Dantherm®
CLIMATE SOLUTIONS

Original user and service instructions

HCV 300-400-460-500-700

| en | de | fr | es | da | nl | sv | sl |

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DANTHERMGROUP

Dantherm CLIMATE SOLUTIONS

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Abbreviations in this manual

The following abbreviations are used in this manual:

Abbreviation	Description
T1	Outside air inlet into the unit
T2	Supply air from the unit into the dwelling
T3	Extract air from the dwelling into the unit
T4	Extract air from the unit
S1	Temperature sensor no 1
S2	Temperature sensor no 2
S3	Temperature sensor no 3
S4	Temperature sensor no 4
Operating mode A	Standard operating mode on delivery, connection diagram and further information see chapter *Installation options*
Operating mode B	Operating mode with inverted fan, connection diagram and further information see chapter *Installation options*
ISO Coarse 75 %	Standard air filter according to ISO 16890; corresponds to G4 filter according to EN779 (obsolete standard)
ePM1>50%	Pollen filter according to ISO 16890 – absorbs finer particles than ISO Coarse 75 %. Corresponds to F7 filter according to EN779 (obsolete standard)
BP	Bypass damper (allows filtered fresh air to be blown into the dwelling, bypassing the heat exchanger)
IP	Unique address for Ethernet port
DHCP	Automatic assignment of an Ethernet address provided from an external network component (if unit is connected to Ethernet)
PC	PC running MS Windows
USB	Universal serial bus connection
LAN	Local area network
WAN	Wide area network
BMS	Building Management System
PCB	Printed Circuit Board
FFC	Flat Flexible Cable

Operation

Overview

⚠ DANGER

Danger to life due to exhaust gases!

When using open fireplaces in combination with this unit, negative pressure may arise inside the dwelling. The exhaust gases produced at the fireplace will be carried into the dwelling and can endanger your life.

- Operate the unit in fireplace mode when making an open fire inside the dwelling and make sure that the exhaust gases can escape easily.
- Install alarm devices that warn you of dangerous exhaust gases.

Control panel

The control panel comes with four keys, each with an associated LED underneath. In the centre of the membrane keyboard is an illuminated LED indicator with four levels to indicate the fan speed. The LED always indicates the current fan speed regardless of the operating mode.

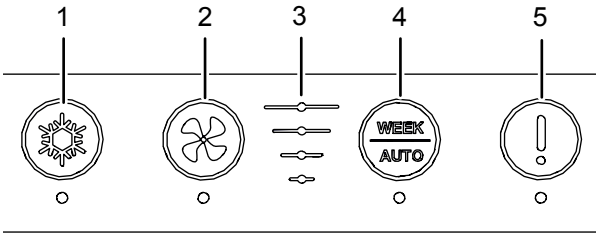

Fig. 1: Buttons and displays on the control panel

Item	Designation	Function
1	Bypass button	**press briefly:** activates/deactivates manual bypassing **press and hold for 5 seconds:** activates/deactivates summer mode
2	Fan speed button	**press briefly:** increases the fan speed by one step **press and hold for 5 seconds:** activates/deactivates fireplace mode
3	Fan speed level indication	indicates the fan speed (stage 0 to 4)
4	*Week/Auto* button	**press briefly:** activates the selected week program **press and hold (for 5 seconds):** activates demand-controlled operation
5	(Filter) alarm button	**press and hold (for 5 seconds):** deactivates the filter alarm resets the timer of the filter alarm (even if the alarm is not triggered) **LED:** orange: check filter red: error alarm (see 48)

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Standard operating modes

NOTICE

Risk of water damage!

In case of heavy condensation, water can leak out of the air duct system which can lead to water damage.

- Never switch off the ventilation unit to save energy. Leave the unit switched on continuously to prevent the formation of condensate.

The unit comes with three standard operating modes:

- Manual operation
- Automatic operation (according to week program)
- Demand-controlled operation

Decide which of the three standard operating modes you want your unit to run in and adjust the settings as desired using the Dantherm PC tool, the Dantherm ResidentialApp or the HRC3 remote control. Note, however, that mandatory minimum values for air exchange may apply.

Manual operation

Controlling the fan speed manually. In manual mode, the ventilation unit operates at the selected fan speed until it is changed manually.

Briefly pressing the fan speed button activates the manual mode. The fan speed is increased by one level (stage 0–4) each time the button is actuated. After stage 4, the fan speed starts again at stage 0. The stage of the fan speed is indicated by the fan speed level indication on the control panel.

INFORMATION

If the unit runs at stage 4 (fan boost) or stage 0 (off) in manual mode, it will automatically switch to stage 3 (nominal mode) after four hours.

Stage 0 of the fan speed can be locked using the PC tool. If stage 0 is locked, the fan speed jumps to stage 1 after stage 4.

When the manual mode is activated, this will be indicated by continuous illumination of the respective LED.

Automatic operation (according to week program)

When automatic operation is activated, the unit will automatically adjust the fan speed to a preset week program.

You can activate the week program from the unit's control panel, but you cannot select it. Selecting one of the 11 week programs (10 preset programs + one customisable program in the PC tool) can only be achieved via the Dantherm app, the HRC3 remote control or the PC tool. For more information on the weekly programmes, please refer to the chapter "Week programs of the time switch".

Briefly pressing the *Week/Auto* button activates automatic operation. When a week program is activated, this will be indicated by continuous illumination of the respective LED.

Demand-controlled operation

Activate demand-controlled operation if you want to control the quality of the room air automatically. In this mode, the measured values of the VOC, RH and/or CO_2 sensors are used to control the quality of the room air. Therefore, the respective sensors must be connected for demand-controlled operation. The CO_2 sensor can only be connected via an installed Accessory Controller (HAC).

Pressing and holding (five seconds) the *Week/Auto* button activates demand-controlled operation. When demand-controlled operation is activated, this will be indicated by the corresponding LED flashing slowly.

Temporary operating modes (override)

With the exception of the automatic bypass function, the temporary operating modes are activated manually and temporarily override the settings of the selected main mode.
The temporary operating modes are stopped automatically by a timer or if certain conditions are not met, but can also be deactivated manually (with the exception of the automatic bypass function).

Bypass mode (cooling)

In bypass mode, the bypass damper is opened, which will guide the airflow around the heat exchanger. The outside air is thus guided into the dwelling without heat recovery.
The bypass mode can be activated in two ways:

- Automatic bypass function
- Manual bypass function

Automatic bypass function

When using the automatic bypass function, the bypass damper is automatically opened/closed when the conditions for automatic bypass are met.
You can change the setpoints for the minimum outdoor temperature (Tmin, default setting: 15 °C) and max. indoor temperature (Tmax, default setting: 24 °C) via the PC tool or the Dantherm HRC3 remote control.

If the conditions for automatic bypass are met, the open status of the damper is indicated by the continuous illumination of the corresponding LED.

Conditions for activating the automatic bypass function:

- The outdoor temperature is at least 2 °C below the extract air temperature
- AND the outdoor temperature is above the setpoint (Tmin)
- AND the extract air temperature is above the setpoint (Tmax).

If one of the following conditions is met, the bypass is deactivated:

- The outdoor temperature is above the extract air temperature.
- The outdoor temperature is at least 2 °C below the setpoint (Tmin).
- The extract air temperature is at least 1 °C below the setpoint (Tmax).

NOTICE

Waste of energy!

If the settings for the bypass temperature are too low, there is a risk that the unit will open the bypass while the central heating inside the dwelling is active.

Manual bypass function

If bypass/cooling is desired and the automatic bypass function is not activated, the bypass can be activated manually.
The bypass is opened once the conditions for manual bypass are met within the set time period (default setting: six hours). The time period can be changed by means of the PC tool.

Briefly pressing the bypass button activates/deactivates the manual bypass mode.
An active bypass mode (open damper) is indicated by the continuous illumination of the corresponding LED.
Note: If the bypass mode is activated but the conditions for the open bypass damper are not met, the activated bypass mode is not indicated by the LED.

Conditions that must be met to activate the automatic bypass function:

- The outdoor temperature is at least 2 °C below the extract air temperature
- AND the outdoor temperature is above 9 °C

Summer mode

In summer mode, the supply air fan is stopped so that only the extract air fan is operating. In this case, the fresh air supply is ensured by opening windows, doors, etc.

INFORMATION

The summer mode is automatically deactivated once the outdoor temperature drops below 14 °C.

Pressing and holding the bypass button for five seconds will activate/deactivate the summer mode.
When the summer mode is activated, this will be indicated by the corresponding LED flashing.

Fireplace mode

The fireplace mode can be activated when you light a fire in the fireplace. The unit will then generate excess pressure for seven minutes to prevent the formation of smoke in the living room. If the fireplace mode is not deactivated manually, it switches off automatically after seven minutes.

INFORMATION

The fireplace mode is only activated once the supply air temperature is above 9 °C.

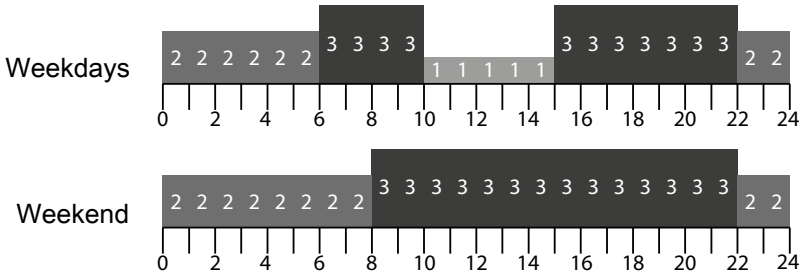
Pressing and holding the fan speed button for five seconds will activate/deactivate the fireplace mode.
When the fireplace mode is activated, this will be indicated by one of the three fan speed LEDs flashing.

Week programs of the time switch

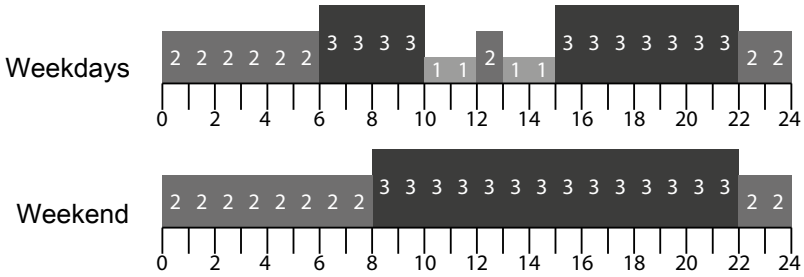
The following illustrations indicate the preset fan stages for one day (0 to 24 h) in the respective programs.
Each of the programs offers two settings:

- Weekdays (Mon–Fri)
- Weekends (Sat–Sun)

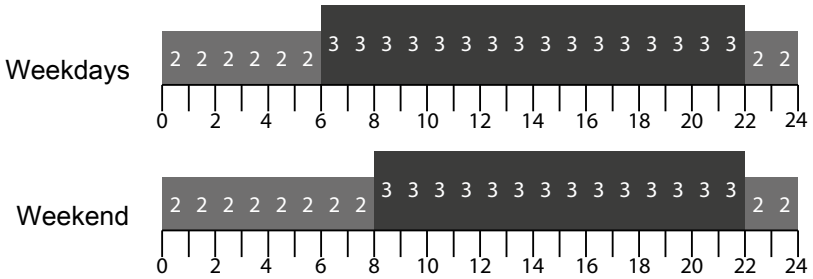
Program 1



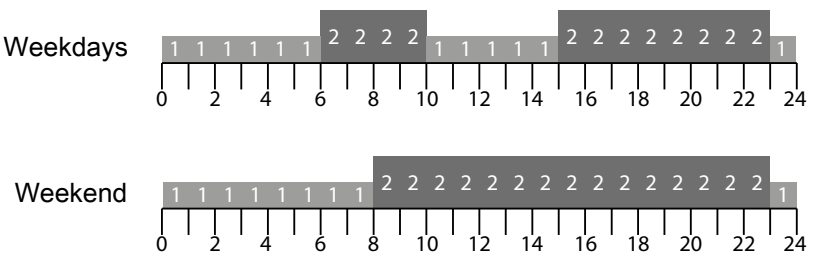
Program 2



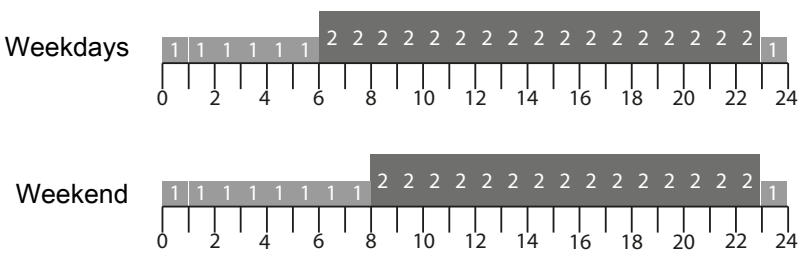
Program 3



Program 4



Program 5



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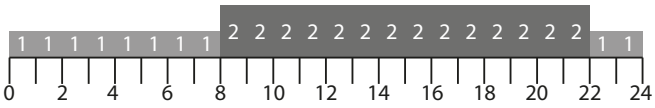
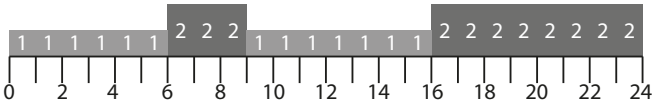
Program 6

Weekdays

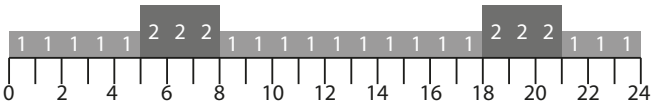


Weekend

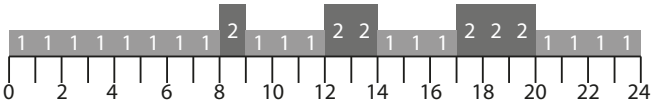


Program 7

Weekdays

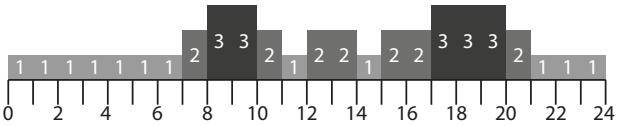


Weekend

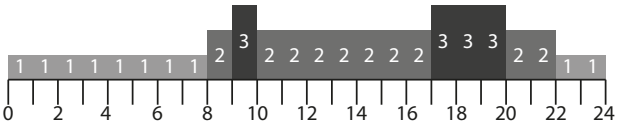


Program 8

Weekdays

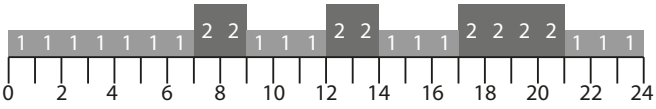


Weekend

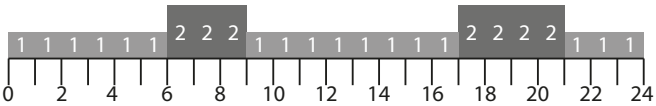


Program 9

Weekdays

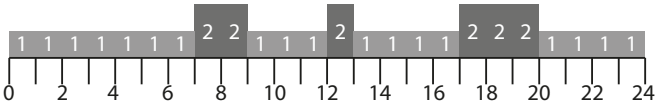


Weekend

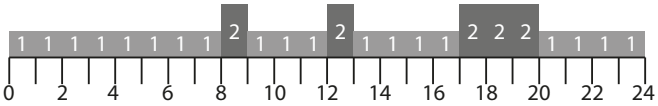


Program 10

Weekdays



Weekend



Program 11

Weekdays

Customised via PC tool

Weekend

Maintenance and care

Preventive maintenance activities are required at regular intervals to ensure efficient and optimal operation without unwanted failure and to ensure an expected service life of at least 10 years.
Note that the filter maintenance intervals may vary depending on the specific ambient conditions. Also be aware and that moving parts are wear parts that must be replaced when worn.

The factory warranty is only valid if it can be documented that regular preventive maintenance activities have been carried out as prescribed. Proof can be provided by a written logbook with a company stamp or similar.

