



# Vallox 90K<sub>SC</sub>

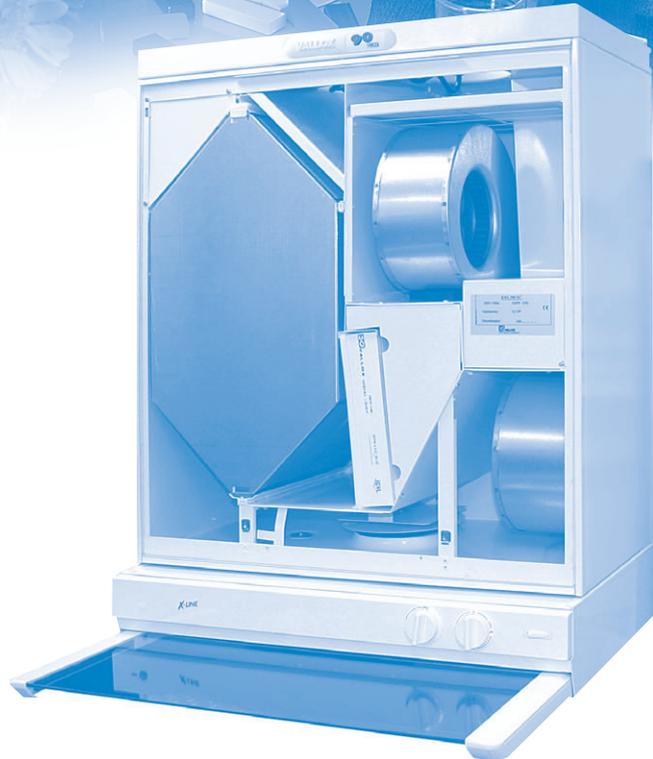
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**Code 3522**

	VALLOX product code
VALLOX 90K SC R	3295600
VALLOX 90K SC L	3295700

**INSTRUCTIONS FOR USE AND MAINTENANCE**

## SUPPLY AND EXTRACT AIR VENTILATION WITH HEAT RECOVERY





## TABLE OF CONTENTS

### EVERYDAY QUICK GUIDE

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

- **Taking a sauna 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:**  
Boost ventilation during cooking and open the flap of the cooker hood. At other times, the flap of the cooker hood must be kept closed.



#### NOTE!

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

### VALLOX 90K SC models

Code: 3522

#### Models

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

#### VALLOX 90K SC R

- with direct current fans

#### VALLOX 90K SC L

- with direct current fans

### 1. THREE QUESTIONS ABOUT VENTILATION

- 1.1. Why is air replaced in dwellings? .....p. 3
- 1.2. What are the characteristics of adequate ventilation? .....p. 3
- 1.3. How much air is replaced? .....p. 3

### 2. INSTRUCTIONS FOR USING VALLOX 90K SC

- 2.1. Initial adjustment .....p. 4
- 2.2. Selection of fan speed .....p. 4
- 2.3. Heat recovery bypass .....p. 5
- 2.4. Air filtering .....p. 5
- 2.5. Defrosting .....p. 5
- 2.6. Stopping the supply air fan .....p. 5
- 2.7. Outdoor air preheating .....p. 5
- 2.8. Post-heating .....p. 5

### 3. MAINTENANCE INSTRUCTIONS

- 3.1. Before starting maintenance operations .....p. 6
- 3.2. Filters .....p. 6
- 3.3. Fans .....p. 7
- 3.4. Condensing water .....p. 7
- 3.5. Cooker hood .....p. 7
- 3.6. Other parts of the ventilation system .....p. 7

### 4. TROUBLESHOOTING .....p. 8

## 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 not only humidity brought about by living but also 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 will condense in the cold structures of the house and mould will start 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 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.

