Installation instruction

CTS 600 by Nilan

VP 18 M2

Version: 6.00, 12-03-2012
Software-version: 1.38

NILAN®
OUTSTANDING INDOOR CLIMATE

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Introduction

Please control that the following documents have been delivered together with the unit:

- Directions for assembly & use (this document)
- CTS 600 directions
- Electrical chart

Should you have any questions on how to operate the system, contact your nearest Nilan dealer, who you can find at www.nilan.dk/dealers

VP 18 M2 is a ventilation unit with heat recovery. The unit can yield up to 325m^3/h at 100Pa external back pressure. The energy in the exhaust air is being transferred to a 180L hot-water tank via a heat pump. When the water is heated the remaining energy is being transferred to the supply air.

The unit is delivered with a G4 filter. In addition to this the unit can be equipped with different accessories e.g. hygrostat and filter box with pollen filter.

Operating the unit is done with the 600 control. The control has many functions such as menu based attendance, week programme, time controlled filter guard and adjustment of the velocity of the ventilator. (Directions for the CTS 600 control is described in another document delivered with the unit.)

See accessories.

VP 18 M2 is delivered in a white-lacquered aluminum-zinc cabinet, tested and ready for use. Installation and start-up must be carried out by an authorized electrician.

We recommend that the system as well as the installation itself are adjusted/looked through in order to ensure a healthy indoor climate and optimal operation

Power supply

Power supply including safety switch must be installed by an authorized electrician.
The VP 18 M2-unit must be connected according to the attached electrical chart.

The unit is delivered with 1m test cable for the CTS 600 panel. The panel should be connected to the CTS 600 control in the unit with cable type 2x2x0.25mm^2 twisted in pairs. (Maximum length 50m).

The CTS 600 panel must be placed dry and frost-proof. The panels' integrated feeler prevents further cooling of the building if the primary heat-supply stops by stopping the ventilation if the panel feeler gets below a specific value. (Factory setting is 10°C; the value can be set from 1-20°C.)

The built-in sensor of the panel prevents further cooling of the building in case of outage of the primary heating source. Should the panel sensor detect a temperature below the set value, the ventilation system will stop. (Factory set position is 10 °C, can be set to anything between 1 and 20 °C)

Figure 1: CTS 600 control

Assembly of VP 18 M2

When mounting the VP 18 M2-unit future service and maintenance should be considered. There is required a minimum of open space in front of the unit of 600mm measured from the front of the unit.

When lifting the system with built-on straps, the straps must be kept to an angle of maximum 45° from vertical.

In order to ease the mounting each of the connection pieces is labeled. Please notice the labels. The connection between the unit and the ducting should be a flexible transition.

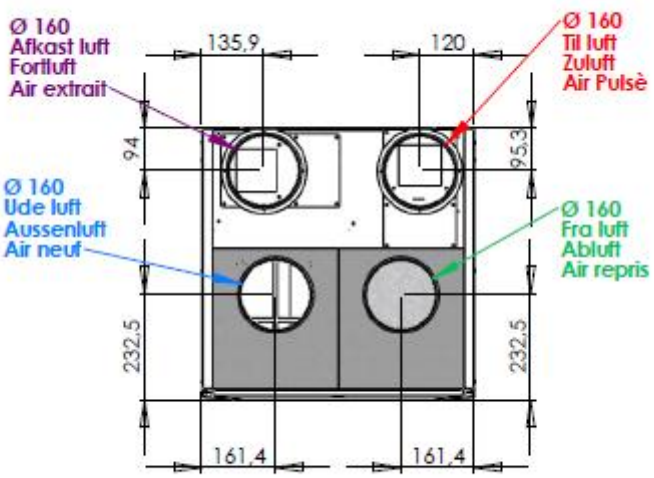

Figure 2: Pipe connection

The system weighs 150 kg and its outer dimensions are HxWxD = 2000x600x600mm. The system must be handled with carrying straps built-on at delivery.

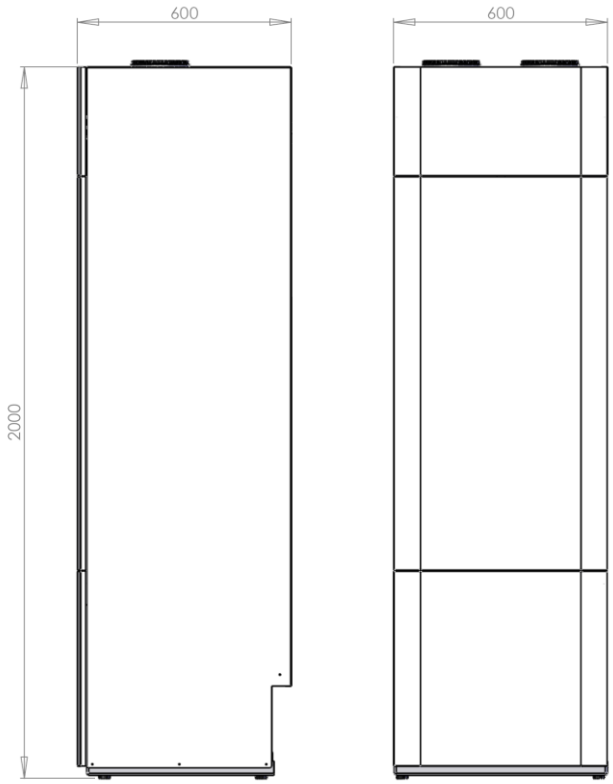

Figure 3: Outer dimensions

The unit should be leveled on a firm and vibration free bed. There should be at least 30mm to building components and other inventory. The unit itself is quiet and almost vibration less; still any potential vibration should be taken into account.

It is important to establish a condensation drain from the unit to the outlet. The unit has an integrated water seal. The drain should be carried frost-proof and even downgrade to the outlet. The overflow from the safety valve should also be carried to the nearest outlet.

If there is made a covering above the unit it should be easy to remove for maintenance purpose.

