

# Vallox 280<sub>SE</sub>

Manual

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## Models

Vallox 280 SE R electric/electric  
Vallox 280 SE L electric/electric  
Vallox 280 SE R electric/VKL  
Vallox 280 SE L electric/VKL

## Type

3487

## Document

1.09.627 ENG

## Valid from

10.9.2015

## Updated

10.9.2015
















Ventilation unit

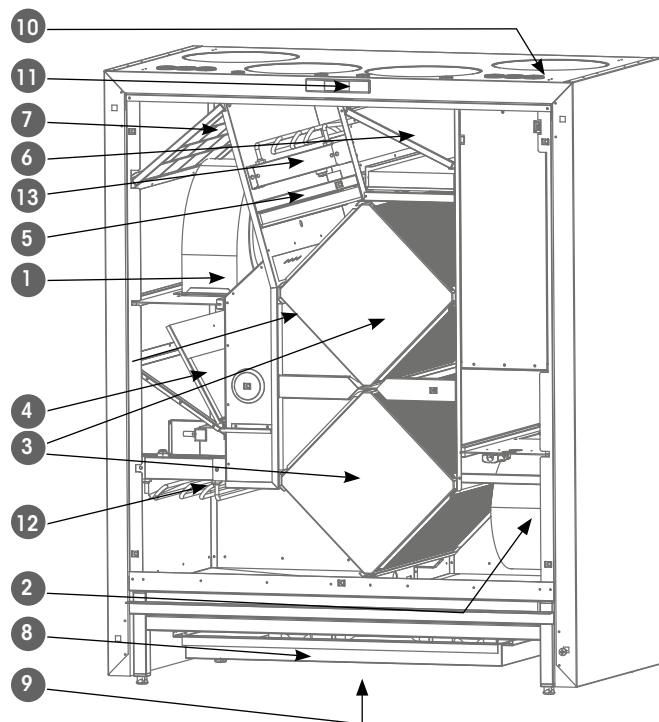
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## MAIN PARTS



- |   |  |    |
|---|--|----|
|    | Supply air fan                                     | 1  |
|    | Extract air fan                                    | 2  |
|    | Heat recovery cell                                 | 3  |
|    | Summer/winter damper                               | 4  |
|    | Supply air filter F7                               | 5  |
|    | Extract air filter G4                              | 6  |
|  | Outdoor air filter G4                              | 7  |
|  | Condensing water tank                              | 8  |
|  | Condensing water outlet                            | 9  |
|  | Electrical connection penetrations                 | 10 |
|  | Measuring tubes                                    | 11 |
|  | Preheating radiator (electric, 2500 W)             | 12 |
|  | Post-heating radiator (electric, 2500 W, or water) | 13 |



*L model in the figure. In the R model, the parts are in a mirror image.*



Vallox Digit SED controller

## OPTIONS



Humidity sensor



Carbon dioxide sensor



LON converter



KNX converter



Filter guard (pressure difference switch)



Silencer part

## DIFFERENCES BETWEEN MODELS

- The model Vallox 280 SE electric/electric has an electric preheating and post-heating radiator.
- The model Vallox 280 SE electric/VKL has an electric preheating radiator and a liquid-circulating post-heating radiator, VKL.



### IMPORTANT

For further information, please see [www.vallox.com](http://www.vallox.com)

## Mounting

The unit is mounted on the floor.

## General safety instructions

The safe and proper handling of the unit requires that you know the basic safety regulations and the purpose of the ventilation system. Please read this manual before using the ventilation unit. Keep this manual for later use. If you lose the manual, you can download it from our web pages.

This manual includes all the information that is important in order to use the system safely. All the people operating and maintaining the ventilation system must follow this manual. In addition, you have to observe the local regulations issued for preventing accidents.

## PURPOSE

The purpose of Vallox ventilation units is to take care of demand-controlled and continuous ventilation in such a way that people and the structures stay healthy.

## GUARANTEE AND LIABILITY

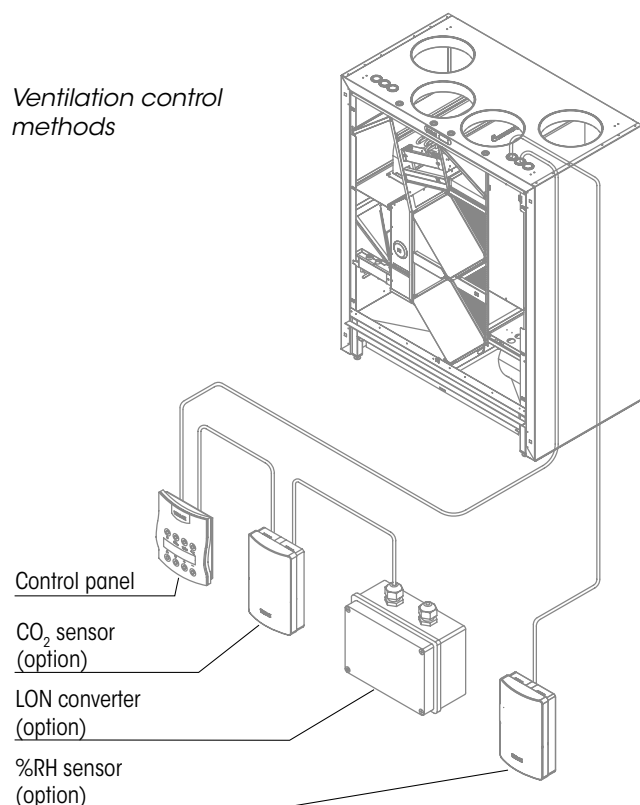
The guarantee and liability are not in force if accidents take place because of the following reasons:

- Inappropriate use of the ventilation system and the control unit
- Faulty mounting, taking into use and operation
- Use of the ventilation system with a faulty security system
- Not following advice concerning transportation, mounting, operation and maintenance
- Carrying out unauthorised structural changes and changing the software without permission
- Accidents caused by extra parts or force majeure

## MOUNTING

The mounting and taking into use must be performed by a competent expert. The electrical installation and connections must be carried out by an electrician in accordance with the local regulations.

## GENERAL INFORMATION

Vallox  
**Digit SED**Ventilation control  
methods

## INTRODUCTION

For indoor air to stay healthy and good not only for people but also for the structures of the dwelling, ventilation has to be in operation all the time. It is not recommended to stop ventilation even for longer holidays as indoor air becomes stuffy and the humidity of indoor air may condense during the heating period in the ventilation ductwork and structures, thereby causing humidity damage.

You can control and automate the operation of the Vallox ventilation unit in the following ways:

- Via a Digit SED controller mounted in the building. The week-clock of the controller gives you the possibility to create a ventilation programme that is perfectly in line with your rhythm of life.
- Managing fan speeds with remote monitoring control with voltage signals coming from real estate automation.
- Managing the whole operation of the unit via remote monitoring control or via real estate automation, to which the unit is connected with a KNX or LON converter.

Ventilation can also be adjusted automatically with optional carbon dioxide and humidity sensors. In this case, ventilation stays optimal even when the residence is empty.

**WARNING**

The unit is not intended to be used by children (less than 18 years of age) or by persons whose senses, physical properties, mental properties or lack of knowledge and experience limit the safe use of the unit.

These persons can use the unit under the control of a person responsible for their safety or in accordance with the instructions.

## SWITCHING THE UNIT ON

Start the unit (1) and choose a suitable ventilation power at the control panel (2-3). You can connect up to 3 control panels in parallel. They can be located in different rooms, and each of them can be used to control ventilation in the same way.

In normal circumstances, basic ventilation is enough. This means that air is exchanged once every two hours. Boosting is needed during sauna baths, cooking, washing clothes or family parties, for instance. If the system includes a carbon dioxide and/or humidity sensor, Vallox 280 SE automatically takes care of demand-controlled ventilation.

Vallox  
**DigitSED**



## CONTROLLING VENTILATION

The unit can be controlled with a control panel. With week-clock control that comes standard with the unit, you can control the fan power of the unit and the set-point of supply air temperature.

Furthermore, the adjustment of demand-controlled ventilation can be implemented with optional carbon dioxide and humidity sensors.

The fan power of the unit can also be controlled with a voltage signal.

### Controlling ventilation with Vallox Digit SED control panel

The control panel can be used for the following ventilation control functions:

#### Ventilation power adjustment functions

- Starting and stopping.
- Power adjustment (8 positions).
- Setting of basic fan speed (or minimum fan speed) and maximum fan speed.
- Adjusting power with the week clock control function.

Ventilation power cannot be set lower than basic fan speed if the minimum power set is  $> 1$ .

When carbon dioxide and/or humidity adjustment is on, power cannot be set higher than the maximum fan speed if maximum power has been set  $< 8$ .

When humidity and carbon dioxide adjustment is off, fan speed can be raised to speed 8 (factory setting).

It is possible to choose the limitation of maximum fan speed to be on all the time. This setting is found in the Settings menu; see section 3.6 in the Operating instructions for control panel.

### Supply air temperature adjustment functions

- Switching the post-heating unit on/off.
- Setting desired supply air temperature ( $+10\text{ °C} \dots +30\text{ °C}$ ).
- Choosing desired method for controlling supply air temperature (constant temperature adjustment, cascade based temperature adjustment).
- Setting desired supply air temperature with week-clock control function.

### Preheating

- Setting control temperature for preheating unit ( $-6\text{ °C} \dots +15\text{ °C}$  exhaust air).
- Changing setpoints.



#### WARNING

It is not recommended to stop ventilation!!

## GENERAL OPERATING INSTRUCTIONS

Carbon dioxide  
sensor

Humidity sensor

**Ventilation control with carbon dioxide sensor (CO<sub>2</sub>)**

- In carbon dioxide control (4) Vallox 280 SE adjusts fan speed so that carbon dioxide content in the ventilation zone stays below the setpoint or the value given. If there are two or more sensors, fan speed adjustment takes place according to the higher measuring result.
- 1 to 5 carbon dioxide sensors can be connected as options to the Vallox 280 SE unit.
- Carbon dioxide control is switched on/off and the desired value (500...2000 ppm) is given. See section 3.25 in the Operating instructions for control panel. The factory setting is 900 ppm. Indicative maximum carbon dioxide content in good indoor air is 1000 ppm.
- During control, it is possible to raise fan speed at the control panel to the maximum fan speed and lower it to the basic fan speed. In carbon dioxide control, the limitation of maximum fan speed is on.

**Controlling ventilation with humidity sensor (%RH)**

There are two adjusting methods for controlling fan speed. See section 3.19 in the Operating instructions for control panel. (5):

**1. Automatic humidity value setting (factory setting).**

- Automatic humidity value setting is suitable for controlling ventilation in bathrooms, for instance, or in other rooms where relative humidity of air varies. The value is updated automatically on the basis of the humidity data collected by the sensor and changes as air humidity changes because of change of season, for instance. Ventilation is boosted when the humidity level goes above the average value.

**2. Setting humidity value manually**

- You can also set the desired humidity level on a certain demand-controlled level between 1 and 99% RH. See section 3.16. in the Operating instructions for control panel. This can be used in public sauna facilities and swimming pools. By adjusting ventilation power you try to keep air humidity at the value chosen.

You can choose the adjustment method at the controller. Indicative humidity content of good indoor air is circa 45%.

During control, it is possible to raise fan speed at the control panel to the maximum fan speed set and to lower it to the basic fan speed.

In humidity control, fan speed is adjusted between the basic and maximum fan speeds chosen.

When the unit is taken into use for the first time and automatic humidity value setting (factory setting) is on, the programme needs about 3 to 10 hours to define the average air humidity. During this time, humidity adjustment is not active (because the first value set at the factory is 100%).

Automatic search is on even if humidity control has not been chosen.



## Controlling ventilation with voltage signal

- The fan power of Vallox 280 SE can be controlled with voltage signals coming from remote monitoring control.
- The signal can have speeds 0 to 8, but not higher than the maximum fan speed if carbon dioxide or humidity adjustment is active. See section 3.25 in the Operating instructions for control panel.
- A signal changes the basic fan speed.
- A signal does not lock the fan speed. This means that the fan speed can be changed within the range set at the control panel. Carbon dioxide and humidity adjustment also work within the range set.

### Voltage signal values

Fan speed	Voltage signal (VDC)
0	0.20...1.25 VDC
1	1.75...2.25 VDC
2	2.75...3.25 VDC
3	3.75...4.25 VDC
4	4.75...5.25 VDC
5	5.75...6.25 VDC
6	6.75...7.25 VDC
7	7.75...8.25 VDC
8	8.75...10.00 VDC

## Controlling ventilation with remote monitoring control system (option)

- Vallox 280 SE can be connected to the remote monitoring control system with an optional LON and KNX converter.
- When Vallox 280 SE is connected to the remote monitoring control system, you have to make sure that they are compatible.
- You can control the same functions via the remote monitoring control system as at the control panel.
- The remote monitoring control system operates in parallel with the control panel and the carbon dioxide and humidity sensors.

