

MANUAL

HCV 300-400-500-700

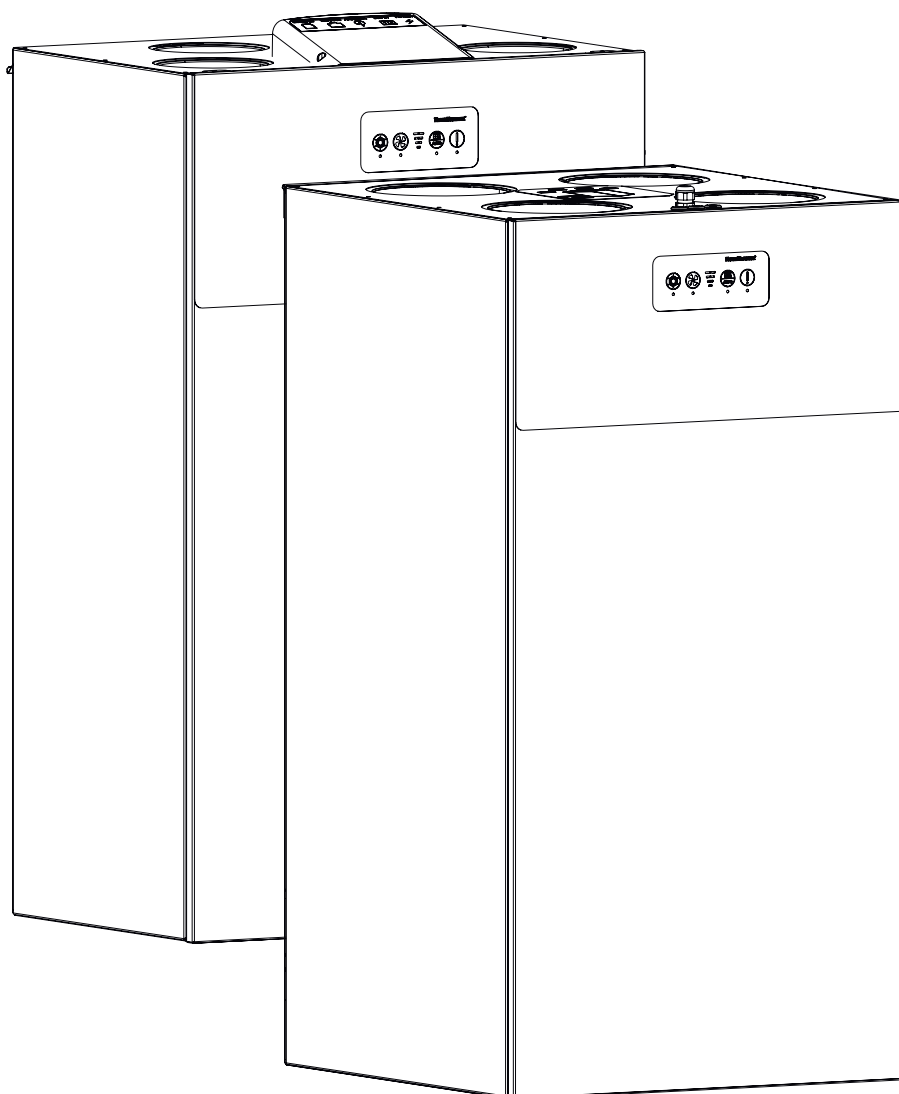


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Introduction

About this manual

Target group

This is the Manual for the Dantherm HCV range incl. the residential ventilation units HCV 300/400/500/700.

This manual covers information for

- Users of the product and
- Professionals as e.g. Installers and service technicians

While the USER MANUAL covers information, which can be relevant for professionals, the INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS is intended for qualified personnel only.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Copyright

Copying of this service manual, or part of it, is forbidden without prior written permission from Dantherm.

Reservations

Dantherm reserves the right to make changes and improvements to the product and the service manual at any time without prior notice or obligation.




Abbreviations in this manual

This manual uses the following abbreviations for ventilation terminologies.

Abb.	Description
T1	Outside air coming into the unit
T2	Supply air from the unit to the home
T3	Extract air from the home to the unit
T4	Exhaust air from the unit
S1	Temperature sensor no 1
S2	Temperature sensor no 2
S3	Temperature sensor no 3
S4	Temperature sensor no 4
Mode A	Indicating operation mode A. See more at page 17
Mode B	Indicating operation mode B (reverse fan). See more at page 17
G4	Standard air filter acc. to EN 779: ISO Coarse 75% acc. to ISO 16890
F7	Fine filter, pollen filter (additional equipment) acc. to EN 779: <ul style="list-style-type: none"> ePM1 55% acc. to ISO 16890 (HCV 400) ePM1 70% acc. to ISO 16890 (HCV 300/ 500/ 700)
BP	Bypass damper (prevents overheating of the home on hot days)
IP	Unique address for the Ethernet port.
DHCP	Automatic settings of an Ethernet address provided from an external network component (if connecting the unit to Ethernet)
PC	Personal computer running MS Windows
USB	Universal serial bus connection
LAN	Local area network
WAN	Wide area network (internet)
BMS	Building Management System
PCB	Printed Circuit Board
FFC	Flat Flexible Cable

Symbols in this manual

Following symbols are used in this manual in order to draw attention to danger risks and additional information of high relevance.

Symbols used	
 WARNING	This symbol in connection with the word "Warning" warns of a risk involving severe injury.
 CAUTION	This symbol in connection with the word "Caution" warns of a risk of minor or moderate injury and material damage.
 NOTICE	In connection with this symbol you will find further tips and information concerning the use of the device.

Warning and caution symbols are described in the following way:


Type and source of hazard

Further elaboration, if relevant.

- Measures to avert danger or immediate measures if the risk occurs are described in this way

Recycling

This unit is designed for long term durability. When total lifetime ends, the unit should be recycled according to national rules and with high environmental protection considerations.

USER MANUAL

Introduction

Overview

Target group

This part of the manual with the title USER MANUAL is intended for users of the product. All instructions described in the INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS require the use of trained personnel.



This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Safety precautions

It is important to acknowledge the correct operating procedures for the residential ventilation unit and all of its safety precautions. Dantherm accepts no liability with regards to loss of business or personal injury as a consequence of failing to abide by safety procedures.

Transport and unwrapping




Unwrapping

Check for
transport damages

Step	Action
1	Report any obvious damage to the carrier, parcel service, postal service etc. immediately on delivery and note down the damage on the shipping document or carrier's document.
2	Remove the packaging material completely (without using a knife) and dispose of according to the local regulations.
3	Check the content of the box.
4	Should any transport damage be detected after unpacking of the device, or should the delivery be incomplete, contact your salesman in charge or specialised dealer without delay.

Content of the box

The scope of delivery includes:

Amount	Description	Illustration
1	HCV unit	-
1	bag incl. <ul style="list-style-type: none">1 m hose1x hose clip	
1	bag incl. <ul style="list-style-type: none">2x spacers1x wall suspension bar1x vibration absorber	
1	bag incl. <ul style="list-style-type: none">1x manualLabels, datasheet etc.1x Cable clamp (HCV 400 only)	

Operation

Control panel - overview

Foil keypad

The foil keypad has four buttons (two on the left and two on the right side) with a corresponding LED signal light below. An LED light with four levels indicating the fan speed is situated in the middle. It will always indicate the present fan speed regardless of the operation mode.

This illustration gives an overview of the different modes (3 main modes and 3 temporary override modes) and other functions, which can be displayed on the control panel and enabled via the buttons.

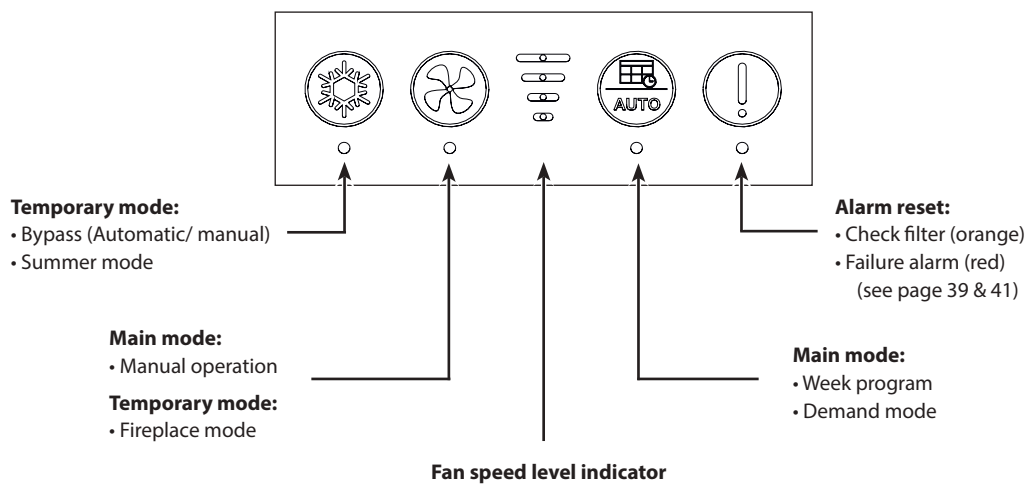


Fig. 1

Main operation modes



CAUTION

Risk of water damage

- Never turn off the ventilation unit to save energy as this may cause condensation and subsequent leaks from the duct system with the risk of water damage.

Introduction

Decide which of the three main operation modes you want your HCV unit to run and customize the settings as desired via Dantherm PC Tool, Dantherm Residential app or HRC3 remote control. Keep in mind however that legislation may prescribe minimum levels of ventilation rate.

Manual operation

Controls fan speed manually. In manual operation mode the ventilation unit will run at the selected ventilation speed until this is changed manually.



Short press - activates manual operation mode. Each time the button is pressed the fan speed increases with one level (level 0-4). After level 4 the fan speed will start from level 0 again.

- **NB:** The unit operating in manual operation - level 4 (fan boost) will automatically return to level 3 (nominal mode) after 4 hours.
- Fan speed level 0 can be locked via PC Tool. When level 0 is locked, the fan speed will jump from level 4 to 1, when it is increased.

Manual operation mode active is indicated by constant light in corresponding LED



Week program

When week program is activated, the unit will automatically adjust the ventilation speed according to a predefined weekly schedule.

You can activate week program via the control panel on the unit, but can't select, which week program you want to run. Selecting between 11 week programs (10 predefined + 1 customized in PC Tool) is only possible via Dantherm app, HRC3 remote control or PC Tool.



Short press - activates selected week program.

Week program active is indicated by constant light in corresponding LED

Demand mode

Enable demand mode if you want to control the indoor air quality automatically. This mode uses readings from the VOC, RH and/or CO₂ sensors in order to control the indoor air quality. Running demand controlled operation thus requires that the corresponding sensors are connected. CO₂ sensor is connectable only via an installed Accessory Controller (HAC).



Long press (5 sec.) - enables demand mode.

Demand mode enabled is indicated by slowly flashing light in corresponding LED

Temporary (override) modes

Introduction

The temporary modes are enabled manually, except from the automatic bypass and will temporarily override the settings of the selected main mode. The temporary modes are stopped automatically by a timer or waiver of conditions, but can also be deactivated manually (except from the automatic bypass).

Bypass mode (cooling)

Bypass mode opens the bypass damper, which is leading the air flow around the heat exchanger. The outside air will thus be supplied into the house without heat recovery. There are two ways of enabling the bypass mode:

- Automatic bypass
- Manual bypass

Automatic bypass

Automatic bypass opens/ closes the bypass damper automatically, when the conditions for automatic bypass are met.

You can change setpoints for min. outdoor temperature (Tmin) (default: 15 °C) and max. indoor temperature (Tmax) (default: 24 °C) via PC Tool or Dantherm HRC3 remote control.



If conditions for automatic bypass are present the open damper is indicated by a constant light in corresponding LED



NOTICE

Mandatory conditions to be fulfilled for activation of automatic bypass:

- Outdoor temp. is min. 2°C lower than extract temp.
- AND outdoor temp. is higher than setpoint (Tmin)
- AND extract temp. is higher than setpoint (Tmax).

If one of the following conditions are present, the bypass will be deactivated:

- Outdoor temp. is higher than extract temp.
- Outdoor temp. is at least 2 °C lower than setpoint (Tmin)
- Extract temp. is at least 1 °C lower than setpoint (Tmax)

Energy waste:

If the bypass temperature settings are set too low, there is a risk that the unit will open bypass while the central heating system in the house is active.

Manual bypass

If bypass/ cooling is required and automatic bypass is not active, bypass can be activated manually.

The bypass will then open any time, the conditions for manual bypass are fulfilled within the defined time span (6 hours by default). The time span can be changed via PC Tool.



Short press - Enables/ disables manual bypass mode.

An active bypass mode (open damper) is indicated by a constant light in corresponding LED.

NB: If the bypass mode is enabled, but conditions for open bypass damper are not present, the enabled bypass mode will not be visible via the LED.



NOTICE

Mandatory conditions to be fulfilled for activation of manual bypass:

- Outdoor temp. is min. 2°C lower than extract temp.
- AND outdoor temp. is higher than setpoint (Tmin)

Summer mode

Summer mode, when active, will stop the supply fan and only the exhaust fan will be in operation. Fresh air supply will in this case be ensured by opening windows, doors e.g.
NB: Summer mode will be disabled automatically, when the outdoor temperature drops below 14°C.



Long press (5 sec.) - activates/ deactivates summer mode

Summer mode active is indicated by a flashing light in corresponding LED

Fireplace mode

Activating fireplace can be used, while you lit the fire in the fireplace. The unit will then create overpressure for 7 minutes, in order to prevent smoke in the living area. If fireplace mode is not deactivated manually, it will automatically stop after 7 minutes.

NB: Fireplace mode is only activated as long as the supply air temperature is above 9 °C.



Long press (5 sec.) - activates/deactivates fireplace mode.

Fireplace mode active is indicated by a flashing of the 3 fan speed LEDs

Maintenance and care

Inspection of the filter

Introduction

Preventive maintenance is necessary at regular intervals if the unit is to function efficiently and optimally, in order to avoid unintended operation stoppages and to ensure the expected lifetime of minimum 10 years.

It is important to notice, that intervals between filter maintenance can vary depending on the specific environment, and that moving parts are wearing parts, that needs replacements when worn down dependent on the specific environment.

The factory warranty only applies if it can be documented that regular preventive maintenance has been carried out as prescribed. The documentation can consist of a written log including a company stamp or equivalent.

