



# Fantech

Your Ventilation Solutions Company

## Light Commercial Heat/Energy Recovery Ventilator

### IMPORTANT - PLEASE READ THIS MANUAL BEFORE INSTALLING UNIT

**CAUTION** - Before installation, careful consideration must be given to how this system will operate if connected to any other piece of mechanical equipment, i.e. a forced air furnace or air handler, operating at a higher static. After installation, the compatibility of the two pieces of equipment must be confirmed by measuring the airflow's of the Heat / Energy Recovery Ventilators.

It is always important to assess how the operation of any HRV/ERV may interact with vented combustion equipment (i.e. Gas Furnaces, Oil Furnaces, Wood Stoves, etc.).

**NEVER** - install a ventilator in a situation where its normal operation, lack of operation or partial failure may result in the backdrafting or improper functioning of vented combustion equipment!!!



ERV-WI 500



HRV-XI 450 or ERV-XI 450

Your ventilation system should be installed in conformance with the appropriate provincial or state requirements or in the absence of such requirements with the current edition of the National Building Code, and / or ASHRAE's "good Engineering Practice".

## INSTALLATION, OPERATION AND MAINTENANCE MANUAL

## Limited Warranty

- The HRV-XI 450 heat recovery polypropylene core has a limited lifetime warranty.
- The ERV-XI 450 energy recovery enthalpy core has a limited 5 year warranty.
- The ERV-WI 500 energy recovery enthalpy wheel has a limited 1 year warranty.
- The HRV-XI 450 & ERV-XI 450 has a warranty that is limited to 5 years on parts and 7 years on the motor & the ERV-WI 500 has a warranty that is limited to 1 year on parts and 7 years on the motors each from the date of purchase, including parts replaced during this time period. If there is no proof of purchase available, the date associated with the serial number will be used for the beginning of the warranty period.
- The motors found in all Fantech HRV/ERV's require no lubrication, and are factory balanced to prevent vibration and promote silent operation.
- The limited warranty covers normal use. It does not apply to any defects, malfunctions or failures as a result of improper installation, abuse, mishandling, misapplication, fortuitous occurrence or any other circumstances outside Fantech's control.
- Inappropriate installation or maintenance may result in the cancellation of the warranty.
- Any unauthorized work will result in the cancellation of the warranty.
- Fantech is not responsible for any incidental or consequential damages incurred in the use of the ventilation system.
- Fantech is not responsible for providing an authorized service centre near the purchaser or in the general area.
- Fantech reserves the right to supply refurbished parts as replacements.
- Transportation, removal and installation fees are the responsibility of the purchaser.
- The purchaser is responsible to adhering to all codes in effect in his area.

\* This warranty is the exclusive and only warranty in effect relative to the ventilation system and all other warranties either expressed or implied are invalid.

# TABLE OF CONTENTS

## TECHNICAL DATA

HRV-XI 450 .....	3
ERV-XI 450 .....	5
ERV-WI 500 .....	7

## OPERATION

Modes Of Operation .....	9
Optional Remote Controls .....	9

## INSTALLATION

Mounting the Unit .....	10
Location & Ducting.....	11
Examples .....	14
Air Flow Balancing .....	16

## MAINTENANCE

.....	17
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## ELECTRICAL CONNECTIONS

.....	18
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ASHRAE Standard 62-2001 defines acceptable ventilation rates for various applications.

### Outdoor Air Requirements Examples

Application	CFM per Person	L/s per Person
Coin-operated laundry	15	8
Cafeteria, Fast Food	20	10
Bars	30	15
Conference Room	20	10
Reception Area	15	8
Beauty Shop	25	13
Classroom	15	8
Libraries	15	8
Medical	15	8
Photo Studios	15	8
Living Areas (residential)	.35 air changes per hour but not less than 15 cfm (7.5 L/s) per person	
Autopsy Rooms	– (0.5 cfm/Ft <sup>2</sup> or 2.5 L/s m <sup>2</sup> )	
Locker Rooms	– (0.5 cfm/Ft <sup>2</sup> or 2.5 L/s m <sup>2</sup> )	
* Swimming Pools	– (0.5 cfm/Ft <sup>2</sup> or 2.5 L/s m <sup>2</sup> )	
Public Restrooms (cfm/wc or cfm/urimac)	50	25

\* Call factory for details 1.800.565.548



# Fantech

## Heat Recovery Ventilator

# HRV-XI 450

## Light Commercial HRV



The HRV-XI 450 Heat Recovery Ventilation system (HRV) complements the energy efficiency of the modern building by filtering incoming fresh outdoor air before it enters the heat-recovery core where it is preheated by the outgoing, stale contaminated air. The HRV then distributes the preheated fresh filtered air throughout the building by direct ductwork installed specifically for the HRV or through the ductwork of a forced-air system.

### APPLICATIONS INCLUDE:

- Class Rooms
- Retail Shops
- Hair Salons
- Bars & Restaurants
- Offices
- Clinics
- Animal Shelters
- Large Homes

### POWER & WEIGHT

- Volts 115V Total
- Amperage 7.7 Amps Total
- Weight 140 Lbs
- Shipping Weight 180 Lbs
- Blowers 115V, 60 Hz, 3.85 Amps
- Phase Single Phase



### OPTIONAL CONTROLS (WHITE ONLY)

- MDEH 1 – Mechanical Low Voltage Dehumidistat
- FD 15M – 15 Minutes Crank Timer
- AQS 1 – Air Quality Sensor

\* External dry contacts (provided)

### SPECIFICATIONS

**CASE** 20 gauge galvanized steel. Baked powder coated paint, grey. Insulated with 1" (25 mm) foil-face fiberglass insulation to prevent condensation. Two (2) drain connections 1/2" NPT.

**BLOWERS** Two ebm™ direct drive external rotor blowers with forward curved blades. Blowers come with permanently lubricated sleeves for smooth and quiet operation. Blowers come pre-wired with 4 speeds, three of which are available to the installer as standard. Blowers are electrically connected with a quick connect for quick and easy inspection of blowers.

**CORES** Two (2) modular polypropylene heat recovery cores configured for an efficient cross-flow ventilation. Each core is 12" x 12" (305 x 305 mm) with a 15" (380 mm) depth. Cores are manufactured using silicone to withstand extreme temperature variations. (Aluminum cores are optional.)

**FILTERS** Four (4) Washable Electrostatic Panel Type Air Filters, 11.75" (298mm) x 15" (380mm) x 0.25" (6mm)

**MOUNTING** Unit can be installed using the four (4) mounting brackets included. Brackets fasten to HRV (bolts provided) and to floor joists using wood screws, not provided. Unit may also be suspended by using the supplied brackets and threaded rod, not supplied, or placed on a platform.

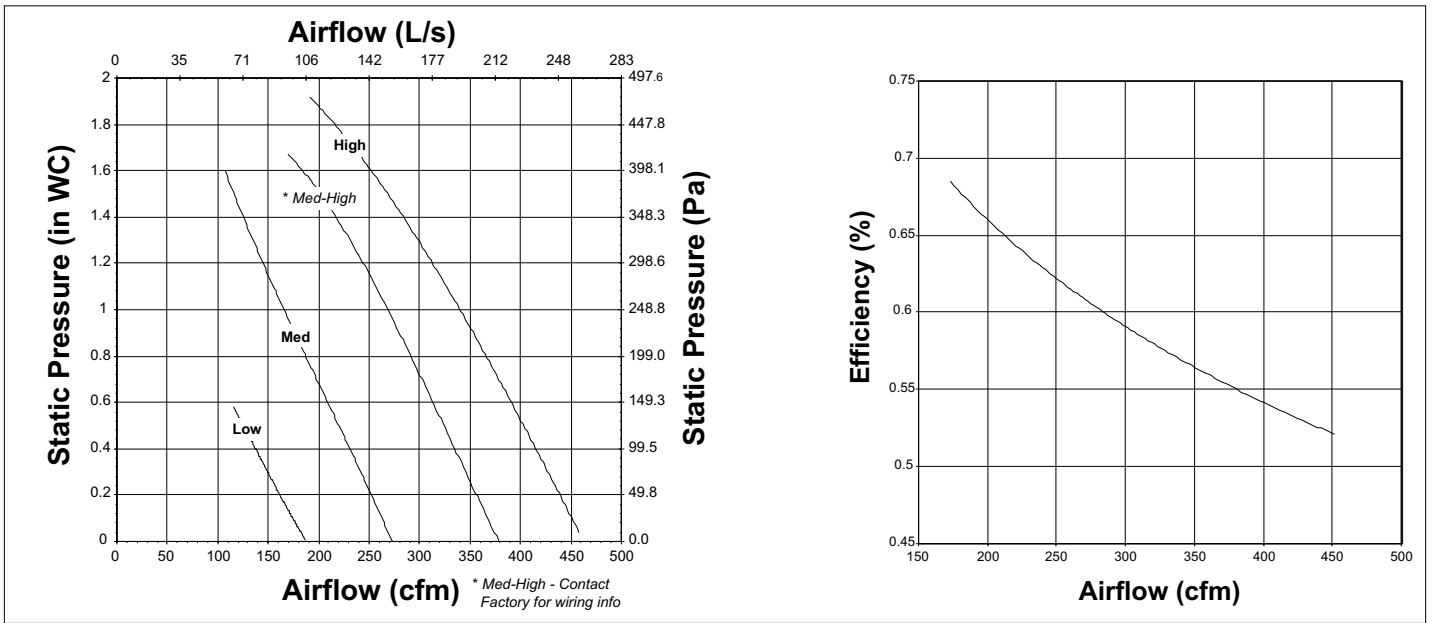
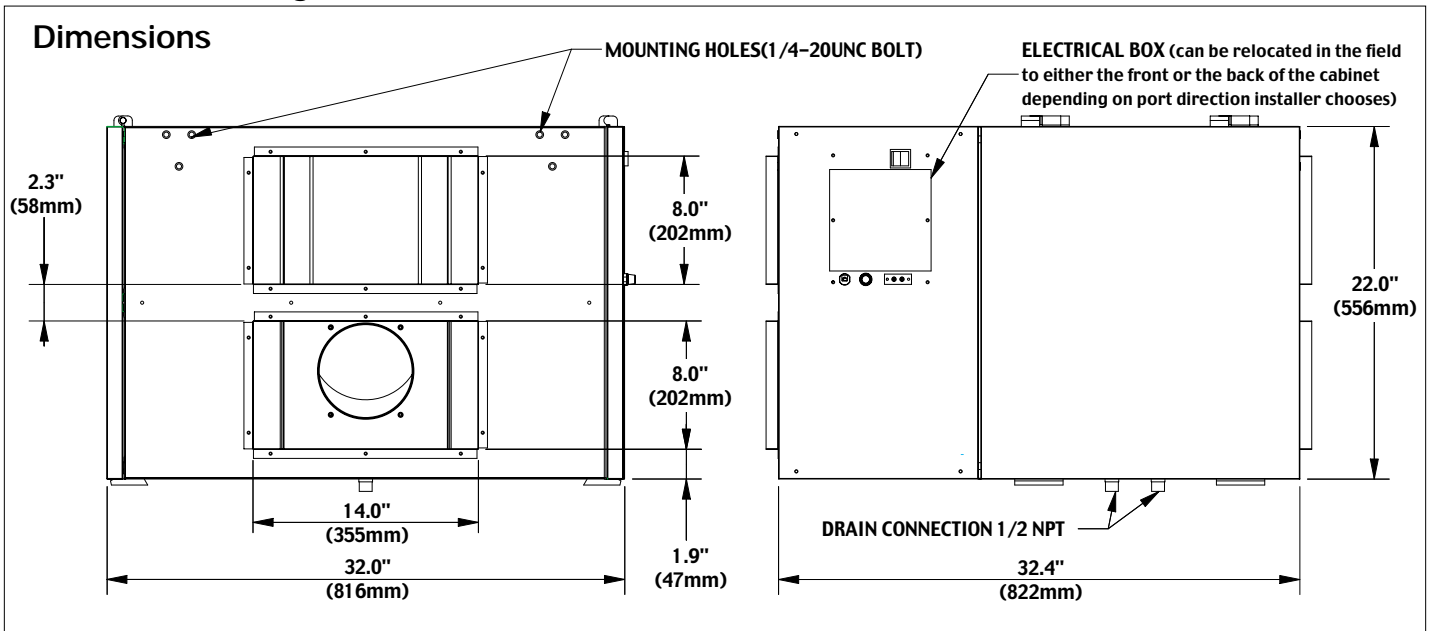
**CONTROLS** Low voltage (24VAC) external dry contacts to activate high speed. External three (3) position switch for LOW/STAND BY/ MED continuous ventilation speeds.

