Installation and maintenance instructions

recoVAIR

VAR 150/4 L, VAR 150/4 R

AT, CH (de), DE

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Contents

1 Safety

1.1 Action-related warnings

Classification of action-related warnings

The action-related warnings are classified in accordance with the severity of the possible danger using the following warning signs and signal words:

Warning symbols and signal words

Danger!
Imminent danger to life or risk of severe personal injury

Danger!
Risk of death from electric shock

Warning.
Risk of minor personal injury

Caution.
Risk of material or environmental damage

1.2 Intended use

There is a risk of injury or death to the user or others, or of damage to the product and other property in the event of improper use or use for which it is not intended.

The product is only intended for aerating and ventilating living areas. If the product is operated with a heat production source, the heat production source must be room-sealed. The remote control must only be used to control the product. The product must only be operated when the filters are inserted.

The product is not suitable for aerating and ventilating swimming pool systems. Due to the high level of exposure to dust, the product must not be operated during the construction phase.

Intended use includes the following:

– observance of accompanying operating, installation and servicing instructions for the product and any other system components
– compliance with all inspection and maintenance conditions listed in the instructions.

Any other use that is not specified in these instructions, or use beyond that specified in this document shall be considered improper use. Any direct commercial or industrial use is also deemed to be improper.

Caution.

Improper use of any kind is prohibited.

1.3 General safety information

1.3.1 Risk caused by inadequate qualifications

The following work must only be carried out by competent persons who are sufficiently qualified to do so:

– Assembly
– Disassembly
– Installation
– Start-up
– Maintenance (Excluding the work that is listed in the operating instructions.)
– Repair
– Decommissioning

► Observe all instructions that are included with the product.
► Proceed in accordance with the current state of technology.
► Observe all applicable directives, standards, laws and other regulations.

1.3.2 Risk of poisoning caused by simultaneous operation with a heat production source

If the product is operated at the same time as a heat production source, life-threatening flue gas may escape into the rooms from the heat production source.

► Install a suitable safety device on-site which monitors the pressure difference between the living room and the flue system and switches the product off if the pressure difference is too large.
► Have the installed safety device approved by a chimney sweep.
► Observe the instructions for the heat production source and the heat production source ordinance as well as any other relevant laws and standards.

1.3.3 Risk of injury due to the heavy weight of the product

► Make sure that the product is transported by at least two people.

1.3.4 Risk of injury during installation due to the high product weight

- ▸ Make sure that the product is installed by at least two people.
- ▸ When installing the product, secure it against toppling or falling over.

1.3.5 Access to the mains plug/circuit breaker must be guaranteed

- ▸ Ensure that the mains plug/circuit breaker (depending on the country) is always accessible after the installation.

1.4 Regulations (directives, laws, standards)

- ▸ Observe the national regulations, standards, guidelines and laws.

2 Notes on the documentation

2.1 Observing other applicable documents

► You must observe all the operating and installation instructions included with the system components.

2.2 Storing documents

► Pass these instructions and all other applicable documents on to the system operator.

2.3 Validity of the instructions

These instructions apply only to:

Product article number

Applicability: Germany

	Germany
VAR 150/4 R	0010015167
VAR 150/4 L	0010015168

Product article number

Applicability: Austria

	Austria
VAR 150/4 R	0010015167
VAR 150/4 L	0010015168

Product article number

Applicability: Switzerland

	Switzerland
VAR 150/4 R	0010016047
VAR 150/4 L	0010016048

3 Product description

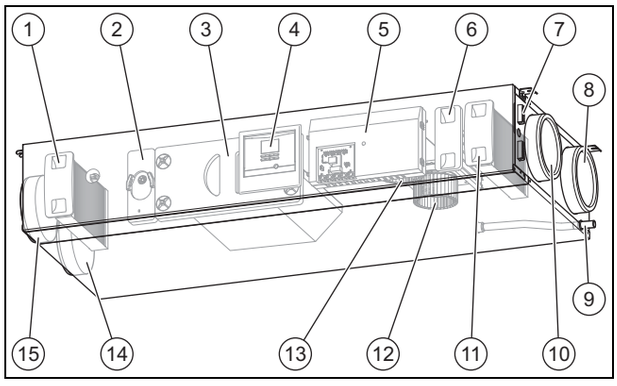
This product is a domestic ventilation unit.

3.1 Symbols on the product

Symbol	Meaning
	Opening for the outdoor-air filter
	Opening for the exhaust air filter

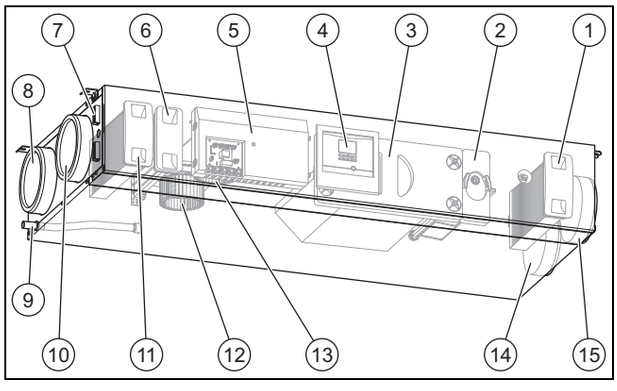
3.2 Design

3.2.1 VAR 150/4 R



1 Exhaust air filter
2 Bypass (optional heat recovery diversion)
3 Cover for heat exchanger
4 Operator control panel
5 Switch box
6 Frost protection element (optional)
7 Connection area for external components
8 Exit air connection
9 Condensate discharge spigot
10 Outside air connection
11 Outdoor air filter
12 Exit-air fan
13 Supply-air fan
14 Supply air connection
15 Exhaust air connection

3.2.2 VAR 150/4 L



1 Exhaust air filter
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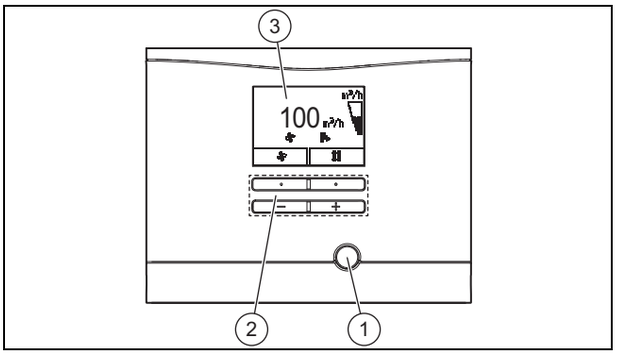
7 Connection area for external components
8 Exit air connection
9 Condensate discharge spigot
10 Outside air connection
11 Outdoor air filter
12 Exit-air fan
13 Supply-air fan
14 Supply air connection
15 Exhaust air connection

3.2.3 Overview of the operator control elements



1 Fault clearance key
2 Operating buttons
3 Display

3.3 Information on the identification plate

The identification plate is mounted on the underside of the product.

Information on the identification plate	Meaning
	Read the installation and maintenance instructions.
VAR 150/4 L (R)	Type designation
VAR	Vaillant ventilation unit with heat recovery
150	Max. air volume flow in m^3/h
/4	Unit generation
L (R)	Left (right)
P_{MAX}	Max. power consumption
V_{MAX}	Max. air volume flow
dP_{MAX}	Delivery pressure at max. air volume flow
T_{MAX}	Max. operating temperature
	Bar code with serial number, The 7th to 16th digits of the serial number form the article number

3.4 CE label

The CE label shows that the products comply with the basic requirements of the applicable directives as stated on the identification plate.

The declaration of conformity can be viewed at the manufacturer's site.

4 Set-up

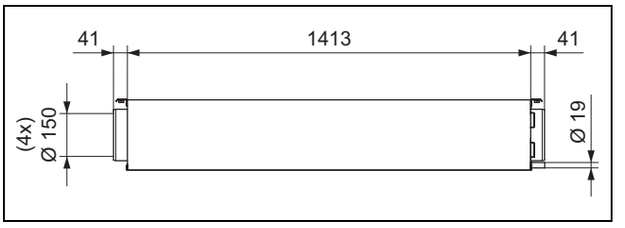
4.1 Checking the scope of delivery

► Check that the scope of delivery is complete.