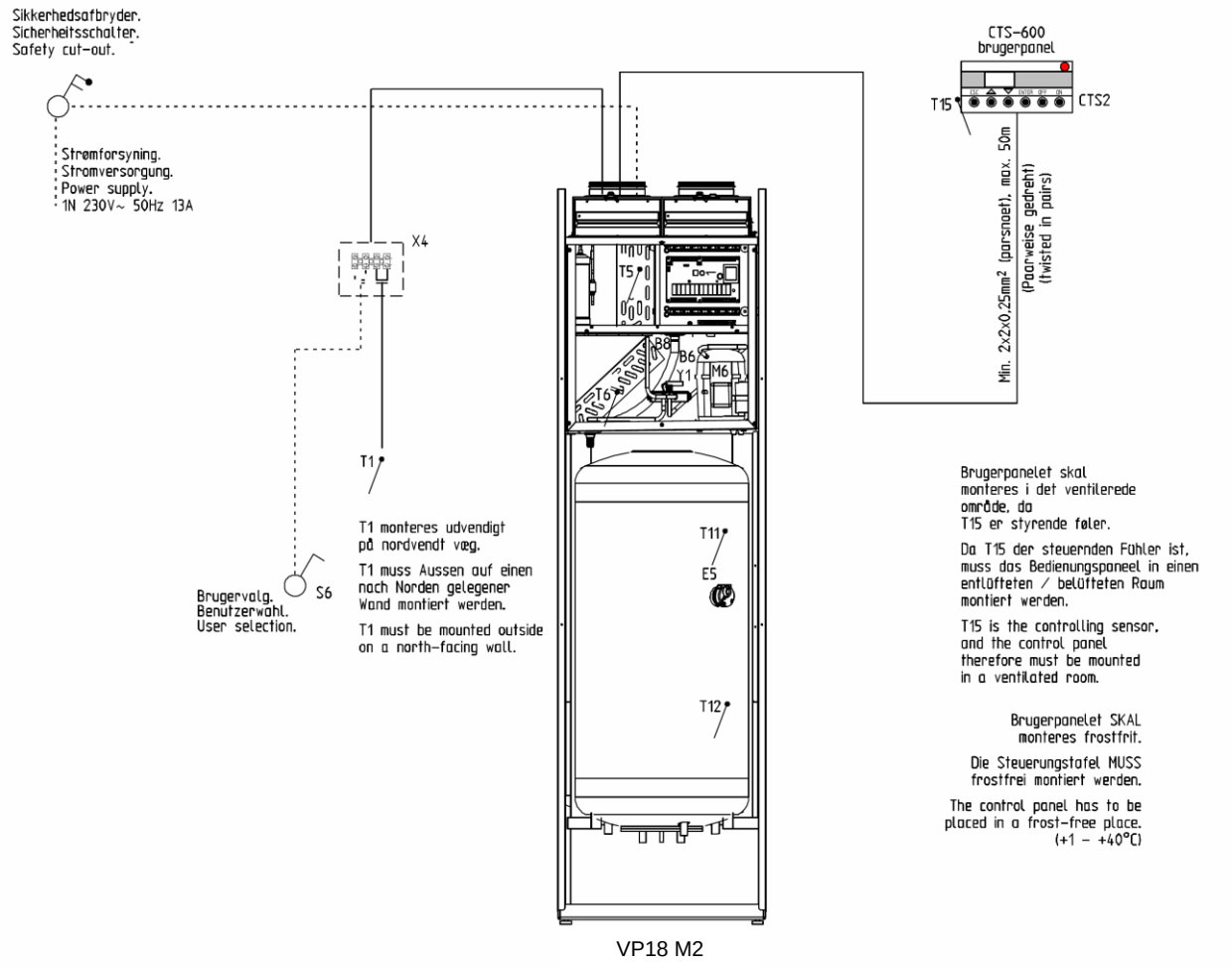

Figure 4: Sketch of VP 18 M2

Condensation drain / water seal

The VP 18 M2 unit is delivered with a 20mm condensation drain. (PVC, GF-fittings). The unit includes a water seal.

The condensation drain should be carried with an even inclination of at least 1cm per metre, frost-proof to the nearest outlet. The overflow from the safety valve should also be carried to the nearest outlet.

To avoid frost problems it can be necessary to supply the condensation drain with a heating cable. It is the plumbers' responsibility to secure the drain.

HWS

In order to prevent icing-up, it may be necessary to supply the condense outlet inside the building envelope with a heating cable. It is the installation contractor's responsibility to frost protect the condense outlet.

The hot-water tank is enamelled inside and equipped with a magnesium sacrificial anode.

All branches have a ¾" thread except for the anode inlet which has a ¾" socket.
All water connections are connected in the bottom and must be done with flexible pipes.

Hot-water circulation can be established if required, by mounting a check valve on the circulation branch of the tank and inserting a 80cm circulation pipe in the tank (accessories).

The branch should remain shut if there is not established hot-water circulation.

There can be a significant heat-loss in the pipes due to the hot-water circulation which reduces the output of the heat pump considerably. To avoid this it is necessary to insulate the circulation pipe and the hot-water circuit with at least 30mm mineral wool or pipe insulation.

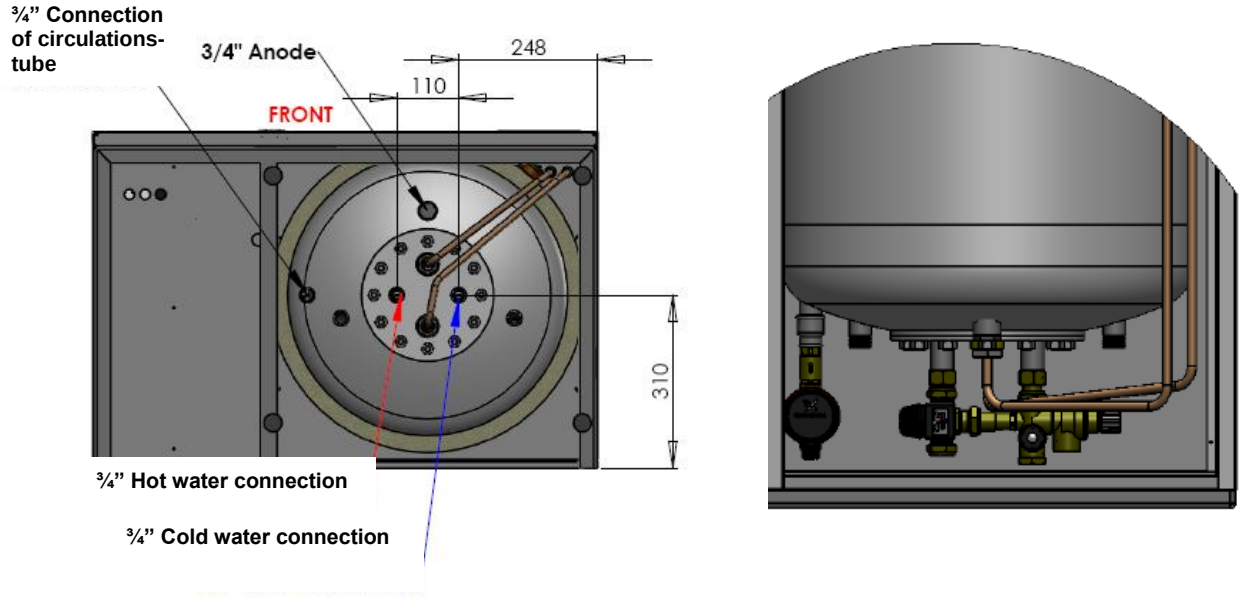

Figure 5: Connections and placement of sacrificial anode and safety group

Ducting

We recommend that there are used ducts and fittings with rubber packing that meet sealing class B and that the connections between the unit and the ducting are made with 1 metre sound absorbing flexible transitions as regards sound reduction.

The ducts should be shortened with a hacksaw or an angle grinder and laid out according to the working drawing. The ducts are typically laid out on the main beam of the truss frame and are secured with hole belts or they are being hanged in assembly belts. Please avoid any unnecessary area reductions and breaks of the ducting.

The ducts should be insulated – in some cases with the ordinary attic-insulation. All ducts should be insulated with 100mm mineral wool to avoid heat loss and condensation. This also applies for flexible transitions. It is recommended that the insulation is carried out with 2 layers of 50mm. If the ducts are laid out in an unheated room it will cause condensation problems if the unit are turned off for a longer period of time as the hot air from the heated room will rise to the ducts and cause condensation which can cause damp problems.