**DEFROST** A preset 5 minute defrost sequence is activated at an outdoor air temperature of 23°F (-5°C) and lower. During the defrost sequence, the supply blower shuts down & the exhaust blower switches into high speed to maximize the effectiveness of the defrost strategy. The unit then returns to normal operation for 25 minutes, and continues cycle.

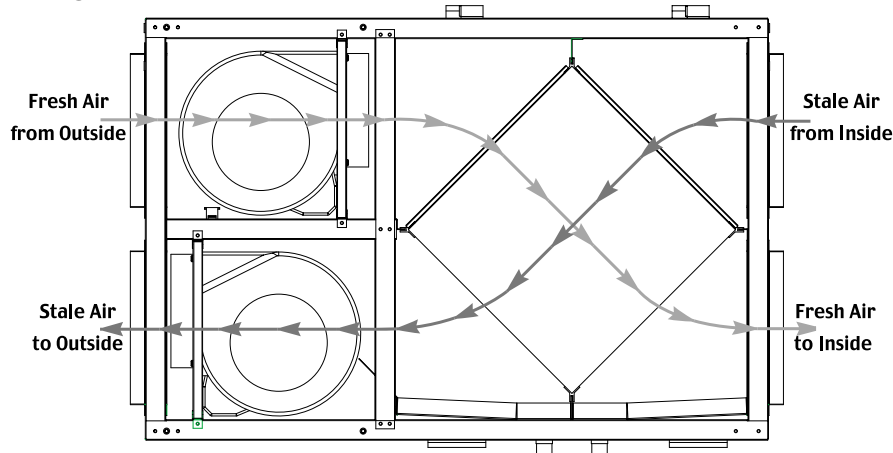
**SERVICEABILITY** Cores, filters and drain pans can be accessed easily from both sides of the HRV from hinged access panels. Cores conveniently slide out with only 15" (380mm) clearance. Blowers can be accessed from both sides of the HRV from fastened access panels. Blowers are easily removed by removing the access panel and sliding the motor plates out of the HRV. A quick connect allows for fast inspection of blowers.

FOR MORE INFORMATION CONTACT:

# HRV-XI 450 Light Commercial HRV



### Airflow



# Fantech

Unit: \_\_\_\_\_

Date: \_\_\_\_\_

Contractor: \_\_\_\_\_

Project: \_\_\_\_\_

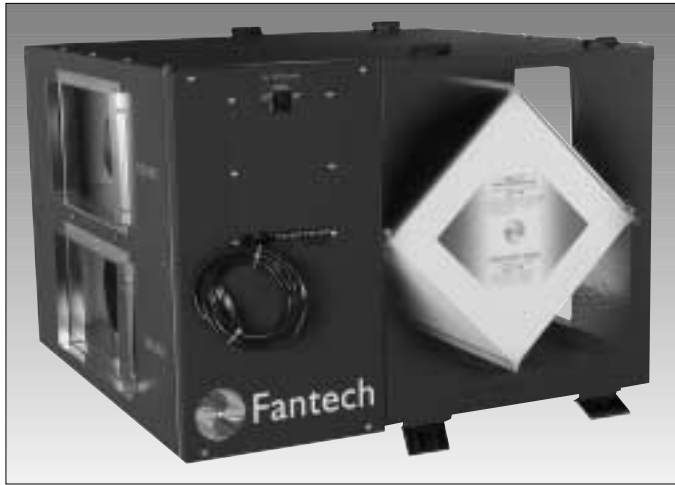


# Fantech

Energy Recovery Ventilator

## ERV-XI 450

Light Commercial ERV



The ERV-XI 450 lowers demand on air conditioning systems. Air supplied from outdoors enters through the Energy Recovery Core where it transfers the heat and humidity to the exhaust air. The air supplied by the ERV-XI 450 is now cooler, dryer and more comfortable. The ERV-XI 450 distributes the pre-conditioned fresh filtered air throughout the building by direct ductwork installed specifically for the ERV or through the ductwork of a forced-air system.

### APPLICATIONS INCLUDE:

- Class Rooms
- Retail Shops
- Hair Salons
- Bars & Restaurants
- Offices
- Clinics
- Animal Shelters
- Larger Homes

### POWER & WEIGHT

- Volts 115V Total
- Amperage 7.7 Amps Total
- Weight 140 Lbs
- Shipping Weight 180 Lbs
- Blowers 115V, 60 Hz, 3.85 Amps
- Phase Single Phase



### OPTIONAL CONTROLS (WHITE ONLY)

- FD 15M – 15 Minute Crank Timer
- AQS 1 – Air Quality Sensor
- MDEH – Dehumidistat (read full description of control found under "optional remote control" in this manual)

### SPECIFICATIONS

**CASE** 20 gauge galvanized steel. Baked powder coated paint, grey. Insulated with 1" (25 mm) foil-face fiberglass insulation to prevent condensation.

**BLOWERS** Two ebm™ direct drive external rotor blowers with forward curved blades. Blowers come with permanently lubricated sleeves for smooth, quiet operation. Blowers come pre-wired with 4 speeds, three of which are available to the installer as standard. Blowers are electrically connected with a quick connect for fast and easy inspection of blowers.

**CORES** Two (2) modular enthalpic energy recovery cores configured for an efficient cross-flow ventilation. Each core is 12" x 12" (305 x 305 mm) with a 15" (380 mm) depth.

**FILTERS** Four (4) Washable Electrostatic Panel Type Air Filters, 11.75" (298mm) x 15" (380mm) x 0.25" (6mm)

**MOUNTING** Unit can be installed using the four (4) mounting brackets included. Brackets fasten to ERV (bolts provided) and to floor joists using wood screws, not provided. Unit may also be suspended by using the supplied brackets and threaded rod, not supplied, or placed on a platform.

