

User's Manual

HRU 1500/2500/3000/3500



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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 HRU 1500/2500/3000/3500 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

- 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.
- Only qualified electricians with a work permit for electrical units up to 1000 V are allowed for installation and maintenance. The present user’s manual should be carefully read before beginning works.
- 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 device 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.
- This appliance 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 appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a safety hazard.
- Ensure that the appliance 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 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.

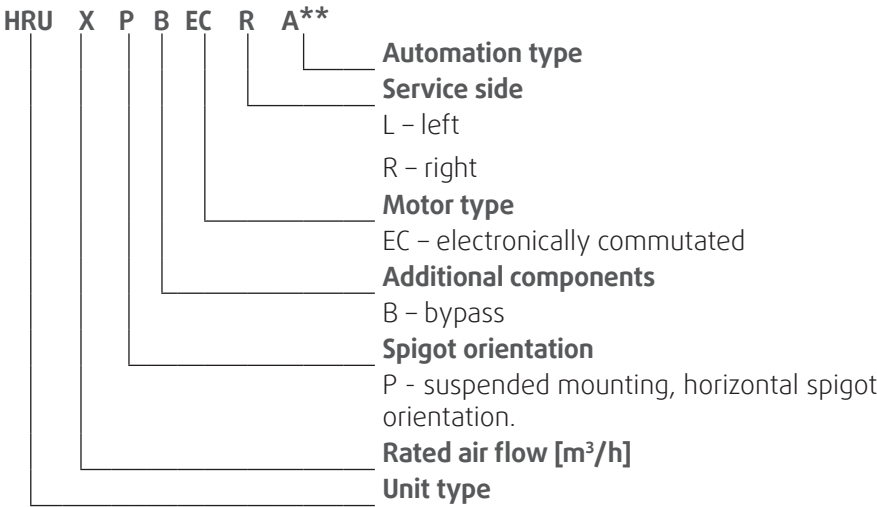
Transported air must not contain any flammable or explosive mixtures, evaporation of chemicals, sticky substances, fibrous materials, coarse dust, soot and oil particles or environments favourable for the formation of hazardous substances (toxic substances, dust, pathogenic germs).

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 °C up to +50 °C.

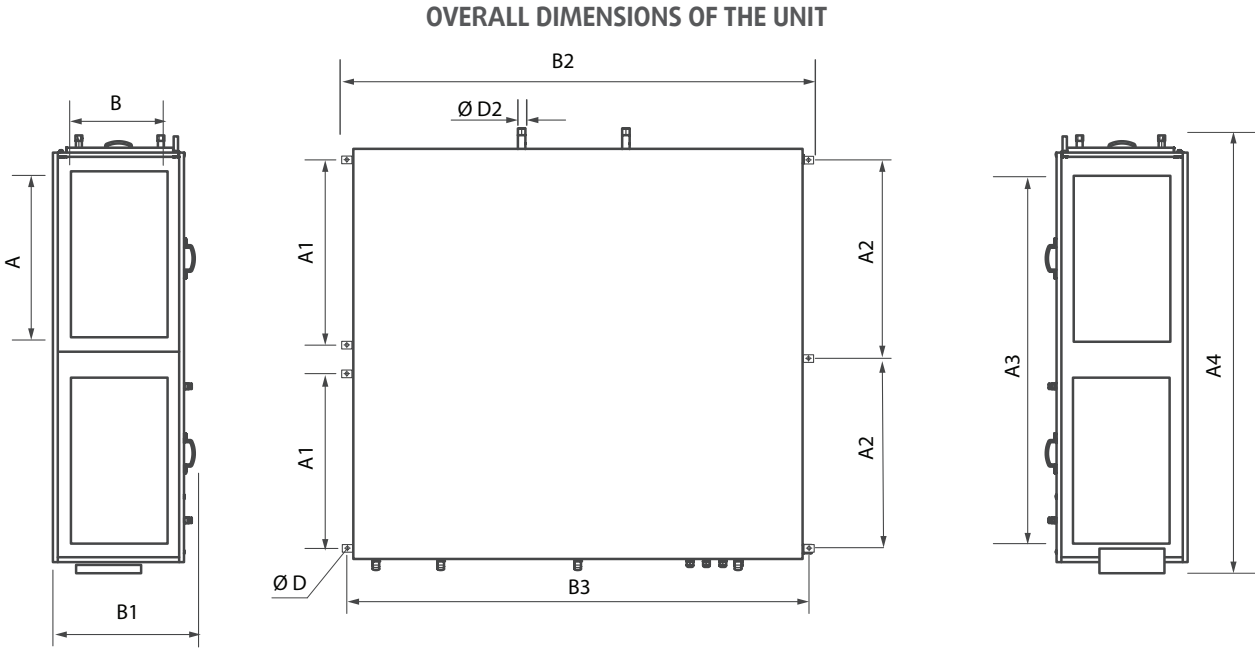
At sub-zero ambient temperatures, frost protection must be provided for the drainage and pipelines connected to the unit.