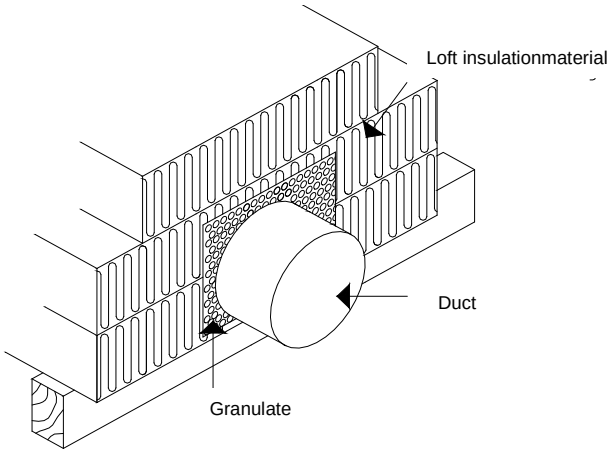

Figure 6: Insulation of ducting

The discharge duct is leading the exhaust air away either above the roof or through the outer wall. It is important that the roof cowl has at least the same open space as the duct leading to the roof cowl. A reduction at this place will cause an unnecessary pressure drop which can lead to a reduced ventilation output.

The holes for the inlet- and exhaust valves should be cut according to the mounting-frame for the prescribed valve. The frame for the valve must be secured with screws before placing the valve in the frame. The valves are placed in accordance with the size, construction and use of the room. As an example we would not recommend placing an inlet valve just above people with sedentary work because the inlet air in some cases would be experienced as a draught.

Supplementary heating element

The 1 kW sanitary hot water tank includes a supplementary heating element. The heating element can be connected or disconnected via the CTS 600 control panel, see the menu “hotwater”. Furthermore, the temperature at which the heating element is connected is chosen (T11) via the menu “hotwater”.

Starting and set up of the CTS 600 control

Starting

Before starting the VP 18 M2 please check all connections. Also check that the hot-water tank is filled with water. This is done by opening the hot-water tap.

The air valves should be opened in such a way that the valve cone and the front edge are in level with each other.

Set up of the CTS 600 control

In this passage we will go through the service menu of the CTS 600 control. For daily use of the CTS 600 control please see the CTS 600 directions. (delivered together with the VP 18 M2).

Use of the CTS600 panel:
- press ESC to go one step back in the menu
- press ▼▲to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on

Figure 7: CTS600 control

Activating the service menu

Press ▼ and **ENTER** at the same time for 10 seconds. The service menu is now available. Press ▼ multiple times until the panel shows **SERVICE**. Press **ENTER** to enter the service menu. It is now possible to move around in the menu by using ▲▼. The headlines of the service menu are shown below in figure 5:

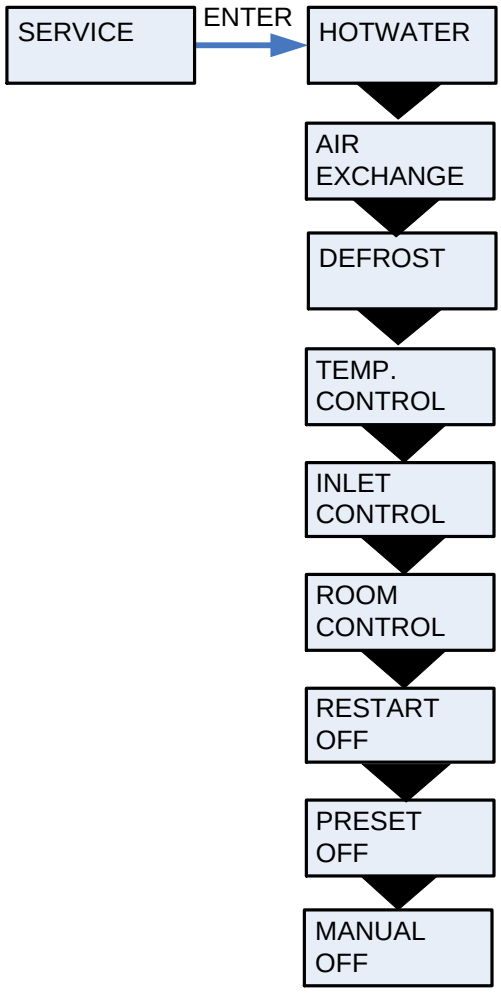

Figure 8: Headlines in the service menu

Hotwater

The ”Hotwater” menu enables you to select the electrical heating element in the main menu.

When the heating element is set on ”on” there will appear a ”w” in the upper right corner of the panel in the main menu when the heating element is in use.

” ” indicates that the menu point flashes and can be set to another value

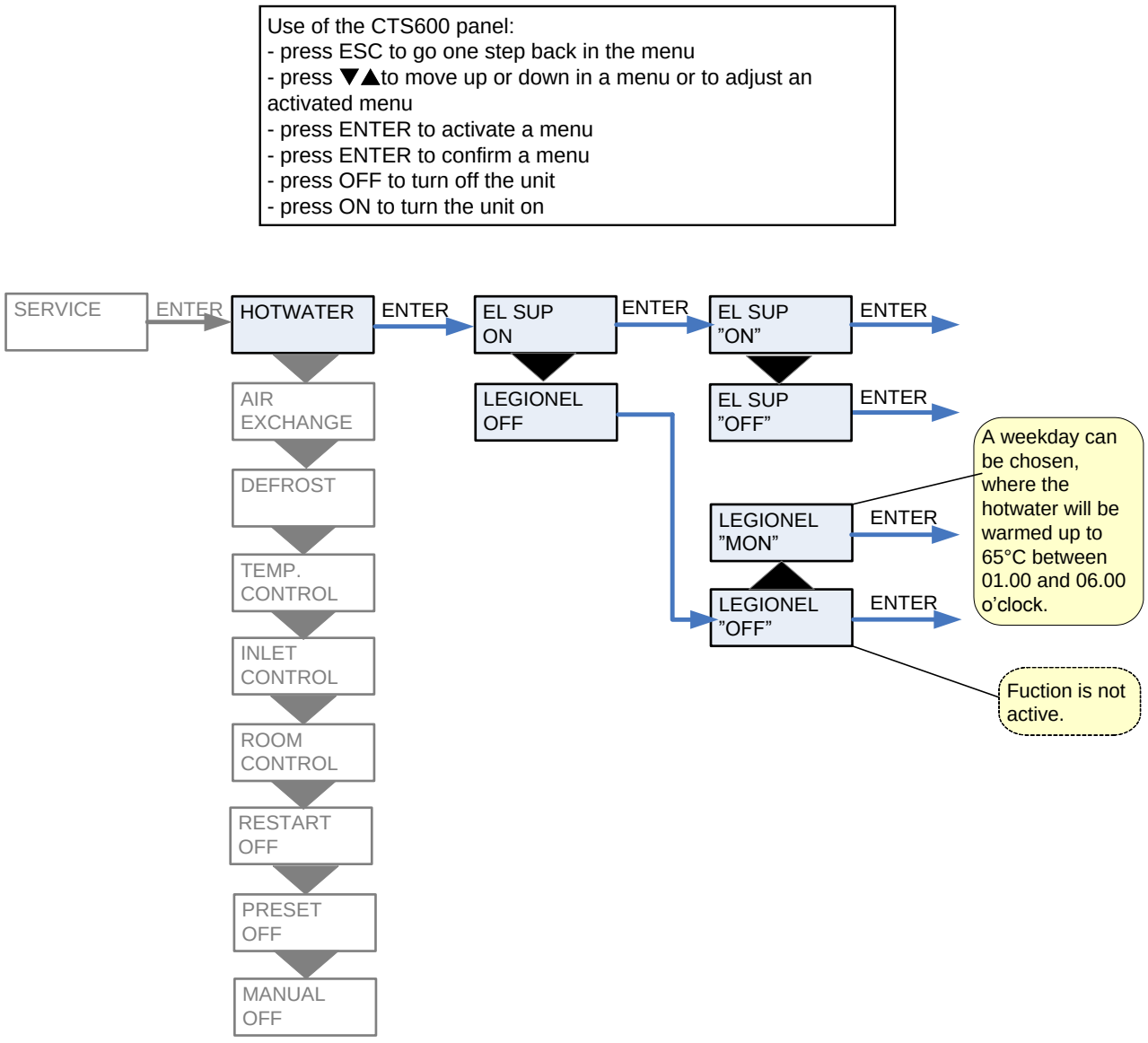

Figure 10: The "Hotwater" menu

Air exchange

In the ”Air exchange” menu it is possible to adjust 4 steps of ventilation speed (air volume). Inlet and exhaust is to be adjusted individually at each level.