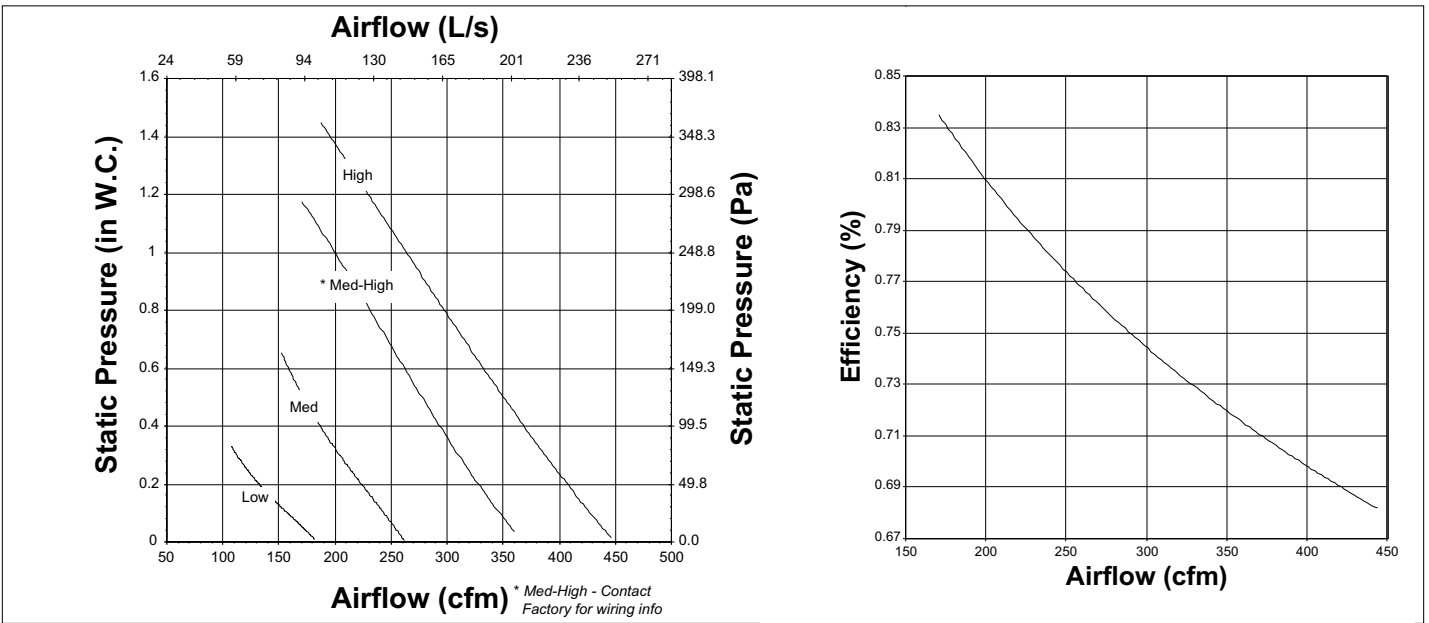
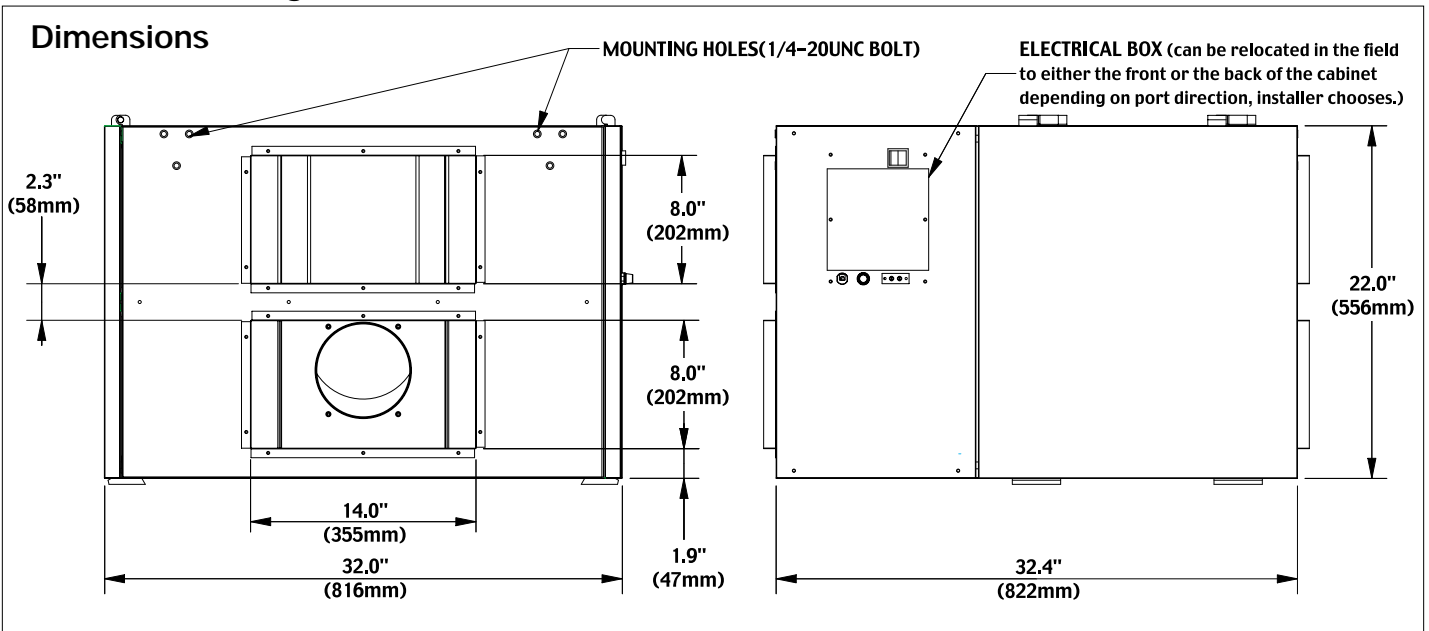
**CONTROLS** Low voltage (24VAC) external dry contacts to activate high speed. External three (3) position switch for LOW/STAND BY/ MED continuous ventilation speeds.

**SERVICEABILITY** Cores and filters can be accessed easily from both sides of the ERV from hinged access panels. Cores conveniently slide out with only 15" (380mm) clearance. Blowers can be accessed from both sides of the ERV from fastened access panels. Blowers are easily removed by removing the access panel and sliding the motor plates out of the ERV. A quick connect allows for fast inspection of blowers.

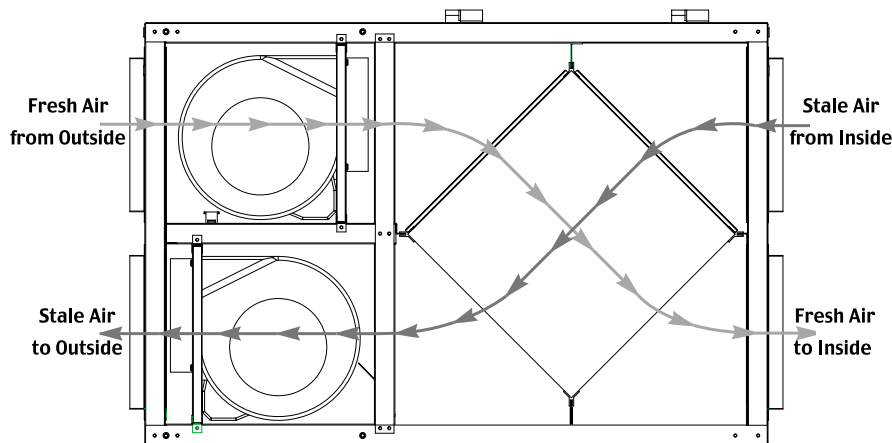


FOR MORE INFORMATION CONTACT:

# ERV-XI 450 Light Commercial ERV



## Airflow



# Fantech

Unit: \_\_\_\_\_

Date: \_\_\_\_\_

Contractor: \_\_\_\_\_

Project: \_\_\_\_\_



# Fantech

Energy Recovery Ventilator

# ERV-WI 500

Light Commercial ERV



The ERV-WI 500 is an energy recovery ventilator (ERV) that transfers both latent and heat energy. Designed for most climates and especially for hot humid regions, the ERV -WI 500 is an effective balanced ventilator that reduces energy costs. Air drawn in from outside enters through the ERV wheel where it is conditioned by the separated exhaust air stream.

## APPLICATIONS INCLUDE:

- Class Rooms
- Retail Shops
- Hair Salons
- Bars & Restaurants
- Offices
- Clinics
- Larger Homes

## POWER & WEIGHT

- Volts 115V Total
- Amperage 8.2 Amps Total
- Weight 300 Lbs
- Shipping Weight 340 Lbs
- Blowers 115V, 60 Hz, 3.85 Amps
- Phase Single Phase



## OPTIONAL CONTROLS

- FD 15M – 15 Minute Crank Timer
- High-voltage 120 V Speed Controller for blowers
  - Can be hard wired to remote location
  - \* ERV unit is shipped from factory set on high speed
- MDEH – Dehumidistat (read full description of control found under "optional remote control" in this manual.)
- Other controls not available through Fantech may be used if compatible with this unit, see controls.

## SPECIFICATIONS

**CASE** 20 gauge galvanized steel. Baked powder coated paint, grey. Insulated with 1" (25 mm) foil-face fiberglass insulation to prevent condensation.

**BLOWERS** Two ebm™ direct drive external rotor blowers with backward curved blades. Blowers come with permanently lubricated bearings for smooth, quiet operation. Blowers come pre-wired with 1 speed, but can be individually slowed down with optional speed control. Blowers are electrically connected with a quick connect for quick and easy inspection of blowers.

**FILTERS** Two (2) 2" medium efficiency pleated filters, one (1) per air stream.

**MOUNTING** Unit may be suspended by using the supplied brackets and threaded rod, not supplied, or placed on a platform.

**CONTROLS** Low voltage (24VAC) internal dry contacts to activate unit from off position to high speed, see wiring diagram.

**DEFROST** A preset 5 minute defrost sequence is activated at an outdoor air temperature of 23°F (-5°C) and lower. During the defrost sequence, the supply blower shuts down. The unit then returns to normal operation for 25 minutes, and continues cycle, until temperature rises above set point.

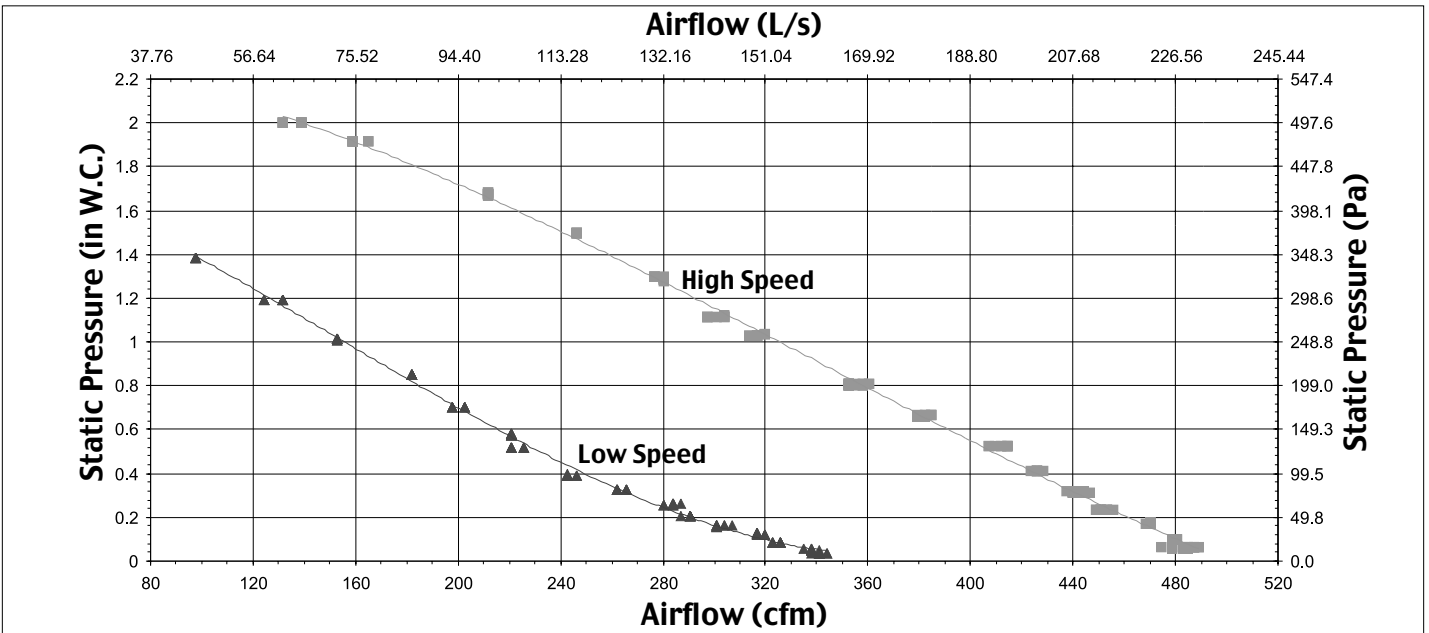
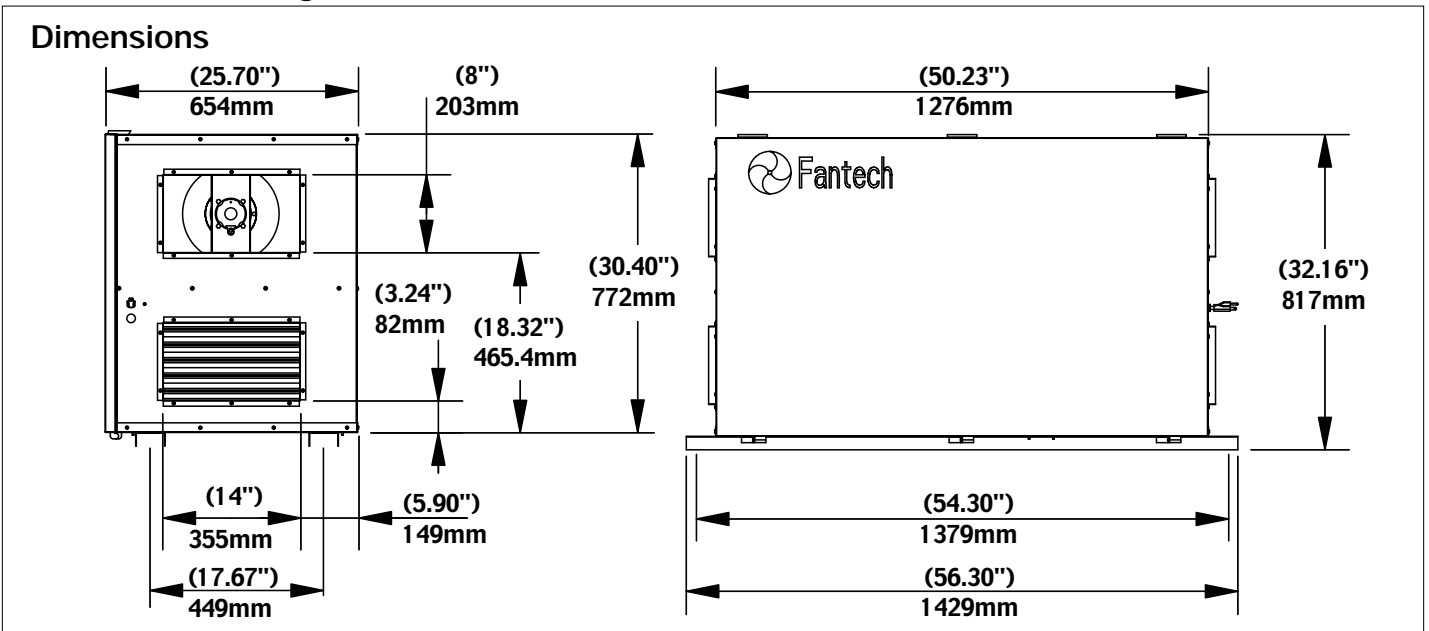
**SERVICEABILITY** Wheel and filters slide out without tools. Access door is secured with safety screw.

