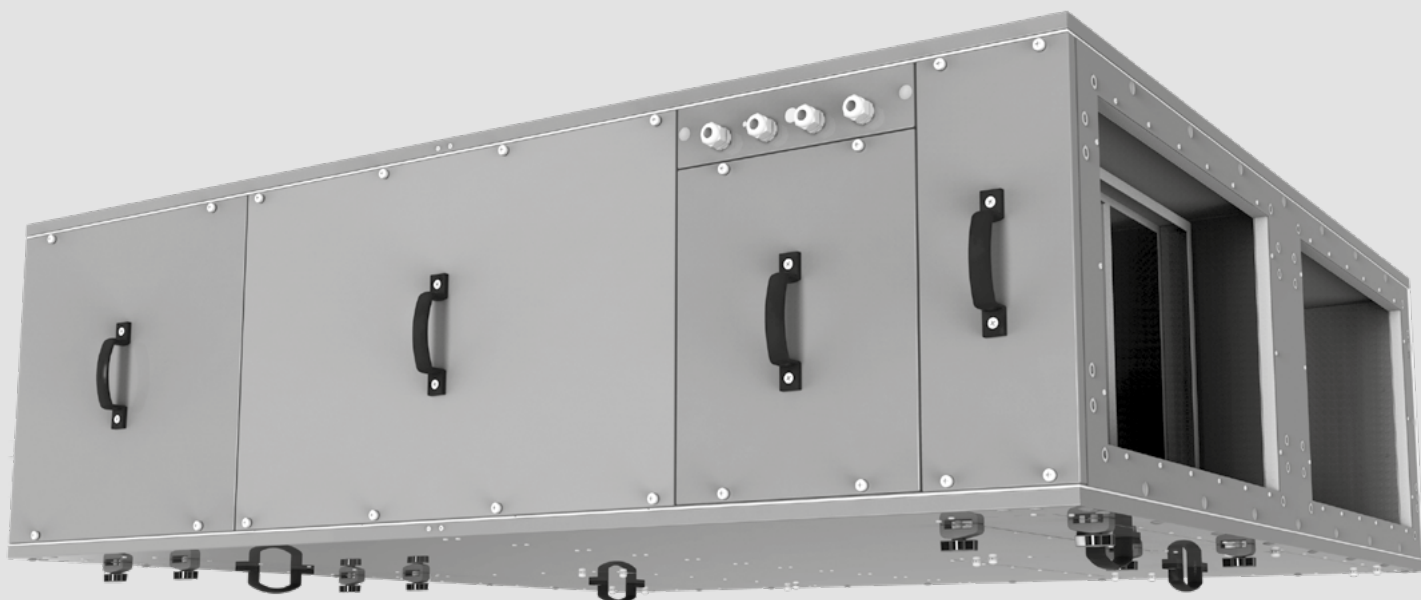


USER'S MANUAL

VUT 1200 PB EC
VUT 1500 PB EC
VUT 2500 PB EC
VUT 3500 PB EC



Air handling unit

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This user's manual is a main operating document intended for technical, maintenance, and operating staff.

The manual contains information about purpose, technical details, operating principle, design, and installation of the VUT 1200/1500/2500/3500 PB EC unit and all its modifications.

Technical and maintenance staff must have theoretical and practical training in the field of ventilation systems and should be able to work in accordance with workplace safety rules as well as construction norms and standards applicable in the territory of the country.

SAFETY REQUIREMENTS

This unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety. Children should be supervised to ensure that they do not play with the unit.

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.

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

Children shall not play with the appliance.

Connection to the mains must be made through a disconnecting device, which is integrated into the fixed wiring system in accordance with the wiring rules for design of electrical units, and has a contact separation in all poles that allows for full disconnection under overvoltage category III conditions.

CAUTION: In order to avoid a safety hazard due to inadvertent resetting of the thermal cut-out, this unit must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.

Ensure that the unit is switched off from the supply mains before removing the guard.

Precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances.

The appliance may adversely affect the safe operation of appliances burning gas or other fuels (including those in other rooms) due to back flow of combustion gases. These gases can potentially result in carbon monoxide poisoning. After installation of the unit the operation of flued gas appliances should be tested by a competent person to ensure that back flow of combustion gases does not occur.

All operations described in this manual must be performed by qualified personnel only, properly trained and qualified to install, make electrical connections and maintain ventilation units.

Do not attempt to install the product, connect it to the mains, or perform maintenance yourself. This is unsafe and impossible without special knowledge.

Disconnect the power supply prior to any operations with the unit.

All user's manual requirements as well as the provisions of all the applicable local and national construction, electrical, and technical norms and standards must be observed when installing and operating the unit.

Disconnect the unit from the power supply prior to any connection, servicing, maintenance, and repair operations.

Connection of the unit to power mains is allowed by a qualified electrician with a work permit for the electric units up to 1000 V after careful reading of the present user's manual.

Check the unit for any visible damage of the impeller, the casing, and the grille before starting installation. The casing internals must be free of any foreign objects that can damage the impeller blades.

