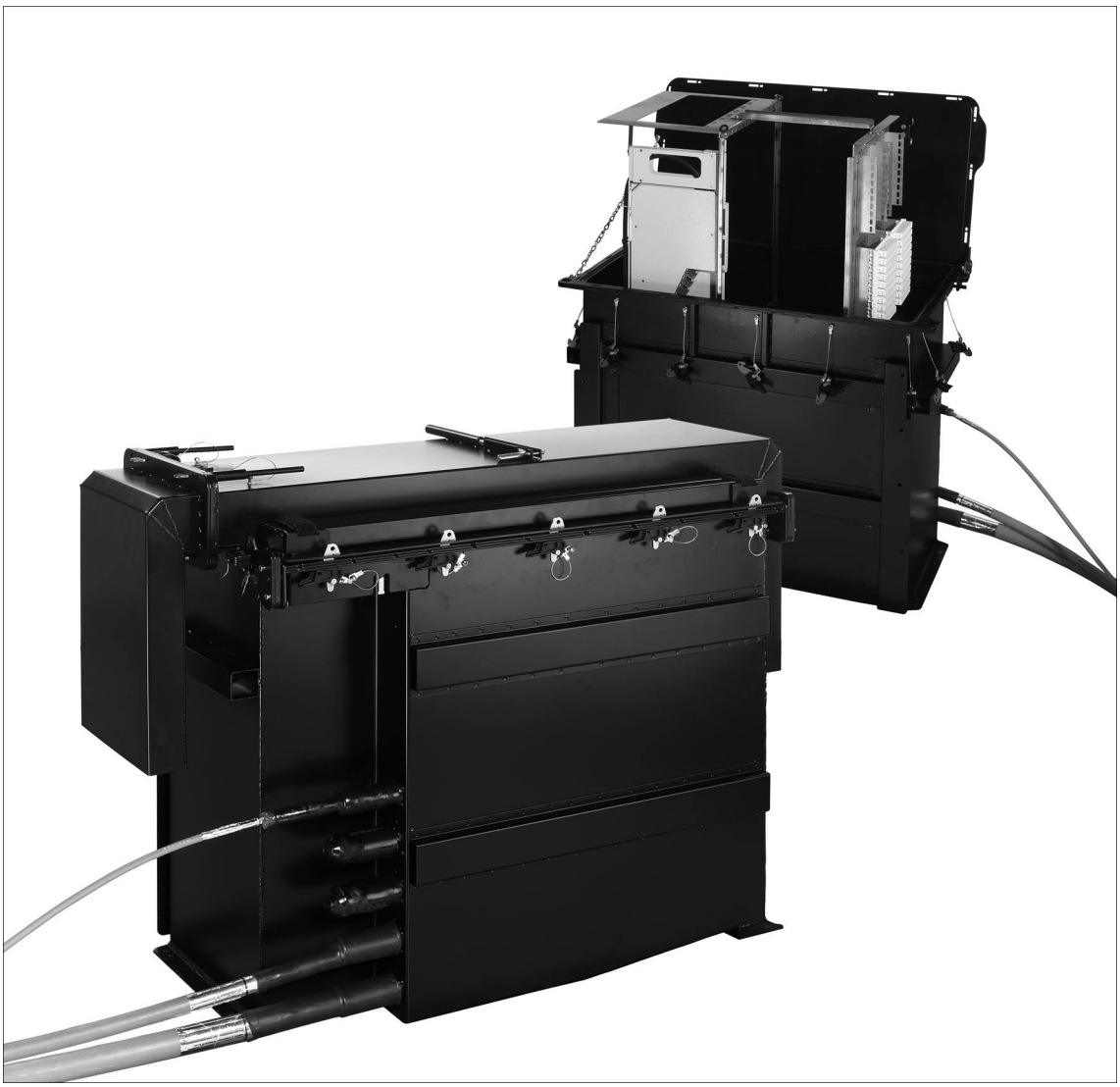
Tyco Electronics

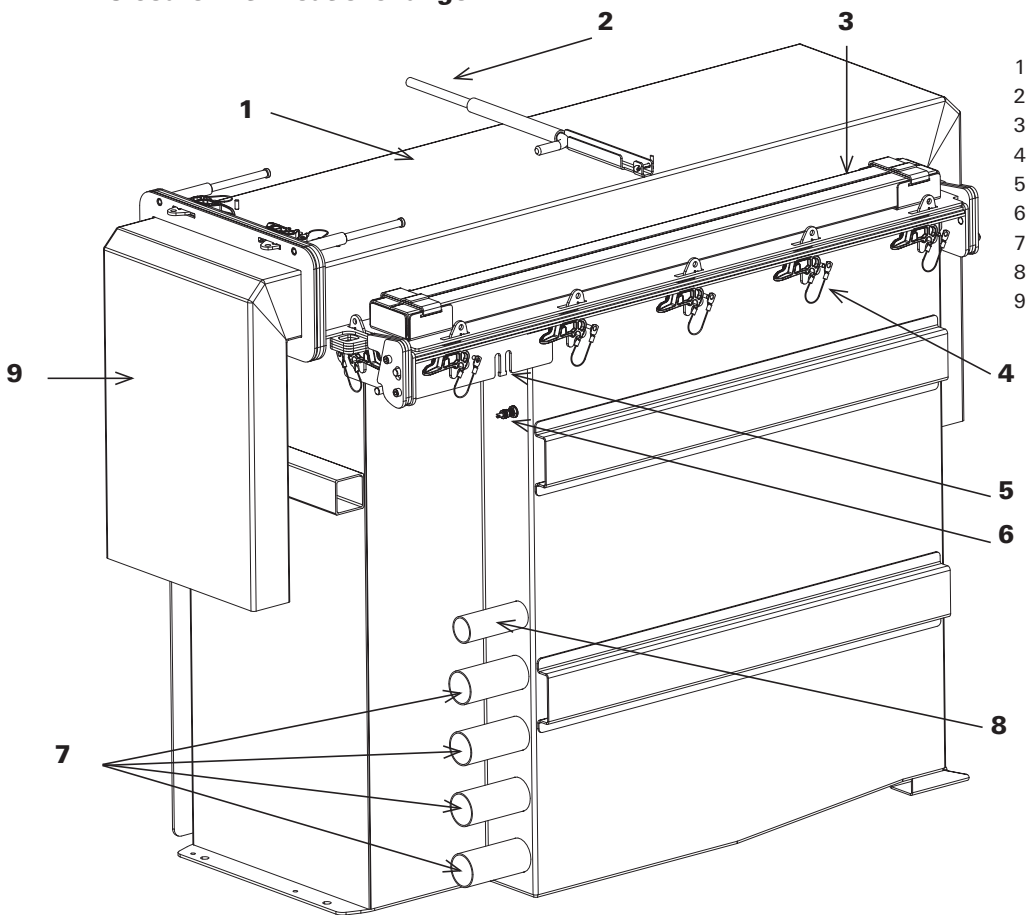
SURE

INSTALLATION INSTRUCTION

Sealed underground closure for remote electronics

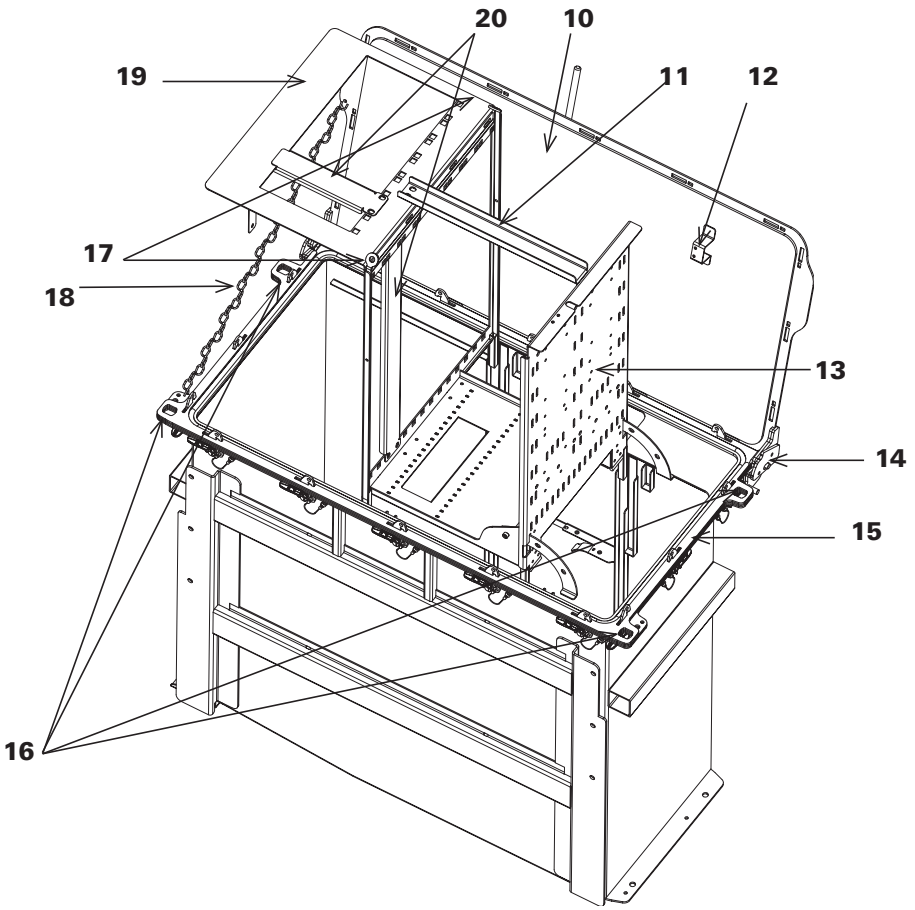


Closure with heat exchanger



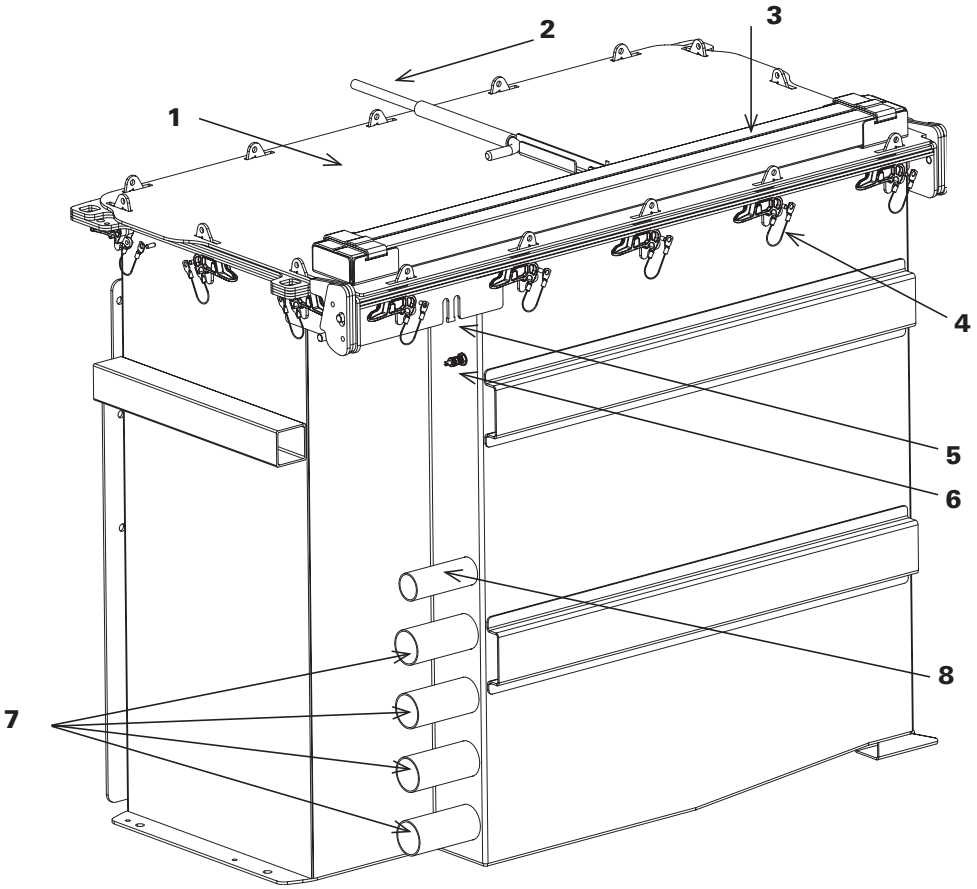
1 Cover with heat exchanger
2 Safety pin
3 Closure support bars
4 Sealing latches
5 Grounding point
6 Pressure test valve
7 Copper cable ports (35mm internal)
8 Fiber cable port (27mm internal)
9 Removable duct heat exchanger

Internal frame components
(shown for version without heat exchanger)



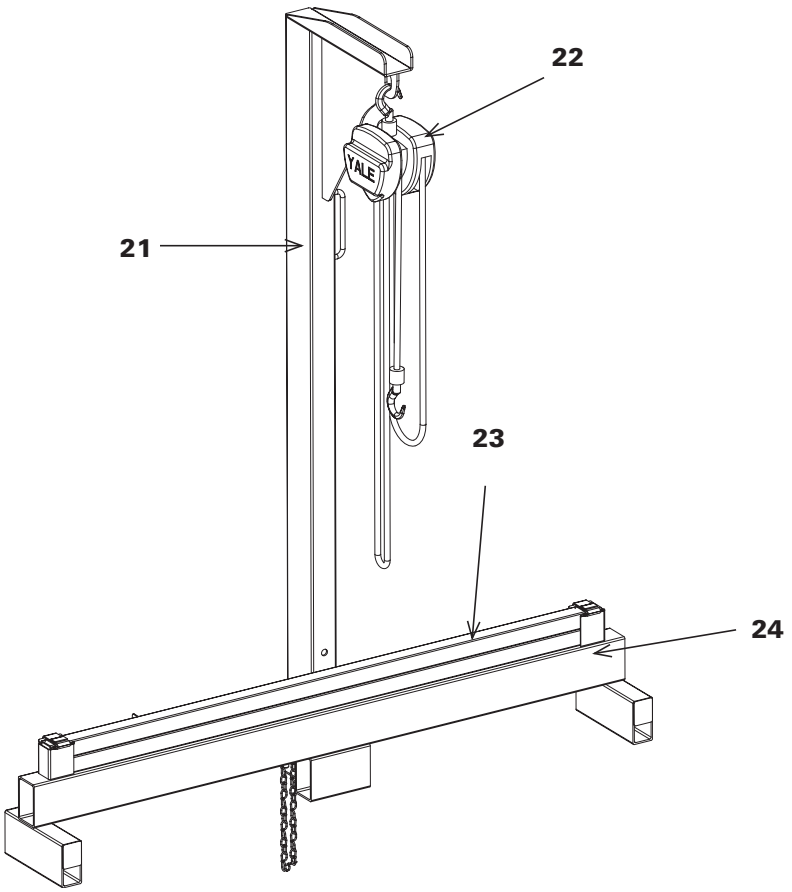
10 Cover without heat exchanger
11 Handle
12 Door switch bracket
13 Copper termination plate
14 Hinge
15 Rubber seal
16 Hoisting points closure
17 Hoisting points internal frame
18 Chain
19 Equipment frame
20 Blind plates

Closure without heat exchanger



1 Cover without heat exchanger
2 Safety pin
3 Closure support bars
4 Sealing latches
5 Grounding point
6 Pressure test valve
7 Copper cable ports (35mm internal)
8 Fiber cable port (27mm internal)

Lift components



21 Top part
22 Pulley
23 Lift support bars
24 Bottom part

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1 Introduction

Sure (Sealed Underground closure for Remote Electronics) is a compact, IP68 sealed underground closure, designed to accommodate electronics, fiber and copper components in the access network. This specific design is a solution for remote DSLAM applications.
The enclosure has an integrated heat management system. Installation steps might differ depending if passive or active cooling (with heat exchanger) is choosen. A future upgrade to active cooling is possible.

2 Safety

- During the initial installation: make sure the closure stays fixed to the transport pallet to ensure stability when opening the cover.
- The closure must be fixed to the wall or the concrete floor to avoid movements during floods. Install the safety pin after installation.
- Before using the lifting system: always check the state carefully. Have a periodical check according to local regulations.
- Before opening the installed closure: remove pressure by activating the valve below the cover.
- Electrical tension: ground the closure before connecting any electrical equipment.
- The closure surface can become hot, wear safety gloves when handling the closure.
