



Code
3524
Models
VALLOX 90K MC R
VALLOX 90K MC L

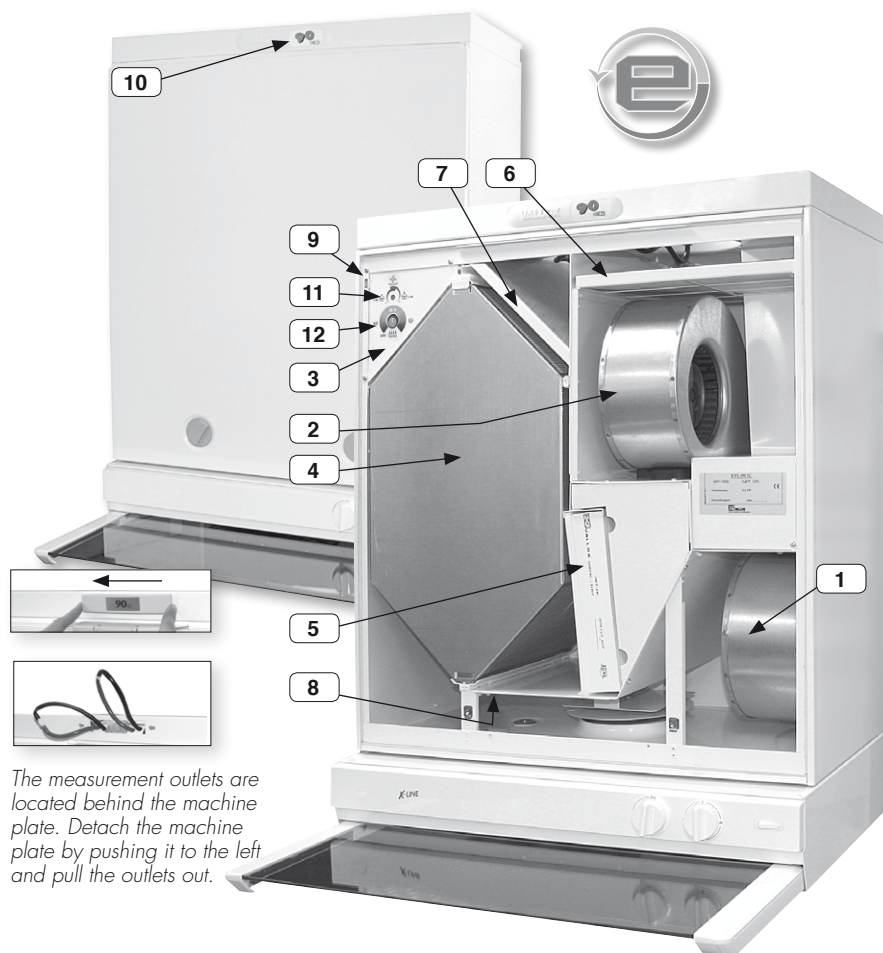
Vallox 90K_{MC}

Low-energy ventilation unit with heat recovery

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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



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

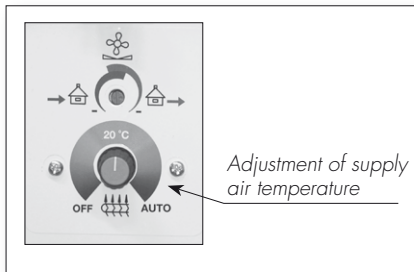
The figure shows the R model

TECHNICAL DATA

Electrical connection	230V 50Hz = 5.7A	
Degree of protection provided by enclosures	IP34	
Fans	Extract air	0.119 kW 0.9A 92dm ³ /s 50Pa
direct current (DC)	Supply air	0.119 kW 0.9A 75dm ³ /s 50Pa
Heat recovery	Cross-counter flow heat recovery cell, $\eta > 80\%$	
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	Cooker hood	



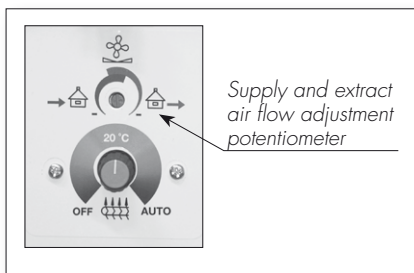
Fan speed adjustment



Adjustment of supply air temperature



Fireplace switch, flush mounting (option)



Supply and extract air flow adjustment 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 cooker hood is connected to the ventilation unit and is used to control air circulation in the whole dwelling. Four operating ranges are available.