## Post-heating

For most of the year, heat recovered from the air extracted is enough to heat the cold air coming from the outside to a suitable temperature. If the heat of extract air is not enough, the air coming from the outside can be heated with the post-heating unit in the ventilation unit.

The post-heating radiator can be electric (Vallox 280 SE electric/electric) or water-circulating (Vallox 280 SE electric/VKL). In both cases, you can switch heating on



Post-heating indicator light

at the control panel. See section 2.1 in the Operating instructions for control panel.

When post-heating is on, the unit automatically adjusts supply air temperature in accordance with the temperature set.

## Supply air constant temperature control

- Vallox 280 SE has a relative post-heating adjustment. This means that when the temperature set for post-heating goes down, the on-time of post-heating goes automatically down in two-minute phases. When the temperature set exceeds supply air temperature by more than 2.5 °C, the post-heating radiator is on all the time.
- The heating radiator heats when the (X) sign is displayed.
- Temperature adjustment is only active when the post-heating function has been switched on.

## Supply air cascade adjustment

- It is possible to change supply air temperature adjustment into cascade adjustment. In this case, the post-heating radiator directs the temperature of air coming in based on the temperature of extract air. See section 3.18 in the Operating instructions for control panel.
- The programme tries to keep the temperature of supply air at the value defined by the difference between extract air and the setpoint as follows: if extract air is warmer than the value set, the temperature of supply air is lower than the setpoint by the difference. If extract air is cooler, supply air is warmer by the difference. If room temperature (the temperature of extract air) is 25 °C and the value set is 24 °C, the aim is to blow 23 °C air into the ventilation zone. If temperature in the ventilation zone is 24 °C and the setpoint is 25 °C, the aim is to blow 26 °C air into the ventilation zone.
- In any case, the aim is to keep the temperature of air blown into the ventilation zone between 10 and 30 °C.
- You can choose cascade adjustment at the control panel, and it is active when post-heating has been switched on.
- The heating radiator heats when the (X) sign is displayed.

## Heat recovery bypass function

- The bypass function tries to get as cool supply air as possible to the ventilation zone by comparing the measurement data of the outdoor air sensor and the extract air sensor.
- The heat recovery cell is bypassed when the post-heating function is off and outdoor air temperature is below the operating temperature set for the heat recovery cell by two degrees and extract air is warmer than outdoor air.
- The operating temperature of heat recovery bypass can be changed within the range of 0...25 °C. See section 3.15 in the Operating instructions for control panel.



## GENERAL OPERATING INSTRUCTIONS

### Heat recovery cell defrost function and preheating

- The defrost function prevents the freezing of the heat recovery cell and thereby ensures proper ventilation even during cold periods.
- The unit comes standard with an electric preheating unit in order to minimise the momentary stopping of the supply air fan. This ensures that the supply air flow coming through the unit is as even as possible.
- The preheating unit switches on when the temperature of exhaust air goes down to the value set for defrost preheating temperature of the heat recovery cell (factory setting +5 °C). See section 3.24 in the Operating instructions for control panel.
- The preheating unit switches off when exhaust air has warmed to the value set as hysteresis (by hysteresis; factory setting +3 °C). See section 3.22 in the Operating instructions for control panel.
- The operation of the preheating unit requires that the setpoint for exhaust air temperature is higher than the setpoint for stopping the supply air fan.
- If the heating power of the preheating unit is not enough, defrost is implemented by stopping the supply air fan. The stopping function is controlled on the basis of the measurement data coming from the exhaust air temperature sensor located after the heat recovery cell.
- The supply air fan stops when the temperature of exhaust air goes down to the value set as the stopping temperature of the supply air fan for cell defrost (factory setting +3 °C). See section 3.23 in the Operating instructions for control panel. The supply air fan starts when exhaust air has warmed to the value set as hysteresis (by hysteresis, factory setting +3 °C). See section 3.22 in the Operating instructions for control panel.

### Defrost function of water-circulating post-heating unit

- The defrost function tries to prevent the water-circulating post-heating unit from freezing. The automatic function stops the supply and extract air fans of the unit when outdoor air temperature is less than 0 °C and supply air temperature less than 7 °C. In addition, the control valve opens fully. An error message "RISK OF FREEZING" is shown in the control panel.
- The fans start automatically when supply air temperature is more than 10 °C.

### Maintenance reminder

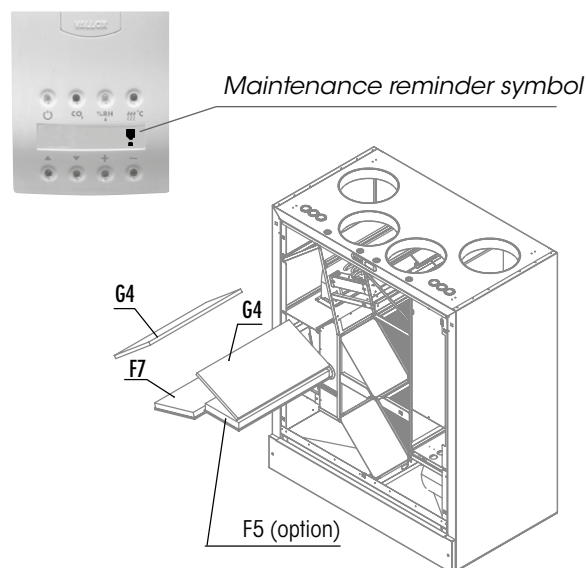
- The maintenance timer of the unit lights the maintenance reminder symbol (⚠) on the main display of the control panel at a selected interval (factory setting 4 months). See section 3.21 in the Operating instructions for control panel.
- The interval can be set between 1 and 15 months.
- Acknowledge the maintenance reminder symbol at the control panel as shown in section 3.10 in the Operating instructions for control panel.

### Air filtering and filter guard function (option)

Vallox 280 SE has coarse filtering of both extract and supply air before the fans. There are F7- and G4-class coarse filters on the supply air side and a G4-class coarse filter on the extract air side. The filters must be in place in the unit whenever ventilation is in operation. An F5-class extract air filter is available as an option.

### Filter guard

- When the unit is equipped with pressure difference switches that monitor the pressure difference of the supply and/or extract air filter, they light the filter guard symbol (⚠) in the main display whenever the pressure exceeds the setpoint. The points of the fault signal relay close at the same time.
- The operating threshold for the pressure difference switch is adjusted to match the planned ventilation power position. The threshold can be adjusted at the controller of the pressure difference switch (see page 15, Setting of pressure difference switch). The factory setting (275 Pa) corresponds to ventilation power position 8.
- The maintenance reminder operates normally during this function.



### FAULT SIGNAL RELAY (REMOTE MONITORING CONTROL)

- The fault signal relay has potential-free contacts (24 VDC, 1 A).
- The contacts provide information on different fault states of the unit.
- The alarm of high carbon dioxide content switches the relay at 1-second intervals.
- In other fault situations, the contacts are closed.
- During the defrost function of the water-circulating radiator, the contacts of the relay close and open at 10-second intervals.

## FIREPLACE/BOOST FUNCTION

### Fireplace switch function

(See section 3.17 in the Operating instructions for control panel.)

- The fireplace switch stops the extract air fan for 15 minutes and creates an overpressure in the ventilation zone, which makes it easier to light up a fireplace, for instance.
- You can start the function in the main display of the control panel by pressing the + and - buttons simultaneously for 2 seconds.
- You can also start the functions at a separate automatically resetting push-button switch that has been wired from the connection box of the unit to the wall of a room with a fireplace. After each pressing of the button, the stopping function continues for 15 minutes. (The switch is not included in the delivery.)
- During the function, there is a fireplace/boost switch symbol (⌘) in the main display.

**NOTE! When the extract air fan starts, draught in the furnace may get weaker! In winter, this may disturb the winter function of the unit. The situation reverts to normal in a short while after the fireplace switch function has stopped.**

### Boost switch function

(See section 3.17 in the Operating instructions for control panel.)

- The boost switch raises fan speed to the maximum fan speed set for 45 minutes.
- You can start the function in the main display of the control panel by pressing the + and - buttons simultaneously for 2 seconds.
- You can also start the functions at a separate automatically resetting push-button switch that has been wired from the connection box of the unit to the wall of a classroom, for instance. After each pressing of the button, the boost function continues for 45 minutes.
- During the function, there is a fireplace/boost switch symbol (⌘) in the main display.



Fireplace/boost switch symbol

# OPERATING INSTRUCTIONS FOR CONTROL PANEL

## 1. USE OF CONTROL PANEL

### 1.1 Keyboard



- 1 Start button**  
Use the button to turn the ventilation unit on and off. When the indicator is lit, the unit is on.
- 2 Carbon dioxide adjustment**  
Use the button to turn carbon dioxide adjustment on and off. When the indicator is lit, the adjustment is on.
- 3 Humidity adjustment**  
Use the button to turn humidity adjustment on and off. When the indicator is lit, the adjustment is on.
- 4 Post-heating**  
Use the button to turn post-heating on and off. The summer function is active when the indicator is not lit.

- 5 Scroll up**  
Use the button to scroll the displays upwards.
- 6 Scroll down**  
Use the button to scroll the displays downwards.
- 7 Add button**  
Use the button to make the values bigger.
- 8 Decrease button**  
Use the button to make the values smaller.

### POWER FAILURE

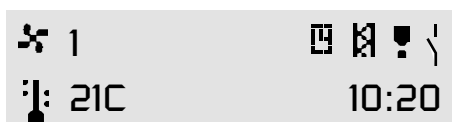
In case of power failure, the unit will start after the failure at the basic fan speed. The adjustments and setpoints chosen remain in the memory of the unit after the failure.

## Ventilation operating and function menus

## 2. OPERATING MENU

Displays of the operating menu (items 2.1. through 2.6.) can be scrolled with the scrolling buttons (see section 1, figure references 5 and 6).

### 2.1. Main display and changing of fan speed



Main display

#### MAIN DISPLAY

Fan speed can be changed in this display with the + and - buttons (see section 1.1, figure items 7 and 8).

- 3 Fan speed (3).
- 21 Supply air temperature (21°C).
- 10:20 Time.
- Filter guard alarm.
- Maintenance reminder alarm.
- Fireplace/boost switch on. The fireplace/boost switch is switched on in this display by pressing the + and - buttons down simultaneously for 2 seconds.
- Week-clock control on.

### 2.2. Moving to Settings menu

To settings menu  
see manual

You can make the control panel move to the Settings menu by pressing the + and - buttons simultaneously. In the Settings menu, you can change the setpoints of the ventilation unit.

### 2.3. Week-clock control

Week program  
on

You can turn week-clock control on by using the + button and off by using the - button. Week-clock control is on when the week-clock control symbol is seen in the main display. In week-clock control, the basic fan speed of the ventilation unit and the temperature of supply air are adjusted as stated in section 3.4.

### 2.4. Content display

RH 35% RH2 40%  
CO2 0821 PPM

The content display shows the humidity content and carbon dioxide content. Requires the corresponding sensors (options).

### 2.5. Temperature display

Out 20 in 20  
Sup. 20 Exh. 20

The temperature display includes the following temperatures: outdoor air, indoor air, supply air and exhaust air. The accuracy of the temperature sensors is  $\pm 2$  °C.

### 2.6. Supply air temperature setting

Temp. setting  
20C

You can change the supply air temperature setting by using the + and - buttons.

## 3. SETTINGS MENU

You can reach the Settings menu from the Operating menu as described in section 2.2.

Displays of the Setting menu (sections 3.1. through 3.26.) can be scrolled with the scrolling buttons (see section 1, figure references 5 and 6).

### 3.1. Setting basic fan speed

MIN speed  
1

Choose desired basic fan speed (minimum fan speed) with the + and - buttons. Active when week-clock control is not on. Week-clock control changes this speed.

### 3.2. Moving to Operating menu

To Main menu  
press + and -

You move back to the Operating menu by pressing the + and - buttons simultaneously.

**3.3. Clearing week programme**

Erase wk. prog.  
Press + and -

The whole week programme can be cleared by pressing the + and - buttons simultaneously.

**3.4. Programming week programme**

Adjust wk. prog.  
Press + and -

You reach the week-clock programming mode by pressing the + and - buttons simultaneously. See instructions in section 4.1.

**3.5. Changing time**

Adjust time  
Press + and -

You reach the time changing mode by pressing the + and - buttons simultaneously. See the separate instruction 4.2.

**3.6. Operating mode of maximum speed setting**

MAX speed limit  
with adjustments

The setting of maximum fan speed can be chosen to operate either with carbon oxide adjustment, with humidity adjustment or always. Make the selection with the + and - buttons.

**3.7. Choice of language version**

Kieli / Language  
English

Choose the desired language (German, English, Swedish, French or Finnish) with the + and - buttons.

