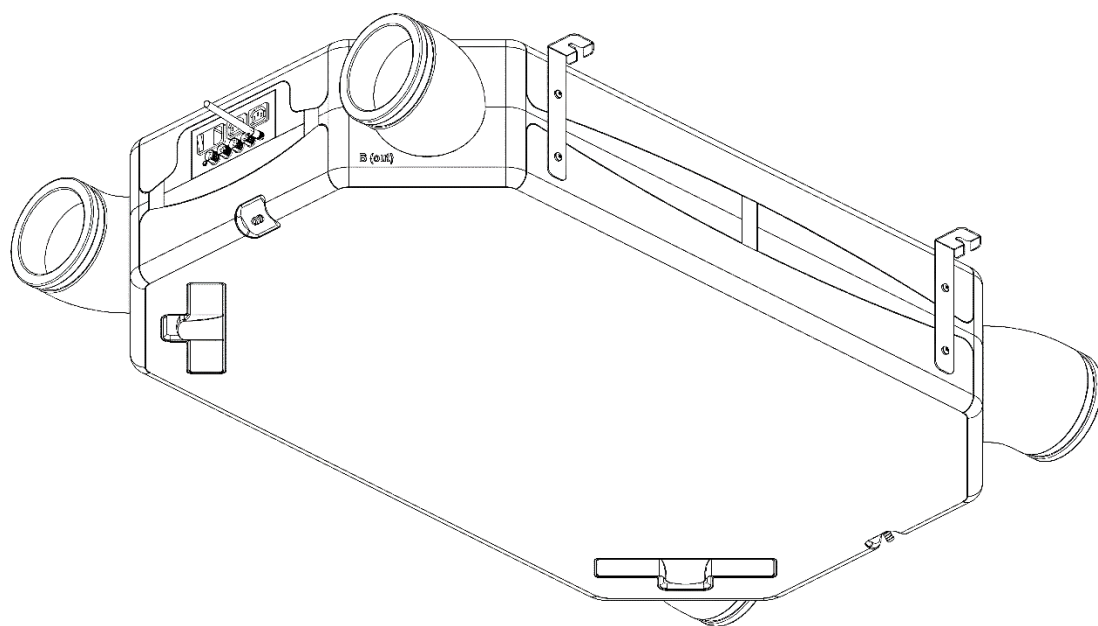




**BSK NOTUS SLIM
RESIDENTIAL HEAT RECOVERY DEVICE**



MONTAGE AND SERVICE MANUAL

PREFACE

Thank you for selecting the BSK NOTUS SLIM heat recovery device. This manual has been prepared to provide users with clear and comprehensive information regarding the components, functions, and maintenance requirements of the BSK NOTUS SLIM.

High indoor air quality is maintained while energy consumption is reduced through the use of a plastic plate counter flow heat exchanger, which enables effective heat transfer between supply and extract air streams. Reliable thermal performance is ensured through the structural design of the unit and the properties of the heat exchange surfaces.

Ease of installation, operation, and maintenance has been considered throughout the design of the device. System configuration may be adjusted through the available control options and compatible accessories to meet specific application requirements.

By selecting the BSK NOTUS SLIM, you have chosen an efficient and practical heat recovery solution with consistent control of indoor air conditions.

WARRANTY DETAILS

The quality of BSK heat recovery units is assured against structural weld defects, material faults, and manufacturing defects, including failures of fans, damper systems, and electronic components. Responsibility is not accepted for damage caused by improper use, misuse, or operation outside the intended conditions.

Warranty Coverage

- The warranty applies to all mechanical and electrical components, including fans, motors, and electronic circuits, for a period of two years from the date stated on the customer invoice.

Warranty Exclusions

- Damage resulting from unauthorized repair, modification, or replacement of components without prior written approval from BSK or an authorized service provider is excluded from warranty coverage. The replacement of G4 or F7 cassette filters, when not carried out by BSK, is also excluded from the scope of the warranty.

Repair and Replacement

- During the warranty period, defects arising from structural weld faults, material defects, or manufacturing issues, including failures in fans, damper systems, or electronic components, are eligible for repair or replacement.

