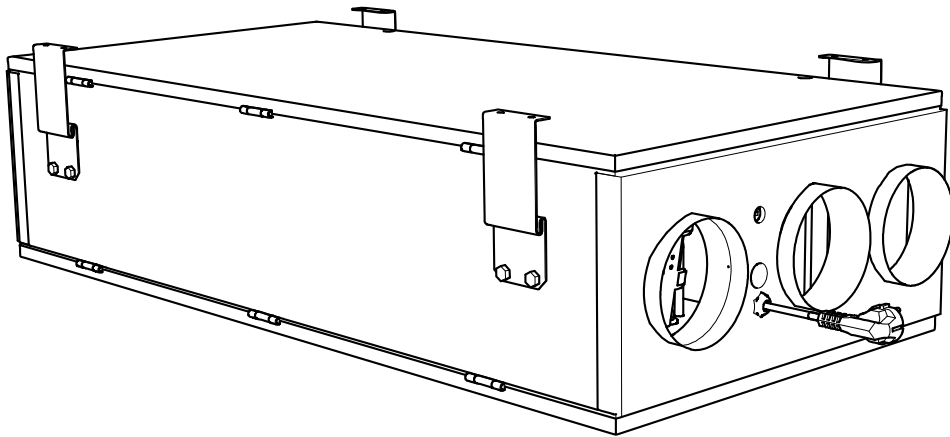


VR 250 ECH/B

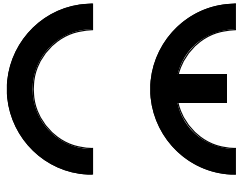
Air Handling Unit



GB Installation description

Manufacturer

Our products are manufactured in compliance with applicable international standards and regulations.



Systemair AB
Industrivägen 3
SE-739 30 Skinnskatteberg
SWEDEN
Office: +46 222 440 00
Fax: +46 222 440 99

The manufacturer hereby confirms that the following products:

Air handling units
VR 250 ECH/B

Comply with the following EC-directives:

EC Declaration of Conformity

as defined by the EC Low Voltage Directive 2006/95/EC

The following harmonized standards are in use:

EN 60 335-1

Electric domestic products and similar – safety-general requirements.

EN 60 335-2-40

Safety of household and similar electrical appliances - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers.

EN 50 106:2007 Electric domestic products and similar-Safety-Instructions for control of manufacture.

EC Declaration of Conformity

as defined by EC's EMC-directive 2004/108/EC

The following harmonized standards are in use:

EN 61000-6-3 Electromagnetic compatibility (EMC) part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments

EN 61000-6-2 Electromagnetic compatibility (EMC) – Part 6-2: Generic standards - Immunity for industrial environments

Complete technical documentation is available.

Skinnskatteberg, 09-04-2010



Mats Sándor
Technical Manager

Introduction

Installation, operation and maintenance manual concerns air handling unit type VR 250 ECH/B manufactured by Systemair AB. It consists of basic instructions and recommendations concerning the design, installation, start-up and operation, which shall be obeyed to ensure proper and fail-free operation of the unit. For proper and safe operation, read this manual thoroughly. Use the unit according to guidelines given and follow all safety requirements.

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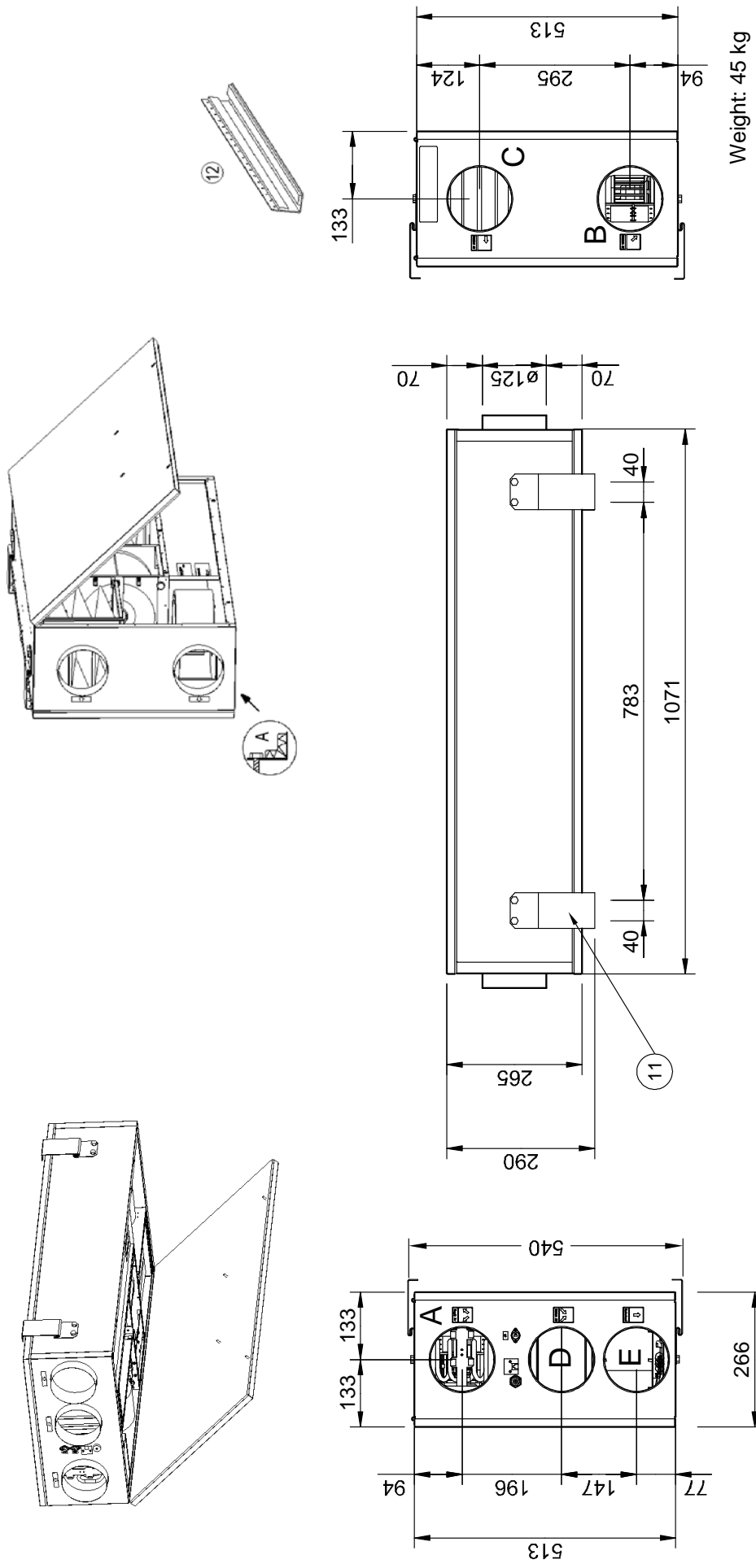
Safety information

