Dantherm®
CONTROL YOUR CLIMATE

HCV500

Service Manual
Rev. 1.4.5
EN

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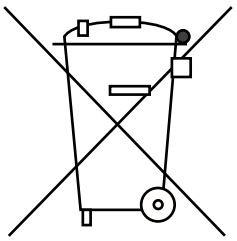
CONTROL YOUR CLIMATE



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Introduction

Overview

Introduction

This is the service manual for the Dantherm Air Handling A/S home ventilation unit type HCV500.

Table of contents

This manual covers the following topics:

096391 • Version 2909.2017

General information

Introduction

This section provides general information about the service manual and the unit.

Manual, Product no.

The product number for this service manual is 096391

Target group

The target group for this service manual is:

- Everyday users
- Technicians who install and maintain the product

Copyright

Reservations

Dantherm Air Handling A/S reserves the right at any time to carry out changes or improvements to the product and user guide without prior warning or obligation.

EU Declaration of Conformity

CE

Dantherm Air Handling A/S, of Marienlystvej 65, DK-7800 Skive, Denmark, declares, at its own liability, that the following product:

352442 **HCV500**

- which is covered by this declaration, complies with the following directives:

2014/35/EU.....LVD Directive (low voltage)
2014/30/EU.....EMC Directive
2014/53/EU.....R&TTE

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

EN 60 335-1:201.....Household & similar electrical appliances, Safety - Part 1
EN 60 335-2-40:2003.....Household & similar electrical appliances, Safety - Part 2-40
EN 61 000-3-2:2014.....Electromagnetic compatibility (EMC) - Part 3-2: Limits (Harmonics)
EN 61 000-3-3:2013.....Electromagnetic compatibility (EMC) - Part 3-3: Limits (Flicker)
EN 61 000-6-2:2005.....Electromagnetic compatibility (EMC) - Part 6-2: Generic standards (Immunity)
EN 61 000-6-3:2007.....Electromagnetic compatibility (EMC) - Part 6-3: Generic standards (Emission)
EN 61 000-6-3/A1:2011..Electromagnetic compatibility (EMC) - Part 6-3: Generic standards (Emission) - Annex 1
EN 62 233:2008.....Measurement methods for electromagnetic fields of household appliances
EN 55 014-1:2007.....Electromagnetic compatibility - Requirements of household appliances etc. Part 1: Emission
EN 55 014-2:015.....Electromagnetic compatibility - Requirements of household appliances etc. Part 2: Immunity - Product family standard
EN 30 1489-1.....EMC / ERM Part 1
EN 30 1489-3.....EMC / ERM Part 3
EN 30 0200-1:2013-02...EMC / ERM Short Range Device Part 1
EN 30 0200-2:2013-02...EMC / ERM Short Range Device Part 2
EN 30 0200-3:2013-02...EMC / ERM Short Range Device Part 3

Skive, 22.09.2016

Recycling

The unit is designed to function for many years. Disposal of the unit must be carried out in compliance with national legislation and procedures to protect the environment.

Product description

General description

Introduction

This section provides a description of the unit.

HCV500 Summary

The HCV500 unit is designed for the ventilation of private homes.
The heat energy in the impure evacuated air is reused in the unit's heat exchanger, and heats up fresh air from outside for optimal comfort.
The unit is designed for installation in dry surroundings with temperatures over 12°C.
The air flow path can be altered electronically.

Abbreviations used in this manual

Common ventilation terms:

Abbre-viation	Description
T1	Outside air to the unit
T2	Supplied air from the unit to the home (heated in the heat exchanger)
T3	Extract. Evacuated, stale and warm air.
T4	Exhaust air from the unit (cooled in the heat exchanger)
S1	Temperature sensor no. 1
S2	Temperature sensor no. 2
S3	Temperature sensor no. 3
S4	Temperature sensor no. 4
A	Indicates mode **A**, where T2 and T3 are on the **left** side of the top of the unit. See page 6
B	Indicates mode **A**, where T2 and T3 are on the **right** side of the top of the unit. See page 6
G4	Standard air filter.
F7	Fine filter, pollen filter (Additional equipment)
BP	Bypass (prevents overheating of the home on hot days)
IP	Unique address for the ethernet port.
DHCP	Automatic settings of an ethernet address from an external source on a net-work (assuming there is connection to Ethernet)
PC	Personal computer with Windows
USB	Universal serial bus connection
LAN	Local area network
WAN	Wide area network (internet)
BMS	Building Management System
PCB	Print Circuit Board
FFC	Flat Flexible Cable

Continued overleaf

General description, *continued*

Illustration

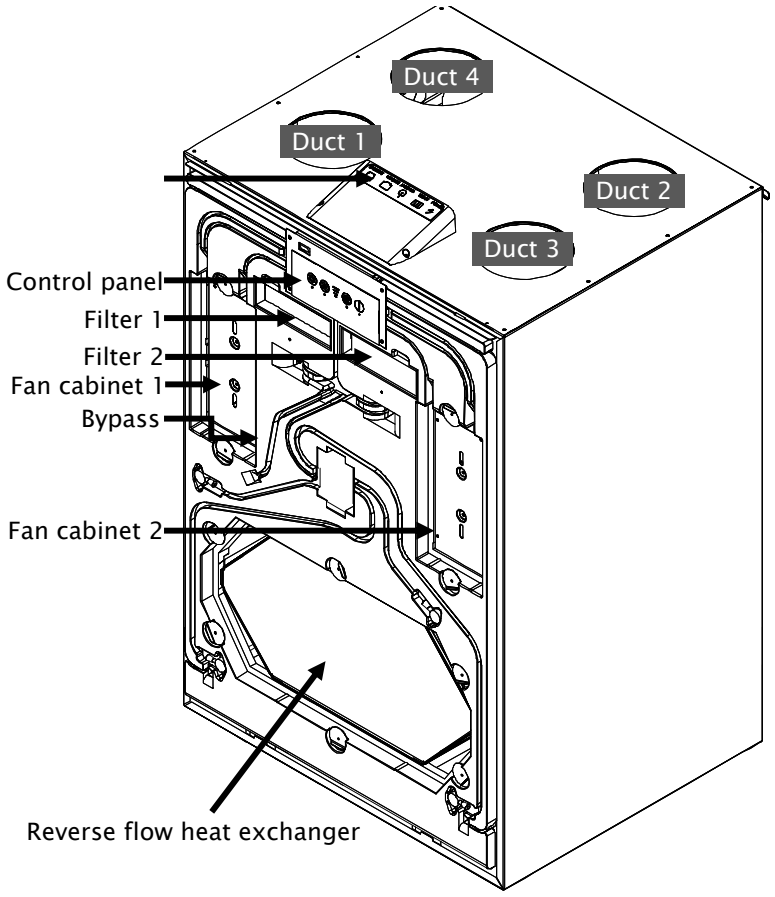


Fig. 1

Parts description

Part	Mode A		Mode B	
Duct connection 1	Extract–	T3	Outside air –	T1
Duct connection 2	Exhaust –	T4	Supply	T2
Duct connection 3	Outside air–	T1	Extract	T3
Duct connection 4	Supply –	T2	Exhaust	T4
Filter 1	Extraction filter G4		Supply filter G4 or F7	
Filter 2	Supply filter G4 or F7		Extraction filter G4	
Fan cabinet 1	Extractor fan		Supply fan *	
Fan cabinet 2	Supply fan*		Extractor fan	

