



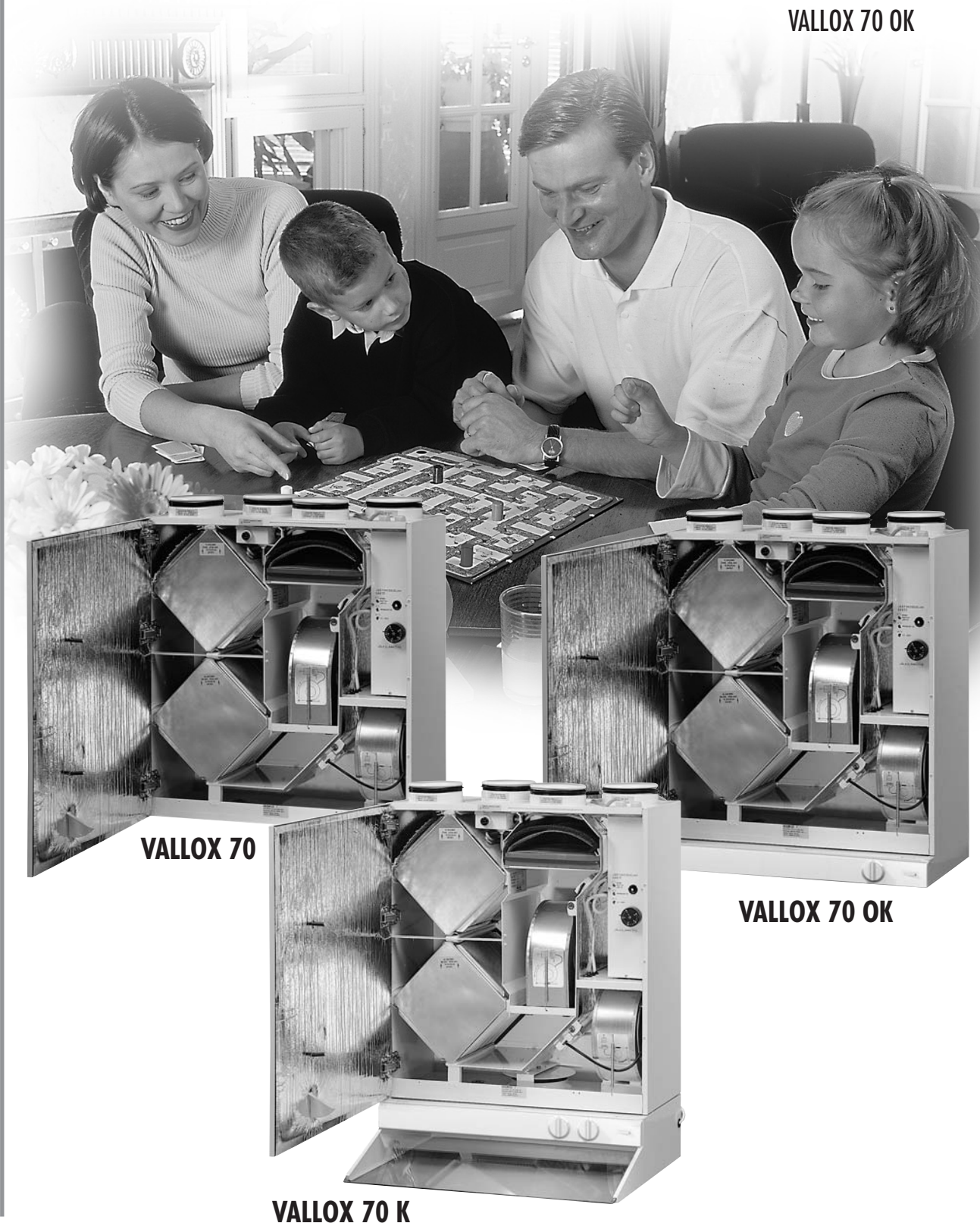
VALLOX 70

• 1.09.61E
• 19.05.2005
© VALLOX

INSTRUCTIONS FOR USE AND MAINTENANCE

Models:
VALLOX 70
VALLOX 70 K
VALLOX 70 OK

INSTRUCTIONS FOR USE AND MAINTENANCE



VALLOX 70

VALLOX 70 OK

VALLOX 70 K



VALLOX 70

MAIN PARTS

CALENDAR

Spring:

- Wash or replace the coarse filter, and clean or replace the fine filter if needed.
- Check the fan impellers and the post-heating radiator if needed.
- Check that summer ventilation is in operation. When needed, replace the heat recovery cells (3) with (optional) summer cells, so that discharge air will not heat air coming from outside..



