



**Fantech**  
Your Ventilation Solutions Company

**Commercial**  
**Energy Recovery Ventilators**

## Installation Manual

**IMPORTANT - PLEASE READ AND SAVE 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 Energy Recovery Ventilators.

It is always important to assess how the operation of any 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!!!



Your ventilation system should be installed in conformance with the appropriate provincial or state requirements or in the absence of such requirements with local building codes.

# Light Commercial Model

SER 5504N • SER 8504N • SER 11504N

## Limited Warranty

- 3 Year Warranty.
- Fantech ERV's have a warranty that is limited to 3 years on all parts 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 ERVs 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, unfortuitous 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

|                  |   |
|------------------|---|
| SER 5504N .....  | 3 |
| SER 8504N .....  | 5 |
| SER 11504N ..... | 7 |

## OPERATION

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

## INSTALLATION

|                          |    |
|--------------------------|----|
| Mounting the Unit .....  | 10 |
| Location & Ducting ..... | 11 |
| Air Flow Balancing ..... | 12 |
| Examples .....           | 13 |

## MAINTENANCE

|       |    |
|-------|----|
| ..... | 15 |
|-------|----|

## ELECTRICAL CONNECTIONS

|       |    |
|-------|----|
| ..... | 16 |
|-------|----|

### Understanding Fantech Product Numbers

SER 5504N  
 S = Side Ducting  
 E = Energy Recovery  
 R = Remote Control Option

550 = 550cfm @0.4 W.G  
 4 = Four Ports  
 N = No Defrost



# Fantech

## SER 5504N

### Light Commercial ERV



The SER Series 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 SER is now cooler, dryer and more comfortable. The

SER distributes the pre-conditioned fresh filtered air throughout the building by direct ductwork installed especially for the ERV or through the ductwork of a forced-air system.

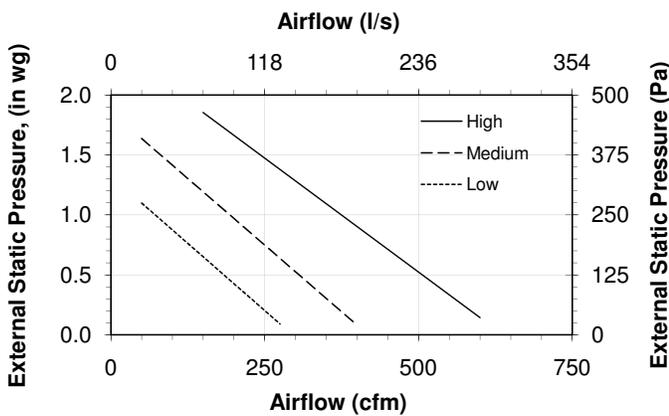
#### APPLICATIONS INCLUDE:

- Class Room
- Retail Shops
- Hair Salon
- Bars & Restaurants
- Offices
- Clinics
- Animal Shelters
- Larger Homes

#### POWER & WEIGHT

- Volts 120V
- Amperage 5.5 Amps Total
- Weight 76 Kg (168 Lbs)
- Shipping Weight 94 Kg (208 Lbs)
- Blowers (x2) 120V, 60 Hz, 2.7 Amps
- Phase Single

Airflow Performance



#### SPECIFICATIONS

**CASE** 20 gauge G90 galvanized steel sheet coated with baked powder paint, insulated with 25mm (1 inch) fiberglass with FSK (Foil-Scrim-Kraft) facing for condensation control.

**BLOWERS** Two (2) maintenance-free Ebm-Papst™ backward inclined motorized impellers with permanently lubricated sealed ball bearings and (TOP) thermal overload protected.

**CORES** Two (2) modular energy recovery cores manufactured from a flame-proof/Polyester-based synthetic paper designed to transfer sensible and latent heat. During winter, the core transfers heat and moisture from the outgoing air to the incoming fresh air. While in summer the core transfers heat and moisture from the incoming air to the outgoing air to reduce the latent load.

**FILTERS** Four (4) MERV1 washable filters that meet UL Class 2 rating to protect the exhaust and fresh air streams.

**MOUNTING** Brackets are included for mounting using threaded rod. Unit may also be seated on a platform. Flanges are provided to simplify ductwork connections.

**CONTROLS** External three (3) position (Low/Stand By/Medium) rocker switch that offers continuous ventilation. Compatible with all Fantech ERV controls.

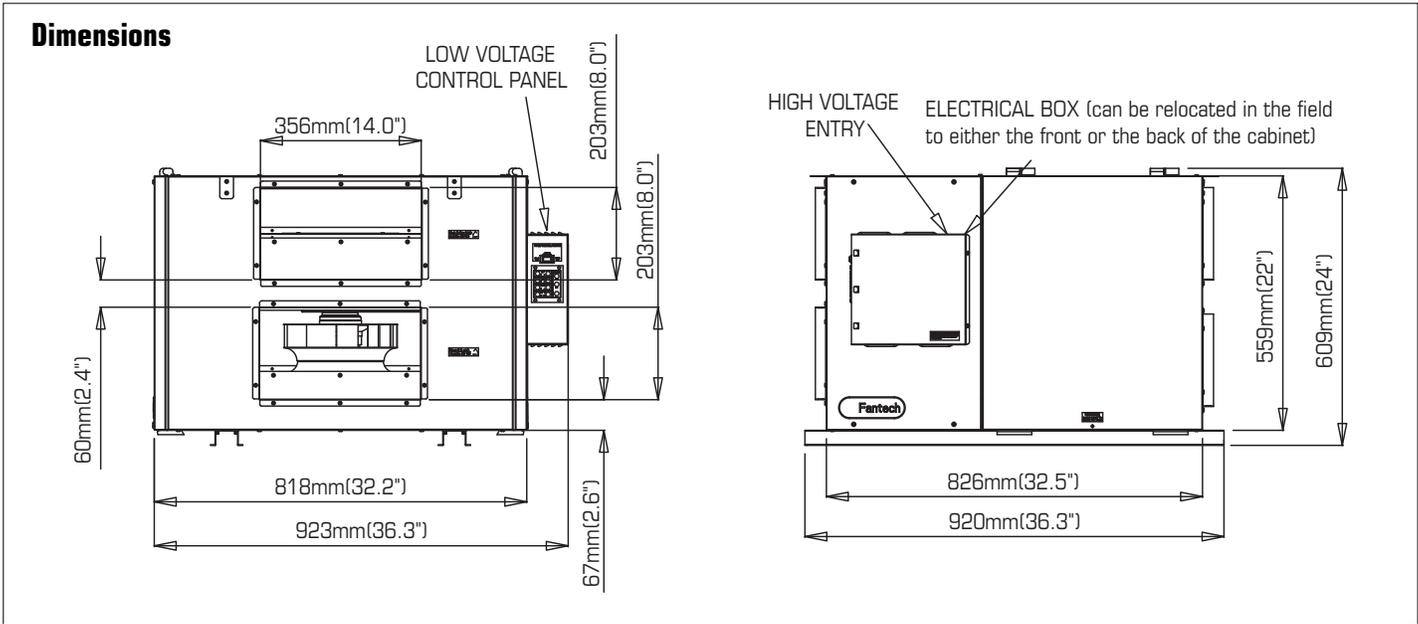
**SERVICEABILITY** Unit has hinged or screwed access panels on front and back of the unit. Cores, filters and motors are serviceable from either side of the unit. Fan assemblies are mounted on removable sliding base. Energy recovery cores conveniently slide out with only 380mm (22.6") clearance for ease of inspection, removal and cleaning. Electrical box can be installed on either side of the unit for improved accessibility.

