

INSTRUCTIONS FOR USE AND MAINTENANCE

**Supply and extract air ventilation
with heat recovery**



MODELS:
VALLOX 90 SC R
VALLOX 90 SC L



CONTENTS

EVERYDAY QUICK GUIDE

VALLOX 90 SC has been initially adjusted for normal circumstances in your home. Ventilation adjustment is needed mainly in the following circumstances:

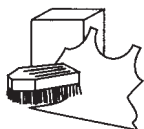
- **Taking a bath:**

Boost ventilation in bathing and washing facilities in order to ensure that the rooms get dry as quickly as possible. It is recommended to have boosted ventilation on for 2 to 3 hours after taking a sauna bath.



- **Washing and drying clothes:**

Boost ventilation in washing and drying facilities during these activities.



- **Sleeping:**

Ventilation in a bedroom has to be sufficient throughout the night. The level is correct when air does not smell fusty when you enter the room in the morning.



- **Empty dwelling:**

To save energy, ventilation can be adjusted to the minimum level.



- **Cooking:**

If the ventilation unit is connected to a cooker hood, boost ventilation during cooking.

The most common way to abate cooking fumes is to have a separate cooker hood.



NOTE!

Never switch ventilation off, because ventilation keeps indoor air quality uniform and removes gases and dust emanating from the structures.

VALLOX 90 SC models

Code: 3521

Models

The letter L or R after the name of the unit indicates the handedness of the unit.

VALLOX 90 SC R

- with direct current fans

VALLOX 90 SC L

- with direct current fans

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THREE QUESTIONS ABOUT VENTILATION

1. THREE QUESTIONS ABOUT VENTILATION

1.1. Why is air replaced in dwellings?

Good ventilation promotes healthy living for both residents and the building. Air in a dwelling needs to be replaced in order to remove humidity brought about by living as well as impurities emanating from structures and human bodies. Impurities of indoor air include carbon dioxide, formaldehyde, radon and other gases as well as dust.

Mechanical ventilation is needed in order to be able to adjust air circulation as needed by the residents. In a tightly sealed house, air does not circulate sufficiently by natural means. Even in a poorly sealed house air is only replaced because of differences between indoor and outdoor air temperatures, or because of winds. This means that ventilation is dependent on weather conditions and cannot be regulated.

It is especially important that humidity and carbon dioxide content of the indoor air stay at a healthy level. Recommended humidity content of good indoor air is approximately 45%. Humidity content is lower in winter and higher in summer and autumn. Dust mites thrive in indoor air if humidity exceeds 50%, and if humidity stays at over 60% for a long time in winter, water condenses in the cold structures of the house and mould starts to form.

The recommended maximum carbon dioxide content in good indoor air is circa 1,000 ppm.

1.2. What are the characteristics of adequate ventilation?

- Indoor air stays fresh in all the rooms of the dwelling, also in bedrooms during night. **Without adequate ventilation**, carbon dioxide content tends to rise high especially in bedrooms.
- The bathroom and the sauna get dry quickly.
- During the heating season, the windows and other outer wall structures remain dry.
- Humidity in indoor air is not condensed in the ventilation ducts.
- Air is fresh in the toilet as well.

1.3. How much air is replaced?

For air to be clean to breathe, it has to be replaced with outdoor air **every two hours**.

In a new and a renovated house, air needs to be circulated continually, at least once an hour, during the first year in order to remove harmful gases and structural humidity. In buildings that are more than a year old and dry, ventilation can be regulated as needed. Ventilation is boosted during for instance a sauna bath, clothes washing and cooking, and reduced during very cold periods or when there is nobody at home. Carbon dioxide and humidity sensors adjust ventilation in the rooms automatically as needed.

SEASONAL CALENDAR

Autumn

- Wash or change the coarse filter and clean or change the fine filter if needed. The recommendation is approximately once a year.
- Check that the heat recovery cell is clean.
- Check that the condensing water outlet is not clogged.