In order to avoid electrical shock, fire or other damage which might occur in connection with faulty use and operation of the unit, it is important to consider the following:

Warning!

- **The Installation must be performed according to the installation instructions**
- **The unit is heavy, be careful when lifting and mounting the unit**
- **Beware of sharp edges when mounting and during maintenance. Use protective gloves!**
- **Tumble dryer must not be connected directly to the ventilation system**
- **Make sure that filters are mounted in their place before running the system**
- **Before performing any maintenance or electrical work make sure that the mains supply is disconnected.**

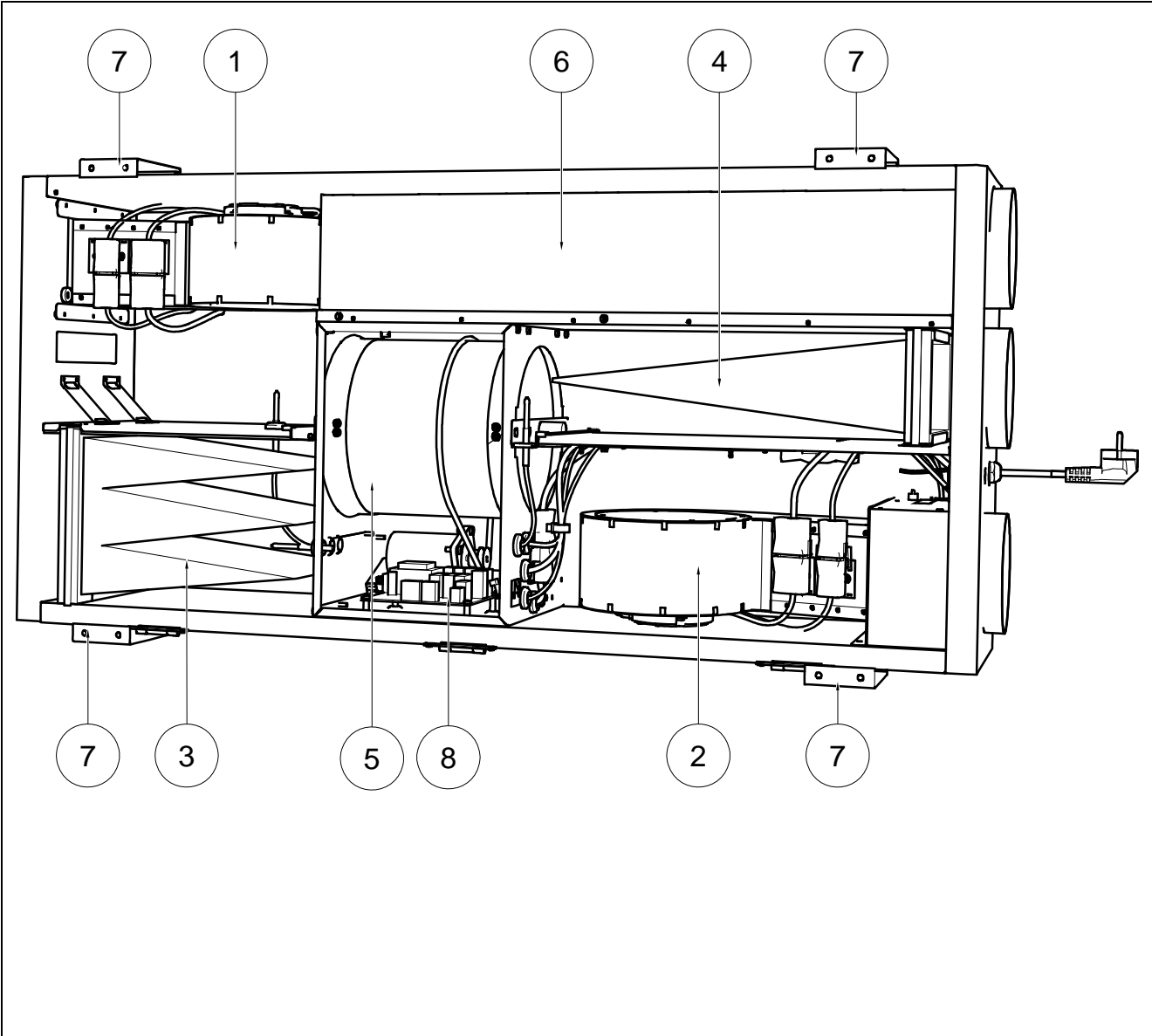
Dimensions and weight



Position	Description
A	Connection Supply air, Ø125mm
B	Connection Exhaust air, Ø125mm
C	Connection Outdoor air, Ø125mm
D	Connection Extract air, Ø125mm
E	Connection to cooker hood (if installed), Ø125mm
11	Mounting brackets (hanging installation)
12	Mounting brackets (wall installation)

Fig. 1

Component description VR 250 ECH/B



Position	Description
1	Fan extract air
2	Fan supply air
3	Filter supply air
4	Filter extract air
5	Heat exchanger
6	By-pass duct
7	Mounting brackets
8	Electrical connection box

Fig. 2

Transport and storage

VR 250 ECH/B is delivered in one piece lying on a pallet for easy transportation using a forklift. The unit should be stored and transported in such a way that it is protected against physical damage that can harm panels, handles, display etc. It should be covered so that dust, rain and snow cannot enter and damage the unit and its components. The appliance is delivered complete with all necessary components, wrapped in plastic on a pallet for easy transportation.

Where/how to install

General

The unit is designed for installation hanging under the ceiling, but can alternatively be installed hanging on the wall. Anti vibration brackets for hanging installation (4 pieces) are provided as a standard. Brackets for installation on the wall can be supplied as additional equipment. Inspection doors on both sides allow for flexible installation and simple duct runs. The inspection hatch can be opened through space for duct runs. Building of separate inspection door is therefore not necessary. VR 250 ECH/B can alternatively be installed in traditional joist layer, where min. opening between joists is 550 mm.

Note! Ensure that noise and fire-technical constructions are not affected.

When choosing the installation position, noise level and the fact that the unit requires regular maintenance must be considered. Make sure that one of the inspection doors is available for maintenance/service. Leave free space for opening of inspection door and removing of main components inside the unit.

If the unit is installed on a light wall construction towards a living room (e.g. bedroom), we recommend that the wall is insulated/constructed so that transfer of noise is avoided.