Maintenance intervals

The filters are the only parts that the user can maintain himself/herself. Maintenance of the filter must be carried out at least at the following intervals:

Interval	Task	To be carried out by:
six months	Check filter(s). Replace filter(s) if required.	User
annually	Replace filter(s)	User

Filters – Alarm and inspection

The unit is provided with an integrated timer for the filter alarm which is activated every 12 months by default. The time period for the filter alarm can be changed via the remote control or the PC tool.

When the timer expires, a filter alarm is triggered. An acoustic signal is emitted and the LED under the ⓘ button is illuminated in orange.

Please proceed as follows to inspect the filter and replace it if necessary:

1. Remove the upper part of the front panel.

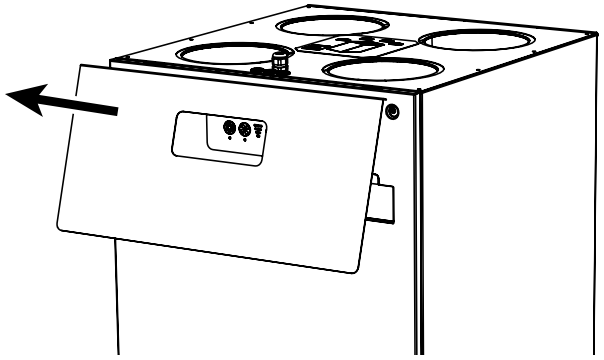


Fig. 2: Removing the upper part of the front panel

2. Remove the insulating cover plates (1) in front of the filters (2).

3. Remove the filters.

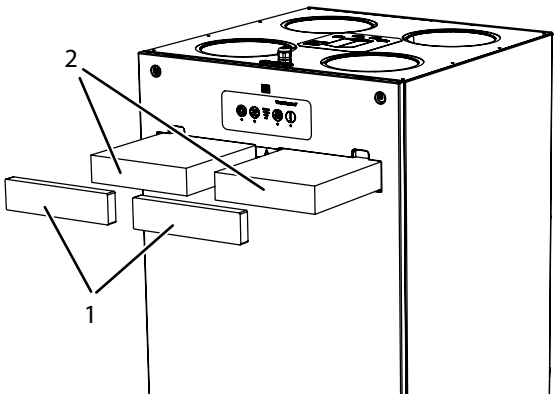


Fig. 3: Removing the filters

4. Check the filters for dirt (after six months). Replace the filters if you notice heavy soiling or clogging. **NOTICE! Always replace both filters, even if only one filter is clogged, to avoid an imbalance in the airflow passing through the unit.**
5. Replace the filters after 12 months, regardless of whether they are clogged or an alarm has been triggered. Dispose of the old filters in accordance with the regulations.
6. Insert the clean filters into the unit. Ensure that the filters are inserted the right way round. The arrows on the filter must point in the direction of the airflow.
7. Reinsert the insulating cover plates of the filter. Note that the cover plates must face outwards with the hard side and inwards with the soft side.
8. Press the ⏻ button for 5 seconds.
   - ⇨ The filter alarm is stopped and the filter alarm timer is reset.
   - ⇨ A brief acoustic signal will be emitted indicating that the filter alarm timer has been reset correctly.

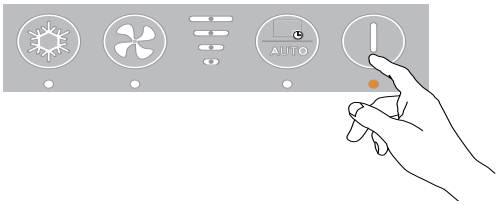


Fig. 4: Stopping the filter alarm

INSTALLATION AND SERVICE MANUAL FOR PROFESSIONALS

Overview

Introduction

Target group

This part of the manual is intended for use by suitably qualified personnel only.

Safety precautions

It is essential to be familiar with the correct operating procedure of the residential ventilation system and all safety measures. Dantherm accepts no liability for operational failures or personal injury resulting from the failure to comply with safety measures.

Safety

Observe the following safety instructions:

- Do not use the unit in potentially explosive rooms or areas and do not install it there.
- Do not use the device in wet rooms (e.g. bathrooms or laundry rooms).
- Ensure that all electric cables outside of the unit are protected from damage (e.g. caused by animals). Never use the unit if electric cables or the power connection are damaged!
- Only plug the power plug into a properly fused (earthed) mains socket.
- Only install the unit in accordance with the national regulations for electrical connection.
- Prevent dust, dirt and moisture from entering the unit during the construction phase by blocking all air ducts and inlets to the unit.
- Do not operate the unit until the house is clean and habitable.
- Observe the operating conditions specified in the "Technical data" chapter.
- Do not cover any air intakes or outlets at any point – except with accessories intended for this purpose.
- Before carrying out maintenance, care or repair work on the unit, remove the power plug from the mains socket. When doing so, pull the plug, not the cable.

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Product description

Scope of delivery and unpacking

Check the scope of delivery for transport damage during unpacking:

1. Report obvious, external damages to the carrier, packaging company, post office, etc. immediately upon receipt and note the damage in the consignment or transport documents.
2. Remove the packaging completely (without using a knife) and dispose of the packaging material according to the local regulations.
3. Check the content of the box.
4. If you notice any transport damage after unpacking the unit or if the delivery is incomplete, contact the responsible sales representative or specialist dealer immediately.

Scope of Delivery

The following parts are included in the scope of delivery:

- 1 x unit HCV 300-400-460-500-700
- 1 x condensation drain hose with hose clamp

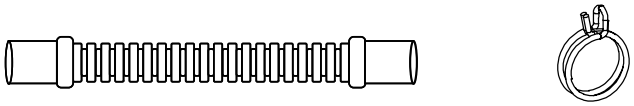

Fig. 5: Condensation drain hose with hose clamp

- 1 x mounting material consisting of:
  - 1 x wall rail
  - 1 x vibration damper
  - 2 x spacer

Fig. 6: Mounting material

- 1 x additional material consisting of:
  - 1 x manual
  - 1 x set of labels, data sheets etc.
  - 1 x hose clamp

Fig. 7: Mounting material

General description

Introduction

The residential ventilation unit HCV 300-400-460-500-700 is designed to supply dwellings with fresh and filtered air. The heat from the extract air is transferred to the supply air inside the unit without mixing the two airflows. The result is energy-efficient ventilation with low heat energy loss.

The unit is designed for dry environments with a temperature > 12 °C, i.e. for utility rooms or rooms with similar heating requirements.

The airflow direction can be changed electronically so that the connected ducts can be routed either to the right or to the left.

The figure below shows the HCV 400/460 unit without the cover.

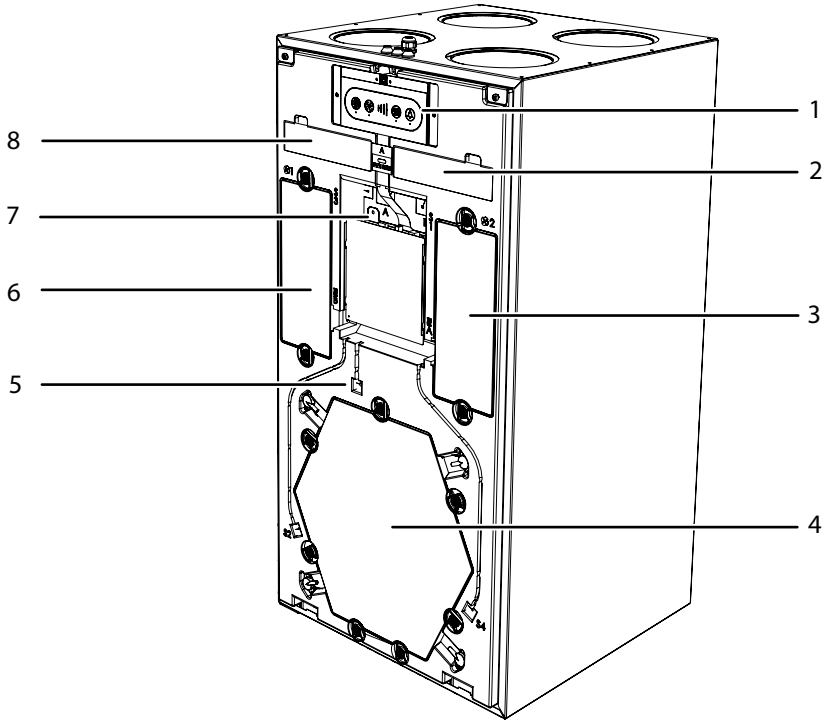

Fig. 8: HCV 400/460

1	Control panel	5	Bypass
2	Filter 2	6	Fan box 1
3	Fan box 2	7	Main PCB
4	Heat exchanger	8	Filter 1

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The figure below shows the HCV 300/500/700 unit without the cover.

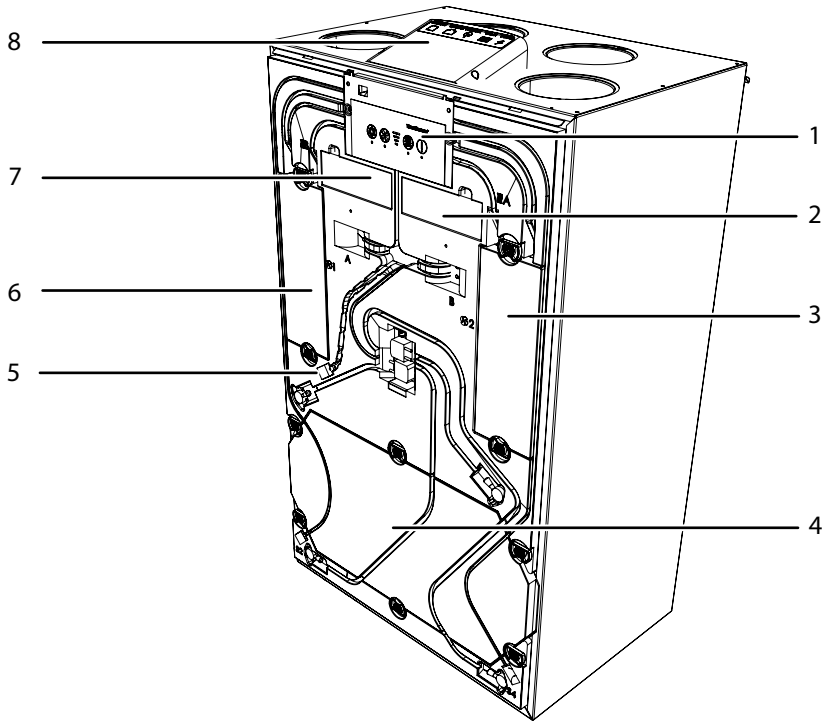

Fig. 9: HCV 300/500/700

1	Control panel	5	Bypass
2	Filter 2	6	Fan box 1
3	Fan box 2	7	Filter 1
4	Heat exchanger	8	Main PCB

Nameplate

The nameplate indicating the version and serial number is located next to the USB port.

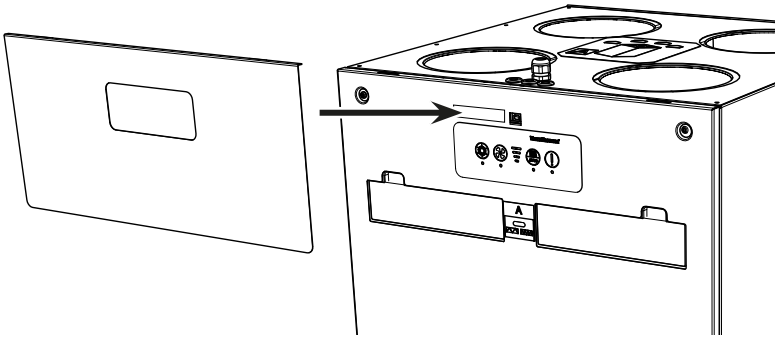

Fig. 10: Nameplate

Operating mode A/B

This section shows the function of the various parts in operating mode A/B. A is the default mode.

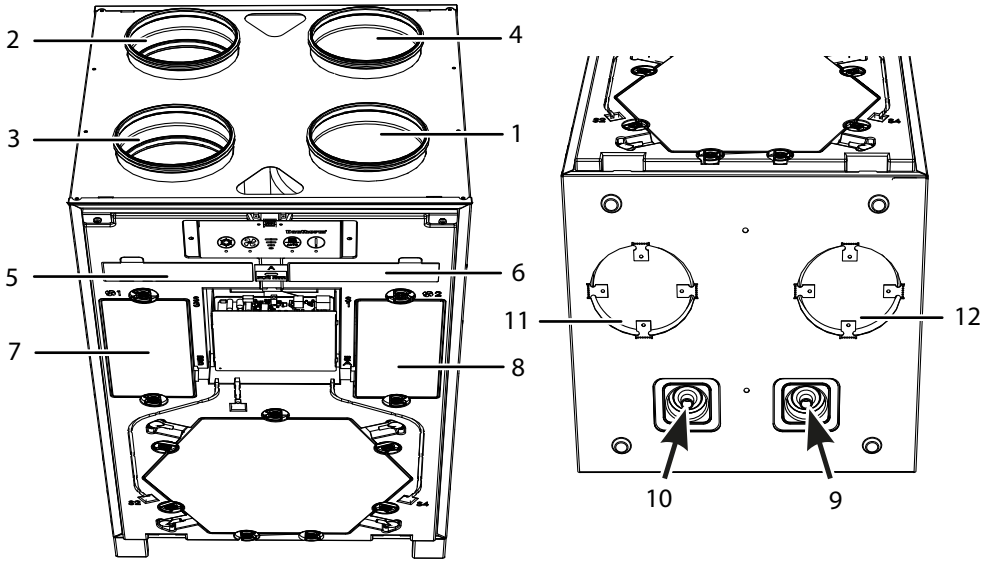

Fig. 11: Components in operating mode A/B

Item	Designation	Mode A	Mode B
1	Duct connection 1	Outside air – T1	Extract air – T3
2	Duct connection 2	Supply air – T2	Exhaust air – T4
3	Duct connection 3	Extract air – T3	Outside air – T1
4	Duct connection 4	Exhaust air – T4	Supply air – T2
5	Filter 1	Extract air filter*	Supply air filter**
6	Filter 2	Supply air filter**	Extract air filter*
7	Fan box 1	Extract air fan	Supply air fan
8	Fan box 2	Supply air fan	Extract air fan
9	Drain 1	Condensate drain	-
10	Drain 2	-	Condensate drain

* The extract air filter is an ISO Coarse (75 %) type filter.
**The supply air filter can be either an ISO Coarse (75 %) type filter or a finer ePM1>50 % filter.

Duct connections at the bottom of the unit

HCV 300, 400 and 460 have additional air duct connections at the bottom, which are closed as standard, but can be used as a floor outlet for the supply air (T2). The table below shows which duct is used as the floor outlet in operating mode A/B and which duct can be closed accordingly at the top of the unit. If required, both ducts can be used simultaneously.

Item	Designation	Mode	Can be closed
11	Duct connection 5	Mode A	Duct connection 2
12	Duct connection 6	Mode B	Duct connection 4

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Airflows

The figure below illustrates the airflows inside the unit.

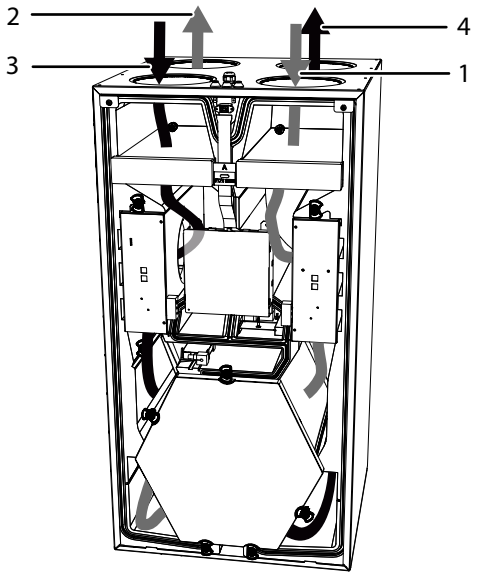

Fig. 12: Airflows in the HCV 300-400-460-500-700

Item	Operating mode A	Operating mode B
1	Outside air	Extract air
2	Supply air	Exhaust air
3	Extract air	Outside air
4	Exhaust air	Supply air

Components description

The individual components of the units included in the standard scope of delivery are described in this section.