While mounting the unit, avoid compression of the casing! Deformation of the casing may result in motor jam and excessive noise.

Misuse of the unit and any unauthorised modifications are not allowed.

Do not expose the unit to adverse atmospheric agents (rain, sun, etc.).

Transported air must not contain any dust or other solid impurities, sticky substances, or fibrous materials.

Do not use the unit in a hazardous or explosive environment containing spirits, gasoline, insecticides, etc.

Do not close or block the intake or extract vents in order to ensure the efficient air flow.

Do not sit on the unit and do not put objects on it.

The information in this user's manual was correct at the time of the document's preparation. The Company reserves the right to modify the technical characteristics, design, or configuration of its products at any time in order to incorporate the latest technological developments.

Never touch the unit with wet or damp hands.

Never touch the unit when barefoot.

BEFORE INSTALLING ADDITIONAL EXTERNAL DEVICES, READ THE RELEVANT USER MANUALS.



THE PRODUCT MUST BE DISPOSED SEPARATELY AT THE END OF ITS SERVICE LIFE.

DO NOT DISPOSE THE UNIT AS UNSORTED DOMESTIC WASTE.

PURPOSE

The heat recovery air handling unit is designed for installation in centralized mechanical ventilation systems. It is rated for continuous operation.

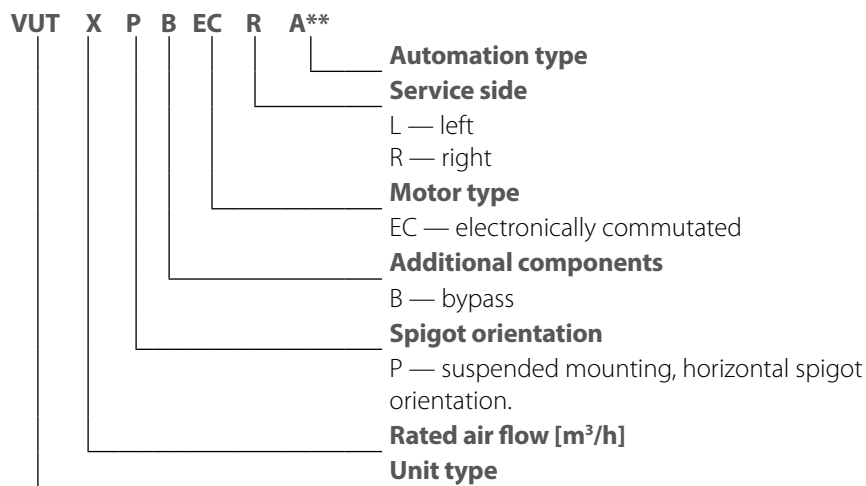
Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, sticky substances, fibrous materials, coarse dust, soot and oil particles or environments favourable for the formation of hazardous substances (toxic substances, dust, pathogenic germs).

The corrosion resistance of the unit is class C4 according to ISO 12944.

DELIVERY SET

Name	Number
Air handling unit	1
User's manual	1
Technical data sheet	1
Wiring diagram	1
Automation system user's manual	1
Packing box	1

DESIGNATION KEY



TECHNICAL DATA

The unit is designed for indoor or sheltered use. The installation conditions must prevent ingress of atmospheric precipitations and direct solar radiation at the ambient temperatures from $-35\text{ }^{\circ}\text{C}$ up to $+50\text{ }^{\circ}\text{C}$.

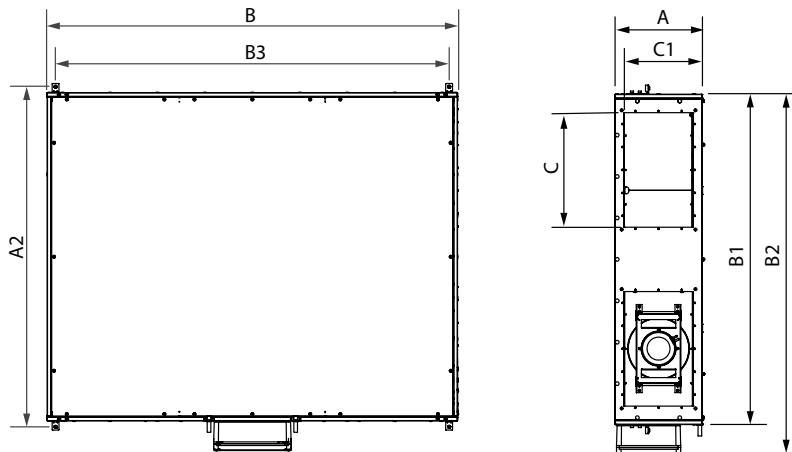
At sub-zero ambient temperatures, frost protection must be provided for the drainage and pipelines connected to the unit.

The heat medium temperature in water heaters (if available) must be sufficient to prevent its freezing.