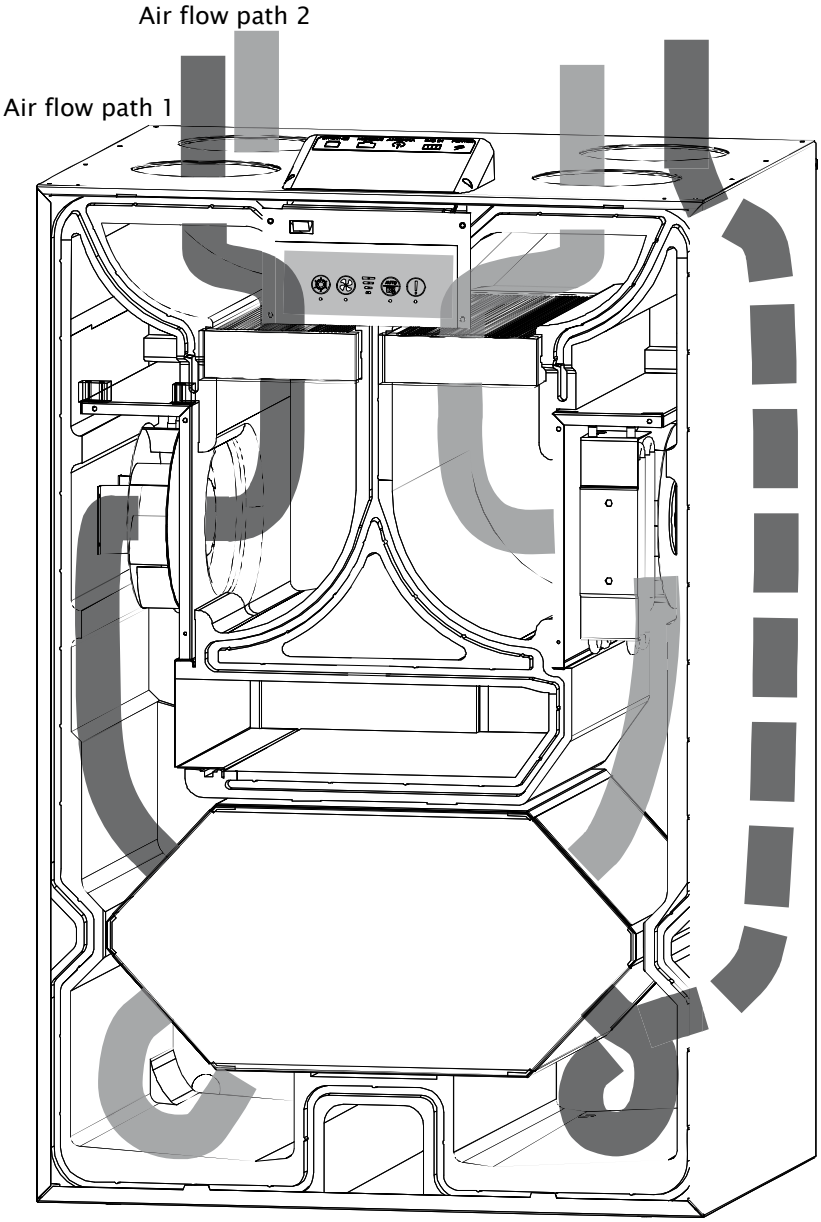
*Supply fanbox can be fitted with electrical preheat element (accessory)

Continued overleaf

General description, *continued*

Air flow paths

This illustration shows the two air flow paths through the unit.
Air flow can be altered electronically. See page 21.



Description of parts

Introduction

This section describes the components in HCV500.
Please see the illustration on page 6 for references.

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 40°C.

Filters

The unit is equipped 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 reverse 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.

Water outlet

The unit is equipped with two drain valves. One of these must be connected to a drain hose to direct the condensate to a drain.
Correct connection to the drain valves is shown at the top of the unit and on page 6 in this service manual.

Description of parts of parts, *continued*

Electronic control

Detailed description of the electronic controls page 11,
and user instructions, page 27

Positioning of parts

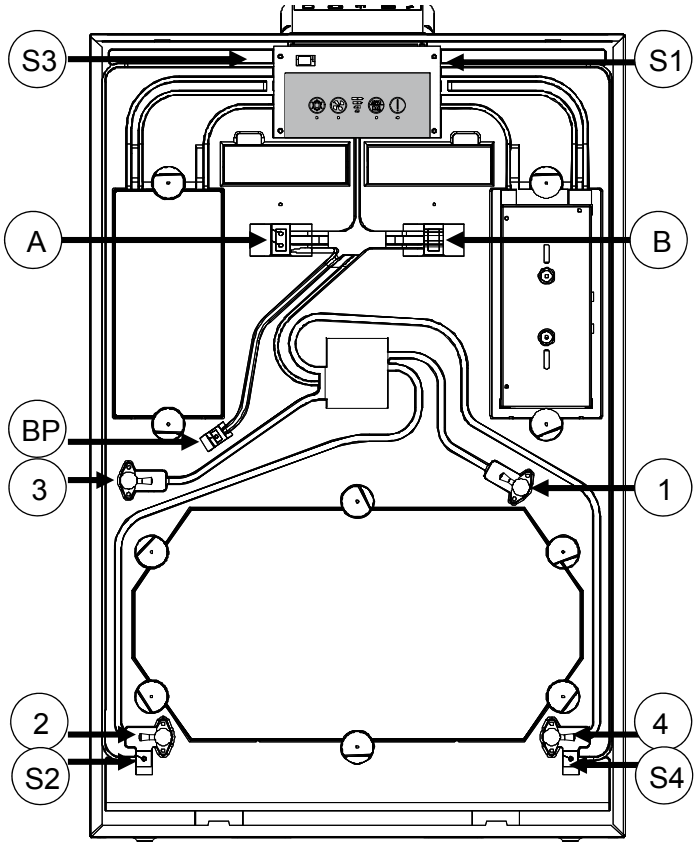


Fig. 2

Description of parts

pos	Mode A	Mode B
S1	T1 Outside air temperature sensor	T3 Extracted air temperature sensor
S2	T2 Supply air temperature sensor	T4 Exhaust air temperature sensor
S4	T4 Exhaust air temperature sensor	T2 Supply air temperature sensor
S3	T3 Extracted air temperature sensor	T1 Outside air temperature sensor
A	VOC and RH% sensor (additional equipment)	n/a (prop)
B	n/a (prop)	VOC and RH% sensor (additional equipment)
1	T1 Pressure gauge valve for outside air	T3 Pressure gauge valve for extracted air
2	T2 Pressure gauge valve for supply air	T4 Pressure gauge valve for exhaust air
3	T3 Pressure gauge valve for extracted air	T1 Pressure gauge valve for outside air
4	T4 Pressure gauge valve for exhaust air	T2 Pressure gauge valve for supply air
BP	Cable bushing, bypass	Cable bushing, bypass

Description of additional equipment

Installation of additional equipment	The unit is supplied without accessories connected. Installation of these accessories is described in the documentation included with them.
Electric Pre Heater	The electric heating element heats up the outside air before it comes into the counter flow heat exchanger and helps to increase comfort in the home during wintertime as well as preventing the build-up of ice in the heat exchanger.
Humidity and VOC sensors	This unit can be equipped with humidity (RH%) and/or air quality (VOC) sensors. These sensors monitor the quality of the air (from) inside the house and adjust the air volume accordingly. If an HRC 3 remote control is connected to the unit, the level is shown on the display. This is called demand controlled ventilation and ensures a high air quality with the lowest possible energy consumption.
Bypass damper	The motorised bypass damper automatically directs the air outside the heat exchanger according to demand. This function is used on sunny days when a cooler outside temperature can help to cool the air inside.
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. Enable 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 hung up on the wall.
Filters	Replacement filters in sets of 2 standard filters or 1 standard plus 1 F7 (pollen) filter
HAC2	Connect a number of additional accessories to the HCV unit via Home Accessory Controller: HAC2.

Contact your dealer for additional accessories and the latest news.

Electronic control

Introduction

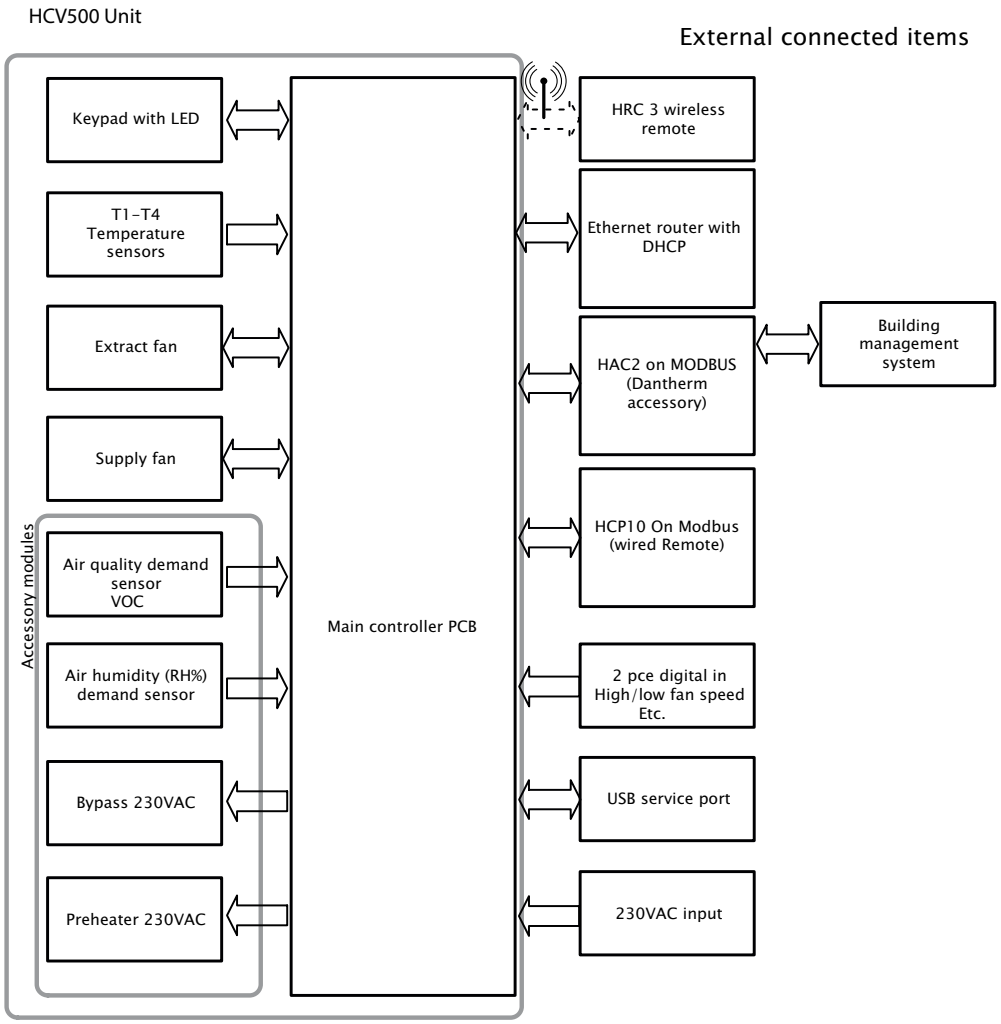
This section provides a detailed description of the electronic controls.