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 ventilation than in normal operation.

Cooking

Open the boost flap of the cooker hood during cooking.

At other times, the flap must be kept closed.

An open flap reduces the power of ventilation in other rooms.



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 heated. **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.

OPERATING INSTRUCTIONS

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 90K MC 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 90K MC unit before starting maintenance operations.

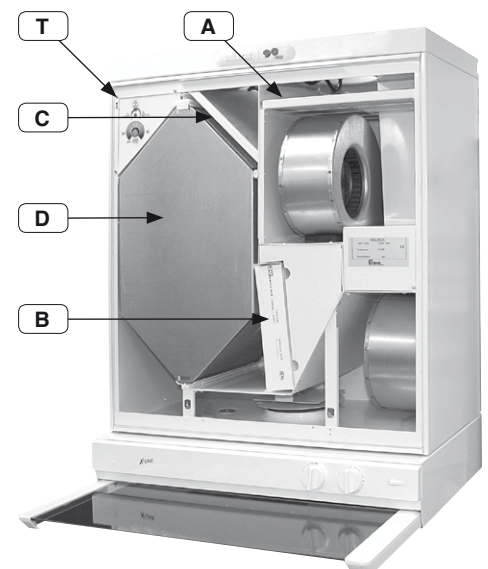
Fans

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.

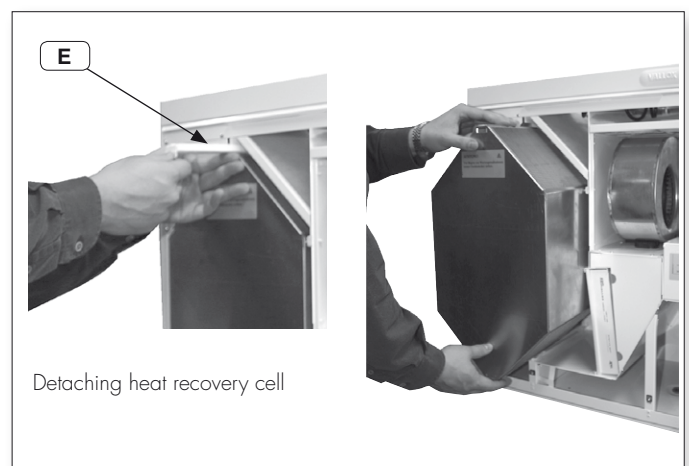
Heat recovery cell

When you replace the filters, you are also advised to check the cleanliness of the heat recovery (HR) cell (D) at 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 90K 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 air comes from the left side of the unit. The filters, summer/winter damper and heating radiator also change places correspondingly.



Fans

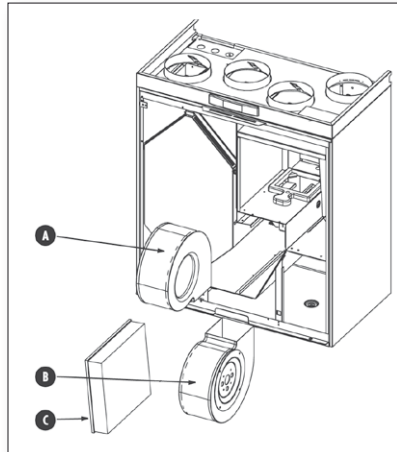
Check the cleanliness of the fans when carrying out maintenance for the filter and the heat recovery cell. Clean the fans if needed. The fans can be removed from the unit for cleaning. The fan blades can be cleaned with compressed air or with a brush. Do not remove or move the balancing pieces on the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

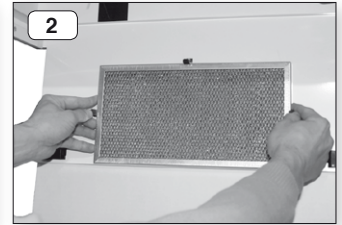
The fan is attached to the fixing plate with a butterfly nut. Detach the butterfly nuts and lift the fan out. Finally, disconnect the quick coupling of the fan conductor. If you use water for cleaning the unit or parts of it, do not let it enter the electrical parts.