Cabinet The outer parts of the cabinet are made of aluzinc sheet metal. To add accessories or replace components, the front cover must be removed. The inside of the cabinet is sound- and heat insulated with a fire-resistant polystyrene foam block.

Heat exchanger The counterflow heat exchanger absorbs the thermal energy from the extract air and transfers thermal energy to the supply air.

Fans The supply air fan provides fresh outside air via the heat exchanger to the distribution ducts through which the air is distributed to bedrooms, living rooms, children's rooms, study spaces, etc. The supply air fan is also used to distribute the air. The exhaust air fan extracts stale, humid indoor air from kitchens, bathrooms, toilets, utility rooms and other wet rooms in the dwelling.

Bypass damper The operation of the heat exchanger is deactivated by the motorised bypass damper. The bypass damper is used in warm summer conditions, when colder outside air can be used to reduce the indoor temperature if the indoor temperature exceeds a preset upper temperature limit.

Control unit The control unit of the appliance is named PCB. The main PCB electrically connects all electrical and electronic parts and various accessory components.

Control unit The control unit on the front of the unit indicates the operating mode and the fan level in which the unit is operating. Both can be selected and changed via the control unit. The control unit also provides other functions such as resetting the filter alarm.

Temperature sensors The unit is equipped with 4 temperature sensors that continuously monitor the temperature changes on 4 sides of the heat exchanger, i.e. in outside air, supply air, extract air and exhaust air.

Air humidity sensor This operating mode is called demand-controlled mode. If an HRC remote control is connected, the level is indicated on the display with the level 3 symbol. A demand-controlled operation ensures that the correct ventilation level is achieved with the lowest possible power consumption.

Filter The unit is equipped with two ISO Coarse cassette filters. These filters protect the heat exchanger and improve the indoor climate by removing dust and particles from both airflows. A filter of class ePM1>50 % (pollen filter) is available as an alternative/accessory. When using an ePM1 filter, always install it between the outside air inlet and the heat exchanger.

Condensate drain The unit is equipped with two drains for the condensate. One of the drains must be connected to the drain hose (1 m drain hose is included) so that the condensate can be directed to a drain. The correct connection to the condensate drain is indicated in the chapter "Installation".

Wall bracket A wall bracket is included for mounting the unit on a wall.

Accessories

The unit is delivered ex-factory without any optional accessories mounted. The accessories are to be mounted prior to initial unit installation, or, if required, after start-up, if additional functionality is requested. For the installation of the accessories, please refer to the instructions supplied with each accessory.

Silencer (HCV 400/460 only)

The HCV 400/460 unit can be equipped with a silencer.

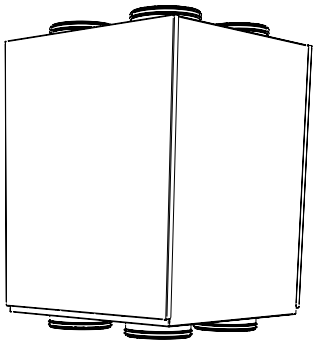

Fig. 13: Silencer for HCV 400/460

Electric preheating coil

The unit can be equipped with an electric preheating coil that preheats the incoming air. The preheating coil increases the temperature of the outside air entering the heat exchanger and thus reduces the risk of ice forming in the heat exchanger in very cold conditions.

Hot water heating coil

The hot water heating coil is controlled by the HAC 2 control unit (accessory). The water heating coil increases the supply air temperature.

Floor bracket (HCV 400/460 only)

The unit can be mounted on a floor bracket if it has to be installed on the floor (e.g. for installation in attics). The floor bracket allows easy access to the condensate drain.

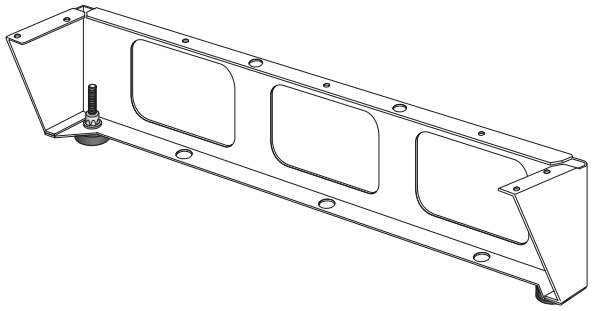

Fig. 14: Floor bracket

Hand-held remote control (HRC 3)

The HRC3 handheld remote control allows you to make numerous settings:

- Setting the ventilation levels
- Checking humidity and temperature
- Activating the cooling function (bypass)
- Setting the manual/demand-controlled mode
- Selecting week programs

The range of the hand-held remote control is up to 30 m. It can be placed on horizontal surfaces or hung on the wall.

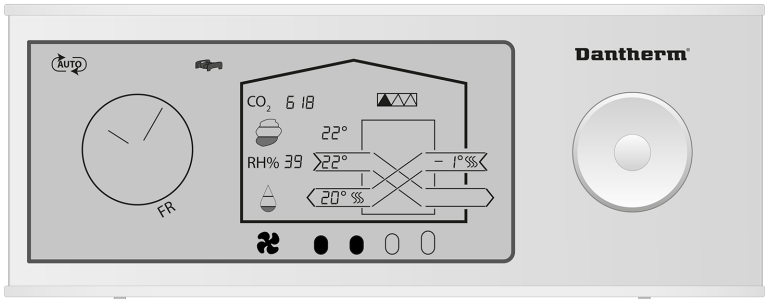

Fig. 15: Hand-held remote control

Wired remote control (HCP 10/11)

A wired remote control (HCP 10/11) without display can be connected to the unit as an alternative to the hand-held remote control.

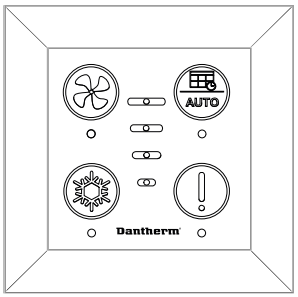

Fig. 16: Wired remote control HCP 10/11

Accessory control (HAC 2)

A variety of accessories can be connected to the unit via the accessory control HAC 2.

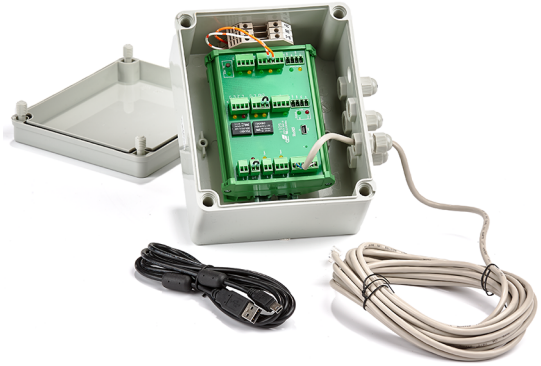

Fig. 17: Accessory control HAC 2

VOC, humidity and CO_2 sensor

The unit can be equipped with a VOC (volatile organic compounds) sensor, a humidity sensor (RH %) and/or a CO_2 sensor.
These sensors provide a continuous quality control of the indoor air and adjust the airflow accordingly, which results in sufficient ventilation with the lowest possible electrical power consumption. This operating mode is called demand-controlled mode. If an HRC remote control is connected, the level is indicated on the display with the level 3 symbol.

A demand-controlled operation ensures the desired ventilation performance with the lowest possible power consumption.

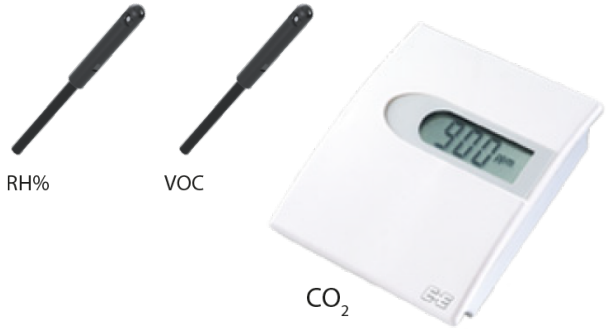

Fig. 18: Humidity sensor (left), VOC sensor (centre) and CO_2 sensor (right)

Filter

Replacement filters in sets of 2 ISO Coarse filters or 1 ISO Coarse filter plus 1 ePM1 filter (pollen filter) are available as spare parts.

Special operating modes

In this section, the operation of the system under special conditions is described. For details on the standard operating modes, please refer to page 9.

Preheating (with preheating coil)

If a preheating coil is installed, the unit can additionally heat the outdoor air (T1) electrically to reduce the risk of frost and increase the supply air temperature. However, if the preheating coil cannot provide for a frost-proof heat exchanger, the defrosting program will start.

- The preheating process is controlled according to a complex algorithm involving several sensors. The sensors constantly measure temperatures while the system keeps the energy consumption to a minimum.
- The temperature of the outside air is increased just enough to maintain the airflow and, if possible, to avoid that the defrosting mode is started.
- Depending on the temperature conditions, preheating increases/decreases by 10 % every 60 seconds.

The temperature setpoints during operation with an active preheating coil are fixed and cannot be changed.

Defrosting

In cold conditions where the T1 outdoor air is below -3 °C and ice may form due to the condensate in the heat exchanger, the unit will start defrosting.

INFORMATION

The defrost mode is a safety mode. During defrosting the unit cannot change to another operating mode until defrosting is completed. When the defrost mode is active, the HRC 3 indicates dEF on the display.

There are two different procedures for defrosting:

- no fireplace in the house (default setting)
- fireplace in the house

You can change the defrosting procedure via the PC tool. However, the setpoints for defrosting cannot be changed.

Standard defrosting procedure

The standard defrosting procedure without a fireplace in the house will trigger the following steps:

- The speed of the supply air fan decreases slowly until the minimum speed is reached.
- After 10 seconds, the supply air fan switches off completely while the exhaust air fan continues to run to defrost the ice by means of warm air from the interior rooms.
- When the defrosting process is completed, the supply air fan starts at minimum speed and increases its speed until the originally desired speed is reached.

The defrosting process creates a negative pressure in the dwelling. Depending on the air tightness of the dwelling, the negative pressure leads to the following:

- If the dwelling is not completely airtight, the "missing" supply air will penetrate through small leaks in the dwelling envelope. In this case, the conditions for defrost mode are favourable.
- If the dwelling envelope is completely airtight and the "missing" supply air cannot enter the dwelling via other ways, defrosting is not as efficient and is only performed in low/freezing temperature conditions. **NOTICE! Under such conditions, we strongly recommend using a preheating coil.**

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Alternative defrosting procedure

If there is a fireplace in the house, the alternative defrosting procedure is selected via the PC tool and will trigger the following steps:

- The speed of the supply air fan and exhaust air fan decreases slowly until the minimum speed is reached.
- After 10 seconds, both fans are switched off completely for four hours.
- When the defrosting process is completed, both fans start at minimum speed and increase their speed until the originally desired speed is reached.

Stopping the operation

If no preheater is installed and the outside temperature is -13 °C for more than 4 minutes and 25 seconds, the operation of the unit is switched off for 30 minutes. This is also carried out if the defrost mode is activated. After 30 minutes, the unit tries to start and the previous operating mode will be activated.

INFORMATION

If an electric preheating coil is installed, this safety shutdown procedure is automatically deactivated.

Description of the components of the control unit

The control system of the unit is located on the main PCB along with other outputs and inputs.
The control unit with LED display is connected to the main PCB via a flat cable.

The general architecture of the system control is shown in the figure below:

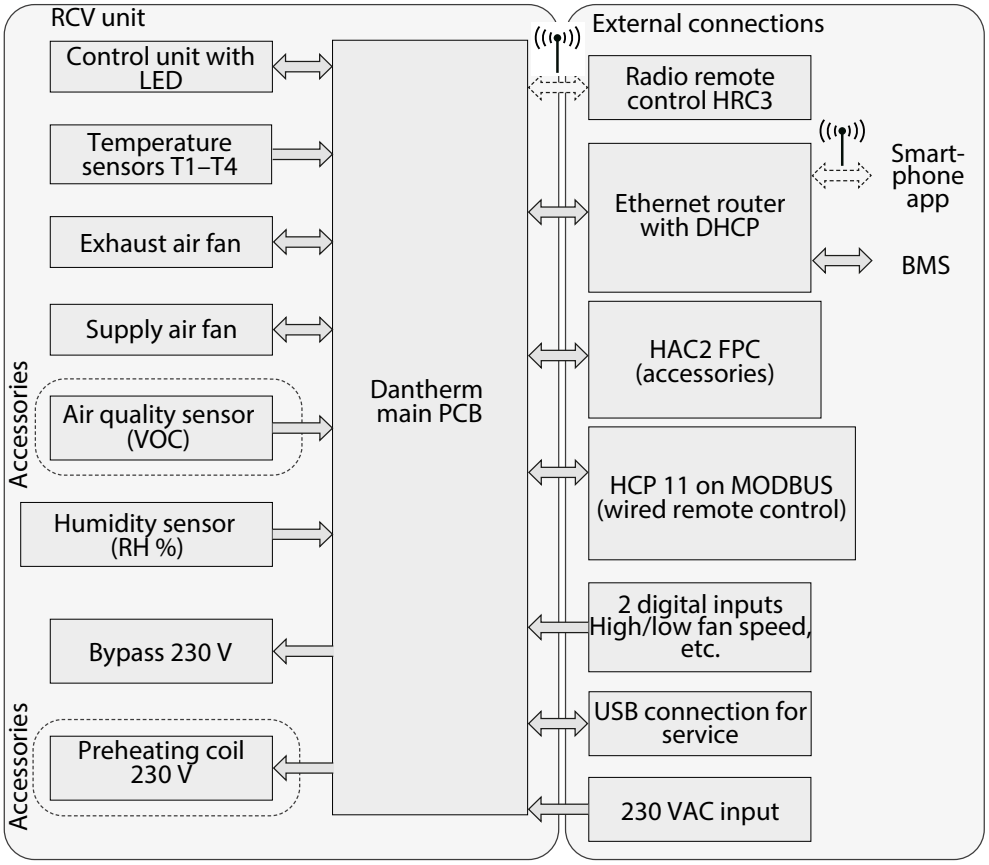


Fig. 19: Components of the system control

Control unit components mode A/B

The figure below shows various control unit components in mode A/B:

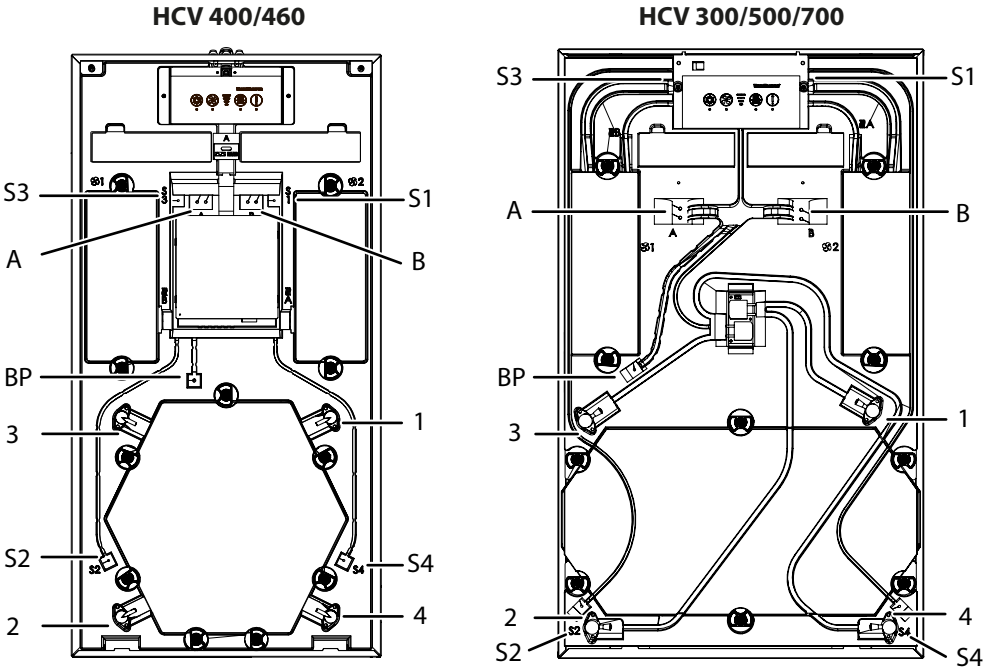


Fig. 20: Control unit components in mode A/B

Item	Operating mode A	Operating mode B
S1	T1 temperature sensor – outside air	T3 temperature sensor – extract air
S2	T2 temperature sensor – supply air	T4 temperature sensor – exhaust air
S3	T3 temperature sensor – extract air	T1 temperature sensor – outside air
S4	T4 temperature sensor – exhaust air	T2 temperature sensor – supply air
A	VOC and RH% sensor (accessories)	Not used
B	Not used	VOC and RH% sensor (accessories)
1	P1 pressure connection – outside air	P3 pressure connection – extract air
2	P2 pressure connection – supply air	P4 pressure connection – exhaust air
3	P3 pressure connection – extract air	P1 pressure connection – outside air
4	P4 pressure connection – exhaust air	P2 pressure connection – supply air
BP	Cable for bypass	Cable for bypass

Control unit and main PCB

The figure below shows the main PCV and the control unit of the HCV units.