- Follow the safety guidelines mentioned on the label, at the cover of the closure.
- Follow local safety regulations.

Testing

- Maximum test pressure 20 kPa - 3 PSI - 200mBar.
- After testing always release the pressure through the valve.

3 Kit content

3.1 General

Table below describes 4 standard configurations.

Code	Description
A	SURE-8DBNNN-01-A Floor mounting, with heat exchanger cover
B	SURE-8DBNNN-01-P Floor mounting, with standard cover
C	SURE-8DBNNS-01-A Side mounting frame, with heat exchanger cover
D	SURE-8DBNNS-01-P Side mounting frame, with standard cover

0	A	B	C	D
SURE body	x	x	x	x
Internal frame	x	x	x	x
Pre-mounted latches	x	x	x	x
Closure support bars	x	x	x	x
Rubber seal	x	x	x	x
Silicagel	x	x	x	x
Installation instruction	x	x	x	x
Copper termination kit	x	x	x	x
Fiber termination kit	x	x	x	x
Splicing shelf	x	x	x	x
Grounding kit	x	x	x	x
Bolt anchors	x	x	x	x
19" adaption brackets for equipment	x	x	x	x
Door switch	x	x	x	x
Standard cover	-	x	-	x
Heat exchanger cover including ventilators	x	-	x	-
Thermostat	x	-	x	-
Side mounting frame	-	-	x	x
Template for side mounting	-	-	x	x

3.1.1 Copper termination kit

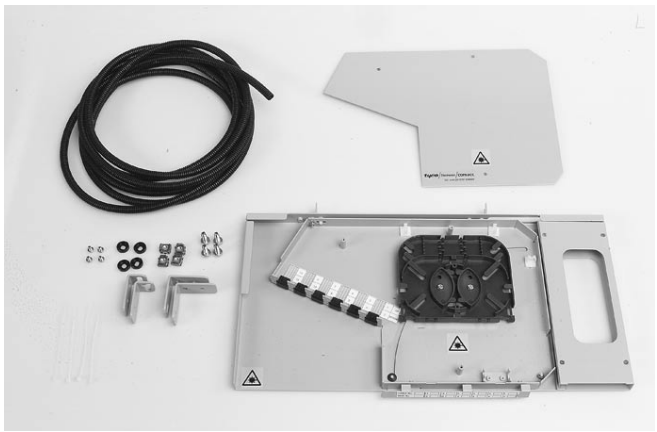
Protective tubing, transition tubing, tiewraps, adhesive foam tape, cable subkit (4x) .

Detail cable subkit (4x): cleaning tissue, abrasive paper, aluminum tape, heat-shrinkable sleeve

3.1.2 Fiber termination kit

Cleaning tissue, abrasive paper, aluminum tape, heat-shrinkable sleeve, strength member termination, tiewraps, small sleeve.

3.1.3 Splicing shelf



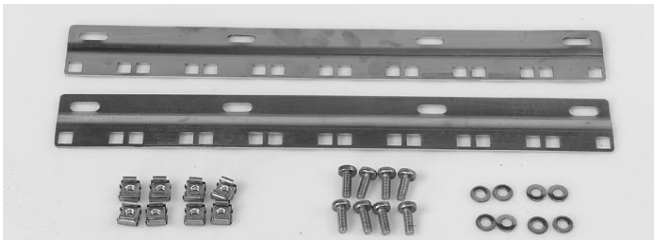
Splicing shelf: shelf with premounted splicing tray, protective cover, flex tube, mounting brackets 19" and ETSI, nuts and washers.

3.1.4 Grounding kit

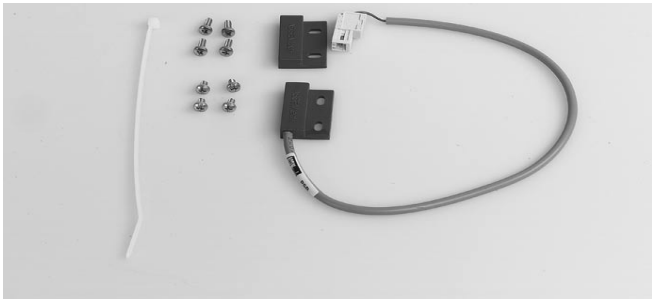
Grounding kit: cables with clamps and clamp for external grounding.

3.1.5 Bolt anchors

3.1.6 19" adaptation brackets for equipment



3.1.7 Door switch

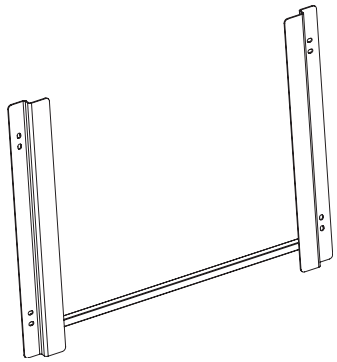


Specifications:
- contact normally closed
- contact resistance: 150mO max
- switching voltage AC175V max
- switching current 0.5mA max
- switching distance: 5mm
- detector mechanical dimension 30 x 20 x 7mm
- magnet mechanical dimension 30 x 20 x 7mm

3.1.8 Thermostat

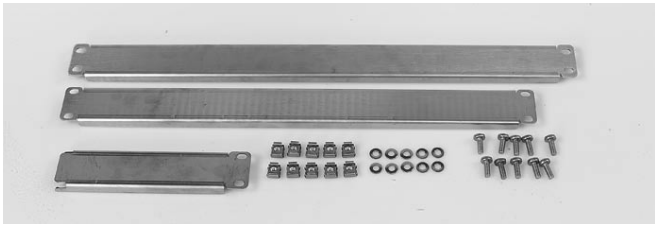
Used to operate the heat exchanger ventilators.
Refer to the documentation of the sensor for more details.