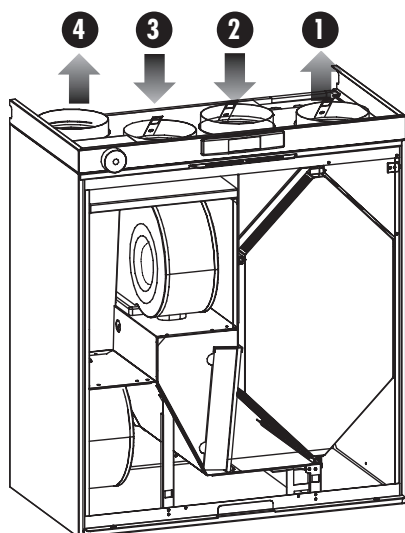
Spring:

- Wash or change the coarse filter and clean or change the fine filter if needed.
- Clean the fan blades and the post-heating unit if needed.
- Check that summer ventilation is in operation.



NOTE!

For further details, see inner pages.



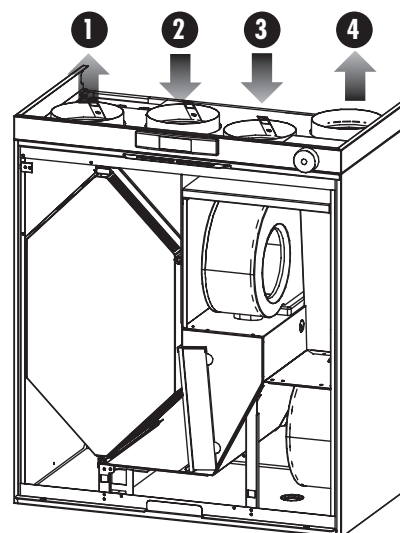
VALLOX 90 SC, order of duct outlets

L MODEL

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

R MODEL

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



INSTRUCTIONS FOR USE

2. Instructions for using VALLOX 90 SC

For indoor air to stay healthy and beneficial also for the structures of the dwelling, ventilation has to be in operation continually. It is not advisable to stop ventilation even for longer holidays, because it makes indoor air stuffy. Also, during the heating season indoor air humidity may condense in the ducts and structures and therefore cause humidity damage.

2.1. Initial adjustment

The ventilation system works properly when air flows in the rooms have been measured and adjusted with the valves in accordance with the planned values. **After the initial adjustment, the position of the ventilation valves must not be changed**, with the exception of the outlet valve with a knob located on the ceiling of a sauna, which can be adjusted if needed. The initial adjustment ensures that a sufficient amount of air is circulated and that extract air flow is always greater than supply air flow, i.e. the dwelling is negatively pressured compared to outdoor air. If the dwelling is positively pressured, air in the dwelling penetrates the outer envelope of the building and between windows, which may cause humidity damage during the heating season.

In normal conditions basic ventilation, with a change of air every two hours, is sufficient in living areas. Boosting is needed during for example sauna baths, cooking, clothes washing or family parties.

2.2. Selection of fan speed

Fan speed is selected by using a separate Simple Control speed selector or Slim Line PTXPA SC cooker hood.

2.2.1. Speed selector

The speed selector can be used to select speeds 1, 2, 3 and 4:

1. **Use during absence.** When the dwelling is empty, ventilation can temporarily be diminished.
- 2-3. **Normal use.** In normal conditions air needs to be replaced once in two hours.
4. **Boosted operation.** Cooking, bathing in the sauna or bathroom, drying clothes, using the toilet, having guests, overheat or a similar situation may cause a need for higher than normal ventilation.

If there is a cooker hood independent of the ventilation system in the dwelling, it is not necessary to raise the speed of VALLOX 90 SC during cooking.

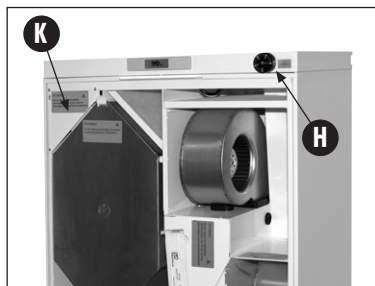
2.3. Post-heating

For most of the year, heat recovered from the air being extracted is enough to warm the cold air coming from the outside to a suitable temperature. If the heat of extract air is not enough, air coming from the outside may be heated further, as needed, with the heating radiator (K) delivered with the unit. The heating radiator is a PTC resistor, which is a live component. The PTC resistor must not be touched without disconnecting power supply.