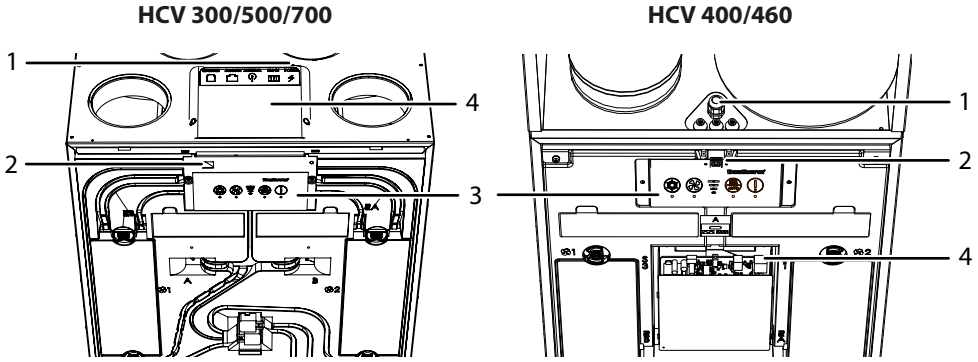


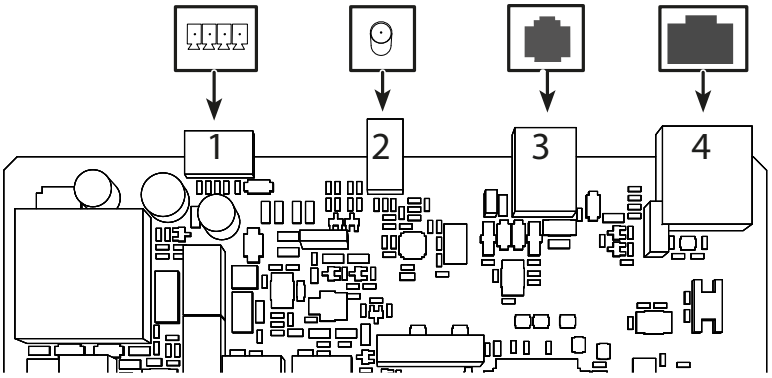
Fig. 21: Control unit and main PCB

1 Power supply
2 USB connection for:
• using the PC tools for calibration, software update, changing settings etc.
• reading out the error list
3 Control unit
4 Main PCB

External connections (main PCB)

The figure below shows the external connections of the main PCB. See also the circuit diagram in the chapter *Annex* for the connection to the different ports.

HCV 400



HCV 300/500/700

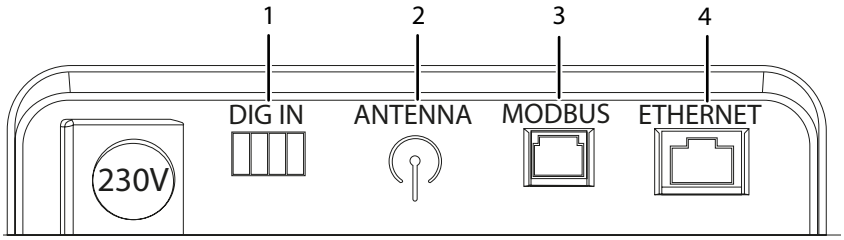


Fig. 22: External connections

1 Dig In:
External digital input to select specific operations
2 Antenna:
Antenna slot for connection to the radio remote control
3 Modbus:
The Modbus RTU port is intended for internal communication between the unit and Dantherm accessories (HAC2 + HCP 11 + FPC)
4 Ethernet:
LAN connection

MODBUS

MODBUS RTU is used for internal communication between the unit (main PCB) and Dantherm accessories (HAC, FPC or HCP11). Modbus RTU is connected via the RS485 port.

INFORMATION

An external Building Management System (BMS) cannot be connected as Modbus RTU via the RS485 connection or via Dantherm accessories (HAC, FPC, or HCP11).

Modbus TCP/IP: The Dantherm ventilation units are provided with the option to communicate with Modbus TCP/IP via the Ethernet connection. This can be used for Building Management Systems (BMS) or communication with smartphone apps.

Connecting to LAN

Connect the unit to a LAN port using a standard Ethernet cable with an RJ45 connector.
If a non-prefabricated cable is used, first install a sufficient cable length through the house. Mount the RJ45 connector using the standard Ethernet cable crossover terminology as specified in T568B. These assembly instructions can be found on the internet, for example on Wikipedia.

The unit can be controlled via a smartphone app (IOS and Android) if your unit is connected to the same network via WiFi.

IP address assignment status	Description
Dynamic IP	If the unit is connected to a router with an integrated DHCP server, it will automatically retrieve the IP address from the router when the unit starts up.
Static IP	The PC tool allows you to assign a static IP address to the unit.

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Installation

General requirements

Warranty claims

Using a unit outside the specified conditions and contrary to the intended use leads to the loss of all warranty claims. The warranty is limited to units that have been installed exclusively by trained and certified personnel.

Location requirements

The following should be considered when selecting an appropriate installation site:

- Ensure that installation mode A (standard) or B (optional) can be implemented at the installation site. If mode B is preferred, please follow the change-over procedure on page 32. For more information on the air duct connections in mode A/B, please see page 39.
- The unit is intended for installation in dry environments at temperature levels >12 °C, i.e. for utility rooms or rooms with similar heating requirements.
- Ensure that the wall structure is able to support the weight of the unit regardless of the type of wall bracket.
- Provide extra space to ensure a proper installation and access for maintenance activities (see following figure).

The additional space required for maintenance activities is depicted in the following figure (top view).

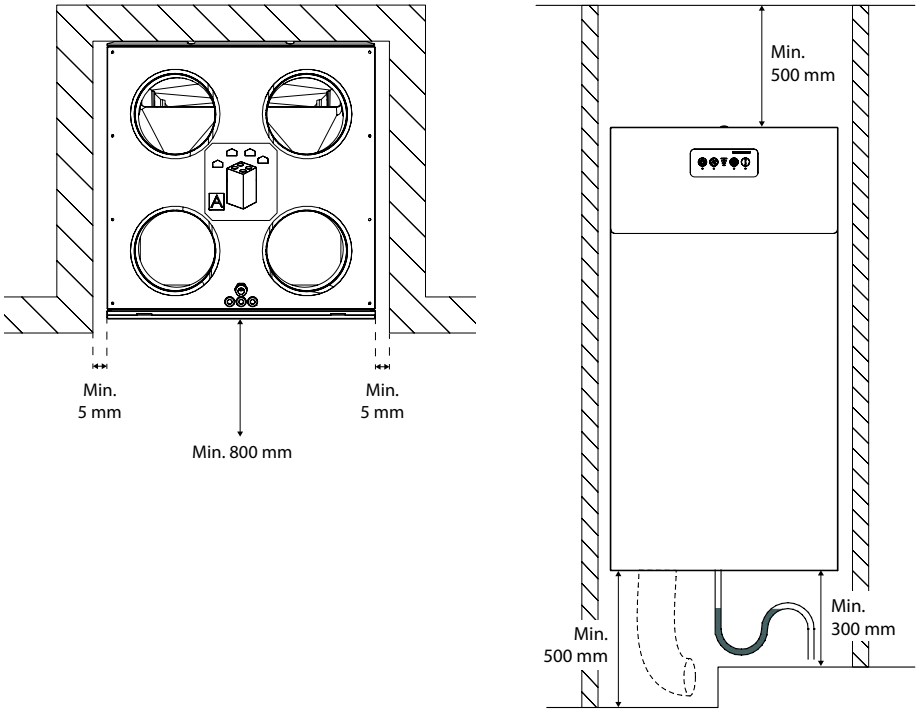

Fig. 23: Space requirement for maintenance activities

Installation options

Change-over to operating mode B

The unit offers the option to exchange the duct connections as described in the section "Product description – General description". Mode A is the default setting. In the following section the change-over from operating mode A to operating mode B is described.

⚠ DANGER

Risk of electric shock!

You can be severely injured by an electric shock.

- Always disconnect the unit from the mains by removing the mains plug from the socket before opening the unit!

The air ducts leading into the dwelling can either be connected to the top right or top left side of the unit. Operating mode A is the default setting.
If operating mode B is required for installation, follow the procedure below and check the information on the label to connect the condensate drain correctly.

1. Affix the new label (1) for operating mode B to the top of the unit.
2. Remove the upper part of the front panel (2).
3. Loosen the two screws (3) in the upper left and right corners (underneath the upper part of the front panel).
4. Remove the remaining part of the front panel (4).
5. Affix the new calibration label to the heat exchanger (5).

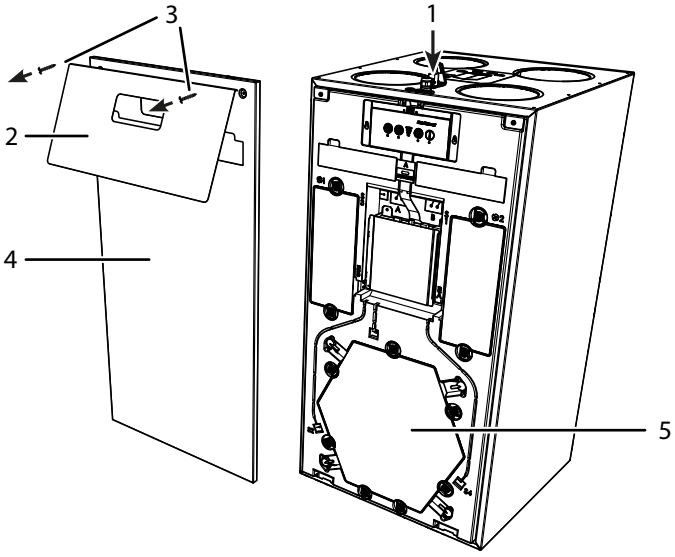

Fig. 24: Removing the front panel and affixing the labels

6. **HCV 400-460:**
   Remove the cover in front of the main PCB.

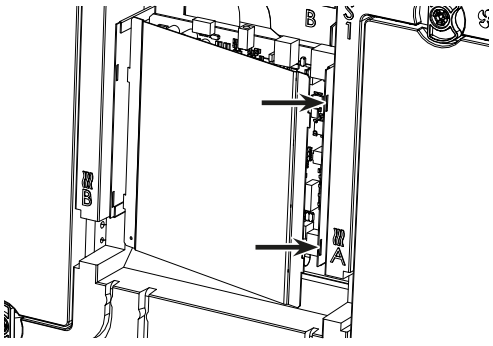

Fig. 25: HCV 400-460: Uncovering the main PCB

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7. **HCV 300-500-700:**
   Loosen the two screws on the control unit and fold up the control unit.

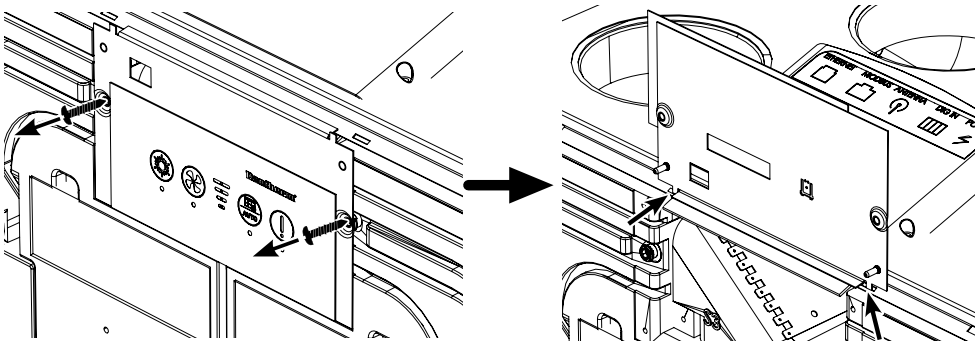
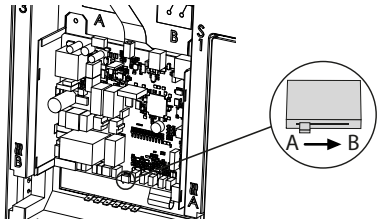


Fig. 26: HCV 300-500-700: Loosening the screws on the control unit and folding up the control unit

8. Set the function switch on the main PCB to position "B".

HCV 400-460



HCV 300-500-700

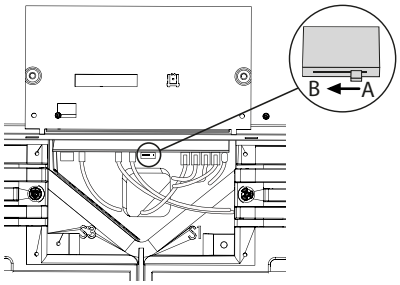
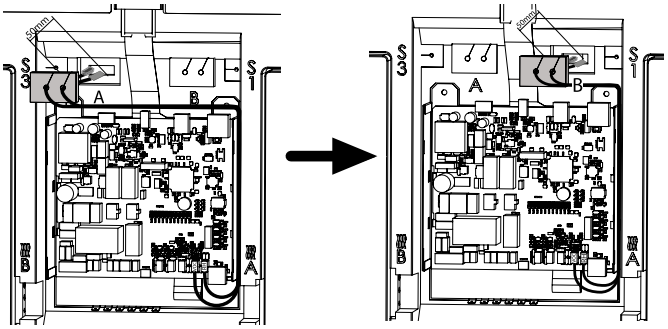


Fig. 27: Function switch in position "B"

9. Change the cable gland incl. humidity sensor (and VOC sensor, if available) to the sensor position for operating mode B. **Information:** Make sure that the distance between the sensor head and the cable gland is 50 mm to ensure correct measurements of the humidity level (and air quality).

HCV 400-460



HCV 300-500-700

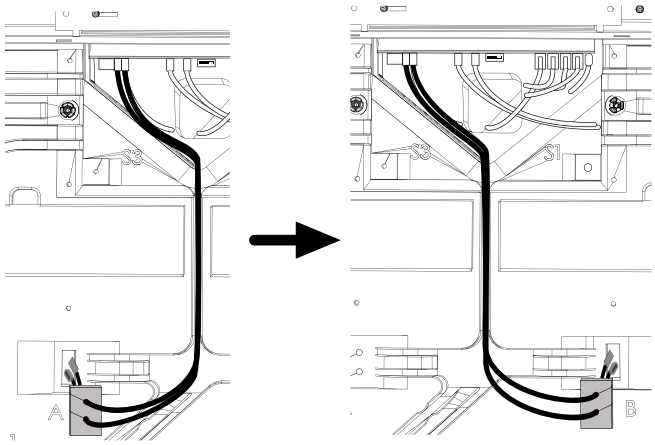


Fig. 28: Repositioning the cable gland with sensor

10. Wire other accessories, if any, according to the new operating mode B.
11. Fit the main PCB cover/control unit.
12. Reposition the drain hose from the connection for operating mode A (1) to the connection for operating mode B (2). Ensure that the unused drain is securely closed with a plug.