3.1.9 Side mounting frame



Weight approximately 5kg.

3.2 Optional components

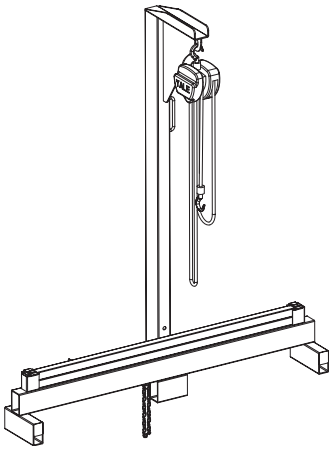


3.2.1 SURE-8D-01-BP. Equipment rack blind plates.

3.2.2 SURE-8D-01-TS. Temperature sensor
Specifications:
- contact normally open
- switching voltage: DC48V max
- switching current: 100 mA max
- temperature setting: 60°C
- mechanical dimension: 44 x 12.5 x 6.4 mm

Refer to the documentation of the sensor for more details.

3.2.3 SURE-8D-01-MS. Moisture sensor
Refer to the documentation of the sensor for more details.



3.2.4 SURE-8D-01-LIFT
Lift (see drawing) , 1 short chain (for internal frame), 2 long chains (for closure).
Weight approximately 30kg.
Note: the lift is designed to lift the SURE. Don't use for other purposes.

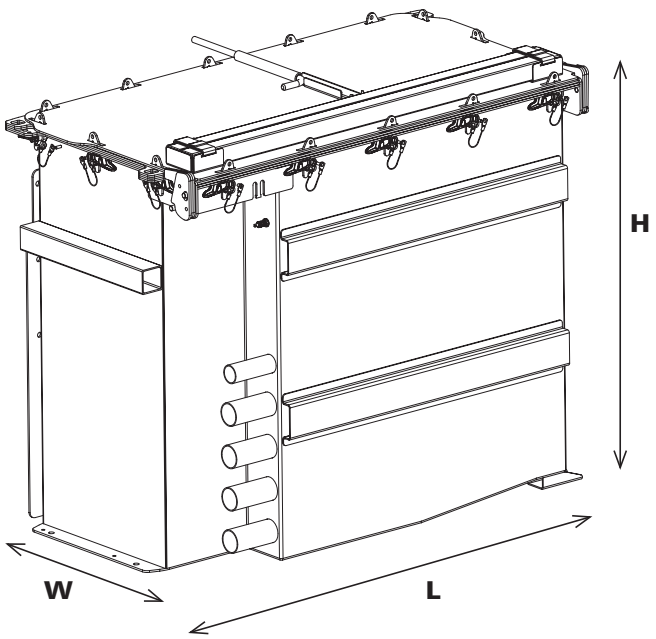
3.2.5 SURE-8D-01-OSEAL. Replacement O-ring seal.

3.2.6 SURE-8D-01-LSEAL. Replacement kit copper termination (1 cable).

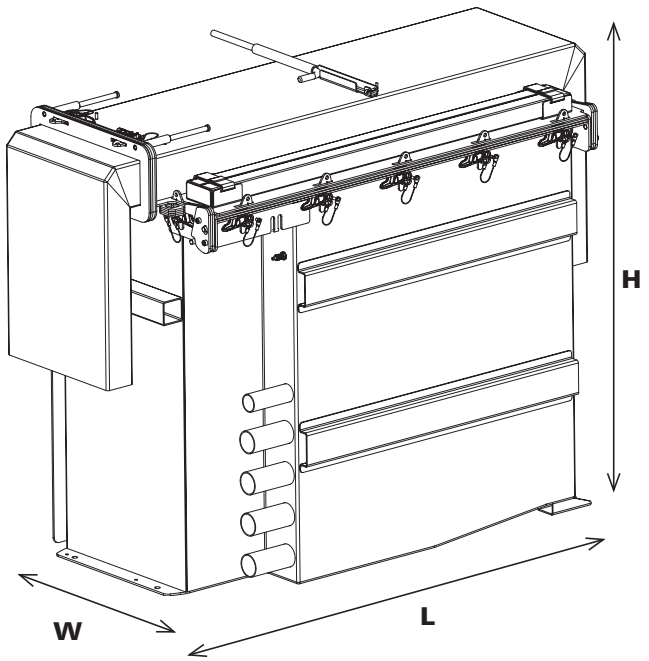
3.2.7 SURE-8D-01-SSEAL. Replacement kit fiber termination (1 cable).

3.2.8 FISTV-E7100-S5027. 10 Bags (100g) of silicagel (drying agent).

4 Product dimensions



4.1 Closure without heat exchanger: 852 x 437 x 706mm (LxWxH). Weight approximately 73kg.

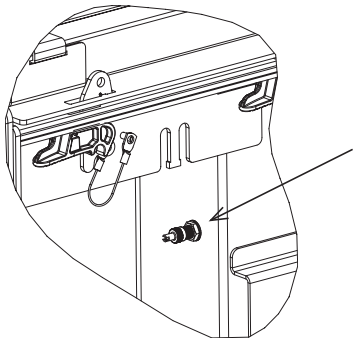


4.2 Closure with heat exchanger: 1010 x 437 x 780mm (LxWxH) weight approximately 90kg.

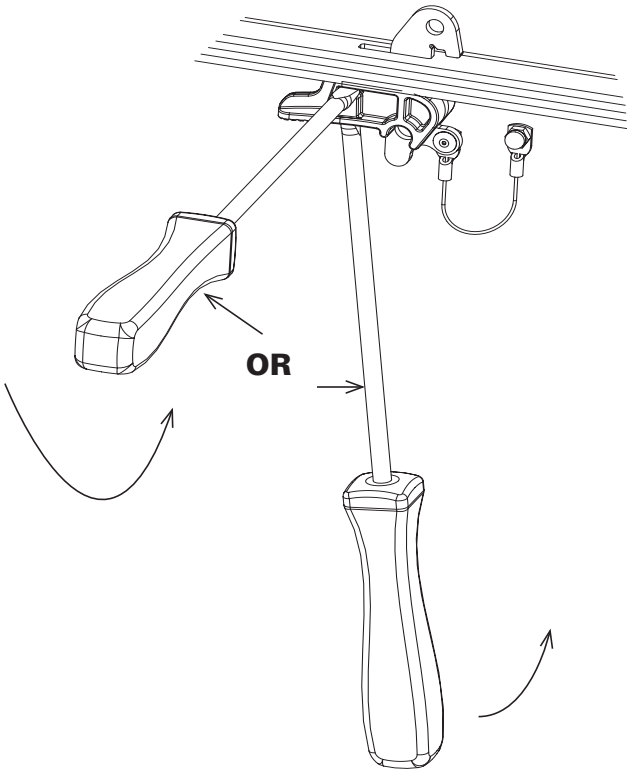
5 Opening the closure

The installation steps to open or close the closure are shown, regardless if this is the initial installation or a re-entry.

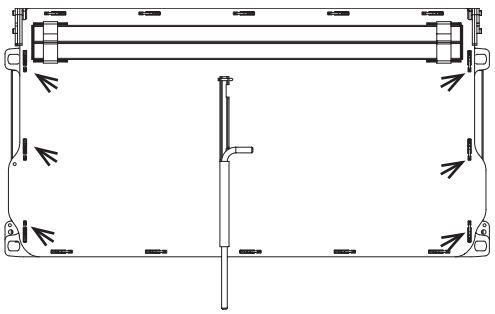
5.1 In case of initial installation: make sure the closure remains fixed to the pallet to ensure stability when opening the cover.



5.2 Remove pressure from the closure through the valve. Protect the valve with the protective cap after use.

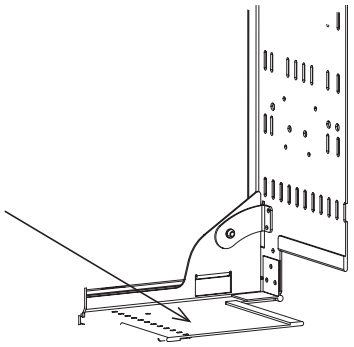


5.3 Open and remove all the latches, if needed use a flat screwdriver (5mm). The screwdriver can be used in 2 different ways.

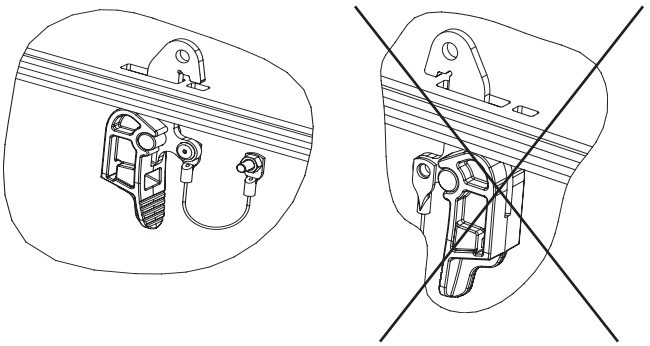


5.4 Start by opening the latches at the SHORT sides.

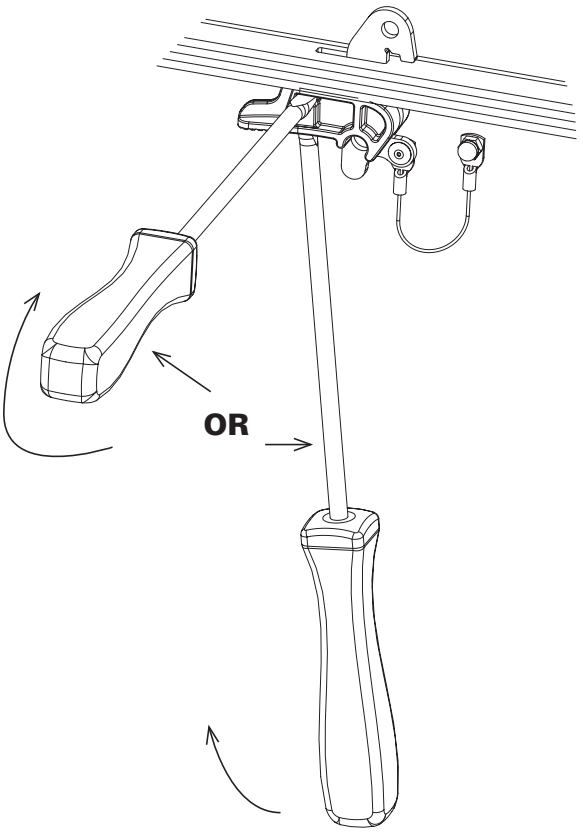
6 Closing the closure



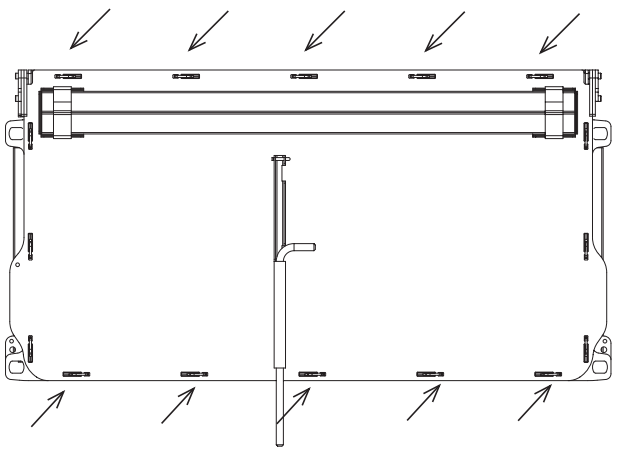
6.1 Place the silicagel at the bottom of the copper termination frame (replace after each re-entry!). Clean the sealing cavity and the seal.



