Code
3523
Models
VALLOX 90MC R
VALLOX 90MC L

Vallox 90MC

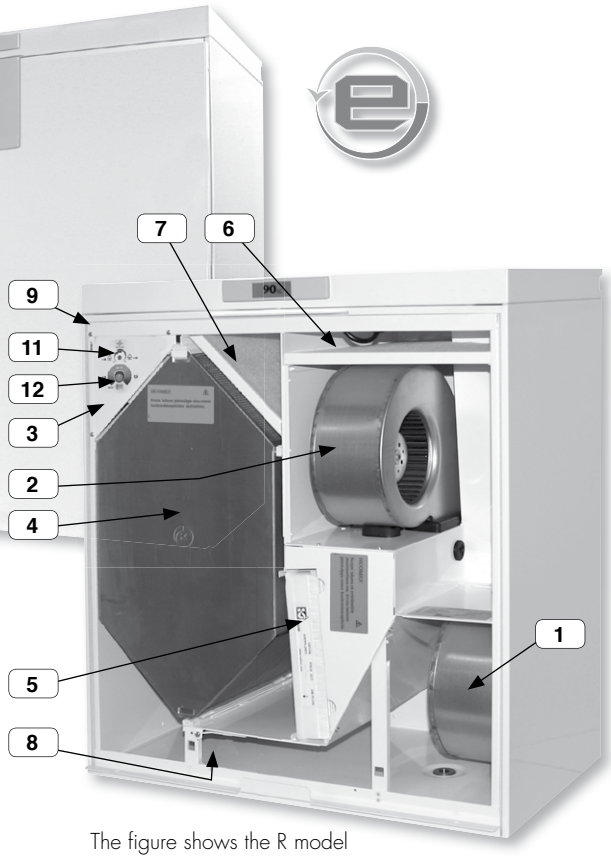
Low-energy ventilation unit with heat recovery

1.09.420 E
14.5.2013

Operating, maintenance and technical instructions

1 Extract air fan
2 Supply air fan
3 Post-heating radiator (electric 900 W)
4 Heat recovery cell
5 Outdoor air filter F7
6 Outdoor air filter G4
7 Extract air filter G4
8 Automatic summer/winter damper
9 Safety switch
10 Measurement outlets (behind an opening door)
11 Adjustment of the relationship between supply and extract air
12 Adjustment of supply air temperature and summer/winter function
13 Speed selector switch (1-4) (option)

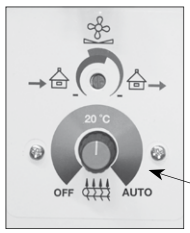
The measurement outlets are located behind the machine plate. Detach the machine plate by pushing it to the left and pull the outlets out.



The figure shows the R model

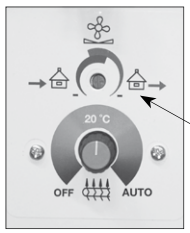
Technical data

Electrical connection		230 V 50 Hz = 5.7 A
Degree of protection provided by enclosures		IP34
Fans direct current (DC)	Extract air	0.119 kW 0.9 A 92 dm³/s 50 Pa
	Supply air	0.119 kW 0.9 A 75 dm³/s 50 Pa
Heat recovery		Cross-counter flow heat recovery cell, η> 80%
Heat recovery bypass		Automatic
Electric post-heating unit		900 W, 3.9 A
Fans	Supply air	G4 and F7
	Extract air	G4
Weight		52 kg
Ventilation control		Simple Control controller (option)
		PTXPA Slim-Line SC cooker hood (option)
		Fireplace switch (option)



Adjustment of supply air temperature

Fireplace switch, flush mounting (option)



Supply and extract air flow potentiometer

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance.

Cleaning and user maintenance shall not be made by children without supervision.

Fan speed adjustment

The fan speed of Vallox ventilation unit can be controlled with a control switch (option), with a separate cooker hood (option) or directly with a 0–10 V voltage signal.

Speeds 1, 2, 3 and 4 can be selected at the control switch.

1. Operation during absence. When the dwelling is empty, ventilation can be reduced temporarily.

2-3. Normal operation. In normal operation, air has to be replaced once every two hours.

4. Boosted operation. Cooking, taking a sauna bath, washing, drying clothes, using the toilet, having guests or a corresponding situation may cause a need for higher than normal ventilation.

