Vallox 90 SC

• 1.09.346F
• 22.11.2012
• Code A3521-1/2

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TECHNICAL SPECIFICATION

- Highly efficient heat recovery (η > 80%)
- Energy-efficient integrated direct-current fans
- 4-step Simple Control adjustment
- Preheating with electricity (option)

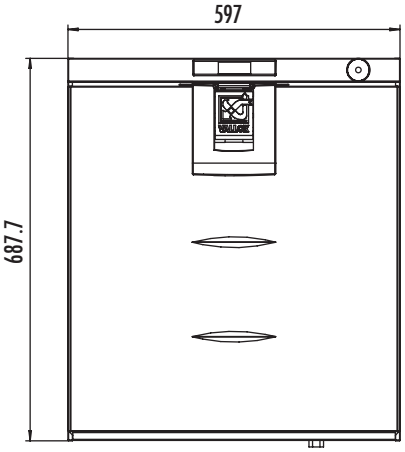
Electrical connection		230 V, 50 Hz, ≈ 1.8 A (+ preheating unit 4.3 A)
Class of protection		IP 34
Fans	Extract air 0,119 kW 0,9 A	92 dm^3/s 50 Pa
direct current (DC)	Supply air 0,119 kW 0,9 A	75 dm^3/s 50 Pa
Heat recovery		Cross-counter flow cell, η >80 %
Heat recovery bypass		Seasonal damper
Filters	Supply air	G4 and F7 (F7 option)
	Extract air	G4
Weight		52 kg
Power adjustment of ventilation		– Simple Control controller, 0...10 VDC
		– PTXPA Slim-Line SC cooker hood
Options		– Simple Control controller, 0...10 VDC
		– PTXPA Slim-Line SC cooker hood
		– Insulated attic floor penetration plate
		– Ceiling mounting plate Vallox 90
		– Electric preheating unit max. 1000 W
		– Supply air filter F7

Models:
VALLOX 90 SC R
VALLOX 90 SC L

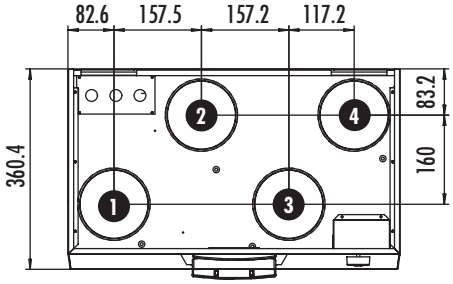
VALLOX 90 SC

DIMENSIONS AND MAIN PARTS

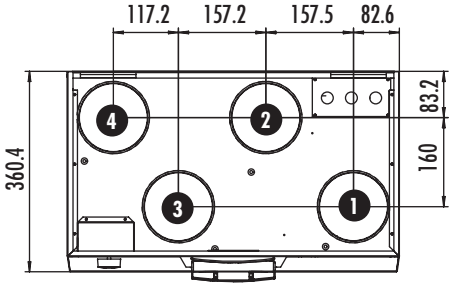
Dimensions and duct outlets



R MODEL



L MODEL

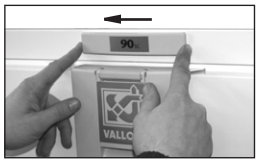


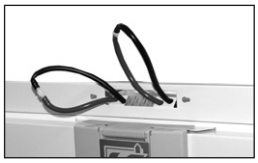
Duct outlets, inner diameter of collar ⌀ 125 mm

1. Supply air to dwelling
2. Extract air from dwelling
3. Outdoor air to unit
4. Exhaust air out

Model R

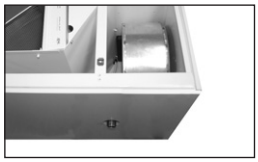
Measurement outlets





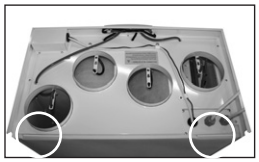
Measurement outlets are located behind the machine plate. Detach the machine plate by pushing it to the left and pull the outlets out.

Condensing water outlet



The condensing water outlet is located up in the back of the unit.