Cooker hood

Cooker hood grease filter

The grease filter of the cooker hood has to be cleaned 1 to 2 times a month, depending on how much the hood is used. The grease filter can be washed with hot water and washing-up liquid or in a dishwasher. Remove the grease filter by pressing the quick couplings (1) on the bottom plate of the hood open, letting the bottom plate go in the down position and removing the filter from its clips (2).



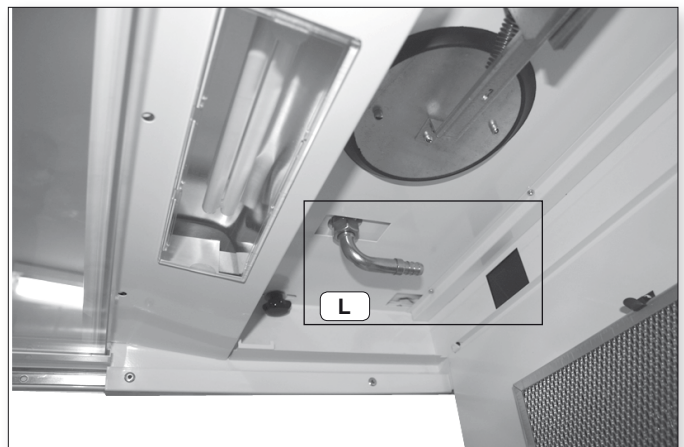
Lamp

To change the lamp, remove the cover glass (3) of the lamp by pushing it to the left and put a new lamp and cover glass in place (4). Lamp type is PL 11 (11 W).



Condensing water

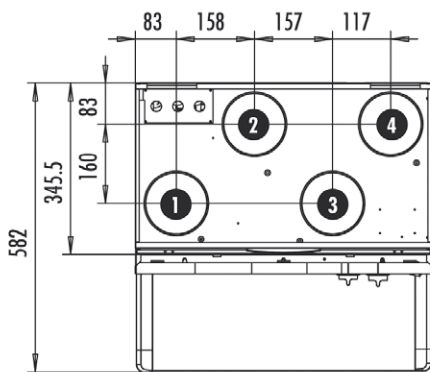
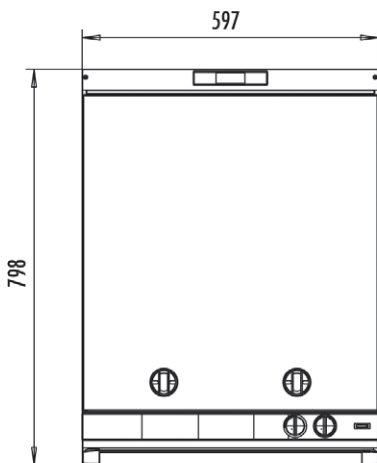
During the heating season, humidity of extract air condenses into condensing water. Water formation may be abundant in new buildings or if ventilation is low compared to the humidity build-up caused by the residents. Condensing water needs to flow out from the ventilation unit without hindrance. In carrying 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.



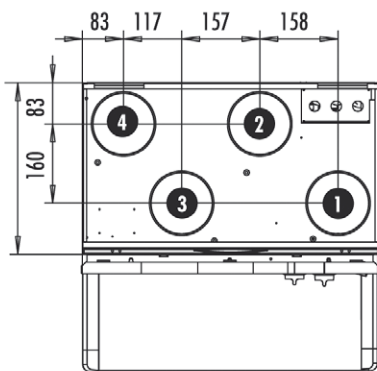
Condensing water outlet (L) and condensing wire outlet port are above the grease filter of the hood and to the left of the flap in both right- and left-handed models.