## ENTHALPY WHEEL

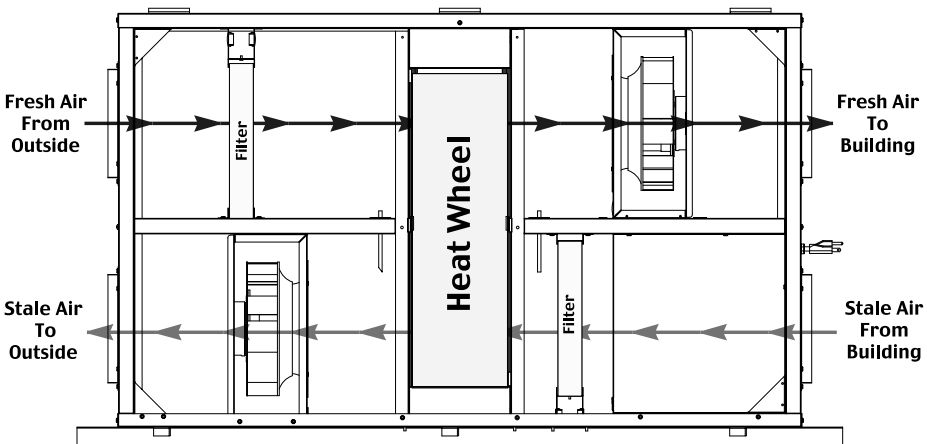
- Homogenous media; Not coated or bonded; Will not delaminate
- Synthetic wheel is completely corrosion resistant
- Unitary wheel media construction maximizes face flatness and fluted geometry to minimize cross-contamination
- 4-Å molecular sieve desiccant allows only water molecules to be transferred; Minimal cross-contamination
- Wheel is completely water washable
- Maintenance-free bearings
- Full contact brush seals
- Certified to **ARI** 1060 Rating Air to Air Energy Recovery Equipment

FOR MORE INFORMATION CONTACT:

# ERV-WI 500 Light Commercial ERV



## Airflow



# Fantech

Unit: \_\_\_\_\_

Date: \_\_\_\_\_

Contractor: \_\_\_\_\_

Project: \_\_\_\_\_



# OPERATION

## MODES OF OPERATION

### 1. Continuous / Ventilation Mode

In this mode of operation both fans are operating and exchanging air with the outside. The heat/energy recovery ventilator (HRV/ERV) constantly exchanges the air at the rate you select, either at low or medium speed, and switches to high speed when activated by an optional remote control. The "Low" and "Med" fan speed selection will cause the unit to operate in continuous exchange mode at a reduce exchange rate. Continuous mode is recommended, since pollutants are slowly but constantly being generated in a building.

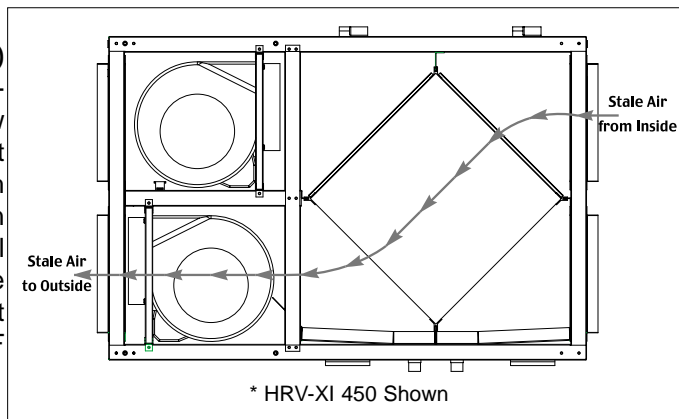
*NOTE: Model ERV-WI 500 is a single speed unit only. Optional speed control is available.*

### 2. Intermittent / Standby Mode

The system is always on standby and operates at high speed when activated by an optional remote control (required): "Standby" should be selected if the user wishes to stop the unit from continuous exchange.

### 3. Defrost (Fan shutdown HRV-XI 450 & ERV-WI 500 only)

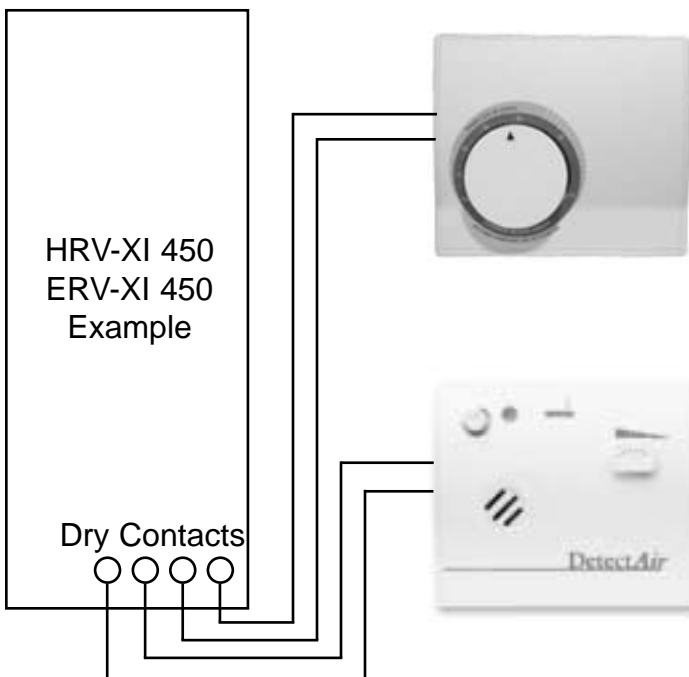
The automatic defrost cycle of HRV's consists of a fan shutdown. When the supply air stream temperature goes below 23°F (-5°C), the supply motor shuts down and the exhaust motor goes in to high speed. Ambient air is passed through the unit for a period of 5 minutes. The supply motor will then re-start and run at the preset speed. The exhaust motor will also slow down to the preset speed, and the unit will operate in the run cycle for 25 minutes. This fan shutdown defrost cycle continues until the supply air stream rises above 23°F (-5°C).



## SETTING SPEED

The HRV/ERV is shipped from the factory on low speed, intermittent operation can be obtain by toggle switch located on outside of cabinet (HRV-XI 450 & ERV-XI 450) or by manipulating jumpers in the electrical box. See wiring diagram. The ERV-WI 500 is factory set to high speed. Internal low voltage contacts allow interruption of power to unit when optional remote control is used. See spec sheet for control options.

## OPTIONAL REMOTE CONTROLS



### \* Dehumidistat – MDEH 1

The wall mount dehumidistat monitors the humidity level in the area it is installed. When the humidity level rises above the desired set-point, the HRV will activate to high speed/override mode. Once the humidity level returns to desired condition, the unit will return to the normal mode. Two (2) low voltage wires required for operation. *Note the dehumidistat helps dehumidify by increasing the speed of the HRV/ERV. Dehumidification will only take place when the air outside is dryer than the air inside.*

### Air Quality Sensor – AQS 1 (Not compatible with ERV-WI 500)

The wall mount Air Quality Sensor (AQS) monitors indoor air quality and activates the override mode when cigarette smoke, formaldehyde, benzene, volatile organic compounds and other pollutants are detected. The unit will then return to normal mode once the air pollutants are reduced to a pre-determined lower level. Three low voltage wires are required for operation

\* This control is not a warning device.

# INSTALLATION

## PRACTICAL TIPS

- *Install the unit close to the outside wall on which the supply and exhaust hoods will be mounted.*
- *Have a nearby power supply 120 Volts, 60 Hz.*
- *Have the possibility of mounting the unit to supporting beams.*
- *Mount the unit as level as possible in order to allow proper condensate drainage. Failure to do so may void warranty. (HRV-XI 450 only)*
- *Have access to a water drain for the condensate of the unit during defrost. (HRV-XI 450)*
- *The HRV-XI or ERV-XI can be accessed for regular maintenance by both sides using one of the two latched doors. Leave appropriate clearance.*

## LOCATION

The HRV/ERV must be located in a heated space where it will be possible to conveniently service the unit. Typically the HRV/ERV would be located in the mechanical room, above a drop ceiling or an area close to the outside wall where the weather-hoods will be mounted. Attic installations are not normally recommended due to extreme temperatures, and difficulty in performing, required service & maintenance. If an attic is selected, special care should be taken in ensuring the unit will perform as intended. Unit may need to be protected with insulated shelter, built on site.