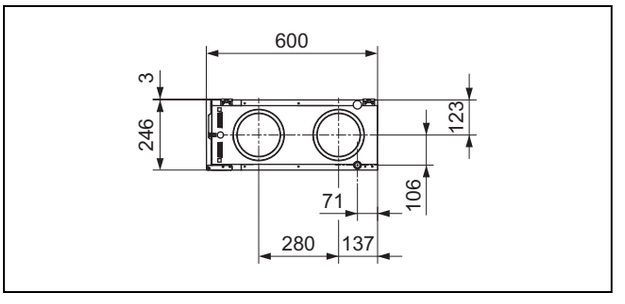
Quantity	Description
1	Domestic ventilation unit
1	Installation set: – Rubber gaskets (4 pcs) – Washers (4 pcs) – Fixing screws (4 pcs) – Rawl plugs (4 pcs) – Connection hose for the siphon or condensate discharge
1	Enclosed documentation

4.2 Dimensions

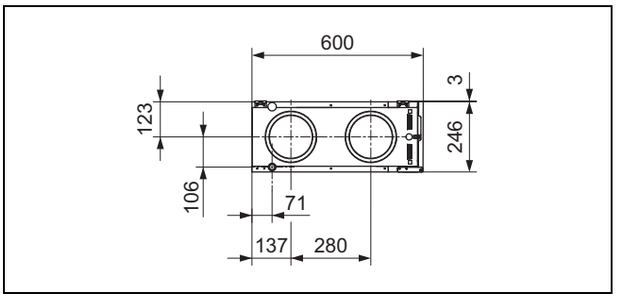
4.2.1 Front view



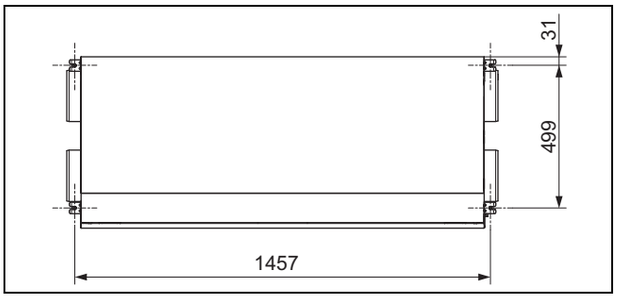
4.2.2 Side view from the right



4.2.3 Side view from the left



4.2.4 View from above



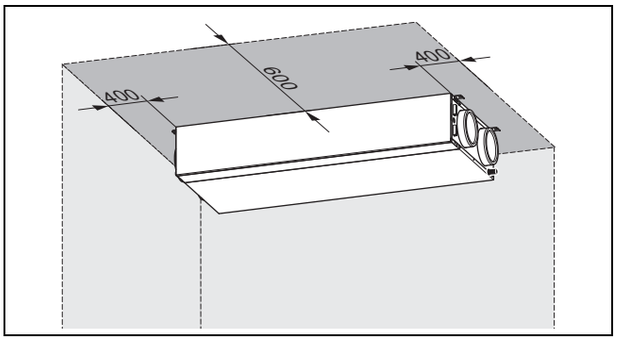
4.3 Observing the requirements for the installation site

4.3.1 Observing the requirements for the product's installation site

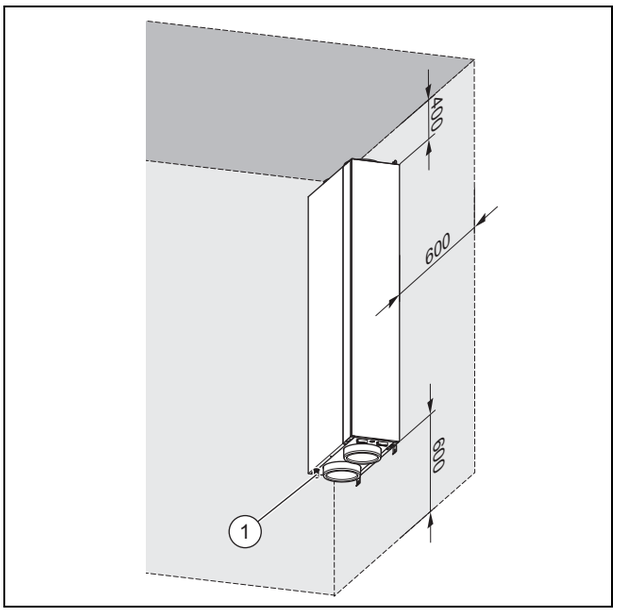
The product can be installed in cellar spaces, storage or utility rooms, and in attics. The product can be ceiling-mounted or it can be wall-mounted.

- ► Observe the current applicable national construction regulations.
- ► Ensure that the installation site is dry and is frost-proof throughout.
- ► Ensure that the installation site is aerated and ventilated.
- ► Install the supply air pipeline so that there is sufficient distance to the exit air pipeline, exhaust air pipeline and outflow purging.
- ► Check the load-bearing capacity of the wall or ceiling.
  - – Load-bearing capacity: ≥ 40 kg
- ► Check whether the supplied fixing elements are sufficient for the selected installation site.
- ► Ensure that the installation site is not located higher than max. 2000 metres above sea level.

Minimum clearances and installation clearances



- ► Observe the minimum clearances and installation clearances when installing on the ceiling.

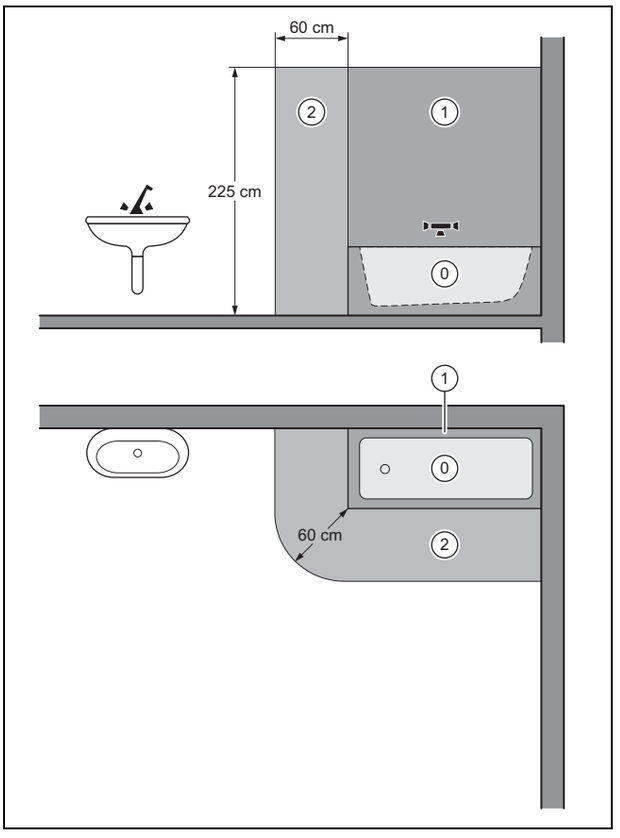


- ► Observe the minimum clearances and installation clearances when installing on the wall.
- ► Plan sufficient space for installing the ventilation system.
- ► In order to minimise pressure losses, ensure that the distances between the header line of the ventilation system and the product are as short as possible.
- ► After installation, ensure that the pipelines and the ventilation system are easily accessible.
- ► Ensure that the mains plug/circuit breaker (depending on the country) is always accessible after the installation.
- ► Ensure that there is sufficient space to install the condensate siphon and condensate drain pipework.
- ► If you install the product upright, the condensate discharge **(1)** must point downwards.
- ► If the product is to be hidden behind panelling (suspended ceiling), make sure that it is accessible for maintenance work through sufficiently large inspection openings.

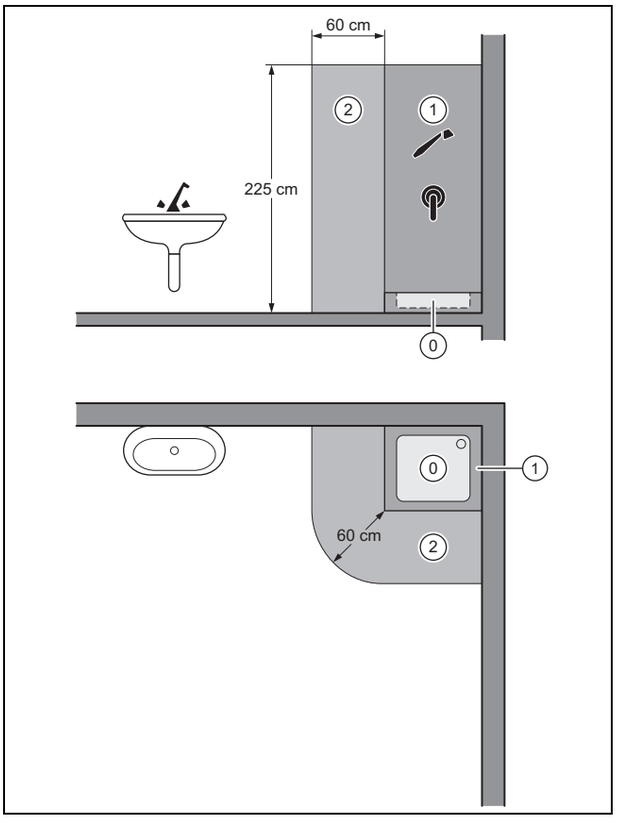
Requirements for the protective areas

- ► Only install the product outside the protective areas shown (0-2).

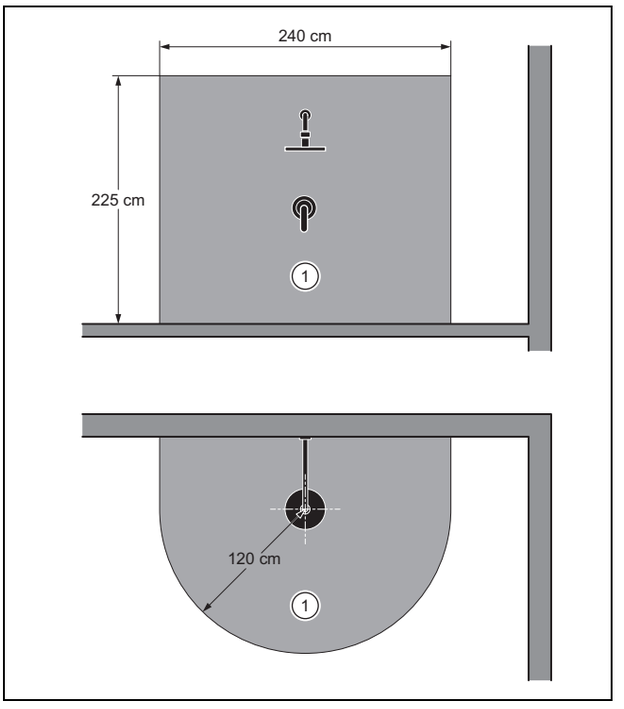
The height of the protective areas is limited by a horizontal surface above the floor. The defined height is 225 cm. However, if a fixed shower head/water outlet is installed above 225 cm, this fixed shower head/water outlet limits the height of the protective area.