TECHNICAL DATA

Dimensions and duct outlets



Model R



Model L

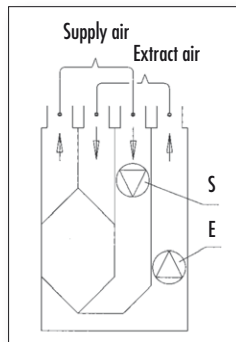
Duct outlets

Inner diameter of female outlet collar 125 mm

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

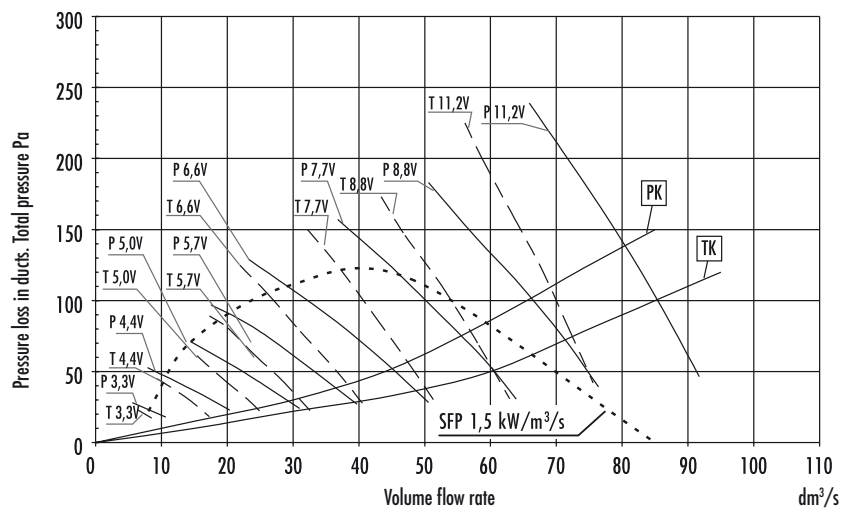
Measuring points after the connection outlet. Fan curves indicate the total pressure available for duct losses.



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



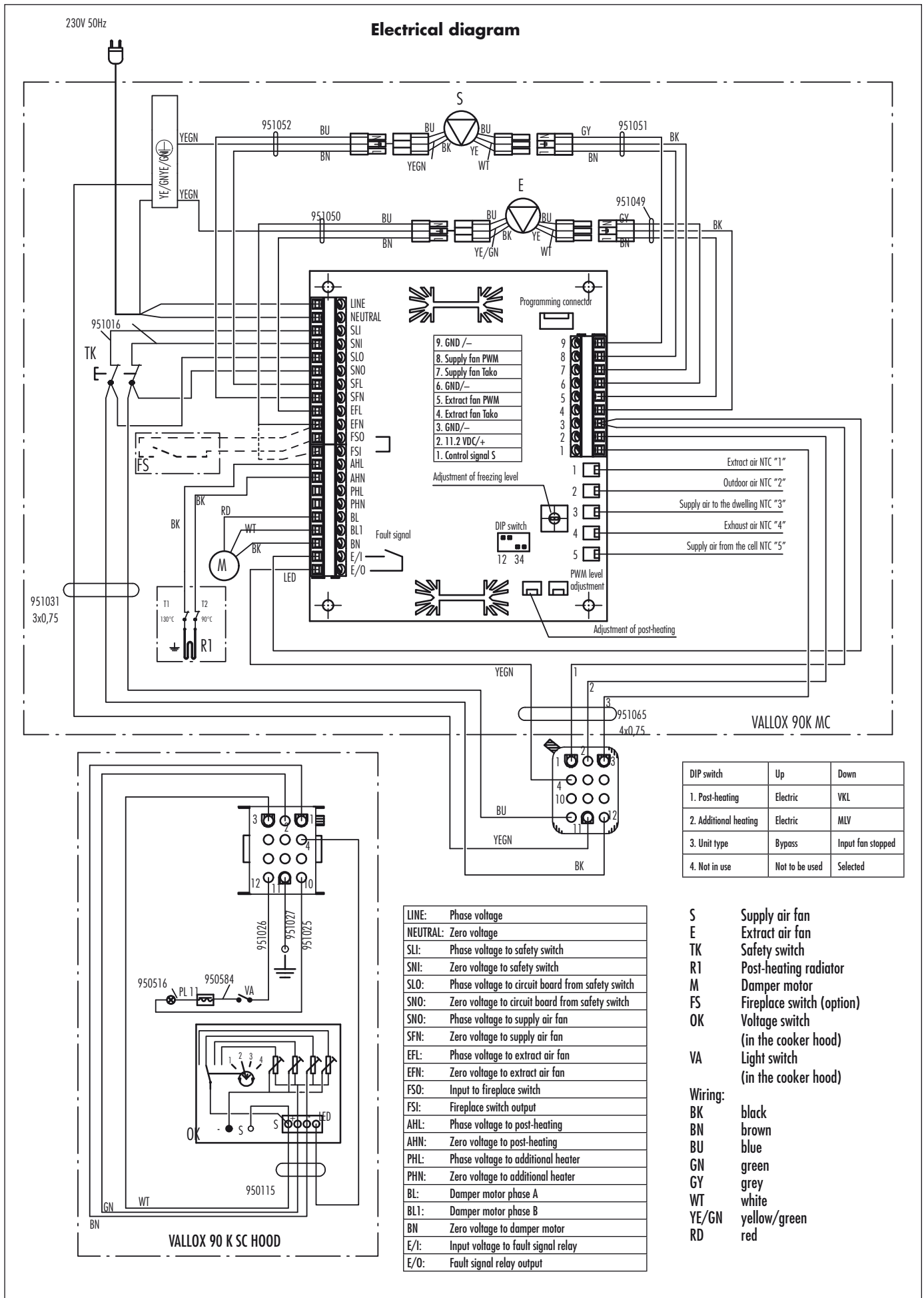
T = Supply air, fan speed 2...10V
P = Extract air, fan speed 2...10V
 $SFP = \frac{\text{Input power (total) (W)}}{\text{Air flow (max.) (dm}^3\text{/s)}}$ SFP (Specific Fan Power) recommended value <2.5 (kW/m³/s)
At a lower total pressure, SFP will be smaller at this speed.