6.2 Insert all the latches first; note the correct orientation. A bad installation can damage the latch.



6.3 Close all the latches, by using a flat screwdriver (5mm) if needed. The screwdriver can be used in 2 different ways.



6.4 Start by closing the latches at the LONG sides.

7 Initial installation SURE

The closure can be secured in 2 ways:

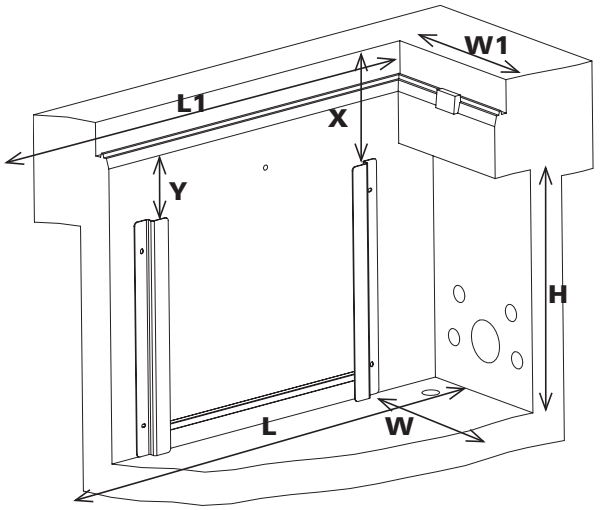
- wall mounting using the side mounting frame; the optional lift system can be used;
- floor mounting.

In case of floor mounting, all the references to the lifting system in the following installation steps are not applicable.

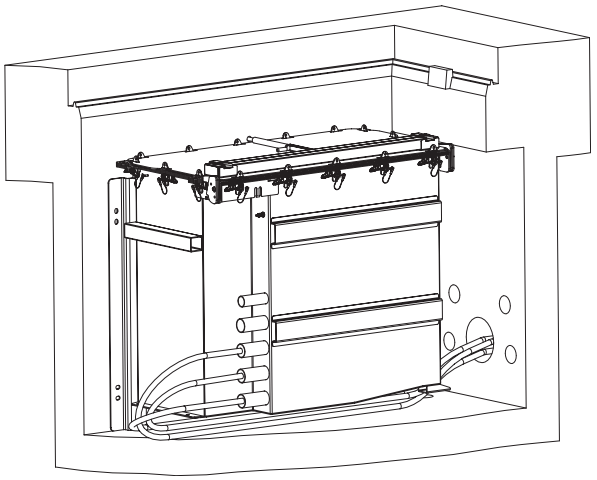
Wall mounting is only possible if all dimensions mentioned on the drawing are respected.
It is recommended to test the wall mounting installation before terminating or fixing any cables.

7.1 Fixing the closure (wall mounting)

7.1.1 If needed use the template (scale 1/1) to define the exact position of the side mounting frame.



7.1.2
- minimum dimensions handhole: 1350 x 450 x 840mm (L x W x H)
- minimum dimensions top opening: 1060 x 450mm (L1 x W1)
- distance from top of mounting frame to street level: max.350 mm (X). (important to be able to use the wall mounting frame)
- distance from top of mounting frame to bottom of manhole cover: min.200 mm (Y) (important to be able to close the manhole).



7.1.3 Cables should preferably exit the handhole at the opposite side of the cable ports.

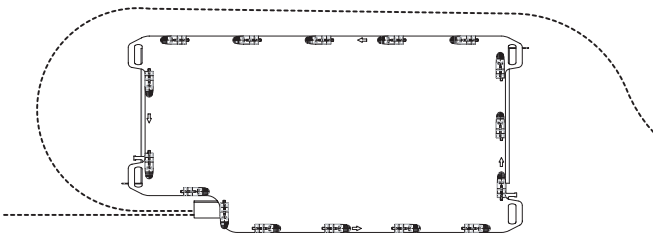
7.1.4 Drill all the holes using the template as guide.

7.1.5 Drill the hole for the safety pin (Ø15mm/ 100mm deep). The template shows 2 positions: with or without heat exchanger.

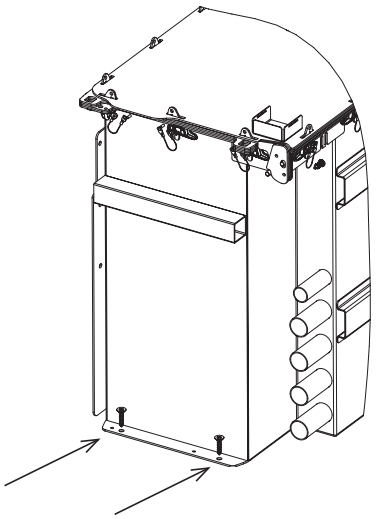
7.1.6 Mount the frame to the wall of the handhole, secure by using 4 bolt anchors.

7.2 Fixing the closure (floor mounting)

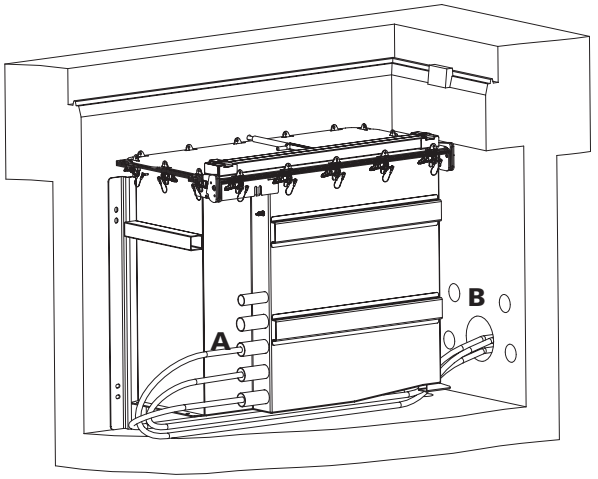
7.2.1 If needed use the template (scale 1/1) to define the exact position.



7.2.2 Keep a distance of minimum 500mm from all walls to allow full access to the closure e.g. replacement of the cover, equipment,... 2 different ways of cable routing are shown on the drawing.



7.2.3 Mount the closure to the concrete floor of the handhole using 4 bolt anchors.



7.3.4 Make sure to have sufficient cable length (between A and B) to lift the closure completely out of the handhole and position it at street level.

7.3 Termination of copper cable

7.3.1 It is recommended to terminate the copper cable before the fiber cable to have better access.

7.3.2 Remove the internal frame completely in order to have better access.

7.3.3 Open the cable port, remove only the top part of the cap. Start with the bottom port.

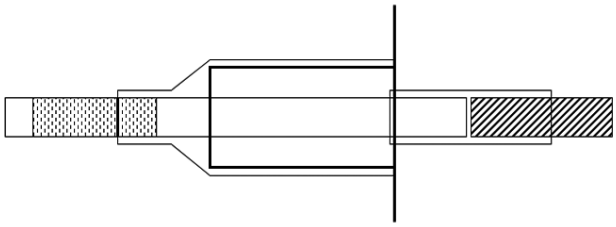
7.3.5 Clean and strip the cable (2m). Mark (*) at 980mm from the jacket end.

7.3.6 Apply the protective tubing over the copper pairs up to the mark.

7.3.7 Clean the cable sheath and shrink the sleeve over the transition cable-protective tubing.

7.3.8 Example of cable with shielding.

7.3.9 Remove any dirt, mud or other contaminants from the cable sheath for 2m. Slide the heat shrinkable sleeve over the cable and insert the cable in the port. Note the correct orientation of the sleeve. The printed arrow on the sleeve should point towards the closure so that the uncoated zone of the sleeve is at the closure side.



7.3.10 Position of the cable in the port.

7.3.11 Clean the cable and the port using the cleaning tissue.

7.3.12 Abrade the cable and the port circumferentially with the abrasive strip.

7.3.13 Mark the sleeve length onto the cable.

7.3.14 Match the blue line of the aluminum cable protection foil with the mark on the cable. Wrap the aluminum cable protection foil around the cable.

7.3.15 Shrink the sleeve using a heat gun. Start shrinking at the port side. Apply heat until all the green paint is converted to black.

7.3.16 Do not move the cable until the sleeve is cool to the touch.

7.3.17 Apply foam at the other end of the protective tubing. The length of the installed protective sleeve should be 980mm.

7.3.18 Fix to the copper termination plate using tie-wraps.

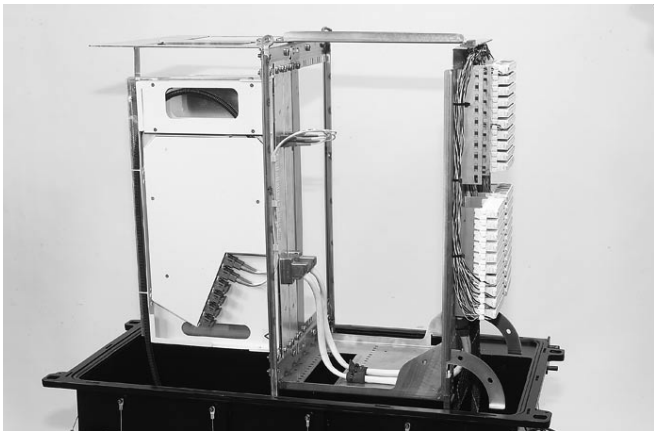
7.3.19 Example of installed cables.