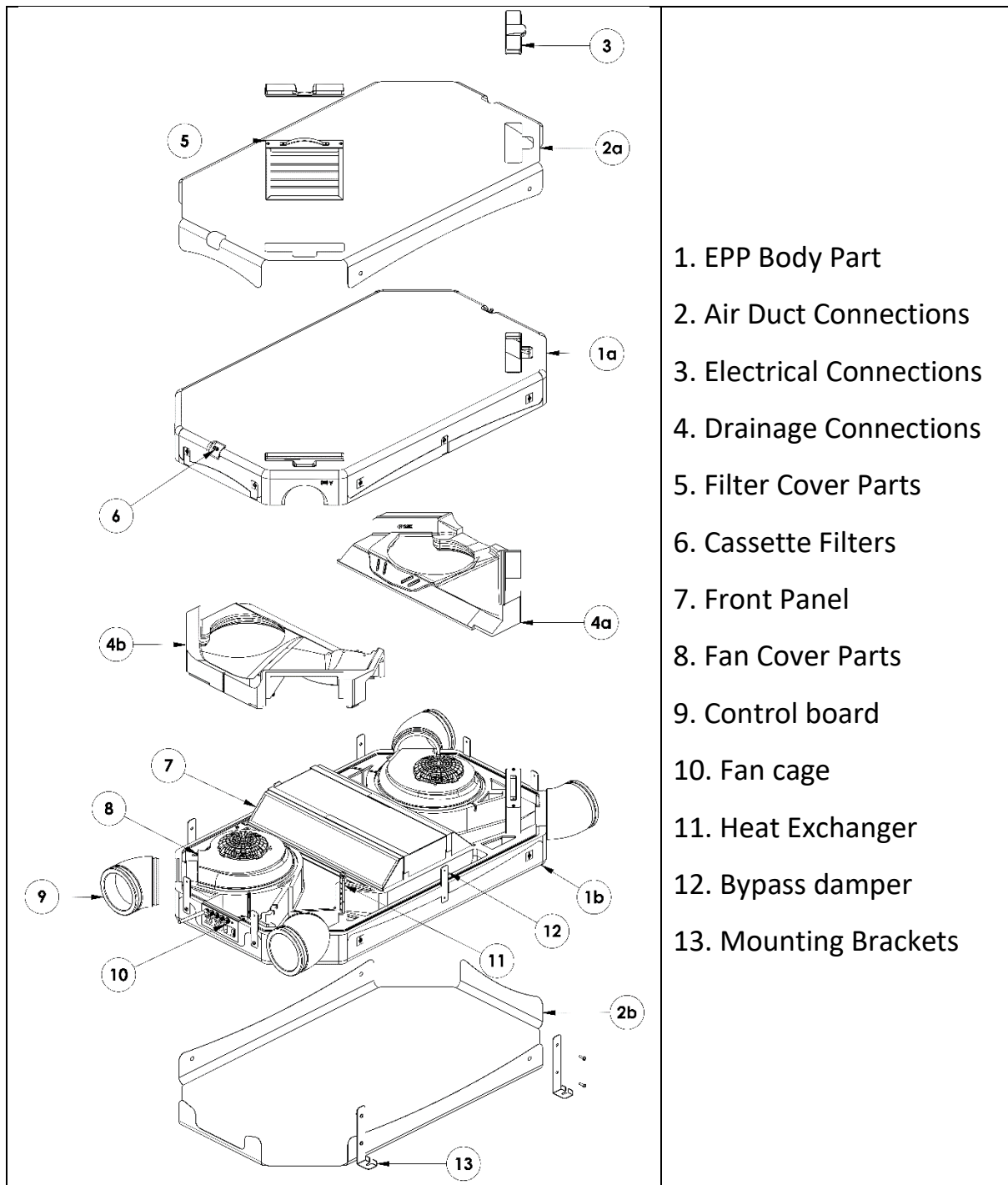
Service Personnel and Associated Costs

- The warranty includes the provision of replacement spare parts for fans, damper motors, and electronic components. Costs related to service personnel, labour, or routine operation and maintenance are not included.

Transportation and Replacement Costs

- When a defect is confirmed to be covered under warranty, transportation costs, replacement expenses, and authorized technical service visits are covered by the authorized service provider. In cases where the defect falls outside warranty coverage, these costs shall be the responsibility of the customer.

HEAT RECOVERY UNIT'S PARTS



1. EPP Body (1A Top, 1B Bottom)

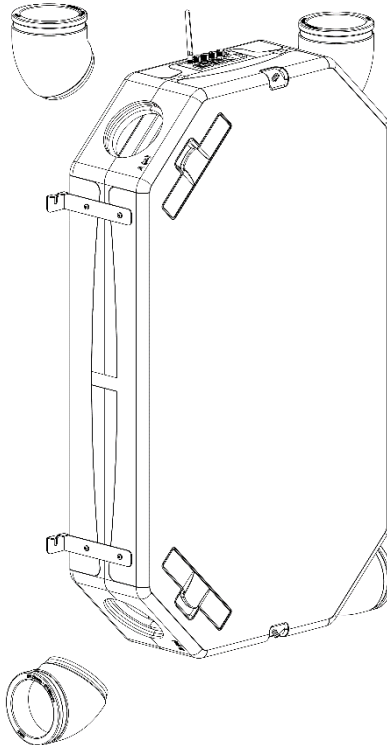
The body of the BSK NOTUS SLIM heat recovery units is made of Expanded Polypropylene (EPP) material. EPP is a highly versatile closed-cell bead foam that provides a unique range of properties, including outstanding shock absorption, thermal insulation, water and chemical resistance, exceptionally high strength to weight ratio and 100% recyclability.

The device body is designed to minimize pressure losses. The inner surfaces of the device are smooth and have no sharp edges.

The lightweight nature of the EPP material significantly reduces the overall weight of the unit compared to metal units, thus bringing the weight down under 25kg so that 1 person can easily lift it up.

2. Air Duct Connections

All air connections should be made with a duct connection with the according diameter of either $\varnothing 125$ or $\varnothing 160$ mm. $\varnothing 125$ mm is the inside diameter and $\varnothing 160$ mm is the outer diameter of the connection part.



Air duct connection parts can be removed and turned to horizontal or vertical positions.

The device needs 4 air connections;

Fresh air in:

Gets the fresh air from outside into the device.

Fresh air in should be connected to A(in).

Fresh air out:

Gives the heated fresh air to the inside. Also called “supply air”

Fresh air out should be connected to A(out).

Exhaust air in:

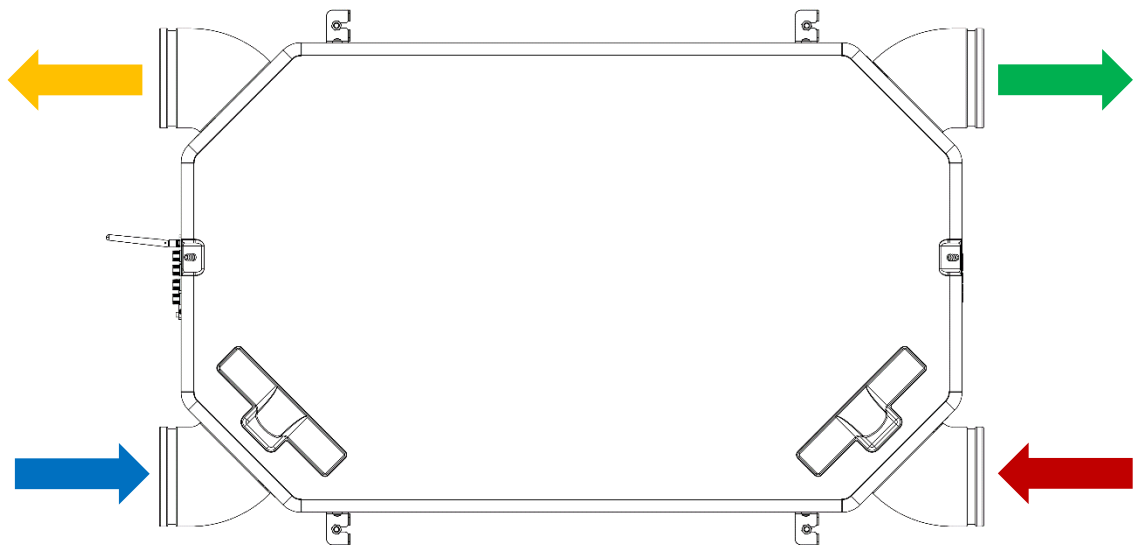
Gets warm inside air into the device. Also called “extract air”

Exhaust air in should be connected to B(in).