Supply air temperature is adjusted using thermostat H.



Simple Control speed selector



2.4. Heat recovery bypass

In winter use the heat recovery cell of VALLOX 90 SC recovers heat from the air leaving the dwelling and uses it to heat the air coming from the outside.

In summer use when it is warm outside, it is unnecessary to heat outdoor air. The heat recovery cell is bypassed in VALLOX 90 SC with the standard damper (A). The position of the damper can be changed by opening the damper release (B) and then moving the replacement damper in another position. In the summer position air flow through the cell is prevented, and heat recovery bypass is activated.

2.5. Air filtering

VALLOX 90 SC features coarse filtering of both extract and supply air before the fans. The supply air side includes a G4 class coarse filter (C) and the extract air side a G4 class coarse filter (D). The unit can also be equipped with a F7 fine filter (E), which captures fine dust and pollen as well dust not seen to the eye. The filters need to be in place in the unit whenever ventilation is in operation.

2.6. Defrosting

Water condensing from extract air may freeze in the heat recovery cell. Freezing can be prevented by stopping the supply air fan, or the unit can be equipped with a preheating resistor, which is switched on as needed.

2.6.1. Stopping the supply air fan

The defrost thermostat T1 stops the supply air fan whenever the temperature of extract air is below +5 °C after the cell. The fan restarts when temperature has risen by circa three degrees, i.e. to 8 °C. The threshold of the thermostat (F) can be adjusted at the back of the heat recovery cell. If the unit includes a preheating radiator (G), the supply air fan cannot be stopped.

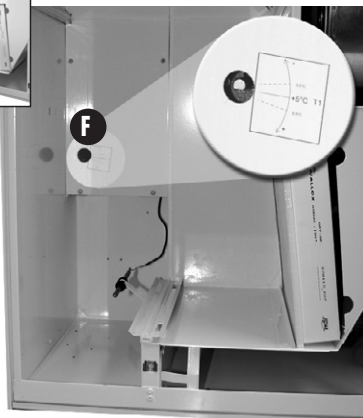
2.6.2. Outdoor preheating

The unit can have been equipped with a preheating radiator (G) at the factory. If that is the case, the defrost thermostat T1 switches the preheating radiator on whenever the temperature of extract air goes below +5°C after the cell. The preheating radiator is switched off when temperature has risen by circa three degrees to +8°C. The preheating radiator heats outdoor air before the heat recovery cell and prevents it from freezing. In very cold temperatures the preheating radiator is not enough to heat maximum air flow to a sufficient degree (in a temperature of minus 30 degrees, maximum air flow is 30 dm³/s, which corresponds to speed 2). The limit of the thermostat can be adjusted at the back of the heat recovery cell.



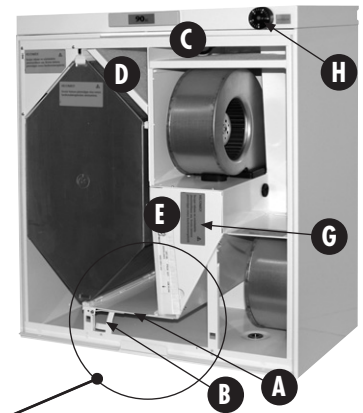
Defrost thermostat (F)

First remove the heat recovery cell, then the cap protecting the adjusting screw of the thermostat.



Preheating radiator (G)

Preheating radiator is located behind a shield.



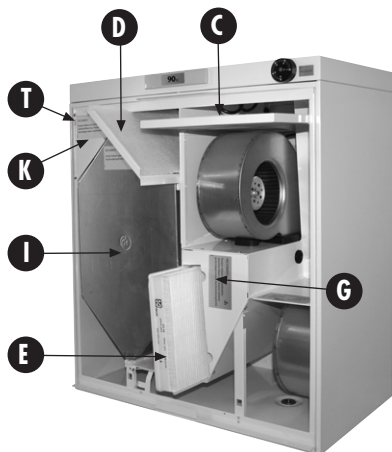
Damper in summer position



Damper in winter position.