Function

The unit's main controls are placed on the main PCB together with other outlets and inputs.
The control panel with LED displays is placed under the main controls, and connected to the
main PCB via FFC.

System architecture

Illustration of the system control architecture:



Continued overleaf

Electronic control, *continued*

Illustration of the control unit

This illustration shows the main PCB and control panel without front cover.

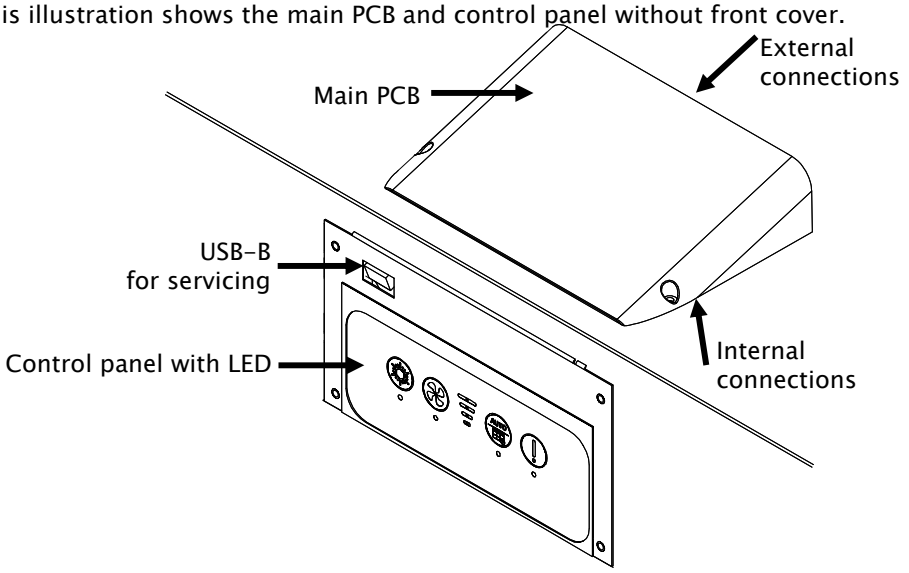
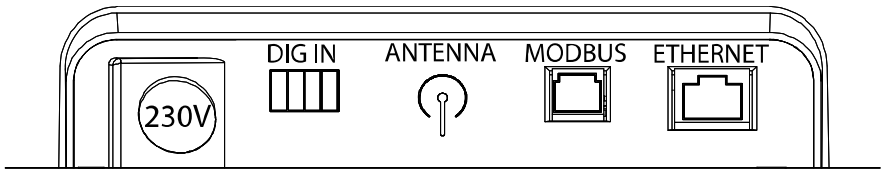


Illustration of connections

External connections:



Description of connections

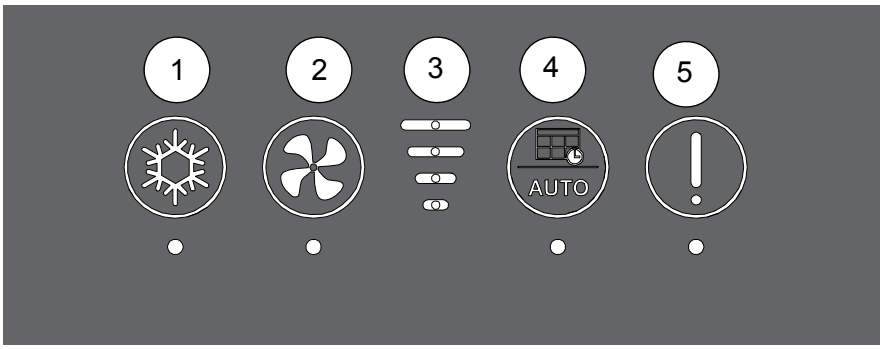
External connections:

Connection	Description
230V	Connection for 230V power supply.
DIGI IN	External digital input, for selection of operation modes
ANTENNA	Wireless connection of control panel
MODBUS	Modbus connection for external modules
ETHERNET	LAN connection

Continued overleaf

Electronic control, *continued*

Illustration control panel



Description control panel

The control panel foil has four buttons with corresponding LED displays.
Four blue LED lights in the middle indicate fan speed regardless of which mode the unit is operating in.

System operation strategy

Introduction

This section describes the operation strategy under a variety of conditions.
See more under user instructions on page 26

Electric preheater

If a heating element is mounted it will ensure the heating of fresh outside air while also reducing the need for defrosting.

- The heating element can be enabled/disabled via the remote control (HRC3) in *installer mode*, if the preheating module is set to enable (active) via PC-Tool during installation.
- The heating element is added after the T1 sensor.
- If the outside temperature is under -3°C or the supply air is under 16.5°C then the heating element will function at 10%.
- The heating element will increase or decrease the effect by 10% every minute depending on the T1 or T2 temperature.
- If 100% preheater power is not sufficient, boths will be lowered in a balanced manner.

Setpoints cannot be changed.

Defrosting and fireplace function

During extremely cold periods with T1 temperatures under -3°C and the exhaust temperature, T4, at less than +2°C there is a risk of condensate in the heat exchanger freezing to ice, which is inadvisable.
The automatic function prevents this via the following procedure:

- Heat is added if a heating element has been mounted.
- The supply fan gradually reduces in speed until the minimum RPM is reached.
- After 10 seconds at this speed the supply fan stops
  while the extractor fan continues to circulate warmer air through the heat exchanger, thereby thawing any frost or ice that has formed.
- Once T4 has again achieved over +8°C, the supply fan will start at minimum RPM and gradually increase the speed until the original speed has been achieved.
- The procedure is repeated for as long as is necessary.
- If the outside air, T1 is under or at -13°C for more than 4 minutes and 15 seconds – also in defrost mode – the unit will stop for 30 minutes and then resume normal operations.
  This is not possible if the unit is equipped with a heating element.

The default defrost strategy can create underpressure in the house. This may cause smoke from e.g. a fireplace to be drawn back into the house. Select fireplace mode in PC-tool house settings. If selected unbalanced defrost is blocked ad the unit will stop for 4 hours.
Setpoints cannot be changed.

During defrosting an HRC3 remote control will show: "dEF" in the display.
If the frost protection has stopped the unit, the T1 temperature on the display will flash.

Bypass cooling and summer mode

See page 28

Installation

Introduction

This section will guide you through mounting and installation.

Important

The warranty is restricted to units that have been correctly mounted and installed by trained personnel only.

Packaging and contents

HCV500 is delivered packaged in a cardboard box.
Check the box for any transport damage before opening.

Do not use a knife to open the box!

Check the contents of the cardboard box:
Wall bracket and spacers.
Drain hose

Prior to installation

Before mounting, consider the following:

- The unit's controls make it possible to change the air flow path to and from the unit between the right and left sides (A/B *mode*).
  Read more in the general description on page 6.
  The change feature ensures optimal installation conditions no matter where the unit is placed in the building.
  The HCV500 unit is designed for mounting in dry surroundings at temperatures over 12°C, such as technical rooms or other suitable spaces.

- Make sure there is plenty of room – especially in front of the unit to ensure it is accessible for servicing and maintenance.