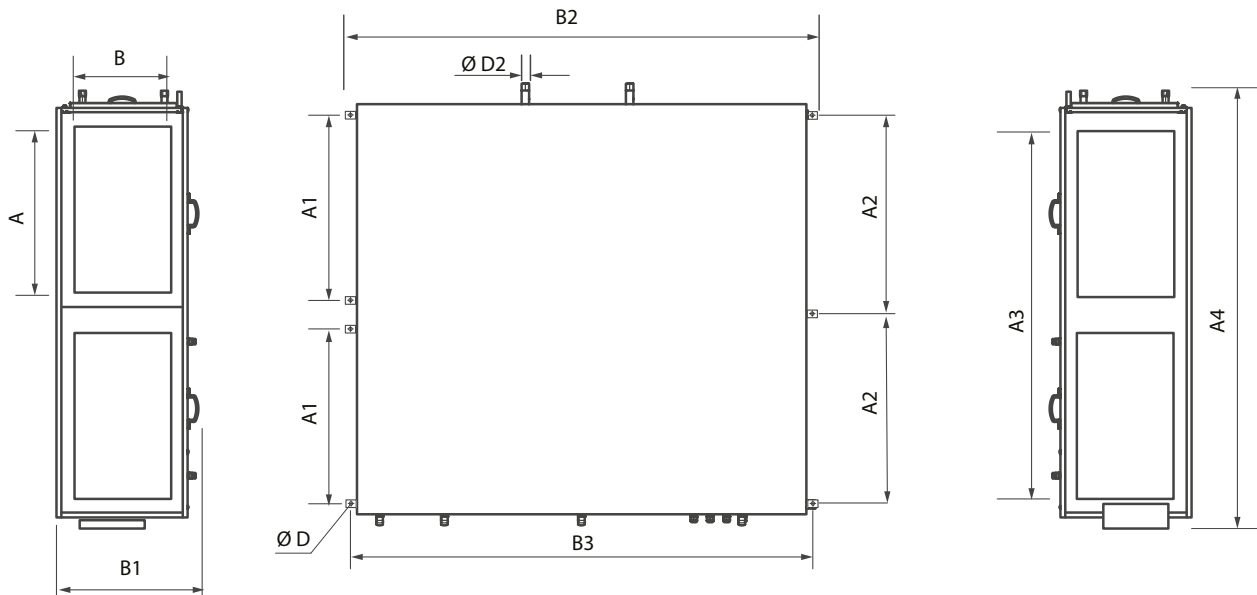
Hazardous parts access and water ingress protection rating:

- IP54 for the motors
- IP40 for the assembled unit connected to the air ducts
- IP00 for the unit not connected to the air ducts

The unit design is constantly being improved, thus some models may be slightly different from those described in this manual.

OVERALL DIMENSIONS OF THE UNIT VUT 1200 PB EC


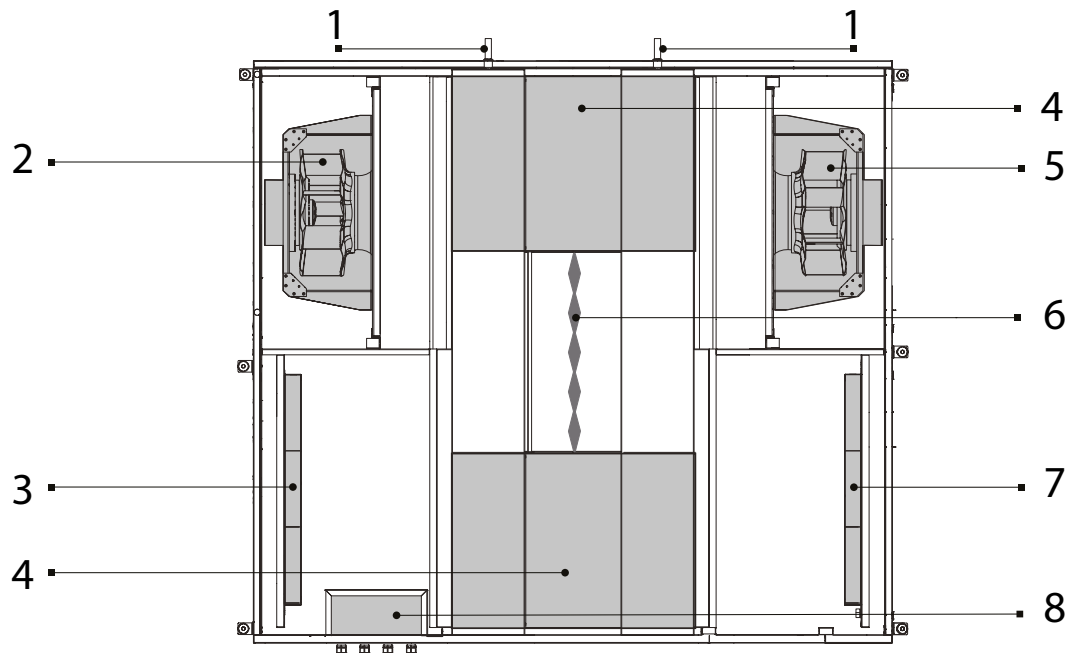
Model	A	B	B1	B2	B3	A2	C	C1
VUT 1200 PB EC	380	1800	1440	1570	1729	1495	500	300

OVERALL DIMENSIONS OF THE UNIT VUT 1500/2500/3500 PB EC


Model	A	A1	A2	A3	A4	B	B1	B2	B3	D	D2
VUT 1500 PB EC	600	676	713	1340	1610	350	520	1726	1700	9	16
VUT 2500 PB EC				1350							
VUT 3500 PB EC				670							

See the complete list of the technical data for the unit in the technical data sheet included in the delivery set.