The inlet speed can be adjusted to a minimum and the exhaust can be adjusted to both a maximum and a minimum.

It is possible to delay the starting of the fan in order to give time to the register to open.

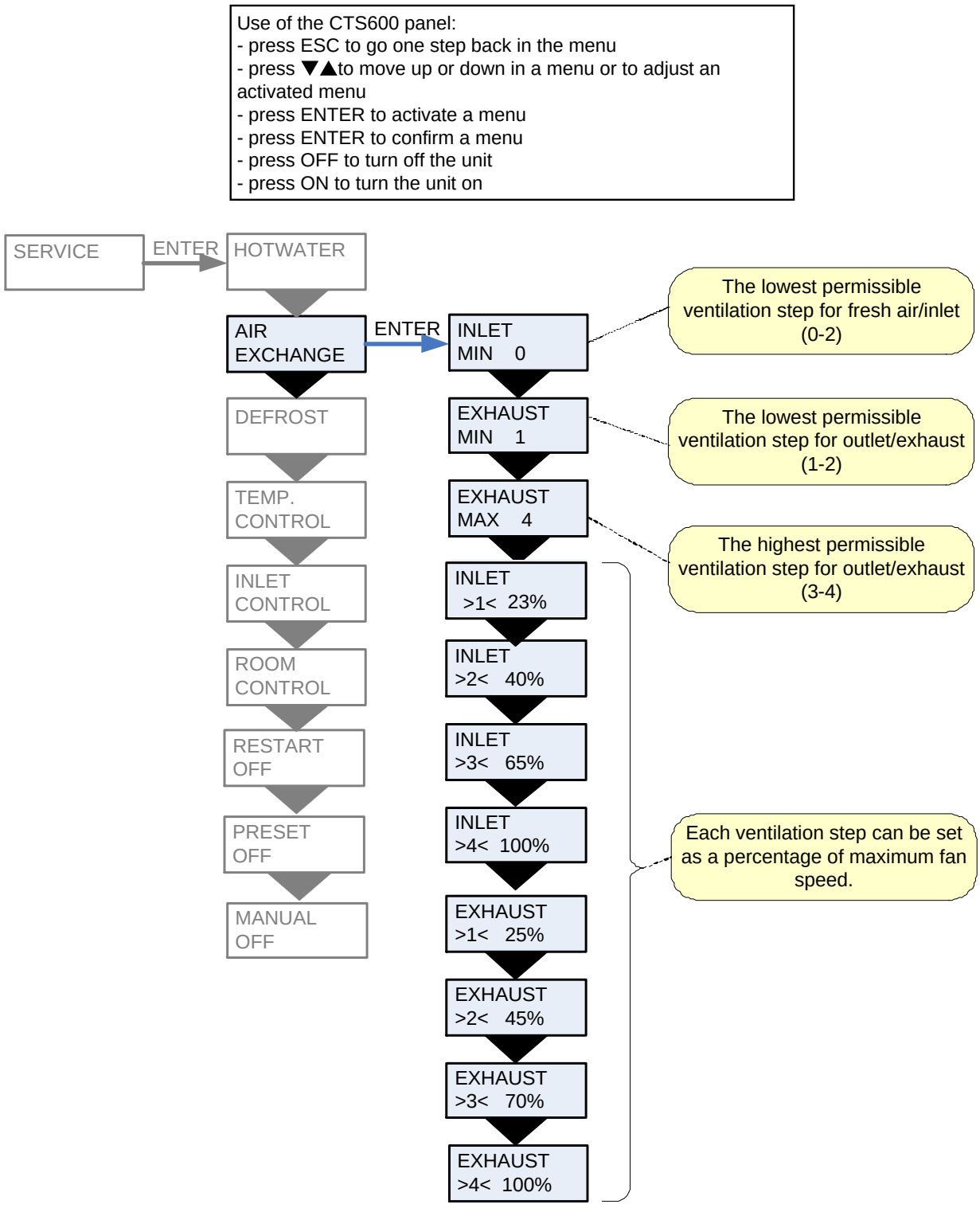

Figure 11: The "Air exchange" menu

Defrost

In the ”Defrost” menu it is possible to chose how the unit should perform during defrosting of the evaporator in the exhaust.

