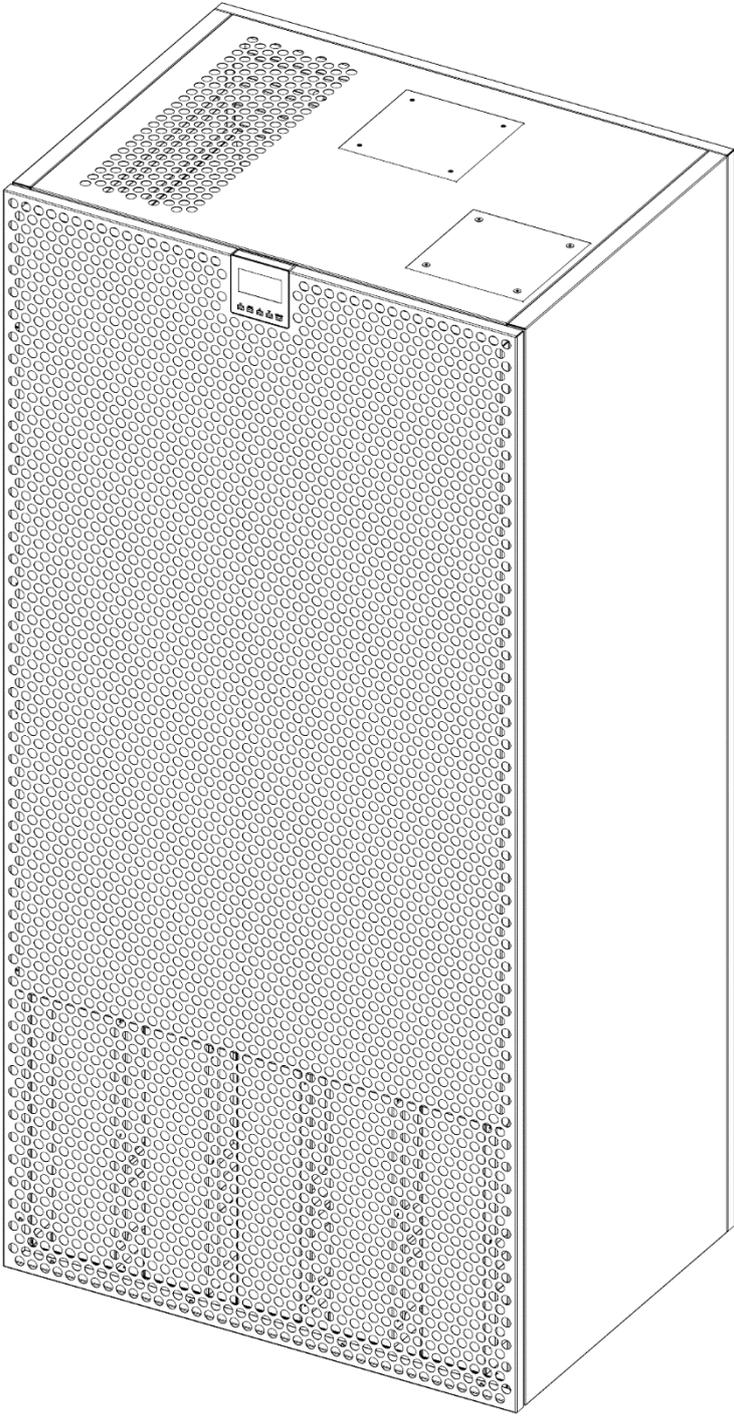


BSK SCHOLAR 500/700 HEAT RECOVERY UNIT MONTAGE, SERVICE AND USAGE MANUAL



PREFACE

Thank you for choosing the BSK Heat Recovery Units. The purpose of this document is to inform the users of the BSK Heat Recovery Unit about the parts and features of the device, to give information about operation and maintenance.