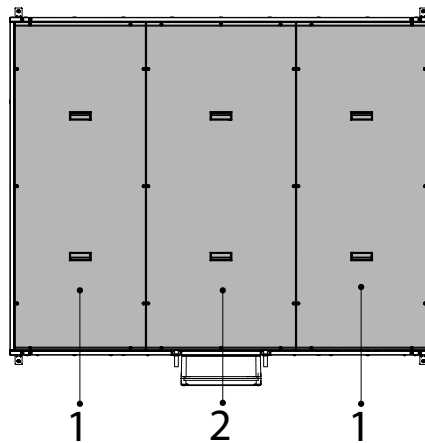
UNIT DESIGN



- 1 — drain pipe
- 2 — supply fan
- 3 — extract filter
- 4 — heat exchanger
- 5 — extract fan
- 6 — bypass damper
- 7 — supply filter
- 8 — control unit (for VUT 1200: located on the outside of the unit casing)

Service panels VUT 1200 PB EC

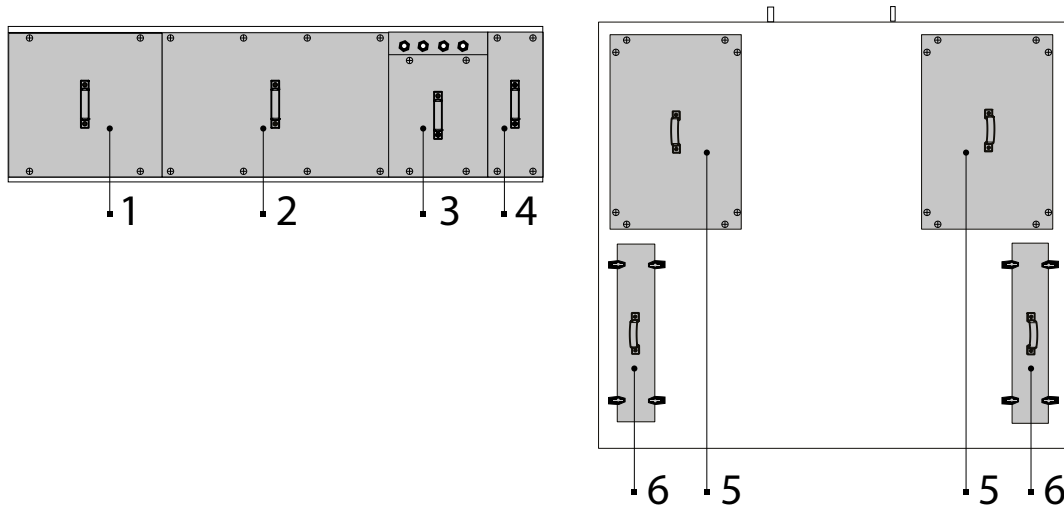
The casing has removable service panels for accessing the unit components.



- 1 — panels for access to the filters and fans (located on the bottom side)
 - 2 — panel for access to the heat exchanger and the bypass damper (located on the bottom side)
- The panels are secured with screws.

Service panels VUT 1500/2500/3500 PB EC

Removable service panels are located on the unit casing for accessing the unit assemblies.



- 1 — panel for access to the filter (located on the service side)
 - 2 — panel for access to the heat exchanger and the bypass damper (located on the service side)
 - 3 — panel for access to the control unit and the terminal block (located on the service side)
 - 4 — panel for access to the filter (located on the service side)
 - 5 — panels for access to the fans (located at the bottom of the unit)
 - 6 — panels for access to the filters (located at the bottom of the unit)
- Panels 1-5 are fixed with screws. Panels 6 are secured with thumbscrews.

**Additional equipment
(purchased at the request of the customer)**

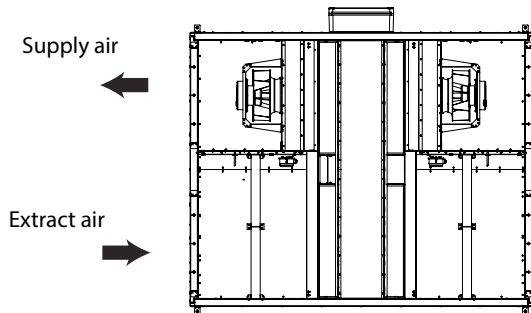
	VUT 1200 PB EC	VUT 1500 PB EC	VUT 2500 PB EC	VUT 3500 PB EC
Control panel	A22 A22 WiFi A25			
Electric heater	HE 500x300-2,4-1 A21 HE 500x300-5,1-1 A21	HE 600x350-5.1-1 A21 HE 600x350-9.0-3 A21 HE 600x350-12.0-3 A21		
DX cooler	CDX 500x300-3	CDX 600x350-3		
Water cooler	CW 500x300-3	CW 600x350-3		
Water heater	HW 500x300-2 A21	HW 600x350-2 A21		
Air damper	RRV P500x300	RRV P600x350		
G4 filter	SF 378x295x48	SF 196x384x40		SF 253x603x48
Air damper actuator	TF 230	TF 230		
Three position ball valve with an electric actuator	Belimo R3020-4-B1+ LR24A-SR		Belimo R3020-6P3-B1+ LR24A-SR	
Liquid mixing kit for the water heater	USVK 3/4-4		USVK 3/4-6	
Differential pressure switch	DTV 500			
Flexible connector	VVG AV 500x300	VVG AV 600x350		
Silencer	SR 500x300	SR 600x350		