► If you install the product in a room with a bath tub, install it outside the protective areas shown.



► If you install the product in a room with a shower tray, install it outside the protective areas shown.



► If you install the product in a room with a shower, install it outside the protective areas shown.

4.3.2 Observing the requirements for the installation site of the remote control (step switch/control)

► Ensure that the remote control is always accessible at the installation site.

► Ensure that there is sufficient space to install and operate the remote control.

4.3.3 Observe the requirements for silencers and for installing ducts and the product

If the opening for the exit air pipeline is too close to the inlet opening of the outside air pipeline, the exit air can recirculate.

► Prevent exit air from being sucked in directly through the outside air opening, supply air from being sucked in directly through the exhaust air opening, and transfer air from being sucked in directly through areas where there are leaks/cable feedthroughs.

► If the circumstances locally are such that you are unable to comply with the minimum distance, you must use a compact façade duct.

► If required, connect the product to the pipelines using a sound-absorbing hose in order to minimise noise pollution caused by structure-borne noise.

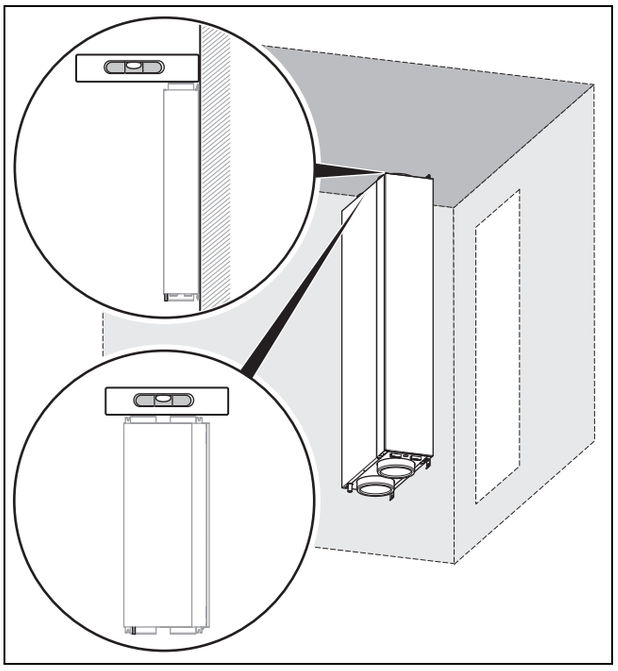
► Install silencers in order to minimise noise pollution via the duct system.

► If you install the product in an attic, select an installation site that is not above living spaces.

► If particular acoustic requirements are in place at the installation site, you should take corresponding on-site measures to prevent noise.

4.4 Installing the product

4.4.1 Installing the product on the wall



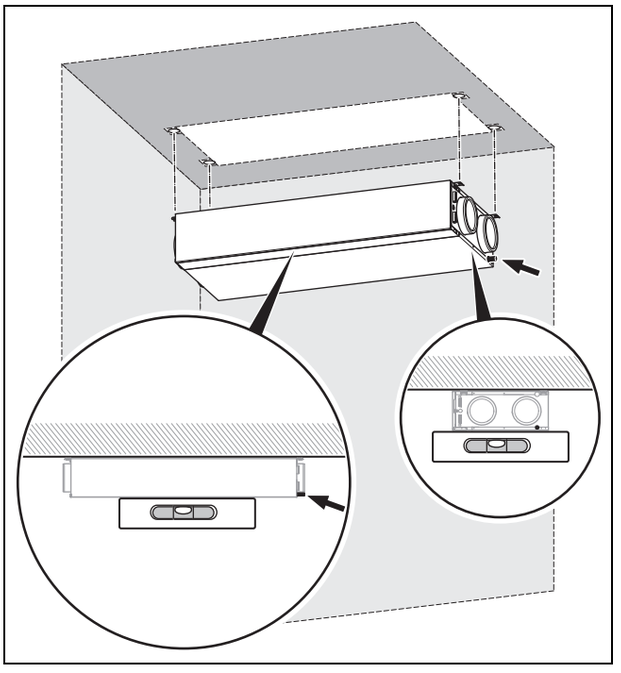
Caution.
Risk of material damage caused by condensate.

If the condensate cannot drain from the product, this may damage the product.

► Install the product such that the condensate drain pipe points downwards.

1. Drill the holes for the fixing screws.
   – Drilled holes (→ Page 6): 4
2. Insert the rawl plugs into the drilled holes.
3. Screw two fixing screws halfway into two drilled holes (on the product side with the condensate drain pipe).
4. Position the lower screw openings of the product onto the fixing screws and press the product against the wall.
5. Insert two fixing screws into the upper drilled holes and screw the product in tightly.
6. Screw the lower fixing screws in tightly.

4.4.2 Installing the product on the ceiling



Caution.
Risk of material damage caused by condensate.

If the condensate cannot drain from the product, this may damage the product.

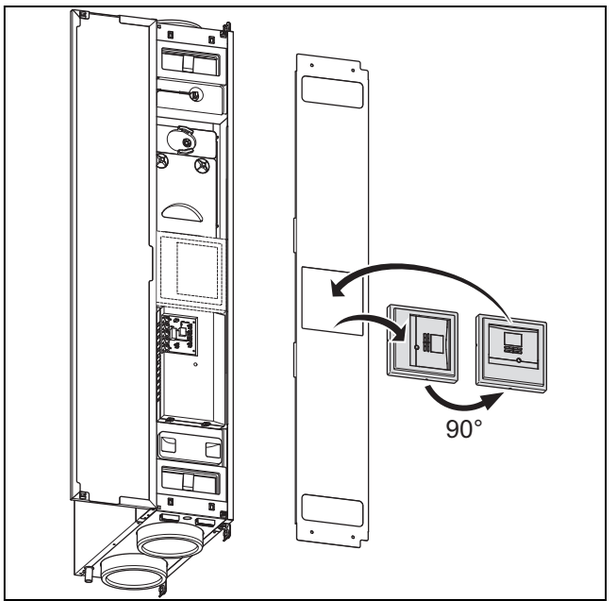
► Install the product such that the side of the product with the condensate drain pipe has a downward gradient.

1. Drill the holes for the fixing screws.
   – Drilled holes (→ Page 6): 4
2. Insert the rawl plugs into the drilled holes.
3. Screw two fixing screws halfway into two drilled holes (on the product side with the condensate drain pipe).
4. Position the screw openings of the product onto the fixing screws to mount it.
5. Press the product against the ceiling and hold it in place.
6. Insert two fixing screws into the two other drilled holes and screw the product in tightly.
7. Screw the remaining fixing screws in tightly.
   – Product position: Horizontal, with no downward gradient

4.4.3 Turning the display and operator control elements

Conditions: Product is wall-mounted

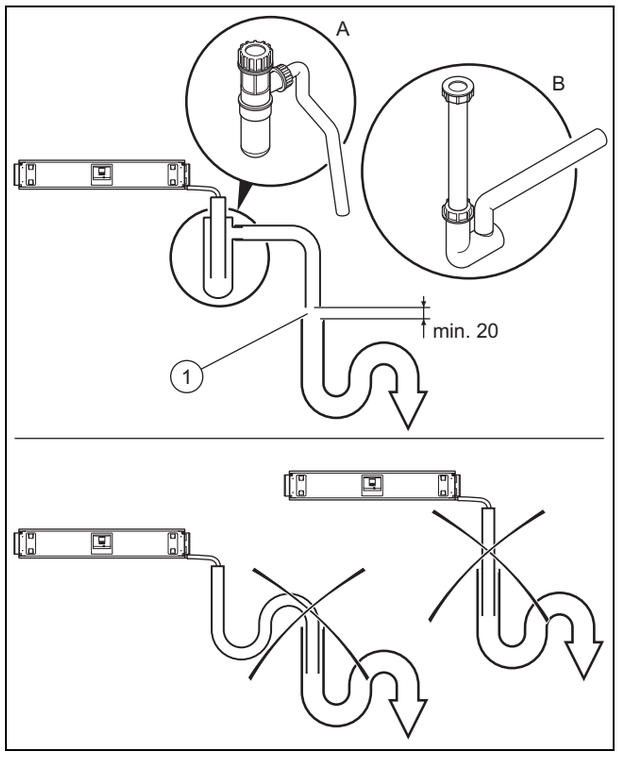
► Open the product. (→ Page 11)
► Loosen the cable connection at the display.
► Press the display out of the holding frame.
► Press the holding frame out of the cut-out in the operator control screen.



