

# RackChiller Rear Door

## User's Manual



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**21130-800 - 21130-811**

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# 1 Safety Instructions

## 1.1 Intended Use

The rear door coolers (RackChiller) described in this manual are intended for mounting to the back side of a server cabinet. The cabinet with RackChiller represents a closed system and allows the cooling of the electronic components installed in the 19 " plane independently of the ambient or room temperature. To commission the cooling system, the RackChiller must be connected to an external recirculation cooling system (chiller).


## 1.2 Safety instructions of the manufacturer


### 1.2.1 Disclaimer


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## 1.3 Safety symbols used in this manual

	<p><b>Hazardous voltage!</b></p> <p><i>This symbol warns of hazardous voltage. Before commencing work on live sections of the equipment you should familiarise yourself with the dangers of high voltages and with the normal accident-prevention procedures.</i></p>
---	---

	<p><b>Attention!</b></p> <p><i>This symbol warns of danger. It indicates that you are in a situation that could be injurious to health. Before commencing work you should familiarise yourself with the normal accident-prevention procedures.</i></p>
---	--

	<p><b>Danger of tipping over!</b></p> <p><i>The asymmetrical positioning of the RackChiller poses a risk of the cabinet tipping over.</i></p>
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## 1.4 Safety Information for the Operator

Commissioning, maintenance and operation may only be carried out by suitably trained specialist personnel. The national regulations for occupational safety must be observed.

## 2 Device description

### 2.1 Overview passive RackChiller

The Schroff Rear Door Cooler (RackChiller) is an air-to-water heat exchanger that can be mounted in place of the rear door of a server cabinet. The passive RackChiller consists of a mounting frame and a perforated door with integrated heat exchanger. The overall depth is approx. 225 mm.



- |   |                                   |    |  |    |                                   |
|---|-----------------------------------|----|--|----|-----------------------------------|
| 1 | Mounting frame                    | 6  | Water drain                                | 11 | Upper temperature sensor cold air |
| 2 | RackChiller Controller (optional) | 7  | Cover water connections                    | 12 | Display (optional)                |
| 3 | Upper temperature sensor warm air | 8  | Hose kit (optional)                        | 13 | Lower temperature sensor cold air |
| 4 | Heat exchanger                    | 9  | Lower temperature sensor warm air          | 14 | Levelling feet                    |
| 5 | Water inlet                       | 10 | Electromechanical control valve (optional) | 15 | Vent valve                        |

## 2.2 Overview active RackChiller.

The active RackChiller consists of a mounting frame and a perforated door with 4 fans and an integrated heat exchanger. The overall depth is approx. 335 mm.



- |   |                                   |    |                                   |    |  |
|---|-----------------------------------|----|-----------------------------------|----|--|
| 1 | Differential pressure sensor      | 7  | Lower temperature sensor warm air | 13 | Fan 4                                      |
| 2 | RackChiller Controller            | 8  | Mounting frame                    | 14 | Display (optional)                         |
| 3 | Heat exchanger                    | 9  | Levelling feet                    | 15 | Vent valve                                 |
| 4 | Upper temperature sensor warm air | 10 | Fan 1                             | 16 | Electromechanical control valve (optional) |
| 5 | Water inlet                       | 11 | Fan 2                             | 17 | Hose kit (optional)                        |
| 6 | Water drain                       | 12 | Fan 3                             | 18 | Server Rack                                |

## 2.3 Functional Description

The warm exhaust air from the servers mounted in the 19" level is forced by the server fans through the air / heat exchanger. In the air / water heat exchanger, the heat energy of the warm air is transferred to the medium of water.

The air/water heat exchanger is connected to an external reciprocal chiller unit (not supplied with the RackChiller), where the water is cooled down again.

The cooling capacity of the RackChiller is determined by the water inlet temperature and the cooling water flow.

With an ideal configuration, the exhaust air from the server is cooled down to room temperature, so that the server cabinet does not give off heat to the environment.

The control of the cooling capacity either takes place on-site via the variation of the volume flow or via an optional RackChiller controller and electro-mechanical control valve.

### 2.3.1 RackChiller Active

The RackChiller Active has the same functionality as the passive RackChiller, but is additionally equipped with 4 AC fans (200 -240 V supply voltage) integrated in the rear door.

The fans support the server's own fans to build up the necessary pressure and air flow to achieve an optimal cooling performance.

The fans are controlled via Modbus by the RackChiller Controller and can be operated either with a constant speed (20% - 100%) or with differential pressure control.



*The fan speed control is an independent control loop and does not interfere with the volume flow control of the water circuit.*



## 2.4 Scope of Delivery

The RackChiller passive consists of a mounting frame and a door with integrated heat exchanger. 2 temperature sensors in front of and behind the heat exchanger for inlet and outlet temperature are already integrated as standard.

The active version comes with 4 additional AC fans mounted on the rear door.

To match with different server rack dimensions, the RackChiller is available in the following dimensions:

Order No. (passive)	Order No. (active)	Height (mm)	Width (mm)
21130-800	21130-806	2000	600
21130-801	21130-807	2000	800
21130-802	21130-808	2200	600
21130-803	21130-809	2200	800
21130-804	21130-810	2450	600
21130-805	21130-811	2450	800

For exact dimensions see the dimensional drawings in the appendix.

In addition, the following accessory sets are available:

Order No.	Description
23130-593	Water hose connection kit 2.4 m
23130-607	Control valve with electromechanical drive
23130-594	Controller for passive RackChiller
23130-621	Display black for active RackChiller
23130-599	Display black for passive RackChiller
23130-608	Kit with flow, pressure and temperature sensors

### 3 Storage and Transport

The RackChiller is delivered in a wooden crate. Check the RackChiller after unpacking for transport damage or other damage.



*The RackChiller is free of water leftovers at the time of delivery, special measures at low temperatures are therefore not necessary with factory-new RackChiller.*



**Attention!**

*Storage or transport at ambient temperatures below 0 °C for units that were previously in service require special measures to prevent frost damage.*





**Attention!**

*Risk of condensation forming.*

*After storage at temperatures below 10 °C, sufficient acclimatisation time must be allowed before the unit is switched on.*

## 4 RackChiller Assembly

### 4.1 Mounting on the server cabinet

	<p><b>Attention!</b></p> <p><i>Assembly, commissioning, completion, maintenance and repair may only be carried out by suitably trained specialist personnel.</i></p> <p><i>The national regulations for occupational safety must be observed.</i></p>
	<p><b>Danger of tipping over!</b></p> <p><i>The door with the RackChiller can only be mounted on the server cabinet when it is fully assembled and / or securely anchored to the floor. Otherwise, the server cabinet can tip over when the RackChiller is open.</i></p>

The RackChiller must be installed on a server cabinet instead of the rear door.

Detailed installation instructions can be found in the appendix to this operating Instructions and is included with the RackChiller.

- Doc.-No. 60130-995 for passive RackChiller
- Doc.-No. 60130-922 for active RackChiller

## 4.2 Connection to the cooling water supply



**Attention!**

*Connection to the cooling water supply may only be carried out by a refrigeration engineer or suitably trained plumber.*



**Attention!**

*Outflow of cooling water can cause damage.*

*It must be ensured that suitable structural measures (leak sensor, automatic shut-off valves) prevent damage to surrounding components in the event of a leak or defect. These measures depend on the installation location or the structural conditions and are the responsibility of the installer or system designer.*



Notes on the water connection:

*The cooling infrastructure to which the unit is connected (the external water loop) must be appropriately dimensioned by the system designer, taking into consideration the available pump pressure and type, the nominal pipe diameters and the pressure loss expected in the load circuit (the cooling module).*

*To avoid a pressure drop in the system, the water pipes should be kept as short as possible.*

*The water pipes to the RackChiller must be made in flexible design. The behavior of the materials used in the cooling module with the materials of the external water circuit must be observed in order to avoid corrosion damage!*

*When creating the on-site piping, contamination in the line system must be avoided, or the lines must be flushed before connecting the RackChiller.*


*Shut-off and drain valves on each cabinet as well as a central water filter and air separator are mandatory.*



**Attention!**

*The max. water pressure is 10 bar.*


### 4.3 Requirements for the water quality

	<p><b>Attention!</b></p> <p><i>If aluminum is used in the external water circuit, there is a risk of corrosion.</i></p> <p><i>To avoid electrochemical corrosion, the compatibility of the materials used in the Rack-Chiller with those of the external cooling circuit must be observed. The type and dosage of a suitable anticorrosive or antifreeze agent depends on the structural environment and the external recooling system and must be determined individually by the plant planner.</i></p>
---	--



*The following materials are used in the RackChiller and the external components such as control valve, etc:*

- Copper
- Brass
- Stainless Steel
- Cast Iron

	<p><b>Attention!</b></p> <p><i>To ensure trouble-free operation of the cooling module, the following water quality requirements must be met.</i></p> <p><i>(see also VDI 3803 / ASHRAE: Liquid cooling guidelines for datacom equipment centers, second edition).</i></p>
---	---

Electrical conductivity:	25 mS/m - 100 mS/m at 25 °C /77 °F
Hydrogen concentration:	7,5 - 8,5 (ph-value) at 20 °C /68 °F
Chloride:	< 50 mg/l / 50 ppm
Total hardness:	> 3 °dH < 8 °dH
Colony-forming units:	< 1000 CFU/ml
Appearance:	clear
Colour:	colourless

## 4.4 Water connection

The water connections are located on the side of the heat exchanger. The hose routing must be made through suitable flexible hoses through the bottom of the cabinet. In order to avoid condensation, the hoses must be insulated.

A corresponding connection kit with 2 insulated hoses with a length of 2.4 m is available ready-made as an accessory.

The bottom of the RackChiller mounting frame is designed as a condensate tray with a centrally arranged hose connection. Especially at low water inlet temperatures it is recommended to realize the condensate drain on site via the hose connection.

The required connection nominal widths and the position of the connections in the enclosure can be found in the drawings in the appendix to this manual.

Connect the water supply, water return and condensate drain according to the installation instructions 60130-984 in the appendix to this operating manual. Installation must be carried out by a qualified plumber.

Before commissioning, the device must be vented. The heat exchanger has an integrated vent valve with connection hose for this purpose. Commissioning must be carried out by a qualified service technician.



Hose kit 2.4 m (Accessory)



*The installation instructions in the appendix refer to the water connection kit available as an accessory consisting of 2 insulated flexible hoses of 2.4 m length and the corresponding seals.*

*If other connecting hoses are used, this may result in deviating work steps.*

## 4.5 Accessories

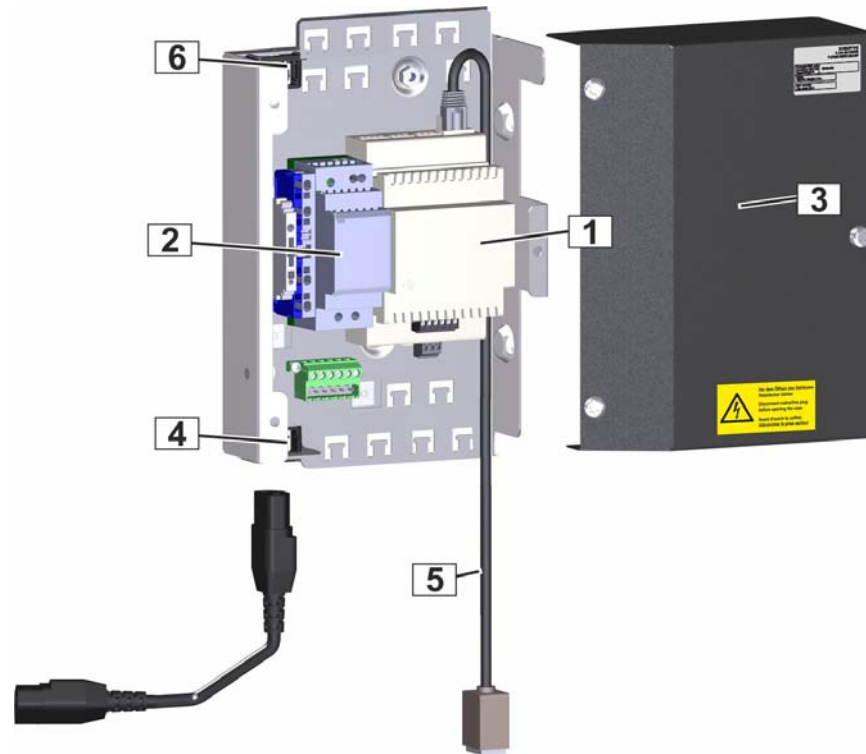
The following system components are available as accessories:

- Controller for passive RackChiller (for active RackChiller the controller is scope of delivery)
- Display
- Control valve with electromechanical drive
- Kit with flow, pressure and temperature sensors

Through 2 temperature sensors for the outlet temperature (factory assembled on the heat exchanger) and the control valve in the water circuit, the controller allows PID control to regulate the air outlet temperature to a specified value.

For monitoring operating parameters or advanced control, a kit with flow, pressure and temperature sensors is available.

## 4.6 RackChiller Controller



1	RackChiller Controller	4	Mains Connector
2	Power Supply	5	Ethernet Cable
3	Cover	6	AC Power Output for Fans (only active version)

The RackChiller controller uses a control valve in the water circuit to regulate the flow of coolant through the heat exchanger as a function of the heat load. The controlled variable used is data from the temperature sensors for the air outlet temperature.

In order to compensate for temperature stratification, the air outlet temperature is detected with 2 temperature sensors at different heights. As a control variable for the opening behavior of the control valve, the temperature of the lower, the upper or the average value of these temperature sensors can be used.

With the optional sensor kit for water pressure, flow and temperature, the RackChiller controller also provides power control over the water outlet temperature or temperature difference water inlet / outlet.

The configuration of the RackChiller controller or the retrieval of the operating parameters takes place via the Ethernet interface via a web interface, ModBus TCP or via a display available as an accessory.

The RackChiller controller is delivered ready for installation together with the power supply in a metal housing.



#### 4.6.1 Controller for RackChiller Active

In addition to the functionality of the Controller for the passive RackChiller, the controller for RackChiller Active can control the 4 AC fans (200 - 240 V supply voltage) integrated in the rear door.

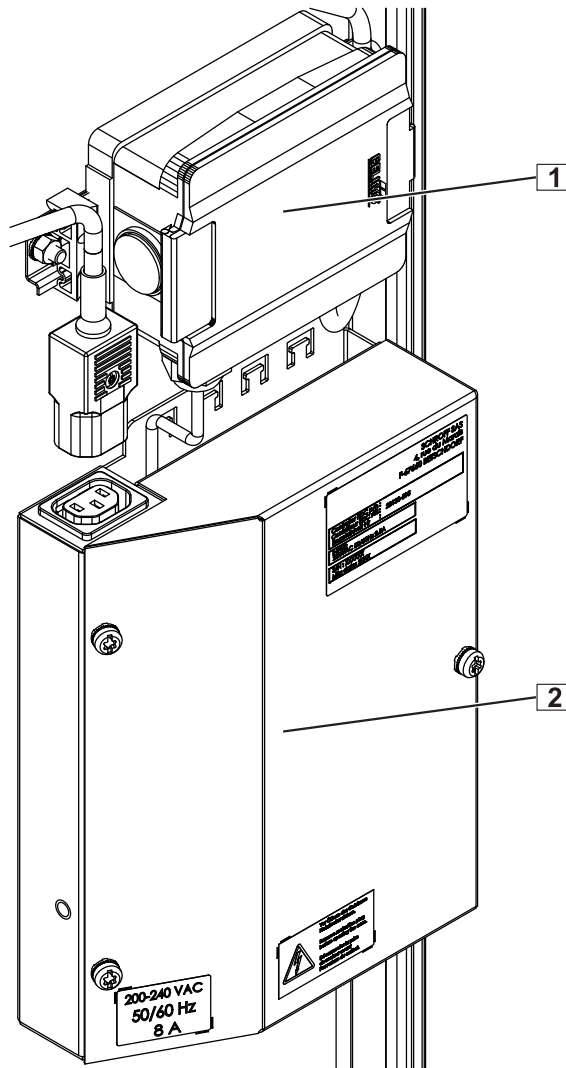
The fans support the server's own fans to build up the necessary pressure and air flow to achieve an optimal cooling performance.

The fans are controlled via Modbus by the RackChiller Controller and can be operated either with a constant speed (20% - 100%) or with differential pressure control.



*The fan speed control is an independent control loop and does not interfere with the volume flow control of the water circuit.*

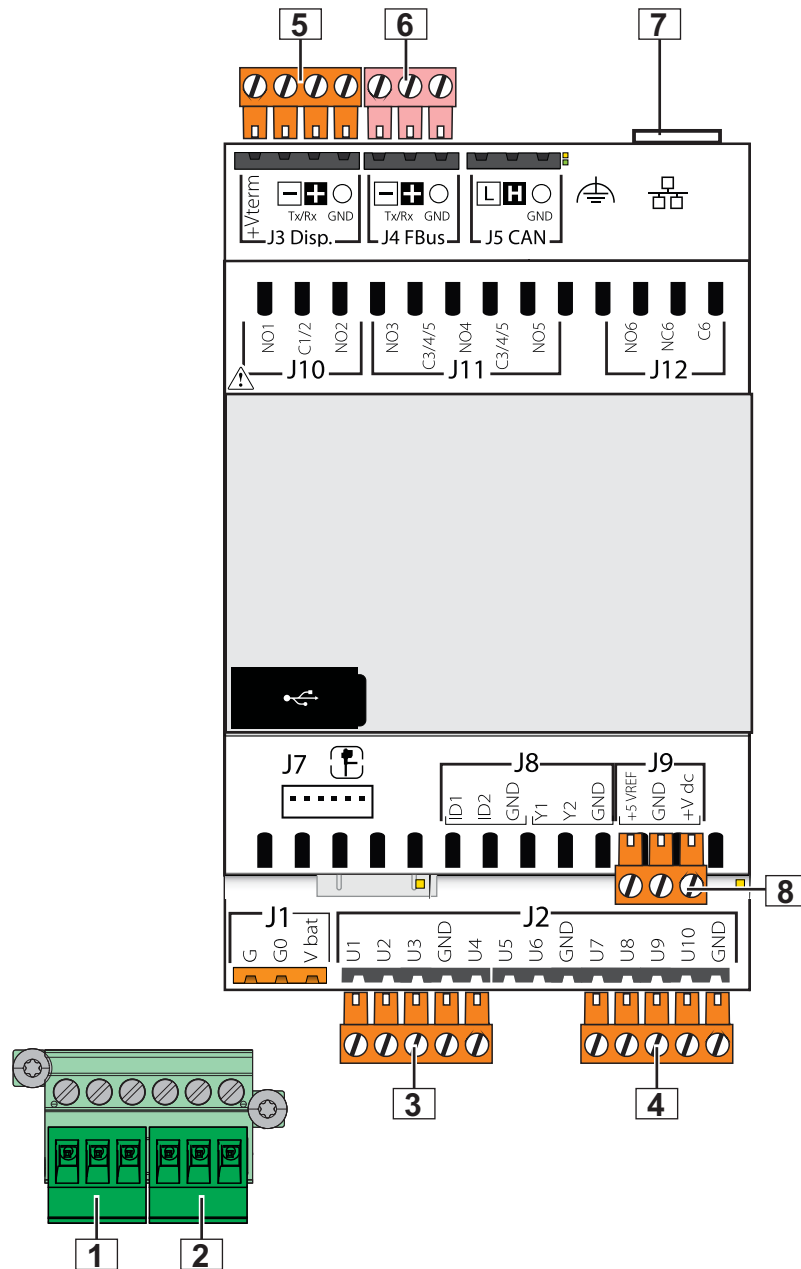
*The 4 fans have different Modbus addresses and therefore different spare part numbers.*



1 Differential pressure sensor

2 RackChiller Controller

## 4.7 Connectors RackChiller Controller



- |   |   |   |  |
|---|---|---|--|
| 1 | Connector for electromechanic control valve                                 | 5 | Display Connector  |
| 2 | Connector diff. pressure sensor (only active version)                       | 6 | Modbus Connector for Fan Control(only active version)                    |
| 3 | Connector Temperature sensors   | 7 | Ethernet Connector (RJ45)  |
| 4 | Data connection volume flow sensor (VFS) and relative pressure sensor (RPS) | 8 | Power supply volume flow sensor (VFS) and relative pressure sensor (RPS) |

Detailed installation instructions can be found in the appendix to this operating Instructions and is included with the RackChiller Controller.

- Doc.-No. 60130-983 for passive RackChiller
- Doc.-No. 60130-005 for active RackChiller

## 4.8 Monitoring and Configuration

The RackChiller controller can be configured or the operating parameters can be monitored via the RJ45 interface using a web interface, ModBus TCP or via an external display.

### 4.8.1 Web Interface

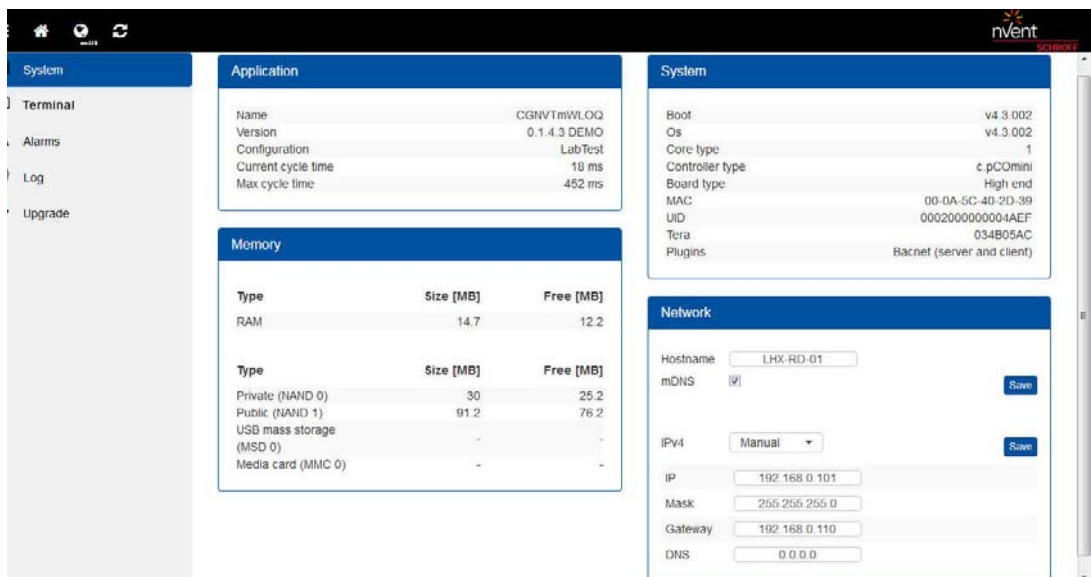
Access to the web interface: 192.168.0.101

User: siteadmin

PW: 12345

There are 5 screens in the web interface.

Screen System: Overview of the system parameters



The screenshot displays the 'System' configuration page in the nVent web interface. It is divided into several sections:

- System (Left Panel):** A navigation menu with options: System, Terminal, Alarms, Log, and Upgrade.
- Application:**

Name	CGNVTmWLOQ	
Version	0.1.4.3 DEMO	
Configuration	LabTest	
Current cycle time	10 ms	
Max cycle time	452 ms	
- Memory:**

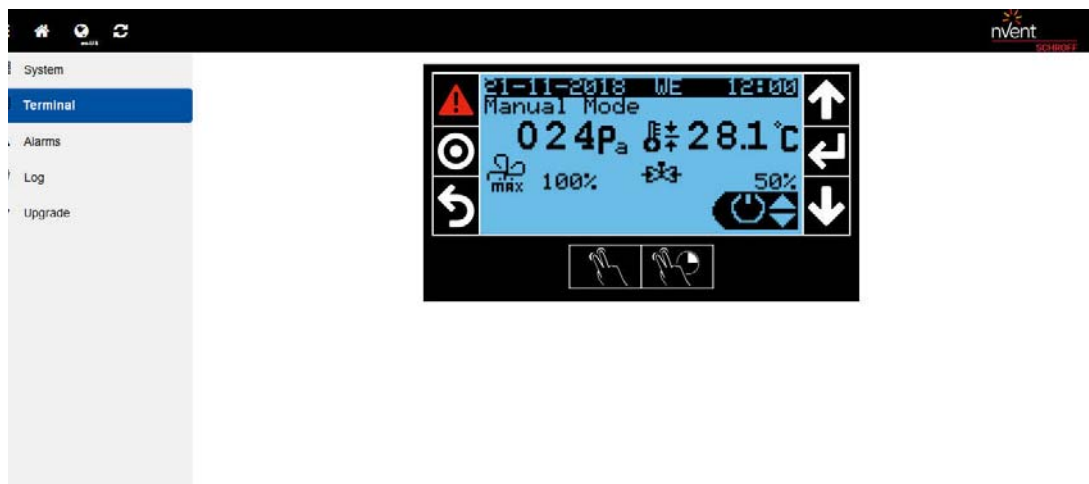
Type	Size [MB]	Free [MB]
RAM	14.7	12.2
<b>Type</b>		
Private (NAND 0)	30	25.2
Public (NAND 1)	91.2	76.2
USB mass storage (MSD 0)	-	-
Media card (MMC 0)	-	-
- System (Right Panel):**

Boot	v4.3.002
Os	v4.3.002
Core type	1
Controller type	c.pCMini
Board type	High end
MAC	00-0A-5C-40-2D-39
UID	0002000000004AEF
Tera	034B05AC
Plugins	Bacnet (server and client)
- Network (Right Panel):**

Hostname	LHX-RD-01	Save
mDNS	<input checked="" type="checkbox"/>	Save
IPv4	Manual	Save
IP	192.168.0.101	
Mask	255.255.255.0	
Gateway	192.168.0.110	
DNS	0.0.0.0	

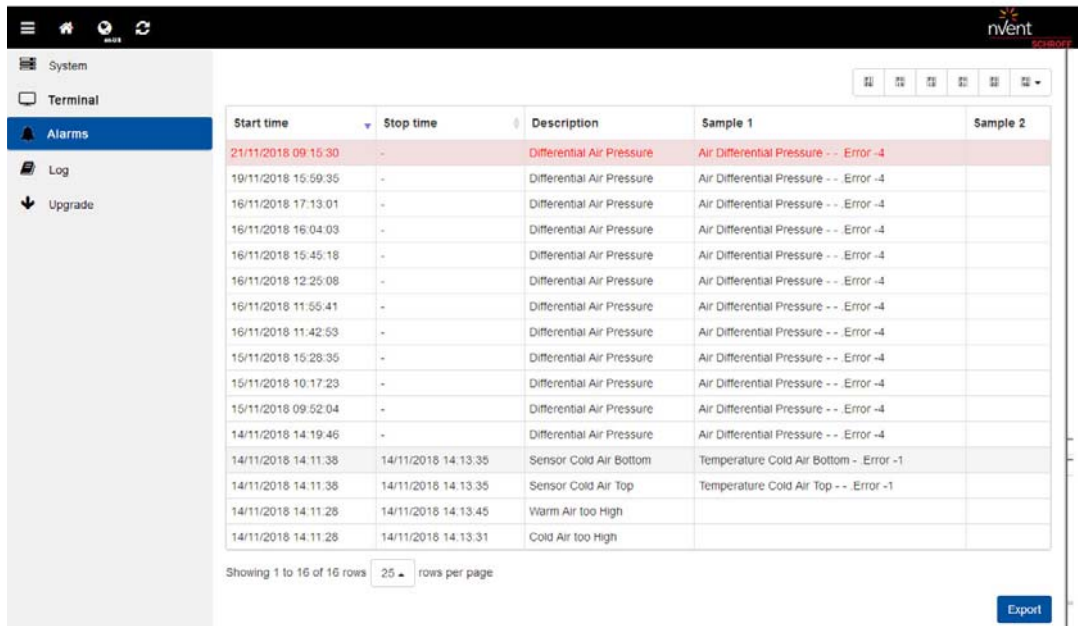
In this screen, the user can change the network settings.

Screen Terminal: Displays the optionally available display



In this screen, all sensor data and operating parameters can be called up and parameterized. A description of the functions can be found in the chapter "Display".

### Screen Alarms



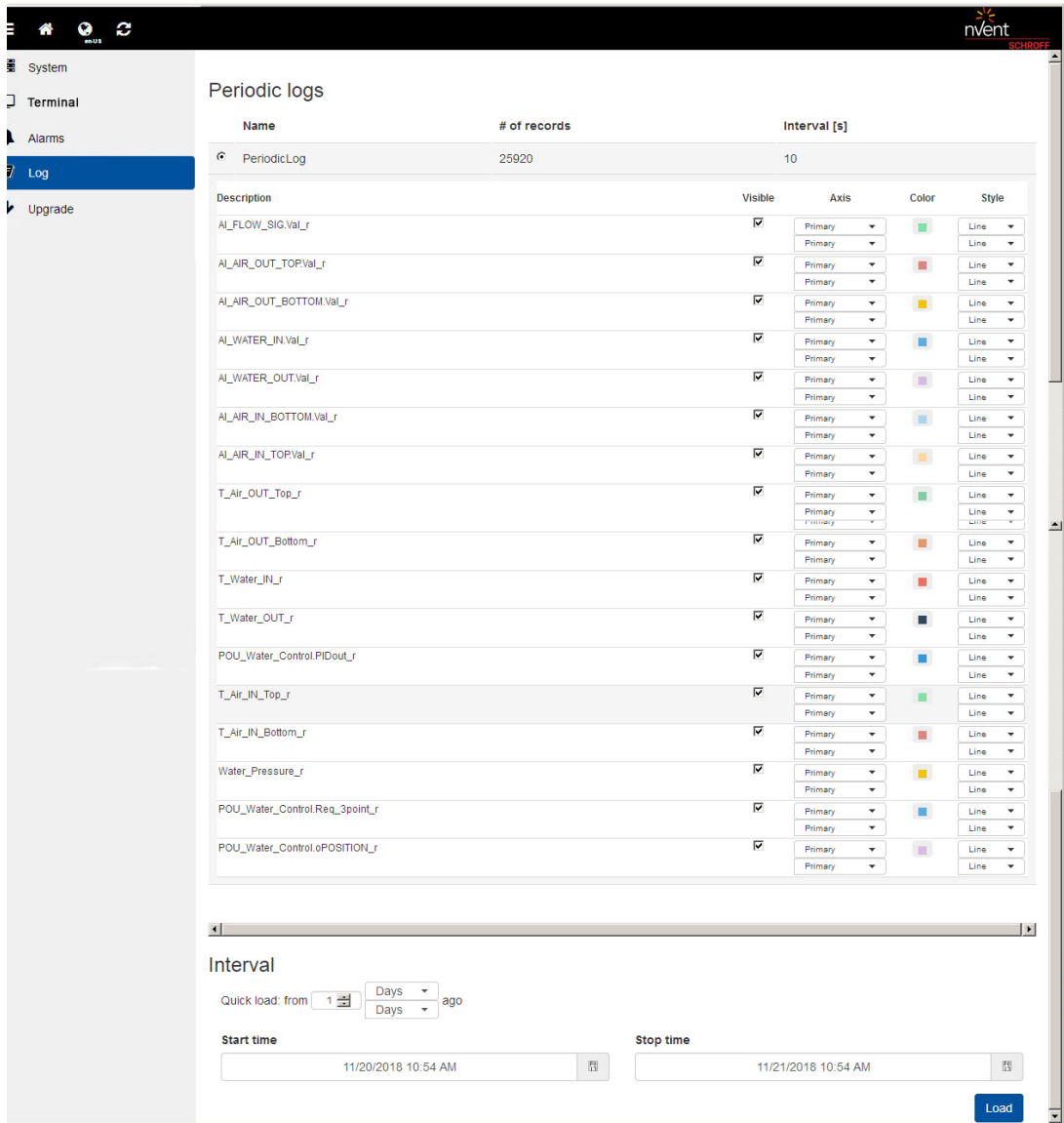
Start time	Stop time	Description	Sample 1	Sample 2
21/11/2018 09:15:30	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
19/11/2018 15:59:35	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
16/11/2018 17:13:01	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
16/11/2018 16:04:03	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
16/11/2018 15:45:18	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
16/11/2018 12:25:08	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
16/11/2018 11:55:41	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
16/11/2018 11:42:53	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
15/11/2018 15:28:35	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
15/11/2018 10:17:23	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
15/11/2018 09:52:04	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
14/11/2018 14:19:46	-	Differential Air Pressure	Air Differential Pressure -- Error -4	
14/11/2018 14:11:38	14/11/2018 14:13:35	Sensor Cold Air Bottom	Temperature Cold Air Bottom - Error -1	
14/11/2018 14:11:38	14/11/2018 14:13:35	Sensor Cold Air Top	Temperature Cold Air Top -- Error -1	
14/11/2018 14:11:28	14/11/2018 14:13:45	Warm Air too High		
14/11/2018 14:11:28	14/11/2018 14:13:31	Cold Air too High		

Showing 1 to 16 of 16 rows  rows per page

[Export](#)

The alarms can be viewed and exported in this screen.

### Screen Log



The screenshot displays the 'Periodic logs' configuration screen. On the left is a navigation menu with options: System, Terminal, Alarms, Log (selected), and Upgrade. The main area shows a table of log entries with columns for Name, # of records, Interval [s], Description, Visible, Axis, Color, and Style. Below the table is an 'Interval' section with a 'Quick load' field set to 1 day, and 'Start time' and 'Stop time' fields set to 11/20/2018 10:54 AM and 11/21/2018 10:54 AM respectively. A 'Load' button is at the bottom right.

Name	# of records	Interval [s]
PeriodicLog	25920	10

Description	Visible	Axis	Color	Style
AI_FLOW_SIG.Val_r	<input checked="" type="checkbox"/>	Primary	Green	Line
AI_AIR_OUT_TOP.Val_r	<input checked="" type="checkbox"/>	Primary	Red	Line
AI_AIR_OUT_BOTTOM.Val_r	<input checked="" type="checkbox"/>	Primary	Yellow	Line
AI_WATER_IN.Val_r	<input checked="" type="checkbox"/>	Primary	Blue	Line
AI_WATER_OUT.Val_r	<input checked="" type="checkbox"/>	Primary	Purple	Line
AI_AIR_IN_BOTTOM.Val_r	<input checked="" type="checkbox"/>	Primary	Light Blue	Line
AI_AIR_IN_TOP.Val_r	<input checked="" type="checkbox"/>	Primary	Orange	Line
T_Air_OUT_Top_r	<input checked="" type="checkbox"/>	Primary	Green	Line
T_Air_OUT_Bottom_r	<input checked="" type="checkbox"/>	Primary	Orange	Line
T_Water_IN_r	<input checked="" type="checkbox"/>	Primary	Red	Line
T_Water_OUT_r	<input checked="" type="checkbox"/>	Primary	Dark Blue	Line
POU_Water_Control.PIDout_r	<input checked="" type="checkbox"/>	Primary	Blue	Line
T_Air_IN_Top_r	<input checked="" type="checkbox"/>	Primary	Green	Line
T_Air_IN_Bottom_r	<input checked="" type="checkbox"/>	Primary	Red	Line
Water_Pressure_r	<input checked="" type="checkbox"/>	Primary	Yellow	Line
POU_Water_Control.Req_3point_r	<input checked="" type="checkbox"/>	Primary	Blue	Line
POU_Water_Control.oPOSITION_r	<input checked="" type="checkbox"/>	Primary	Purple	Line

Interval

Quick load: from 1 Days ago

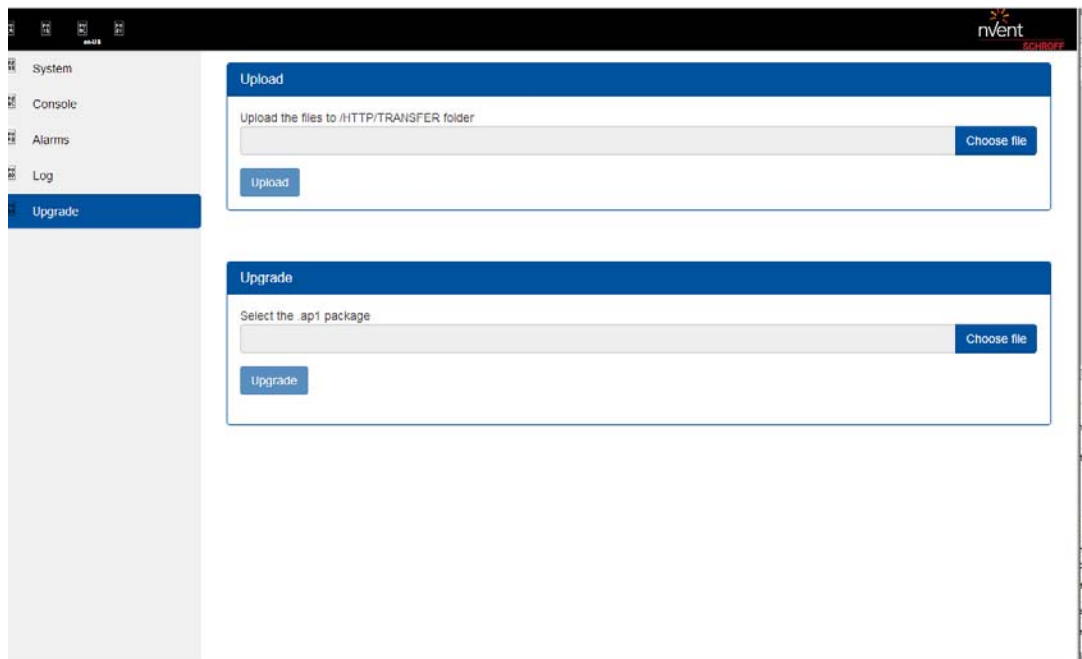
Start time: 11/20/2018 10:54 AM

Stop time: 11/21/2018 10:54 AM

Load

In this screen the logged system events can be viewed and exported

## Screen Upgrade









Allows you to upload and install a firmware upgrade.

## 4.8.2 Display for RackChiller Controller



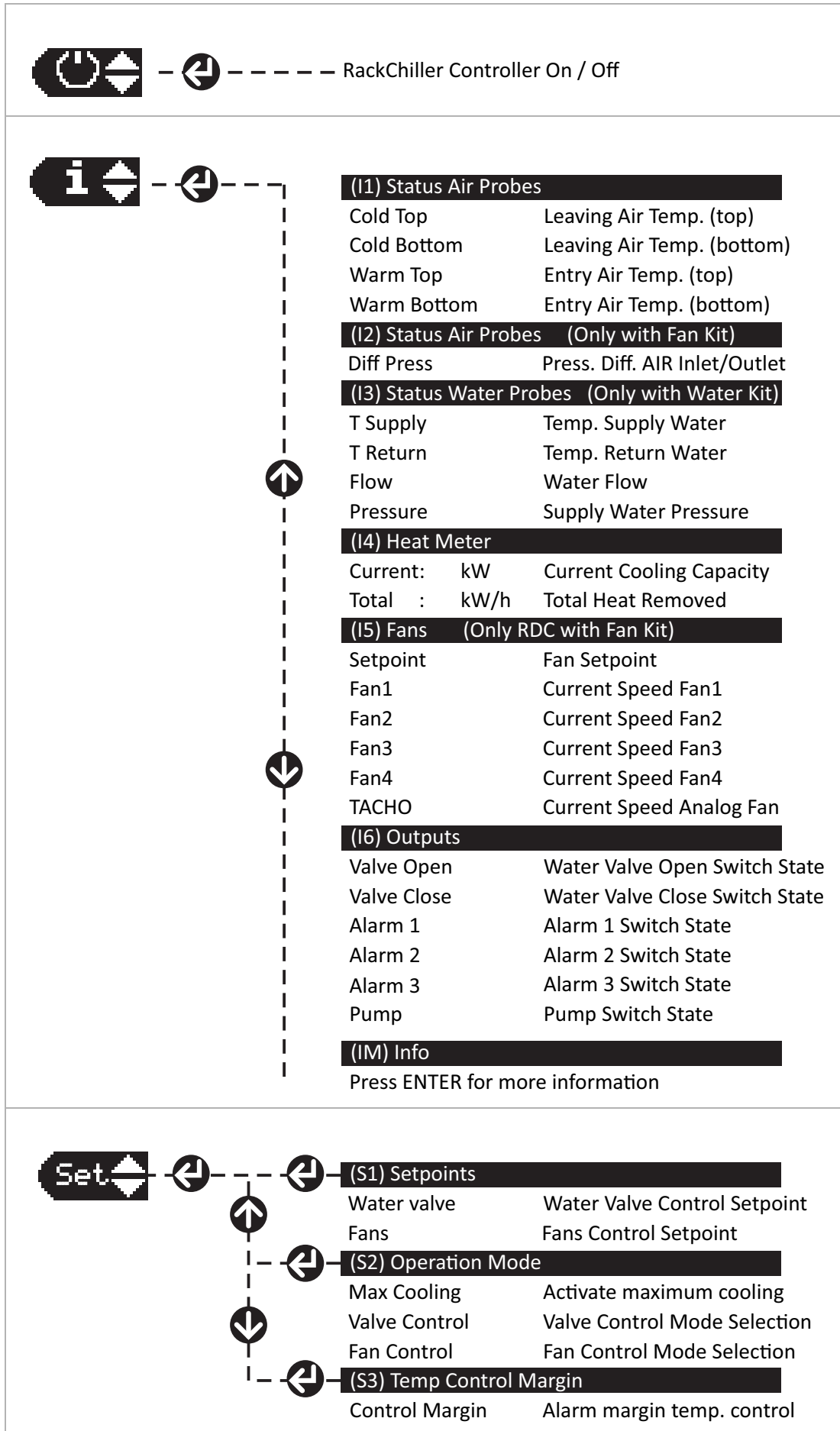
The optional display allows you to configure the RackChiller controller or retrieve the operating parameters. The display can be mounted directly on the door of the RackChiller, the corresponding connection cable to the RackChiller controller is already preconfigured.

	UP button	Scroll up or increase the value of a parameter.
	DOWN button	Scroll down or decrease the value of a parameter.
	ENTER button	Scroll through parameters or enter parameters.
	ESCAPE button	Return to the previous screen.
	PROG button	Enter the program menu. Menu Only available for service personnel.
	ALARM button	Displays current alarms.

Detailed installation instructions can be found in the appendix to this operating Instructions and is included with the display.

- Doc.-No. 60130-986 Display for passive RackChiller
- Doc.-No. 60130-048 Display for active RackChiller





### 4.8.3 Set Temperature

#### General

In general the RackChiller is configured that the air outlet temperature is approximately at room temperature, so that the server cabinet does not distribute any heat to the environment.

The air outlet temperature is detected by 2 temperature sensors. The temperature sensors are attached at the outlet the heat exchanger, to compensate the temperature stratification, at different heights.

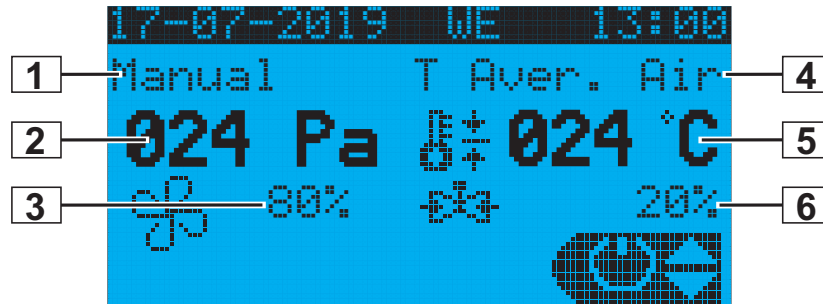
As a control variable for the opening behavior of the control valve, the temperature of the lower ("cold bottom"), the upper ("cold up") or the average value of these temperature sensors can be used.

If the optional water kit is used, the control variable can also be the water outlet temperature or the water / water return temperature difference. However, this regulation is reserved for experienced users.

In addition to the control via temperature sensors, it is also possible to set the opening ratio of the water valve manually (in % opening ratio).

With the active RackChiller, the fan control can additionally be configurized.

## Overview Display



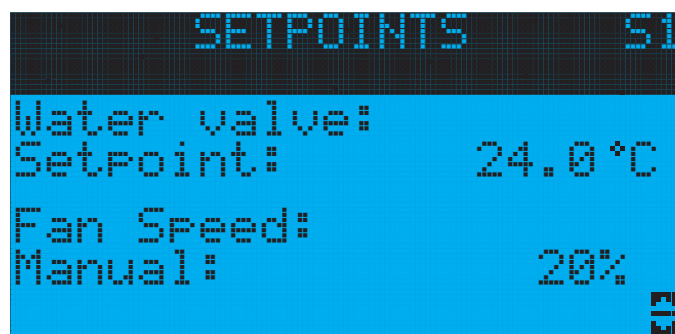
- |   |                            |   |                                    |
|---|----------------------------|---|------------------------------------|
| 1 | Fan control operating mode | 4 | Temperature control operating mode |
| 2 | Differential pressure      | 5 | Current temperature                |
| 3 | Fan speed                  | 6 | Opening ratio water valve          |



**The currently displayed temperature depends on the operating mode of the temperature control. In the above example, it is the average of the air outlet temperature sensors.**

The display shown above shows the current measured values for temperature and differential pressure. The setpoints can be viewed via the display menu:

SET --> (S1) Setpoint

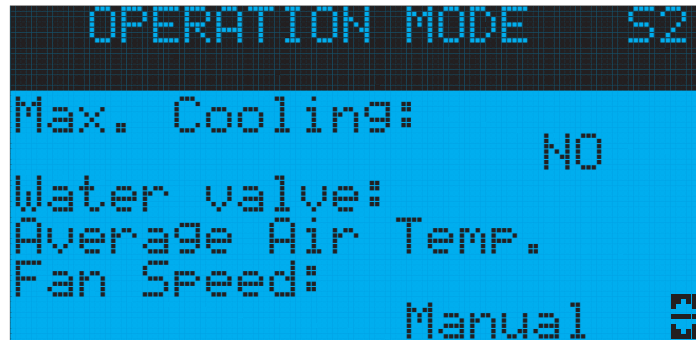


### Define control variables

Via the display menu

SET -> (S2) Operating mode -> Water valve

the control variable for the water valve is set.



The following parameters are available:

- Average Air Temp
- Temp Air Bottom
- Temp Air Top
- Manual
- dT Water
- Temp Water Out

Via the display menu

SET -> (S2) Operating mode -> Fan speed

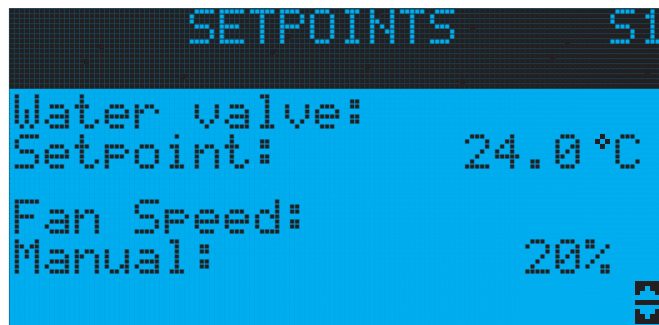
The control variable for the fan speed is set. The following parameters are available:

- Pressure Difference
- Manuall

## Setpoints

Via the display menu

SET -> (S1) setpoints -> Water valve



the setpoint for the control of the water valve is set. If the control is made by a temperature sensor, the temperature can be set in ° C (° F), with manual control, the opening ratio of the water valve can be set in %.

Via the display menu

SET -> (S1) Setpoints -> Fan speed

the setpoint for controlling the fan is set. If the control is via the differential pressure sensor, the pressure can be set in Pa; with manual control, the fan speed can be set in %.

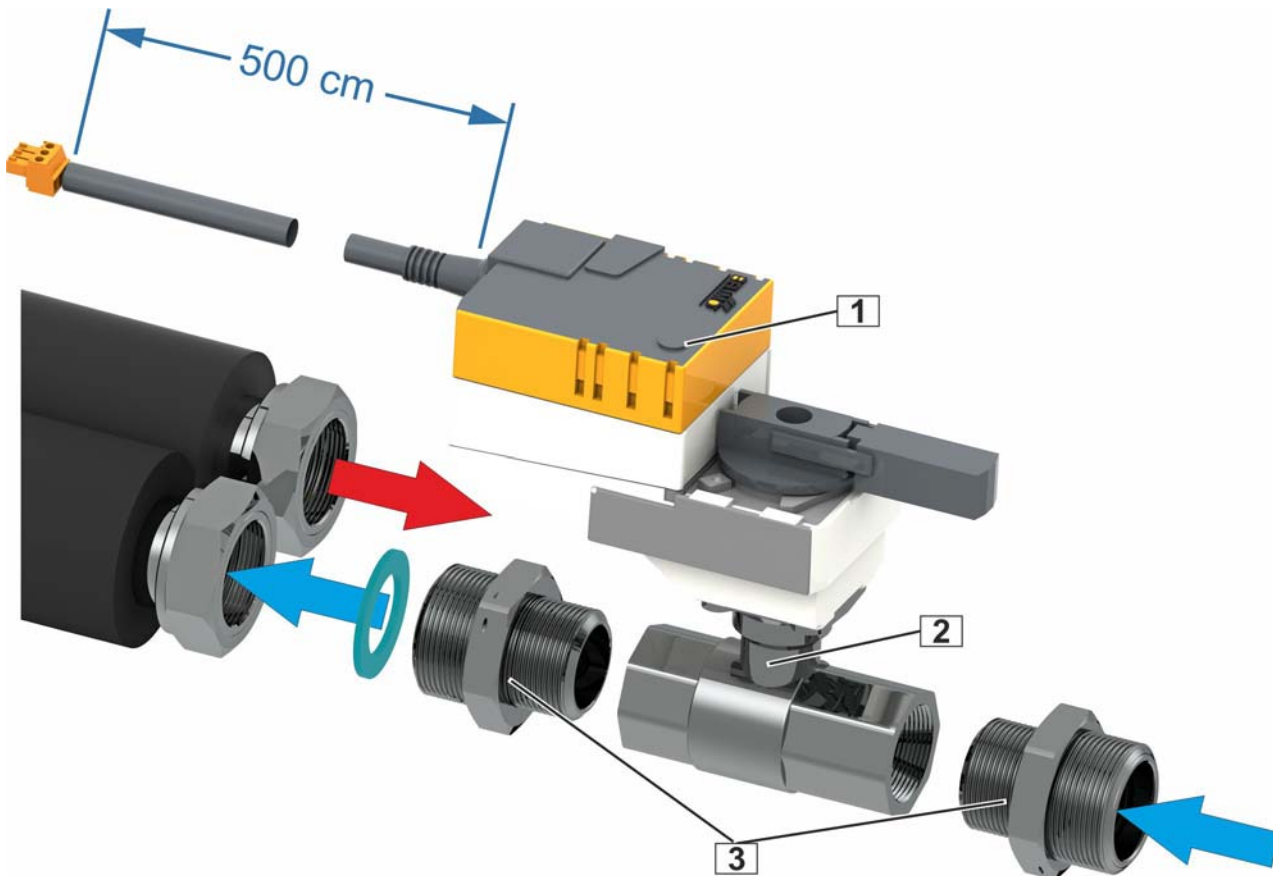


***The differential pressure can be set in the range of -150 Pa to +150 Pa.***

***Negative differential pressure means that the pressure in the cabinet is higher than the ambient pressure.***

***Schroff recommends a setting of approx. +20 Pa.***

#### 4.8.4 Electromechanical control valve



- 1 Actuator control valve
- 2 2 way control ball valve

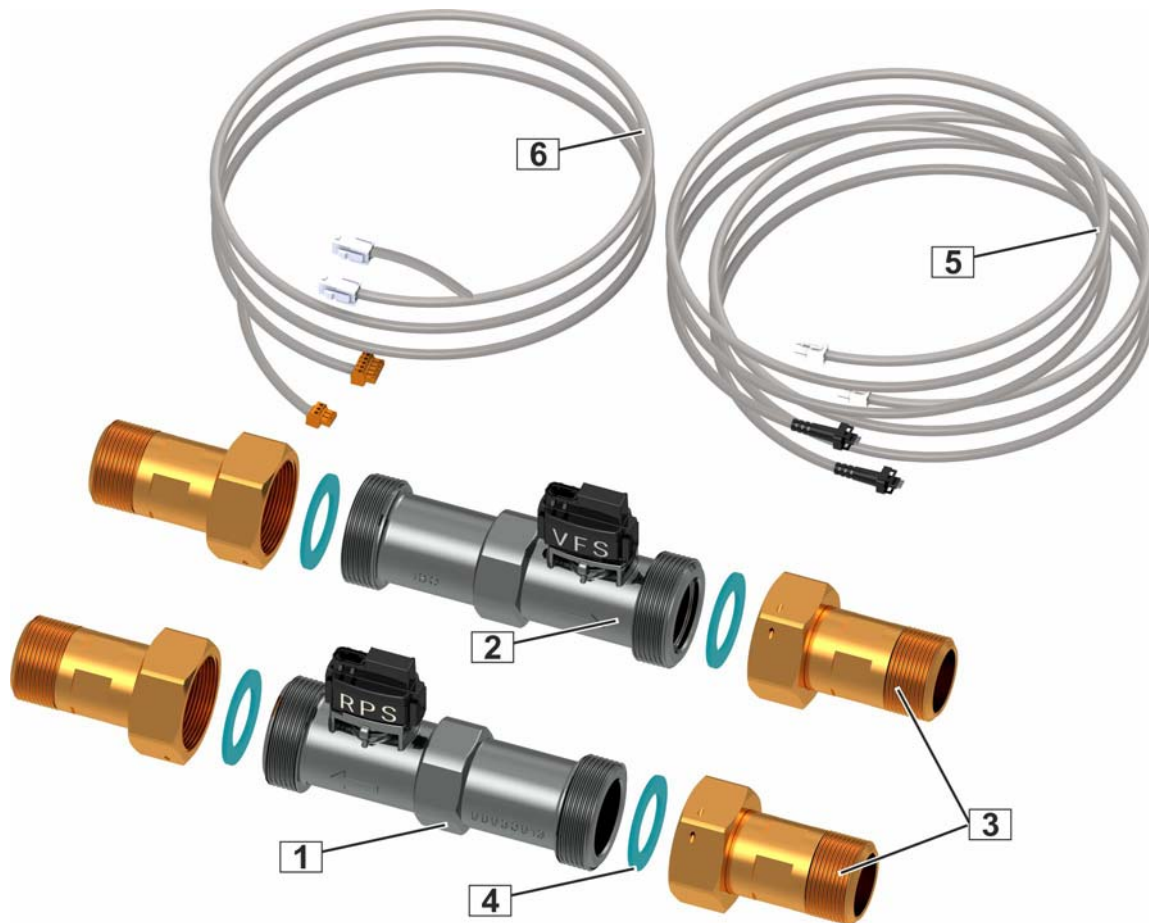
- 3 Double nipples R1 "/ R1 1/4"

The electromechanical control valve is mounted in a suitable place, typically in the false floor, in the water supply. The control valve consists of the electromechanical actuator and a 2-way control ball valve with 1" internal thread. The scope of delivery includes 2 double nipples with the thread size 1" / 1 1/4".

The installation instructions (60130-985) are attached to these operating instructions and are included in the delivery of the control valve.

## 4.8.5 Water Control Package

Scope of delivery



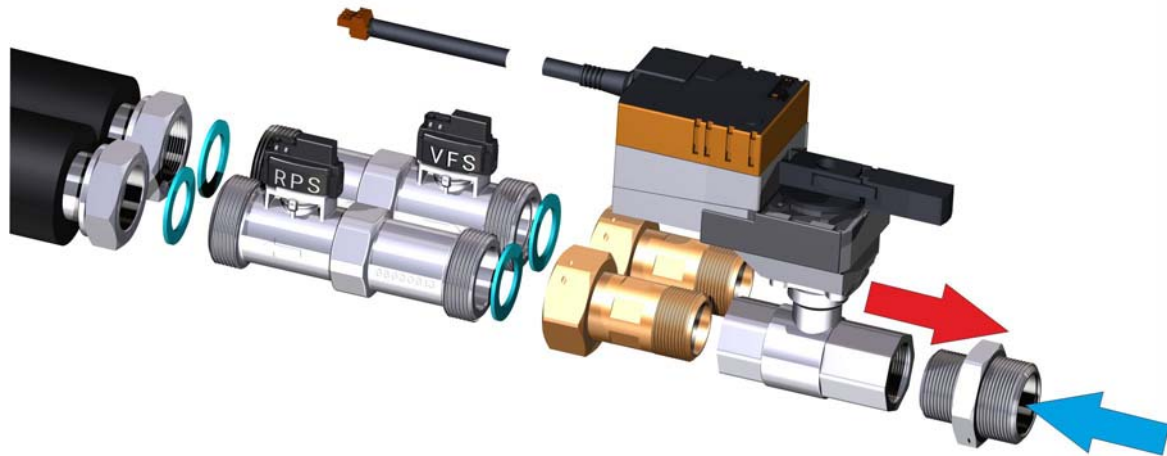
- |   |                             |   |   |
|---|-----------------------------|---|---|
| 1 | Relative pressure sensor    | 4 | Seals                                   |
| 2 | Flow rate sensor            | 5 | Sensor connection cable                 |
| 3 | Brass fittings 1 1/4 " / 1" | 6 | Connection cable RackChiller Controller |

The accessory Water Control Package consists of a volume flow and temperature sensor (VFS) and a relative pressure and temperature sensor (RPS). The sensors are mounted on 2 stainless steel fittings with the connection nominal width 1 1/4 ".

In addition to an extended monitoring of the operating parameters, the water kit also enables a power control of the RackChiller via the water outlet temperature or the temperature difference water inlet / water outlet.

The Water Control Package is mounted according to the following diagram in the water flow and return. The installation instructions (60130-987) are included in the appendix to these operating instructions and are included with the water kit.