MOUNTING AND SET-UP

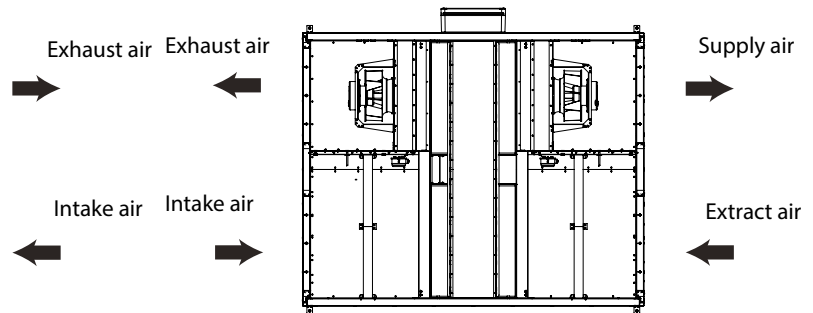
The units are manufactured in left and right versions, i.e. they can be serviced from the right or left side. Choosing the right arrangement can improve the ease of installation, shorten the length of the ducts and reduce the number of air duct bends.

VUT 1200 PB EC

Left-handed modification (top view)

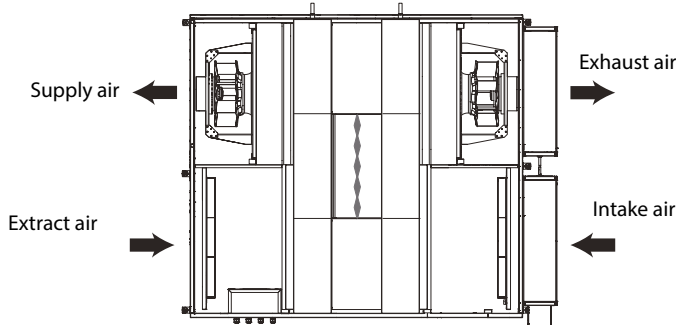


Right-handed modification (top view)

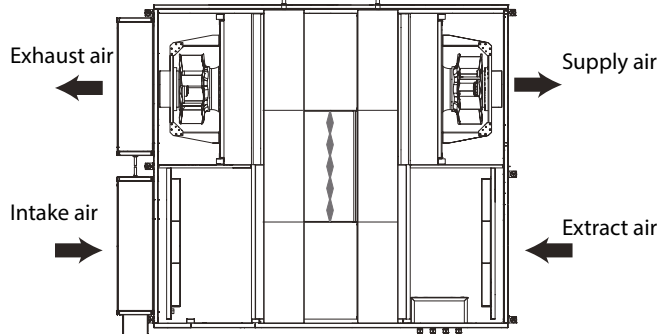


VUT 1500/2500/3500 PB EC

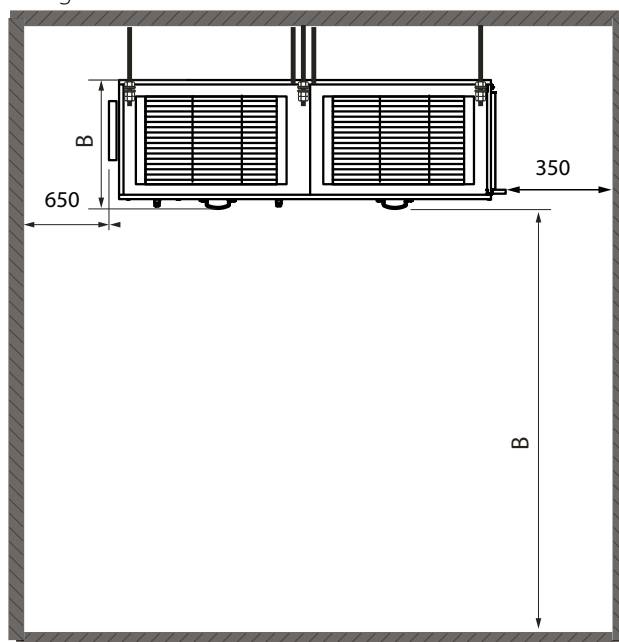
Left-handed modification (top view)



Right-handed modification (top view)



While mounting the unit provide enough access for maintenance or repair work. The minimum recommended clearances between the unit and the adjoining walls are given in the figure below.