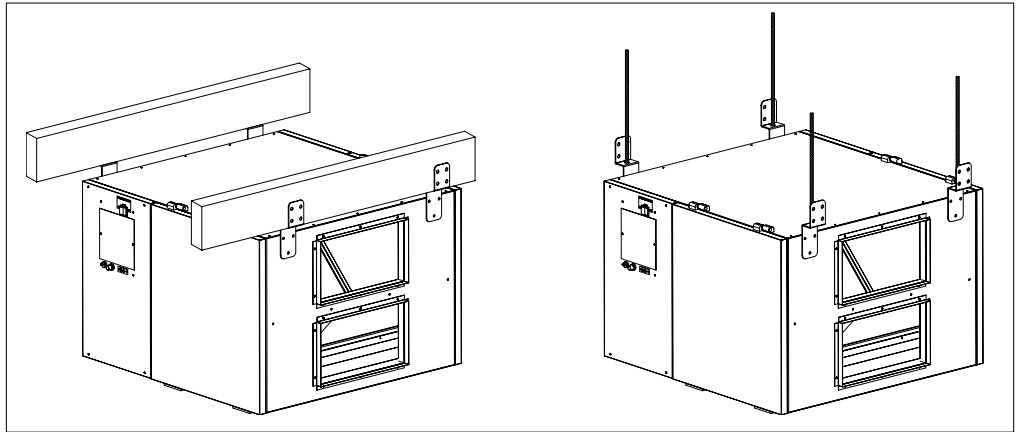
**Connecting appliances to the HRV/ERV** It is not recommended, including:

- clothes dryer
- kitchen exhaust hoods
- combustion venting
- central vacuum system

These appliance may cause lint, dust or grease to collect in the HRV , damaging the unit.

**NOTE:** Connecting any of these type of appliances to the HRV will invalidate your warranty

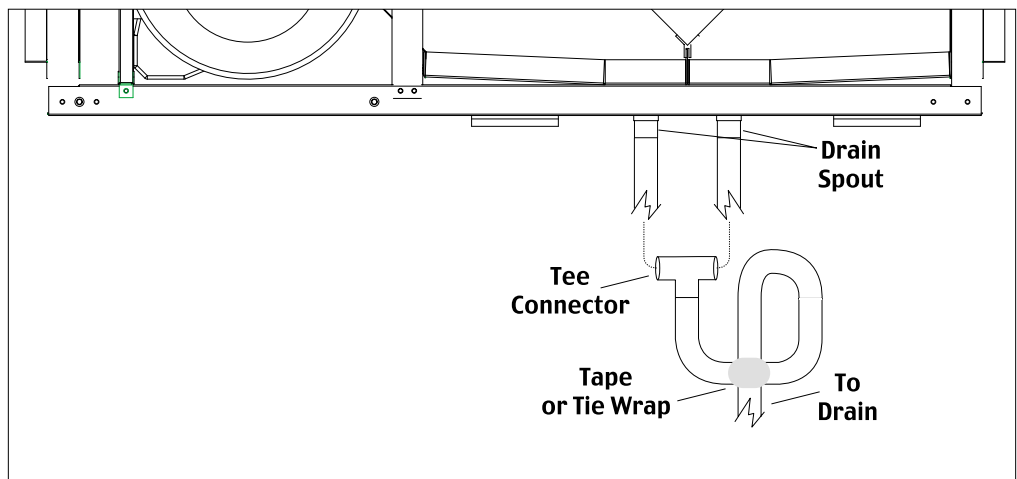
## MOUNTING



## Installing Drain Line (HRV-XI 450 only)

Through normal operation and including defrost mode, the HRV-XI 450 may produce some condensation. This water should flow into a nearby drain, or be taken away by a condensate pump. The HRV and all condensate lines must be installed in a space where the temperature is maintained above the freezing point. A "P" trap should be made in the drain line. This will prevent odors from being drawn back up into the unit. The drain connection is a 1/2" NPT nipple.

## Install the drain hose, making a "P" trap



# INSTALLING DUCTS GOING TO / FROM OUTSIDE

## INSTALLING THE DUCTING TO THE WEATHERHOODS

**OUTSIDE WEATHERHOODS** – The weatherhoods must have built-in "bird" screens with 1/4 inch (6.35 mm) minimum mesh to prevent birds and rodents from entering into the ductwork. Do not use smaller mesh as it will be very susceptible to plugging up. The preferred location of the weatherhoods is:

- no less than 10 ft. (3 m) apart from each other.
- at least 18 inches (457.2 mm) snow line or ground level.
- supply hood must be kept away from source of contaminants, such as automobile exhaust fumes, gas meters, garbage cans, containers, cooling towers, tar roofs, etc.
- avoid prevailing winds, whenever reasonably possible.

The outside perimeter of the weatherhood must be sealed to prevent leakage into the building.

The design and size of the weatherhoods or louvers chosen by the installer must allow for adequate free area. Water and snow penetration of the system is minimized when the airflow does not exceed 1000 FPM (5.08 m/s) free area velocity.

**DUCTING FROM THE WEATHERHOODS-TO AND FROM THE HRV/ERV** – Insulated galvanized sheet metal ducting with sufficient cross section with an integral single piece vapor barrier should be used to connect the HRV/ERV to the weatherhoods. Insulated flex duct may be used in moderation, if sized and installed properly. (Consult local codes)

A minimum R value of insulation should be equal to 4 (RSI 0.75) ,consult local codes.

All ducts should be sealed using a good bead of high quality caulking (preferably acoustical sealant) and a high quality aluminum foil tape, or other approved duct sealant.

# INSTALLING DUCTS TO / FROM INSIDE

To maximize airflow in the ductwork system, all ducts should be kept short and have as few bends or elbows as possible. Forty-five degree are preferred to 90° elbows. Use “Y” tees instead of 90° elbows whenever possible. All duct joints must be fastened with screws or duct sealant and wrapped with a quality duct tape to prevent leakage. Aluminum foil duct tape is recommended.

## SUPPLY AIR DUCTING

In buildings without a forced air HVAC systems, fresh air should be supplied to all habitable areas. It should be supplied from high wall or ceiling locations. Grilles that diffuse the air comfortably such as Fantech grille {MGE (metal) or PGE (plastic)}s are recommended. To avoid possible noise transfer through the ductwork system, a piece of flexible ducting should be connected between the HRV and the supply ductwork system.

If the floor is the only option available, then special care should be taken in locating grilles. Areas such as under baseboard heaters will help to temper the air. Also optional inline duct heaters are available for mounting in the supply duct work to add heat if required. In buildings with a forced air HVAC systems, you may want to connect the HRV to the HVAC ductwork (see information below).

## PRACTICAL TIPS

- *The fresh air inlet from the HRV needs to ensure proper air mixing and temperature in the air handler. Units should be interlocked with one another so that the air handler runs, when there is a call for ventilation.*
- *Units may be operating at different static pressures. Compatibility of the two (2) systems must be verified by checking that balance of the HRV/ERV found in this manual.*

*Notes: See air handler manufacturer for appropriate specifications.*

## Direct Connection to Furnace/ Air handler return duct

- Should you wish to hard duct the supply air directly into the cold air return of the HVAC systems, remember to check the airflow balance of the HRV with the HVAC systems fan both “on” and “off” to determine that it does not imbalance the HRV more than 10%. Make sure you respect the minimum distance from the supply air in of the HRV/ERV and the HVAC systems (Refer to your local and National Building & Heating Codes for any variations in these notes).
- It may be necessary to install a separate fresh air supply ductwork system if the heating is other than forced air. When installing an HRV/ERV, the designer and installer should be aware of local codes that may require smoke detectors and/or firestats in the HVAC or HRV/ERV ductwork. Because an HRV/ERV is designed to bring fresh air into the building, structures may require supply voltage interrupt when smoke or flame sensors are triggered, or when a central fire alarm system is activated.

\* See installation examples found in this manual.

# INSTALLING DUCTS TO / FROM INSIDE (CON'T)

## Exhaust Air ducting

The stale air exhaust system is used to draw air from the points in the building where the worst air quality problems occur. ( See installation examples in the manual.)

### PRACTICAL TIPS

- *Choose the location your Supply and Exhaust Fantech grille {MGE (metal) or PGE (plastic)}s. The Exhaust Grilles should be located in areas where known contaminant's exist.*
- *A piece of flexible ducting should be placed between the HRV and the rigid ducting to absorb any noise or vibrations.*
- *The grilles should be installed on the ceiling or on high the wall 6" (152 mm) to 12" (305 mm) from the ceiling.*



Push the Fantech grille {MGE (metal) or PGE (plastic)} into the optional mounting collar or directly into installed elbow.

## Backdraft Dampers

Backdraft dampers may be desired to prevent the passive migration of unwanted outside air when the HRV/ERV is set to standby or off mode.

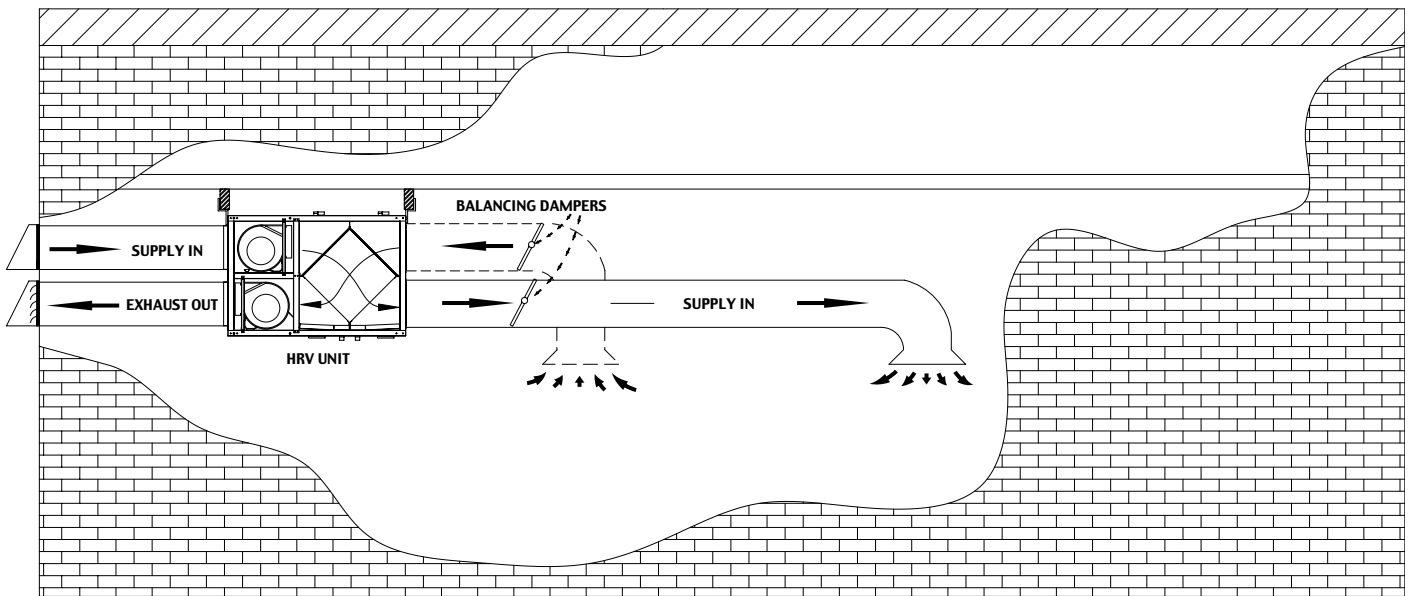
# INSTALLATION EXAMPLES

\* Drawings are illustrations only and actual port locations and airflow directions may vary, consult unit spec sheets.