- ► Turn the display and the holder frame.
  - – 90°
- ► Place the holding frame into the cut-out in the operator control screen.
- ► Place the display into the holding frame.
- ► Establish the cable connection at the display.
- ► Close the product. (→ Page 11)

4.4.4 Connecting the condensate siphon/dry siphon and condensate drain pipework

1. Connect the condensate siphon/dry siphon to the product (→ Installation instructions for the condensate siphon/dry siphon, accessories).
   - – Condensate discharge pipe downward gradient (descending from the product): > 5°



Danger!

Risk of damage to health caused by incorrectly connected condensate drain pipework!

In the interests of hygiene, the condensate drain pipework must not be directly connected to the waste-water piping.

- ► Connect the condensate discharge to the second siphon.

Caution.

Risk of material damage caused by condensate.

If a condensate discharge pipe has been connected incorrectly, a build-up of condensate and uncontrolled condensate drainage may damage the product. Furthermore, the condensate may leak out of the product and onto the floor.

- ► Install a drip distance of min. 20 mm between the outlet for the condensate drain pipework and the second siphon.
- ► Note the downward gradient for the condensate discharge pipe (> 5°).

2. Connect the condensate drain pipework to the second siphon while taking into consideration the drip distance **(1)**.

– Drip distance: ≥ 20 mm

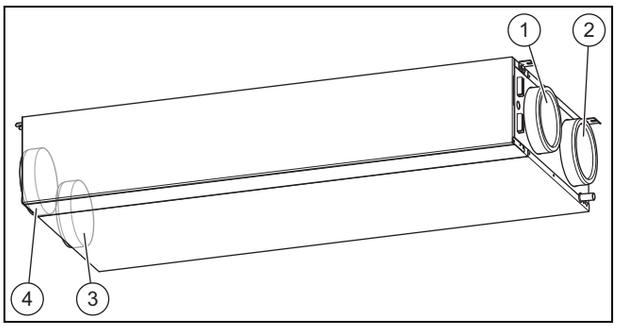
3. Fill the condensate siphon/dry siphon with water.

4.4.5 Connecting the pipelines

1. Check the pipelines for coarse dirt.
   Coarse dirt: Available
   ► Clean the pipelines.
2. Route the pipelines in accordance with the manufacturer's specifications and applicable regulations for the product.
   – Diameter of pipelines: ≥ 150 mm
   – Installing the exit air lines: Continuous downward gradient to the product with condensate drain pipework at the lowest point (special accessory (elbow with condensate discharge))
3. Install the silencer in the supply, exit and outside air lines.
4. Insulate all of the pipelines in accordance with the applicable regulations.

Note
Supply and exhaust air lines too, when routing through unheated rooms.

5. Seal the outside and exit air lines so that they are vapour-diffusion-tight.



1	Outside air connection (R variant)	3	Supply air connection (R variant)
2	Exit air connection (R variant)	4	Exhaust air connection (R variant)

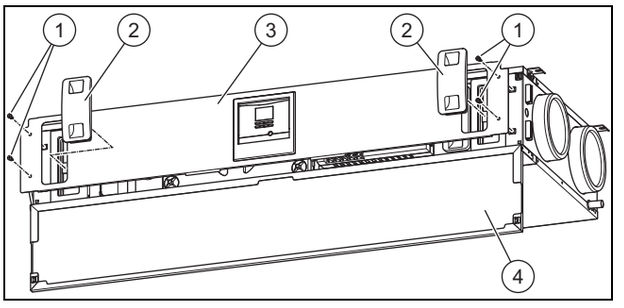
6. Remove the sealing caps from the product connections.
7. Connect the pipelines to the product.

Caution.
Risk of material damage caused by a missing seal.
If the pipelines are not connected to the product in way that is vapour-diffusion-tight, condensate may form and damage the product.
► Seal all of the connections for the pipelines to each other and on the product, so that they are vapour-diffusion-tight.
► Use suitable accessories and sealant.

8. Seal all of the product connections so that they are vapour-diffusion-tight.
   – Suitable vapour-diffusion-tight adhesive tape

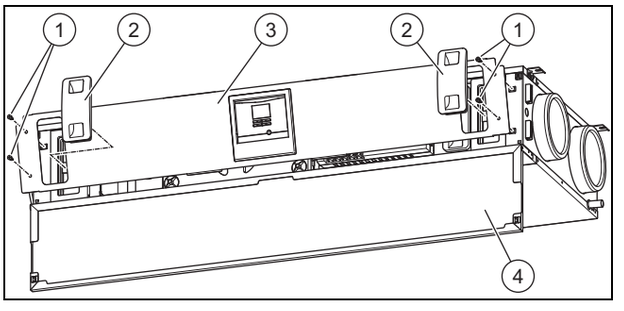
4.5 Opening/closing the product

4.5.1 Opening the product



1. Open the front flap **(4)**.
2. Pull out both of the filter plugs **(2)**.
3. Open all the turn locks **(1)** on the operator control screen.
   – Quarter turn to the left
4. Remove the operator control screen **(3)**.

4.5.2 Closing the product



1. Place the operator control screen **(3)** onto the product by placing the "uneven" edge of the operator control screen onto the corresponding cut-outs.
2. Press the operator control screen onto the product and screw the turn locks **(1)** closed.
   – Quarter turn to the right
3. Push in both filter plugs **(2)**.
4. Close the front flap **(4)**.

5 Electrical installation

Only qualified electricians may carry out the electrical installation.

Danger!
Risk of death from live connections (230 V)!
Risk of death from electric shock when working on live connections (230 V).
► Before carrying out any work on the product, pull the product's mains plug out of the earthed plug socket or use the

circuit breaker (depending on the country) to switch off the product's power supply.

► Secure the power supply against being switched on again.

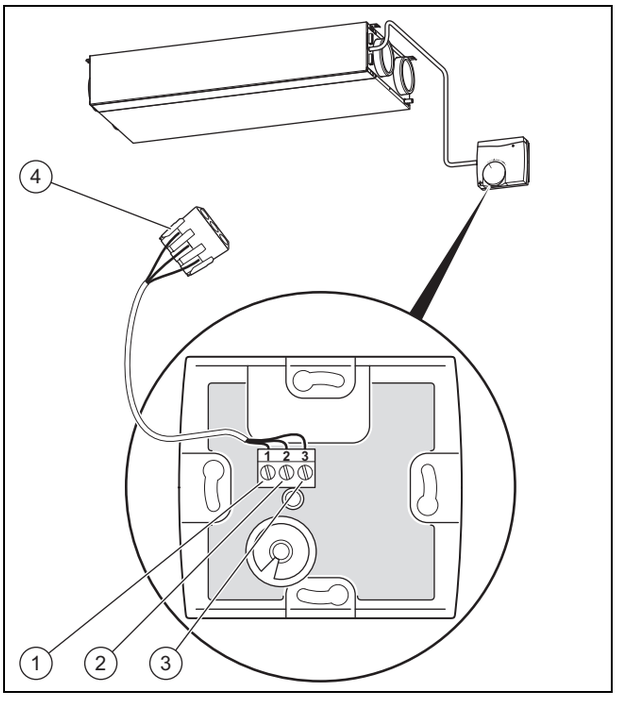
► Check that there is no voltage in the connections.

5.1 Connecting external components in the product's connection area

5.1.1 Connecting the stage switch

Note

If a Vaillant controller is connected, the step switch will not work.



1	Connection 1 to GND connection	3	Connection 3 to connection V+
2	Connection 2 to LED connection	4	Connection plug (in the unit)

1. Open the stage switch by removing the housing.
2. Connect the connection cable in the connection area of the stage switch.
   – Terminal assignment: GND connection to connection 1/LED connection to connection 2/V+ connection to connection 3
3. Connect the connection cable to the connection plug **(4)** in the connection area for external components of the product.

5.1.2 Connecting the air quality sensors

► Connect the air-quality sensors in the connection area for external components of the product (→ Installation instructions for the air-quality sensors).

5.1.3 Connecting the VRC 700 system control

► Connect the control to the eBUS connection in the connection area for external components of the product (→ System control installation instructions).
   – Connection type: eBUS line
   – Controller: Compatibility as of VRC 470/4

► If the DCF signal is not decoded, set the date and time on the control (→ System control installation instructions).

5.2 Installing and connecting the frost protection element

► Install the frost protection element (→ Installation instructions for the frost protection element).