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

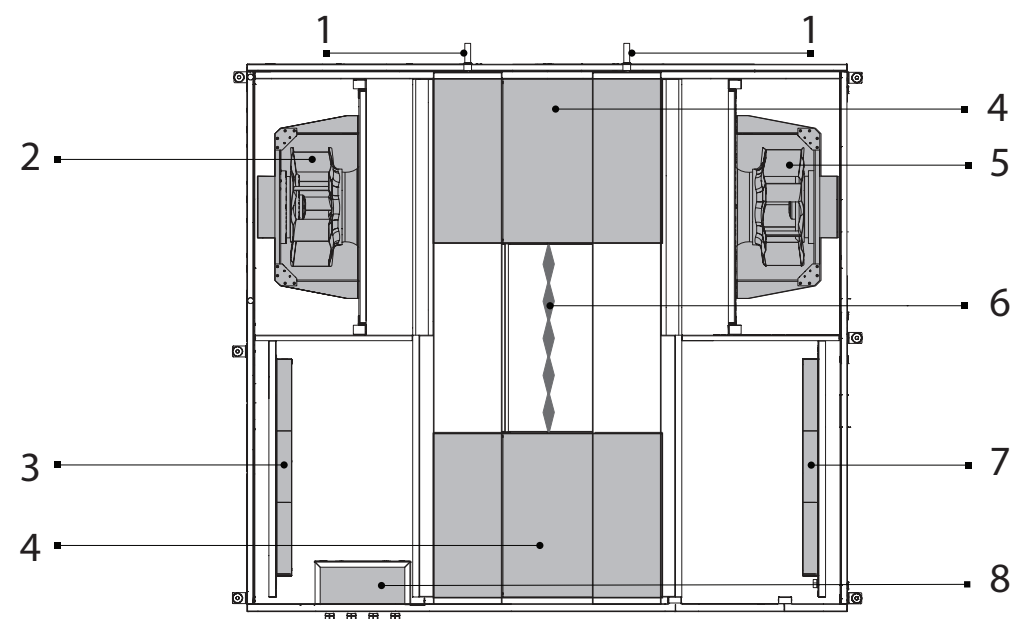
The unit design is constantly being improved, thus some models may be slightly different from those described in this manual.



Model	A	A1	A2	A3	A4	B	B1	B2	B3	D	D2
HRU 1500	600	676	713	1340	1610	350	520	1726	1700	9	16
HRU 2500	600	676	713	1340	1610	350	520	1726	1700	9	16
HRU 3000	600	676	713	1350	1610	500	670	1960	1932	9	16
HRU 3500	600	676	713	1350	1610	500	670	1960	1932	9	16

