USER'S MANUAL

VUT 300 V mini EC Comfo
VUT 300 H mini EC Comfo

Air handling unit with heat recovery

CONTENT

INTRODUCTION

This user's manual contains technical description, operation, installation and mounting guidelines, technical data for the air handling unit with heat recovery VUT 300 V (H) mini EC Comfo, VENTS series, hereinafter referred as the unit.

USE

The air handling unit with heat recovery is designed to save thermal energy by means of heat recovery and is one of the energy saving components used in buildings and premises. The product is a component unit and is not designed for separate operation.

The unit is designed to provide permanent controllable air exchange by mechanical ventilation in houses, offices, hotels, cafés, meeting halls and other mechanically ventilated premises as well as utilization of extract air heat energy to warm up supply purified air.

Transported medium must not contain any flammable or explosive mixtures, evaporation of chemicals, coarse dust, soot and oil particles, sticky substances, fibrous materials, pathogens or any other harmful substances.

THE UNIT IS NOT INTENDED TO BE USED BY CHILDREN, PHYSICALLY OR MENTALLY DISABLED PERSONS, PERSONS WITH SENSORY DISORDER, PERSONS WITH NO APPROPRIATE EXPERIENCE OR EXPERTISE.

ONLY QUALIFIED EXPERTS ARE ALLOWED TO OPERATE THE UNIT AFTER APPROPRIATE INSTRUCTION ABOUT ITS USE AND OPERATION.

INSTALL THE UNIT TO BE OUT OF REACH OF CHILDREN.

DELIVERY SET

- unit VUT 300 V (H) mini EC Comfo - 1 item;
- remote controller - 1 item;
- user's manual - 1 item;
- packing box - 1 item.

DESIGNATION KEY

VUT 300 X mini EC X Comfo

Side modification
L - left-hand; R - right hand

Motor type
EC - electronically commutated

Spigot orientation
V - vertical; H - horizontal

Air capacity [m³/h]

Unit type
VUT - heat recovery ventilation;

TECHNICAL DATA

The unit is designed for indoor application with the ambient temperature ranging from +1°C up to +40°C and relative humidity up to 80%.

The unit must be grounded.

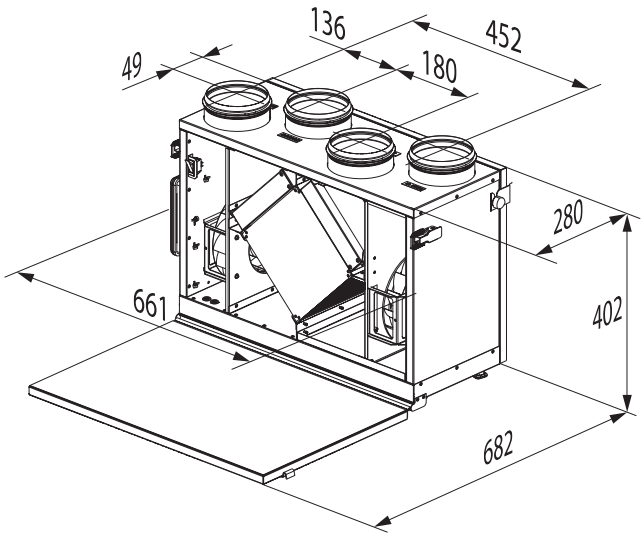
Hazardous parts access and water ingress protection standard:

- Unit motors - IP 44;
- Unit assembly connected to air ducts - IP 22.

The unit overall and connecting dimensions, external view, technical data are shown in fig. 1 and in table 1. The technical data of the remote controller are stated in the table 2.

The unit design is regularly being improved, so some models can slightly differ from those ones described in this manual.

VUT 300 V mini EC Comfo



VUT 300 H mini EC Comfo

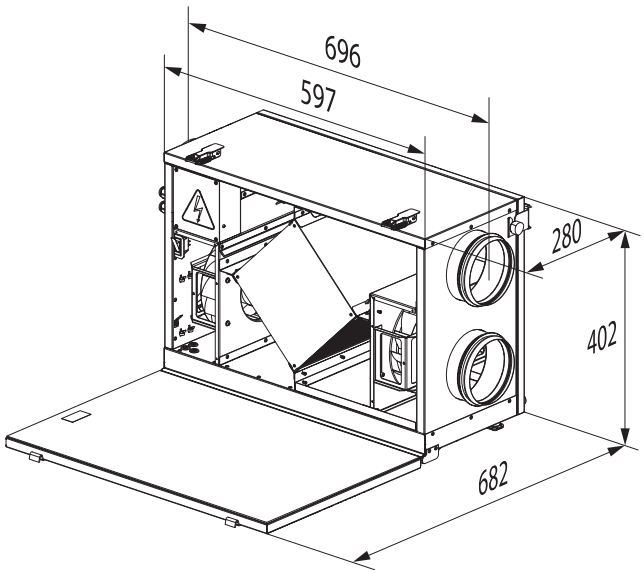


Fig. 1. Overall and connection dimensions

Table 1. Unit technical data

Type		VUT 300 V mini EC Comfo VUT 300 H mini EC Comfo
Unit voltage 50/60 Hz [V]		1 ~ 230
Total unit power [kW]		167
Total unit current [A]		1,13
Max. air capacity [m^3/h]		300
Rotation speed [min^{-1}]		3200
Noise level, 3 m [dB(A)]		28-47
Max. transported air temperature [°C]		from -25 up to +60
Casing material		Painted steel
Insulation		20 mm mineral wool
Filter:	extract	G4
	supply	G4/F7(EU7)
Connected duct diameter [mm]		Ø 125
Weight [kg]		23
Heat recovery efficiency		up to 78%
Heat exchanger type		Cross flow
Heat exchanger material		Aluminum