5.3 Connecting the bypass

1. Open the product. (→ Page 11)
2. Remove the existing screen from the bypass insertion point.
3. Insert the new screen (with an opening for the bypass motor) into the bypass insertion point.
4. Push the bypass shaft onto the bypass motor.
5. Connect the relevant cable (directly to the left of the insertion point) to the bypass motor.
6. Insert the bypass motor into the screen for the bypass insertion point.
7. Close the product. (→ Page 11)

Conditions: The bypass motor was connected retroactively

► Navigate to **Menu** → **Installer level** → **Configuration** → **Bypass** and change the setting.
   – Setting: **Available**

Installer level – Overview (→ Page 19)

5.4 Connecting the VR 32 bus coupler

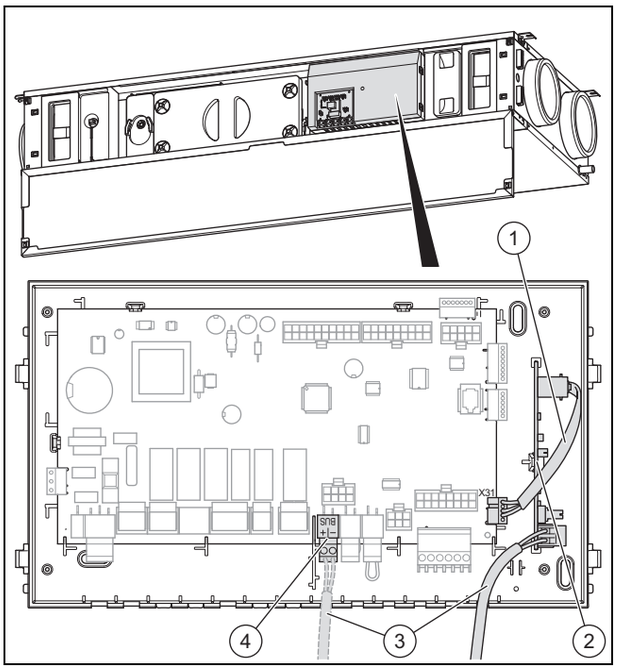
Note

If you want a system control to control other Vaillant heat generators in addition to the product, the VR 32 bus coupler is required.

1. Open the product. (→ Page 11)

Opening the electronics box

2. Remove the cover from the electronics box by releasing the latching lugs from their anchoring point.



3. Insert the bus coupler **(2)** in the electronics box.
4. Use the digital cable **(1)** to connect the bus coupler **(2)** and the PCB (connection "X31").
5. Undo the eBUS cable **(3)** from the eBUS connection **(4)** on the PCB.
6. Secure the eBUS cable **(3)** to the bus coupler.

Closing the electronics box

7. Press the cover firmly onto the electronics box until the latching lugs engage.
8. Close the product. (→ Page 11)
9. Set the bus address for the bus coupler on the system control (→ System control instructions).

5.5 Connecting the product to the power supply in a fixed installation

If no suitable country-specific earthed socket outlet is available at the installation site, a fixed connection to the power supply is required.

► Remove the mains plug (type F, CEE 7/4) from the power supply cable.
► Permanently connect the mains connection line to the on-site power supply via an all-pole electrical partition which can be switched off (e.g. a line protection switch).
  – Contact opening of the electrical partition: ≥ 3 mm
► Connect the product to the protective earth conductor.

6 Operation

6.1 Operating concept

The operating concept, the operation of the product and the read-off and setting options in the operator level are described in the operating instructions.

An overview of the read-off and setting options for the installer level can be found in the "Installer level – Overview" table in the appendix.

Installer level – Overview (→ Page 19)

6.2 Calling up the installer level

1. Press [ ] and [ ] at the same time.
2. Use [−] and [+] to set the code for the installer level.
   – Code: 17
3. Confirm by pressing [ ] .

6.2.1 Exiting the installer level

► Press [ ] (several times, if necessary, depending on the selection level).
  ◁ The basic display is shown.

7 Start-up

► To start up and operate the operator control elements, open the front flap.
► If you want to operate the product at the same time as an extractor hood in exhaust air mode, ensure that sufficient outside air can flow in.

7.1 Switching on the product

► Plug the product's mains plug into the earthed plug socket (230 V) or use the circuit breaker (depending on the country) to switch on the product.
  ◁ The product's electronics start up.
  ◁ The basic display appears on the display.

7.2 Installation assistant

As a prerequisite for running the installation assistant, the product must have been installed completely and correctly and the system must have been started up completely and correctly (including the pipelines and all valves). The valves must also be set.

The installation assistant is automatically launched when the product is switched on for the first time.

You must confirm the launching of the installation assistant. After confirming this, all heating demands for the product are blocked. This status remains until the installation assistant is completed or cancelled.

7.2.1 Setting the language

► Set the required language.

7.2.2 Setting the installation height

► Set the height above sea level of the installation site in order to guarantee the required volume flows at the installation site.
  – Adjustment range: −200 … 2,000 m

7.2.3 Setting the nominal flow

► Set the nominal flow in accordance with the building size and type.
  – Adjustment range: 70 … 120 m³/h

7.2.4 Setting the nominal flow correction (exhaust air)

► Set the nominal flow correction (exhaust air).
  – Adjustment range: −40 … 40 %

7.2.5 Setting the nominal flow correction (supply air)

► Set the nominal flow correction (supply air).
  – Adjustment range: −40 … 40 %

7.2.6 Setting the type of frost protection element

► Set the type of frost protection element.
  – Adjustment range: **Not available**/**Electrical**/**Hydraulic**

7.2.7 Setting the air/earth collector

► Set whether an air/earth collector is available.
  – Adjustment range: **Not available**/**Available**

7.2.8 Setting the pressure monitor

1. If you want to operate the product at the same time as an open-flued heat production source, you must set the pressure monitor to **Available**.
   – Adjustment range: **Not available**/**Available**

> **Note**
> If a pressure monitor is available, the standard frost protection function is deactivated.

2. If a pressure monitor is available, use the frost protection element to guarantee frost protection.

7.2.9 Setting the bypass

► Set whether or not a bypass is present.
  – Adjustment range: **Not available**/**Available**

7.2.10 Setting the step switch

► Set whether a step switch is available.
  – Adjustment range: **Not available**/**Available**

7.2.11 Setting the air quality sensors

► Set the number of air quality sensors.
  – Adjustment range: 0 … 2

7.2.12 Setting the U value

► Set the U value in accordance with the building.
  – 0.2 … 2.5

7.2.13 Recording contact details

► If you want, you can store your telephone number (max. 16 digits with no spaces) in the menu.
► If the telephone number is shorter than 16 digits, end the entry after the last digit by pressing the right-hand selection button [ ].

The operator can display your telephone number in the information menu.

8 Product adjustment

If you have already started up the product and finished the installation assistant, you can again adapt/set the parameters for the functions that are already set and for other functions.

Installer level – Overview (→ Page 19)

You can use the check programmes (installer level) to check/run the product's functions.

The following text lists only those functions that have not yet been set in the installation assistant.

Menu → Installer level → Configuration

Function	Explanation
Int. ventil. vol. flow	You can use this function to set the percentage value for the intensive ventilation. The setting of the nominal ventilation is used as a reference value here.
Red. ventil. vol. flow	You can use this function to set the percentage value for the reduced ventilation. The setting of the nominal ventilation is used as a reference value here.
Exh. air disbalance	You can use this function to set the disbalance between the exhaust air volume flow and supply air volume flow. The exhaust air volume flow must always be greater than the supply air volume flow, so that there is slight negative pressure. This means that, for example, moisture loads are not pushed into the building fabric, but are drained away as effectively as possible.
Exh.air int. vol. fl. cor.	You can use this function to set the exhaust air volume flow for the intensive ventilation in the case of deviations between the target and actual value.
Sup.air int. vol.fl. cor.	You can use this function to set the supply air volume flow for the intensive ventilation in the case of deviations between the target and actual value.

Function	Explanation
Exh. air red. vol. corr.	You can use this function to set the exhaust air volume flow for the reduced ventilation in the case of deviations between the target and actual value.
Sup. air red. vol. corr.	You can use this function to set the supply air volume flow for the reduced ventilation in the case of deviations between the target and actual value.
Diff.temp. bypass	You can use this function to set the temperature amplitude between outside air and exhaust air from which the bypass switches from "open" to "half-open". This means that, at a high sensitivity to draughts, the value should be reduced. When using a complete, passive cooling capacity, the value should be increased.
Min. CO2 content	You can use this function to set the CO_2 value (measured by the air-quality sensors) from which the product increases the air volume flow in automatic mode.
Max. CO2 content	You can use this function to set the CO_2 value (measured by the air-quality sensors) from which the product achieves the set nominal flow in automatic mode.
Min. air humidity	You can use this function to set the relative air humidity (measured by the moisture sensor) from which the product increases the air volume flow in automatic mode.
Max. air humidity	You can use this function to set the relative air humidity (measured by the moisture sensor) from which the product achieves the set nominal flow in automatic mode.
System efficiency	You can use this function to monitor the system efficiency after **P.03** has previously been run once. If there is an extended period of inefficiency, maintenance message **M.802** is shown in the display.
Appliance type	You can use this function to set whether you are installing/have installed a wall unit or a ceiling unit. Adjustment options: – 1 = Small wall unit (air volume flow 260 m³/h) – 2 = Large wall unit (air volume flow 360 m³/h) – 3 = Ceiling unit (air volume flow 150 m³/h, L variant) – 4 = Ceiling unit (air volume flow 150 m³/h, R variant)

8.1 System efficiency

8.1.1 Starting the system efficiency monitoring

1. Call up the installer level. (→ Page 13)
2. Navigate to the **Test menu** → **Check programmes** → **Initialisation measure** menu item.
3. Start the check programme.
   ◁ If the check programme has been successfully run, the **System efficiency** function can be selected from the **Configuration** menu.
4. Navigate to the **Configuration** → **System efficiency** menu item.
5. Activate the **System efficiency** function.
6. Exit the installer level. (→ Page 13)

8.1.1.1 Checking system efficiency

Conditions: The **Initialisation measure** check programme has been run once before

► Call up the installer level. (→ Page 13)
► Navigate to the **Test menu** → **Check programmes** → **System efficiency test** menu item.
► Start the check programme.
◁ If the check programme has been successfully run, the degree of system efficiency is shown in the display.