Sound values

ADJUSTMENT POSITION AIR FLOW dm ³ /s	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			
	2	4	6	8	2	4	6	8
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	125	250	500	1000	2000	4000	8000
L _w dB	61.7	46.9	39.6	35.1	31.1	13.0		
L _w dB(A)	67.2	56.2	47.0	41.6	38.7	25.7	15.6	20.0
	73.1	64.3	54.4	18.6	45.7	34.4	27.5	36.0
	82.1	73.4	63.5	57.3	52.4	52.0	42.0	
	56.9	46.4	39.5	32.7	27.9	17.6		
	63.9	53.9	44.6	38.8	35.5	24.5	13.3	
	69.6	60.8	52.2	45.6	43.2	33.6	23.2	
	75.6	69.1	61.0	53.3	48.9	42.9	33.8	
	57.4	46.4	39.5	32.7	27.9	17.6		
	64.3	53.9	44.6	38.8	35.5	24.5	13.3	
	70.2	60.8	52.2	45.6	43.2	33.6	23.2	
	76.7	69.1	61.0	53.3	48.9	42.9	33.8	
	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 ² sound absorption)							
	ADJUSTMENT POSITION/AIR FLOWS (supply/extract)							
	2	4	6	8				
	17/24 l/s	29/39 l/s	44/56 l/s	69/81 l/s				
L _{pk} dB (A)	23.9	30.6	38.0	45.3				

Vallox 90K MC

(Sound values measured without cooker hood, cover plate and top cabinets beside)



MOUNTING INSTRUCTIONS

Mounting

VALLOX 90K MC has to be mounted in a place where temperature does not go below +10 °C.

Wall mounting

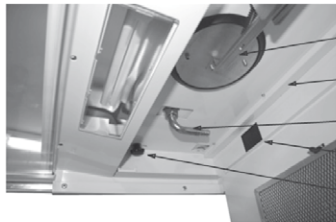
VALLOX 90K MC is mounted on the wall with a mounting plate as shown in the adjacent figure.

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

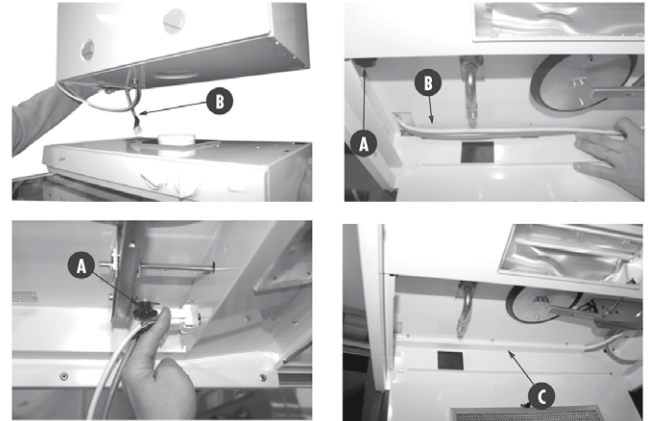
The delivery includes a water seal. By connecting a pipe to the water seal the water condensing from extract air can be led to a floor drain (not directly to the drain). The pipe must not rise after the water seal. The unit has to be mounted horizontally level, so that condensing water can get out of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