BSK heat recovery unit ensures high indoor air quality and energy savings at the same time. Heat transfer between the fresh air and the exhaust air is achieved by means of a plastic plate, counter-flow heat exchanger. It ensures high performance and high thermal conductivity, and efficient heat transfer between warm and cold air. The devices are designed to be easy to assemble, use and maintain. They work quietly thanks to the low noise self-motorized fans and noise isolation inside the device. Extensive controls, and accessory options give users the ability to custom fit their needs perfectly.

WARRANTY DETAILS

BSK guarantees that the heat recovery units it produced are of good quality. It ensures repair and exchange during the warranty period for faults which could manifest from structural weld flaws, material defects, or manufacturing problems as well as fans, damper system or electronics. BSK does not accept any liability for damage caused by improper and irresponsible use conditions.

Failings related to all mechanical and electrical components such as fans, motors, and circuitry, caused by defective modules or incorrect assembly are covered by warranty for 2 years, starting from the date of invoice to the customer.

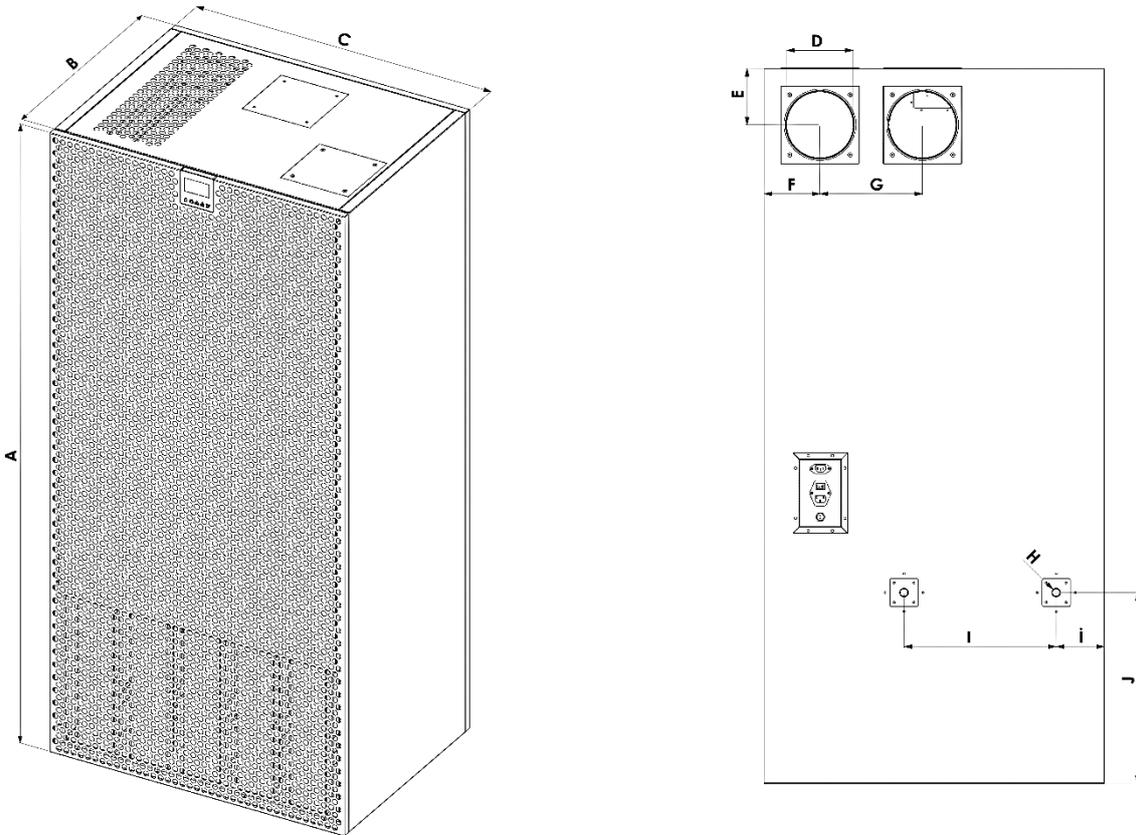
If repairs or modifications to parts have been made without the written permission of BSK or the authorized service, the device will not be covered by the warranty. Repaired device malfunctions, and changed defective parts handled by means of the technical staff appointed by BSK or an authorized service will not void the warranty. Also the replacement of the G4 / F7 cassette filters contained in the device, made by BSK, will be excluded from this scope.