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

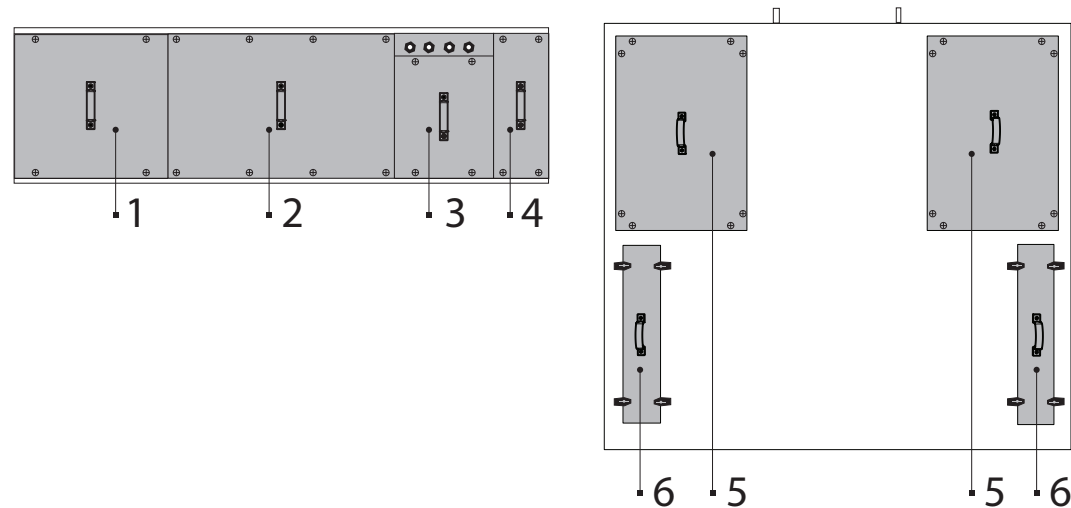
UNIT DESIGN



- 1 – drain pipe
- 2 – supply fan
- 3 – extract filter
- 4 – heat exchanger
- 5 – extract fan
- 6 – bypass damper
- 7 – supply filter
- 8 – control unit

Service panels

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)

	HRU 1500	HRU 2500	HRU 3000	HRU 3500
Control panel	A22			
	A22 WiFi			
	A25			
Electric heater	HE 600x350-5.1-1 A21			
	HE 600x350-9.0-3 A21			
	HE 600x350-12.0-3 A21			
DX cooler	CDX 600x350-3			
Water cooler	CW 600x350-3			
Water heater	HW 600x350-2 A21			
Air damper	RRV P600x350			
G4 filter	SF 196x384x40			SF 253x603x48
Air damper actuator	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 600x350			
Silencer	SR 600x350			