Water Control Package Assembly:





## 5 Technical Data

Electrical rating	
RackChiller passive	
Input voltage	115/230 VAC, 50/60 Hz
Input current rated	180 mA
Input current max.	2.5 A
RackChiller active	
Input voltage	200 - 240 VAC, 50/60 Hz
Input current rated	2,3 A (230 V)
Input current max.	8 A (200 V)
Power consumption max.	530 W (Fan speed 100%)

Part No.	For Cabinet [mm]	Width (A) [mm/in.]	Height (B) [mm/in.]	Depth (C) [mm/in.]	Weight (Dry) [kg]	Water capacity [l]	Cooling Capacity [kW]	Air Flow [m³/h / cfm]
RackChiller passive								
21130-800	600x2000	598/23.54	2 018-2 040/79.45-80.32	226/8.90	71,6	7	32	2850/1676
21130-801	800x2000	798/31.42	2 018-2 040/79.45-80.32	226/8.90	82,8	9	48	4600/2706
21130-802	600x2200	598/23.54	2 218-2 240/87.32-88.19	226/8.90	76,1	8	37	3200/1882
21130-803	800x2200	798/31.42	2 218-2 240/87.32-88.19	226/8.90	88,6	10	54	5150/3029
21130-804	600x2450	598/23.54	2 468-2 490/97.17-98.03	226/8.90	80,3	8	37	3200/1882
21130-805	800x2450	798/31.42	2 468-2 490/97.17-98.03	226/8.90	93,3	10	54	5150/3029
RackChiller active								
21130-806	600x2000	598/23.54	2 018-2 040/79.45-80.32	333/13.11	106,8	7	32	2850/1676
21130-807	800x2000	798/31.42	2 018-2 040/79.45-80.32	333/13.11	123,1	9	48	4600/2706
21130-808	600x2200	598/23.54	2 218-2 240/87.32-88.19	333/13.11	112,1	8	37	3200/1882
21130-809	800x2200	798/31.42	2 218-2 240/87.32-88.19	333/13.11	130,3	10	54	5150/3029
21130-810	600x2450	598/23.54	2 468-2 490/97.17-98.03	333/13.11	117,8	8	37	3200/1882
21130-811	800x2450	798/31.42	2 468-2 490/97.17-98.03	333/13.11	136,9	10	54	5150/3029

Part No.	Packaging	Dimensions packaging [mm]	Dimensions packaging [in.]	Weight (Packaging) [kg]	Weight Product & packaging [kg]
RackChiller passive					
21130-800	Wooden crate	2385x940x520	93.90x37.01x20.47	53.4	125
21130-801	Wooden crate	2385x940x520	93.90x37.01x20.47	53.2	136
21130-802	Wooden crate	2385x940x520	93.90x37.01x20.47	53.9	130
21130-803	Wooden crate	2385x940x520	93.90x37.01x20.47	53.4	142
21130-804	Wooden crate	2635x940x520	103.74x37.01x20.47	57.7	138
21130-805	Wooden crate	2635x940x520	103.74x37.01x20.47	58.7	152
RackChiller active					
21130-806	Wooden crate	2385x940x730	93.90x37.01x28.74	72.2	179
21130-807	Wooden crate	2385x940x730	93.90x37.01x28.74	71.9	195
21130-808	Wooden crate	2385x940x730	93.90x37.01x28.74	71.9	184
21130-809	Wooden crate	2385x940x730	93.90x37.01x28.74	71.7	202
21130-810	Wooden crate	2635x940x730	103.74x37.01x28.74	80.2	198
21130-811	Wooden crate	2635x940x730	103.74x37.01x28.74	80.9	217

The cooling capacity is determined under the following conditions:

$\Delta p$ water:	<100 kPa
$\Delta p$ air:	15 Pa
Water flow temperature:	12°C / 53,6 F
Outlet temperature:	24°C / 75,2 F
Water flow:	4.8 m <sup>3</sup> /h / 21,1 gal/min
Airflow:	Depending on cooling module dimensions, see table



*To achieve the specified cooling capacity, the server fans must provide the specified air-flow and pressure or the active RackChiller must be used.*

## 5.1 Spare Parts and Accessories

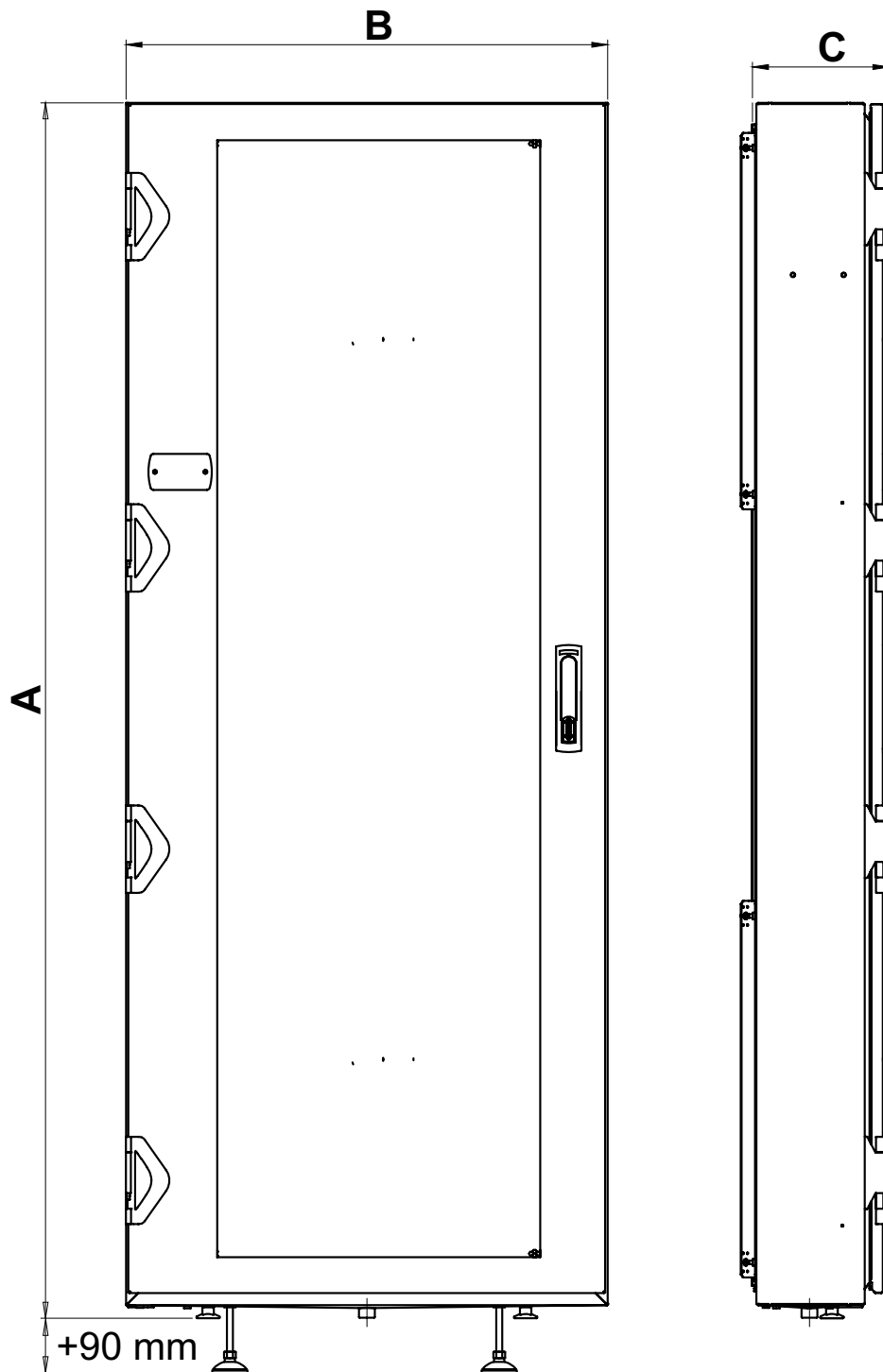
Order No.	Description
23130-593	Water hose connection kit 2.4 m
23130-607	Control valve with electromechanical drive
23130-594	Controller for passive RackChiller
23130-656	Controller for active RackChiller w.o. differential pressure sensor
23130-657	Differential pressure sensor kit for active RackChiller
23130-621	Display black for active RackChiller
23130-599	Display black for passive RackChiller
23130-608	Kit with flow, pressure and temperature sensors
23130-652	Fan 1 (upper)
23130-653	Fan 2
23130-654	Fan 3
23130-655	Fan 4 (lower)



*The 4 fans have different Modbus addresses and therefore different spare part numbers.*

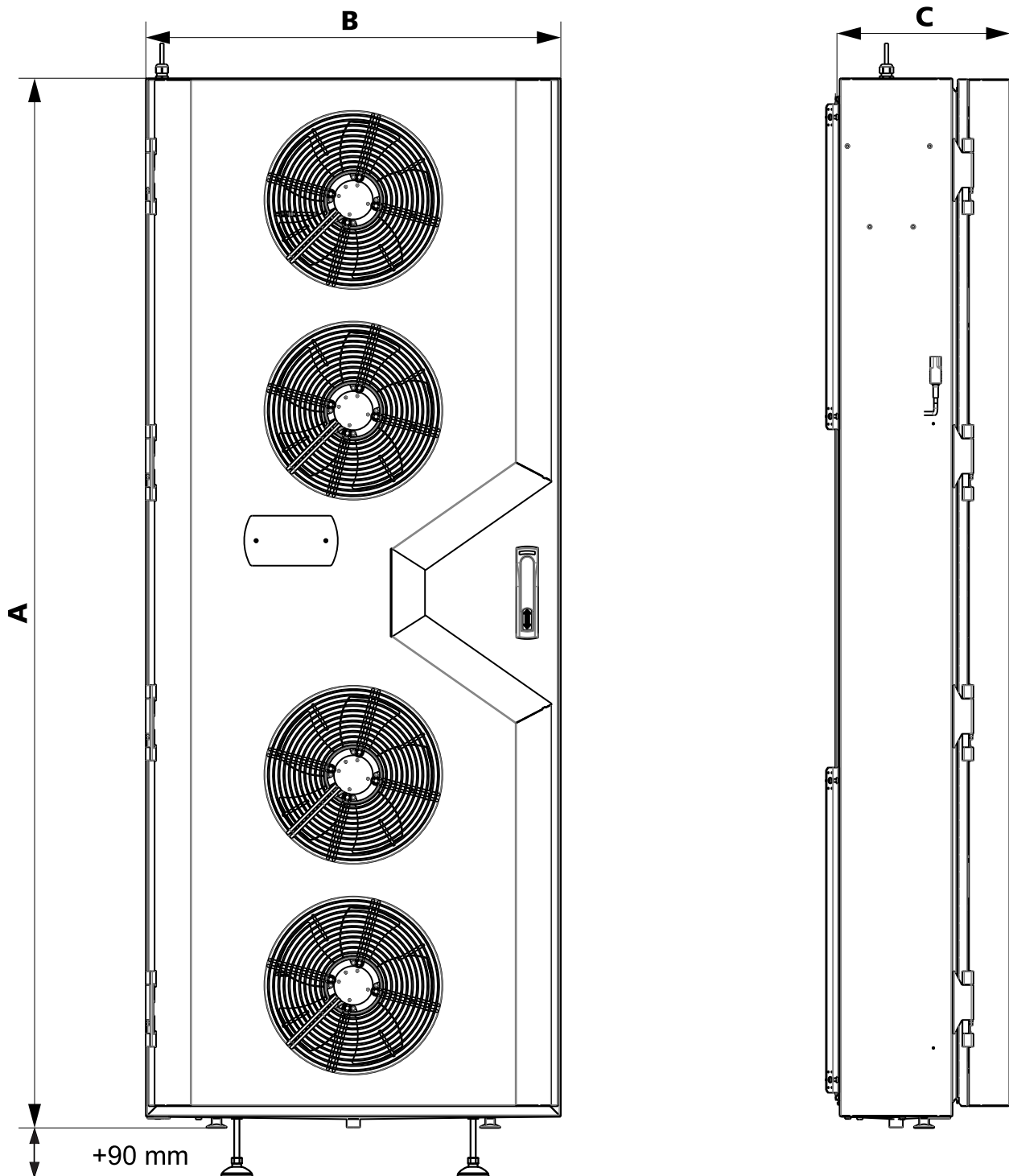
## 5.2 Dimensions

### 5.2.1 RackChiller passive



*For cabinets with base plinth, a second pair of leveling feet is included in the scope of delivery..*

### 5.2.2 RackChiller active



*For cabinets with base plinth, a second pair of leveling feet is included in the scope of delivery..*

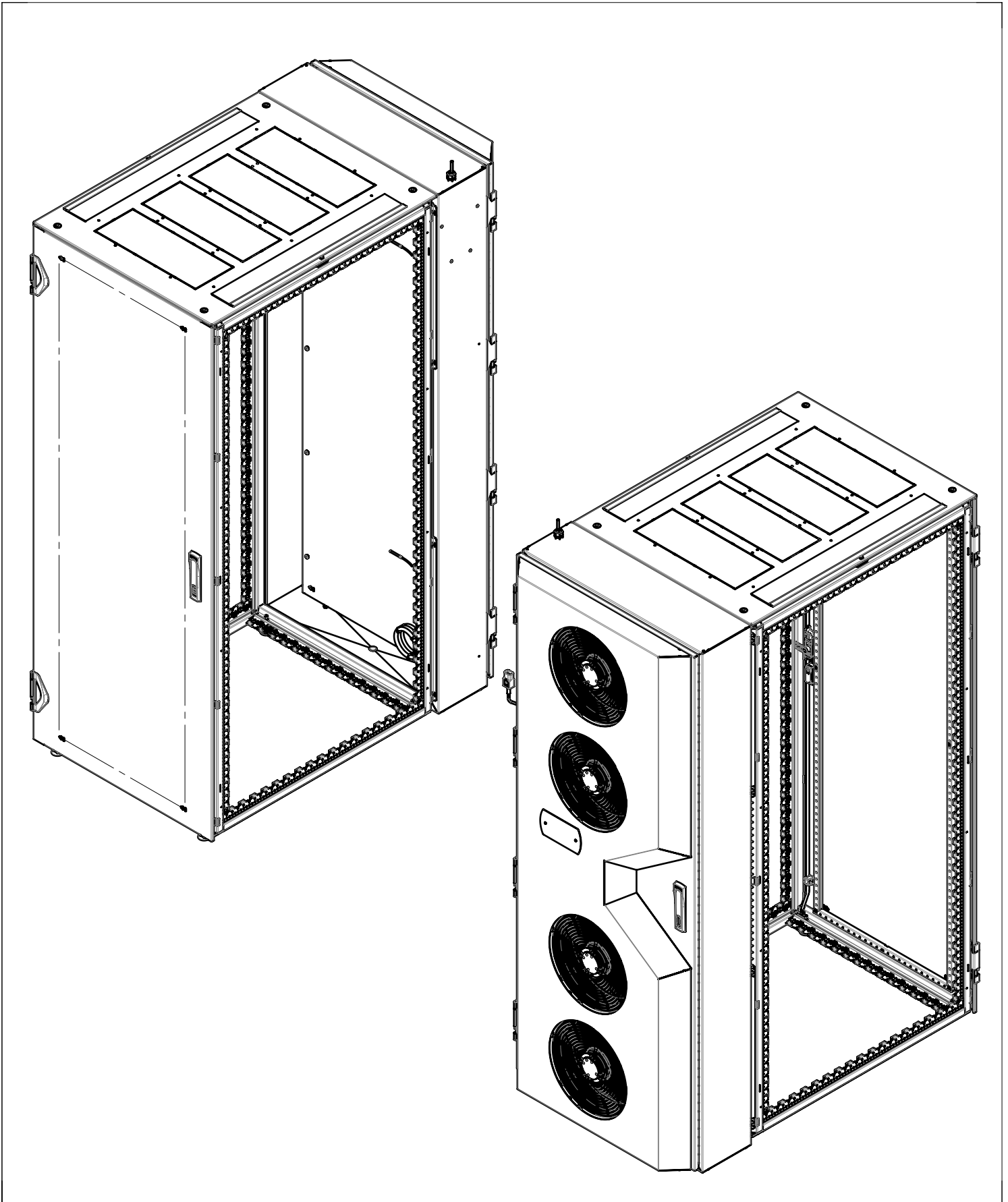




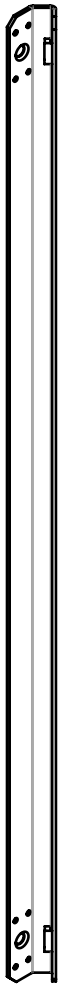
**Schroff GmbH**

Langenalber Str. 96 - 100  
75334 Straubenhardt, Germany  
Tel +49.7082.794.0  
Fax +49.7082.794.200





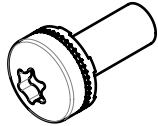
1 (4x)



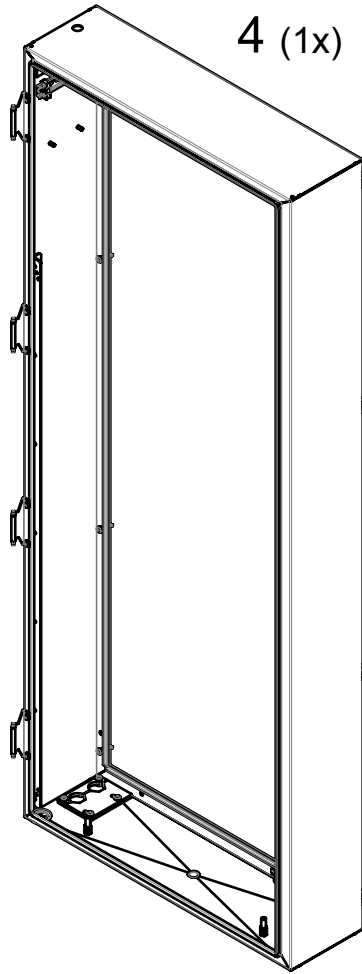
2 (8x)



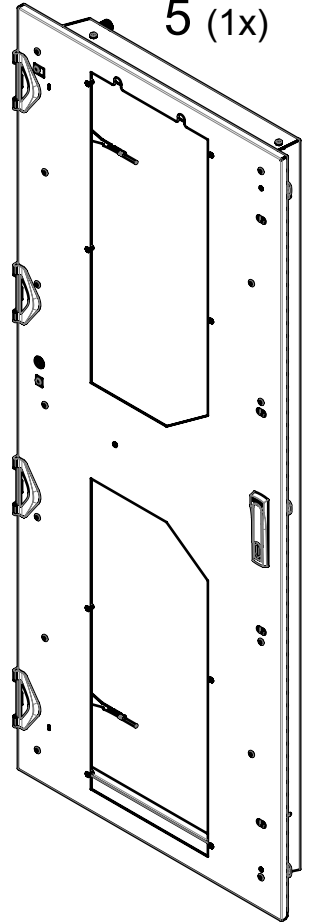
3 (17x)



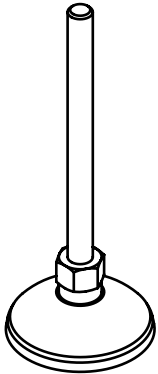
4 (1x)



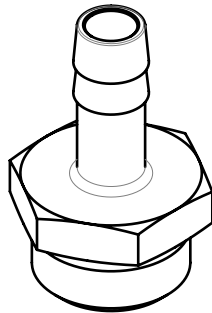
5 (1x)



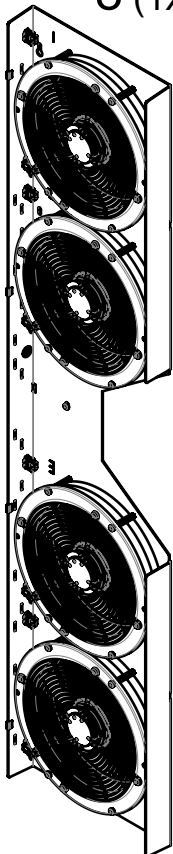
6 (2x)



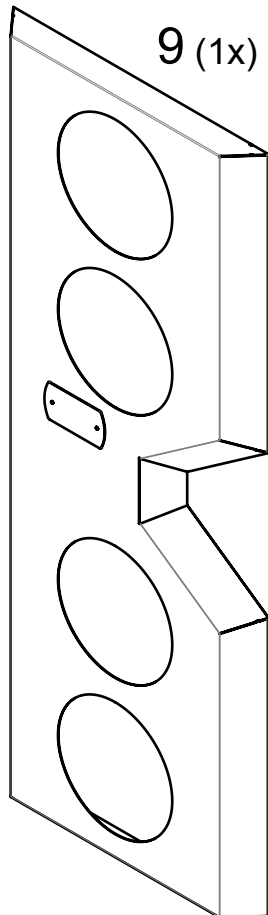
7 (1x)



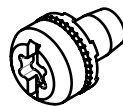
8 (1x)



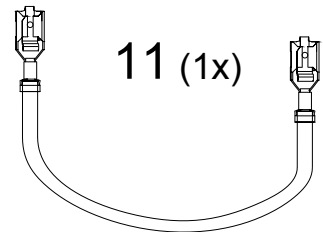
9 (1x)



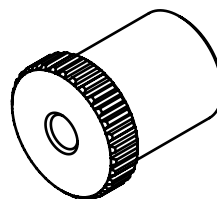
10 (1x)



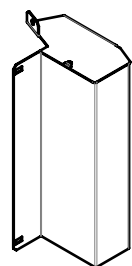
11 (1x)



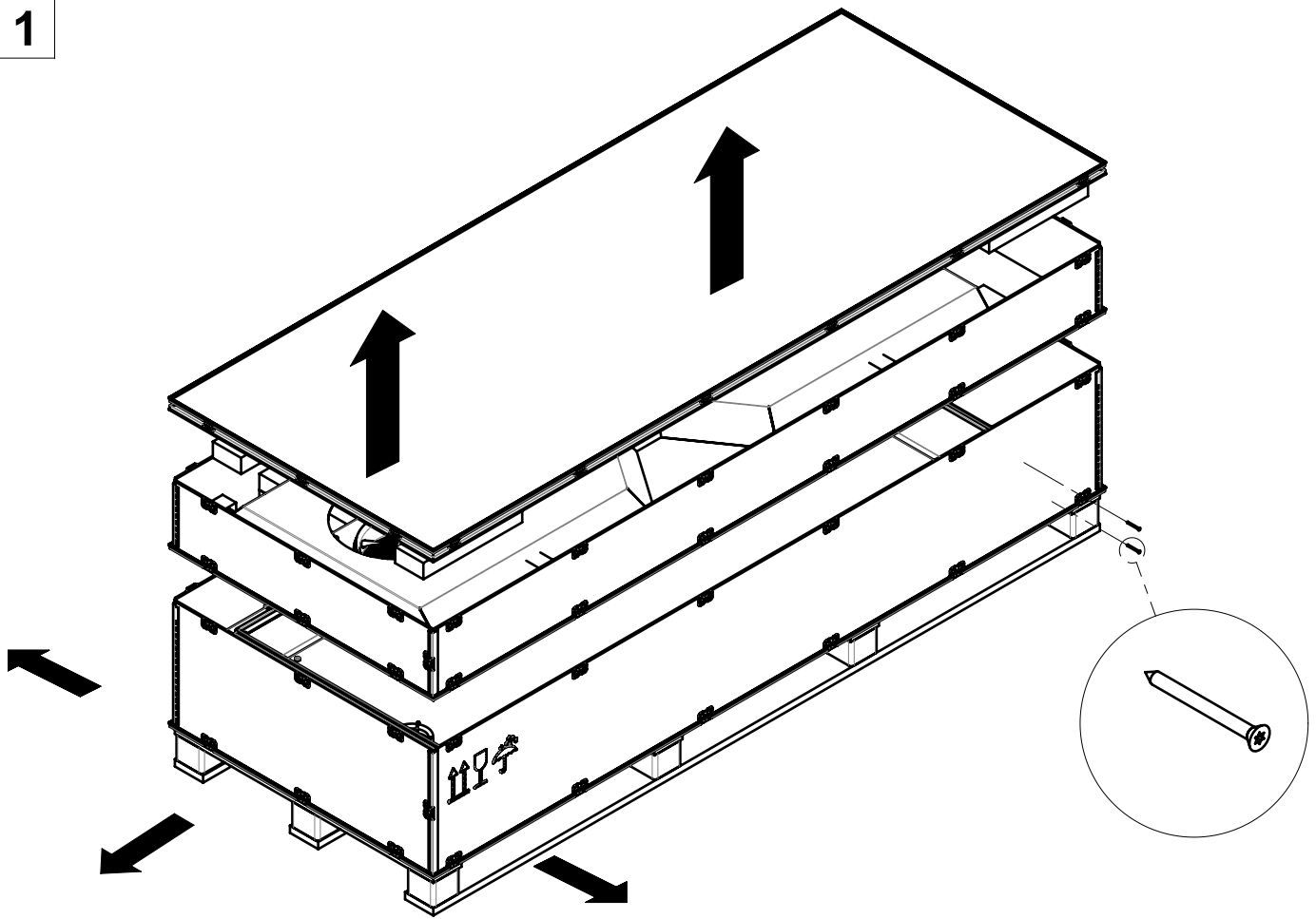
12 (4x)



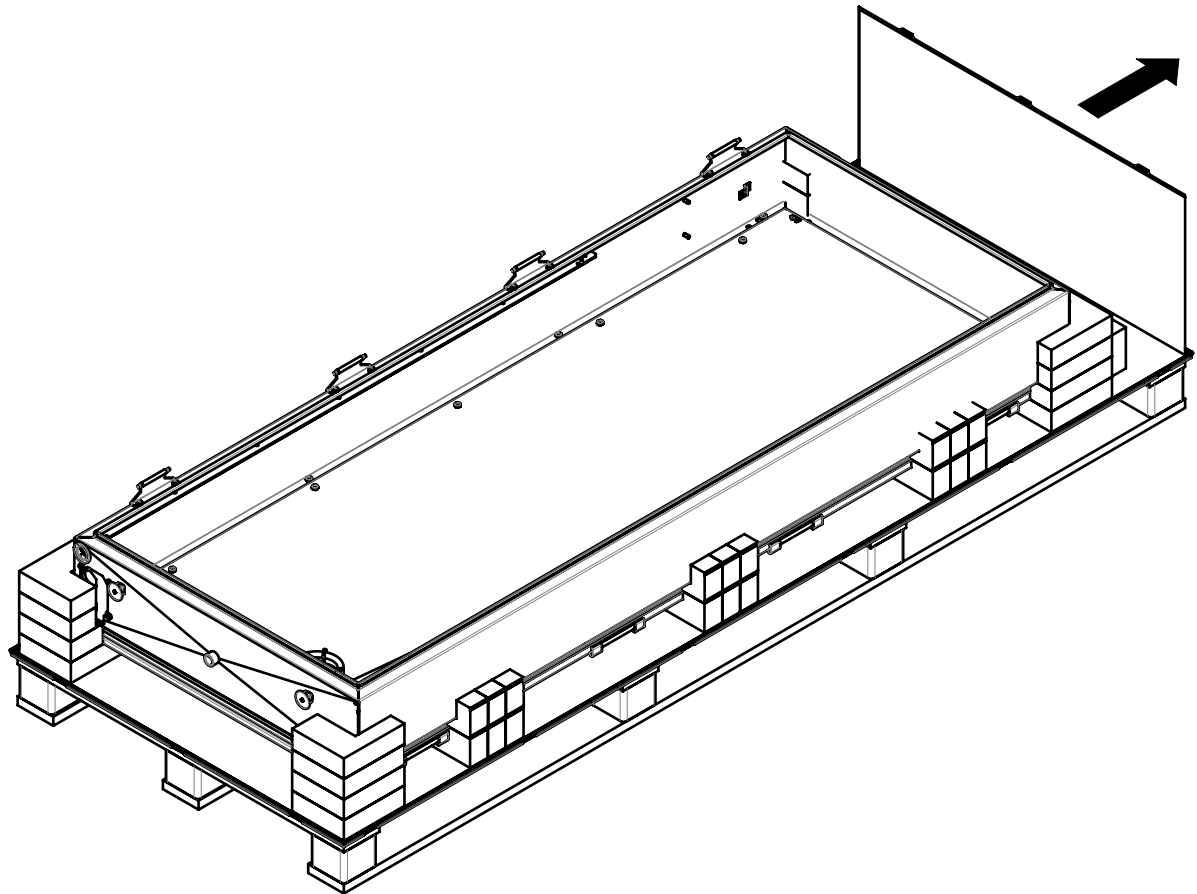
13 (1x)



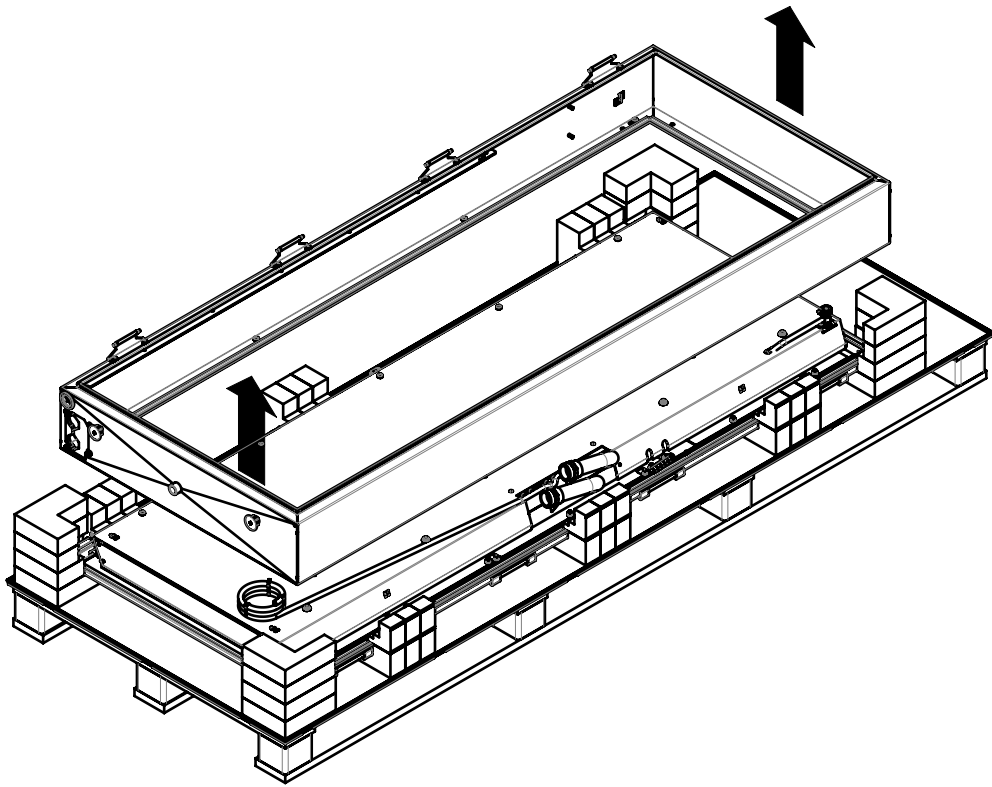
1



2

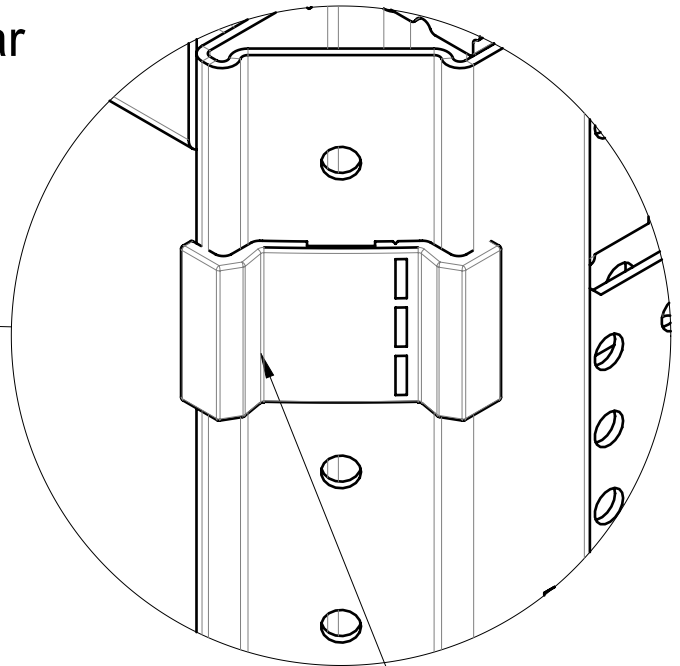
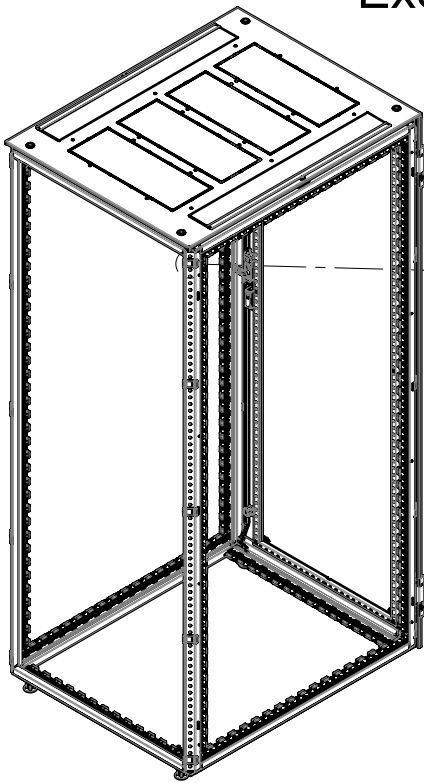


3



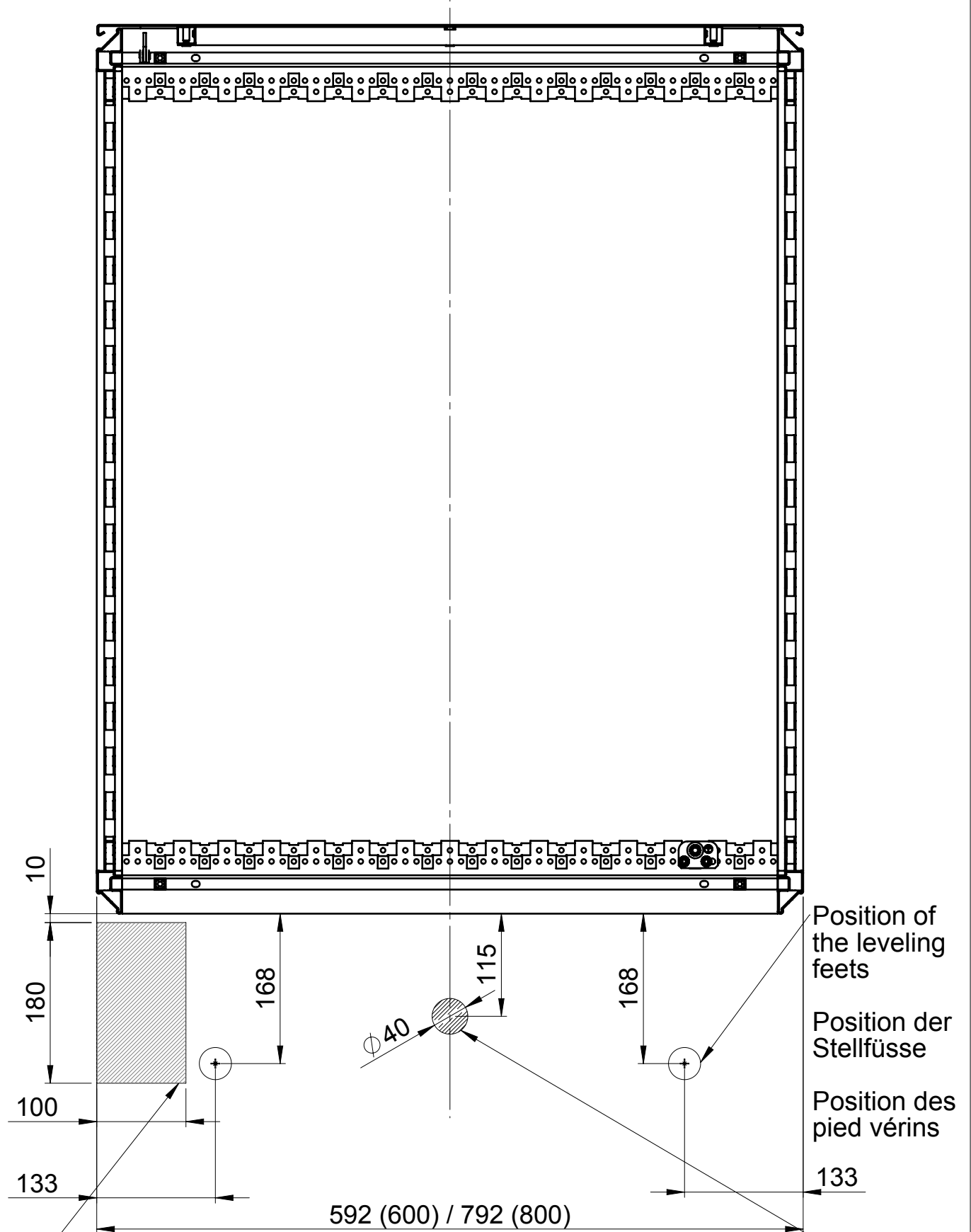
4

Example: Varistar  
 Beispiel: Varistar  
 Exemple: Varistar



Remove the plastic door stoppers or the IP55 gasket.  
 Tür Anschläge aus Kunststoff oder IP55 Dichtung entfernen.  
 Enlever les butées de porte plastique ou le joint d'étanchéité IP55.

HORIZONTAL CUT VIEW

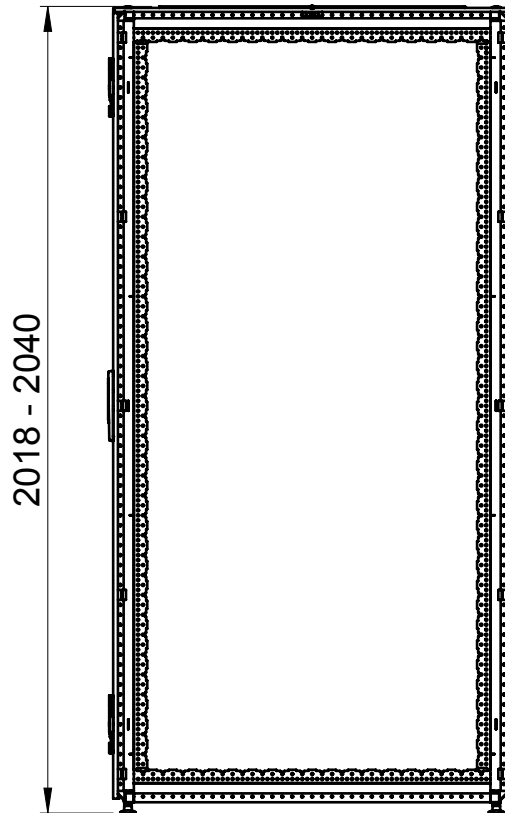


Realize cut outs in the double floor before mounting.  
 Ausbrüche im Doppelboden vor der Montage vorsehen.  
 Création de découpes dans le plancher technique avant montage.

6

(A)

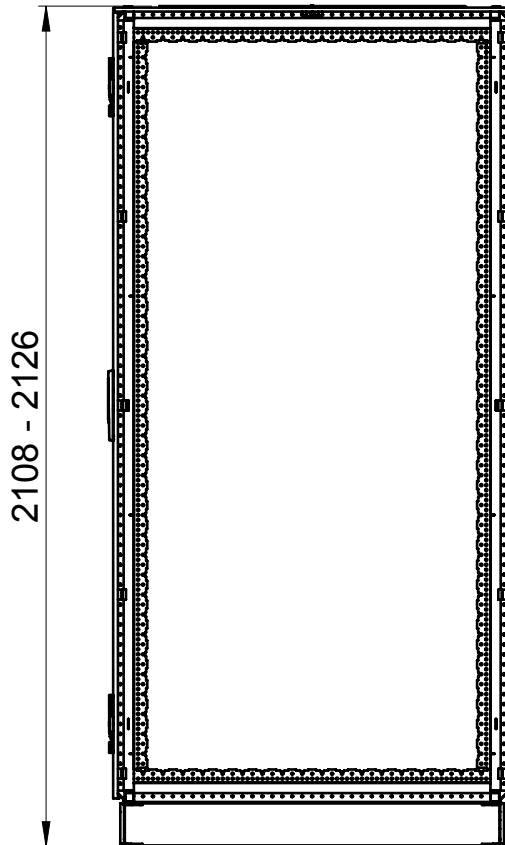
Without plinth  
Ohne sockel  
Sans socle



Small leveling feet for cabinet height between 2018 - 2040mm.  
Kleiner Nivelierfuss für Schrank Höhen von 2018 - 2040 mm.  
Petit pied vérin pour hauteur d'armoire de 2018 - 2040 mm.

(B)

With plinth  
Mit sockel  
Avec socle

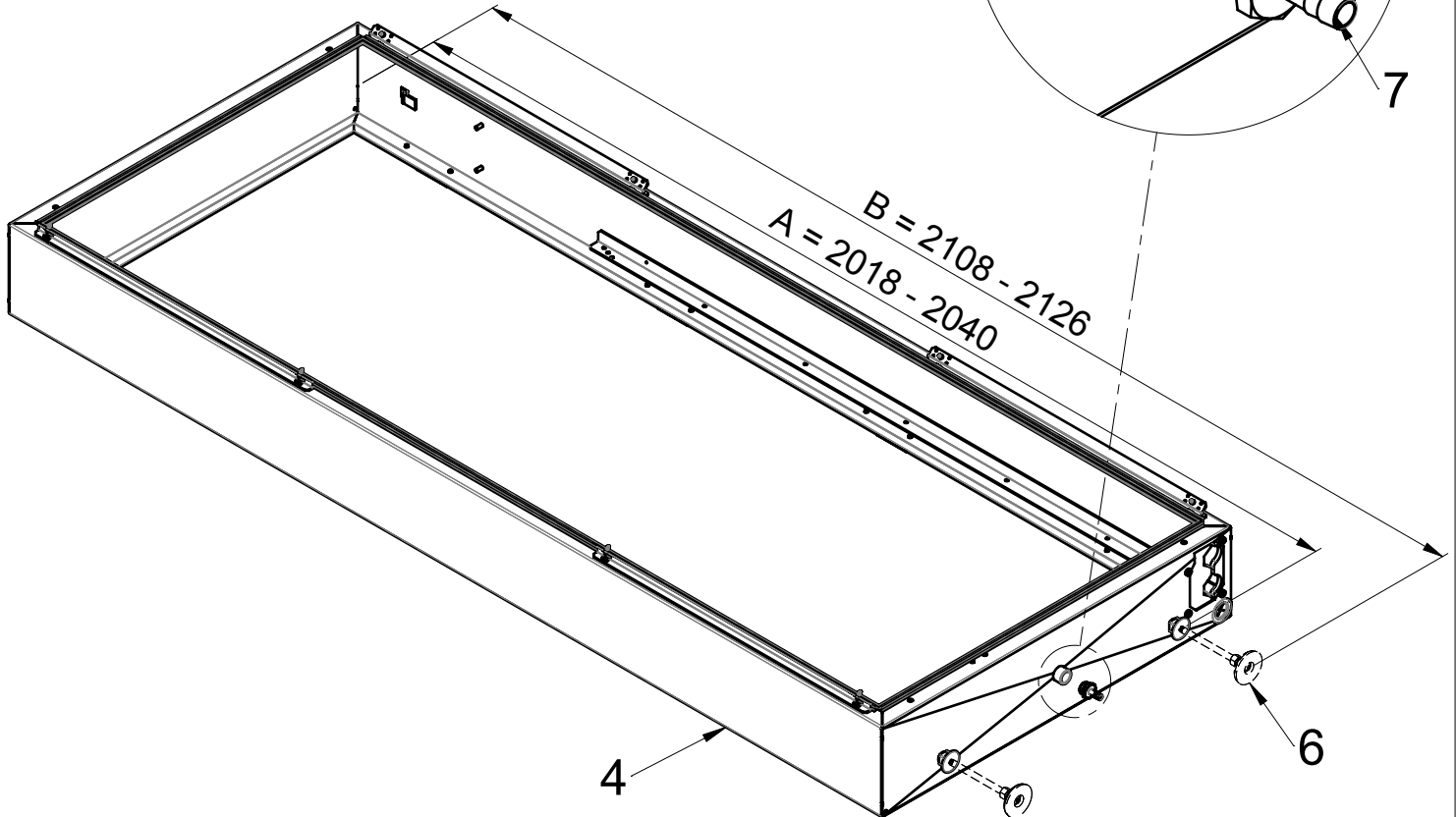
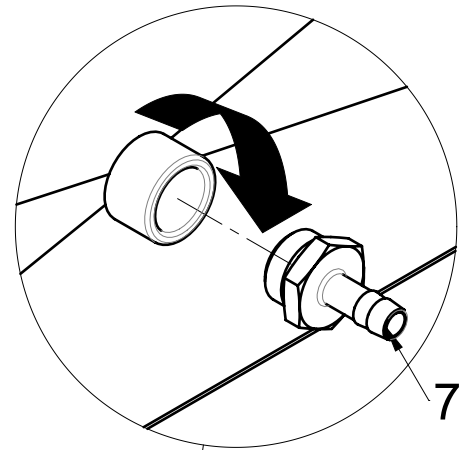


Tall leveling feet for cabinet height between 2108 - 2126mm.  
Großer Nivelierfuss für Schrank Höhen von 2108 - 2126 mm.  
Grand pied vérin pour hauteur d'armoire de 2108 - 2126 mm.

**7** Kondensat Anschluss mit Dichtungsmittel montieren  
(Teflon Band oder gleichwertig)

Réaliser l'étanchéité du raccord pour condensat lors  
du montage ( ruban téflon ou équivalent)

Realize a sealed assembly of the condensate  
connector (Teflon tape or equivalent)



**8**

	<p>Danger of cabinet tipping Kippgefahr des Schrankes Danger de renversement de l'armoire</p>	
--	---	--

**Danger of tipping over!**

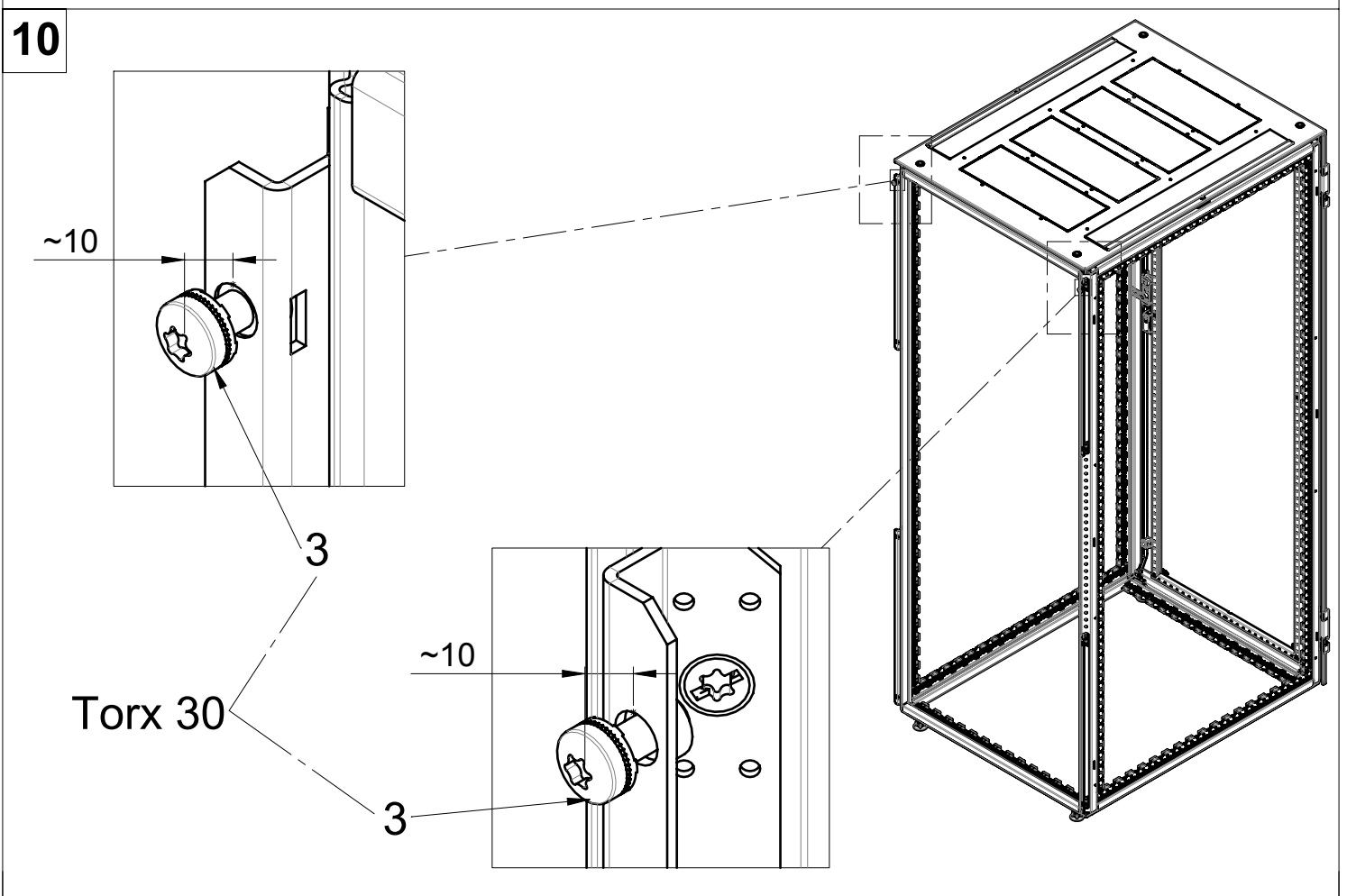
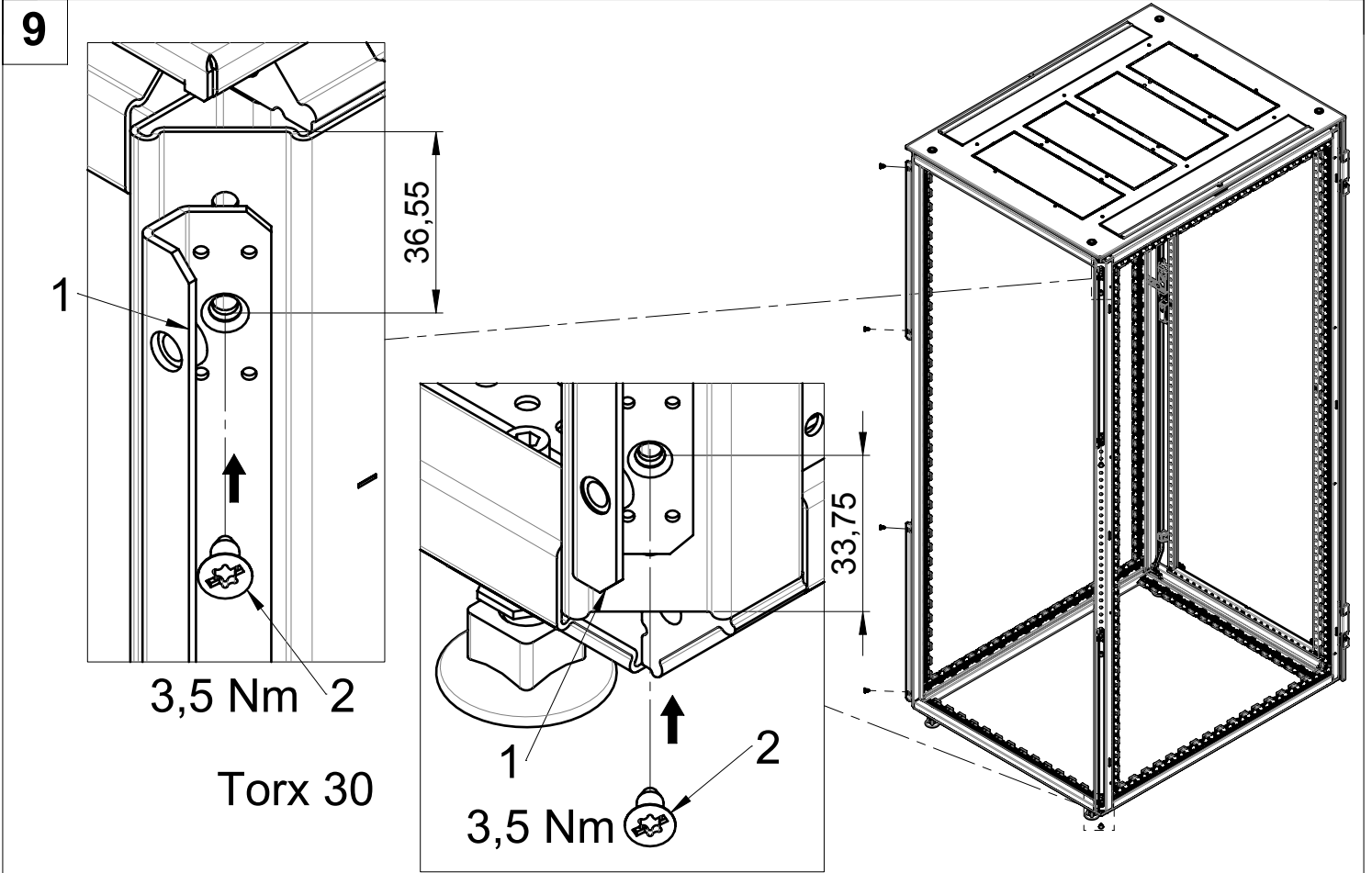
The door with the RackChiller can only be mounted on the server cabinet when it is fully assembled and / or securely anchored to the floor. Otherwise, the server cabinet can tip over when the RackChiller is open.

**Achtung Kippgefahr!**

Die RackChiller Tür an den Serverschrank montieren, nur wenn dieser komplett mit Server ausgebaut oder am Boden befestigt ist. Andernfalls könnte der Serverschrank bei der Öffnung der Tür umkippen.

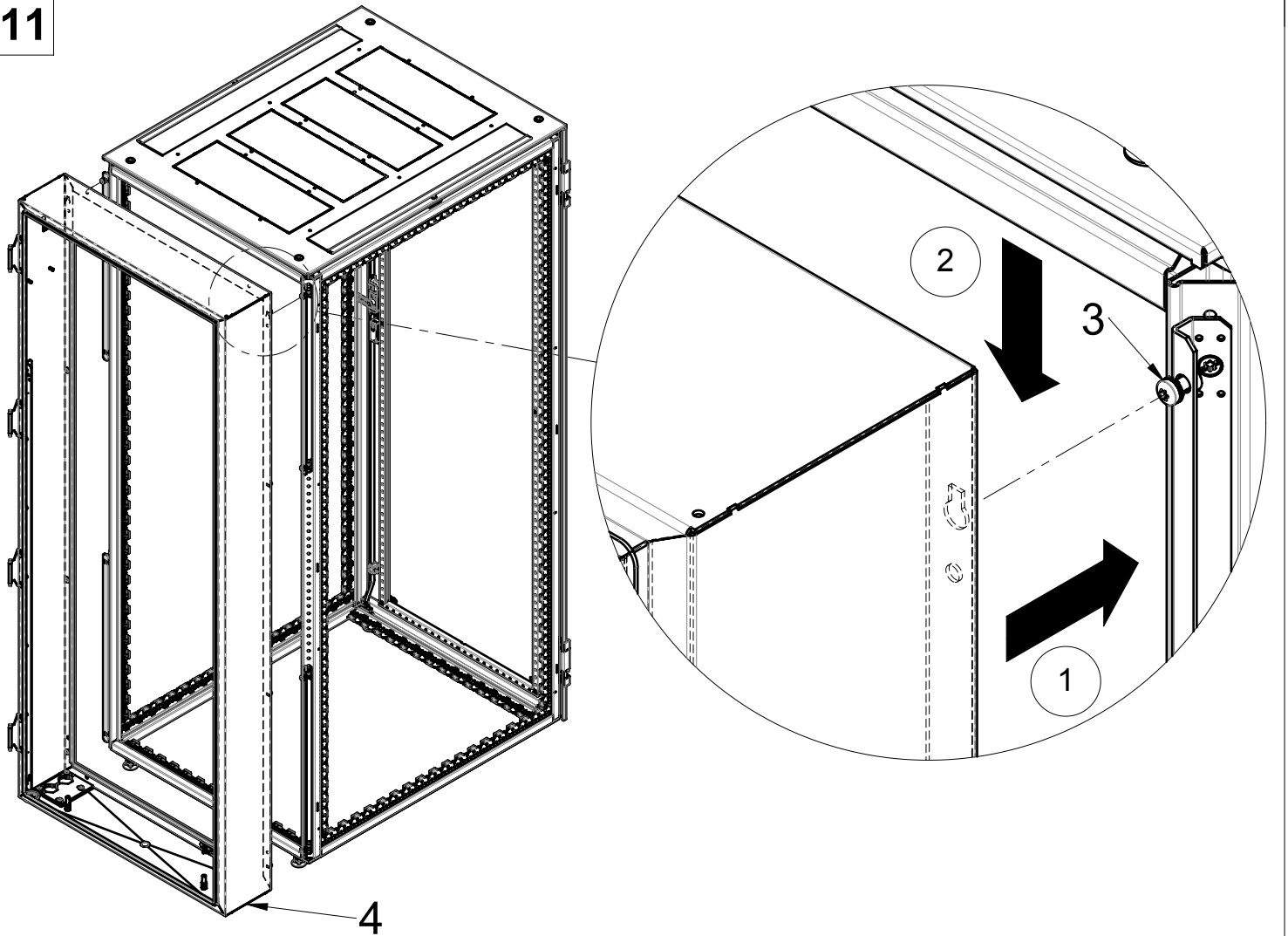
**Attention risque de basculement!**

Monter uniquement la porte RackChiller sur une baie server complètement équipée ou fixée au sol. Dans le cas contraire la baie server pourrait basculer lors de l'ouverture de la porte RackChiller.

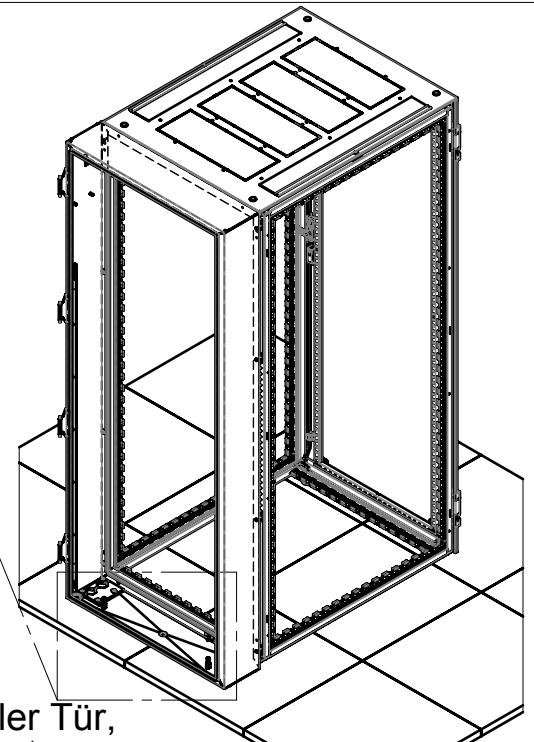
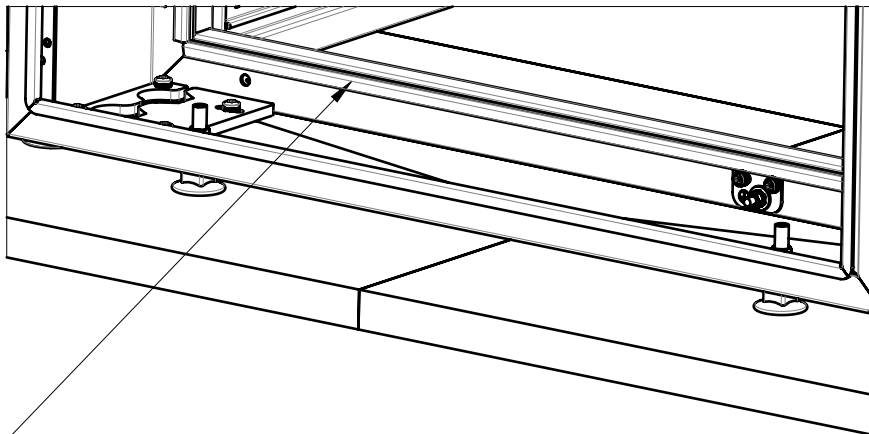




11



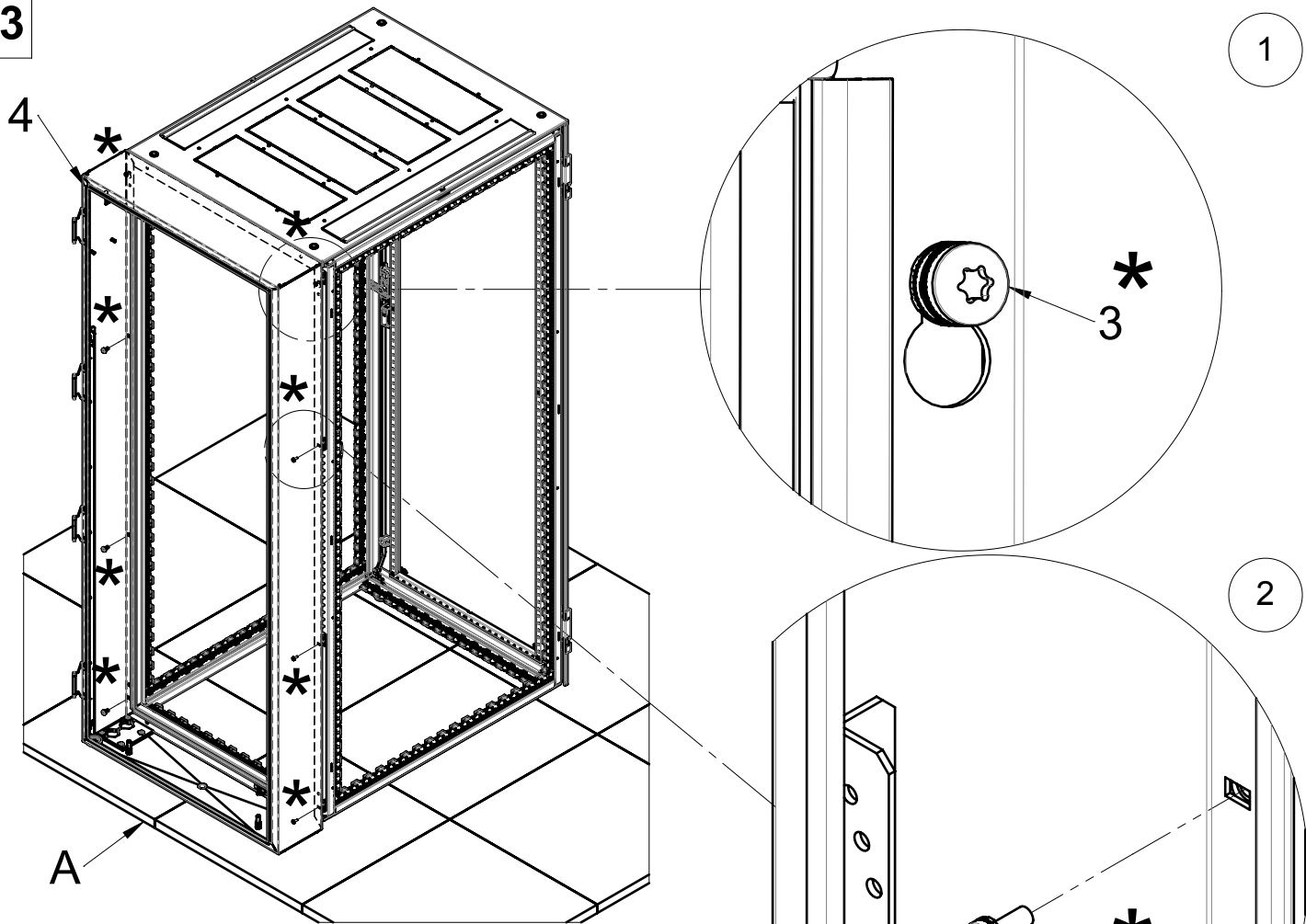
12



After mount the body of the RackChiller door, make a check if the gasket have a good contact with the cabinet frame.