**Note:** This model is not recommended for climates that experience temperature below -5°C (23°F) for extended periods of 2 or more days.

#### NET EFFECTIVENESS

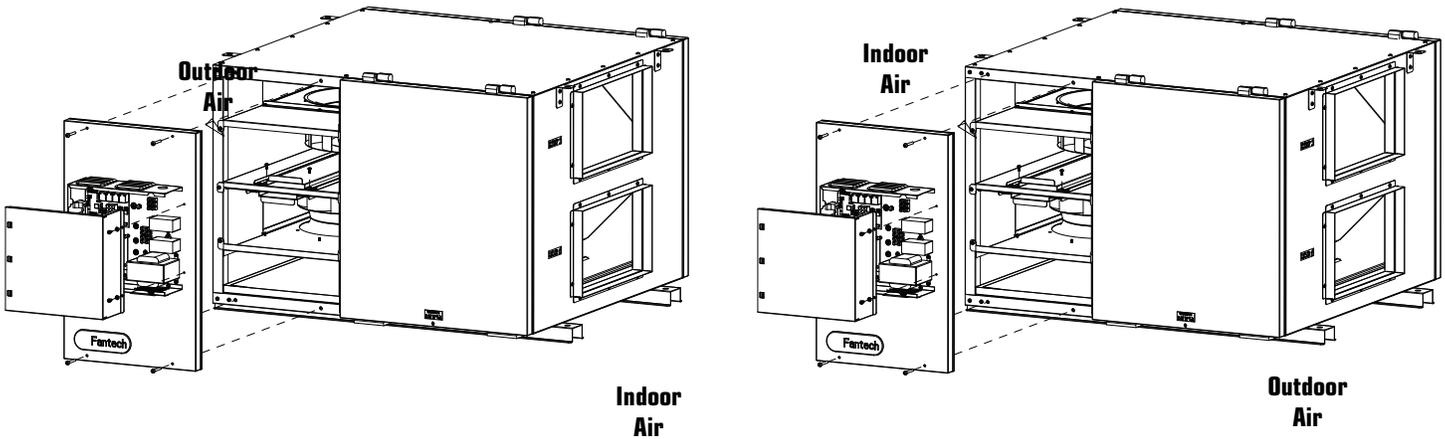
| Flow<br>l/s (CFM) | Heating      |            |           | Cooling      |            |           |
|-------------------|--------------|------------|-----------|--------------|------------|-----------|
|                   | Sensible (%) | Latent (%) | Total (%) | Sensible (%) | Latent (%) | Total (%) |
| 189 (400)         | 71%          | 36%        | 58%       | 58%          | 35%        | 44%       |
| 260 (550)         | 63%          | 29%        | 50%       | 51%          | 29%        | 37%       |

# SER 5504N Light Commercial ERV



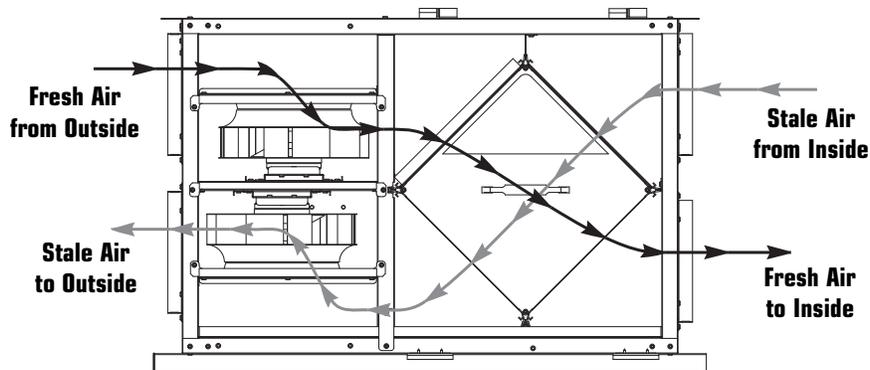
## PORT CONFIGURATION

The unit has access doors on the front and back. Also, the main control panel may be moved from front to back allowing for ducting layout.



Standard Configuration as shipped from factory.

## Airflow





# Fantech

## SER 8504N

### Light Commercial ERV



The SER Series 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 SER is now cooler, dryer and more comfortable. The

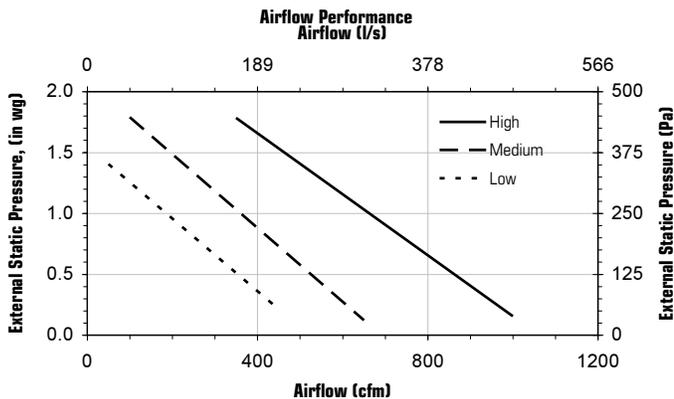
SER distributes the pre-conditioned fresh filtered air throughout the building by direct ductwork installed especially for the ERV or through the ductwork of a forced-air system.