1 / 2

Test result: **Efficiency: High**

Test result: **Efficiency: Medium**

Test result: **Efficiency: Low**

If the **Efficiency: Low** test result is shown in the display, first try to increase the system efficiency. (→ Page 17)
If it is not possible to increase the system efficiency, re-measure the system. (→ Page 15)

2 / 2

The check programme was not run successfully.

Establish the system efficiency. (→ Page 17) If you cannot establish the system efficiency, re-measure the system. (→ Page 15)

► Exit the installer level. (→ Page 13)

8.1.1.2 Measuring/initialising the system

1. Call up the installer level. (→ Page 13)
2. Navigate to the **Test menu** → **Check programmes** → **Initialisation measure** menu item.
3. Start the check programme.
   ◁ The system was measured or initialised again.
   ◁ The **System efficiency** function is still active.
4. Exit the installer level. (→ Page 13)

9 Handing the product over to the operator

► Inform the operator about how to handle the system. Answer any questions the operator may have. In particular, draw attention to the safety information which the operator must follow.

- ► Inform the operator of the necessity to have the system maintained according to the specified intervals.
- ► Provide the operator with all relevant instructions and unit documentation for safe keeping.
- ► Inform the operator that the product must not be operated together with open-flued combustion locations without a protection device.

10 Inspection, maintenance and repair

Danger!

Risk of death from live connections (230 V)!

Risk of death from electric shock when working on live connections (230 V).

- ► Before carrying out any work on the product, pull the product's mains plug out of the earthed plug socket or use the circuit breaker (depending on the country) to switch off the product's power supply.
- ► Secure the power supply against being switched on again.
- ► Check that there is no voltage in the connections.

10.1 Procuring spare parts

The original components of the product were also certified by the manufacturer as part of the declaration of conformity. If you use other, non-certified or unauthorised parts during maintenance or repair work, this may void the conformity of the product and it will therefore no longer comply with the applicable standards.

We strongly recommend that you use original spare parts from the manufacturer as this guarantees fault-free and safe operation of the product. To receive information about the available original spare parts, contact the contact address provided on the reverse of these instructions.

- ► If you require spare parts for maintenance or repair work, use only the spare parts that are permitted for the product.

10.2 Mains connection line defective

If the unit's mains connection line is damaged, the mains connection line must be replaced by the manufacturer or their customer service department or a similarly qualified person in order to prevent any hazards.

10.3 Carrying out maintenance work

- ► Carry out all maintenance work during the annual inspection/maintenance.
- ► Observe the maintenance messages that are displayed.
- ► Temporarily decommission the product before carrying out any maintenance work. (→ Page 18)
- ► After all maintenance work has been carried out, start up the product again. (→ Page 13)

10.3.1 Caring for the product

Caution.

Risk of material damage caused by unsuitable cleaning agents.

- ► Do not use sprays, scouring agents, detergents, solvents or cleaning agents that contain chlorine.

- ► Clean the casing with a damp cloth and a little solvent-free soap.

10.3.2 Cleaning the supply and exhaust air valves

- ► Clean the supply and exhaust air valves in the living areas (→ Instructions for valves).

10.3.3 Cleaning the heat exchanger, condensate siphon, condensate discharge pipe and condensate tray

1. Open the product. (→ Page 11)
2. Undo and remove the heat exchanger cover.

Caution.

Risk of material damage to the heat exchanger caused by incorrect handling.

If your hands or any objects come into direct contact with the fins, the heat exchanger may be damaged.

- ► Use the pull-out strip to pull the heat exchanger out of the product.
- ► Do not touch the fins.

3. Use the pull-out strip to remove the heat exchanger from the guide rails in the product.

Note

Condensate may escape from the heat exchanger.

4. Catch any condensate that may escape, before it comes into contact with other components.
5. Only clean the heat exchanger with clean water and allow the heat exchanger to dry.

Note

Wear gloves and avoid contact with the skin and eyes.

6. Unscrew the condensate siphon from the product.
7. If they are dirty, clean the condensate discharge pipe, the condensate tray and the condensate siphon.
8. Secure the condensate siphon to the product. (→ Page 10)
9. Place the heat exchanger in the guide rails and slide the heat exchanger back into the product.
10. Place the cover on the heat exchanger with new seals and screw it down tightly.
11. Close the product. (→ Page 11)

10.3.4 Cleaning the frost protection element

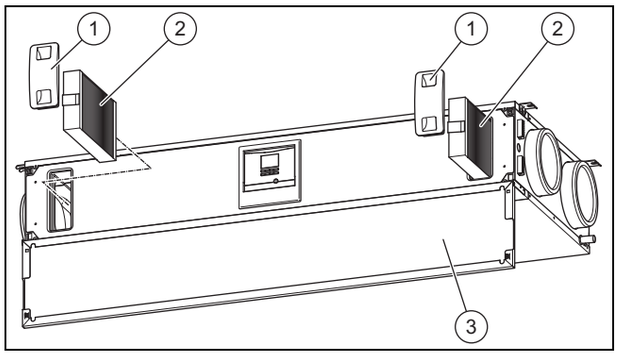
1. Open the product. (→ Page 11)

Caution.
Risk of material damage caused by incorrect cleaning.
Water and other liquids may damage the frost protection element.
► Use only a vacuum cleaner to clean the frost protection element.

2. Clean the frost protection element.
   – Vacuum cleaner
3. Close the product. (→ Page 11)

10.3.5 Maintaining the filters

Removing the filters



1. Open the front flap **(3)**.
2. Pull out both of the filter plugs **(1)**.
3. Pull the outdoor- and exhaust-air filter **(2)** out of the product.
4. Check the filters for dirt.
   – Recommended check: Every three months

   1 / 2

   Degree of contamination: Filter is lightly soiled

Caution.
Risk of material damage caused by incorrect cleaning of the filter.
Water and other liquids may damage the filters and the product.
► Only clean the filters with a vacuum cleaner.

► Clean the filters.
   – Vacuum cleaner at a low setting

2 / 2

Degree of contamination: Filter is heavily soiled

Operating days: ≥ 182 d

Replacement interval reached: At least twice annually

► Replace the filters.
   – Exhaust-air filter class: G4 (in accordance with EN 779)/ISO Coarse (in accordance with ISO 16890)
      – Outdoor-air filter class: F7 or F9 (in accordance with EN 779)/ISO ePM2.5 70% or ISO ePM1,0 85% (in accordance with ISO 16890)
   – Exhaust air valve filter

Installing the filters

5. Install the filters in the product and ensure that they are correctly aligned as you do so.
   – Labelling on the filters
   – Sticker on the inside of the front flap
6. Place the filter plugs on the filters.

Resetting the filter days

7. Switch on the product. (→ Page 13)
8. Press the ▭ + ▭ buttons simultaneously to access the menu.
9. Navigate to the **Resets** menu → **Res. days until fil. ch.**.
10. Reset the filter days.
11. Press the ▭ button to exit the menu.
12. Close the front flap.

10.3.6 Increase/establish system efficiency

1. Clean the supply and exhaust air valves and their corresponding filters. (→ Page 16)
2. Check the exposed piping for leaks.
3. Check whether any obstructions are impeding the air flows.
4. If required, re-adjust the supply-air and exhaust-air valves.
5. Clean the outside air's intake tract and the exit air's outlet openings.
6. Carry out maintenance on the product filter. (→ Page 17)
7. Remove the front flap if this has not yet been done.

Conditions: The maintenance message **M.802** was previously shown in the display.

► Switch the product on if this has not already been done. (→ Page 13)

◁ The system efficiency is checked automatically.

1 / 2

Maintenance message **M.802** is no longer shown in the display.

No other measures are required.

2 / 2

Maintenance message **M.802** is still being shown in the display.

► Measure/initialise the system. (→ Page 15)

Conditions: No maintenance message is shown in the display.

- ► Switch the product on if this has not already been done. (→ Page 13)
- ► Check the system efficiency. (→ Page 15)

8. Secure the front flap.

11 Detecting and rectifying faults, fault messages and limp home mode messages

Danger!

Risk of death from live connections (230 V)!

Risk of death from electric shock when working on live connections (230 V).

- ► Before carrying out any work on the product, pull the product's mains plug out of the earthed plug socket or use the circuit breaker (depending on the country) to switch off the product's power supply.
- ► Secure the power supply against being switched on again.
- ► Check that there is no voltage in the connections.

- ► If faults, fault messages (**F.XXX**) or messages regarding limp home mode (**Lhm.XXX**) occur, rectify the fault after checking the tables in the appendix or using the check programmes.

12 Customer service

Applicability: Austria

Vaillant Group Austria GmbH
Clemens-Holzmeister-Straße 6
1100 Wien
Österreich

E-Mail Kundendienst: termin@vaillant.at

Internet Kundendienst: http://www.vaillant.at/werkskundendienst/

Telefon: 05 7050-2100 (zum Regionaltarif österreichweit, bei Anrufen aus dem Mobilfunknetz ggf. abweichende Tarife - nähere Information erhalten Sie bei Ihrem Mobilnetzbetreiber)

Der flächendeckende Kundendienst für ganz Österreich ist täglich von 0 bis 24 Uhr erreichbar. Vaillant Kundendiensttechniker sind 365 Tage für Sie unterwegs, sonn- und feiertags, österreichweit.