Nach dem montieren des Aufsatzgehäuse der RackChiller Tür, prüfen Sie das die Dichtung am Schrankgestell gut anliegt.

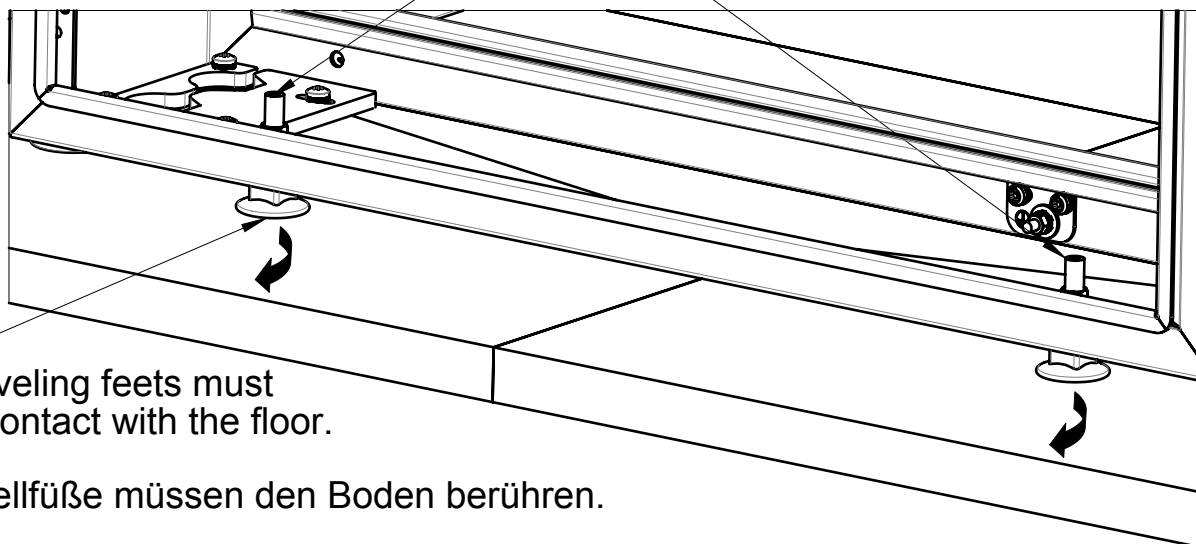
Après la mise en place du caisson, vérifier le bon contact du joint avec le cadre de l'armoire.



Torx 30  
5 Nm

A (1 : 4)

Torx 30

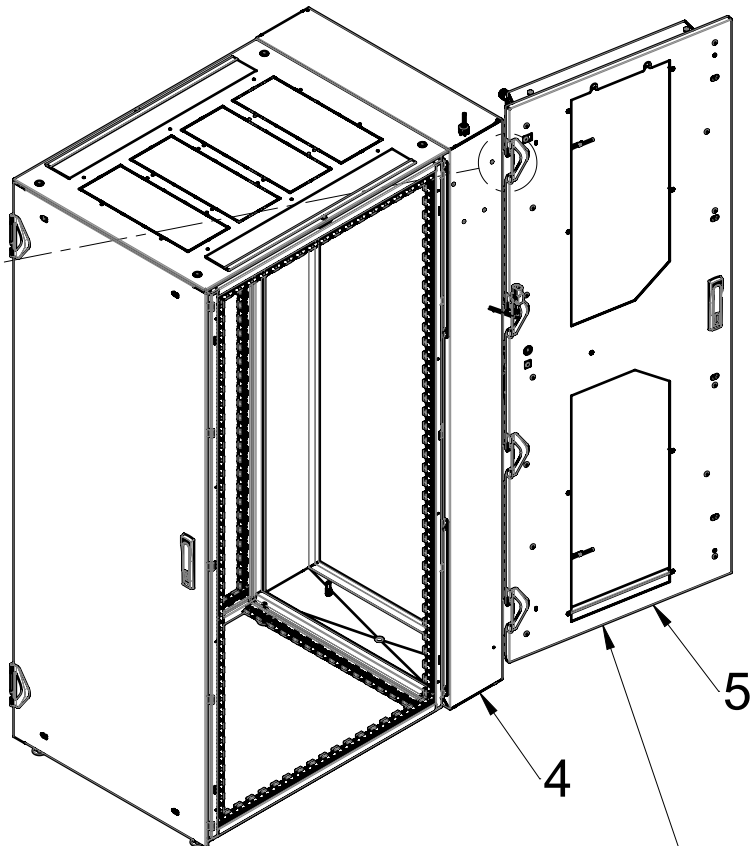
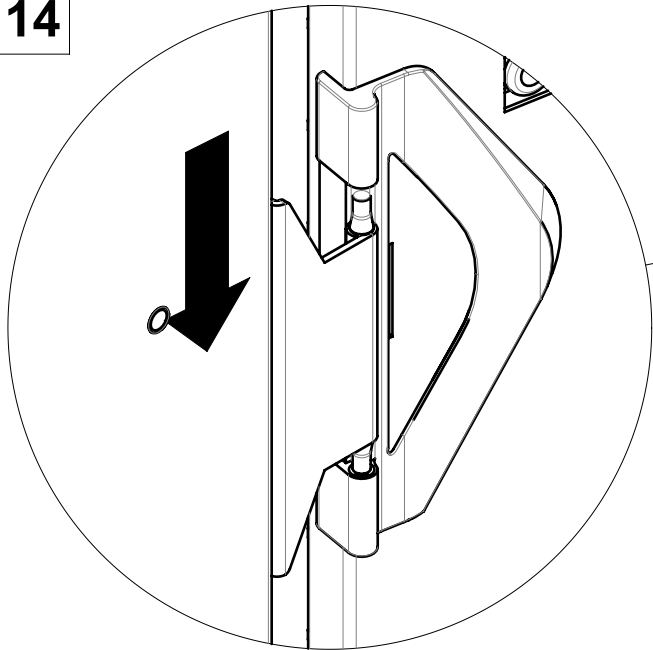


The leveling feet must be in contact with the floor.

Die Stellfüße müssen den Boden berühren.

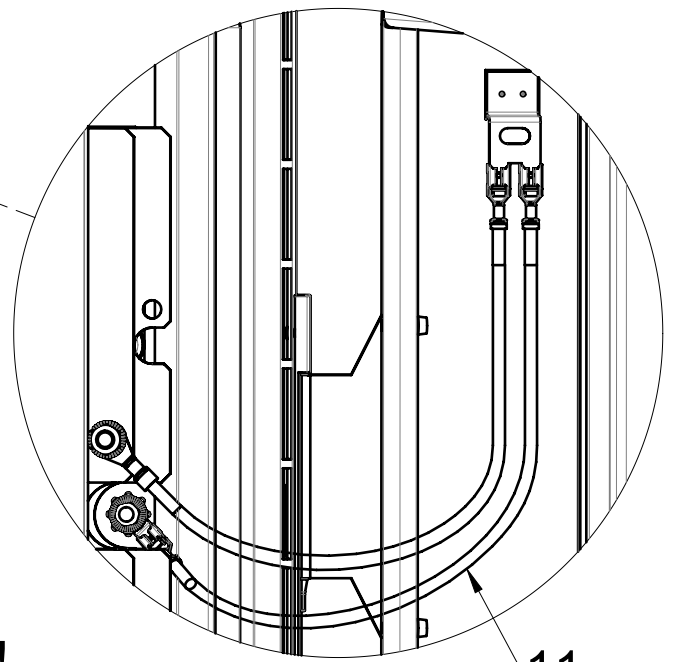
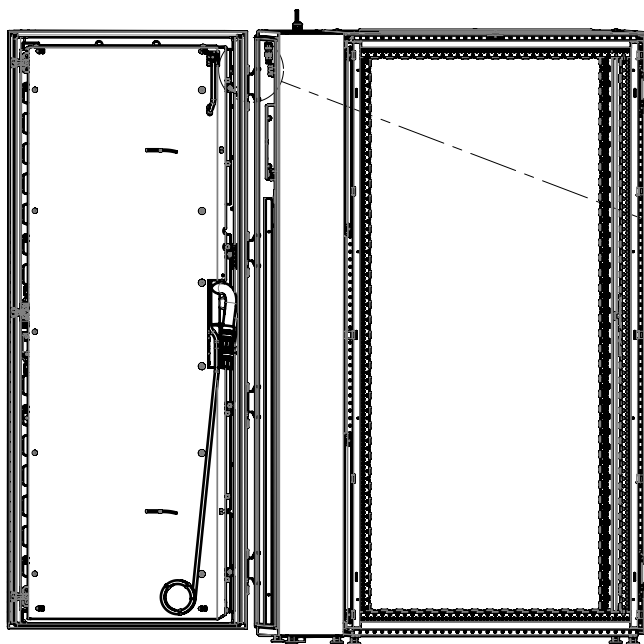
Les pieds réglables doivent être en contact avec le sol.

14



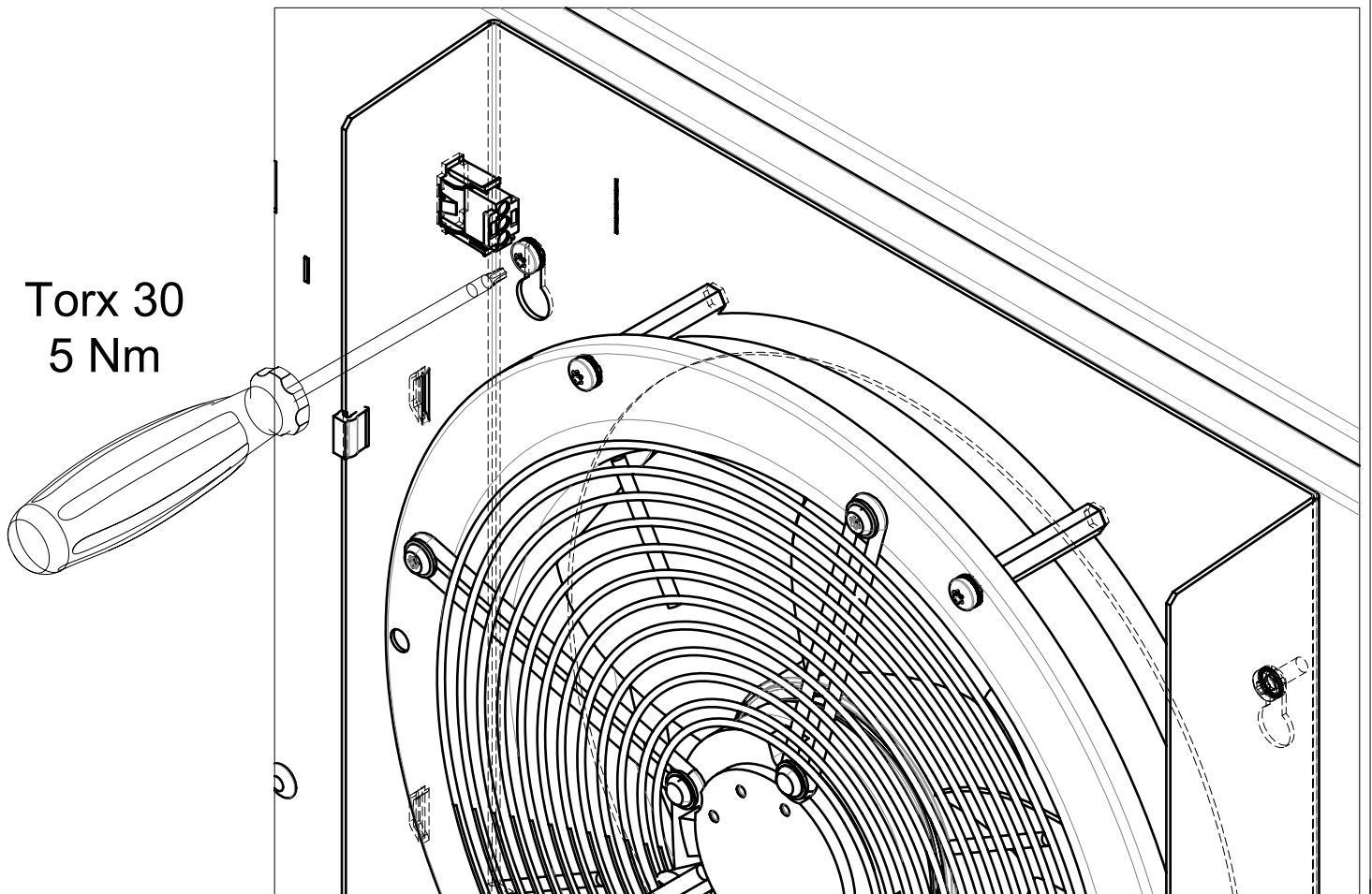
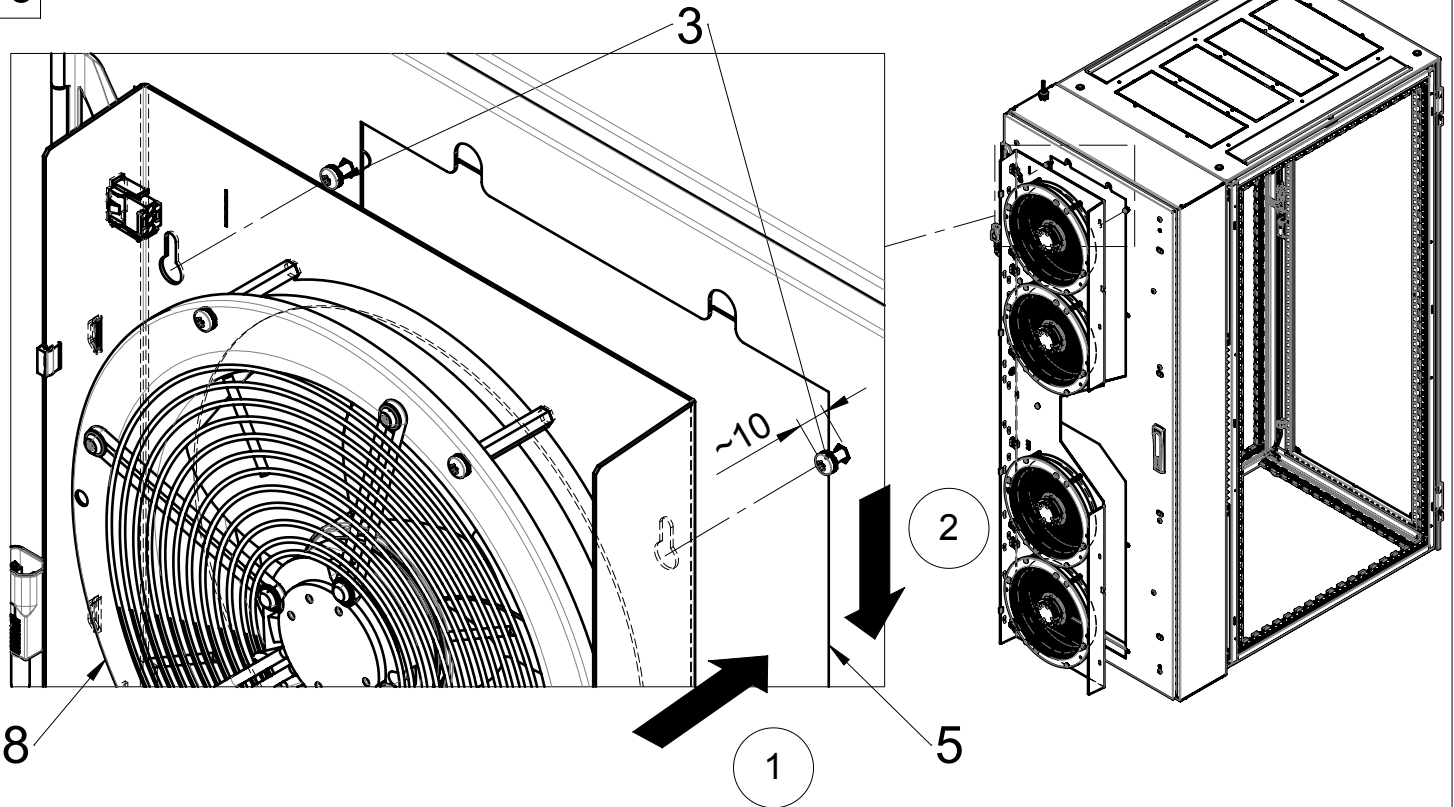
Put cardboard on the floor to protect the RackChiller door during the mounting phase.  
 Legen Sie Kartonnage auf den Boden, um die RackChiller Tür während der Montage zu schützen.  
 Poser du carton au sol pour protéger la porte RackChiller pendant la phase de montage.

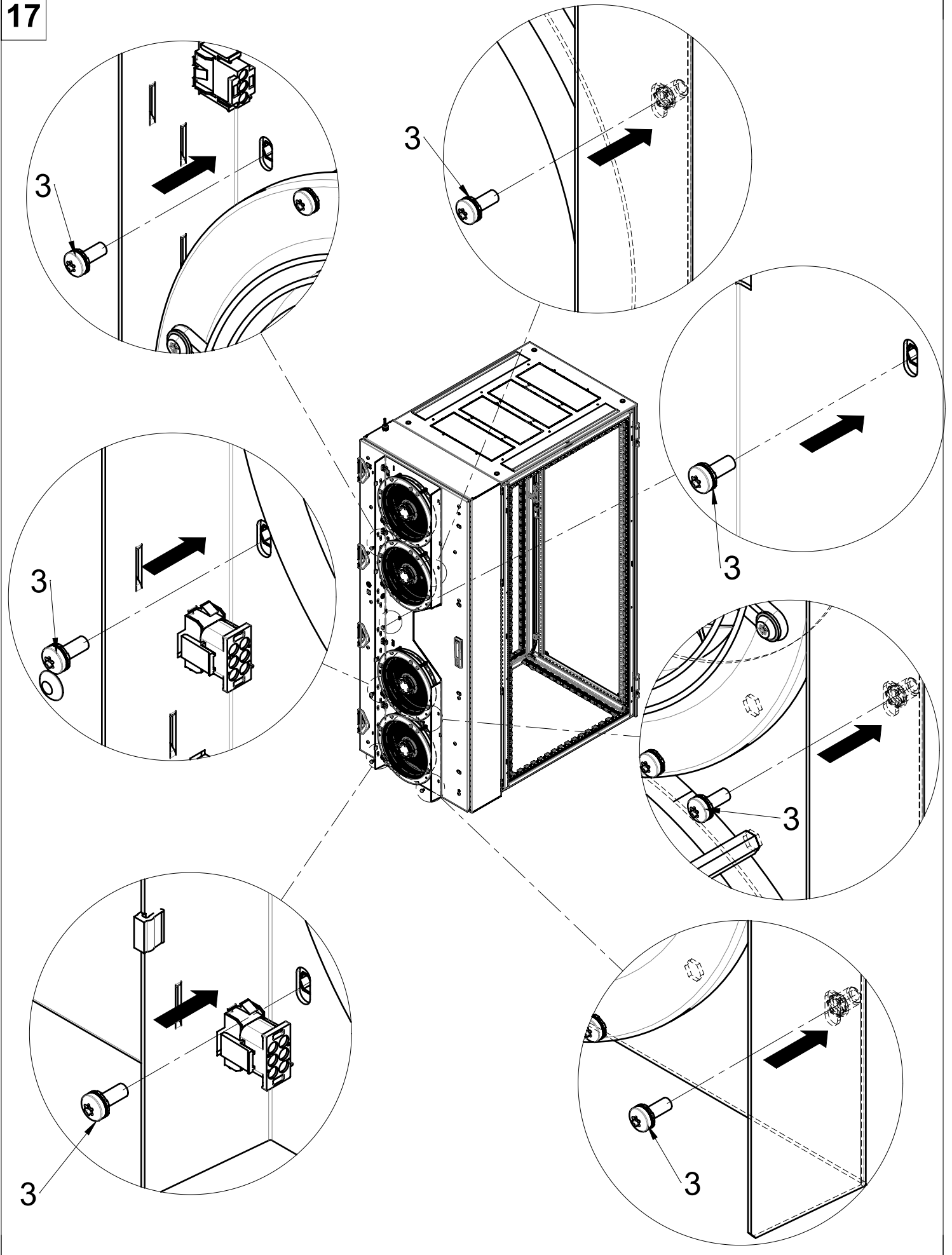
15



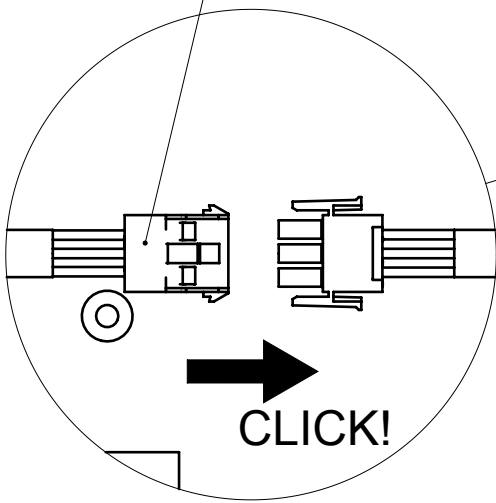
Attention: see also User's Manual!  
 Achtung: siehe auch die Benutzeranleitung!  
 Attention: voir aussi la notice d'utilisation!

16

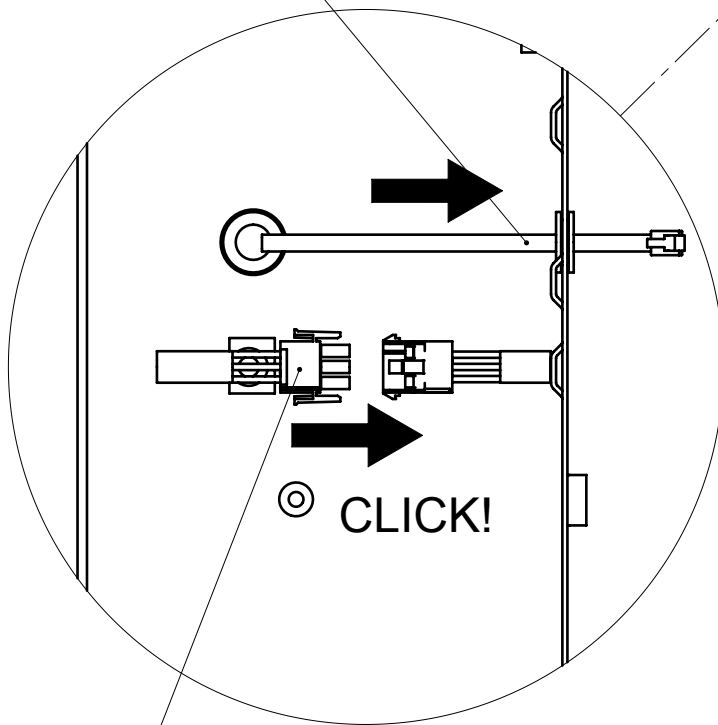




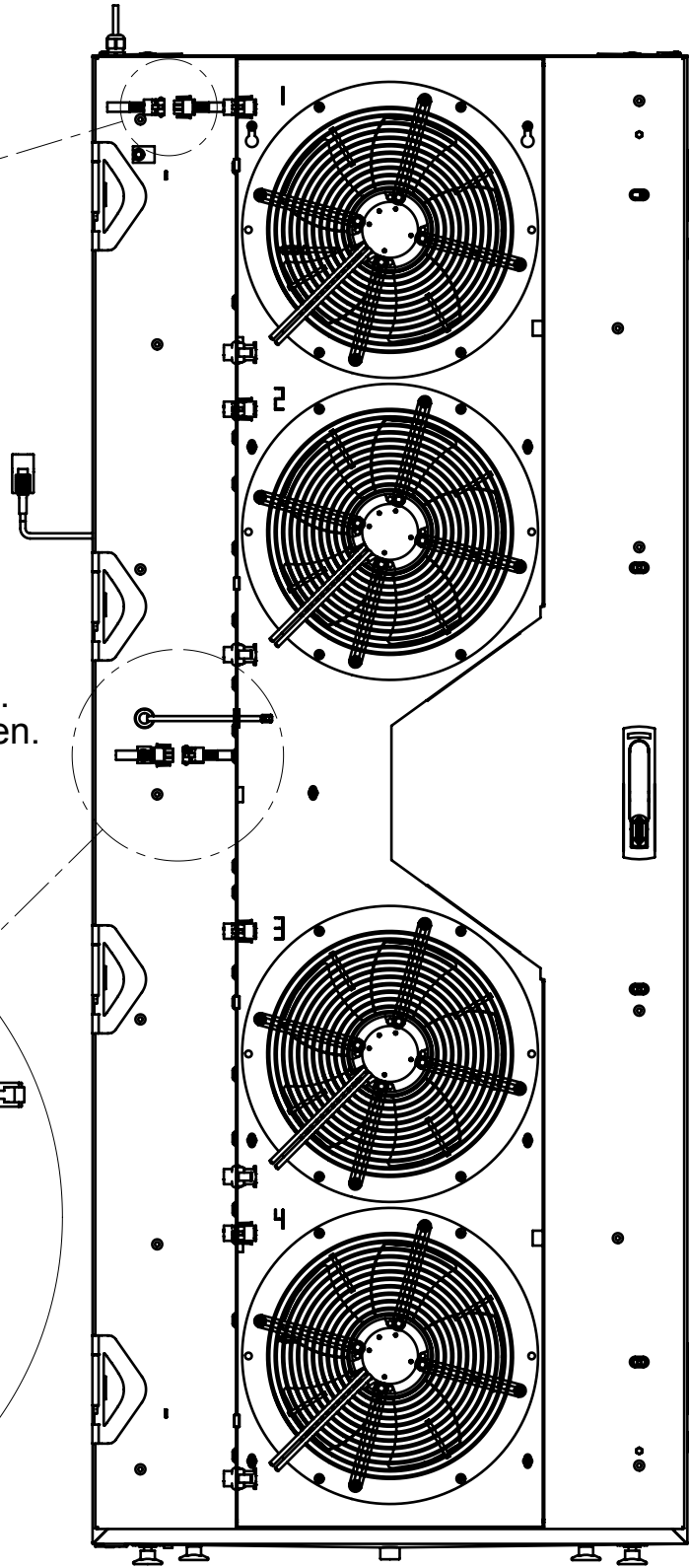
Connect the fans power cable.  
 Das Lüfterkabel anschliessen.  
 Connecter le câble d'alimentation des ventilateurs.



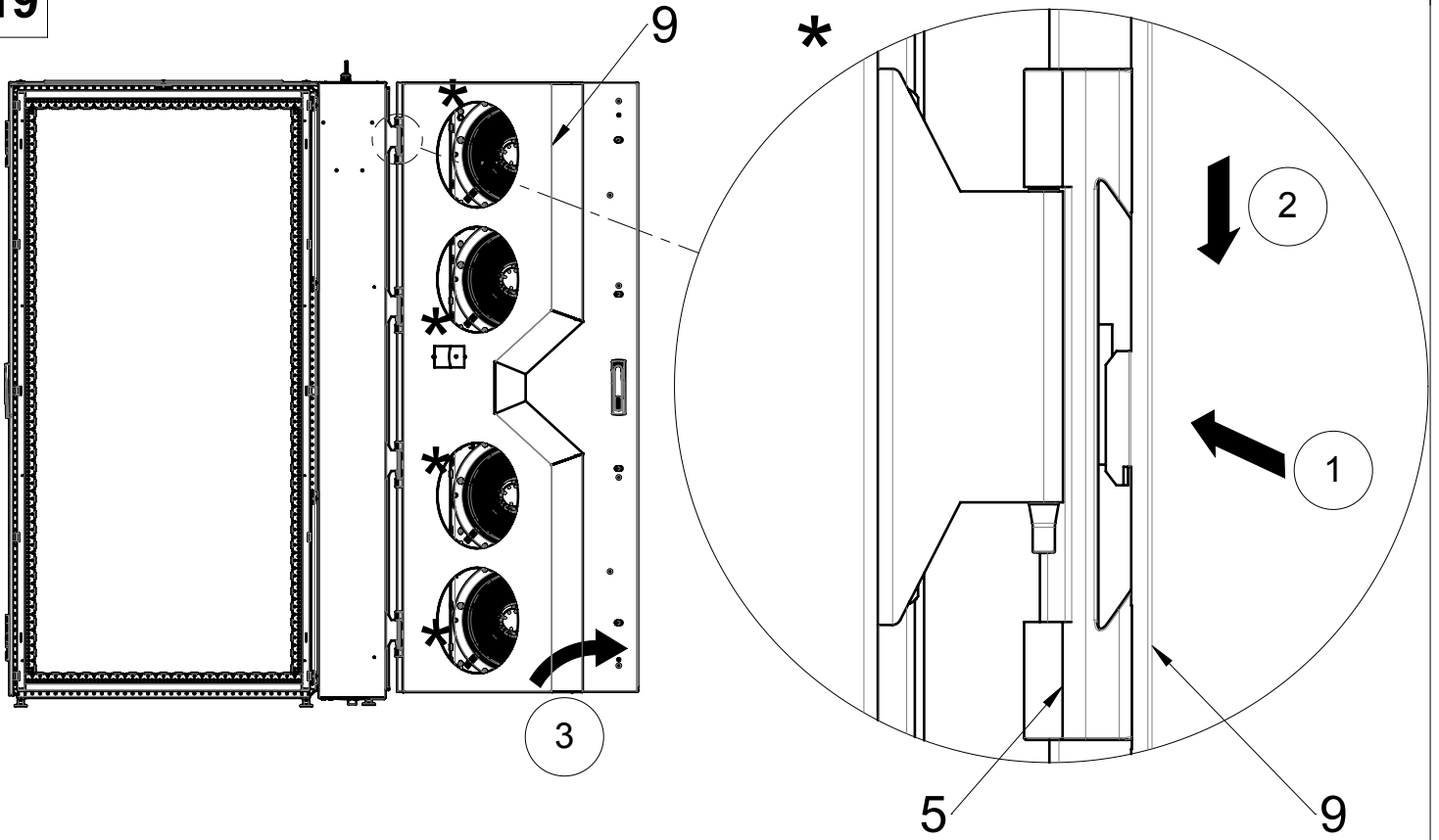
Pass the display cable through the hole.  
 Das Anzeigekabel durch das Loch führen.  
 Passer le câble de l'afficheur à travers le trou.



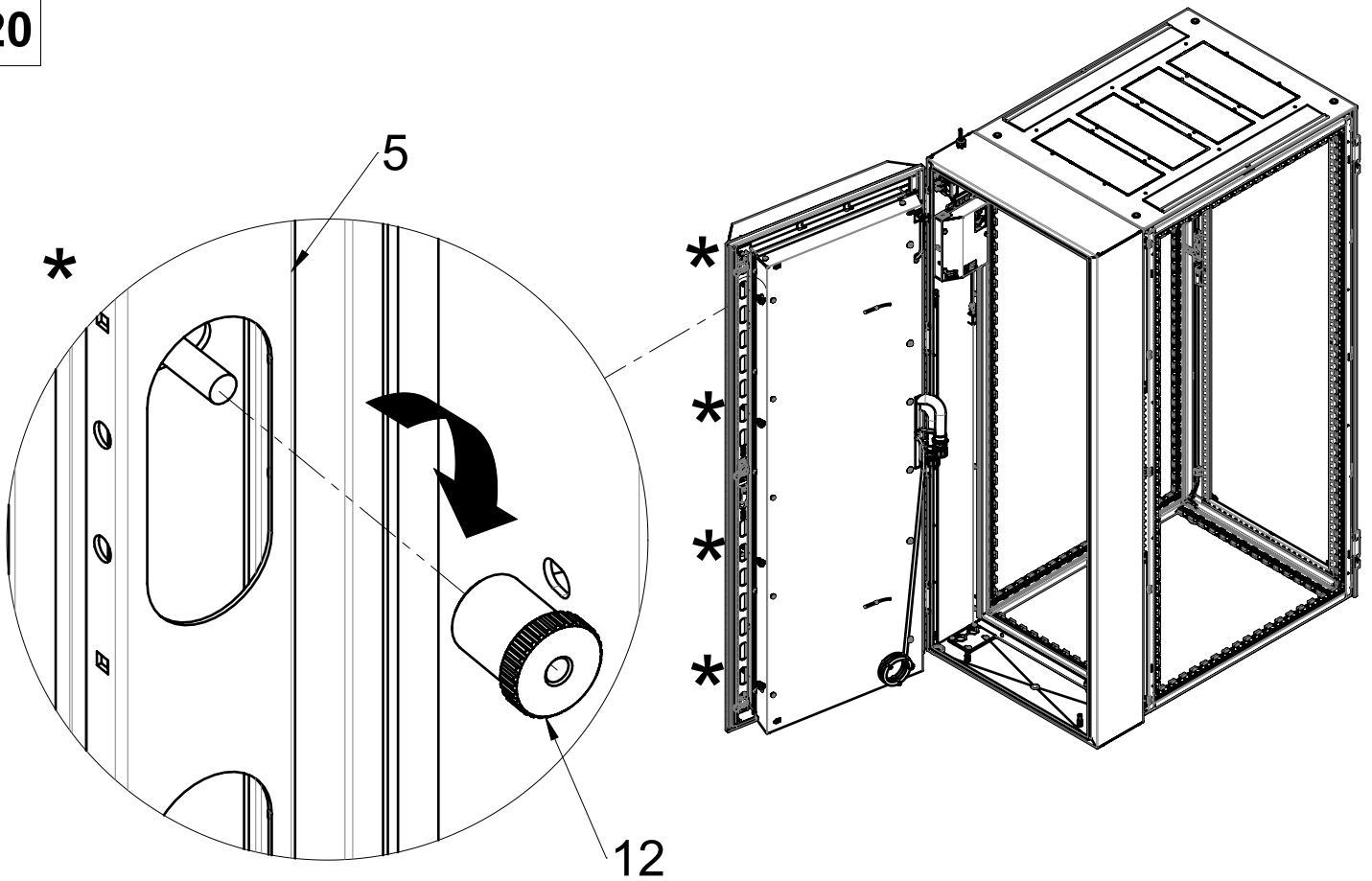
Connect the Modbus cable.  
 Das Modbus-Kabel anschliessen.  
 Connecter le câble Modbus.

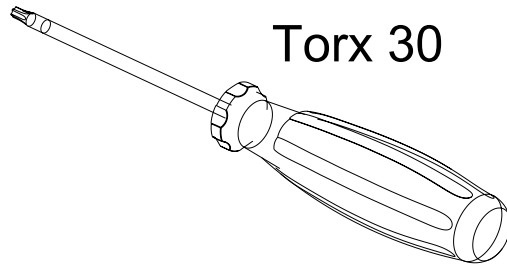
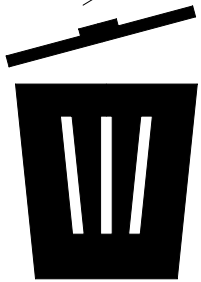
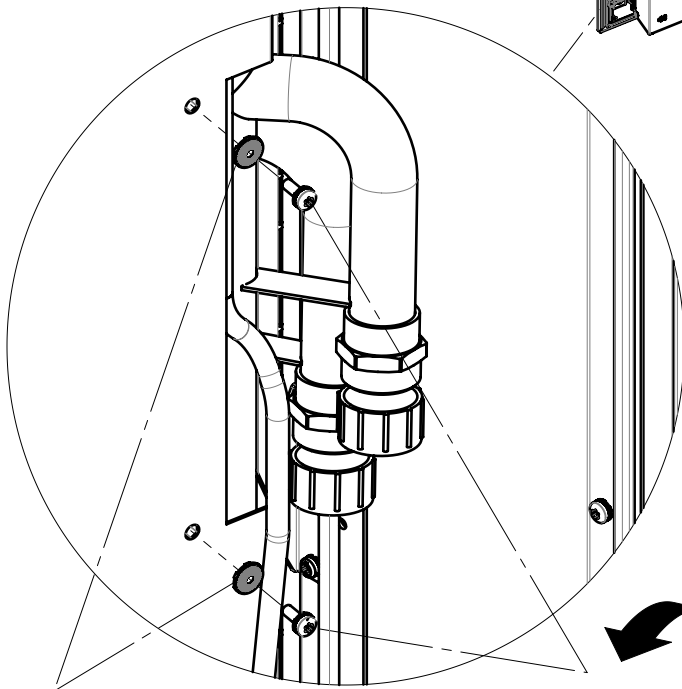
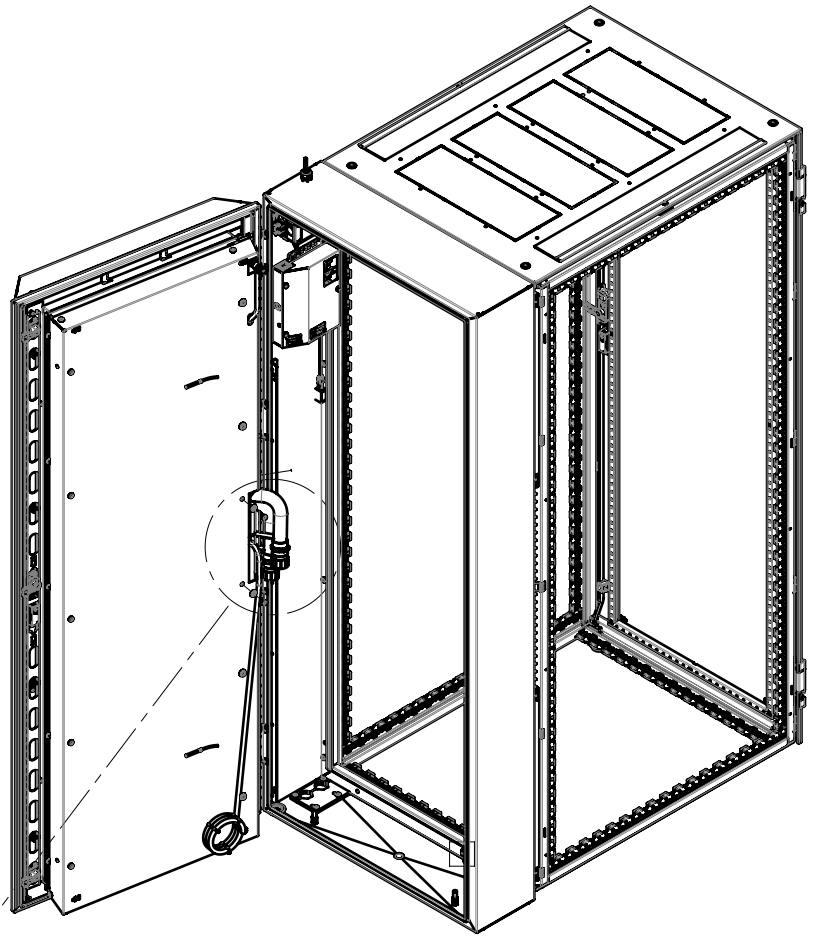


19



20



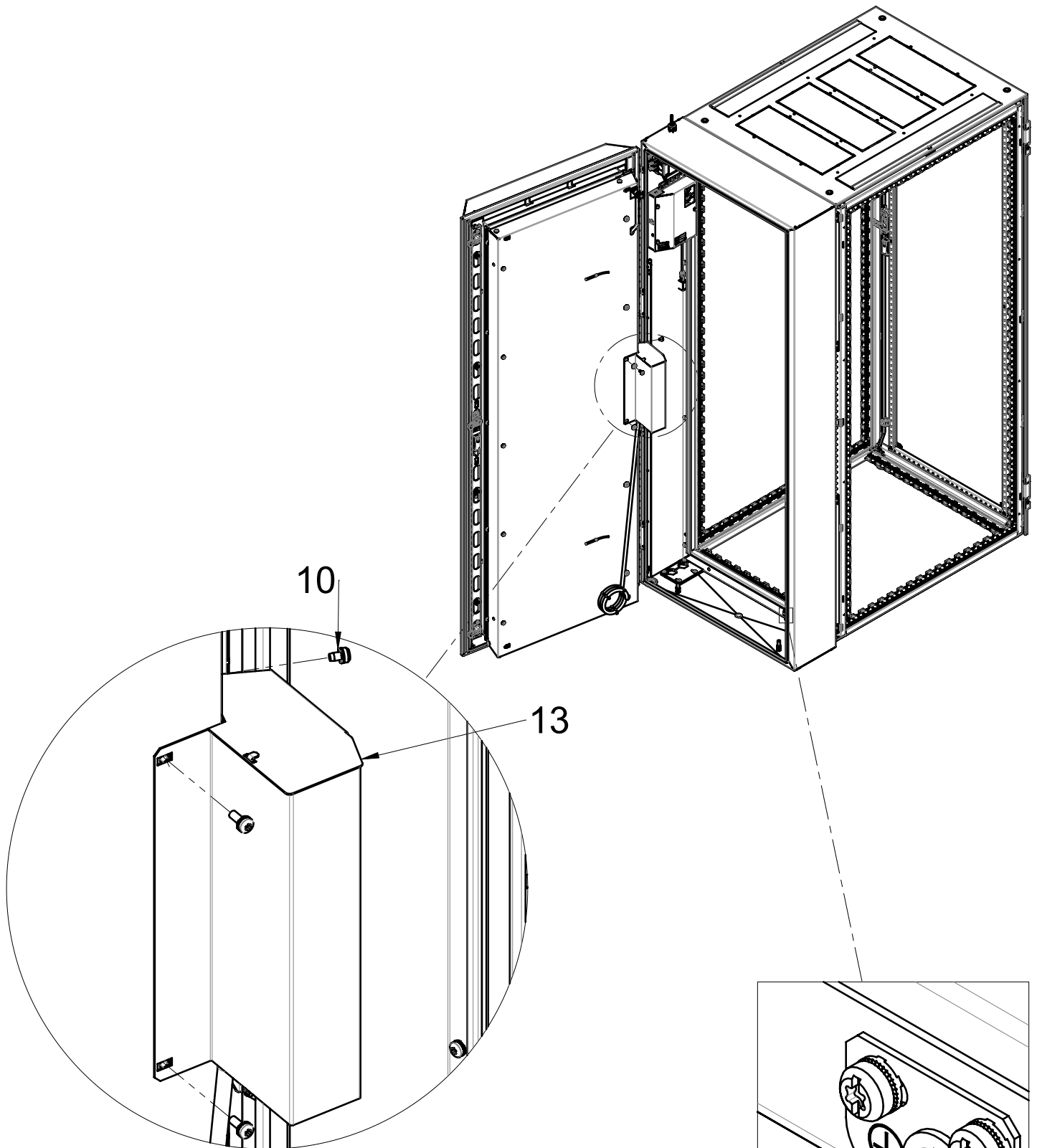


Torx 30



**22**

Make the fixing of cover Pos.13 only after installation of the flexible water hoses.  
 Montieren Sie Haube Pos.13 nach dem Anschluss der flexiblen Wasseranschlusschläuche.  
 Monter le capot Pos.13 après avoir fait le branchement des tuyaux d'eau flexible.

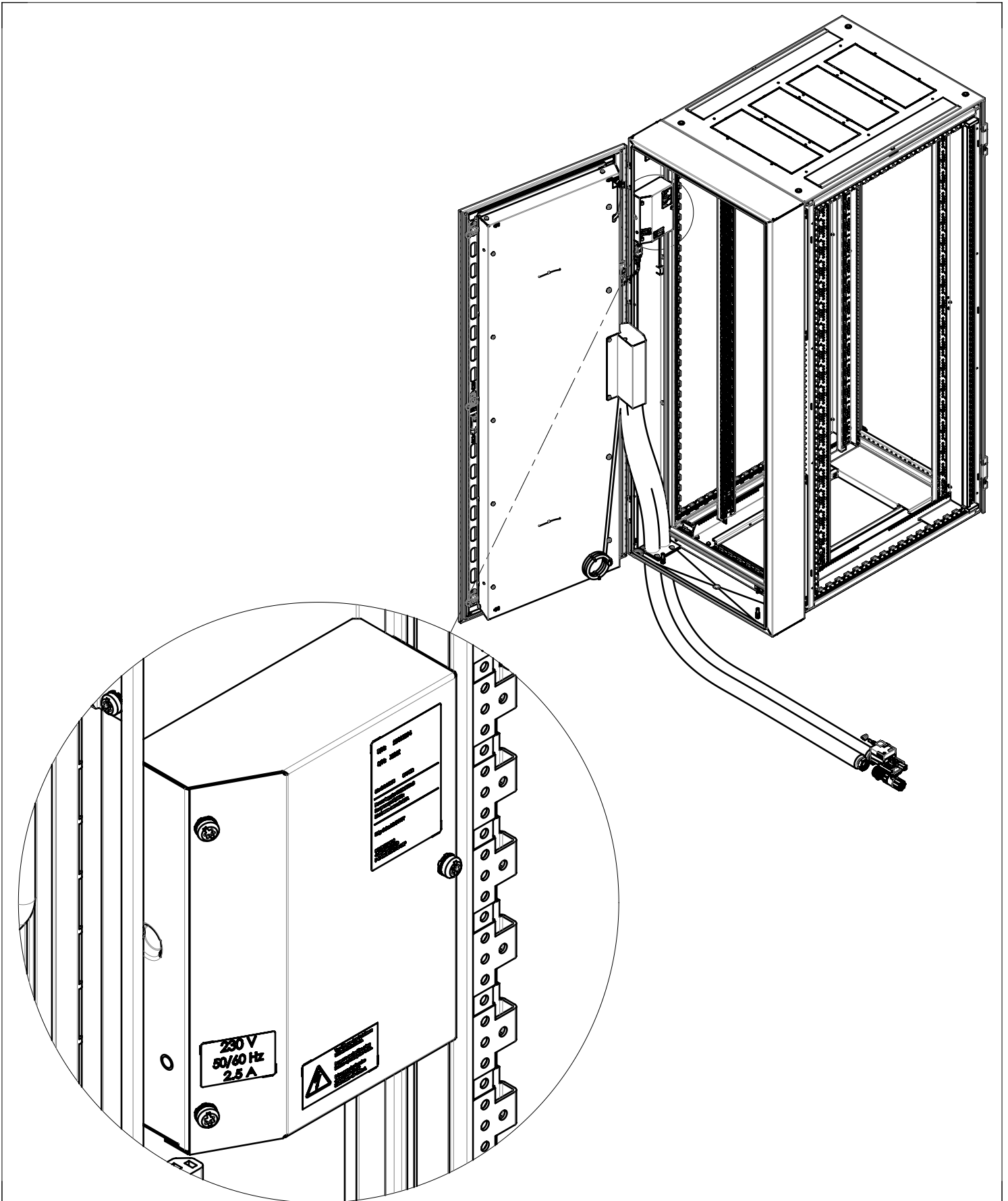


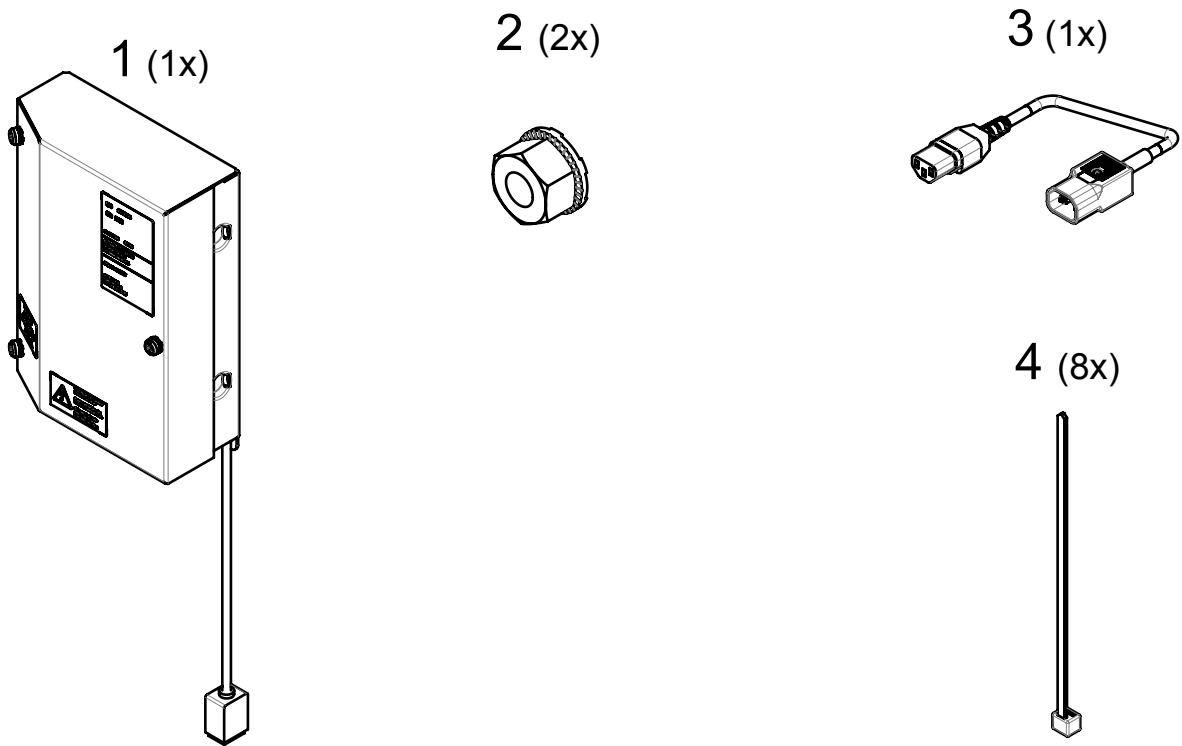
Attention: connect the central earthing point.  
 Achtung: Zentraler Erdungspunkt Anschliessen.  
 Attention: Connecter le point de masse central.

Further product information available on:  
<https://go.nvent.com/en-rackchiller-reardoor.html>

Weitere Produkt Informationen finden Sie unter:  
<https://go.nvent.com/de-rackchiller-reardoor.html>

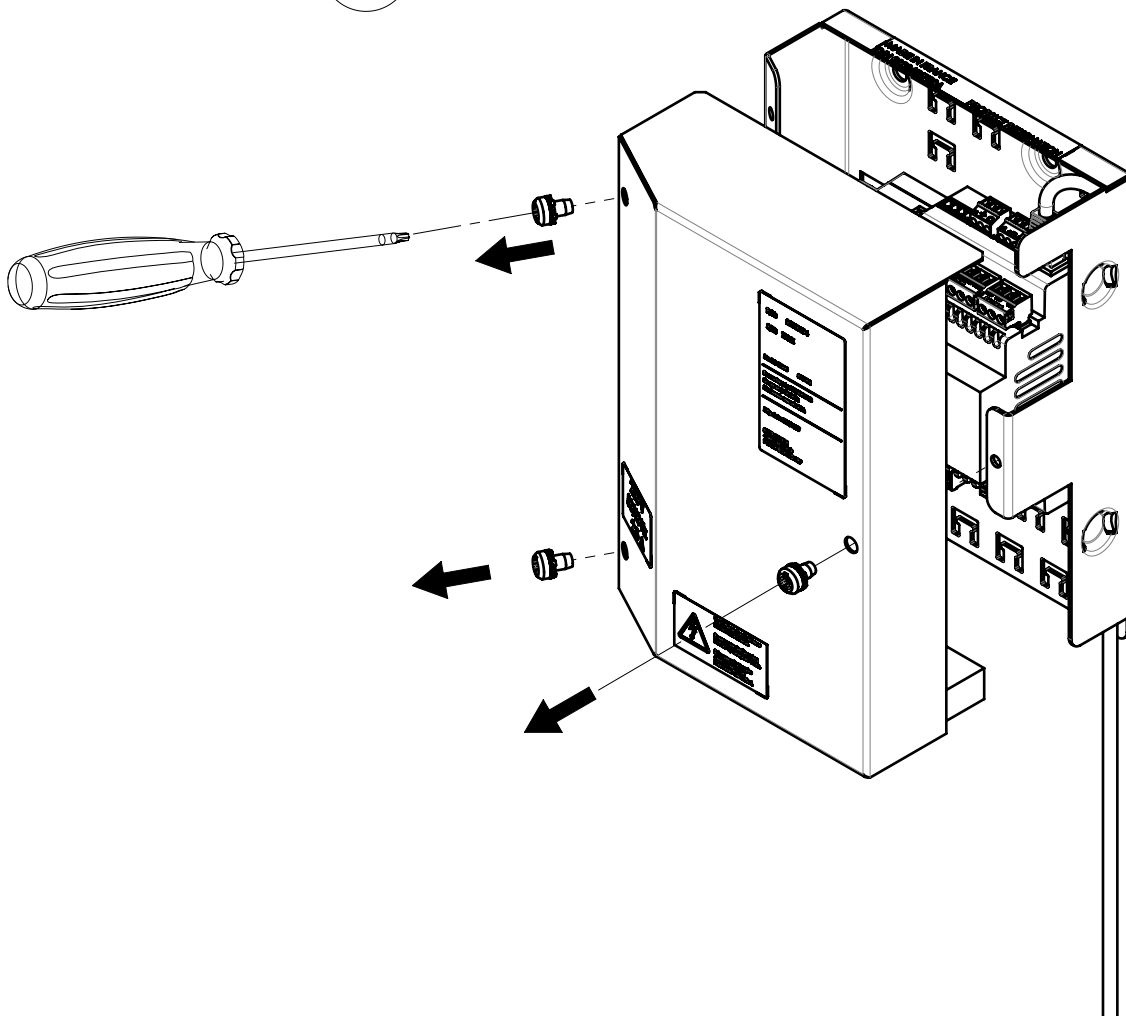
Informations complémentaires sur ce produit sous:  
<https://go.nvent.com/fr-rackchiller-reardoor.html>

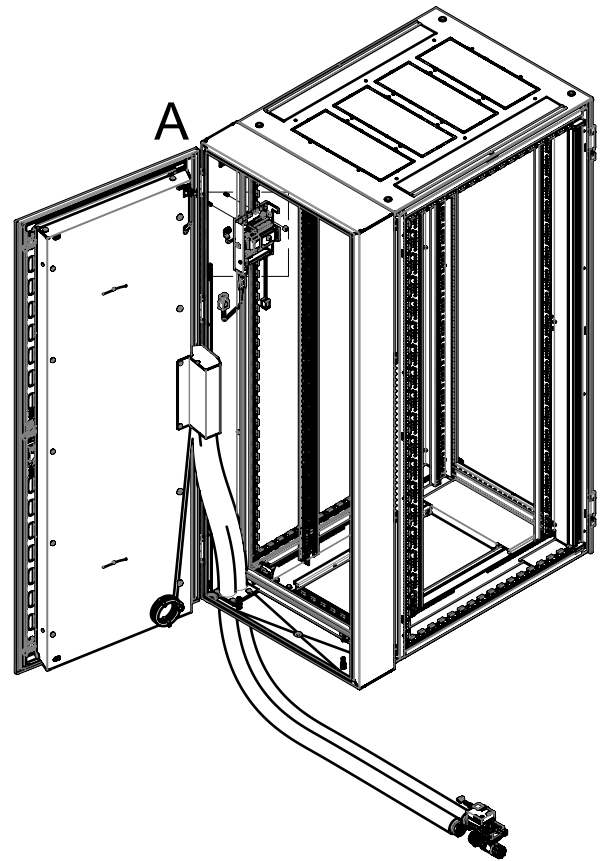




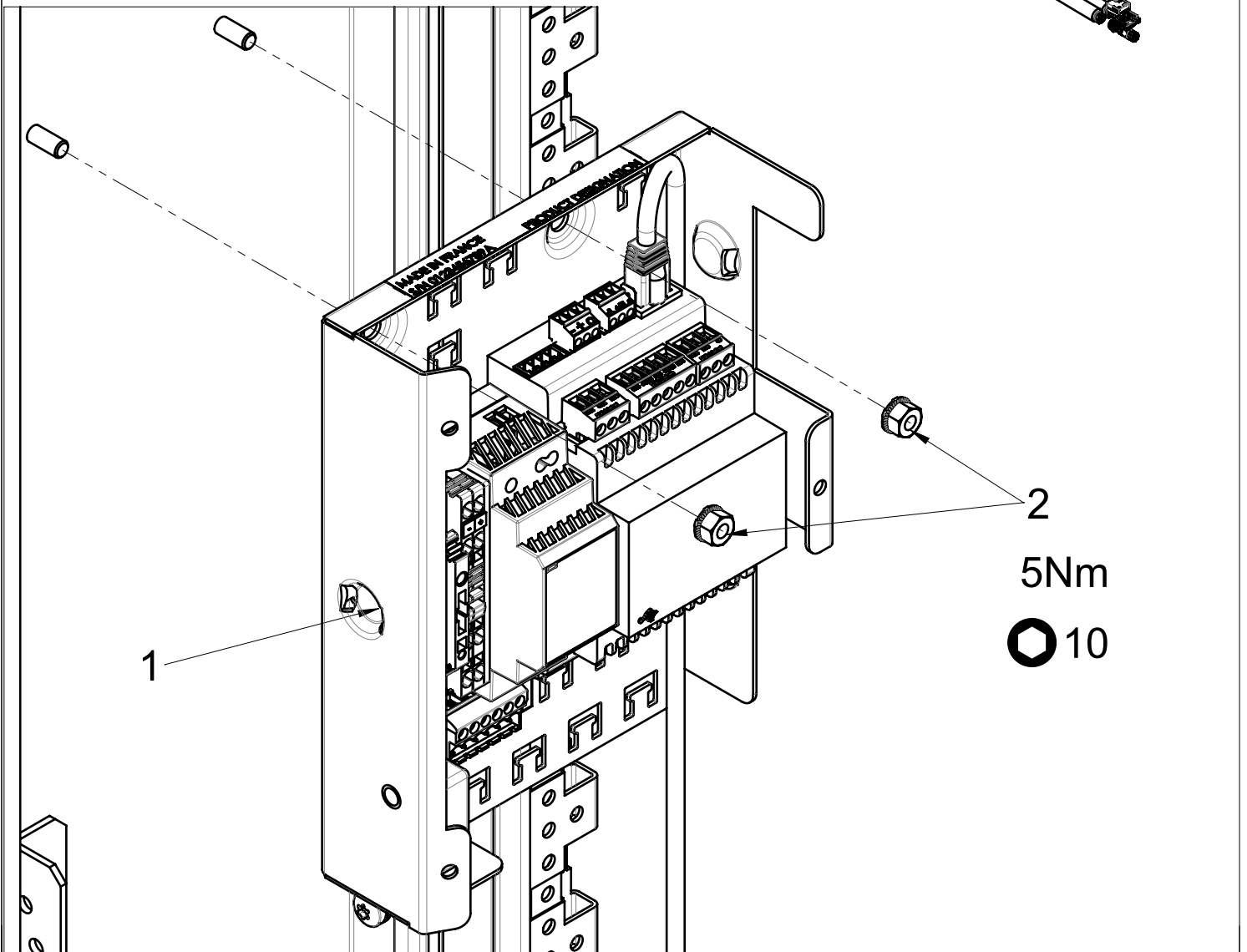
1

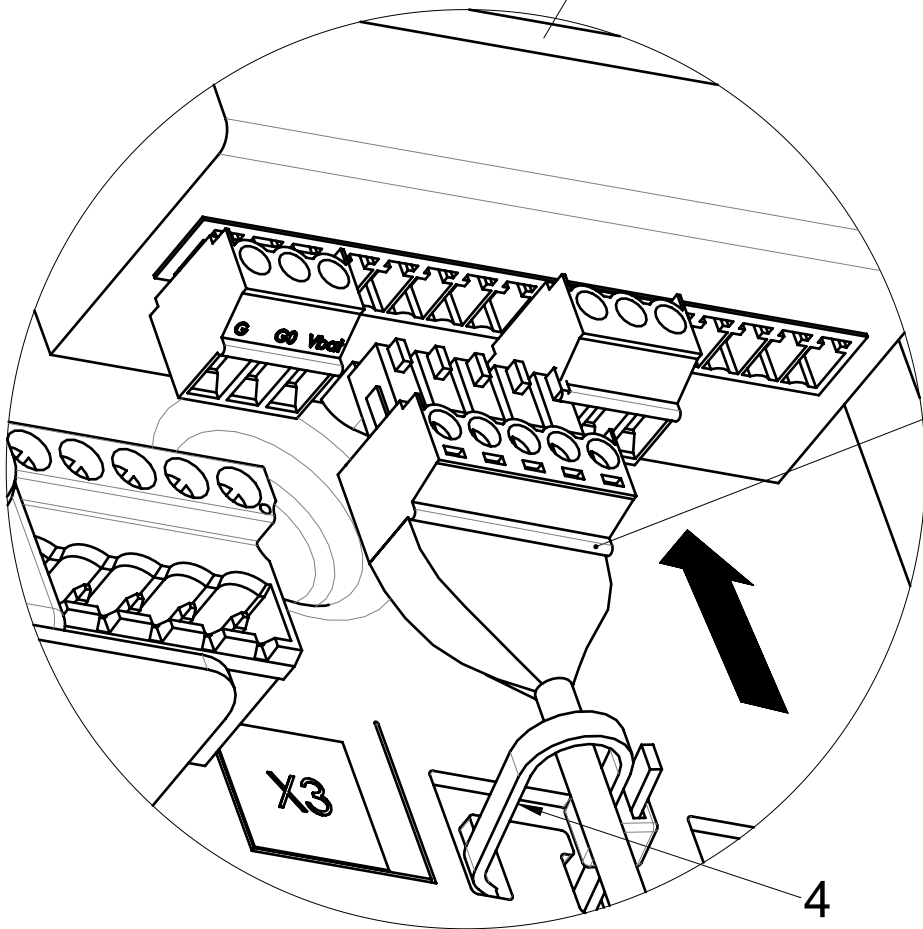
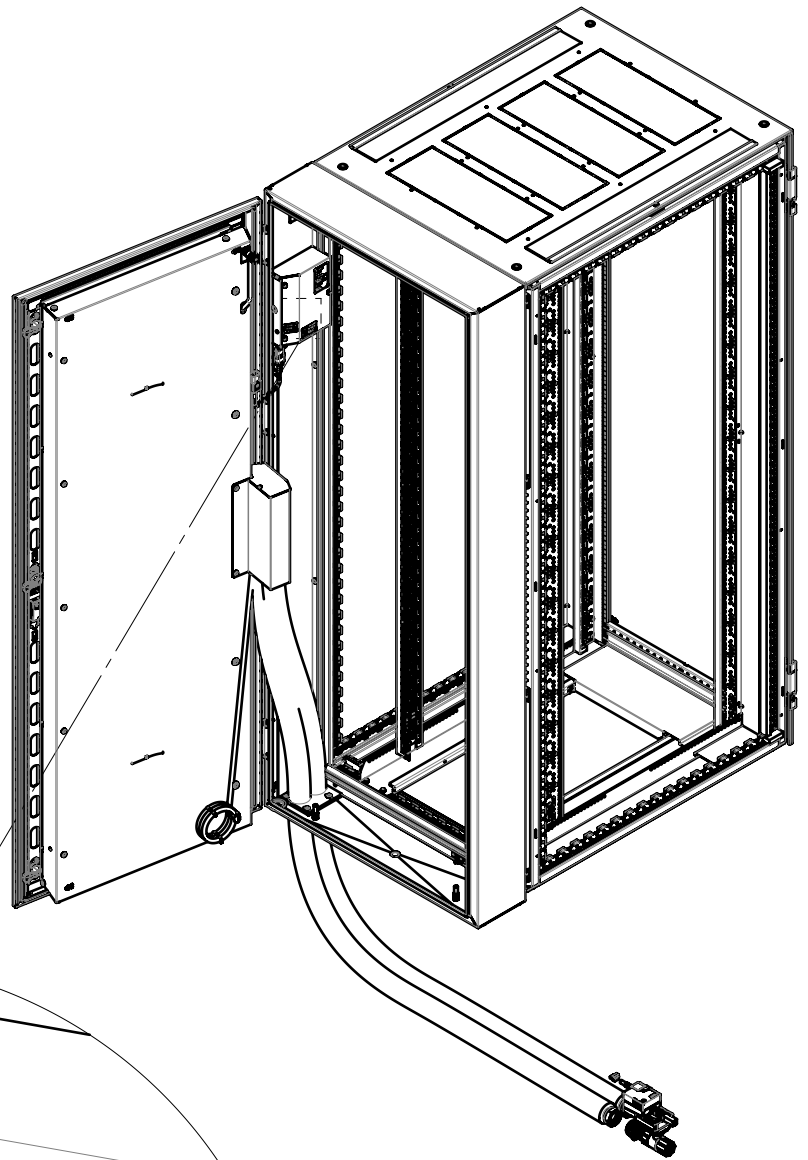
TORX 30