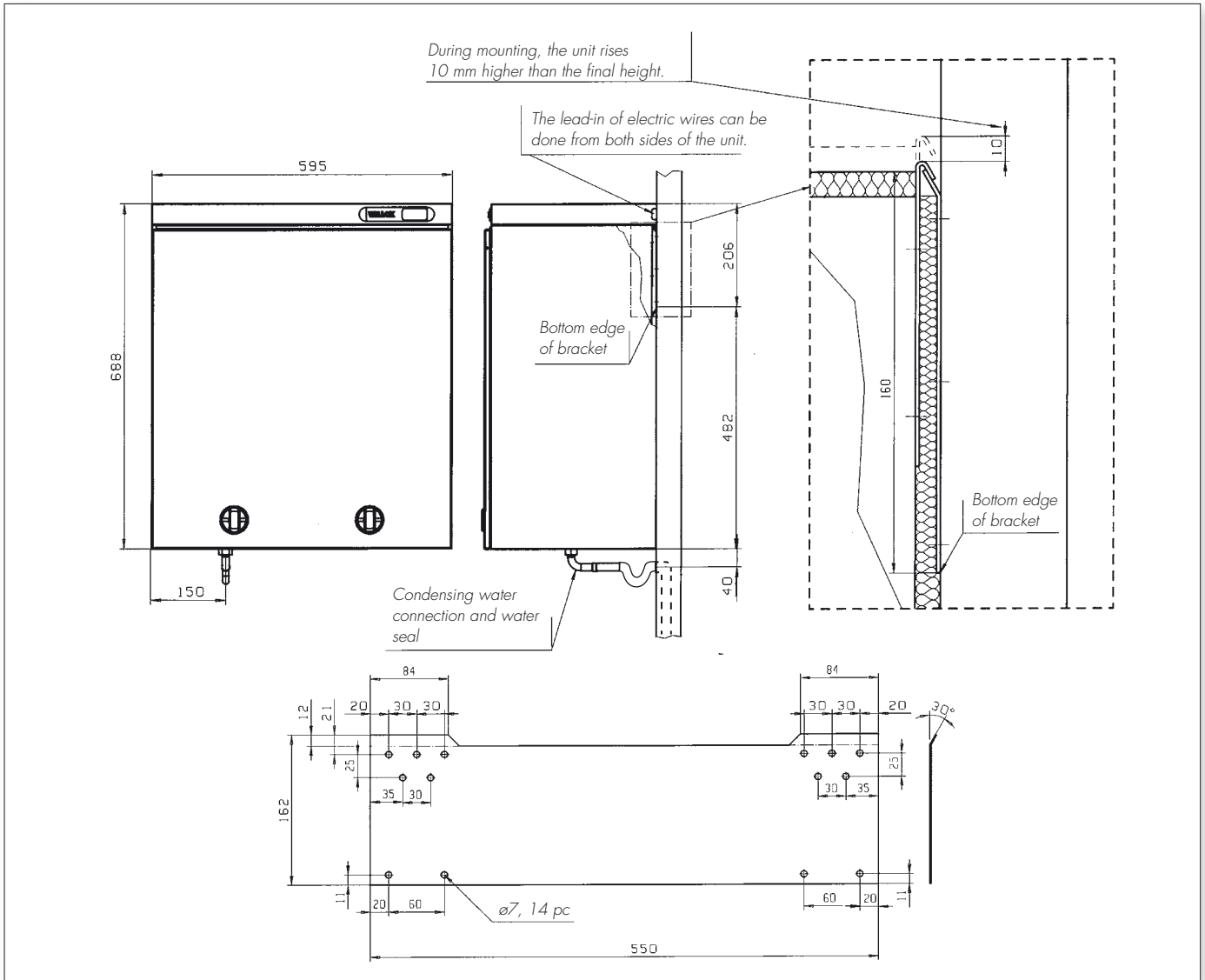


- Damper*
- Hood connection wire and wire shield*
- Condensing water outlet*
- Condensing wire outlet port*
- Knurled-head nut, fastening of hood*