Four-step control switch

Cooker hood PTXPA-SC

Adjustment of supply air temperature and summer/winter function

The temperature of air coming to the dwelling can be adjusted between circa +10 °C and +30 °C. The midpoint of the adjustment range is circa +20 °C. When supply air temperature adjustment has been turned in the OFF position, post-heating is not active. This means that summer function is activated for the ventilation unit. The unit has a motorised summer/winter function. When the summer function is on, the heat recovery cell is bypassed as soon as outdoor air temperature has risen above +14 °C. When outdoor air temperature goes below +12 °C, the unit starts to recover heat. When supply air temperature adjustment is in the AUTO position, automatic function is activated for the unit. In this case, the setpoint for post-heating is +17 °C and the heat recovery cell is bypassed automatically according to outdoor temperatures as indicated above. When the unit bypasses the heat recovery cell, in which case summer function is activated, post-heating is off.

Fireplace switch function

It is possible to connect a timer-operated switch to the unit. The switch stops the extract air fan during the time when the fireplace is lighted. NOTE! The starting of the extract air fan may weaken draught in the fireplace! In winter, this situation may disturb the winter function of the unit. The situation will normalise in a while, after the fireplace function stops.

Winter function of ventilation unit

A threshold value has been set at the factory for the freezing of the heat recovery cell. When the threshold is exceeded, the ventilation unit starts to melt the heat recovery cell. Melting is done by stopping the supply air fan.

A normal melting period takes from 15 to 45 minutes depending on the extent of ice on the heat recovery cell and on the amount of extract air flow. The unit has been optimised to operate on the factory settings in normal operation in dwellings and detached houses. The winter function parameters can be adjusted in extreme conditions, such as in a swimming bath, but even then it is advisable to contact Vallox Maintenance.

Adjustment of the relationship between supply and extract air

This feature may be useful when adjusting air flows at the valves during mounting. After the valves have been adjusted, a user does not need, and must not, touch the adjustment. When needed, supply or extract air flow can be reduced at the potentiometer. When the potentiometer is approximately halfway, supply and extract air flow have not been reduced. Turning the potentiometer anticlockwise reduces the air flow on the supply side, and turning it clockwise reduces the air flow on the extract side.

Maintenance reminder

The unit reminds of the need for maintenance every six months if an indicator (not standard) has been connected to the connectors of the fault signal relay. The indicator then blinks at one-second intervals. The maintenance reminder is reset when the door of the ventilation unit is opened. See the maintenance instructions for information on the necessary maintenance activities.

Troubleshooting

When a fault described in the table appears, the unit indicates of the fault with a fault signal relay, indicator light and LED on the circuit board. The number of blinks reveals the fault in question.

Led blinks	Problem	Repair
1	Supply air sensor after the HR cell is faulty	Check the sensor and conductors, replace if needed
2	Extract air sensor is faulty	Check the sensor and conductors, replace if needed
3	Supply air sensor is faulty	Check the sensor and conductors, replace if needed
4	Exhaust air sensor is faulty	Check the sensor and conductors, replace if needed
5	Outdoor air sensor is faulty	Check the sensor and conductors, replace if needed
6	Supply air fan has stopped	Check the wiring of the fan, replace the fan if needed
7	Extract air fan has stopped	Check the wiring of the fan, replace the fan if needed
8	EEPROM faulty	Replace the circuit board of the unit with a new one

MAINTENANCE

Before starting maintenance operations

When you open the VALLOX 90MC unit, the safety switch of the door (T) turns power off from the unit. In spite of that, always disconnect the plug of the VALLOX 90 MC unit before starting maintenance operations.

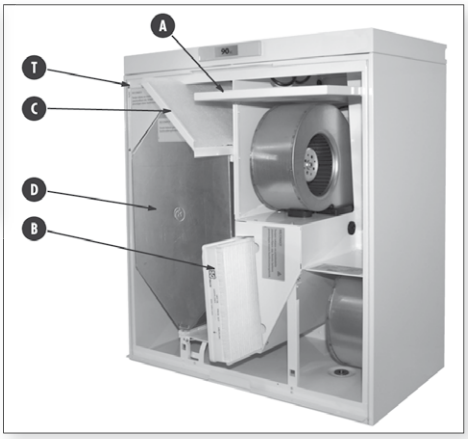
Fans

When the maintenance reminder gives an alarm, the cleanliness of the fans must be checked. Outdoor air is filtered in the unit with two kinds of filters. A coarse filter (A) filters off insects, heavy pollen and other dust. An F7 class fine filter (B) filters off fine dust invisible to the eye. Extract air is filtered with a coarse filter (C).