#### 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.
- Switch summer ventilation off.



##### Spring:

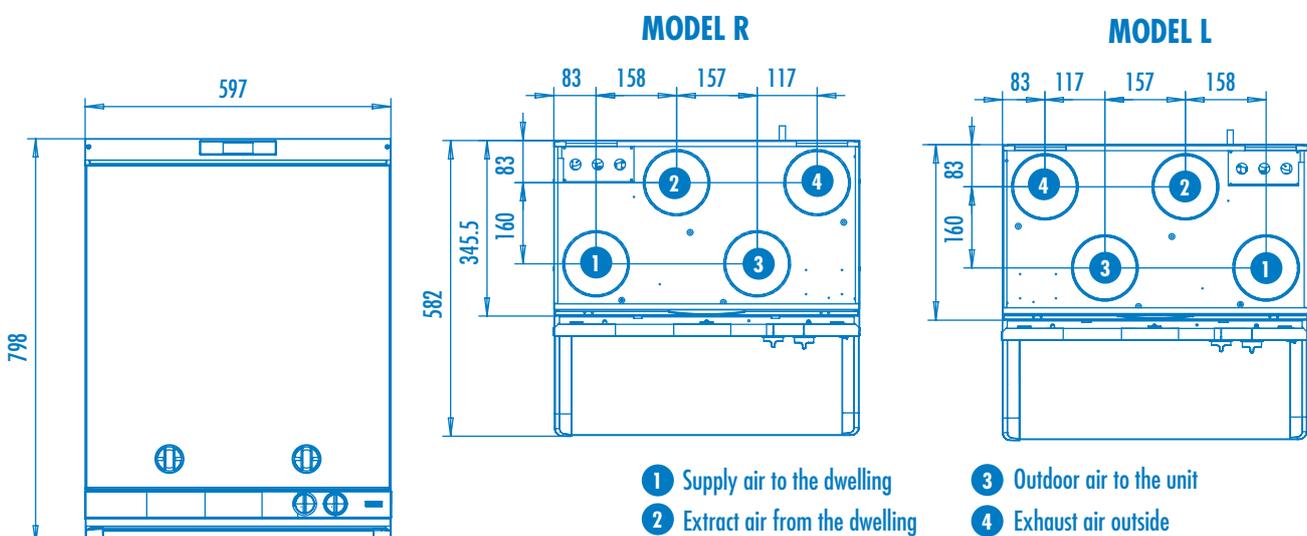
- Wash or change the coarse filter and clean or change the fine filter if needed.
- Clean the fan blades and the post-heating unit if needed.
- Check that summer ventilation is in operation.



#### NOTE!

For further details, see inner pages.

### VALLOX 90K SC dimensions and order of duct outlets, inner diameter of collar $\varnothing$ 125 mm





## INSTRUCTIONS FOR USE

### 2. Instructions for using VALLOX 90K 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 in 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 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. Fan speed control

##### Cooker hood control (hood in the unit)

The cooker hood is connected to the ventilation unit and is used to control air circulation in the whole dwelling. Four power ranges are available.

##### Speed 1

Use during absence. When the dwelling is empty, ventilation can temporarily be diminished.

##### Speeds 2 and 3

These are speeds that are normally used. Speed 2 is used when the need for ventilation is fairly small and air is good.

Speed 3 is used when there is a need for boosting – for instance in the following situations: cooking, taking a sauna bath, having a wash, drying clothes, use of toilet, guests, excess heat and "large dwellings".

##### Speed 4

Boosting position, used as needed for example during cooking, parties and hot weathers.

##### Cooking

Open the flap of the cooker hood during cooking. At other times, the flap must be kept closed. An open flap decreases the power of ventilation in other rooms.





### 2.3. Heat recovery bypass

In winter use the heat recovery cell of VALLOX 90K 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 90K SC with the standard damper (A). The position of the damper can be changed by opening the damper release (B) and then moving the summer/winter damper in another position. In the summer position air flow through the cell is prevented, and heat recovery bypass is activated.

### 2.4. Air filtering

VALLOX 90K SC features coarse filtering of both extract and supply air before the fans. The supply air side includes a G3 class coarse filter (C) and the extract air side a G3 class coarse filter (D). The unit can also be equipped with an 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.

### 2.5. 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 an optional preheating resistor, which is switched on as needed.