It is the responsibility of the installer to ensure all ductwork is sized and installed as designed to ensure the system will perform as intended. The amount of air (CFM) that an HRV/ERV will deliver is directly related to the total external static pressure (E.S.P.) of the system. Static pressure is a measure of resistance imposed on the blower by length of duct work/number of fittings used in duct work, duct heater etc.

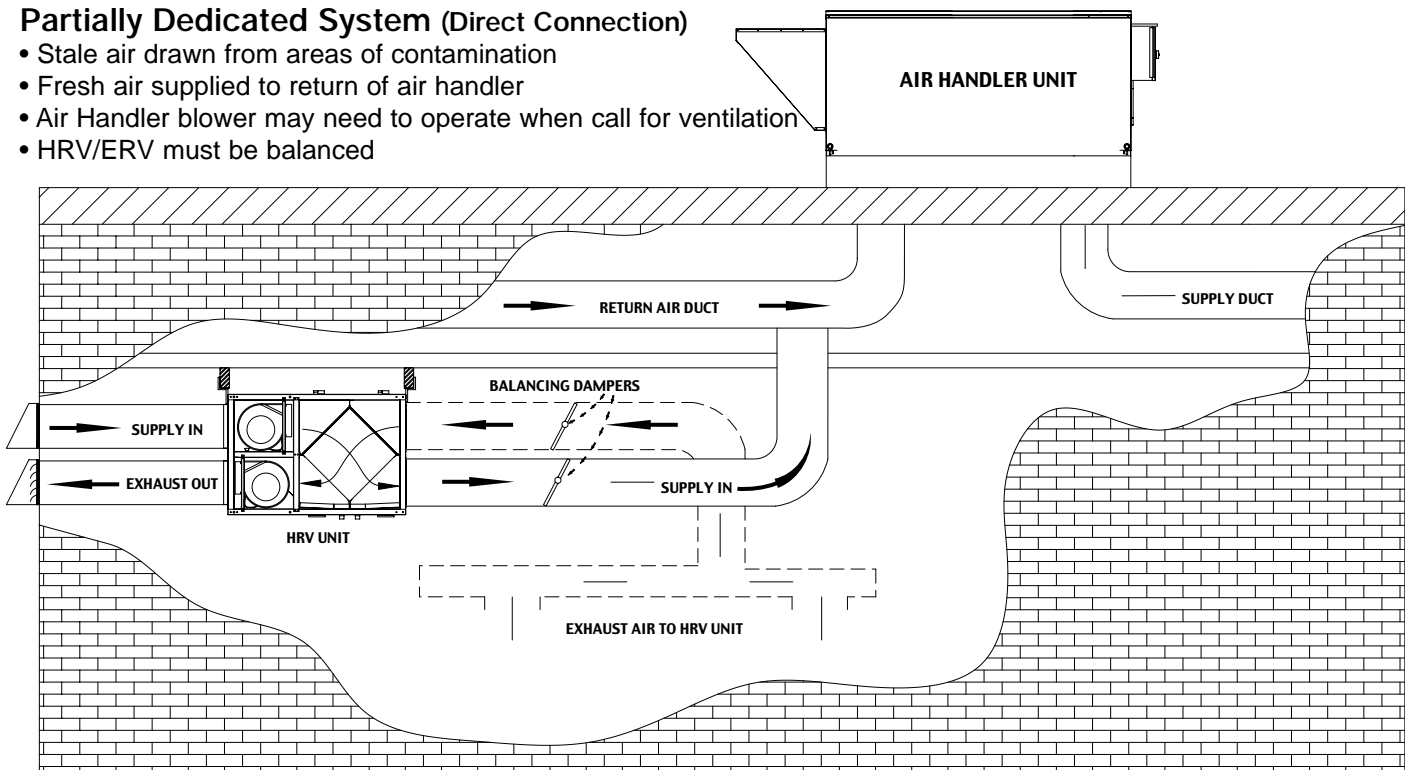
## Fully Dedicated System

- Stale air drawn from areas of contamination
- Fresh air supplied to main areas
- HRV/ERV must be balanced
- External heating or cooling coil may be needed if air is not able to mix comfortably.



## Partially Dedicated System (Direct Connection)

- Stale air drawn from areas of contamination
- Fresh air supplied to return of air handler
- Air Handler blower may need to operate when call for ventilation
- HRV/ERV must be balanced



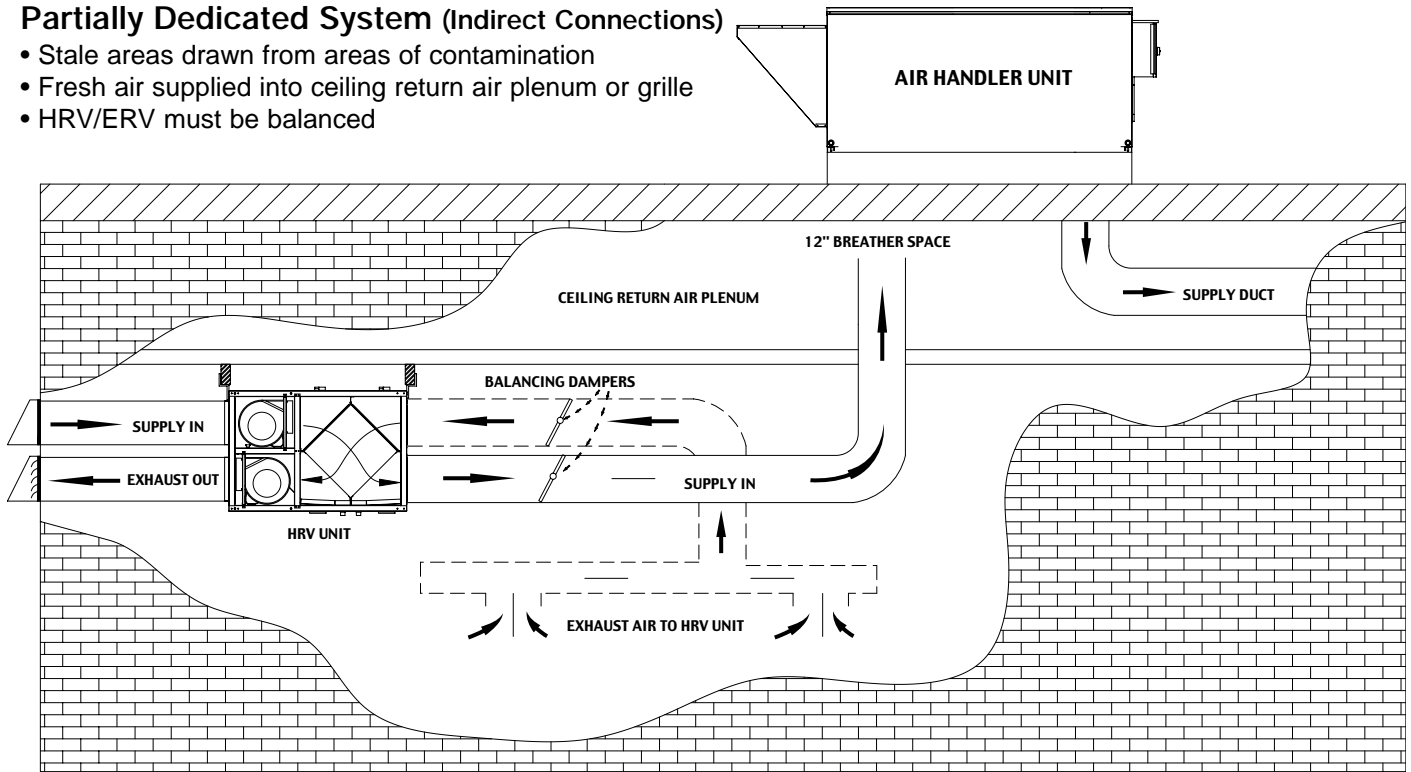
# INSTALLATION EXAMPLES (CON'T)

\* Drawings are illustrations only and actual port locations and airflow directions may vary, consult unit spec sheets.

It is the responsibility of the installer to ensure all ductwork is sized and installed as designed to ensure the system will perform as intended. The amount of air (CFM) that an HRV will deliver is directly related to the total external static pressure (E.S.P.) of the system. Static pressure is a measure of resistance imposed on the blower by length of duct work/number of fittings used in duct work, duct heater etc.