Cooker hood mounting

The cooker hood is mounted at the bottom of the VALLOX 90K MC unit with knurled-head nuts (A), included in the accessory bag delivered with the unit. Open the cooker hood's bottom plate, which has the grease filter attached to it, lift the hood against the bottom of the ventilation unit and fasten the hood with the knurled-head nuts. Thread the connection wire (B) as shown in the figure, and use a wire shield (C) if needed





MC CONTROLLER



Set the speed knob in position 1 and detach the knob with for instance screwdriver.



There are adjustment and measurement holes between the knob.



Measure voltage at contacts – and S, adjust for instance speed 1 at potentiometer 1.



Put the knob back in place, turn the knob to the following speed position and detach the knob again.



Measure voltage at contacts – and S, adjust speed 2 at potentiometer 2, and so on.



You can also carry out the measurement at the terminal block, in locations shown in the electrical diagram.

Indicator

Indicator (A) shown in Figure 1 is lit when the MC ventilation unit controlled by the hood is on. If the indicator blinks at one-second intervals, the ventilation unit reminds of the need for maintenance. The reminder is given at half-year intervals. The maintenance reminder is reset when the cover of the ventilation unit is opened. The instructions for the ventilation unit also include explanations for other cases where the indicator blinks in fault situations.

The indicator is not in use if a cooker hood is used to control roof fans or other ventilation unit or the indicator is not connected to the ventilation unit.

Adjustment of fan speeds

A low signal voltage comes to the controller, which means that the adjustment can be made when the controller is connected and the ventilation unit is in operation.

- The adjustment is conducted in the four holes below the controller knob (Figure 2) one speed at a time, at the potentiometer corresponding to each speed.
- The voltage adjusted can be measured at the measuring points found below the knob (markings S and –) or on the terminal block below a black housing (markings S and –, see Figure 6) with a multimeter direct-current voltage measurement. The adjustment range is ~2...11.2 V.
- Control voltage (air flow) rises when the potentiometer is turned clockwise. The preset voltages are as follows: 2.5 V, 5 V, 7.5 V and 10 V.

Note! Do not set control voltage so low that the fan does not start (circa 1.5 V).

Sample adjustment of air flows:

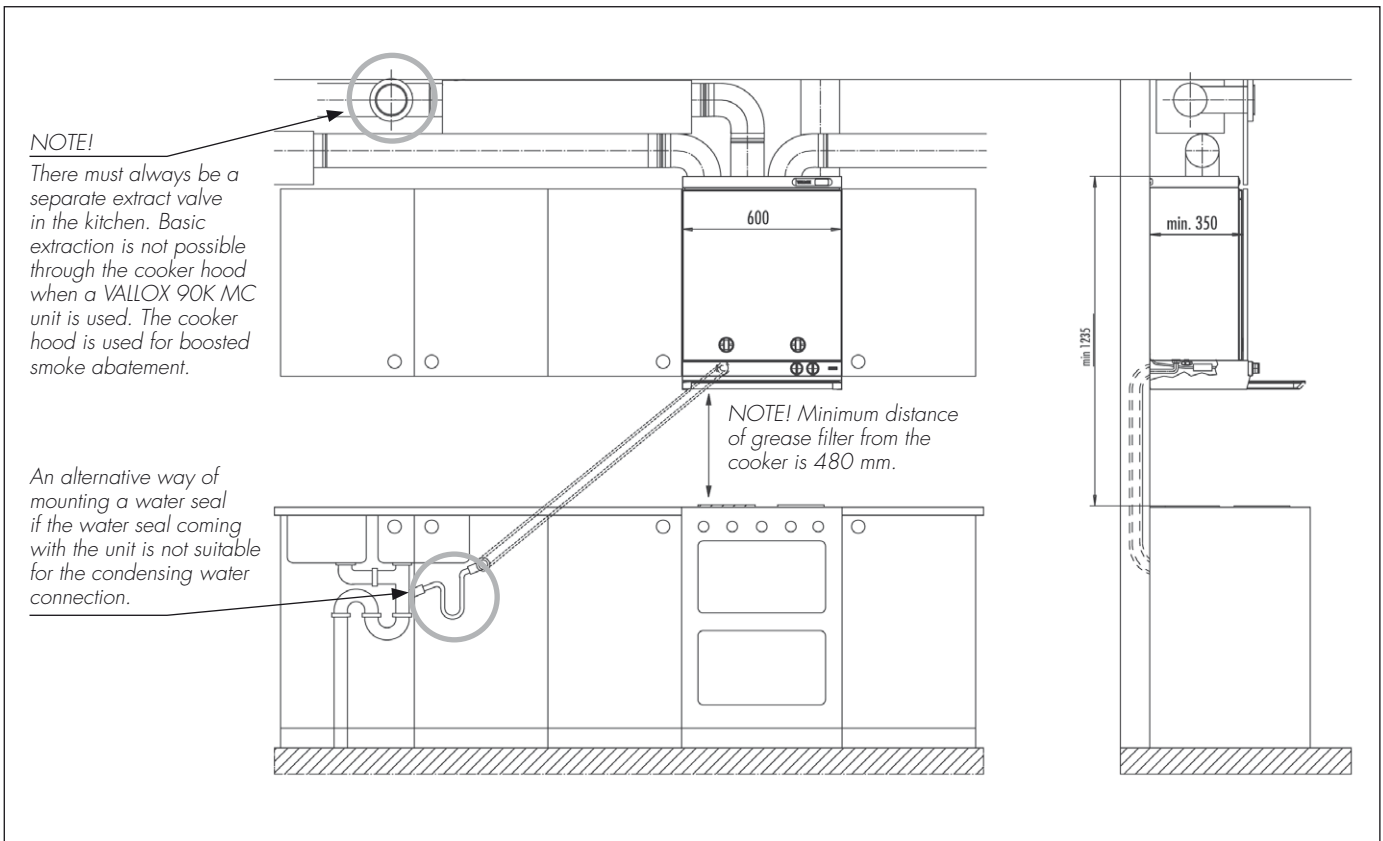
Basic ventilation is adjusted at speed 2.

- Set the controller at speed 2 and measure air flows at the valves.
- If the total air flow is too low, set the control voltage higher at potentiometer 2.
- If the total air flow is too high, set the control voltage lower at potentiometer 2.

Do not throttle the air flow unnecessarily with valves.

- The balance between supply and extract air flows in the Vallox MC ventilation unit can be adjusted with the potentiometer inside the unit. Do not change this balance during measurements carried out at other speeds.
- Adjust the absence air flows correspondingly at speed 1 (potentiometer 1).
- Adjust the boosting air flows correspondingly at speed 3 (potentiometer 3).
- You can usually leave speed 4 for full power.

Finally, measure voltage at all speeds at the measurement pins and enter them in the measurement record. In for instance a terraced house, you can use voltage measurement to copy the measurement in the first dwelling to other similar dwellings.



MOUNTING INSTRUCTIONS

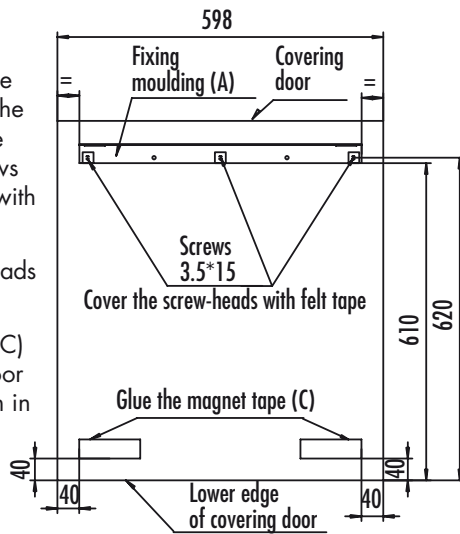
VALLOX 90K MC

Mounting of covering door brackets

Fasten the fixing moulding (A) to the covering door at the point shown in the figure, using screws 3.5*15 supplied with the unit.

Cover the screw-heads with felt tape.

Glue the magnet (C) to the covering door at the point shown in the figure.



Mounting of covering door

Insert the groove of the fixing moulding (A) at the upper of the covering door to the projections (B) at the upper edge of the ventilation unit's door.

Press the magnets (C) at the lower edge of the covering door on the door of the ventilation unit.