” ” indicates that the menu point flashes and can be set to another value

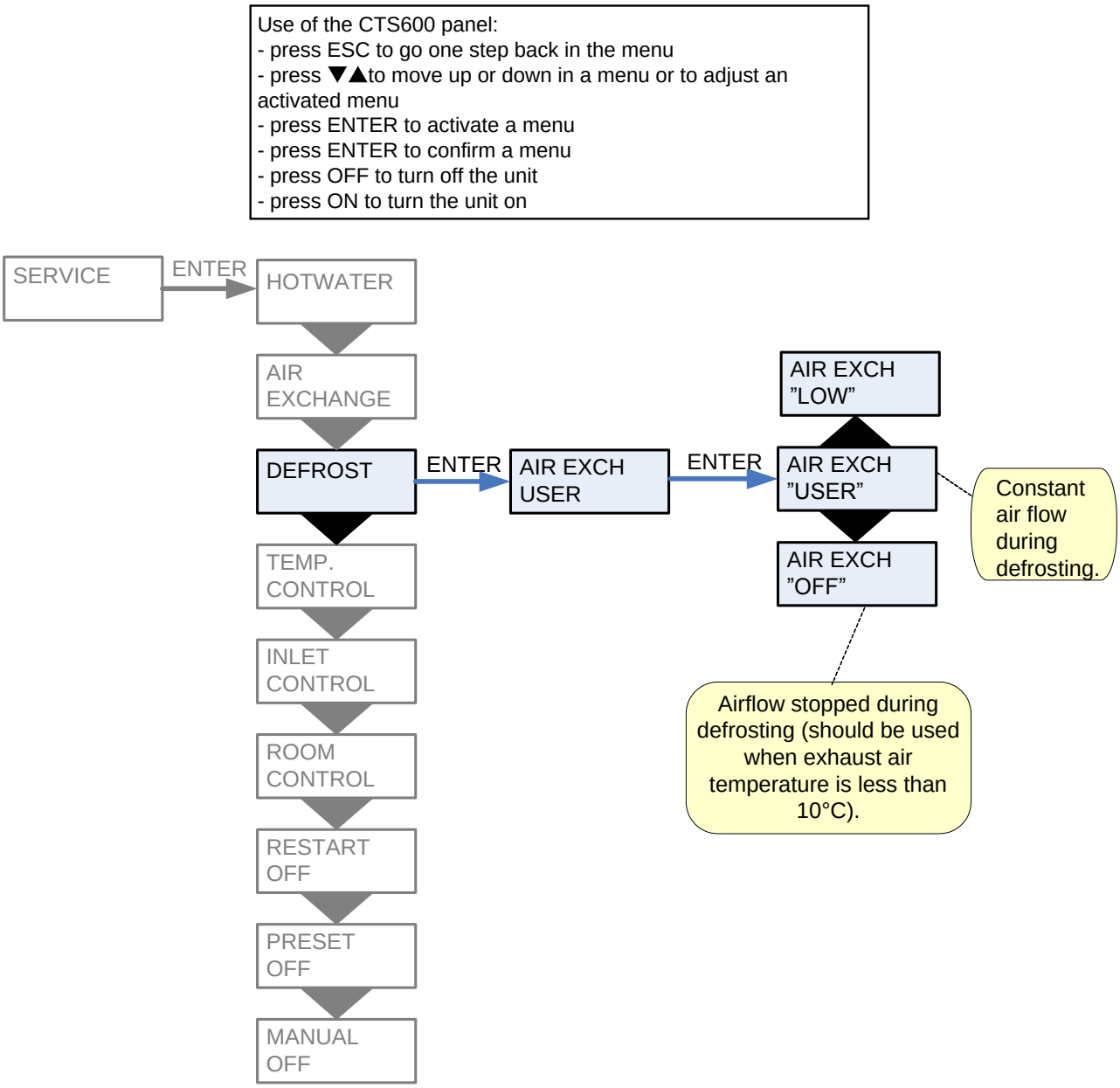

Figure 12: The "Defrost" menu

Temp. control

In the ”Temp. control” menu it is possible to chose a room temperature where the unit stops in order to avoid further cooling of the building if the primary heating shuts down.

” ” indicates that the menu point flashes and can be set to another value

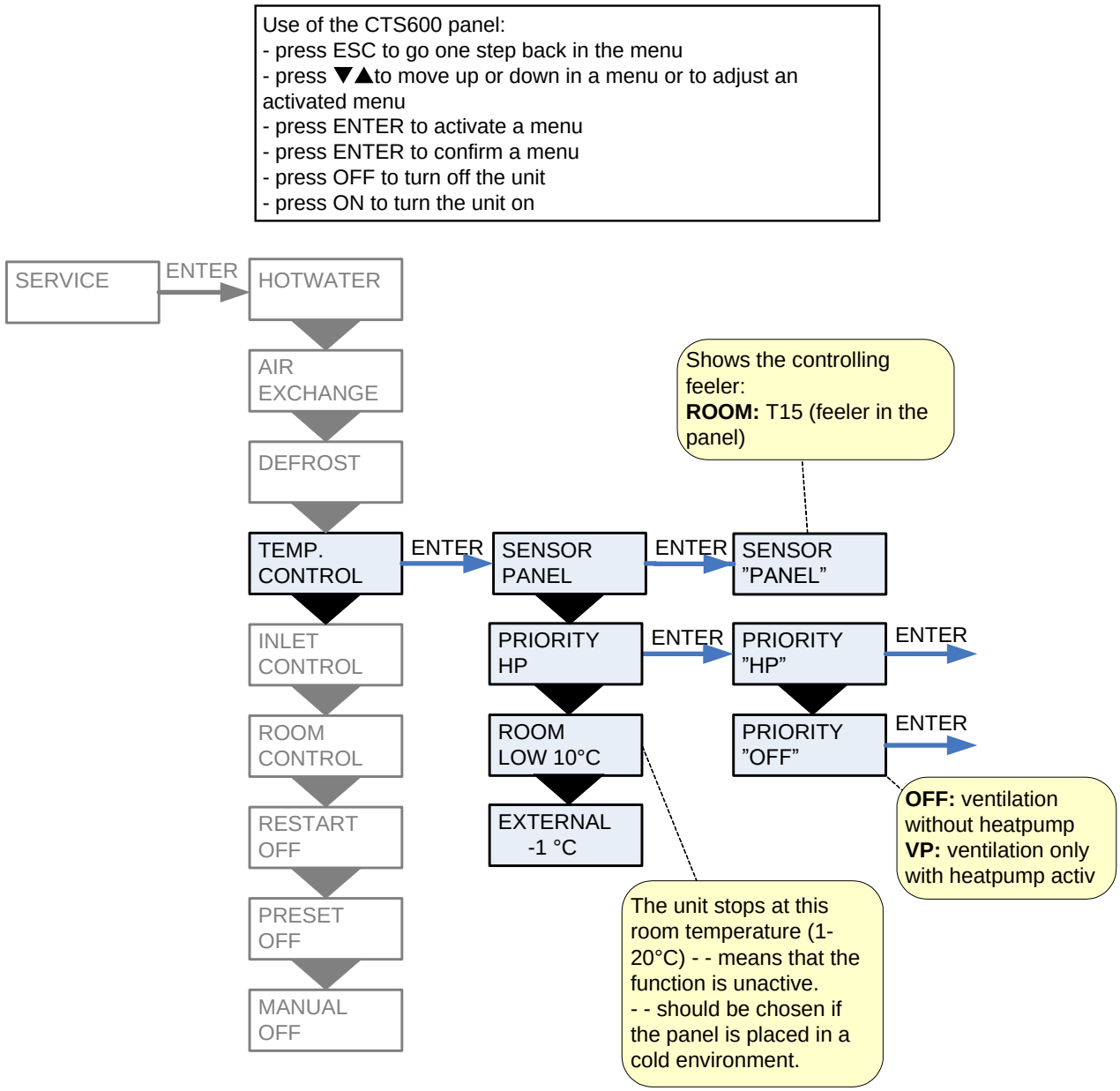

Figure 13: The "Temp. control" menu

Inlet control

In the ”Inlet control” menu it is possible to adjust the period of time before restart of the compressor.

” ” indicates that the menu point flashes and can be set to another value

The ”Inlet control” menu should only be adjusted by persons with knowledge of control engineering. (To restore factory settings see PRESET)