Table 2. Remote controller technical data

Ambient temperature [°C]	from +5 to +40
Relative humidity [%]	from 5 to 80 (no condensate)
Cable cross section [mm^2]	from 0.25 up to 0.35
Material	ABS plastic
Dimensions WxHxL [mm]	86x86x14
Cable length [m]	up to 10
Ingress Protection	IP30

SAFETY REQUIREMENTS

While operating and mounting the unit consider the requirements of the present operation manual as well as general requirements of all applicable local and national building and electrical codes and standards.

The unit must be grounded!

Before connecting the unit to power mains make sure that the unit is free of any visible damages or any other foreign objects inside the casing that can damage the impeller blades. Otherwise please contact the service center.

WARNING!

DISCONNECT THE UNIT FROM POWER SUPPLY PRIOR TO ANY MOUNTING, SERVICING, CONNECTION OR REPAIR OPERATIONS WITH THE UNIT.

RESTRICTIONS

- **DO NOT OPERATE THE UNIT BEYOND THE SPECIFIED TEMPERATURE RANGE OR IN AN AGGRESSIVE AND EXPLOSIVE MEDIUM!**
- **DO NOT CONNECT CLOTHES DRYERS OR SIMILAR EQUIPMENT TO THE VENTILATION SYSTEM!**
- **DO NOT OPERATE THE UNIT IN THE AIR AND DUST MIXTURE MEDIUM!**

DESIGN AND OPERATING LOGIC

The unit design and operating logic are shown in fig. 2. Warm stale air from the premises enters the unit through the air ducts and flows to the extract filter, where it is stripped of impurities, then it is extracted through the heat exchanger to outside.

Cool fresh air from outside enters the unit through the air ducts and flows to the supply filter, where it is stripped of impurities. Then air is passes through the heat exchanger and is supplied to the premise by means of the supply fan.

The heat exchanger ensures thermal energy exchange between the warm stale air from indoors with the cool fresh air from outdoors without mixing both air flows. Such technology reduces heat energy losses and, consequently, the heating costs in the cold season.

The unit design and operating logic are shown in fig. 2.