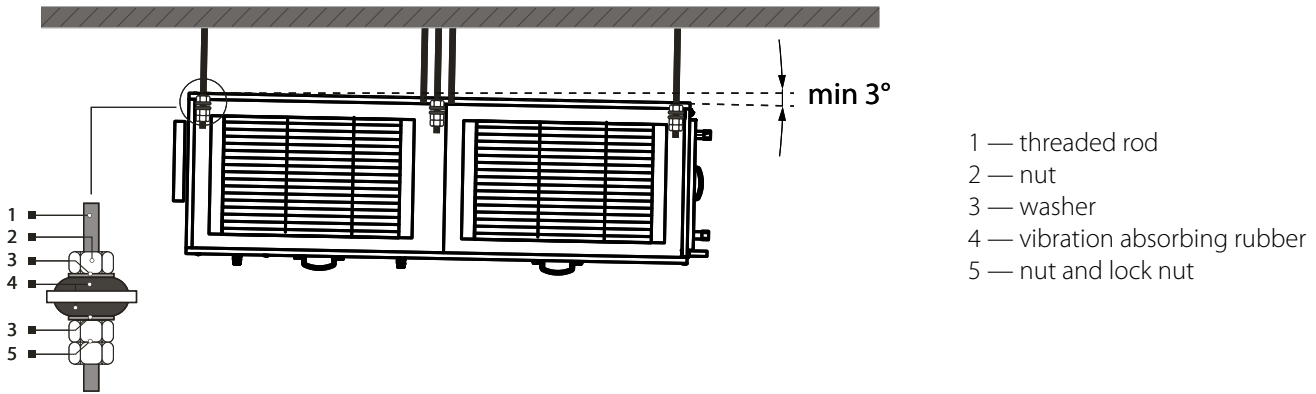
To attain the best performance of the unit and to minimise turbulence-induced air pressure losses, connect the straight air duct section to the spigots on both sides of the unit while mounting.

Minimum straight air duct length:

- equal to 1 air duct diameter on the intake side
- equal to 3 air duct diameters on outlet side

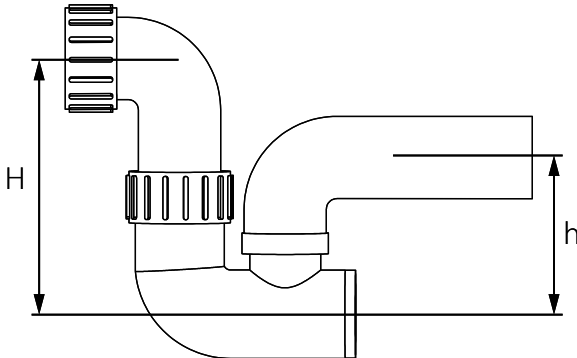
If the air ducts are too short or not connected, protect the unit parts from ingress of foreign objects. To prevent uncontrollable access to the fan, the spigots may be covered with a protecting grille or other protecting device with mesh width not more than 12.5 mm. Fasteners for fan mounting are not included in the delivery set and should be ordered separately. While choosing fasteners consider the material of the mounting surface as well as the weigh of the unit. Fasteners for installation should be selected by a qualified technician. When installing the unit, it is necessary to ensure its slope of at least 3° towards the drainage pipes.

Recommended installation diagram



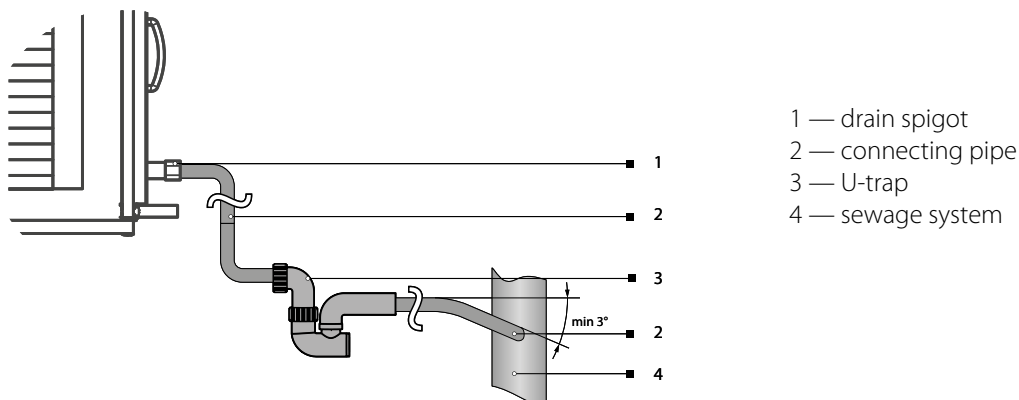
Condensate drainage

The unit is equipped with drain spigots for condensate drainage outside the casing. U-traps must be connected to the drain spigots. The dimensions of the U-trap are selected depending on the pressure in the section, shown in the table.



