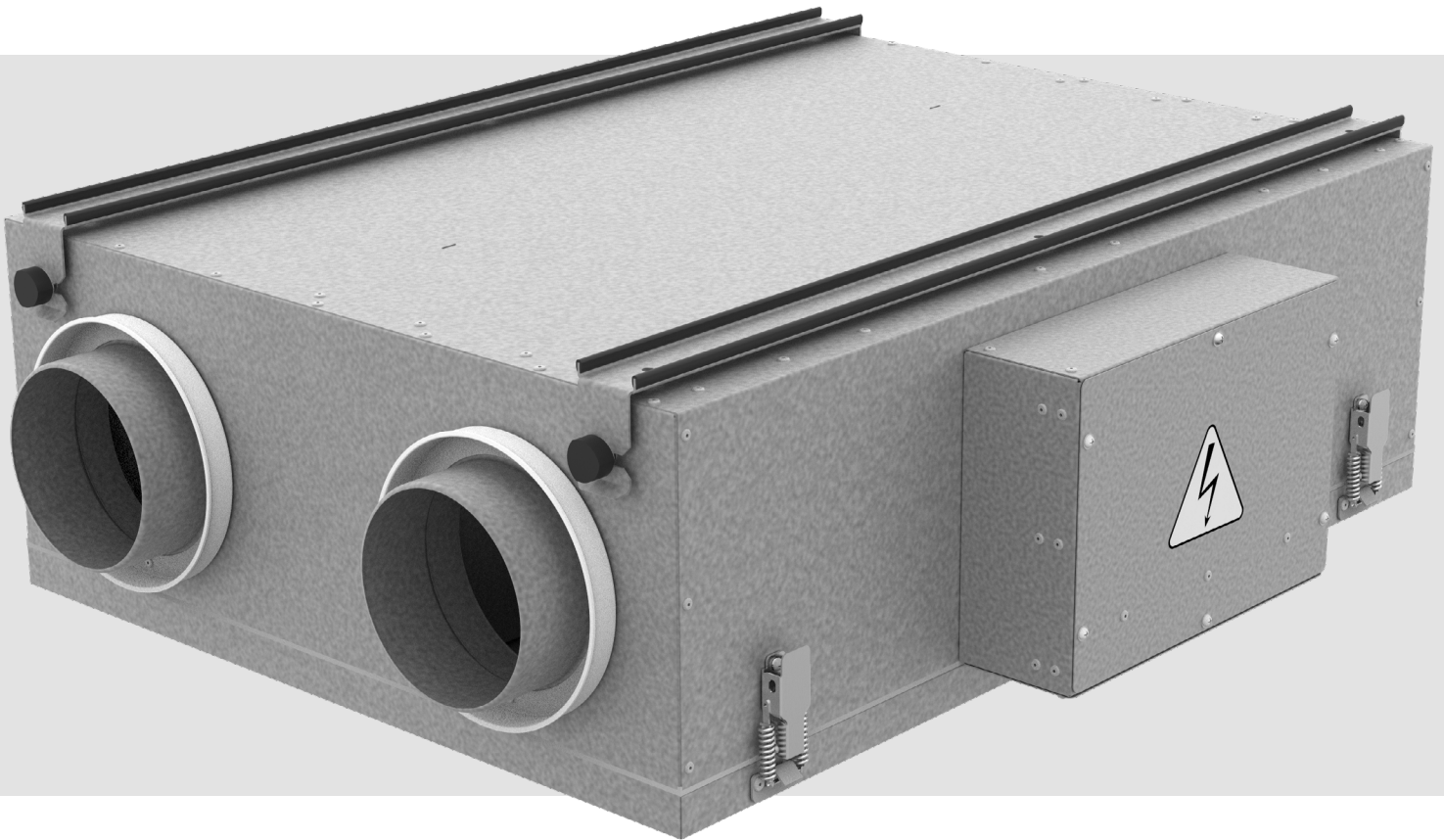


USER'S MANUAL

FRIGATE HRV 80	FRIGATE HRV 120 L	FRIGATE ERV 80	FRIGATE ERV 120 L
FRIGATE HRV 80 R	FRIGATE HRV 120 R	FRIGATE ERV 80 R	FRIGATE ERV 120 R
FRIGATE HRV 80 EC	FRIGATE HRV 120 EC	FRIGATE ERV 80 EC	FRIGATE ERV 120 EC
FRIGATE HRV 80 R EC	FRIGATE HRV 120 EC L	FRIGATE ERV 80 R EC	FRIGATE ERV 120 EC L
FRIGATE HRV 100	FRIGATE HRV 120 R EC	FRIGATE ERV 100	FRIGATE ERV 120 R EC
FRIGATE HRV 100 R	FRIGATE HRV 150	FRIGATE ERV 100 R	FRIGATE ERV 150
FRIGATE HRV 100 EC	FRIGATE HRV 150 R	FRIGATE ERV 100 EC	FRIGATE ERV 150 R
FRIGATE HRV 100 EC L	FRIGATE HRV 150 EC	FRIGATE ERV 100 EC L	FRIGATE ERV 150 EC
FRIGATE HRV 100 R EC	FRIGATE HRV 150 EC L	FRIGATE ERV 100 R EC	FRIGATE ERV 150 EC L
FRIGATE HRV 120	FRIGATE HRV 150 R EC	FRIGATE ERV 120	FRIGATE ERV 150 R EC



Heat and energy recovery 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 HRV/ERV 80/100/120/150 (R) (EC) (L) 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

THE UNIT MUST BE GROUNDED!

DO NOT BEND THE POWER CABLE.

AVOID DAMAGING THE POWER CABLE.

DO NOT PUT ANY FOREIGN OBJECTS ON THE POWER CABLE.

DO NOT USE DAMAGED EQUIPMENT OR CABLES WHEN CONNECTING THE UNIT TO POWER MAINS.

DO NOT TOUCH THE UNIT CONTROLS WITH WET HANDS.

DO NOT CARRY OUT THE INSTALLATION AND MAINTENANCE OPERATIONS WITH WET HANDS.

DO NOT ALLOW CHILDREN TO OPERATE THE UNIT.

DO NOT STORE ANY EXPLOSIVE OR HIGHLY FLAMMABLE SUBSTANCES IN CLOSE PROXIMITY TO THE UNIT.

DO NOT OPEN THE UNIT DURING OPERATION.

DO NOT BLOCK THE AIR DUCT WHEN THE UNIT IS SWITCHED ON.

DO NOT SIT ON THE UNIT AND AVOID PLACING FOREIGN OBJECTS ON IT.

UNPACK THE UNIT WITH CARE.

WHILE INSTALLING THE UNIT, FOLLOW THE SAFETY REGULATIONS SPECIFIC TO THE USE OF ELECTRIC TOOLS.

DO NOT LAY THE POWER CABLE OF THE UNIT IN CLOSE PROXIMITY TO HEATING EQUIPMENT.

DO NOT OPERATE THE UNIT OUTSIDE THE TEMPERATURE RANGE STATED IN THE USER'S MANUAL.

DO NOT OPERATE THE UNIT IN AGGRESSIVE OR EXPLOSIVE ENVIRONMENTS.

DO NOT WASH THE UNIT WITH WATER.

PROTECT THE ELECTRIC PARTS OF THE UNIT AGAINST INGRESS OF WATER.

DISCONNECT THE UNIT FROM POWER MAINS PRIOR TO ANY TECHNICAL MAINTENANCE.

WHEN THE UNIT GENERATES UNUSUAL SOUNDS, ODOR, OR EMITS SMOKE, DISCONNECT IT FROM POWER SUPPLY AND CONTACT THE SELLER.

DO NOT DIRECT THE AIR FLOW PRODUCED BY THE UNIT TOWARDS OPEN FLAME OR IGNITION SOURCES.

IN CASE OF CONTINUOUS OPERATION OF THE UNIT, PERIODICALLY CHECK THE SECURITY OF MOUNTING.

USE THIS UNIT ONLY IN THE MANNER INTENDED BY THE MANUFACTURER. IF YOU HAVE QUESTIONS, CONTACT THE MANUFACTURER.

THE UNIT SHOULD NOT BE OPERATED BY CHILDREN OR PERSONS WITH REDUCED PHYSICAL, MENTAL, OR SENSORY CAPACITIES, OR THOSE WITHOUT THE APPROPRIATE TRAINING.

THE CHOICE OF UNIT INSTALLATION LOCATION MUST PREVENT UNAUTHORIZED ACCESS BY UNATTENDED CHILDREN.

READ THE USER'S MANUAL BEFORE INSTALLING THE UNIT.

INSTALLATION WORK AND ELECTRICAL WIRING MUST BE DONE BY QUALIFIED PERSON(S).

WHEN CUTTING OR DRILLING INTO WALL OR CEILING, DO NOT DAMAGE ELECTRICAL WIRING AND OTHER HIDDEN UTILITIES.

DO NOT MOUNT ROOM-TO-ROOM FAN IN A FIRE-RATED WALL.

POWER OFF THE POWER SUPPLY PRIOR TO ANY OPERATIONS WITH THE UNIT.

THE UNIT MUST BE CONNECTED TO POWER SUPPLY BY A QUALIFIED ELECTRICIAN.

THE RATED ELECTRICAL PARAMETERS OF THE UNIT ARE GIVEN ON THE MANUFACTURER'S LABEL.

ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.

INSTALLATION ONLY BY EXPERTS AND ONLY IN ACCORDANCE WITH LOCAL REQUIREMENTS AND NATIONAL ELECTRICAL CODE.

DISCONNECT THE UNIT FROM POWER SUPPLY BEFORE ANY MAINTENANCE OPERATIONS!

ENSURE THAT THE UNIT IS SWITCHED OFF FROM THE SUPPLY MAINS BEFORE REMOVING THE GUARD.

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.

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

USE THIS UNIT ONLY IN THE MANNER INTENDED BY THE MANUFACTURER. IF YOU HAVE QUESTIONS, CONTACT THE MANUFACTURER.

BEFORE SERVICING OR CLEANING THE UNIT, SWITCH POWER OFF AT THE SERVICE PANEL AND LOCK THE SERVICE DISCONNECTING MEANS TO PREVENT POWER FROM BEING SWITCHED ON ACCIDENTALLY. WHEN THE SERVICE DISCONNECTING MEANS CANNOT BE LOCKED, SECURELY FASTEN A PROMINENT WARNING DEVICE, SUCH AS A TAG, TO THE SERVICE PANEL.

FOR GENERAL VENTILATING USE ONLY. DO NOT USE TO EXHAUST HAZARDOUS OR EXPLOSIVE MATERIALS AND VAPORS.



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

DO NOT DISPOSE THE UNIT AS UNSORTED DOMESTIC WASTE.

PURPOSE



CAUTION!

FOR GENERAL VENTILATING USE ONLY.

DO NOT USE TO EXHAUST HAZARDOUS OR EXPLOSIVE MATERIALS AND VAPORS AS WELL AS FLAMMABLE 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).

FOR USE IN NON FIRE RATED INSTALLATIONS ONLY.

FOR USE IN ONE- AND TWO-FAMILY DWELLINGS ONLY.

The unit is designed to ensure continuous mechanical air exchange in houses, offices, hotels, cafes, conference halls, and other utility and public spaces as well as to recover the heat energy contained in the air extracted from the premises to warm up the filtered stream of intake air.

The unit is not intended for organizing ventilation in swimming pools, saunas, greenhouses, summer gardens, and other spaces with high humidity.

Due to the ability to save heating energy by means of energy recovery, the unit is an important element of energy-efficient premises.