#### APPLICATIONS INCLUDE:

- Class Room
- Retail Shops
- Hair Salon
- Bars & Restaurants
- Offices
- Clinics
- Animal Shelters
- Larger Homes

#### POWER & WEIGHT

- Volts 120V
- Amperage 11.0 Amps Total
- Weight 98.5 Kg (217 Lbs)
- Shipping Weight 116 Kg (257 Lbs)
- Blowers (x4) 120V, 60 Hz, 2.7 Amps
- Phase Single



#### SPECIFICATIONS

**CASE** 20 gauge G90 galvanized steel sheet coated with baked powder paint, insulated with 25mm (1 inch) fiberglass with FSK (Foil-Scrim-Kraft) facing for condensation control.

**BLOWERS** Four (4) maintenance-free Ebm-Papst™ backward inclined motorized impellers with permanently lubricated sealed ball bearings and (TOP) thermal overload protected.

**CORES** Three (3) modular energy recovery cores manufactured from a flame-proof/Polyester-based synthetic paper designed to transfer sensible and latent heat. During winter, the core transfers heat and moisture from the outgoing air to the incoming fresh air. While in summer core transfers heat and moisture from the incoming air to the outgoing air to reduce the latent load.

**FILTERS** Six (6) MERV1 washable filters that meet UL Class 2 rating to protect the exhaust and fresh air streams.

**MOUNTING** Brackets are included for mounting using threaded rod. Unit may also be seated on a platform. Flanges are provided to simplify ductwork connections.

**CONTROLS** External three (3) position (Low/Stand By/Medium) rocker switch that will offer continuous ventilation. Compatible with all Fantech ERV controls.

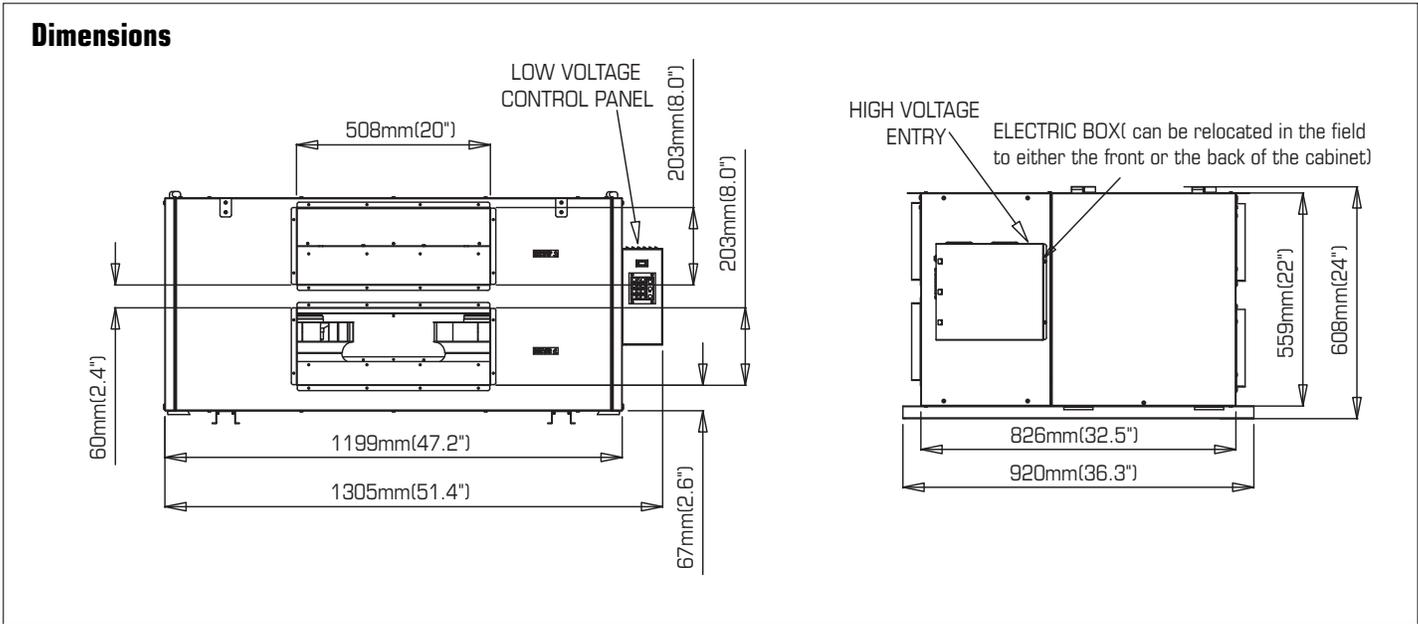
**SERVICEABILITY** Unit has hinged or screwed access panels on front and back of the unit. Cores, filters, and motors are serviceable from either sides of the unit. Fan assemblies are mounted on removable sliding base. Energy recovery cores conveniently slide out with only 380mm (22.6") clearance for ease of inspection, removal and cleaning. Electrical box can be installed on either side of the unit for improved accessibility.

**Note:** This model is not recommended for climates that experience temperature below -5°C (23°F) for extended periods of 2 or more days.

#### NET EFFECTIVENESS

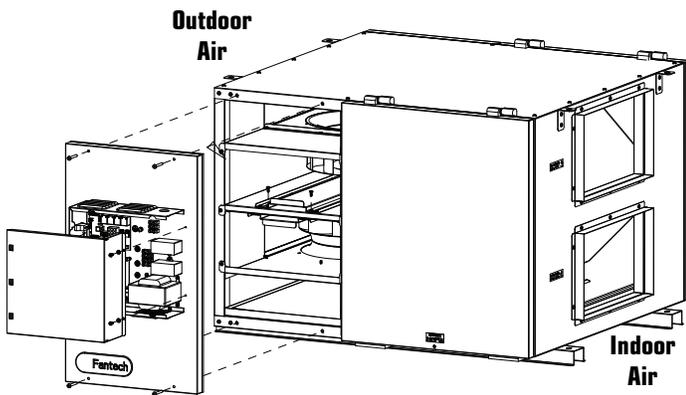
| Flow<br>l/s (CFM) | Heating      |            |           | Cooling      |            |           |
|-------------------|--------------|------------|-----------|--------------|------------|-----------|
|                   | Sensible (%) | Latent (%) | Total (%) | Sensible (%) | Latent (%) | Total (%) |
| 302 (640)         | 69%          | 35%        | 56%       | 57%          | 34%        | 42%       |
| 401 (850)         | 62%          | 29%        | 49%       | 50%          | 28%        | 36%       |