7.3.20 If applicable: connect the cable shielding to the central grounding point inside the closure.

7.3.21 Different copper connect modules can be mounted: UCS 8pr, UCS 10 pr, C5C, QDF.

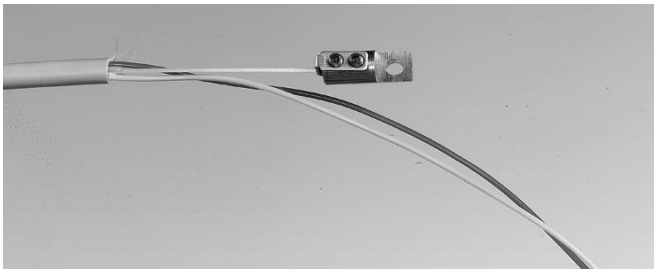
7.3.22 Several layouts can be used, at both sides of the copper termination plate. The outer side of the plate is preferred to be used first.

7.3.23 Make the connections on the termination blocks.



7.3.24 Terminate the cables connected to the DSLAM. Fix to the bottom of the frame using foam and tiewraps. If needed leave some cable slack to enable easy connection-reconfiguration.

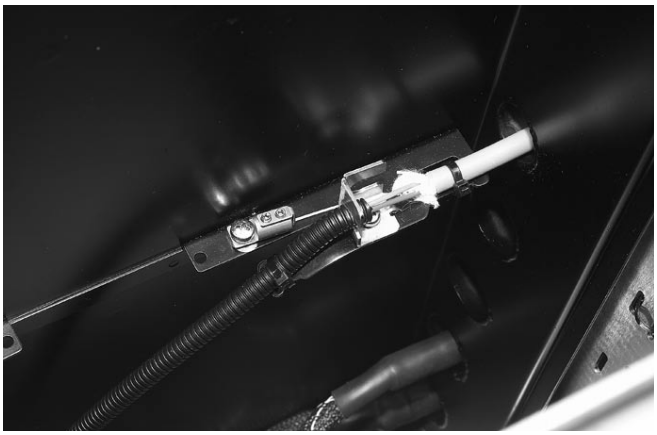
7.4 Termination of fiber cable



7.4.1 Strip the cable jacket to 3m, cut the strength member to 75mm and secure the strength member.

7.4.2 Slide the heatshrinkable sleeve over the cable and insert the cable in the closure. Note the correct orientation of the sleeve. The printed arrow on the sleeve should point towards the closure so that the uncoated zone of the sleeve is at the closure side.

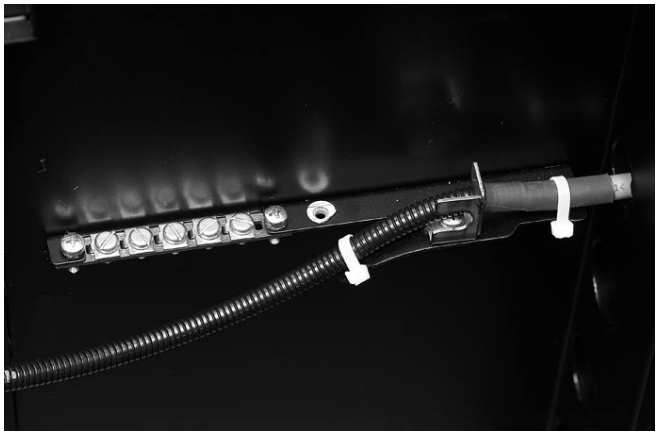
7.4.3 Cut the flexible tubing to a length of 1550mm.



7.4.4 Feed the loose tube trough the flex tube and terminate the cable as shown. Use tiewraps to fix the flex tube and the cable jacket.

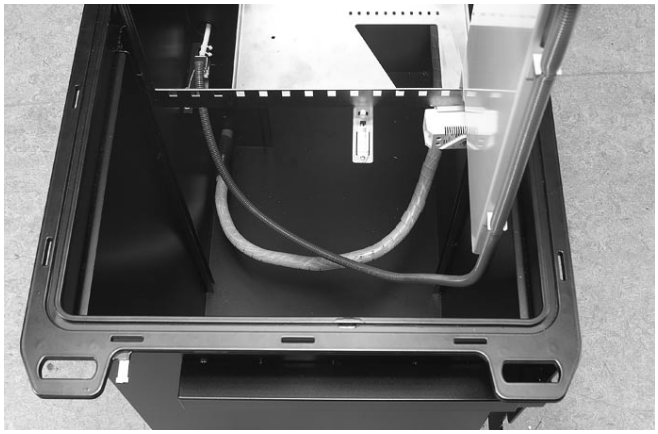
7.4.5 Prepare the cable jacket and shrink the sleeve as described in the “termination copper cable” section.

7.4.6 Do not move the cable until the seal is cool to the touch.



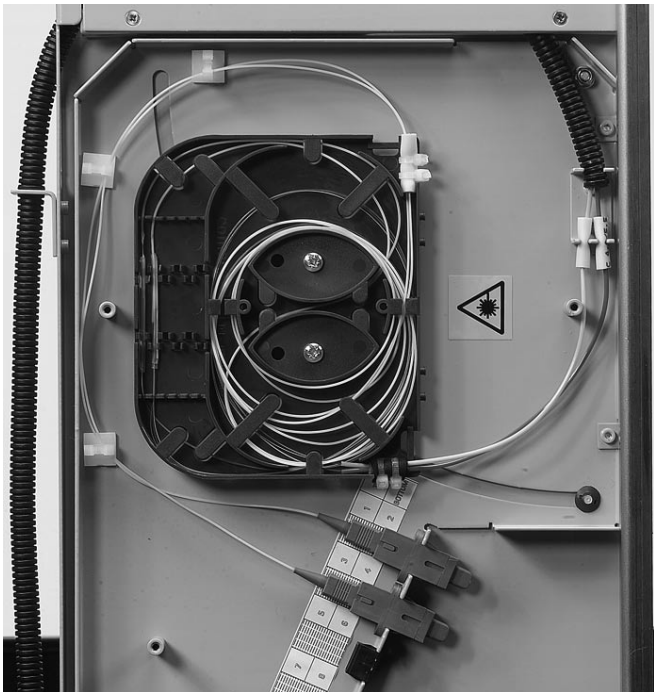
7.4.7 In case the strength member is not terminated: shrink the transition tubing over the cable and the flex tube.

7.4.8 If applicable: connect the cable shielding to the central grounding point.



7.4.9 Routing of the flex tube.

7.4.10 Clamp the flex tube in the fiber termination shelf.



7.4.11 Terminate and splice the fibers as shown.

7.4.12 Feed the pigtails once through the middle section of the tray to change the direction from clockwise to anti-clockwise.

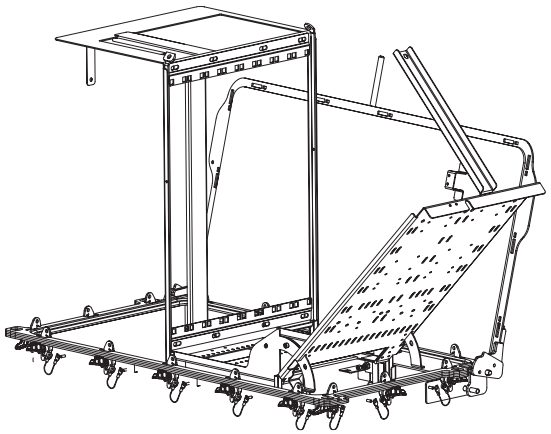
7.4.13 Make sure all fibers respect 30mm bend-radius.

7.4.14 Position all fibers under the containment lips.

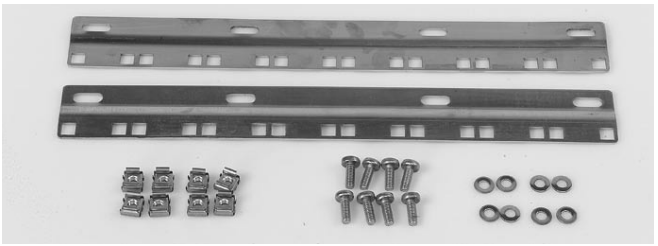
7.4.15 Close the shelf with the protective cover.

7.5 Installation electronic equipment

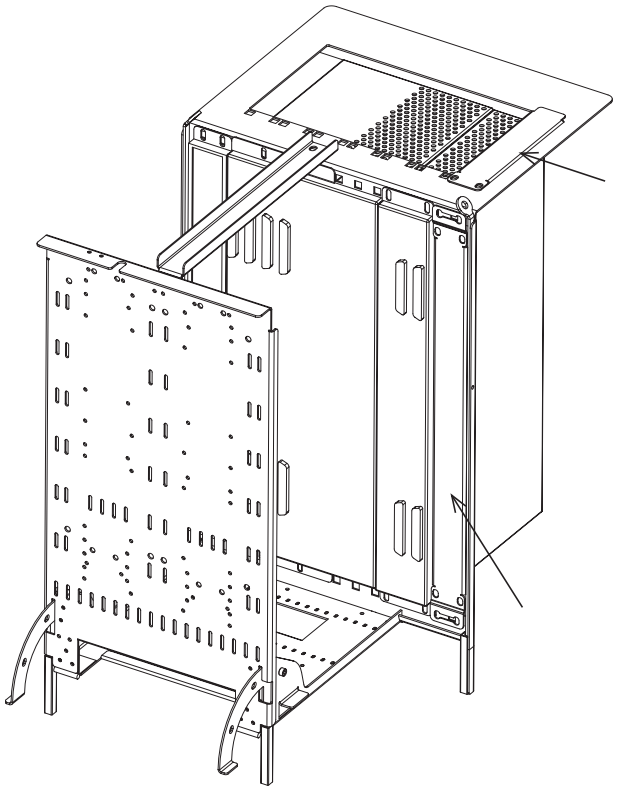
8x19″ rack units are available (=14ETSI rack units). The fiber splicing shelve is using 1/2 19″ unit (=1 ETSI rack unit).



7.5.1 Lift the internal frame to “position 2” (see lifting section) and if needed, hinge the copper termination frame to have better access. Standard ETSI equipment can be mounted.



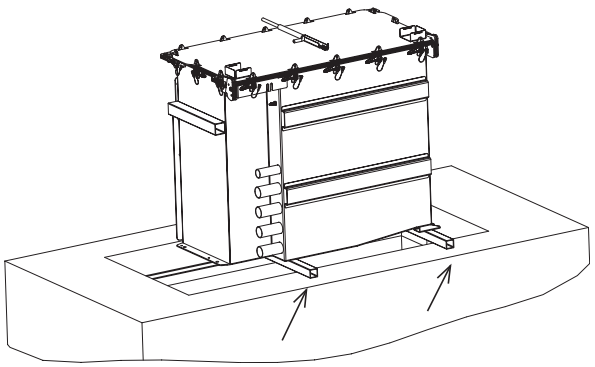
7.5.2 Use the adaptation brackets for 19″ equipment if needed.