**3.8. Restoring factory settings**

Factory settings  
see manual

The general factory settings are restored by pressing the + and - keys simultaneously.

You have to check for each unit that the settings are in accordance with the factory settings for the unit.

Pay special attention to unit model (electric/water) and change it if needed as described in section 3.20.

**3.9. Adjustment interval**

Adjust interval  
10

CO<sub>2</sub> adjustment setpoint is selected with the + and - buttons. The adjustment interval is in minutes.

**3.10. Acknowledgement of maintenance reminder**

Mainten. reset  
Press + and -

Acknowledge the maintenance reminder by pressing the + and - buttons simultaneously. The maintenance reminder symbol (⚠) is then lit off in the main display.

**3.11. Contrast of control panel display**

Display contrast  
05

You can change the contrast of the control panel with the + and - buttons.

**3.12. Control panel address**

Panel address  
1

You can change the address of the control panel with the + and - buttons. Two control panels cannot have the same address. If two control panels have the same address, they move to the bus fault state and do not work.

**3.13. Adjusting direct-current fan on the extract air side**

DC fan, exhaust  
100%

Choose the desired setpoint for the direct-current fan with the + and - buttons. You can lower the rotation speed of the extract air fan by reducing the percent value. If the ventilation unit has alternating-current fans, this adjustment has no impact on the operation of the unit.

**3.14. Adjusting direct-current fan on the supply air side**

DC fan, supply  
100%

Choose the desired setpoint for the direct-current fan with the + and - buttons. You can lower the rotation speed of the supply air fan by reducing the percent value. If the ventilation unit has alternating-current fans, this adjustment has no impact on the operation of the unit.

**3.15. Changing operating temperature for heat recovery cell bypass n**

Cell bypass  
10C

Choose the desired cell bypass temperature with the + and - buttons. If outdoor temperature is lower than the temperature for cell bypass, the summer/winter damper is in the winter position.

**3.16. Basic humidity level setpoint**

Basic %RH level  
40%

You can choose the desired value with the + and - buttons when manual adjustment has been chosen for Rh (Rh = humidity) level setting (section 3.19.).

**3.17. Operating mode of fireplace/boost switch**

Switch type  
fireplace switch

Choose either fireplace or boost switch with the + and - buttons.

**3.18. Choosing cascade adjustment for supply air temperature**

Cascade adjust  
off

You choose cascade adjustment on or off with the + and - buttons.

**3.19. Choosing basic humidity level**

Rh-level setting  
automatic

You can choose either automatic or manual basic humidity level. Make the selection with the + and - buttons.

**3.20. Choosing post-heating for unit**

Radiator type  
Electric rad.

You can choose either water-circulating radiator or electric radiator in accordance with the post-heating radiator, using the + and - buttons.

Note! Choosing the wrong type of post-heating causes a faulty post-heating function.

**3.21. Choosing maintenance reminder interval**

Maintenance rem.  
04

Choose the interval for the maintenance reminder with the + and - buttons. The interval is in months.

**3.22. Heat recovery cell defrost hysteresis**

Hysteresis  
03 C

Choose hysteresis for the defrost of the heat recovery cell with the + and - buttons.

**3.23. Stopping temperature of supply air fan for heat recovery cell defrost**

Supply fan stop  
05 C

Choose the stopping temperature of supply air fan for the heat recovery cell defrost with the + and - buttons.

**3.24. Heat recovery cell defrost preheating temperature**

Preheater  
07 C

Choose the preheating temperature for the heat recovery cell defrost with the + and - buttons.

## OPERATING INSTRUCTIONS FOR CONTROL PANEL

## 3.25. Changing carbon dioxide adjustment setpoint

CO<sub>2</sub> setting  
0900 PPM

CO<sub>2</sub> adjustment setpoint is selected with the + and - buttons.

## 3.26. Choosing maximum fan speed

MAX speed  
8

Choose the desired maximum fan speed with the + and - buttons. Maximum fan speed is active either with adjustments or always. See section 3.6. Operating mode of maximum speed setting.

## 4. WEEK-CLOCK CONTROL

## 4.1. Programming week programme

The week programme can be used to adjust the desired fan speed (basic fan speed) and supply air temperature for each hour in a day on seven days a week. The week programme changes the adjustments made manually.

Carbon dioxide and humidity adjustment can change fan speed higher, but never lower than the basic fan speed adjusted in the week programme.

## EXAMPLE: MONDAY

You want to decrease fan speed to speed 2 and supply air temperature to 17 °C during the working hours (07 through 16 hours). After that you want to raise fan speed to speed 4 and supply air temperature to 20 °C. You want to boost fan speed for the evening to speed 6 during the taking of a sauna bath (19 through 21 hours) and decrease it after that to speed 4.

## STARTING SITUATION

d	hr	sp	tmp	Exit
1	0	N	N	Exit

## CURSOR

D DAY 1...7  
1 = MONDAY, 2 = TUESDAY ETC.

H HOUR  
0...23

SP FAN SPEED  
1...8

TEM SUPPLY AIR TEMPERATURE  
10...30 °C

EXIT ACKNOWLEDGING  
THE SETTING AND EXITING

N NO CHANGE TO  
THE SETTING FOR  
THE PREVIOUS HOUR

Move the cursor with the arrow keys and change the values with the + or - button. Note that the Exit acknowledgement is done at the end of programming by taking the cursor under the work Exit and pressing either + or -.

Changes to fan speed (Sp) and supply air temperature (tmp) are only made for the hours to which the change applies. In other cases, use N (no change to previous).

**Monday (d=1), time 07:00 (hr=7),**  
fan speed 2 (Sp=2), supply air temperature 17 °C (tmp=17).

Use the cursor to move the following hour.

**Monday (d=1), time 16:00 (hr=16),**  
fan speed 4 (Sp=4), supply air temperature 20 °C (tmp=20).

Use the cursor to move the following hour.

**Monday (d=1), time 19:00 (hr=19),**  
fan speed 6 (Sp=6), supply air temperature no change (tmp=N).

Use the cursor to move the following hour.

**Monday (d=1), time 21:00 (hr=21),**  
fan speed 4 (Sp=4), supply air temperature no change (tmp=N).

Use the cursor to move to the following day.

d	hr	sp	tmp	Exit
1	7	2	17	Exit

d	hr	sp	tmp	Exit
1	16	4	20	Exit

d	hr	sp	tmp	Exit
1	19	6	N	Exit

d	hr	sp	tmp	Exit
1	21	4	N	Exit

Corresponding changes have to be done separately for each day. Finally, leave the programming mode by selecting Exit. If you wish, you can clear the week programme as described in section 3.3. and start programming from the beginning. You can see the values programmed by choosing a day and browsing hours with the + or - key.

## 4.2. Changing time

Move the cursor with the arrow keys and change the values with the + or - button. Finally, acknowledge the changes by choosing Exit.

day	hour	min	Exit
1	15	30	Exit

## CURSOR

D DAY 1...7  
1 = MONDAY, 2 = TUESDAY ETC.

H HOUR 0...23

M MINUTES 0...60

EXIT ACKNOWLEDGING  
THE SETTING AND EXITING

Monday (day=1), hours 15 (hour=15), minutes (min=30).

Time is kept during power failures. (See section 1.1., figure references 5 and 6.)

## 5. FACTORY SETTINGS

Basic fan speed	= 1
Maximum fan speed	= 8
Carbon dioxide adjustment (CO <sub>2</sub> )	= 900 ppm CO <sub>2</sub>
Adjustment interval	= 10 min.
Freezing protection (cell)	= 3 °C
Freezing protection hysteresis	= 3 °C
Preheating setting	= 5 °C
Maintenance reminder	= 4 months
Cell bypass	= 12 °C
Cascade adjustment	= not in use
Humidity level (RH level) setting	= automatic
Switch type	= boost switch

## MAINTENANCE INSTRUCTIONS

### General information

- The unit has a two-part door. When you detach the upper door, the safety switch (T) turns power off. The upper door is always opened first and closed last.
- If you want to carry out maintenance activities only for the filters, you only need to detach the upper door. When you carry out other maintenance steps, you have to detach both doors.

### Filters

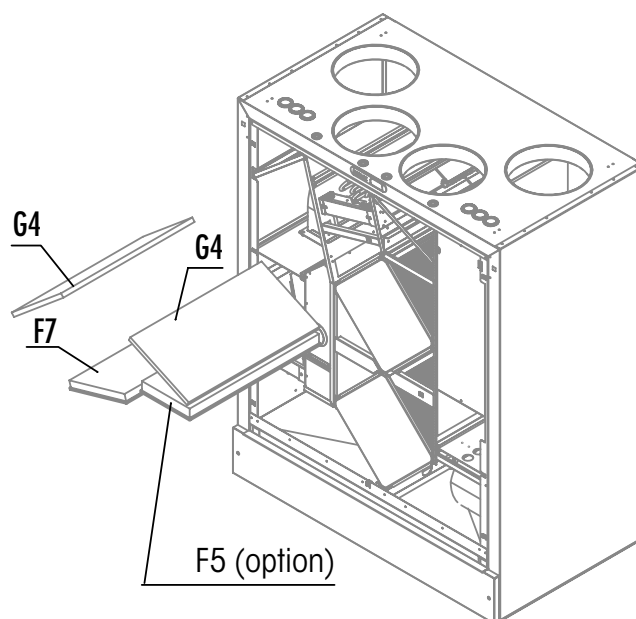
- The unit comes standard with G4-class coarse filters for outdoor and extract air and an F7-class fine filter for supply air.  
Optionally, you can also get an F5-class fine filter for extract air. The filters have to be cleaned or replaced at regular intervals (2 to 4 times a year) and depending on how dirty they are.
- If the unit has been equipped with filter guards, the symbol ( ) in the main display of the control panel or in remote monitoring control indicates when filters need to be cleaned and replaced with new ones.

### Maintenance of filters:

- Open the fastening screws of the upper door of the unit.
- Lift the door off.
- Check if the filters are clean.
- You can wash the G4-class (blue and white) filter with +25 °C...+ 30 °C water and dishwashing detergent. It must not be cleaned or dried hard-handedly but by pressing gently.
- F5- and F7-class filters (fibre filters) cannot be cleaned, but you can clean them cautiously by blowing with compressed air to the direction in which the filter gets dirty. (F5 is an option). When needed, the filters have to be replaced. The recommended interval, depending on circumstances, is 2 to 4 times a year.

### Other cleaning

- During maintenance, also check the general cleanliness of the unit inside: preheating and post-heating units, bottom tank and inner envelope. Remove dirt with a vacuum cleaner, brush, damp cloth or similar.
- **It is strongly forbidden to let water come into electric devices!**



### REMEMBER!

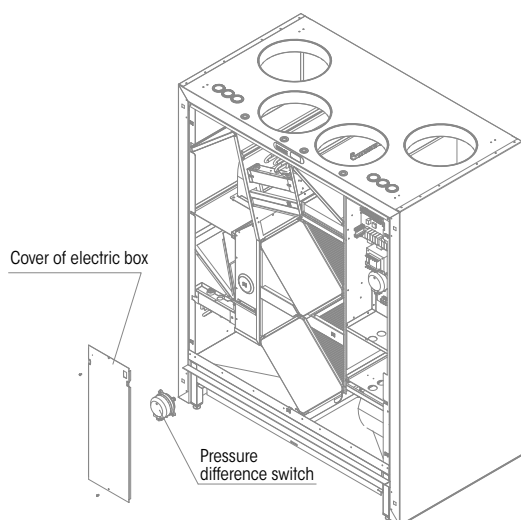
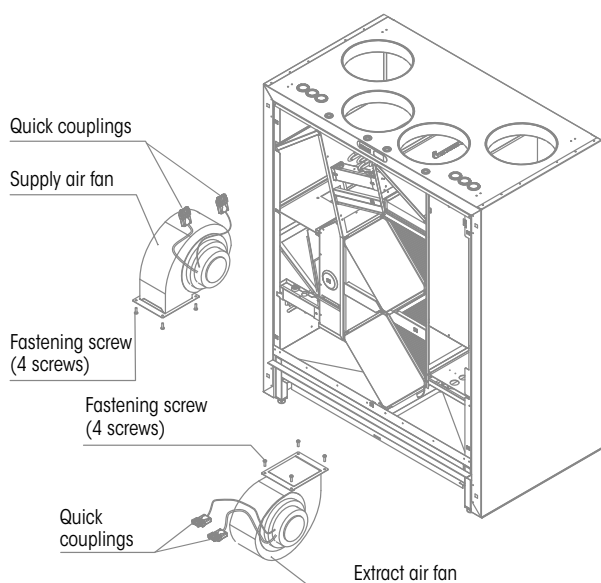
*Clean the filters when needed. The recommended replacement interval is 2 to 4 times a year. The need depends on the cleanliness of outdoor and indoor air. Set the maintenance reminder interval according to your need. See section 3 in the Operating instructions.*

### Heat recovery cells

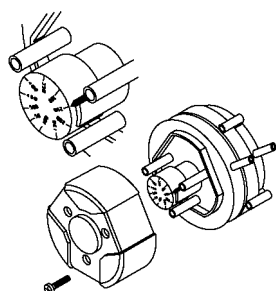
- The heat recovery cells in the unit can get dirty even if there are filters. Because of this, the cleanliness of the cells has to be checked at regular intervals, about once a year. It is recommended to do the checking during maintenance.
- You can detach the cells from the unit by pulling the ears at the end plates of the cells. Dirty cells can be cleaned either by spraying a dishwashing detergent on the cells first or by sinking the cells in water containing a dishwashing detergent. After this, you can use a water shower to flush them. Let the cells get dry and then mount them back in place. When mounting the cells back in place, note the "this side up" stickers on the cells.