Recommended installation location for the fresh air intake is the northern or eastern side of the building and with a distance to openings for discharge of stale ventilation air, kitchen ventilator, central vacuum system, waste water drainage and other pollution sources like exhaust from traffic etc. Stale exhaust air should ideally be led via a roof unit to outside and with a good distance to any outdoor air intake, windows etc.

Ducting

General

Air to and from the unit is led through a duct system. To ensure long life and satisfactory cleaning possibilities, ducts made of galvanised steel (Spiro) are highly recommended.

Short pieces (max. 1 m) of flexible aluminium ducting can be used for connection between the unit and roof unit/wall grill.

To obtain high efficiency, low energy consumption and the required airflow the duct system should be commissioned for low air speeds and a low pressure drop. Female duct connectors, Ø125 mm, ensure flexible and space saving duct connections. If extra long lengths of discharge and/or fresh air duct is required, e.g. through naboring apartment, duct dimension should be increased to Ø160 mm in the shaft and all through to the roof unit/outdoor grill.

NOTE!

- **If the VR 250 ECH/B is not connected to a cooker hood, the connector on the unit must be plugged**
- **Do not connect tumble dryer to the ventilation system. Use separate duct from the dryer to outside**
- **Duct connections/duct ends should be covered during storage and installation**
- **Grill for discharge/roof unit must also be installed according to building regulations in force.**

Duct connections

Secure all joints between ducting and Tee-pieces, duct connectors, reducers etc. by means of special tape or 3 pieces self-drilling screws per joint. "Telescopic joint" on Villavent Zoom duct must be taped (**fig.4**).

Silencers

To avoid fan noise being transferred to rooms, install sound attenuators (pos.1, **fig.5**) on connectors for inlet air and extract air on the unit. (L = 1,0 m). Not from cooker hood.

To avoid noise being transferred between rooms via the duct system and also to reduce noise from the duct system itself, installation of sound attenuators before every inlet diffuser is recommended.

Flexible ducting

Use only flexible ducting (pos. 2, **fig. 5**) for connections between the unit and roof unit/grill for outdoor air intake.

Condensation/heat insulation

Outdoor air duct and discharge ducts must always be well insulated against condensation (**fig.6**). Correct insulation installation on ducts connected to the unit is especially important. All ducting installed in cold rooms/areas must be well insulated. Use insulating covering (minimum 100 mm mineral wool) with plastic diffusion barrier. In areas with extremely low outdoor temperatures during the winter, additional insulation must be installed. Total insulation thickness must be at least 150 mm.