BSK warranty includes the replacement spare parts for fans, damper motor and system, and electronic components. It does not include the wages of service personnel, operation and / or maintenance costs. If the defect is within the coverage of the warranty, all transportation and exchange costs of the device and the technical staff appointment shall be borne by the authorized service, otherwise these costs must be met by the customer.

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BSK SCHOLAR 500/700 DIMENSIONS

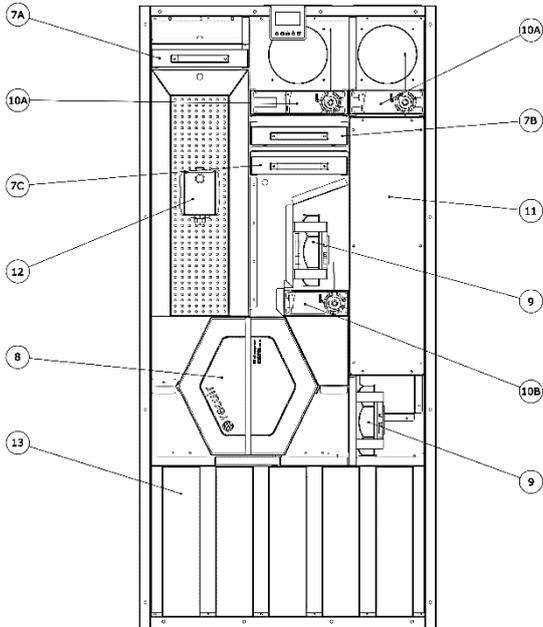
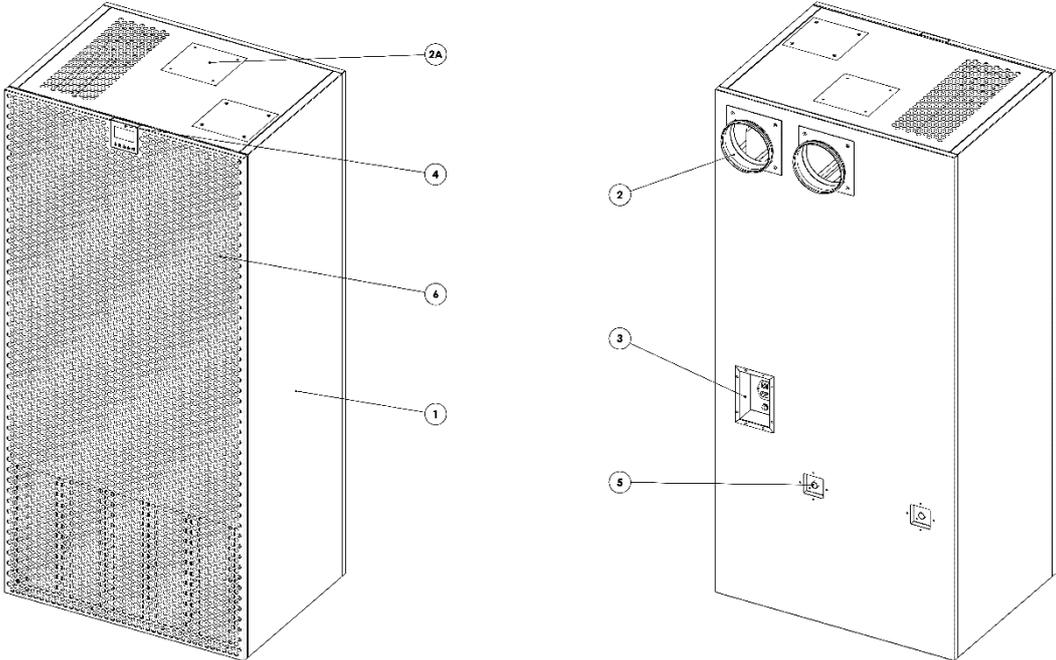


(mm)	A	B	C	D	E	F	G	H	I	J
SCHOLAR 500	1650	575	780	160	130					
SCHOLAR 700		625	780	180	130					

POSITIONING AND CLEARANCES

- For easy access and maintenance leave at least 50mm from the sides and 100mm from the back when installing near walls.
- Leave at least 500mm gap from the ceiling to the top of the device. Do not obstruct the air intake grid on the top by any means.
- Leave at least 1m of free space in front of the device. Do not obstruct the air outlet grid on the bottom by any means.