Fastening brackets



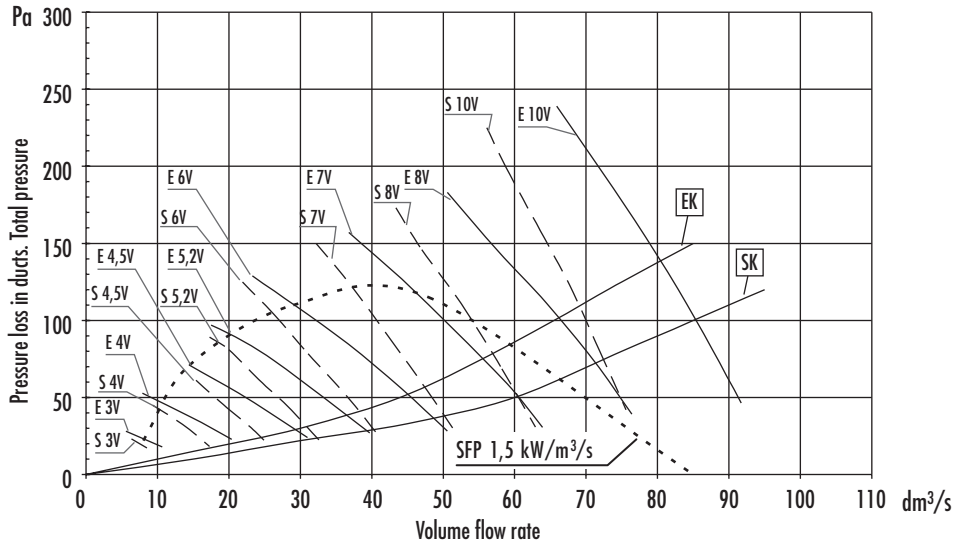
The fastening brackets are located up at the bottom of the unit.

Main parts

1. Extract air fan
2. Supply air fan
3. Preheating radiator (option)
4. Measurement outlets
5. Heat recovery cell
6. Outdoor air filter F7 (option)
7. Outdoor air filter G4
8. Extract air filter G4
9. Summer / winter damper
10. Summer / winter damper lock
11. Safety switch
12. Speed selector swich (option)
13. Connection box

Air volumes

SUPPLY / EXTRACT AIR VOLUMES / VALLOX 90 SC



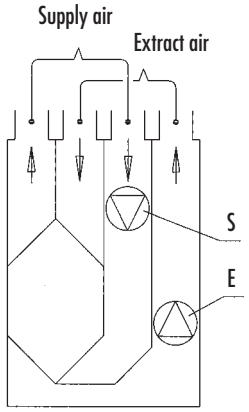
SFP (Specific Fan Power)
guideline value < 2.5 (kw/m³/s)

Supply air, 2…10 V
Extract air, 2…10 V

$$SFP = \frac{\text{Input power (total) (W)}}{\text{Air flow (max) (dm}^3\text{/s)}}$$

Measuring points after the connection outlet.

Fan curves indicate the total pressure available for duct losses.



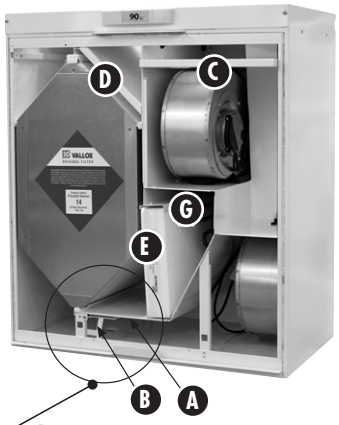
Fan control voltage (V)	Total input power W
3	9
4	15
4,5	22
5,2	31
6	47
7	72
8	114
10	182