A (1 : 2)



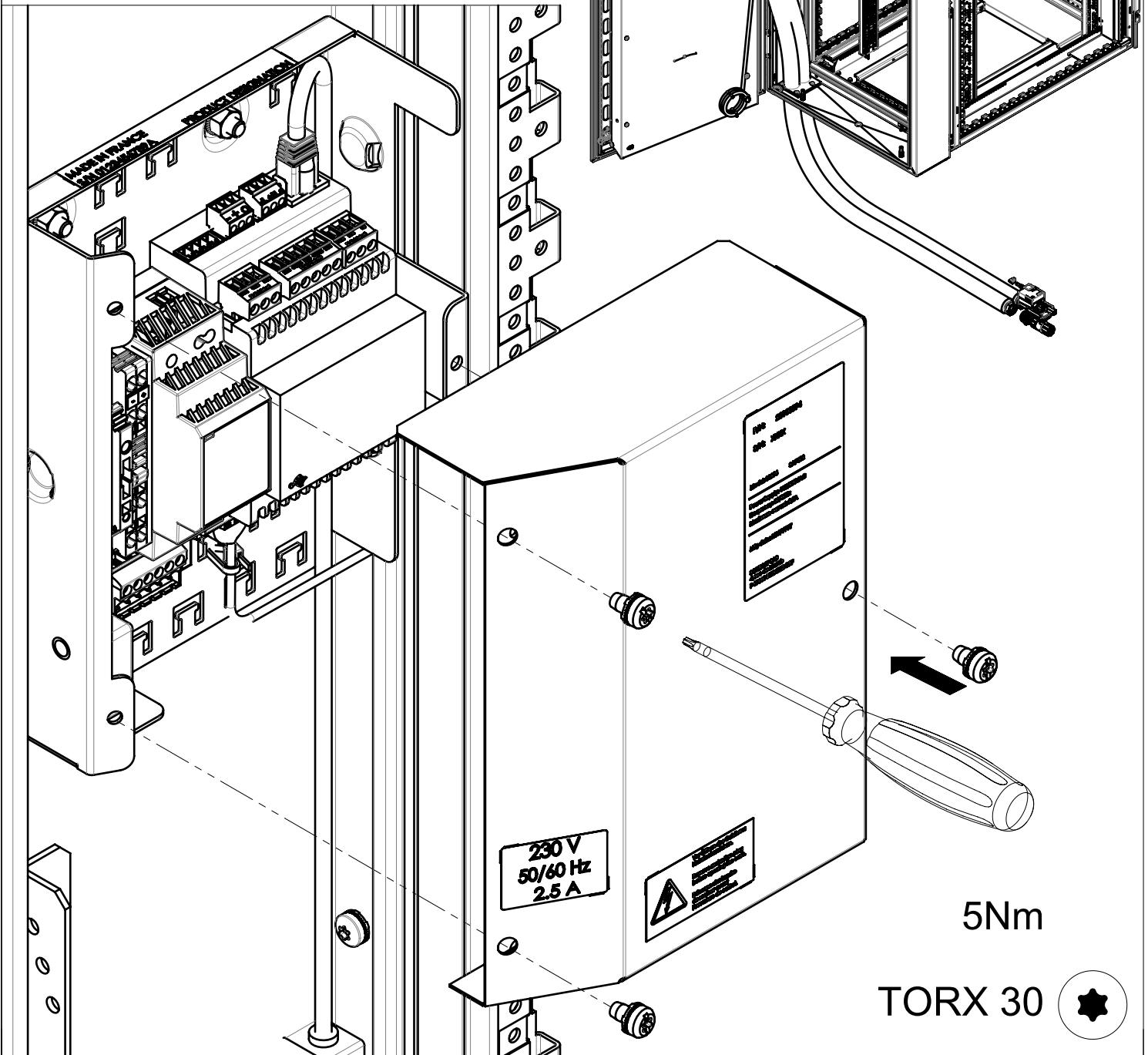
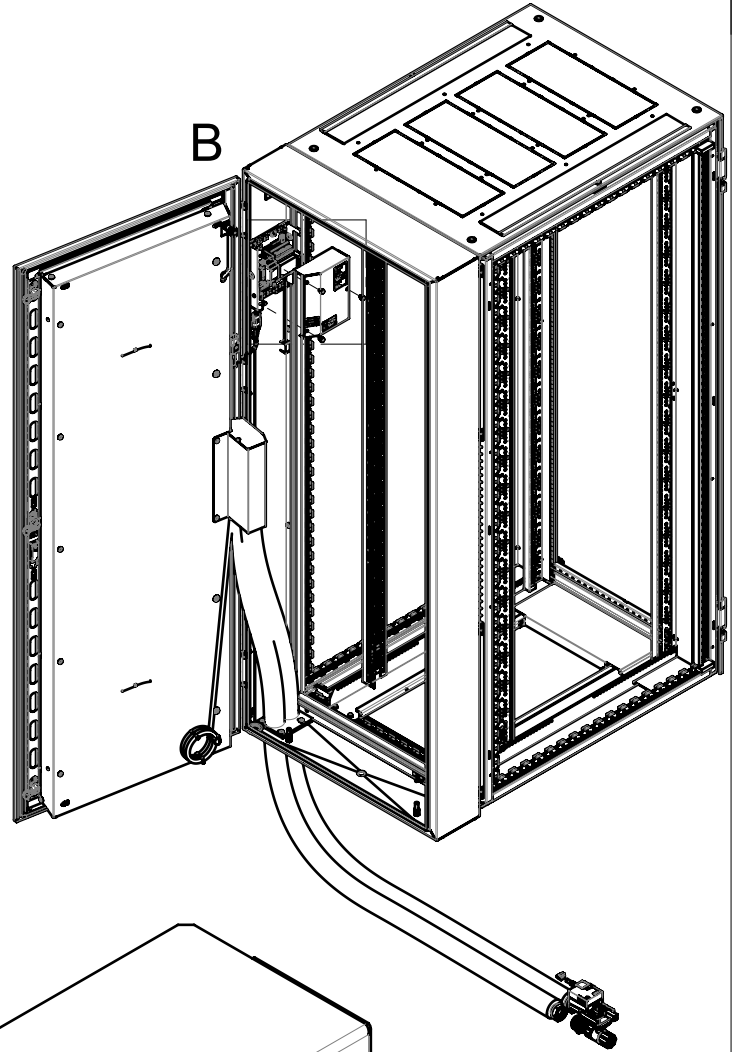


Temperature sensors cable  
from RDC door

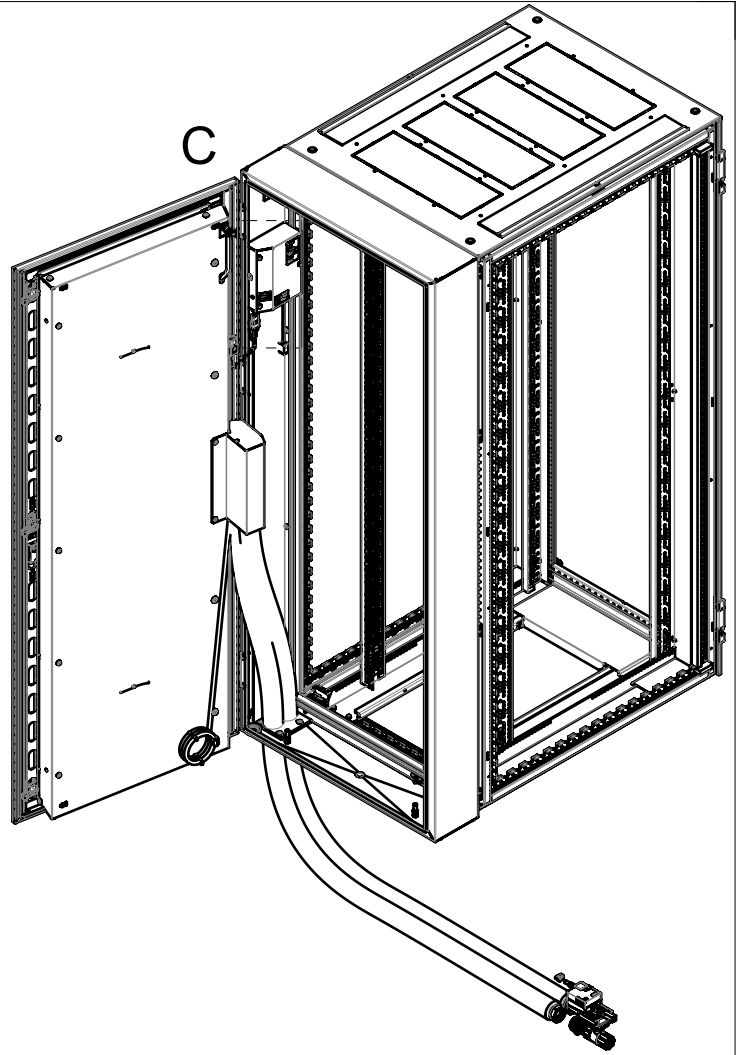
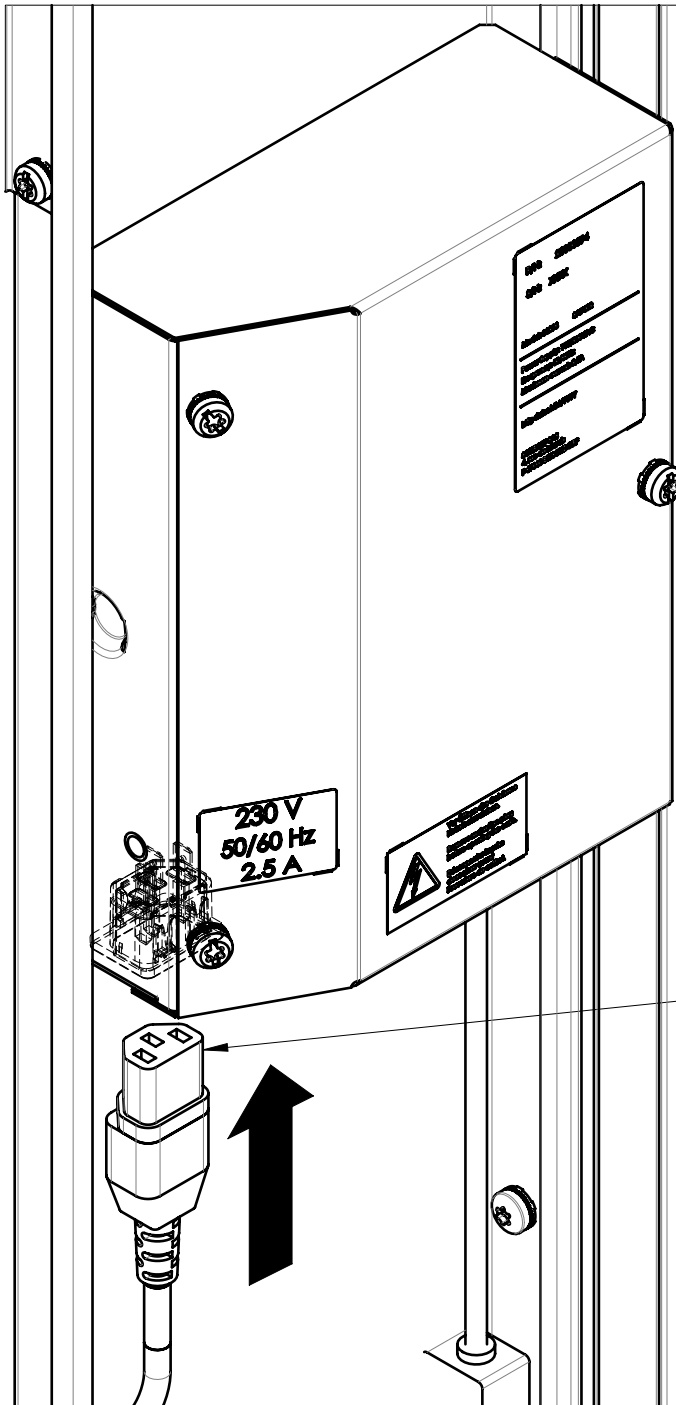
Temperatur sensor Kabel  
der RDC Tür

Cable sondes de température  
porte RDC

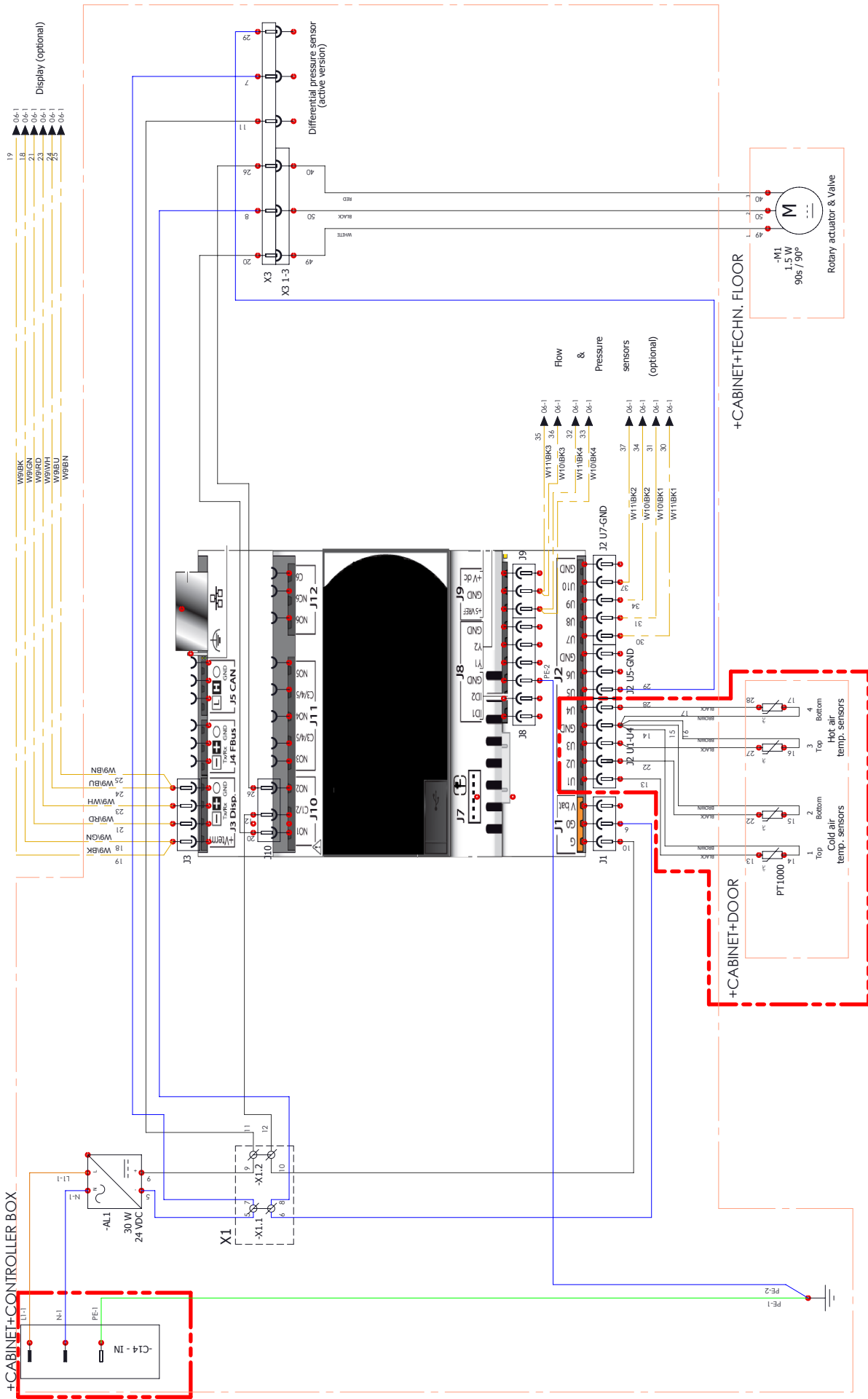
B (1 : 2)



C (1 : 2)



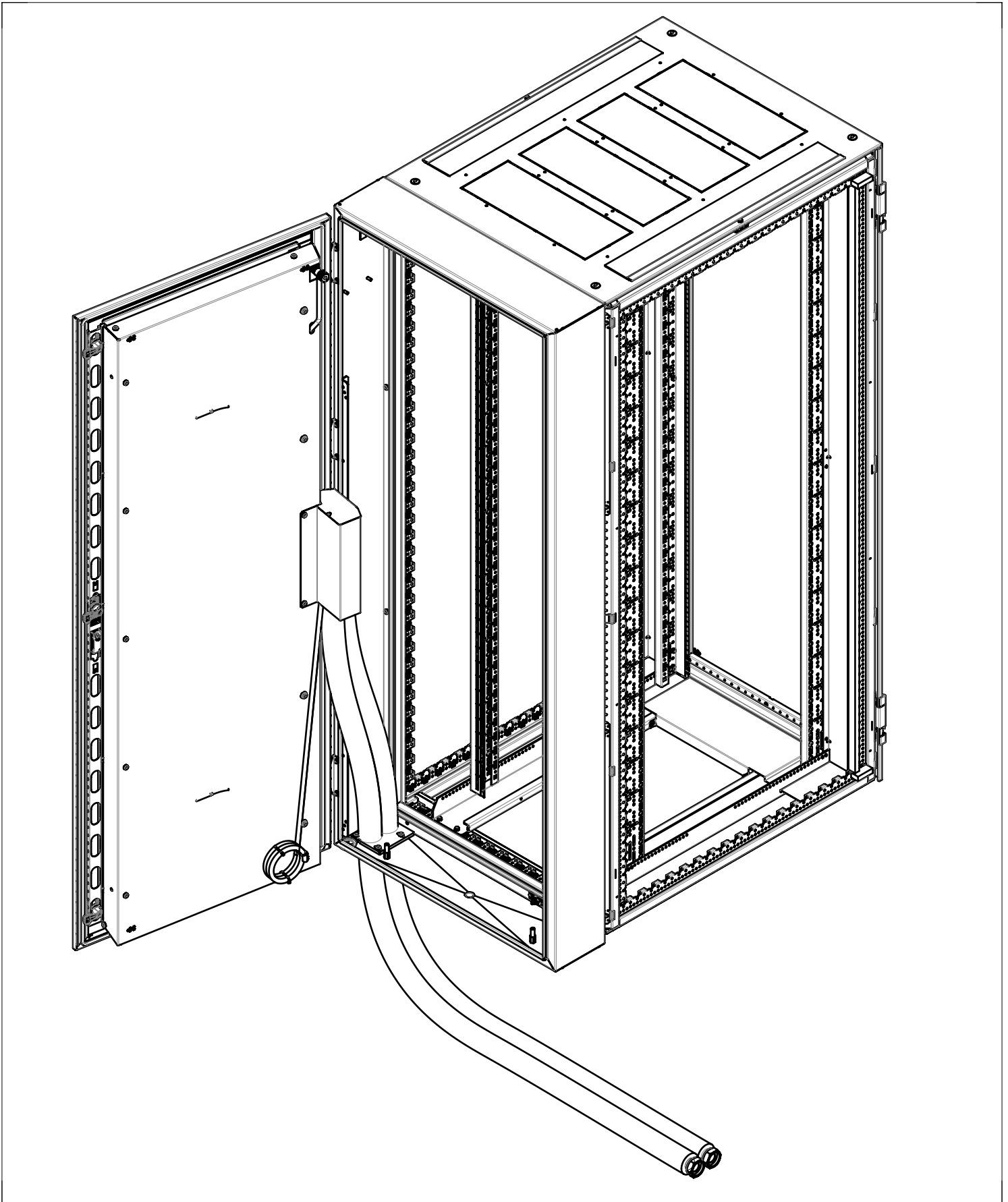


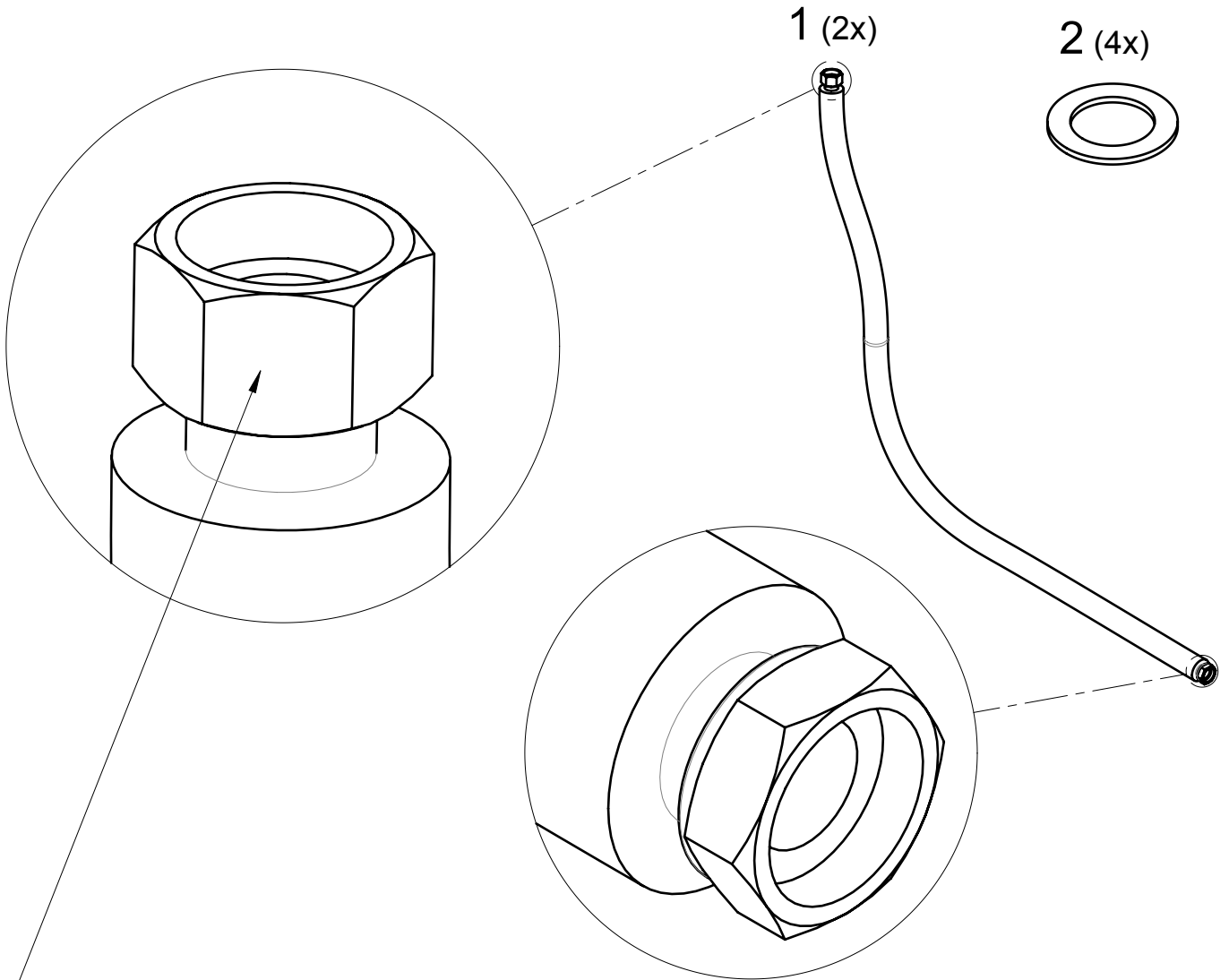
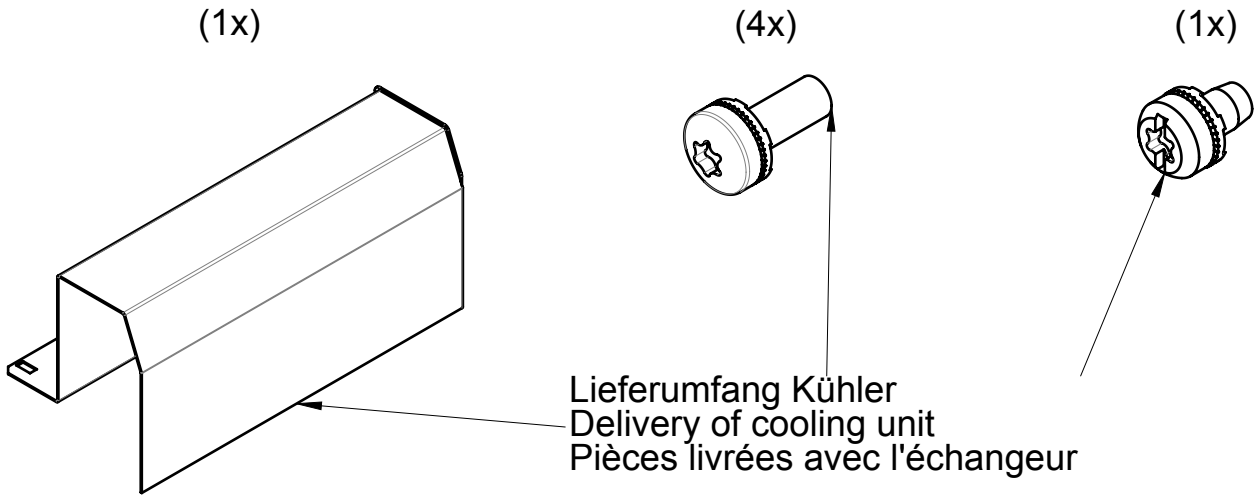


Further product information available on:  
<https://go.nvent.com/en-rackchiller-reardoor.html>

Weitere Produkt Informationen finden Sie unter:  
<https://go.nvent.com/de-rackchiller-reardoor.html>

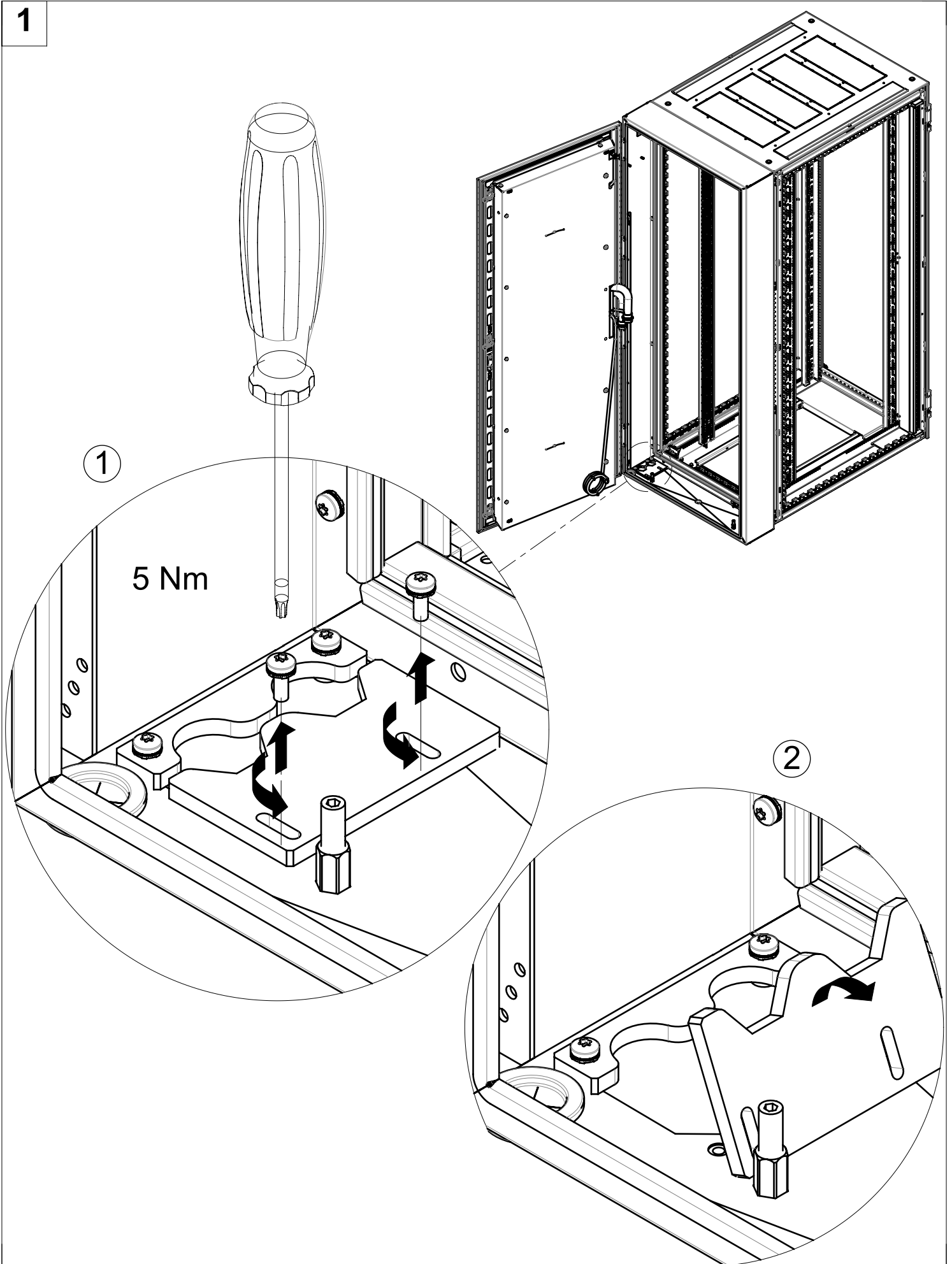
Informations complémentaires sur ce produit sous:  
<https://go.nvent.com/fr-rackchiller-reardoor.html>





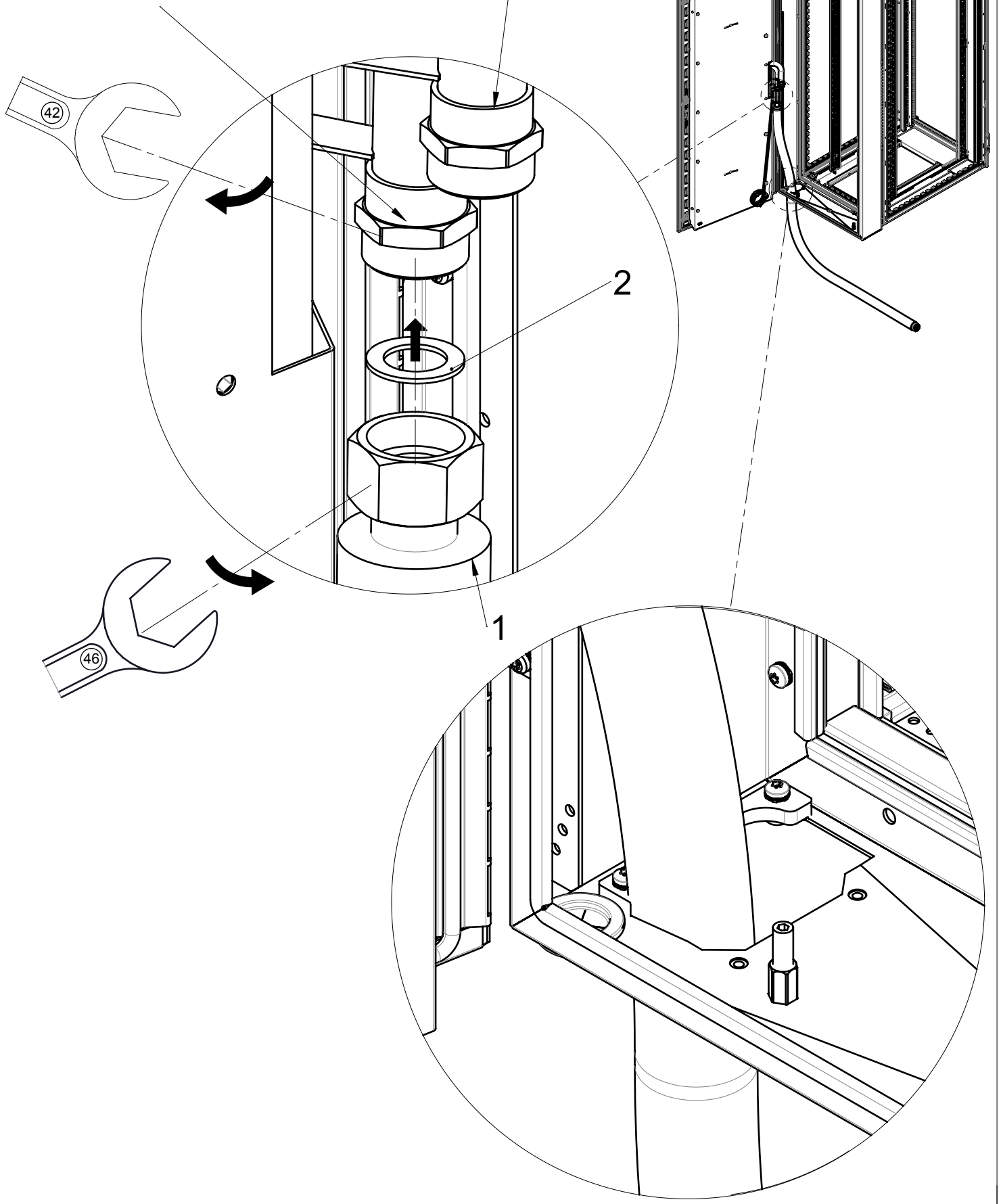
Montieren Sie den torsionsfreien Anschluss auf der Wärmetauscherseite  
Mount the torsion free connection on the heat exchanger side  
Monter la connexion libre en rotation sur le côté de l'échangeur de chaleur

1



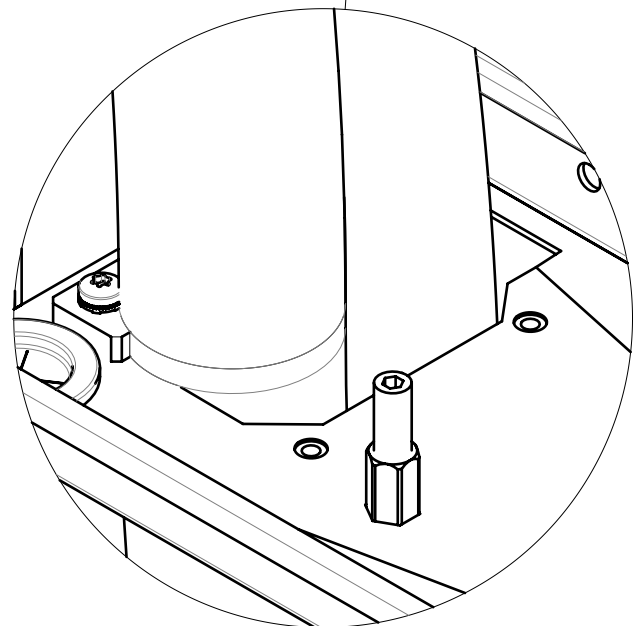
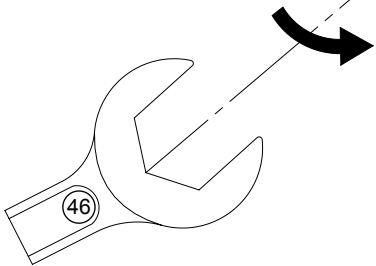
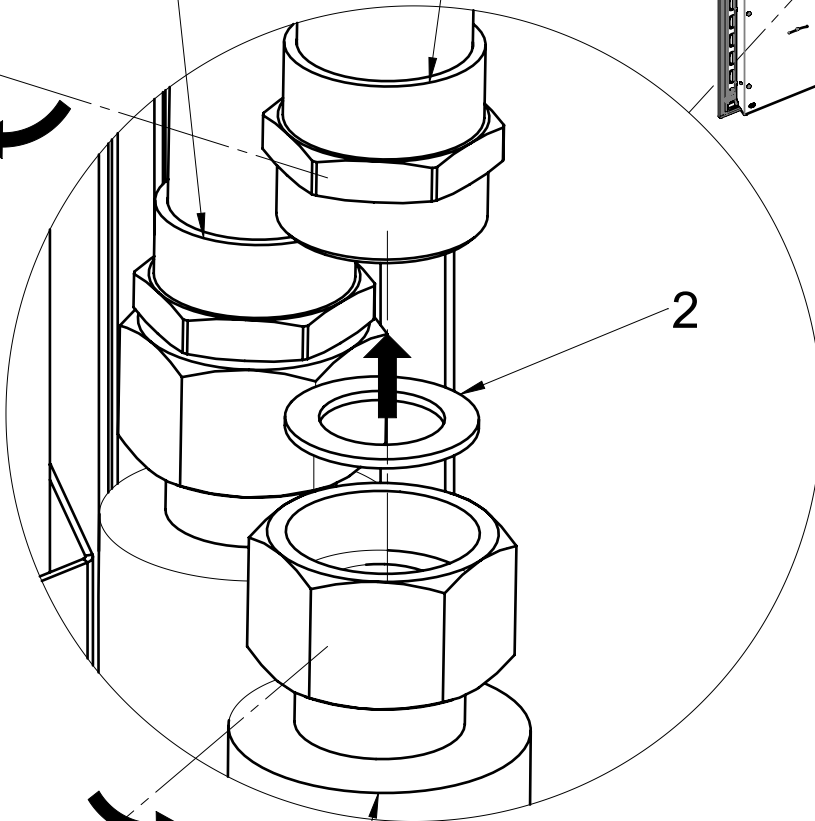
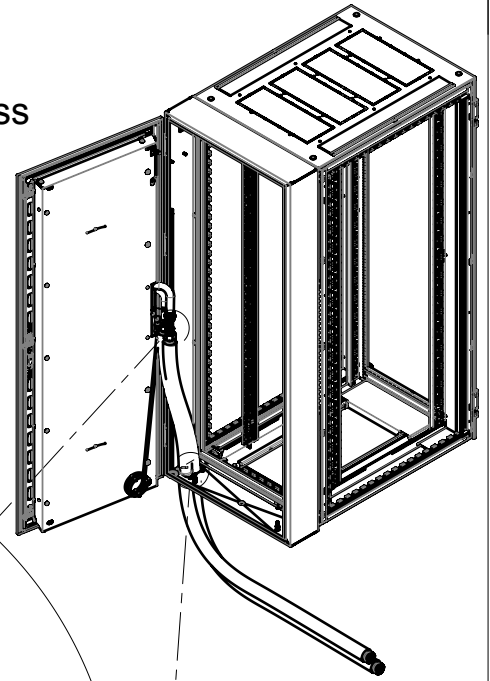
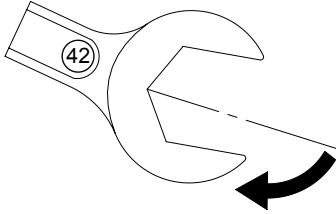
Wasserzufluss  
Water inlet  
Arrivée d'eau

Wasserabfluss  
Water outlet  
Sortie d'eau

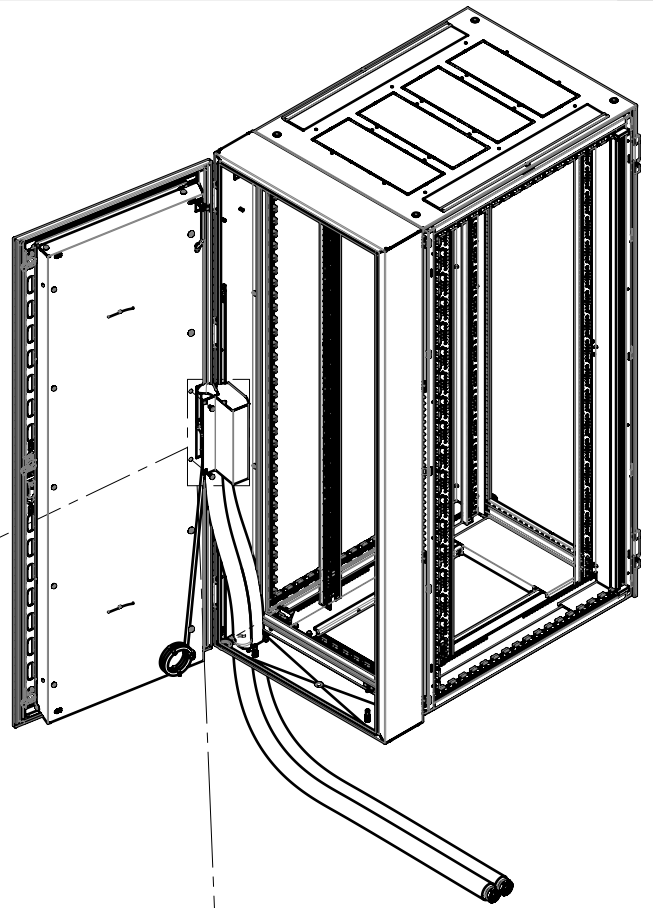
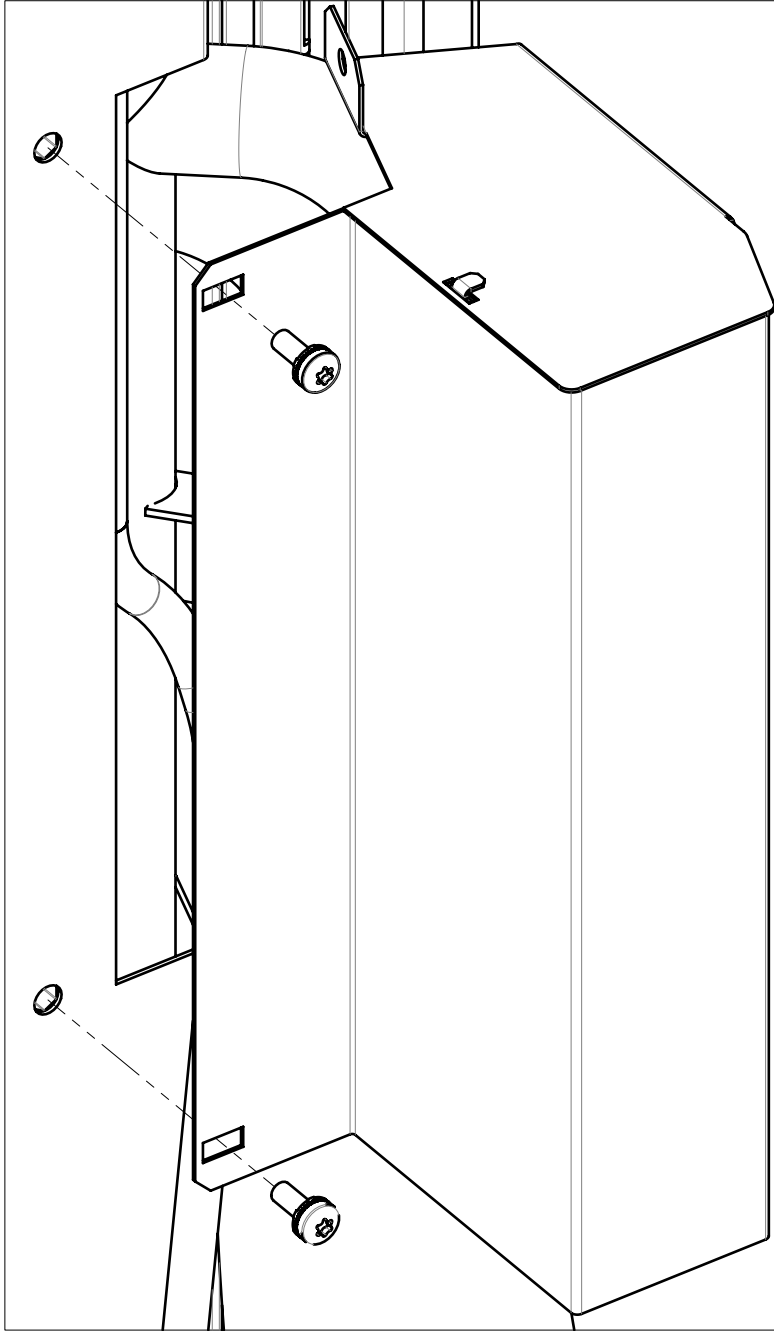