## MAINTENANCE



Detaching of pressure difference switch cover



### Fans

- It is a good idea to check the cleanliness of the fans during the maintenance of the filters and heat recovery cells. Clean them when needed.
- You can detach the fans by opening the 4 fastening screws and the quick couplings of the conductors. Fan blades can be cleaned by blowing them cautiously with compressed air, brushing each blade with a brush or wiping with a damp cloth so clean that the fans stay in balance. Also the hoods of the fans have to be cleaned.
- It is strictly forbidden to rinse water into the fan motor!

### Condensing water connections

- During maintenance also the bottom tank and the condensing water connections are checked.
- To see the condensing water connections, detach the base plate. If a condensing water tank is used, bring it out by pulling it forward. You can detach the tank for emptying and cleaning.
- When the condensing water outlet is used, check its condition and make sure it has not clogged up.

### Pressure difference switch

#### Setting of pressure difference switch

You can change the operating threshold for the pressure difference switch as follows:

Detach Vallox 280 from the electrical network by cutting off supply voltage at the distribution panel, for instance.

1. Detach the upper door of the unit.
2. Detach the cover of the electrical box inside the unit.
3. Detach the cover of the pressure difference switch and turn the adjusting wheel to the value desired (see the figure and the adjoining table).

#### PRESSURE DIFFERENCE SWITCH ADJUSTMENT VALUES

Ventilation power position	Supply air filter F7 Pressure difference switch (PDS1)	Extract air filter G4 Pressure difference switch (PDS2)	Extract air filter G4 + F5 Pressure difference switch (PDS2)
1	100	100	125
2	125	125	150
3	150	150	175
4	175	175	225
5	200	200	250
6	225	225	300
7	250	250	325
8	275	275	350

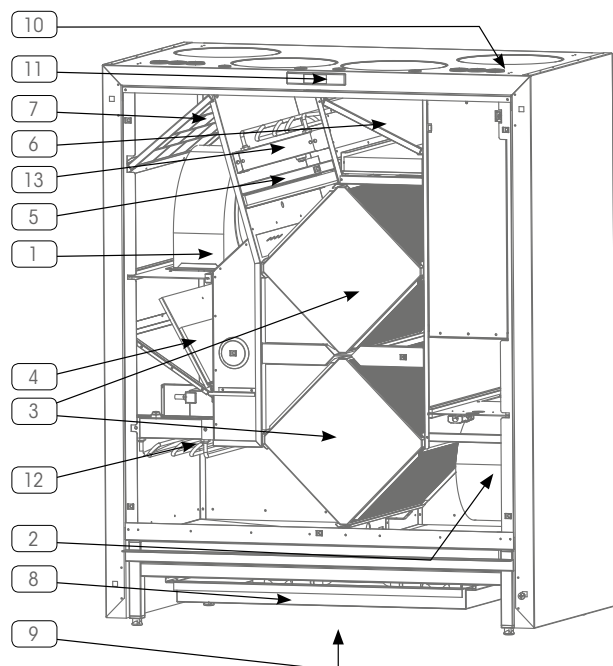


Symptom	Cause	Do this
<b>1</b> Outdoor coming to the residence is cold.	<ul style="list-style-type: none"> <li>Air cools down in the ducts in the attic.</li> <li>The heat recover cell is frozen, so extract air cannot heat outdoor air.</li> <li>The post-heating radiator does not work.</li> <li>The extract air filter or cell has clogged up.</li> <li>The basic ventilation adjustment has not been done.</li> </ul>	<ul style="list-style-type: none"> <li>Check the insulation in the ducts in the attic.</li> <li>If the heat recovery cell is frozen, check the setpoint for freezing protection. You can raise the setpoint for freezing protection by 1 or 2 °C, or you can bend the sensor closer to the cell, which makes the supply air fan stop earlier. See section 3.23 in the Operating instructions for control panel. Melt the cell before closing the door.</li> <li>If the post-heating radiator does not work, check if the operation is prevented by the thermal overload protector: press the reset button of the thermal overload protector and measure supply air temperature inside the unit when the door is closed. If the radiator does not work after these steps, contact a maintenance shop.</li> <li>Check the cleanliness of the filters and the heat recovery cell.</li> </ul>
<b>2</b> The supply air fan keeps stopping.	<ul style="list-style-type: none"> <li>Defrost of the heat recovery cell is in operation. NOTE! If you lower the setpoint too much, the cell may freeze. See item 1.</li> </ul>	<ul style="list-style-type: none"> <li>The fan stops more seldom and the efficiency of the heat recovery cells improves when the setpoint is lowered by 1 or 2 °C. See section 3.22 in the Operating instructions for control panel.</li> </ul>
<b>3</b> The supply air fan stops and starts too often.	<ul style="list-style-type: none"> <li>The difference between the stopping and starting temperatures is too small.</li> <li>The preheating radiator does not work.</li> </ul>	<ul style="list-style-type: none"> <li>Raise the difference between the stopping and starting temperatures by 1 or 2 °C to make the interval between the stopping and starting of the supply air fan longer. See sections 3.22 and 3.23 in the Operating instructions for control panel.</li> <li>If the post-heating radiator does not work, check if the operation is prevented by the thermal overload protector: press the reset button of the thermal overload protector and measure supply air temperature inside the unit before the heat recovery cell when the door is closed. If the radiator does not work after these steps, contact a maintenance shop.</li> </ul>
<b>4</b> The maintenance reminder symbol (🔧) is shown in the display and the unit operates otherwise normally.	<ul style="list-style-type: none"> <li>The maintenance reminder lights up the maintenance reminder symbol in the main display of the controller at intervals of circa 4 months (factory setting).</li> <li>You can change the interval. See section 3.21 in the Operating instructions for control panel.</li> </ul>	<ul style="list-style-type: none"> <li>Check the cleanliness of the filters and the unit, and clean or replace the filters when needed. Also check the external grille.</li> <li>Acknowledge the maintenance reminder symbol to make it disappear. See section 3.10 in the Operating instructions for control panel.</li> </ul>
<b>5</b> "Faulty exhaust air sensor" text is shown in the display and the unit is stopped.	<ul style="list-style-type: none"> <li>There is a fault in the extract air sensor.</li> </ul>	<ul style="list-style-type: none"> <li>Contact a maintenance shop: check the sensor mounting and replace the sensor if needed.</li> </ul>
<b>6</b> "Faulty supply air sensor" text is shown in the display and the unit is stopped.	<ul style="list-style-type: none"> <li>There is a fault in the supply air sensor.</li> </ul>	<ul style="list-style-type: none"> <li>Contact a maintenance shop: check the sensor mounting and replace the sensor if needed.</li> </ul>
<b>7</b> "Faulty indoor air sensor" text is shown in the display and the unit is stopped.	<ul style="list-style-type: none"> <li>There is a fault in the freezing protection sensor.</li> </ul>	<ul style="list-style-type: none"> <li>Contact a maintenance shop: check the sensor mounting and replace the sensor if needed.</li> </ul>
<b>8</b> "Faulty outdoor air sensor" text is shown in the display and the unit is stopped.	<ul style="list-style-type: none"> <li>There is a fault in the outdoor air sensor.</li> </ul>	<ul style="list-style-type: none"> <li>Contact a maintenance shop: check the sensor mounting and replace the sensor if needed.</li> </ul>
<b>9</b> "Bus fault" text is shown in the display and the unit operates at speed 1 (check fan speed).	<ul style="list-style-type: none"> <li>There is a wiring mistake in the carbon dioxide sensor, control panel or humidity sensor</li> </ul>	<ul style="list-style-type: none"> <li>Contact a maintenance shop. The connections have to be checked and repaired if needed.</li> </ul>
<b>10</b> "Freezing risk" text is shown in the display and the unit is stopped.	<ul style="list-style-type: none"> <li>Defrost of the water-circulating radiator is on. NOTE! If there is no antifreezing compound in the water of the radiator, the radiator is at a risk of freezing.</li> </ul>	<ul style="list-style-type: none"> <li>Immediately sort out the situation. Ask the maintenance shop if there is any antifreezing compound in the radiator. Check if the circulating pump is broken, the boiler off or similar. It is possible that the situation reverts to normal by itself when supply air temperature exceeds 10 degrees, but do not wait to see if this happens.</li> </ul>
<b>11</b> Desired automatic adjustment does not stay on.	<ul style="list-style-type: none"> <li>There is a fault in the humidity or carbon dioxide sensor. One of the sensors is broken or missing.</li> </ul>	<ul style="list-style-type: none"> <li>Contact a maintenance shop. The sensor mounting and connections have to be checked. (Sensors are options.)</li> </ul>
<b>12</b> The unit is not running, the fans do not rotate and there are no indicator lights in the control panel.	<ul style="list-style-type: none"> <li>The door switch may be broken or the door is not properly closed.</li> <li>No electricity is coming to the unit. A fuse may have blown.</li> <li>The glass-tube fuse protecting the electronics inside the unit may have blown. (The fuse is located in the control card behind the protective plate.)</li> </ul>	<ul style="list-style-type: none"> <li>Check the door switch and the fuses. The unit has a T800 mA glass-tube fuse.</li> <li>When needed, contact a maintenance shop (for checking the glass-tube fuse, for instance).</li> </ul>
<b>13</b> The unit does not obey the control panel.		<ul style="list-style-type: none"> <li>Detach the power supply fuse in the distribution panel or switch off the circuit breaker. Wait for 30 seconds and put the fuse back, or switch the circuit breaker back on. If this does not help, contact a maintenance shop.</li> </ul>
<b>14</b> "Carbon dioxide alarm" text is shown in the display and the unit is stopped.	<ul style="list-style-type: none"> <li>Carbon dioxide alarm. Carbon dioxide content has exceeded 5000 PPM for two minutes. May be caused by a fire, for instance.</li> </ul>	<ul style="list-style-type: none"> <li>If there is a fire, take necessary action.</li> <li>To get the unit back in operation, detach the plug from the wall, wait for 30 seconds and put the plug back.</li> </ul>
<b>15</b> The filter guard symbol (🛡️) is shown in the display and the unit operates otherwise normally.	<ul style="list-style-type: none"> <li>The pressure of the filter guard (pressure difference switch) has risen above the setpoint.</li> </ul>	<ul style="list-style-type: none"> <li>Check the cleanliness of the filters and the unit, and clean or replace the filters when needed.</li> </ul>

If there has been a power failure, the unit starts at minimum fan speed. All the other adjustments and setpoints selected remain in the memory of the unit.