You can return the winter damper to summer position by pulling the damper release towards yourself.

MAINTENANCE INSTRUCTIONS



VALLOX 90 SC filters and heat recovery cell. The units are available in right and left handed models. In the right handed model (model R) outdoor air comes to the unit from the right side of the centre line as shown in the instructions. In the left handed model (model L) outdoor air comes from the left side of the unit. The filters and the summer / winter damper change places correspondingly.

Detaching of heat recovery element

First remove the sealing ledge located above the cell. Slowly pull the cell from behind the cell about half way outwards and lift it out of the unit.



3. MAINTENANCE INSTRUCTIONS

3.1. Before starting maintenance operations

When you open the door of the VALLOX 90 SC unit, the safety switch (T) switches the unit off; in spite of that, please remove the fuse of the unit from the main fuse panel. If the unit is equipped with a preheating (G) or a post-heating resistor (K), please bear in mind that the PTC resistor used as the heating resistor is a live component. Because of this you have to make sure that the unit has no voltage.

3.2. Filters

When the maintenance reminder lights up the control panel indicator, the cleanliness of the filters must be checked. Outdoor air is filtered in the unit with two kinds of filters. A G4 class coarse filter (C) filters off insects, heavy pollen and other dust. An F7 class fine filter (E) filters off invisible dust. Extract air is filtered with a G4 class coarse filter (D). **Clean the coarse filters D and C by washing them at least twice a year.** Wash the filters with +25...30°C warm water and washing-up liquid, pressing them smoothly. Do not handle the filters with force. When washing is done properly, filters stand cleaning 3 to 4 times. In other words, **you have to replace them at least every two years.**

The fine filter (E) is not washable. Clean it at the same time as the G4 class filters by vacuuming it with a brush nozzle. When cleaning, be careful not to break filter material.

To ensure good supply air quality, replace the filter preferably every year, and at least every two years depending on local air quality. It is recommended to replace filters in autumn. This way the filters stay cleaner through the winter and can effectively filter off dust in the following spring.

In connection with the cleaning of the filters it is also advisable to check the cleanliness of the heat recovery (HR) cell (I) at about two-year intervals. The sealing ledge (J) above the HR cell must be torn off before it is possible to start removing the cell. When the sealing ledge has been removed, the HR cell can be pulled out of the unit. **Note! The laminas of the HR cell are very thin and get easily damaged.** The correct way to remove the HR cell is to put your hands behind the HR cell and slowly pull the cell outward. If the HR cell is dirty, soak it in a solution of water and washing-up liquid. Rinse the HR cell clean with a jet of water. When all the water has drained off from between the laminas, you can put the HR cell back in place. Finally, push the sealing ledge in place.

3.3. Fans

Check the cleanliness of the fans in connection with the maintenance of the filter and heat recovery cell. Clean the fans if necessary. You can remove the fans from the unit before cleaning them.

The fan blades can be cleaned with compressed air or with a brush. Do not remove or move the balancing pieces on the fan blade.

Removing the supply air fan (A)

Before removing the supply air filter, you have to remove the F7 fine filter (C) and the shield panel (D) of the preheating radiator. The F7 fine filter can be removed by pulling, and the protective sleeve of the preheating radiator is fixed with four screws. The fan is attached to the fixing plate with a butterfly nut. Loosen the butterfly nuts and lift the fan out. Finally disconnect the quick coupling of the fan conductor.