Wasserzufluss  
Water inlet  
Arrivée d'eau

Wasserabfluss  
Water outlet  
Sortie d'eau

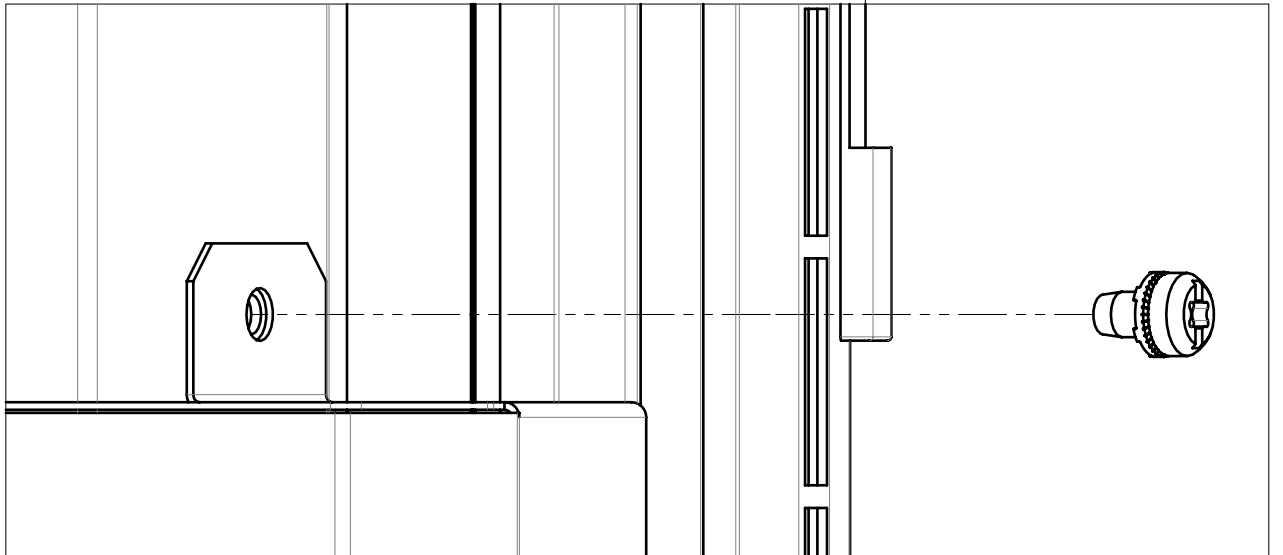


4

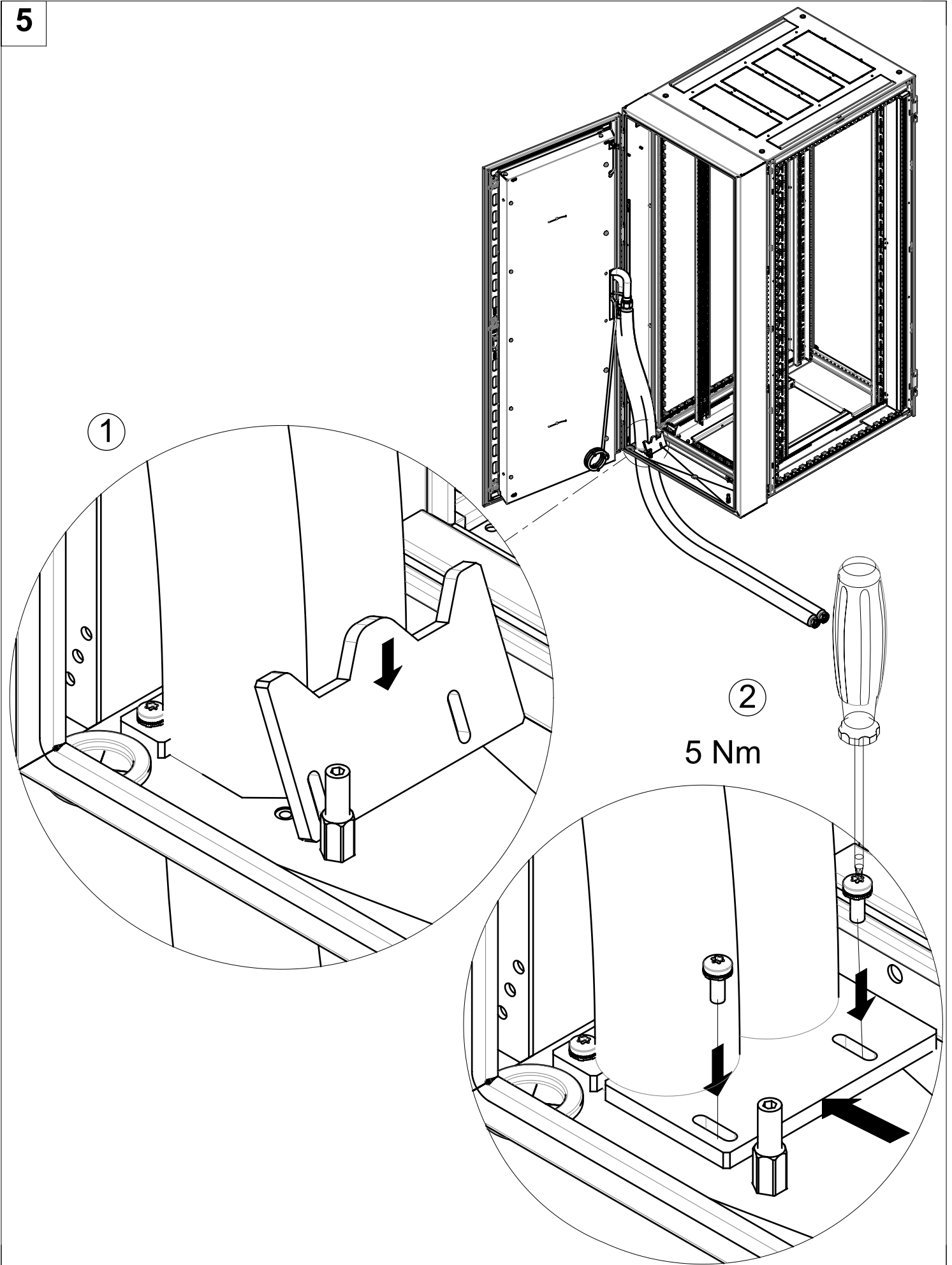


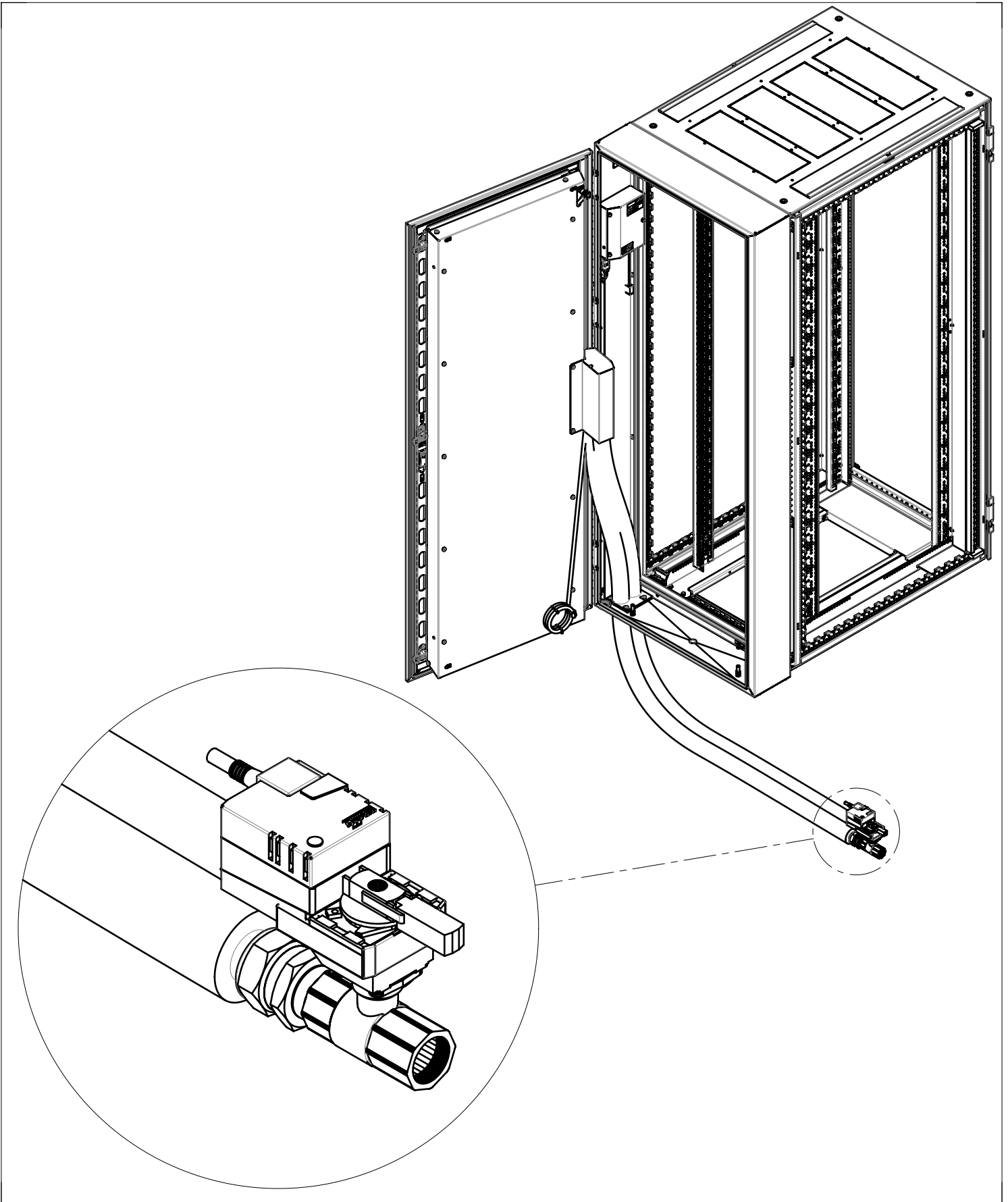
5 Nm

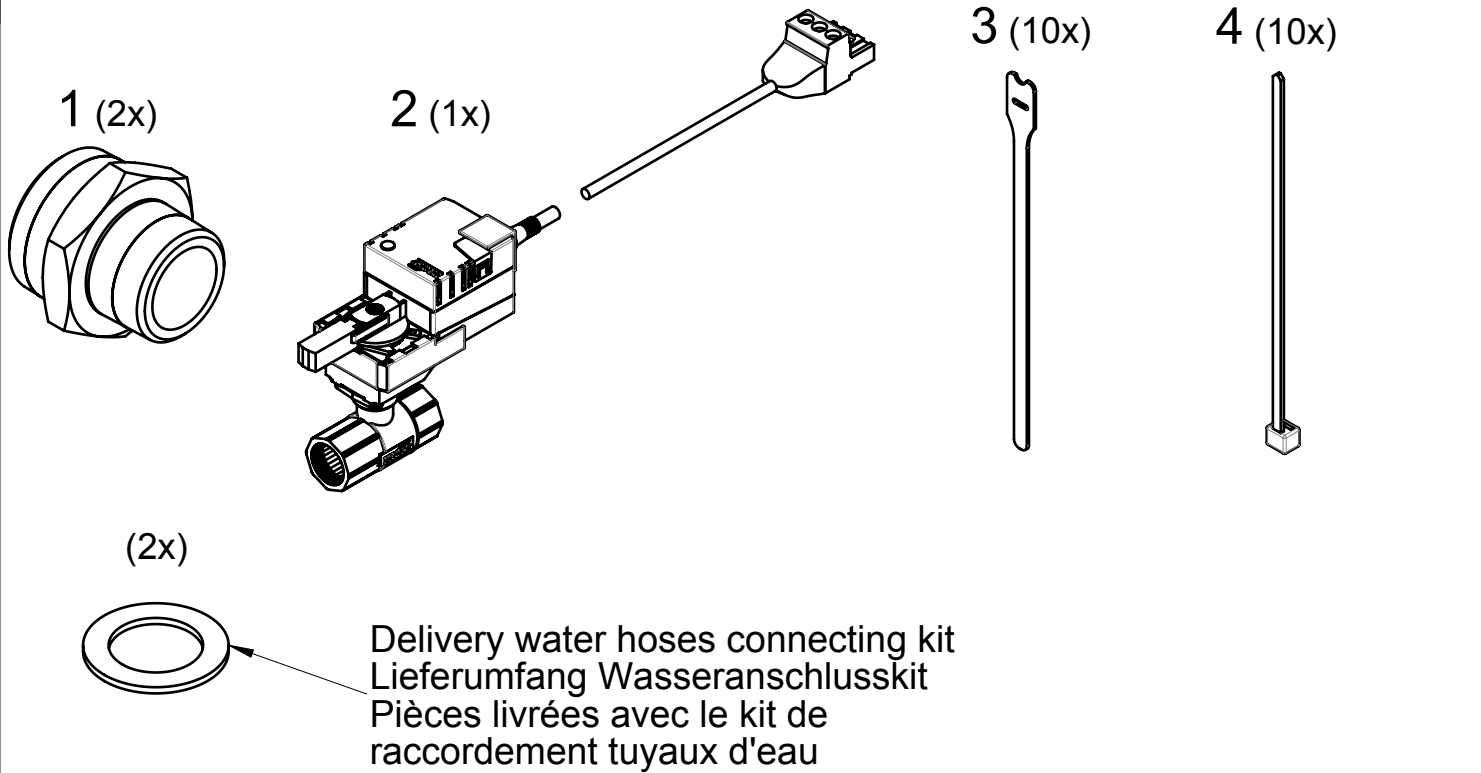
5 Nm



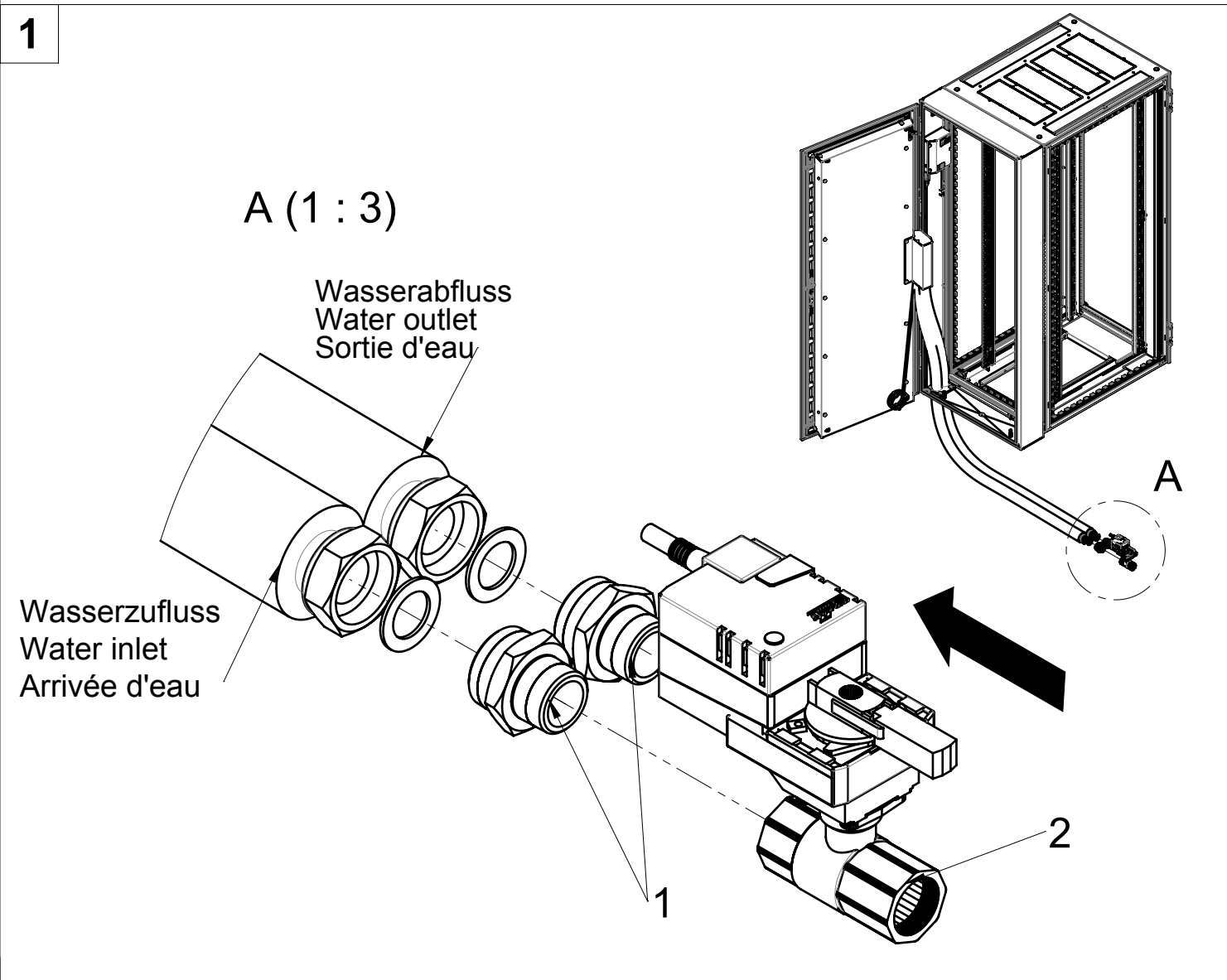


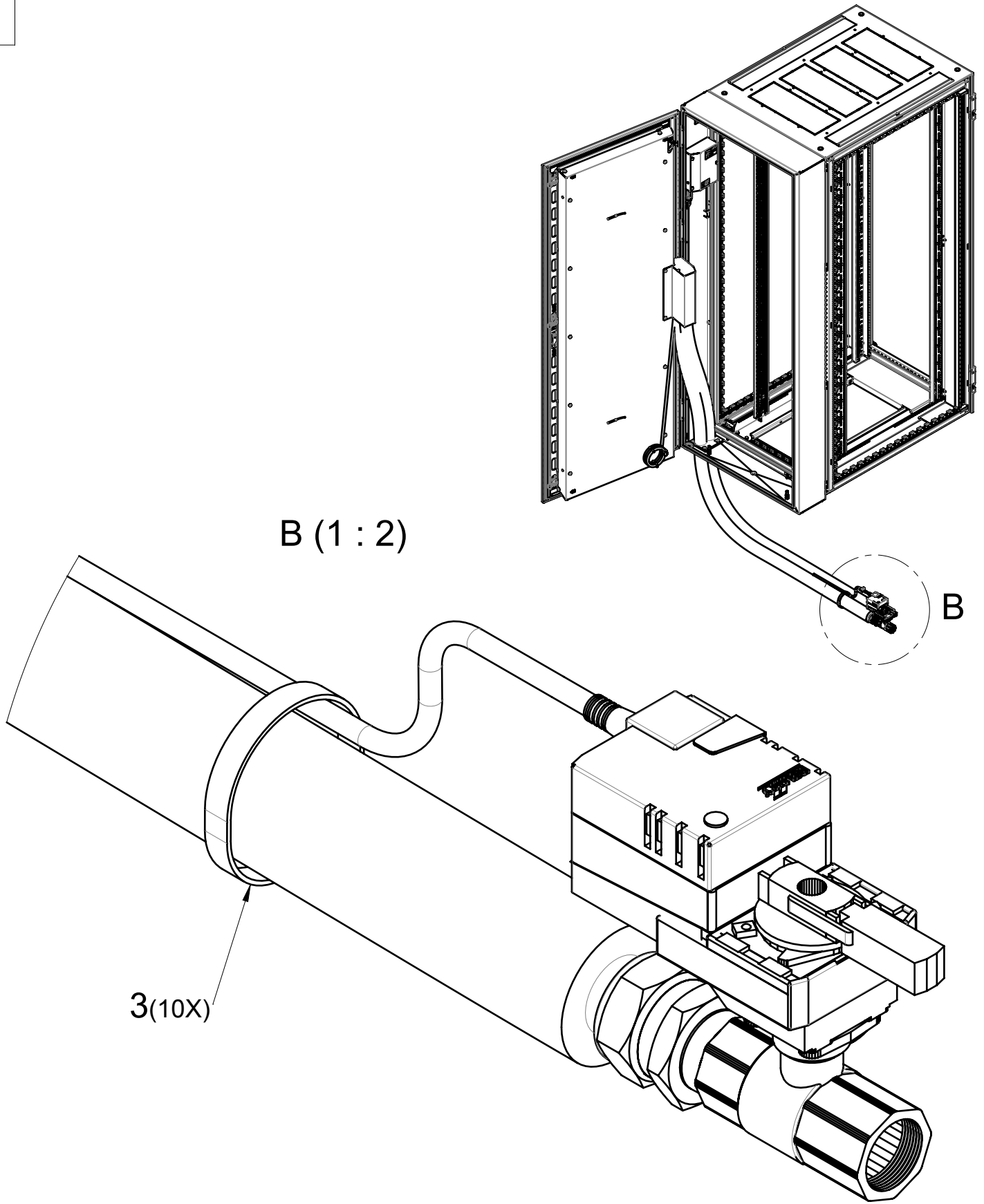






1





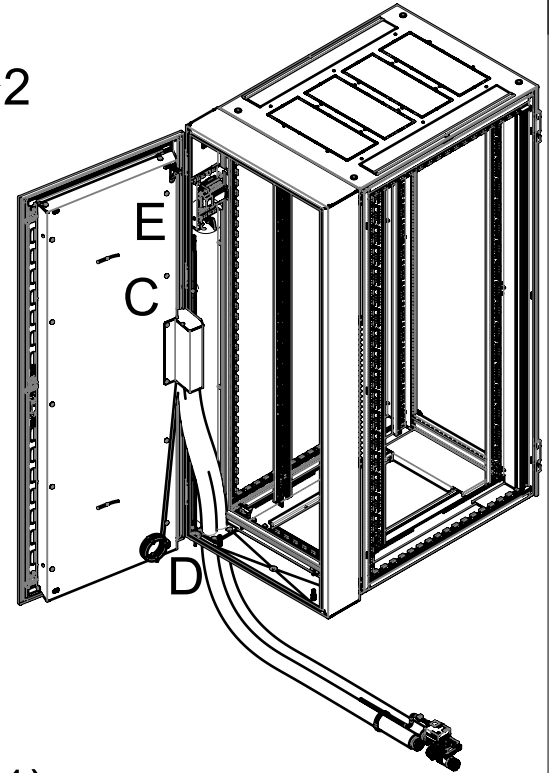
3

C (1 : 1)

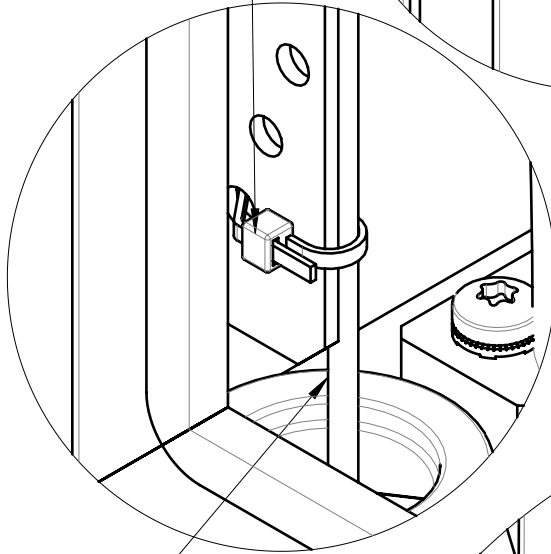
2

4(10x)

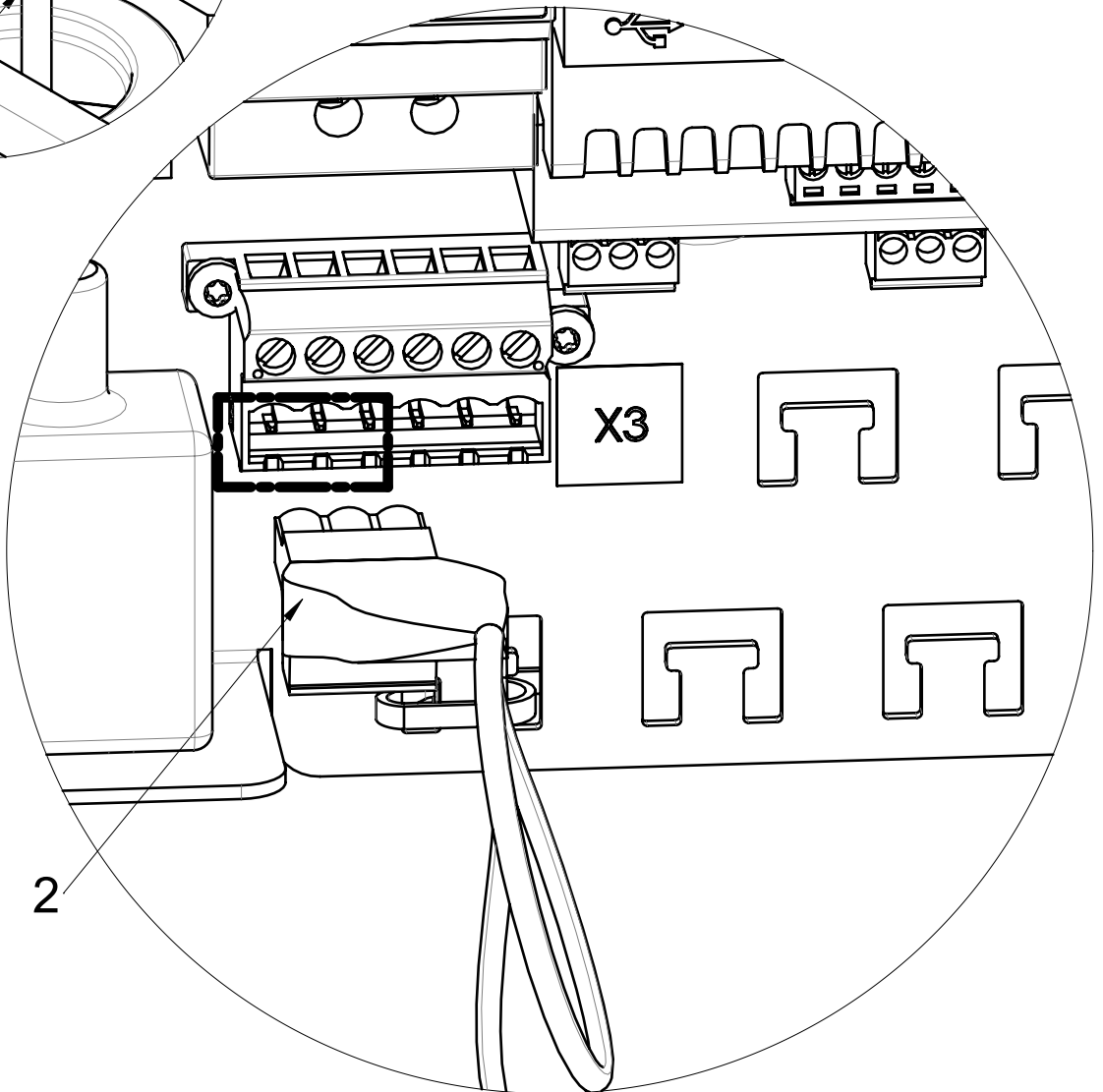
D (1 : 1)



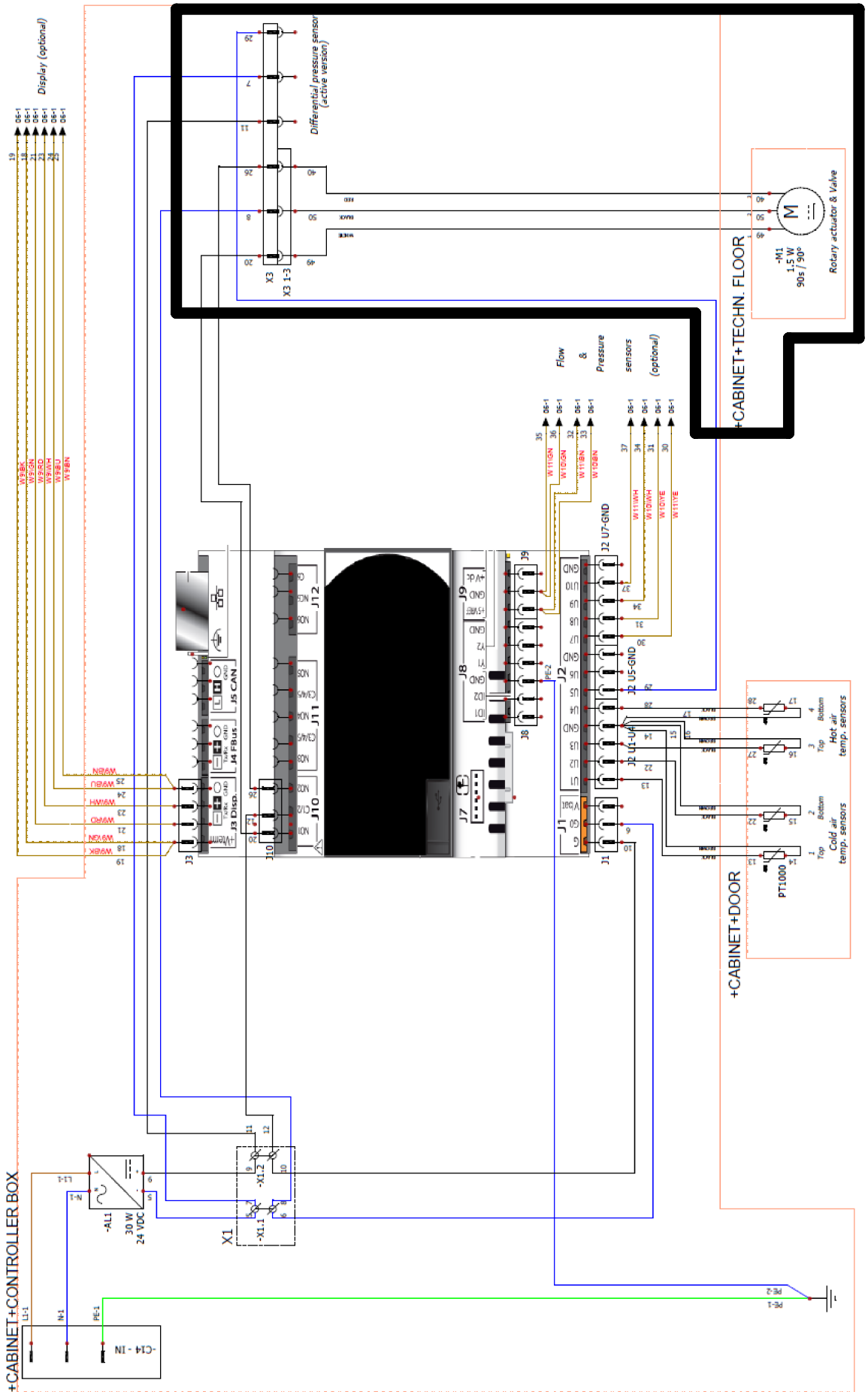
E (1 : 1)

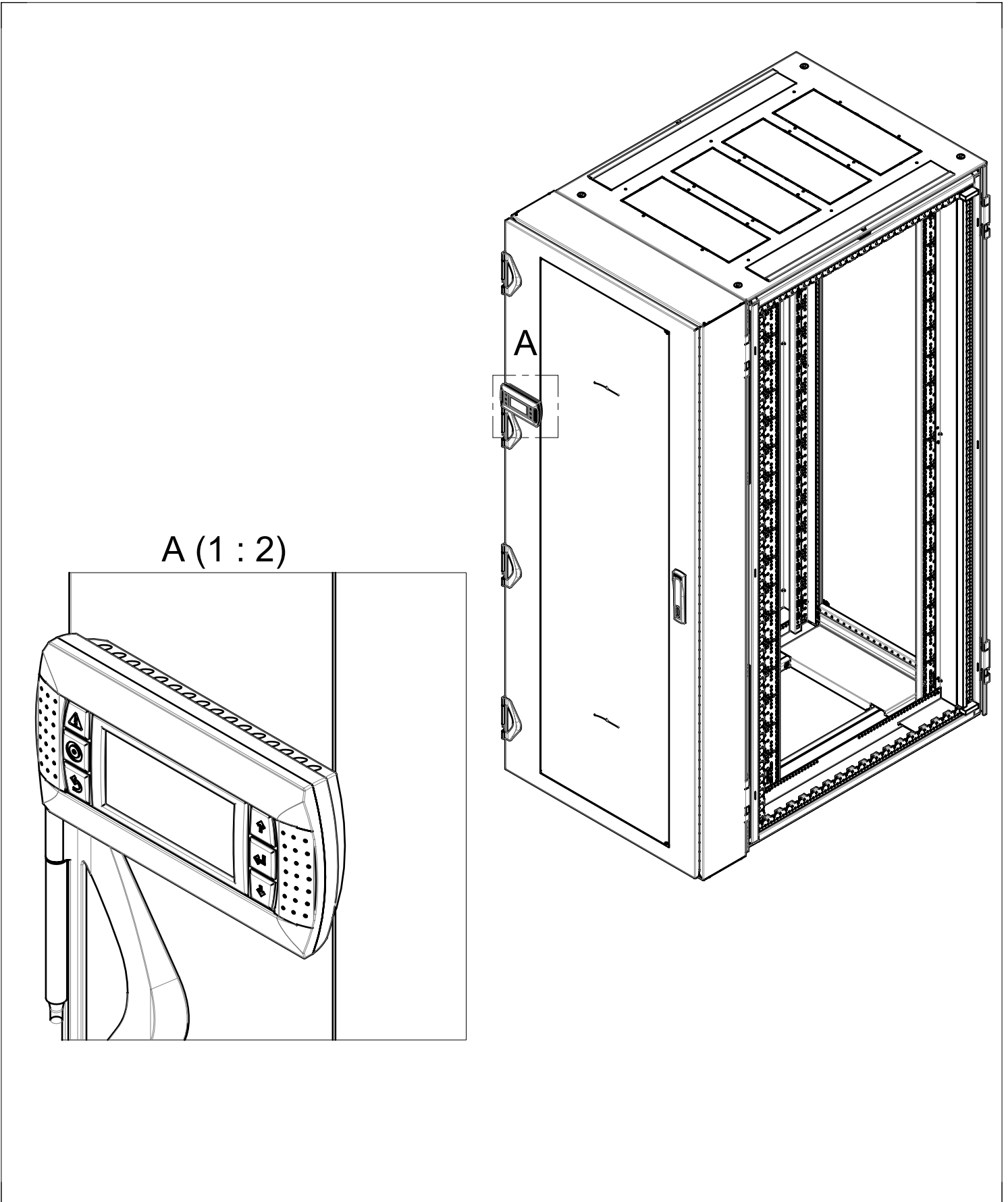


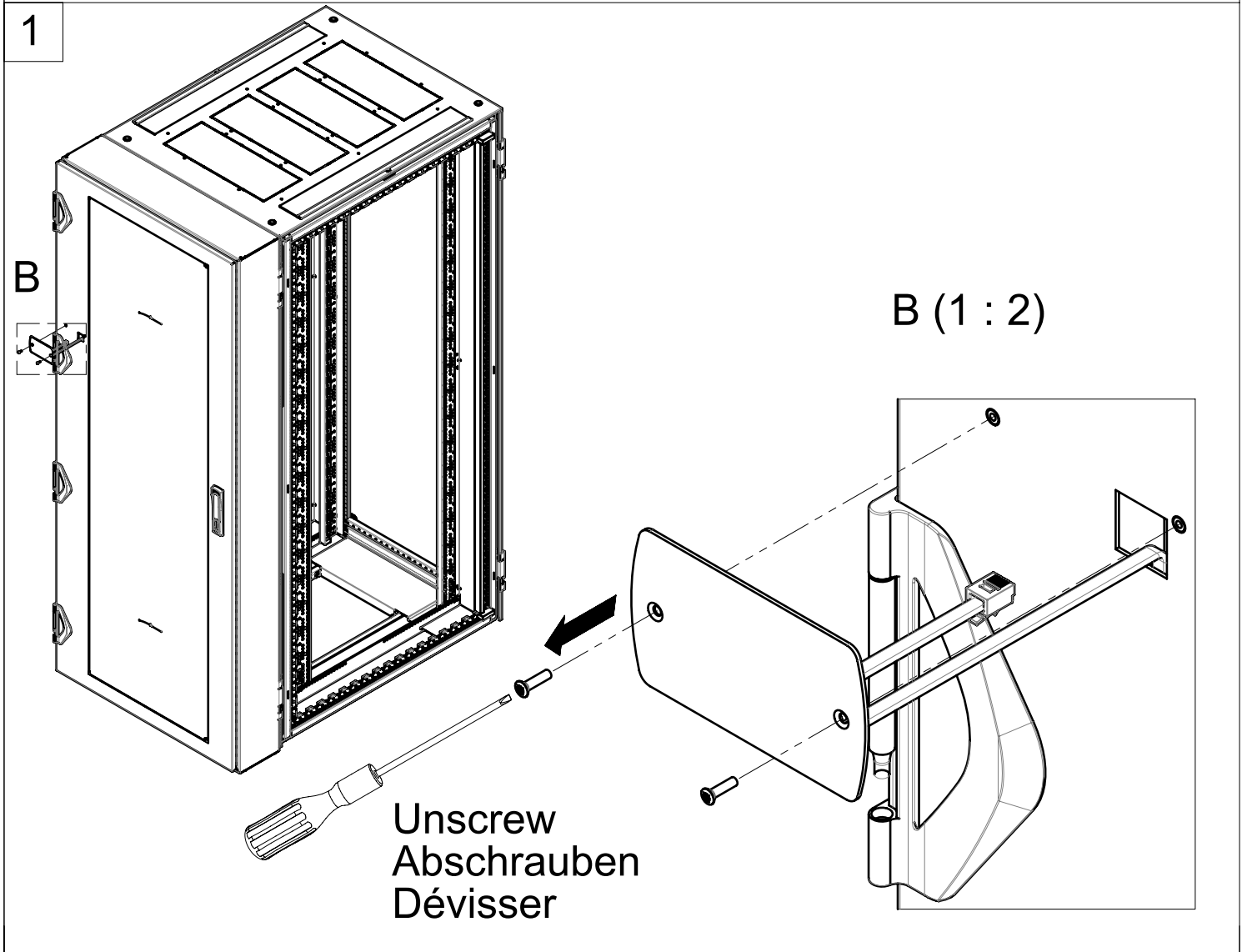
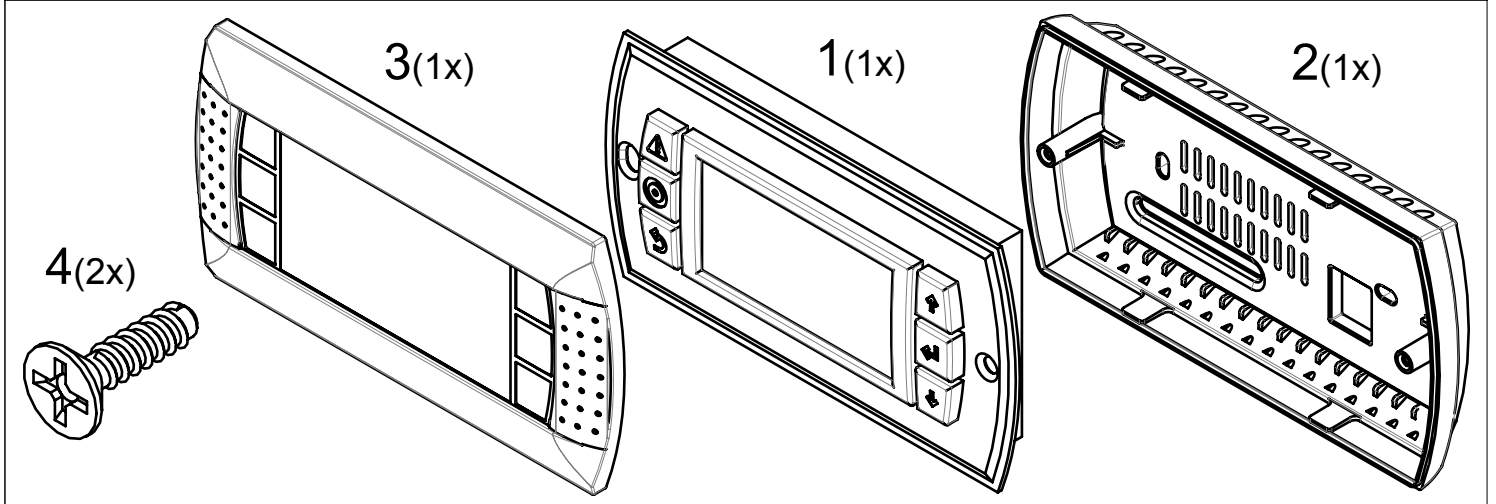
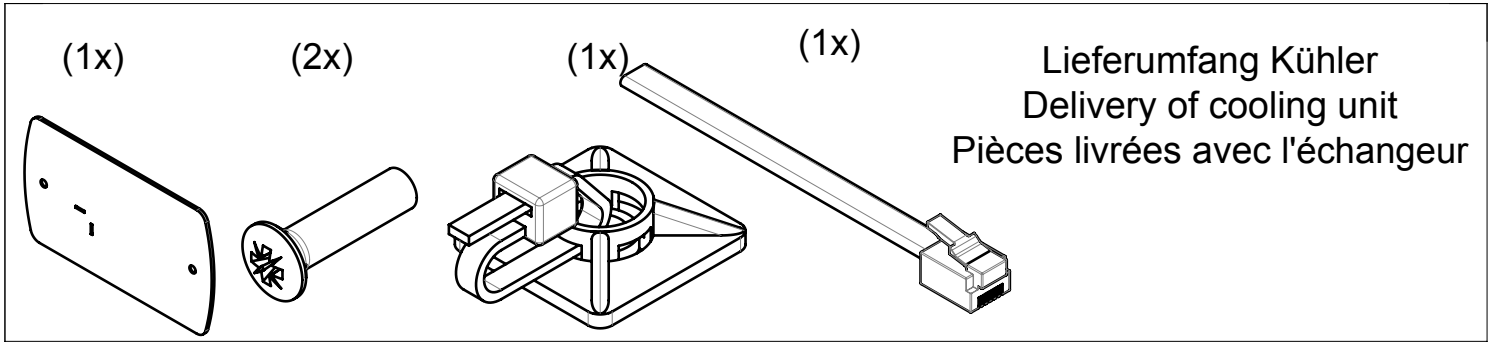
2



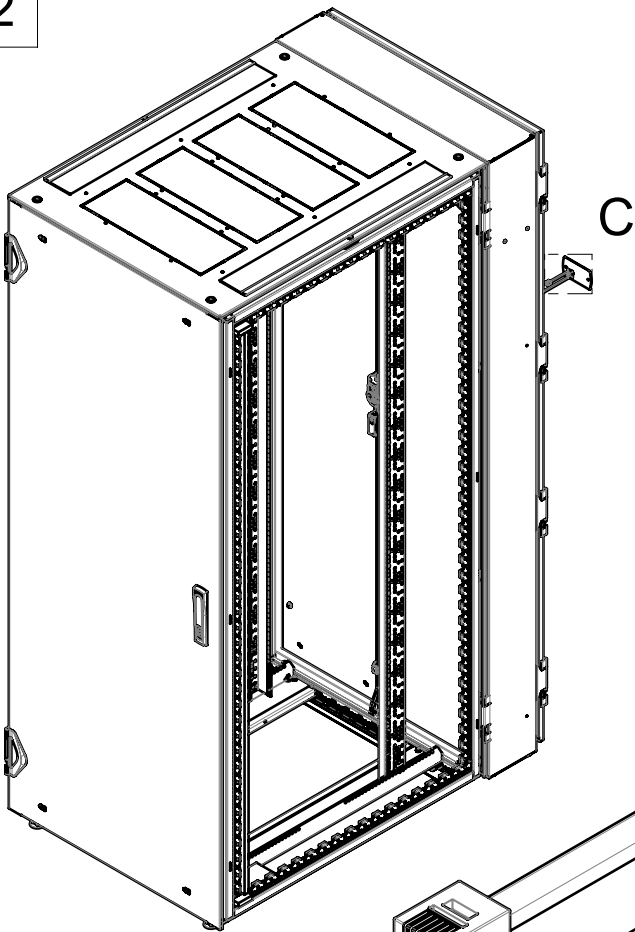
2



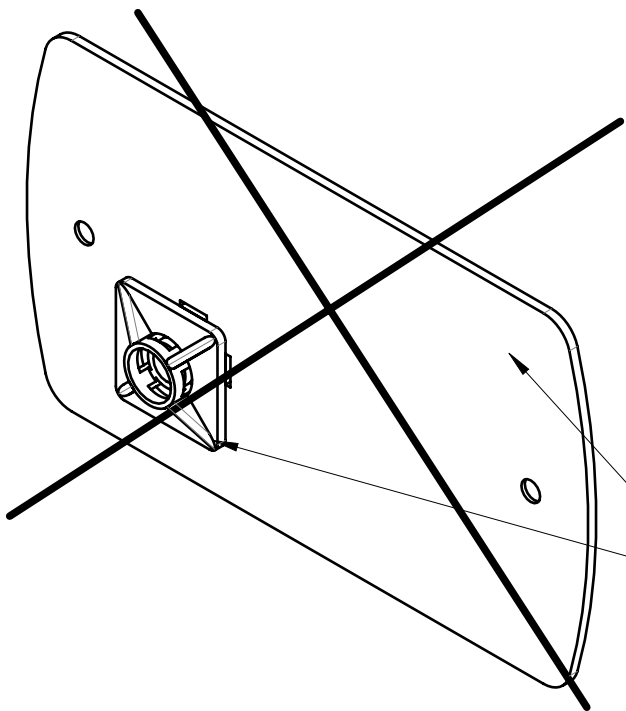
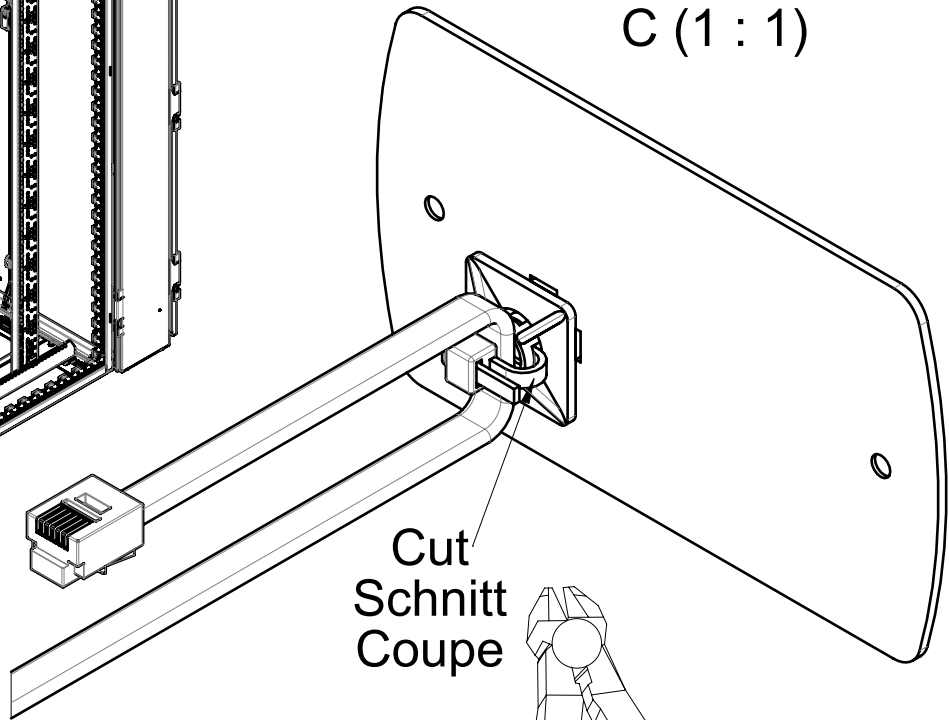






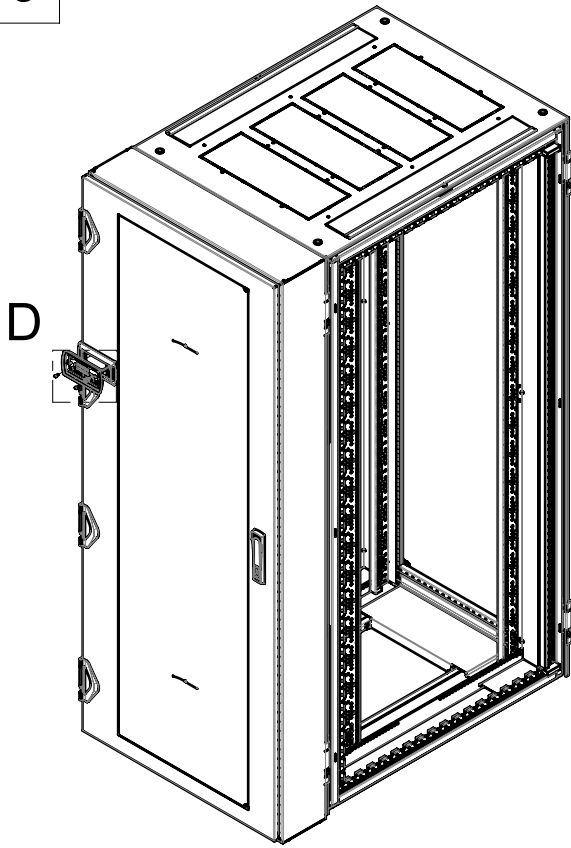


C (1 : 1)

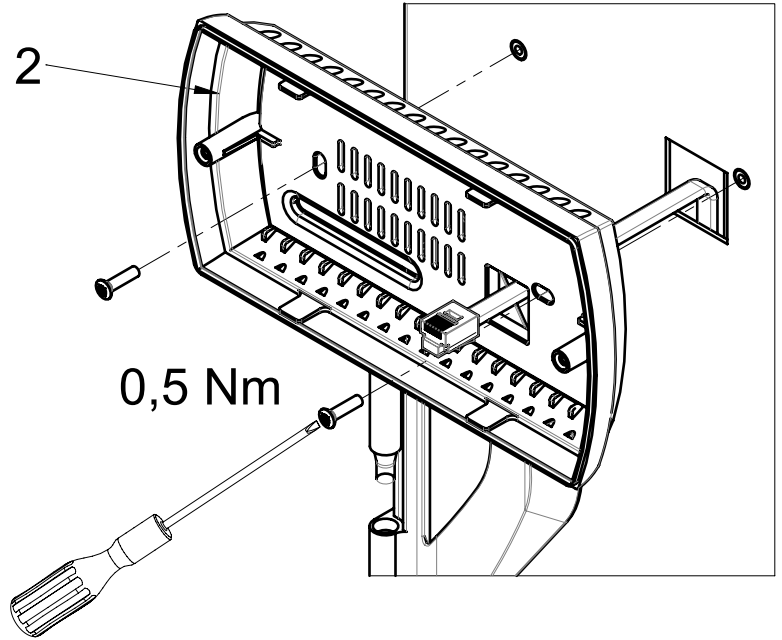


Nicht mehr verwendet  
No more used  
Ne sera plus utilisé

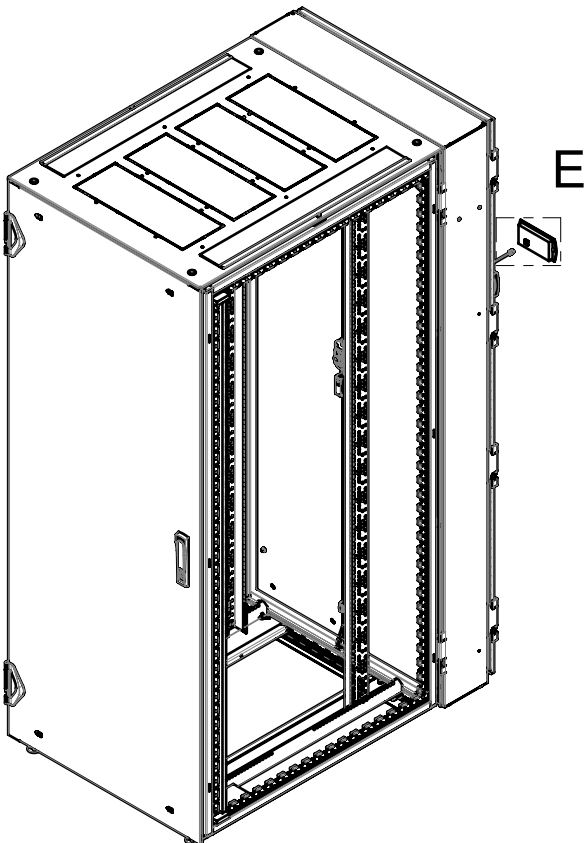
3



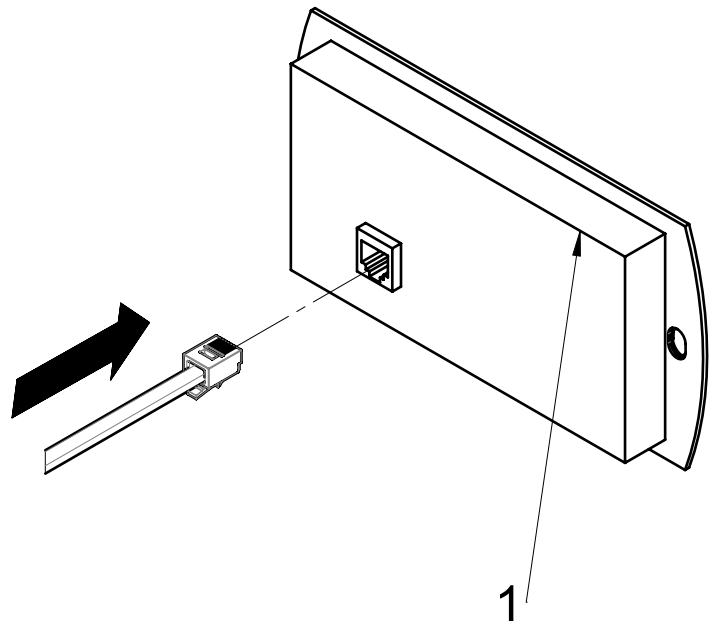
D (1 : 2)



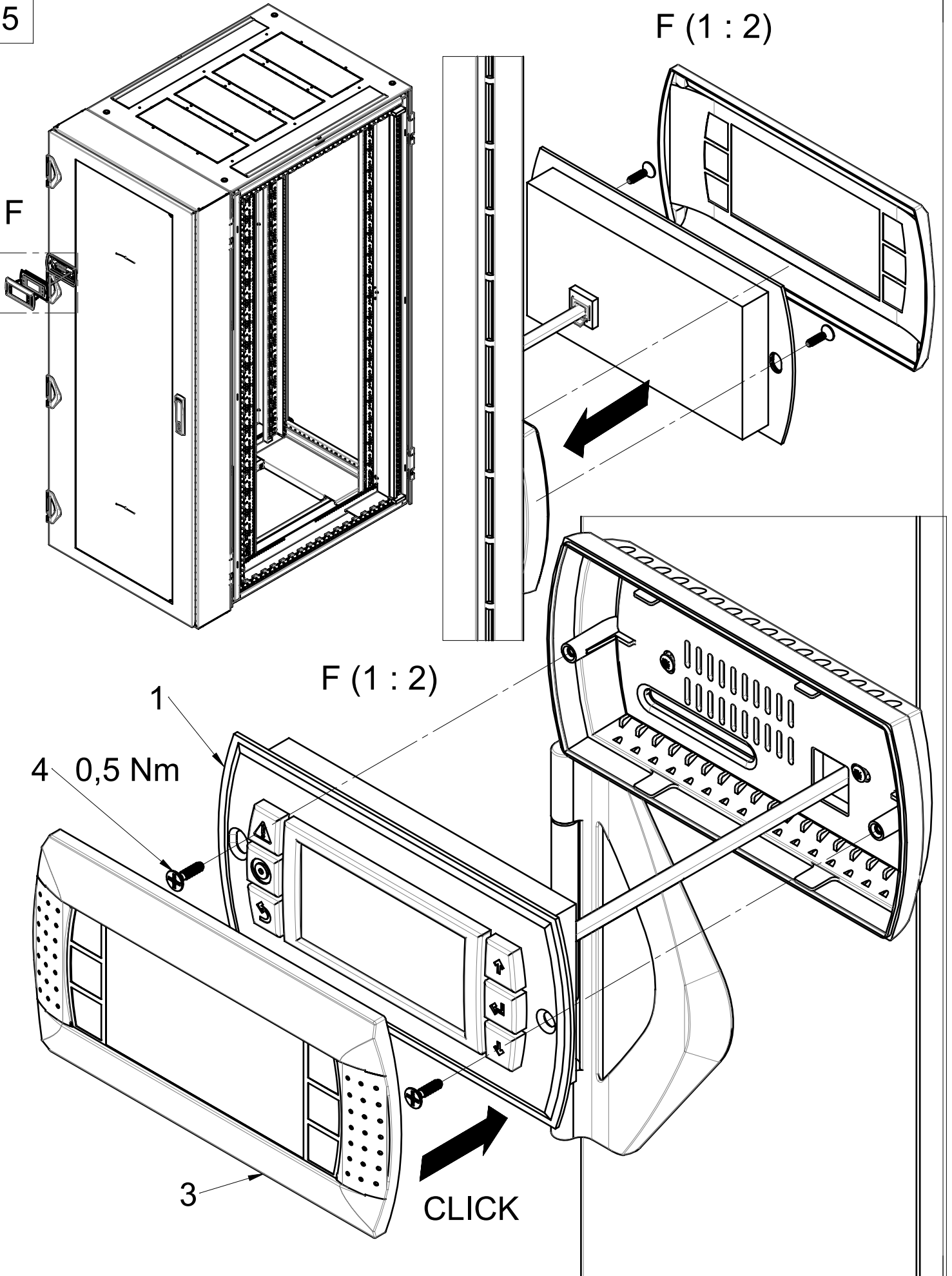
4

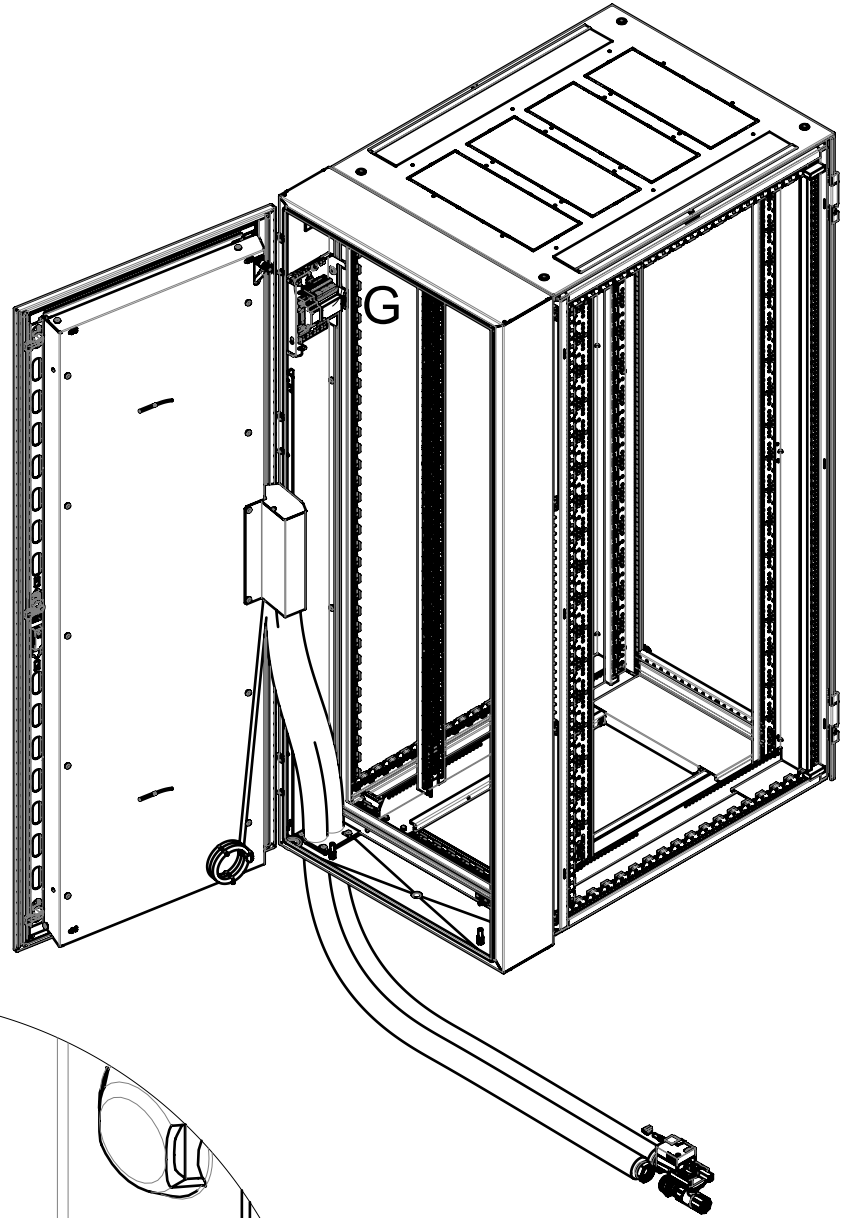


E (1 : 2)

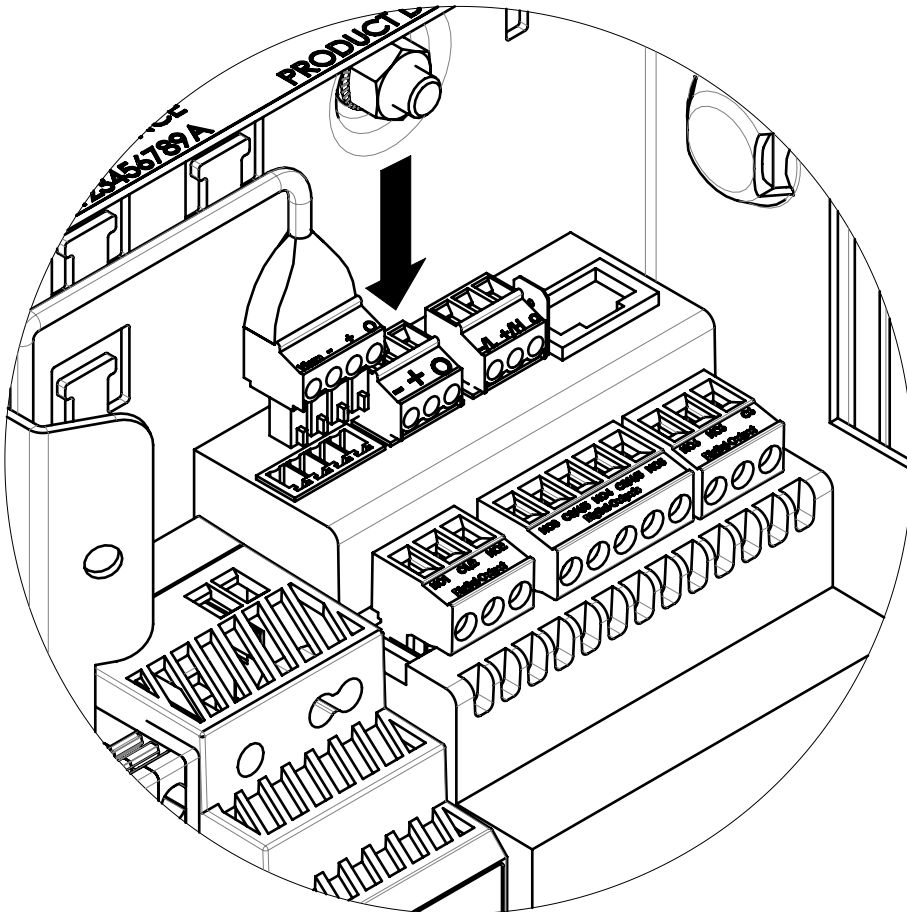


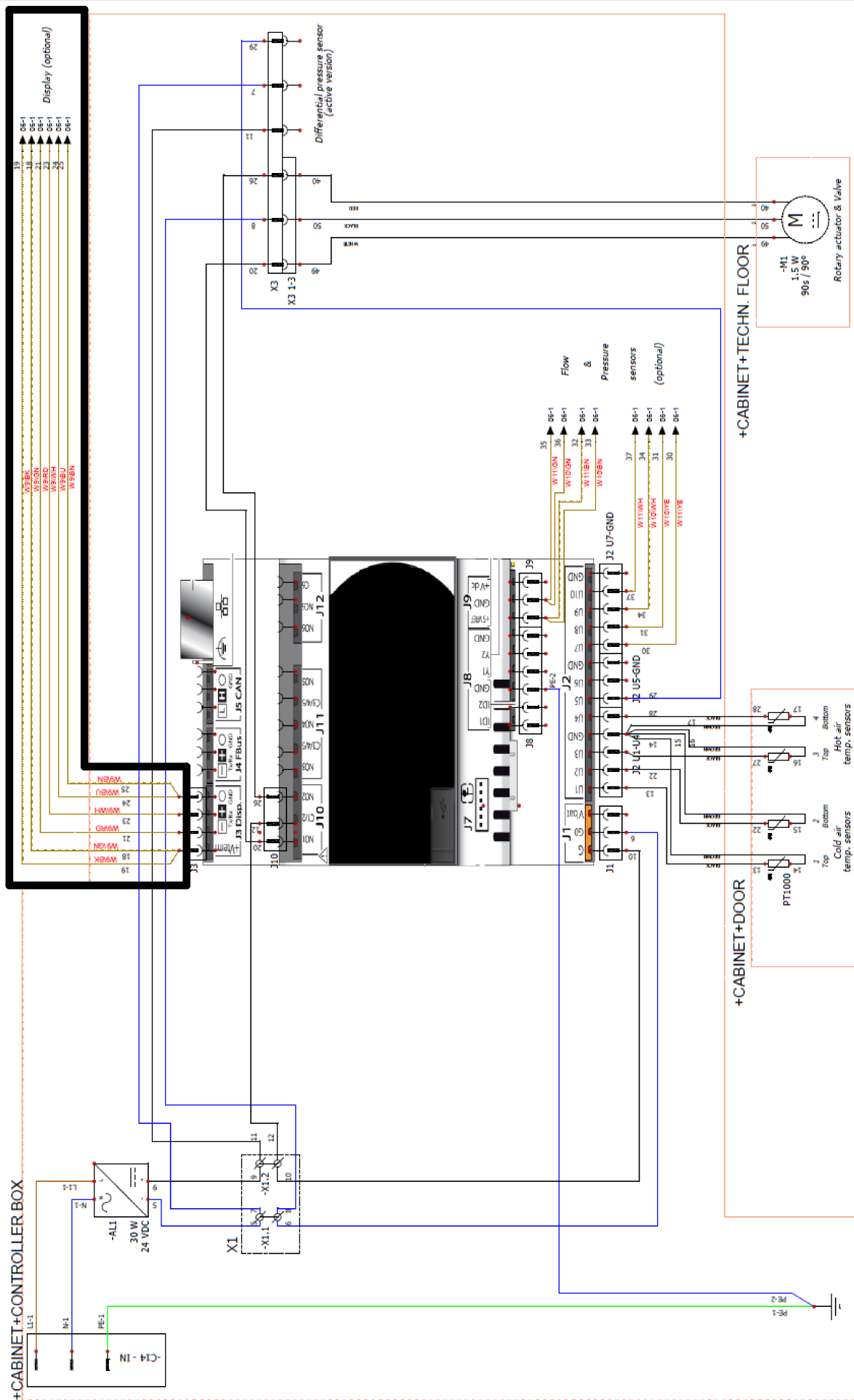
5

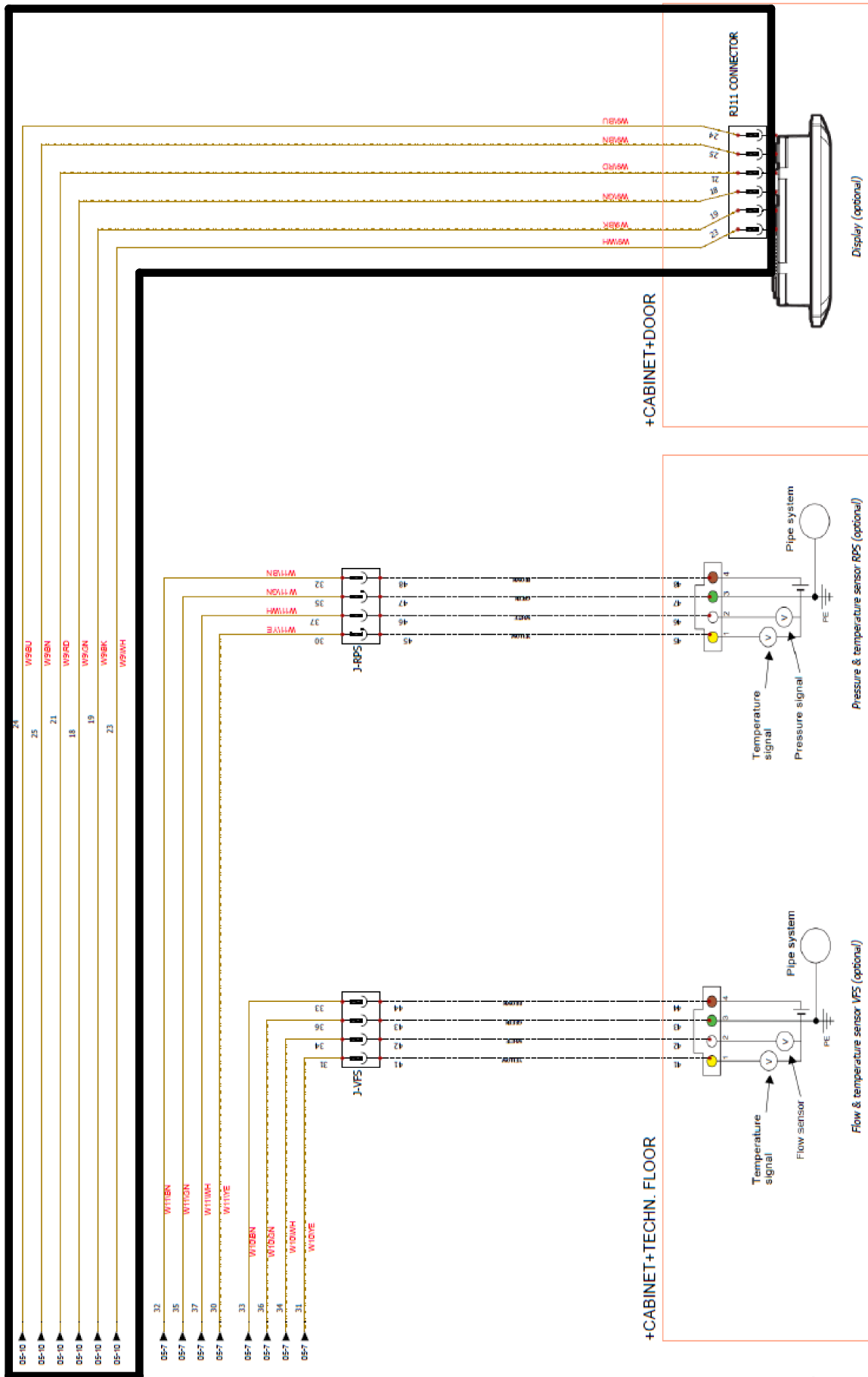


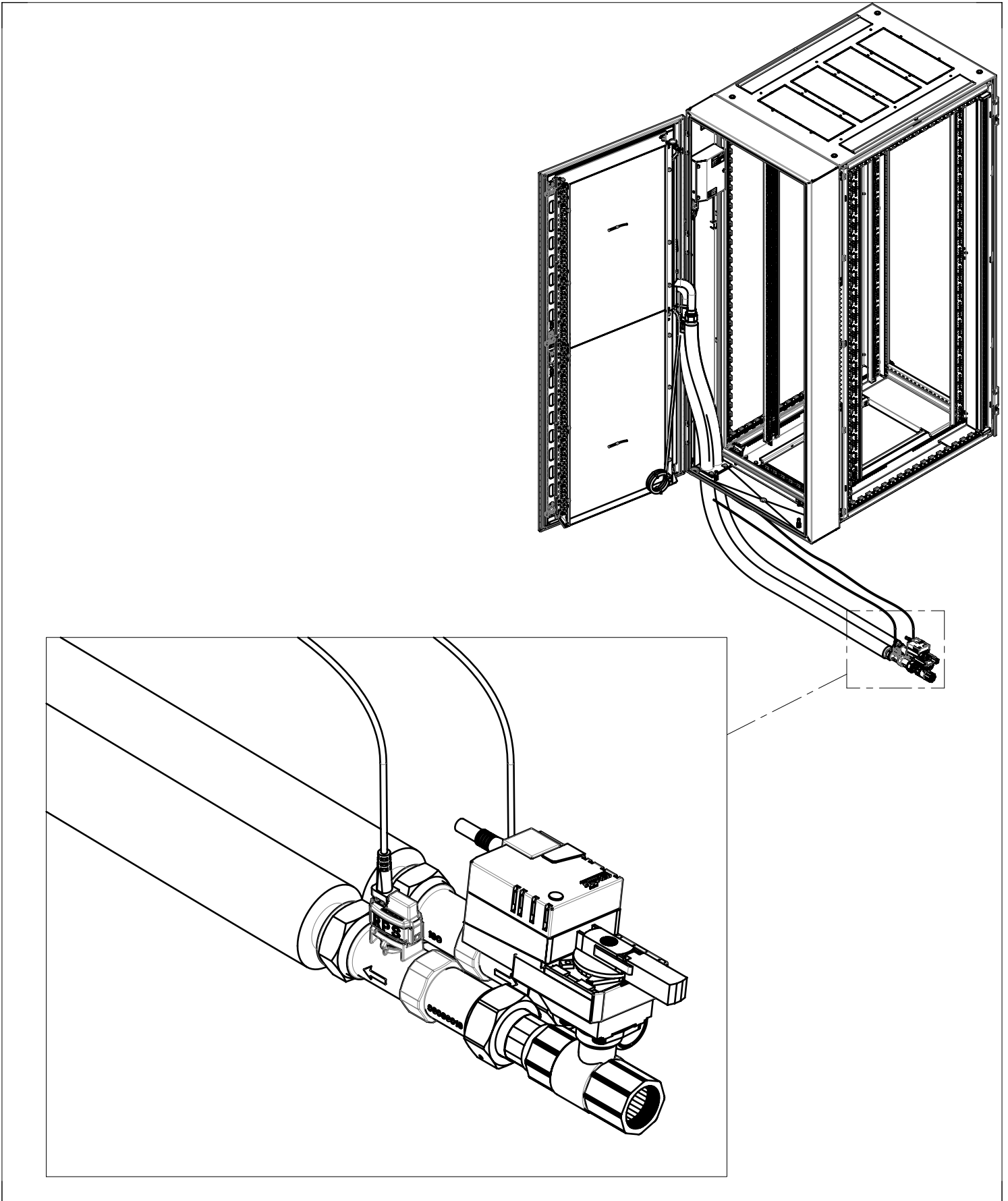


G (1 : 1)