By using original Vallox filters you ensure good operation of the ventilation unit and the best filtering result. The replacement interval of filters depends on dust content in ambient air. It is recommended to replace fans in spring and autumn, but at least once a year.

Heat recovery cell

When you replace the filters, you are also advised to check the cleanliness of the heat recovery (HR) cell (D) approximately every two years. The sealing ledge (E) above the HR cell must be pulled off before the cell can be detached. 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 of removing the HR cell is to put your hands behind the HR cell and slowly pull it off. If the HR cell is dirty, wash it by putting it in a solution of water with washing-up liquid. Rinse the HR cell clean with a jet of water. When water has drained from between the laminas, you can push the HR cell back in place. Finally, push the sealing ledge in place.



VALLOX 90 MC filters and heat recovery cell

The units are available as right- and left-handed models. In a right-handed (model R) model, outdoor air comes to the unit from the right side of the centre line, as shown in the instructions. In a left-handed (model L) unit, outdoor comes from the left side of the unit. The filters, summer/winter damper and heating radiator also change places correspondingly.

Fans

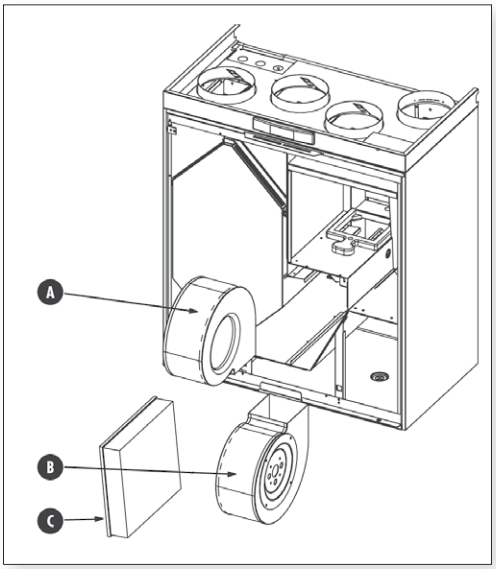
Check the cleanliness of the fans when carrying out maintenance for a filter and the heat recovery cell. Clean the fans if needed. The fans can be removed from the unit for cleaning. The fan blades can be cleaned with compressed air or with a brush. Do not remove or move the balancing pieces on the fan blade.

Detaching supply air filter (A)

Before detaching the supply air fan, you must remove the F7 fine filter (C). To remove the F7 fine filter, pull it out. The fan is attached to the fixing plate with a butterfly nut. Detach the butterfly nuts and lift the fan off. Finally, disconnect the quick coupling of the fan conductor.

Detaching extract air filter (B)

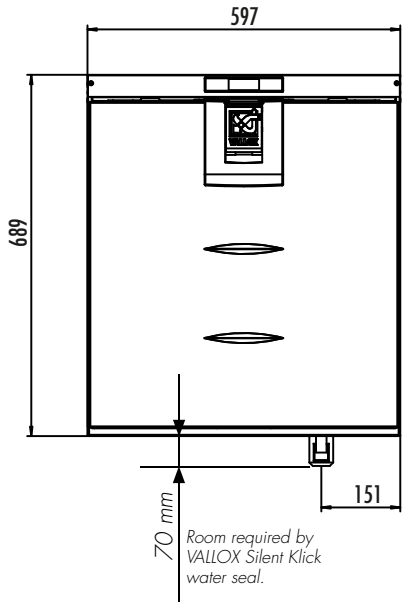
The fan is attached to the fixing plate with a butterfly nut. Detach the butterfly nuts and lift the fan out. Finally, disconnect the quick coupling of the fan conductor. If you use water for cleaning the unit or parts of it, do not let it enter the electrical parts.



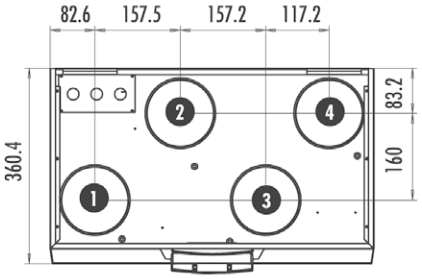
Condensing water

During the heating season, humidity of extract air condenses into condensing 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 carrying out 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 can check it by pouring a little water in the tank. Clean if needed. Do not let water flow into electrical devices.