MOUNTING AND SET-UP

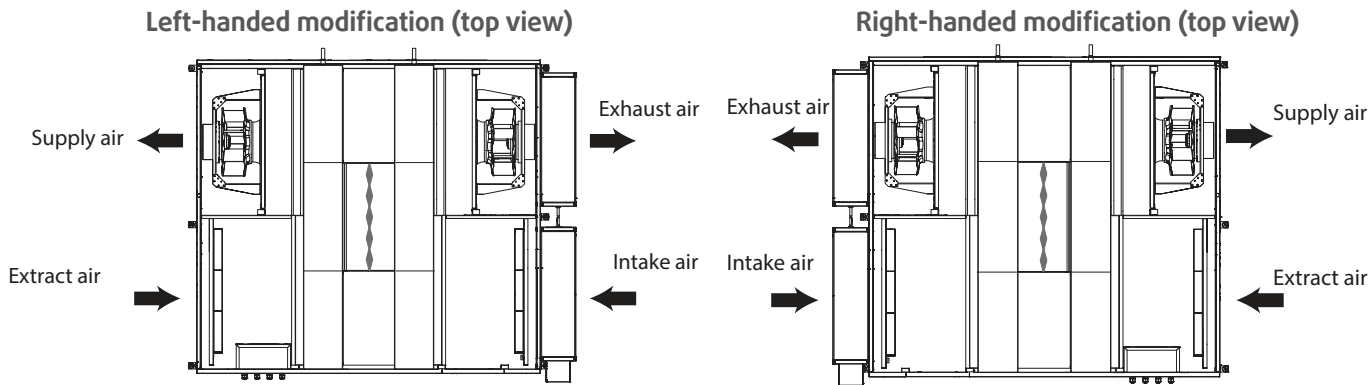


ALL OPERATIONS DESCRIBED IN THIS USER’S MANUAL MUST BE PERFORMED BY QUALIFIED PERSONNEL ONLY, PROPERLY TRAINED AND QUALIFIED TO INSTALL AND MAINTAIN VENTILATION EQUIPMENT.

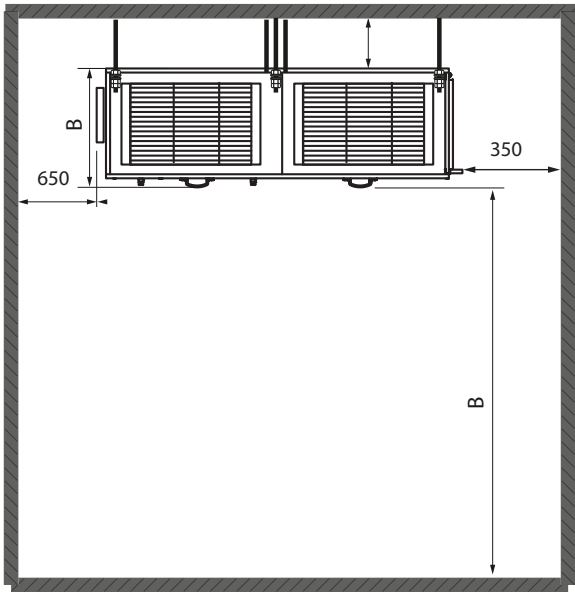
DO NOT ATTEMPT TO INSTALL THE PRODUCT YOURSELF.

IT IS UNSAFE AND IMPOSSIBLE WITHOUT SPECIAL KNOWLEDGE.

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.



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.

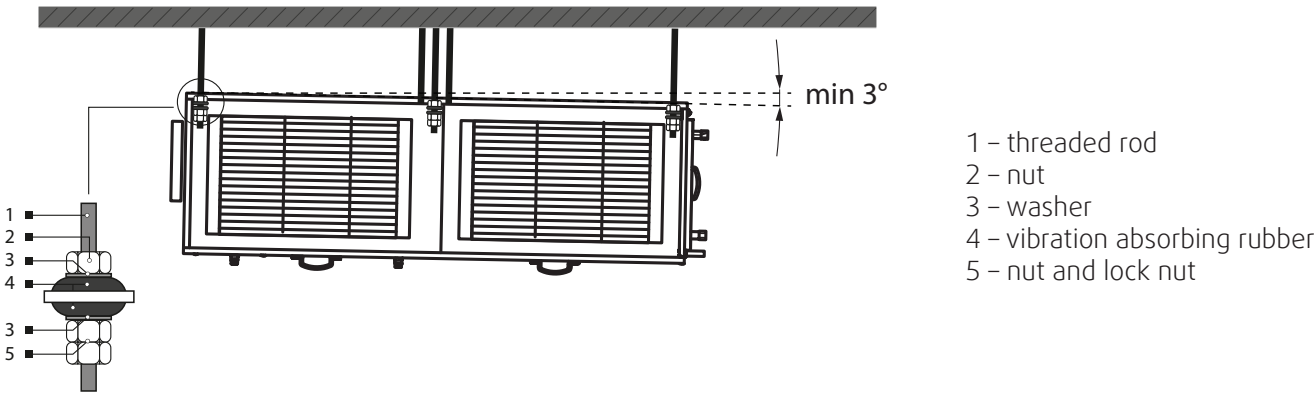
Fasteners for fan mounting are not included in the delivery set and should be ordered separately.

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.