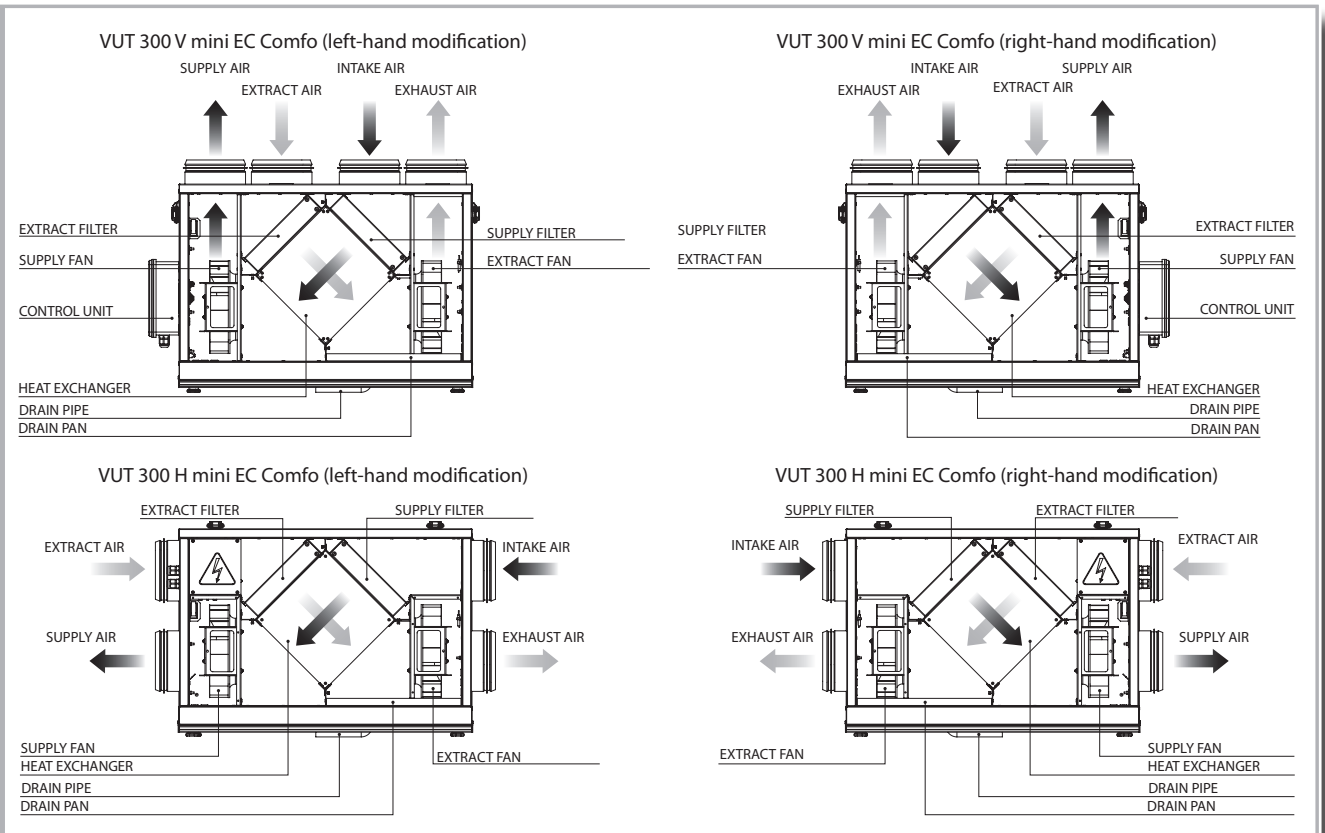


Fig. 2. Unit design and operating logic

MOUNTING AND SET-UP

While installing the unit ensure convenient access for subsequent maintenance or repair. The unit is designed for mounting on a horizontal plane as well as wall mounting with a fixing bracket, fig. 3 that is fastened with three screws and dowels (not in the delivery set).