Autumn:

- Clean or replace the coarse filter, and clean or replace the fine filter if needed.
- Check the cleanliness of the heat recovery cell.
- Make sure the condensation water joint is not clogged.



MAIN PARTS..... s. 2

1. THREE QUESTIONS ABOUT VENTILATION

- 1.1. Why Are Rooms Ventilated? s. 3
- 1.2. What Are the Characteristics of Adequate Ventilation? s. 3
- 1.3. How Much Ventilation Is Needed? s. 3

2. INSTRUCTIONS FOR USE: VALLOX 70, 70 OK, AND 70 K

- 2.1. Initial Adjustments s.4
- 2.2. Use of Ventilation s.5
- 2.3. Post-heating s.5
- 2.4. Air Filtration s.6
- 2.5. Defrosting s.6

3. INSTRUCTIONS FOR MAINTENANCE

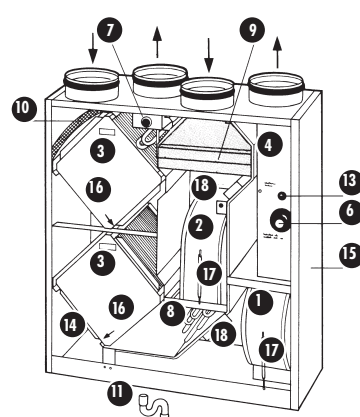
- 3.1. Filters..... s.7
- 3.2. Fans and Post-heating Radiator s.7
- 3.3. Condensing Water s.7

4. TROUBLE SHOOTING s.8

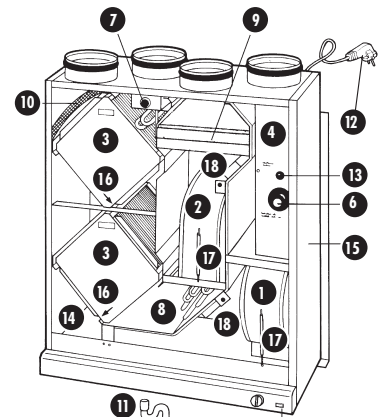
5. AUTHORIZED SERVICE REPRESENTATIVES..... s.8

MAIN PARTS

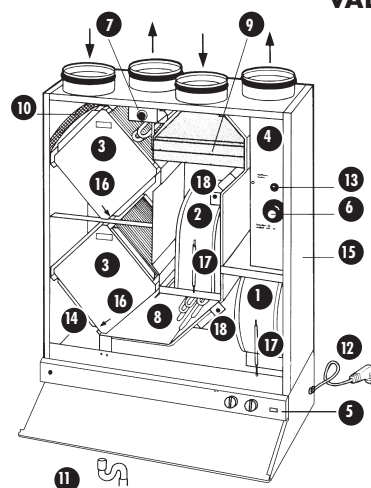
1. Discharge air fan 90 W
2. Supply air fan 90W
3. Heat recovery cell, 2 pcs
4. Electrical connection
5. Control center, OK and K models
6. Adjustment thermostat of the post-heating radiator
7. Post-heating radiator, 500 W
8. Preheater 1000 W, optional
9. Outdoor air filters
10. Discharge air filter
11. Water seal and hose, 2 m
12. Earthed plug, OK and K models
13. Adjustment of the defrosting thermostat
14. Sensor of the defrosting thermostat
15. Envelope and insulation
16. Drip groove
17. Fan fastener
18. Electrical quick-disconnect coupling of the fan



**VALLOX
70**



VALLOX 70 OK



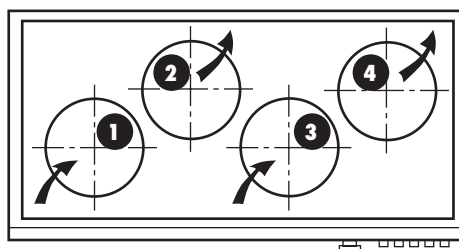
VALLOX 70 K



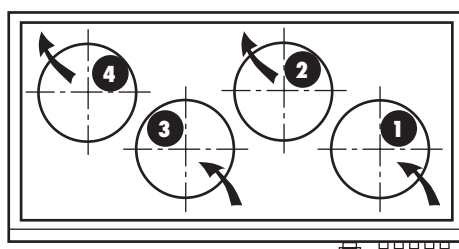
ORDER OF DUCT JOINTS IN VALLOX 70:

1. Discharge air to the unit
2. Supply air to the rooms
3. Outdoor air to the unit
4. Extract air going outside

The R Model



The L Model



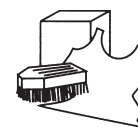
EVERYDAY QUICK REFERENCE GUIDE

VALLOX 70 has been initially adjusted for normal conditions at your home. Further adjustment is mainly needed in the following situations:

- **Taking a sauna bath:**
Increase ventilation in the sauna and the washroom so that they get dry as soon as possible. It is advisable to have ventilation at an increased level for two to three hours after taking a sauna bath.



- **Washing and drying clothes:**
Increase ventilation in the washing and drying space when washing and drying.



- **Sleeping:**
Ventilation in the bedroom has to be adequate throughout the night. The level is correct when there is no musty smell in the morning when you enter the room.



- **Empty house:**
In order to save energy, you can set ventilation at the minimum level.



- **Cooking:**
If the ventilation unit is connected to a cooker hood, increase ventilation while cooking.



NOTE!

Never switch ventilation off, as it ensures the even quality of indoor air and removes dust as well as gases emitting from structures.

1. THREE QUESTIONS ABOUT VENTILATION

1.1. Why Are Rooms Ventilated?

Good ventilation promotes healthy living for both the people and the building. The air in a residential building needs to be replaced in order to remove humidity and impurities emitted by structural and human sources. The impurities of indoor air include carbon dioxide, formaldehyde, radon and other gases as well as dust.

Mechanical ventilation is needed in order to regulate ventilation according to the needs of the inhabitants. In a well-insulated house, air is not replaced sufficiently by natural means. Even in a poorly insulated house, air is only replaced because of the differences in temperature of indoor and outdoor air, or thanks to winds. In this case, ventilation is dependent on weather conditions and cannot be regulated.

It is of utmost importance to keep the relative humidity and CO₂ content of indoor air at a healthy level. The relative humidity of indoor air should preferably be about 45%. Humidity is smaller in the winter and higher in the summer and in the autumn. Dust mites thrive in a space where relative humidity exceeds 50%, and if relative humidity exceeds 60% for an extended period in the winter, the cold structures of the building start to gather water and mould.

The maximum CO₂ content of indoor air should be about 1000 ppm.

1.2. What Are the Characteristics of Adequate Ventilation?

- Indoor air remains fresh in all rooms, also in the bedrooms during the night.
Without adequate ventilation, CO₂ content in the bedrooms especially tends to rise to an unhealthy level.
- The bathroom and the sauna get dry quickly.
- During the heating season, the windows and other outer wall structures remain dry.
- Humidity in the indoor air is not condensed in the ventilation ducts.
- Air is fresh in the toilet, too.

1.3. How Much Ventilation is Needed?

In order for indoor air to be clean for breathing, it should be replaced **every two and a half hours**. In a new and a renovated house, air needs to be replaced at least once an hour throughout the first year, so that harmful gases and structural humidity will be extracted. In buildings that are dry and more than a year old, ventilation can be regulated as needed. Ventilation is increased when taking a sauna bath, washing clothes and cooking, for instance, and reduced during very cold periods or when there is nobody at home.



INSTRUCTIONS FOR USE

Remember!
Vallox 70 is in operation
in all weathers

2. INSTRUCTIONS FOR USE: VALLOX 70, 70 OK, AND 70 K

In order for indoor air to remain healthy, also for the structures of the building, ventilation has to be in continuous operation. Do not stop ventilation even for longer holidays, because that makes room air musty, and during the heating period room air humidity may condensate in the ducts and the structures, thereby causing humidity damage.

2.1. Initial Adjustments

The unit comes in three models: VALLOX 70, VALLOX 70 OK, and VALLOX 70 K. They are all equipped with electric post-heating. The OK model is controlled by the unit itself, and the two other models by a cooker hood or a separate control center.

The ventilation system operates correctly when the air flows in different spaces have been measured and adjusted through the valves according to the values planned. **After the initial adjustment have been done, the position of the ventilation valves must not be changed**, with the exception of the outlet valve with a knob, located in the ceiling of the sauna, that you can adjust if needed. The initial adjustments ensure that ventilation is adequate and that discharge air flow is always bigger than supply air flow, i.e. the house has a negative pressure compared to outdoor air. If the house has a positive pressure compared to outdoor air, the air of the house penetrates the building envelope and the space between the windows, thereby possibly causing humidity damage during the heating season.