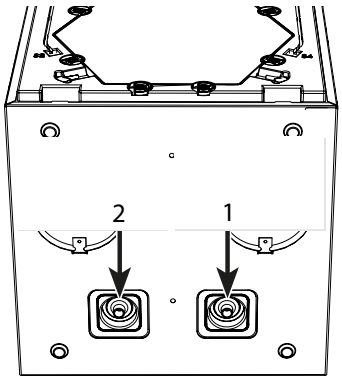


Fig. 29: Changing the condensate drain

13. Change the position of the two filters if an optional pollen filter (ePM 1>50%) is used. Check the correct position of the pollen filter using the description on page 20.

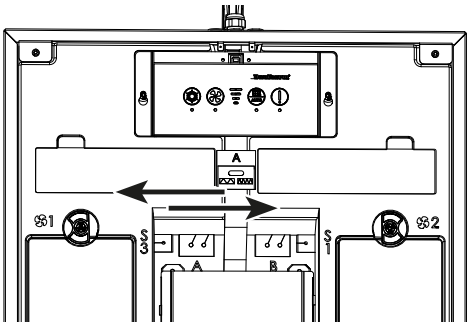


Fig. 30: Repositioning the filters (if required)

14. Connect the air ducts as indicated on the label and described on page 39.
15. Calibrate the unit as described on page 41.
16. Fit the front and upper part of the front panel.

Assembly

Wall mounting

Please proceed as follows to mount the unit on a wall.

1. Attach the wall bracket observing the dimensions given in the illustration below. Make sure you use the appropriate wall plugs and screws.

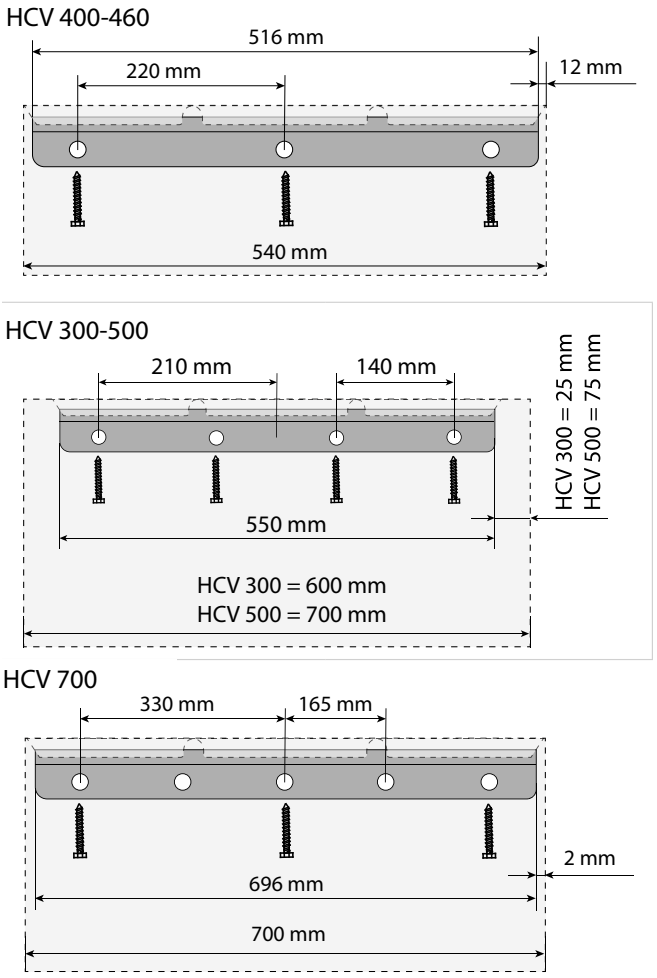


Fig. 31: Mounting the wall rail

2. Mount the two spacers on the back of the unit.

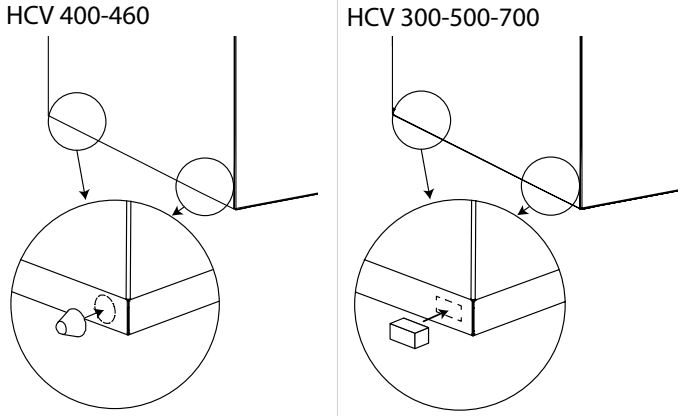


Fig. 32: Mounting the spacers

3. Mount the vibration damper (1) to the wall rail (2). Then lift the unit onto the wall rail.

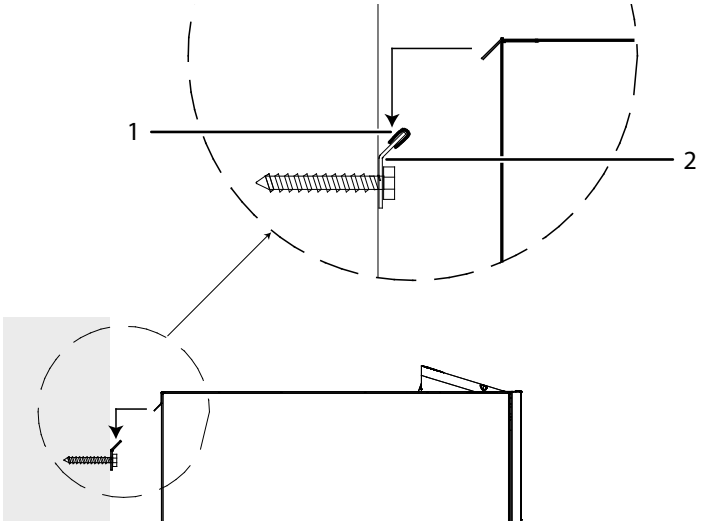


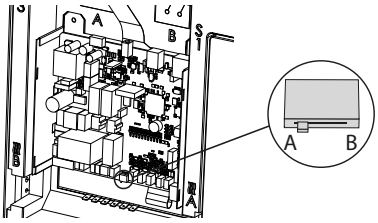
Fig. 33: Mounting the vibration damper and unit to the wall rail

Condensate drain

The unit is fitted with two condensate drains on the bottom side. Depending on the operating mode (A/B), one drain must be connected to the condensate drain hose, while the other drain is fitted with a plug.

1. Check the operating mode of the ventilation system (A/B) on the main PCB.

HCV 400-460



HCV 300-500-700

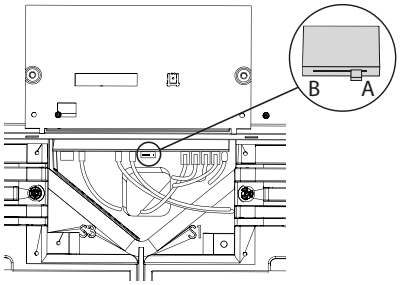


Fig. 34: Checking the function switch on the main PCB

2. Determine the correct condensate drain on the bottom side of the unit. The right drain (1) is intended for operating mode A, the left drain (2) for operating mode B.
3. Make sure that the plug (3) is inserted in the unused drain (1 or 2), otherwise water may drain into the dwelling and cause damage.

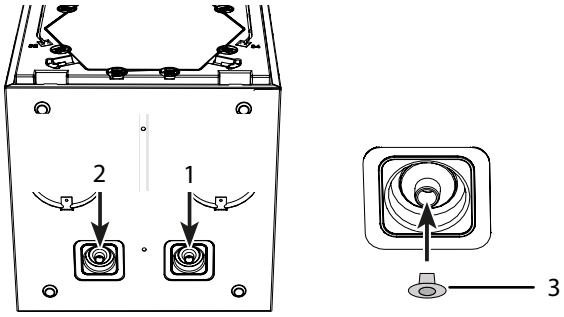


Fig. 35: Inserting the plug

4. Connect the condensate drain hose to the drain used and secure the condensate drain hose with a hose clamp.

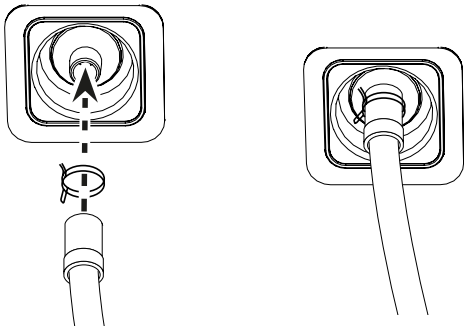


Fig. 36: Connecting the condensate drain hose

5. Route the condensate drain hose in a way that a siphon is created that is at least 100 mm high. The siphon can be created in two ways:
   A) as a circle
   B) in the shape of an S

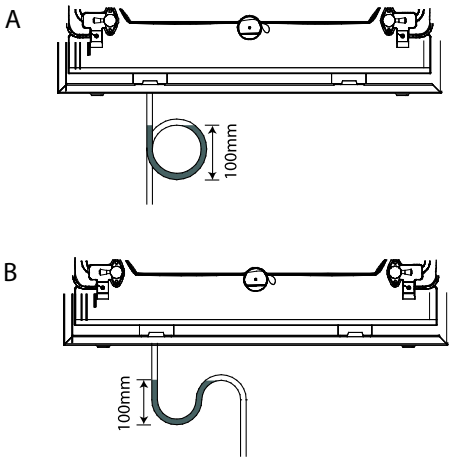


Fig. 37: Routing the condensate drain hose

6. **HCV 400-460 only:** When routing the siphon directly under the unit, use the hose clamp supplied. To do so, fix the hose clamp in the opening on the underside of the unit and guide the condensate drain hose through the hose clamp to create a siphon.

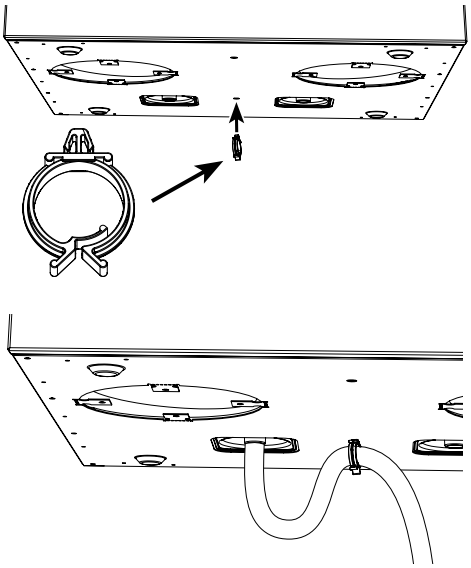


Fig. 38: HCV 400-460: Creating a siphon

7. Fill the siphon with at least 0.5 l of water.

8. Guide the hose to a drain and make sure it is not exposed to frost. Install a heating cable around the drain hose if the insulation is not sufficient to provide a frost-proof drain hose.
9. Ensure a minimum inclination of 1 % (1 cm/metre).

Connecting the air ducts

NOTICE

Danger from dust!

Moisture, dirt or dust entering the duct system may damage the unit.

- Protect ducts and connections until the house is cleaned and ready for occupancy.

INFORMATION

The dimensions of ducts and silencers must comply with national standards and building regulations. Please contact your Dantherm dealer if you need more information.

✓ All four ducts are fully provided with at least 50 mm insulation.

1. Before connecting the air ducts, observe which inputs and outputs are available in operating mode A or operating mode B.
2. Ensure that the diameter of the air ducts is equal or larger than the one of the unit connection. For the dimensions, please refer to the chapter "Technical data" on page 55.
3. Fit NPU couplings (1) in the outlets of the unit and connect the air ducts to the NPU couplings.

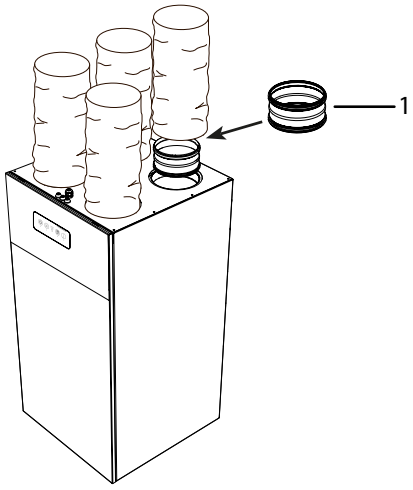


Fig. 39: Fitting NPU couplings and connecting the air ducts

4. **HCV 400-460 only:** Check whether the unit must be installed with or without silencers and, if necessary, fit silencers (1) in the outlets of the unit. Then connect the air ducts to the couplings of the silencers.

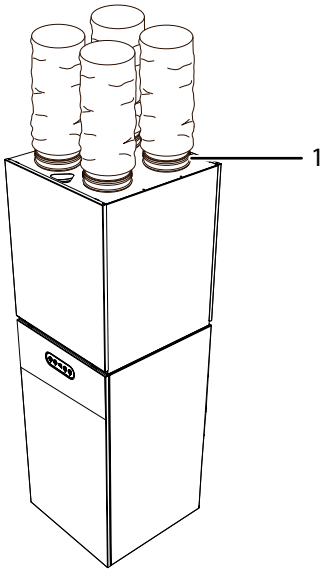


Fig. 40: Fitting silencers and connecting the air ducts

Initial start-up and calibration

To control the humidity level and to achieve the right comfort level, it is important to regulate the amount of supply air entering the house and the amount of exhaust air being discharged from the house.
This is achieved by setting the fan speed in a nominal mode corresponding to speed 3.

Calibration is required in the following situations:

- Prior to initial start-up
- After changes to the size of the house
- After renovations affecting the air duct system
- After changing the filter type, e.g. in connection with the pollen season

INFORMATION

Pour 0.5 l of water into the siphon before carrying out the calibration to prevent air from escaping from the condensate drain.

INFORMATION

Observe the following:

- The required airflow for each room must comply with the national standards for ventilation and/or building regulations.
- Major adjustments to the valves may greatly affect the main airflow. For this reason, check the main airflows and adjust them if necessary. In order to ensure reliable operation and to establish the conditions for mass balancing within the system, the volume of the final total extract airflow achieved during calibration must be 5 to 10 % greater than the volume of the total supply airflow achieved.

NOTICE

Risk of damages caused by humidity!

If the volume of the supply air flow is greater than the volume of the extract air flow, humid air is introduced into the dwelling. This can cause damage to the dwelling if the vapour barrier is not 100 % airtight.

- When adjusting the airflow of the unit it is important to ensure that the extract air flow is 5–10 % greater than the supply air flow.

Calibration tools

There are two ways to calibrate the airflow

- via the control unit on the unit (see description below)
- via the PC tool (follow the step-by-step description in the PC tool)

With both methods, the airflow must be calibrated by measuring ΔPa over the heat exchanger using the pressure nozzles behind the front panel.
Dantherm recommends a hand-held pressure gauge such as Testo 510 or similar.

Please proceed as follows to prepare calibration of the unit:

1. Determine the required volume flow according to the national regulations based on the size and pressure drop of the house. **NOTICE! The supply air volume flow must under no circumstances be higher than the extract air volume flow, as this can lead to moist air being pressed into the dwelling structure, which can have harmful, negative effects on the dwelling.**

2. Note the desired values for the supply and extract air volume flows on the label located on the cover of the heat exchanger in front of the unit [m³/h].

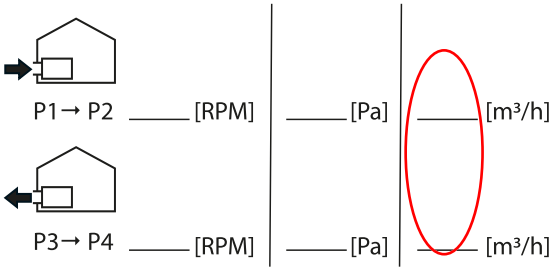


Fig. 41: Writing down the required extract airflows

3. Read the corresponding pressure drop from the airflow diagram on the heat exchanger and note this value in front of the unit [Pa].