Exhaust air out:

Deposits the used, cooled air to the outside

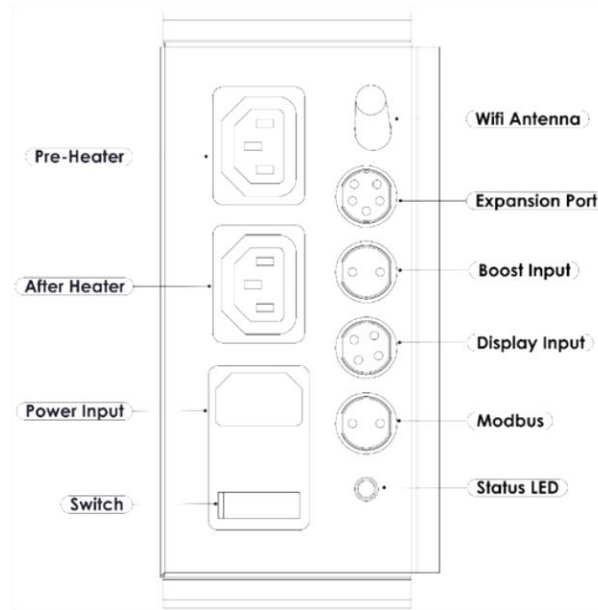
Exhaust air out should be connected to B(out).



	Fresh air in
	Exhaust air in
	Fresh air out
	Exhaust air out

3. Electrical Connections

BSK NOTUS SLIM units are designed for direct commissioning, with all electrical connections provided through pre connected sockets. Open wiring to the control board is not required. Operation of accessories is achieved by connecting the designated sockets to their corresponding interfaces on the device.



A. Power Input

This socket serves as the primary power supply connection of the device. An integrated on and off switch is provided, where the “I” position indicates on and the “O” position indicates off.

The switch shall be set to the off position before any electrical connections are made to the device.

The socket is fitted with a 250 V 10 A glass fuse for surge protection.

B. Status LED

The status LED is activated when the filters reach the replacement threshold. Filter pressure is monitored by the internal differential pressure sensor, and an indication is provided when filter replacement is required.

Once the filters are replaced, the sensor will detect clean filters and the status LED is automatically deactivated.

C. WiFi Antenna

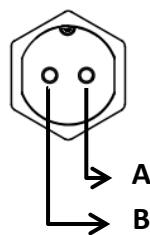
A 15cm 2.4Ghz antenna is used to increase the range of the WiFi.

D. Display Input

Display connection is used to connect the BSK Touch Display control panel to the device. For detailed explanation please refer to the BSK Touch Display User Guide.

E. Modbus Port

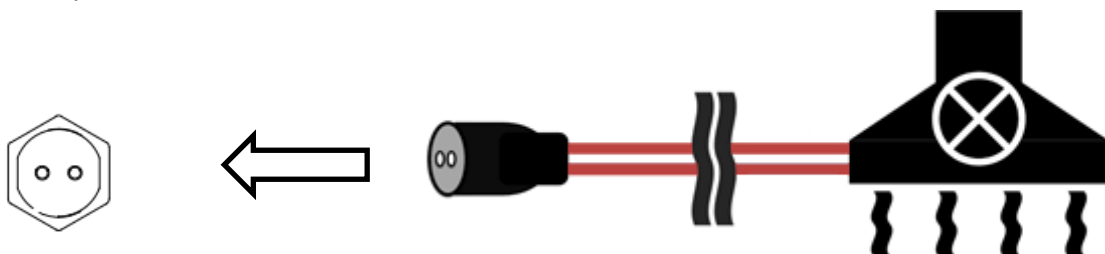
The device can be connected to a building management system (BMS) via the ModBus protocol. The A and B pins of the ModBus port is shown below.



F. Boost Input Port

Connection of the device to a kitchen extractor hood or to another external switch can be made through the boost input port. This dry contact input is used to signal the device when the external switch is activated, upon which External Boost Mode is initiated.

For connection, splice the two wires of the extension cable (sold separately) to the kitchen hood or on/off switch.



- **DO NOT** connect the cable to the power directly, the input is dry contact and should only be connected to a potential-free switch.

G. Expansion Port

The expansion port is provided for the connection of optional extension accessories such as Automatic Fire Damper Control Module (sold separately). If additional functions are required at a later stage, they may be added to the BSK NOTUS SLIM through the expansion port.

H. Electric Pre-heater Signal Port

This port is used to connect the on/off signal cable to unit-controlled PFC model electrical duct heaters (sold separately). The connection is made by plugging the pre-heater signal cable into the designated sockets on the NOTUS SLIM unit and the PFC Electrical Heater.

In cold climates, where ambient temperatures frequently fall below 0 °C, the use of an electrical pre-heater is recommended at the fresh air intake. This prevents frost formation within the device and heat exchanger by warming the incoming air first.

The pre-heater is activated automatically when the fresh air temperature falls below the set defrost threshold, which can be adjusted between -10 °C and 0 °C.

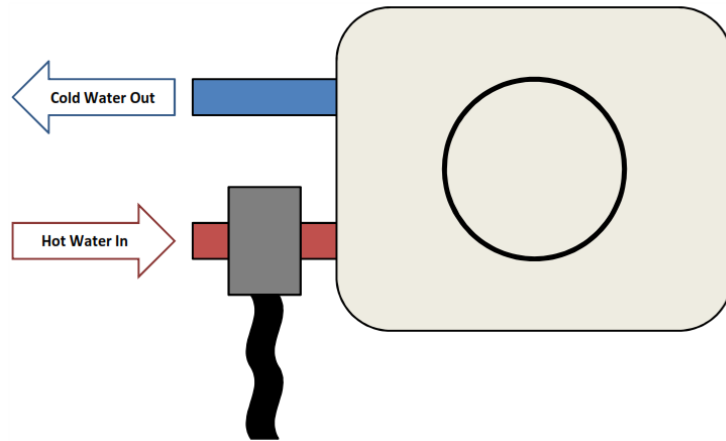
The pre-heater shall be installed at a minimum distance of two duct diameters from the heat recovery unit's connection.