NOTE! If the unit is installed in a cold place make sure that all joints are covered with insulation, and tape well.

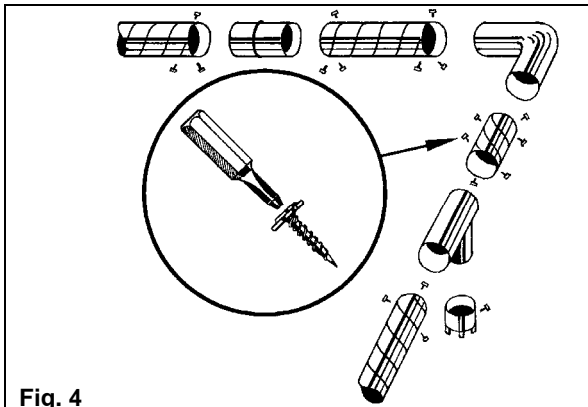


Fig. 4

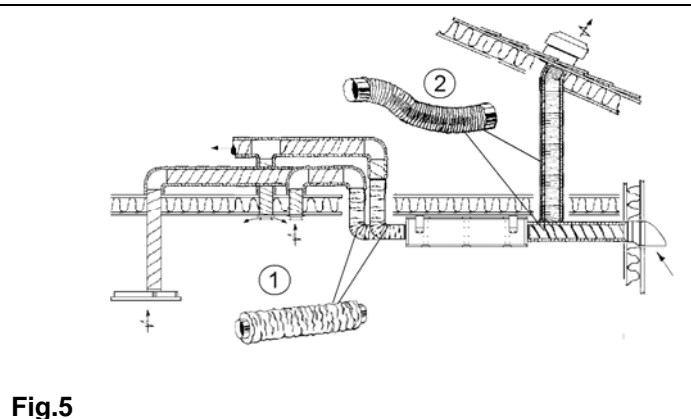


Fig.5

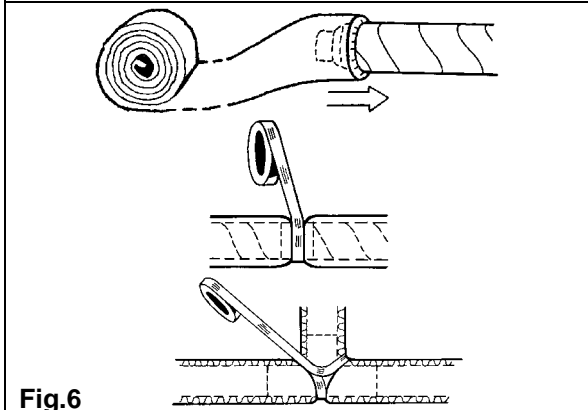


Fig.6

Diffusers/valves

Inlet diffusers, extract valves and cooker hood (**Fig. 7**)

Mount inlet diffusers in all living rooms, dining areas and bedrooms. Extract louvers to be installed in bathrooms, laundry room, WC and kitchen.

Note: Even if the cooker hood is connected to the unit, a separate extract louver must be installed in the kitchen.

In the VR 250 ECH/B the extract air from the cooker is led directly to the extract fan, bypassing the heat exchanger. In order to obtain heat recovery from the basic ventilation, the extract louver in the kitchen must be connected to pos.6, **fig. 1** together with extract from the wet rooms.

Note: The cooker hood must be equipped with a damper leaving no opening in closed position (without opening for basic ventilation). Bung, provided with the cooker hood must be mounted.

Air stream from inlet diffuser mounted on the wall (where the ceiling is horizontal), must have throw length, so that the air is supplied to the room alongside the ceiling. Air supply through extract louvers will ensure an air stream with throw length, and extract louvers can therefore be used as inlet diffusers when mounted in the wall close to the ceiling. Use frames to ease the removing of diffusers for cleaning.

Use frames to ease the removing of diffusers for cleaning.