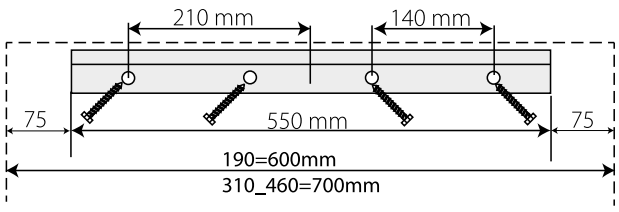
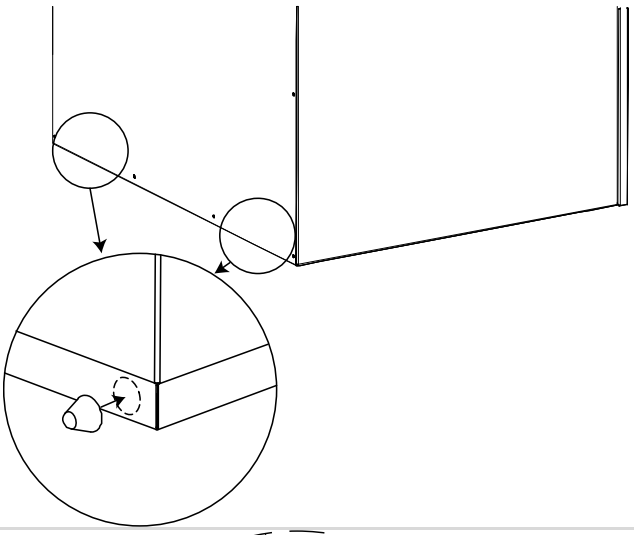
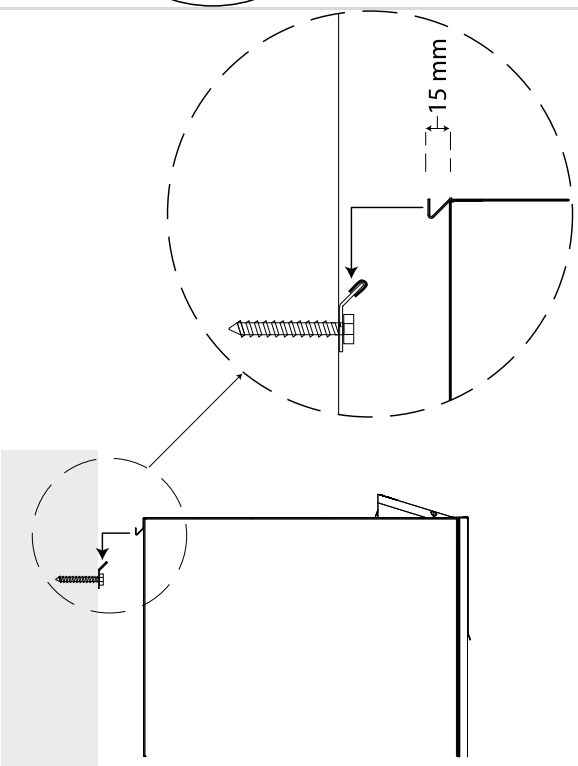
- Ensure that the wall is suitable for carrying the weight of the unit.

Continued overleaf

Wall mounting

Mounting of wall bracket.

Mount the wall bracket as follows:

Step	Illustration
Secure the wall bracket using these measurements. Ensure you use suitable screws and rawlplugs.	
Mount the two spacers at the bottom of the back of the unit.	
Mount the rubber strip and lift the unit up onto the wall rail.	

Drain

Warning

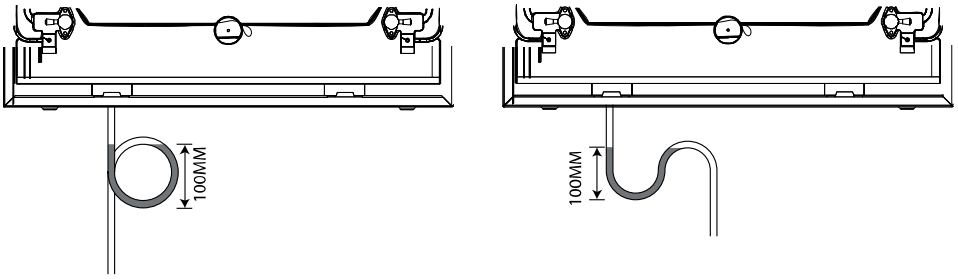
Heat recovery of air with a high moisture content leads to condensation in the heat exchanger. Condensate must be led into a drain, as otherwise it can damage the floor under the unit.

Drain

Connect a drain hose to the correct drain valve at the base of the unit.
The unit is manufactured with blanked drain, see marking at the top of the unit (A/B *mode*)

IMPORTANT:
Make sure that the cap is moved to the correct drain if you change between A/B *mode*, as otherwise condensate cannot be led out of the unit, and this will then lead to an inadvisable buildup of water in the unit and the risk of water ingress in the house!

The drain hose must be supplied with a min. 100 mm siphon, as shown below.
Guide the hose to the drain and make sure it does not get exposed to frost.
Fill the hose with water before calibrating the unit.



Duct positioning

Warning

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.

Consider

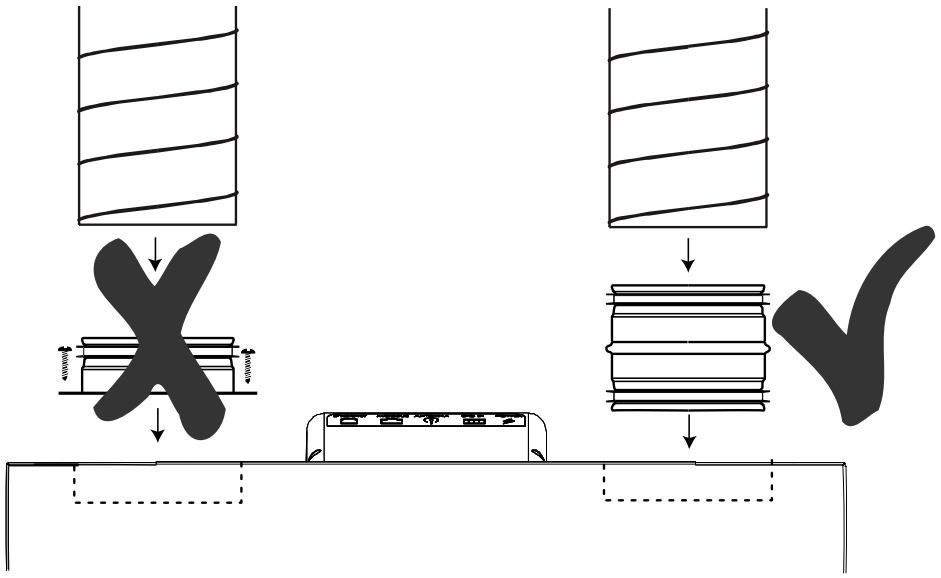
The ducts, which are connected to the unit must have the same diameter as the connectors or larger.
The dimensions can be seen in the section on technical data.
Duct dimensions and sound absorbers must be in accordance with national standards and building regulations.
Contact your Dantherm dealer for further information.
Noise and vibrations from the unit to the duct system must be minimised. This can be achieved by installing sound absorbers on both the supply and exhaust air sides.

Correct duct positioning

See the product description on page 6 and on the labels on the unit to ensure correct duct positioning.

Connection

Connect the duct via nipple (NPU) as shown below



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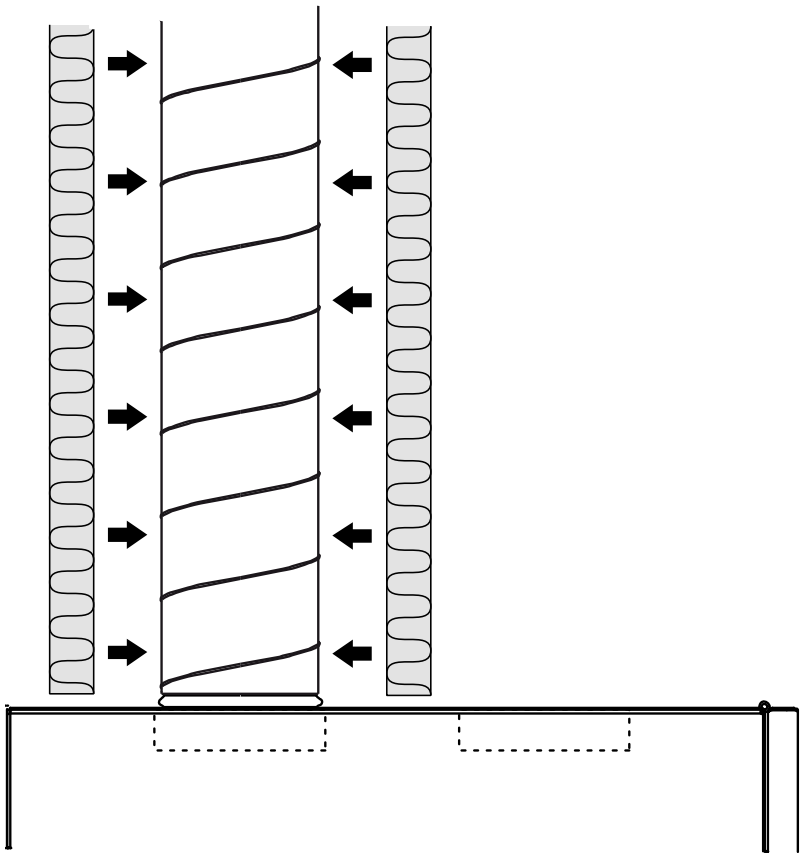
Duct connection, *continued*

Insulation

Insulate all four ducts with minimum 50 mm insulation



External connections

Introduction

Connecting accessories enables you to expand the ventilation system's field of application.