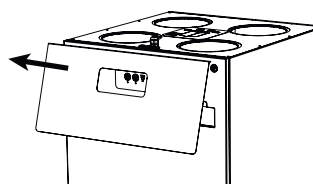
Interval summary

At minimum, maintenance must be carried out as shown here:

Interval	Task	To be carried out by
6 month	Check filters, Replace if required	User
1 year	Replace filters	User

Preparing the inspection

Remove upper part of the front cover.



Filters - alarm and inspection (6 months -1 year)

The unit has a built in timer for filter alarm (6 months by default). The timer period for the filter alarm can be changed via remote control or PC Tool or can be reset via the alarm button

When the timer has expired a filter alarm is triggered. A buzzer will sound and the LED of the "!"-button will light yellow-orange. (If the LED lights RED, please see: Troubleshooting on page 41.)



5 Sec. press

Resets filter alarm when the alarm has been triggered
Resets filter timer without the timer having expired.




A short beep will sound, indicating that the filter alarm has been reset successfully.

Step	Action	Illustration
1	Pull out and inspect the filters, when the filter alarm has been triggered.	
2	Even if only one of the filters is dirty, we recommend to change both filters in order to avoid an imbalance in the air flow through the unit. NB: Change the filters at least once each year regardless of whether they are dirty or an alarm has been triggered.	
3	After changing the filters, the filter alarm must be reset with a short press on the alarm button. A short beep will sound, indicating that the filter alarm has been reset successfully.	

INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS

Introduction

Overview

Target group	This part of the manual with the title INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS is intended for trained personnel only.
Safety precautions	It is important to acknowledge the correct operating procedures for the residential ventilation unit and all of its safety precautions. Dantherm accepts no liability with regards to loss of business or personal injury as a consequence of failing to abide by safety procedures.
 WARNING	Risk of personal injury <ul style="list-style-type: none">• Installation and repair of the unit has to be carried out by qualified personnel only.• It is the responsibility of the installer to read and understand this service manual prior to initial start and setup of the HCV unit.
 WARNING	Risk of equipment damage, property damage or personal injury <ul style="list-style-type: none">• The HCV MUST be earthed, through cables WITH earth wire and earthed power supply.
 CAUTION	Risk of water damage <ul style="list-style-type: none">• Never turn off the ventilation unit to save energy as this may cause condensation and subsequent leaks from the duct system with the risk of water damage.

Declaration of Conformity

Dantherm hereby, declare that the unit mentioned below:

No.: 352480 Type: HCV 400 P1, P2, E1, P1/E1

No.: 352441, 352442, 352443 Type: HCV 300, HCV 500, HCV 700

- complies with the following directives:

2014/35/EU Low Voltage Directive

2014/30/EU EMC Directive

2014/53/EU RED

2009/125/EC Eco Design Directive

2011/65/EU RoHS Directive (Restriction of hazardous substances)

1907/2006/EC REACH Regulation

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

EN 60335-1:2012 Household and similar electrical appliances - Safety - Part 1

EN 60335-2-40:2003 Household and similar electrical appliances - Safety - Part 2-40

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

EN 61000-6-3:2007 Electromagnetic compatibility (EMC) - Part 6-3

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 301489-1 V1.9.2 Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 1

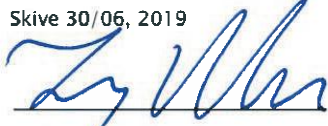
EN 301489-3 V1.6.1 Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 3

EN 300220-1 V2.4.1 Electromagnetic compatibility & Radio spectrum Matters (ERM); Short Range Devices

EN 300220-2 V3.1.1 Electromagnetic compatibility & Radio spectrum Matters (ERM); Short Range Devices

EN 13141-7:2010 Ventilation for buildings - performance testing of components/products for residential ventilation

Skive 30/06, 2019



Product manager



Managing director Jakob Bonde Jessen

Product description

Overall description

Introduction

The HCV range from Dantherm is a residential ventilation unit which is designed to supply fresh air to residential homes, by exchanging heat from outgoing air to incoming air, resulting in energy efficient ventilation with low heat energy loss.

These units are designed for installation, in dry surroundings, with temperatures >12°C. e.g. utility room or similar heated rooms.

The air flow paths can be electronically swapped, providing ability to route the connected ducts, either to the right or to the left.

Product illustration
HCV 400

This illustrates the HCV 400 unit without cover.

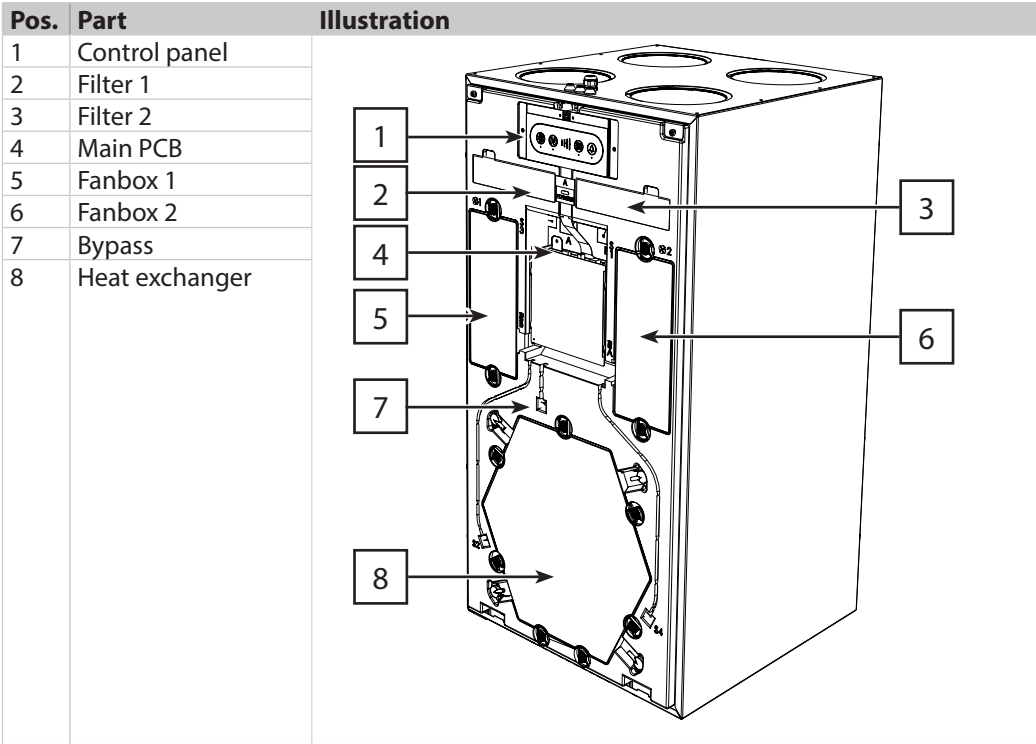


Fig. 2

Product illustration
HCV 300/ 500/ 700

This illustrates the HCV 300/500/700 unit without cover.

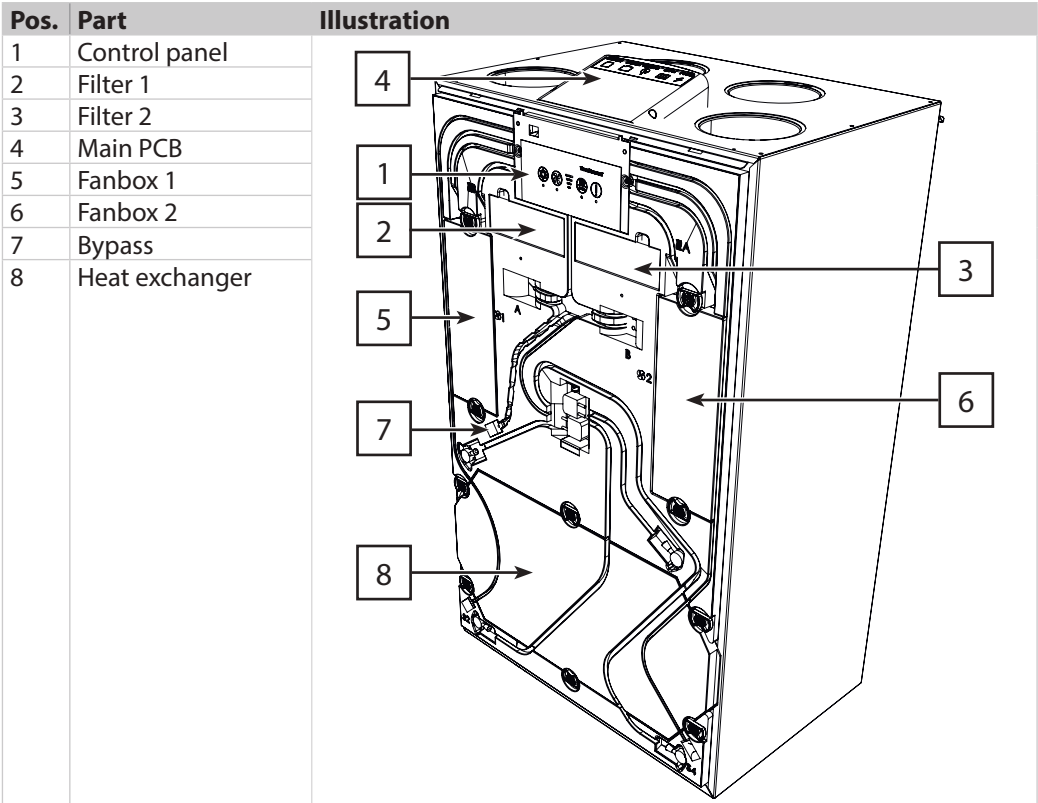


Fig. 4

Variant description The HCV units exist in different variants. The function and installation of the variants are exactly the same. The variants only differ by their heat exchanger and fan or built-in accessory thus influencing the performance of the unit.

This variant name is just an example (describing the syntax) and not necessarily identical with your HCV unit (see where to find the exact variant name of your unit on Fig. 5):

1) 2) 3) 4) 5) 6)
HCV 400 E1-A-BP-RH-PH

Pos.	Description	Options
1)	Product name	HCV 300 HCV 400 HCV 500 HCV 700
2)	Heat exchanger	ALU (aluminium) P1 (plast 1) P2 (plast 2) P1/E1 (enthalpy) (P1 heat exchanger replaced by enthalpy heat exchanger)
3)	Mode A/B (from factory)	A
4)	Fitted with bypass	BP
5)	Fitted with humidity sensor	RH (If this part is missing, the unit is not fitted with
6)	Fitted with preheater	PH a preheater)

Product label

The product label showing the variant and serial number is placed next to the USB connection.

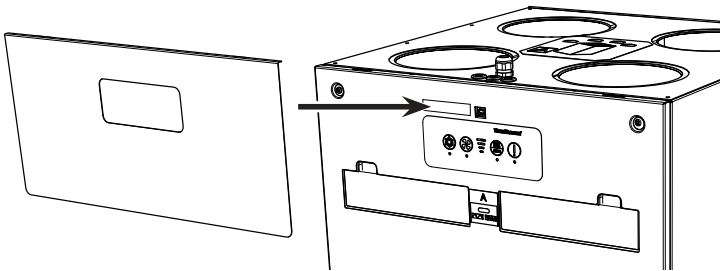


Fig. 5

**Description of
drain mode A / B**

This section illustrates the function of the different parts in drain mode A / B. The default mode is mode A.

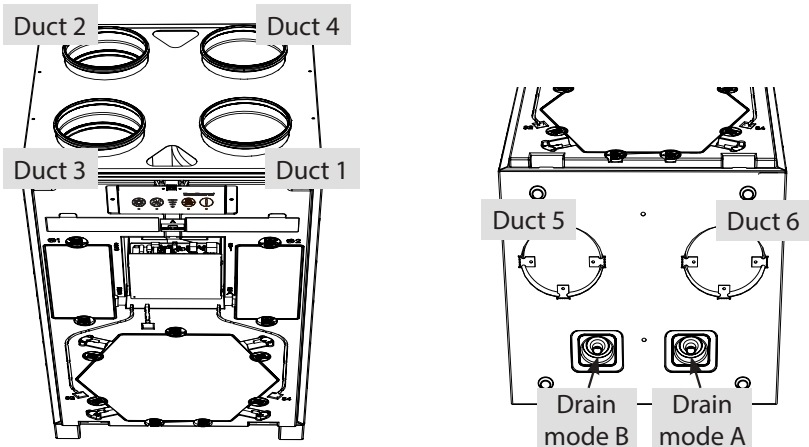


Fig. 6

Part	Mode A	Mode B
Duct connection 1 (Fig. 6)	Outdoor air - T1	Extract air - T3
Duct connection 2 (Fig. 6)	Supply air - T2	Exhaust air - T4
Duct connection 3 (Fig. 6)	Extract air - T3	Outdoor air - T1
Duct connection 4 (Fig. 6)	Exhaust - T4	Supply air - T2
Filter 1 (Fig. 4)	Extract filter G4	Supply filter G4 or F7
Filter 2 (Fig. 4)	Supply filter G4 or F7	Extract filter G4
Fanbox 1 (Fig. 4)	Extract fan	Supply fan*
Fanbox 2 (Fig. 4)	Supply fan*	Extract fan

*Supply fanbox can be fitted with electrical preheat element (accessory)

**Bottom outlet
in mode A / B**

HCV 300 and 400 have supplemental ducts in the bottom (Duct 5 and 6) (Fig. 6), which are closed by default, but can be used as a bottom outlet for supply air (T2). The table below shows, which duct is used for bottom outlet in mode A / B and which corresponding duct has to be closed at the top of the unit.

Option for HCV 300/ 400 only:

Drain mode	Bottom outlet	Closed duct
Mode A	Duct 5	Duct 2
Mode B	Duct 6	Duct 4

**Air flow direction
in mode A / B**

This illustration shows the two air flow paths through the unit. The airflow direction can be changed by changing operation mode as described on page 26.