Sound values

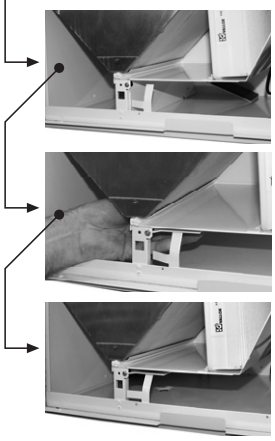
		Sound power level from the ventilation unit to supply air ducts by octave band L_W, dB				Sound power level from the ventilation unit to extract air ducts by octave band L_W, dB			
		ADJUSTING VOLTAGE/AIR FLOW				ADJUSTING VOLTAGE/AIR FLOW			
	Hz	3,6 V 16,5 l/s	5,4 V 27,2 l/s	7,3 V 40,9l/s	10,0 V 65,6 l/s	3,6 V 23,8 l/s	5,4 V 35,8 l/s	7,3 V 51,9 l/s	10,0 V 76,7 l/s
Medium frequency of the octave band, Hz	**63**	61,7	67,2	73,1	82,1	56,9	63,9	69,6	75,6
	125	46,9	56,2	64,3	73,4	46,4	53,9	60,8	69,1
	250	39,6	47,0	54,4	63,5	39,5	44,6	52,2	61,0
	500	35,1	41,6	48,6	57,3	32,7	38,8	45,6	53,3
	1000	31,1	38,7	45,7	52,4	27,9	35,5	43,2	48,9
	2000	13,0	25,7	34,4	43,5	17,6	24,5	33,6	42,9
	4000		15,6	27,5	35,9		13,3	23,2	33,8
	8000			20,0	22,6				
	L_W, dB	61,8	67,6	73,7	82,7	57,4	64,3	70,2	76,7
	L_{WA}, dB(A)	38,5	46,1	53,3	61,9	36,4	43,5	50,5	58,2

	A-weighted sound pressure level dB (A) coming from the unit through the envelope to the rooms where the unit has been installed (10 m² sound absorption)				
	ADJUSTING VOLTAGE/AIR FLOWS (supply/extract)				**VALLOX 90 SC**
	3,6 V 17/24 l/s	5,4 V 29/39 l/s	7,3 V 44/56 l/s	10,0 V 69/81 l/s	
L_{pA}, dB(A)	23,9	30,6	38,0	45,3	

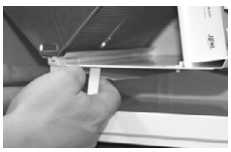
OPERATION



Damper in summer position



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



Speed selector

Preheating radiator (G)
(option)

Note! The heating radiator is tubular and can be scalding hot.

Heat recovery bypass

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

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

Air filtering

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

Defrosting

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

Stopping the supply air fan

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

Outdoor preheating

The unit can have been equipped with a preheating radiator at the factory. If that is the case, the defrost thermostat T1 switches the preheating radiator on whenever the temperature of extract air goes below +5°C after the cell. The preheating radiator is switched off when temperature has risen by circa three degrees to +8°C. The preheating radiator heats outdoor air before the heat recovery cell and prevents it from freezing. In very cold temperatures the preheating radiator is not enough to heat maximum air flow to a sufficient degree (in a temperature of minus 30 degrees, maximum air flow is 30 dm^3/s, which corresponds to speed 2). The limit of the thermostat can be adjusted at the back of the heat recovery cell.

Selection of fan speed

Fan speed is selected by using a separate speed selector.