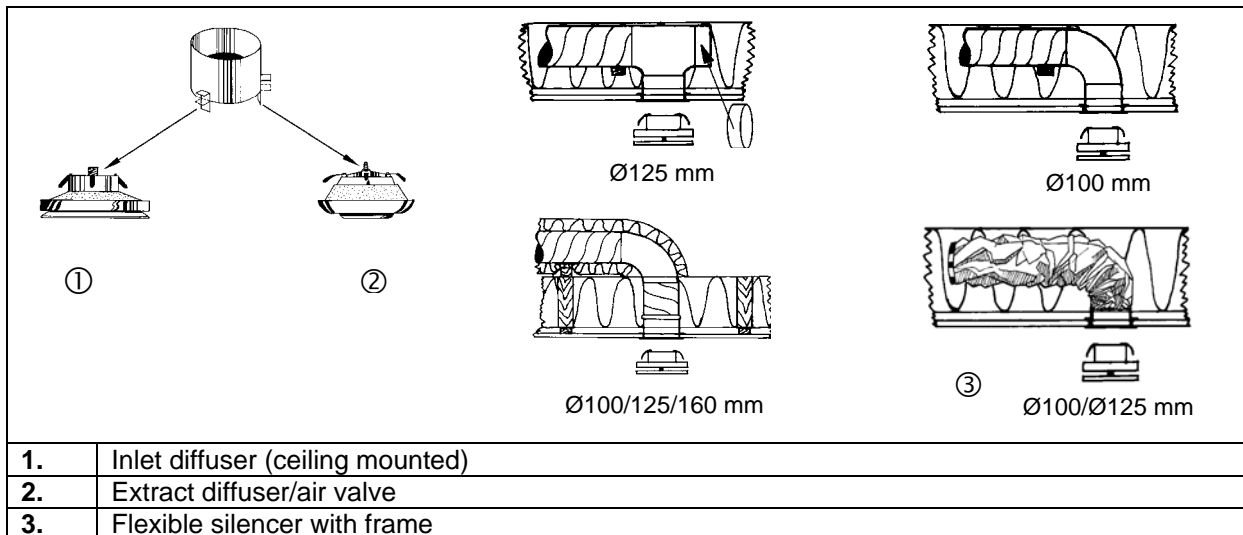


Fig.7

Setting airflow

For basic setting of inlet diffusers, open core of the diffuser 5-7 turns from closed position. Lock by means of centre nut. For basic setting of extract louvers, open core of the diffuser 10 turns from closed position.

Lock by means of centre nut. For adjustment of air volumes to each separate room, setting on diffusers/louvers are to be made in accordance with calculations made during designing of the ventilation system or during commissioning of the system (special measuring equipment required).

Air circulation between rooms

To obtain a satisfactory air circulation, a small gap should exist around the doors between rooms with inlet diffusers (living rooms and bedrooms) and rooms with extract points (bathroom, WC, kitchen, laundry rooms etc.) (**fig.8**). Install doors with slots in the frame, doors without door sill or slots/vents in doors/walls (min. 70 cm² free area per extract diffuser).

Fireplace, kitchen ventilator, tumble dryer etc.

Balanced ventilation is obtained where the VR 250 ECH/B is installed. There will normally be no under pressure in the building, and therefore no risk for back draught from fireplace or chimney (**fig. 9**).

An open fireplace requires an air supply of 150 - 300 m³/h (42 - 84 l/s) for maximum functionality and efficiency. This equals 300 cm² ventilation slots per fireplace. Supply air duct directly to the fireplace would be the optimal solution, but 2 pieces 16x16 cm closing vents in outer wall is a good alternative.

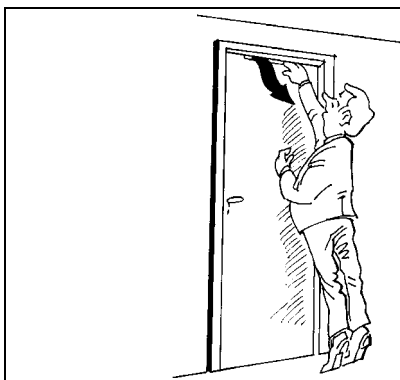


Fig. 8

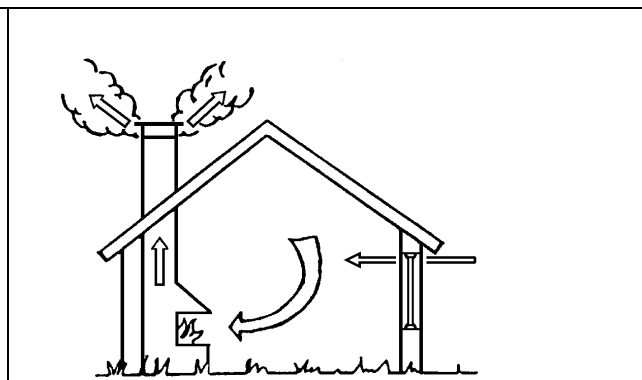


Fig. 9

When cooker hood is connected to the VR 250 ECH/B, the airflow will automatically be increased when kitchen extract is in use. A minor under pressure in the building could occur. This can be solved by slightly opening a window or by leaving a vent in the wall open while cooking.

Even when cooker hood is connected to the VR 250 ECH/B, approximately full balanced ventilation is maintained, also when extract from cooker is in operation. 16x16 cm vents could be installed for air supply to tumble dryer and kitchen ventilator (one for each). An open window will also give the required air supply to fireplace, kitchen ventilator and tumble dryer.

Electrical connection

The VR 250 ECH/B (pos.2, **fig.10**) is supplied with approx. 1 m cable and plug for 10A, 230V, and single phase earthed connection.

The cooker hood

The VR 250 ECH/B is designed for connection to cooker hood (pos.1, **fig.10**). The cooker hood is provided with approx. 1 m cable and plug for 10A, 230V, single phase earthed connection and approx. 1 m cable for potential free signal to unit. When opening the timer operated damper in the cooker hood, the fans in the VR 250 ECH/B will automatically go to maximum capacity. Install a 2 lead wire for potential free signal from cooker hood to the unit. The wire may be fixed to the extract duct or installed in electrical tube.

Connect the cable from the cooker hood as shown in pos.1, **fig. 10a**, by means of the provided plug.

Separate controller

VR 250 ECH/B is controlled from one or more separate control panels. For necessary signal between control panel and unit, an unscreened, 4-lead cable (12V) can be installed. (Screened cable to be used in areas exposed to EMC noise). Install extension cable with plugs (12V) between separate control panel, and the unit (pos.3, **fig. 10a**). Alternatively install it between terminal blocks in control panel and unit marked 12V, GND, Hi and Lo inside the unit (see wiring diagram). Use 4x0.22 or 0.5 mm² cable when connecting between terminal blocks.