I. Electric/Water After-heater

This port is used to connect the on/off signal cable to unit-controlled electrical or water after-heaters (sold separately). The connection is made by plugging the after-heater signal cable into the designated sockets on the NOTUS SLIM unit and the heater unit.

The heater can be added to the device, after the supply air duct, to further heat the air going inside of the house.

The after-heater shall be installed at a minimum distance of two duct diameters from the heat recovery unit's connection.

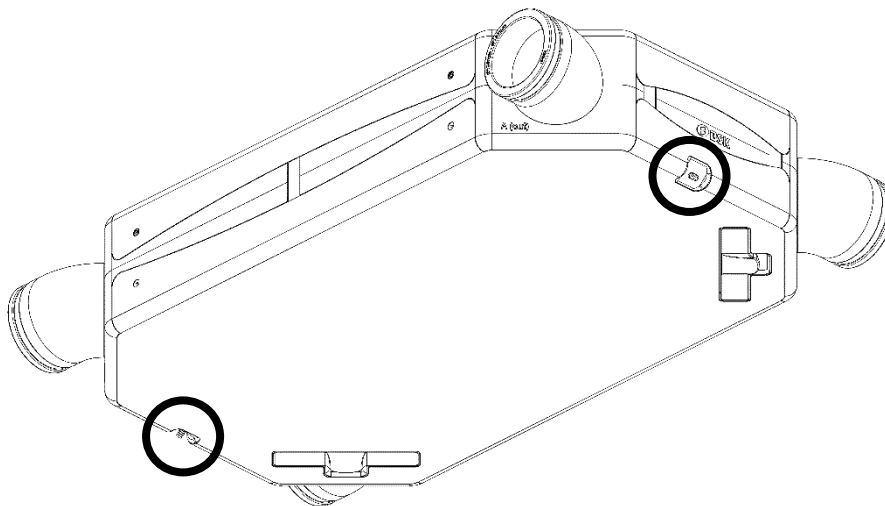


An electric valve is installed on the hot water inlet of the water heater to regulate the flow of hot water into the coil. The valve cable shall be connected to the device's "water/electric heater port."

4. Drainage Connections

Depending on the climate conditions and heat exchanger type (regular/enthalpy), condensation may occur inside the heat exchanger and the unit.

Condensate water formed inside the device is collected through the drainage system. The drainage outlet of the unit must be connected to the wastewater system or a discharge pipe.



The drainage pipes shall be connected to the wastewater line prior to device start-up. Connection to the unit is made using a Ø10 mm pipe.

The drain must not be directed to an external gutter, as freezing conditions may cause water damage.

A water trap shall be installed in the drain connection to prevent the entry of odors from the wastewater system.



5. Filter Cover Parts

The detachable filter covers on the front panel can be removed to allow access to the filters without fully detaching the front panel.

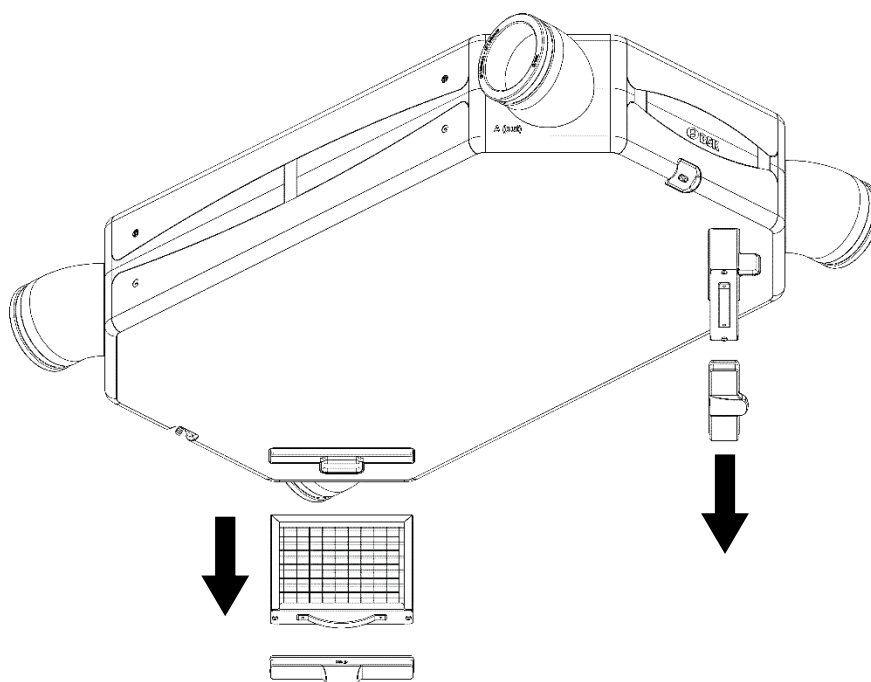
6. Cassette Filters

Two cassette filters are installed at the fresh air supply and extract air intake ports to remove dust and abrasive particles, thereby protecting the heat exchanger and other internal components.

A red LED indicator illuminates when a filter requires replacement. If a touch display is connected, corresponding warnings are also displayed.

Filter condition is monitored by an internal differential pressure sensor, and all warnings are automatically cleared when new filters are installed.