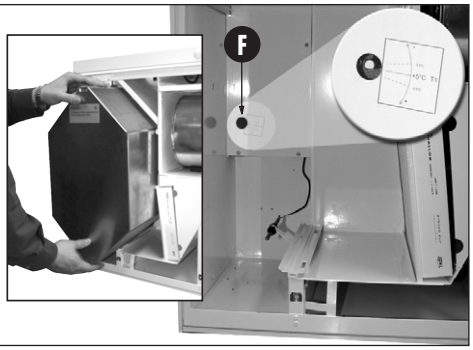
Speed selector

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

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

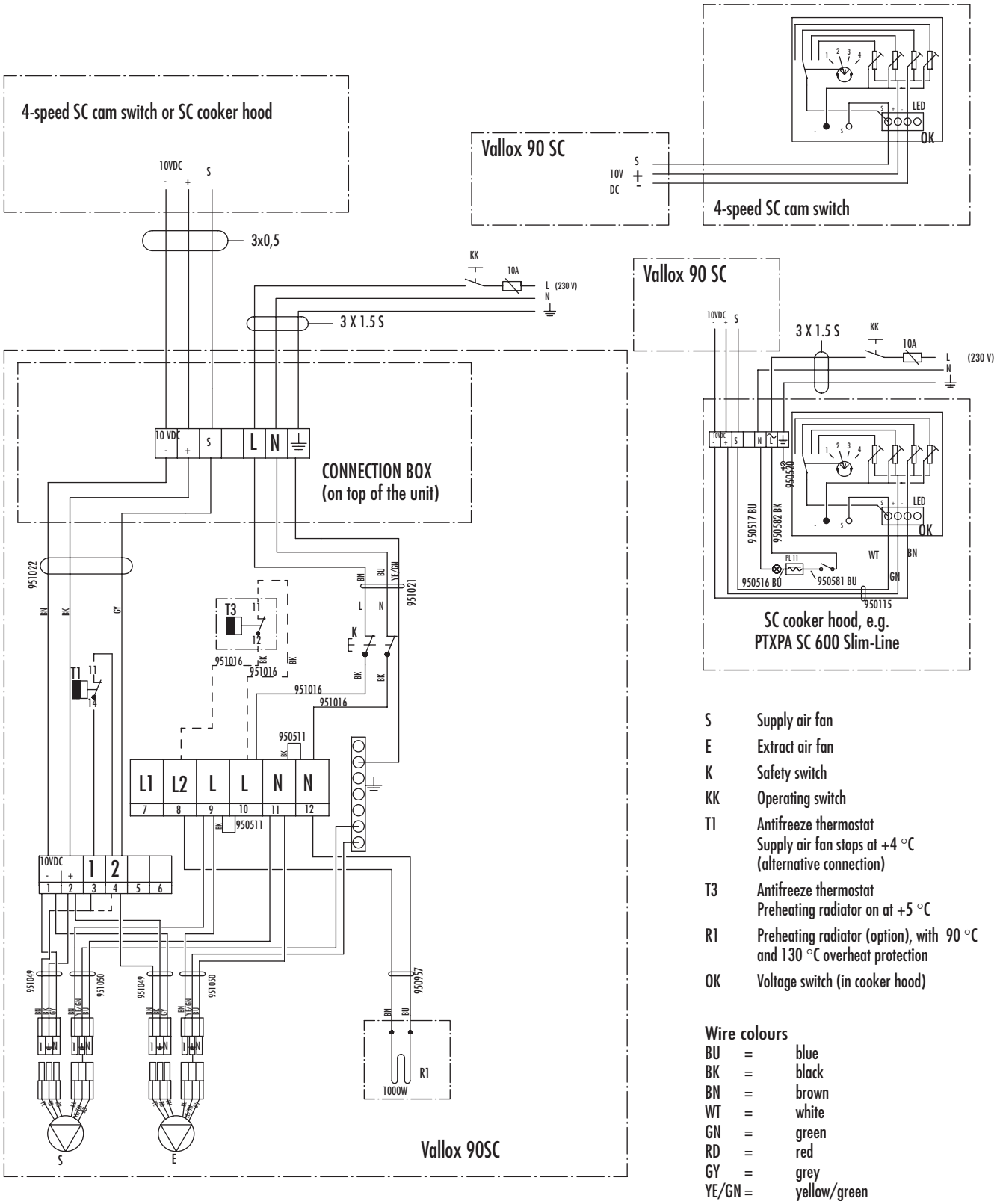
If there is a cooker hood independent of the ventilation system in the dwelling, it is not necessary to raise the speed of VALLOX 90 SC during cooking.

Defrost thermostat (F)
First remove the heat recovery cell, then the cap protecting the adjusting screw of the thermostat.