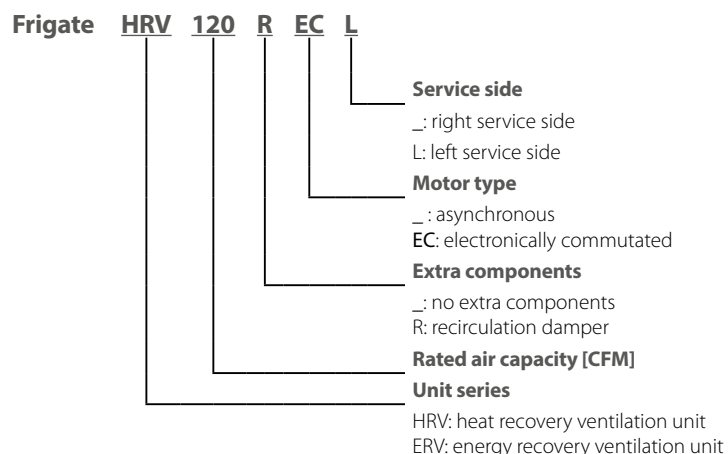
The unit is a component part and is not designed for stand-alone operation. It is rated for continuous operation.

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).

DELIVERY SET

Name	Quantity
Ventilation unit	1 pc.
User's manual	1 pc.
Mounting brackets	2 pcs.
Packing box	1 pc.

DESIGNATION KEY



TECHNICAL DATA

The unit is designed for indoor application at ambient temperature from +34 °F (+1 °C) up to +104 °F (+40 °C) and relative humidity up to 80 %.

Hazardous parts access and water ingress protection rating:

- IP 44 for the unit motors
- IP 22 for the assembled unit connected to the air ducts

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

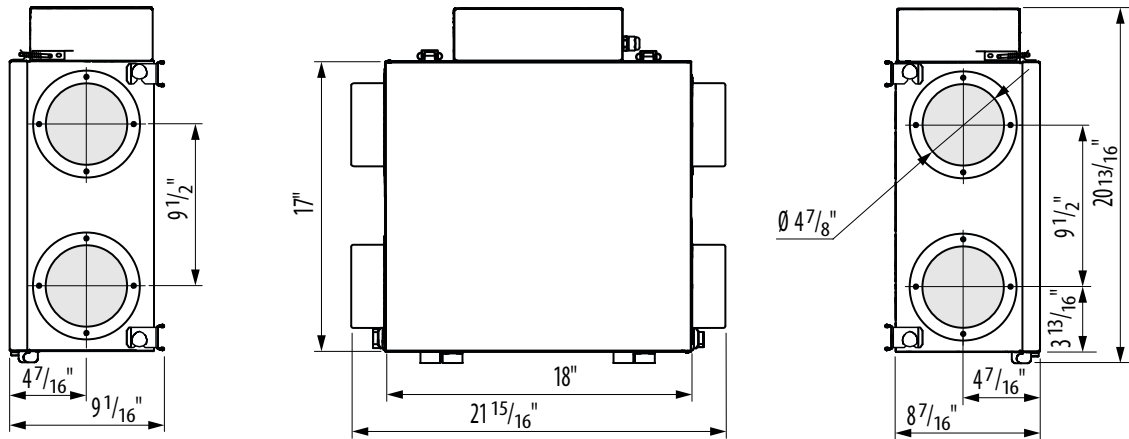
TECHNICAL DATA

MODEL		Frigate HRV 80	Frigate HRV 80 R	Frigate HRV 80 EC	Frigate HRV 80 R EC	Frigate HRV 100	Frigate HRV 100 R	Frigate HRV 100 EC (L)	Frigate HRV 100 R EC	Frigate HRV 120 (L)	Frigate HRV 120 R	Frigate HRV 120 EC (L)	Frigate HRV 120 R EC	Frigate HRV 150	Frigate HRV 150 R (L)	Frigate HRV 150 EC (L)	Frigate HRV 150 R EC
Supply voltage, 60 Hz [V]		120															
Rated input power [W]		74		61		154		94		156		198		192		186	
Maximum current [A]		0.6		0.9		1.3		1.4		1.3		2.5		1.6		2.5	
Air capacity [cfm @ 0.4 in. w.g.]		61		61		119		106		132		175		137		162	
Transported air temperature [F (°C)]		-13(-25) up to +122(+55)															
Insulation thickness [inch (mm)]		polystyrene 1" (25)															
Extract filter: material/filtration class		Poret PPI 20/MERV6															
Supply filter: material/filtration class		Poret PPI 20/MERV6															
Connected air duct diameter [inch (mm)]		Ø 5" (125)															
Weight	lbs	29.8	35.3	29.8	35.3	51	62	51	62	44	57.3	44	57.3	46.3	53	46.3	53
	kg	13.5	16	13.5	16	23	28	23	28	20	26	20	26	21	24.4	21	24.4
Heat recovery core type		cross-flow															
Heat recovery core material		polystyrene															

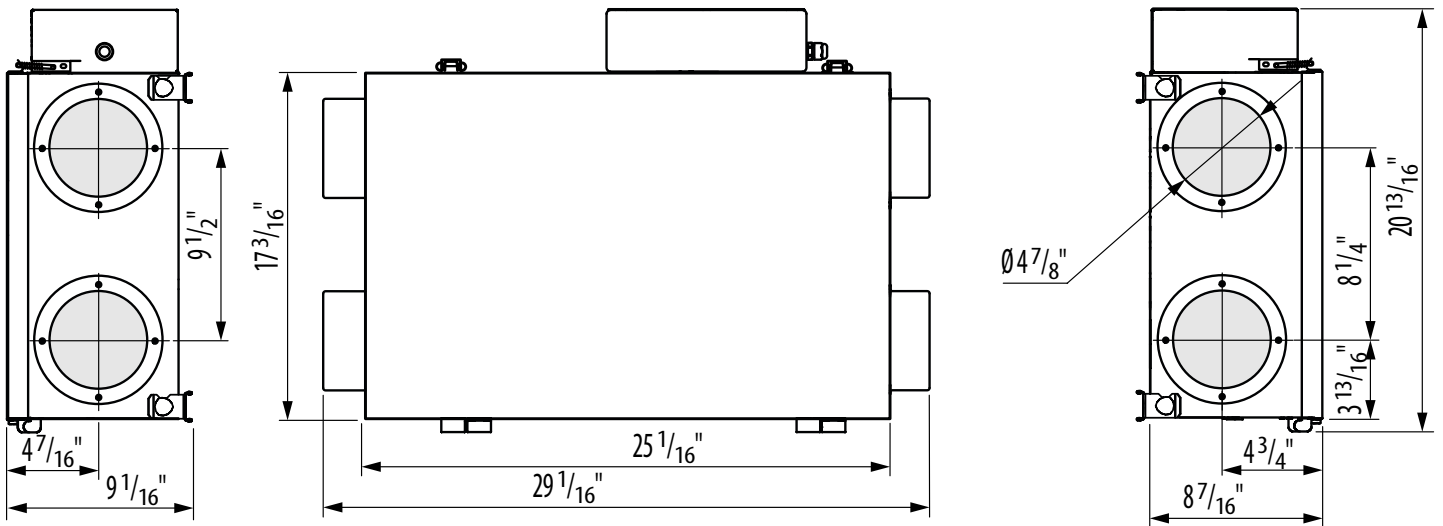
MODEL		Frigate ERV 80	Frigate ERV 80 R	Frigate ERV 80 EC	Frigate ERV 80 R EC	Frigate ERV 100	Frigate ERV 100 R	Frigate ERV 100 EC (L)	Frigate ERV 100 R EC	Frigate ERV 120 (L)	Frigate ERV 120 R	Frigate ERV 120 EC (L)	Frigate ERV 120 R EC	Frigate ERV 150	Frigate ERV 150 R (L)	Frigate ERV 150 EC (L)	Frigate ERV 150 R EC
Supply voltage, 60 Hz [V]		120															
Rated input power [W]		74		61		154		94		156		198		192		186	
Maximum current [A]		0.6		0.9		1.3		1.4		1.3		2.5		1.6		2.5	
Air capacity [cfm @ 0.4 in. w.g.]		53	61	61		111		106		114	121	150	133	150		162	
Transported air temperature [F (°C)]		-13(-25) up to +122(+55)															
Insulation thickness [inch (mm)]		polystyrene 1" (25)															
Extract filter: material/filtration class		Poret PPI 20/MERV6															
Supply filter: material/filtration class		Poret PPI 20/MERV6															
Connected air duct diameter [inch (mm)]		Ø 5" (125)															
Weight	lbs	29.8	35.3	29.8	35.3	51	62	51	62	44	57.3	44	57.3	46.3	53	46.3	53
	kg	13.5	16	13.5	16	23	28	23	28	20	26	20	26	21	24.4	21	24.4
Heat recovery core type		cross-flow															
Heat recovery core material		enthalpy membrane															

Overall dimensions

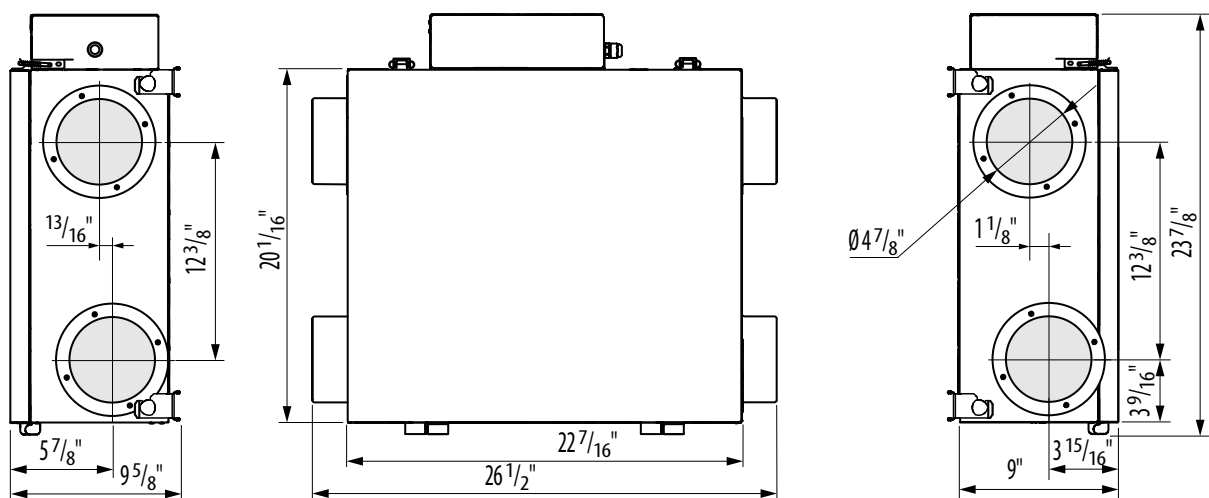
Frigate HRV/ERV 80 (EC)