## TECHNICAL DATA

### MAIN PARTS



*L model in the figure*

*In the R model, the parts are in a mirror image.*

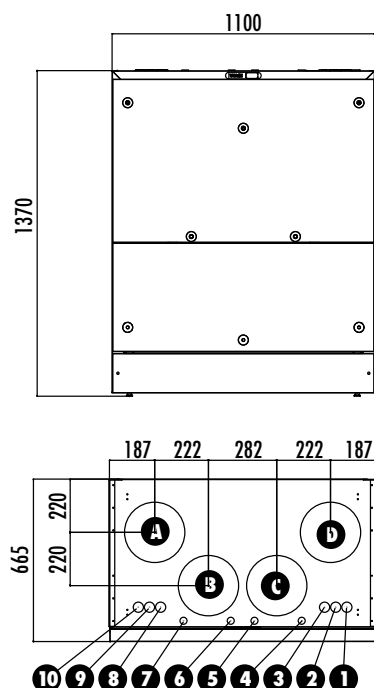
- |                         |  |
|-------------------------|--|
| 1 Supply air fan        | 9 Condensing water outlet                          |
| 2 Extract air fan       | 10 Electrical connection penetrations              |
| 3 Heat recovery cells   | 11 Measuring tubes                                 |
| 4 Heat recovery bypass  | 12 Preheating radiator (electric, 2500 W)          |
| 5 Supply air filter F7  | 13 Post-heating radiator (electric, 2500 W or VKL) |
| 6 Extract air filter G4 |  |
| 7 Outdoor air filter G4 |  |
| 8 Condensing water tank |  |

### TECHNICAL DATA

Product codes	Vallox code
<b>Vallox 280 SE electric/electric L</b>	3544300
<b>Vallox 280 SE electric/electric R</b>	3544400
<b>Vallox 280 SE electric/VKL L</b>	3544500
<b>Vallox 280 SE R electric/VKL R</b>	3544600
Air volumes	Supply air
	Extract air
	240 dm³/s, 100 Pa
	290 dm³/s, 100 Pa
Electrical connection	
<b>Vallox 280 SE electric/electric</b>	230 V, 50 Hz, 400 V, 15 A (11.0 A), fixed mounting
<b>Vallox 280 SE electric/VKL</b>	230 V, 50 Hz, 15.0 A fixed mounting
Degree of protection provided by enclosures	IP 34
Post-heating radiator	
<b>Vallox 280 SE electric/electric</b>	Electric, 2.5 kW, 11.0 A
<b>Vallox 280 SE electric/VKL</b>	VKL water-circulating radiator, 5 kW
Preheating radiator	
<b>Vallox 280 SE electric/electric</b>	Electric, 2.5 kW, 11.0 A
<b>Vallox 280 SE electric/VKL</b>	Electric, 2.5 kW, 11.0 A
Fans	Supply air
	Extract air
	520 W 3.2 A EC
	520 W 3.2 A EC
Efficiency	
Annual efficiency	54 % C
Supply air efficiency	74 %
Specific Fan Power SFP	1.7 (175 dm³/s) C
Filters	Supply air
	Extract air
	G4 + F7
	G4
Heat recovery	Cross-flow cell, $\eta = \text{ca. } 60\%$
Heat recovery bypass	Automatic
Weight	206 kg
Ventilation power adjustment	Vallox Digit SED controller
Options	Humidity sensor
	Carbon dioxide sensor
	LON converter
	KNX converter
	Filter guard (pressure difference switch)

## DIMENSIONS AND DUCT OUTLETS

### DIMENSIONS



### L model

#### DUCT OUTLETS

- A Outdoor air to unit
- B Supply air to dwelling
- C Extract air from dwelling
- D Exhaust air out

#### ELECTRICAL CONNECTIONS

- 1 Supply cable - distribution panel
- 2 Connection cable - control panel - CO<sub>2</sub> sensor - LON/KNX converter
- 3 Connection cable - humidity sensor - remote monitoring control

#### PIPE CONNECTIONS

- 6 Return water from radiator
- 7 Supply water to radiator

### R model

#### DUCT OUTLETS

- A Exhaust air out
- B Extract air from dwelling
- C Supply air to dwelling
- D Outdoor air to unit

#### ELECTRICAL CONNECTIONS

- 8 Supply cable - distribution panel
- 9 Connection cable - control panel - CO<sub>2</sub> sensor - LON/KNX converter
- 10 Connection cable - humidity sensor - remote monitoring control

#### PIPE CONNECTIONS

- 4 Return water from radiator
- 5 Supply water to radiator

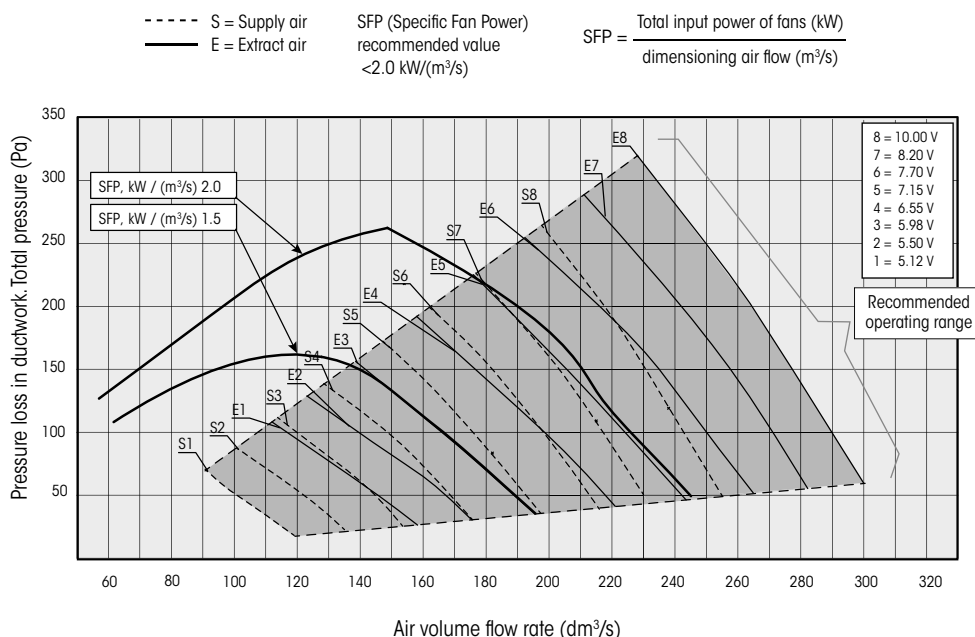
## VALLOX 280 SE ELECTRIC/ELECTRIC

### SUPPLY/EXTRACT AIR VOLUMES

Vallox 280 SE electric/electric  
Supply G4 + F7, extract G4

#### FAN INPUT POWER

Fan speeds	Extract air flow dm <sup>3</sup> /s	Total input power of fans W
1	130	150
2	150	180
3	170	250
4	190	320
5	210	405
6	230	510
7	250	620
8	290	830



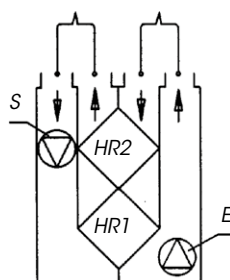
### MEASURING POINTS

#### Measuring points after the outlet collar.

Fan curves indicate the total pressure available for duct losses.

(HR = Heat recovery cell)

Supply air Extract air



### SOUND VALUES

		Sound power level going from the unit to the supply air ductwork by octave band $L_w$ dB				Sound power level going from the unit to the extract air ductwork by octave band $L_w$ dB			
		ADJUSTMENT POSITION/AIR FLOW dm <sup>3</sup> /s				ADJUSTMENT POSITION/AIR FLOW dm <sup>3</sup> /s			
Adjustment position		2	4	6	8	2	4	6	8
Air flow dm <sup>3</sup> /s		128	164	202	238	171	210	242	261
Octave band medium frequency Hz	63	78	82	84	86	75	82	84	85
	125	63	69	73	76	73	77	81	86
	250	60	66	70	74	60	65	69	72
	500	46	50	54	57	47	51	55	57
	1000	43	47	49	51	43	47	50	51
	2000	39	43	48	51	40	45	49	52
	4000	29	34	38	42	30	35	39	41
	8000	17	24	28	31	19	25	29	32
$L_w$ dB		78	82	84	87	77	83	86	89
$L_{WA}$ dB(A)		56	61	64	68	59	63	67	71
A-weighted sound pressure level dB (A) coming from the unit through the envelope in the rooms where the unit has been installed (10 m <sup>2</sup> sound absorption)									
ADJUSTMENT POSITION/AIR FLOWS (supply/extract)									
Adjustment position		2		4		6		8	
Air flow dm <sup>3</sup> /s		119/171		149/209		177/239		208/260	
$L_{PA}$ dB (A)		45		50		53		55	

# TECHNICAL DATA

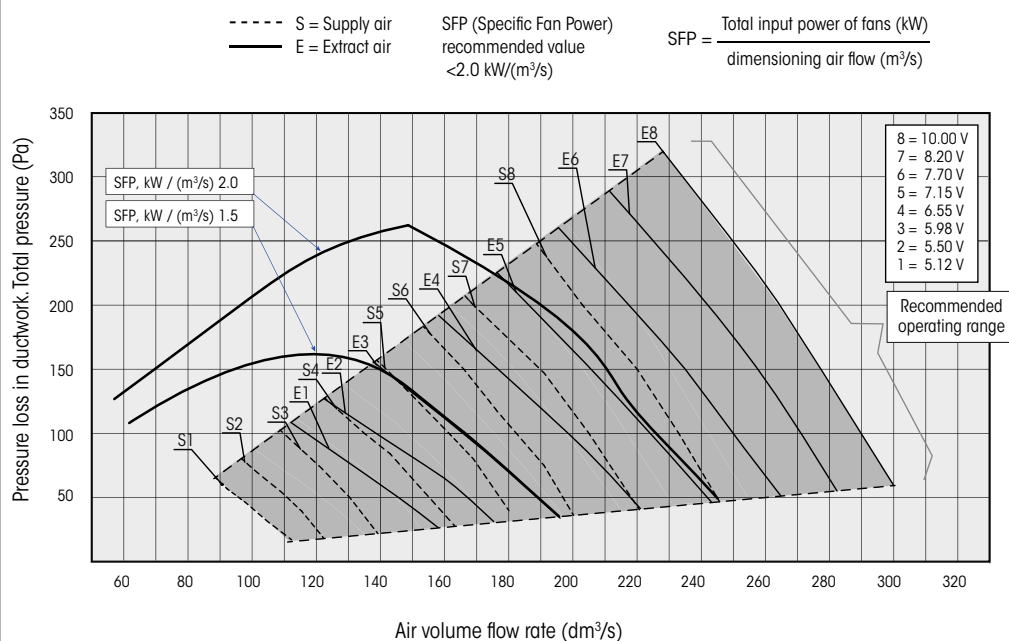
## VALLOX 280 SE ELECTRIC/VKL

### SUPPLY / EXTRACT AIR VOLUMES

Vallox 280 SE ELECTRIC/VKL  
Supply G4 + F7, extract G4

#### FAN INPUT POWER

Fan speeds	Extract air flow dm <sup>3</sup> /s	Total input power of fans W
1	130	150
2	150	180
3	170	250
4	190	320
5	210	405
6	230	510
7	250	620
8	290	830



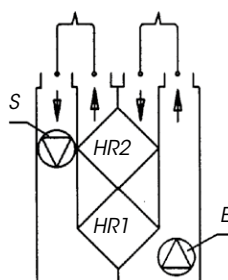
### MEASURING POINTS

#### Measuring points after the outlet collar.

Fan curves indicate the total pressure  
available for duct losses.

(HR = Heat recovery cell)

Supply air



#### SOUND VALUES

		Sound power level going from the unit to the supply air ductwork by octave band L <sub>w</sub> dB				Sound power level going from the unit to the extract air ductwork by octave band L <sub>w</sub> dB			
		ADJUSTMENT POSITION/AIR FLOW dm <sup>3</sup> /s				ADJUSTMENT POSITION/AIR FLOW dm <sup>3</sup> /s			
Adjustment position		2	4	6	8	2	4	6	8
Air flow dm <sup>3</sup> /s		128	164	202	238	171	210	242	261
Octave band medium frequency Hz	63	78	82	84	86	75	82	84	85
	125	63	69	73	76	73	77	81	86
	250	60	66	70	74	60	65	69	72
	500	46	50	54	57	47	51	55	57
	1000	43	47	49	51	43	47	50	51
	2000	39	43	48	51	40	45	49	52
	4000	29	34	38	42	30	35	39	41
	8000	17	24	28	31	19	25	29	32
L <sub>w</sub> dB		78	82	84	87	77	83	86	89
L <sub>WA</sub> dB(A)		56	61	64	68	59	63	67	71
		A-weighted sound pressure level dB (A) coming from the unit through the envelope in the rooms where the unit has been installed (10 m <sup>2</sup> sound absorption)							
		ADJUSTMENT POSITION/AIR FLOWS (supply/extract)							
Adjustment position		2		4		6		8	
Air flow dm <sup>3</sup> /s		119/171		149/209		177/239		208/260	
L <sub>pA</sub> dB (A)		45		50		53		55	

## VALLOX 280 SE + SILENCER UNIT

### SUPPLY/EXTRACT AIR VOLUMEST

Vallox 280 SE  
Vallox 280 SE + silencer unit  
Supply G4 + F7, extract G4

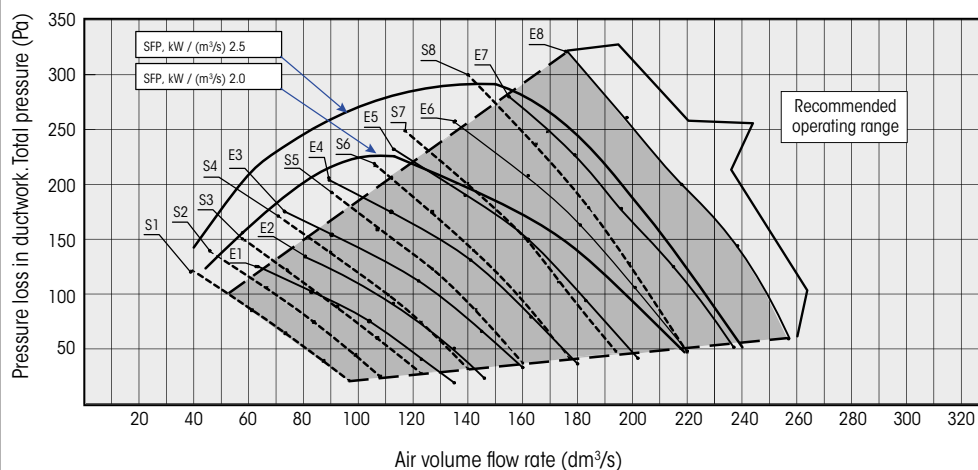
#### FAN INPUT POWER

Fan speeds	Extract air flow dm <sup>3</sup> /s	Total input power of fans W
1	90	110
2	110	140
3	130	180
4	150	240
5	170	320
6	190	400
7	210	480
8	250	680

----- S = Supply air  
———— E = Extract air

SFP (Specific Fan Power)  
recommended value  
<2.0 kW/(m<sup>3</sup>/s)

$$SFP = \frac{\text{Total input power of fans (kW)}}{\text{dimensioning air flow (m}^3\text{/s)}}$$



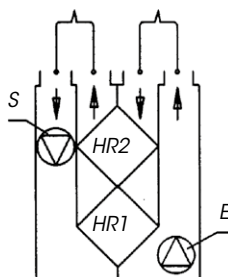
### MEASURING POINTS

#### Measuring points after the outlet collar.

Fan curves indicate the total pressure available for duct losses.