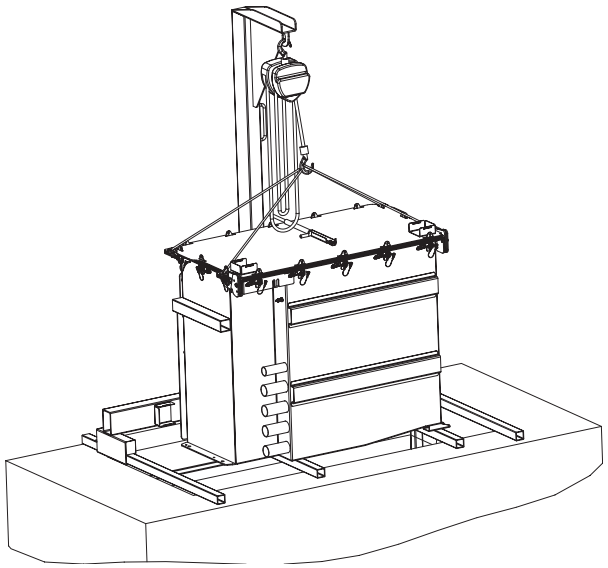
7.5.3 Install the blind plates in **all** the unused positions to ensure proper heat management and stability of the equipment frame.

7.6 Lowering the closure

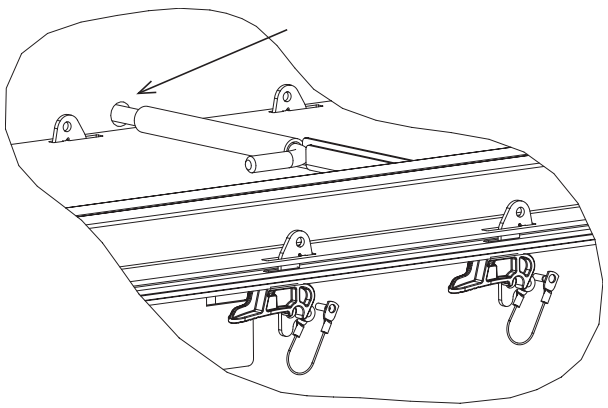
Procedure only applicable in case of wall mounting.
Refer to the lifting section for more details.



7.6.1 Position the closure above the handhole, supported by the 2 closure support bars (part of the closure kit).



7.6.2 Mount the lifting system. Remove the closure support bars and carefully lower the closure. Slide the closure in the side mounting frame. Make sure no cables are squeezed between the closure and the wall/floor/side mounting frame.

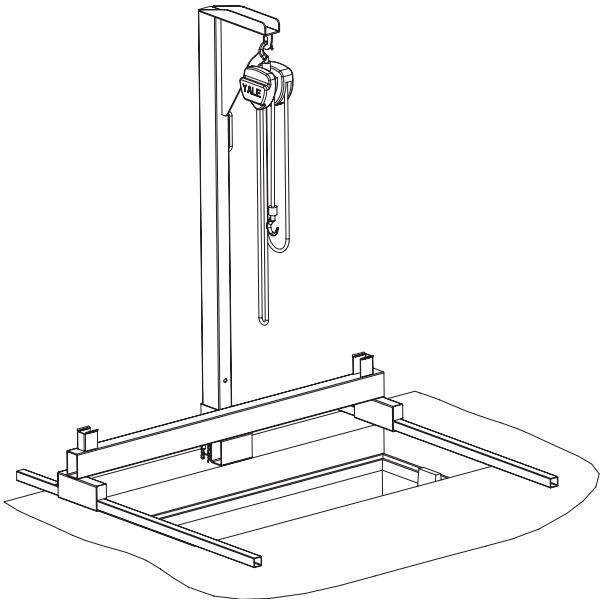


7.6.3 Make sure to lock the closure using the safety pin.

8 Lifting

The procedure describes different steps when using the SURE lifting system.
Always check the state of cables, chains and lift before use.
Note: the lift is designed to lift the SURE. Don't use for other purposes.

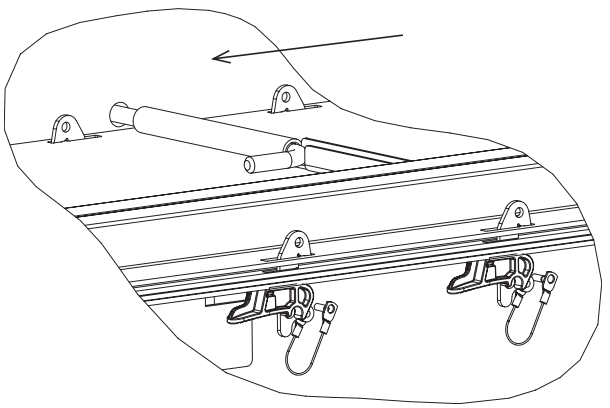
8.1 Preparation



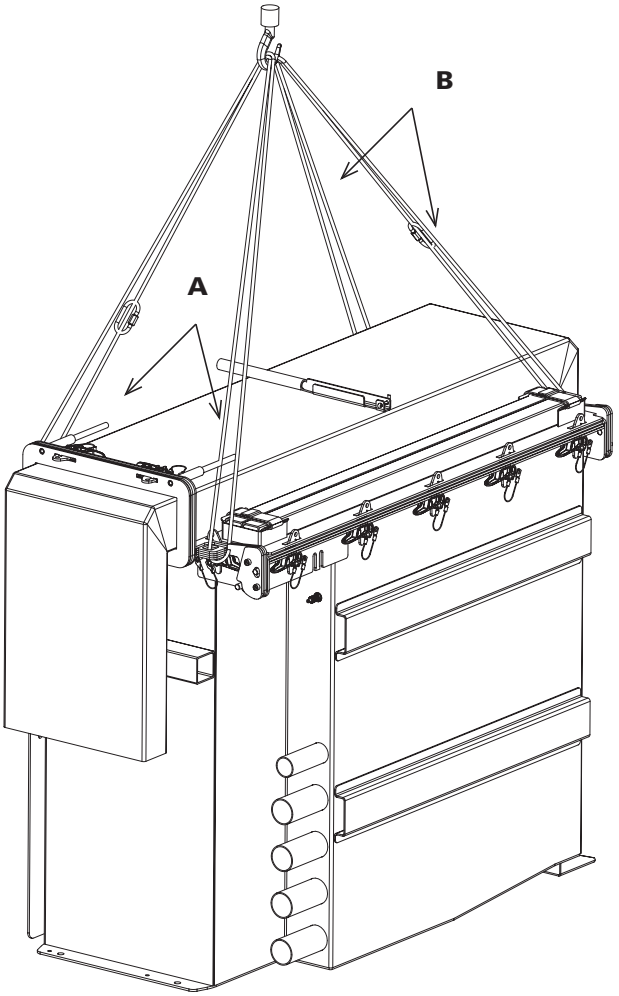
8.1.1 Assemble the lift as shown. Position it above the handhole. Position should be aligned with any of the long sides of the handhole.

8.2 Lifting the closure

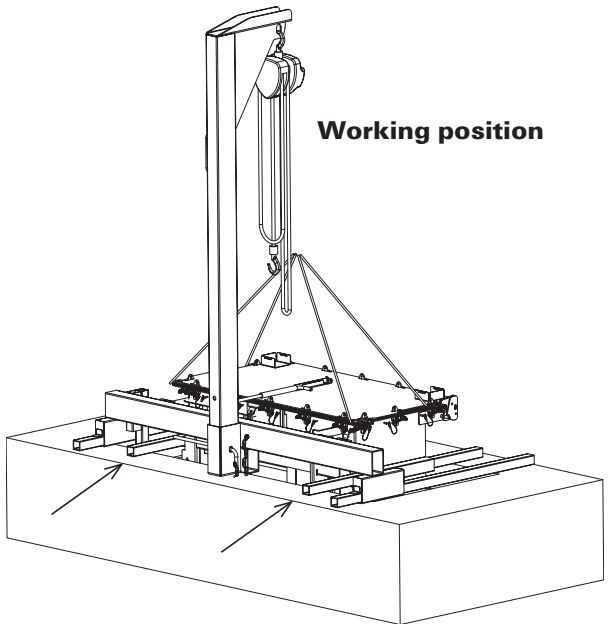
8.2.1 Remove water from the handhole before unlocking the safety pin!



8.2.2 Unlock the safety pin.



8.2.3 Attach the 2 chains (A + B) to the 4 hoisting points. Respect the correct routing of the chains.

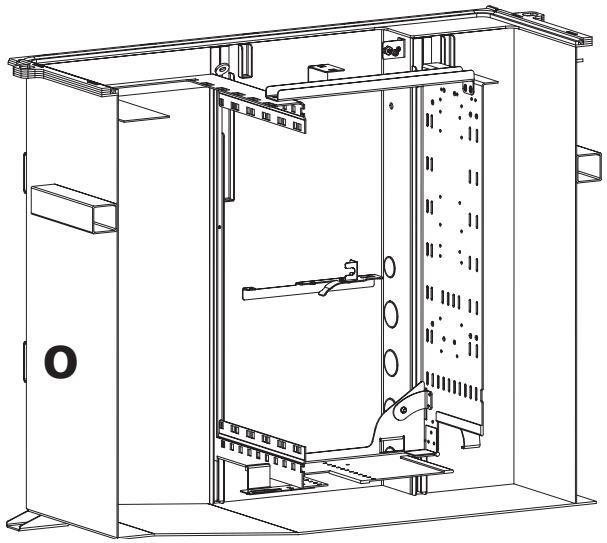


8.2.4 Lift the closure and if needed secure in the 'working' position by sliding the closure support bars beside the closure.

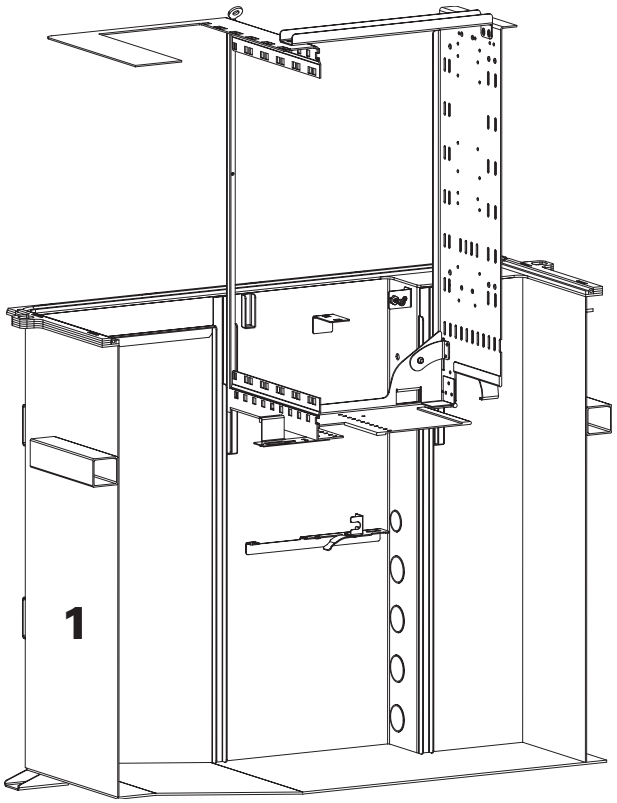
8.2.5 For better access, one can remove the top part of the lift.