# SER 8504N Light Commercial ERV

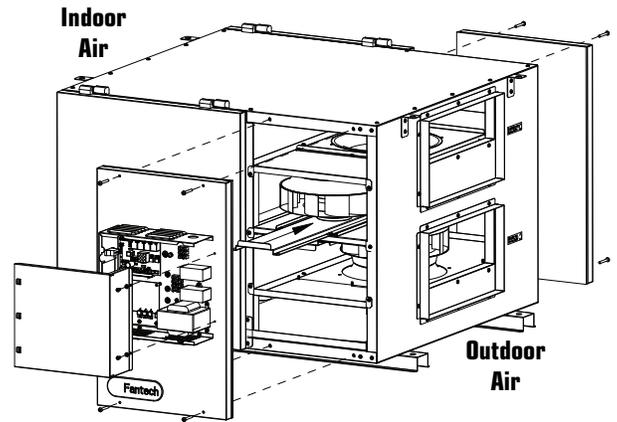


## PORT CONFIGURATION

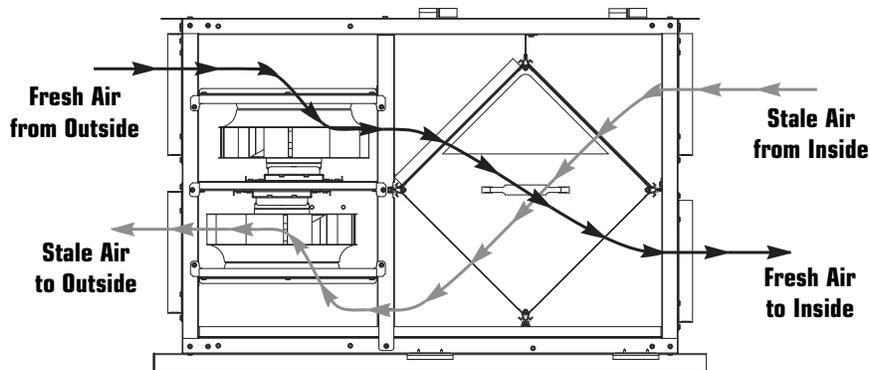
The unit has access doors on the front and back. Also, the main control panel may be moved from front to back allowing for ducting layout.



Standard Configuration as shipped from factory.



## Airflow





# Fantech

## SER 11504N

### Light Commercial ERV



The SER Series 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 SER is now cooler, dryer and more comfortable. The

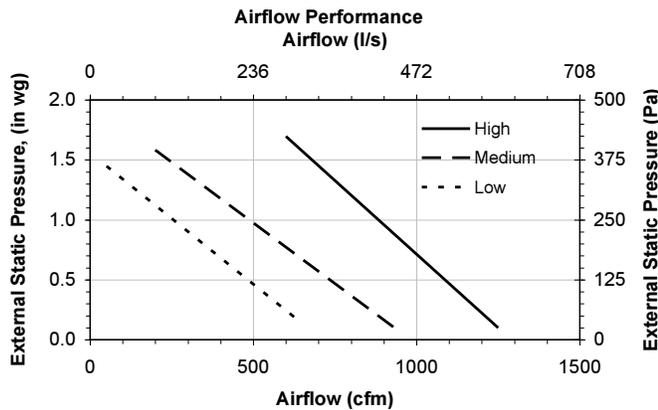
SER distributes the pre-conditioned fresh filtered air throughout the building by direct ductwork installed especially for the ERV or through the ductwork of a forced-air system.

#### APPLICATIONS INCLUDE:

- Class Room
- Retail Shops
- Hair Salon
- Bars & Restaurants
- Offices
- Clinics
- Animal Shelters
- Larger Homes

#### POWER & WEIGHT

- Volts 120V
- Amperage 10.8 Amps Total
- Weight 96Kg (212lbs)
- Shipping Weight 114Kg (252lbs)
- Blowers (x4) 120V, 60 Hz, 2.7 Amps
- Phase Single



#### SPECIFICATIONS

**CASE** 20 gauge G90 galvanized steel sheet coated with baked powder paint, insulated with 25mm (1 inch) foil-faced high density polystyrene foam for condensation control.

**BLOWERS** Four (4) maintenance-free Ebm-Papst™ backward inclined motorized impellers with permanently lubricated sealed ball bearings and (TOP) thermal overload protected.

**CORES** Three (3) modular energy recovery cores manufactured from a flame-proof/Polyester-based synthetic paper designed to transfer sensible and latent heat. During winter, the core transfers heat and moisture from the outgoing air to the incoming fresh air. While in summer core transfers heat and moisture from the incoming air to the outgoing air to reduce the latent load.

**FILTERS** The exhaust and fresh air streams are protected by MERV1 washable filters constructed to meet UL Class2. Optional MERV6 filters are direct replacement to the MERV1. Use of MERV6 filters will add an additional system pressure of 72 Pa (0.29in.wg) at 543 l/s (1150cfm).

**MOUNTING** Brackets are included for mounting using threaded rod. Unit may also be seated on a platform. Flanges are provided to simplify ductwork connections.

**CONTROLS** External three (3) position (Low/Stand By/Medium) rocker switch that will offer continuous ventilation. Compatible with all Fantech ERV controls.

**SERVICEABILITY** Unit has hinged or screwed access panels on front and back of the unit. Cores, filters, and motors are serviceable from either sides of the unit. Fan assemblies are mounted on removable sliding base. Energy recovery cores conveniently slide out with only 380mm (22.6") clearance for ease of inspection, removal and cleaning. Electrical box can be installed on either side of the unit for improved accessibility.

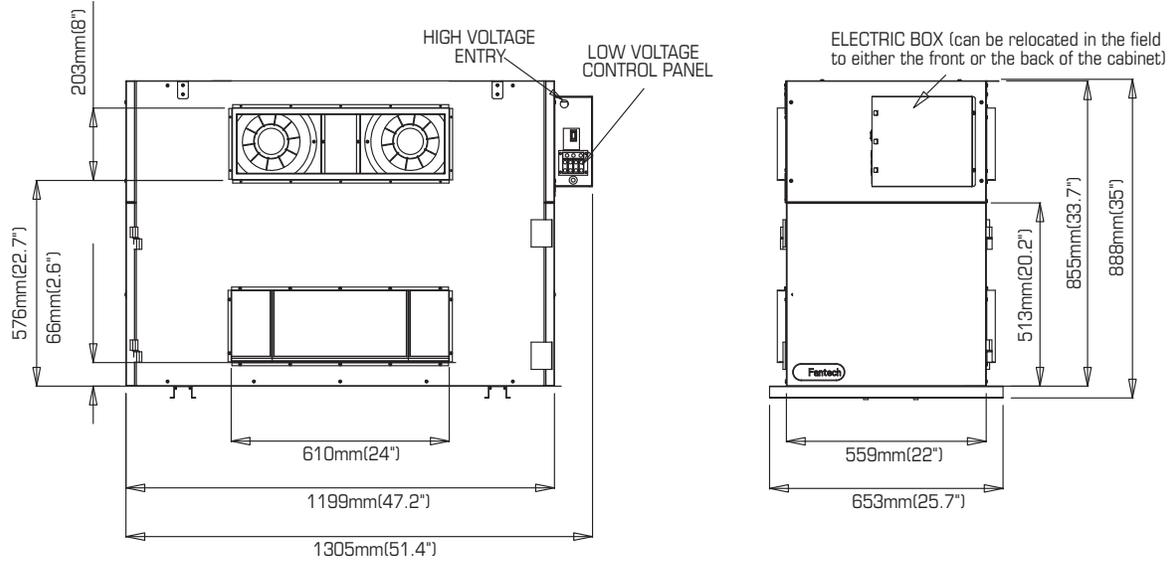
**Note:** This model is not recommended for climates that experience temperature below -5°C (23°F) for extended periods of 2 or more days.