(HR = Heat recovery cell)

Supply air



#### SOUND VALUES

		Sound power level going from the unit to the supply air ductwork by octave band $L_w$ dB				Sound power level going from the unit to the extract air ductwork by octave band $L_w$ dB			
		ADJUSTMENT POSITION/AIR FLOW dm <sup>3</sup> /s				ADJUSTMENT POSITION/AIR FLOW dm <sup>3</sup> /s			
Adjustment position		2	4	6	8	2	4	6	8
Air flow dm <sup>3</sup> /s		99	123	159	199	136	158	186	218
Octave band medium frequency Hz	63	68	72	75	78	68	70	75	78
	125	51	57	61	65	62	66	71	73
	250	39	45	50	55	42	46	50	53
	500	24	30	36	42	28	32	36	41
	1000		11	23	31	13	21	27	32
	2000				22			9	25
	4000								19
$L_w$ dB		68	72	75	78	69	72	77	79
$L_{wa}$ dB(A)		43	48	51	55	48	51	56	58
A-weighted sound pressure level dB (A) coming from the unit through the envelope in the rooms where the unit has been installed (10 m <sup>2</sup> sound absorption)									
ADJUSTMENT POSITION/AIR FLOWS (supply/extract)									
Adjustment position		2		4		6		8	
Air flow dm <sup>3</sup> /s		122/151		153/186		183/215		218/239	
$L_{pa}$ dB (A)		42		47		50		53	

## TECHNICAL DATA

### HEAT RECOVERY AND HEATING

Efficient heat recovery means that most of the heat in dirty extract air can be transferred to the outdoor air that is taken inside. The efficiency of the heat recovery cells is about 70%. If outdoor air does not get sufficiently warm in the heat recovery cells, it can be heated with a water-circulating or electric post-heating unit (option).

The automatic heat recovery bypass function in the unit ensures that there is no need to heat outdoor air in summer. The unit also has an automatic defrost function for the water-circulating post-heating unit.

#### Defrost

When exhaust air temperature goes below the threshold value set, the automatic defrost function of the heat recovery cell switches the preheating unit on. If the power of the preheating unit is not enough, the unit momentarily stops the supply air fan.

#### Electric preheating unit

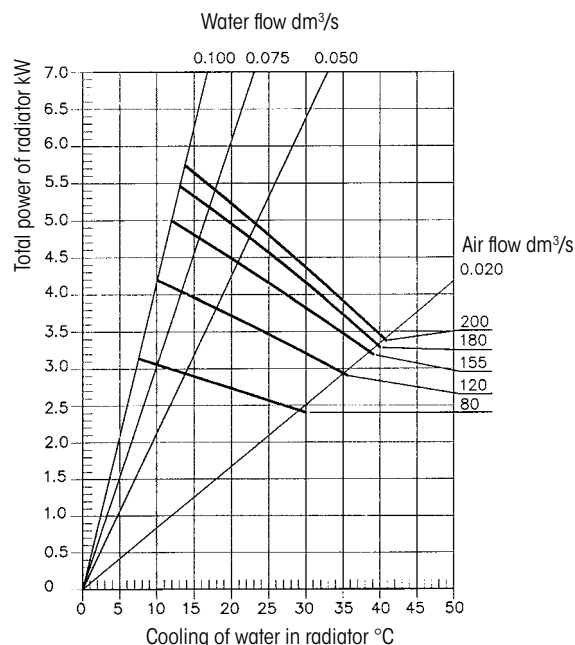
- Power 2.5 kW, 11 A.

#### Electric post-heating unit

- Power 2.5 kW, 11 A.

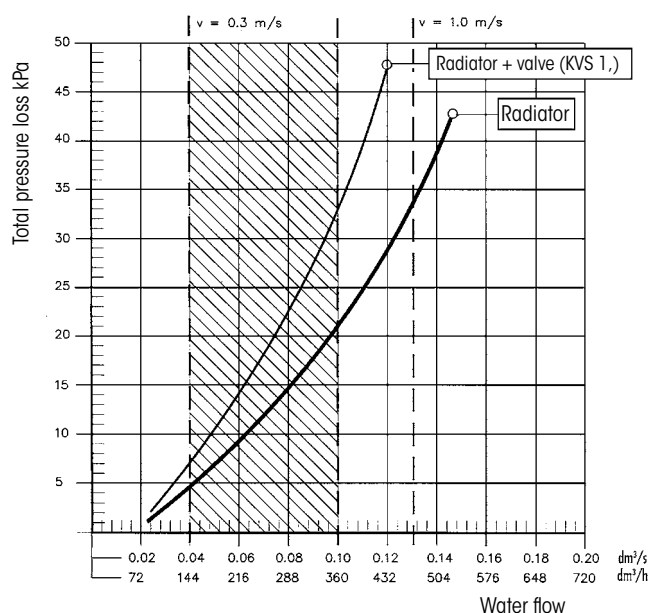
### Water-circulating post-heating unit, VKL model Water radiator power

Temperature of water coming to the radiator 70 °C  
Temperature of air coming to the radiator 15 °C

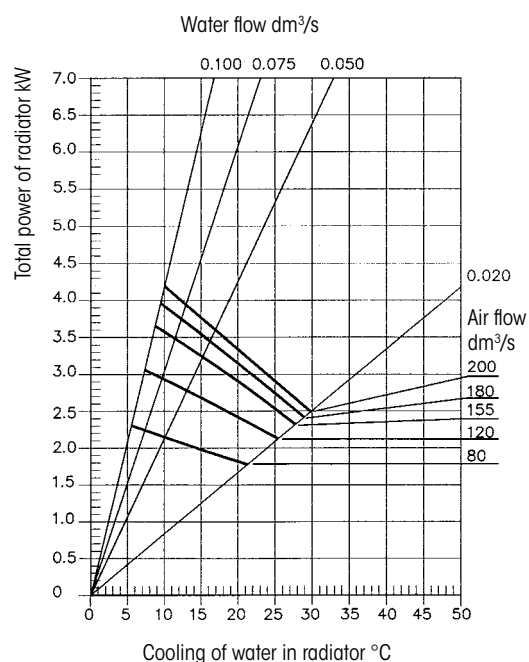


### Pressure loss in the liquid side of the VKL water-circulating radiator

Defined for 100% water

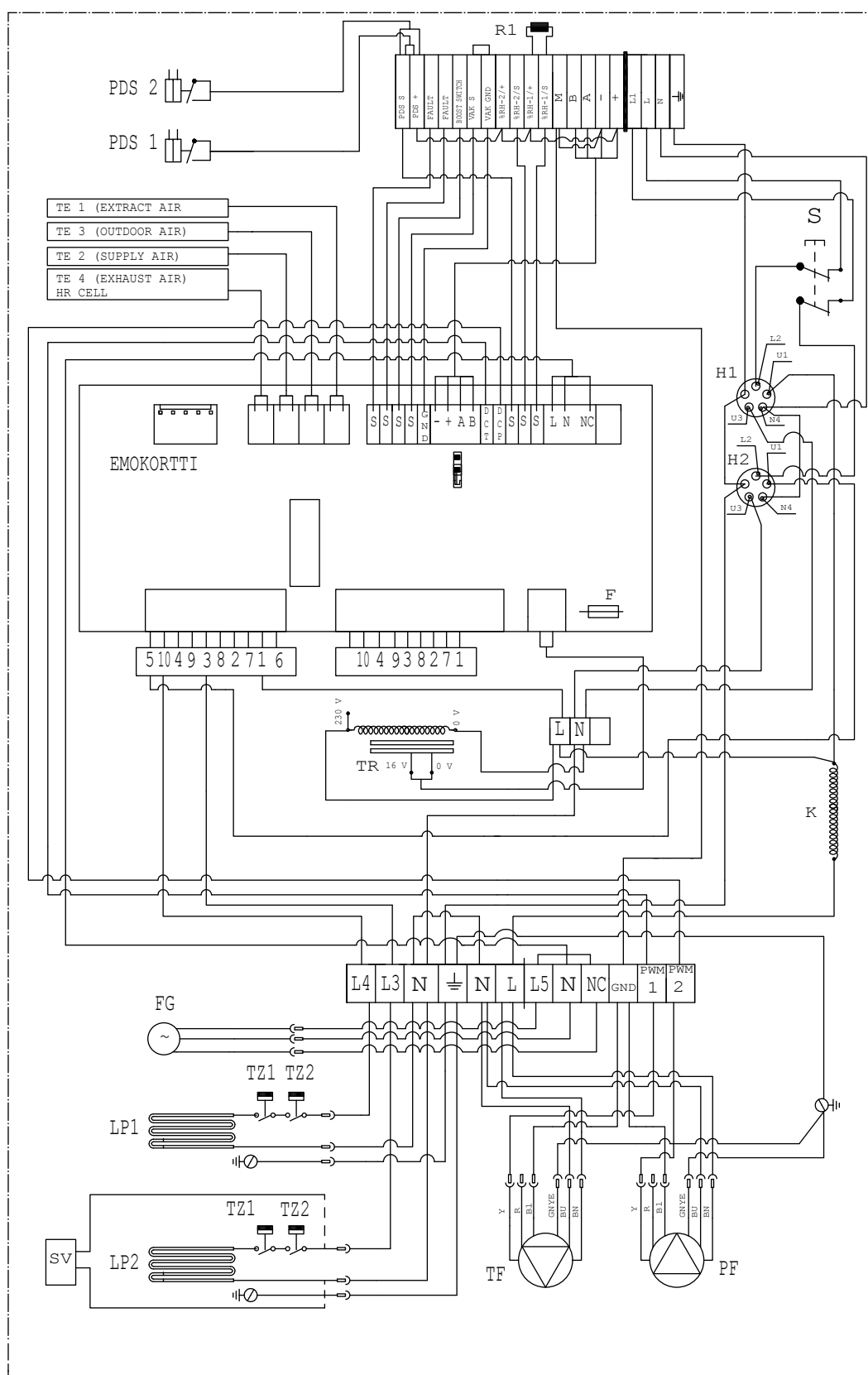


Temperature of water coming to the radiator 55 °C  
Temperature of air coming to the radiator 15 °C