Applicability: Switzerland

Vaillant GmbH (Schweiz, Suisse, Svizzera)
Riedstrasse 12
CH-8953 Dietikon
Schweiz, Svizzera, Suisse

Kundendienst: 044 74429-29

Techn. Vertriebssupport: 044 74429-19

Applicability: Germany

Auftragsannahme Vaillant Kundendienst: 021 91 5767901

13 Decommissioning

Danger!

Risk of damage to health caused by decommissioning the product.

If the product is decommissioned, the frost protection function is no longer active. This increases the risk of moisture or mould building up.

- ► Only decommission the product in the case of an emergency, for maintenance or repair work or for final disassembly.

13.1 Temporarily decommissioning the product

- ► Pull the mains plug out of the earthed plug socket (230 V) or use the circuit breaker (depending on the country) to switch off the product.

13.2 Permanently decommissioning the product

- ► Pull the mains plug out of the earthed plug socket (230 V) or use the circuit breaker (depending on the country) to switch off the product.
- ► Remove the product and all of its components.

14 Recycling and disposal

Your product consists largely of recyclable materials.

Disposing of the packaging

- ► Dispose of the packaging correctly.

Disposing of the product and accessories

- ► Dispose of used filters with household waste.
- ► Do not dispose of the product or the accessories (apart from the filters) with household waste.
- ► Dispose of the product and all accessories correctly.
- ► Observe all relevant regulations.

Appendix

A Installer level – Overview

Setting level	Values		Unit	Increment, select	Default setting
	Min.	Max.			
Installer level →					
Enter code	00	99		1 (competent person code 17)	00
Installer level → List of faults →					
F. XXX – F.XXX[1)]				**Delete**	
Installer level → Test menu → Statistics →					
Operating hours	Current value		h		
Pass. cool. op. hours	Current value		h		
Heat recovery hours	Current value		h		
Stand. HE op. hrs	Current value		h		
FPE operating hours	Current value		h		
FPE operations	Current value				
Exit air ventil. op. hrs	Current value		h		
Sup. air ventil. op. hrs	Current value		h		
Bypass steps (if a bypass is installed)	Current value				
Bypass operations (if a bypass is installed)	Current value				
No. switch. ops	Current value				
Installer level → Test menu → Check programmes →					
P.01 Bypass test (optional)				**Yes**, **No**	**No**
P.02 Test Frost prot. element (optional)				**Yes**, **No**	**No**
P.03 Initialisation measure				**Yes**, **No**	**No**
P.04 System efficiency test				**Yes**, **No**	**No**
Installer level → Test menu → Sensor/actuator test →					
T.01 Frost prot. element (optional)				**on**, **off**	**off**
T.03 Temperature: Outside air	−50	60	°C	0.5	0
T.04 Temperature: Exit air	−50	60	°C	0.5	0
T.05 Temperature: Supply air	−50	60	°C	0.5	0
T.06 Temperature: Exhaust air	−50	60	°C	0.5	0
T.07 Exhaust air humidity	0	100	%	0.5	0
T.08 Supply air internal target value	0	400	m³/h	1	0
T.10 Supply air speed	0	5000	rpm	1	0
T.11 Exhaust air internal target value	0	400	m³/h	1	0
T.13 Exhaust air speed	0	5000	rpm	1	0
T.14 Air quality sensor 1 (optional)	0	5000	ppm	1	0
T.15 Air quality sensor 2 (optional)	0	5000	ppm	1	0
T.17 Position of bypass flap (optional)	0	100	%	1	0
T.18 Step switch LED (optional)				**on**, **off**	**off**
T.19 Alarm signal				**on**, **off**	**off**

[1)] Fault lists are only available, and can only be deleted, if faults have occurred.

Appendix

Setting level	Values		Unit	Increment, select	Default setting
	Min.	Max.			
Installer level → Configuration →					
Language	Current language			Languages available for selection	English
Contact data	Phone number			0 - 9	
Installation height	−200	2000	m	50	100
Nominal flow	175	280	m³/h	5	
Int. ventil. vol. flow	120	130	%	1	130
Red. ventil. vol. flow	60	80	%	1	70
Exh. air disbalance	−20	20	%	1	5
Exh. air nom. flow corr.	−40	40	%	1	0
Sup. air nom. fl. corr.	−40	40	%	1	0
Exh.air int. vol. fl. cor.	−40	40	%	1	0
Sup.air int. vol.fl. cor.	−40	40	%	1	0
Exh. air red. vol. corr.	−40	40	%	1	0
Sup. air red. vol. corr.	−40	40	%	1	0
Frost prot. element				**Not available**, **Electrical**, **Hydraulic**	**Not available**
Air-earth collector				**Not available**, **Available**	**Not available**
Diff.temp. bypass	0	25	°C	0.5	10
Pressure monitor				**Not available**, **Available**	**Not available**
Step switch				**Not available**, **Available**	**Not available**
Air quality sensor	0	2		1	0
Min. CO2 content	350	600	ppm	50	450
Max. CO2 content	800	2000	ppm	50	1200
U value	0.2	2.5	W/(m²K)	0.1	1.5
Min. air humidity	30	40	%	2	38
Max. air humidity	50	70	%	2	68
System efficiency				**On**, **Off**	**Off**
Software version	Is displayed only				
Appliance type	1	4		1	
Installer level → Resets →					
Factory settings				**Yes**, **No**	**No**
Res. days until maint.				**Yes**, **No**	**No**
Reset exh. air ventil.				**Yes**, **No**	**No**
Reset supply air fan				**Yes**, **No**	**No**
Reset FPE (optional)				**Yes**, **No**	**No**
Reset bypass (optional)				**Yes**, **No**	**No**
Installer level → Start inst. assistant →					
Language				Languages available for selection	English
Installation height	−200	2000	m	50	100
Nominal flow	175	280	m³/h	5	
Exh. air nom. flow corr.	−40	40	%	1	0
Sup. air nom. fl. corr.	−40	40	%	1	0

[1] Fault lists are only available, and can only be deleted, if faults have occurred.

Setting level	Values		Unit	Increment, select	Default setting
	Min.	Max.			
Frost prot. element				**Not available**, **Electrical**, **Hydraulic**	**Not available**
Air-earth collector				**Not available**, **Available**	**Not available**
Bypass				**Not available**, **Available**	**Not available**
Pressure monitor				**Not available**, **Available**	**Not available**
Step switch				**Not available**, **Available**	**Not available**
Air quality sensor	0	2		1	0
U value	0.2	2.5	W/(m²K)	0.1	1.5
Contact data	Phone number			0 - 9	
Close the installation assistant?				**Yes**, **Back**	

[1] Fault lists are only available, and can only be deleted, if faults have occurred.

B Fault messages – Overview

Message	Possible cause	Measure
F.800 Frost protection not guaranteed	Outside temperature sensor does not work/is defective	► Check that the outside temperature sensor works correctly.
	Exit-air temperature sensor does not work/is defective	► Check that the exit-air temperature sensor works correctly.
F.801 Frost protection not guaranteed	Heat exchanger protection is active	► Wait until the outside temperature increases (the product automatically switches on no later than 60 minutes after the temperature increases.). Outside temperature: > −3 °C
F.802Fault: Ventilator exit air	Exhaust-air fan does not work/is defective	► Check that the exhaust-air fan works correctly.
F.803 Fault: Supply air ventilator	Supply-air fan does not work/is defective	► Check that the supply-air fan works correctly.
F.804 Supply air temp. too low	Bypass does not work/is defective	1. Press the fault clearance key. – Fault clearance attempts: ≤ 3 2. If you cannot eliminate the fault with the fault clearance attempt, check that the bypass works correctly.
	Heat exchanger does not work/is defective	► Check that the heat exchanger works correctly/has no leakages.
F.805 Air supply temp. of heat exch. too high	The frost protection element does not work/is defective	► Check that the frost protection element works correctly.
F.806 Fault: Frost prot. element	The frost protection element is defective	► Replace the frost protection element.
F.809 Failure: Outside air temp. sensor	Outside temperature sensor does not work/is defective	► Check that the outside temperature sensor works correctly.
F.810 Failure: Exit air temp. sensor	Exit-air temperature sensor does not work/is defective	► Check that the exit-air temperature sensor works correctly.
F.811 Failure: Supply air temp. sensor	Supply-air temperature sensor does not work/is defective	► Check that the supply-air temperature sensor works correctly.
F.812 Failure: Exhaust air temp. sensor	Exhaust-air temperature sensor does not work/is defective	► Check that the exhaust-air temperature sensor works correctly.
F.815 Fault: Frost prot. element	Exhaust-air humidity sensor does not work/is defective	► Check that the exhaust-air humidity sensor works correctly.
F.816 Ventilator connection inverted	Fan connection incorrect/fan incorrectly connected/installed	► Check the fan connections.