#### NET EFFECTIVENESS

| Flow<br>l/s (CFM) | Heating      |            |           | Cooling      |            |           |
|-------------------|--------------|------------|-----------|--------------|------------|-----------|
|                   | Sensible (%) | Latent (%) | Total (%) | Sensible (%) | Latent (%) | Total (%) |
| 406 (860)         | 62%          | 29%        | 49%       | 50%          | 28%        | 36%       |
| 543 (1150)        | 53%          | 22%        | 41%       | 42%          | 21%        | 29%       |

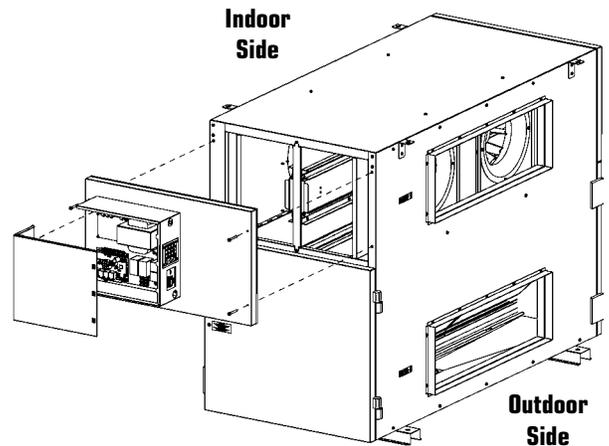
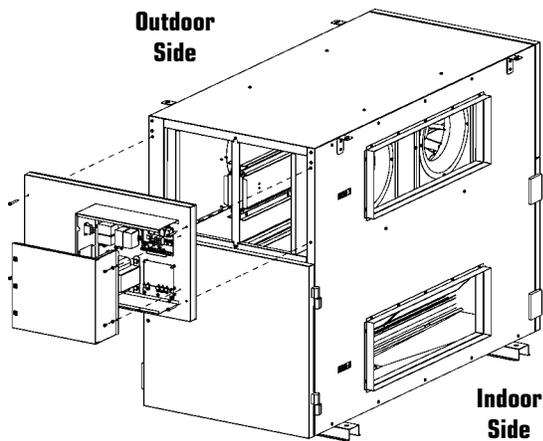
# SER 11504N Commercial ERV

## Dimensions



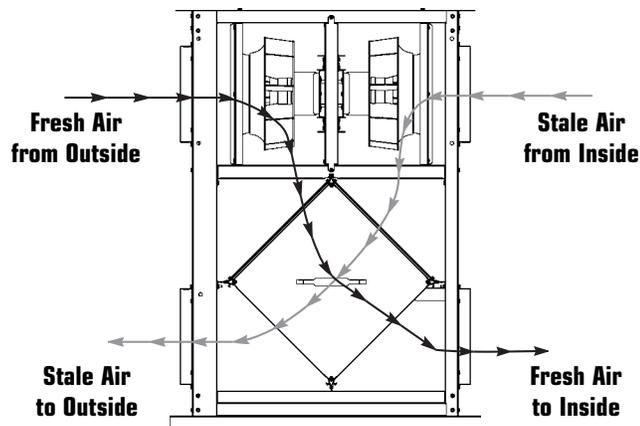
## PORT CONFIGURATION

The unit has access doors on the front and back. Also, the main control panel may be moved from front to back allowing for ducting layout.



Factory Setting. Unit may be easily reversed in field.

## Airflow



# MODES OF OPERATION

## 1. Continuous / Ventilation Mode

In this mode of operation both fans are operating and exchanging inside air for outside air. The energy recovery ventilator (ERV) will operate at the selected rate, 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 ventilation mode at a reduced exchange rate. Continuous mode is recommended, since pollutants are slowly but constantly being generated in a building.

## 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.

# SETTING SPEED

The ERV is shipped from the factory on low speed, intermittent operation can be obtain by toggle switch located on outside of cabinet. External low voltage contacts allow for high speed operation when optional remote control is used.

## Convenient Optional Low Voltage Wall Controls

### Main Control

---



### EDF1

#### Triple Function Wall Control



2-wire

- Press button once for continuous low speed
- Press button twice and the unit will cycle 20 minutes ON/40 minutes OFF and repeat
- Press the button a third time and the system will run continuously on high speed
- Use in one central location

### AQS1

#### Air Quality Sensor



3-wire

- Activates ERV to high speed if levels of pollutants exceed normal conditions
- Light changes color to indicate level of pollution
- Pushbutton override switch sets unit to run 1, 2, or 3 hours at high speed
- Use one per ERV

### Boost Switches

---

### RTS3

#### Pushbutton Timer



3-wire

- 20-40-60 Min. Boost Timer
- Press button once to energize system to high speed for 20 minutes
- Press button twice unit will run for 40 minutes on high speed.
- Press button three times for 60 minutes of high speed
- Up to five can be used with one system

# INSTALLATION

## LOCATION

The ERV must be located in a conditioned space where it will be possible to conveniently service the unit. Typically the ERV would be located in the mechanical room, above a drop ceiling or an area close to the outside wall where the weatherhoods 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 an insulated shelter built on site.