## INTERNAL ELECTRICAL CONNECTIONS

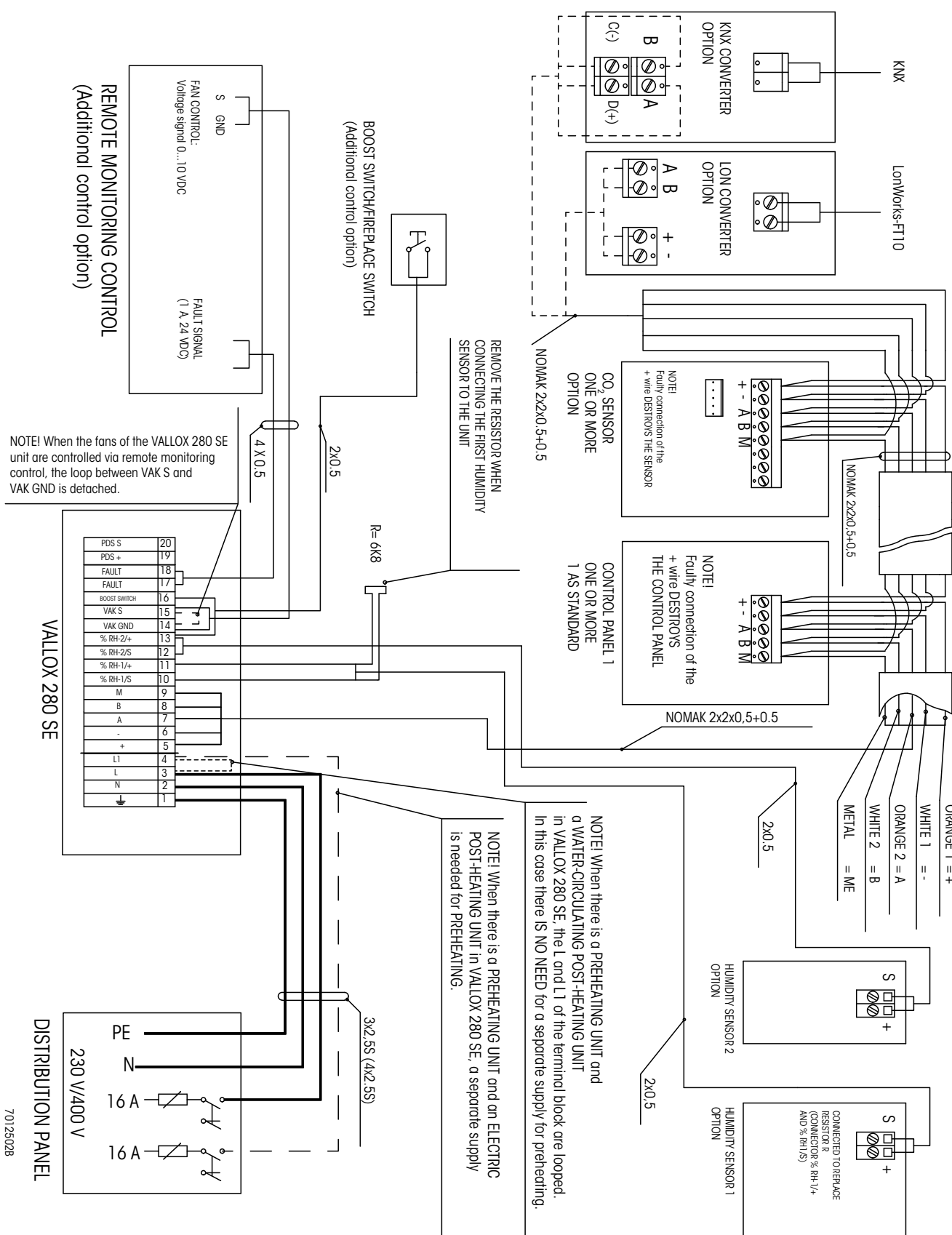
- TF = SUPPLY AIR FAN 520 W DC  
 PF = EXTRACT AIR FAN 520 W DC  
 H1 = INTERFERENCE ELIMINATOR MOTHERBOARD  
 H2 = INTERFERENCE ELIMINATOR MOTHERBOARD  
 FG = DAMPER MOTOR 24 VAC  
 TE = TEMPERATURE SENSORS  
 R1 = AUXILIARY RESISTOR 6.8 KOHM  
 TR = TRANSFORMER 1.3A/16 V  
 F = MOTHERBOARD FUSE 800 mA  
 S = MAINTENANCE SWITCH (DOOR SWITCH)  
 LP1 = ELECTRIC HEATING UNIT 2500W (PREHEATING, OPTION)  
 LP2 = ELECTRIC HEATING UNIT 2500W (POST-HEATING, OPTION)  
 SV = WATER HEATING UNIT ACTUATOR (POST-HEATING, OPTION)  
 TZ1 = OVERHEAT PROTECTION + 60 °C  
 TZ2 = OVERHEAT PROTECTION + 95 °C (RESETTING)  
 PDS1 = SUPPLY AIR FILTER PRESSURE DIFFERENCE SWITCH (OPTION)  
 PDS2 = EXTRACT AIR FILTER PRESSURE DIFFERENCE SWITCH (OPTION)  
 K = INTERFERENCE FILTER





## ELECTRICAL CONNECTIONS

## EXTERNAL ELECTRICAL CONNECTIONS



## MOUNTING AND WIRING OF CONTROL PANEL

The control panel is wired directly from the electrical connection box. The control panel can also be wired in series with CO<sub>2</sub> sensor or another control panel. (See External electrical connections, page 23.)

### Control panel addresses

If two or more control panels are connected to the system, the addresses of the control panels have to be changed.

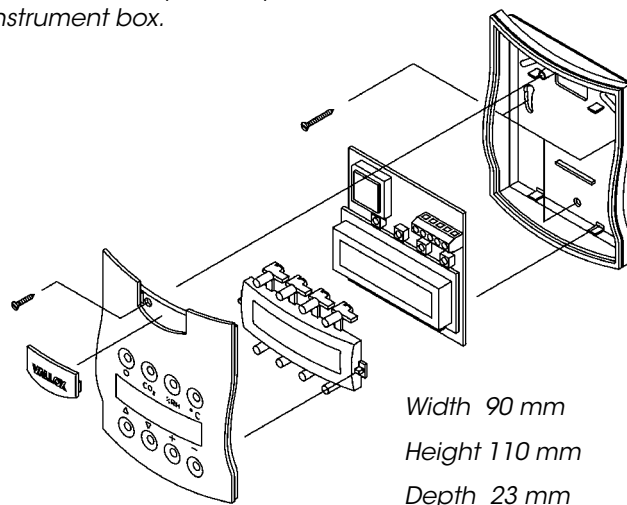
#### For example 3 control panels:

- Connect the first control panel to the unit and change its address to 3.
- Connect the second control panel to the unit and change its address to 2.
- Connect the third control panel to the unit and change its address to 1.

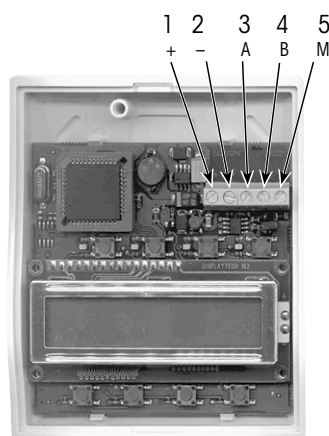
**NOTE:** If two control panels have the same address, they go to the bus fault state. In this situation, detach one of the control panels and change the address of the control panel connected. The above situation is possible when additional control panels are mounted afterwards.

### Surface mounting of control panel

The control panel is mounted on the wall or upon a 1-part instrument box.



## Wiring of control panel



Electronics card of control panel

Cable:  
NOMAK 2 x 2 x 0.5 mm<sup>2</sup> + 0.5 mm<sup>2</sup>

**NOTE!**  
Faulty connection of the + wire destroys the control panel!

1 = orange	= +	} ca. 21 VDC
2 = white 1	= -	
3 = orange 2	= A	
4 = white 2	= B	
5 = metal	= signal ground	

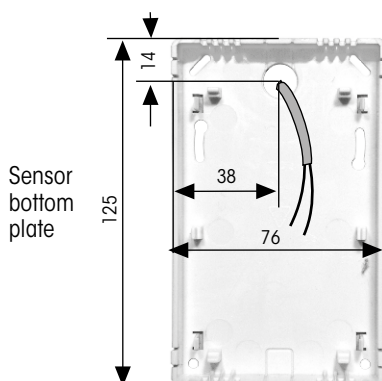


## MOUNTING AND WIRING OF HUMIDITY SENSOR

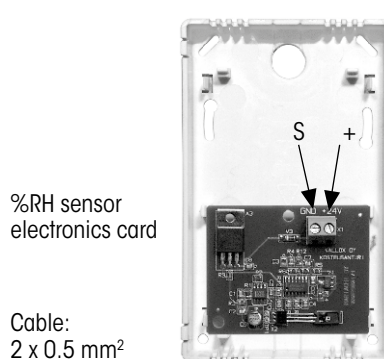
Connect humidity sensors if any to the terminal block of the connection block so that the first humidity sensor is connected to replace the 6K8 resistor in the terminal block in %RH1 (remove the resistor in this case) and the second humidity sensor in %RH2. See the electrical diagram.

The sensor is wired directly from the electrical connection box of the unit.

### Surface mounting



### Wiring



%RH sensor electronics card

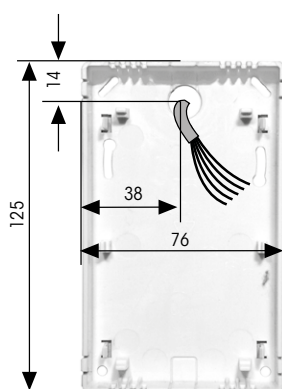
Cable:  
2 x 0.5 mm<sup>2</sup>



## MOUNTING AND WIRING OF CARBON DIOXIDE SENSOR

CO<sub>2</sub> sensor is wired directly from the electrical connection box of the unit, or it can also be wired in series with another CO<sub>2</sub> sensor or control panel. (See External electrical connections, page 23.)

### Surface mounting



CO<sub>2</sub> sensor bottom

### Wiring



CO<sub>2</sub> sensor electronics card

Cable:  
NOMAK 2 x 2 x 0.5 mm<sup>2</sup> + 0.5 mm<sup>2</sup>

NOTE!  
Faulty connection of (+) wire destroys the carbon dioxide sensor!

1 = orange	= +	} ca. 21 VDC
2 = white 1	= -	
3 = orange 2	= A	
4 = white 2	= B	
5 = metal	= signal ground	

## LOCATION

- Mounted indoors in a place where temperature does not go below +10 °C.
- Mounted in a place where the sound pressure level coming through the envelope of the unit is not disturbing (storerooms, halls, technical rooms, in some cases classrooms or other rooms where people spend time).
- The unit is equipped with an adjustable stand. If the unit is mounted on a wall, take into consideration the weight of the unit (206 kg) and vibration absorption.
- The unit is splash-proof (IP 34), so it can be mounted in a damp room.

## Electrical connections

- The unit is connected permanently to the electrical network. The electrical connection box of the unit is located inside the unit, next to the exhaust air duct.
- The cables connected to the unit are wired through the penetration sealings next to the extract air duct outlet.
- The cables are connected to the unit by detaching the upper door and the cover of the electrical connection box located in the exhaust air duct. The connections are carried out according to the connection instructions. The external and internal connection diagrams are in this manual and inside the cover of the electrical connection box.

## Duct connections

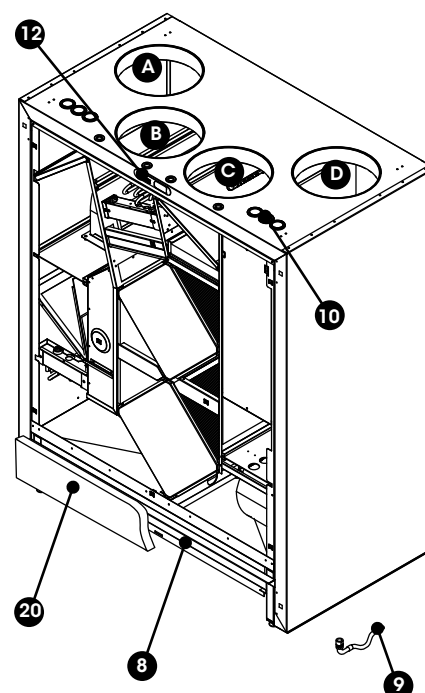
- The unit is equipped with four ø 250 external connector outlets. A required connector par (inner connector, bend or similar) can be connected to the external connector outlet.

**NOTE! LENGTH OF THE END OF THE CONNECTOR PART MAX. 50 MM.**

- The ducts are connected to the proper outlets steadily and tightly. (NOTE! Unit models L/R.) Any duct insulation is carried out according to the ventilation plan.

## Air flow measuring tubes

- The fixed air flow measuring tubes located in the unit are behind the Vallox nameplate (12) on the upper edge. It is easy for you to detach the nameplate by sliding it upwards and pulling it towards you.
- You can use the measuring tubes to measure the total pressures of the supply and extract air ducts with a pressure difference gauge. When you have the pressure readings, you can look at the air volume table (see page 18 or 19) to see the volume air flows at different operating positions.
- The red measuring hose is in the pressure side and the black hose in the suction side of the fan.