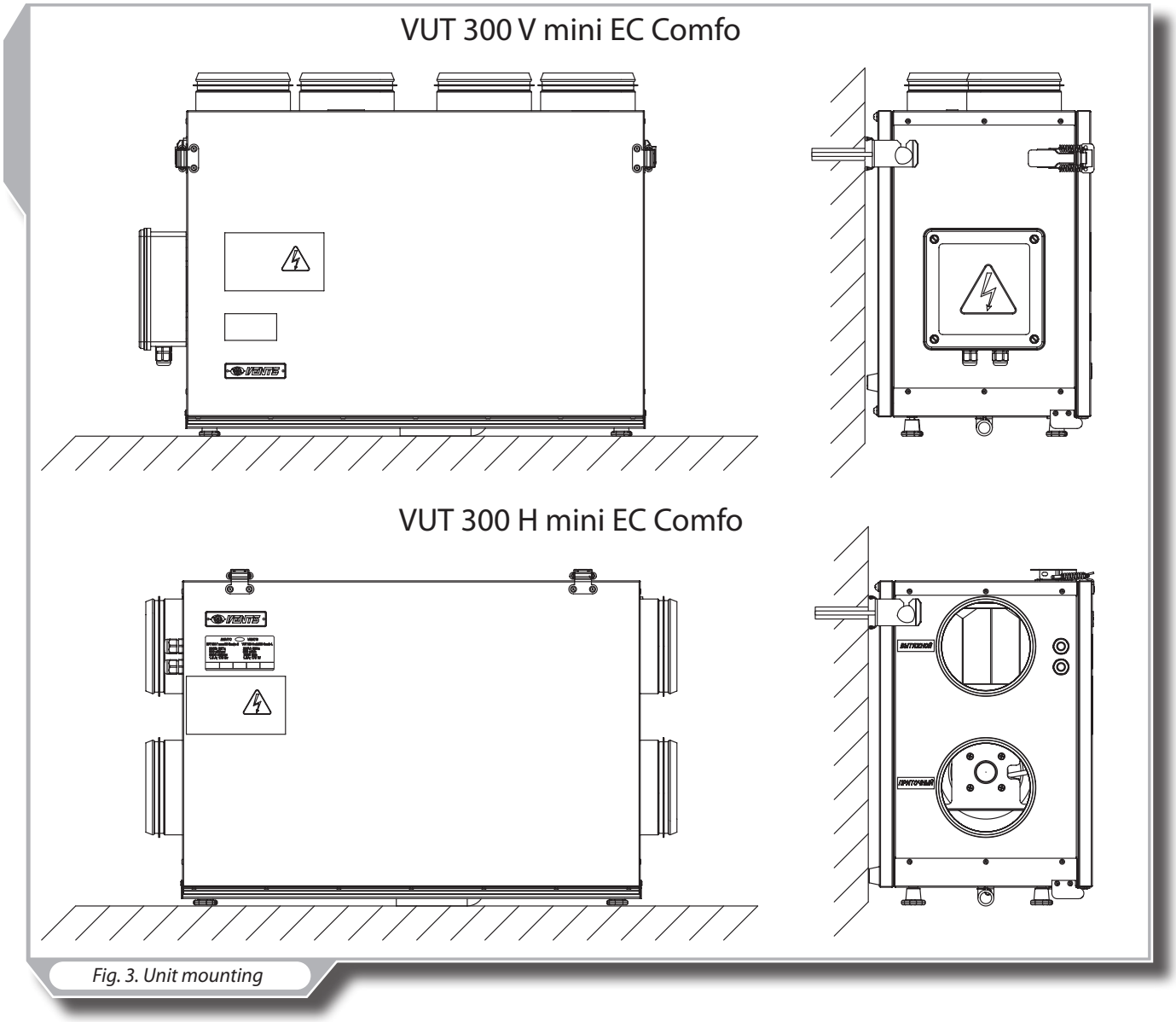


Fig. 3. Unit mounting

Connect a straight air duct section not shorter than 900 mm on both sides of the unit to ensure the best efficiency of the unit.

The unit must be protected against unauthorized access to the fans with a grille or any other protecting device with a mesh width not more than 12 mm.

The unit is available in left- and right-hand modifications to facilitate mounting, fig. 2.

CONDENSATE DRAINAGE

Connect the drain pipe , U-trap (not in the delivery set) and sewage collection system with metal, plastic or rubber pipes. The pipe pitch must be at least 3° downwards. Fill up the system with water before connecting the unit to the power mains! During the operation the U-trap must be filled with water at all times. Make sure that the water flows freely into the sewage collection system, otherwise condensed water may build up in the unit during the heat exchanger operation which, in turn, may cause equipment failure and water ingress into the premises.

The condensate drainage system is designed for normal operation in premises with air temperatures above 0 °C. If the expected air temperatures are below 0 °C the condensate drainage system must be equipped with heat insulation and pre-heating facilities.

DO NOT CONNECT SEVERAL DRAIN PIPES FROM SEVERAL AIR HANDLING UNITS TO ONE U-TRAP!

DIRECT CONDENSATE OUTSIDE WITHOUT CONNECTION TO DRAIN SYSTEM IS NOT ALLOWED!

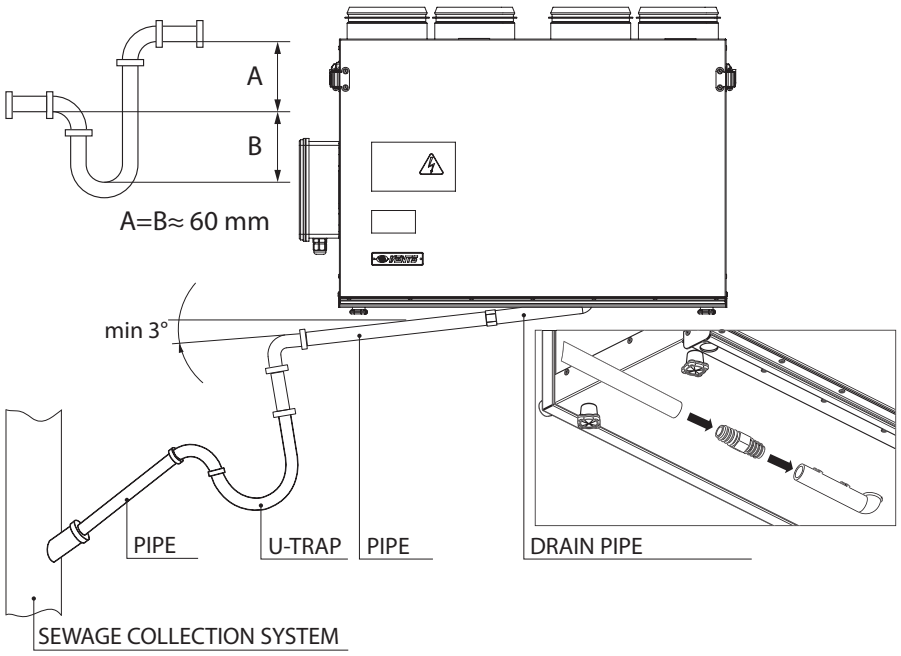


Fig. 4. Condensate drainage

CONNECTION TO POWER MAINS

DISCONNECT THE UNIT FROM POWER MAINS PRIOR TO ANY OPERATIONS. CONNECT THE UNIT TO A CORRECT INSTALLED AND GROUNDED SOCKET. THE RATED ELECTRICAL PARAMETERS OF THE UNIT ARE SHOWN ON THE MANUFACTURING STICKER. ANY INTERNAL CONNECTION MODIFICATIONS ARE NOT ALLOWED AND RESULT IN WARRANTY LOSS.

The unit is rated for connection to single-phase ac 230 V / 50 Hz power mains. For wireworks facilitation, the unit is supplied with a pre-wired power cord and a plug. The wiring diagram is shown in fig. 5.

Connect the unit to power mains through the external automatic circuit breaker with magnetic trip integrated into the fixed wiring system. The rated current of the circuit breaker must be not less than the unit current consumption, refer table 1.