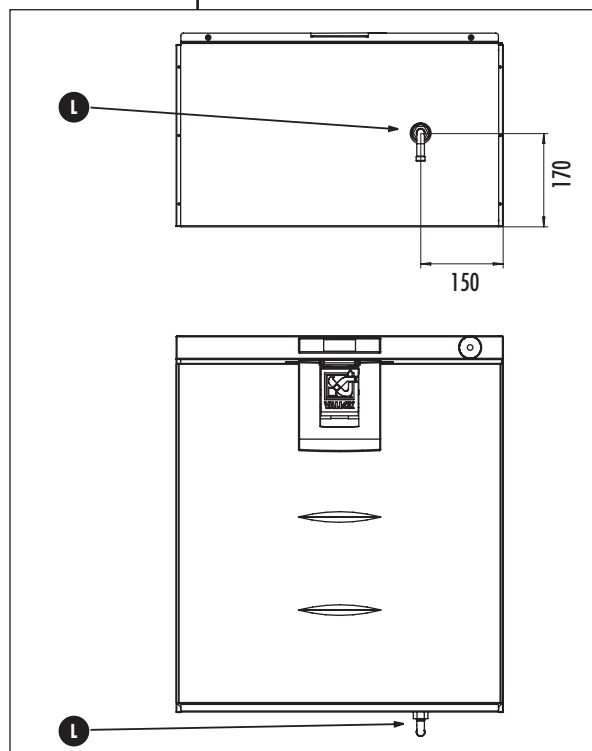
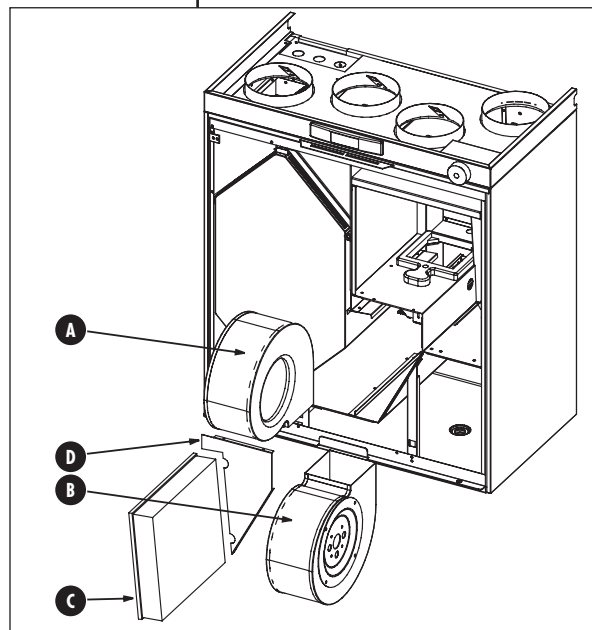
Removing the extract air fan (B)

The fan is attached to the fixing plate with a butterfly nuts. Loosen the butterfly nuts and lift the fan out. Finally disconnect the quick coupling of the fan conductor.

If you use water in cleaning the unit or its parts, do not let it flow into electrical devices.

3.4. Condensing water

During the heating season, humidity of extract air condenses to water. Water formation may be abundant in new buildings or if ventilation is low compared to the humidity build-up caused by the residents. Condensing water needs to flow out from the ventilation unit without hindrance. In connection with maintenance, e.g. in autumn before the beginning of the heating season, make sure that the condensing water outlet (L) in the bottom tank is not clogged. You may check it by pouring a little water in the tank. Clean if necessary. **Do not let water flow to electrical devices.**



TROUBLE SHOOTING

1. Outdoor air coming to the dwelling is cold.

REASON

- Air cools down in the attic ducts.
- The heat recovery cell is frozen, which is why extract air cannot heat outdoor air.
- The preheating radiator does not work.
- The extract air filter or cell is clogged.
- The initial adjustment of ventilation has not been done.

DO THIS

- Measure the temperature of supply air in the unit and compare it with the air coming from the valve.
- Check the insulation of the attic ducts.
- Check the operation of the defrost thermostat and preheating resistor (see Section 2.6 Defrosting on page 5). You can turn the defrost thermostat clockwise. In this case there will probably be no freezing, but extract air can be too warm when going out. The defrost thermostat can also be turned anticlockwise. In this case, the risk of freezing of the heat recovery cell will increase. According to the factory setting, the defrost thermostat works at +5°C.
- Check that the filters and the heat recovery cell are clean.
- Check the initial adjustment.

2. Supply air fan keeps stopping

REASON

The heat recovery cell defrost function works and prevents the cell from freezing.

DO THIS

If you want the fan to stop at temperatures lower than the preset value, you can decrease the threshold value of the thermostat by 1 to 2°C.

NOTE!

If you decrease the threshold value too much, the cell may freeze.

See Section 1.