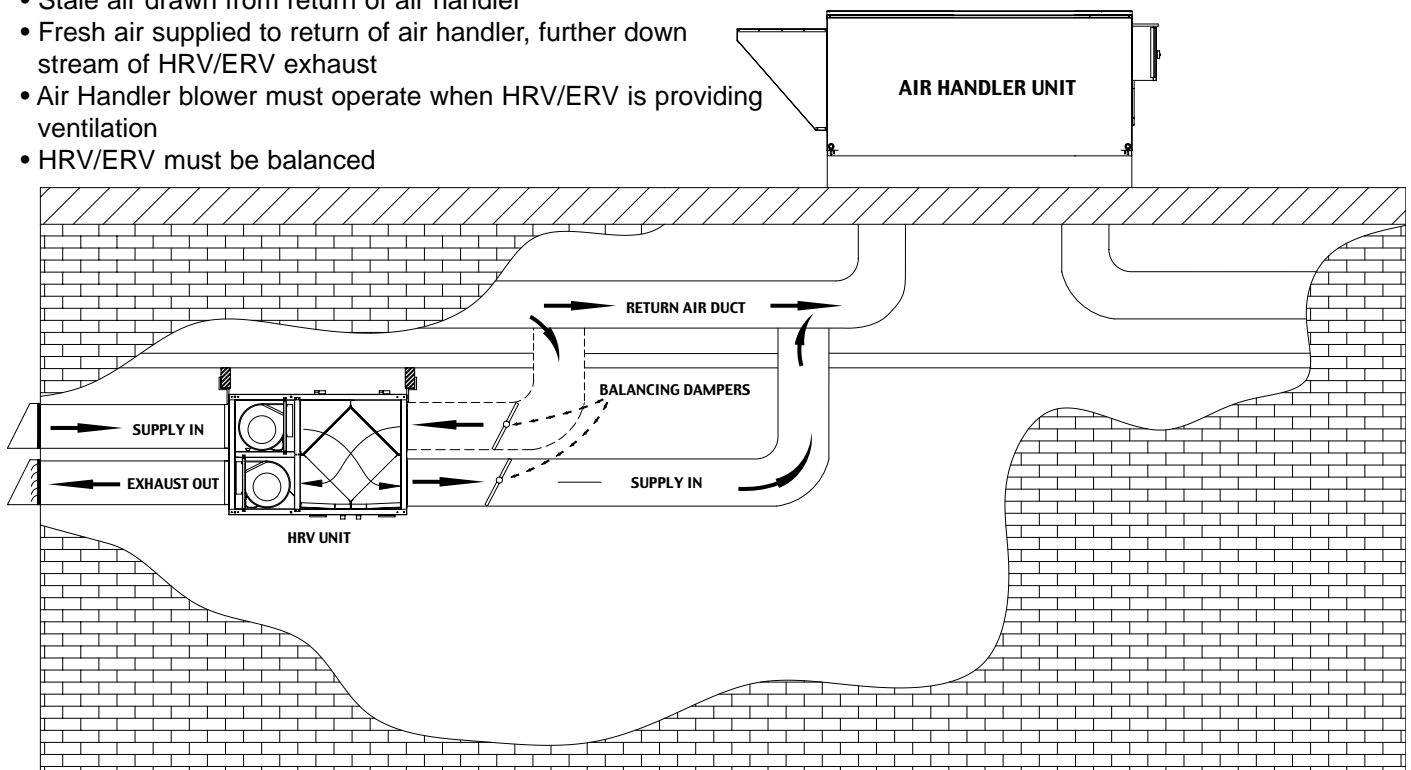
## Partially Dedicated System (Indirect Connections)

- Stale areas drawn from areas of contamination
- Fresh air supplied into ceiling return air plenum or grille
- HRV/ERV must be balanced



## Simplified Installation

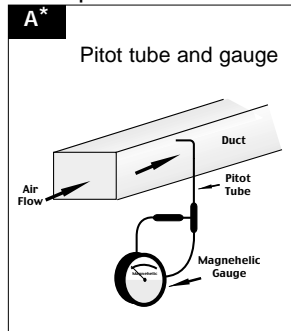
- Stale air drawn from return of air handler
- Fresh air supplied to return of air handler, further down stream of HRV/ERV exhaust
- Air Handler blower must operate when HRV/ERV is providing ventilation
- HRV/ERV must be balanced



# AIR FLOW BALANCING

## PRACTICAL TIPS

- If the unit's airflows are not properly balanced...
  - The unit may not operate at its maximum efficiency.
  - Heat & Energy recovery core damage may occur.
  - The unit's use could cause negative or positive pressure in the building causing cold air to enter or other combustible equipment to backdraft.
  - The unit may not defrost properly.
- The balancing procedure consists of measuring the exhaust air leaving the system and the supply air entering the system and ensuring that these two are equal. A deviation of 10% or less is acceptable. In such cases, it is recommended to have a greater amount of exhaust air than supply air as so to increase the supply air's temperature.



**A** The duct's airflow velocity is measured with a magnehelic gauge and a pitot tube. See "Pitot Tube Balancing Procedure" next page.

- To avoid airflow turbulence and incorrect readings, the airflow velocity should be measured on steel ducting a minimum of 3 duct cross-section from the unit or elbow and before any transition.

## PITOT TUBE BALANCING PROCEDURE

### PITOT TUBE

#### BALANCING PROCEDURE

The following is a method of field balancing an HRV/ERV using a Pitot tube, advantageous in situations when flow stations are not installed in the ductwork. Procedure should be performed with the HRV/ERV on high speed.

The first step is to operate all mechanical systems on high speed, which have an influence on the ventilation system, i.e. the HRV/ERV itself and the forced air HVAC system or air handler if applicable. This will provide the maximum pressure that the HRV/ERV will need to overcome, and allow for a more accurate balance of the unit.

Drill a small hole in the duct (about 3/16"), four feet downstream of any elbows or bends, and two feet upstream of any elbows or bends.

These are recommended distances but the actual installation may limit the amount of straight duct.

The Pitot tube should be connected to a magnehelic gauge or other manometer capable of reading from 0 to 0.25 in (0-62 Pa) of water, preferably to 3 digits of resolution. The tube coming out of the top of the pitot is connected to the high pressure side of the gauge. The tube coming out of the side of the pitot is connected to the low pressure or reference side of the gauge.

Insert the Pitot tube into the duct; pointing the tip into the airflow. For general balancing it is sufficient to move the pitot tube around in the duct and take an average or typical reading. Repeat this procedure in the other (supply or return) duct. Determine which duct has the highest airflow (highest reading on the gauge). Then damper that airflow back to match the lower reading from the other duct. The flows should now be balanced. Actual airflow can be determined from the gauge reading. The value read on the gauge is called the velocity pressure. The Pitot tube comes with a chart that will give the air flow velocity based on the velocity pressure indicated by the gauge. This velocity will be in either feet per minute or meters per second. To determine the actual airflow, the velocity is multiplied by the cross sectional areas of the duct being measured.

The accuracy of the air flow reading will be affected by how close to any elbows or bends the readings are taken. Accuracy can be increased by taking an average of multiple readings as outlined in the literature supplied with the Pitot tube.



# MAINTENANCE

## CAUTION MAKE SURE UNIT IS UNPLUGGED BEFORE ATTEMPTING ANY MAINTENANCE WORK

The following components should also be inspected regularly and well maintained.

### PRACTICAL TIPS

- To prevent electrical shock, check that the unit is unplugged before doing any repairs or maintenance.
- A yearly inspection is recommended to ensure the efficiency and trouble-free use of your system. Run through the system and verify the different operating modes.

**The motor** - The motors are factory balanced and lubricated for life. They require no maintenance.

**The unit** - The inside of the unit should be vacuumed yearly. Be careful not to damage any of the mechanical components and electrical connections.

**Condensation Panel** - The condensation panel should be cleaned yearly or as needed.

**The drain and drain line** - Units with drain hoses should have their line and connection checked regularly.

**Outside hoods** - The outside hoods need to be checked every season to make sure there are no leaves or insects blocking the airflow. Check regularly that there are no pollutants near the intake hood. Make sure they are clear of any snow accumulation during the winter months.

## FILTERS

The filters need to be checked and cleaned once a month or when they appear dirty.

### FIXED PLATE HRV-XI 450 (Polypropylene Core) Wash OK & ERV-XI 450 (Enthalpy Core) Vacuum Only



#### Clean core on a average every 3-6 months.

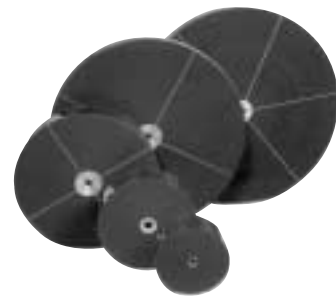
- a) Open access door & remove filters.
- b) Carefully grip ends of core and pull evenly outward. Core may be snug, but will slide out of the channel.
- c) Vacuum only ERV-XI 450 core (**do not wash**).
- d) Wash HRV-XI 450 core in warm soapy water.
- e) Install clean core
- f) Install the clean filters
- g) Replace access door

**Note:** Core installation label on the outer end of the core.

#### To install the clean Core and Filters.

- a) first mount the bottom flange of the core guide into the bottom channel approximately 1/4" (6mm)
- b) mount the left or right side flange of the core guide approximately 1/4 " (6mm) followed by the other side
- c) mount the top flange of the core guide into the top channel approximately 1/4" (6mm)
- d) with all four corners in place and the core straight and even, push hard in the centre of the core until the core stops on the back of the cabinet.