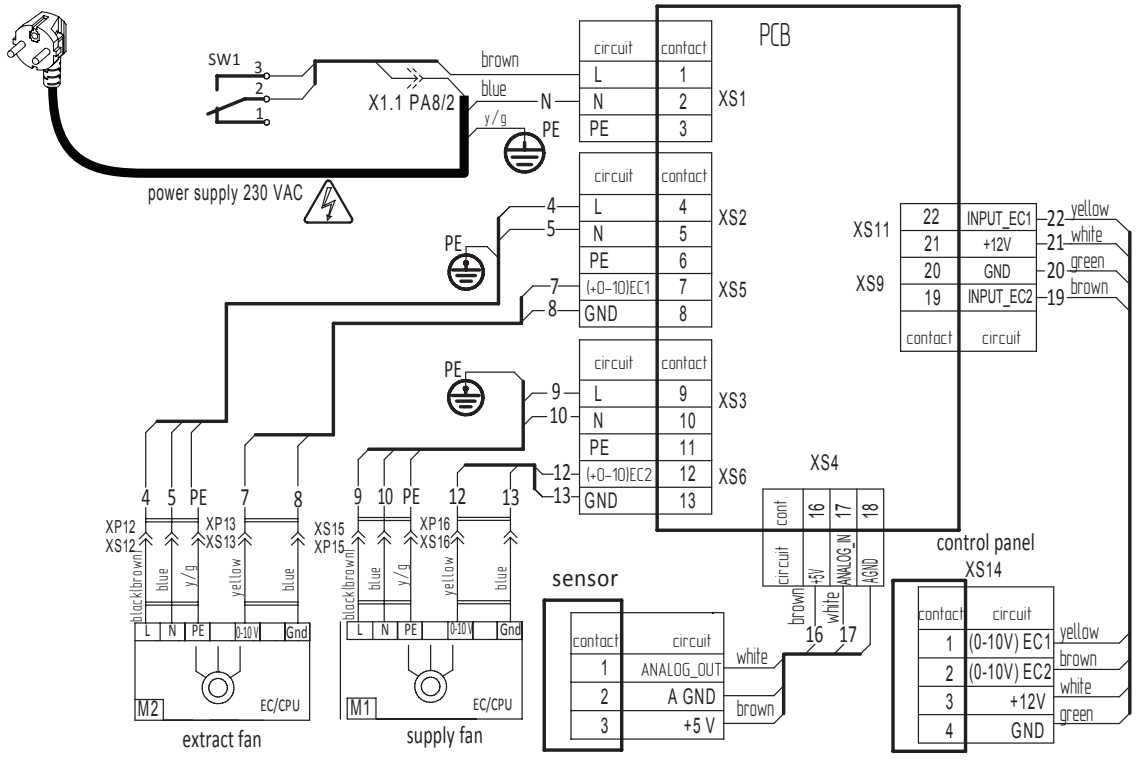


Fig. 5. Wiring diagram

UNIT CONTROL

The unit is controlled with a remote controller, fig. 6.