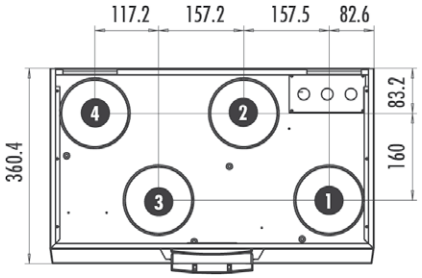
Dimensions and duct outlets



MODEL R



MODEL L



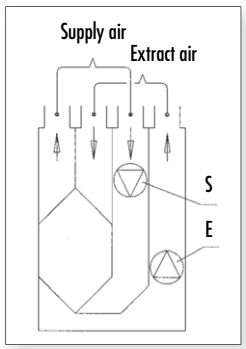
Duct outlets

Inner diameter of female outlet collar ø125

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

Measuring points

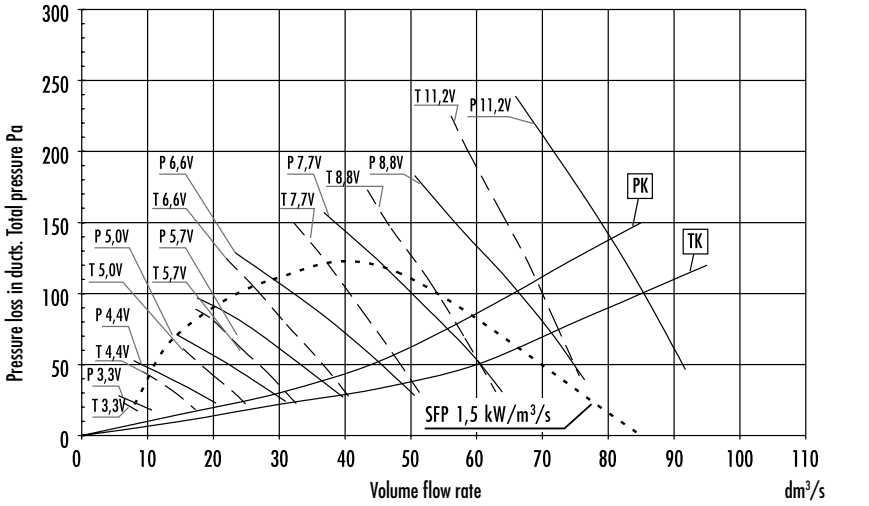
Measuring points after the connection outlet. Fan curves indicate the total pressure available for duct losses.



Input powers of fans

Fan control voltage V	Combined input power of fans W
3.3	9
4.4	15
5.0	22
5.7	31
6.6	47
7.7	72
8.8	114
11.2	182