HEAT RECOVERY UNIT'S PARTS



1. Body

The body of the SCHOLAR series heat recovery units is made of double walled galvanized sheet metal filled with rock wool insulation.

Both inside and outside of the body is painted with electrostatic powder paint.

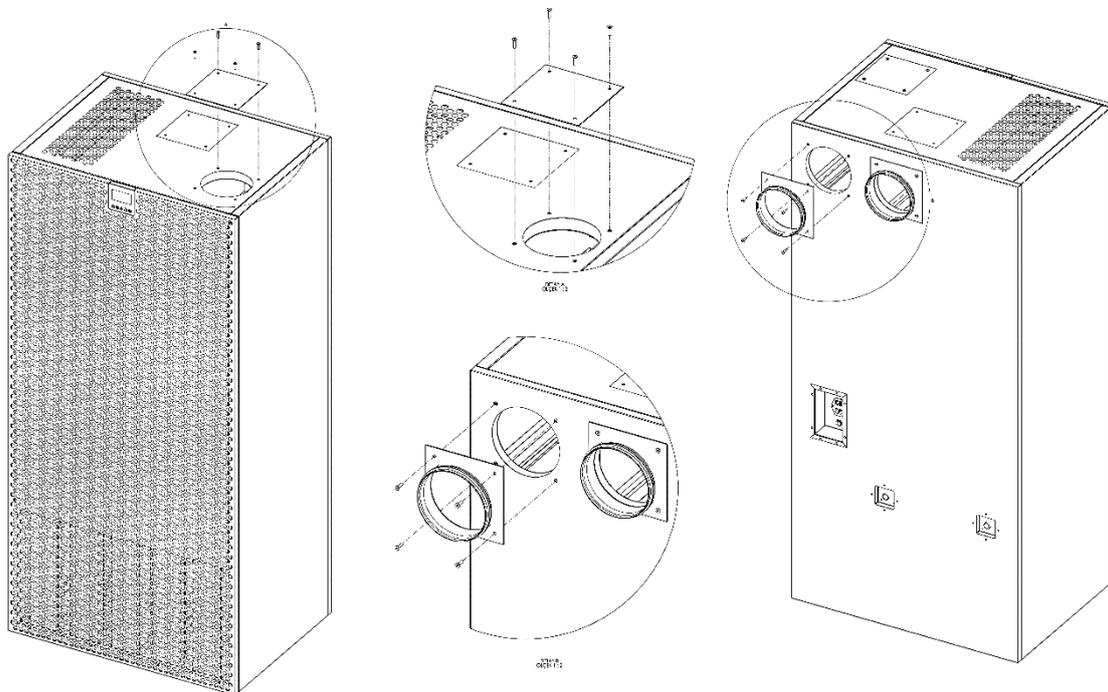
2. Air Connections

Air connection pipes have a round cross-section. The duct connectors are sealed with double lipped rubber joints. All connections should be made with according diameter of the device model ($\varnothing 160$ or $\varnothing 180$ mm).

Fresh air in

Exhaust air out

The device needs 2 air connections. These are indicated on the device near air connection pipes with stickers. The other air ways (fresh air out and exhaust air in) is located directly on the body of the device and no duct connection is needed.



The air connections can be changed from back to top, depending on the user's preferences. Simply remove the screws shown above and relocate the spigots in desired position.