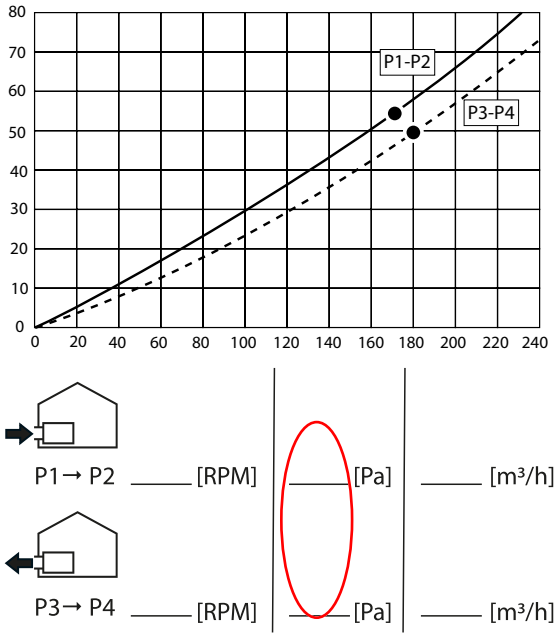


Fig. 42: Writing down the pressure loss

Calibration via the control unit

Calibrate the fan speed via the control unit on the front of the unit.

1. Press and hold the fan speed button (B) and the *Week/Auto* button (D) for five seconds.

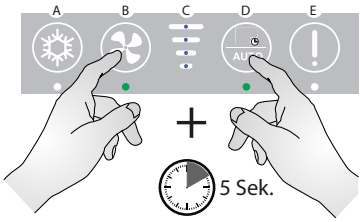


Fig. 43: Activating the installation mode

- ⇨ The LEDs under the buttons start flashing.
- ⇨ The fan speed changes to stage 3.
- ⇨ The unit is in installation mode for one hour. In installation mode, the bypass, frost protection and filter flocculation compensation are switched off to avoid interruption during calibration.

2. Check the current operating mode of the unit (A/B). **Information:** The figure below shows P1 and P2 in operating mode A. An illustration for calibration in operating mode B is provided on the label for operating mode B, which is included in the scope of delivery.

3. Connect the ΔPa measuring device (pressure gauge) across the supply air direction P1 - > P2.

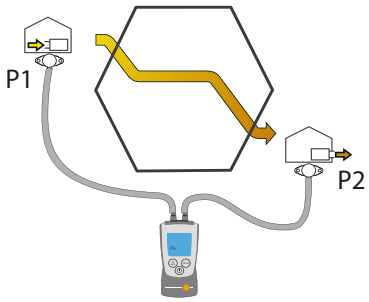


Fig. 44: Operating mode A: measuring the pressure loss via P1 - > P2

4. Compare the ΔPa value on the pressure gauge with the value P1 - > P2 that you have previously noted down.

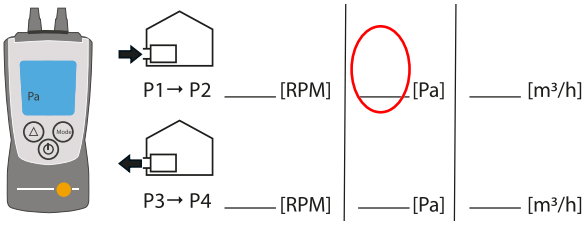


Fig. 45: Comparing the pressure loss values

5. Press and hold the bypass button (A) and adjust the supply air:
   - ⇨ Press the fan speed button (B) to decrease the supply air.
   - ⇨ Press the *Week/Auto* button (D) to increase the supply air.
6. Read the ΔPa value on the measuring device and adjust the supply air until the measured ΔPa value is as close as possible to the value P1 - > P2 noted on the label.

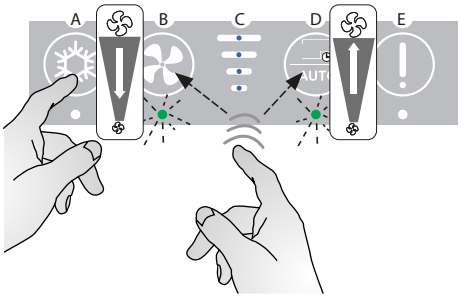


Fig. 46: Adjusting the supply air

7. Disconnect the pressure gauge from P1 - > P2 and connect the pressure gauge across the extract air direction P3 - > P4 (operating mode A).

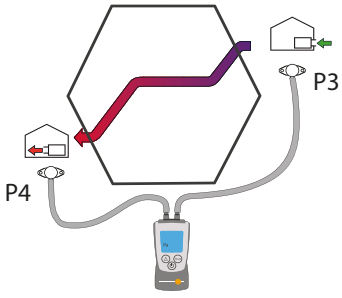


Fig. 47: Operating mode A: measuring the pressure loss via P3 -> P4

8. Compare the ΔPa value on the pressure gauge with the value P3 - > P4 that you have previously noted down.

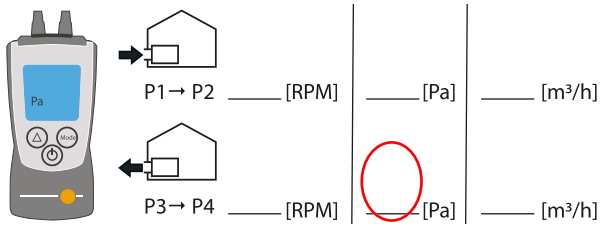


Fig. 48: Comparing the pressure loss values

9. Press and hold the (filter) alarm button (E) and adjust the extract air:
   - ⇨ Press the fan speed button (B) to decrease the extract air.
   - ⇨ Press the *Week/Auto* button (D) to increase the extract air.
10. Read the ΔPa value on the measuring device and adjust the extract air until the measured ΔPa value is as close as possible to the value P3 - > P4 noted on the label.

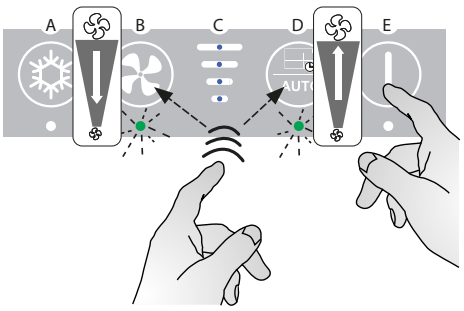


Fig. 49: Adjusting the extract air

en

Maintenance and troubleshooting

General maintenance instructions

To ensure that the unit always meets the technical requirements, preventive maintenance activities have to be carried out at specified intervals. This can prevent breakdowns and inefficient operation and maximise the service life of the unit, i.e. to 10 years or more.
It is particularly important to note that maintenance intervals for filters can vary depending on the specific environment. Moving parts are subject to wear and tear and need to be replaced when they are worn out, depending on their specific environment.
The factory warranty is only valid if preventive maintenance activities have been carried out and documented. This documentation can be in form of a written maintenance protocol.

⚠ DANGER

Risk of electric shock!

You can be severely injured by an electric shock.

- Always disconnect the unit from the mains by removing the mains plug from the socket before opening the unit!

Scope of maintenance

The following parts require preventive maintenance:

Maintenance interval	Task	To be carried out by:
every 6 months	Check the filters. Replace filter(s) if required.	User
annually	Changing the filter	User
every 2 years	Inspecting and cleaning the fans	Trained specialist personnel
	Inspecting and cleaning the heat exchanger	Trained specialist personnel
	Inspecting and cleaning the bypass	Trained specialist personnel
	Cleaning the internal air duct	Trained specialist personnel
	Checking and cleaning drip tray, drain and drain hose	Trained specialist personnel

Cleaning the interior of the unit

Every two years, the unit must be opened to check and clean some components.

1. Remove the upper part of the front panel (1).
2. Loosen the two screws (2) in the upper left and right corners (underneath the upper part of the front panel).
3. Remove the remaining part of the front panel (3).

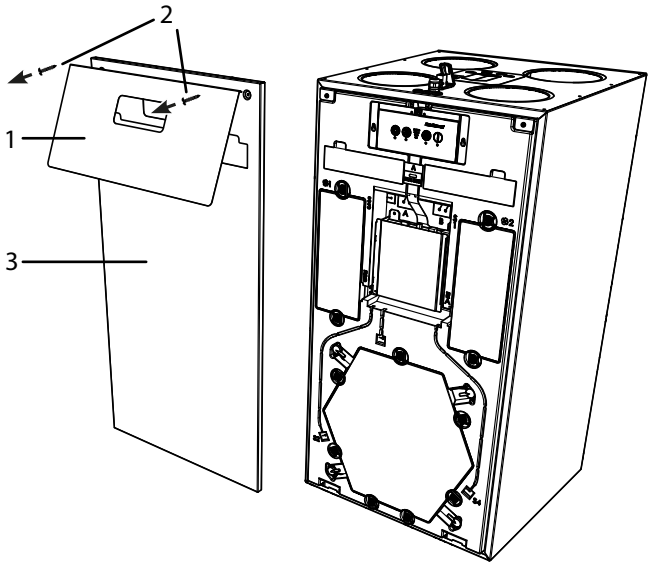


Fig. 50: Opening the unit

Inspecting and cleaning the fans

⚠ CAUTION

Sharp edges!

The fan cabinets may have sharp edges on which you can cut yourself.

- Wear protective gloves when inspecting and cleaning the fan cabinets.

1. Remove the covers in front of the fan cabinets.
2. Pull the fan cabinets out of the unit.

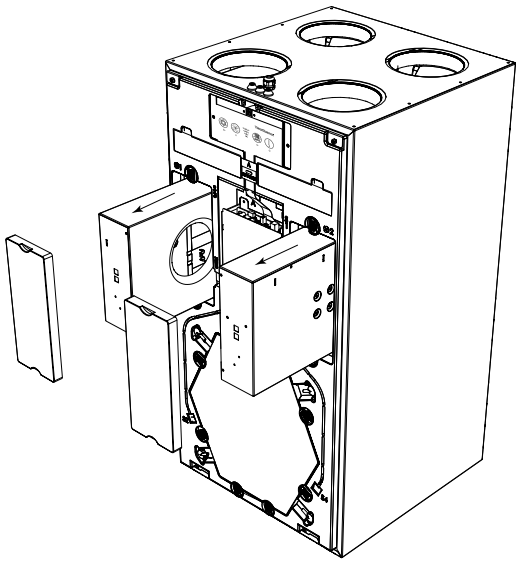


Fig. 51: Removing the fan cabinets

3. Carefully clean the fan blades with compressed air or a brush through the opening on the underside of the fan cabinet. All blades must be clean in order to maintain the balance of the fan. Be careful not to remove the small stabilizer pieces on the fan as this may cause vibrations.
4. Turn the fan with your fingers and check whether you can hear any noise from the bearing. If you can hear noise from the bearing, the fan probably needs to be replaced.
5. If the unit is equipped with a preheating coil, clean the latter as best as possible without taking the fan box apart. Check the heating elements for visible damage.

Troubleshooting

In this section you will get to know how to detect and correct possible operating errors. Dantherm strongly recommends to connect a remote control to the unit for operation in order to perform proper troubleshooting.

Error signals

Occurring errors are indicated in various ways:

Component	Signal
Ventilation unit	Acoustic signal from the main PCB. Connect a remote control or the PC tool to indicate the specific error. LED for filter reset
Hand-held remote control	Audible signal and indication of a specific error code.
Wired remote control (HCP 10/11)	Acoustic signal and flashing LED: The number of flashes corresponds to an error code, followed by a 5 second break. See error list.
PC tool	Indication of the error number as well as the option to indicate a log of specific operations covering a longer period of time.
Smartphone APP	Indication of a specific error code.

Error list

How to read the error list:

Column	Description	Code	Meaning
A	Number of flashes in the display (wired remote control)	-	-
B	LED for filter reset on the ventilation unit	Y	yellow LED flashes
		R	red LED flashes
C	Acoustic signals	0	no acoustic signals
		1	one acoustic signal/ hour
		2	one acoustic signal/ sec
Error code	Error number indicated on the display of the hand-held remote control, the smartphone app or in the PC tool	-	E.g., "E12" stands for error number 12.

Resetting errors

After any inspection or repair carried out due to potential errors, the unit can be reset by disconnecting the unit from the 230 V AC supply and then reconnecting it. This way, the control unit is reset. The unit will resume normal operation and also starts a new search for potential errors.
This process may take up to 15 minutes.

For a full description, see the list below:

A	B	C	Error code	Fault	Potential cause	Action required	Reset
-	Y	1	-	Filter alarm	Filter time period expired	Dismantle the filter(s) and check for dirt Replace the filter(s) and reset alarm	Reset alarm and reset filter(s) by pressing and holding the alarm button for 5 seconds Press and hold the centre button on the wireless remote control for 10 seconds The same procedure can be performed to reset the filter before resetting the alarm.
					Filters are not soiled, the filter time period is therefore too short	Extend the filter timer period	
					Filters are soiled	Replace the filter(s) and reset alarm	
					Filters are very soiled, filter time period is to long	Replace the filter(s) and reset alarm Reduce filter timer period	
1	R	1	E1	Exhaust air fan No speed feedback (tachometer) from the exhaust air fan	Exhaust air fan power cable is not connected	Connect exhaust air fan power cable	Manual reset by pressing the alarm button on the membrane keyboard operating panel or by switching the unit off/on
					Control cable of exhaust air fan is not connected	Connect control cable of exhaust air fan	
					Exhaust air fan is not functioning	Replace exhaust air fan	
				Exhaust air fan does not run at the desired speed	Fan speed setpoint is too high	Decrease fan speed setpoint	Automatic reset after 140 seconds but alarm will reappear if problem persists
					Fan is defective	Replace fan	
2	R	1	E2	Supply air fan No speed feedback (tachometer) from the supply air fan	Supply air fan power cable is not connected	Connect supply air fan power cable	Manual reset by pressing the alarm button on the membrane keyboard operating panel or by switching the unit off/on
					Control cable of supply air fan is not connected	Connect control cable of supply air fan	
					Supply air fan is not functioning	Replace supply air fan	
				Supply air fan does not run at the desired speed	Fan speed setpoint is too high	Decrease fan speed setpoint	Automatic reset after 140 seconds but alarm will reappear if problem persists
					Fan is defective	Replace fan	

A	B	C	Error code	Fault	Potential cause	Action required	Reset
3	R	0	E3	Bypass damper does not close as expected	Switch position A: bypass is closed, but supply air temperature is lower than expected Switch position B: bypass is closed, but exhaust air temperature is higher than expected	Check whether bypass is activated in PC tool	Automatic reset when efficiency is high enough for 30 seconds
						Check if bypass is blocked	
						Check mechanical connection between bypass actuator and bypass valve	
						Check electrical connection between control unit and bypass	
						Check control unit output	
				Bypass damper Reduced heat recovery due to low extract airflow	Extract air filter soiled	Changing the filter	Automatic reset when efficiency is high enough for 30 seconds
					Poor adjustment of the airflows	Adjust the system	
					A bathroom extract air fan creates a negative pressure in the dwelling	Remove the extract air fan from the bathroom and connect the extract air from the bathroom to the ventilation system instead	
					A kitchen extract air fan is creating negative pressure inside the dwelling	Provide heated fresh air for the extraction hood. If this cannot be achieved, open a window/door while the extraction hood is running	
					A stove fan creates negative pressure inside the dwelling	Contact the fireplace/stove supplier to take safety precautions	
				bypass is closed, but supply air temperature is lower than expected Airflows are not balanced. There is much more extract air than supply air	Supply air filter is soiled	Changing the filter	
					Poor adjustment of the airflows	Adjust the system	
4	R	1	E4	Extract air temperature sensor (T1) Control board measures that temperature sensor is open or short-circuited	Temperature sensors are not mounted correctly	Mount temperature sensor(s) correctly	Automatic reset if the temperature is within the normal range for 30 seconds
					Resistance in one of the temperature sensors is too low or too high	Replace temperature sensor	
					Resistance in temperature sensor is OK	Replace control board	