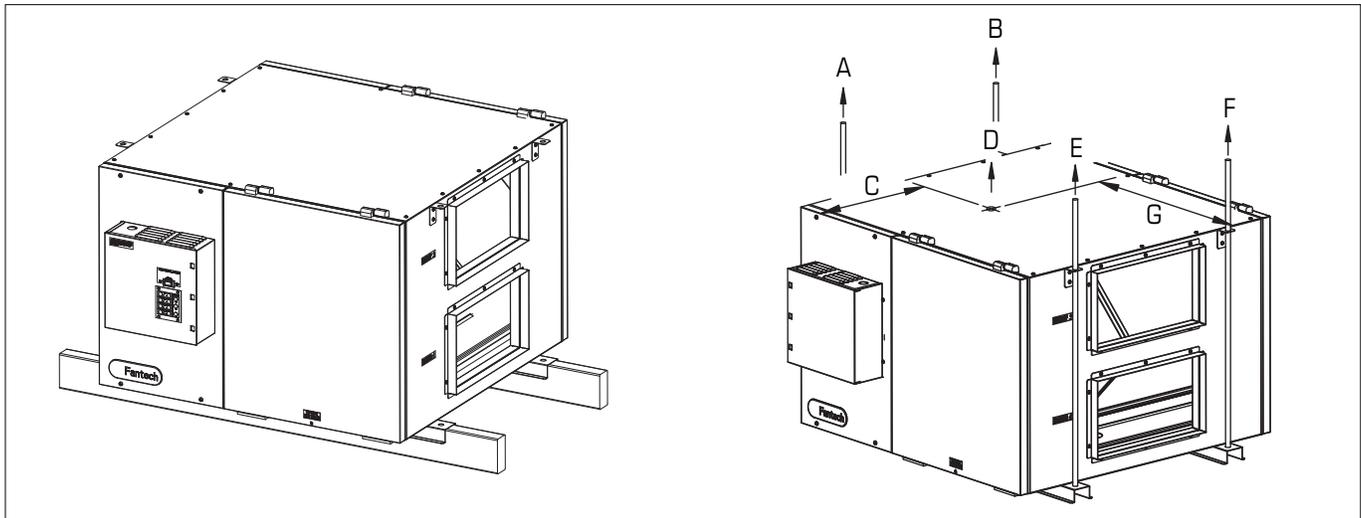
## Connecting appliances to the ERV

Connecting the ERV to one of the following appliances is not recommended because it is against regulatory standards and most local building codes.

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

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

**NOTE:** Connecting any of these type of appliances to the ERV will void your warranty



| Model      | A                | B                | C             | D                | E                | F                 | G             |
|------------|------------------|------------------|---------------|------------------|------------------|-------------------|---------------|
| SHR 5504   | 21.7Kg (47.8lbs) | 20.4Kg (44.9lbs) | 390mm (15.4") | 76Kg (168lbs)    | 17.8Kg (39.3lbs) | 16.6Kg(36.6lbs)   | 448mm (17.6") |
| SHR 8504   | 27.4Kg (60.5lbs) | 24.3Kg (53.5lbs) | 544mm (21.4") | 97.5Kg (215lbs)  | 24.7Kg (54.5lbs) | 21.3Kg (47lbs)    | 455mm (18")   |
| SER 11504N | 31.4Kg (69.3lbs) | 25.8Kg (56.9lbs) | 254mm (10")   | 102.5Kg (226lbs) | 26.7Kg (58.9lbs) | 21.2 Kg (46.7lbs) | 483mm (19")   |

# 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 susceptible to clogging. The preferred location of the weatherhoods is:

- No less than 3 m (10ft.) apart from each other.
- At least 457.2 mm (18 inches) snow line or ground level.
- Supply hood must be kept away from sources of contaminant, 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.

Careful consideration should be given to selecting an outside hood with a face velocity low enough so as not to encourage the migration of rain or snow into the ductwork.

**DUCTING FROM THE WEATHERHOODS—TO AND FROM THE ERV** – Galvanized sheet metal ducting with sufficient cross section with an integral single piece of insulated wrap with vapor barrier should be used to connect the 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 "WYE" fittings instead of tees 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. Grilles that diffuse the air comfortably such as Fantech grille MGE (metal) or CG (plastic) grilles with "coanda effect" are recommended.

Optional inline duct heaters may be used to add heat if required.

## 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 ERV with the HVAC systems fan both "on" and "off" to determine that it does not imbalance the ERV more than 10%. Make sure you respect the minimum distance from the supply air in of the ERV and the HVAC systems.
- It may be necessary to install a separate fresh air supply ductwork system if the cooling is other than forced air.

When installing an ERV, the designer and installer should be aware of local codes that may require smoke detectors and/or firestats in the HVAC or ERV ductwork.

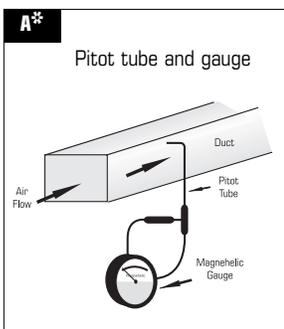
Because an ERV is designed to bring fresh air into the building, structures may require supply voltage interrupt when smoke or flame sensors are triggered, or when a central fire alarm system is activated.

## 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.)

# AIR FLOW BALANCING

- 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.



**A** The duct's airflow velocity is generally measured with a magnehelic gauge and a pitot tube.

- Velocity readings should be taken in a smooth duct section a minimum 3 equivalent duct diameter in length upstream and 1 equivalent duct diameter downstream from the Pitot tube.

**Note:** A professional air balancer should be contacted to commission the system properly. A skilled HVAC Tech may complete the balance of air providing they possess the proper equipment. Call Fantech Technical support for assistance.