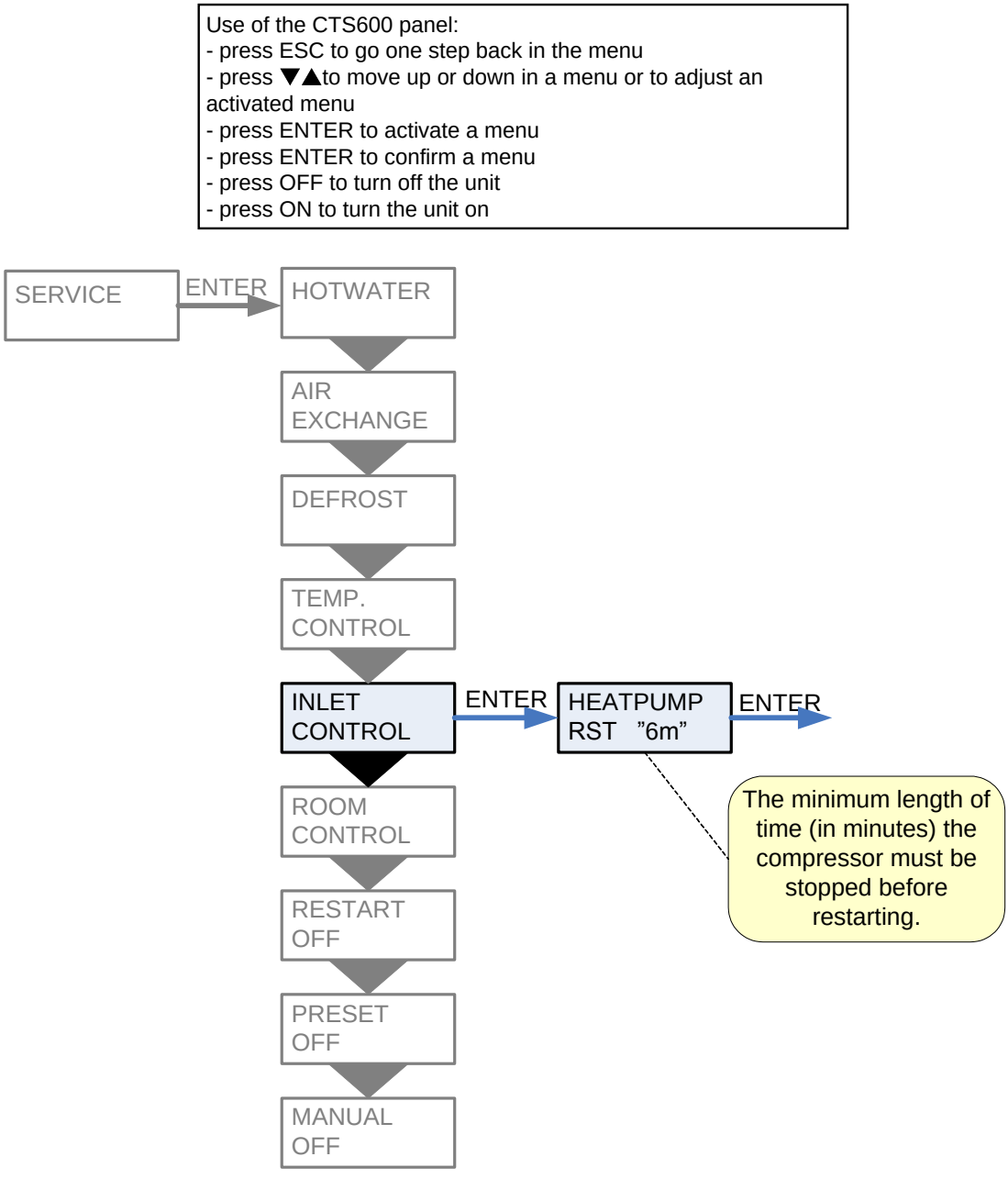

Figure 14: The "Inlet control" menu

Room control

In the ”Room control” menu it is possible to adjust the regulator for controlling the room temperature.

” ” indicates that the menu point flashes and can be set to another value

The ”Room control” menu should only be adjusted by persons with knowledge of control engineering. (To restore factory settings see INLET).

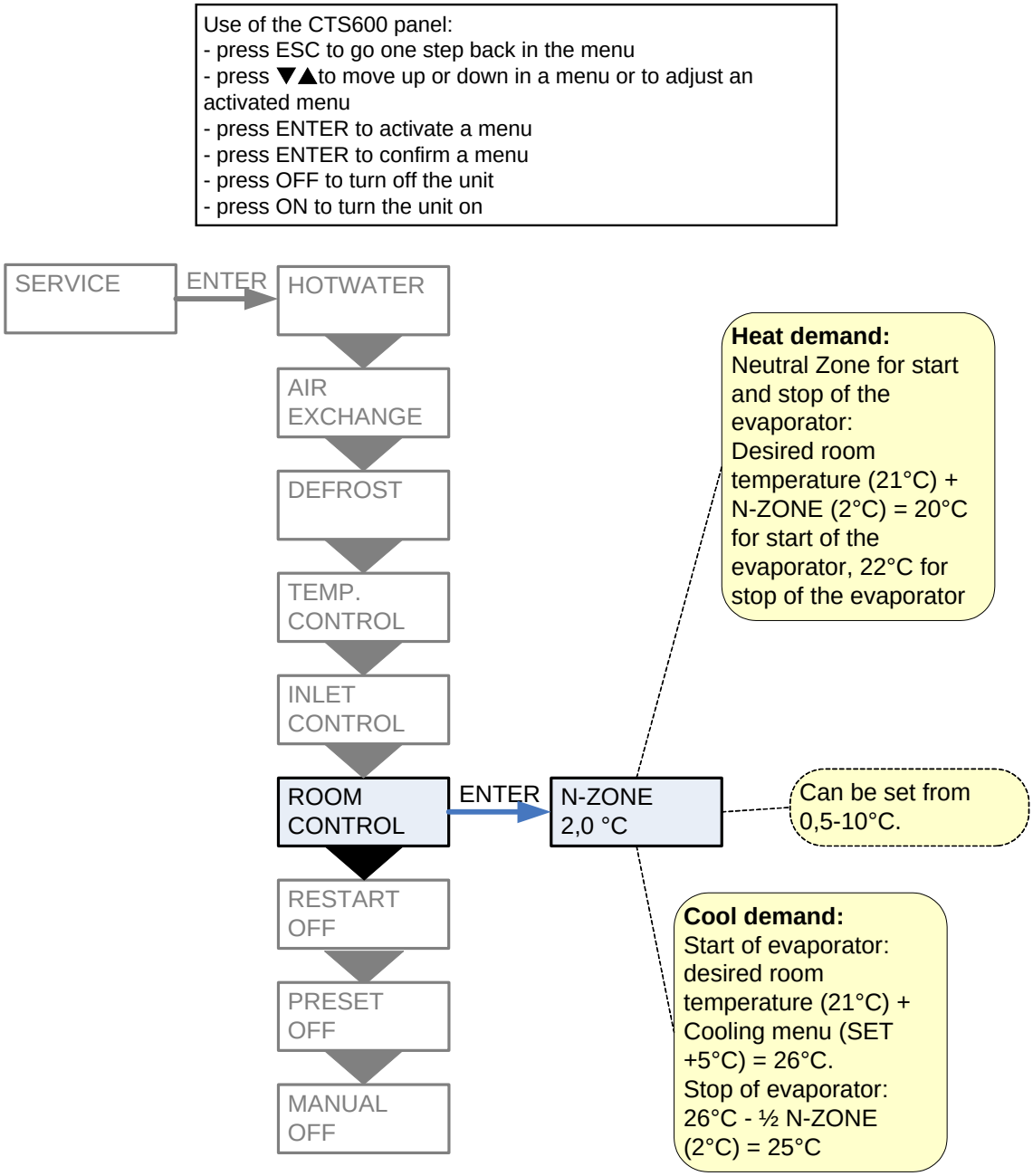

Figure 15: The "Room control" menu

Restart

The ”Restart” menu enables you to set the unit to automatically restart in connection with high-pressure/low-pressure alarms.

” ” indicates that the menu point flashes and can be set to another value

The setting HP/LP in the Restart menu may not be used under normal conditions.