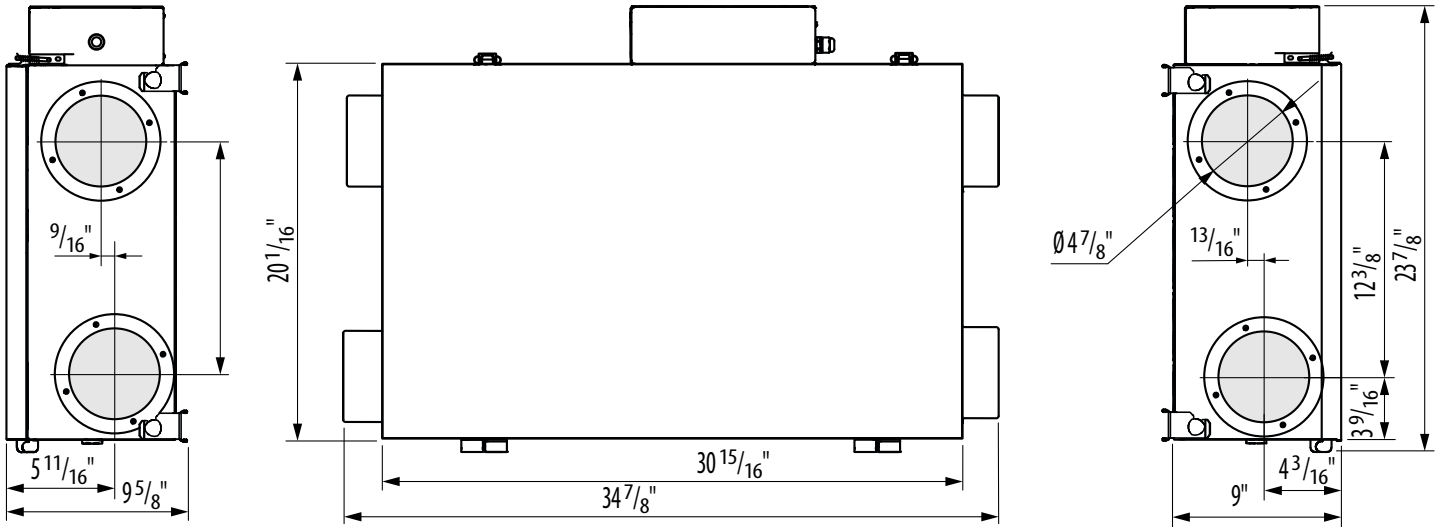
Frigate HRV/ERV 80 R (EC)



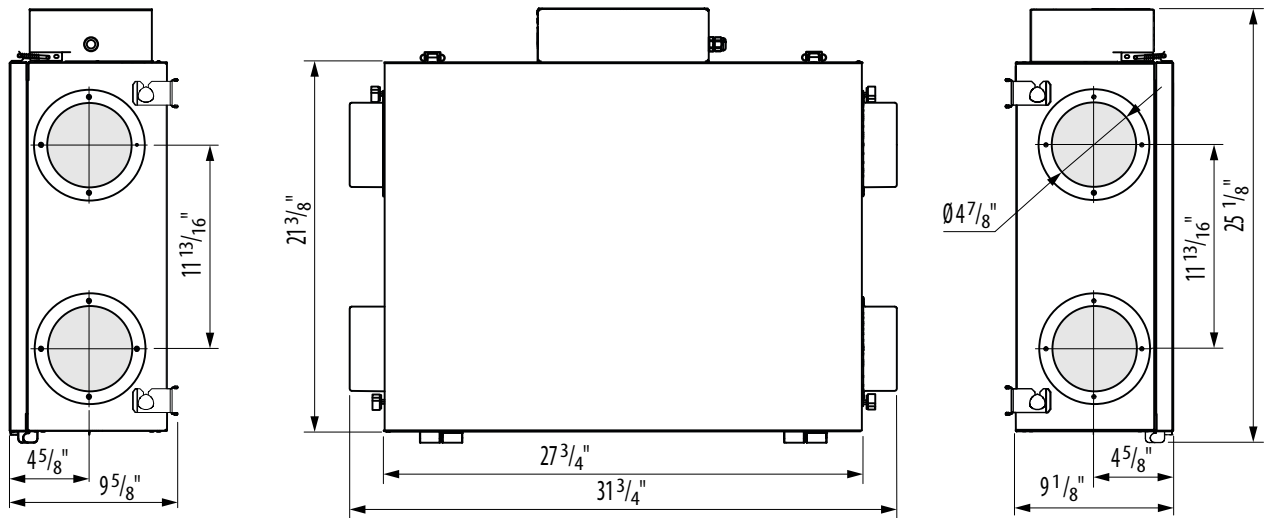
Frigate HRV/ERV 120 (EC) (L)



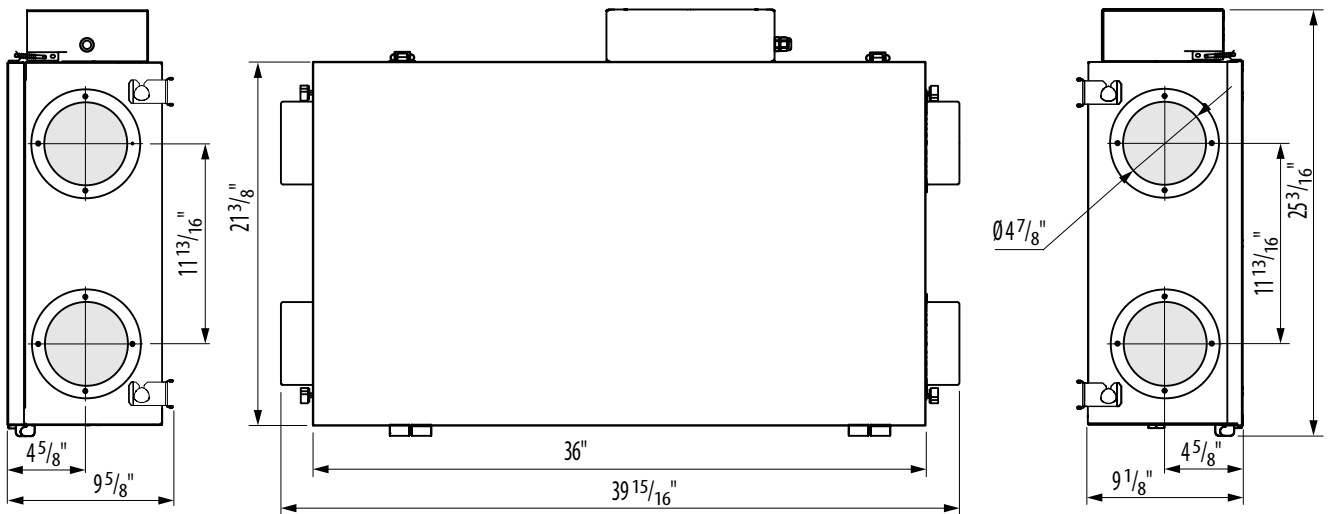
Frigate HRV/ERV 120 R (EC)



Frigate HRV/ERV 100/150 (EC) (L)



Frigate HRV/ERV 100/150 R (EC) (L)

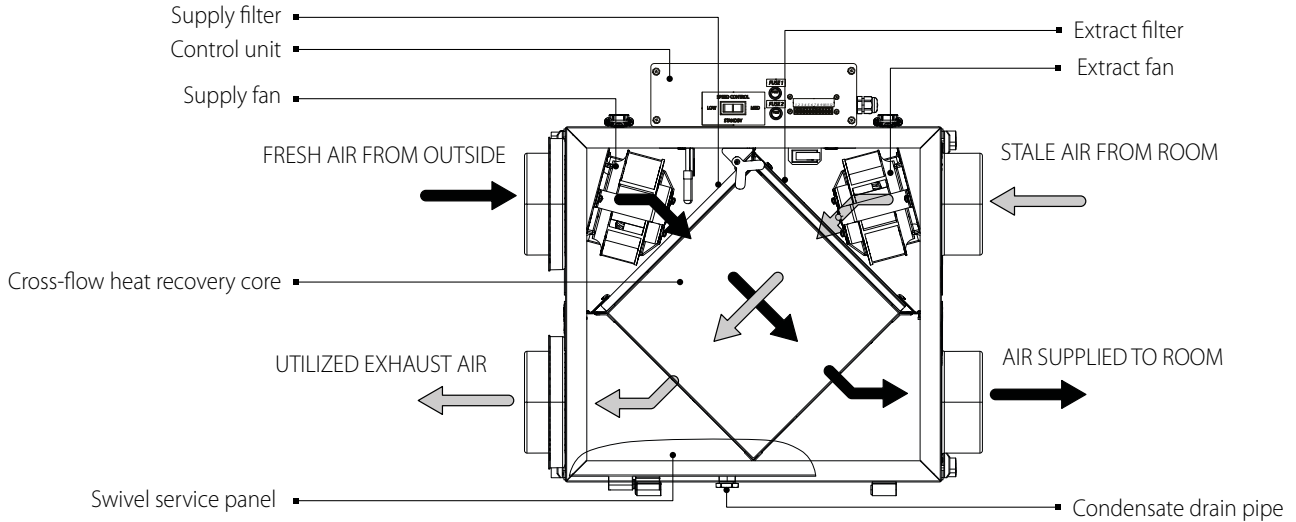


UNIT DESIGN AND OPERATING PRINCIPLE

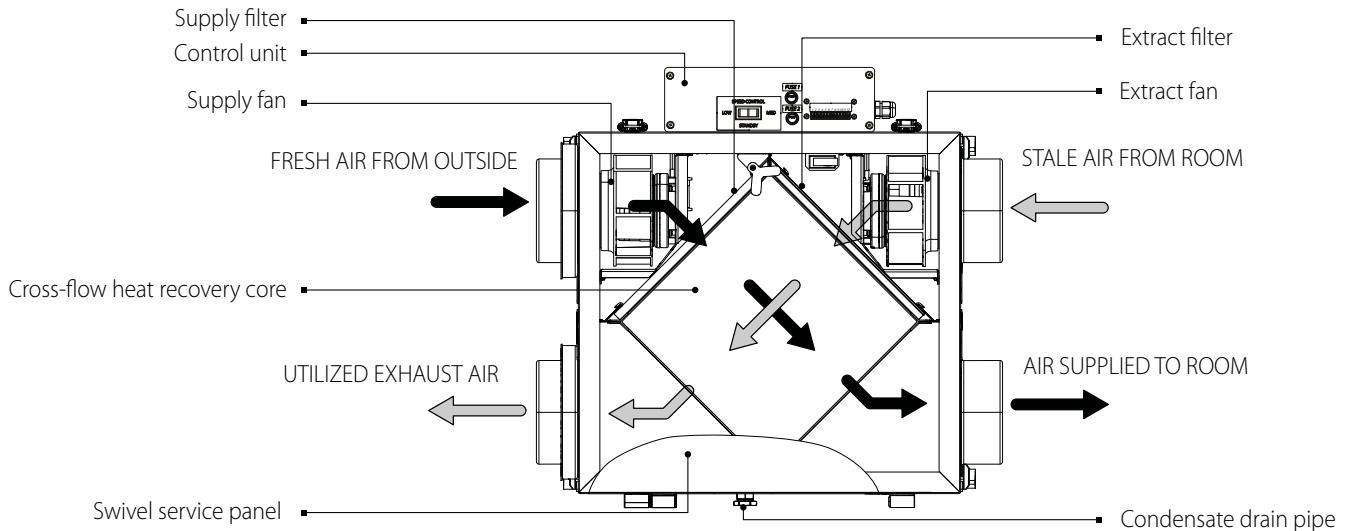
The unit operation is as follows: warm polluted air is extracted from indoor to the unit and is cleaned by the extract filter. Then the air streams through the heat recovery core and is removed outside by the extract fan. The cold intake air from outside flows into the unit and is cleaned by the supply filter.

Further the air flows through the heat recovery core and is supplied inside by the supply fan. The recovery core serves as a heat exchanger for the warm extract air and cold intake air. The air streams remain fully isolated from each other. The heat recovery technology minimizes heating costs during the cold season.