3. Electrical Connections

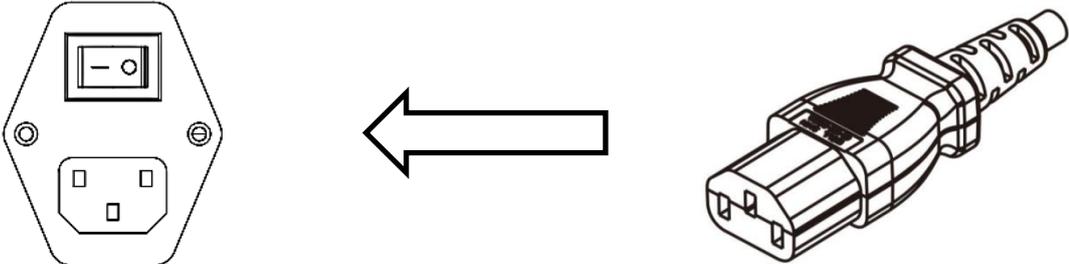
SCHOLAR units are designed to be plug and play, and all the electrical connections come with pre-connected sockets for this purpose. You do not need to wire connections to the control board, just plug the power cable to the back of the device.

A. Power Input

This is the main power source of the device. The socket is equipped with an on/off switch. “I” is the **ON** and “O” is the **OFF** position.

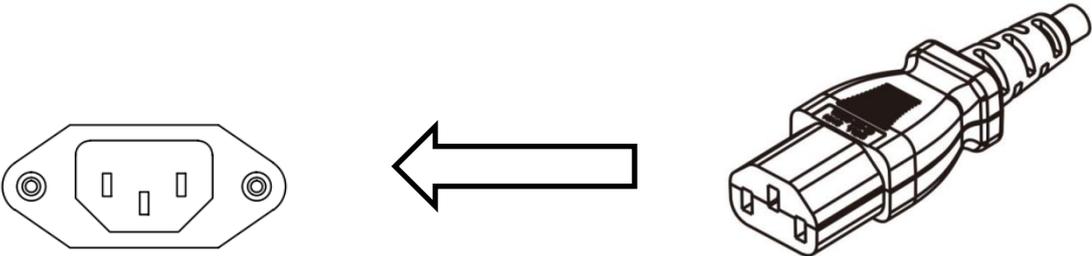
The switch must be on **OFF** position before all the connections to the device is made.

The socket has a 250V 10A glass fuse.



B. Boost Input

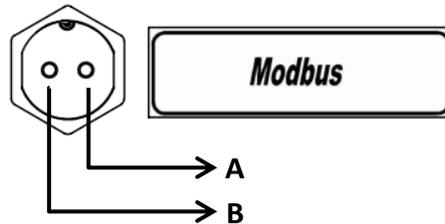
An 220V signal or switch can be connected to the device via this port. When the connected switch is turned on, the device will enter Boost Mode to help with the ventilation.



Users can change the aspirator and ventilator fan levels for Boost Mode to best suit their needs. To change the boost levels press ▲ and ▼ together while the device is turned off from the control panel (BSK logo is on the screen). Select “Aspirator Boost” from the menu and set the ASP and VNT levels according to your needs.

C. Modbus Port

The device can be connected to a building management system (BMS) via the ModBus protocol. The A and B pins of the ModBus port is shown below.



4. Digital Control Panel

Digital control panel of the device is used to control the various features of the device. For more information on how to use the digital control panel please refer to the Digital Control Panel User Guide.

5. Drainage Pipes

There is a collector tray made of galvanized sheet metal, to collect the condensing water droplets which can be formed inside the device. The drainage pipe has been taken out to be able to connect to the waste water system.

The drainage pipes must be connected to the waste water line before the device is started. The connection is made with a $\varnothing 19$ mm pipe.