Use of the CTS600 panel:
- press ESC to go one step back in the menu
- press ▼▲to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on

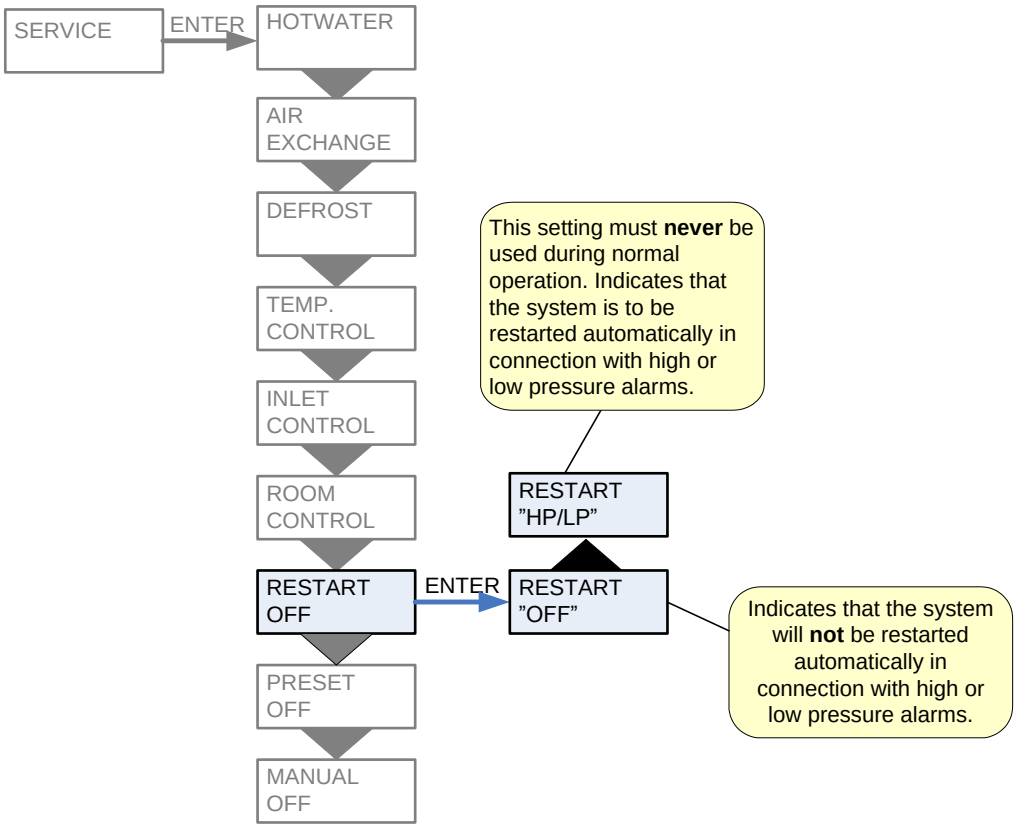

Figure 16: The "Restart" menu

Preset

” ” indicates that the menu point flashes and can be set to another value

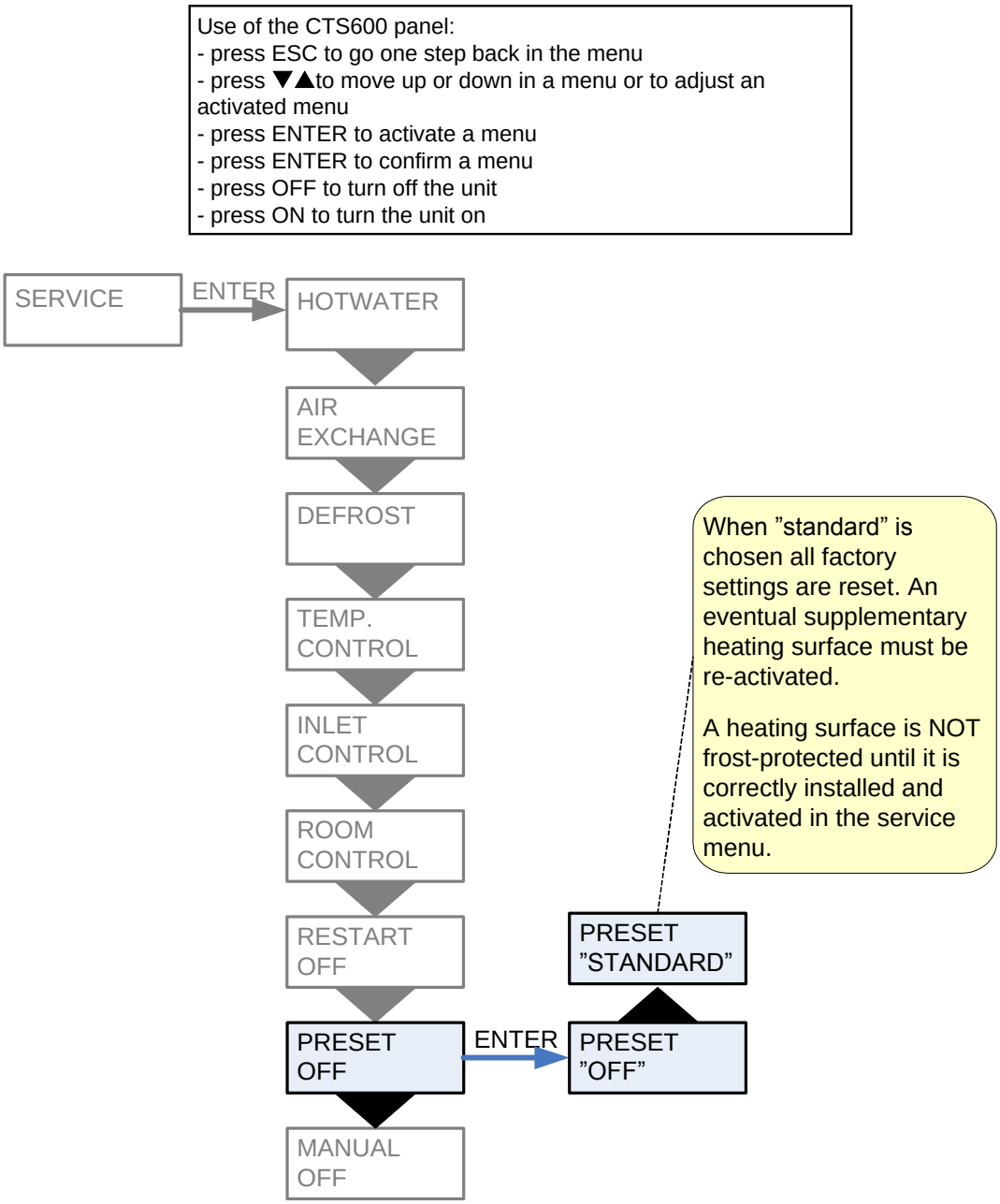

Figure 17: The "Preset" menu

Manual

In the ”Manual” menu it is possible to test the functions of the unit manually.

” ” indicates that the menu point flashes and can be set to another value

Use of the CTS600 panel:
- press ESC to go one step back in the menu
- press ▼▲to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on