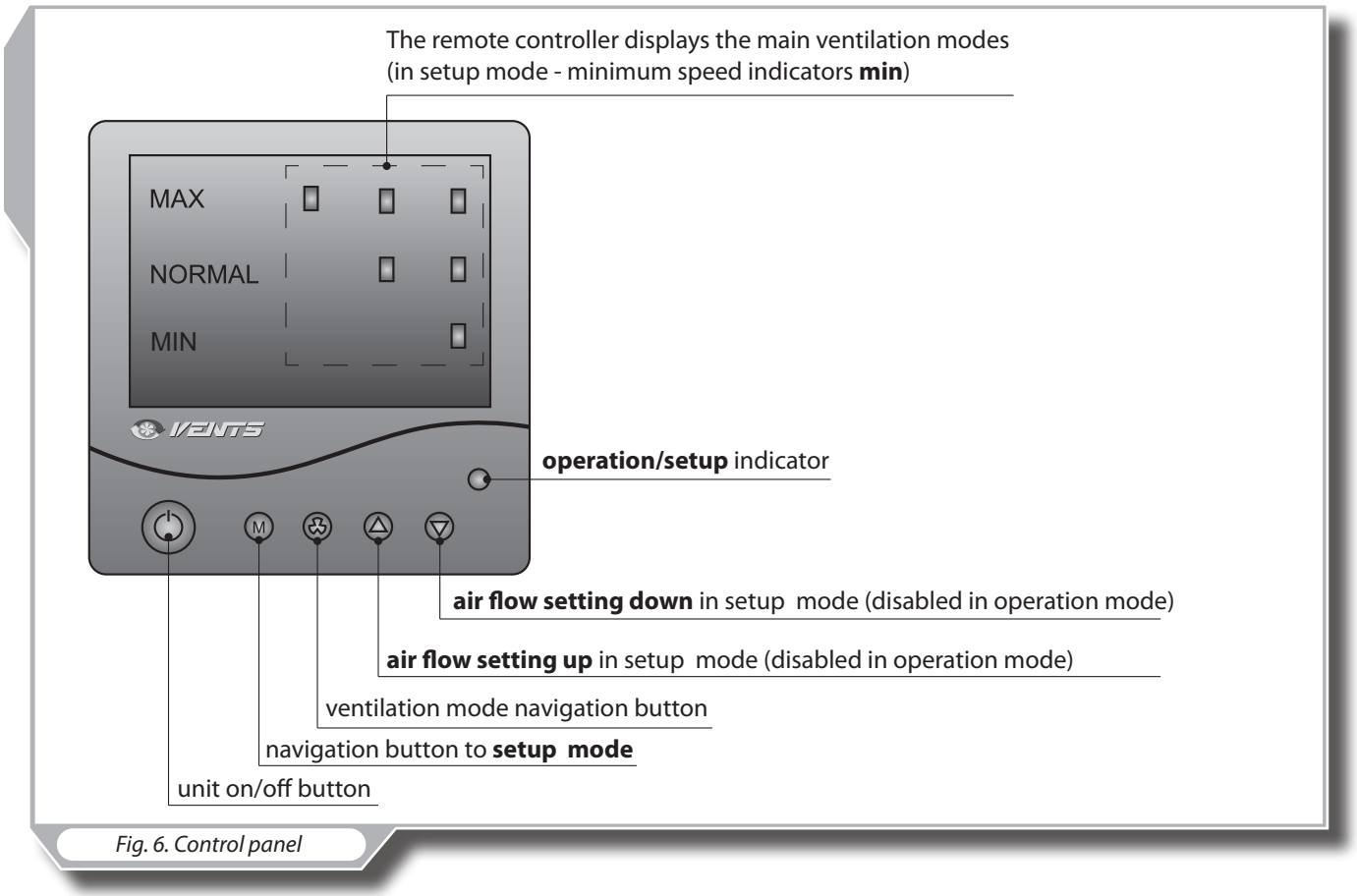


Fig. 6. Control panel

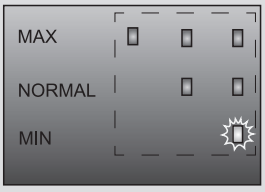
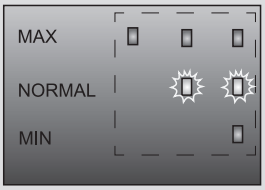
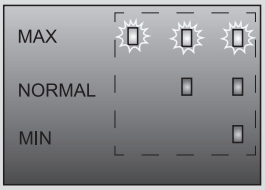
1. Ventilation Mode Control.

The unit has the following ventilation modes:

- MIN - main ventilation mode. Air flow rate is selected in setup mode in compliance with table 3, refer clause 2, section Setup mode, page 9);
- NORMAL - air capacity is by 80 m³/h higher as compared to MIN mode.
- MAX - maximum attainable capacity of the unit.

The ventilation mode indication is shown in table 3. The ventilation mode changeover is performed with a button . The ventilation modes are engaged cyclically.

Table 3

Mode	Indicator combination	Operation mode
MIN		Minimum air capacity
NORMAL		Minimum air capacity + 80 m³/h
MAX		Maximum air capacity

2. Setup Mode

To enter the setup mode press and hold the button M fig. 6 for at least 10 seconds until the operation/setup indicator changes from green to red.

The main ventilation mode indicators display the minimum air flow rate corresponding to the first speed of the unit according to table 4.

To change the air flow rate use button ▲ or ▼. Press button ▲ to increase the parameter value or press button ▼ to decrease it. The air flow rate being set can be controlled by means of six main ventilation mode indicators provided that the operation/setup indicator glows red.

To exit the setup mode press the button M once again or the button ✿. 60 seconds after last pressing the button ▲ or ▼ the remote controller exits the setup mode automatically. The operation/setup indicator changes colour from red to green.

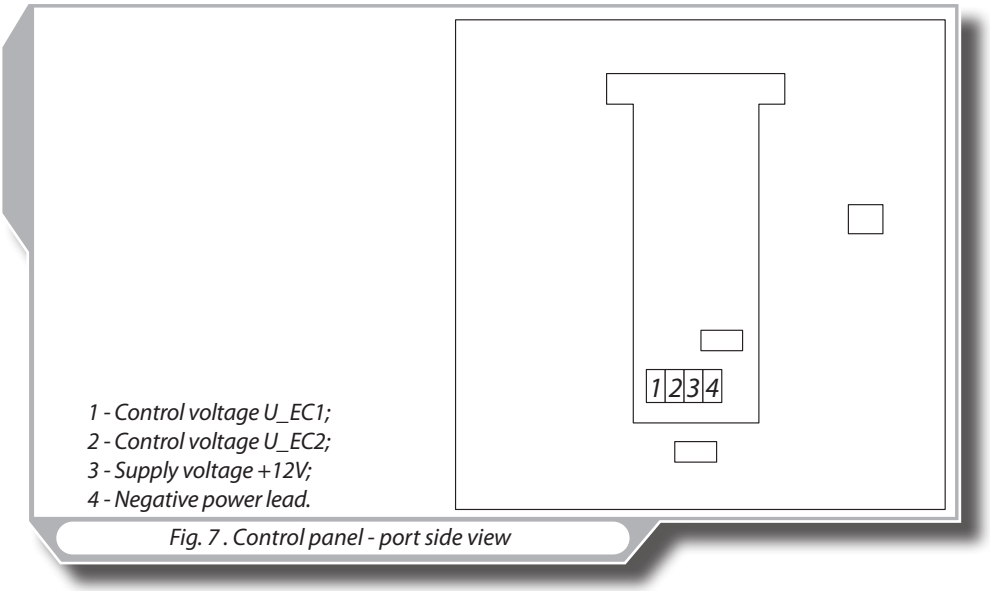
After exit from setup mode the minimum flow rate value setting remains in the nonvolatile memory even after power-off.