### 2.6. Stopping the supply air fan

Defrost thermostat T1 stops the supply air fan whenever the temperature of extract air goes below +5 °C after the cell. The fan restarts when temperature has risen by circa three degrees, i.e. to +8 °C. The limit 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.

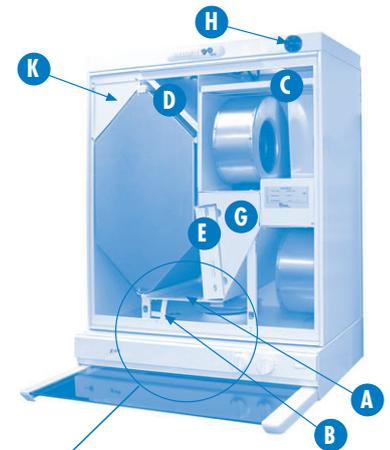
### 2.7. Outdoor air preheating

The unit may have been equipped with a preheating radiator at the factory. If this is the case, defrost thermostat T1 switches the preheating radiator on whenever the temperature of extract air goes below +5 °C after the cell. The preheating radiator switches off when temperature has risen by circa three degrees, i.e. to +8 °C. The preheating radiator heats outdoor air before the 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 -30 °C, maximum air flow is 30 dm<sup>3</sup>/s, which corresponds to speed 2). The limit of the thermostat can be adjusted at the back of the heat recovery cell.

### 2.8. 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 with a radiator (K) available as an option for 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.



in winter position



Summer/winter damper in summer position.

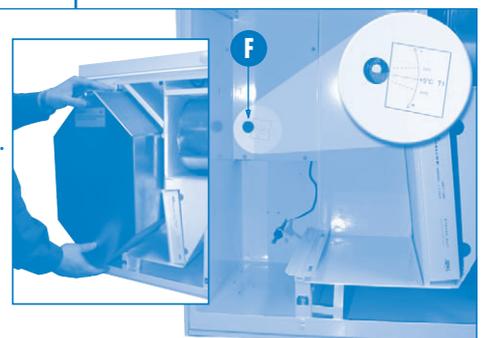
You can switch the summer/winter damper to winter position by pushing the damper behind the holder.

Preheating radiator (G)  
Preheating radiator is located behind a shield.



### Defrost thermostat (F)

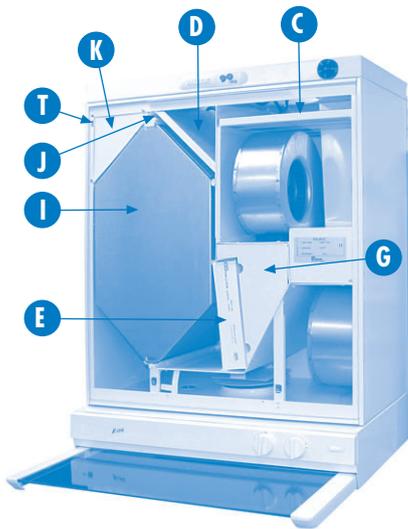
First remove the heat recovery cell, then the cap protecting the adjusting screw of the thermostat.





# VALLOX 90K SC

## MAINTENANCE INSTRUCTIONS



VALLOX 90K 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 the heat recovery cell

First remove the sealing ledge (J) 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 90K 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 post-heating (K) resistor, please bear in mind that the PTC resistor used as the preheating 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 G3 class coarse filter (C) filters off insects, heavy pollen and other dust. An F7 class fine filter (E) filters off fine, invisible dust. Extract air is filtered with a G3 class coarse filter (D). Clean 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 G3 class filters by vacuuming it with a brush nozzle. When cleaning, be careful no 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 water has drained off from between the laminas, you can put the HR cell back in place. Finally, push the sealing ledge in place.