Fan full pressure [Pa]	Dimension H [mm]	Dimension h [mm]
<600	100	50
600-1000	140	70
1000-1400	190	95
1400-1800	240	120
1800-2200	290	145
2200-2600	340	170

Connect the spigot, U-trap and the sewage system with metal, plastic or rubber connecting pipes.



Make sure that the water flows into the sewage system before starting operation. Fill up the U-trap with water before using it.

TECHNICAL MAINTENANCE



**OPEN THE UNIT FOR INSPECTION AND SERVICE AT LEAST TWO MINUTES AFTER COMPLETE DE-ENERGIZATION OF THE UNIT.
FANS MAY CONTINUE ROTATING.**



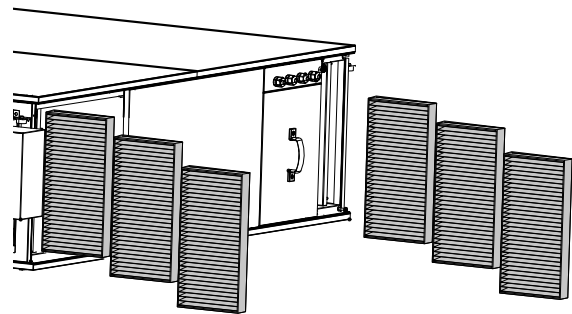
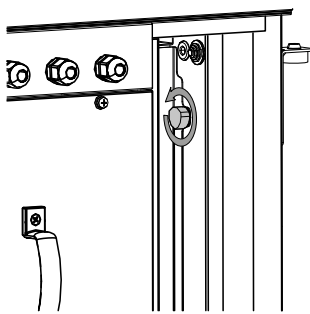
IN CASE OF ANY ABNORMAL NOISE, SMELL AND COMPONENT DEFORMATION, IMMEDIATELY CUT OFF POWER SUPPLY TO THE UNIT AND CONTACT A SERVICE PROVIDER OR THE UNIT SELLER.

The unit operation requires regular inspection, dry cleaning of inner components, check-up and replacement of air filters in case of filter clogging.

3-6 months after commissioning of the unit it must be inspected by a service expert for planned preventive maintenance of the unit. Subsequent maintenance should be carried out at least once every 6-12 months. The frequency of maintenance is determined by the service technician, depending on the operating conditions of the unit. Dust deposits on the inner parts of the unit, especially in the electric heater, may lead to unpleasant odours. This is not a malfunction. Clean the unit to eliminate odours.

Access to filters through VUT 1500/2500/3500 PB EC side service panels

Remove the service panels.



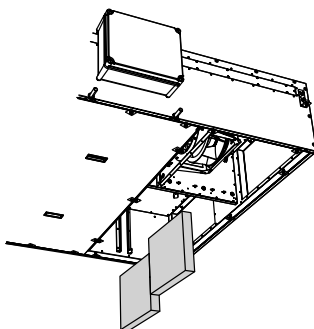
Unscrew the two thumbscrews securing the retaining plate.

Remove the filter elements.

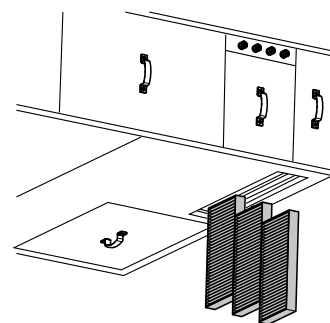
Access to filters through bottom service panels

Remove the service panels. Remove the filter elements.

VUT 1200 PB EC

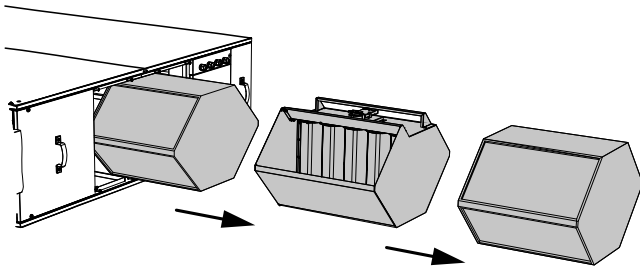


VUT 1500/2500/3500 PB EC

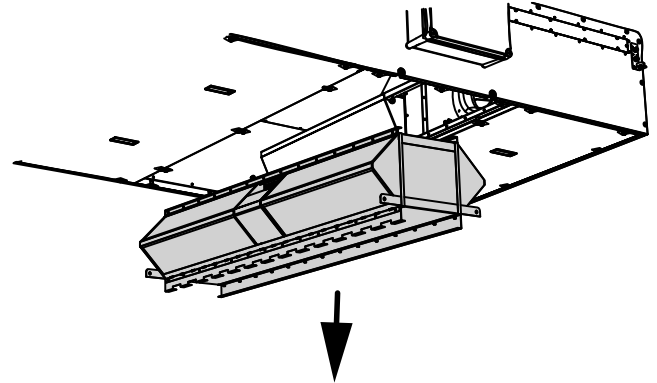


Remove the service panel to access the heat exchanger. Remove the heat exchanger. Disconnect the connector from the bypass damper actuator. Remove the bypass unit, then remove the second heat exchanger.