The drain must never be led to the gutter directly, since it can cause water damage when it freezes outside

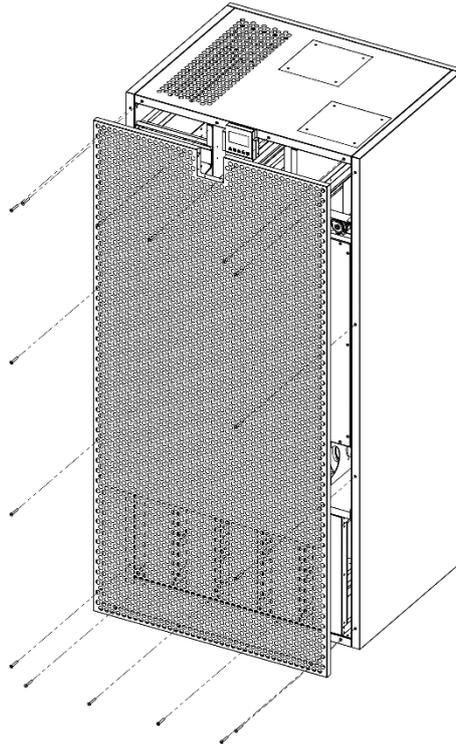
The connection of the drain must always have a water lock to prevent smells from the waste water line.



6. Service Door

The units have service doors that can be opened and sealed with hexagonal screws for maintenance and replacement.

To open the cover, unscrew all the bolts on the cover like shown below, with an M5 Allen wrench, and take off the cover.



7. Cassette filters

There are 2 filters (G4 and F7) after the fresh air and 1 (M5) after the extract air inlet which filters the air going into the device to protect the heat exchanger and other commodities from dust and abrasive particles.

7A – M5 Filter

7B – G4 Filter

7C – F7 Filter

All 3 filters are equipped with a pressure switch, which will notify the user when the respective filter is full. The warning message can be seen on the control panel.

To change the filters, open the service cover. Pull the filter from its slot, put the new filter back in and then tightly screw the service door back.

8. Heat exchanger

Plastic plated, high efficiency, hexagonal counter flow heat exchangers are used in all of the units.

To clean the heat exchanger, open the service cover and simply pull the heat exchanger from its slot. After removing the heat exchanger, wash it with water and dry it out before putting it back in. Tightly screw the service door back. Clean the heat exchanger once every 6 – 12 months depending on the usage.

9. Fans

All devices utilize self-motorized, silent, monophase (220 V) and variable speed-controlled EC fans.

To change the speed of the fans from the digital control panel, press MODE/OK on the main screen to select ASP or VNT. Then press ▲ to increase or ▼ to decrease the fan speed. For more information refer to the digital control panel guide.

10. Automatic dampers

The device utilizes 3 automatic dampers.

A. Air dampers

These dampers automatically open when the device is started and close when it is turned off from the control panel. They prevent air draft to the device from the outside when the device is not running.

B. By-pass damper

At the back of the device, inside, there is a channel which by-passes the heat exchanger. By-pass damper opens or closes this channel along with the heat exchanger. (When the canal is closed heat exchanger is open and vice versa).

By-pass damper is used to control the flow of air to the by-pass channel. This is called the Free-cooling mode, as it allows direct intake of the outside air, without conditioning it in the heat exchanger.

Free-cooling mode

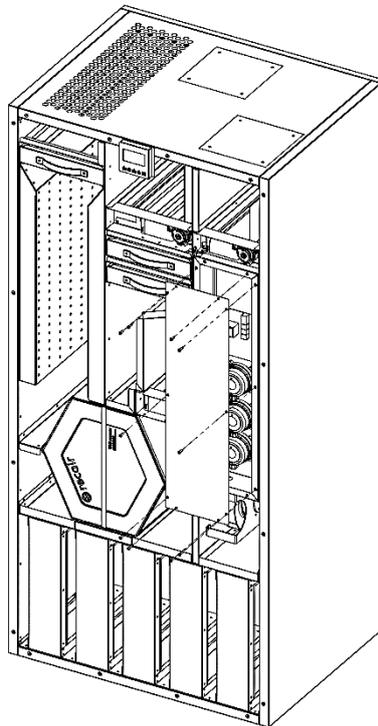
When the outside temperature is warm enough, heat recovery from the inside air is not always necessary. For these situations, usually on seasonal changes, free cooling mode is activated and the air flow is directed from the heat exchanger to the by-pass canal. This will decrease the pressure drop and the load on the fans can work with less energy, improving the power consumption of the device.