## MAINTENANCE INSTRUCTIONS

### 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.

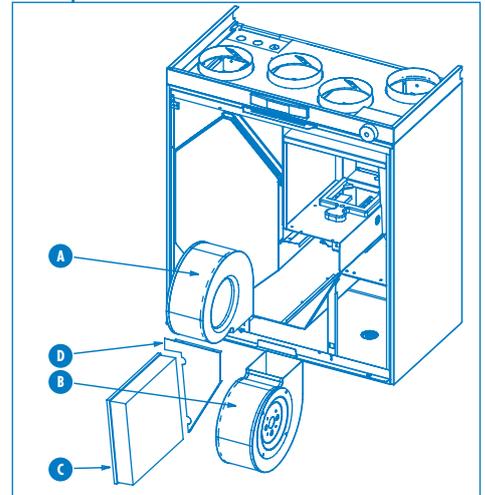
#### Removing the supply air fan (A)

Before removing the supply air fan, 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 it, and the shield panel of the preheating radiator is fixed with four screws. The fan is attached to the fixing plate with butterfly nuts. 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 nut.

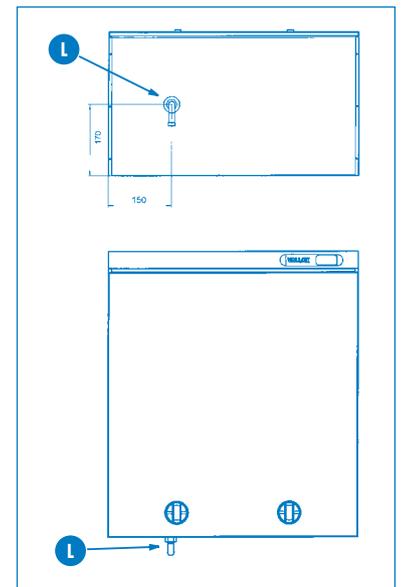
Loosen the butterfly nuts and lift the fan out. Finally disconnect the quick coupling of the fan conductor. If you use water in cleaning the unit or its parts, do not let it flow into electrical devices.



### 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 into electrical devices.**

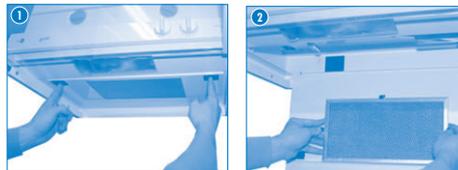


### 3.5. Cooker hood

#### Cooker hood grease filter

The grease filter of the cooker hood has to be cleaned 1 to 2 times a month, depending on the use of the hood. The grease filter can be washed with hot water and washing-up liquid or in a dishwasher.

Remove the grease filter by pressing the quick couplings (1) open, letting the bottom plate go in the down position and removing the filter from its clips (2).



#### Lamp

To change the lamp, remove the cover glass of the lamp by pushing it to the left and put a new lamp and cover glass in place. Lamp type is PL 11 (11 W).



### 3.6. Other parts of the ventilation system

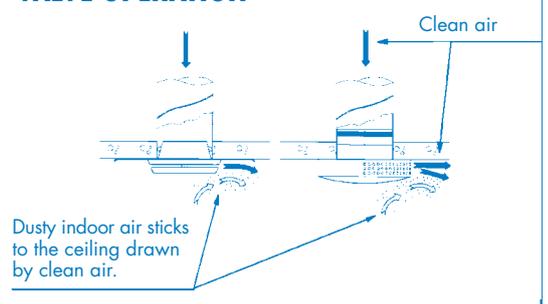
#### Ductwork

In blocks of flats and terraced houses, the housing company will take care of the maintenance and cleaning of the ductwork in accordance with the regulations and instructions. In detached houses, it is up to the owner to take care of the cleaning.

#### Valves

The valves may be gently cleaned on the surface. It is forbidden to remove the valves and to change their adjustment values. Room dust may also gather around the supply air valve. The easiest way to remove it is to vacuum the valve with a brush nozzle. Dirt does not come from the ductwork with ventilation, but originates in dust in indoor air. The flow coming from the valve makes this dust stick to the ceiling or the wall.

#### VALVE OPERATION





## 4. TROUBLESHOOTING

### 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 the 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 item 1.