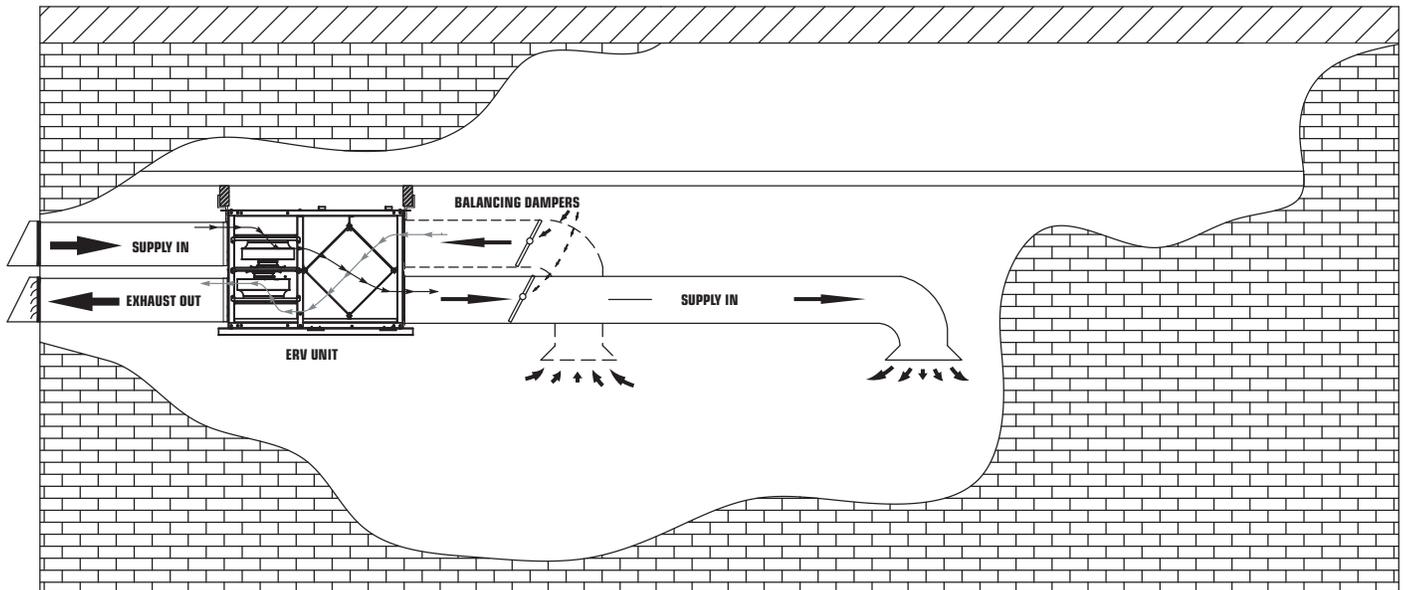
# INSTALLATION EXAMPLES

\* 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 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.

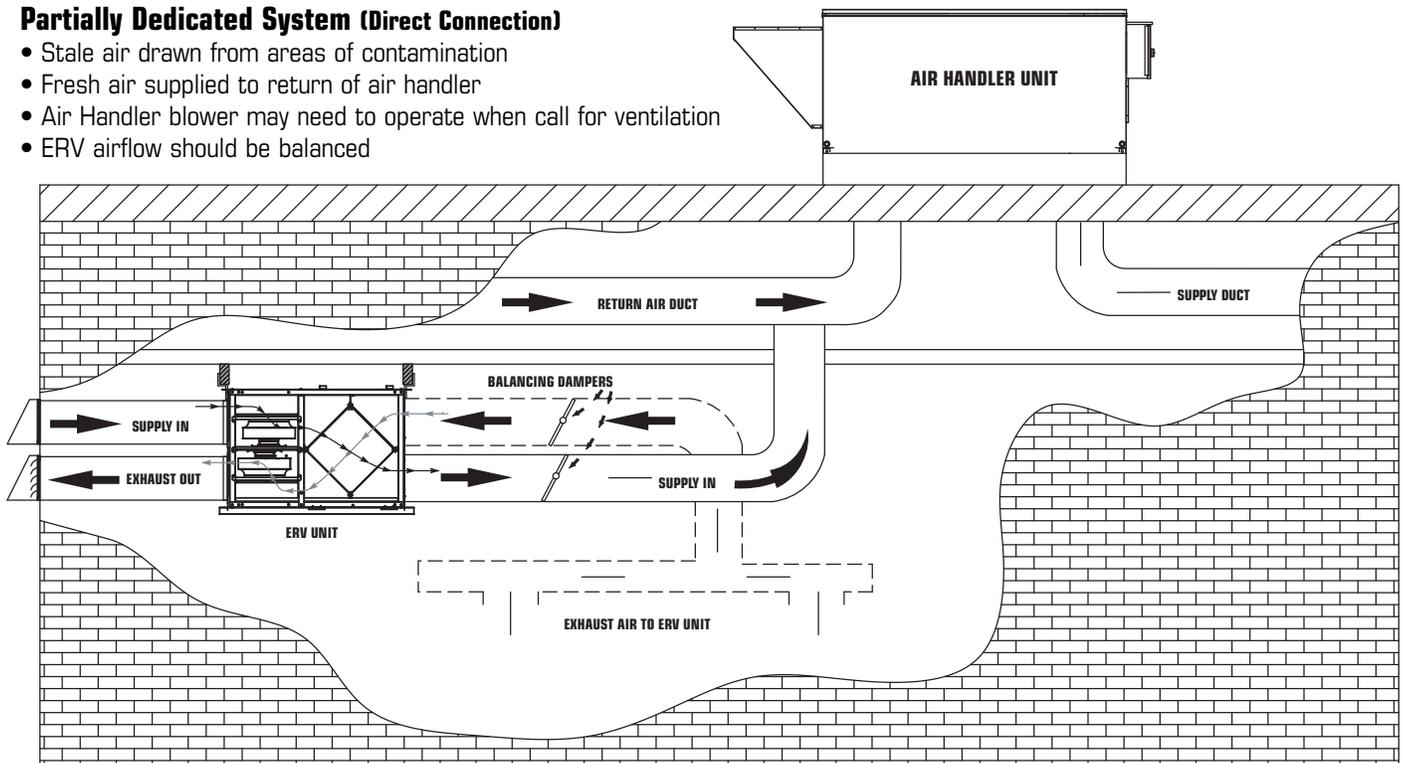
## Fully Dedicated System

- Stale air drawn from areas of contamination
- Fresh air supplied to main areas
- ERV airflow should 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
- ERV airflow should be balanced