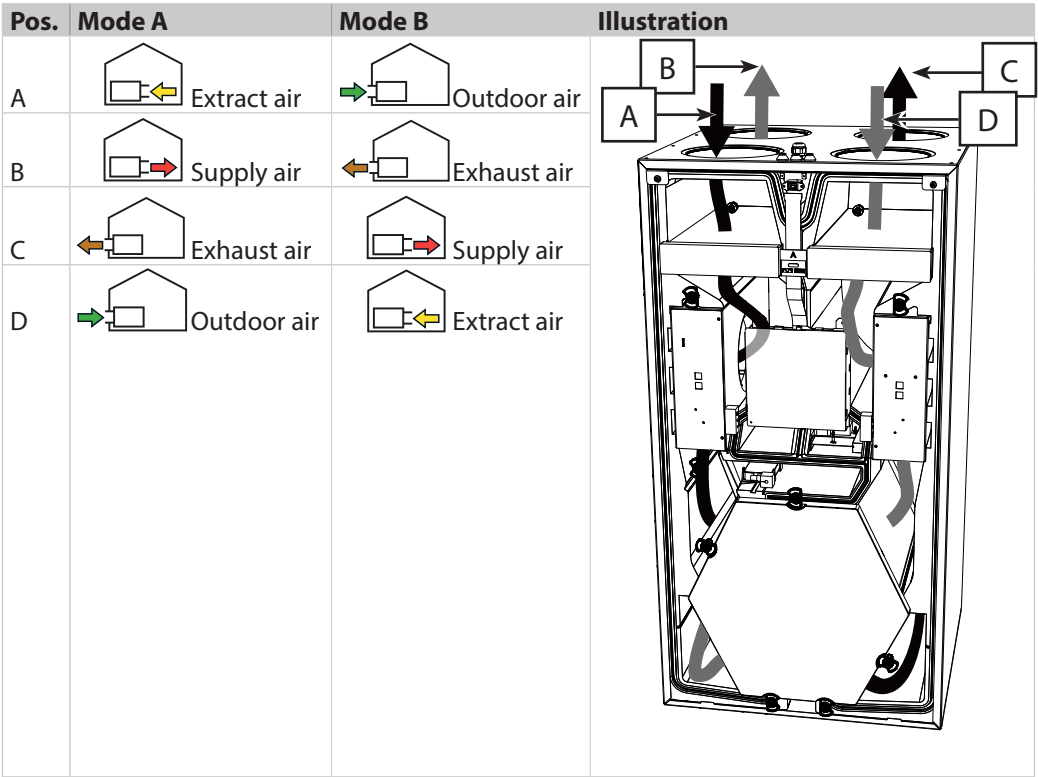


Fig. 7

Components description

Introduction	This section describes the individual components of the HCV units, which are part of standard delivery.
Cabinet	The external parts of the cabinet are manufactured from powder coated, AZ-coated steel plating. The internal parts of the cabinet are manufactured from expanded polystyrene (EPS). Accessories are installed after removing the steel front and EPS doors. The cabinet is sound and heat insulated with fire retardant polystyrene foam. The unit is designed for installation in ambient temperatures from 12° to 50°C.
Filters	The unit is fitted with a class G4 cassette filter as standard. These filters protect the heat exchanger and improve the indoor climate by filtering the air of dust and other particles. An F7 filter (pollen filter) can be purchased as an accessory. The F7 filter is always placed on the supply side - shown on the top of the unit.
Heat exchanger	The counter flow heat exchanger absorbs the heat energy from the evacuated air and moves it to the fresh air, thereby saving on energy needed for heating.
Fans	The supply fan adds fresh air from outside through the heat exchanger to the ventilated indoor rooms. The extractor fan sucks out stale and moist air from the home through the heat exchanger, where it releases its heat into the fresh outdoor air.
Bypass damper	The motorized bypass damper overrides the heat exchanger functionality. This is used in warm summer conditions, where colder outside air can be used for reducing inside temperature, when inside temperature exceeds an upper temperature limit.
Water outlet & drain hose	The unit is fitted with two drain valves. One of these must be connected to the drain hose (1 m drain hose is part of delivery) to direct the condensate to a drain. Correct connection to the drain valves is shown at the top of the unit and on page 32 in this service manual.
Wall bracket	The unit is fitted with a wall bracket, which is used, when the unit has to be mounted on the wall.
Humidity sensor	The humidity sensor will continuously monitor the quality of the extract air, and adjust the air flow level accordingly. This operation is named demand mode. If a HRC remote control is connected, the level will be shown in the display using 3 level icon. Using demand mode will result in the correct level of ventilation with lowest possible electrical power consumption.
Foil keypad	The desired operation mode can be chosen and changed via the foil keypad, which is placed at the front of the unit.

**Control parts
illustration**

This illustration shows the control part of the HCV units.

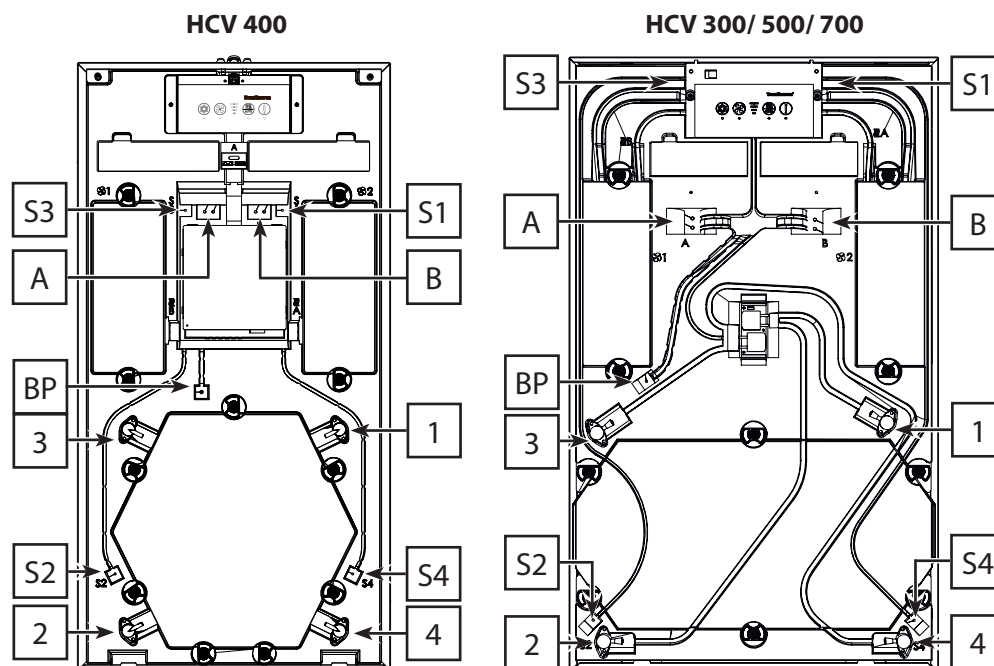


Fig. 8

Pos.	Mode A	Mode B
S1	T1 outside air inlet temperature sensor	T3 indoor extracted air temperature sensor
S2	T2 indoor supply air temperature sensor	T4 exhaust to outside temperature sensor
S3	T3 indoor extracted air temperature sensor	T1 Outside air inlet temperature sensor
S4	T4 exhaust to outside temperature sensor	T2 indoor supply air temperature sensor
A	VOC and RH% sensor (accessory)	n/a (Gasket)
B	n/a (sealing pad)	VOC and RH% sensor (accessory)
1	P1 outside air inlet pressure connection	P3 indoor extracted air pressure connection
2	P2 indoor supply air pressure connection	P4 exhaust to outside air pressure connection
3	P3 indoor extracted air pressure connection	P1 outside air inlet pressure connection
4	P4 exhaust to outside air pressure connection	P2 indoor supply air pressure connection
BP	Cable for bypass	Cable for bypass

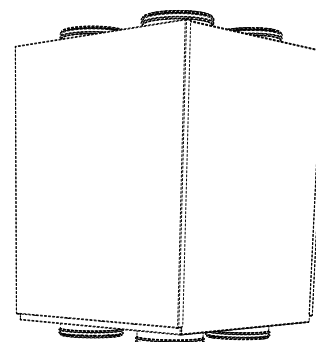
Accessory

Introduction

The unit is delivered without any accessories mounted. If further functionality is requested the accessories are to be installed prior to initial unit installation or alternatively after commissioning.

Silencer (for HCV 400 only)

The HCV 400 unit can be equipped with a silencer.



Electric preheating

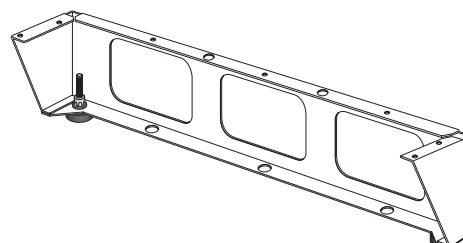
The unit can be fitted with an electrical preheating element that preheats the incoming air. The preheater increases the outside air temperature going into the heat exchanger, and thereby reduces the risk of ice in the heat exchanger in very cold conditions.

Water heating coil

The water heating coil is controlled by the accessory control HAC 2. The water heating coil increases the outside air temperature going into the heat exchanger, and thereby reduces the risk of ice in the heat exchanger in very cold conditions.

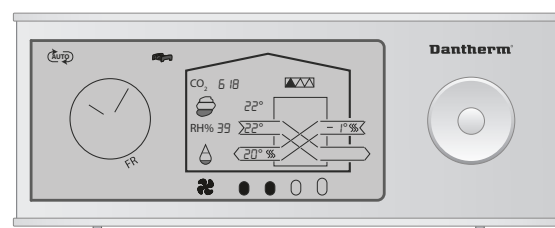
Floor stand (for HCV 400 only)

A floor stand will raise the unit and make it easy to access the drain outlet.



Hand-held remote control (HRC 3)

Adjust the ventilation and keep track of the home's humidity and temperatures via the large LCD screen in the hand-held remote control. Activate cooling function/bypass (if this is installed in the HCV unit), select manual ventilation steps or relevant weekly programs or set the controls to automatic.

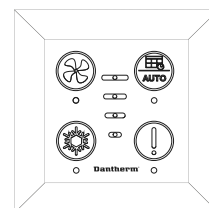


The remote control can communicate with the HCV unit at up to 30 metres distance. The remote control can be placed on level surfaces or hang on the wall.

Wired remote control (HCP 10/11)

A wired remote control (HCP 10/11) *without display* can be connected to the unit, if the unit is placed in a way, which makes it difficult to reach the control panel.

HCP 10/11 gives the same functionality as the control panel.



Accessory control (HAC 2)

Connect a number of additional accessories to the HCV unit via an accessory controller: HAC2.

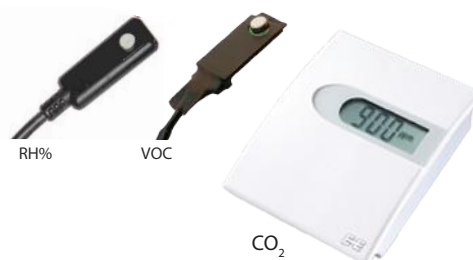


VOC, humidity and CO₂ sensor

This unit can be fitted with a VOC (air quality), humidity or CO₂ sensor. The installed sensor(s) will continuously monitor the extract air, and adjust the air flow level accordingly.

This operation is named demand mode. If a HRC remote control is connected, the level will be shown in the display using 3 level icon.

Using demand mode will result in the correct level of ventilation with lowest possible electrical power consumption.



Filters

Replacement filters in sets of 2 standard filters (G4) or 1 standard plus 1 F7 (pollen) filter.



Electronic control

Function The unit’s main controls are placed on the main PCB, together with other outputs and inputs. The Control panel with LED displays is connected to the main PCB with a non-extendable multicore cable.

Illustration This illustrates the overall system control architecture:

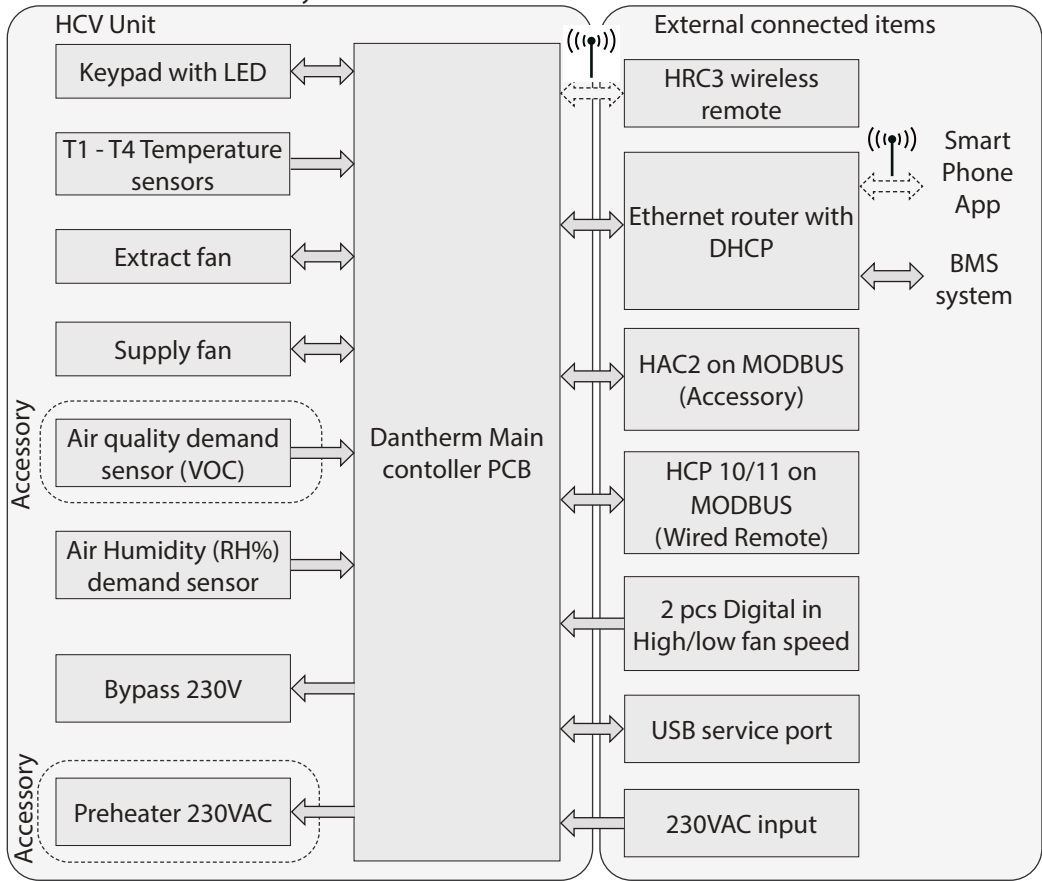


Fig. 9

**Unit control
illustration**

This illustration shows the main PCB and control panel of the HCV units.