MODBUS

Connections for the external connection module, available through your Dantherm dealer:

- HAC2 This module can control various inputs/outputs.
- Wired remote- HCP10

Digital input

The control board has two digital inputs.
Via the Dantherm Control PC Tool, it is possible to configure the functionality for the digital input.

Factory settings are:
Digital input 1: Fan step 2
Digital input 2: Fan step 4

Digital input is used for different speed settings on the fans.
All settings are performed via PC-Tool

Changing the air flow path

Introduction

HCV500 allows the user to electronically swop the air flows through the unit.
This section describes the change between A and B *mode.*

Warning

The unit must always be disconnected from the power supply before accessing the live wiring and rotating parts and before changing the air flow path on the main control.

Select 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 with the house ducts going out to the left. If local systems demands mode B, follow the below procedure AND follow the label or description at page 6 to connect the water drainage correct.

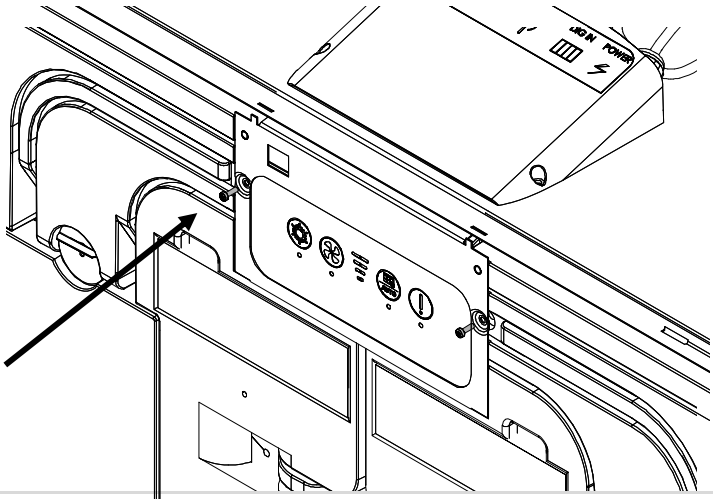
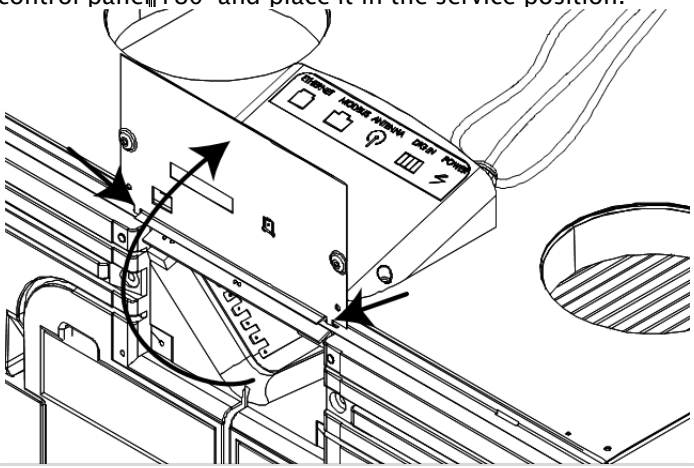
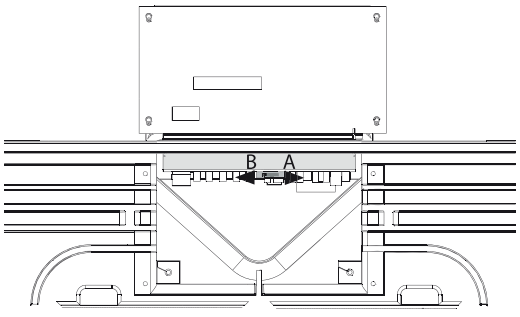
Labels

Note: if you swop air flows remember to also exchange label on the unit so it corresponds to the correct mode.

Continued overleaf

Changing the air flow path, *continued*

Procedure

Step	Action
1	Remove the front and remove the two screws as shown 
2	Turn the control panel 180° and place it in the service position. 
3	Find the A/B *mode* button on the edge of the PCB and set it to the *mode* desired.  If accessories have been connected to the controls. Check relevant manual for correct connection to the controlboard.

Calibration

Introduction

In order to obtain the correct ventilation comfort level, as well as not damaging the house structure, it's important to calibrate the amount of ventilation air going in to the house, as well as extracting from the house.
This is done by adjusting the fan speed levels, in nominal mode (100% ventilation), that is equals to fans speed three.
Fan speed four is an operation boost level, only active for 4 hours, then the unit switch to fan step 3.

Calibration tool

The unit can be calibrated by means of the Dantherm PC tool, or using the keypad on the front. In both options the air flows needs to be measured in order to calibrate the unit to the counter pressure in the ducts connected. Dantherm recommend a small handheld meter, Testo 510, which is perfect for this kind of measurements.

Important

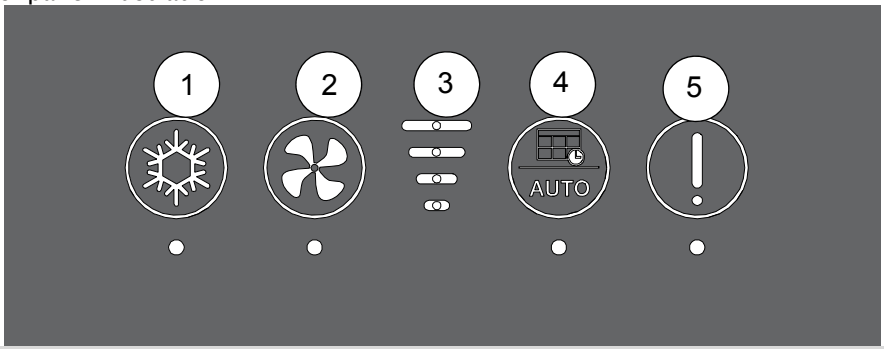
Fill 0,5 L water into the water trap, to assure no leakage through the drain prior to calibration.

Calibration using keypad on front

Follow these steps to calibrate the unit's fan speed.

Step	Action
1	Press and hold (5 sec.) the fan button (2) and weekly program (4) until both LED lights are flashing. The fan speed will now change to step 3. The unit is now in *"installer mode"*
2	Connect the differential pressure gauge to the valves directed to supply, as shown on the label on the heat exchanger's cover panel (P1 -> P2)
3	Adjust the supply air to a suitable level in relation to the current ventilation needs by pressing and holding down the bypass switch (1) and adjusting up (4) or down (2) until the correct level is measured. Note the values on the label on the unit.
4	Uncap P1 and P2 and connect the differential pressure gauge to the valves directed to extracted air (P3 -> P4)
5	Adjust the extracted air to a suitable level in relation to the current ventilation needs. Press and hold the alarm reset (5) and adjust up (4) or down (2) until the correct level is measured. Note the values on the label on the unit.
6	Press and hold down the switches for fan (2) and weekly program (4) until the LED has stopped flashing. The unit is now calibrated.

Control panel illustration:



Setting operating parameters

Introduction

HCV500 uses a USB-B connection to adjust the unit's parameters via Dantherm PC-Tool / MS Windows PC.

Preparation

Check that the unit is working as it should and that 230V can easily be connected and disconnected.

Tools

The following tools are necessary in order to set operating parameters.