VALLOX 90 SC

ELECTRICAL DIAGRAMS



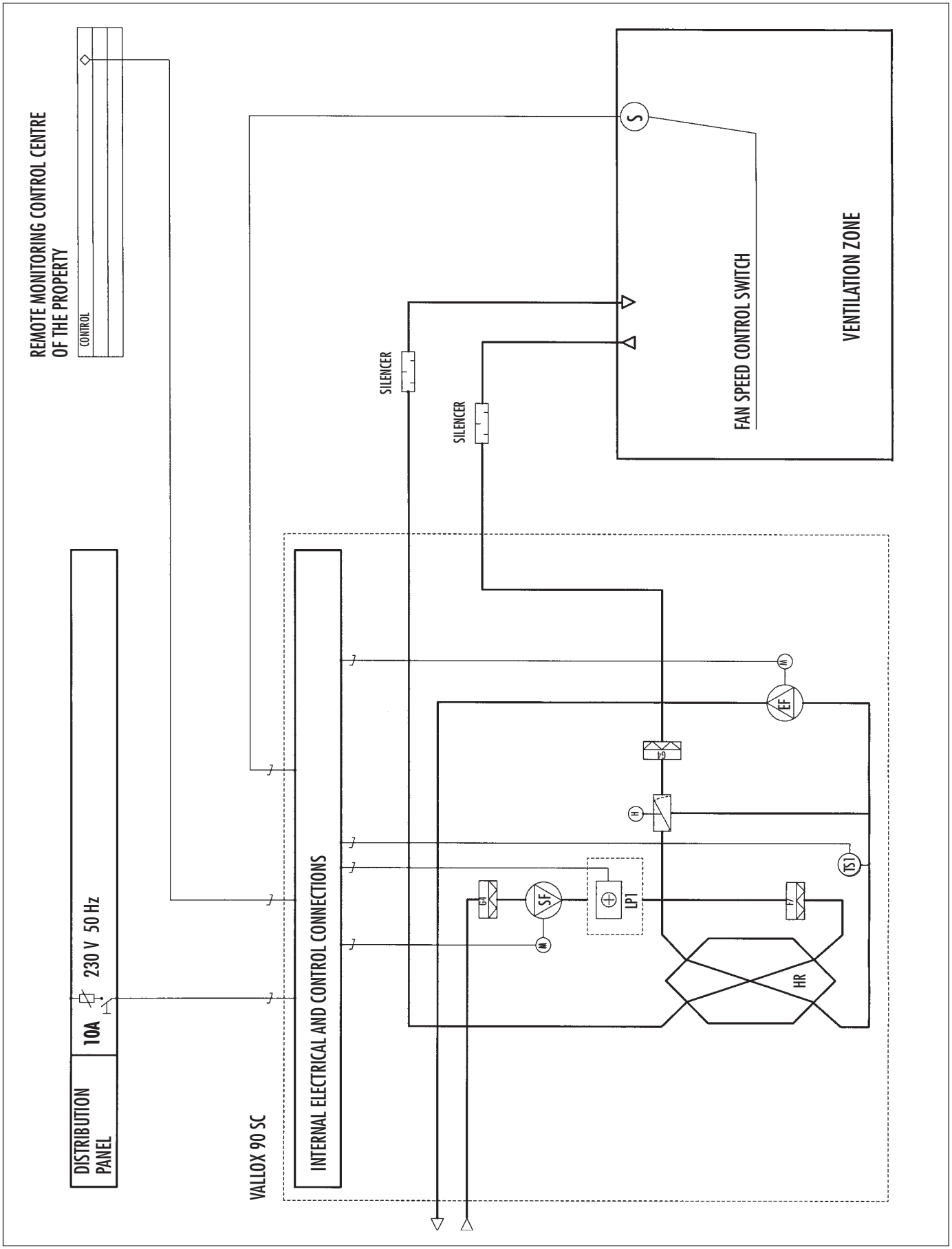
S	Supply air fan
E	Extract air fan
K	Safety switch
KK	Operating switch
T1	Antifreeze thermostat Supply air fan stops at +4 °C (alternative connection)
T3	Antifreeze thermostat Preheating radiator on at +5 °C
R1	Preheating radiator (option), with 90 °C and 130 °C overheat protection
OK	Voltage switch (in cooker hood)

Wire colours

BU	=	blue
BK	=	black
BN	=	brown
WT	=	white
GN	=	green
RD	=	red
GY	=	grey
YE/GN	=	yellow/green

VALLOX 90 SC

CONTROL DIAGRAM



DESCRIPTION OF OPERATION

Control of operation

Power supply to the unit can be controlled with the 0/1 switch in the distribution panel if needed. After starting, the unit operates at the power selected on the fan speed control switch. There is also a safety switch SS inside the unit. It stops power supply when the maintenance door of the unit is opened.