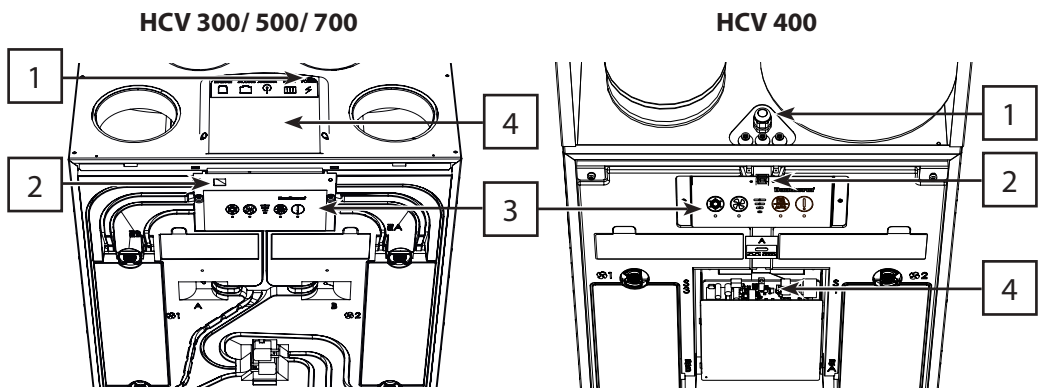


Fig. 10

Pos.	Part
1	Power
2	USB connection for: <ul style="list-style-type: none">• Using PC Tool for calibration purposes, changing settings etc.• Read out error list
3	Control panel
4	Main PCB

**External
connections
(Main PCB)**

This drawing illustrates the external connections of the main PCB. See also the wiring diagram on page 47, when connecting to the different ports.

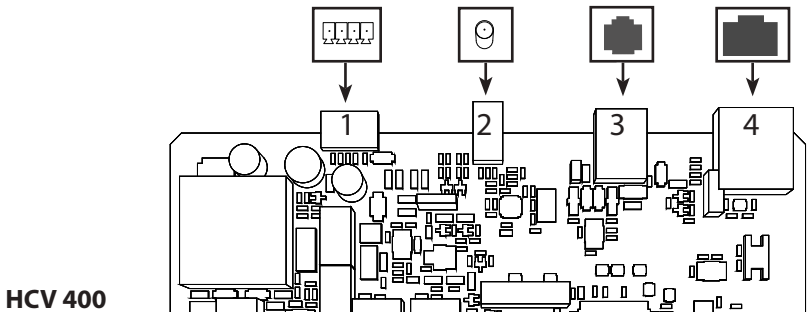


Fig. 11

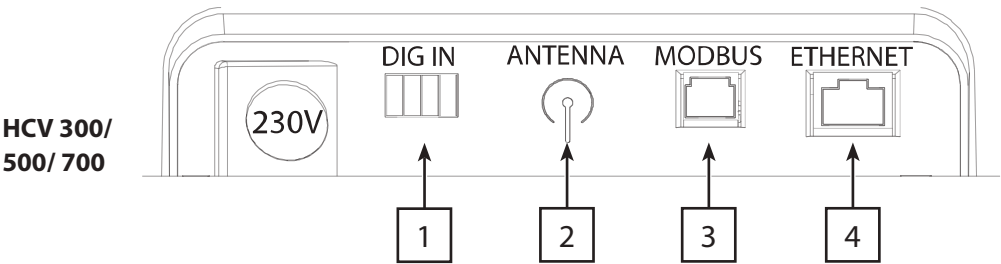


Fig. 12

Pos.	Connection (Part)	Description
1	Dig in	External digital input, to select operation modes
2	Antenna	Wireless connection point for proprietary remote control - HRC3
3	Modbus	Modbus connection for HAC2 + HCP 10/11
4	Ethernet	LAN connection

System operation strategy

Introduction

This section describes the operation strategy in various conditions.

Preheat

If a preheater is installed, the unit can add electrical heat to the T1 incoming outside air, in order to reduce defrost situations, and increase the supply air temperature.

- Preheat is applied after the T1 sensor.
- If outside temperature is $< -3^{\circ}\text{C}$ or supply air is $< 16,5^{\circ}\text{C}$ the preheater will switch on with 10% power.
- The power will increase/decrease 10% for each 60 seconds depending on the T1 or T2 temperature.

Preheating setpoints are fixed and cannot be changed.

Defrost / fireplace function

In cold conditions where T1 is below -3°C and exhaust T4 is $< +2^{\circ}\text{C}$ the condensed water could built up as ice in the heat exchanger.

In order to prevent this, following sequence is initiated:

- Apply additional heat with preheater if mounted.
- The supply fan speed will decrease speed until minimum RPM is reached.
- After 10 seconds the supply fan will stop completely, while the ongoing exhaust fan supplies warmer air into the heat exchanger component, to remove potential ice.
- When T4 yet again is $> +8^{\circ}\text{C}$ the supply fan will start at minimum RPM, and then increase speed until the original required speed is regained.
- This procedure is repeated as long as necessary.
- If T1 is $\leq -13^{\circ}\text{C}$ for more than 4 minutes and 25 seconds, even with defrost mode active, the unit will stop all operation for 30 minutes, and reattempt previous operation condition. If electrical preheat is present, this total off-mode is disabled.

The defrost operation will create an underpressure inside the house. This may cause smoke from e.g. a fireplace to be drawn back into the house. If fireplace mode is enabled, the unit will stop all operation in 4 hours instead.

Setpoints for defrost cannot be changed.

When defrost is active HRC 3 will show "dEF" in the display.

When defrost has shut all off, the display will flash the T1 temperature

Bypass cooling and summer mode

See more in the "Transport and unwrapping" section on page 10 and page 11.

Installation Options

Swapping between mode A and B

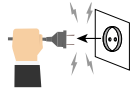
Introduction

The HCV range has an option for swapping the duct connections according to the description in section "Product description" - "Overall description". The current section will guide you through the process of swapping the running mode between mode A and B.



CAUTION

Injury by electric shock and risk of damage to the device



- Always make sure the power is disconnected prior to disassembling the unit and operating the mode selector switch.

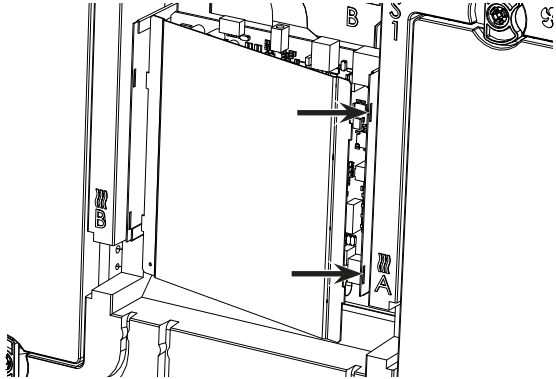
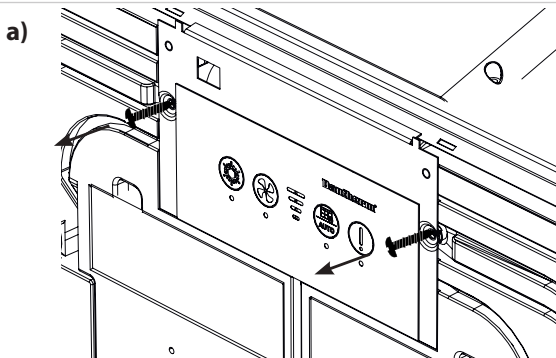
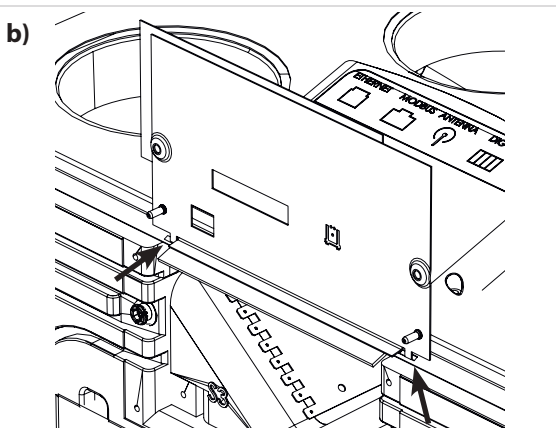
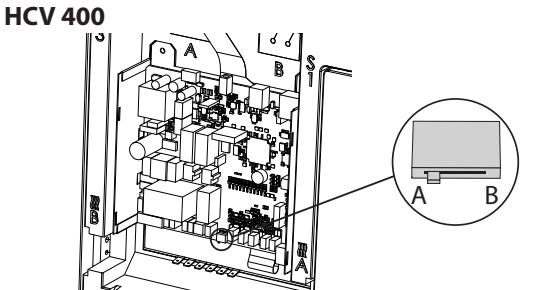
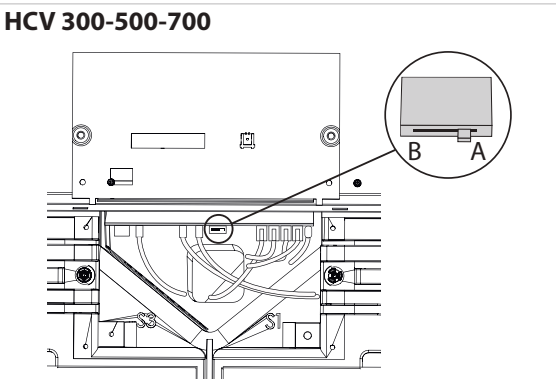
Selecting mode

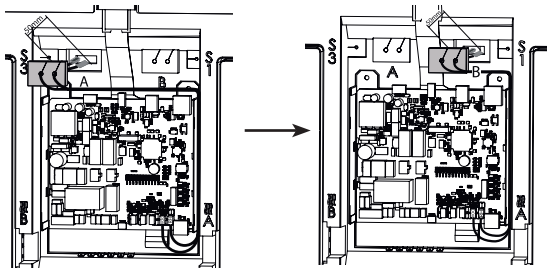
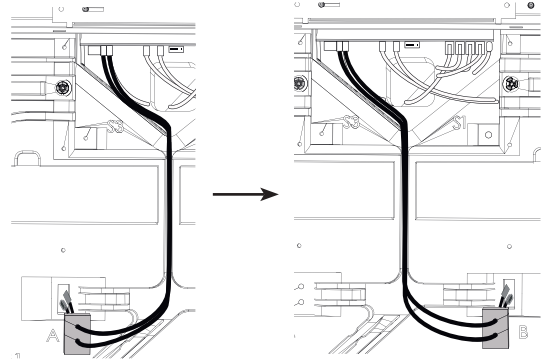
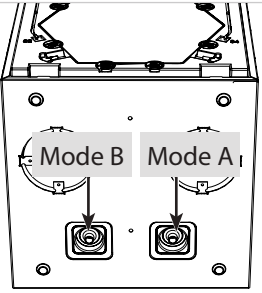
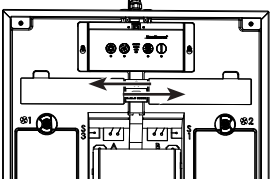
The air ducts going into the house can either be connected on the right hand side or the left hand side of the top of the unit. The default mode is mode A. If local systems demands mode B, follow the below procedure AND check the label in order to connect the water drainage correctly.

Swapping to mode B

Follow these steps when swapping the mode:

Step	Action	Illustration
1	Place new B-sticker on top of the unit.	
2	Remove the upper part of the front cover.	
3	Release the two screws at the upper left and right corner (underneath the upper part of the front cover).	
4	Remove the remaining part of the front cover.	
5	Place new calibration sticker on the heat exchanger.	

6	<p>HCV 400: Remove the cover of the main PCB.</p>	
	<p>HCV 300-500-700: a. Release the two screws from the control panel. b. Place in the service position.</p>	<p>a)</p>  <p>b)</p> 
7	<p>Switch A-B switch on the main PCB to mode "B".</p>	<p>HCV 400</p>  <p>HCV 300-500-700</p> 

8	Move grommet incl. humidity sensor (and VOC sensor if installed) to the sensor position for mode B.	<p>HCV 400</p>  <p>HCV 300-500-700</p> 
	<p>CAUTION</p> <p>Insufficient device performance and ventilation effect</p> <p>To ensure optimal device performance all wired accessory must be mounted correctly.</p> <ul style="list-style-type: none"> • Make sure that the distance between sensor head and grommet is 50 mm, in order to ensure correct measurements of the humidity level (and air quality). • Any other wired accessory must be swapped/ installed according to the current operating mode A/B. 	
9	Remount main PCB cover / control panel.	
10	Swap the drain hose and plug to mode B as indicated. For a further description of the drain hose installation, see page 32.	
11	Swap the filter (ONLY if the optional pollen filter F7 is used). • Check the table on page 17 in order to determine the right position of the F7 filter during mode A/B.	
12	Connect the duct as specified on the label and described on page 34.	
13	Calibrate the unit as described on page 36.	
14	Remount the front and upper part of the front cover.	

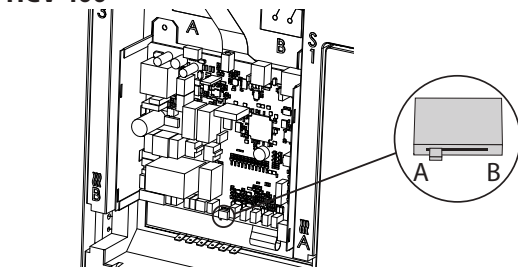
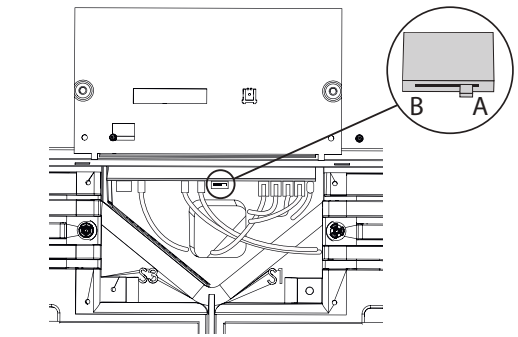
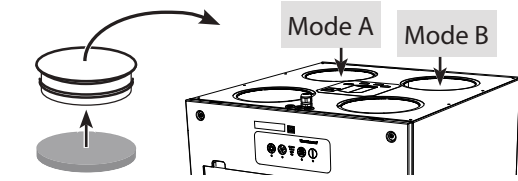

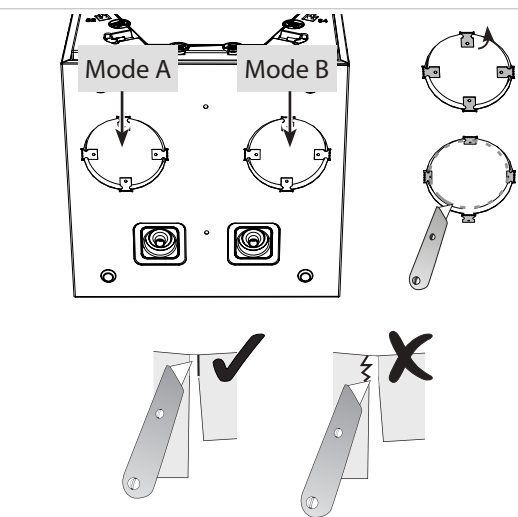


Using bottom outlet (HCV 300/ 400)

Introduction

The HCV 300 and HCV 400 units have an option for mounting the supply air duct to the bottom of the unit. The current section will guide you through the process of opening the bottom outlet and closing the corresponding duct connection at the top.