Supply/extract air flows



T = Supply air, fan speed 1…8
P = Extract air, fan speed 1…8

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

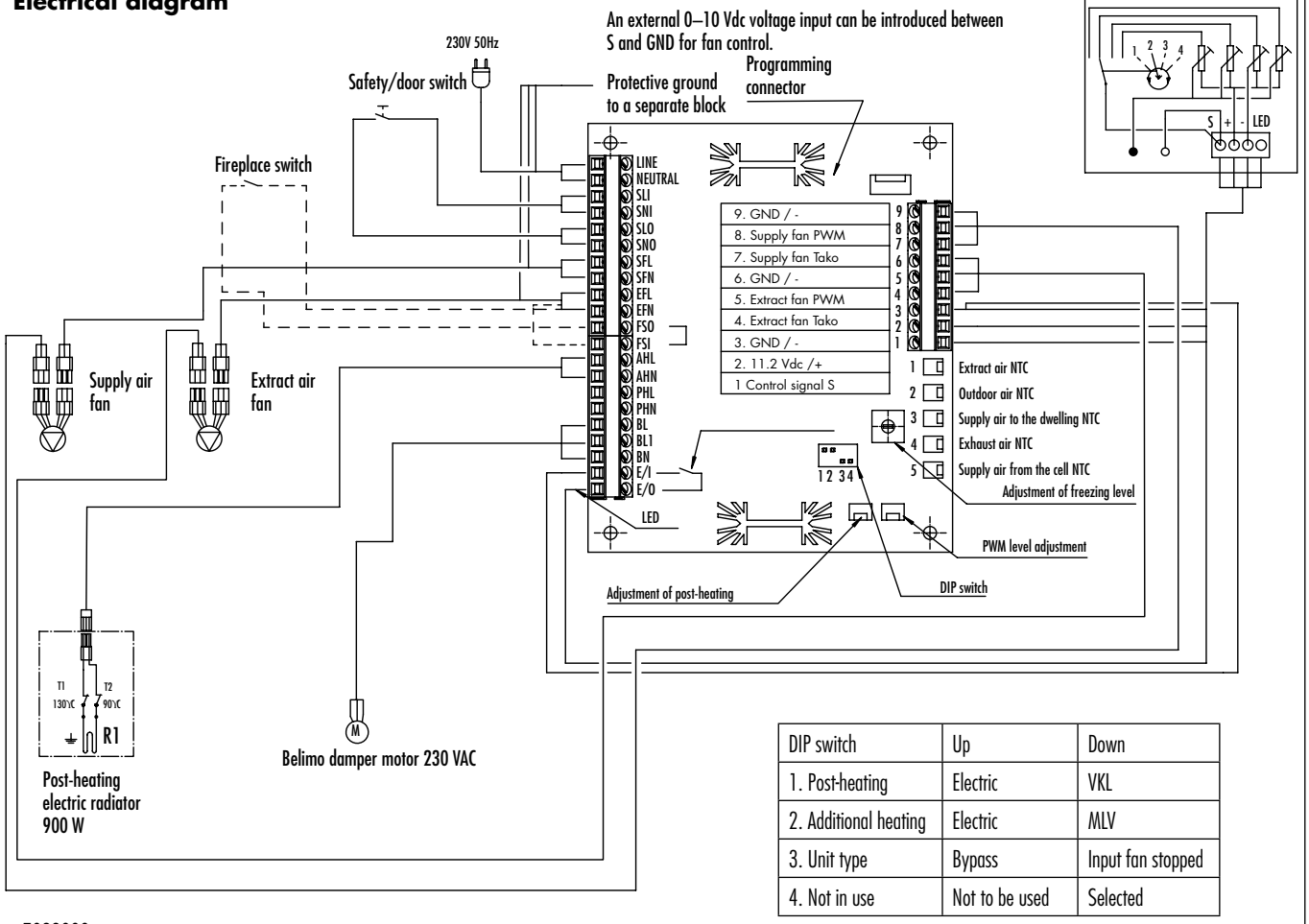
SFP (Specific Fan Power) recommended value <2.5 (kW m³/s)
At a lower total pressure, SFP will be smaller at this speed.

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			
		ADJUSTMENT POSITION/AIR FLOW				ADJUSTMENT POSITION/AIR FLOW			
ADJUSTMENT POSITION		2	4	6	8	2	4	6	8
AIR FLOW dm³/s		16.5 l/s	27.2 l/s	40.9 l/s	65.6 l/s	23.8 l/s	35.8 l/s	51.9 l/s	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	18.6	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	52.0	17.6	24.5	33.6	42.9
	4000		15.6	27.5	42.0		13.3	23.2	33.8
	8000			20.0	36.0				
L_w dB		61.8	67.6	73.7	77	57.4	64.3	70.2	76.7
L_{wA} dB(A)		38.5	46.1	53.3	59	36.4	43.5	50.5	58.2

	A-weighted sound pressure level dB (A) coming from the unit through the envelope in the rooms where the unit has been installed (10 m² sound absorption)				
	ADJUSTMENT POSITION/AIR FLOWS (supply/extract)				**Vallox 90 MC**
	2	4	6	8	
	17/24 l/s	29/39 l/s	44/56 l/s	69/81 l/s	
L_{pA} dB (A)	23.9	30.6	38.0	45.3	

Electrical diagram



DIP switch	Up	Down
1. Post-heating	Electric	VKL
2. Additional heating	Electric	MLV
3. Unit type	Bypass	Input fan stopped
4. Not in use	Not to be used	Selected

7023000

LINE:	Phase voltage
NEUTRAL:	Zero voltage
SLI:	Phase voltage to safety switch
SNI:	Zero voltage to safety switch
SLO:	Phase voltage to circuit board from safety switch
SNO:	Zero voltage to circuit board from safety switch
SNO:	Phase voltage to supply air fan
SFN:	Zero voltage to supply air fan
EFL:	Phase voltage to extract air fan
EFN:	Zero voltage to extract air fan
FSO:	Input to fireplace switch
FSI:	Fireplace switch output
AHL:	Phase voltage to post-heating
AHN:	Zero voltage to post-heating
PHL:	Phase voltage to additional heater
PHN:	Zero voltage to additional heater
BL:	Damper motor phase A
BL1:	Damper motor phase B
BN:	Zero voltage to damper motor
E/I:	Input voltage to fault signal relay
E/O:	Fault signal relay output