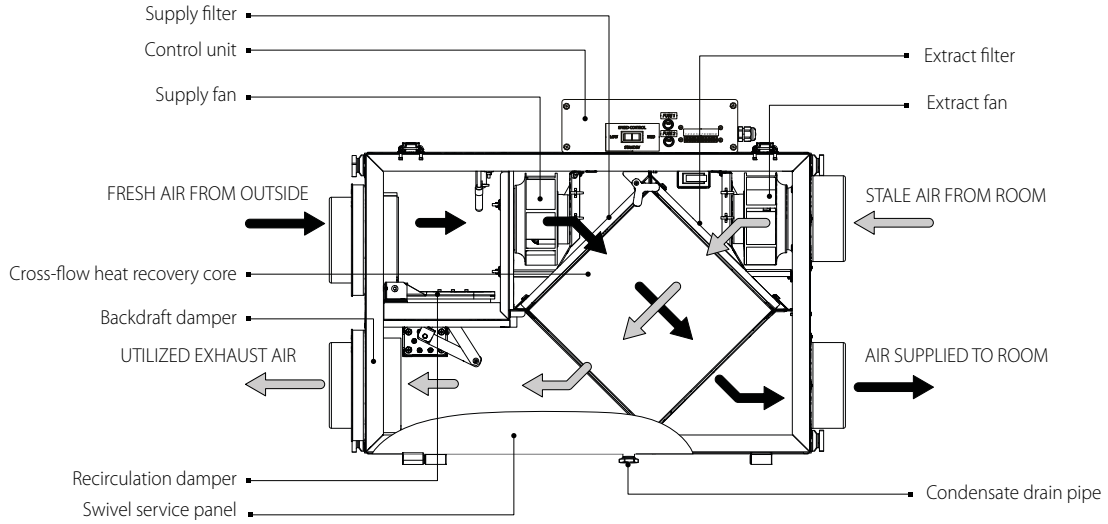
Assembly drawing for Frigate HRV/ERV 80 and air flow diagram in heat recovery mode



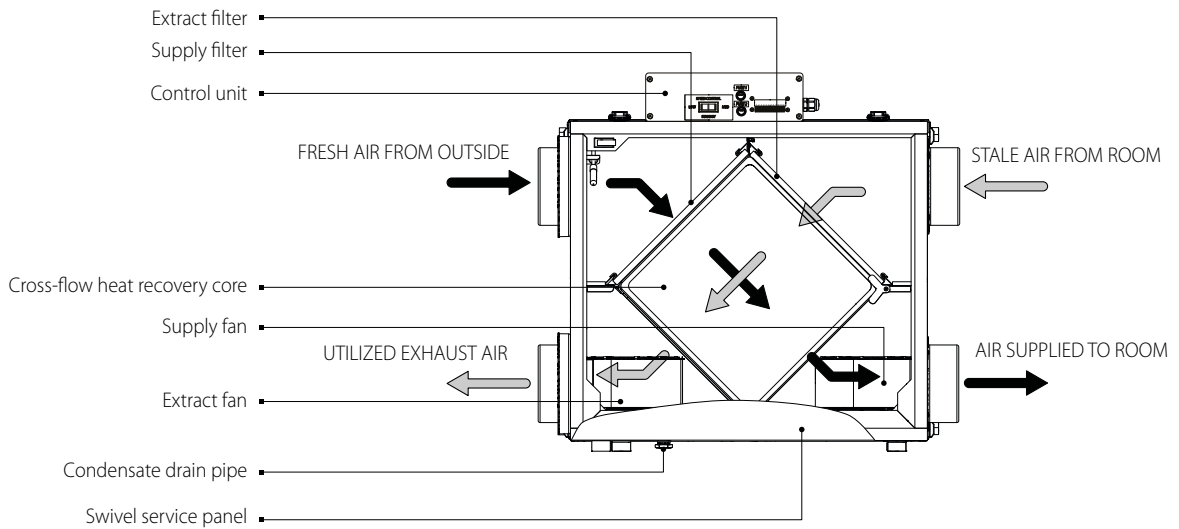
Assembly drawing for Frigate HRV/ERV 80 EC and air flow diagram in heat recovery mode



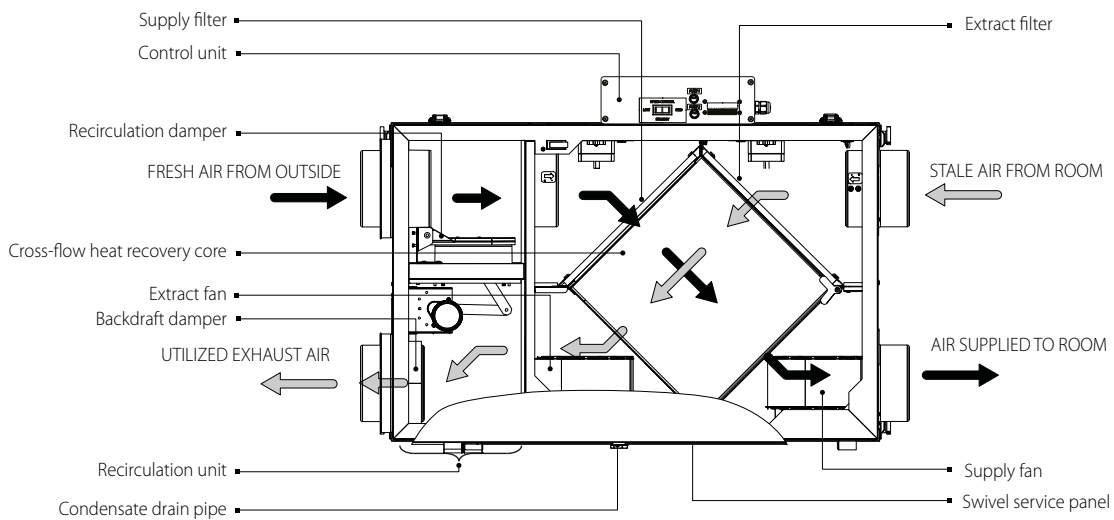
Assembly drawing for Frigate HRV/ERV 80 R (EC) and air flow diagram in heat recovery mode



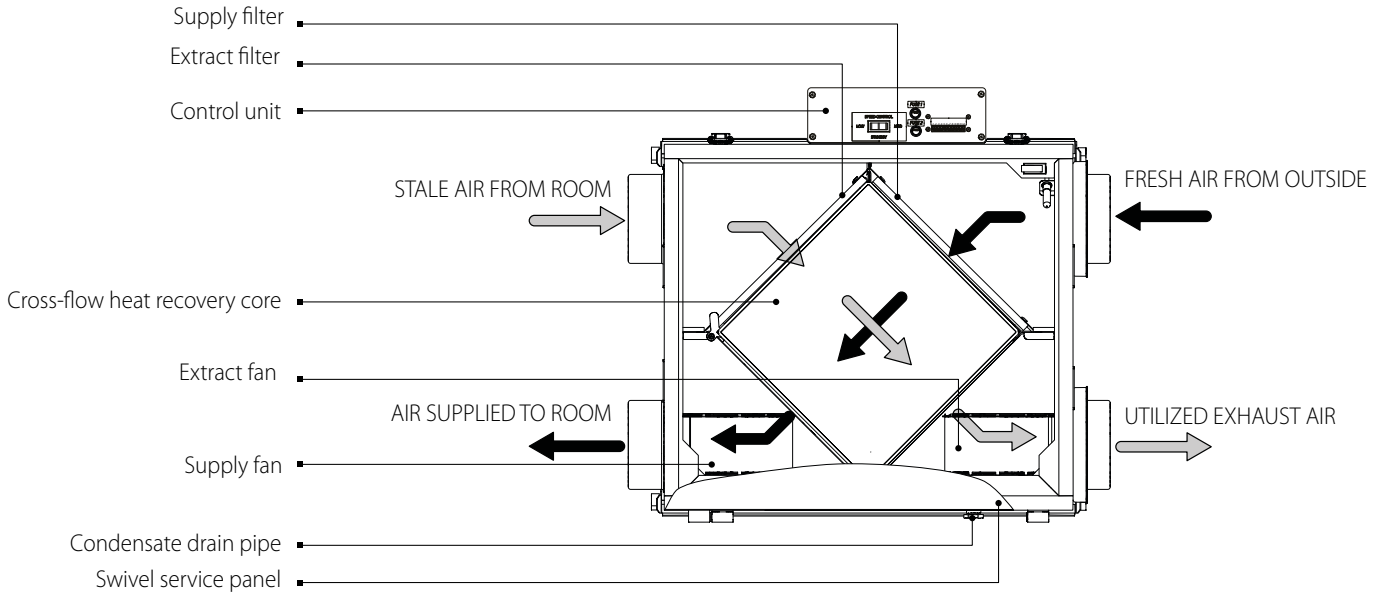
Assembly drawing for Frigate HRV/ERV 120 (EC) and air flow diagram in heat recovery mode



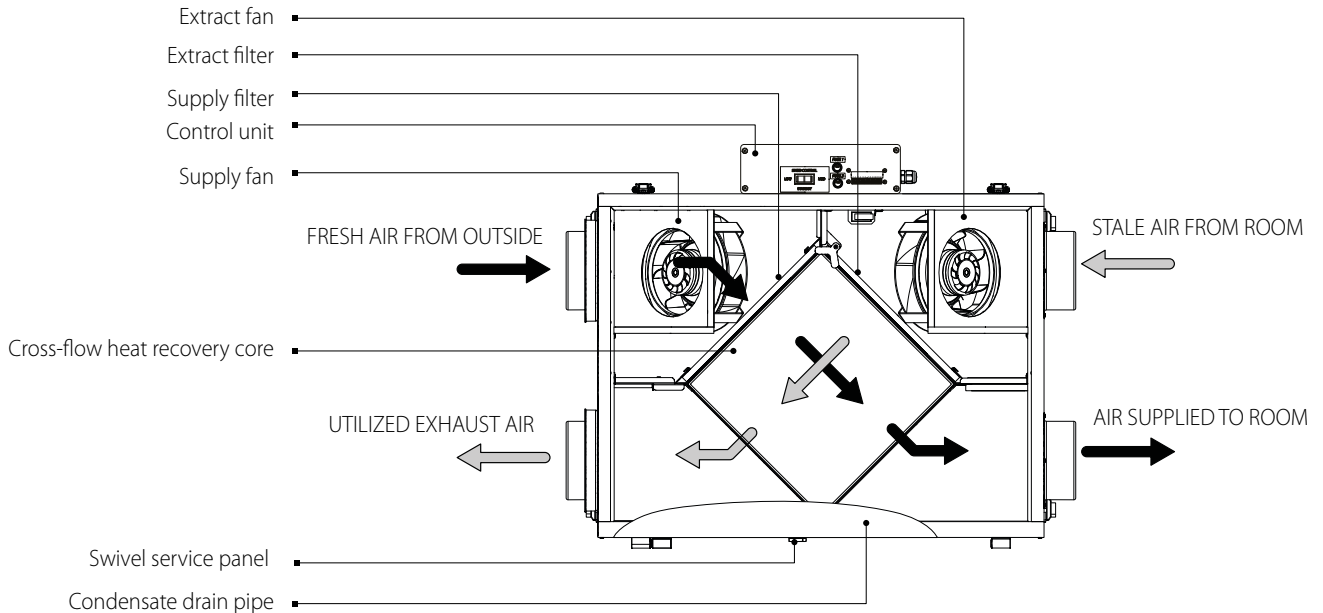
Assembly drawing for Frigate HRV/ERV 120 R (EC) and air flow diagram in heat recovery mode