C Limp home mode messages – Overview

Message	Possible cause	Measure
Lhm.801 Failure: Exh. air temp. sensor	Exhaust-air temperature sensor does not work/is defective	► Check that the exhaust-air temperature sensor works correctly.
Lhm.802 Failure: Exit air sensor	Exit-air temperature sensor does not work/is defective	► Check that the exit-air temperature sensor works correctly.
Lhm.803 Failure: Supply temp. sensor	Supply-air temperature sensor does not work/is defective	► Check that the supply-air temperature sensor works correctly.
Lhm.804 Failure: Outside air temp. sensor	Outside temperature sensor does not work/is defective	► Check that the outside temperature sensor works correctly.
Lhm.805 Failure: Exhaust air humidity sensor	Exhaust-air humidity sensor does not work/is defective	► Check that the exhaust-air humidity sensor works correctly.
Lhm.806 Supply air temp. too low	Frost protection active	► Wait until the supply-air temperature increases again. The product then starts normal operation. Supply air temp.: > 10 °C
Lhm.807 Failure/fault: Air quality sensor	Air quality sensor does not work/is defective	► Check the air quality sensors.
Lhm.810 No connection to step switch	4-step switch does not work/is defective	1. Activate the 4-step switch in the installer level. 2. Check that the 4-step switch works correctly.
Lhm.817 Failure: Frost prot. element	The frost protection element is defective	► Replace the frost protection element.

D Troubleshooting

Symptom	Possible cause	Measure
Product not operating	The mains voltage has been interrupted/power cut	► Wait until the mains voltage has been re-established and the product automatically switches on (all settings are retained).
	Frost protection active (mains voltage present)	1. Check whether **S.815** is displayed in the **Live Monitor**. 2. Wait until the outside temperature increases (the product automatically switches on no later than 60 minutes after the temperature increases.). – Outside temperature: > −3 °C
Product with increased noise level	Missing/incorrect silencer in the supply-air exhaust-air pipes	► Install silencers in accordance with the system planning.
	System components (e.g. heat exchanger, fan) are defective	► Replace defective system components.
	System components (e.g. heat exchanger, fan) are dirty	► Clean dirty system components.
	Fan runs at maximum rotational speed	1. Check whether the pressure hoses are bent. 2. Reduce the air volume flow at the lowest ventilator speed.
No or insufficient exhaust air or supply air	Filter dirty	► Clean the filters.
	Exhaust-air line blocked	► Clean the exhaust-air line.
	Supply-air line blocked	► Clean the supply-air line.
	Fan defective	► Replace the fan(s).
	Air flow too low	► Install an intake grille that has increased air flow.
	Supply-air valve is closed too far	1. Open the supply-air valve. 2. Adjust the system.
	Exhaust-air valve is closed too far	1. Open the exhaust-air valve. 2. Adjust the system.
	Supply-air temperature too low	► Wait until the supply-air temperature increases again. The product then starts normal operation. Supply air temp.: > 10 °C
	Outside temperature too low	1. Check whether **S.812** is displayed in the **Live Monitor**. 2. Wait until the outside temperature increases again. The product then starts normal operation. – Outside temperature: > −3 °C
Bypass summer mode does not work	Bypass function not active	1. Activate the bypass function. 2. Set the planned operating days for summer mode.

Symptom	Possible cause	Measure
Bypass summer mode does not work	The bypass motor is connected incorrectly	1. Check the plug connection to the bypass motor. 2. Check the temperature sensor.
	Bypass motor is defective	► Replace the bypass motor.
	Incorrect flap position	► Check the flap position.
	The temperature sensor is positioned incorrectly	► Check the positioning of the temperature sensor.
Noises in the condensate drain pipework	Condensate siphon connected incorrectly	► Connect the condensate siphon correctly.
Water drips out of the product	Exhaust-air lines not insulated to ensure that they are vapour-diffusion-tight	► Insulate the exhaust-air lines so that they are vapour-diffusion-tight.
	Supply-air lines not insulated to ensure that they are vapour-diffusion-tight	► Insulate the supply-air lines so that they are vapour-diffusion-tight.
The supply air is too cold	Supply-air and exhaust-air flows are not balanced	► Adjust the product.
	Incorrect flap position	► Check the flap position.
	Bypass motor is defective	► Replace the bypass motor.
	System components (e.g. heat exchanger, fan) are dirty	► Clean dirty system components.
	Frost protection active (mains voltage present)	1. Check whether **S.815** is displayed in the **Live Monitor**. 2. Wait until the outside temperature increases (the product automatically switches on no later than 60 minutes after the temperature increases.). – Outside temperature: > −3 °C
Bad and/or unpleasant odours present	Openings for the supply-air and exhaust-air lines are too close to each other	► Increase the distances between the openings for the supply-air and exhaust-air lines.
Noise transmission between the rooms	No T supersonic damper installed	1. Install T supersonic dampers. 2. Adjust the product.
Planned air volume flow not available after installation	Installation is not vapour-diffusion-tight	► Check that all of the connections are leak-tight.
Noises after replacing the fan	Fan installed incorrectly	► Check the fan's installation location.

E Check programmes – Overview

Prüfprogramme	Meaning
P.01 Bypass test	The bypass flap is actuated and moved to the closed and open position. In the event of a negative test result, **Test not OK** is shown in the display. Then check that the bypass is connected correctly and works correctly. If required, replace/clean components.
P.02 Test Frost prot. element	A defined volume flow is created by the ventilation unit and the frost protection element is switched on. In the event of a negative test result, **Test not OK** is shown in the display. Check that the frost protection element is connected correctly and works correctly. If required, replace components.
P.03 Initialisation measure	The ventilation unit runs through four ventilation levels, one after the other. The rotational speeds of the ventilation levels are used as characteristic lines for monitoring the system efficiency. The check programme must always be run through before the system efficiency function can be activated in the configuration menu.
P.04 System efficiency test	The prerequisite is that check programme **P.03** has been executed once previously. To check the system efficiency, four volume flows are created by the ventilation unit.

F Maintenance messages – Overview

#	Message	Description	Maintenance work	Interval	
1	**M.800 Filter change**	The maintenance interval for the filters was exceeded.	Maintaining the filters	At least twice annually	17
2	**M.801 Maintenance**	The maintenance interval for the product was exceeded.	Maintaining the product	At least annually	
3	**M.802 System efficiency impaired**	The system efficiency is adversely affected.	Increase/establish system efficiency	As required	17

G Technical data

	VAR 150/4 L	VAR 150/4 R
Width	1,412 mm	1,412 mm
Depth	598 mm	598 mm
Height	249 mm	249 mm
Product with packaging	42 kg	42 kg
Product without packaging/ready for operation	35.8 kg	35.8 kg
Rated voltage/measuring voltage of the control circuit	230 V	230 V
Power frequency	50 Hz	50 Hz
Fuse, slow-blow	4 A	4 A
Power consumption	4 … 84 W	4 … 84 W
Max. power consumption (with frost protection element, if available)	684 W	684 W
Current consumption	0.37 A	0.37 A
Minimum cross-section of the supply line	≥ 1.5 mm²	≥ 1.5 mm²
Protection class	1	1
Level of protection	IP10B	IP10B
Air connection area diameter (internal)	150 mm	150 mm
Air connection area diameter (external)	180 mm	180 mm
Heat exchanger material	PET C/aluminium	PET C/aluminium
Max. air volume flow	150 m³/h	150 m³/h
Nominal flow	70 … 115 m³/h	70 … 115 m³/h
Remaining delivery pressure at max. air volume flow	130 Pa	130 Pa
Specific power consumption at max. nominal flow and external compression	0.4 W/(m^3/h) at 115 m^3/h, 100 Pa	0.4 W/(m^3/h) at 115 m^3/h, 100 Pa
Specific power consumption in accordance with the Passivhaus Institut (Passive House Institute)	0.4 W/(m^3/h) at 115 m^3/h, 100 Pa	0.4 W/(m^3/h) at 115 m^3/h, 100 Pa
Ourdoor air filter class (in accordance with EN 779)	F7/F9	F7/F9
Ourdoor air filter class (in accordance with ISO 16890)	ISO ePM2,5 70%/ISO ePM1,0 85%	ISO ePM2,5 70%/ISO ePM1,0 85%
Extract air filter class (in accordance with EN 779)	G4	G4
Extract air filter class (in accordance with ISO 16890)	ISO Coarse	ISO Coarse
Filter surface	0.5 m²	0.5 m²
Thermal efficiency in accordance with EN 13141-7	82 %	82 %

	VAR 150/4 L	VAR 150/4 R
Thermal efficiency in accordance with the Passivhaus Institut (Passive House Institute)	75 %	75 %
Thermal efficiency in accordance with DIBt (Deutsches Institut für Bautechnik – German Institute for Civil Engineering)	84 %	84 %
Frost protection mode active (prevents freezing and thaws condensate)	≤ −3 °C	≤ −3 °C
Max. operating temperature	40 °C	40 °C
Sound power level, level 1 (at 16 Pa)	44 dB(A) at 46 m^3/h	44 dB(A) at 46 m^3/h
Sound power level, level 2 (at 50 Pa)	47 dB(A) at 80 m^3/h	47 dB(A) at 80 m^3/h
Sound power level, level 3 (at 100 Pa)	54 dB(A) at 115 m^3/h	54 dB(A) at 115 m^3/h
Max. sound power level (at 169 Pa)	61 dB(A) at 150 m^3/h	61 dB(A) at 150 m^3/h
Ambient temperature	5 … 40 °C	5 … 40 °C

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