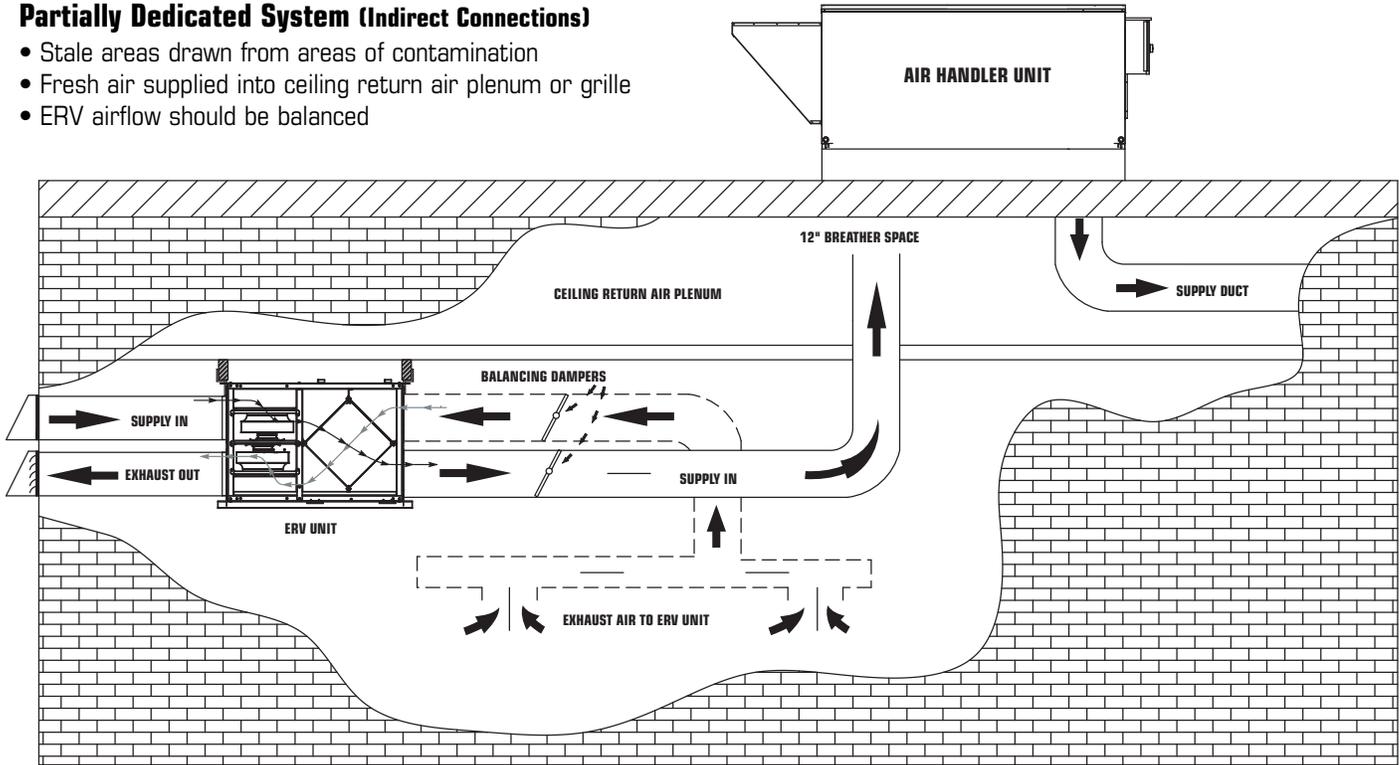
# INSTALLATION EXAMPLES (CON'T)

\* 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 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.

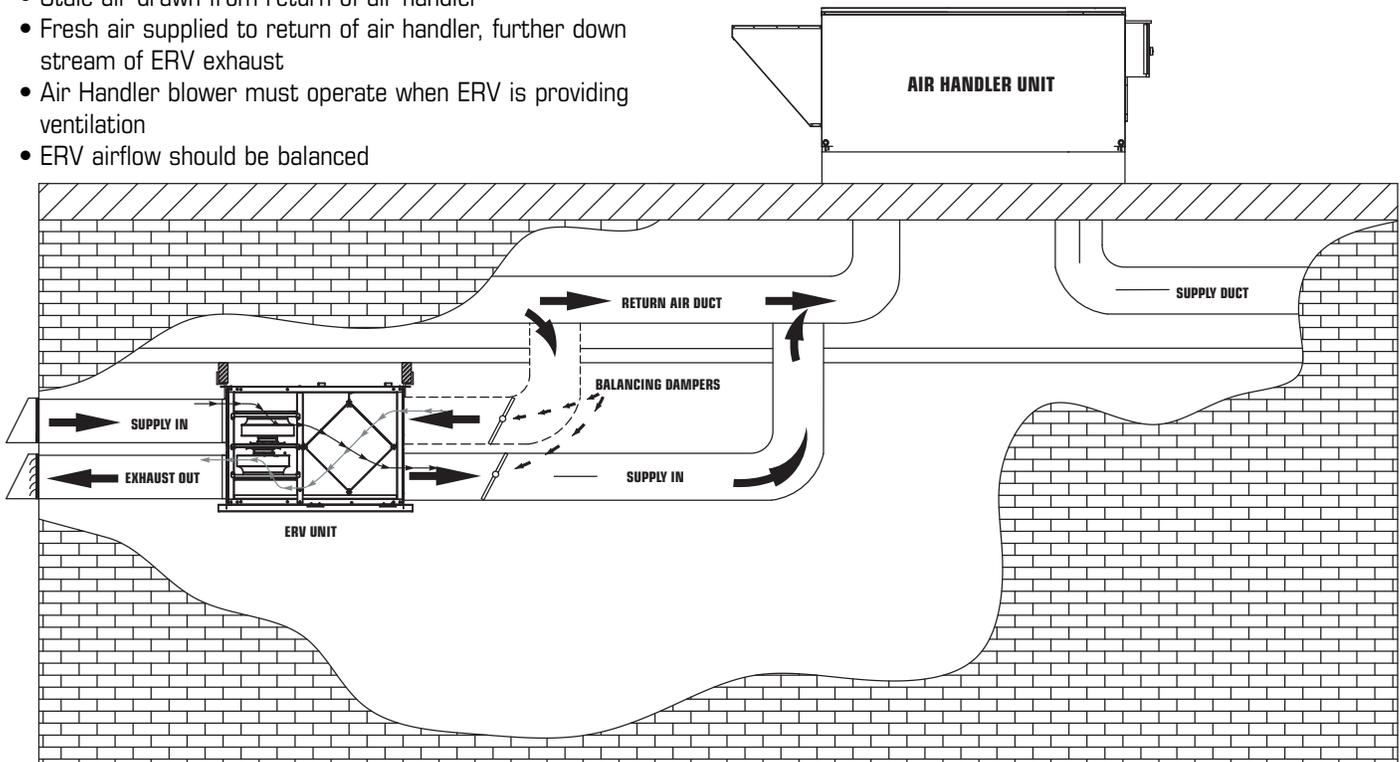
## Partially Dedicated System (Indirect Connections)

- Stale areas drawn from areas of contamination
- Fresh air supplied into ceiling return air plenum or grille
- ERV airflow should be balanced



## Simplified Installation

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



# MAINTENANCE

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

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

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

**The unit** - The inside of the unit should be wiped clean as needed.

**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 CORE**



### **Clean core every 3-6 months or as needed.**

- 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) Clean the Enthalpic core with a vacuum cleaner. Use a soft brush attachment.
- d) Install clean core
- e) Install the clean filters
- f) 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 center of the core until the core stops on the back of the cabinet.