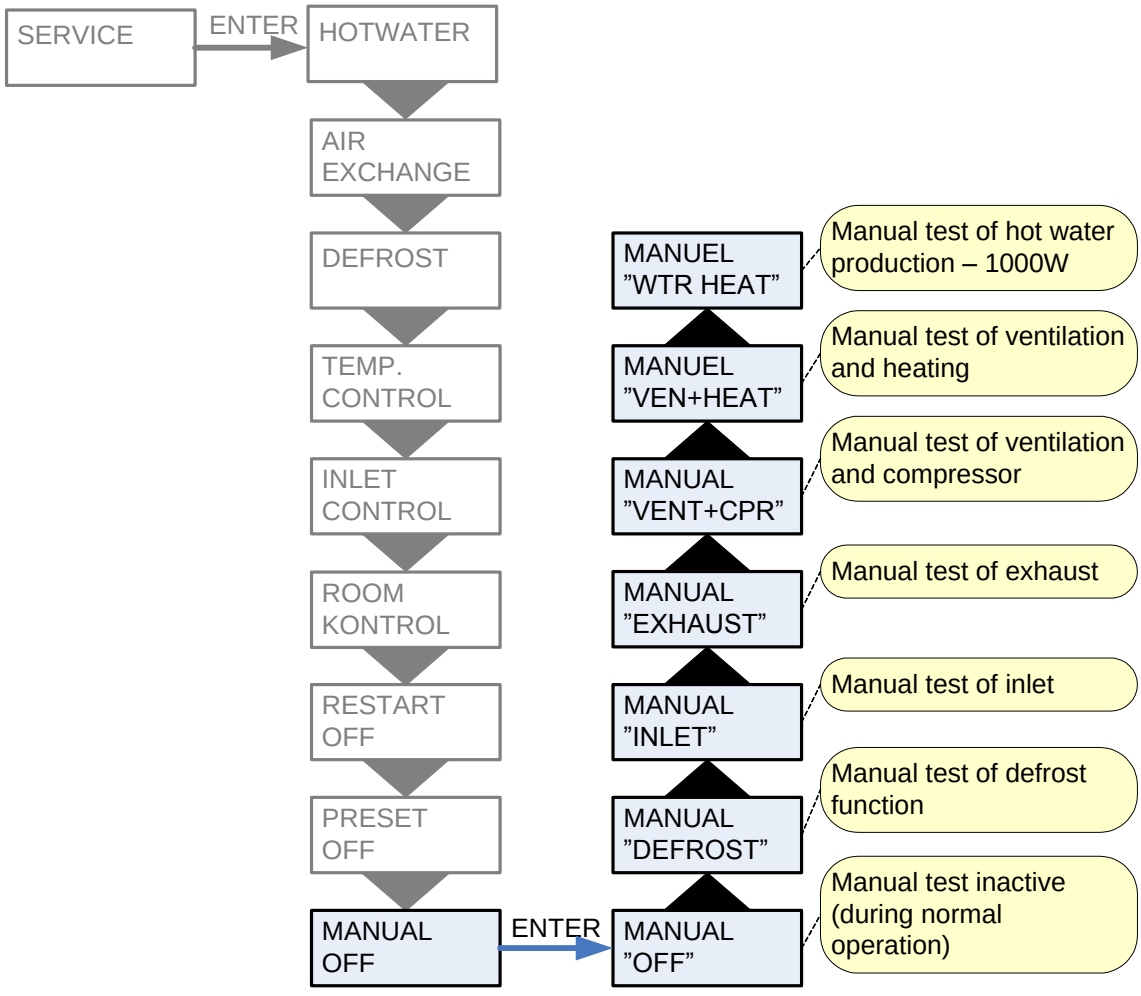

Figure 18: The "Manual" menu

Faultfinding

If there should be any operating errors please inspect the following before contacting your service mechanic:

Check if the alarm diode on the CTS 600 panel is flashing. If this is the case please read the alarm in the “Show alarms” menu and correct the fault. If necessary please contact your local service mechanic. Alarm codes and directions for correcting alarms can be found in the CTS 600 directions.

- **VP 18 M2 is functioning but with reduced output.**
  Please inspect if the unit is supplied with enough air. Check the filters and control that the air valves are sufficiently opened. In 98% of the cases the fault derives from obstructed filters. The ventilators can be set on a higher speed if necessary. Any draught controls to the outside should be closed at outside temperatures below 6°C.

- **VP 18 M2 is functioning but there is no hot water.**
  Please check if the hot water tank is emptied. If the unit is supplied with hot-water circulation and the pipes are not insulated there can be a significant heat-loss which can cause a reduced output of the VP 18 M2.

  Is the water temperature adjusted correctly in the CTS 600 control? (T12). The temperature should normally bet set to 45–55°C. How to adjust the temperature please see the CTS 600 directions (delivered together with the VP 18 M2).

  Is the air supply too cold or is the air flow too little? Please check the filters and valves and if the insulation of the ducts is sufficient and dense.

- **VP 18 M2 is not functioning.**
  Please inspect the fuse. Check if the safety thermostat for hot water has disengaged the electricity (B41 figure 2 page 6). If this is the case please press the button and the thermostat will connect when the water temperature has dropped 10–15°C. if the thermostat disengages the electricity several times please contact your service mechanic.

Maintenance

At least every 3 months:

- The filters should be cleaned and renewed when needed. Usually the filters need to be renewed once a year.
  The filter guard in the CTS 600 control can be used in order to make sure that the filters are checked. Please see CTS 600 directions for further information. (delivered together with the VP 18 M2).

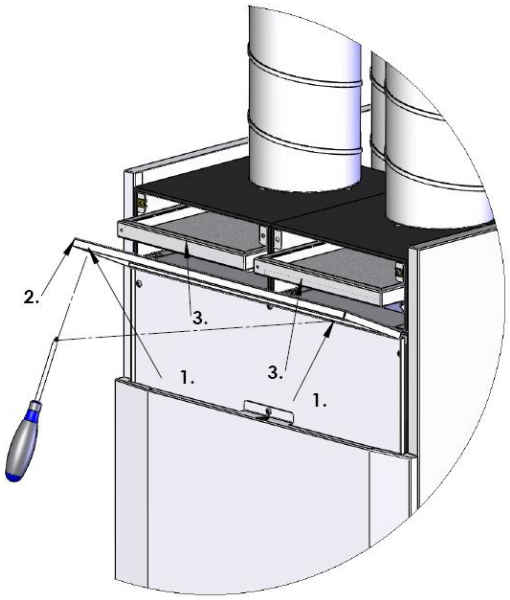

Figure 19: Filtershift

Changing filters:
1. loosen the screws
2. remove the filter door
3. pull the filter frames out to remove/clean the filters.

Once a year:

- The sacrificial anode should be inspected and renewed if it is much corroded. The hot-water tank can corrode if the anode is left unchanged. See HWS
- The intake should be inspected and any uncleanness should be removed.
- The evaporator should be inspected and cleaned.
- It should be checked that the condensate has free passage through the water seal and the condensation drain.
- The safety switch for the hot water tank should be controlled. (See under Accesspries).
- It is recommended to take out a subscription for service.

Energy saving

- Use the setting ”Energy” in the ”Air exchange” menu in the CTS 600 control. Please see CTS 600 directions for further information. (delivered together with the VP 18 M2).

- Keep the hot-water at a low temperature. Try with 45°C.

- The auxiliary heating element should be cut off and only be used at very large hot-water demands. Please see CTS 600 directions

- The ventilation speed should not be set higher than necessary.

- Avoid hot-water circulation.

- Spread out the bathing times as the VP 18 M2 Combi needs 6-7 hours to heat the 180L water.

- Insulate the ducting as prescribed.

- Do not cool during winter time.

Accessories/spare parts

- Safety group with scald prevention. Product no. 3690.
  Statutory safety equipment that must be installed on the hot water tank. You are obliged to test it at least once a year. This is done by pressing the handle which lets out water through the spillway. The group consists of a safety valve and an adjustable check valve. The check valve functions as a cutoff valve as it opens and closes the water supply while at the same time preventing return flow from the tank. Reduced hot water flow.

  Filter. Product no. 39543.
  A dirty/lacking filter will result in increasing dirtying of the system, resulting in decreased performance, durability and polluted incoming air. The filter complies with filter class G4.

- Pollen filter. Product no. 39542

- Hygrostat. Product no. 3637
  Allows for forced extraction at damp air.