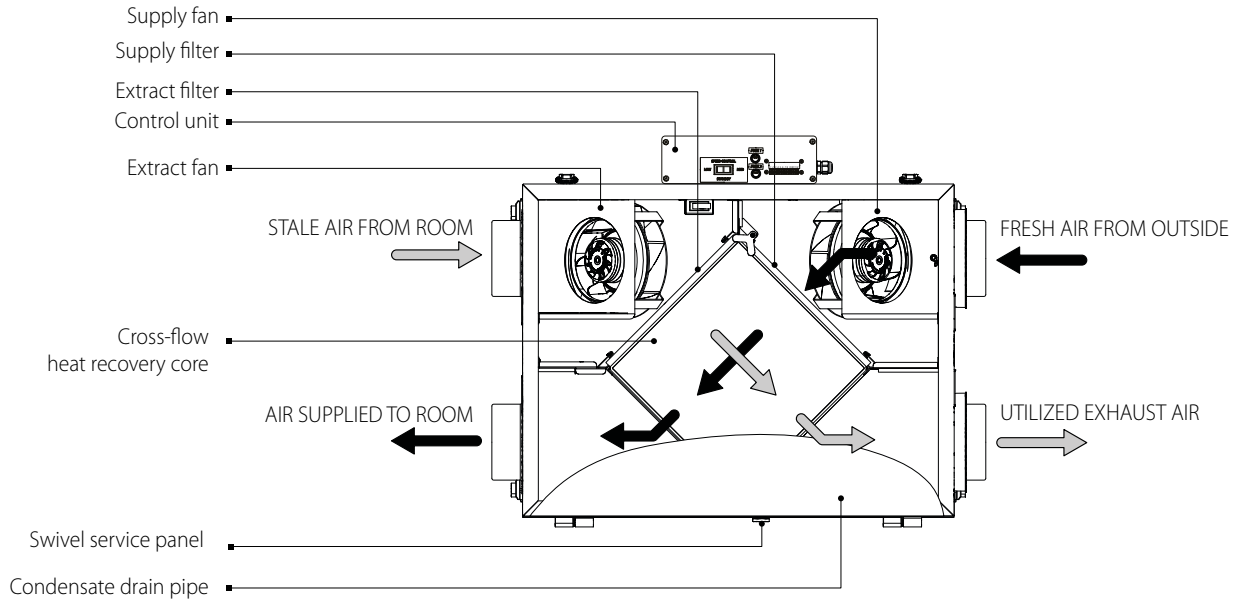
Assembly drawing for Frigate HRV/ERV 120 (EC) L and air flow diagram in heat recovery mode



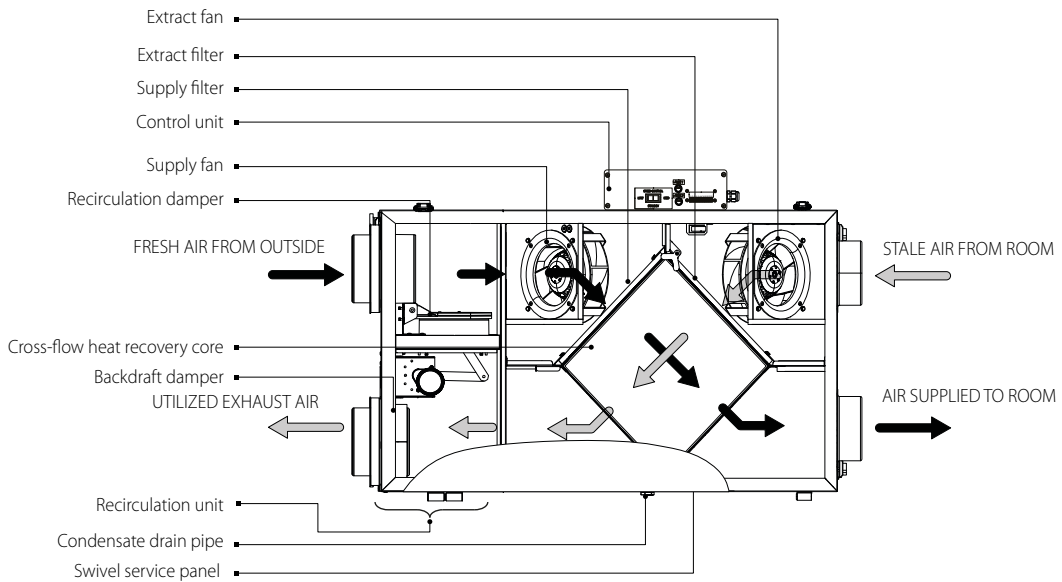
Assembly drawing for Frigate HRV/ERV 100/150 (EC) and air flow diagram in heat recovery mode



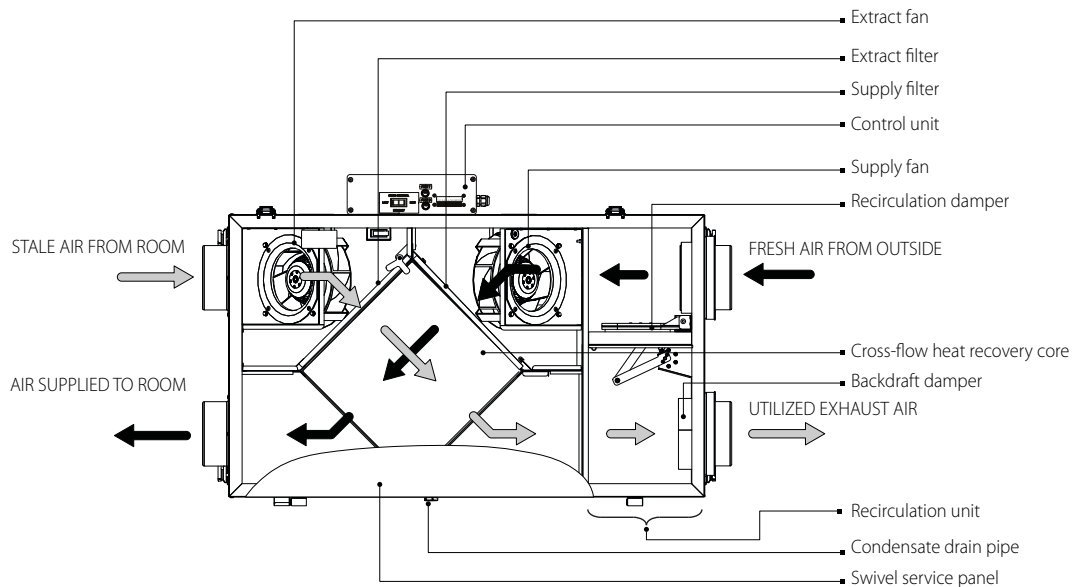
Assembly drawing for Frigate HRV/ERV 100/150 EC L and air flow diagram in heat recovery mode



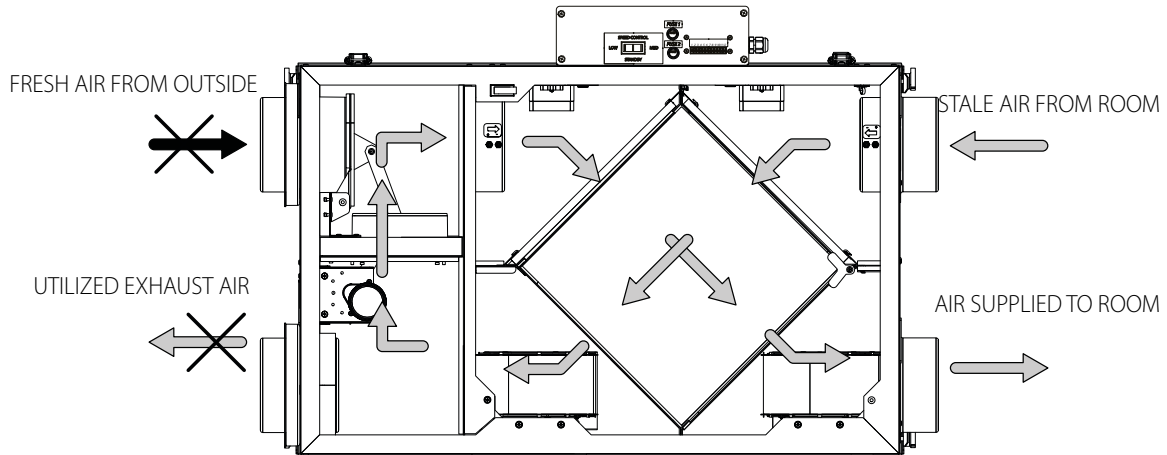
Assembly drawing for Frigate HRV/ERV 100/150 R (EC) and air flow diagram in heat recovery mode



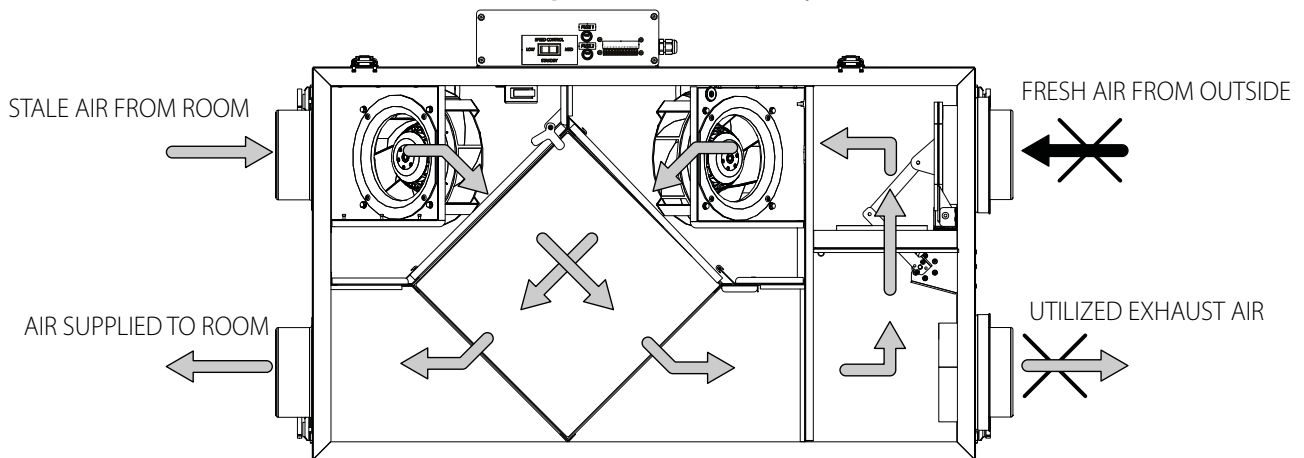
Assembly drawing for Frigate HRV/ERV 100/150 R (EC) L and air flow diagram in heat recovery mode



**Air flow diagram for Frigate HRV/ERV 80/120/100/150 R (EC) in recirculation mode
(the swivel service panel is conventionally not shown)**



**Air flow diagram for Frigate HRV/ERV 80/120/100/150 R (EC) L in recirculation mode
(the swivel service panel is conventionally not shown)**



The removable service panel enables repair and maintenance works.

Access to the control unit for mounting and connection is made through the removable front panel of the control unit. The power and earth cables are connected to the control unit via the cable glands.

Modifications of heat recovery cores:

- **HRV** heat recovery core transfers sensible heat energy (temperature) from one air stream to another. The heat energy extracted from the indoor air is transferred to the incoming fresh air, thus increasing or decreasing its temperature. The air streams remain fully isolated from each other. This heat recovery core is made of polystyrene. Heat recovery minimizes ventilation heat losses and saves heating costs in cold seasons and air conditioning costs in summer.

- **ERV** heat recovery core transfers sensible heat energy (temperature) and latent heat energy (humidity) from one air stream to another. The latent heat energy (humidity) is transferred in the same way as the temperature. As the opposite air streams have different temperature and humidity, they also have different surface vapor pressure. The vapor pressure difference enables transfer of the vapor pressure. The main advantage of the energy recovery cores is the ability to recover humidity (latent energy). This energy recovery is possible during the air conditioning and air heating seasons. During the air conditioning season, the incoming air from outside is dehumidified and cooled down. That significantly reduces operating load for the air conditioners. During the heating season the heat recovery core performs reverse and the incoming air from outside is humidified and heated. The heat recovery technology cuts high expenses for air humidification and air heating.