The controller is adaptable in ELKO frame system, and designed for both flush installation and for installation on the wall by means of an 18 mm double frame. When more than one controller is installed, use one or more double inlet plugs in the plug on the unit as necessary.

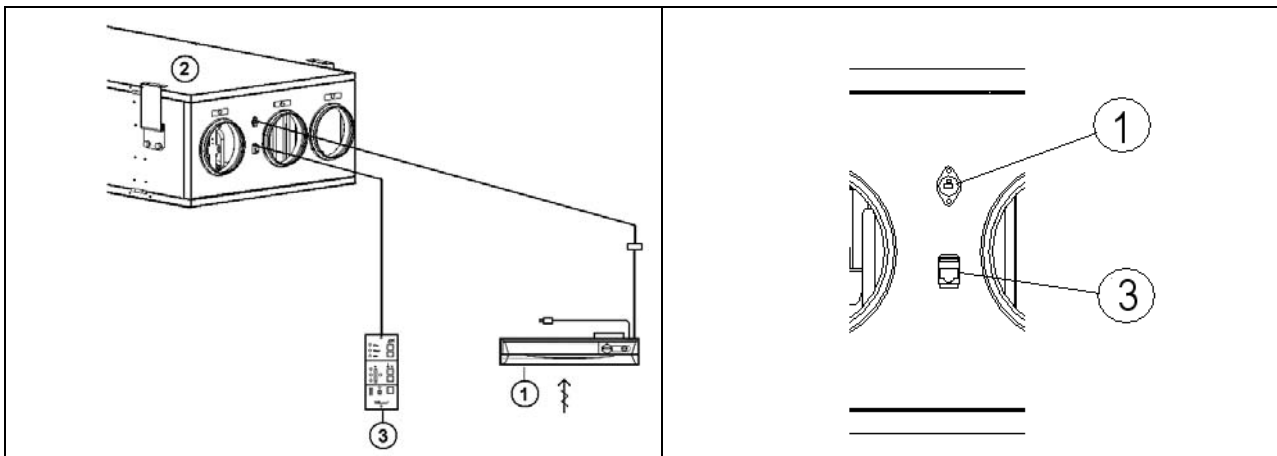


Fig. 10

Fig. 10a

Possible extra functions

It is possible to achieve different optional functions by altering the positions of 4 dip-switches that are found on the main print card (**fig. 11**) situated in the electrical connection box (**fig.2**). The following alternative functions can be achieved:

Dip-switches No.				Function description
1	2	3	4	
On				Stop at night operation
Off				Low speed at night operation (default)
	On			Operation with heater (default)
	Off			Operation without heater
		Off		No monitoring of processor values (default)
			On	Supply air fan and extract air fan will deliver the same air volume (default)
			Off	Supply air fan will deliver a 5% lower air volume than the extract air fan

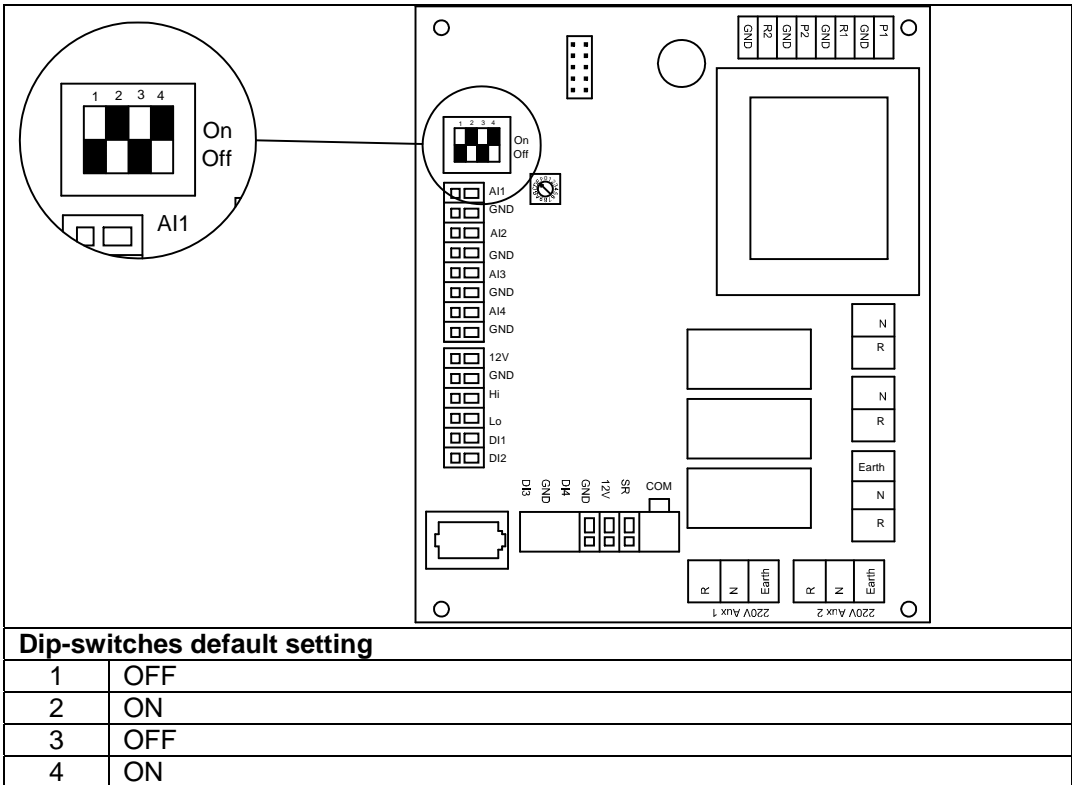


Fig. 11

Commissioning

When the installation is finished, check that:

- The unit is installed in accordance with instructions
- Sound attenuators are installed or that the duct system is correctly connected to the unit
- There is no noise from the unit or from diffusers and louvers
- Outdoor air intake and discharge is installed so that short circuit of the air streams is avoided
- Outdoor air intake is positioned with sufficient distance to pollution source (kitchen ventilator exhaust, central vacuum system exhaust or similar)
- Control panel and lamp signals function (see user and maintenance instructions, "Operation")
- Cooker hood (if installed) is operating (see User and maintenance instructions, "Kitchen Extract")
- The cooker hood must be equipped with a damper leaving no opening in closed position (without opening for basic ventilation).

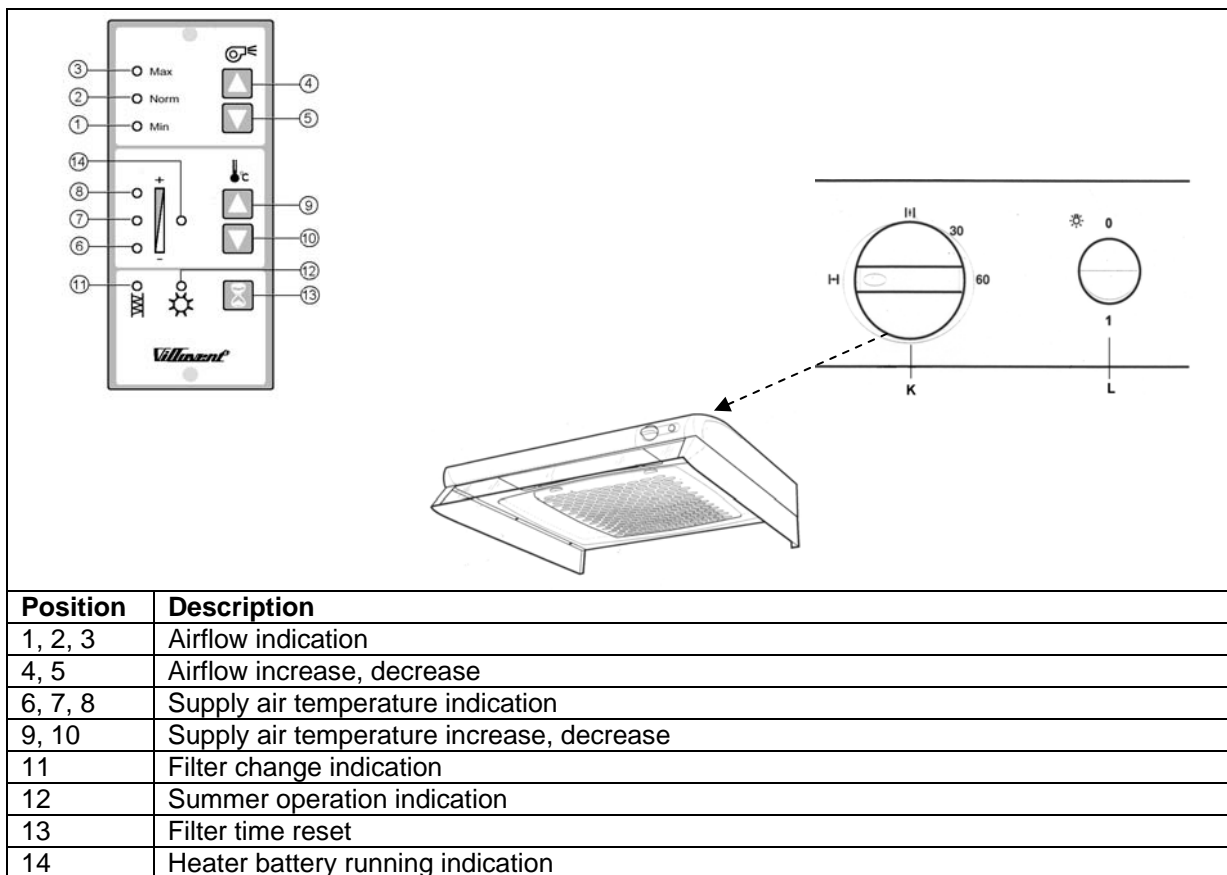


Fig 12

Before starting the system

- Choose required airflow at normal fan speed as follows:
Set the normal fan speed from a potentiometer on the print card in the unit (see **fig. 13**). The potentiometer is set by using a screw driver. Each setting corresponds to a different fan speed based on certain voltage output to the fans (see **table 1**). To get an idea of the airflow corresponding to each setting see **fig. 14** showing a fan performance diagram displaying performance curves for supply air and extract air.