A	B	C	Error code	Fault	Potential cause	Action required	Reset
5	R	1	E5	Supply air temperature sensor (T2)	Temperature sensors are not mounted correctly	Mount temperature sensor(s) correctly	Automatic reset if the temperature is within the normal range for 30 seconds
				Control board measures that temperature sensor is open or short-circuited	Resistance in one of the temperature sensors is too low or too high	Replace temperature sensor	
					Resistance in temperature sensor is OK	Replace control board	
6	R	1	E6	Extract air temperature sensor (T3)	Temperature sensors are not mounted correctly	Mount temperature sensor(s) correctly	Automatic reset if the temperature is within the normal range for 30 seconds
				Control board measures that temperature sensor is open or short-circuited	Resistance in one of the temperature sensors is too low or too high	Replace temperature sensor	
					Resistance in temperature sensor is OK	Replace control board	
7	R	1	E7	Exhaust air temperature sensor (T4)	Temperature sensors are not mounted correctly	Mount temperature sensor(s) correctly	Automatic reset if the temperature is within the normal range for 30 seconds
				Control board measures that temperature sensor is open or short-circuited	Resistance in one of the temperature sensors is too low or too high	Replace temperature sensor	
					Resistance in temperature sensor is OK	Replace control board	
8	-	0	E8	Room air temperature sensor (T5)	Only indicated on wireless remote control		Automatic reset
9	-	-	E9	Not used			
10	R	0	E10	Outside air temperature < -13 °C	-	-	Automatic restart after 30 minutes

A	B	C	Error code	Fault	Potential cause	Action required	Reset
11	R	0	E11	Supply air temperature < +5 °C Reduced heat recovery due to low extract air temperature	Low temperatures from unheated rooms	Ensure that all ventilated rooms are heated Alternatively, close the air vents to rooms that are not heated	Manual reset by pressing the alarm button on the membrane keyboard operating panel or by switching the unit off/on Firmware version 2.9 and higher also offer automatic restart after 10 minutes
					Poorly insulated ducts in cold environments	Improve the insulation of ducts	
				Reduced heat recovery due to low extract airflow	Extract air filter soiled	Changing the filter	
					Poor adjustment of the airflows	Adjust the system	
					A bathroom extract air fan creates a negative pressure in the dwelling	Remove the extract air fan from the bathroom and connect the extract air from the bathroom to the ventilation system instead	
					A kitchen extract air fan is creating negative pressure inside the dwelling	Provide heated fresh air for the extraction hood. If this cannot be achieved, open a window/door while the extraction hood is running	
					A stove fan creates negative pressure inside the dwelling	Contact the fireplace/stove supplier to take safety precautions	
12	R	2	E12	Overheating One of the internal sensors measures a temperature of > 70 °C.	Overtemperature caused by fire inside or outside the ventilation unit	Check ventilation unit and surroundings for fire	The alarm display can be reset by pressing the alarm button or by switching the unit off/on. However, the unit cannot be started until the causes of the alarm have been eliminated
					Overtemperature due to combination with a preheater or post-heater and insufficient airflow	Check ventilation unit and surroundings for fire	
						Check which sensor is measuring a high temperature. Check whether the airflow is blocked and the filters are soiled. If necessary, increase the setting for the minimum airflow	
13	-	0	E13	Communication error / weak signal, indicated on wireless remote control only			Repeat every 5 minutes or when a button is pressed
				No wireless signal	Ventilation unit is switched off	Switch on the ventilation unit	
				Wireless signal is too weak	Antenna is not mounted on the unit	Mount antenna	
					Distance of the remote control is too far from the ventilation unit	Move closer to the ventilation unit	
						Mounting the antenna extension cable	

A	B	C	Error code	Fault	Potential cause	Action required	Reset
14	R	2	E14	Fire alarm Fire protection thermostat connected to the air duct (accessory) Input is normally closed (NC), but now it is open	Fire or smoke sensor connected to this input is active	Check for smoke or fire	The alarm display can be reset by pressing the alarm button or by switching the unit off/on. However, the unit cannot be started until the causes of the alarm have been eliminated
						Check if sensor and connection are OK	
					Nothing is connected to this input	Mount short circuit equipment	
15	R	1	E15	High water level (accessory) Water level is too high	The water drain is blocked	Clean the water drain	Automatic reset when the input is closed again
					The water drain is mounted incorrectly	Check whether the water drain is mounted on the correct side and make sure that the pipes are not located above the level of the water drain	
					Auxiliary drain pump is not operating	Check pump	
						Check fuse	
				Water level is not too high	Water level sensor is not connected	Check wiring	
					Water level sensor is normally open (NO)	Configure or change the water level sensor so that it is normally closed (NC)	
					Digital input incorrectly configured	Check the configuration of the digital input with PC tool	

A	B	C	Error code	Fault	Potential cause	Action required	Reset
16	R	2	E16	Firmware 2.9 and later: FPC error (accessory), only active if the accessory "fire protection control" is connected to the unit. No communication with fire protection control	Fire protection control with this address has already been installed but is no longer accessible	Check connection to fire protection control	Manual reset by pressing the alarm button on the membrane keyboard operating panel or by switching the unit off/on
				Missing position feedback for a fire damper	A fire damper is closed but should be open	Check the power supply to the fire damper	
						Check internal fire detector of the fire dampers	
				Failure during monthly, weekly or manual fire damper test	Fire damper is jammed either in open or closed position	Something is blocking the fire damper	
						Fire damper is incorrectly connected	
						Defective fire damper	

Annex

Technical data

HCV 400

TECHNICAL DATA	Abbr.	Unit	HCV 400 P1	HCV 400 P2	HCV 400 E1
Operating range (min. at 50 Pa – max. at 100 Pa)	V	m^3/h	80 to 250	50 to 240	50 to 240
EN 13141-7 reference flow rate at 50 Pa	Vref	m^3/h	175	168	168
PERFORMANCE					
Thermal efficiency according to EN 13141-7 @ reference flow	η_{SUP}	%	91 to 97	79 to 94	79 to 94
Leakage (external and internal) according to EN 13141-7		%	< 2 % (class A1)		
Filters according to EN 779:2012		-	G4 (optional on supply air: F7)		
Filters according to ISO 16890		-	ISO Coarse (ePM1>50 % optional on supply air)		
Ambient temperature range for the installation	t_{SURR}	°C	-12 to +50		
Outside air temperature range (without preheating coil installed)*	t_{ODA}	°C	-12* to +50		
Outside air temperature range (with preheating coil installed)	t_{ODA}	°C	-20 to +50		
Maximum humidity level in the extract air	x	g/kg	10		
CABINET					
Dimensions (with bracket)	WxDxH	mm	540 x 549 x 1050		
Spigot / air duct connections	Ø	mm	Ø160 – female		
Weight	m	kg	39		
Thermal conductivity of the polystyrene insulation	λ	W/(mK)	0.031		
Heat transfer coefficient of the polystyrene insulation	U	W/(m2K)	U<1		
Drain hose (included in scope of delivery)	Ø - length	"-m	3/4" – 1 m		
Cabinet colour	RAL	-	9016		
Fire protection class of the polystyrene insulation according to DIN 4102-1		-	B2		
Fire protection class of the polystyrene insulation according to EN 13501-1		-	E		
ELECTRICAL SPECIFICATIONS					
Electrical voltage	U	V	230		
Max. power consumption (without/ with preheater)	P	W	170/1570		
Frequency	f	Hz	50		
Protection type (IP)		-	21		

* It is recommended to use a preheating coil at outdoor temperatures below -3 °C to ensure balanced ventilation.

HCV 460

TECHNICAL DATA	Abbr.	Unit	HCV 460 P2	HCV 460 E1
Max. flow rate at 100 Pa	V_{100Pa}	m^3/h	460	
Max. nominal flow rate at 100 Pa	$V_{max.nom.}$	m^3/h	360	
Operating range DIBt (German Institute for Building Technology)	V_{DIBt}	m^3/h	70 – 360	-
Operating range passive house at 100 Pa	V_{PHI}	m^3/h	106 – 270	-
EN 13141-7 reference flow rate at 50 Pa	V_{ref}	m^3/h	252	
PERFORMANCE				
Thermal efficiency dry according to EN 13141-7	η_{SUP}	%	86	77
Leakage (external and internal) according to EN 13141-7		%	< 2 % (class A1)	
Filters according to EN 779:2012		-	G4 (optional on supply air: F7)	
Filters according to ISO 16890		-	ISO Coarse (ePM1>50 % optional on supply air)	
Ambient temperature range for the installation	t_{SURR}	°C	-12 to +50	
Outside air temperature range (without preheating coil installed)*	t_{ODA}	°C	-12* to +50	
Outside air temperature range (with preheating coil installed)	t_{ODA}	°C	-20 to +50	
Maximum humidity level in the extract air	x	g/kg	10	
CABINET				
Dimensions (with bracket)	WxHxD	mm	540 x 549 x 1050**	540 x 549 x 1050
Spigot / air duct connections	Ø	mm	Ø160 – female	
Weight	m	kg	40	
Thermal conductivity of the polystyrene insulation	λ	W/(mK)	0.031	
Heat transfer coefficient of the polystyrene insulation	U	W/(m2K)	U<1	
Drain hose (included in scope of delivery)	Ø - length	"-m	3/4" – 1 m	
Cabinet colour	RAL	-	9016	
Fire protection class of the polystyrene insulation according to DIN 4102-1		-	B2	
Fire protection class of the polystyrene insulation according to EN 13501-1		-	E	
ELECTRICAL SPECIFICATIONS				
Electrical voltage	U	V	230	
Max. power consumption (without/with preheater)	P	W	230/2080	
Frequency	f	Hz	50	
Protection type (IP)		-	21	

* It is recommended to use a preheating coil at outdoor temperatures below -3 °C to ensure balanced ventilation.
** +20 mm fitting

HCV 300-500-700

TECHNICAL DATA	Abbr.	Unit	HCV 300	HCV 500	HCV 700
Operating range (min. 50 Pa – max. at 100 Pa)	V	m^3/h	50 to 180	80 to 300	80 to 450
EN 13141-7 reference flow rate at 50 Pa	V_{REF}	m^3/h	126	210	315
PERFORMANCE					
Thermal efficiency according to EN 13141-7	η_{SUP}	%	85 to 86	85 to 88	85 to 88
Specific fan power according to EN 13141-7	SFP	W/m3/h	0.28	0.21	0.22
Leakage (external and internal) according to EN 13141-7		%	< 2 % (class A1)		
Filters according to EN 779:2012		-	G4 (optional on supply air: F7)		
Filters according to ISO 16890		-	ISO Coarse (ePM1>50 % optional on supply air)		
Ambient temperature range for the installation	t_{SURR}	°C	-12 to +50		
Outside air temperature range (without preheating coil installed)*	t_{ODA}	°C	-12* to +50		
Outside air temperature range (with preheating coil installed)	t_{ODA}	°C	-20 to +50		
Maximum humidity level in the extract air	x	g/kg	10		
CABINET					
Dimensions (with bracket)	WxDxH	mm	600 x 430 x 1000	700 x 603 x 1050	700 x 750 x 1050
Spigot / air duct connections	Ø	mm	Ø125 – female	Ø160 – female	Ø200 – female
Weight	m	kg	36	49.5	70
Thermal conductivity of the polystyrene insulation	λ	W/(mK)	0.031		
Heat transfer coefficient of the polystyrene insulation	U	W/(m2K)	U<1		
Drain hose (included in scope of delivery)	Ø - length	"-m	3/4" – 1 m		
Cabinet colour	RAL	-	9016		
Fire protection class of the polystyrene insulation according to DIN 4102-1		-	B2		
Fire protection class of the polystyrene insulation according to EN 13501-1		-	E		
ELECTRICAL SPECIFICATIONS					
Electrical voltage	U	V	230	230	230
Max. power consumption (without/ with preheater)	P	W	170/870	170/1370	234/1834
Frequency	f	Hz	50	50	50
Protection type (IP)		-	21	21	21

* It is recommended to use a preheating coil at outdoor temperatures below -3 °C to ensure balanced ventilation.