- Computer (PC) with Windows and an available USB slot.
- USB cable – USB_A to USB_B (printer cable)
- Dantherm PC-Tool

Connection

Follow this procedure to connect the PC and HCV500

Step	Action
1	Turn on the computer
2	Install PC Tool – this can be ordered from your Dantherm dealer.
3	Power on HCV 300 with no USB cable connected.
4	Connect USB cable
5	Start PC-tool
6	Login

Log in

Start Dantherm PC-Tool and select your unit on the start screen, select: "**connect**"
Log in with:

- *Installer* = "1234"
- *User* = password is not necessary

Mandatory parameter changes

Air volumes – supply air and extracted air should always be adjusted so that they comply correctly with the ventilation level in accordance with legislation.
Go to calibration tab in PC-Tool to adjust the fan level.

Firmware update

Introduction

The firmware can be different from one unit to another.
If you need to update the unit's firmware please contact Datherm to ensure you have the right firmware version.

User's guide

Introduction

This section describes how the control panel can be used to set different parameters and display the unit's operation.

Contents

This section covers the following topics:

General ventilation functions

Introduction

HCV500 can ventilate your home via three different *modes.* These *modes* can be selected according to your wishes.
Keep in mind however that legislation may prescribe minimum levels for air change.

Warning

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.

Manual ventilation level

In manual operation mode the HCV500 will run at the selected ventilation speed until this is changed manually.
This operating level can be selected via the control panel or the HRC3 remote controller and HCP10.

Timer-controlled operation / weekly program

When set to timer-controlled operation HCV500 will automatically adjust the ventilation speed according to a predetermined weekly schedule. This can cover ventilation in a normal family rhythm depending on whether one is home or out of the house. One of the 11 schedules can be adapted with PC-Tool or remote controller.
Week *mode* is enabled via the control panel or HRC3 remote controller or HPC10

Sensor control VOC and RH% sensor (optional extra)

When set to demand controlled operation the unit is adjusted as needed. Using measurements from the VOC and/or humidity sensor, the unit adjusts the fan speed according to the need for air change. A VOC sensor measures the quality of the air.
This operating mode can only be selected if the unit is equipped with at least one of the sensors above.

Use of control panel.

Introduction

This section describes how to use the control panel on the front of the unit. The panel's functions vary depending on whether accessories have been mounted or not.
On the front of the unit you will find brief instructions under the front cover.

Summer cooling *mode*

In summer *mode* the supply fan stops and the addition of fresh air comes from open doors and windows.

- Press and hold for 5 seconds to enable or disable summer cooling *mode*.
- The supply fan does not run in summer *mode*.
- Cooler, fresh air is brought in from an open window, e.g. The exhaust fan will continue to run, thereby generating air circulation.
- Summer mode can only be enabled if the outside air (T1) is above 14°C

When summer mode is enabled, the LED light will light for 5 seconds at a time, interrupted by 1 second intervals.

Automatic cooling via bypass

Automatic bypass cooling is only possible if the bypass module is installed and enabled.
It is possible to set the parameters for bypass cooling. The following options are available on HRC3 remote controller and Dantherm PC-tool:

- Set the minimum outside temperature within the range 8-15°C.
- Set the bypass setpoint, which makes the bypass damper open. Range: 22-30°C. You can select "off" to disable automatic bypass
  This is called Tmax.

The following preconditions will enable automatic bypass cooling:

- If the outside temperature is 2°C lower than the indoor temperature
- AND Tmin is higher than the setpoint (between 12-15°C).
- AND Tmax is higher than the setpoint (between 21-27°C).

The bypass damper will close if one of the three preconditions listed above deviates by 2°C
The bypass LED will light constantly when the bypass damper is open.

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

Continued overleaf

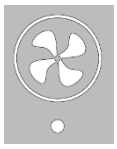
Use of control panel., *continued*

Manual bypass *mode*

If one of the preconditions for automatic bypass *mode* is not present, you can still select bypass manually: Press on the bypass button once. This will override the setpoints and enable bypass for 6 hours. This only applies however if the outside temperature is 2°C lower than the indoor temperature and if there is no risk of icing in the heat exchanger.
The bypass LED will light constantly when the bypass damper is open.

Manual fan speed

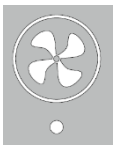
Press on this button once and the fan speed will increase one step.
This can be repeated until step 4 is achieved, after which the fan will start back on step 0 and so on.



Fireplace *mode*

A wood-burning fireplace requires overpressure so that smoke is not brought into the house when lit. Fireplace*mode*:

- Set the supply fan speed to 3
- Reduce the exhaust fan to 50% of the supply fan to generate overpressure.
- If the supply air temperature (T2) is under 9°C, fireplace *mode* will be disabled.



Fireplace mode can be enabled by pressing on Manual fan speed for 5 seconds. Fireplace mode is discontinued after 7 minutes but can be cancelled again manually by pressing on Manual fan speed for 5 seconds.
The 3 LEDs for fan speed flash for the 7 minutes that fireplace mode is enabled.

Week program

Press once to select the weekly program function. The LED will light continously when the weekly program is enabled. The HRC3 remote control and Dantherm PC-Tool will allow you to select the appropriate week program according to wishes and needs.

Week program 11 can be adapted with a mixture of fan speeds and timers. Week program 11 can be adapted with Dantherm PC-Tool.

Demand mode

Press and hold for 5 seconds to enable demand controlled operation.
This is only possible if the unit is equipped with VOC/RH% sensor.

- The LED flashes to indicate Auto-*mode* (demand controlled operation) via the VOC/CO_2 sensors.

Filter or error display

This button is an alarm *reset*. If the LED lights orange this is a warning that the filter needs changing. See page 32 for information on changing filters.

- Press once to reset the filter alarm.
- Press and hold for 10 seconds to reset the filter timer without the timer having expired.

If the LED is red, the unit is in a alarm state, that needs to be corrected, in order to bring the unit into operation again.
Error codes can be read on the remote control if connected, or in the Dantherm PC tool.

Use of LAN interface

Introduction

HCV500 is supplied with an Ethernet connection for the reading and checking of the unit's operation via a BMS system.

Setup IP address

Every unit must have its own IP address on the computer network to identify the unit.

Dynamic IP address allocation:

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 address allocation:

Using PC-Tool it is possible to allocate a static IP address to the unit, which is necessary for example in order to perform checks on HCV500 via smartphone app when outside the LAN's range. This will also require setup of the home's WAN address as well as allocating a port on the router.

Service guide

Overview

NB!

All servicing must be carried out by trained professionals.

Serial numbers

Requests for information, service or parts must include a serial number.
The product model and serial number can be found on the information plate (reduced type plate) which is found behind the front cover.

Contents

This section covers the following topics:

Preventative maintenance

Introduction

Preventative 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 preventative maintenance has been carried out as prescribed. The documentation can consist of a written log ioncluding a company stamp or equivalent.

Interval summary

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

Interval	Task	Carried out by:
6 months	Check filters and replace if necessary	User
1 year	Change filters	User
2 years	Clean and inspect the fans	Trained professionals
	Clean and inspect the electric heating element, if mounted	Trained professionals
	Clean the internal air ducts in the unit	Trained professionals
	Check the duct joints and connections	Trained professionals
	Check the condensate drain and hose.	Trained professionals

NB!

- A biannual inspection every other year, 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 trained professionals.

Filters (6 mths)

After 6 months a filter alarm is triggered. A buzzer will sound and "**!**" The LED will light **orange**. If the LED lights **RED**, please see the section: Troubleshooting on page 35.
Inspect the filters. Even if only one of the filters is dirty, we recommend that you change both filters so as not to create an imbalance in the air flow through the unit.
After changing the filters, the filter alarm must be reset. See page 30.
The timer period for the filter alarm can be changed via remote control or PC-Tool.