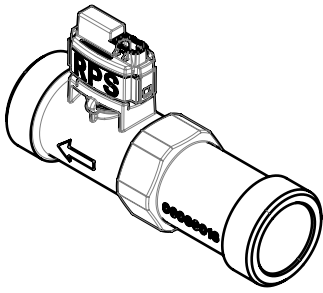




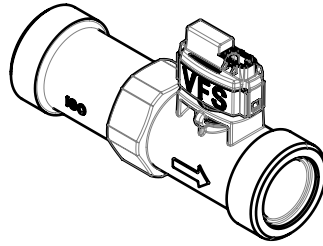




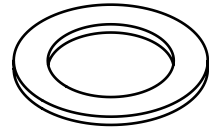
1(1x)



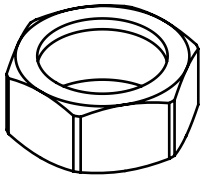
2(1x)



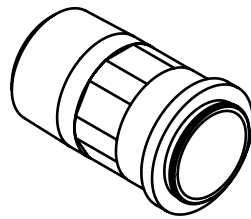
3(2x)



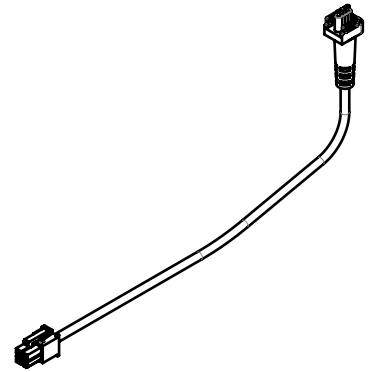
4(4x)



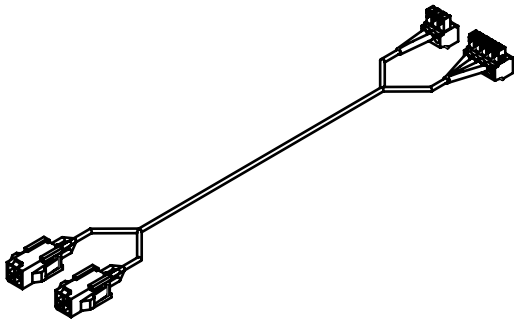
5(4x)



6(2x)



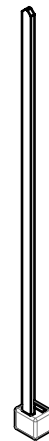
7(1x)



8(10x)

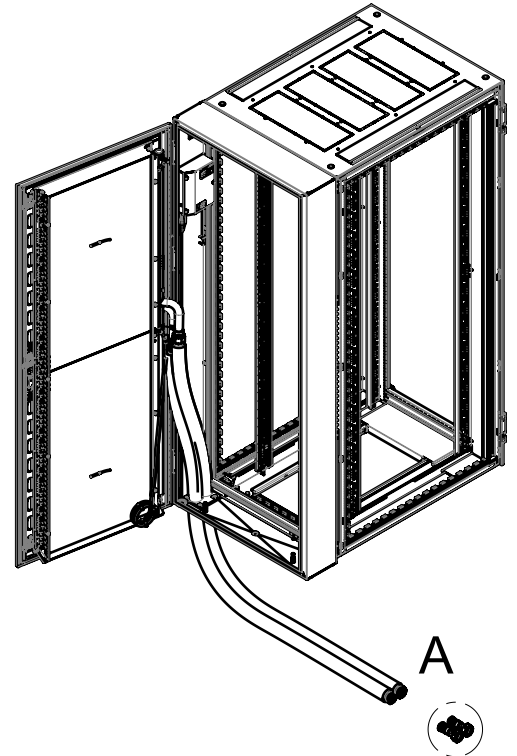
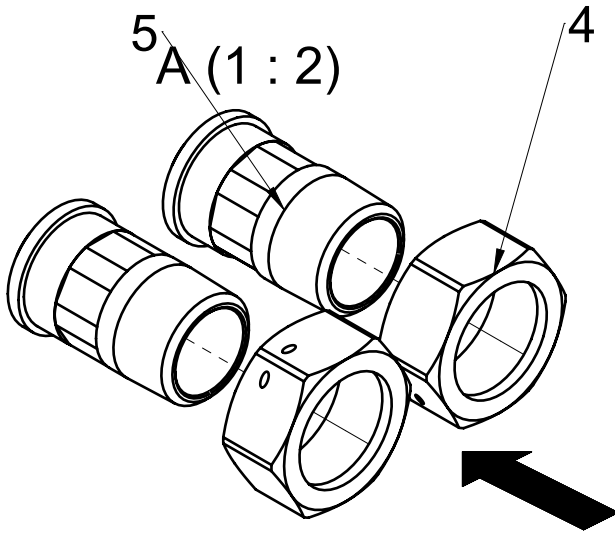


9(10x)

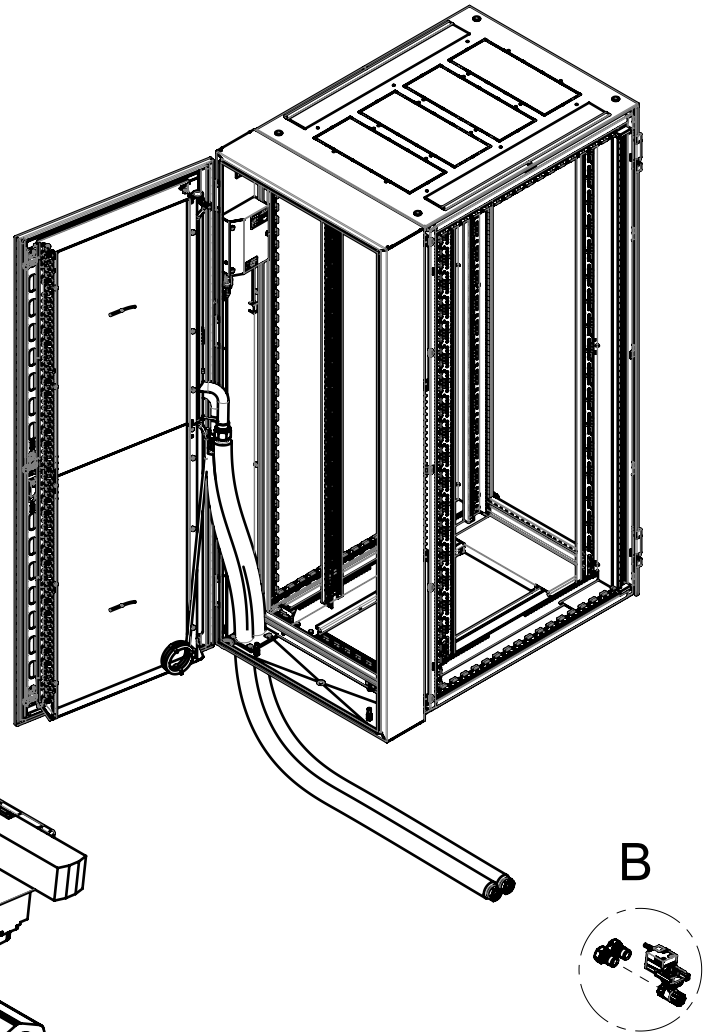
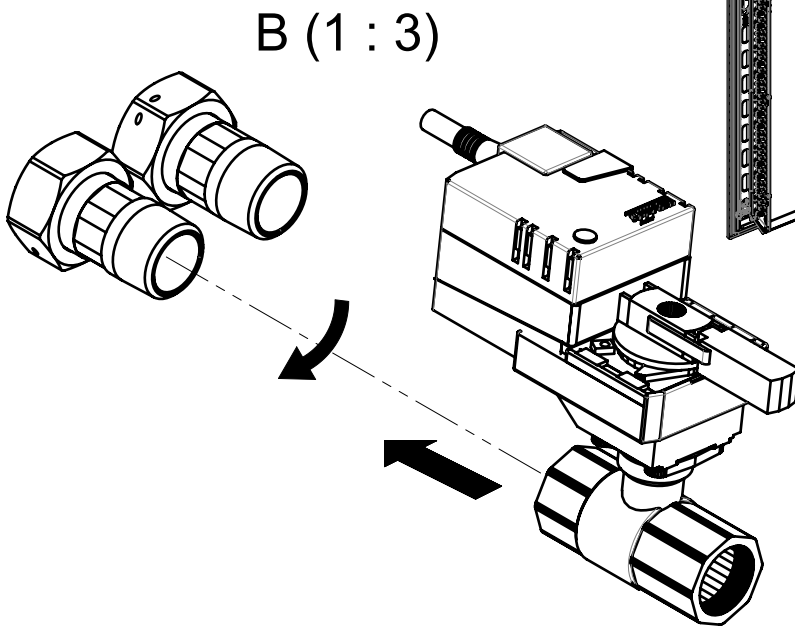




1

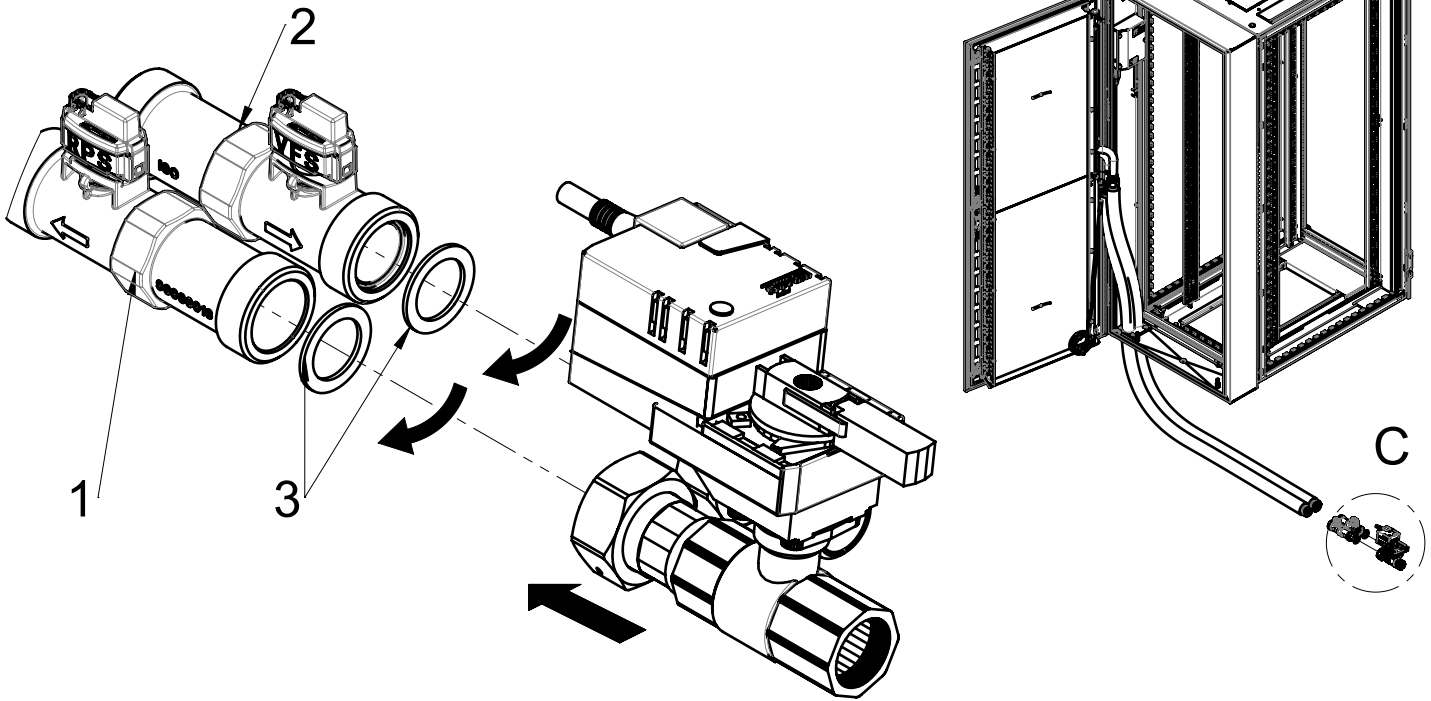


2



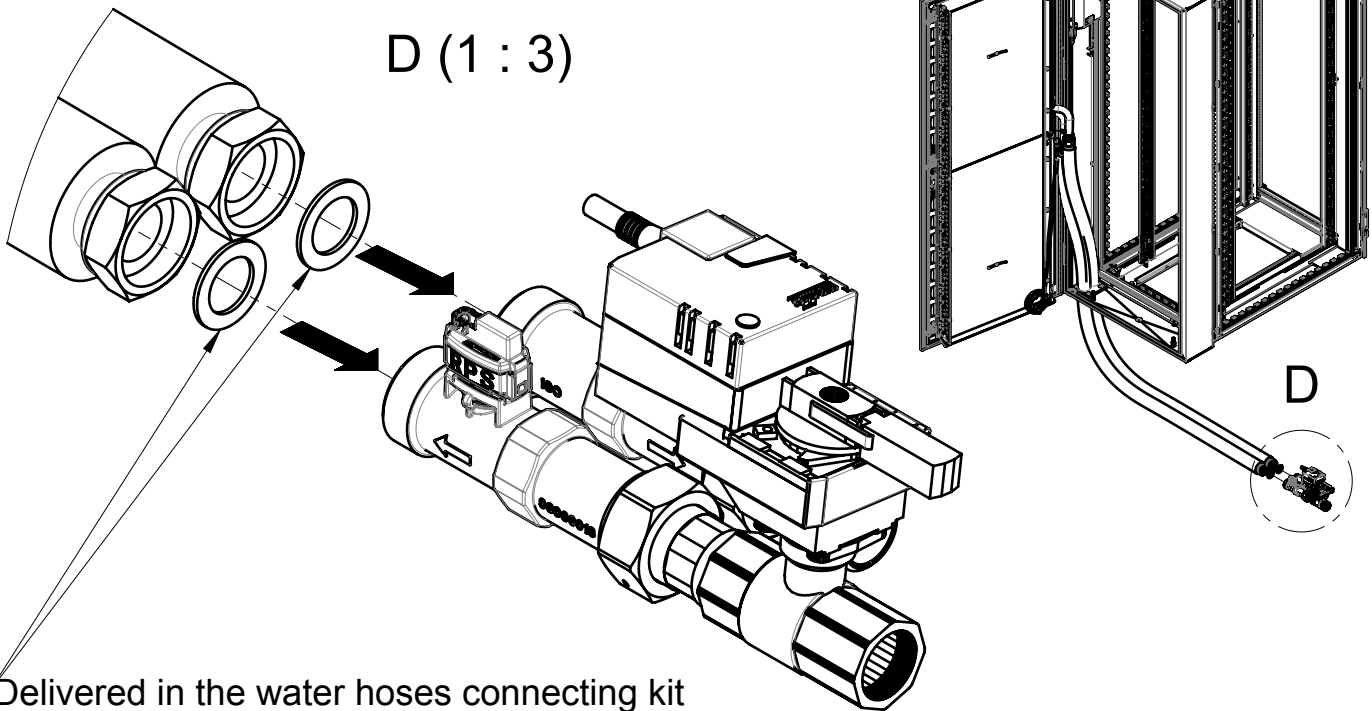
3

C (1 : 3)



4

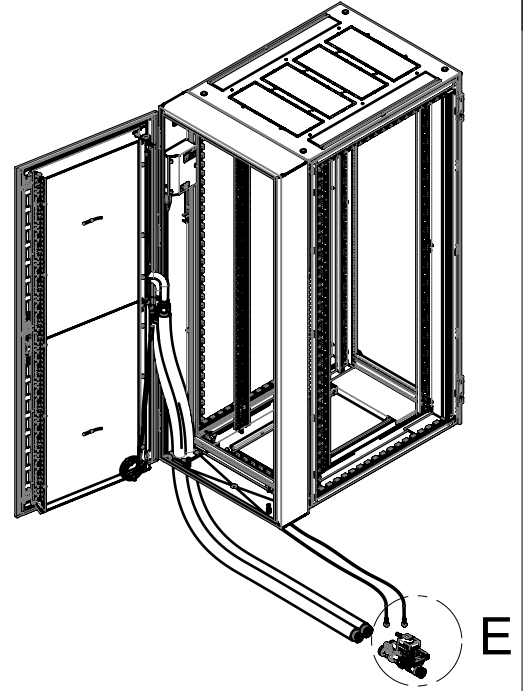
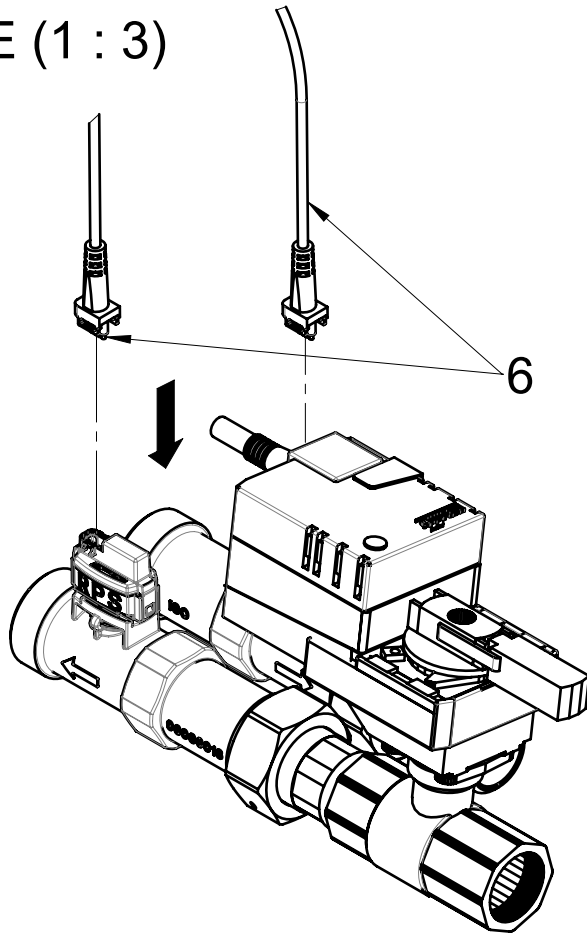
D (1 : 3)



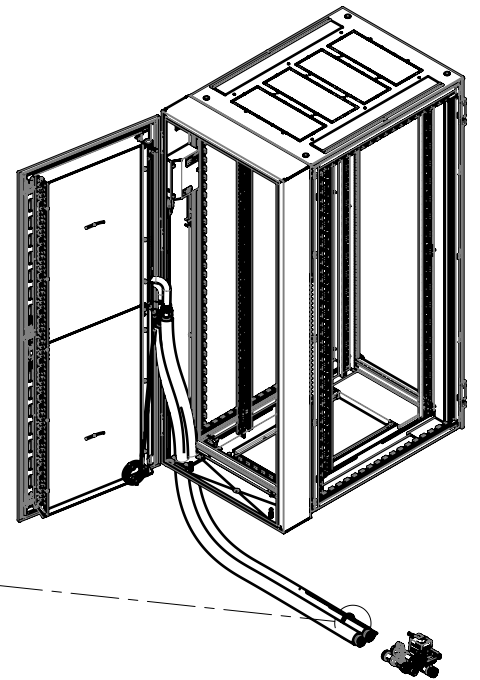
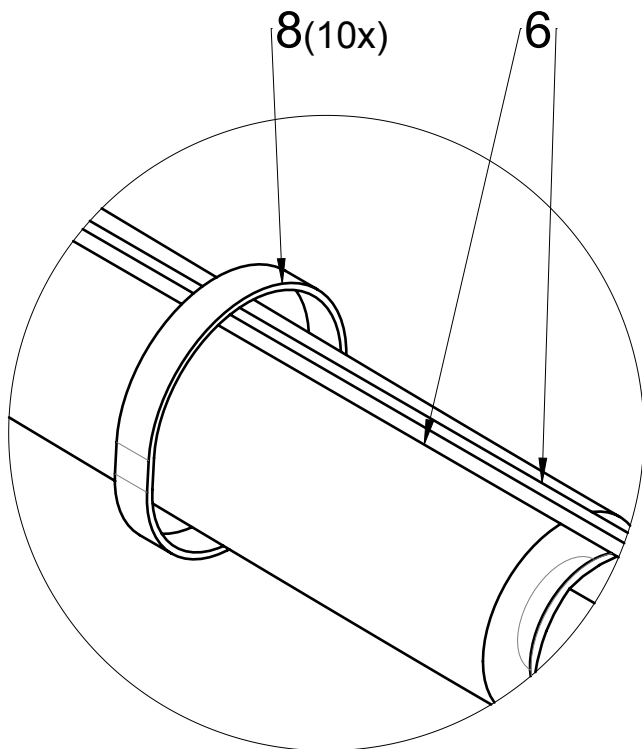
Delivered in the water hoses connecting kit  
 Lieferumfang Wasseranschlusskit  
 Pièces livrées avec le kit de raccordement tuyaux d'eau

5

E (1 : 3)

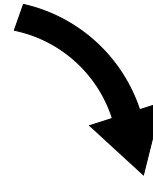
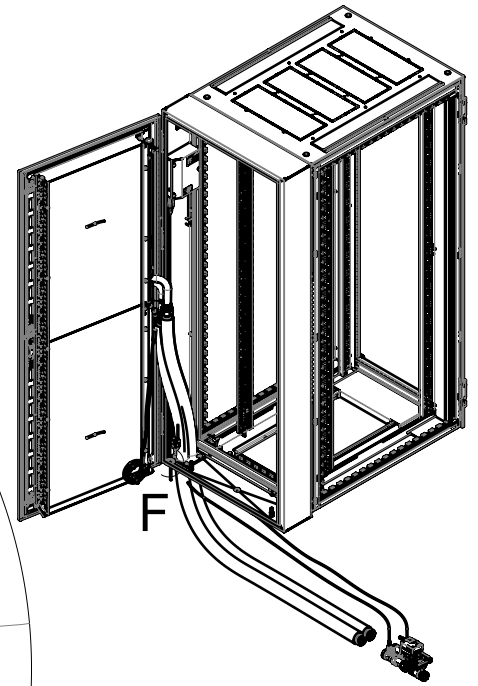
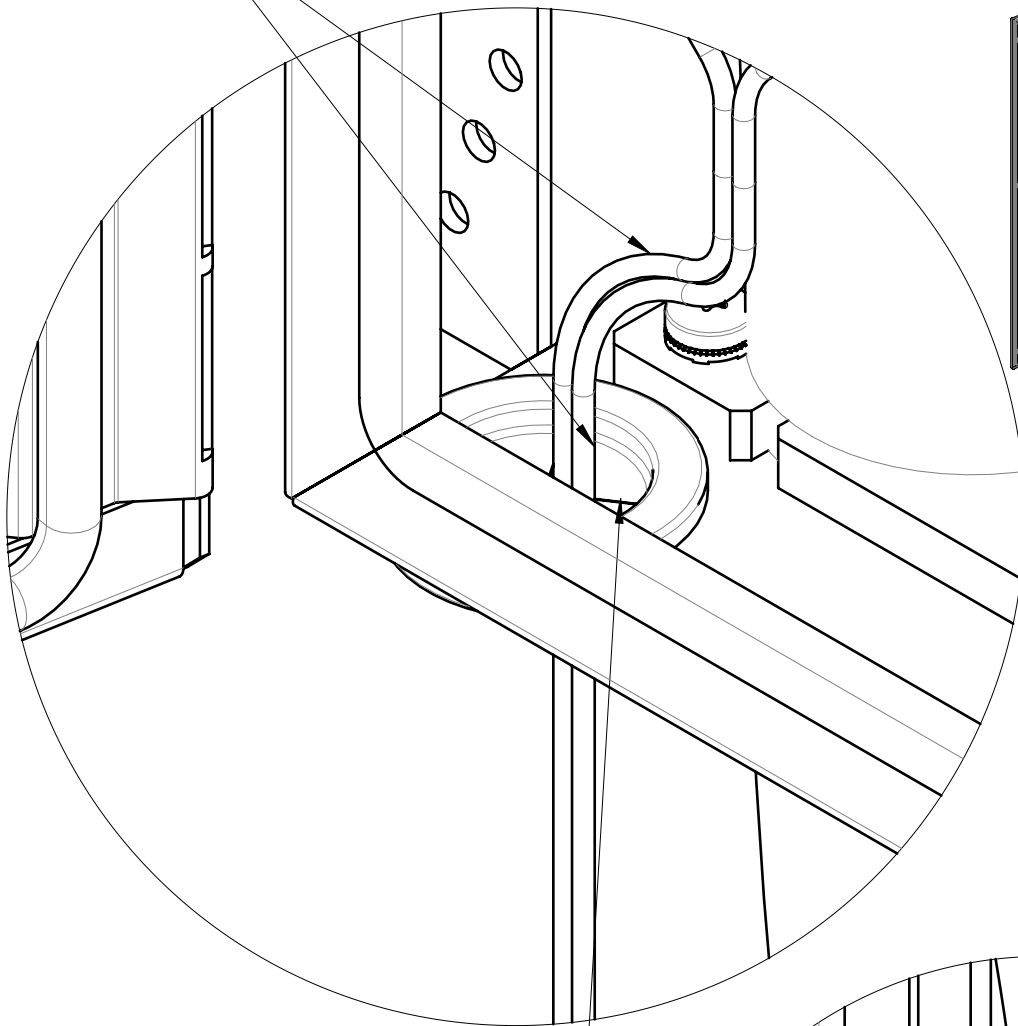


6

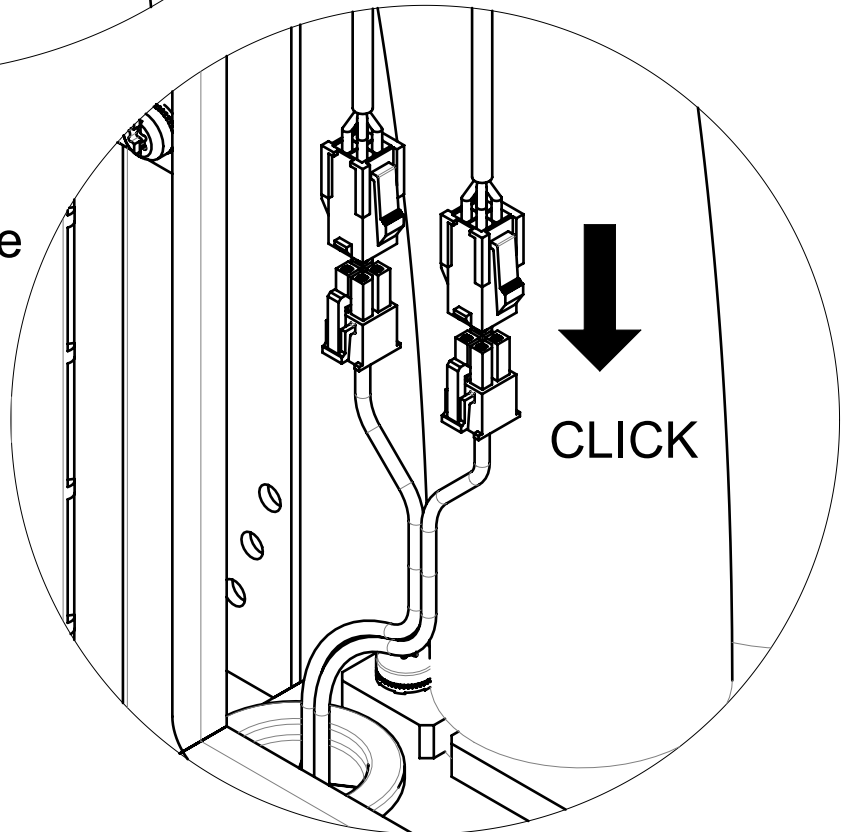


6

F (1 : 1)



Cables through cut-out  
Kabel durch Aussparung  
Câbles à travers la découpe



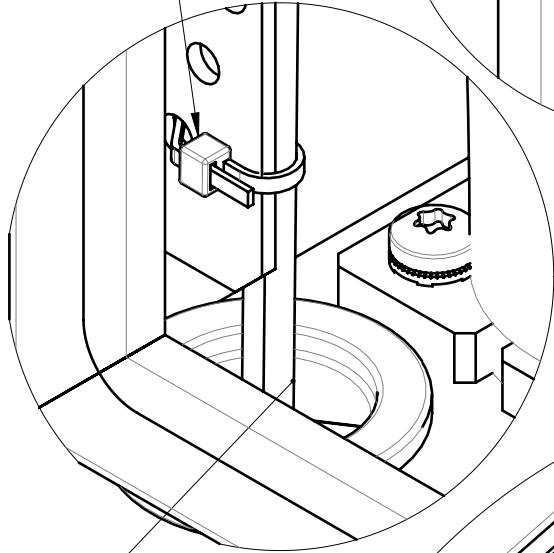
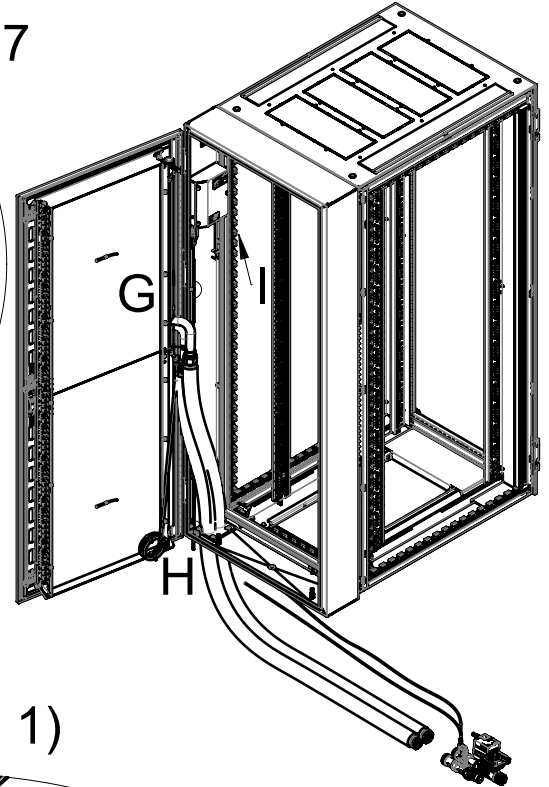
8

G (1 : 1)

7

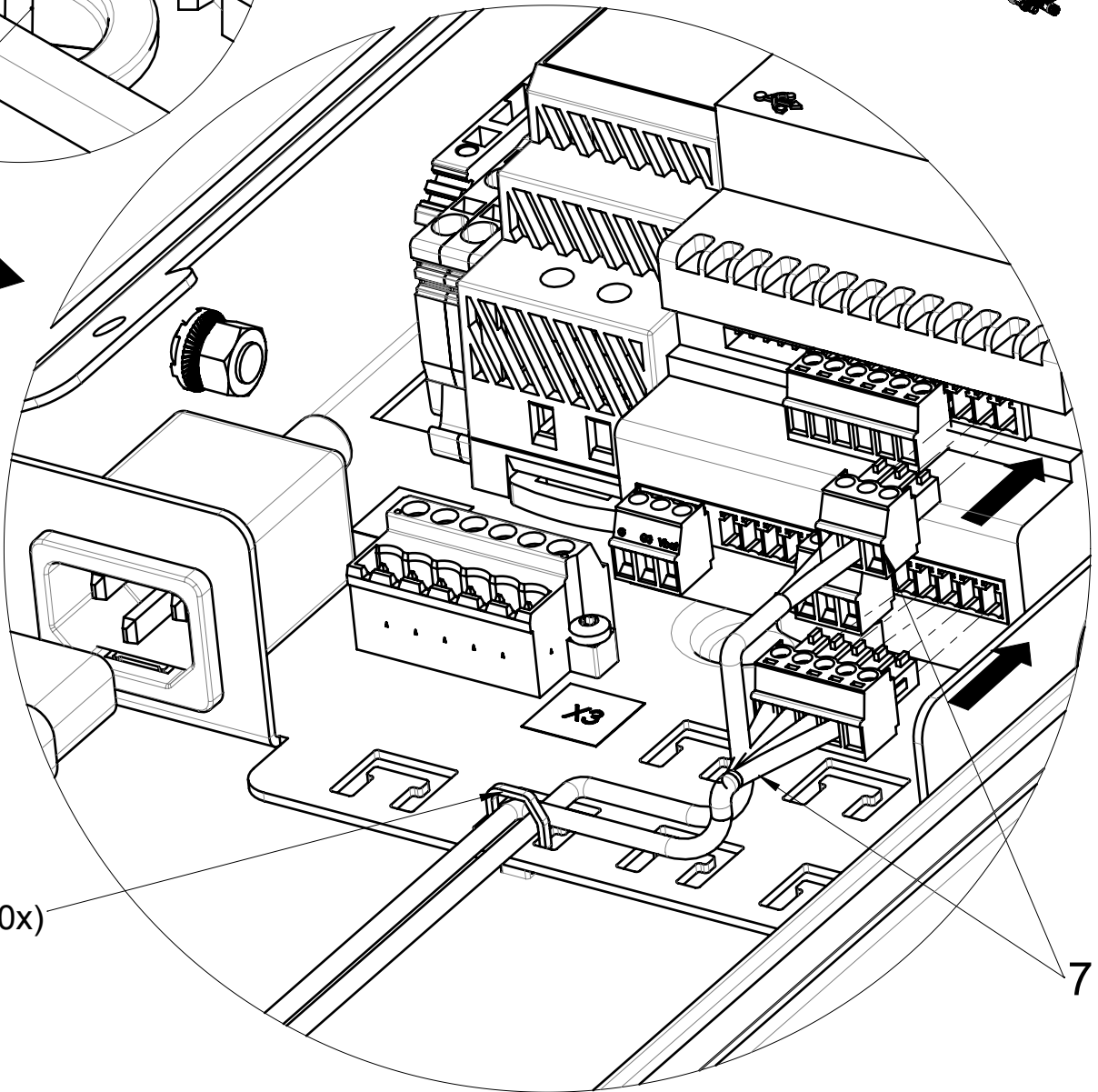
9(10x)

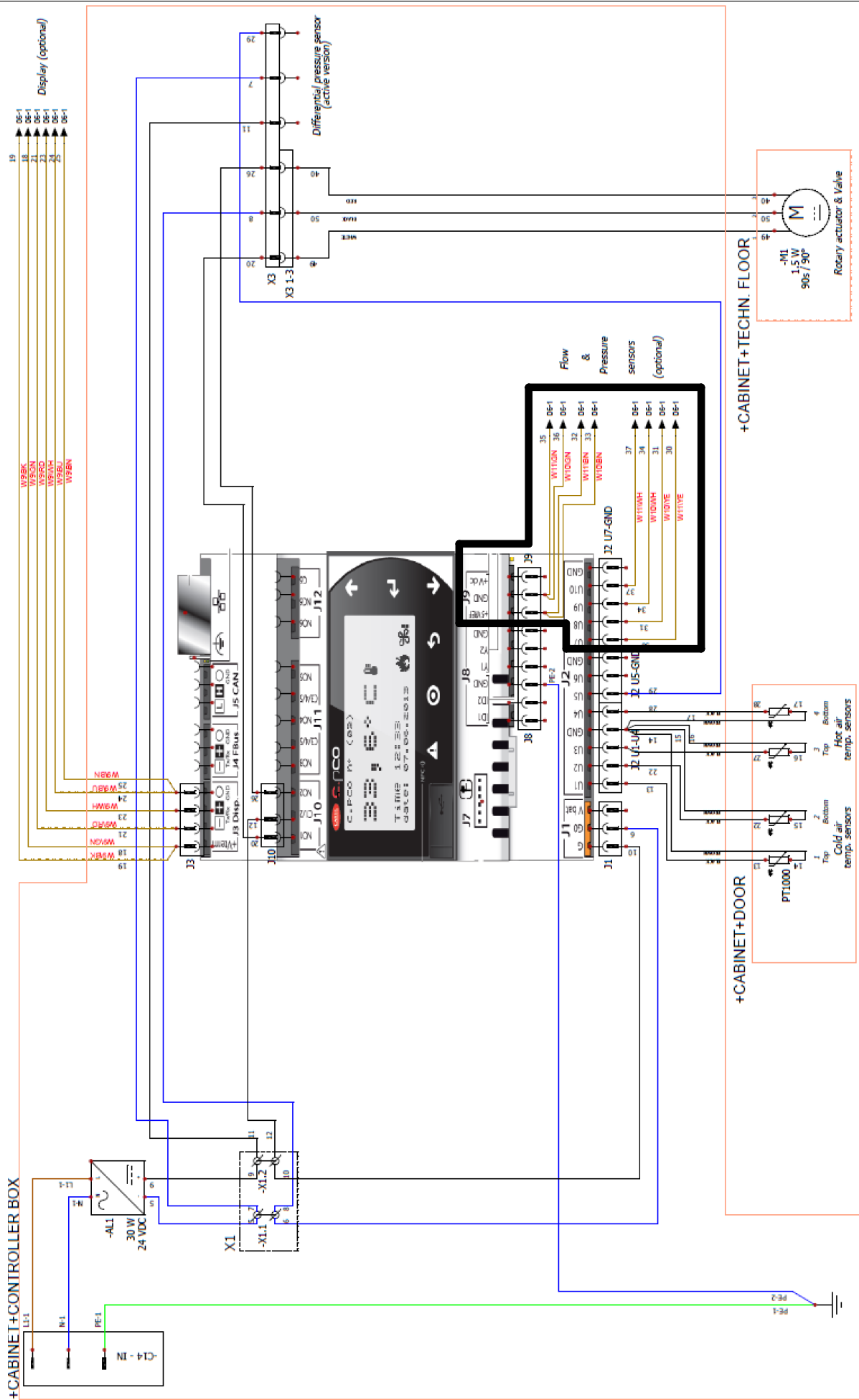
H (1 : 1)

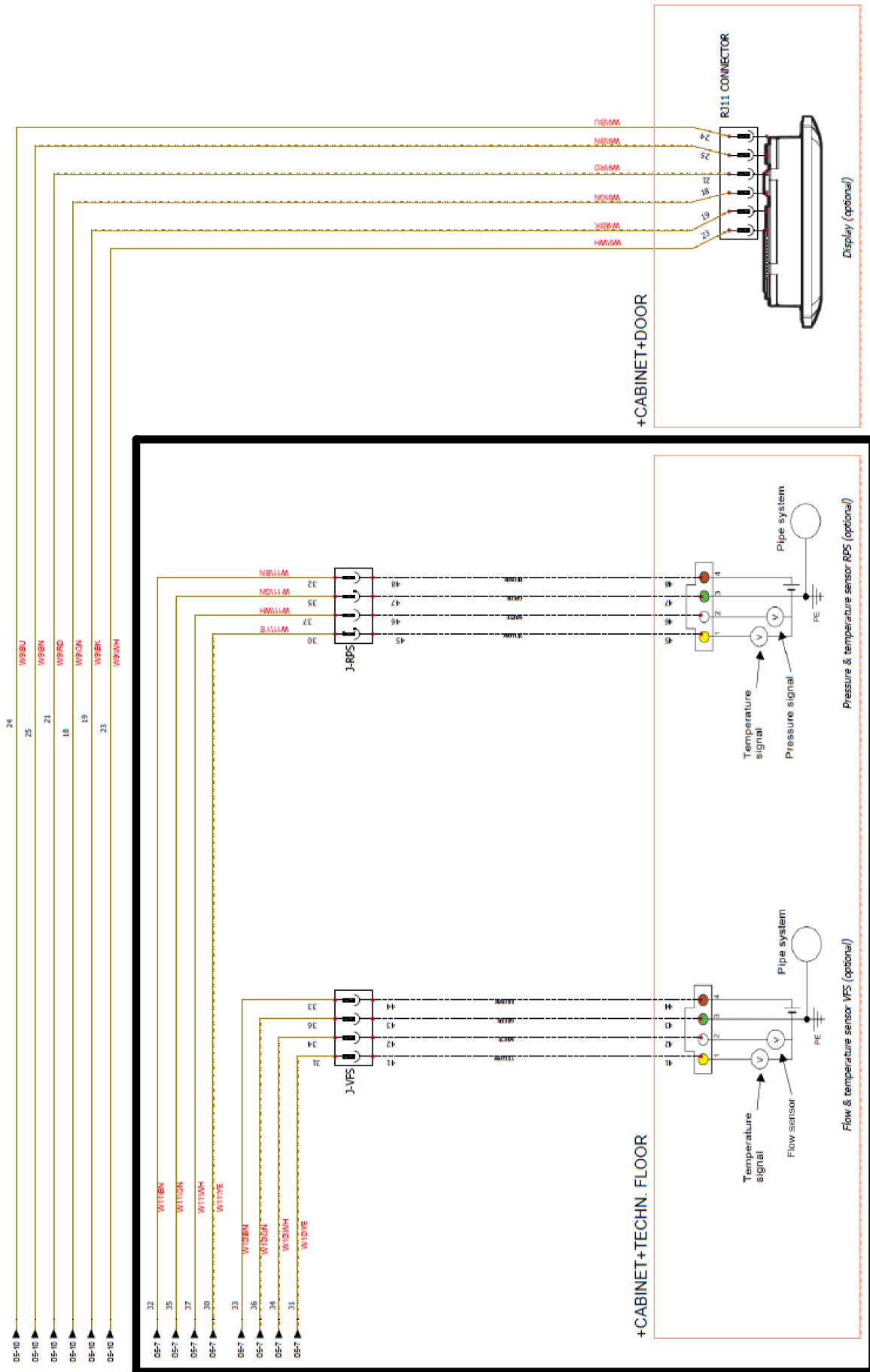


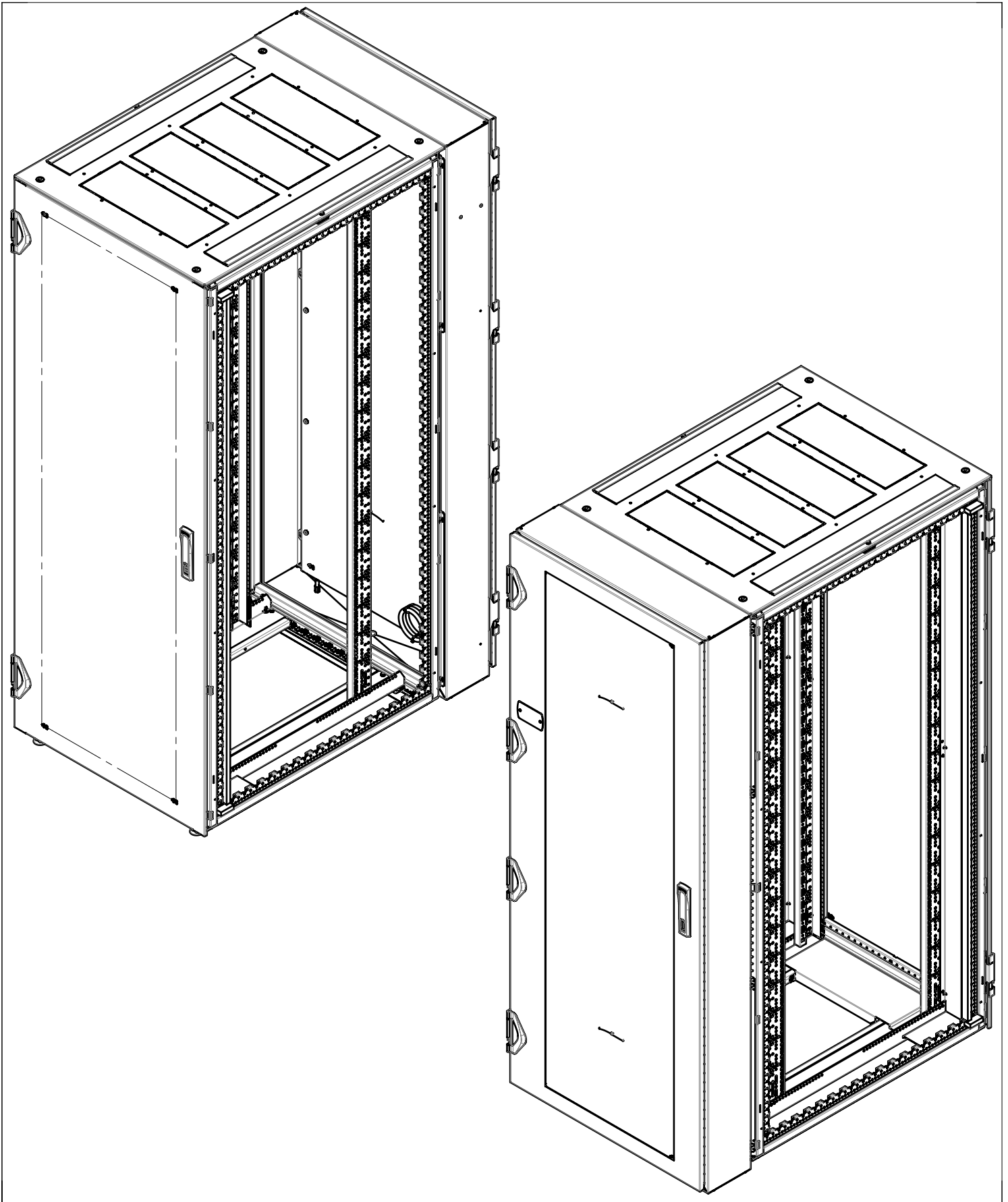
I (1 : 1)

6











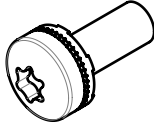
1 (4x)



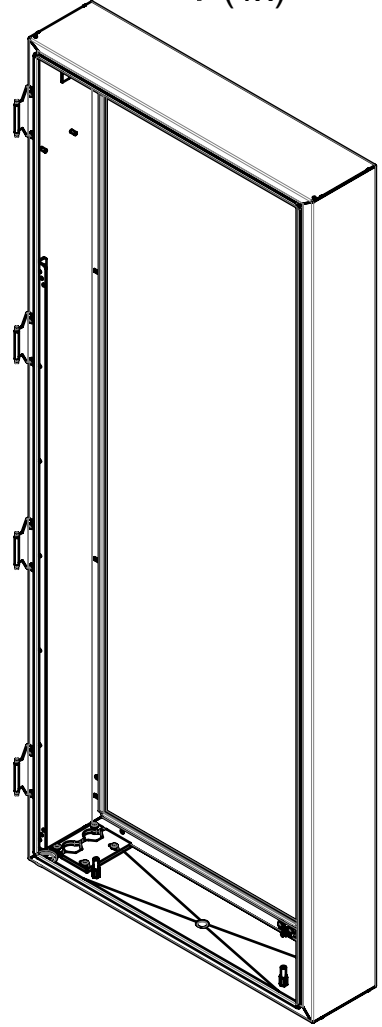
2 (8x)



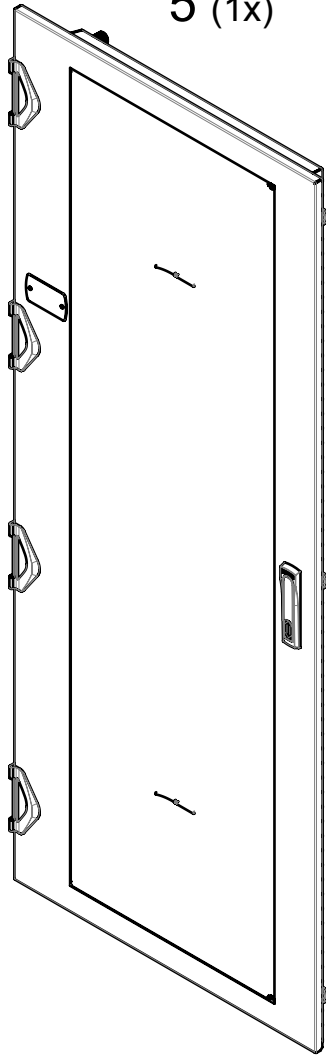
3 (8x)



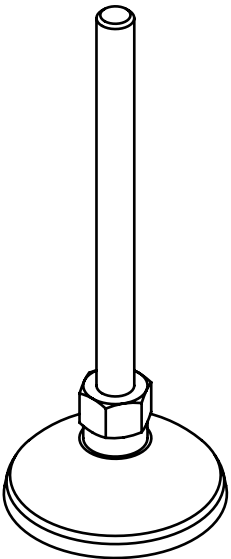
4 (1x)



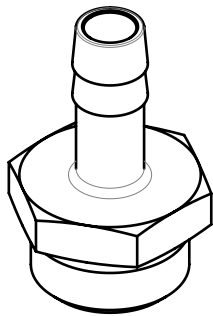
5 (1x)



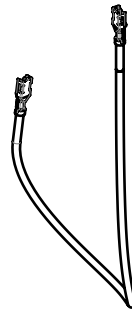
6 (2x)



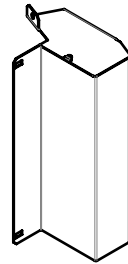
7 (1x)



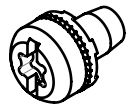
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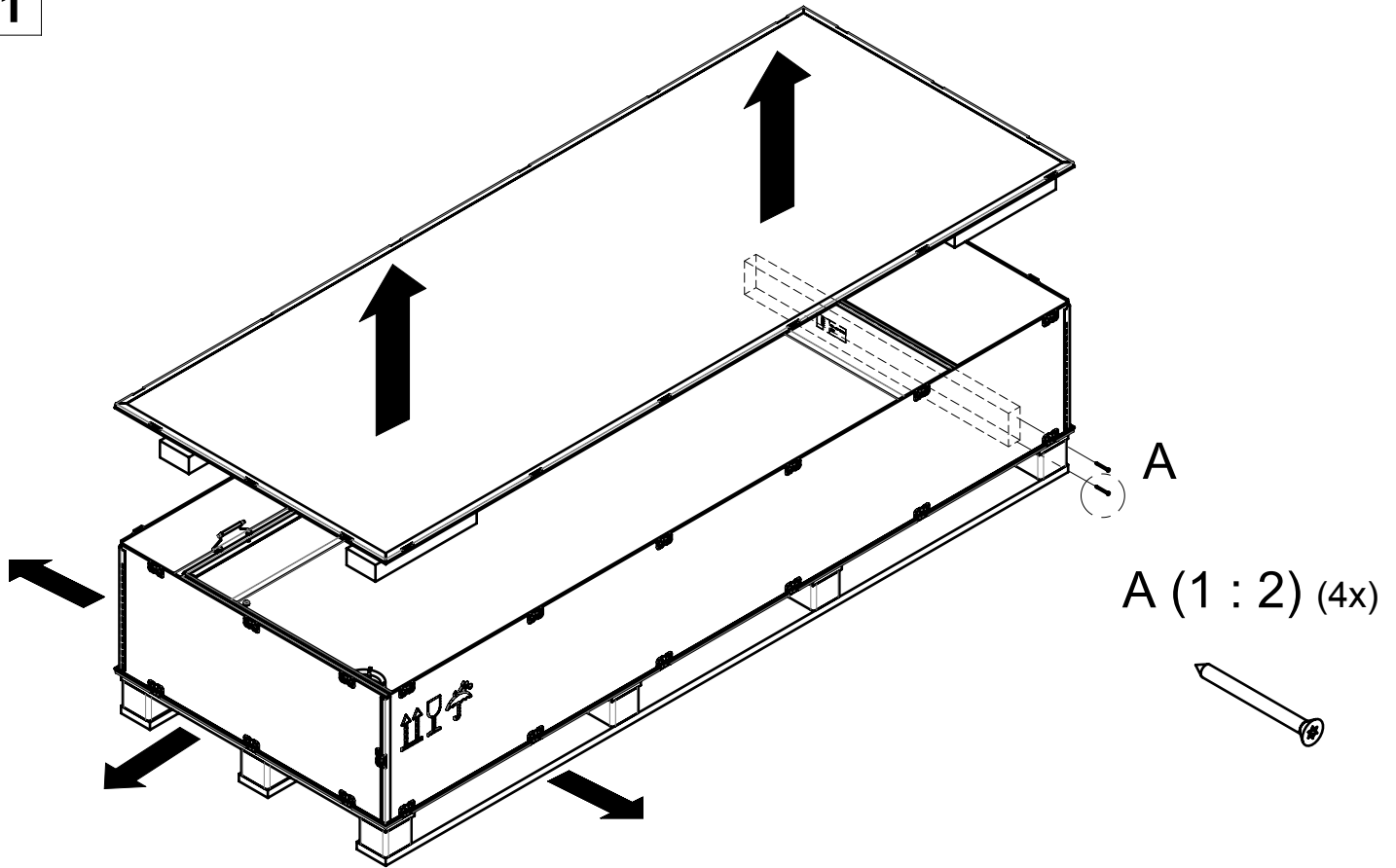
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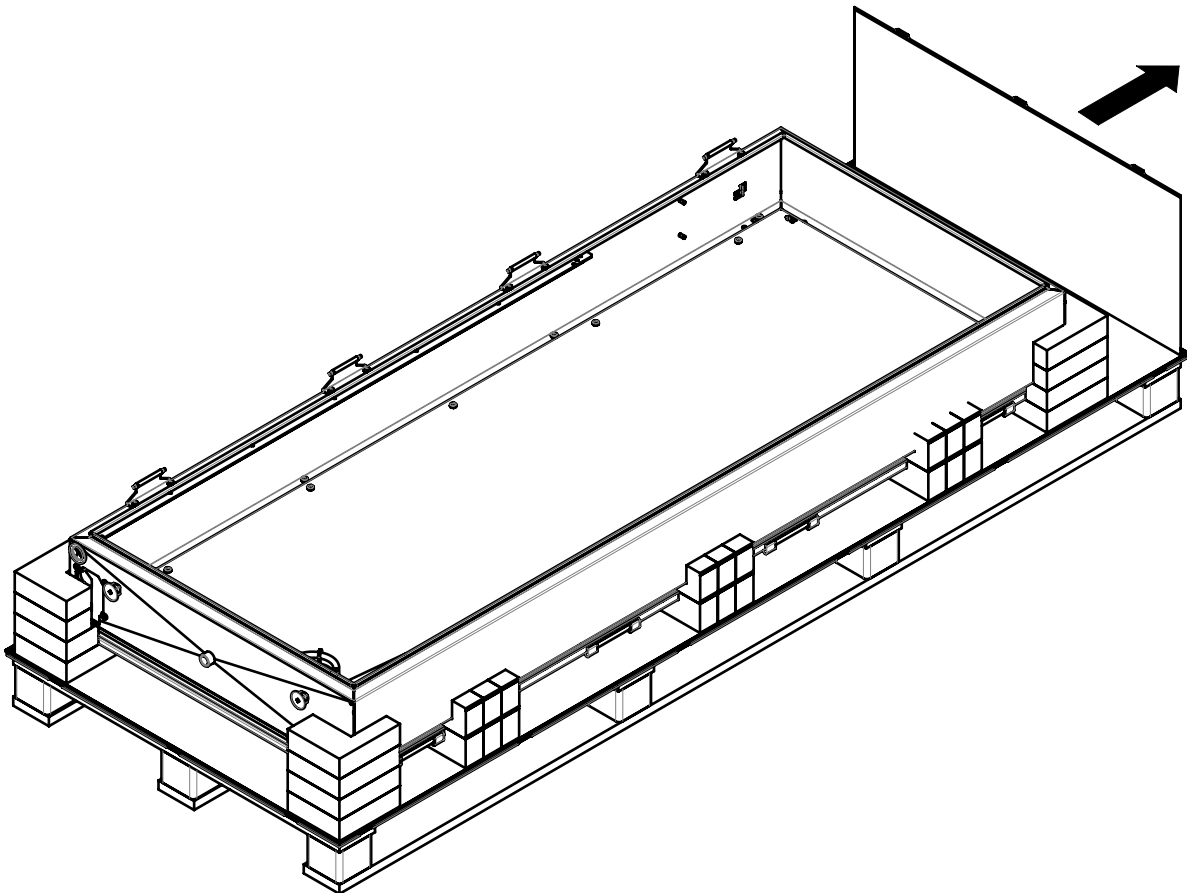
10 (1x)



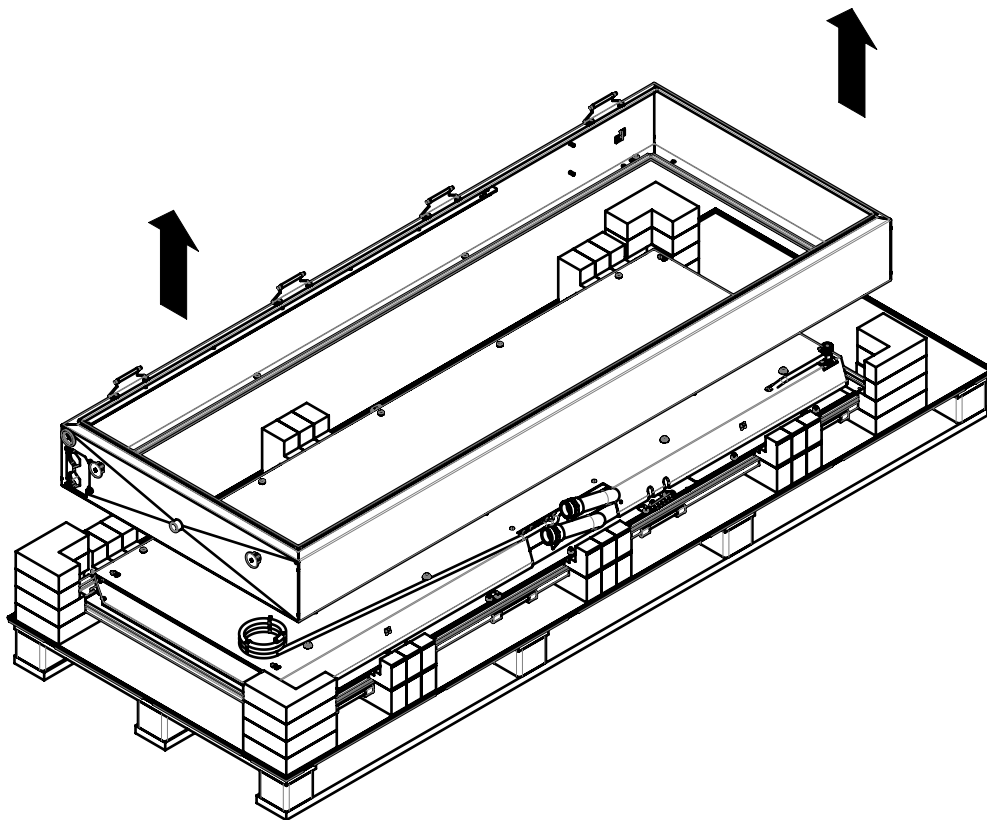
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2