8.3 Lifting the internal frame

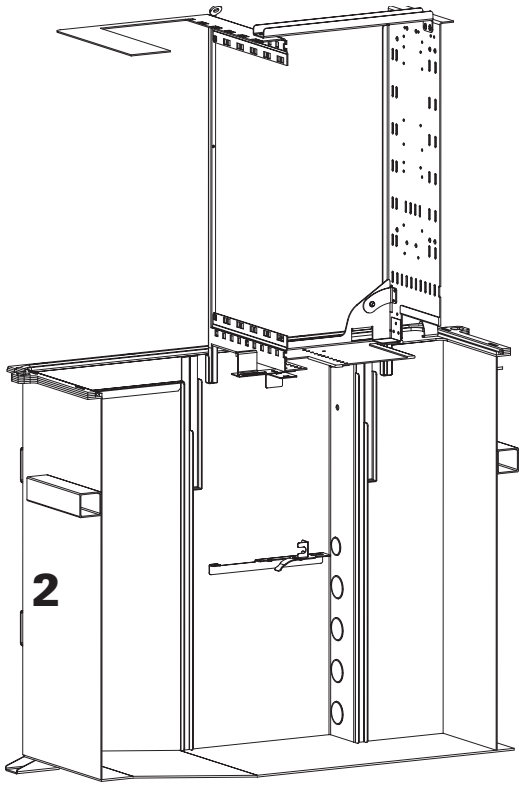
8.3.1 3 positions are possible for the internal frame.



a) **Position 0**: installed position.

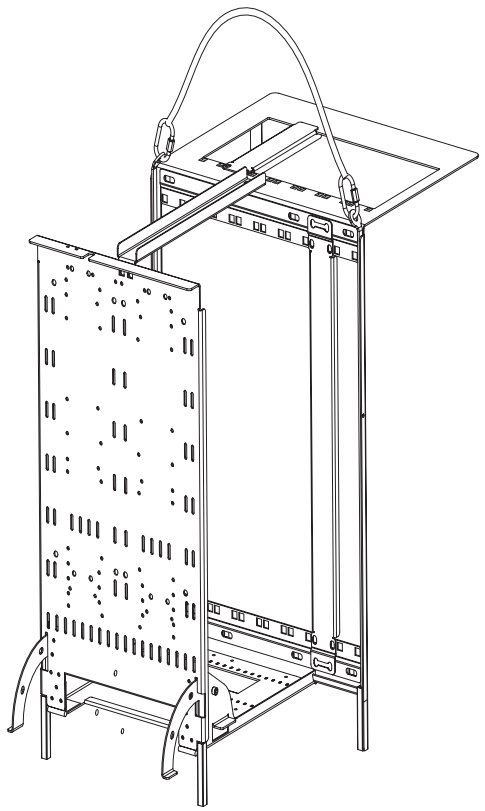


b) **Position 1**: check position.

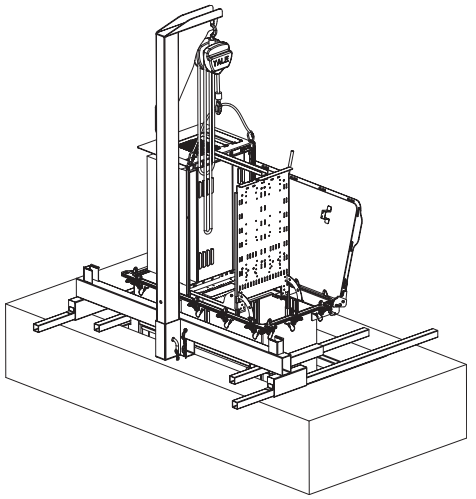


c) **Position 2**: equipment can be removed, the copper termination plate can be hinged.

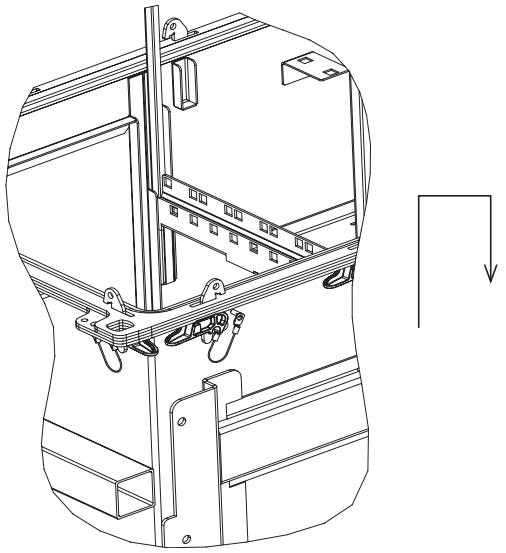
8.3. If heavy electronic equipment is installed it might be necessary to use the lifting system. In that case support the SURE on the "working" position inside the handhole (see section 8.2.4).



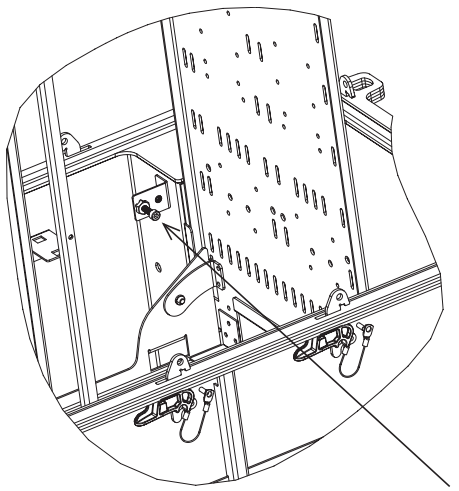
8.3.3 Attach the short chain to the hoisting points on the internal frame.



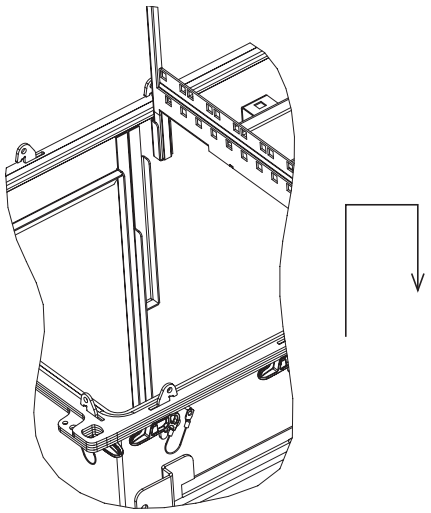
8.3.4 Carefully lift the frame.



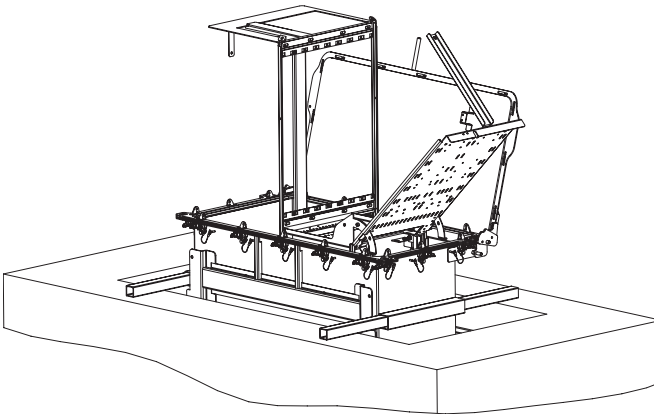
8.3.5 Slide to the right (+/- 10 mm) and lower to secure in "position 1".



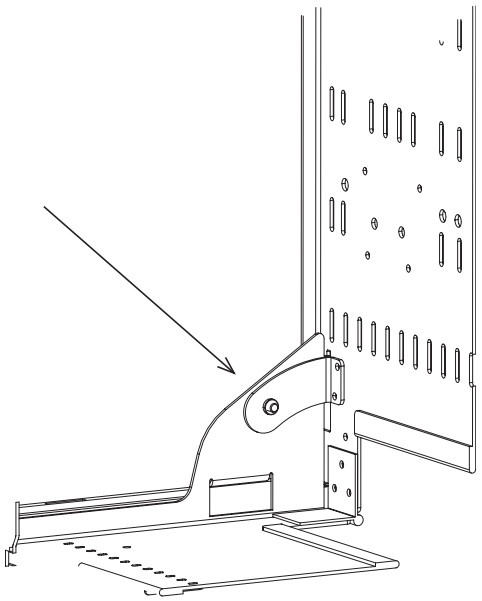
8.3.6 To change to "position 2": first remove the security screw to be able to lift the frame.



8.3.7 Slide the frame more up and to the right and lock in “position 2”.



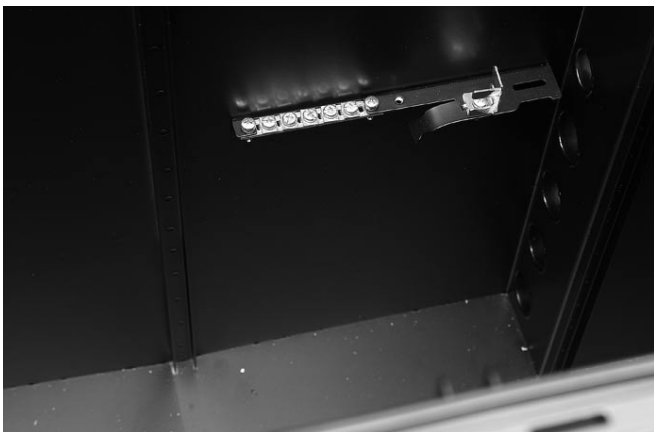
8.3.8 In “position 2” the copper termination plate can be hinged. First remove the 2 screws on the handle.