The energy recovery core is based on polymer membrane. The membrane enables transfer of the water molecules hence they have high dielectric constant and small sizes. The water vapor extracted from the humid air is condensed on the cold membrane surface. Water condensation takes place at temperatures above the dew point. The liquid water molecules are moved through the membrane. The humidity concentration differential between the warm and cold air streams enables this movement process. The humidity is vaped away from the membrane surface and is absorbed by the dry air stream. Microbes cannot get through the membrane as their size is much bigger compared to water molecules. Bacteria, fungi, mould and microbes cannot reproduce on the membrane material. Microbes die on the membrane surface within several hours. The ultra thin membrane serves to decrease air speed in the heat recovery core and increases high heat and humidity recovery efficiency.

The temperature difference between the supply and extract air streams leads to condensate formation. It is collected in the drain pan and is removed through the drain pipe.

INSTALLATION 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.



IF A UNIT HAVING PROVISION FOR CONNECTION OF A FRESH AIR DISCHARGE DUCT DOES NOT ALSO HAVE PROVISION FOR CONNECTION OF AN INDOOR AIR INTAKE DUCT, APPLICABLE INSTALLATION CODES MAY LIMIT THE UNIT TO INSTALLATION ONLY IN A SINGLE-STORY RESIDENCE.

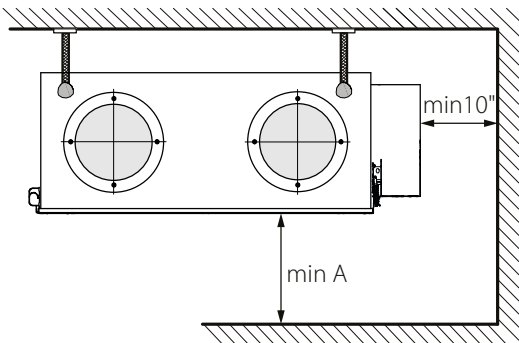
The units are designed for ceiling mounting.

While installing the unit ensure convenient access for subsequent maintenance and repair.

Keep the recommended minimum distances to the walls for all mounting variants as shown below.

The fasteners are not included in the delivery set and must be purchased separately. While selecting appropriate fasteners consider the material of the mounting surface as well as the weight of the unit, refer to technical data. Fasteners selection and unit mounting should be done by service technicians.

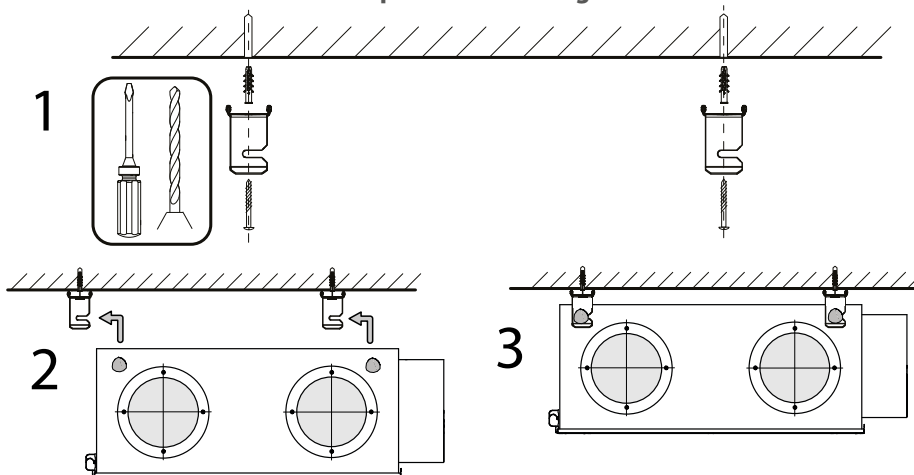
To mount the unit to the ceiling use belts rigidly fixed to a horizontal surface or threaded rods and expansion anchors.



MODEL	DIMENSION A
FRIGATE HRV/ERV 80 (EC)	21"
FRIGATE HRV/ERV 120 (EC)	24"
FRIGATE HRV/ERV 100/150 (EC)	25"

The belts, threaded rods and expansion anchors are not included in the delivery set.

Suspended mounting



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

Minimum straight air duct length:

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

If the air ducts are not connected or the connected air ducts are too short, protect the unit parts from ingress of foreign objects by covering the spigots with a protecting grille or other protecting device with mesh width not more than 1/2"mm to prevent uncontrollable access to the fans.

Prior to commissioning of the unit make sure it contains no objects.



EACH VENTILATION UNIT MUST BE CONNECTED TO AN INDIVIDUAL U-TRAP IRRESPECTIVELY OF THE VENTILATION UNIT TYPE

Condensate drainage

The HRV units must be connected to a condensate drain system. The ERV units are equipped with enthalpy recovery cores with no condensate buildup and require no condensate drain system.

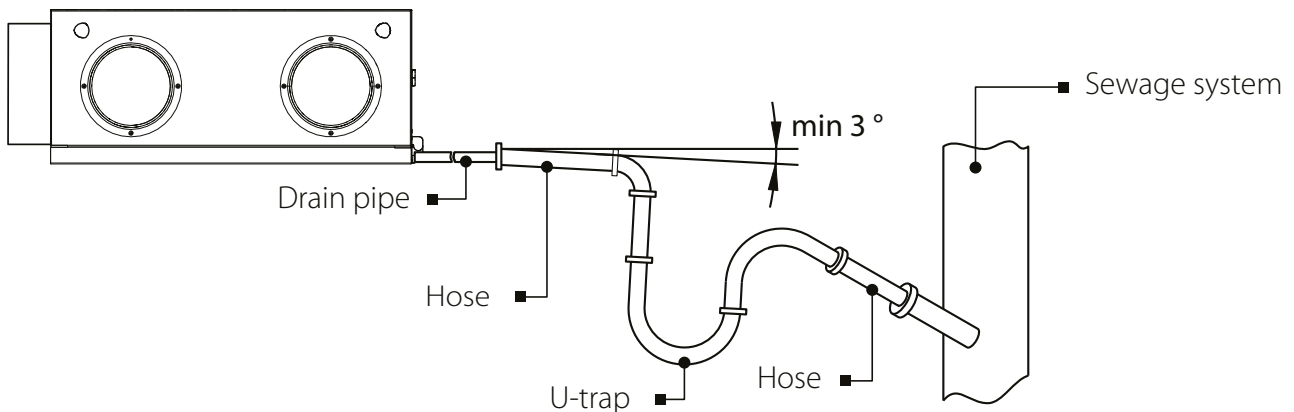
The drain pan in the heat recovery unit has a drain pipe to remove condensate outside of the unit.

Connect the condensate pipe, the U-trap or a hydraulic lock of the other type (not included in the delivery) with the sewage system using metal, plastic or rubber hoses.

While laying the hoses provide the slope downwards min 3°. Prior to commissioning the unit make sure the water runs smoothly in the sewage system, otherwise accumulation of the water condensate may lead to the unit malfunction and water outflow. Fill up the U-trap with water before using it. When using other hydraulic lock systems read the installation instruction to prepare the condensate drain system for operation.

The condensate drain system is designed for use in premises with ambient temperature above 32 °F!

If the expected air temperatures are below 32 °F, the condensate drainage system must be equipped with heat insulation and pre-heating facilities.



CONNECTION TO POWER MAINS

THE UNIT CONNECTION TO THE POWER SUPPLY MUST BE PERFORMED BY DULY QUALIFIED PERSONNEL MADE FAMILIAR WITH THE PRESENT OPERATION MANUAL.

THE UNIT IS INTENDED FOR CONNECTION TO AC MAINS SUPPLYING THE VOLTAGE COMPLIANT WITH THE TECHNICAL SPECIFICATION CHART. CHECK THE ENTIRE POWER CORD LENGTH FOR CHOKING. DO NOT SWITCH ON THE UNIT IF THE CABLE IS DAMAGED.

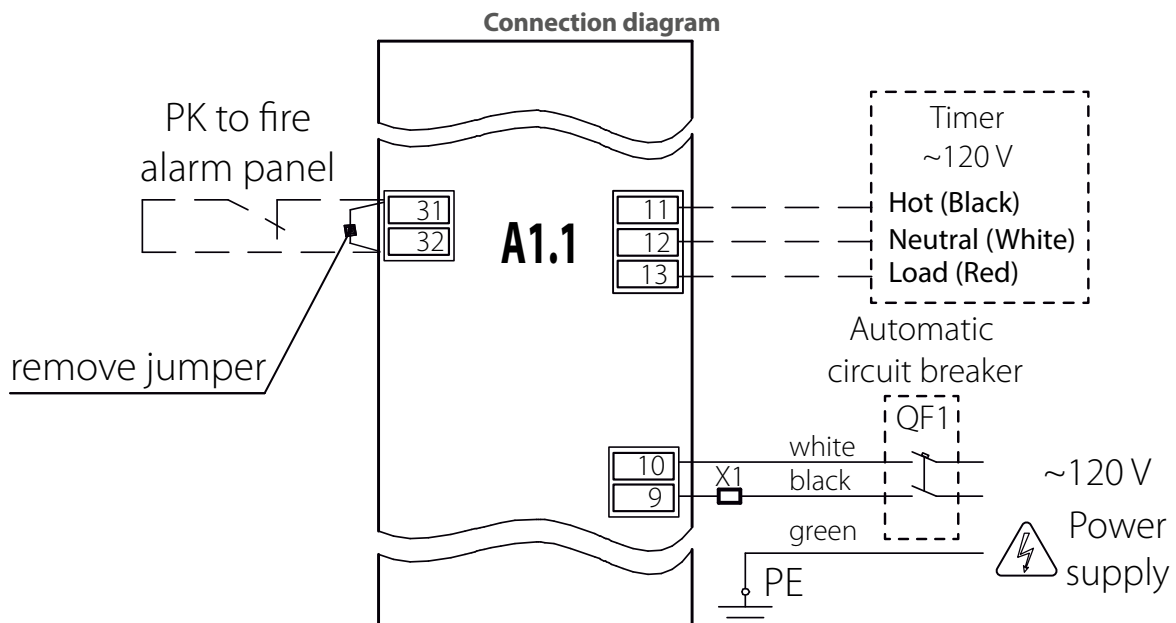
DISCONNECT THE UNIT FROM POWER SUPPLY PRIOR TO ANY OPERATIONS.

THE RATED ELECTRICAL PARAMETERS OF THE UNIT ARE STATED ON THE RATING PLATE.



ANY TAMPERING WITH THE INTERNAL CONNECTIONS IS PROHIBITED AND WILL VOID THE WARRANTY.

The unit is for connection to the fixed installation and rated for connection to 120 V/60 Hz power supply source. The unit is supplied with a pre-wired power cable and an adapter. It is suitable for connection to any standard earthed outlet. Connect the unit to power mains via an external automatic circuit breaker installed at the power input and integrated in the house cabling. Selection of the trip current for the circuit breaker must be based on the power mains technical parameters. The circuit breaker installation place must provide quick access for emergency shut-down of the unit. The overload protection is performed by two fuses 3.15A (glass 5x20) and 0.5A (glass 5x20). They are used for overload protection in case of an overload or a short circuit. To replace the fuse disconnect the ventilation unit from power supply, replace the fuse and check the ventilation unit as described in the Unit Control section. Use the fuses with the stated current only. In case of repeated melting of the cutout fuse please contact the Product Seller.



CONNECTION OF EXTERNAL CONTROLS

The ventilation unit enables connection of maximum 5 controls. If any control unit is activated, the ventilation unit goes to high-speed mode.

Connectable controls:

1. Remote control (thermostat).

Remote control (thermostat) functions:

- Unit on/off
- Speed selection
- Indoor temperature display
- Scheduled operation

2. CO₂ sensor.

Recommended for use in office buildings and public premises. When carbon dioxide concentration exceeds the set point, the unit goes to the high speed mode.