Fan speed adjustment

Cam switch

The SF and EF fans of the unit are controlled, depending on operating conditions, with a separate 4-step SC cam switch located in the ventilation zone.

Voltage signal control

The fan power of the unit can be controlled steplessly with voltage signal 0...10 VDC. With a voltage signal lower than 1.5 VDC the fans stop.

Heat recovery bypass

Summer-time bypass (H) of the heat recovery cell HR is done manually by turning the HR damper in the bypass position for the summer.

Heat recovery defrosting

The defrost thermostat TS1 of the HR cell stops the supply air fan SF, preventing the HR cell from freezing. The fan starts automatically as soon as the risk of freezing has passed. The operating point of the defrost thermostat cannot be changed, the factory setting is +5°C.

The unit can alternatively be equipped with preheating radiator LP1, controlled by antifreeze thermostat TS1. When there is a risk of frosting, preheating radiator LP1 starts to heat air coming from outside to the unit, thereby preventing the HR cell from freezing.

The tubular preheating resistor is connected to 90°C (resetting) overheat protection and 130°C (not automatically resetting) overheat protection.

Note! The preheating radiator can be scalding hot, especially in winter.

Parts list VALLOX 90 SC

Code	Name	Technical data	Standard / Option
G4 F7	Filter	Supply air G4 + F7 (option)	Standard
		Extract air G4	
H	HR bypass damper	Manual	Standard
HR	Heat recovery cell	Cross-counter flow cell, efficiency ≈ 80%	Standard
EF	Extract air fan (DC – direct current)	qv = 92 dm³/s (50Pa)	Standard
TS1	HR defrost thermostat	Factory setting +5°C	Standard
SF	Supply air fan (DC – direct current)	qv =75 dm³/s (50 Pa)	Standard
S	4-step adjustment switch	1, 2, 3, 4 switch	Option
LPl	Preheating radiator	PTC resistor max. 1.0 kW	Option

VALLOX 90 SC

LOCATION AND MOUNTING OF VALLOX 90 SC

Installation

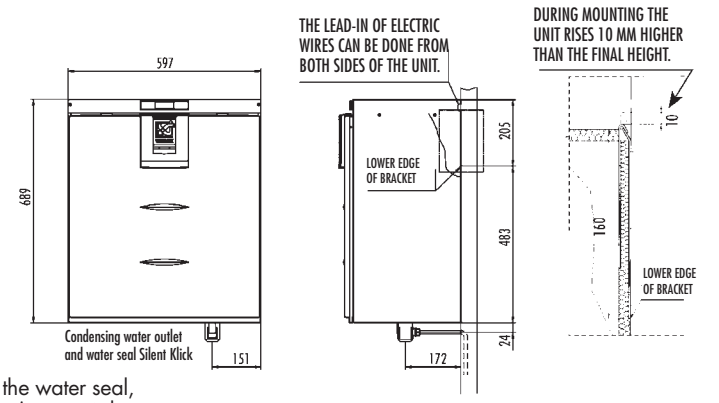
VALLOX 90 SC has to be mounted in a place where temperature does not fall below +10 °C. Without protective casing, the unit must be located in a place with no acoustic disturbance: storerooms, technical rooms etc.

Wall mounting

VALLOX 90 SC is mounted on the wall with a fixing plate as shown in the adjacent figure.

Wall construction

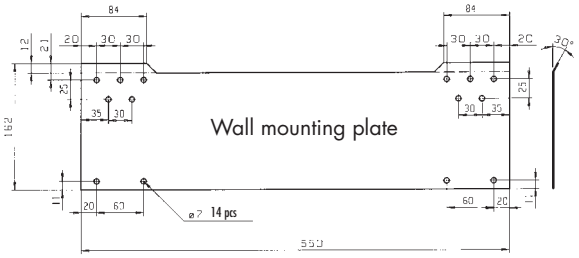
When fixing the unit, take the wall structure into account. Because of sound conduction, avoid mounting the unit on a hollow, echoing dividing wall and on a bedroom wall; or, if you do, prevent sound conduction.



Condensing water

The delivery includes a water seal. With a pipe connected to the water seal, water condensing from extract air can be led to a floor drain (not straight to the drain).