Using bottom outlet

Step	Action	Illustration
1	Remove the front cover and check the mode (A / B) of the ventilation unit on the main PCB.	HCV 400  HCV 300 
2	Close duct connection (at the top) <ul style="list-style-type: none">Insert an insulation block into an end cap.Close the duct connection on top of the unit according to mode A or B with the insulated end cap.	
3	Open duct connection (at the bottom) <ul style="list-style-type: none">Identify the correct duct connection at the bottom of the unit (mode A or B) and bend all four metal tabs.Cut a hole along the recess (dotted line) thus opening into the unit. <div></div> <p>Try to cut along the inner recess line in order to avoid damaging the duct connection. Don't attempt to break the recess and make sure that a complete cut through the material has been made.</p>	
4	Connect the duct with a coupling as described on page 34 and fix both with screws or blind rivets onto the metal tabs.	
5	Calibrate the unit as described on page 36.	

Installation

Location considerations

Warranty claims

Using a device outside the specified conditions and contrary to its designated use will lead to the forfeiture of all warranty claims. Warranty is restricted to units, installed by trained and certified personnel only.

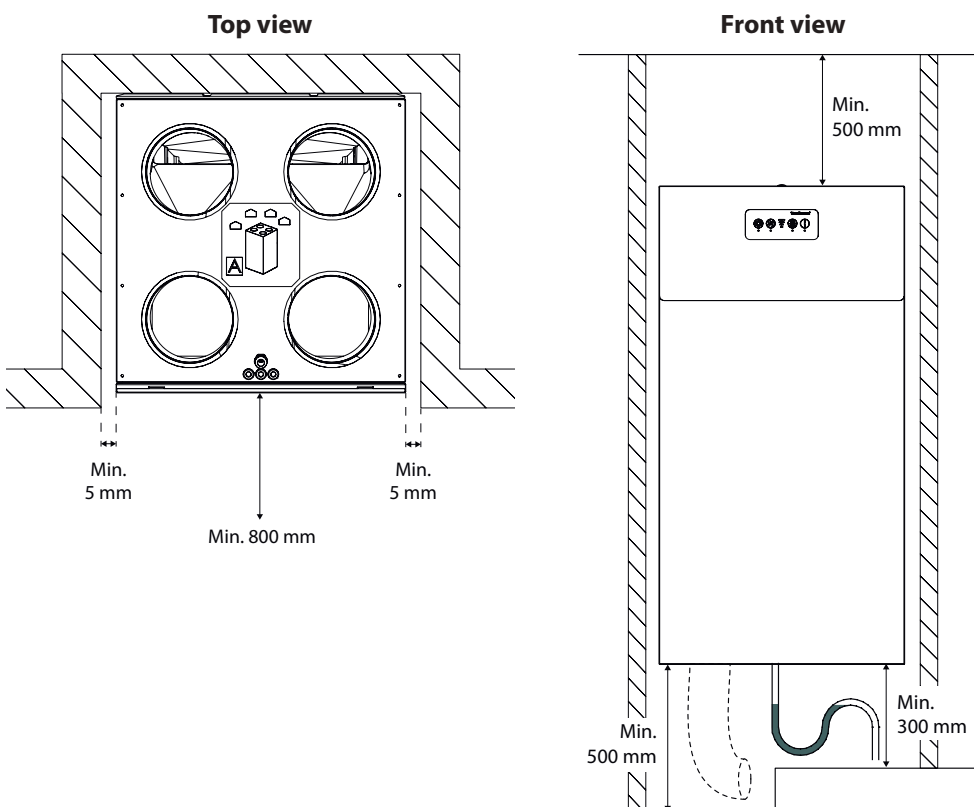
Location requirements

The following should be considered selecting an appropriate location for installation:

- Verify whether installation mode A (Standard) or B (Optional) is feasible for the installation site. If mode B is preferred, follow the swapping procedure on page 26.
Note: The swapping function between mode A and B provides ability to route the pair of ducts (outside or inside) towards the unit from the left OR the right, according to building and room construction. See the difference between the two modes in the "Overall description" on page 17.
- The HCV units are designed to be mounted in dry surroundings, with temperatures $>12^{\circ}\text{C}$, utility room or similar heated rooms.
- Allocate additional space, to ensure correct mounting and serviceability (see "Siting unit" on page 30).
- Ensure that the walls structure is adequate to support the weight of the unit, regardless of bracket type.

Siting unit

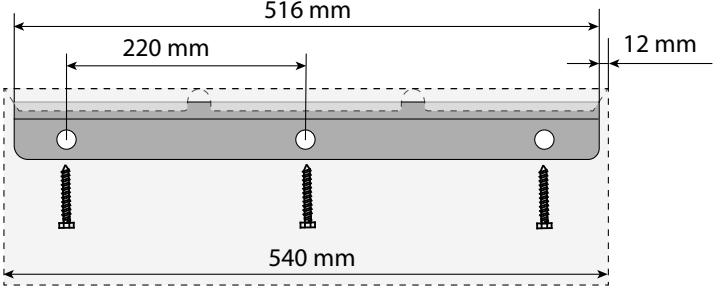
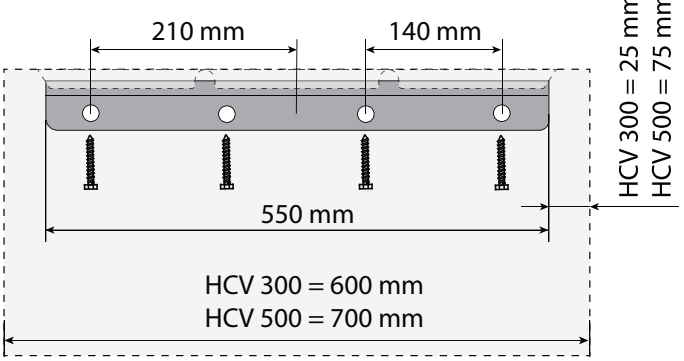
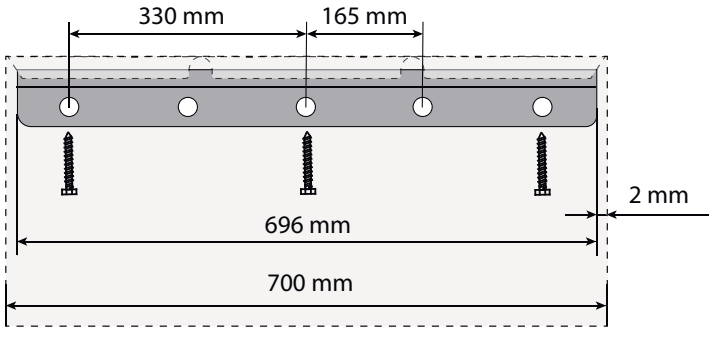
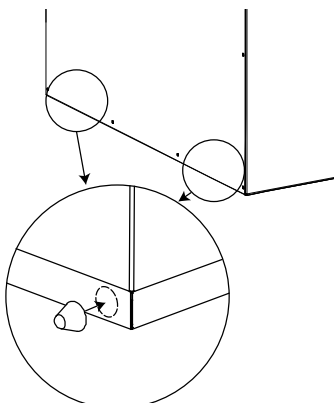
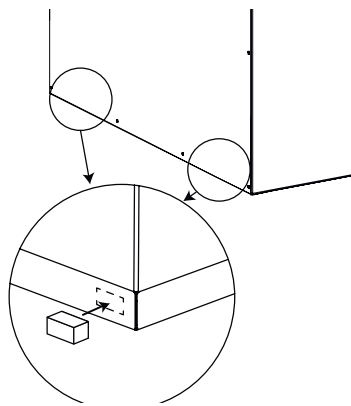
Min. space required for serviceability:



Mounting of the unit

Wall mounting

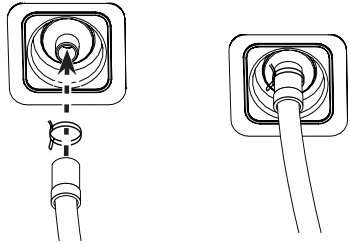
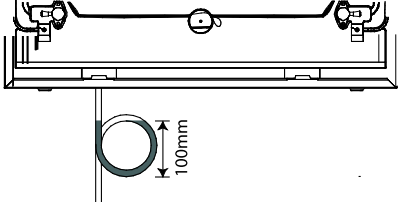
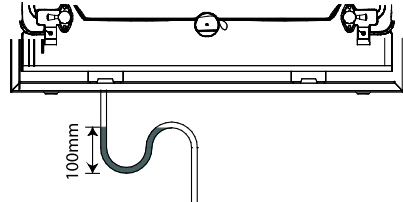
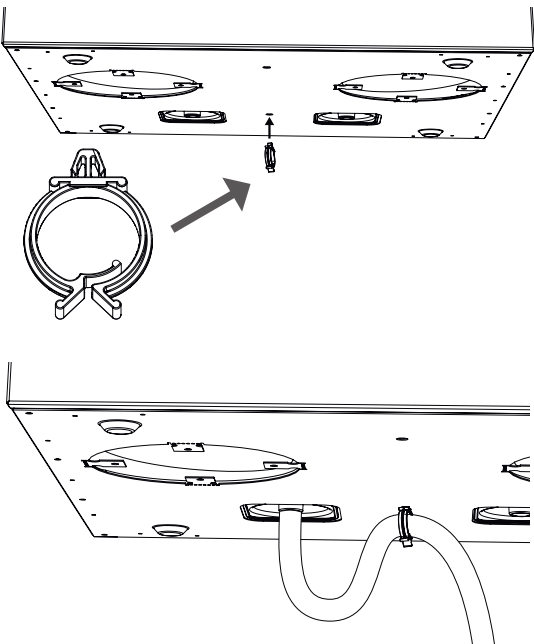
Follow these steps, when mounting the HCV unit to the wall.

Step	Action	Illustration
1	Secure the wall bracket using these measurements. Ensure you use suitable screws and rawl-plugs.	<div>HCV 400 </div> <div>HCV 300/ 500 <div>HCV 300 = 25 mm HCV 500 = 75 mm</div><div>HCV 300 = 600 mm HCV 500 = 700 mm</div></div> <div>HCV 700 </div>
2	Mount the two spacers at the bottom and back of the unit.	<div>HCV 400 </div> <div>HCV 300/ 500/ 700 </div>

Drain

The unit is manufactured with blanked drain. Connect a drain hose to the correct drain valve at the base of the unit.

32

3	Connect the drain hose to the used drain outlet and secure the connection with a hose clamp.	
4	<p>The drain hose must be supplied with a min. 100 mm siphon (option A or B).</p> <ul style="list-style-type: none"> • Guide the hose to a drain and make sure it does not get exposed to frost. • Fill the siphon with min. 0.5 L water. 	<p>A</p>  <p>B</p> 
5	<p>HCV 400 only</p> <ul style="list-style-type: none"> • Mount the cable clamp into the hole at the bottom of the unit • Guide the drain hose through the cable clamp, in order to create the siphon. 	



WARNING

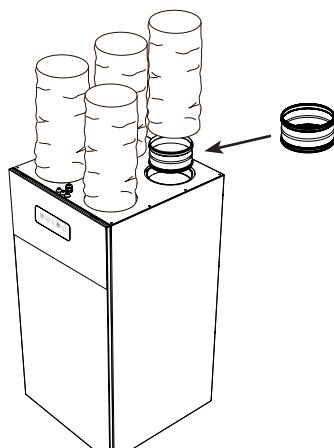
Material damage (e.g. water damage)

Heat recovery of air with a high moisture content leads to condensation in the heat exchanger. Condensate must be led into a drain, as it otherwise can damage the floor under the unit.

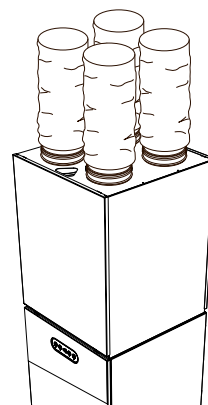
- Make sure that the drain hose is installed according to the current operating mode.
- Check the siphon periodically especially during summer period and make sure that it is filled with water as recommended.

Connecting ducts

Step	Description
1	Make sure that the ducts, which are connected to the unit, have the same diameter as the connector or larger. The dimensions can be seen in the technical data section on page 45.
2	Please consult the product description at page 17 to determine the correct duct connection (A/ B mode).
3	See if the unit has to be installed with or without a silencer and connect the ducts accordingly (see illustration below).
4	Wrap minimum 50 mm insulation around all four ducts.



Without silencer:
Connect ducts via (NPU) nipple



With silencer (HCV 400 only):
Connect ducts to the spigots on the silencer
(The silencer is already fitted with spigots)

Noise adjustment

Duct dimensions and sound absorbers must be in accordance with national standards and building regulations. Contact your Dantherm dealer for further information.



WARNING

Dust hazard

Ducts and connectors must be protected and kept closed until the house is ready to be inhabited. This is to ensure that no moisture, dirt or dust comes into the ducts, which could create problems at a later time.

External Connections

Connecting to LAN

Connect the unit to LAN using a standard Ethernet cable, fitted with RJ45 plug.
If using non pre-fabricated cable, please first run the cable through the house as needed and mount the RJ45 plug using the standard Ethernet wire crossing terminology, as specified in T568B. These mounting instructions can be found in the internet fx. on Wikipedia.

The unit will be accessible for the smartphone app (IOS and Android), if your device is connected to the same network via WIFI.

IP adress allocation status	Description
Dynamic IP	If the unit is connected to a router with built-in DHCP server it will fetch the IP address itself from the router when the unit starts up.
Static IP	Using PC Tool it is possible to allocate a static IP address to the unit.

MODBUS

Connections for the external connection module are available through your Dantherm dealer. This module can control various inputs/outputs, e.g. Dantherm HAC2 (accessory controller), wired remote - HCP 10/11 e.g.

Dig. input

The unit is fitted with 2 overrule inputs, also called digital inputs. These inputs can be used for selecting other fan speed level or activating alarms. As default the digital input are setup to:

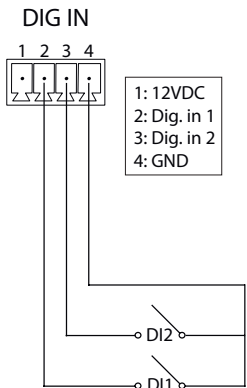
- Dig. input 1: Ventilation step 2
- Dig. input 2: Ventilation step 4

How it works (example to the right):

- Switch DI1 between pin 2 & 4 will activate input 1
- Switch DI2 between pin 3 & 4 will activate input 2

Dig. input can be used for:

- Ventilation steps from 0 - 4
- Safety shutdown
- High water level sensor.
- Kitchen hood boost
- And more



Find relevant information and settings in the PC Tool, under External Control.