Table 4

Sr. no.	Indication	Air flow [m³/h]
1		40
2		60
3		80
4		100
5		120
6		140
7		160
8		180
9		200

3. Control Panel Connection

The connection port side view of the control panel is stated on fig.7.



1 - Control voltage U_EC1;
2 - Control voltage U_EC2;
3 - Supply voltage +12V;
4 - Negative power lead.

Fig. 7 . Control panel - port side view

The wiring diagram of the unit is shown in fig. 5

4. Heat Exchanger Freezing Protection

The heat exchangers are equipped with a freezing protection, which disables the supply fan when the temperature in the exhaust duct downstream of the heat exchangers falls to +5 °C.

5. Filter replacement indication

As the time period for the filter replacement (3000 motor hours) approaches, the operation/setup indicator on the control panel blinks red and green. In case of such indication turn the unit off and replace the filters. Then turn the unit on and press the buttons and synchronously to reset the motor hours until the LED mode is off.

The unit must undergo technical maintenance 3 or 4 times a year. The unit technical maintenance includes general cleaning of the unit and the following operations:

1. Filter service (3-4 times a year).

Contaminated filters increase air resistance thus reducing supply air delivery into the premises. The filters should be cleaned as they get dirty, but at least 3-4 times a year. Vacuum cleaning is allowed. As the filters get worn out after the second cleaning they must be replaced with the new ones once or twice per year. Contact your Seller for new filters.

Follow filter replacement procedure, fig. 8:

1. Unlock the latches.
2. Open the door.
3. Remove the filters.

2. Fan Inspection (once a year).

Even regular filter technical maintenance may not completely prevent dirt accumulation in the fans which impairs supply air delivery into the premises.

Clean the fans with rugs or a soft brush. Do not use water, aggressive solvents or sharp objects as they may damage the impeller.

3. Heat exchanger inspection (once per year).

Some dust can get accumulated on the heat exchanger block even in case of regular filter maintenance. To maintain the high heat exchange efficiency, regular heat exchanger cleaning is required. To clean the heat exchanger pull it out of the unit and flush it with warm soap or mild detergent water solution. Re-install the dry heat exchanger to the unit.

To remove the filters and the heat exchanger follow the operation in fig. 8.

1. Unlock the latches and remove the bottom panel.
2. Open the door.
4. remove the heat exchanger.

4. Condensate Drain Check (once a year).

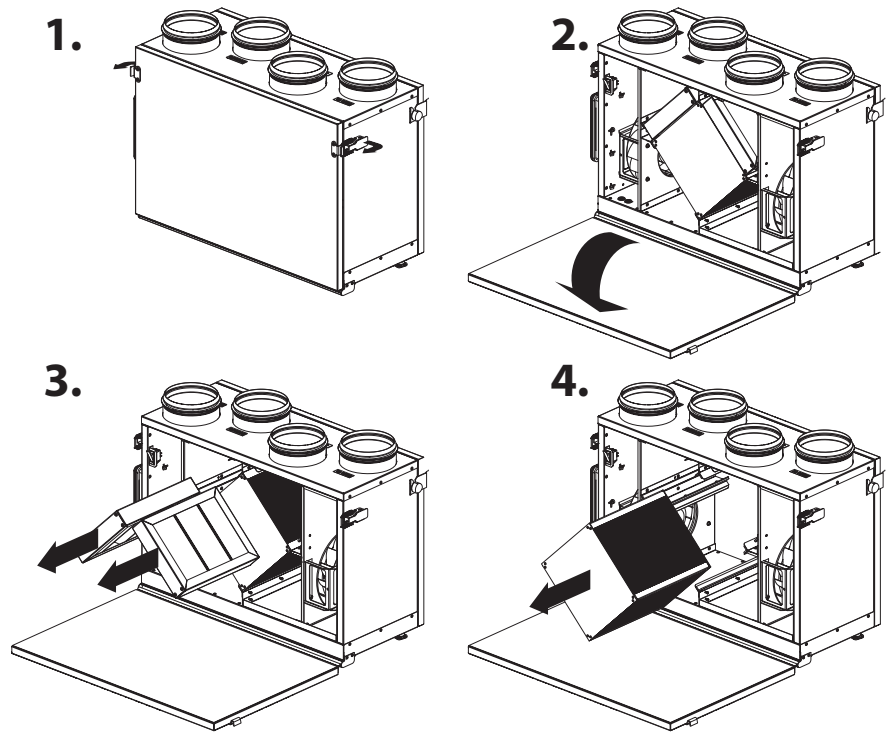
The condensate drain may get clogged with dirt and dust particles contained in the exhaust air. Check the drain line operation by filling the drain pan under the unit with water, clean the U-trap and the drain, if required.