3. Humidistat.

The humidistat is used for indoor humidity control. When indoor humidity exceeds the set point, the unit goes to the high speed mode and runs with the high speed until the humidity level falls down below the set point. The humidity set point is adjustable.

4. Timer.

A remote timer is recommended for polluted indoor air areas. In case of the timer activation, the unit goes to the high speed mode and runs for the set time.

5. Switch.

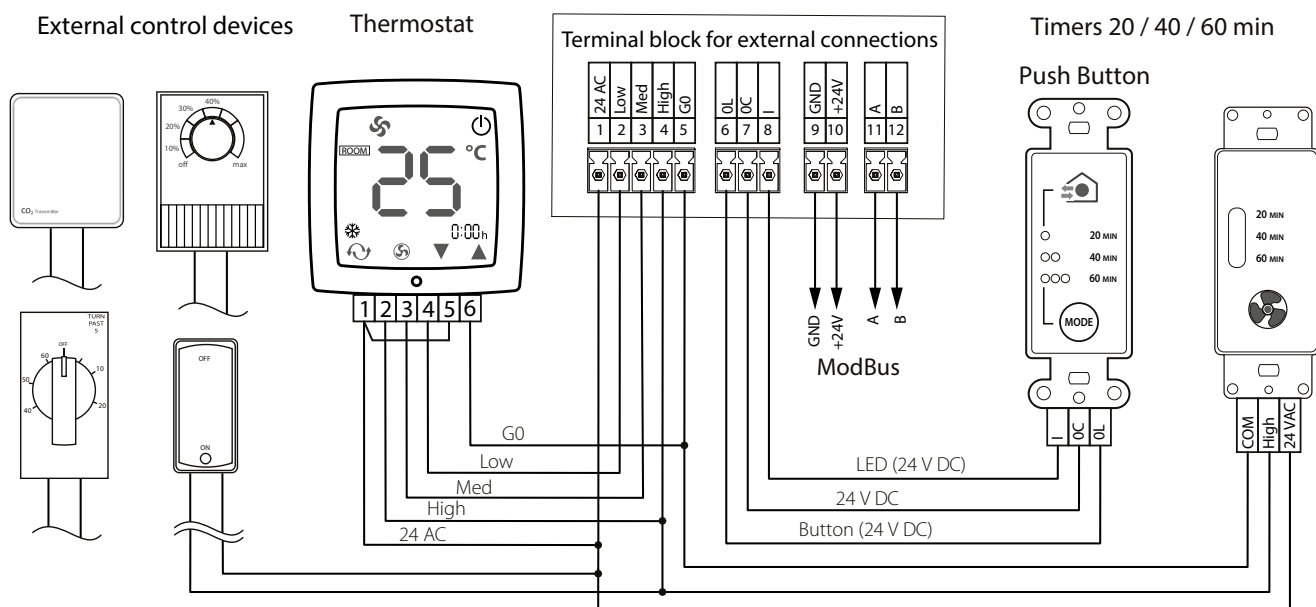
A switch is recommended for the polluted indoor air areas. When the switch contacts are closed, the unit goes to the high speed mode. Open the switch contacts to return to the permanent low-speed mode.

All the listed above controls must be connected in compliance with the wiring diagram. Maximum five various controls can be parallel connected to the terminals 1 and 4.

6. Fire alarm panel signal.

When the dry contacts No. 31 and 32 are opened, the unit has emergency shutdown. The contacts are jumped by the manufacturer. The jumper must be removed in case of use of the fire alarm.

All the controls listed above must be connected in compliance with the wiring diagram.



UNIT CONTROL

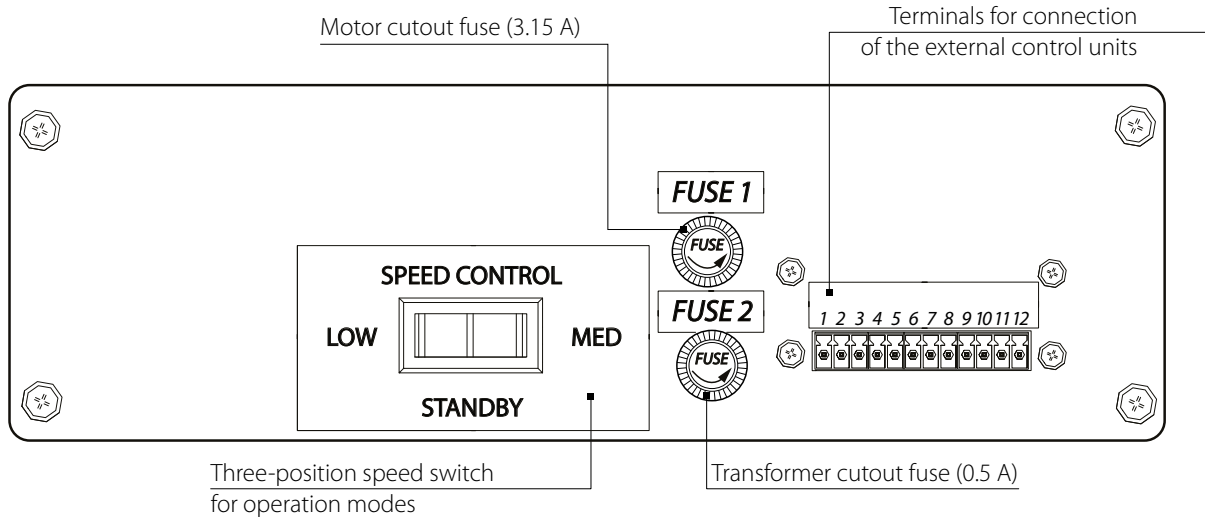
OPERATION MODES

- Permanent low-speed mode or standby mode
- High-speed mode

The unit has a three-position speed switch. **LOW** or **MED** speed are used to set permanent operation mode or to set the **STANDBY** mode. The external controls switch the ventilation unit to the high-speed mode.

The supply and extract fan speed is individually adjusted.

The air capacity is controllable from 0 % up to 100 %.



SPEED SETTING

The control system enables equal speed settings or synchronous speed correcting for the supply and extract fan (see **ALL**).

If the air resistance differential in the supply and extract air ducts the speed of the supply and extract fan can be individually adjusted and this setting will be saved in the controller memory (see **SPL** and **Eht**, respectively).

The controller circuit board has a digital indicator and «KEY1», «KEY2», «KEY3» buttons which are used for operation mode setup and editing of the operation parameters. After switching on power the ventilation unit operates normally and the light indicator is off. Press «KEY1» to open the setup menu. Select the required menu item using the buttons «KEY2» and «KEY3». The display shows the current setting of the menu item:

- «**ALL**»: actual speed setting for both the supply and extract fans over the range from 0 % up to 100 % (displayed as previously set speed setting for the supply fan). For example, in case of activated **LOW**-speed mode, editing of this parameter will result in change of the low speed setting both for the supply and extract fans. To display or change this parameter press «KEY1» and set a required value using the buttons «KEY2» and «KEY3». Then press «KEY1» to save the value in the nonvolatile memory and return to the setup menu.
- «**SPL**»: activated speed setting of the supply fan displayed percentagewise over the range from 0 % to 100 %. For example, in case of activated **MEDIUM**-speed mode, editing of this parameter will result in change of the supply fan **MEDIUM** speed setting. To display or change this parameter press «KEY1» and set a required value using the buttons «KEY2» and «KEY3». Then press «KEY1» to save the value in the nonvolatile memory and return to the setup menu.
- «**Eht**»: activated speed setting of the extract fan displayed percentagewise over the range from 0 % to 100 %. For example, in case of activated **HIGH**-speed mode, editing of this parameter will result in change of the **HIGH** speed setting for the extract fan. To display or change this parameter press «KEY1» and set a required value using the buttons «KEY2» and «KEY3». Then press «KEY1» to save the value in the nonvolatile memory and return to the setup menu.
- «**dEF**»: reset to the factory settings (default settings). To reset to the factory settings press «KEY1», then select «-Y-» using the «KEY2» and «KEY3» buttons and press the «KEY1» button.
To edit the factory settings, select the «-n-» value using the «KEY2» and «KEY3» buttons and press the «KEY1» button. The ventilation unit reverts to the manual settings.
- «**Cor**»: temperature corrections. To correct the temperature value communicated by the temperature sensor, press the «KEY1» button, change the temperature setpoint using the «KEY2» and «KEY3» buttons, then press the «KEY1» button.
- «**Prg**»: software version. Press the «KEY1» button to display it.

In case of alarm the alarm message «Err» is displayed. To detect the alarm root, press the «**KEY1**» button and review the list of all alarm messages using the «**KEY2**» and «**KEY3**» buttons.

The alarm message consists of a number (1, 2, 3) and a letter (n, Y).

The number determines the alarm message type.

1: fire alarm activation.

2: temperature sensor short circuit

3: temperature sensor breakout

The letter indicates no alarm (n) or available alarm (Y).

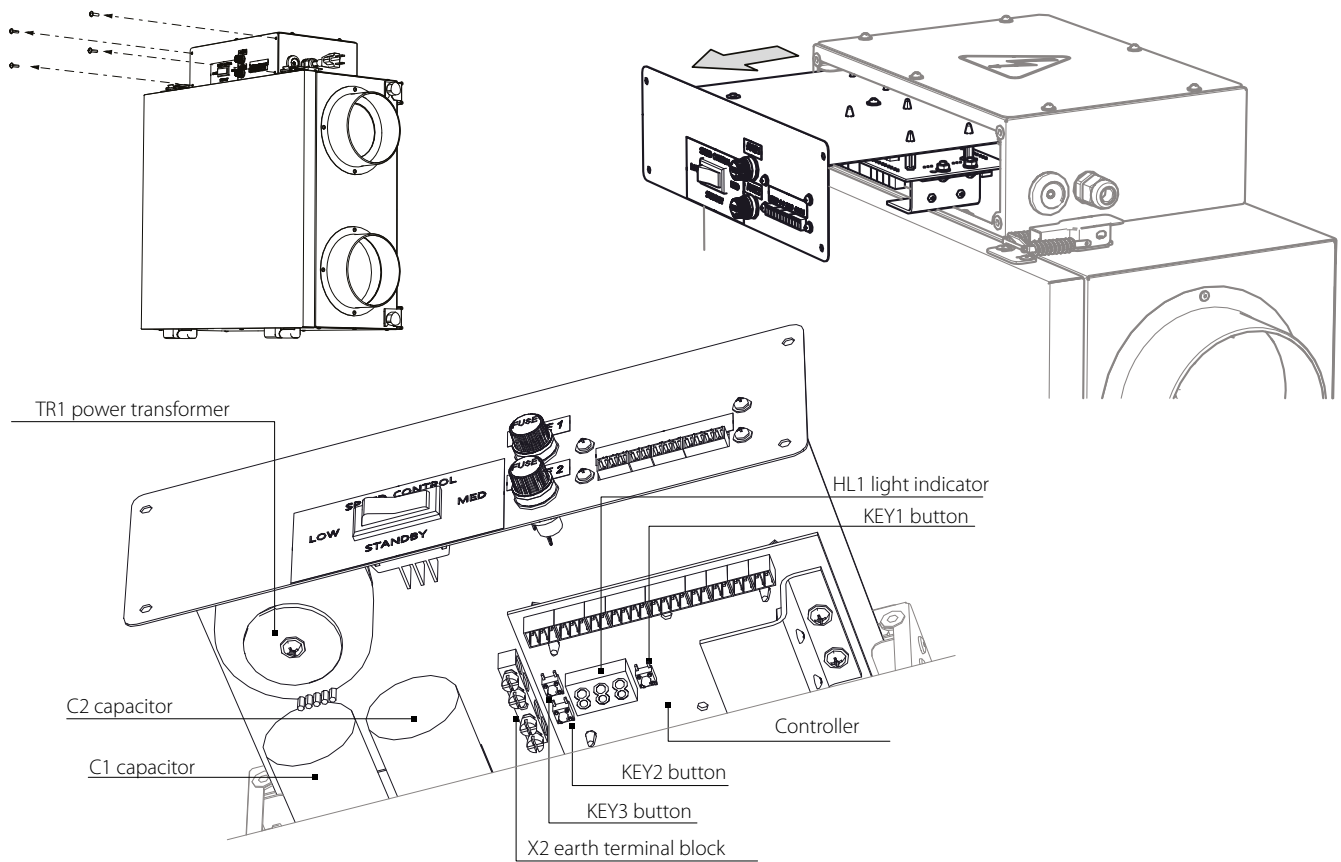
Example:

«1-Y»: fire alarm activation. If the fire alarm panel is disconnected, it means that the controller contacts 31 and 32 are not jumpered.