Calibration of the air flows

Introduction

In order to obtain the correct comfort level, as well as managing humidity level, it's important to adjust the amount of supply air going into the house, as well as extract air from the house. This is done by adjusting the fan speed level in nominal mode, that is equal to level 3.

Calibration tools

Calibration of the air flow can be done in two ways:

1. via the foil keypad of the unit (see description below)
2. via PC Tool (follow step-by-step description in PC tool)

In both procedures the air flows need to be calibrated by measuring the ΔPa over the heat exchanger, by using the pressure nozzles behind the front cover.

Dantherm recommends using a handheld manometer such as Testo 510 or similar.


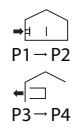
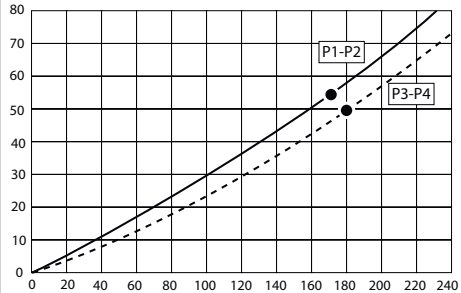
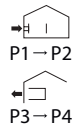


NOTICE

Pour 0,5 L water into the siphon, to prevent leakage from the drain prior to calibration.

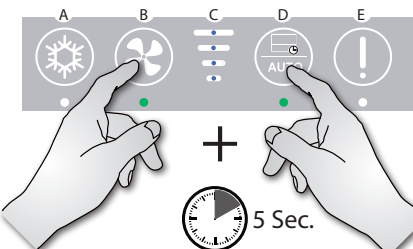
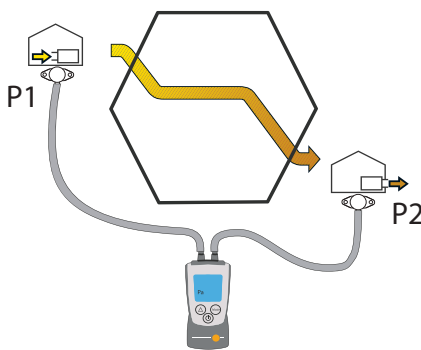
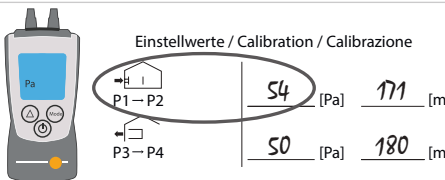

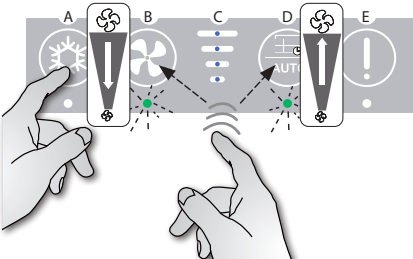
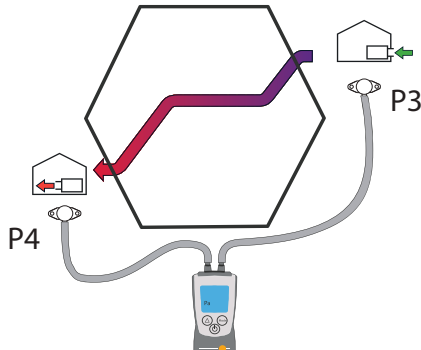
Use of flow chart


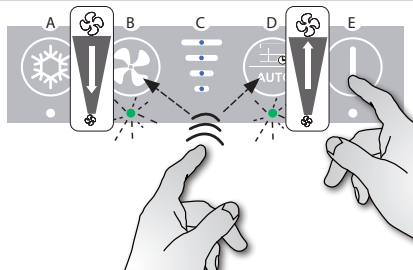

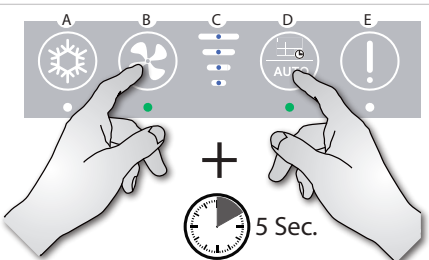
Follow these steps as a preparation for calibrating the unit.

Step	Action	Illustration
1	Use a desired air flow rate according to national regulations, which corresponds to the size and pressure loss of the house.	
	 <p>The supply air flow must under no circumstances be higher than the extract air flow, as this can cause humid air to be pressed into the building construction with destructive, negative effects on the building.</p>	
2	Write down the desired values of supply and exhaust air flow rates on the label placed on the cover of the heat exchanger. (The values here are examples for illustrative purposes only)	<p>Einstellwerte / Calibration / Calibrazione</p>  <p>_____ [Pa] <u>171</u> [m³]</p> <p>_____ [Pa] <u>180</u> [m³]</p>
3	Read the corresponding pressure loss on the airflow chart on the heat exchanger and write down the value as illustrated.	 <p>Einstellwerte / Calibration / Calibrazione</p>  <p><u>54</u> [Pa] <u>171</u> [m³]</p> <p><u>50</u> [Pa] <u>180</u> [m³]</p>

Calibration via foil keypad

Calibrate the fan speed by using the foil keypad on the front of the unit.

Step	Action	Illustration									
1	Press and hold down (5 sec.) the fan button (B) and weekly program (D) until both LED lights are flashing. The fan speed will now change to level 3. The unit is now in "installer mode" for one hour.										
2	Connect the Δ Pa meter (manometer) across the supply air path P1 -> P2. Check position of P1 and P2 according operation mode on page 20. NB: This example shows P1 and P2 in operation mode A. An Illustration of "Mode B" calibration is found on the label for Mode B included in the delivery.	<p>Example for Mode A.</p> 									
3	Compare the Δ Pa value on the manometer with the P1 -> P2 value, written down as described on page 36.	 <table border="1"><thead><tr><th colspan="3">Einstellwerte / Calibration / Calibrazione</th></tr></thead><tbody><tr><td>P1 - P2</td><td>54 [Pa]</td><td>171 [m]</td></tr><tr><td>P3 - P4</td><td>50 [Pa]</td><td>180 [m]</td></tr></tbody></table>	Einstellwerte / Calibration / Calibrazione			P1 - P2	54 [Pa]	171 [m]	P3 - P4	50 [Pa]	180 [m]
Einstellwerte / Calibration / Calibrazione											
P1 - P2	54 [Pa]	171 [m]									
P3 - P4	50 [Pa]	180 [m]									
4	Press and hold down the bypass switch (A) and adjust the supply air up (D) or down (B) until the measured Δ Pa comes as close as possible to the P1 -> P2 value, which was written on the label.  Strong wind against the building might affect balancing the unit.										
5	Disconnect manometer from P1 -> P2 and connect the manometer across the extract air path P3 -> P4. Check position of P3 and P4 according operation mode on page 20.. NB: This example shows P3 and P4 in operation mode A. An Illustration of "Mode B" calibration is found on the label for Mode B included in the delivery.	<p>Example for Mode A.</p> 									

6	Compare the ΔPa value on the manometer with the P3 -> P4 value, written down as described on page 36.	 <p>Einstellwerte / Calibration / Calibrazione</p> <table><tr><td>P1 → P2</td><td>54 [Pa]</td><td>171 [m³]</td></tr><tr><td>P3 → P4</td><td>50 [Pa]</td><td>180 [m³]</td></tr></table>	P1 → P2	54 [Pa]	171 [m³]	P3 → P4	50 [Pa]	180 [m³]		
P1 → P2	54 [Pa]	171 [m³]								
P3 → P4	50 [Pa]	180 [m³]								
7	Press and hold down the alarm reset (E) and adjust the extract air up (D) or down (B) until the measured ΔPa comes as close as possible to the P3 -> P4 value, which was written on the label.									
	Strong wind against the building might affect balancing the unit.									
8	Connect the ΔPa meter (manometer) across the supply air path P1 -> P2 one more time. Check the measured ΔPa value as it might have changed due to the adjustment on the extract air side. Make an adjustment if necessary.									
9	Check the air flow in every room and adjust the air flow rate by opening/ closing the valves in the different rooms.									
10	Connect the ΔPa meter (manometer) once again, in order to check the measured ΔPa value on both the supply air and extract air side.	<p>Einstellwerte / Calibration / Calibrazione</p> <table><tr><td>P1 → P2</td><td>56</td><td>54 [Pa]</td><td>171 [m³]</td></tr><tr><td>P3 → P4</td><td>51</td><td>50 [Pa]</td><td>180 [m³]</td></tr></table>	P1 → P2	56	54 [Pa]	171 [m³]	P3 → P4	51	50 [Pa]	180 [m³]
P1 → P2	56	54 [Pa]	171 [m³]							
P3 → P4	51	50 [Pa]	180 [m³]							
	Write down the measured values on the label.									
11	Press and hold down (5 sec.) the buttons for fan (B) and weekly program (D) until the LED stops flashing.									
	The unit is now calibrated.									

Operation

Operating the unit See user manual section "Transport and unwrapping" on page 7.

Maintenance and care

Preventive maintenance

Introduction

Preventive maintenance is necessary at regular intervals if the unit is to function efficiently and optimally, in order to avoid unintended operation stoppages and to ensure the expected lifetime of minimum 10 years.

It is important to notice, that intervals between filter maintenance can vary depending on the specific environment, and that moving parts are wearing parts, that needs replacements when worn down dependent on the specific environment.

The factory warranty only applies if it can be documented that regular preventive maintenance has been carried out as prescribed. The documentation can consist of a written log including a company stamp or equivalent.

Interval summary

At minimum, maintenance must be carried out as shown here:

Interval	Task	To be carried out by
6 month	Check filters, Replace if required	User
1 year	Replace filters	User
2 years	Inspect and clean fans	Trained professionals
	Inspect and clean electrical preheater	Trained professionals
	Clean internal air path	Trained professionals
	Inspect and clean heat exchanger	Trained professionals
	Inspect and clean drip tray, drain and drain hose	Trained professionals



CAUTION

Injury by electric shock and risk of damage to the device

- A biannual inspection every other year is to be performed by trained professionals only.
- Turn off the unit while carrying out inspections of the unit's internal parts.
- If the power supply cable is damaged, this must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Preparing the inspection

Remove front cover in order to carry out the inspection.

Step	Action	Illustration
1	Remove the upper part of the front cover.	
2	Release the two screws at the upper left and right corner (underneath the upper part of the front cover).	
3	Remove the remaining part of the front cover.	

**Filters - alarm and inspection
(6 months -1 year)**

The unit has a built in timer for filter alarm (6 months by default). The timer period for the filter alarm can be changed via remote control or PC Tool or can be reset via the alarm button

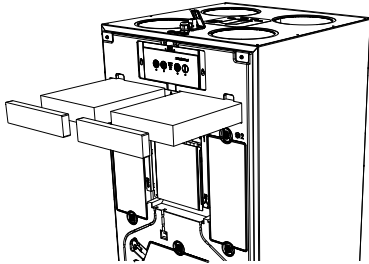
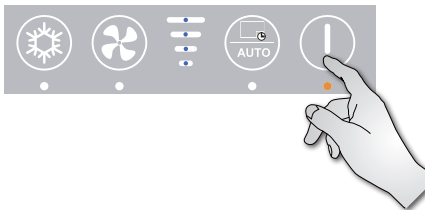
When the timer has expired a filter alarm is triggered. A buzzer will sound and the LED of the "!"-button will light yellow-orange. (If the LED lights RED, please see: Troubleshooting on page 41.)



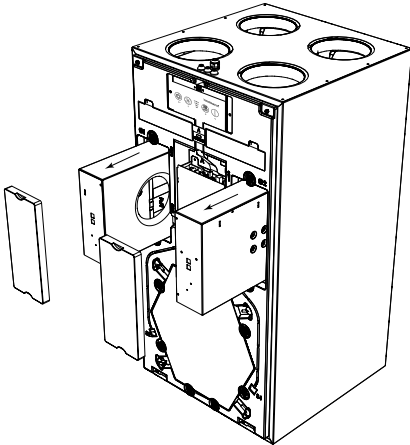
5 Sec. press

Resets filter alarm when the alarm has been triggered
Resets filter timer without the timer having expired.

A short beep will sound, indicating that the filter alarm has been reset successfully.

Step	Action	Illustration
1	Pull out and inspect the filters, when the filter alarm has been triggered.	
2	Even if only one of the filters is dirty, we recommend to change both filters in order to avoid an imbalance in the air flow through the unit. NB: Change the filters at least once each year regardless of whether they are dirty or an alarm has been triggered.	
3	After changing the filters, the filter alarm must be reset with a 5 sec. press on the alarm button. A short beep will sound, indicating that the filter alarm has been reset successfully.	

**Fans and electrical preheater
(2 years)**

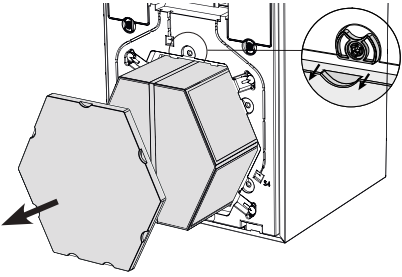
Step	Action	Illustration
1	Pull out one of the fan boxes.	
2	Carefully clean the fan's blades with compressed air or a brush through the opening at the base of the fan box. All blades must be clean in order to maintain the fan's balance. Be careful not to remove the small metal balance pieces on the fan's blades as this can cause vibrations.	
3	Turn the fan with the fingers and listen to check for murmurs from the bearing. If this is the case, the fan will probably need to be replaced.	
4	If the unit is fitted with a heating element: clean as much as possible without taking the fan box apart. Inspect the heating elements for visible damage.	
5	Reinsert the fan box and repeat steps 1-5 with the second fan box.	

**Internal air path
(2 years)**

Pull out the fan boxes and filters and inspect the ducts and internal surfaces inside the unit visually for dirt. If the ducts or surfaces are dirty they must be cleaned with a wet cloth, brush, vacuum cleaner or alike.

Reinsert fan boxes and filters, when you have finished the cleaning.