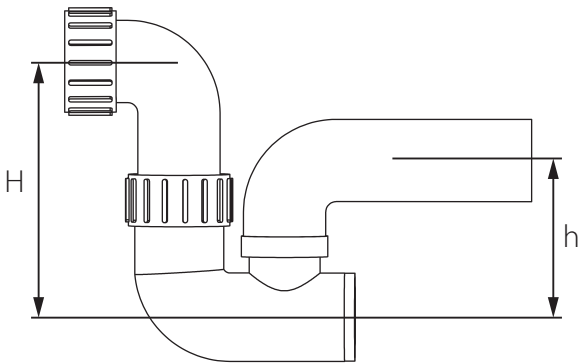
Recommended installation diagram



Condensate drainage

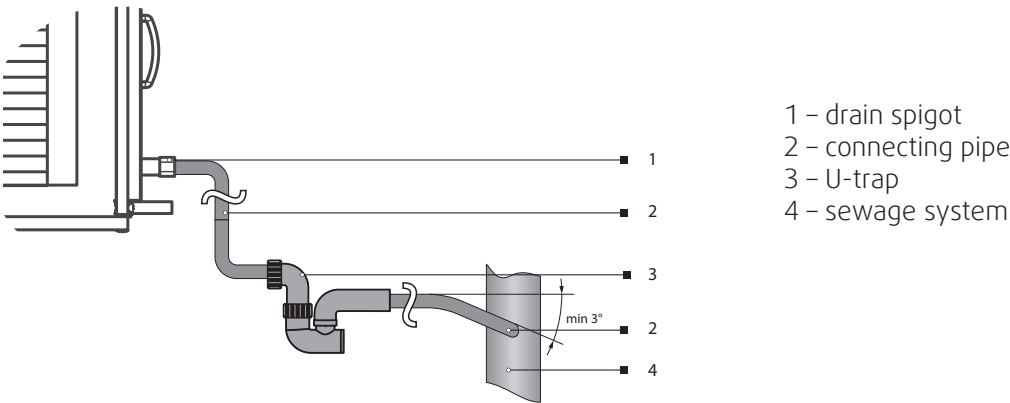
The unit is equipped with drain spigots for condensate drainage outside the casing. U-traps must be connected to the drain spigots.

The dimensions of the U-trap are selected depending on the pressure in the section, shown in the table.



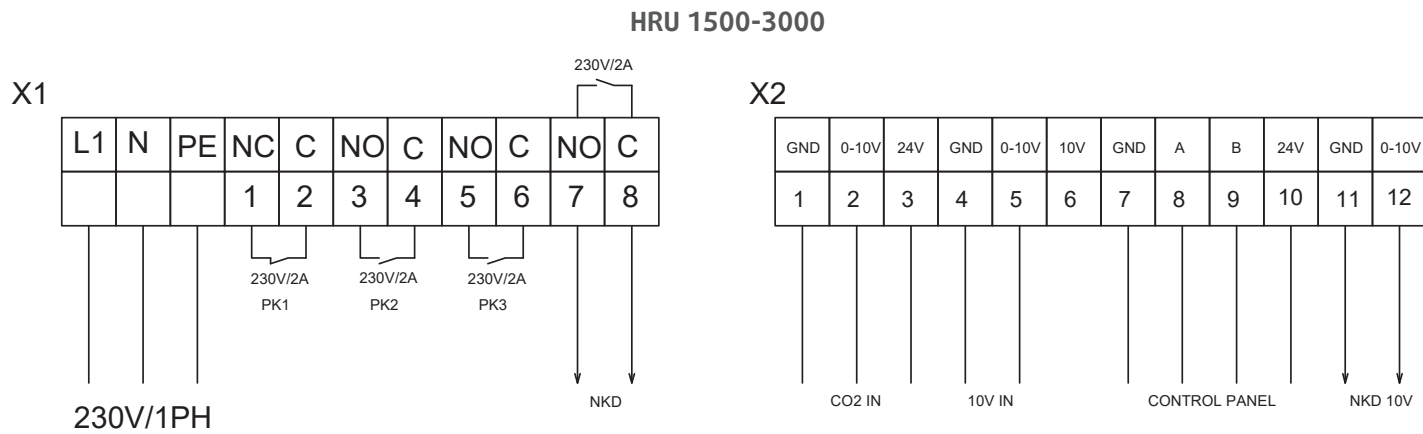
Fan full pressure [Pa]	Dimension H [mm]	Dimension h [mm]
<600	100	50
600-1000	140	70
1000-1400	190	95
1400-1800	240	120
1800-2200	290	145
2200-2600	340	170

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.