The pipe must not rise after the water seal. The unit has to be mounted level with the horizontal in order to ensure that condensing water can get out of the unit.



Ceiling mounting/ceiling mounting plate

Fastening of ceiling mounting plate to ceiling

The ceiling mounting plate is mounted straight, and it has to be fastened so that there is a space of circa 6 mm between the back edge of the ceiling mounting plate and the wall (Figure 1).The ventilation unit then becomes attached to the back wall.

Minimum distance between the lower edge of the ceiling mounting plate and the ceiling of the room is 14 mm. With this distance, there will be a vent of circa 2 mm between the upper edge of the mounted unit and the ceiling.

The ceiling mounting plate is fixed to the ceiling with M8 thread bars. After the thread bars have been fastened to the ceiling, first turn the nuts into the thread bars and lift the ceiling mounting plate in place. Then push a rubber damper and washer to each thread bar, all the way into the cup of the plate, and turn the nut.

Shorten the lower ends of the thread bars so that they will be at no more than 25 mm from the lower surface of the ceiling mounting plate. NOTE! Shortening the thread bars can only be done before mounting the ceiling mounting plate. The maximum length of a thread bar from the lower surface of the ceiling is the space between the lower surface of the ceiling and the lower surface of the ceiling mounting plate + 25 mm.

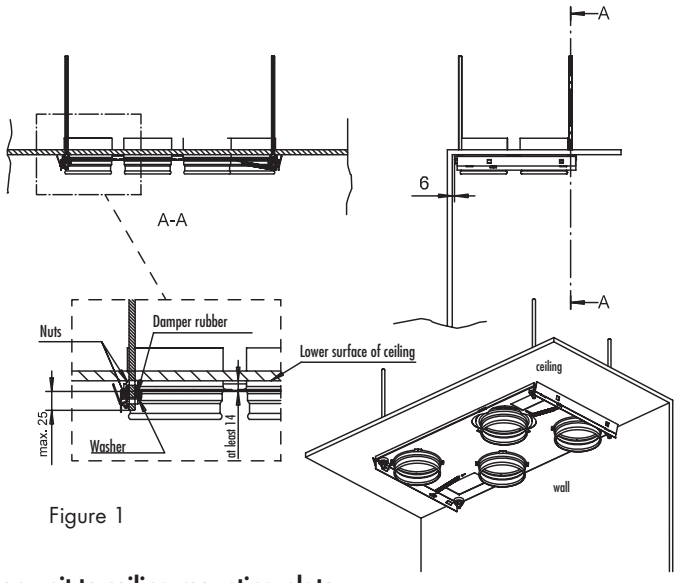


Figure 1

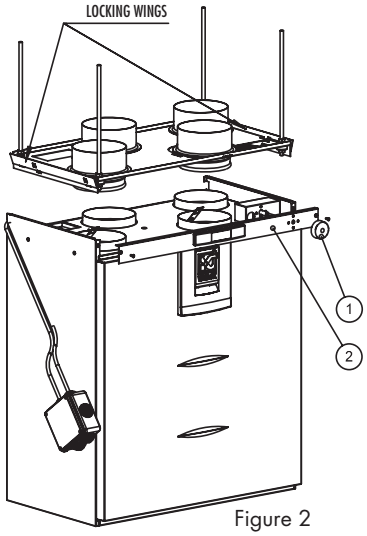


Figure 2

Mounting of ventilation unit to ceiling mounting plate

Before lifting the unit to the ceiling mounting plate, detach the following items from the unit (Figure 2):

1. Thermostat knob (SC unit)
2. Front panel (leave it hanging from the measurement hoses)

Put the cables of the connection box into the slot in the upper part of the side plate and pull the connection box next to the unit so that the cables remain in the slot. Make sure that the duct outlets for the unit's extract air duct and for the duct coming from the outside to the unit are equipped with condensing water insulation. Lift the unit in place to the ceiling mounting plate till both locking wings lock to the outer edge of the side plate of the unit. Do a visual check of the tightness of the duct outlets and of the correct moving of the measurement hoses and electric cables. Fasten the front panel and the knob of the thermostat (SC unit) back in place.

VALLOX

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