**Access to the heat exchanger through
VUT 1500/2500/3500 PB EC side service panels**



**Access to the heat exchanger through bottom
VUT 1200 PB EC service panels**



STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range +5...+40 °C and relative humidity up to 70 %.
- Storage environment must not contain aggressive vapors and chemical mixtures provoking corrosion, insulation, and sealing deformation.
- Use suitable hoist machinery for handling and storage operations to prevent possible damage to the unit.
- Follow the handling requirements applicable for the particular type of cargo.
- The unit can be carried in the original packaging by any mode of transport provided proper protection against precipitation and mechanical damage. The unit must be transported only in the working position.
- Avoid sharp blows, scratches, or rough handling during loading and unloading.
- Prior to the initial power-up after transportation at low temperatures, allow the unit to warm up at operating temperature for at least 3-4 hours.

MANUFACTURER'S WARRANTY

The manufacturer hereby warrants normal operation of the unit for 24 months after the retail sale date provided the user's observance of the transportation, storage, installation, and operation regulations. Should any malfunctions occur in the course of the unit operation through the Manufacturer's fault during the guaranteed period of operation, the user is entitled to get all the faults eliminated by the manufacturer by means of warranty repair at the factory free of charge. The warranty repair includes work specific to elimination of faults in the unit operation to ensure its intended use by the user within the guaranteed period of operation. The faults are eliminated by means of replacement or repair of the unit components or a specific part of such unit component.

The warranty repair does not include:

- routine technical maintenance
- unit installation/dismantling
- unit setup

To benefit from warranty repair, the user must provide the unit, the user's manual with the purchase date stamp, and the payment paperwork certifying the purchase.

The unit model must comply with the one stated in the user's manual.

Contact the Seller for warranty service.

WARNING! The warranty does not apply to units with a water heater that are not equipped with air flow regulators with an electric actuator.

The manufacturer's warranty does not apply to the following cases:

- User's failure to submit the unit with the entire delivery package as stated in the user's manual including submission with missing component parts previously dismantled by the user.
- Mismatch of the unit model and the brand name with the information stated on the unit packaging and in the user's manual.
- User's failure to ensure timely technical maintenance of the unit.
- External damage to the unit casing (excluding external modifications as required for installation) and internal components caused by the user.
- Redesign or engineering changes to the unit.
- Replacement and use of any assemblies, parts and components not approved by the manufacturer.
- Unit misuse.
- Violation of the unit installation regulations by the user.
- Violation of the unit control regulations by the user.
- Unit connection to power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in power mains.
- Discretionary repair of the unit by the user.
- Unit repair by any persons without the manufacturer's authorization.
- Expiration of the unit warranty period.
- Violation of the unit transportation regulations by the user.
- Violation of the unit storage regulations by the user.
- Wrongful actions against the unit committed by third parties.
- Unit breakdown due to circumstances of insuperable force (fire, flood, earthquake, war, hostilities of any kind, blockades).
- Missing seals if provided by the user's manual.
- Failure to submit the user's manual with the unit purchase date stamp.
- Missing payment paperwork certifying the unit purchase.



FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT



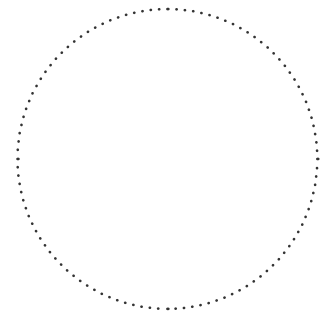
USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP

CERTIFICATE OF ACCEPTANCE

Unit Type	Air handling unit
Model	
Serial Number	
Manufacture Date	
Quality Inspector's Stamp	

SELLER INFORMATION

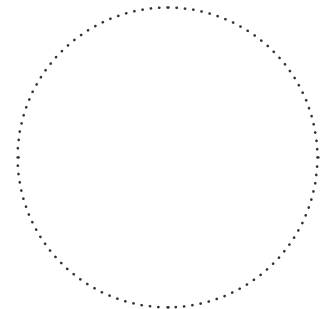
Seller	
Address	
Phone Number	
E-mail	
Purchase Date	
This is to certify acceptance of the complete unit delivery with the user's manual. The warranty terms are acknowledged and accepted.	
Customer's Signature	



Seller's Stamp

INSTALLATION CERTIFICATE

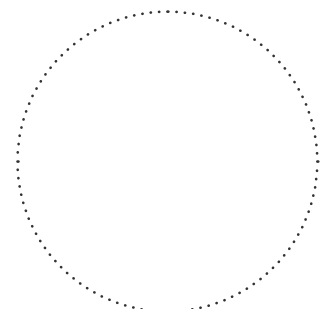
The _____ unit is installed pursuant to the requirements stated in the present user's manual.	
Company name	
Address	
Phone Number	
Installation Technician's Full Name	
Installation Date:	Signature:
The unit has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The unit operates normally as intended by the manufacturer.	
Signature:	



Installation Stamp

WARRANTY CARD

Unit Type	Air handling unit
Model	
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	



Seller's Stamp