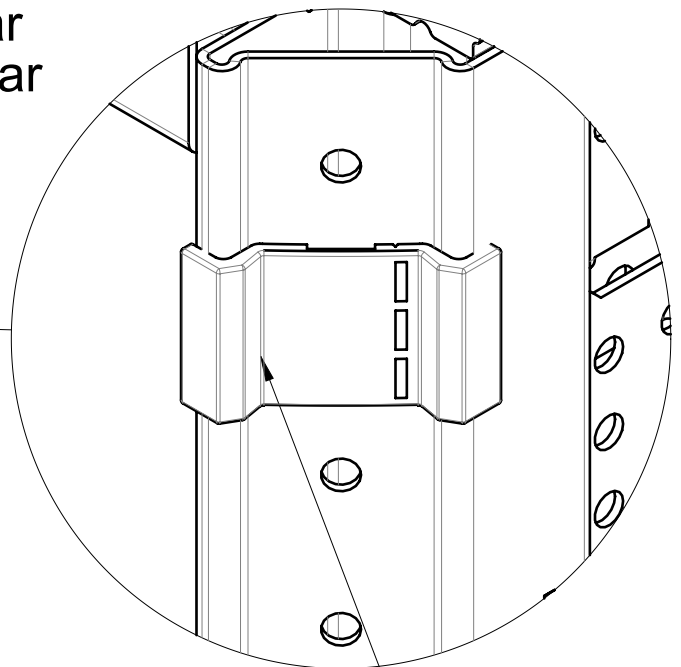
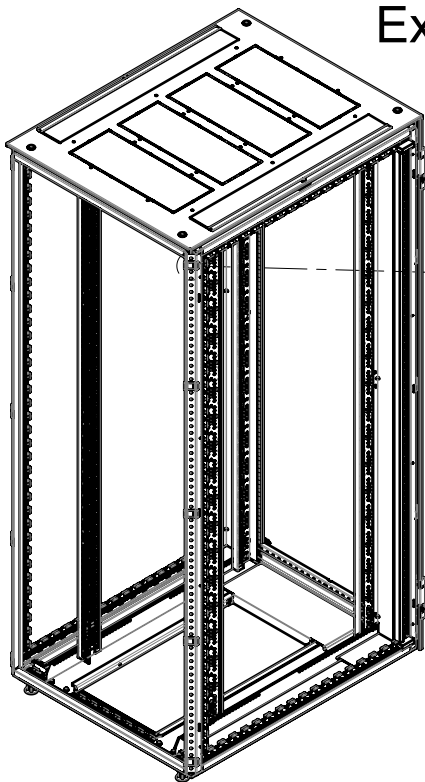


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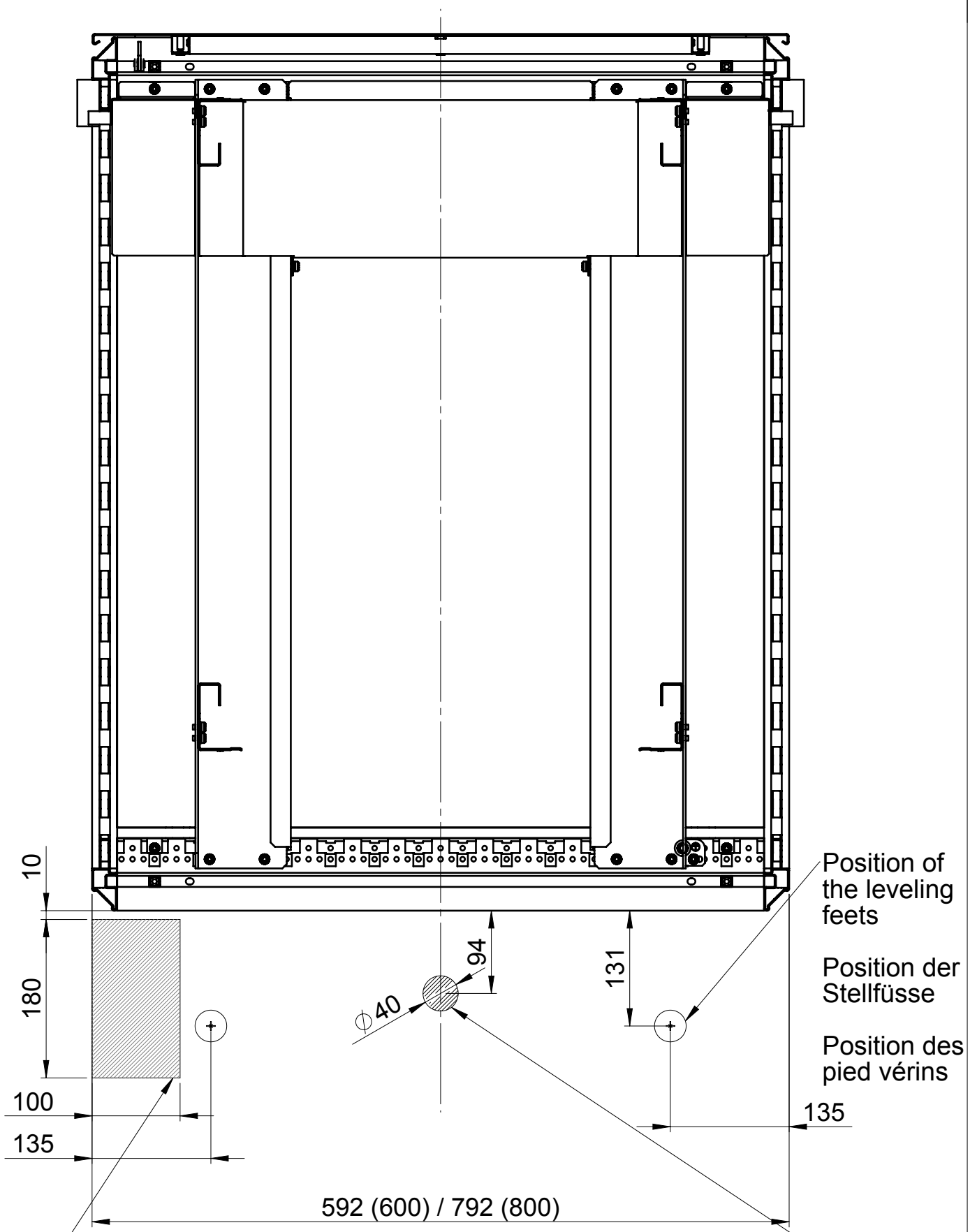


4

Example: Varistar  
 Beispiel: Varistar  
 Exemple: Varistar



Remove the plastic door stoppers or the IP55 gasket  
 Tür Anschläge aus Kunststoff oder IP55 Dichtung entfernen  
 Enlever les butées de porte plastique ou le joint d'étanchéité IP55

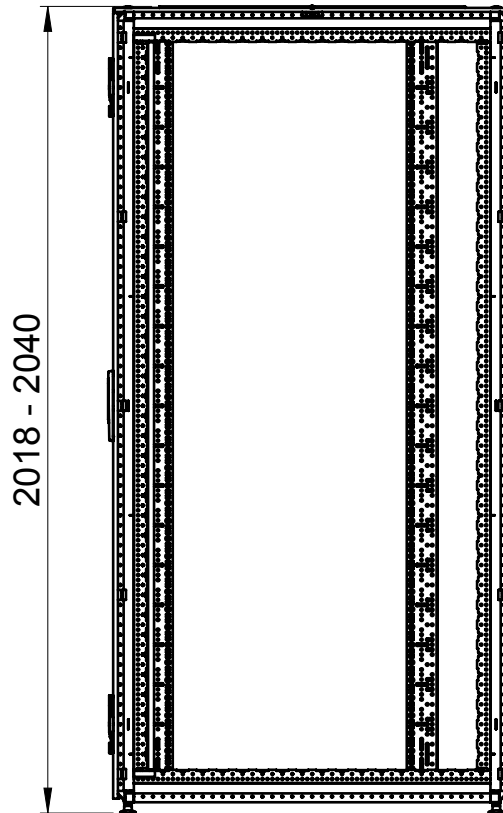


Realize cut outs in the double floor before mounting  
 Ausbrüche im Doppelboden vor der Montage vorsehen  
 Création de découpes dans le plancher technique avant montage

6

(A)

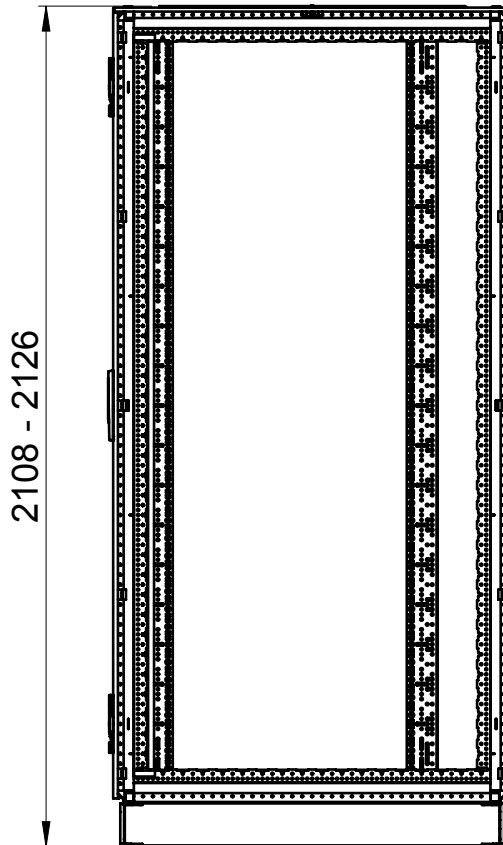
Without plinth  
Ohne sockel  
Sans socle



Small leveling feet for cabinet height between 2018 - 2040mm  
Kleiner Nivelierfuss für Schrank Höhen von 2018 - 2040 mm  
Petit pied vérin pour hauteur d'armoire de 2018 - 2040 m

(B)

With plinth  
Mit sockel  
Avec socle

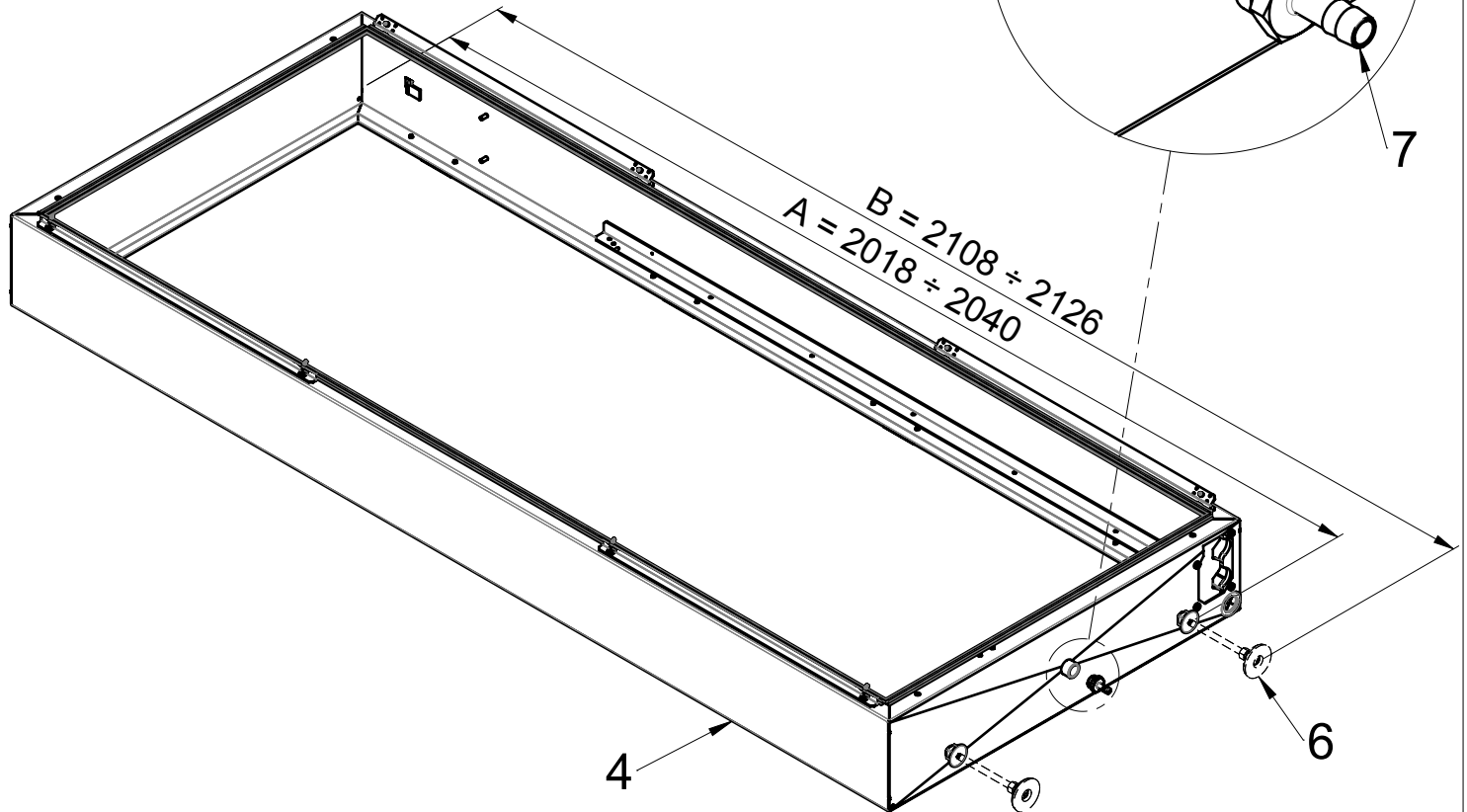


Tall leveling feet for cabinet height between 2108 - 2126mm  
Großer Nivelierfuss für Schrank Höhen von 2108 - 2126 mm  
Grand pied vérin pour hauteur d'armoire de 2108 - 2126 mm

**7** Kondensat Anschluss mit Dichtungsmittel montieren  
(Teflon Band oder gleichwertig)

Réaliser l'étanchéité du raccord pour condensat lors  
du montage ( ruban téflon ou équivalent)

Realize a sealed assembly of the condensate  
connector (Teflon tape or equivalent)



**8**

	<p>Danger of cabinet tipping Kippgefahr des Schrankes Danger de renversement de l'armoire</p>	
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**Danger of tipping over!**

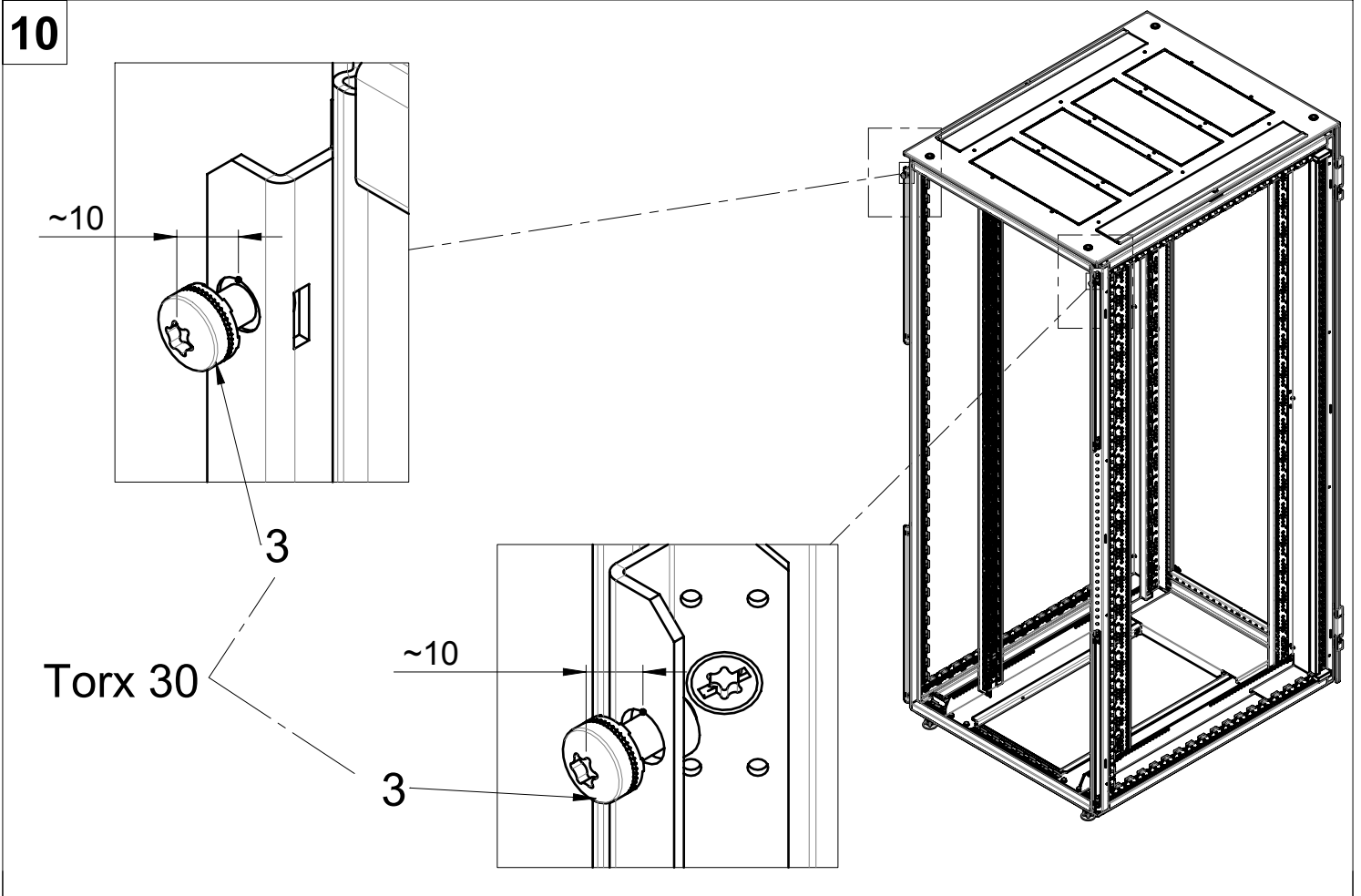
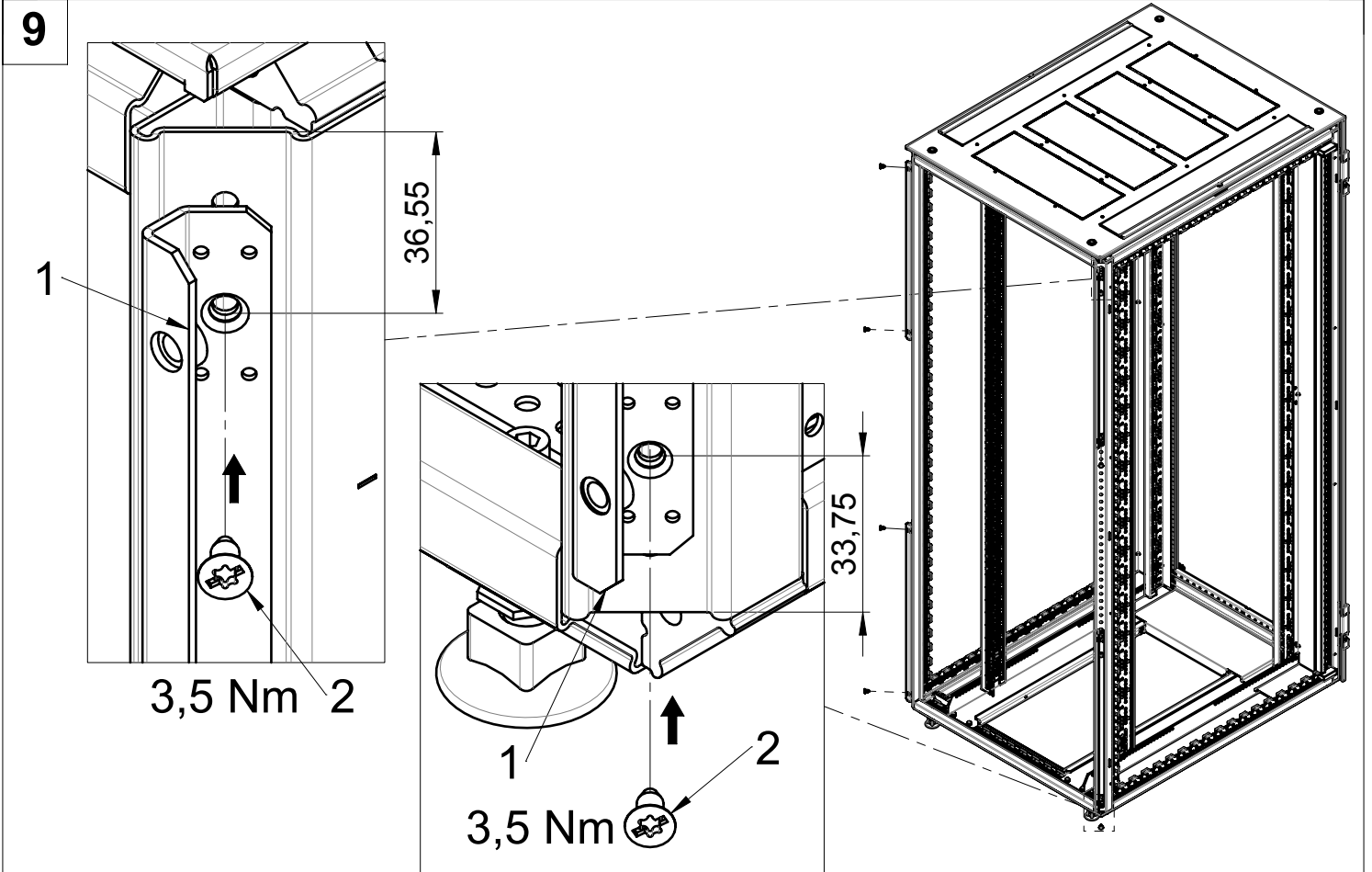
The door with the RackChiller can only be mounted on the server cabinet when it is fully assembled and / or securely anchored to the floor. Otherwise, the server cabinet can tip over when the RackChiller is open.

**Achtung Kippgefahr!**

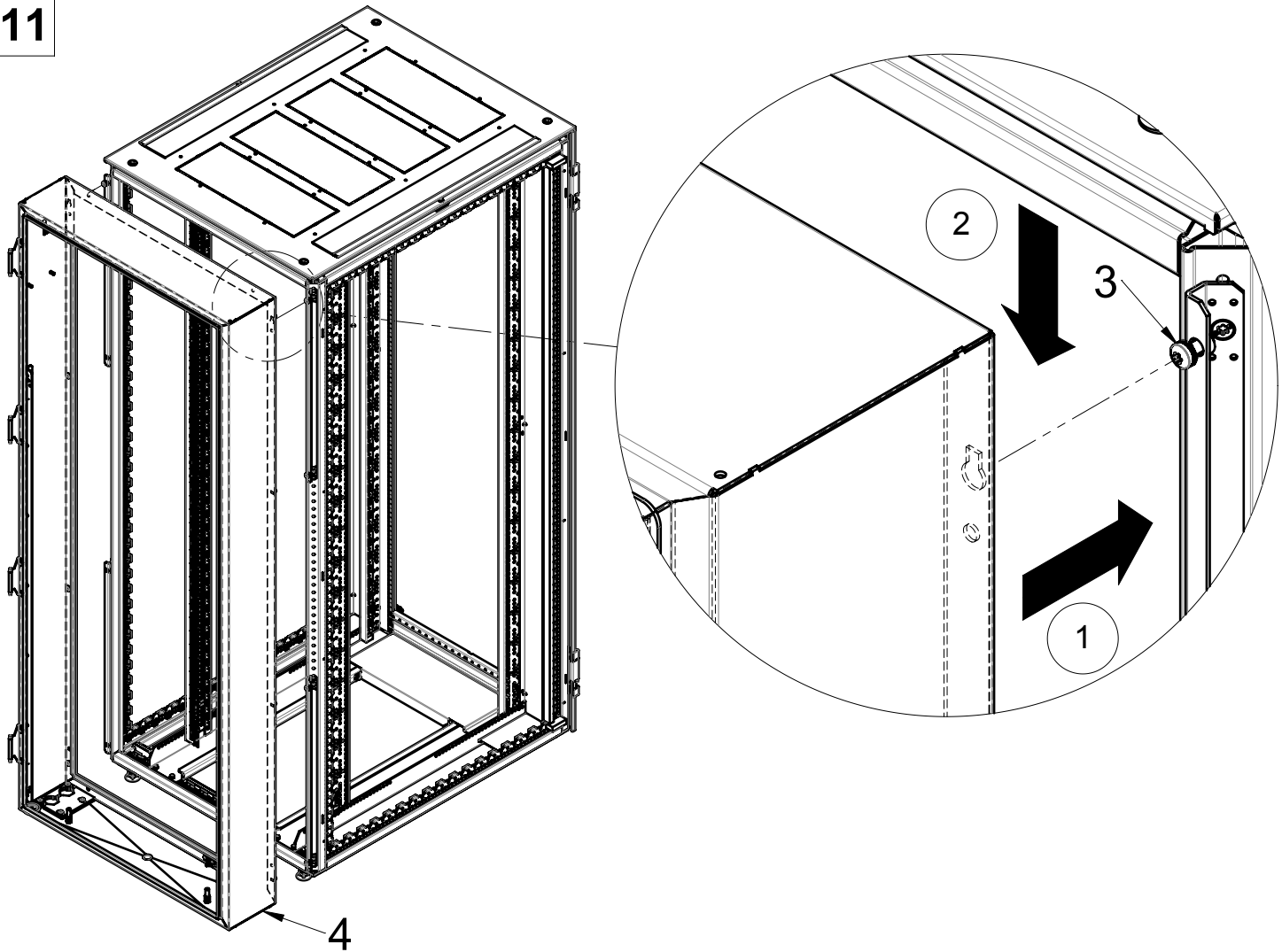
Die RackChiller Tür an den Serverschrank montieren, nur wenn dieser komplett mit Server ausgebaut oder am Boden befestigt ist. Andernfalls könnte der Serverschrank bei der Öffnung der Tür umkippen.

**Attention risque de basculement!**

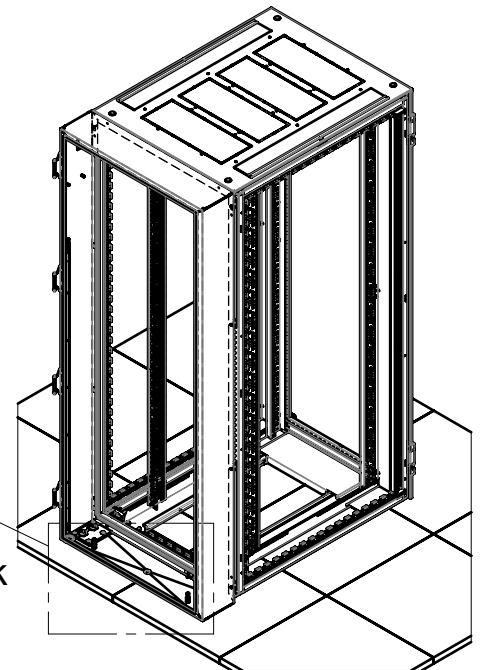
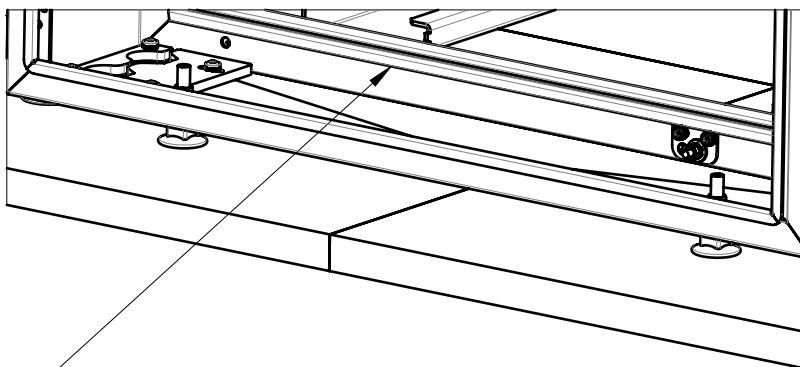
Monter uniquement la porte RackChiller sur une baie server complètement équipée ou fixée au sol. Dans le cas contraire la baie server pourrait basculer lors de l'ouverture de la porte RackChiller.



11



12

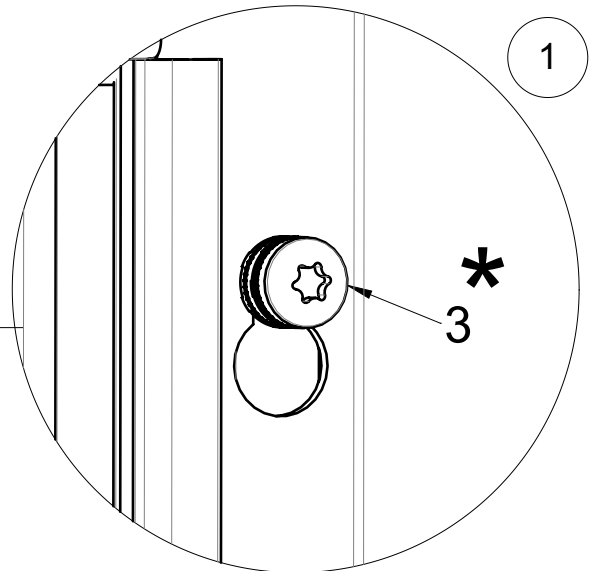
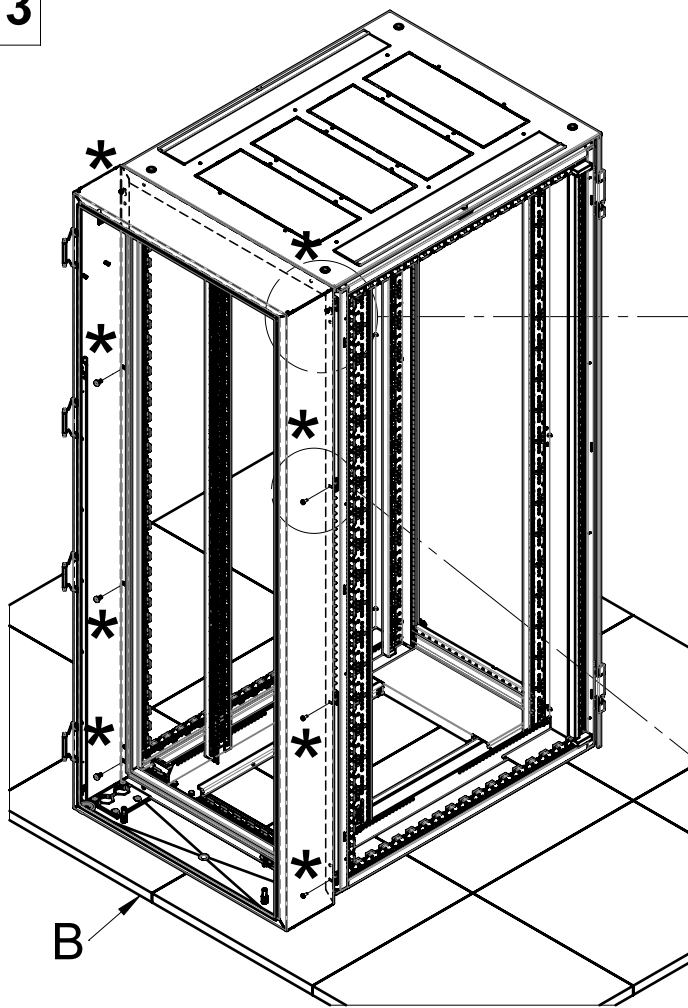


After mount the body of the RackChiller door, make a check if the gasket have a good contact with the cabinet frame.

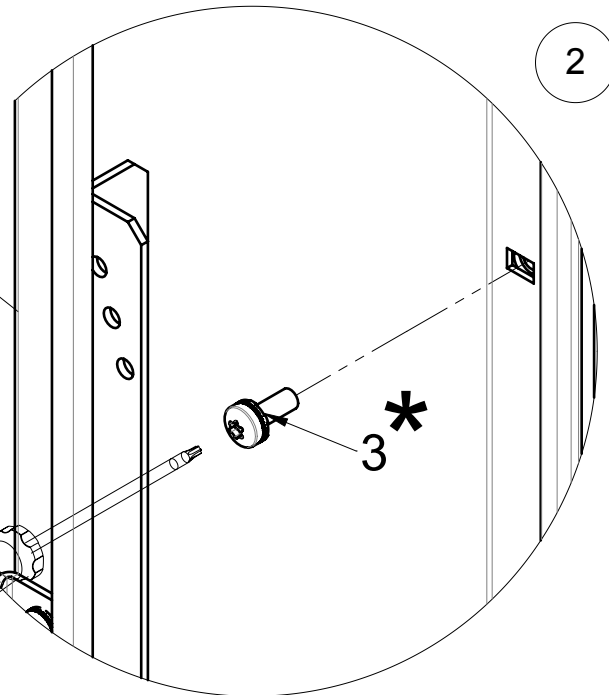
Nach dem montieren des Aufsatzgehäuse der RackChiller Tür, prüfen Sie das die Dichtung am Schrankgestell gut anliegt.

Après la mise en place du caisson, vérifier le bon contact du joint avec le cadre de l'armoire.





1

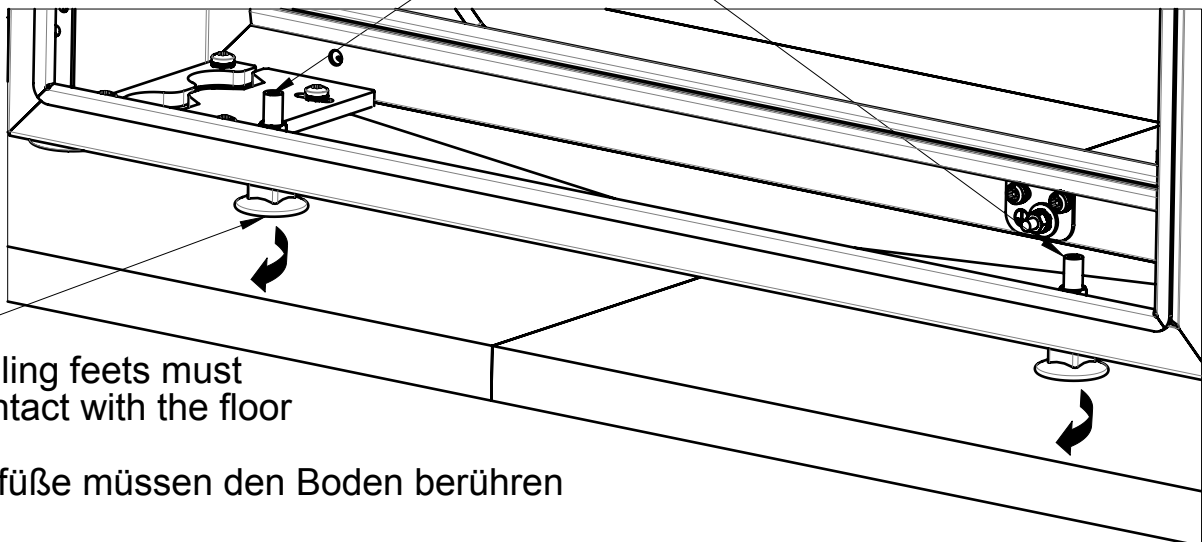


2

Torx 30  
5 Nm

B (1 : 4)

Torx 30



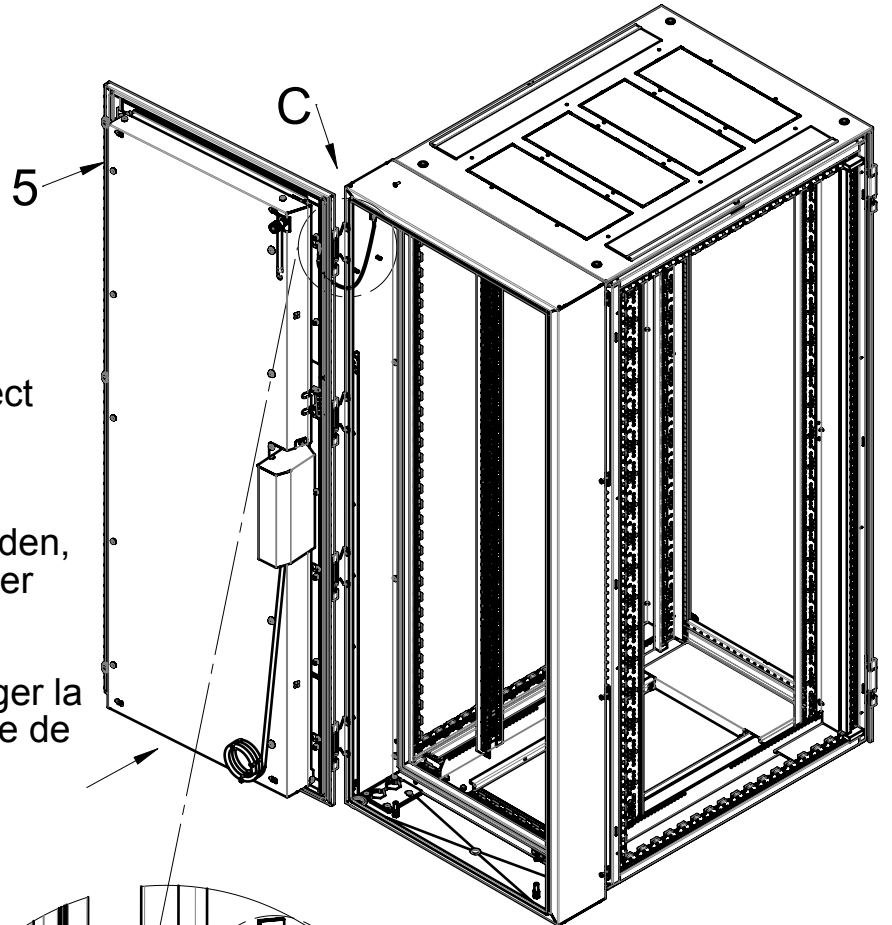
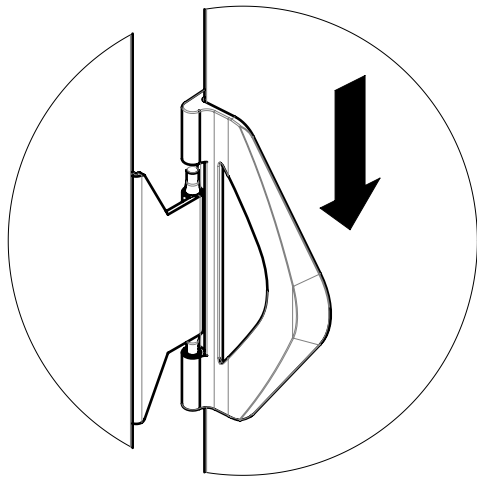
3

The leveling feet must be in contact with the floor

Die Stellfüße müssen den Boden berühren

Les pieds réglables doivent être en contact avec le sol

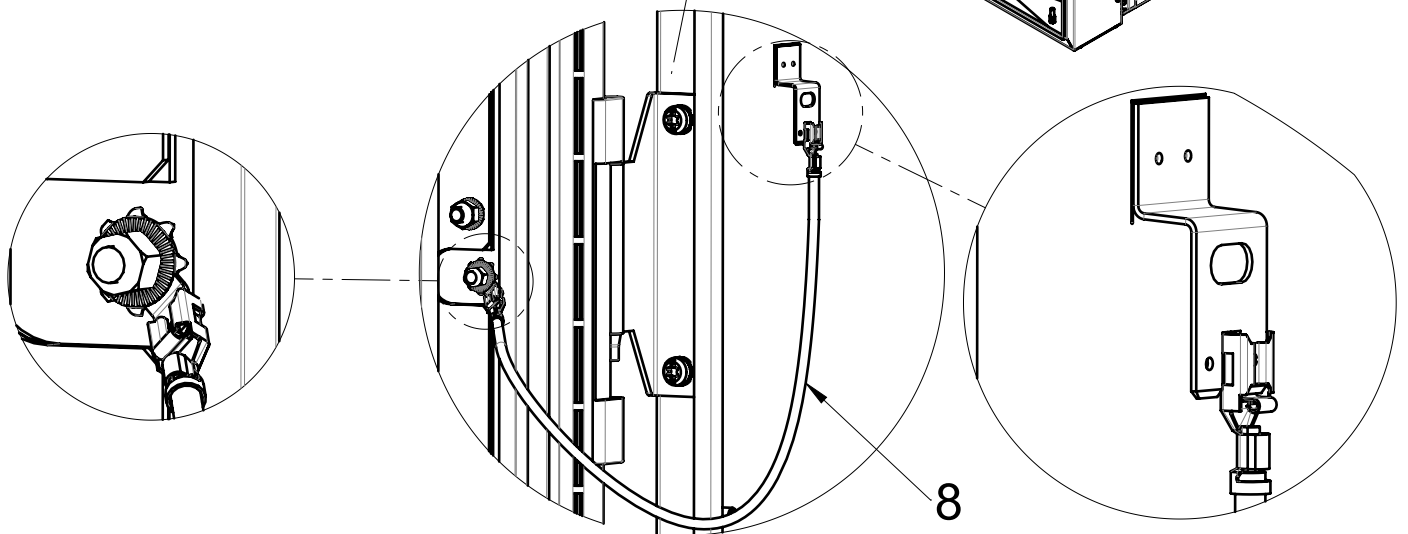
C (1 : 3)



Put cardboard on the floor to protect the RackChiller door during the mounting phase.

Legen Sie Kartonnage auf den Boden, um die RackChiller Tür während der Montage zu schützen.

Poser du carton au sol pour protéger la porte RackChiller pendant la phase de montage.

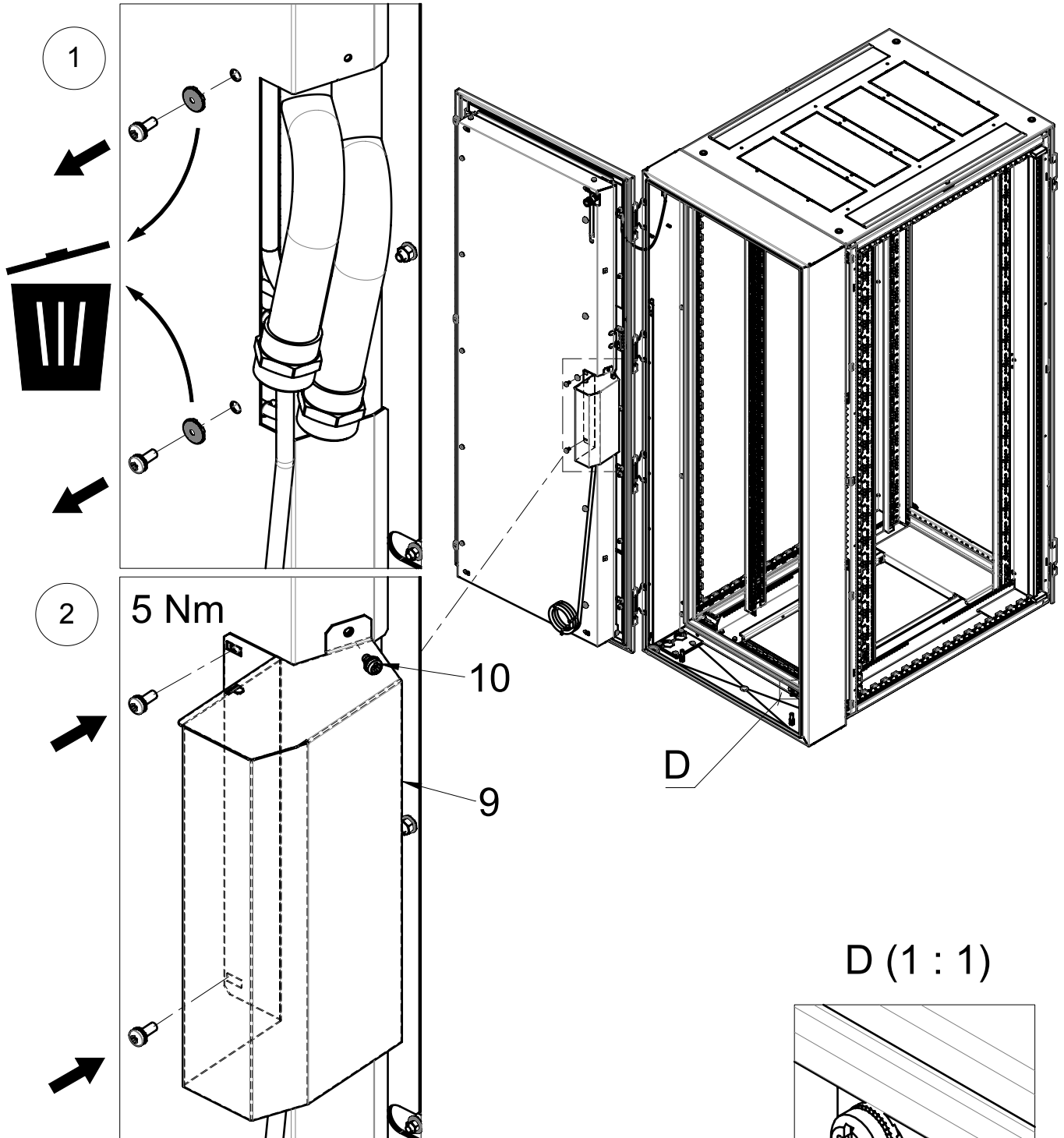


Attention: see also User's Manual!  
 Achtung: siehe auch die Benutzeranleitung!  
 Attention: voir aussi la notice d'utilisation!

**14** Make the fixing of cover Pos.9 only after installation of the flexible water hoses.

Montieren Sie Haube Pos. 9 nach dem Anschluss der flexiblen Wasseranschlussschläuche.

Monter le capot Pos.9 après avoir fait le branchement des tuyaux d'eau flexible.



Attention: connect the central earthing point.

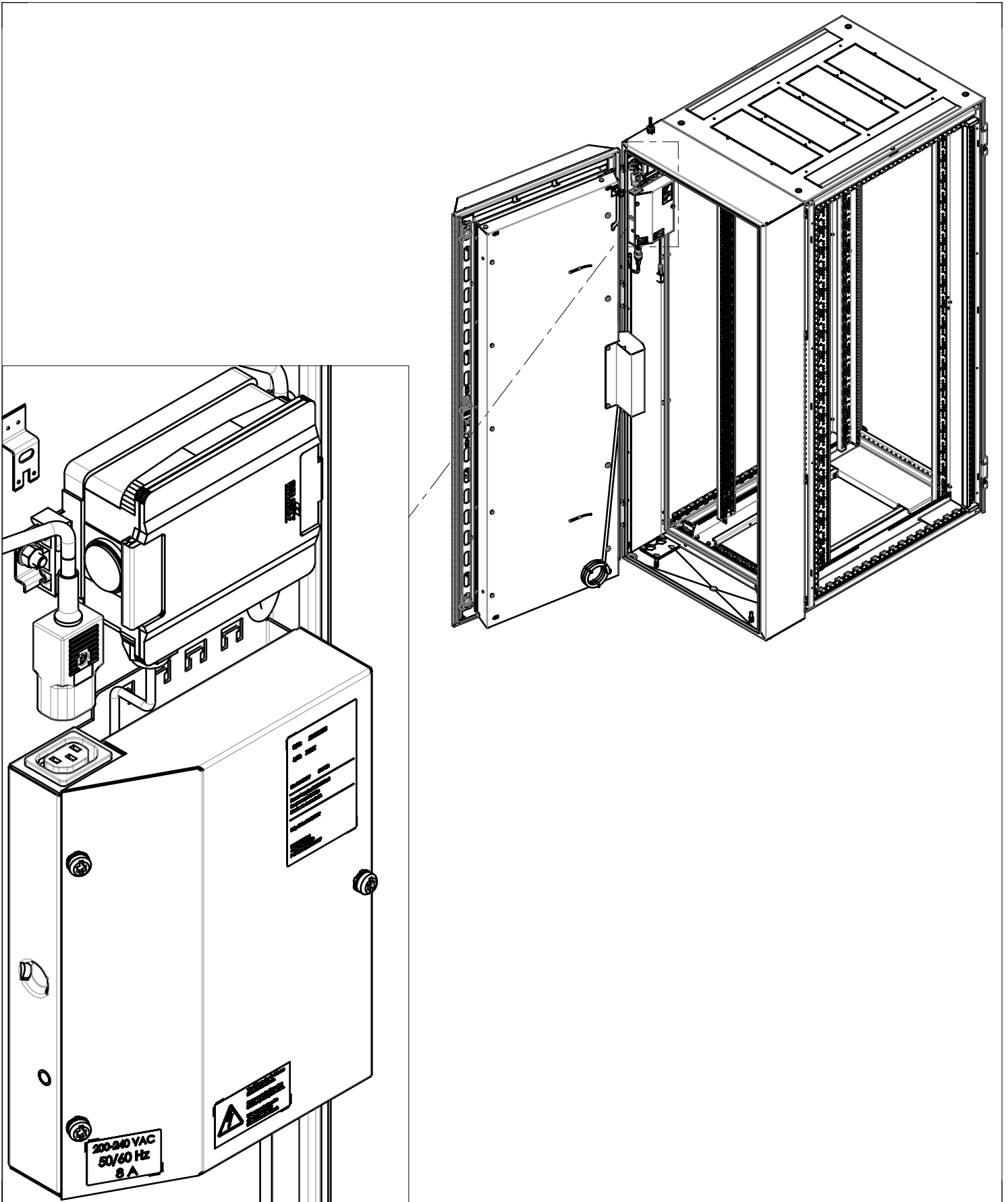
Achtung: Zentraler Erdungspunkt Anschliessen.

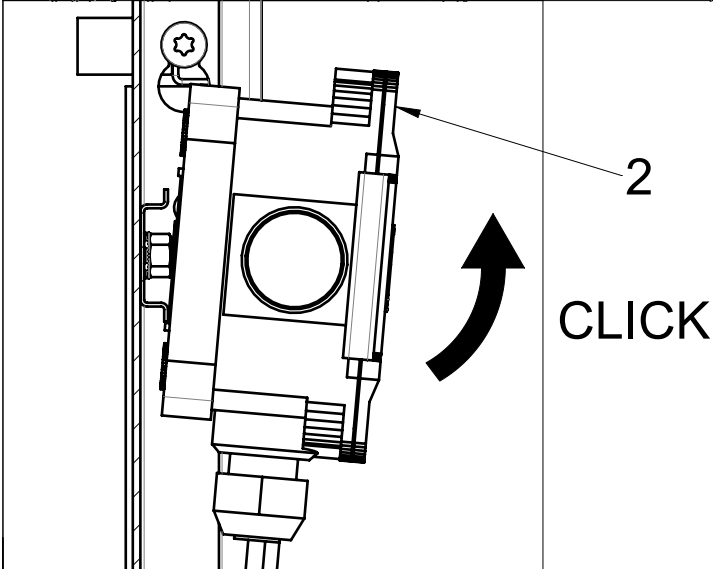
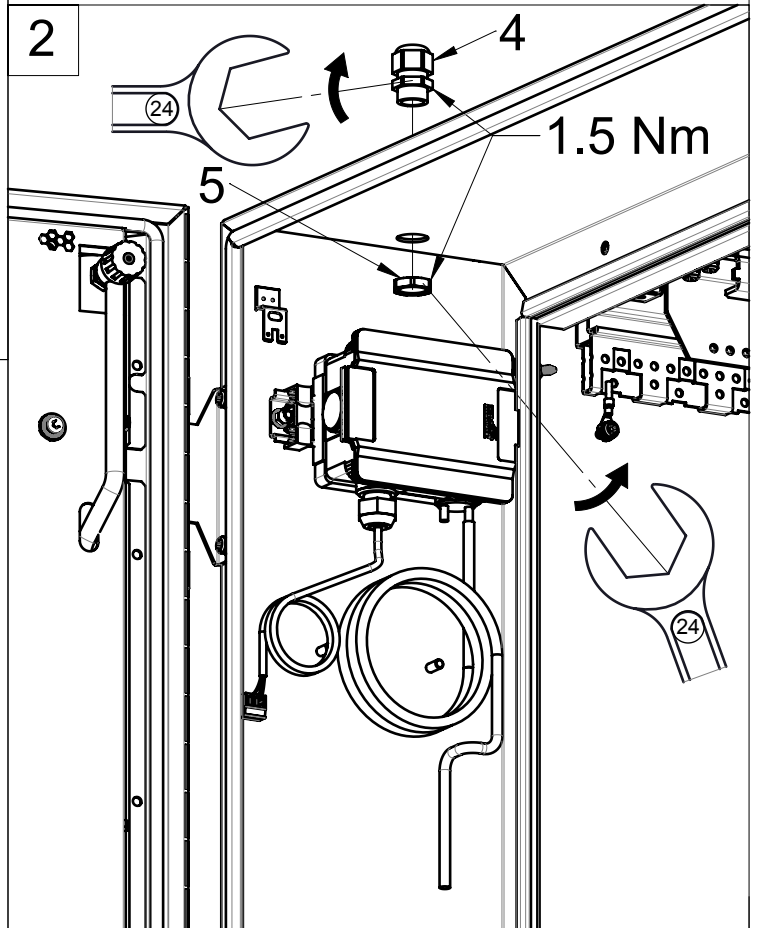
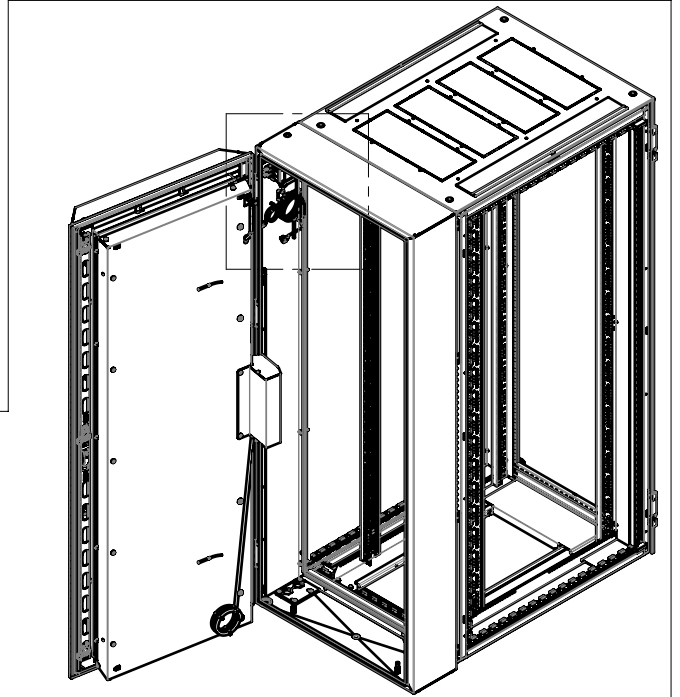
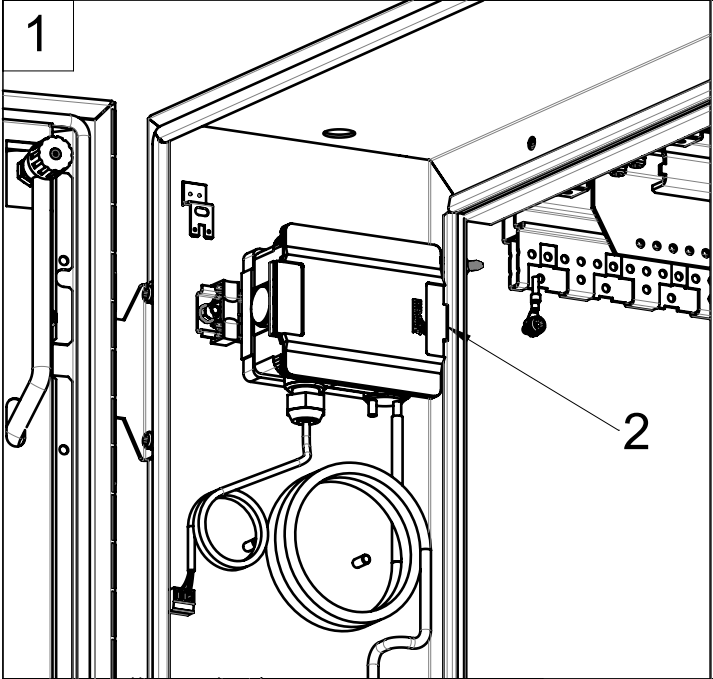
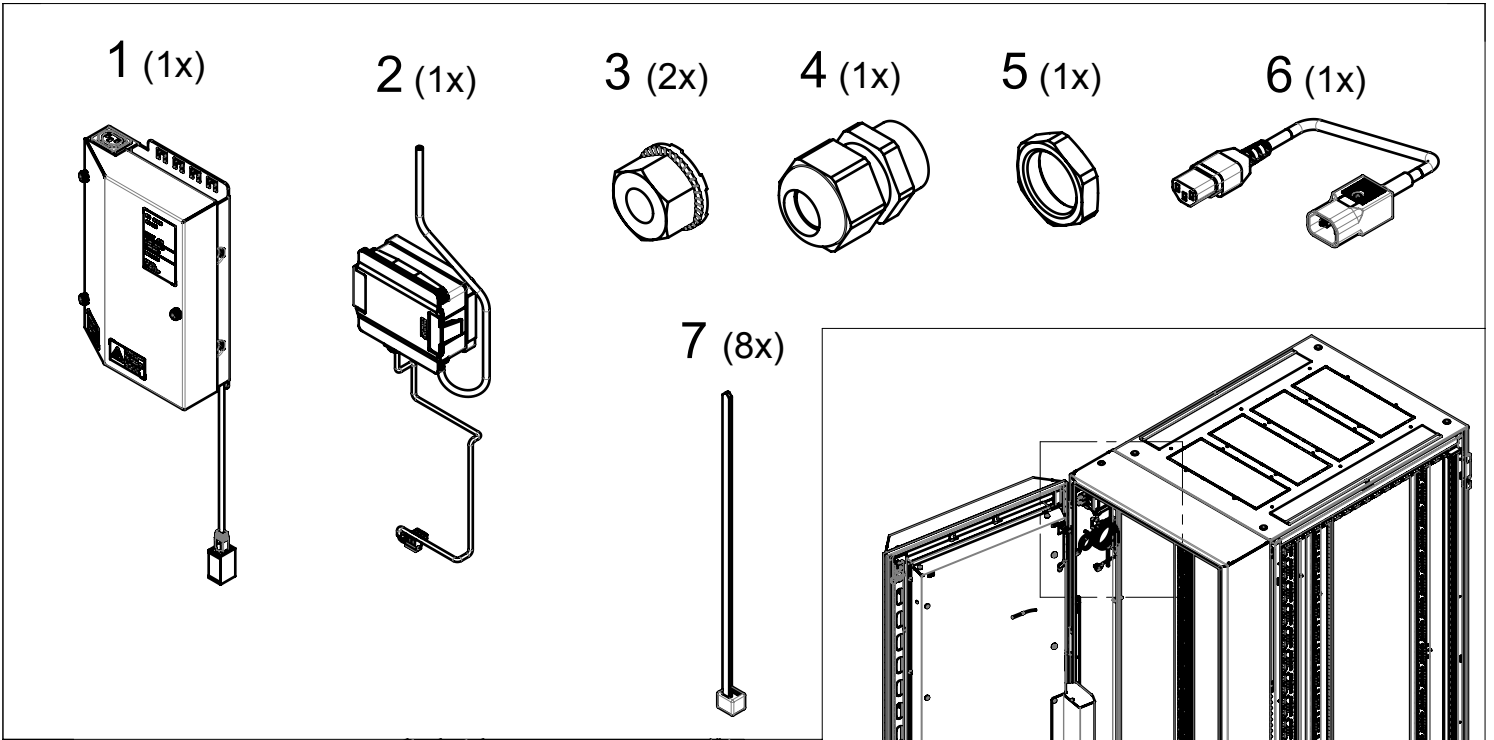
Attention: Connecter le point de masse central.