In normal conditions, **basic ventilation** is adequate, which means that air is replaced once every two and a half hours. Increased ventilation is needed during sauna baths, cooking, washing of clothes or family parties.

If the user does not know the air flows measured, the table below indicates approximate discharge air flows and the total electricity consumption of the fans at different fan speeds. The table also shows the fan speed that is adequate for normal basic ventilation in dwellings of different sizes. The switch positions in the table, i.e. the shaded fan speeds, are factory-set values. If needed, an expert or an electrician can change the settings and choose the speeds shown in the white columns. Speed changes are always made by an expert, not the user himself. The room height is 2.5 metres.

SPEED	1	2	3	4
Living space (m ²)	40	80	140	190
Air flow (l/s)	12	23	40	55
Total electricity consumption of the fans (W)	34	63	110	150



2.2. Use of Ventilation

Ventilation Control Depending on the Type of Unit

VALLOX 70

- Separate control center
- Cooker hood

VALLOX 70 OK

- Control center in the unit

VALLOX 70 K

- Cooker hood connected to the unit

2.2.1. Cooker Hood Connected to Ventilation

When cooking, open the booster flap on the cooker hood, and if necessary, increase fan output using the ventilation switch on the cooker hood. At other times, keep the flap of the cooker hood closed.

Note! When the cooker hood or the damper of the wood-burning cooking range is open, ventilation is reduced in the bathroom and in other rooms.

2.2.2. Separate Cooker Hood (not applicable to model 70 K)

If there is a separate cooker hood that is not connected to the ventilation system of the house, only use it when needed. Using it does not affect the operation of VALLOX 70, because VALLOX 70 takes care of ventilation for other rooms in the house. In this case, there is a minimal discharge in the kitchen that is connected to the VALLOX 70 system. The unit is then controlled through a separate control center or by the unit itself (OK models).

2.2.3. Ventilation in Other Rooms

Ventilation in other rooms is continuous and can be adjusted as needed. Outdoor air is primarily brought to the bedrooms, living room, room with a fireplace, dining room, and sauna. Supply air can flow freely from these rooms through under-door spaces, for instance, to the bathroom, sauna, WC, walk-in wardrobe, kitchen and to other rooms with venting outlets. If cold outdoor air comes to the sauna, only use it when needed, e.g. as combustion air for the wood-burning sauna oven.

2.3. Post-heating

For most of the year, the heat recovered from air to be discharged is enough to heat the cool air coming from outside to a suitable temperature. If the heat of discharge air is not enough, the air coming from outside can be heated with the radiator included in the unit.

VALLOX 70 comes standard with a 500W electric radiator (see page 3, item 7) for heating supply air. The temperature of supply air is adjusted at the thermostat regulator inside the unit (see page 3, item 6). The temperature adjustment range is +10...+25°C. Supply air temperature will not go below the setpoint value.

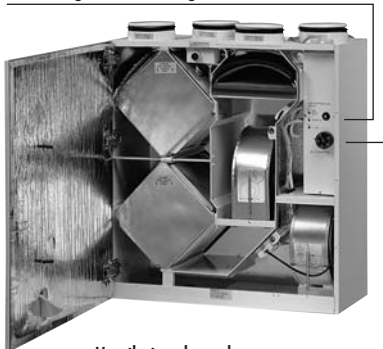
In the summer, it is recommended to set the thermostat at 0°C, in order to prevent the radiator from heating air.



VALLOX 70

Supply air temperature regulation

Defrosting thermostat regulation



Ventilation through a separate control center, four speeds

VALLOX 70 OK

Supply air temperature regulation

Defrosting thermostat regulation



Ventilation through a control center in the unit, four speeds

VALLOX 70 K

Equipped with a cooker hood, otherwise as VALLOX 70. Ventilation through the cooker hood, four speeds





INSTRUCTIONS FOR USE

2.4. Air Filtration

VALLOX 70 features both discharge and supply air filtration before the fans and the heat recovery cell. The unit comes standard with an EU7 fine filter that filters fine dust, pollen and dust not discernible to the eye, as well as an EU1 coarse filter for insects, coarse pollen and dust. The filters have to be in the unit whenever ventilation is operating.

2.5. Defrosting

Water condensing from discharge air may freeze in the heat recovery cell. Defrosting can be prevented by stopping the supply air fan (standard), or by turning on the preheating resistor (optional). Both functions are automatic.