1. To change the filters, first remove the filter cover by pulling it from its handle.
2. Pull the filter from its slot.

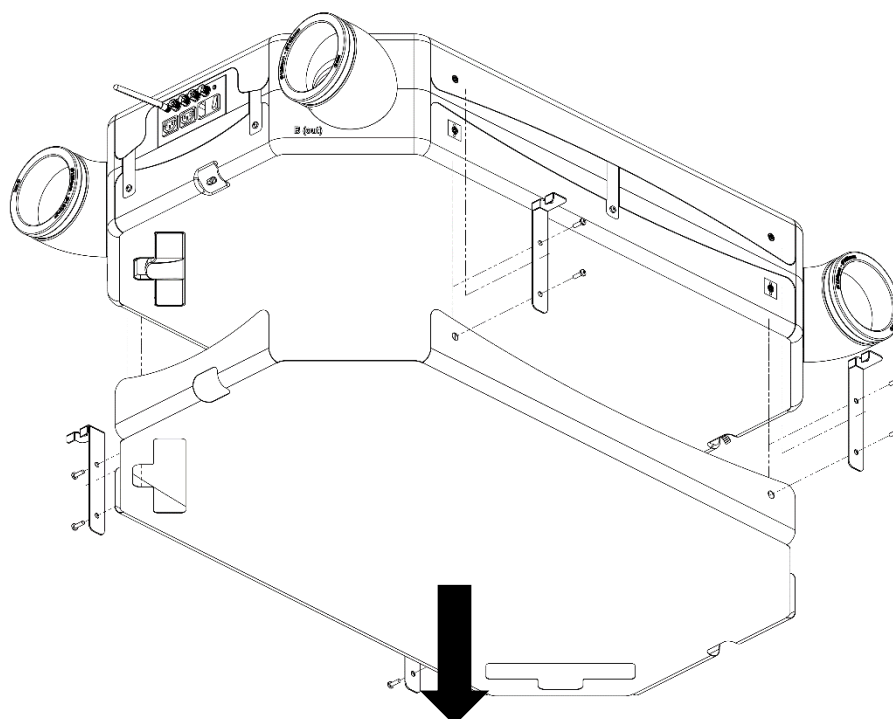


3. After removing the dirty filter, put the clean filter back in the slot.
4. Put the filter covers back into their slots.

7. Sheet Metal Front Panel

The units have a sheet metal front panel which can be removed easily.

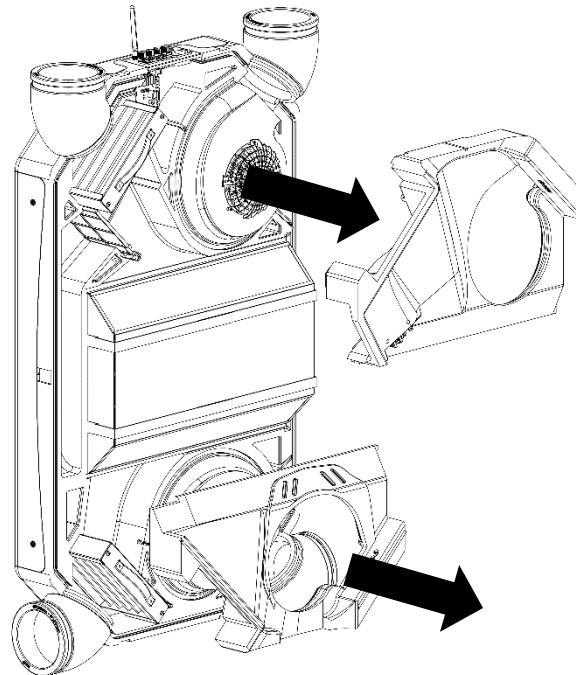
To open the device, first remove the 2 screws on the top and bottom of the front panel like shown below, and take off the cover.



8. Fan Cover Parts

There are 2 EPP fan cover parts to separate the air flows and hold the fan cages in place. To access the fans, they need to be removed first.

1. To remove the fan cover parts, first remove the front panel and open the unit to access the fan cover parts.
2. Then carefully disconnect any cables or tubes going over the fan cover parts.
3. The fan cover parts are secured to the EPP body with snap-fit joints. Carefully pull them downward to remove them. (The fan cages remain secured and will not fall when the covers are removed.)
4. The fan cover parts are asymmetrical. Fan Cover Part A and Fan Cover Part B
5. Reinsert them into their original respective positions and carefully push them up and make sure their snap-fits are locked down.
6. Re-connect any cables or tubes which are disconnected before.