Further product information available on:  
<https://go.nvent.com/en-rackchiller-reardoor.html>

Weitere Produkt Informationen finden Sie unter:  
<https://go.nvent.com/de-rackchiller-reardoor.html>

Informations complémentaires sur ce produit sous:  
<https://go.nvent.com/fr-rackchiller-reardoor.html>

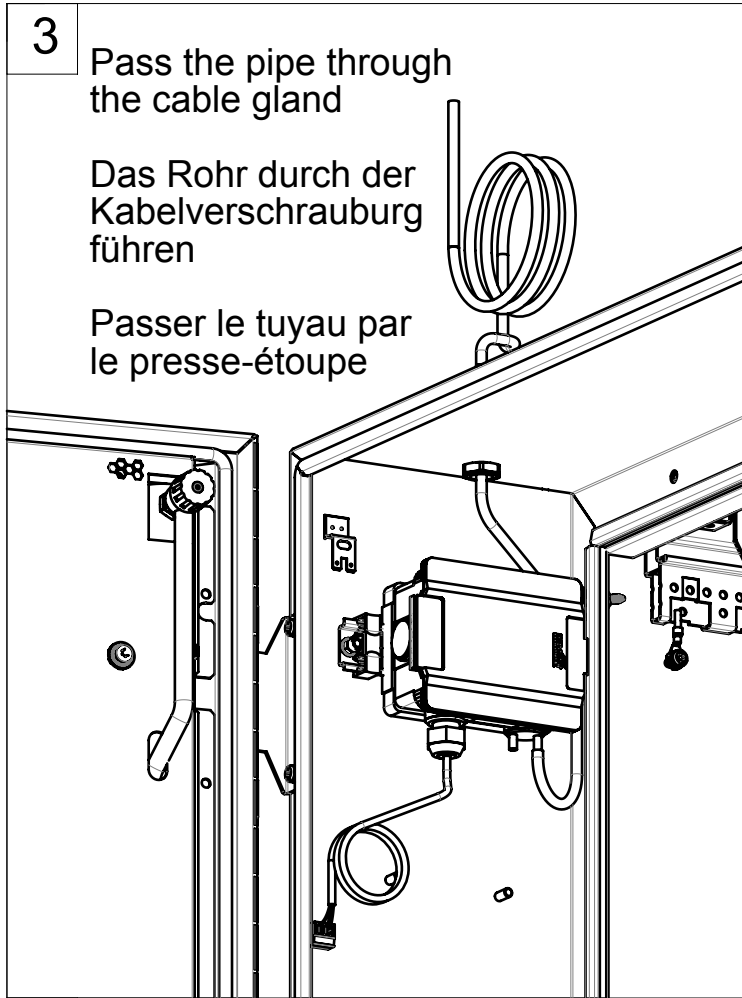




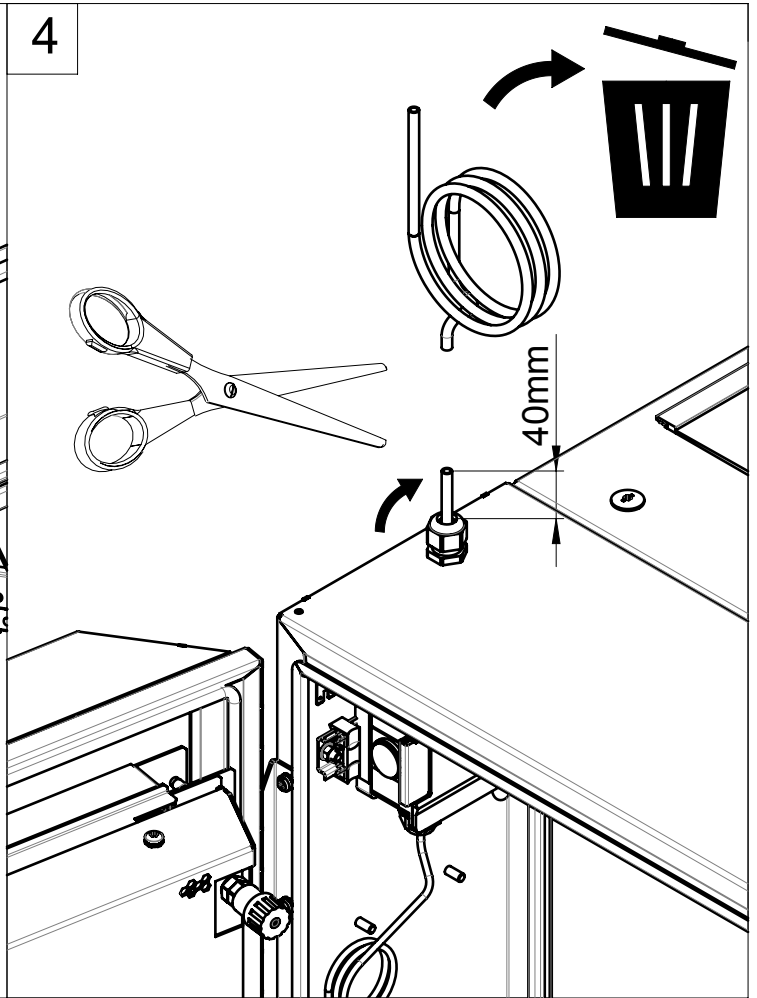
3 Pass the pipe through the cable gland

Das Rohr durch der Kabelverschraubung führen

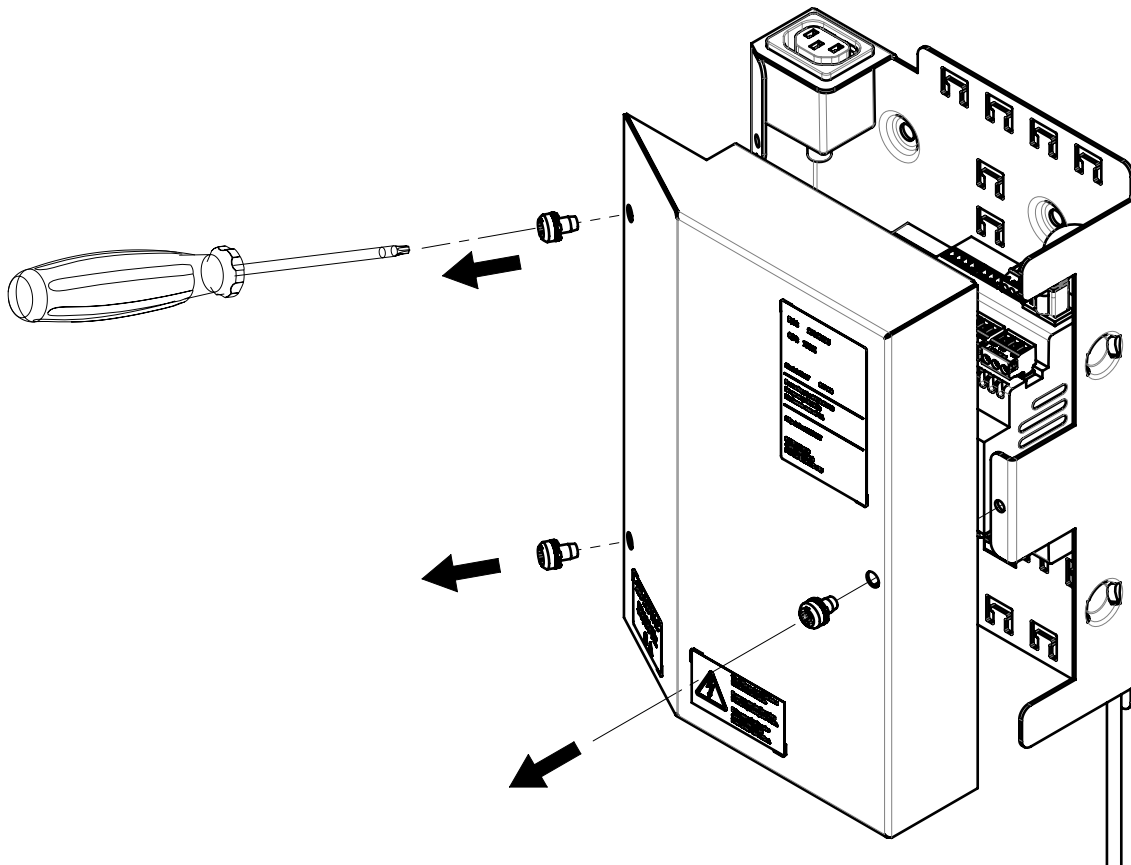
Passer le tuyau par le presse-étoupe

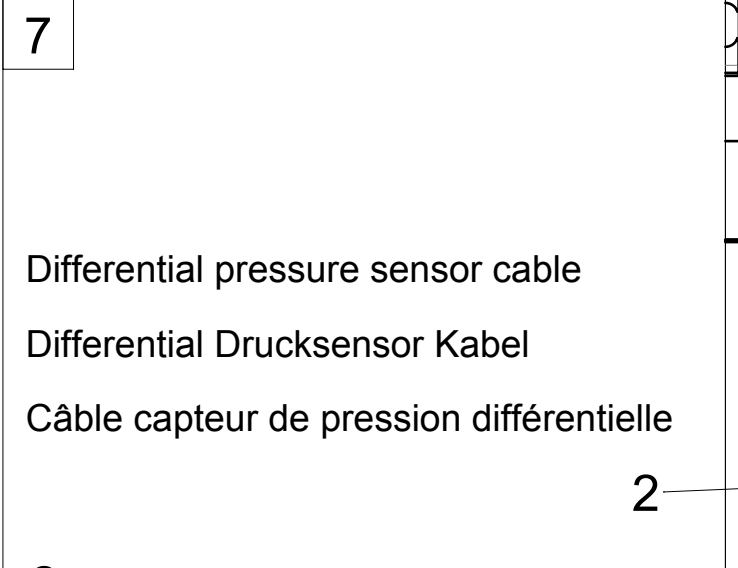
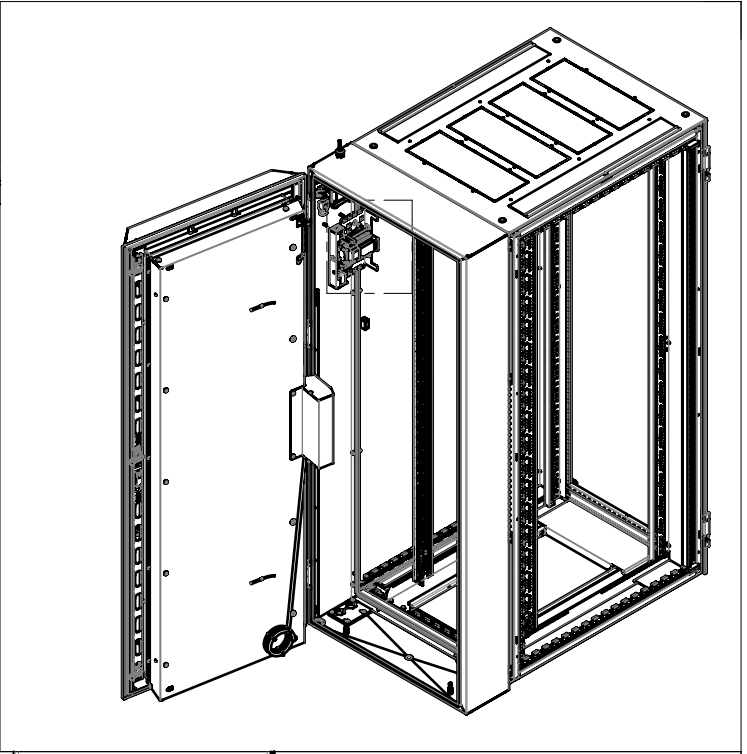
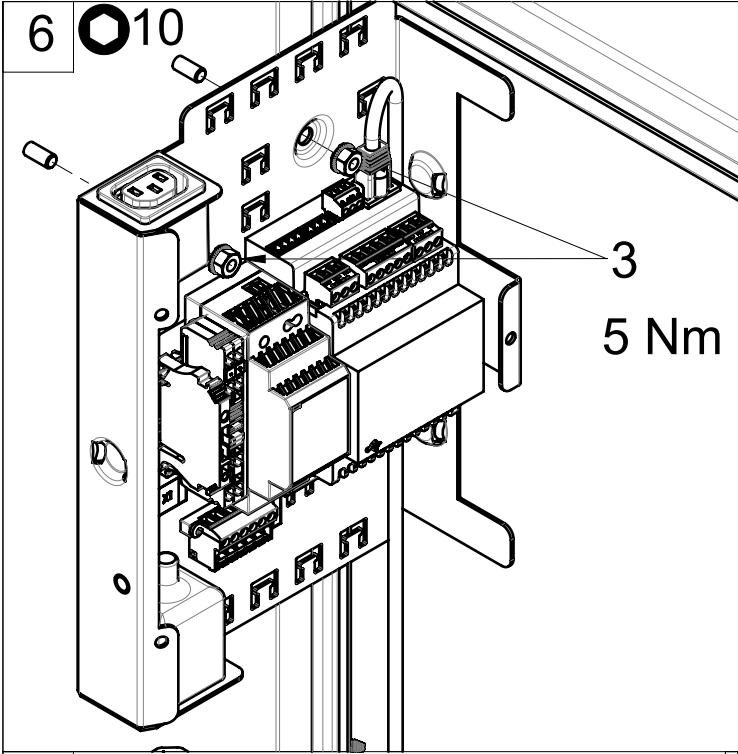


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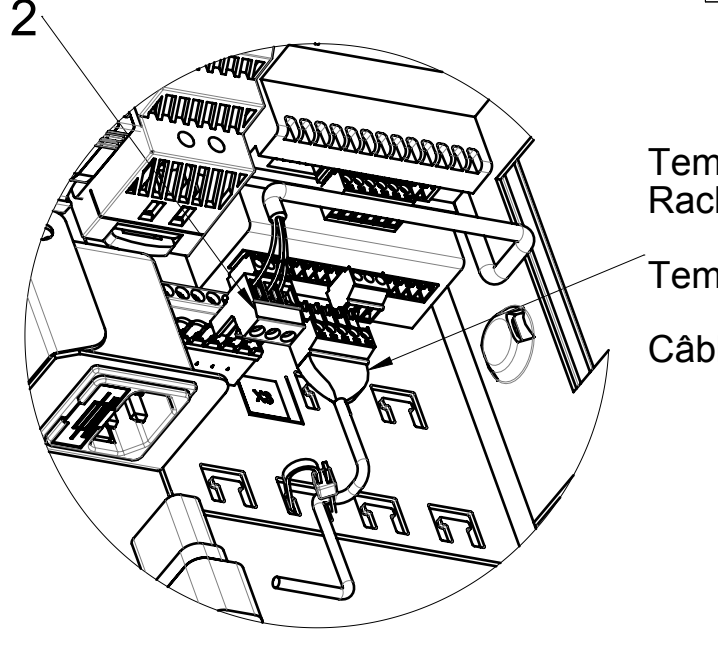
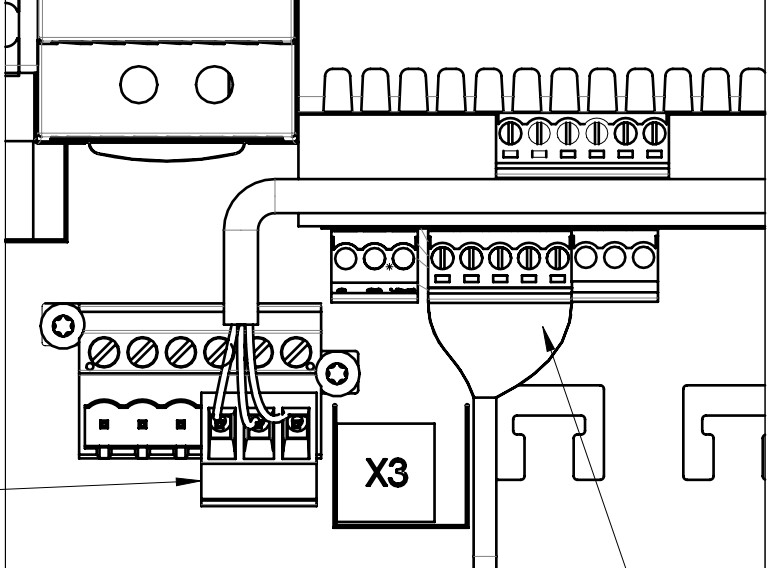


5 TORX 30 



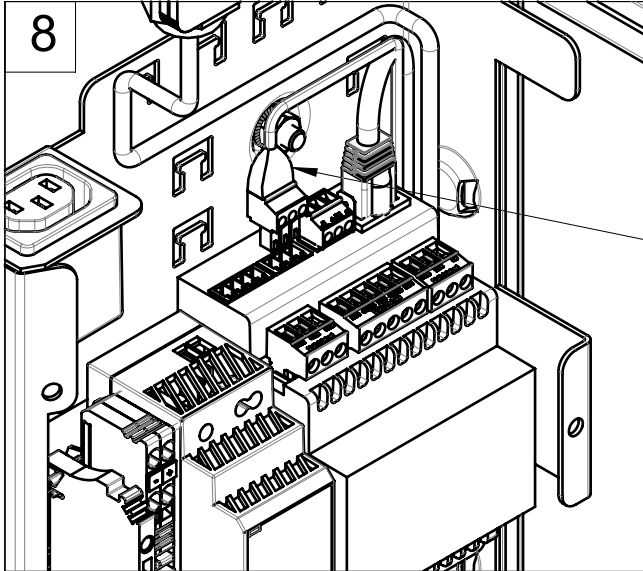


Differential pressure sensor cable  
 Differential Drucksensor Kabel  
 Câble capteur de pression différentielle



Temperature sensor cable from  
 RackChiller Rear Door  
 Temperatur sensor Kabel RackChiller Rücktür  
 Câble sondes de température porte RackChiller

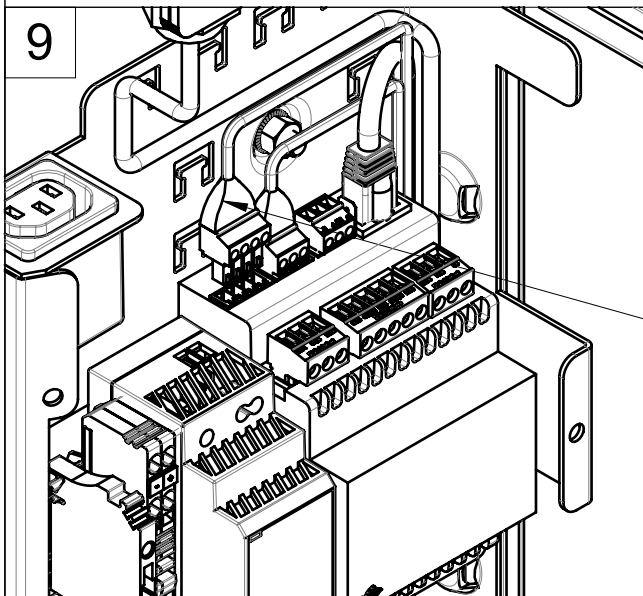




Modbus cable from  
RackChiller Rear Door

Modbus Kabel RackChiller Rücktür

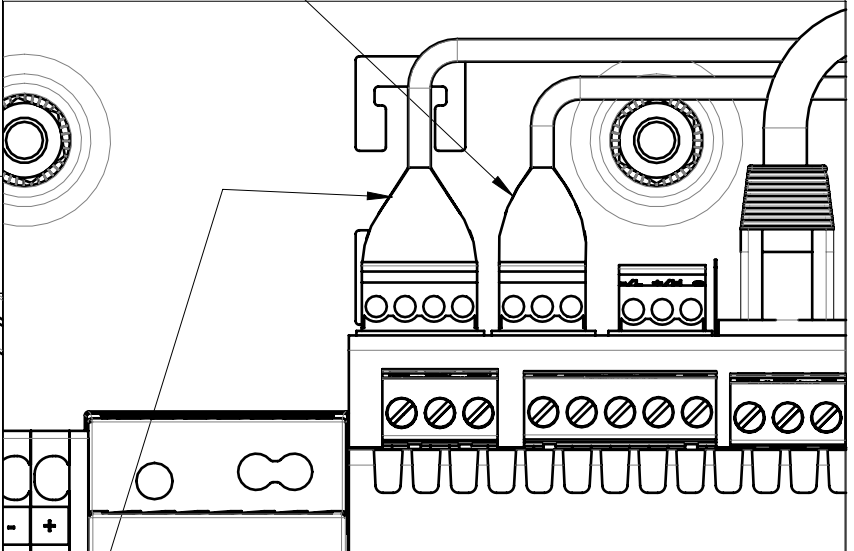
Câble Modbus porte RackChiller



Display cable from  
RackChiller Rear Door

Anzeige Kabel RackChiller Rücktür

Câble afficheur porte RackChiller

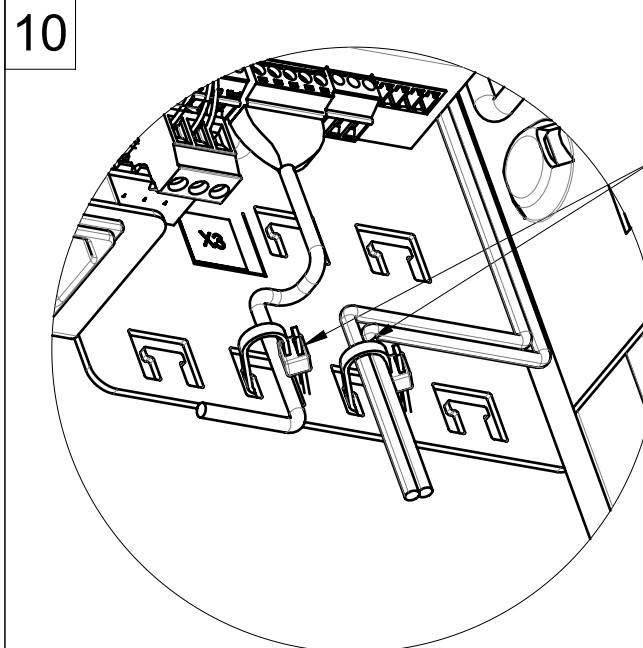


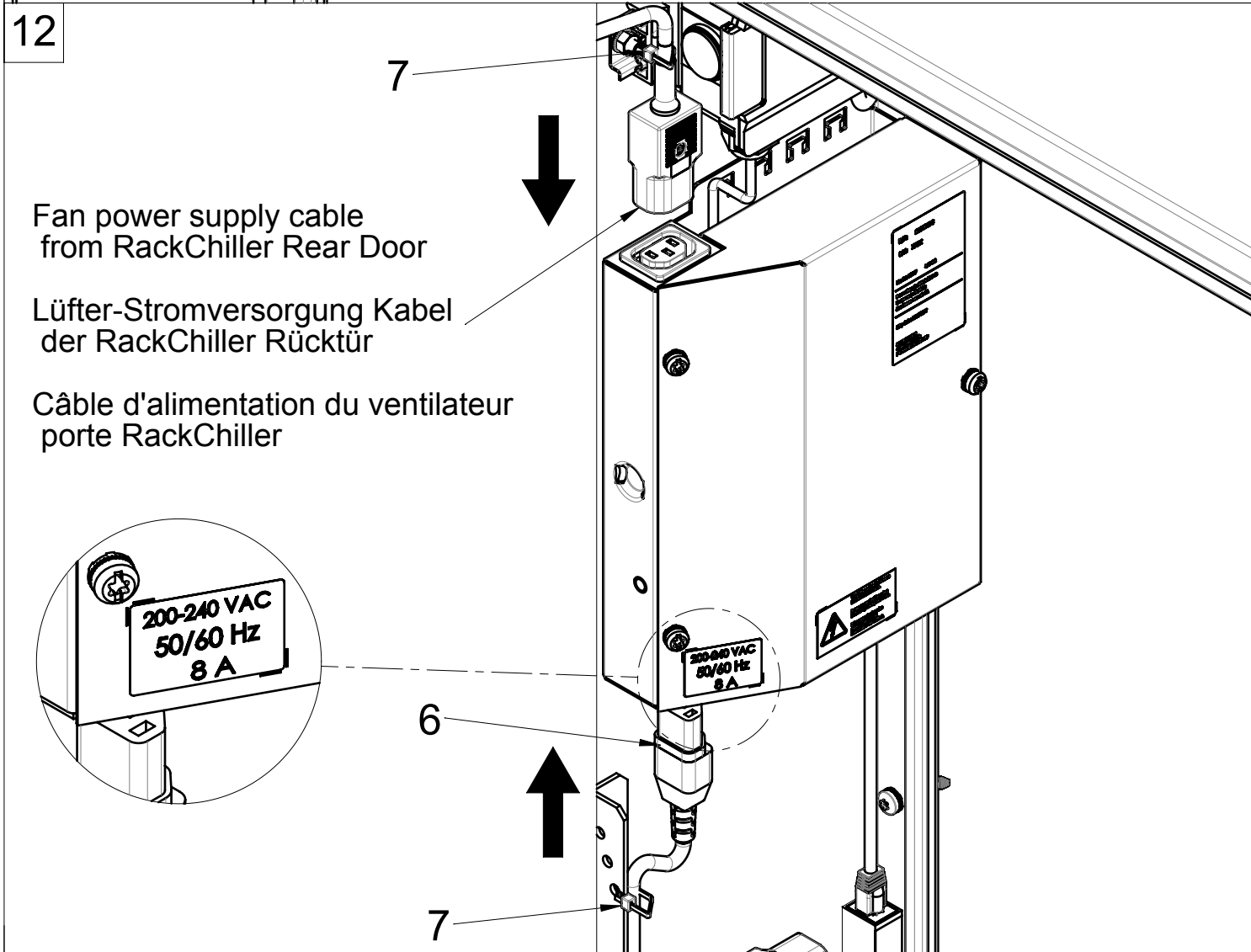
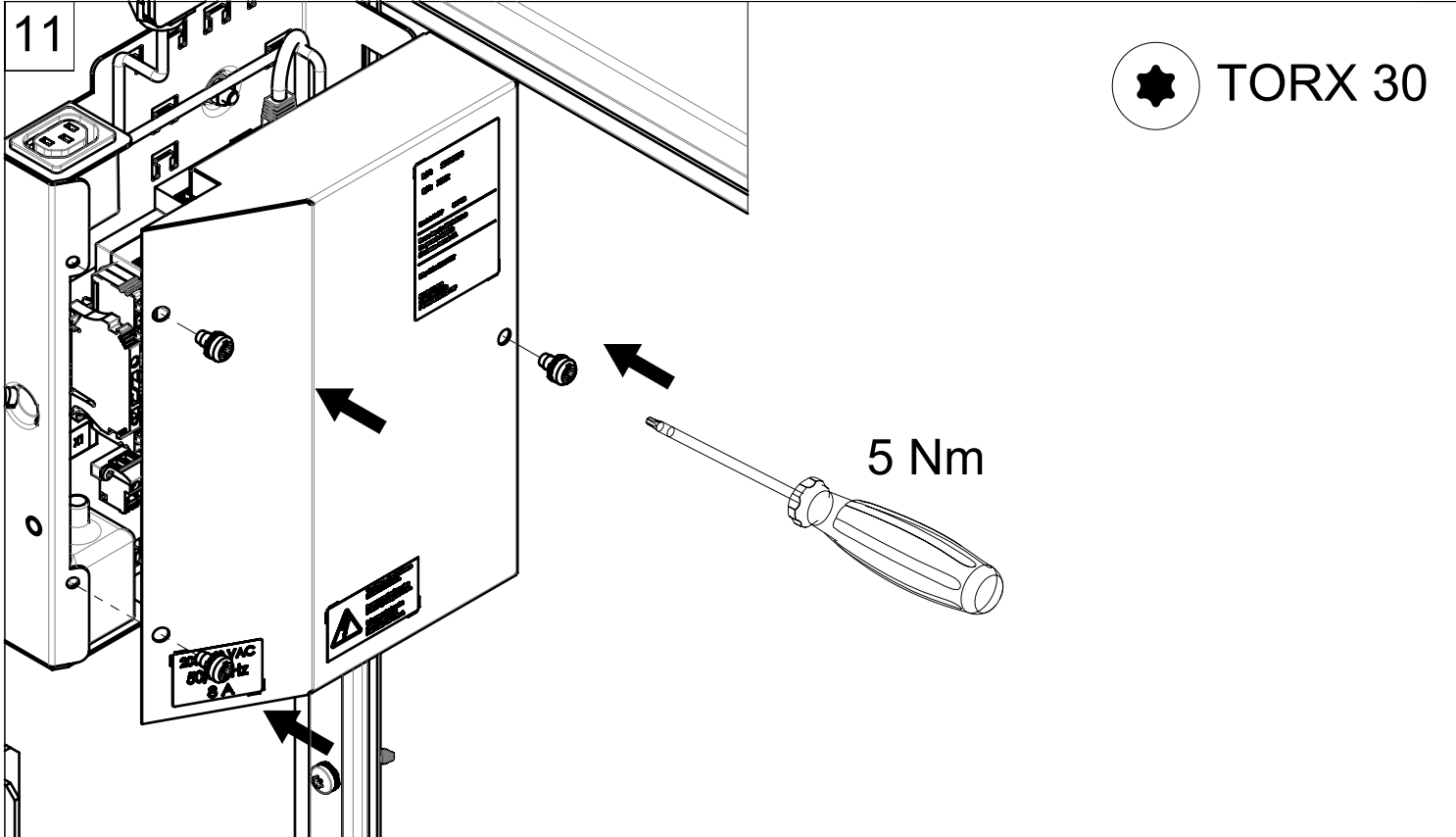
7

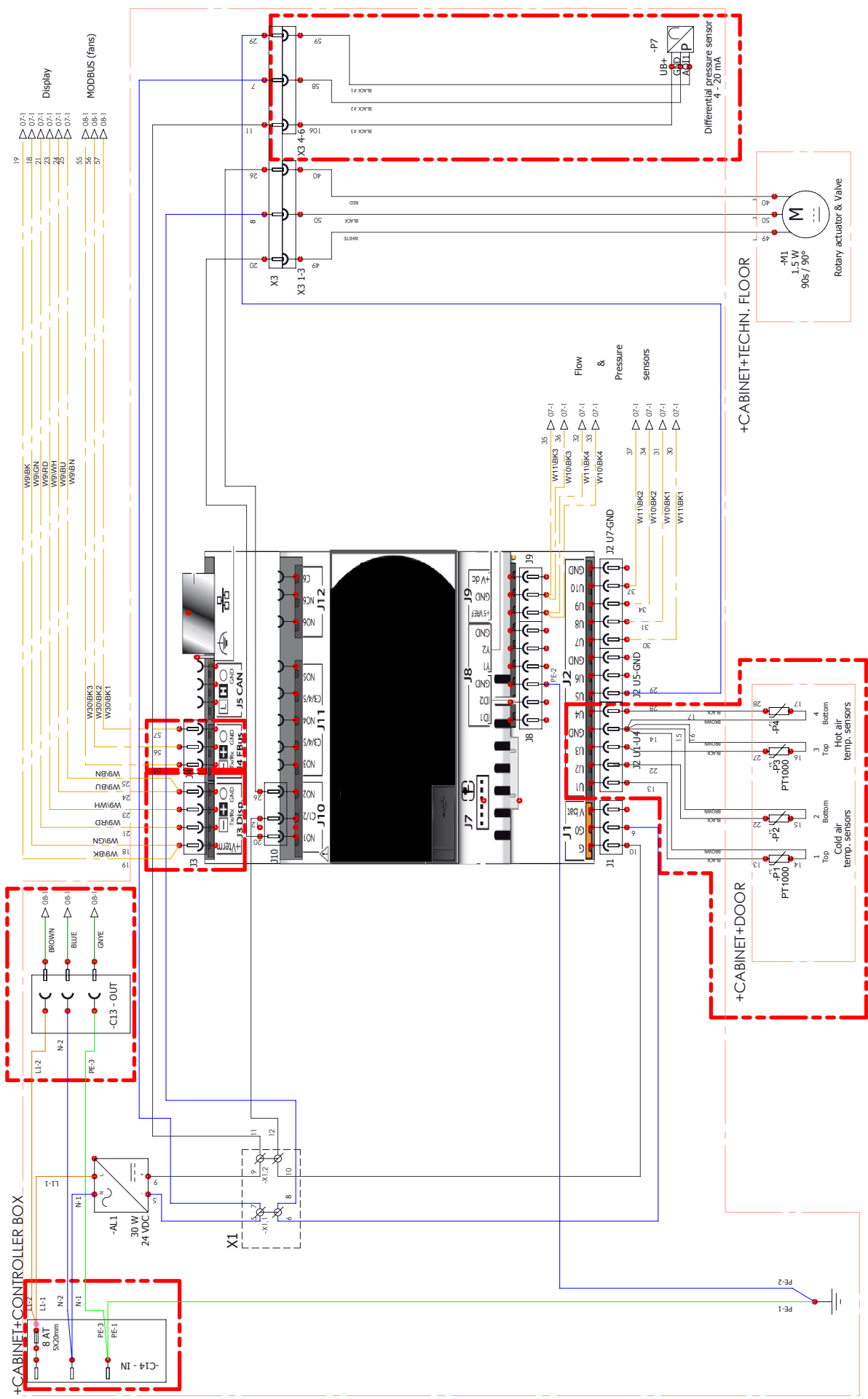
Fix the cables with cable ties

Kabel mit Kabelbinder befestigen

Fixer les câbles à l'aide des serre câbles



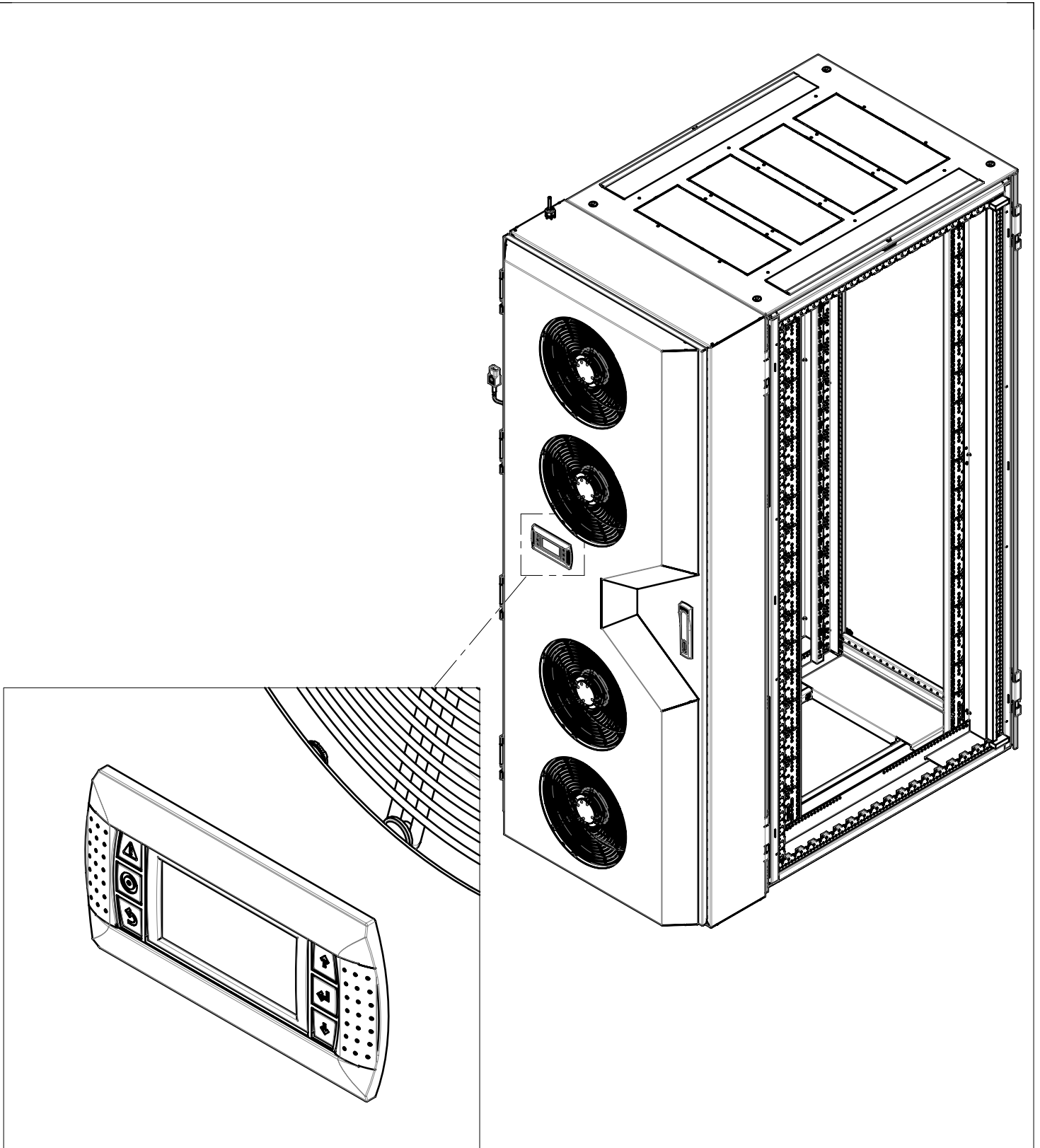




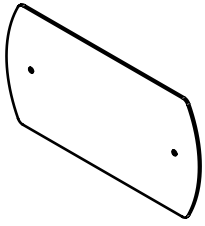
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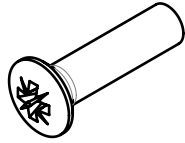
Informations complémentaires sur ce produit sous:  
<https://go.nvent.com/fr-rackchiller-reardoor.html>



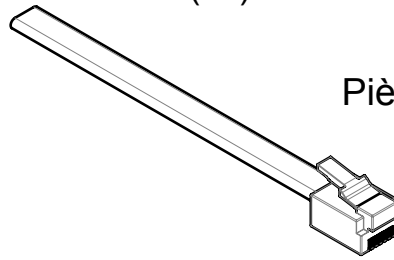
(1x)



(2x)

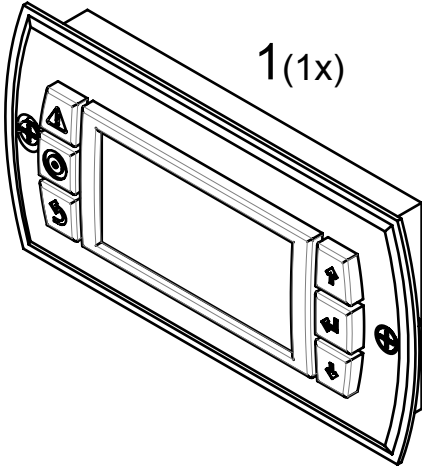


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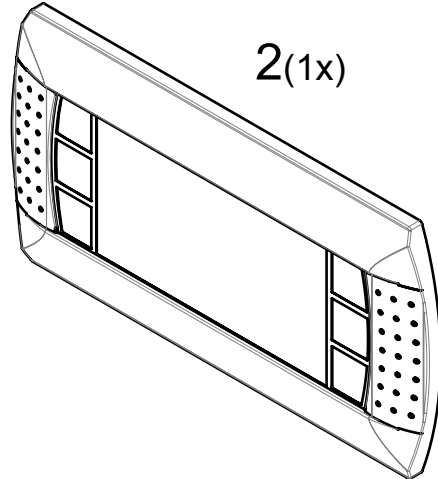


Lieferumfang Kühler  
Delivery of cooling unit  
Pièces livrées avec l'échangeur

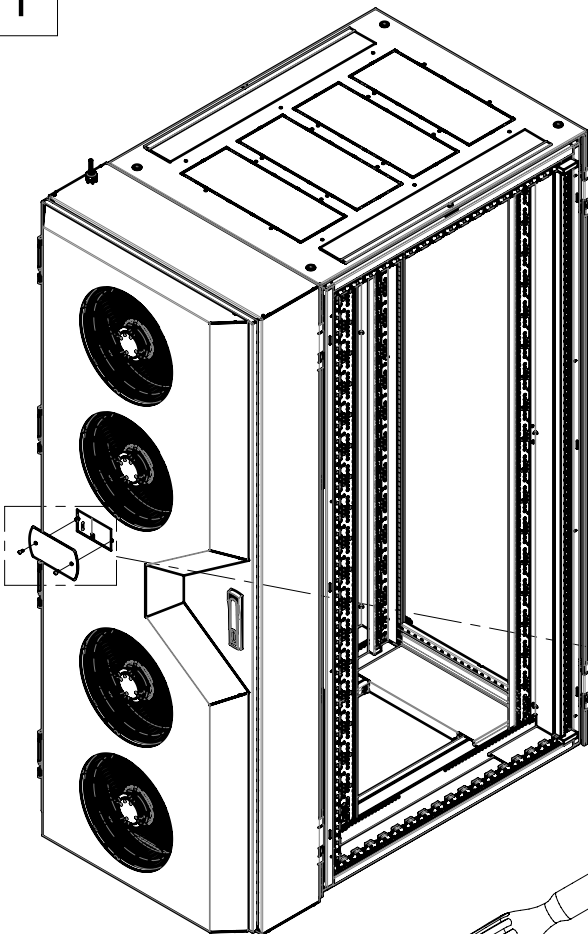
1(1x)



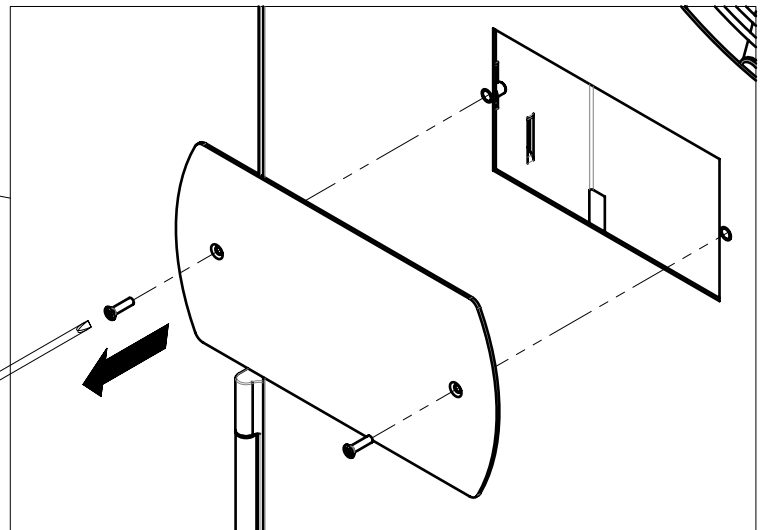
2(1x)



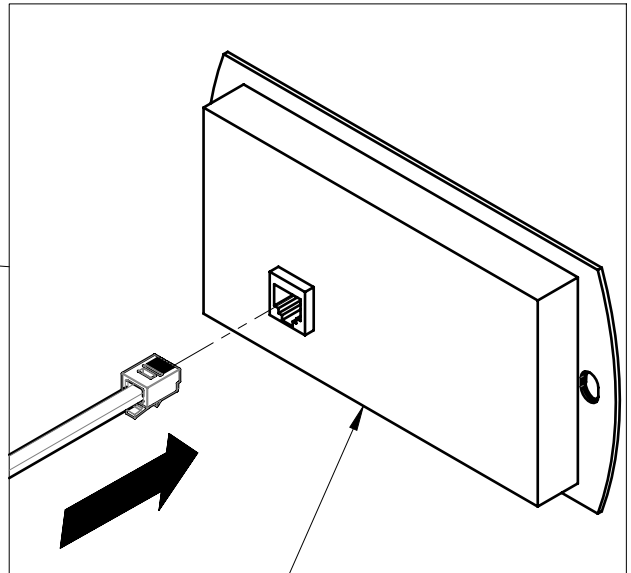
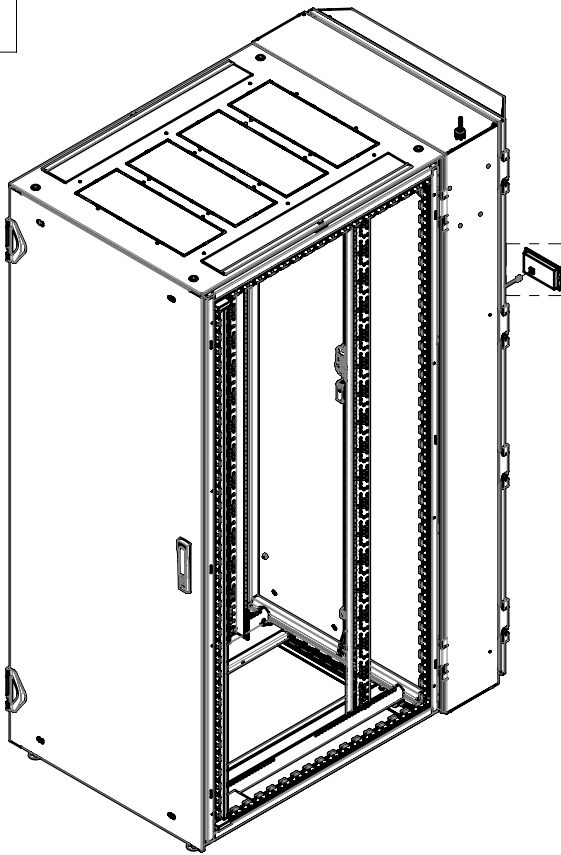
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Abschrauben  
Unscrew  
Dévisser

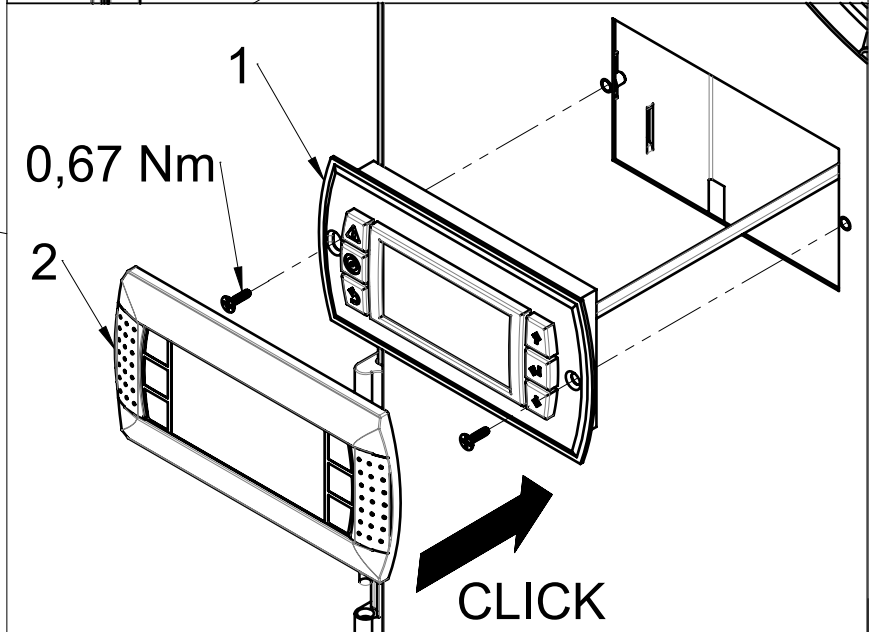
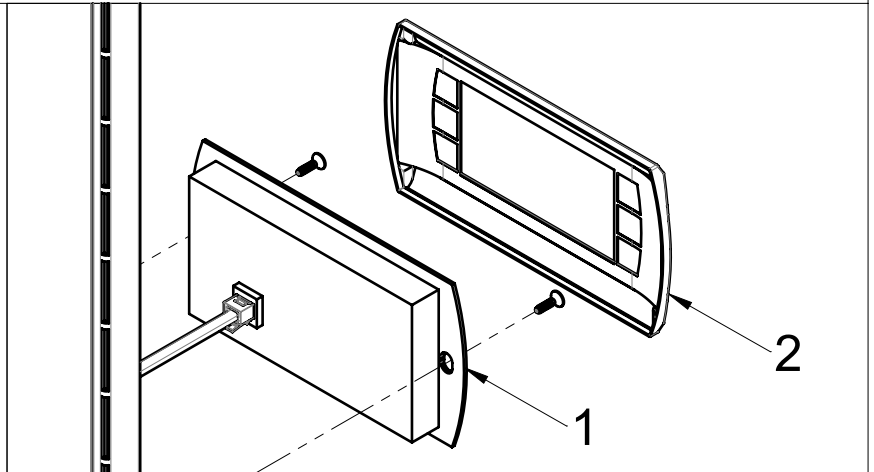
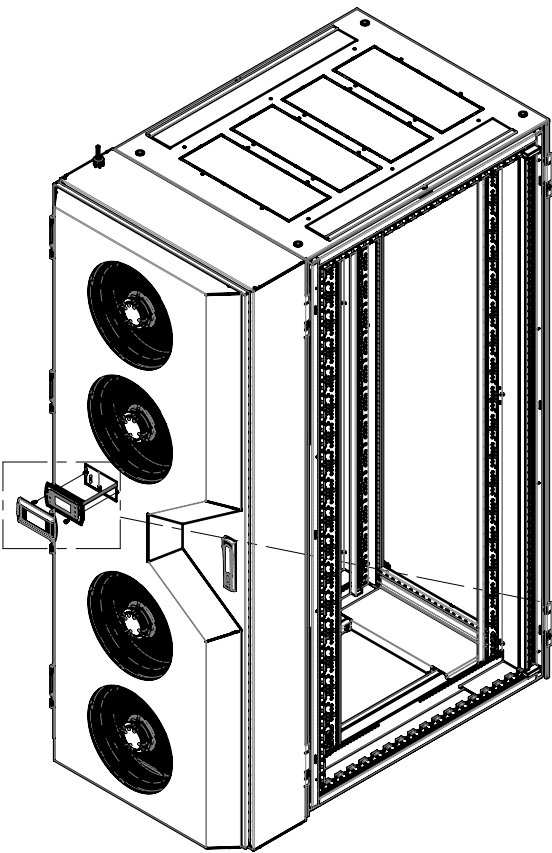


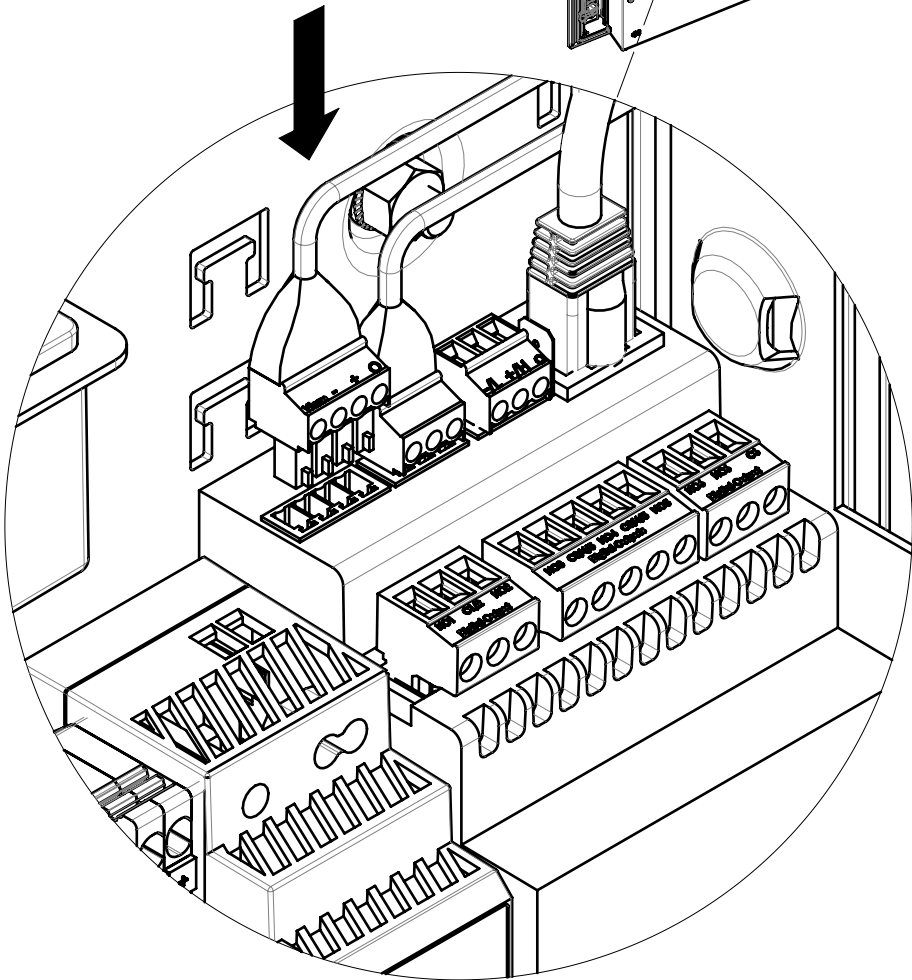
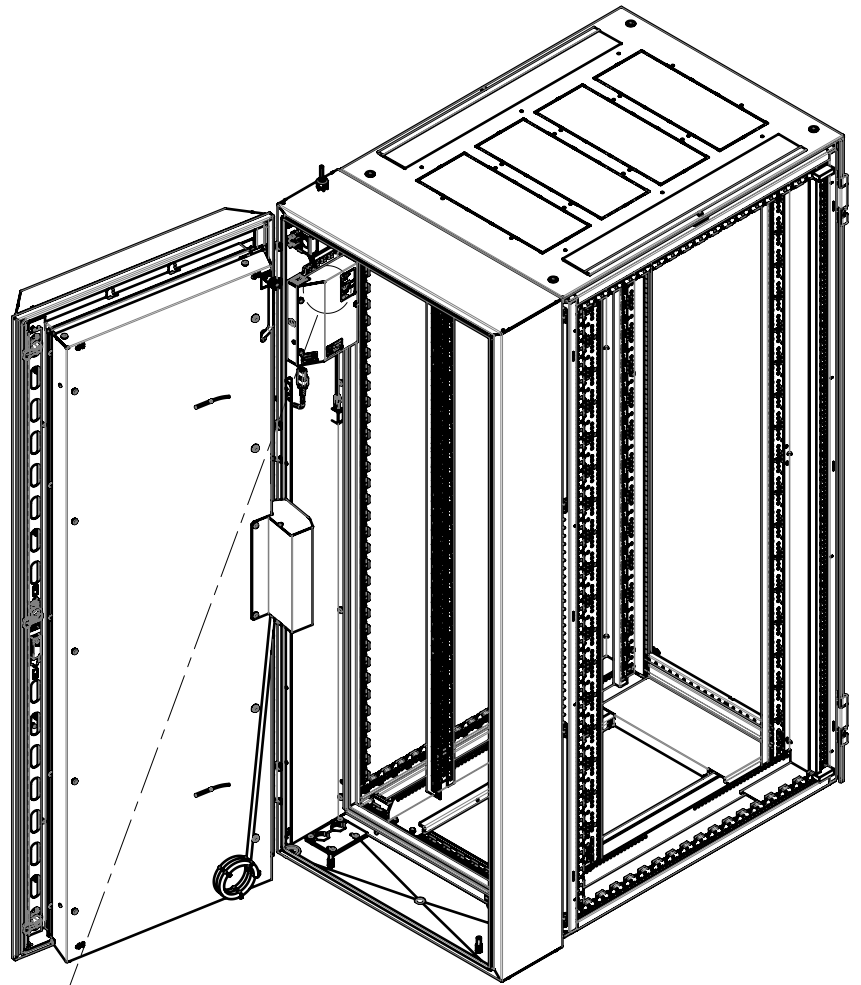
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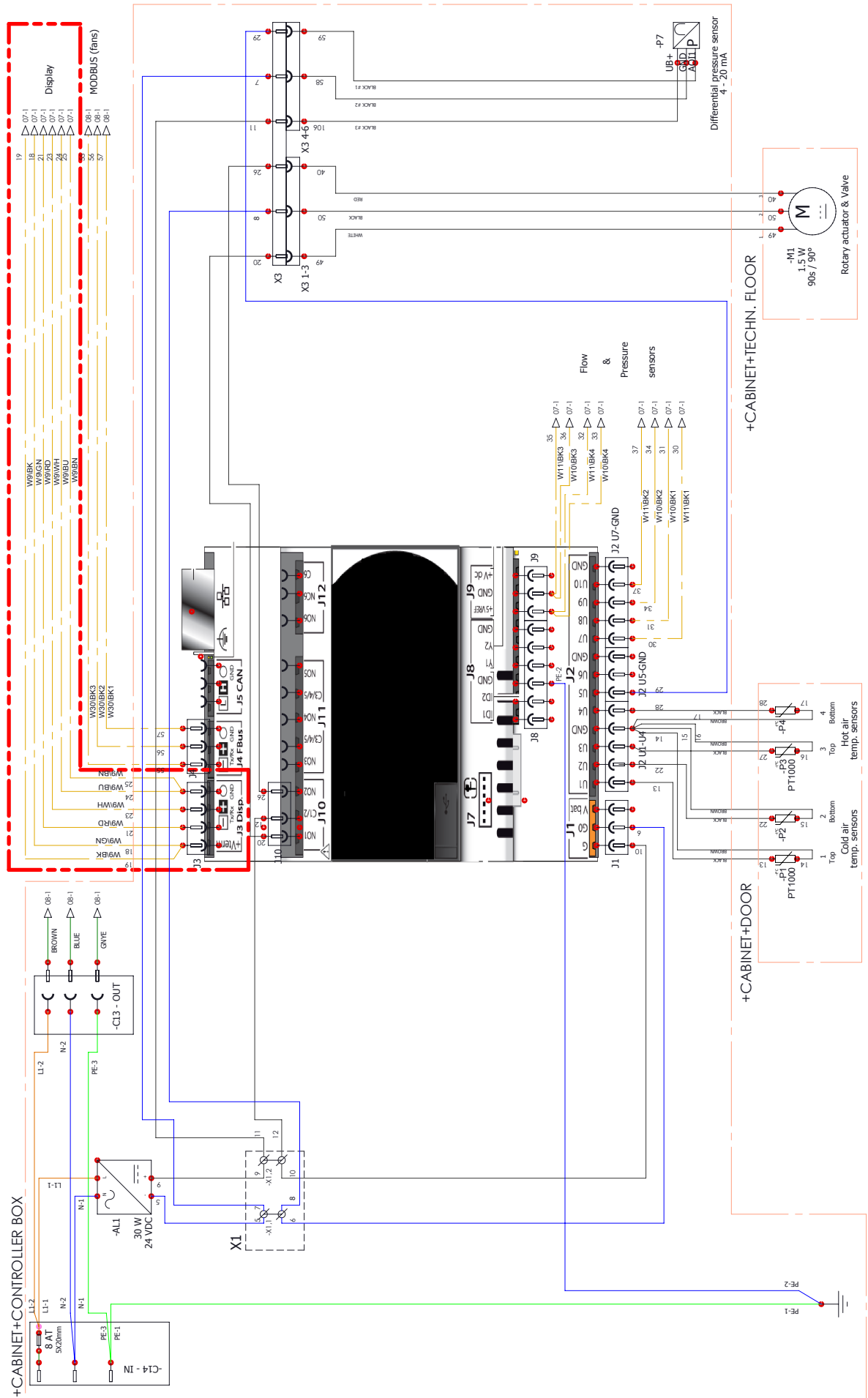
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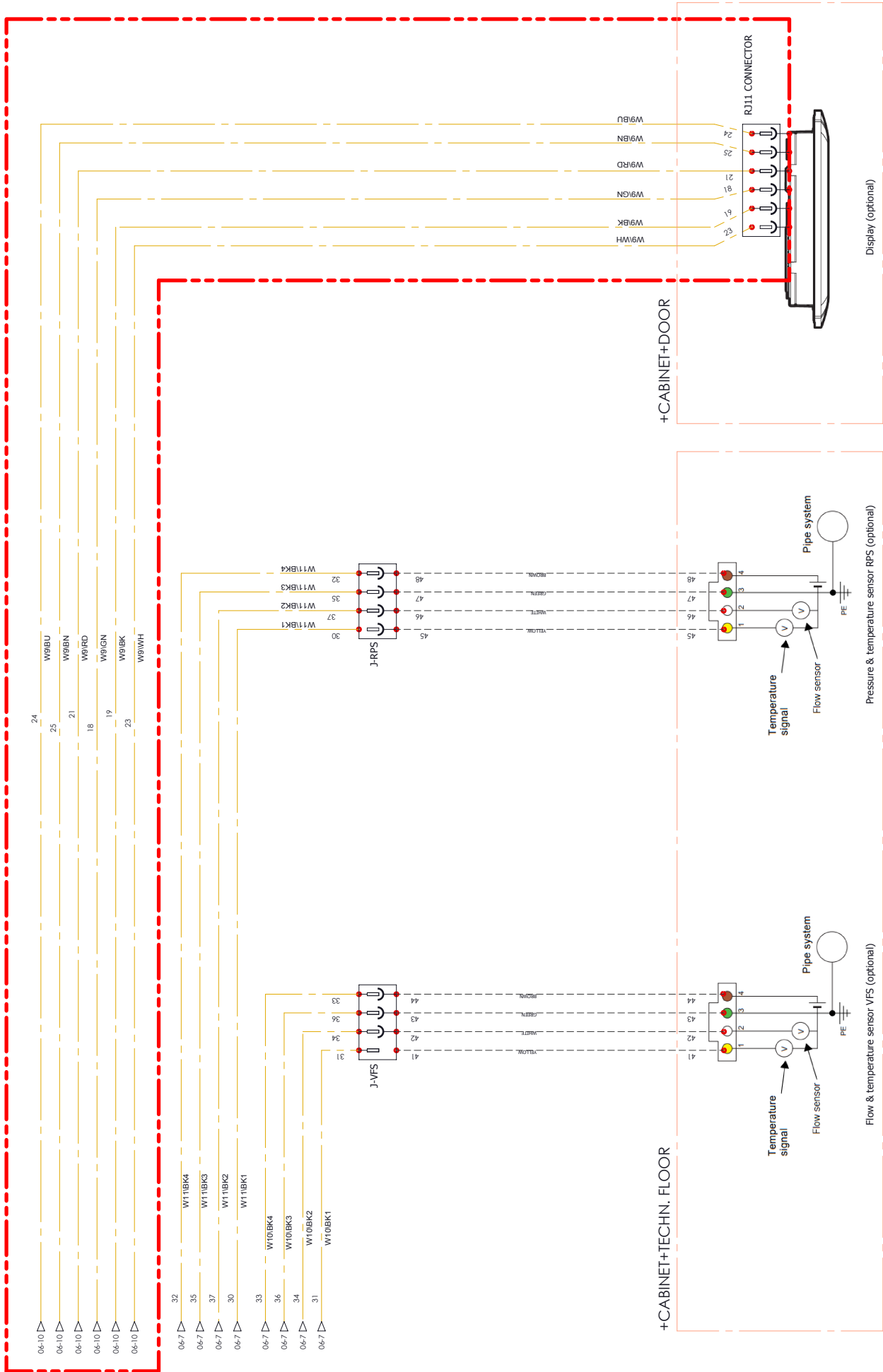
3











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