5. Fresh Air Supply Duct Check (twice a year).

The supply duct grill may get clogged by leaves and other objects that reduce the unit performance and supply air delivery. Check the supply duct grill twice a year and clean it, if required.

6. Duct System Check (every 5 years).

Even regular technical maintenance of the unit may not completely prevent dirt accumulation in the air ducts, which reduces the unit performance. The air duct maintenance includes their periodic cleaning or replacement.



Note: The unit maintenance is shown by the example of the unit VUT 300 V mini EC Comfo. The maintenance procedure for the unit VUT 300 H mini EC Comfo is the same.

Fig. 8. Unit maintenance

FAULT HANDLING

Troubleshooting and Fault Handling

Problem	Possible Reasons	Fault handling
Fan (Fans) does (do) not start up	No power supply.	Make sure that the unit is properly connected to the power mains, otherwise troubleshoot the connection error.
Cold supply air	Clogged exhaust filter.	Clean or replace the extract filter.
	Ice buildup in the heat exchanger.	Check for ice in the heat exchanger. If there is ice in the heat exchanger, let it melt before switching the unit back on.
Low air flow	Filter, fan or heat exchanger clogging.	Clean or replace the filters; Clean the fans and the heat exchanger.
	Air handling system clogged or damaged.	Check for unobstructed diffuser opening, check the exhaust cowl and the supply duct grill and clean them, if necessary; Make sure that the air ducts are clean and intact.
Noise, vibration	Fan impellers are dirty.	Clean the fan impellers.
	Fan fastening screws are loose.	Make sure the fastening screws are tight.
Water leakage	The drain line is clogged, damaged or improperly arranged.	Clean the drain line, if necessary. Check the drain line slant, inspect the U-trap and make sure the drain line is equipped with frost protection.

STORAGE AND TRANSPORTATION RULES

Store the unit in the manufacturer's original packing box in a closed ventilated premise with temperature range from +10°C to +40°C and relative humidity less than 80% (at +20°C).

Ambient air must not contain aggressive vapours and chemical mixtures provoking corrosion, insulation and sealing deformation.

Use hoist machinery for handling and storage operations to prevent the unit damage in consequence of falling or excessive oscillation.

Fulfil the handling requirements applicable for the applicable freight type.

Transportation with any vehicle type is allowed provided that the goods are protected against mechanical and weather damage.

Avoid any mechanical shocks and strokes during handling operations.

MANUFACTURER'S WARRANTY

Manufacturer hereby guarantees normal performance of the unit during two years from the date of retail sale provided compliance with transport, storage, mounting and operation regulations. In case of no confirmation of sales date the warranty period is calculated from the production date.

In case of failures in the unit operation during the warranty period the manufacturer will accept reclamations and complaints from the owner of the unit only after receiving technically sound act specifying the form of failure. Any unauthorized modifications of the electric connection are not allowed and will void the warranty service. For warranty and post-warranty services contact your seller or the product manufacturer.

In case of warranty reclamation, submit the present user's manual with a stamp of the trade company, filled connection certificate and the warranty card.

Both warranty and post-warranty services for the unit are provided at the manufacturing facility.

RECLAMATIONS AND CLAIMS FOR REPLACEMENT SHALL NOT BE ACCEPTED WITHOUT A COMPLETED CONNECTING CERTIFICATE.

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY MECHANICAL OR PHYSICAL DAMAGES RESULTING FROM THE MANUAL REQUIREMENTS VIOLENCE, THE UNIT MISUSE OR GROSS MECHANICAL EFFECT.

FULFIL THE REQUIREMENTS SET IN THE USER'S MANUAL TO ENSURE PROPER FUNCTIONING OF THE UNIT AND LONG SERVICE LIFE.

ACCEPTANCE CERTIFICATE

THE AIR HANDLING UNIT WITH HEAT RECOVERY VUT 300 V (H) mini EC Comfo has been duly certified as serviceable.

We hereby declare that the product complies with the essential protection requirements of Electromagnetic Council Directive 2004/108/EC, 89/336/EEC and Low Voltage Directive 2006/95/EC, 73/23/EEC and CE-marking Directive 93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

This certificate is issued following test carried out on samples of the product referred to above.

Acceptance Inspector's Stamp

Date of manufacture _____

Sold by

Name of trade company and retailer's stamp _____

_____

_____

Date of sale _____

ELECTRICAL CONNECTION CERTIFICATE

This is to certify that the air handling unit VUT 300 V (H) mini EC Comfo has been connected to power mains pursuant to the requirements stated in the present user's manual by a qualified technician:

Company:_____

Name _____

Date_____Signature_____

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WARRANTY CARD

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