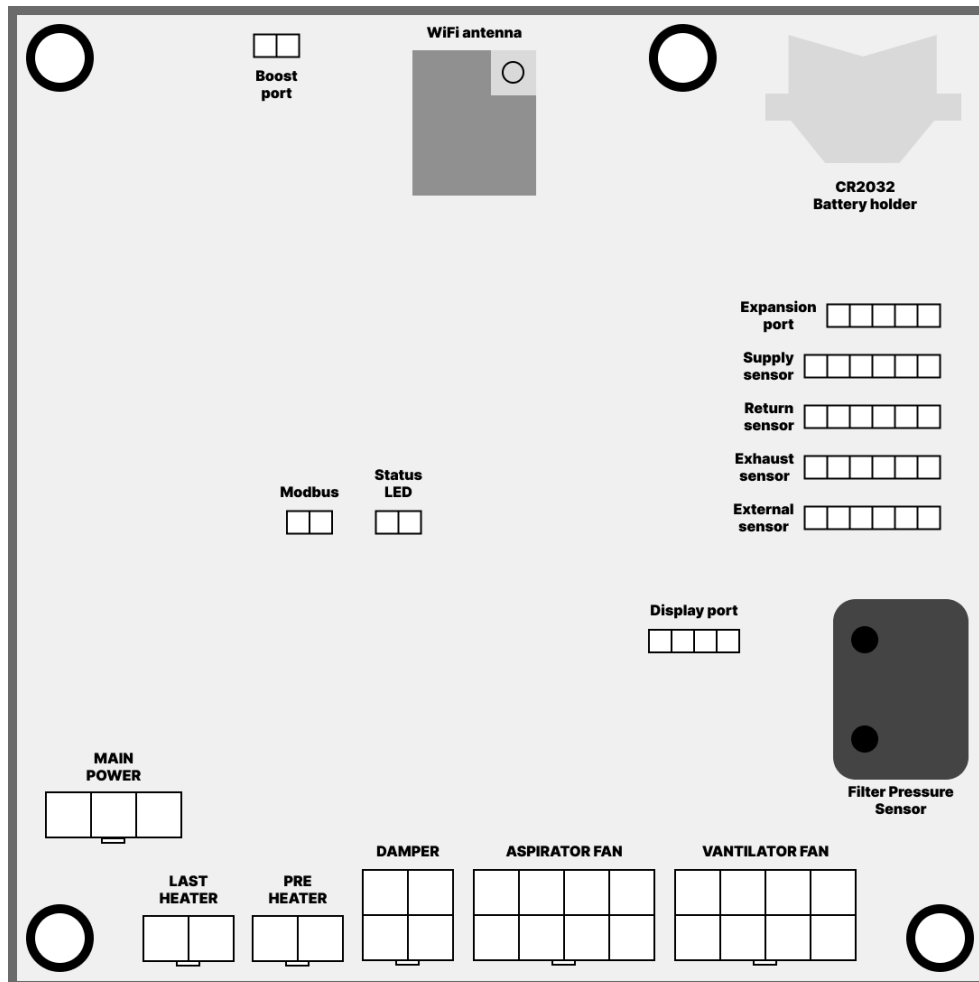


9. Electronic Control Board

Electronic control board is in the top side of the unit, under the Fan Cover Part A. It is where the electrical connections terminate inside the device.

1. To remove the control board, first turn off the device and then unplug it from the main power plug.
2. After that, disconnect the wires from their sockets one by one,

3. Remove the 2 silicone tubes colored red or blue which are connected to the differential pressure sensor on the control board.
4. Remove the Wi-Fi antenna cable which is connected to the Wi-Fi module on the back side of the control board.
5. To install a new control board, put the cables and tubes back into their respective sockets.



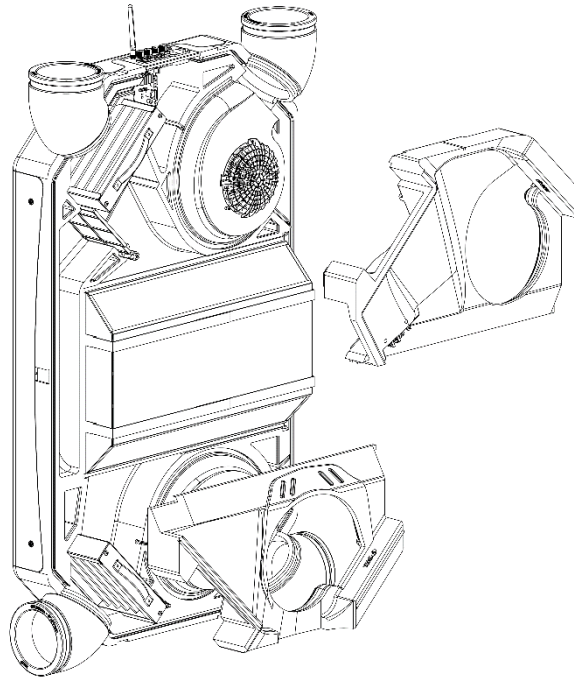
Electronic Control Board Socket Layout

10.Fan Cage

All devices utilize modern EC motors with backward curved fan blades for maximum efficiency.

1. To service the fans, turn off the unit and un-plug it from the main power cable.
2. Then remove the metal front panel and then remove the front body part (1A),
3. Remove the fan cover parts as explained in previous section.
4. Unplug the fan cables from and any other cable or tubes,

5. The fan cages are locked to the body with snap-fit joints. Carefully pull the fan cage out of its slot.

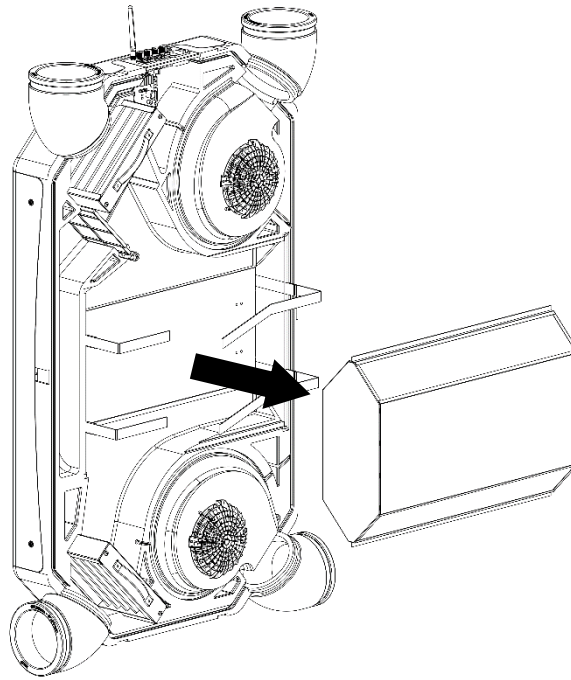


6. After service, put the fan cage back into its slot. The fan cages are symmetric. They can be put in either of the slots.
7. Reconnect the fan cables and any other disconnected cable or tubes back into their sockets.
8. Push the fan cover parts back to their place,
9. Put the front body part (1A) and then the metal front panel back on the device and secure it with screws.

11.Heat Exchanger

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

1. To service the heat exchanger, turn off the unit and un-plug it from the main power cable.
2. Then remove the metal front panel and then remove the front body part (1A),
3. Remove the fan cover parts as explained in previous section.
4. The heat exchanger is hold in place by the straps, carefully remove the straps while holding the heat exchanger in place.
5. Remove the heat exchanger.



6. After servicing, put the heat exchanger back in its slot.
7. Secure and tighten the straps back on the heat exchanger.
8. Put the fan cover parts back on.
9. Put the front body part (1A) and then the metal front panel back on the device and secure it with screws.

12. Bypass Damper

Automatic bypass damper allows the bypass canal to be opened and closed, enabling the free-cooling mode where the outside air bypasses the heat exchanger and routed directly into the house.

Free-cooling mode

When the outside temperature is sufficient, heat recovery from indoor air may not be required. In such conditions, typically during seasonal transitions, Free Cooling Mode is activated, directing airflow through the bypass channel instead of the heat exchanger.