2.5.1. Stopping the Supply Air Fan

The defrosting thermostat (item 13 in the parts list on page 3) stops the supply air fan when discharge air temperature falls to approximately $+5^{\circ}\text{C}$. The fan restarts when temperature has risen by three degrees, i.e. to $+8^{\circ}\text{C}$. The threshold value of the thermostat can be adjusted.

2.5.2. Outdoor Air Preheating (optional)

VALLOX 70 can be equipped with an optional preheater (installed at the factory). The defrosting thermostat turns the heater on instead of stopping the outdoor air fan. The heater heats outdoor air before it reaches the cell, preventing it from freezing. At very low temperatures, the 1000W radiator is not enough for heating maximum air flow (at -30°C , max air flow is $30\text{dm}^3/\text{s}$, corresponding to speed 2 or 3).

The threshold values of the defrosting thermostat can be adjusted inside the unit.

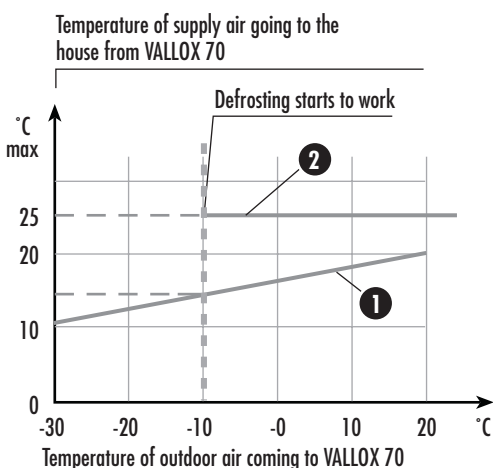
2.5.3. Post-heating of Outdoor Air

The operation of the radiator is controlled inside VALLOX 70. The adjustment range is $+10\ldots+25^{\circ}\text{C}$.

Figure 2.5.3. Operation of the post-heating radiator

The effect of outdoor air flow and temperature on supply air

1. Supply air heated by discharge air
2. Maximum temperature
 - 500W post-heating radiator can heat air flowing at $50\text{dm}^3/\text{s}$ by approximately 8°C .
 - The temperature of outdoor air coming to the unit is 20°C .



2.5.4. Heat Recovery Bypass (optional)

VALLOX 70 can be equipped with an optional summer cell that is installed in place of the heat recovery cell for the summer. The summer cell lets in fresh outdoor air without discharge air heating outdoor air.



Summer cell for VALLOX 70 units



3. MAINTENANCE INSTRUCTIONS

Before starting maintenance operations, stop the unit at the ON/OFF switch, or by removing the fuse from the fuse box of the house.

3.1. Filters

Outdoor air is filtered in the unit with two kinds of filters. The EU1 coarse filter (C) filters insects and coarse pollen and dust. The EU7 fine filter (D) filters fine dust that is not discernible to the eye. Discharge air is filtered with a similar EU1 filter than outdoor air (A).

Clean the coarse filters (A, C) by washing them **at least twice a year** (or more often if needed) and whenever the (optional) filter guard indicates that maintenance is needed.

Clean the filters with 25...30°C water and washing-up liquid, pressing them lightly. Do not handle the filters with force. When properly cleaned, the filters stand cleaning 4 to 5 times. This means they **have to be replaced every two years** or when needed.

The fine filter (D) cannot be cleaned with water. Clean it in connection with the cleaning of the EU1 filters, vacuuming it with a brush roll. When cleaning, take care not to break the filtration material. **In order to ensure good quality supply air, replace the filter every one to three years, depending on the quality of air in the neighbourhood.** It is recommended to replace the filters in the autumn. In this way, the filter stays fresh during the winter and efficiently filters the dust in the following spring.

While cleaning the filters, it is also recommended to check the cleanliness of the heat recovery cells (L) about every two years. Holding the ears at the end of the cells, pull the cells out of the unit. If a cell is dirty, wash it by sinking it to water containing washing-up liquid. Rinse the cell clean by showering it with water. When water has flown from between the sheets, push the cell back into the unit, making sure the sealings against the slide surfaces are in place and that the "this side up" label at the end of the cell points to the corner facing the upper support.

3.2. Fans and Post-heating Radiator

Because of the electric quick-disconnect couplings, the fans can be removed for maintenance. Unfasten the coupling (G) and the fastener (H), and pull the fan out.