«2-Y»: temperature sensor short circuit.

«3-n»: no temperature sensor breakout.

Access to the control circuit board and location of the indicator and control buttons.



FREEZE PROTECTION OF THE HEAT RECOVERY CORE

The freeze protection function prevents freezing of the heat recovery core in the cold season. This function is activated automatically and cannot be turned on or off. The ventilation unit periodically switches from rated operation mode to the special defrost mode (the extract fan runs in high speed, the supply fan is off) and vice versa according to the signaling from the outdoor temperature sensor. The temperature conditions for this mode are described in the table below.

The temperature conditions for this mode are described in the table below.

Air temperature in the air duct for the incoming fresh air	Duration of the operation in the respective mode [min]	
	Defrost mode	Rated mode
Above 23 F (- 5 °C)	-	permanent
From 5 F (- 15 °C) up to 23 F (-5 °C)	10	30
From -17 F (- 27 °C) up to F (-15 °C)	10	20
Below -17 F (- 27 °C)	10	15

TECHNICAL MAINTENANCE

WARNING – TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

BEFORE REMOVING THE FILTERS, SWITCH OFF THE EXTERNAL AUTOMATIC CIRCUIT BREAKER AND LOCK THE SERVICE DISCONNECTING MEANS, THEN OPEN THE HINGED SERVICE PANEL AND REMOVE THE FILTERS CAREFULLY.



IT IS POSSIBLE TO CLEAN FILTERS WITH A VACUUM CLEANER OR RINSE THEM WITH WATER AND DRY. MAKE SURE FILTERS ARE COMPLETELY DRY BEFORE THEY HAVE BEEN INSTALLED BACK INTO THE UNIT.

OPEN THE UNIT FOR INSPECTION AND SERVICE NOT LESS THAN 2 MINUTES AFTER COMPLETE DE-ENERGIZING OF THE UNIT.

THE FANS ROTATION MAY BE STILL PRESENT.

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.

Maintenance operations of the unit are required 3-4 times per year. Maintenance includes general cleaning of the unit and the following operations:

1. Filter maintenance.

Clogged filters increase air resistance in the system and reduce supply air volume. The filters require cleaning not less than 3-4 times per year. Clean the filters with a vacuum cleaner or rinse the filters with water and let them dry out.

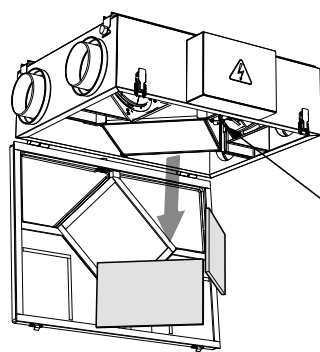
Steps for removal of the filters:

- Disconnect the unit from power mains.
- Open the service panel.
- Turn the latch to release the filters and the recovery core.
- Pull the filter frames to remove.
- Pull the filter fabric on the edge and detach it from the frame.

After cleaning insert the dry filter fabric into the frame and fix it on the edges to get it fixed to the glued contact tape on the frame.

Install the filters in the reverse order.

Multiple cleaning is allowed until the filters get mechanically worn out. For new filters of the type stated in the technical data, please contact to the Product Seller.



Turn the latch to release the filters and the recovery core

2. Recovery core maintenance (once per year).

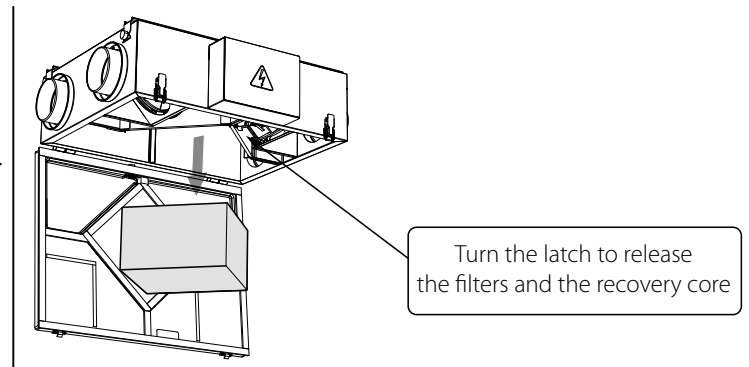
Some dust may accumulate on the recovery core even in case of regular maintenance of the filters. Regular cleaning is required to maintain the high recovery efficiency.

To clean the recovery core pull it out of the unit and clean it with a vacuum cleaner. Optionally cleaning with warm detergent solution is allowed. Only the dry recovery core must be installed!

Steps for removal of the heat recovery core:

- Disconnect the unit from power mains.
- Open the service panel.
- Turn the latch to release the filters and the recovery core.
- Pull recovery core to remove it.

After cleaning reinstall the dry recovery core in the reverse order.



3. Fan maintenance (once a year).

Even in case of regular maintenance of the filters, some dust may accumulate inside the fans and reduce the fan performance and supply air flow. Clean the fans with a soft cloth, brush or using compressed air. Do not use water, aggressive solvents or sharp objects as they may damage the impeller.

4. Technical maintenance of the air intake devices (twice per year).

The supply duct grille may get clogged with leaves and other objects reducing the unit performance and supply air delivery. Check the supply grille twice per year and clean it as required.

5. Technical maintenance of the air duct system (every 5 years).

Even regular fulfilling of all the maintenance operations prescribed above may not completely prevent dirt accumulation in the air ducts which reduces the unit capacity. Duct maintenance means regular cleaning or replacement.

6. Technical maintenance of the control unit (as required).

The control unit is located inside of the unit casing. For accessing the control unit remove the fixing screws on the front panel and pull out the control unit front panel with the mounting panel as shown in page 18.

Troubles and troubleshooting

Trouble	Possible reasons	Troubleshooting
The fan(s) do(es) not get started during activation of the unit.	No power supply.	Make sure the power supply line is connected correct. Otherwise troubleshoot a connection error.
	Jammed motor, soiled impeller blades.	Turn the unit off. Troubleshoot the motor jamming. Clean the blades. Restart the unit.
The unit does not get started, the indicator displays Err.	System failure.	Contact the product Seller.
Automatic circuit breaker tripping following the unit start-up.	Overcurrent as a result of short circuit in the electric circuit.	Turn the unit off. Contact the product Seller.
Low air flow.	Low set fan speed.	Set higher speed.
	Clogged filters, fans or recovery core.	Clean or replace the filters. Clean the fans and the recovery core.
	Clogged or damaged air ducts, diffusers, louver shutters, grilles or other ventilation system components.	Clean or replace the air ducts, diffusers, louver shutters, grilles or other ventilation system components.
Low supply air temperature.	Clogged extract filter.	Clean or replace the extract filter.
Noise, vibration.	Clogged impeller.	Clean the impellers.
	Loose screw connection in the fans or in the unit casing.	Tighten the screws of the fans or the casing against stop.
	No anti-vibration connectors on the connection spigots.	Install the rubber anti-vibration connectors.
Water outflow (applicable only for HRV units).	Clogged or damaged drain line. Wrong installation of the drain line.	Clean the drain line. Check the installation angle of the drain line, the U-trap operation and heat insulation.



RISK OF FIRE.

Install only 3.15A (glass 5x20) and 0.5A (glass 5x20) fuses rated for 125 Volts as shown in the UNIT CONTROL section on page 14.

If the fuse blows, replace it. For this:

- disconnect the unit from the power supply using the automatic circuit breaker
- unscrew the fuse holder cap
- carefully remove the blown fuse from the cap
- install a new fuse in the cap
- screw the cap

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed ventilated premise with temperature range from +4 °F (+5 °C) to +104 °F (+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

Production meets standard operating requirements in the USA and Canada.

Vents US warrants to the original purchaser of the unit that it will be free from defects in materials or workmanship for a period of 24 months from the date of original purchase. The Vents US warrants to the original purchaser of the unit that the integrated control unit will be free from defects in materials and workmanship for a period of 24 months from the date of original purchase.

THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

During the stated warranty period, Vents US will, at its option, repair or replace, without charge, any product or part which is found to be defective under normal use and service. This warranty does not cover (a) normal maintenance and normal service or (b) any products or parts which have been subject to misuse, negligence, accident, improper maintenance or repair (other than by Vents US), faulty installation or installation contrary to recommended installation instructions. Labor to remove and replace products is not covered. The duration of any implied warranty is limited to the time period specified for the express warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

VENTS US OBLIGATION TO REPAIR OR REPLACE, AT VENTS US OPTION, SHALL BE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY. VENTS US SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH PRODUCT USE OR PERFORMANCE.

Some states do not allow the exclusion or limitations of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. This warranty supersedes all prior warranties. If proof of sales date is absent, warranty period is calculated from the production date. The unit can be exchanged at the following address:

Vents-US
400 Murray Road, Cincinnati, OH 45217, USA
Tel: 1-888-640-0925, 513-583-5786, Fax: 513-268-4597
E-mail: support@ventsus.com
www.vents-us.com

Please follow guidelines in this manual for product problem-free operation.



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



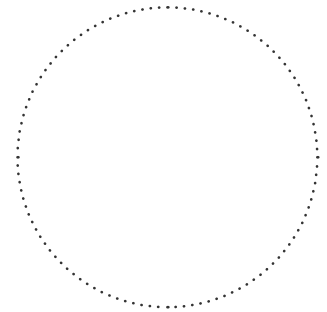
USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP

CERTIFICATE OF ACCEPTANCE

Unit Type	Heat and energy recovery air handling unit
Model	
Serial Number	
Manufacture Date	
Quality Inspector's Stamp	

SELLER INFORMATION

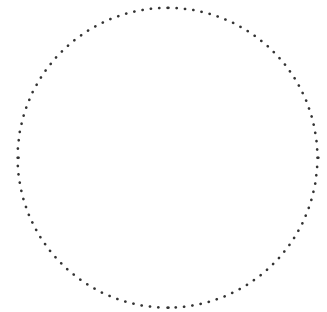
Seller	
Address	
Phone Number	
E-mail	
Purchase Date	
This is to certify acceptance of the complete unit delivery with the user's manual. The warranty terms are acknowledged and accepted.	
Customer's Signature	



Seller's Stamp

INSTALLATION CERTIFICATE

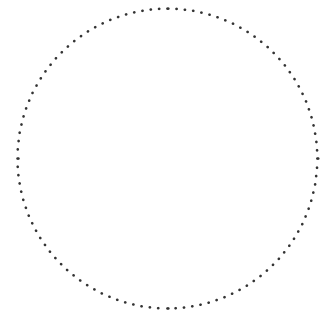
The _____ unit is installed pursuant to the requirements stated in the present user's manual.	
Company name	
Address	
Phone Number	
Installation Technician's Full Name	
Installation Date:	Signature:
The unit has been installed in accordance with the provisions of all the applicable local and national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



Installation Stamp

WARRANTY CARD

Unit Type	Heat and energy recovery air handling unit
Model	
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	



Seller's Stamp