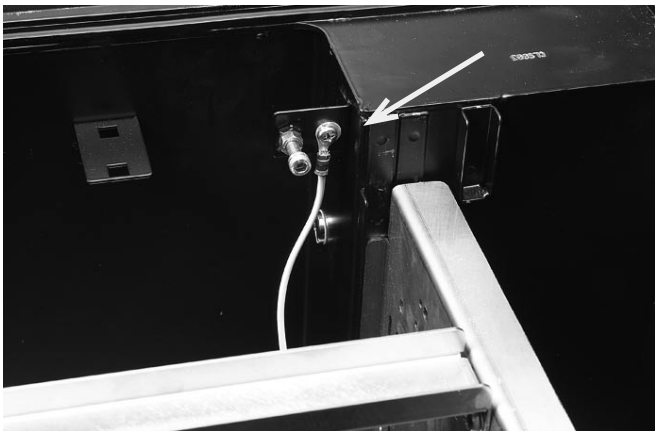
8.3.9 Remove the 2 screws to be able to hinge the plate.

8.3.10 Mount the security screw after installation.

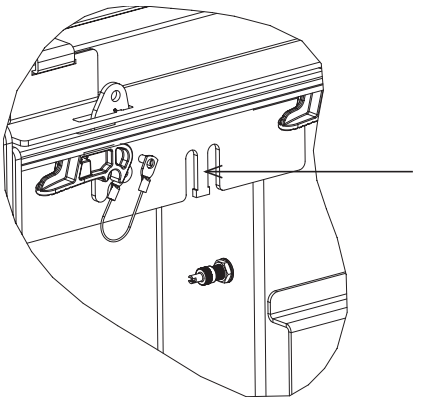
9 Grounding



9.1 Connect all electronic equipment to the central grounding bar or to the internal frame. Use any of the available holes on the copper termination plate.

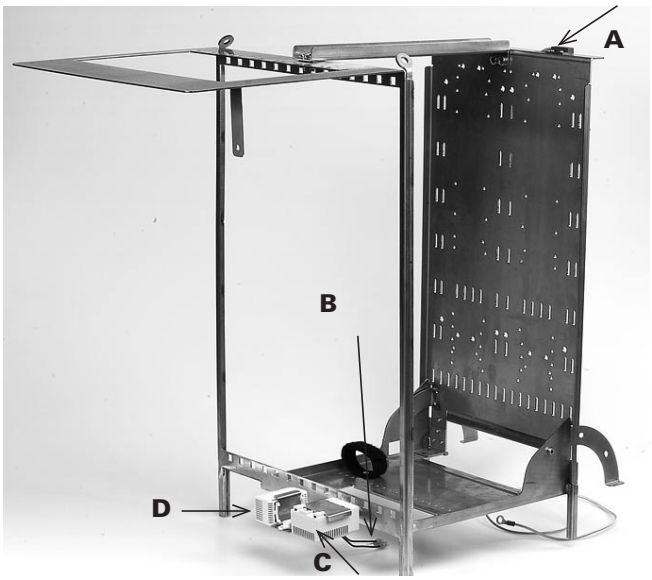


9.2 Connect the internal frame with the closure using the grounding cable (pre-installed).



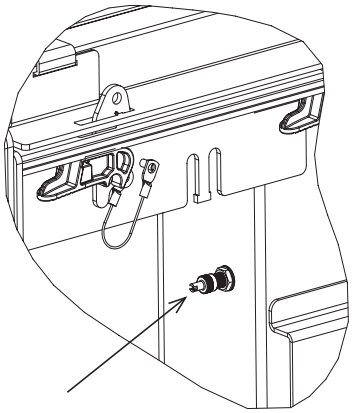
9.3 Connect the external grounding cable to the closure before connecting/activating any electric equipment.

10 Sensors



10.1 Connect the different sensors with the equipment. Door sensor (A), temperature sensor (B), moisture sensor (C), thermostat (D).

11 Testing



11.1 Apply test pressure to the closure by using the pressure valve. Maximum 20 kPa - 3PSI - 200mBar.

11.2 Wait until the pressure is stable. Use leak detection fluid and wait for 10 minutes.

11.3 Release the pressure after testing !!

11.4 Protect the valve with the protective cap.

12 Re-entry

12.1 Remove water from the handhole.

12.2 Unlock the safety pin (only applicable in case of wall mounting).

12.3 Clean the upper surface of the closure, remove water and dust.

12.4 Lift the closure.

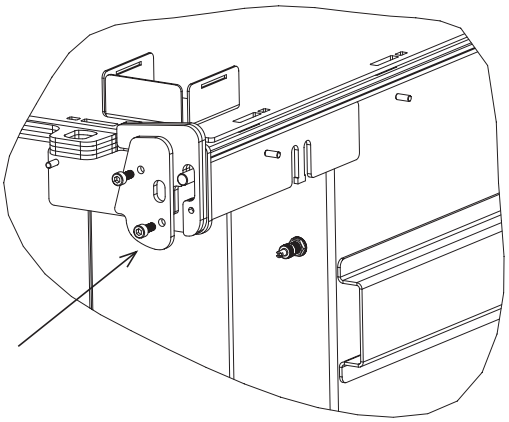
12.5 Follow other installation steps as decribed in section 'opening' and 'closing'.

12.6 Lower the closure.

12.7 Make sure to lock the closure using the safety pin (only applicable in case of wall mounting).

13 Maintenance

13.1 Change standard cover to heat exchanger cover.



13.1.1 Remove the plate at the side of the hinge (both sides) and remove the cover.

13.1.2 Install the new cover. If needed replace the rubber seal.

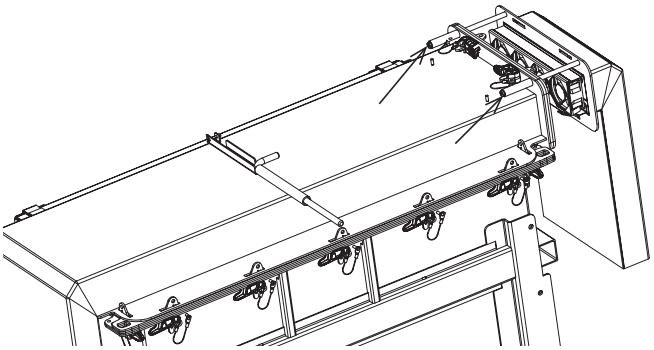
13.1.3 Do a pressure test.

13.2 Replacing ventilator cassette

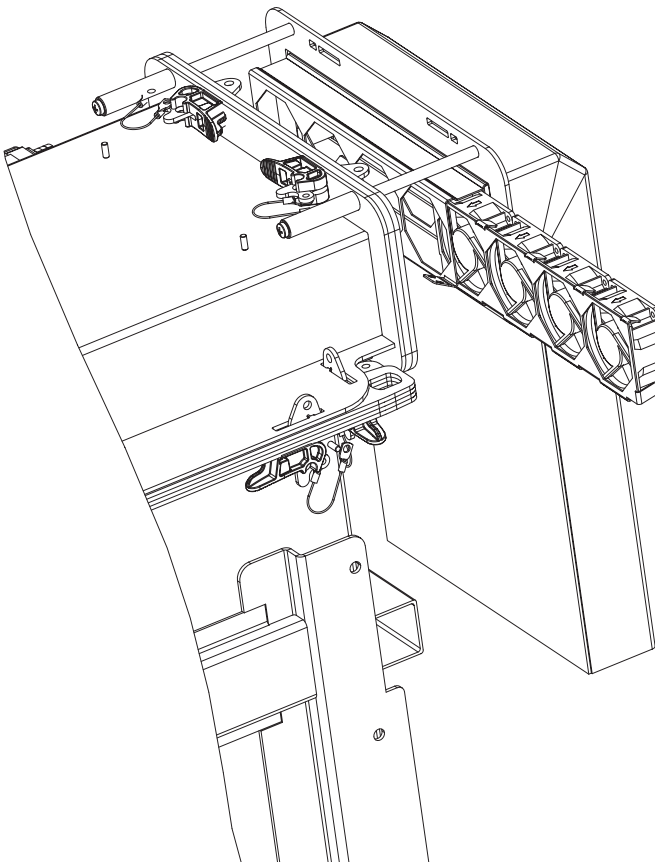
3.2.1 A heat exchanger cover has one internal and one external ventilator. Shown installation steps are also valid for the internal ventilator.

13.2.2 Open the closure cover to have better access to the latches.

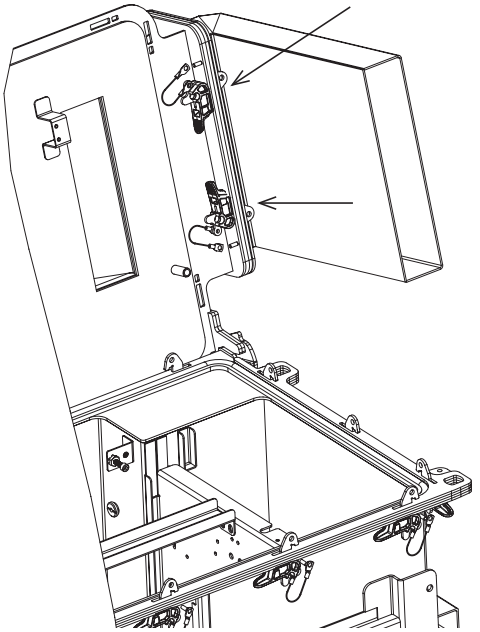
13.2.3 Disconnect the power supply to the ventilators.



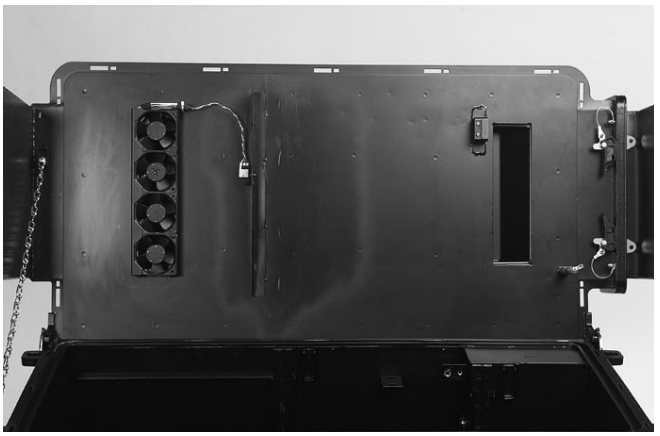
13.2.4 Open the 4 latches of the removable duct and slide it open until it butts. If needed the screws can be removed to take away the duct completely.



13.2.5 Disconnect the cables. Undo the tie wraps. Slide out the cassette and replace. Respect the correct orientation of the ventilators. Connect the cables again and secure by using a tiewrap.



13.2.6 Make sure all 4 latches of the removable duct of the heatexchanger are closed. Replacement of the internal ventilator cassette is similar.



13.2.7 Connect the cables to the ventilator cassettes.
Wiring: red=+ blue=- white=tacho
Nominal voltage: 48V DC
Voltage range: 36-56V DC
Power consumption: 3,4 x 4 = 13,6 W
Refer to the ventilator datasheet for more details.

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