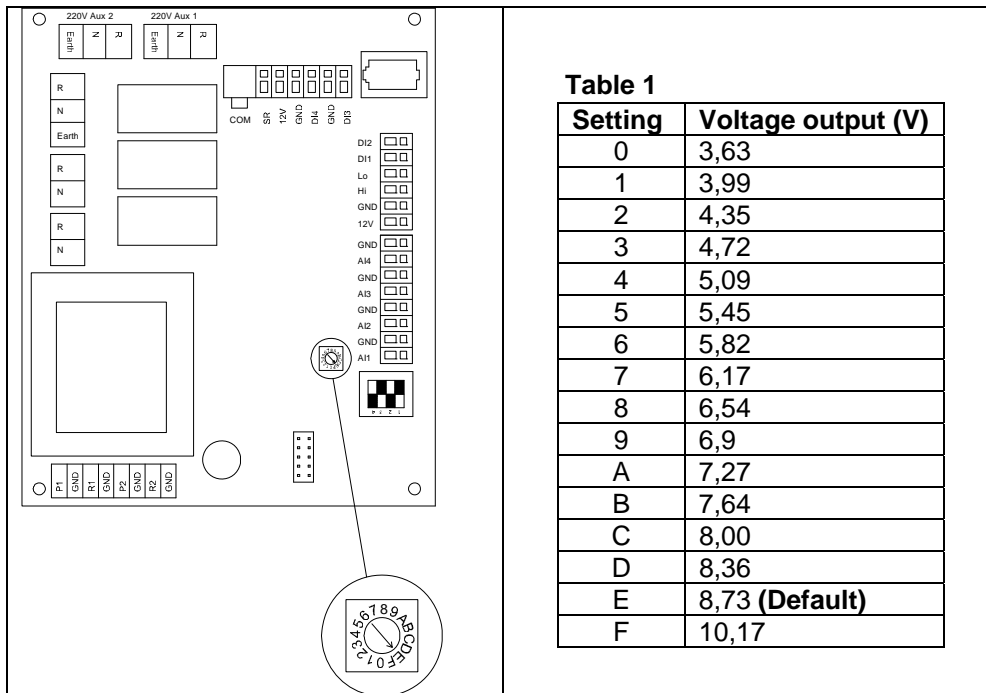
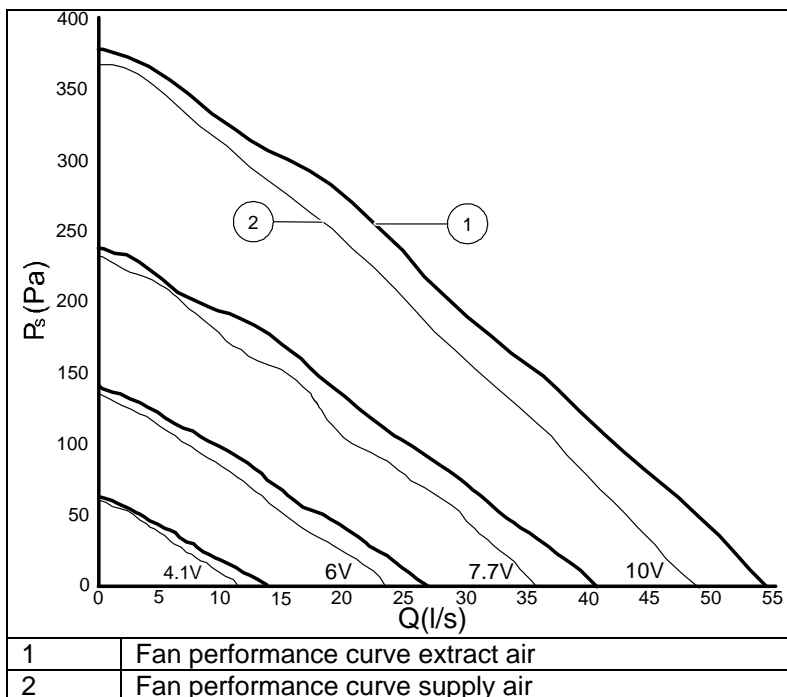


Fig. 13



- Adjust diffusers and louvers in accordance with commissioning or basic setting (see "Diffusers/Louvers"). Make sure that the inlet diffusers are set so that the air stream is not lead towards visible joist, wall etc. close to the diffuser.

3. Chose supply air temperature (see user and maintenance instructions, "Operation").
4. Chose operation time for filter (**fig. 12**). Standard factory setting is 9 months. This is sufficient in areas where the outdoor air has a satisfactory quality. If the outdoor air is polluted by exhaust from traffic, industry etc, filter change every 6 months is recommended. Even if the outdoor air quality is good, and the fresh air filter is not clogged, maximum recommended operation time for filters is 12 months (Smells and organic pollution will reduce the supply air quality). To increase or reduce the operation time for filters, press buttons (13) and (9) or (13) and (10) simultaneously. Setting is confirmed by flashing light in lamp (14) and constant light in:
 - Lamp (6) for 6 months operation time between changing filter
 - Lamp (7) for 9 months operation time between changing filter
 - Lamp (8) for 12 months operation time between changing filter

Additional accessories

For more information about silencers, diffusers/louvers, roof units, wall grilles etc. see technical catalogue and installation respective instructions.



Systemair AB
Industrivägen 3
739 30 Skinnskatteberg, Sweden
Phone +46 222 440 00
Fax +46 222 440 99

206609 (17-09-2010)