You can change the set temperature from the digital control panel to arrange the range of temperature when the free cooling mode is needed. For more information, please refer to the Digital Control Panel User Guide.

11. Electric Control Box

All devices have a box on the body which encloses the electronic control card, differential pressure switches and other electrical connections.

To access the controller box, open the service cover first. Then unscrew the controller box cover shown on the drawing below.



12. Carbon dioxide (CO₂) Sensor

The device is equipped with a CO₂ sensor for automatic crowd detection. When the CO₂ ppm levels rise above a set value, the device will enter boost mode and increase its fan speeds to dissipate the CO₂ build-up. These levels can be controlled from the digital panel. For more information, please refer to the Digital Control Panel User Guide.

13. Box Silencers

The device is fitted with silencers to reduce the fan and air noise. There are 2 regions of perforated silencers, located at exhaust air intake and fresh air output. There are also special cage silencers in front of the fans.

GENERAL WARNINGS

- Installation and commissioning of the device must be done by qualified personnel.
- The heat recovery device should not be disassembled in any case. Only authorized service personnel can disassemble and repair. Otherwise, electric shocks or injuries may result.
- All protective materials (stretch, etc.) placed on the device to prevent damage during transportation must be removed before the device is switched on. These materials can be inside or outside of the device.



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- This appliance is not to be used in heated swimming pools, cold storage rooms, environments where humidity and heat are very different. It is not used in environments exposed to rain. (Otherwise, you may be exposed to electric shocks, and your device will not operate correctly.)
 - Do not use this device in corrosive environments such as acids and in corrosive environments. (oil mist, paint, toxic gases etc ...) Do not use the device in flammable media (containing explosive gas).
 - These devices operate at 230V - 50 Hz.



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- The fixing of the device should be done well and securely.
 - Do not apply force to electrical connections and control box while lifting the device.
 - Connect waste water lines to the pipes of the drain pans.
 - When connecting the device, be careful of the service spaces, otherwise the filter changes and the device cannot be interfere with the fan motors.
 - The drain pipes must be connected to the waste water lines before the device is started.
 - If the control panel displays a warning about filter, you should clean or change your filter.
 - Check that the drain line is properly installed.
 - The fresh air inlet (exterior part) of the device with exhaust should be such that it does not miss the rainwater into the appliance.
 - This device should be used in a temperature range of -10°C to $+40^{\circ}\text{C}$, where the relative humidity is below 60%. It is recommended to use an electric heater when the appliance is to be humidified at the fresh air intake. Failure to get fresh air into the desired properties can lead to a reduction in the amount of oxygen in the room and discomfort. In such cases, the indoor air quality sensor can be placed on the suction side.



- Apparatus (switch, fuse, cable etc.) to be used with the system must be selected from the staff with the quality certificate and the high strength.
- Make sure that the power supply of the device is suitable for the power supply with the appropriate cable and thermally protected switch.
- Make sure that the device is not in electrical contact with air ducts and building steel constructions. Otherwise, electrical leaks and fire may occur.
- A circuit breaker working with the fuse and switch system must be placed on the mains connection to the device.
- Electric heaters must be used with the heat recovery device automatic controller. In the automatic controller, the small relay contacts for controlling the resistances are of low amperage capacity and are intended for dry contact (open / close). It is necessary to check the contactors to operate the resistances to be controlled by this contact. (A separate panel should be made for the electric heater and the contactor, switch, fuse must be installed.)
- Switch off the electrical connections before interfering with the appliance.
- Make sure the fan motor is not running before opening the service doors. Do not open the service lid while the fan is running. Before removing the fan during service, unplug the power cord and remove it from the power outlet.
- There should not be foreign substances in the cell.
- Clean the G4 filters and heat exchanger with compressed air. Do not clean with flammable gases or water.
- Clean G4 filters with compressed air at least every 45 days depending on ambient conditions. After cleaning five times, replace filters with new ones.
- During installation of the devices to the duct system; sharp turns in the canal system, sudden contraction or expansion in multiple canvases and canal diameters should not be allowed.