Filters (1 year)

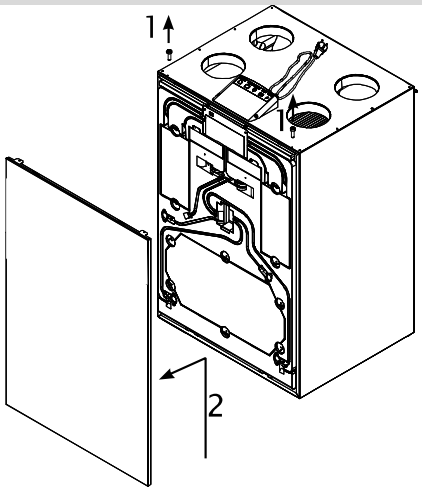
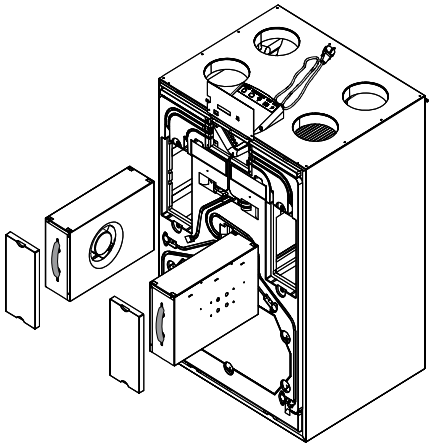
Change the filters at least once each year regardless of whether they are dirty or an alarm has been triggered.
After changing the filters, the alarm must be reset. See page 30

Continued overleaf

Preventative maintenance, *continued*

Internal:
fans,
air ducts and
heating element
(2 years)

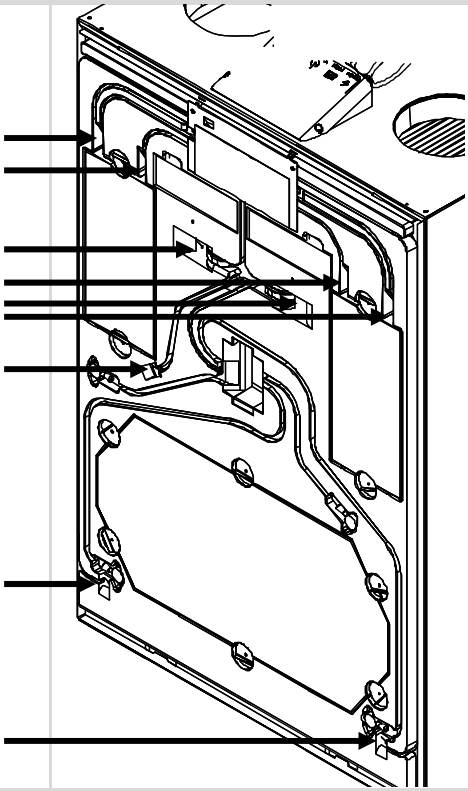
Follow this procedure to inspect and clean the internal parts:

Step	Action	Illustration
1	Remove the two screws on the front panel of the unit and lift off the panel.	
2	Take out a fan cabinet at random.	
3	Carefully clean the fan's blades with compressed air or a brush through the opening at the base of the fan cabinet. 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.	
4	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.	
5	If the unit is equipped with a heating element: clean as much as possible without taking the fan cabinet apart. Inspect the heating elements for visible damage.	
6	Pull out the filter and inspect the ducts visually for dirt. If this is the case, the ducts must be cleaned.	
7	Reinsert the fan cabinet and repeat steps 1–6 with the second fan cabinet.	

Continued overleaf

Preventative maintenance, *continued*

fans, air ducts and heating element (2 years), *continued*

Step	Action	Illustration
8	Ensure that all gaskets are sealed completely before replacing the panel.	
9	Check that all connections are securely connected to the PCB.	
10	Mount the front panel	

External: Hoses and duct connections (2 years)

Visually inspect:

1. The duct connections at the top of the unit must be checked for leaks, which will appear as dirty areas.
2. Check drain hoses and valves for damage.
   See more on page 17.
   Ensure that there is water in the hose's siphon.

Troubleshooting

Introduction

Errors are indicated by an LED located under the filter *reset* button.
If the LED slowly flashes orange, it means you need to replace the air filters.
See page 10

LED displays Software <2.0

If this LED is **red** it indicates an operating error. The red LED can indicate three different errors:

LED Red	Description
Flashing slowly	• Error on the bypass damper • Error on the internal temperature sensor T3/T4
Flashing rapidly	• Error on the fan • Supply temperature is <+5°C • External fire alarm is activated • One of the internal temperature sensors is measuring >70°C
Lights constantly	• T1/T2 Temperature sensor is defective

LED displays Software ≧2.0

If the LED flashes **RED** then there is an operating error. The length of the flash corresponds to an error code with corresponding digits in the left column of the table below, followed by a 5 second break.

Number of flashes	Error number Control panel	Error
1	E 1	Exhaust fan
2	E 2	Supply fan
3	E 3	Bypass damper
4	E 4	Outside air temperature sensor (T1)
5	E 5	Supply air temperature sensor (T2)
6	E 6	Extracted air temperature sensor (T3)
7	E 7	Exhaust air temperature sensor (T4)
8	E 8	Indoor air temperature sensor (T5)
9	E 9	Humidity sensor, RH% (optional extra)
10	E 10	Outside temperature < -13°C
11	E 11	Supply air temperature < +5°C
12	E 12	Fire alarm, one or more of the internal sensors is measuring a temperature over 70°C.
13	E 13	Communication error / poor signal
14	E 14	Fire alarm, thermostat in the duct system. (Optional extra)
15	E 15	High water level

Continued overleaf

Troubleshooting, *continued*

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 manual for the remote control in the chapter 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.

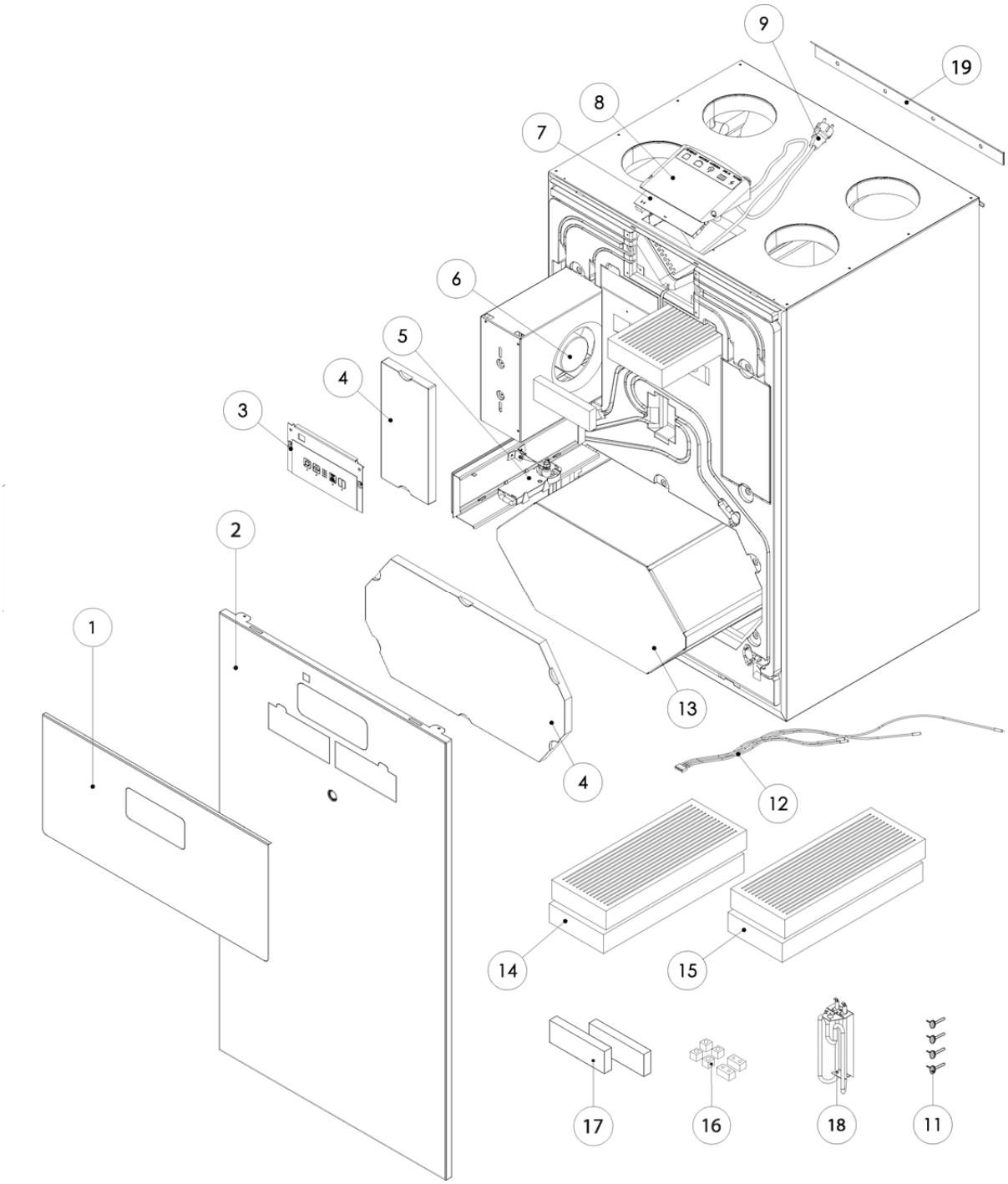
Spare parts list

Introduction

Spare parts are ordered through Dantherm dealers.