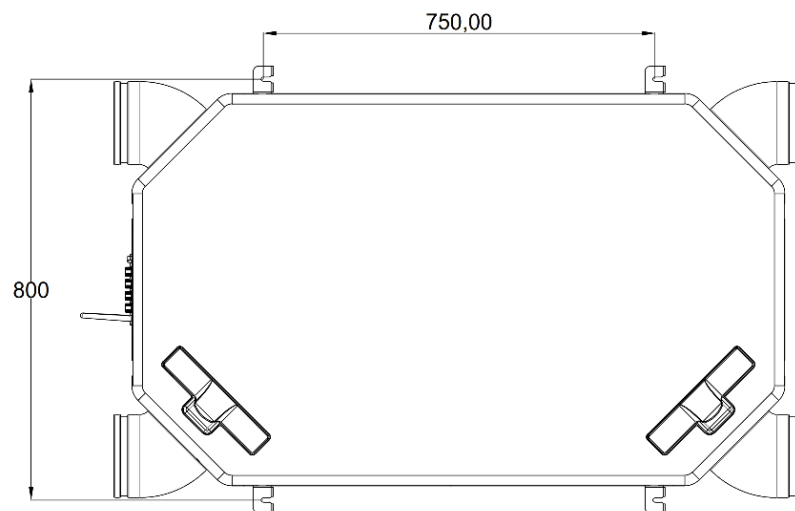
In automatic free-cooling mode the bypass damper will open if the set temperature is within $\pm 2^{\circ}\text{C}$ of the external temperature. Or if set to ON or OFF mode it will permanently stay opened or closed depending on the selection.

To learn how to set free-cooling modes, please check the Touch Display User Guide.

13.Wall Mounting Brackets

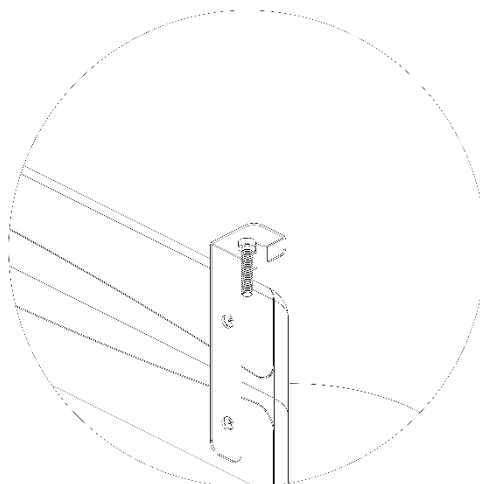
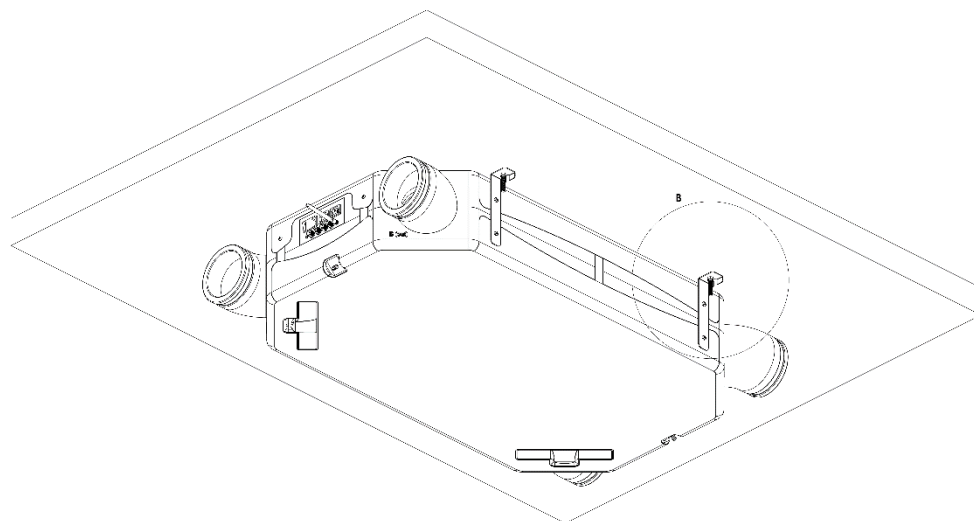
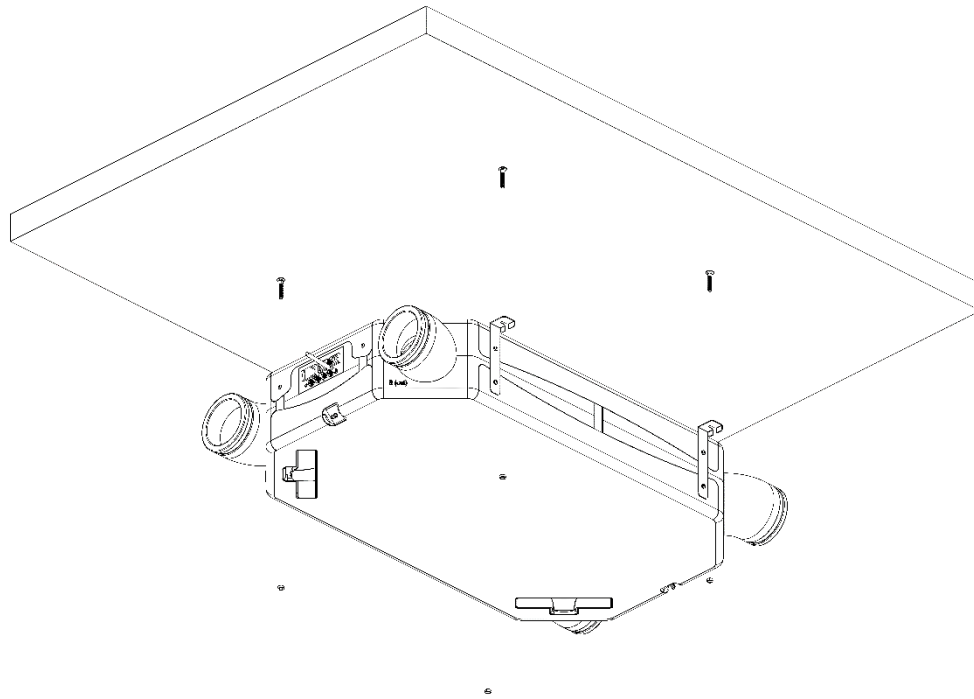
4 wall mounting brackets are provided for installation of the device on a flat ceiling or wall.