In connection with maintenance operations, it is important to check the cleanliness of the inside of the unit: the fans, the heating radiator, the drip groove and the rest of the inner structures. If there is dirt, remove it carefully (using a damp cloth, brush, vacuum cleaner or similar.) Do not pour water to the electric devices and motors. To ensure proper functioning and hygiene, the unit has to be kept clean.

3.3. Condensing Water

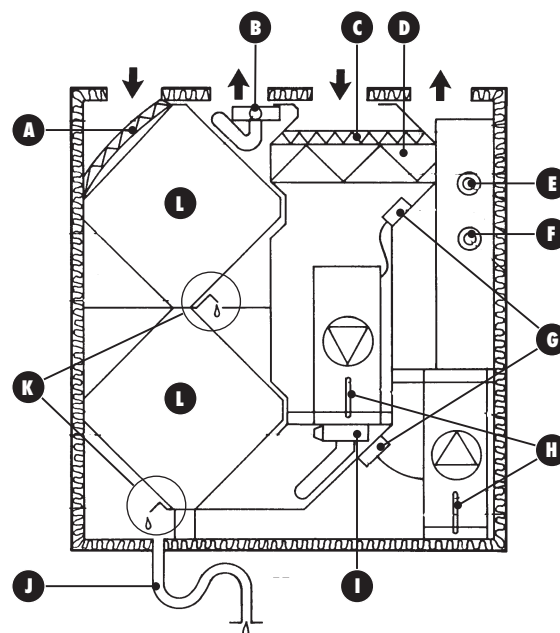
During the heating season, the humidity in discharge air condenses as condensing water. Water formation may be abundant in new buildings or if ventilation is scarce as compared to moisture production by the inhabitants.

The condensing water must be able to exit the unit without hindrance. In connection with maintenance operations, for example in the autumn before the start of the heating season, make sure that the condensing water joint (J) in the bottom tank is not clogged. You can check this by pouring a little water in the tank. **Do not let any water enter the electrical devices.**

REMEMBER!

Clean the filters at least twice a year.

Parts Needing Maintenance



- A** Discharge air filter EU1
- B** Reset button of the overheat protector of the post-heating radiator
- C** Outdoor air filter EU1
- D** Outdoor air fine filter EU7
- E** Defrosting regulation 0...+10 °C
- F** Post-heating regulation ...+10°C...+25 °C
- G** Electric quick-disconnect coupling of the fan
- H** Fan fastener
- I** Reset button of the overheat protector of the preheater
- J** Condensing water
- K** Drip groove
- L** Heat recovery cell



TROUBLE-SHOOTING

1. Outdoor air is cool when entering the house.

CAUSE

- Air cools in the attic ducts.
- The heat recovery cell has frozen, and discharge air cannot heat outdoor air.
- The post-heating radiator is not functioning.
- The discharge air filter or the cell is clogged.
- The initial adjustments for ventilation have not been made.

DO THIS

- Measure the temperature of supply air in the unit, and compare it with the air coming from the valve (See page 6, Figure 2.5.3.).
- Check the insulation of the attic ducts.
- Check the functioning of the defrosting thermostat and the preheating resistor (See the instructions for use, page 6, Section 2.5, "Defrosting"). The defrosting thermostat may be adjusted by turning the pin clockwise to +10°C or anticlockwise to 0°C. At 0°C freezing is probable, and at +10°C there is no freezing, but discharge air going out may be too warm. At the factory-set value, the defrosting thermostat works at +5°C.
- Check if overheating protection has gone off by pressing the black button at the end of the radiator. If the protection has gone off, you hear a click when pressing the button. Pressing the button restores the operation of the radiator after the overheating protection has gone off.
Ask an expert to find out why this has happened.
- Check the operation of the radiator by comparing it with curve 2.5.3 on page 6. The curve shows the amount of supply air that is heated by discharge air without any post-heating.
- Check the cleanliness of the filters and the heat recovery cell.
- Check the initial adjustments.

2. The supply air fan keeps stopping.

CAUSE

- The heat recovery cell defrosting is operating and prevents the cell from freezing.

DO THIS

- If you want the fan to stop at temperatures lower than has been defined during the initial adjustments, you can decrease the thermostat value by 1-2°C.

NOTE! If you decrease the threshold by too much, the cell may freeze.

See item 1 on this page.



VALLOX

Vallox Oy FIN-32200 Loimaa Finland Tel: +358 2 7636 300 Fax: +358 2 7631 539
Internet: www.vallox.com