Mounting

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

Wall mounting

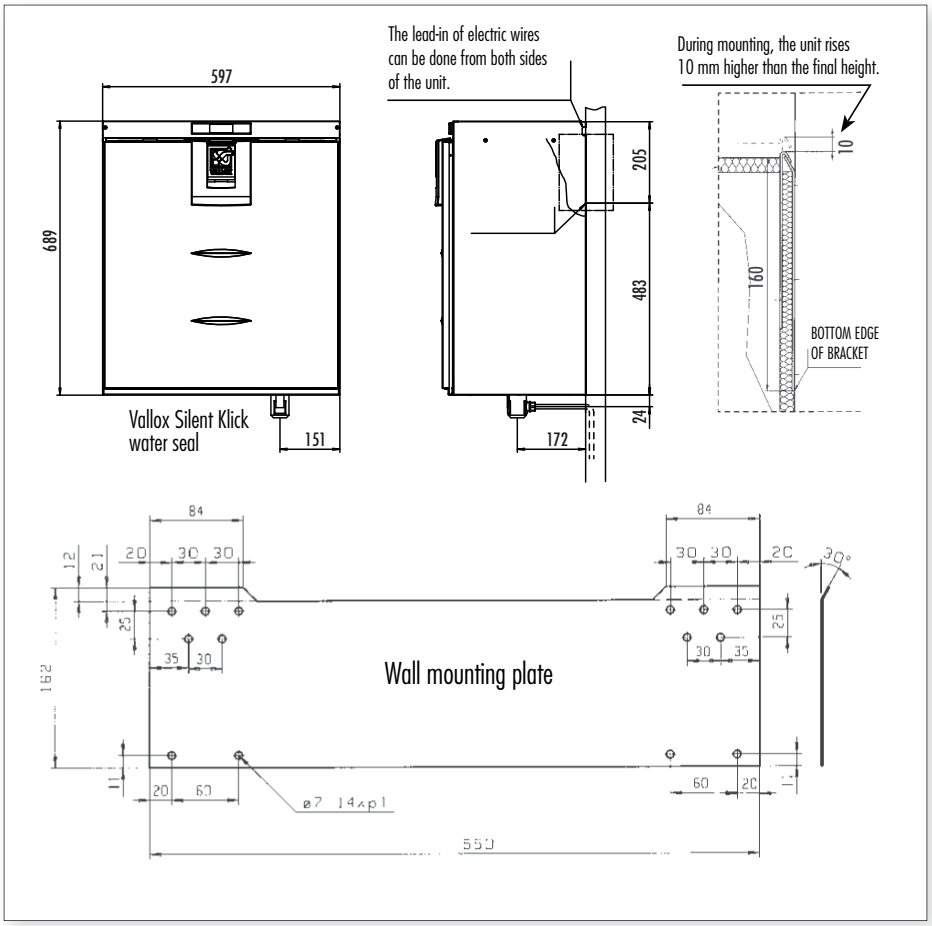
VALLOX 90 MC is mounted on the wall with a mounting plate as shown in the adjacent figure.

Wall construction

Observe the wall construction during mounting. Avoid mounting the unit on a hollow, echoing dividing wall and on a bedroom wall because of sound conduction, or prevent sound conduction.