**Heat exchanger
(2 years)**

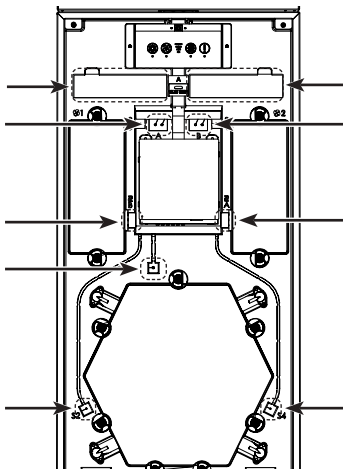
Step	Action	Illustration
1	Remove the heat exchanger.	
2	Clean the heat exchanger with a soft brush and a vacuum cleaner at all four inlets. In special cases, e.g. if there are clear traces of accumulated, dirty condensate water in the heat exchanger, it is necessary to clean the heat exchanger with soapy water outside the unit.	
3	Wait until the heat exchanger is completely dry and reinsert it then.	

**Drain and drip tray
(2 years)**

Step	Action	Illustration
1	Remove the heat exchanger in order to inspect the drip tray. <ul style="list-style-type: none"> • Check that the condensate drain is not clogged in the drip tray. • Clean the drip tray with soapy water and a brush/ cloth. Reinsert the heat exchanger.	
2	Check drain hoses and valves for damage and proper installation. See optimal installation on page 32. <ul style="list-style-type: none"> • Make sure that the hose drops minimum 1% toward the drain • Make sure that the hose is protected against frost from unit to drain • Ensure that there is water in the hose's siphon. 	

Finish inspection

When the service inspection has been completed, the unit has to be closed again.

Step	Action	Illustration
8	Ensure that all gaskets are sealed completely before mounting the front cover.	
9	Check that all connections are securely connected to the PCB.	
10	Mount the front cover with the two screws and then put the upper part of the front cover back in place.	

Trouble shooting

Error signalling



Errors are indicated by an LED located under the alarm reset button.
The LED can light in two colours: Red or yellow-orange.

LED Colour	Errors
Yellow-Orange	Replace the air filters (See also page 40) and reset filter alarm (5 sec. press on the button). A short beep will sound, indicating that the filter alarm has been reset successfully.
Red	Operating error E1-E16. The number flashes corresponds to an error code with corresponding digits in the left column of the table below, followed by a 5 second break.

LED displays Software ≥2.0

This table shows the list of errors, which can be displayed.

Number of flashes	Error number Control panel	Error
1	E1	Exhaust fan
2	E2	Supply fan
3	E3	Bypass damper
4	E4	Outside air temperature sensor (T1)
5	E5	Supply air temperature sensor (T2)
6	E6	Extracted air temperature sensor (T3)
7	E7	Exhaust air temperature sensor (T4)
8	E8	Indoor air temperature sensor (T5)
9	E9	Humidity sensor, RH% (Accessory)
10	E10	Outside temperature < -13 °C
11	E11	Supply air temperature < +5 °C
12	E12	Fire alarm, one or more of the internal sensors are measuring a temperature above 70 °C.
13	E13	Communication error / poor signal
14	E14	Fire alarm, thermostat in the duct system (Accessory)
15	E15	High water level
16	E16	Fire damper failure

Error messages on the remote control's LCD panel

Errors are displayed on the HRC3 remote control with an "E" + a number. The error can then be looked up in the troubleshooting overview and in the control panel's manual for rectifying errors.

PC Tool

Operating warnings and errors are logged in the controller's memory. Connect a computer with PC Tool installed via USB to output detailed information from the logfile.

Reset the unit after a restart

A restart of the unit (disconnect/connect 230V) will reset the controller and start the unit up in standard operating mode.
The controller will subsequently check for any errors. This can take up to 15 minutes.

Spare parts

Introduction

Spare parts for the HCV units shown in this section, are available via Dantherm dealers.

Spare parts illustration HCV 400

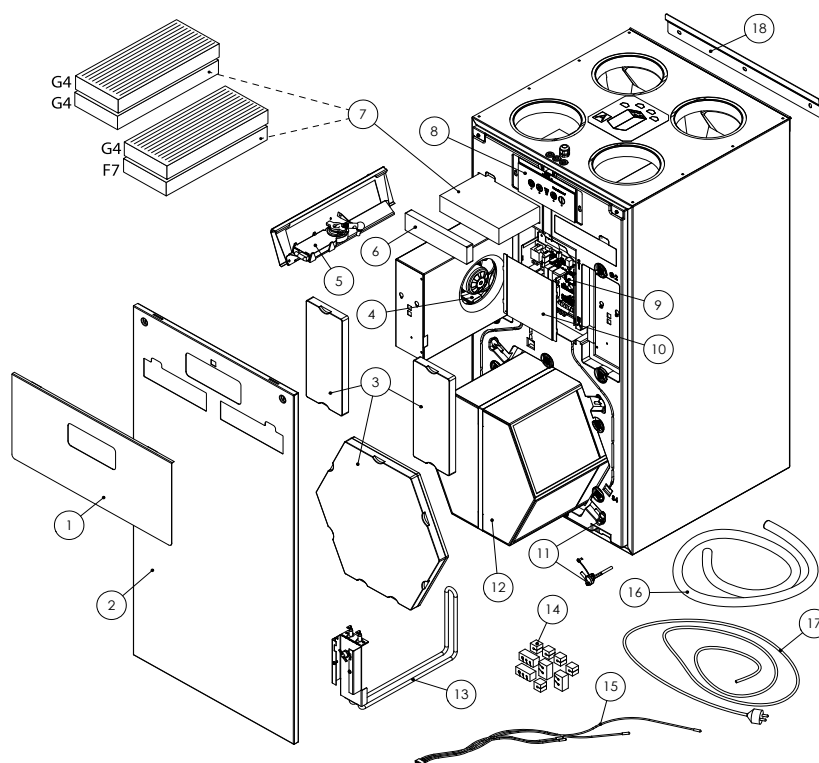


Fig. 13

Spare part list HCV 400

Please check the variant of your unit on the product label (see page 16 and page 17).

Pos.	Description	HCV 400 P1	HCV 400 P2	HCV 400 Enthalpy (E1)	HCV 400 P1/E1
1	Filter cover			097411	
2	Front plate			097412	
3	EPS cover kit			097414	
4	Fan - Ø190 mm	099250		097416	099250
5	Bypass motor			077231	
6	Filter packing, kit			097418	
7	Kit, filters 2x ISO Coarse 75% ISO 16890 (G4) (standard equipment)			098347	
	Kit, filters ISO Coarse 75% ISO 16890 (G4) + ePM1 55% ISO 16890 (F7) (additional kit)			098346	
8	User panel complete			097413	
9	Control board units (PCB)			077234	
10	Control board cover			099174	
11	Air connection spigot, kit			081185	
12	Heat exchanger	097422	099182		099183
13	Pre-heater 1400W			098268	
14	Cable gaskets, kit			097425	
15	Temperature sensors, kit			097420	
16	Drain hose with clamp			086697	
17	Power cable			077237	
18	Support bracket			098348	

**Spare parts
illustration
HCV 300/ 500/ 700**

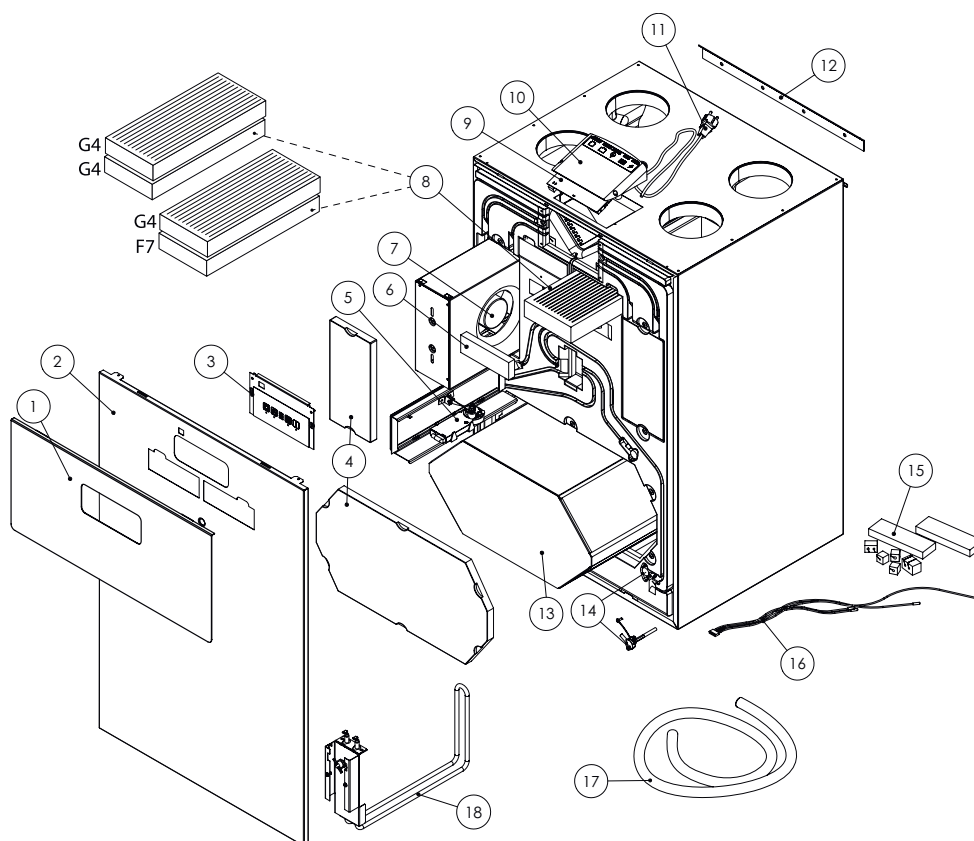


Fig. 14

**Spare part list
HCV 300/ 500/ 700**

Pos.	Description	HCV 300	HCV 500	HCV 700
1	Filter cover	093842	094692	
2	Front plate	093843	094698	
3	User panel complete		092946	
4	EPS cover kit	077230	077229	
5	Bypass motor		077231	
6	Filter packing, kit	077241	077242	
7	Fan - Ø190 mm (HCV 300/ 500), Ø225 (HCV 700)	077233		081429
8	Kit, filters 2x ISO Coarse 75% ISO 16890 (G4) (standard equipment)	093845	087342	093478
	Kit, filters ISO Coarse 75% ISO 16890 (G4) + ePM1 70% ISO 16890 (F7) (additional kit)	093844	096393	093479
9	Control board units (PCB)		077234	
10	Control board cover		077236	
11	Power cable		077237	
12	Support bracket	045843		098857
13	Heat exchanger	077244	077245	077246
14	Air connection spigot, kit		081185	
15	Cable gaskets, kit		077208	
16	Temperature sensors, kit		077243	
17	Drain hose with clamp		086697	
18	Pre-heater	081187	081188	081189

Appendix

Technical Data

Data sheet
HCV 400

Specification	Abbr.	Unit	HCV 400 P1	HCV 400 P2	HCV 400 E1
Operating range (min. - max. @100Pa)		m³/h	80 to 250	60 to 240	60 to 240
Performance					
Thermal efficiency EN13141-7 dry at up to	η SUP	%	96	96	95
Filters according to EN779 (extract/outdoor)	class	-	Standard: ISO Coarse 75% ISO 16890 (G4/G4) Optional: ePM1 55% ISO 16890 (F7)		
Installation surrounding temperature	tSURR	°C	from +12 to +50		
Outdoor temperature without preheater installed	tODA	°C	from -12* to +50		
Outdoor temperature with preheater installed	tODA	°C	from -25 to +50		
Max. absolute humidity in extract air	x	g/kg	10		
Cabinet:					
Dimensions (without floor console, incl. 12 mm wall bracket)	W x H x D	mm	540 x 1056 x 561		
Spigots / Duct connections	Ø	mm	160 - female		
Weight	m	kg	39	40	
Heat conductivity of the polystyrene insulation	λ	W/(mK)	0,031		
Heat transfer coefficient of the polystyrene insulation	U	W/(m²K)	<1		
Fire classification of the polystyrene insulation	class	-	DIN 4102-1 class B2; EN 13501 class E		
Drainage hose included	Ø/length	" / m	3/4" - 1m		
Cabinet colour	RAL	-	9016		
Electrical					
Voltage	U	V	230		
Max. power consumption (without/with preheater)	P	W	170/1570		
Frequency	f	Hz	50		
IP-class	class	-	21		

* Preheater is recommended when outdoor temperature is below -5°C, to ensure balanced ventilation.

Data sheet
HCV 300/ 500/ 700

Specification	Abbr.	Unit	HCV 300	HCV 500	HCV 700
Operating range (min. - max. @100Pa)		m³/h	50 to 180	80 to 300	80 to 450
Performance					
Thermal efficiency EN13141-7 dry at up to	η SUP	%	86	86	85
Filters according to EN779 (extract/outdoor)	class	-	Standard: ISO Coarse 75% ISO 16890 (G4/G4) Optional: ePM1 70% ISO 16890 (F7)		
Installation surrounding temperature	tSURR	°C	from +12 to +50		
Outdoor temperature without preheater installed	tODA	°C	from -12* to +50		
Outdoor temperature with preheater installed	tODA	°C	from -25 to +50		
Max. absolute humidity in extract air	x	g/kg	10		
Cabinet:					
Dimensions (without floor console, incl. 12 mm wall bracket)	W x H x D	mm	600 x 1000 x 430	700 x 1050 x 603	700 x 1050 x 750
Spigots / Duct connections	Ø	mm	125 - female	160 - female	200 - female
Weight	m	kg	36	49,5	70
Heat conductivity of the polystyrene insulation	λ	W/(mK)	0,031		
Heat transfer coefficient of the polystyrene insulation	U	W/(m²K)	<1		
Fire classification of the polystyrene insulation	class	-	DIN 4102-1 class B2; EN 13501 class E		
Drainage hose included	Ø/length	" / m	3/4" - 1m		
Cabinet colour	RAL	-	9016		
Electrical					
Voltage	U	V	230		
Max. power consumption (without/with preheater)	P	W	170/870	170/1370	234/1834
Frequency	f	Hz	50		
IP-class	class	-	21		

* Preheater is recommended when outdoor temperature is below -5°C, to ensure balanced ventilation.