Illustration

Spare parts for HCV500:



Continued overleaf

Spare parts list, *continued*

List

List of spare parts including spare part numbers:

Pos.	Description	HCV500
1	Filter cover	094692
2	Front	094698
3	Complete Control panel	092946
4	EPS cover kit	077229
5	Bypass Damper motor	077231
6	Fan	077233
7	Control print (PCB)	077234
8	Control print cover	077236
9	Power cable	077237
10	OT thermostat for heating	290372
11	Kit, Air valves	081185
12	Kit, temperature sensors	077243
13	Heat exchanger	077245
14	Kit, filters G4+F7	096393
15	Kit, Filters 2xG4	087342
16	Kit, cable gaskets	077241
17	Kit, Filter gaskets	077208
18	Pre heating element HCV500	081188
19	Support bracket	045843
20	Drain hose with clamp (not shown)	086697
21	Antennae	090658

Technical Data

HCV500

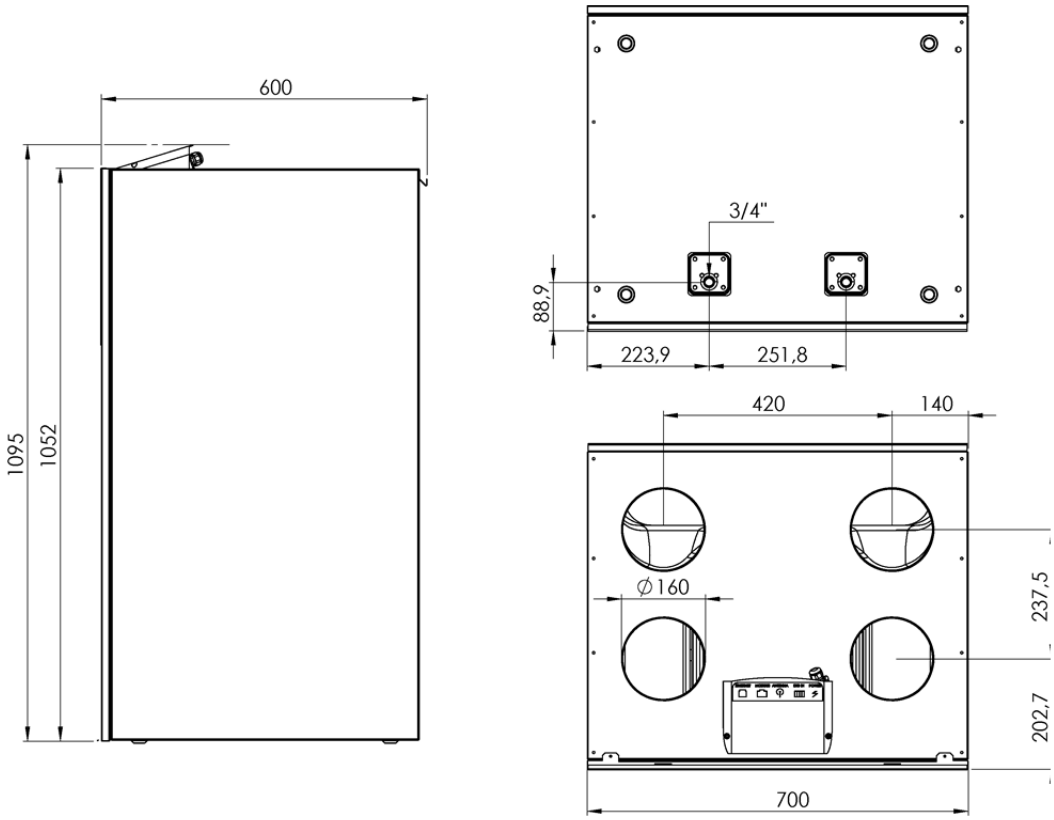
The table below shows the technical data for HCV500:

		Unit	HCV500
SPECIFICATION			
Operating range (min. - max. @100Pa)		m^3/h	80-300
PERFORMANCE			
Efficiency EN13141-7 dry	η_{SUP}	%	86
Cabinet sound pressure / cabinet sound power	L_{pA} /L_{wA}	dB(A)	46/51 @ 230 m3/h; 100Pa
Sound power - ducts (extract/supply)	L_{wA}	dB(A)	61/55 @ 230 m3/h; 100Pa
Filters according to EN779 (extract/outdoor)	class	-	G4/G4 (F7 option)
Installation surrounding temperature		°C	+12 to +50
Outdoor temperature without preheater installed	t_{ODA}	°C	-12 to +50
Outdoor temperature with preheater installed	t_{ODA}	°C	-25 to +50
Max. absolute humidity in extract air	RH	g/kg	10
CABINET			
Dimensions (without bracket)	WxHxD	mm	700 x 1095 x 603
Ducts	Ø	mm	160 - female
Weight		kg	49,5
Heat conductivity of the polystyrene insulation	Λ	W/(mK)	0,031
Heat transfer coefficient of the polystyrene insulation	U	$W/(m^2K)$	<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		V	230
Max. power consumption (without/with preheater)		W	170/1370
Frequency		Hz	50
IP-class	class	-	21

Continued overleaf

Dimensions

HCV500



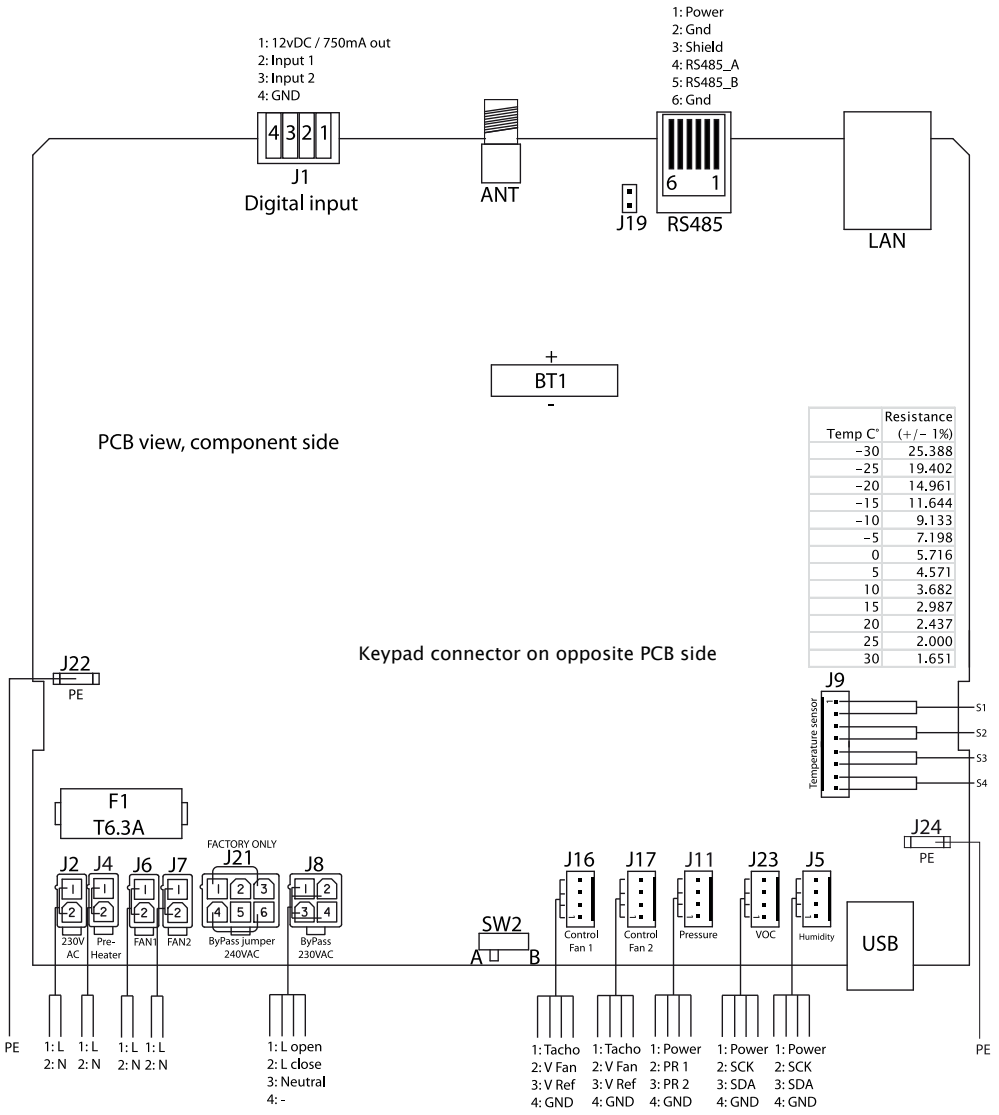
Wiring Diagram

Introduction

This section shows wiring diagrams for the main components:

Illustration

Overview:



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