Condensing water

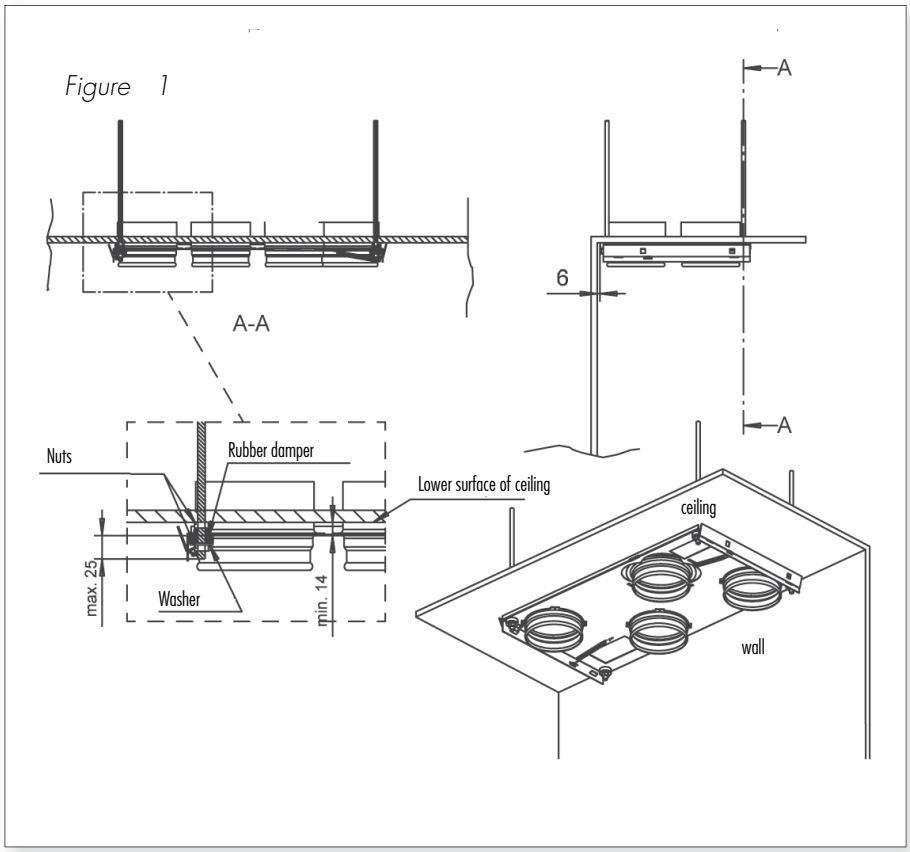
The delivery includes a water seal. By connecting a pipe to the water seal the water condensing from extract air can be led to a floor drain (not directly to the drain). The pipe must not rise after the water seal. The unit has to be mounted horizontally level, so that condensing water can get out of the unit.

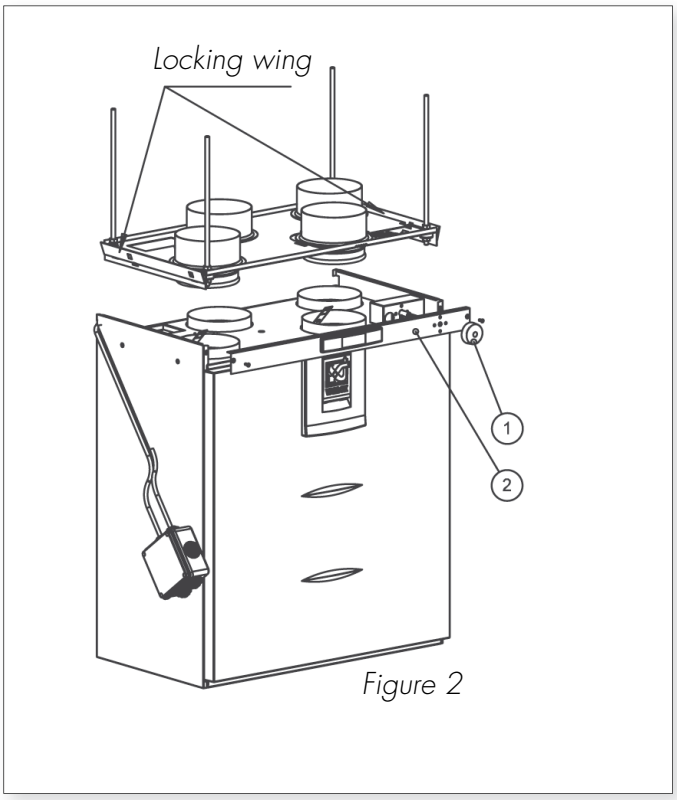


Ceiling mounting/ ceiling mounting plate

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 bottom 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 top 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.





Mounting of ventilation unit to ceiling mounting plate

Before lifting the unit to the ceiling mounting plate, detach the front panel from the unit (and leave it hang from the measurement hoses), Figure 2:

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 back in place.

Air flow measurement outlets

The fixed measurement outlets are located behind the nameplate. You can measure the total pressure of the supply and extract air ductwork at the measurement outlets, using a differential pressure instrument. Pressure readings and air volume tables show volume flow rates at various adjustment positions. The red measurement hose is on the pressure side and the black hose on the suction side of the fan.

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