Schematics

Illustration of the wiring diagram

This illustration shows the wiring diagram of the unit

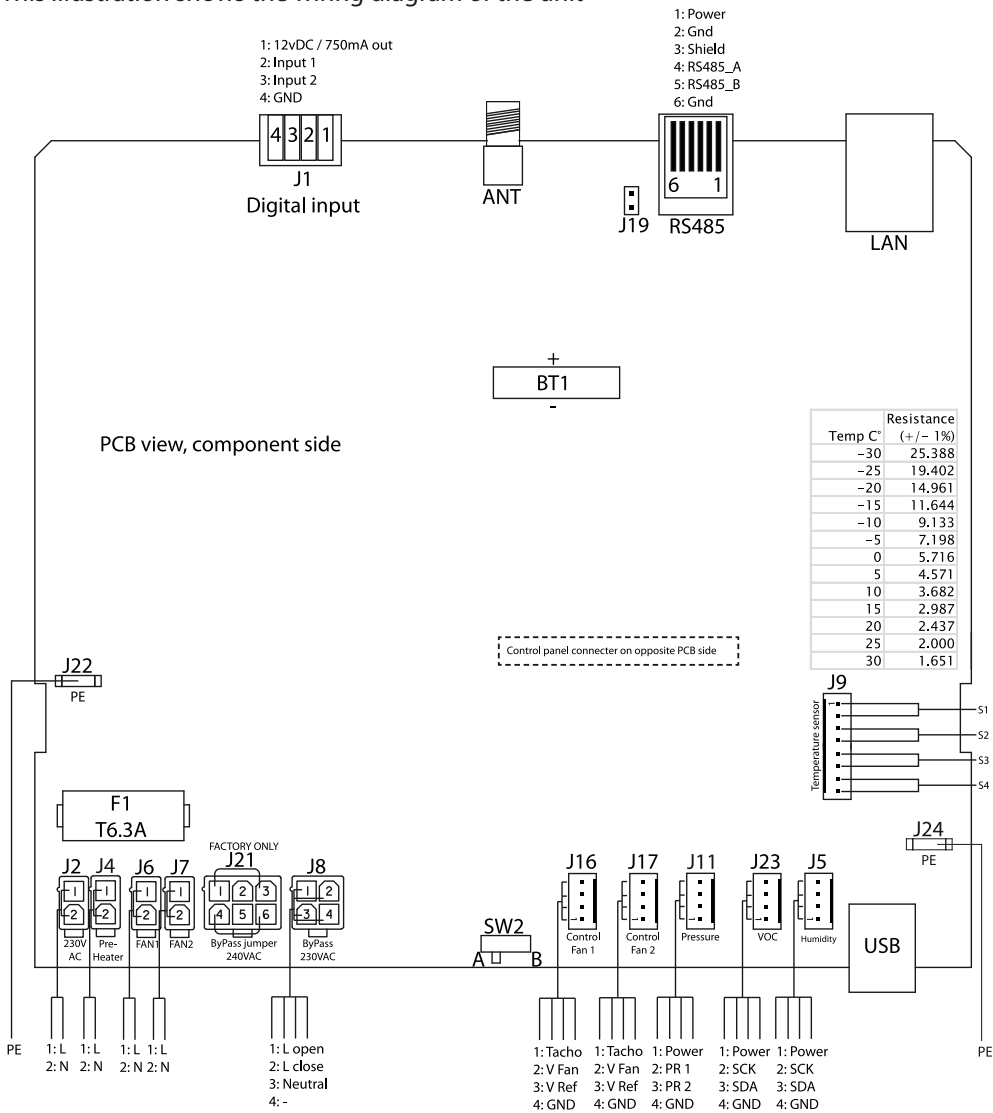
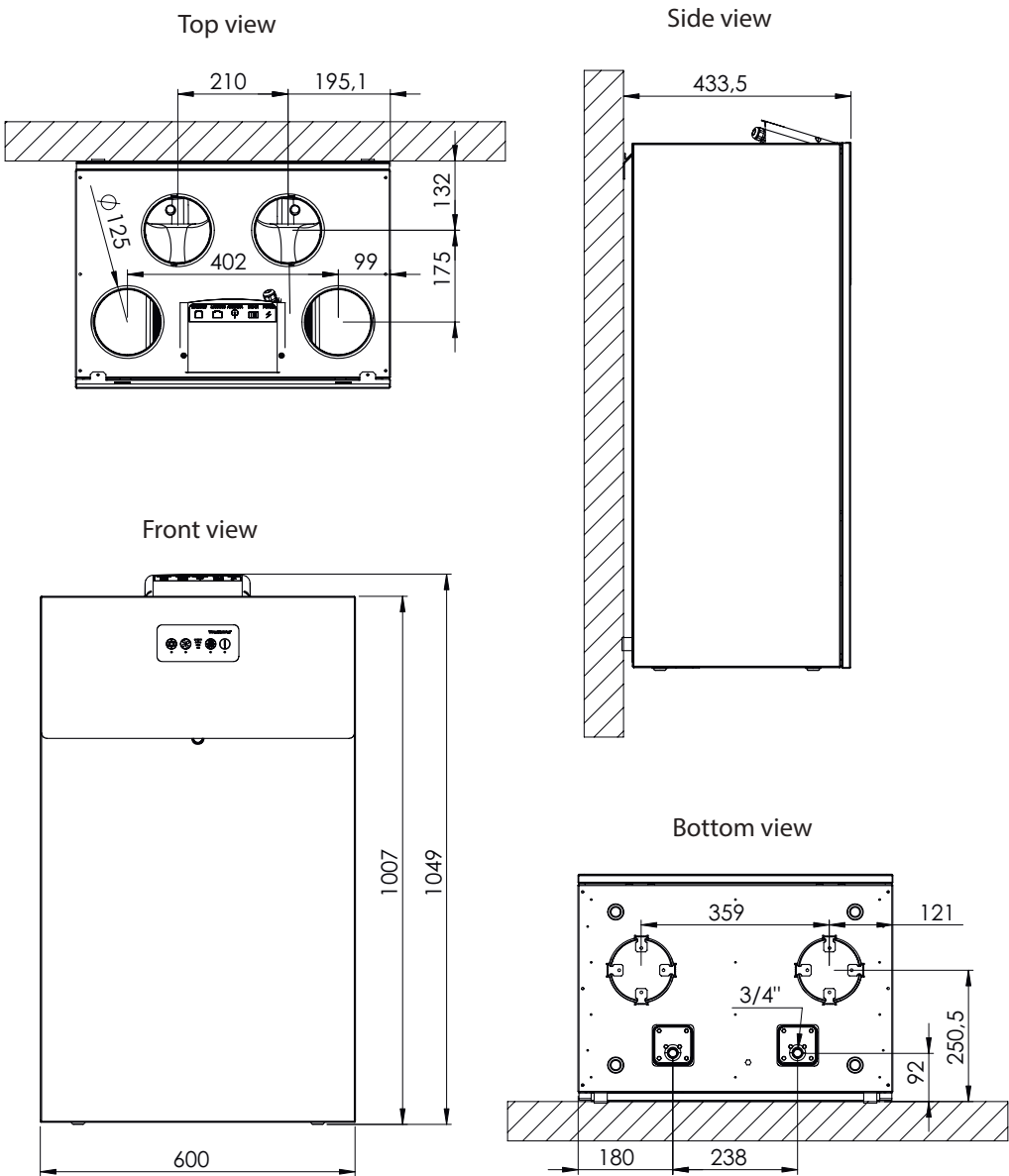


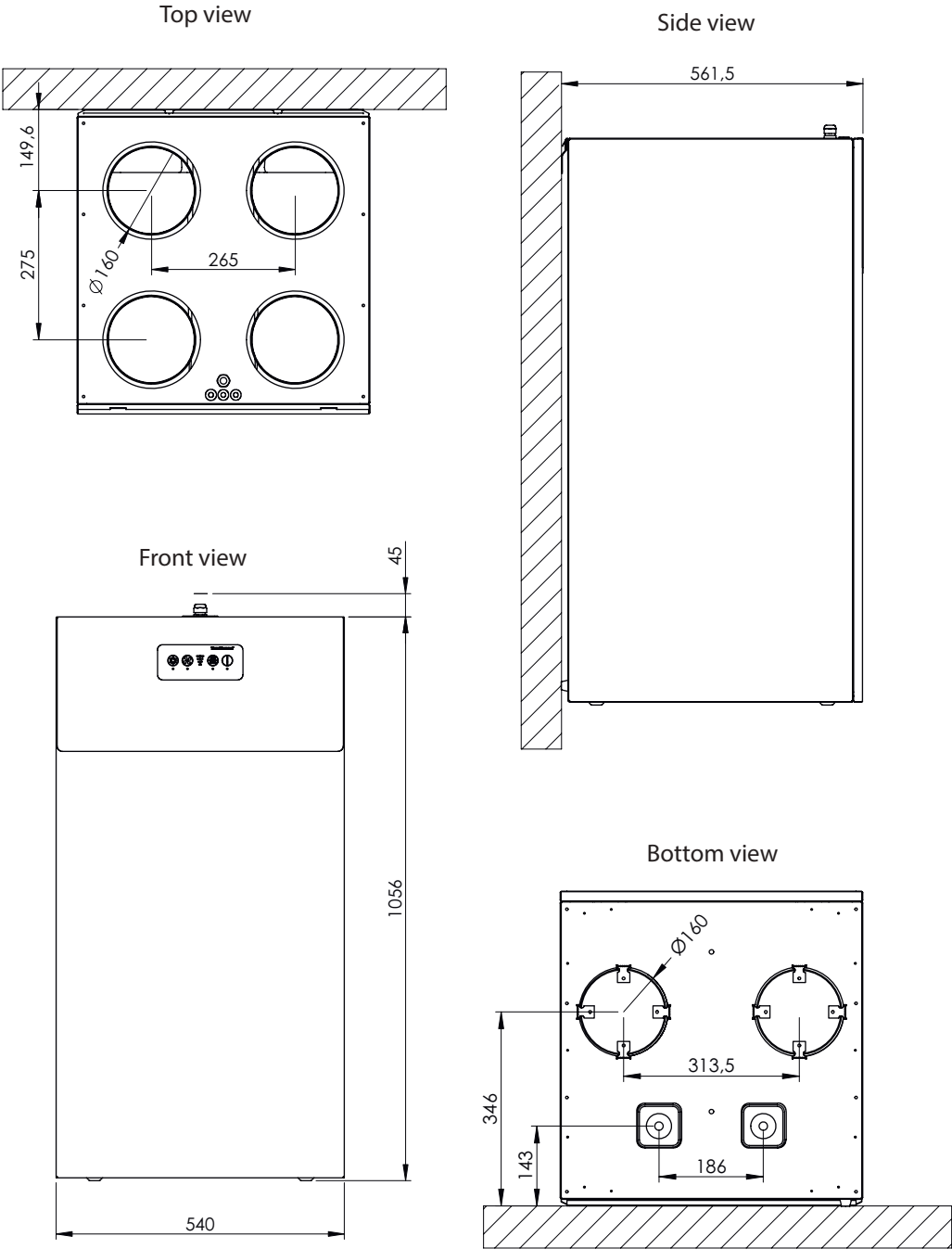
Fig. 15

Enclosure dimensions

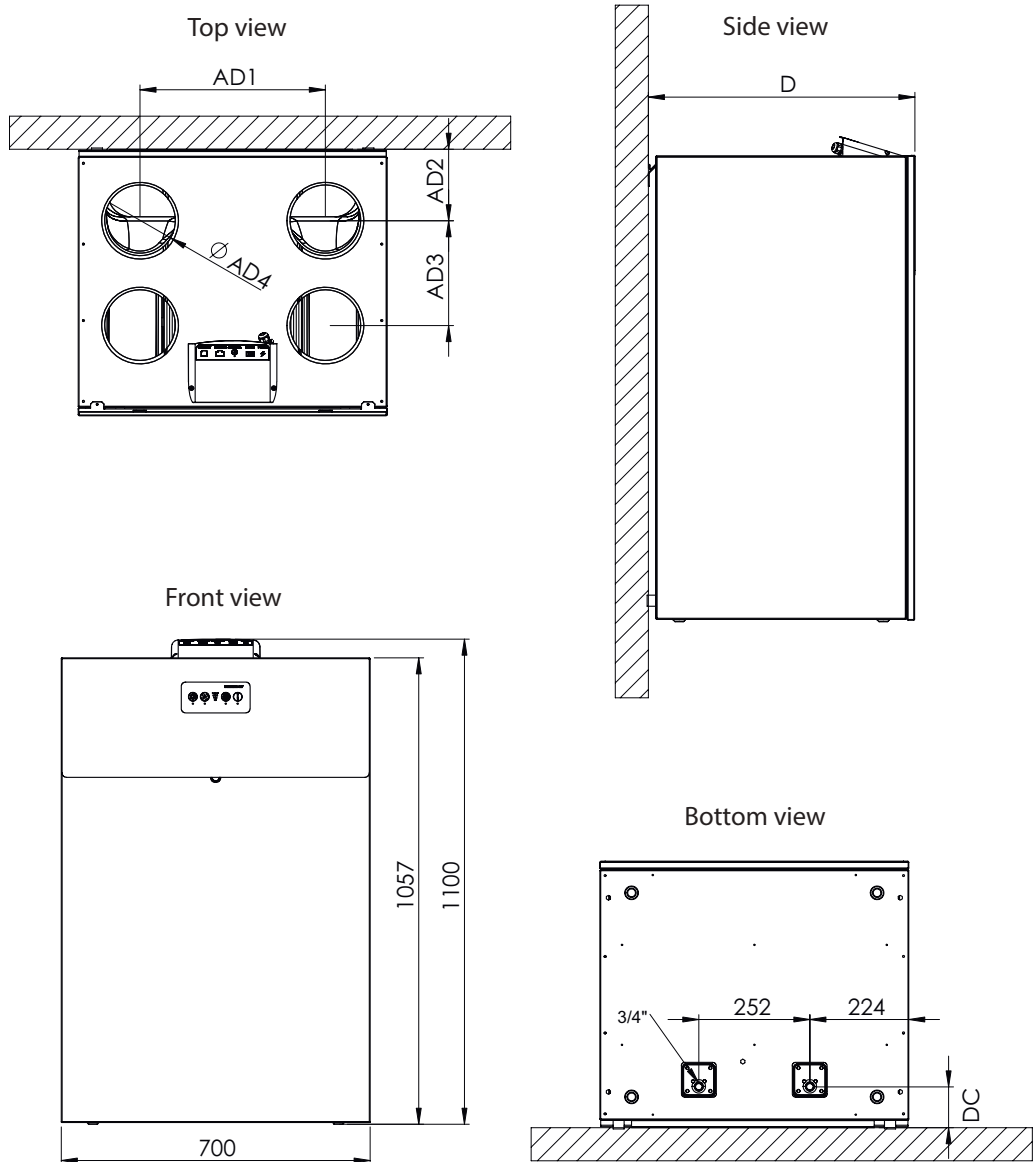
HCV 300
Dimensions



HCV 400
Dimensions



HCV 500/ 700
Dimensions



View	Pos.	HCV 500	HCV 700
Top view	AD1	420	394
	AD2	162	196
	AD3	237,5	289
	AD4	Ø 160	Ø 200
Side view	D	604	770
Bottom view	DC	93	98



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