WIRING DIAGRAM



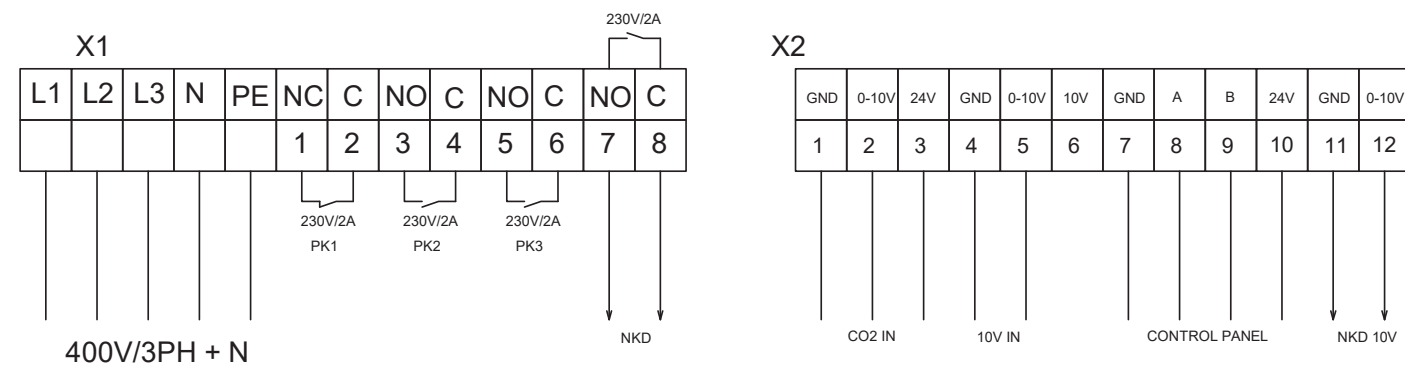
X1

DESIGNATION	NAME	CABLE TYPE	CONTACT TYPE	SWITCH VOLTAGE
PK1	CONTACT FROM FIRE PANEL	2 X 0.75	NC	2A, 230V, AC
PK2	FIREPLACE MODE INPUT	2 X 0.75	NO	2A, 230V, AC
PK3	BOOST MODE INPUT	2 X 0.75	NO	2A, 230V, AC
NKD	HEATER RELEASE OUTPUT	2 X 0.75	NO	2A, 230V, AC

X2

DESIGNATION	NAME	CABLE TYPE	SIGNAL TYPE	SIGNAL VOLTAGE
CO2 IN	CO2 SENSOR 0-10V	CAT	ANALOGUE	0-10V, DC
10V IN	EXTERNAL 0-10V	CAT	ANALOGUE	0-10V, DC
PANEL	CONTROL PANEL CONNECTION	CAT	MODBUS	24V, DC
NKD 10V	HEATER OUTPUT 0-10V	CAT	ANALOGUE	0-10V, DC

HRU 3500



X1

DESIGNATION	NAME	CABLE TYPE	CONTACT TYPE	SWITCH VOLTAGE
PK1	CONTACT FROM FIRE PANEL	2 X 0.75	NC	2A, 230V, AC
PK2	FIREPLACE MODE INPUT	2 X 0.75	NO	2A, 230V, AC
PK3	BOOST MODE INPUT	2 X 0.75	NO	2A, 230V, AC
NKD	HEATER RELEASE OUTPUT	2 X 0.75	NO	2A, 230V, AC