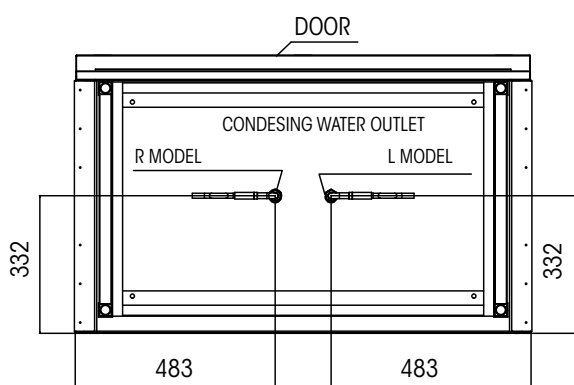


**VALLOX 280 SE L VALLOX 280 SE R**

<b>A</b> OUTDOOR AIR	<b>A</b> EXHAUST AIR
<b>B</b> SUPPLY AIR	<b>B</b> EXTRACT AIR
<b>C</b> EXTRACT AIR	<b>C</b> SUPPLY AIR
<b>D</b> EXHAUST AIR	<b>D</b> OUTDOOR AIR

- 10** Penetration sealings for electrical connections
- 9** Condensing water outlet
- 8** Condensing water tank
- 20** Base plate
- 12** Measuring tubes

## MOUNTING



## CONNECTIONS

### Condensing water connections

- Water condensing from the extract water going through the unit can be removed from the bottom tank in two ways.
- When the humidity content of extract air is high, as in washing rooms, condensing water is led from the screw-type coupling in the bottom tank through the condensing water outlet (water seal and water hose) to the floor drain.
- When the humidity content of extract air is low, as in office rooms, condensing water can be led from the screw-type coupling in the bottom tank to the condensing water tank delivered with the unit. It is pushed below the bottom tank to the guides located in the stand. In this case, no separate condensing water outlet is used. **NOTE!** When a condensing water tank is used, it has to be checked often enough.
- The screw-type coupling is located almost in the middle of the unit, which is why the unit has to be level.

### Pipe connections

- If the unit is equipped with a water-circulating post-heating unit, it is connected to the warm water circuit with 15/13 copper pipes.

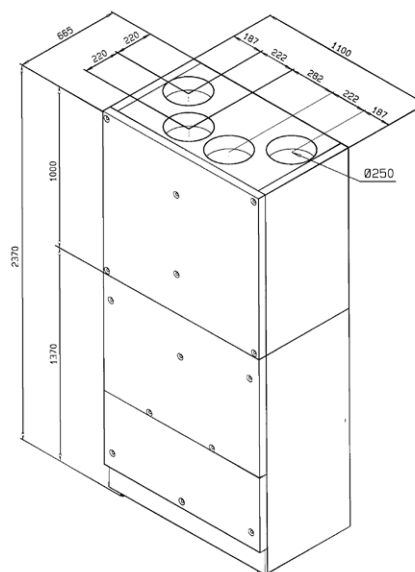
**NOTE! WATER-CIRCULATING HEATING UNIT INCLUDES A CONTROL VALVE.**

### Pressure difference switches

- When the unit is equipped with pressure difference switches that monitor the pressure difference of the supply and/or extract air filter, they have to be set at the correct values according to the operating position selected. (See page 15.)

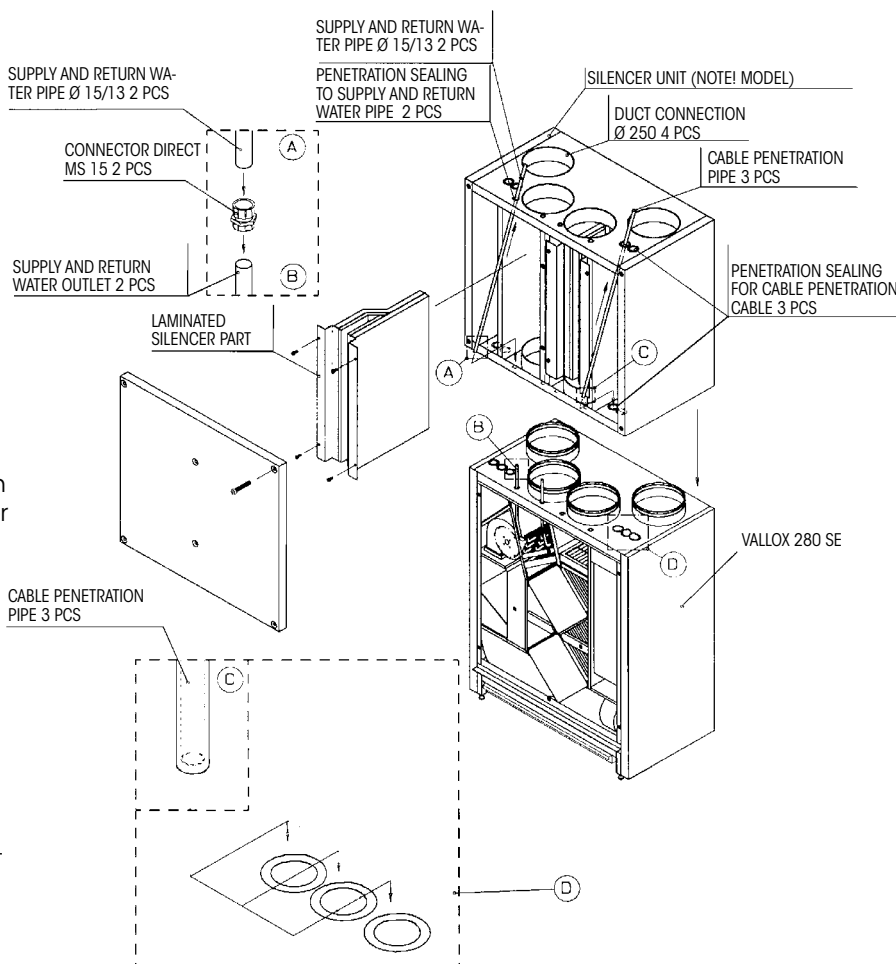
**SILENCER UNIT****General information**

- The silencer unit is intended to be used as duct silencer, mounted upon Vallox 280 SE. The unit has a cover that can be opened, so the unit can be cleaned without detaching the ducts.
- The unit also has detachable laminated silencer parts in the supply and extract air ducts.
- Duct connections consist of 4  $\varnothing$  250 mm outer connectors that make it possible to start the ducts directly from the unit, using curved duct parts, for instance.
- The ceiling of the unit includes penetration sealings for cable penetration pipes and supply and return pipes for a water-circulating heating unit.
- The weight of the unit is 105 kg with the door and 82 kg without the door.

**Mounting**

**NOTE! CHECK BEFORE MOUNTING IF VALLOX 280 SE IS AN R OR AN L MODEL!**

- Detach the door of the silencer unit. (See the adjoining figure.)
- Cut through the penetration sealings in Vallox 280 SE. (See item D in the figure.)
- Cut through the penetration sealings at the bottom of the exhaust air duct of the silencer unit (no insulation inside). **Note! Vallox 280 SE, L or R model. (See the figure.)**
- If Vallox 280 SE is equipped with a water-circulating heating unit, also detach the laminated silencer part in the supply air duct of the unit. **Note! Vallox 280 SE, L or R model. (See the figure.)**
- Lift the unit on top of Vallox 280 SE.
- Mount the cable penetration pipes (included in the delivery) in place by pushing them first through the penetration sealings in the ceiling of the silencer unit and then through the penetration sealings in Vallox 280 SE.
- Take the cables to be connected through the penetration pipes to the connection box inside Vallox 280 SE.
- Mount the supply and return water pipes (not included in the delivery) of a water-circulating heating unit if one is used through the penetration sealings in the ceiling of the silencer unit and Vallox 280 SE and connect them with a direct connector, for instance, to the supply and return water outlets. (See items A and B in the figure.)
- Mount the laminated silencer part in place.
- Carefully fasten the door of the silencer unit in place.
- Fasten the ducts to the proper outlets steadily and tightly. Any duct insulation is carried out according to the ventilation plan.





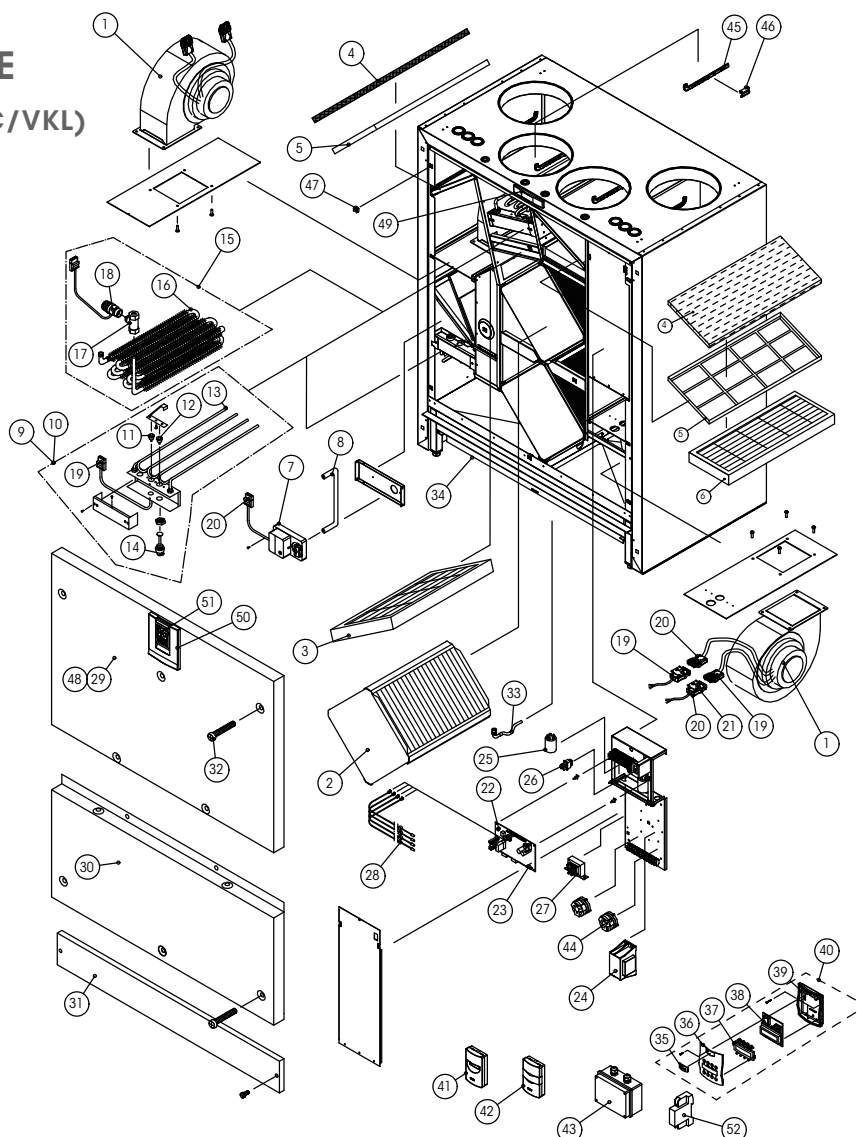
# EXPLODED VIEW AND PARTS LIST VALLOX 280 SE

(ELECTRIC/ELECTRIC + ELECTRIC/VKL)

(MODEL 3487)

*L model in the figure*

*In the R model, the parts are in a mirror image.*



No	Part	Code	No	Part	Code
1	Fan G3G180 520W	3312100	27	Transformer 1.3 A/16V	940027
2	Heat recovery cell	933040	28	NTC sensor	946140
3	Fine filter F7	978145	29	Upper door, L model	3321400
4	Outdoor air filter G4	3165200	30	Lower door	3154200
5	Support frame for outdoor air filter	3165100	31	Base moulding	3133000
6	Fine filter F5 (option)	978140	32	Ball-head hex screw M 8 x 70	988520
7	Damper motor	3322900	33	Condensing water outlet	3086800
8	Lever arm	3062200	34	Evaporation tank	3133100
9	Electric post-heating unit (option)	3138100	35	Cover plate	3214400
10	Electric preheating unit (option)	3169000	36	Cover	3214200
11	= Overheat protection + 60 °C autom.	946094	37	Lens	3214300
12	Thermal protection +95 °C	946020	38	Controller card	949026
13	Resistor 2500 W	942173	39	Bottom	3214100
14	PNR Reset button	948450	40	SED control panel	3214000
15	Water-circulating post-heating unit (option)	3169500	41	Carbon dioxide sensor (option)	946146
16	Water radiator	3175800	42	Humidity sensor (option)	946142
17	2-way valve (alternative) V5822 A DN 15, KV 1.0	946300	43	LON converter (option)	3151600
18	Actuator (alternative) M 4450 A 1009 2-way valve, open when dead	946320	44	Pressure difference switch (option)	948600
19	Connector Enstonet 3-pole male	950350	45	Measuring tube holder	990606
20	Connector Enstonet 3-pole female	950340	46	Measuring tube holder fastener	990607
21	Base Enstonet	950320	47	Cage nut M8	990367
22	Motherboard PK	3321700	48	Upper door, R model	3321401
23	Glass-tube fuse 5 x 20 0.8 A slow	952484	49	Name plate	990991
24	Harmonic filter 3.5 A	948516	50	Lock body	990990
25	Interference eliminator	942200	51	Vallox logo	990993
26	Safety switch	948370	52	KNX converter	949115





**VALLOX**

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