1. Drill 4 holes in the wall to the corners of an 750x800 mm rectangle. The unit's box can be used as a template.



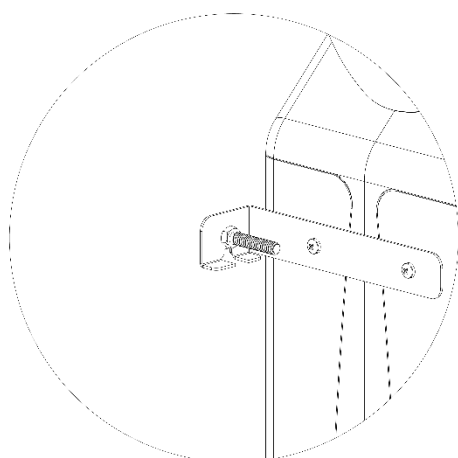
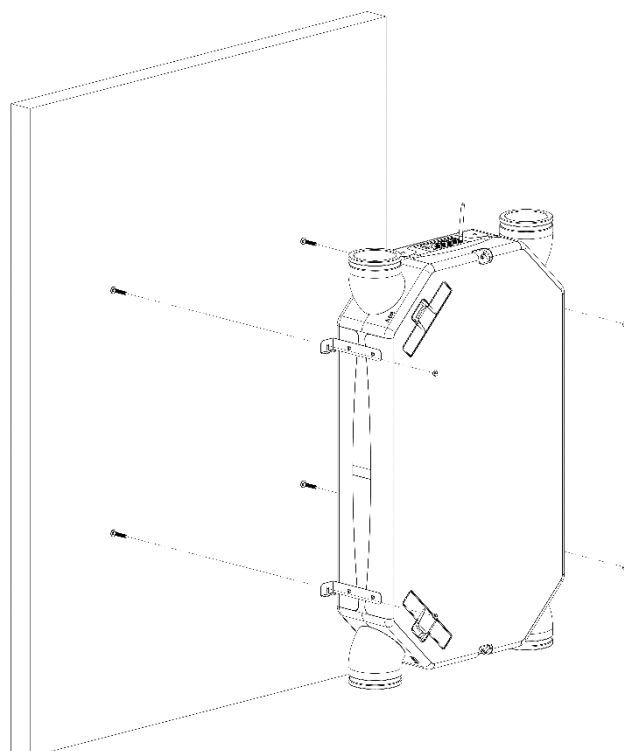
2. Insert metal dowels into the drilled holes and secure them.
3. Position the unit so that the wall mounting brackets align with the dowels.
4. Once all four corners are positioned, tighten the dowel screws to secure the unit in place.

Horizontal Ceiling Installation;

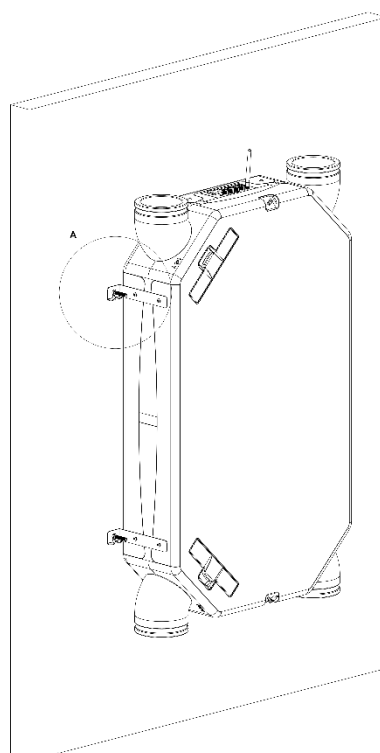


DETAIL B
SCALE 1:1

Vertical Wall Installation;



DETAIL A
SCALE 1 : 1



GENERAL WARNINGS

By following these guidelines, you contribute to the safe and efficient operation of the heat recovery device.



1. Installation and Commissioning:

Ensure the installation and commissioning of the device are conducted exclusively by qualified personnel to guarantee optimal performance.

2. Disassembly and Repair:

The heat recovery device should never be disassembled by users. Only authorized service personnel are permitted to undertake disassembly and repairs to prevent electric shocks or injuries.

3. Removal of Protective Materials:

Before powering on the device, remove all protective materials, inside and outside, used during transportation to avoid operational issues.

4. Operating Environment:

Do not use the device in heated swimming pools, cold storage rooms, or environments with extreme humidity and heat variations. Avoid exposure to rain to prevent electric shocks and ensure correct device operation.

5. Avoid Corrosive and Flammable Environments:

Do not use the device in corrosive environments (acids, oil mist, paint, toxic gases, etc.) or in flammable media containing explosive gases.

6. Electrical Specifications:

The device operates at 230V - 50 Hz. Ensure the quality and strength of apparatus (switches, fuses, cables) used with the system.

7. Secure Fixing and Handling:

Securely fix the device, avoiding force on electrical connections and the control box during lifting.

8. Drainage and Service Spaces:

Connect waste water lines to drain pans and maintain a clear service space of at least 50cm in front of the device for filter changes and service door openings.

9. Temperature and Humidity Range:

Operate the device in a temperature range of -10 °C to +40 °C, with a relative humidity below 60%. Consider using an electric pre-heater if temperatures fall below -10 °C consistently.

10. Electrical Safety:

Use apparatus with quality certificates and high strength. Ensure proper power supply with appropriate cables and thermally protected switches.

11. Avoid Electrical Contact:

Ensure the device is not in electrical contact with air ducts and building steel constructions to prevent electrical leaks and fires.

12. Circuit Breaker and Electrical Heaters:

Install a circuit breaker on the mains connection. Electric heaters should be used with the heat recovery device automatic controller, and caution is advised regarding their connections.

13. Safety Precautions:

Switch off electrical connections before any interference with the appliance. Ensure the fan motor is not running before opening service doors.

14. Maintenance and Cleaning:

Regularly clean G4 filters and heat exchangers with compressed air. Avoid cleaning with flammable gases or water. Sharp turns and sudden contractions or expansions in duct systems during installation should be avoided.

For more information, visit our product website;



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