X2

DESIGNATION	NAME	CABLE TYPE	SIGNAL TYPE	SIGNAL VOLTAGE
CO2 IN	CO2 SENSOR 0-10V	CAT	ANALOGUE	0-10V, DC
10V IN	EXTERNAL 0-10V	CAT	ANALOGUE	0-10V, DC
PANEL	CONTROL PANEL CONNECTION	CAT	MODBUS	24V, DC
NKD 10V	HEATER OUTPUT 0-10V	CAT	ANALOGUE	0-10V, DC



— ELECTRIC SHOCK HAZARD!

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.

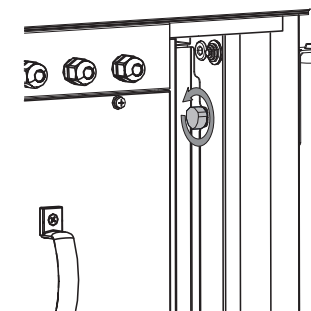
The unit operation requires regular inspection, dry cleaning of inner components, check-up and replacement of air filters in case of filter clogging.

3-6 months after commissioning of the unit it must be inspected by a service expert for planned preventive maintenance of the unit.

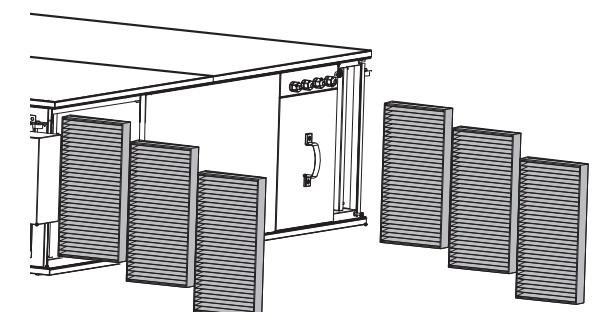
Subsequent maintenance should be carried out at least once every 6-12 months. The frequency of maintenance is determined by the service technician, depending on the operating conditions of the unit. Dust deposits on the inner parts of the unit, especially in the electric heater, may lead to unpleasant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

Access to filters through side service panels

Remove the service panels.



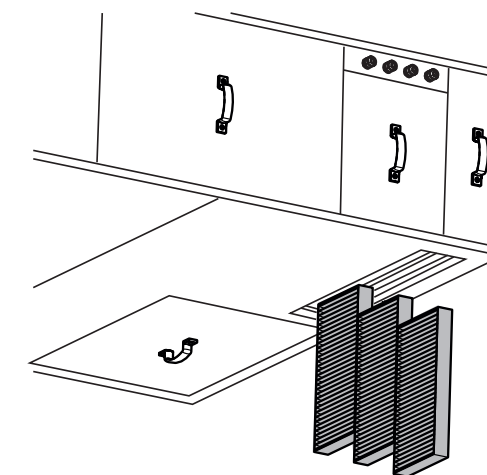
Unscrew the two thumbscrews securing the retaining plate.



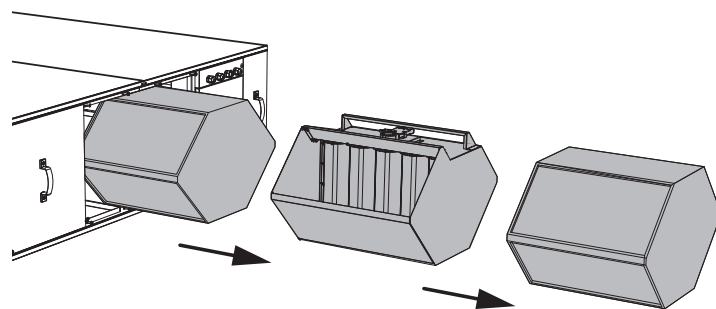
Remove the filter elements.

Access to filters through lower service panels

Remove the service panels. Remove the filter elements.



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.



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.



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