### WHEEL ERV-WI 500 (Enthalpic Wheel) Wash OK

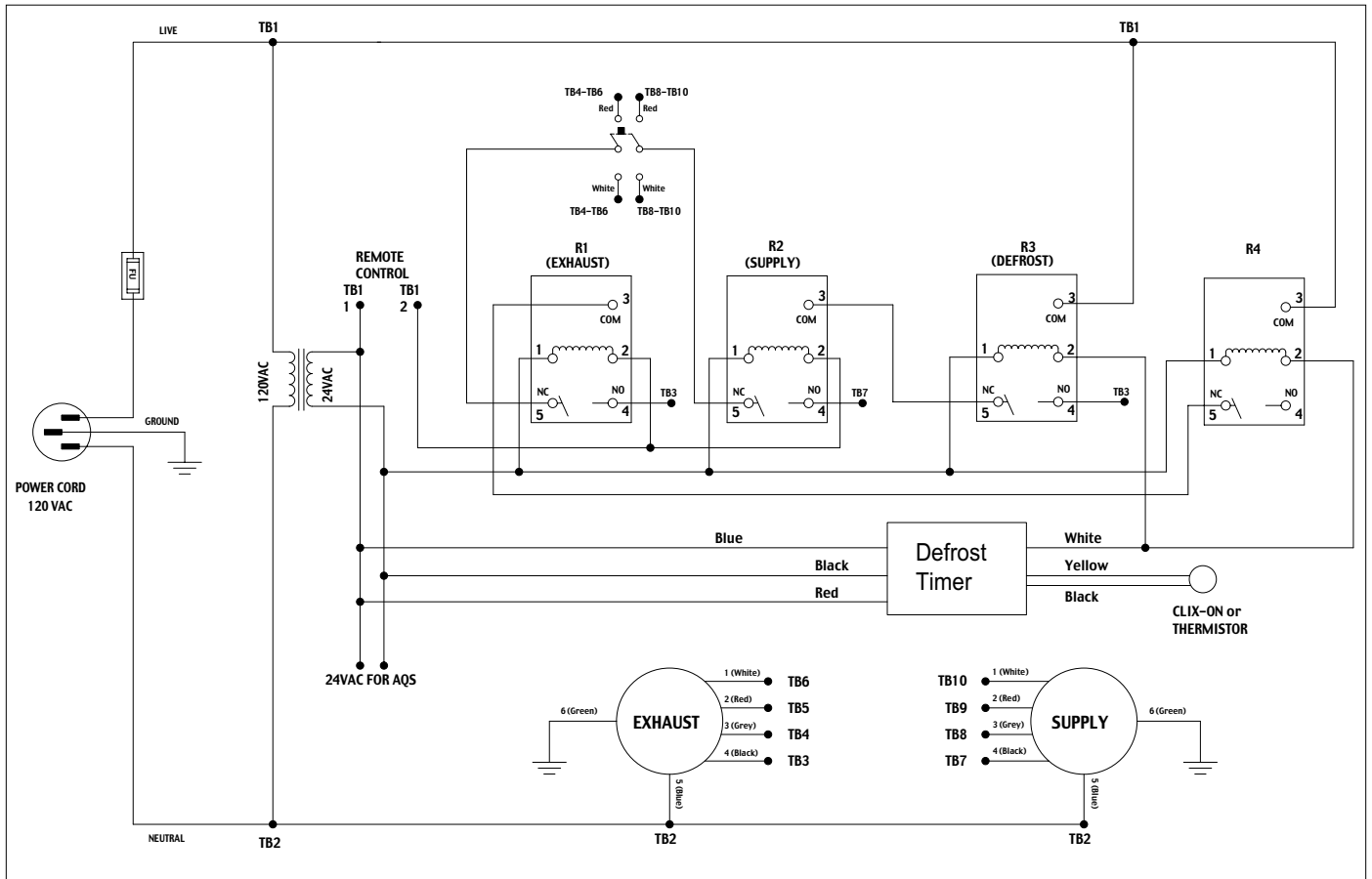


**Seals** – The seals are designed to be durable and require no maintenance other than adjustment, but if seals become worn or damaged they may easily be replaced. The seals are made to clip on the cassette or post metal easily.

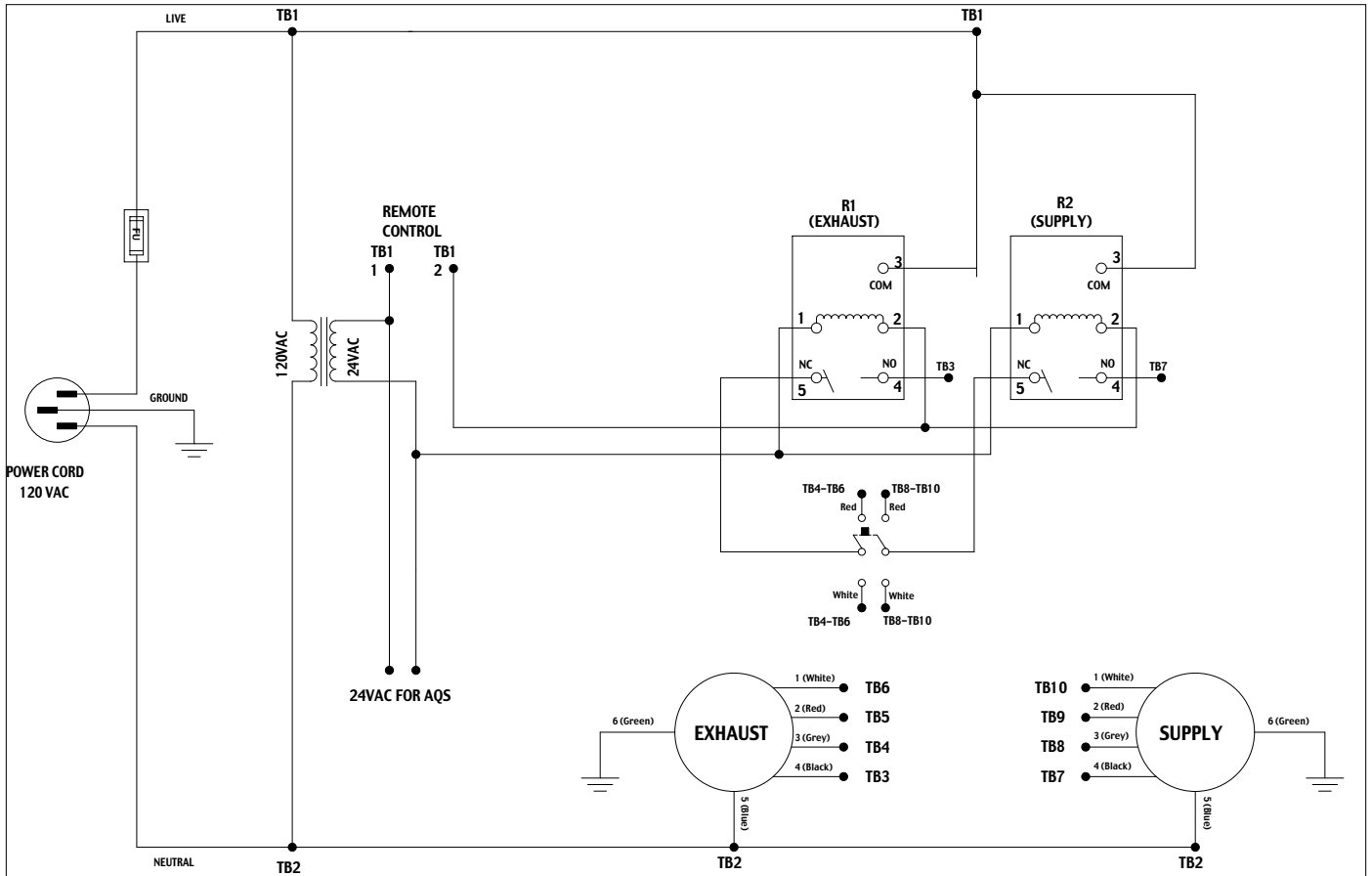
**Wheel** – The wheel is somewhat self cleaning through its normal action of rotating in and out of countercurrent airflow streams.. If the wheel becomes dirty, it may be cleaned by blowing out the unit with compressed air (20 psig maximum). In cases of severe uncleanliness, the wheel may be removed from the cassette and washed with water following wheel removable procedures outlined below:

1. Open ERV-WI 500 access door so that the front or back of the cassette may be easily accessed.
2. Support the wheel from the bottom
3. If the unit is equipped with an internal bearing, unbolt the shaft screw on both sides of the shaft. Unbolt one post completely and remove post. Remove the shaft clips at the face of the hub from both sides of the shaft. Remove the shaft. Roll the wheel out carefully.
4. With the wheel out, wash the media carefully with water. Once clean, allow the media to dry out for several hours or days if necessary.
5. Reinstall using the reverse procedure. Run the unit. It may take several hours for the desiccant to dry out and for the wheel to perform normally.

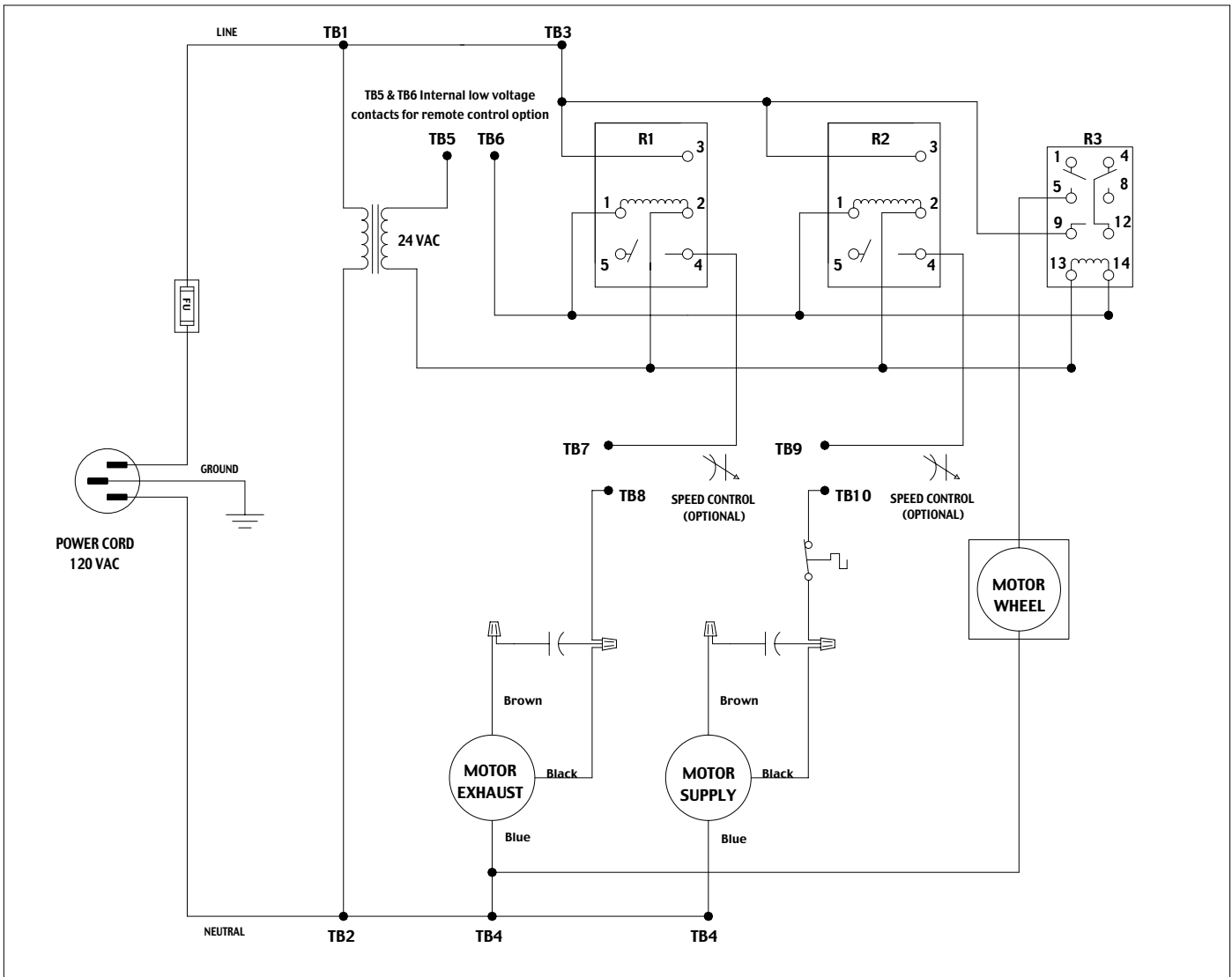
# WIRING DIAGRAM HRV-XI 450



# WIRING DIAGRAM ERV-XI 450



# WIRING DIAGRAM ERV-WI 500





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