Cabinet dimensions

HCV 300

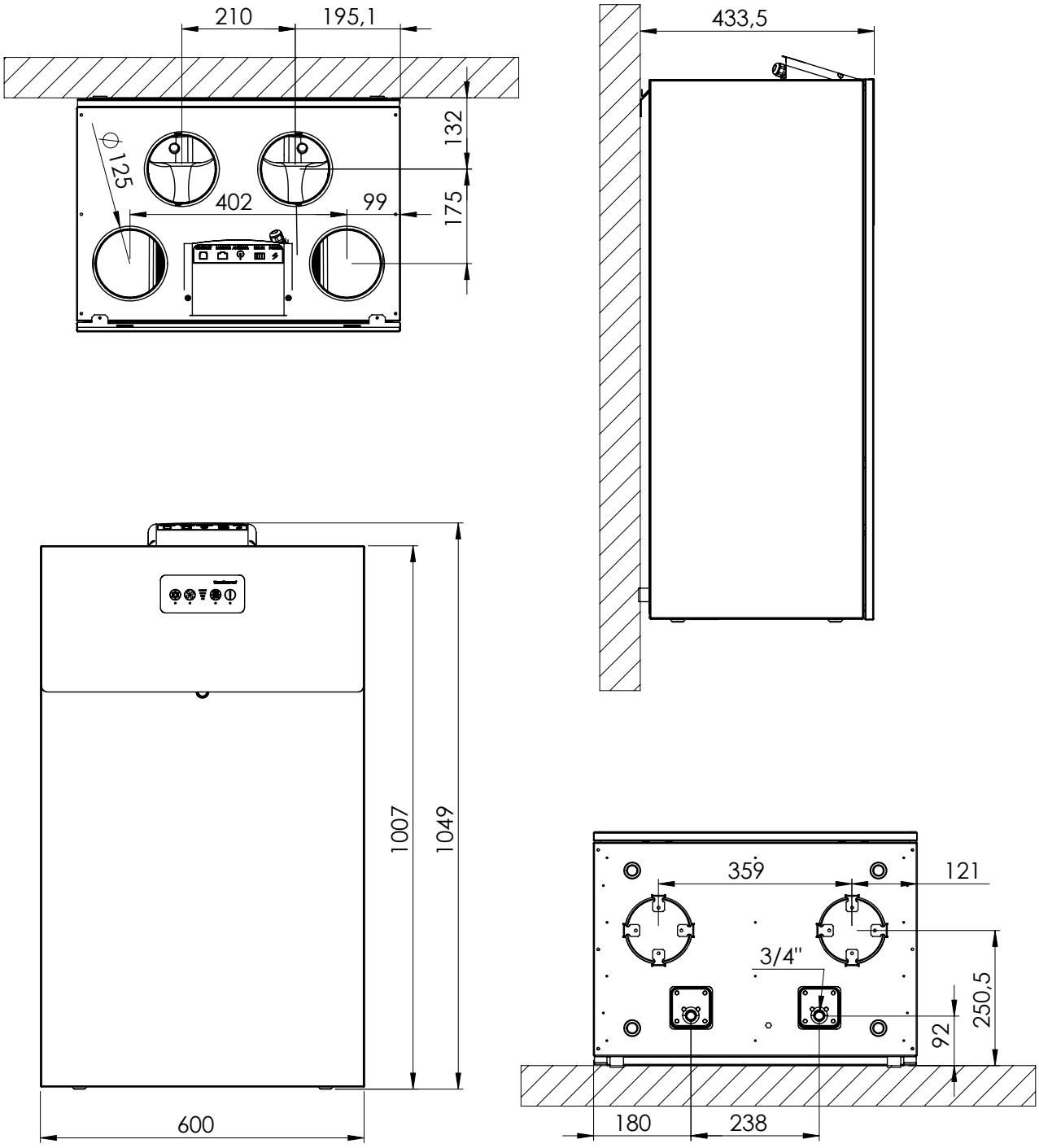


Fig. 52: Cabinet dimensions HCV 300

HCV 400-460

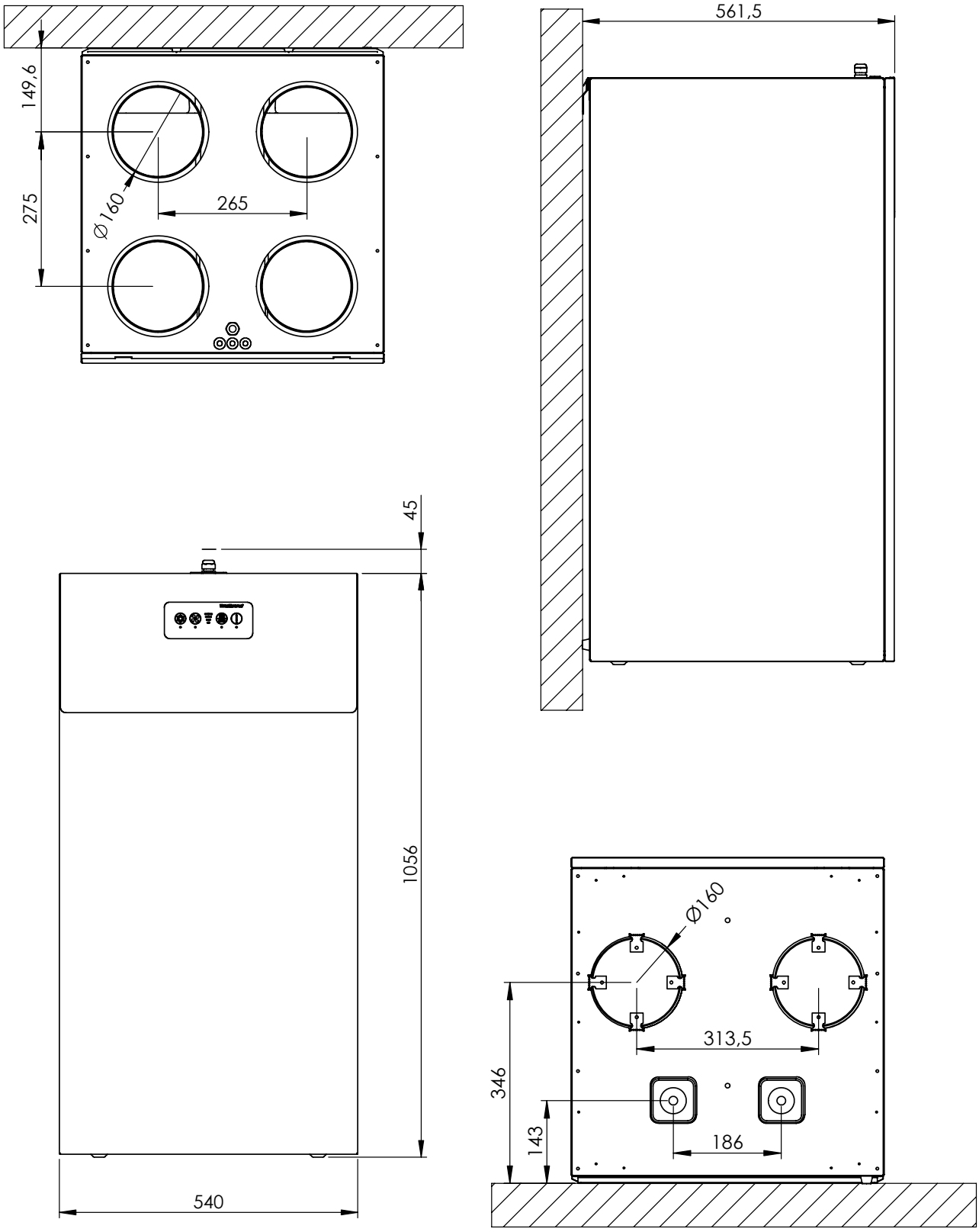


Fig. 53: Cabinet dimensions HCV 400-460

HCV 500-700

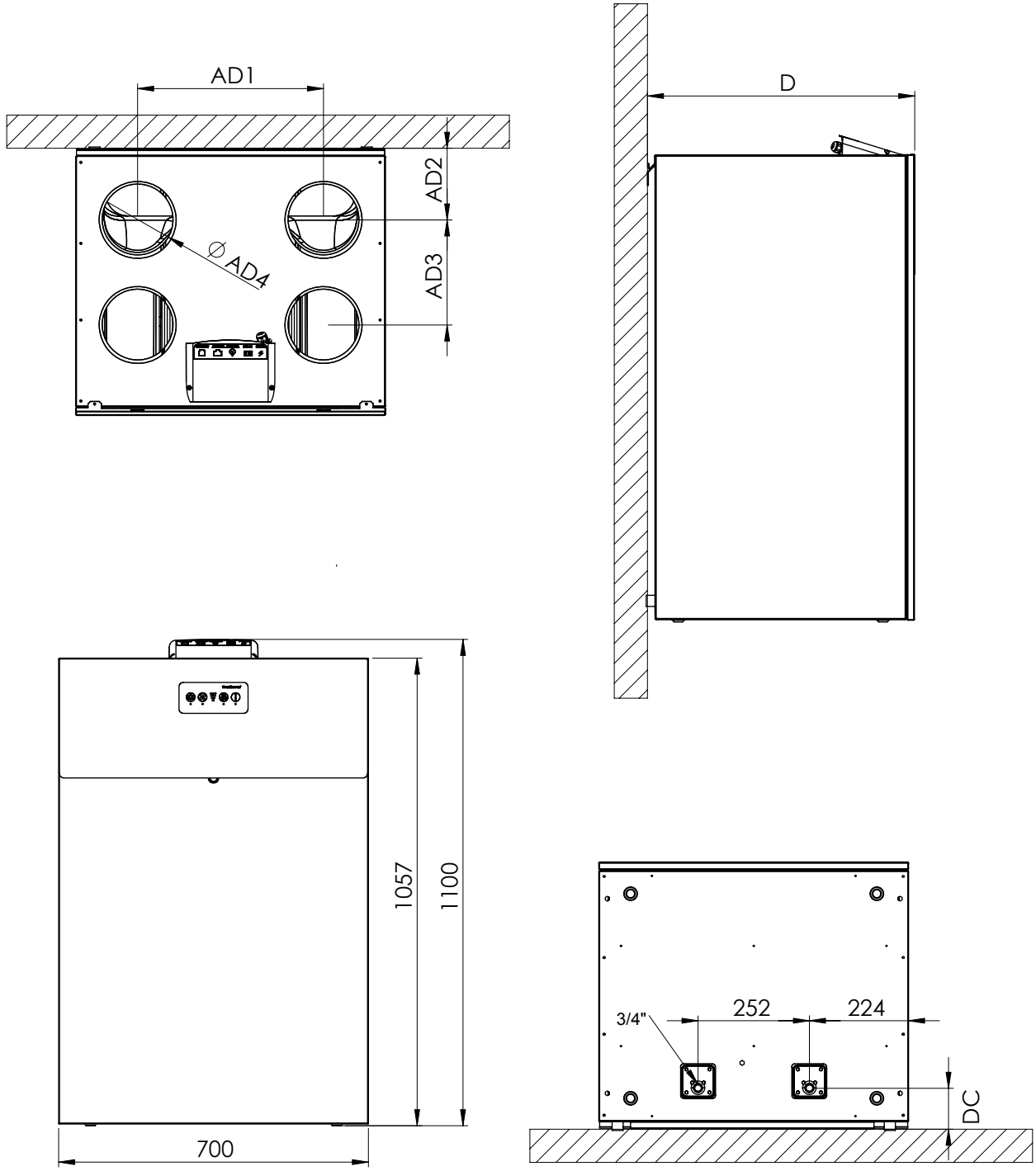


Fig. 54: Cabinet dimensions HCV 500-700

Various dimensions HCV 500/HCV 700 (all dimensions in mm):

Designation	HCV 500	HCV 700
AD1	420	394
AD2	162	196
AD3	237.5	289
AD4	Ø 160	Ø 200
D	604	770
DC	93	98

en

Main PCB with connections

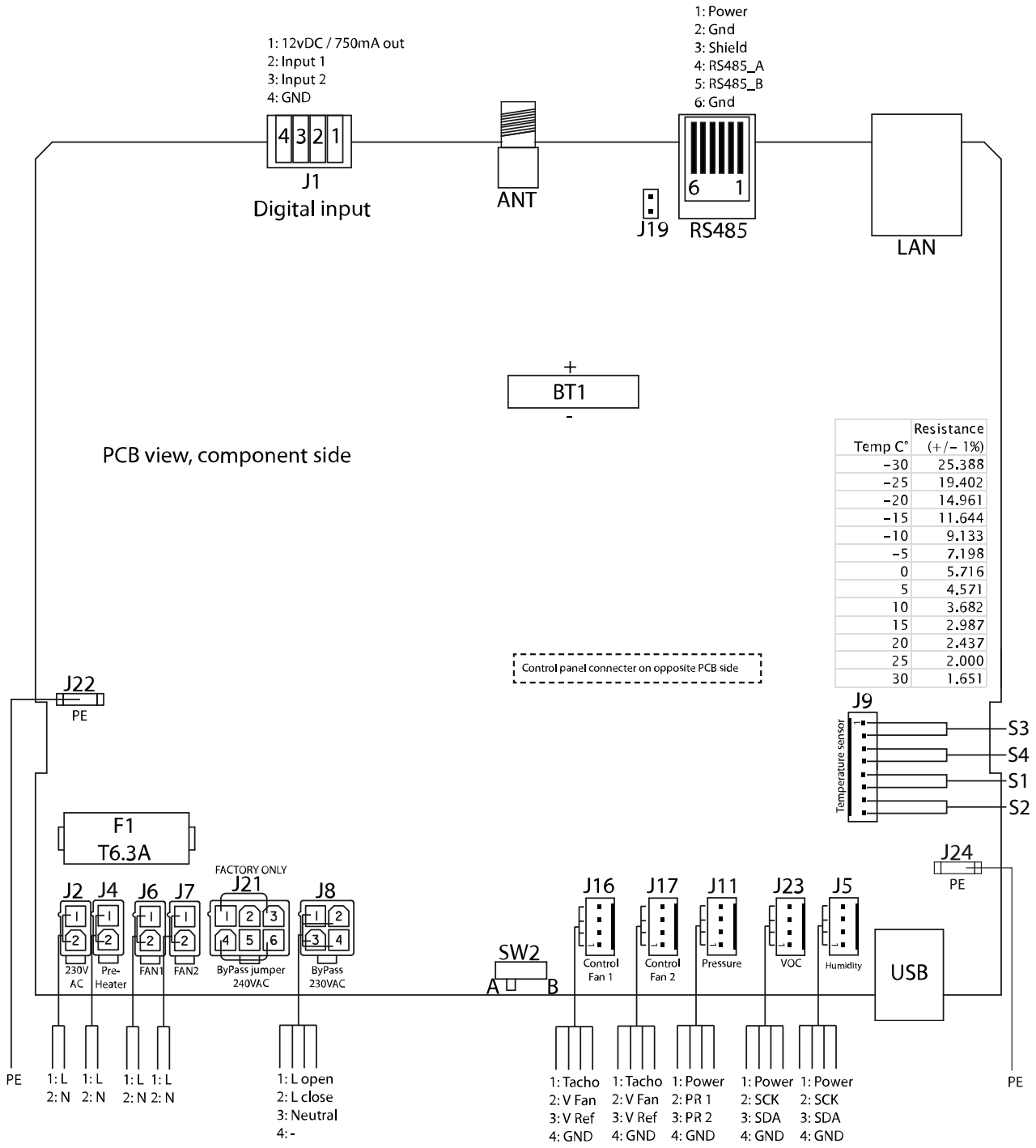


Fig. 55: Main PCB with connections

Spare parts

If spare parts are required, please visit Dantherm's online shop:
shop.dantherm.com

Declaration of conformity (EU)

Dantherm A/S, Marienlystvej 65, DK – 7800 Skive, hereby declares that the unit mentioned below:
No.: 352426
Type:HCV 300-400-460-500-700 (all variants included)

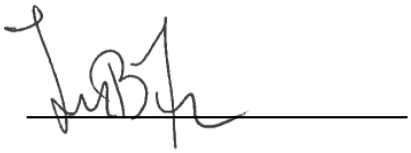
– complies with the following directives:

2014/35/EU	Low Voltage Directive
2014/30/EU	EMC Directive
2014/53/EU	Radio Equipment Directive
2009/125/EC	Eco Design Directive (incl. Regulation 2014/1253)
2011/65/EU	RoHS Directive
1907/2006/EC	REACH Regulation

– and is manufactured in compliance with the following standards:

EN 60335-1:2012	Household and similar electrical appliances – Safety – Part 1 (+AC:2014 + A11:2014 + A13:2017 + A1:2019 + A2:2019 + A14:2019)
EN 60335-2-40:2003	Household and similar electrical appliances – Safety – Part 2-40 (+A11:2004 + A12:2005 + A1:2006 + AC/2006 + A2:2009 +AC:2010 + A13:2012 + A13/AC:2013)
EN 61000-3-2:2014	Electromagnetic compatibility (EMC) – Part 3-2
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) – Part 3-3
EN 61000-6-2:2005	Electromagnetic compatibility (EMC) – Part 6-2 (+AC:2005)
EN 61000-6-3:2007	Electromagnetic compatibility (EMC) – Part 6-3 (+A1:2011 + A1/AC:2012)
EN 60730-1:2011	Automatic electrical controls for household and similar use – Part 1
EN 62233:2008	Measurement methods for electromagnetic fields of household appliances
EN 55014-1:2006	Electromagnetic compatibility – Requirements for household appliances – Part 1
EN 55014-2:1997	Electromagnetic compatibility – Requirements for household appliances – Part 2
EN 301 489-1 V1.9.2	Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 1
EN 301489-3 V1.6.1	Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 3
EN 300 220-1 V2.4.1	Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices
EN 300 220-2 V3.1.1	Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices
EN 13141-7:2010	Ventilation for buildings – performance testing of components/products for residential ventilation
EN 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Skive, 28th March 2022



Product manager

Jakob Bonde Jessen, Managing Director

Declaration of conformity (UKCA)

Dantherm, Marienlystvej 65, DK-7800 Skive, declares that the units mentioned below:
Type: HCV300, HCV400, HCV460, HCV500, HCV700 (all variants included)
Item no.: 352441, 352480, 352442, 352443

– confirm with the following directives:

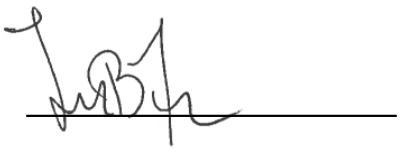
UK SI 2016 No. 1101	Electrical Equipment (Safety) Regulations 2016
UK SI 2016 No. 1091	Electromagnetic Compatibility Regulations 2016
UK SI 2017 No. 1206	Radio Equipment Regulations 2017
UK SI 2019 No. 539	The Eco-design for Energy-Related Products and Energy Information (Amendment) (EU Exit) Regulations 2019
UK SI 2012 No. 3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
UK REACH	The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019

– and is manufactured in compliance with the following harmonized standards:

EN 60335-1:2012	Household and similar electrical appliances – Safety – Part 1 (+AC:2014 + A11:2014 + A13:2017 + A1:2019 + A2:2019 + A14:2019)
EN 60335-2-40:2003	Household and similar electrical appliances – Safety – Part 2-40 (+A11:2004 + A12:2005 + A1:2006 + AC/2006 + A2:2009 +AC:2010 + A13:2012 + A13/AC:2013)
EN 61000-3-2:2014	ElectroMagnetic Compatibility (EMC) – Part 3-2
EN 61000-3-3:2013	ElectroMagnetic Compatibility (EMC) – Part 3-3
EN 61000-6-2:2005	ElectroMagnetic Compatibility (EMC) – Part 6-2 (+AC:2005)
EN 61000-6-3:2007	ElectroMagnetic Compatibility (EMC) – Part 6-3 (+A1:2011 + A1/AC:2012)
EN 60730-1:2011	Automatic electrical controls for household and similar use – Part 1
EN 62233:2008	Measurement methods for electromagnetic fields of household appliances
EN 55014-1:2006	Electromagnetic compatibility – Requirements for household appliances – Part 1
EN 55014-2:1997	Electromagnetic compatibility – Requirements for household appliances – Part 2
EN 301 489-1:2011	Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 1
EN 301489-3	Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 3
EN 300 220-1:2001	Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices
EN 300 220-2:2017	Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices
EN 300 220-3:2001	Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices
EN 13141-7:2010	Ventilation for buildings – performance testing of components/products for residential ventilation
EN 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Skive, 29-03-2023

Product Manager



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