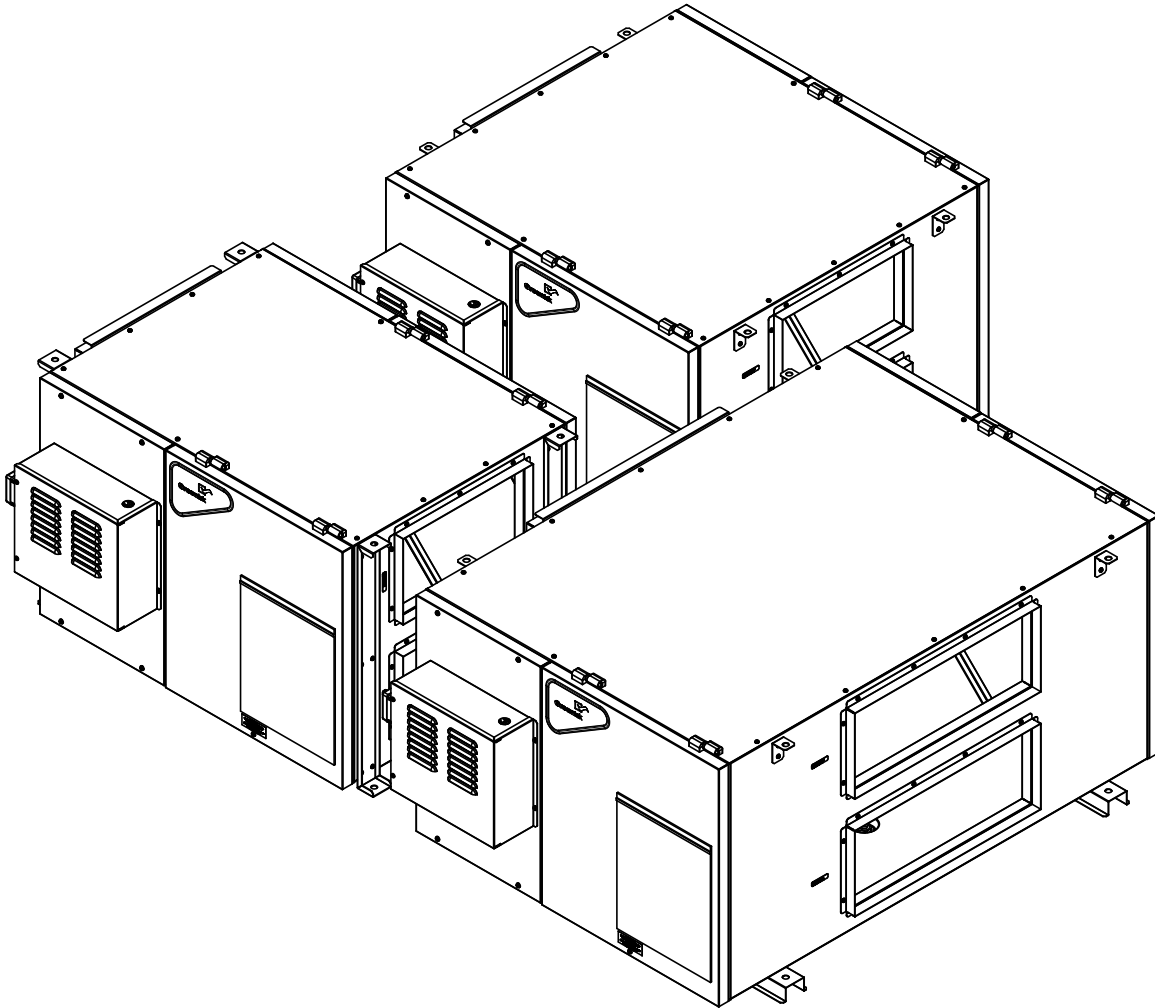


INSTALLATION GUIDE

Greentek Models LCH-4E (Item No. 463303)
LCH-7E (Item No. 463304)
LCH-12E (Item No. 463305)



Product of **Greentek**

Greentek reserves the rights to modify a product, without prior notice, whether in price, design, color or codes, in order to offer at all times quality products that are highly competitive.

Greentek
50 Kanalfakt Way, Bouctouche, NB E4S 3M5
Tel 1-888-724-5211 Fax 1-866-426-7430
www.Greentek.ca

IMPORTANT - PLEASE READ MANUAL BEFORE INSTALLATION

NOTICE: Prior to installing, serious consideration must be taken to insure this ventilation system will operate properly if integrated to any other type of mechanical system, i.e. a forced air system, or an air handling unit. To insure proper operation & compatibilities of both system, it is required that the airflow's of the LCH Energy Recovery Ventilator (ERV) be balanced, by following the procedures found in this manual.



CAUTION: DO NOT INSTALL IN A COOKING AREA OR CONNECT DIRECTLY TO ANY APPLIANCES

CAUTION: TURN OFF ALL INTEGRAL DISCONNECTS BEFORE SERVICING

TO REDUCE OR AVOID THE HAZARDS OF ELECTRIC SHOCK AND FIRE:	CAUTIONS CONCERNING THE OPERATION AND FULL EFFICIENCY OF THIS PRODUCT:
<ul style="list-style-type: none">• While servicing of cleaning the ventilation system, always disconnect from the main power.• To reduce the chance or avoid the hazards of electric shock and fire, do not perform any service to the ventilation system other than that stated in the operating manual instructions.• Do not use ventilation system for outdoor application.• Do not pull or twist electrical connection when disconnecting it from the ventilation system.• Do not use the ventilation system for removal of flammable fumes or near flammable gases.• Use a dedicated power source.	<ul style="list-style-type: none">• Do not obstruct or cover the air intake or air outlet of the ventilation system.• Do not modify, repair or disassemble this ventilation system. They are to be performed by authorized serviced personnel only. Fire, electrical shock and/or bodily injury may occur if not.• To prevent injuries, do not operate the ventilation system while servicing or maintaining. There are impeller wheels turning at a very high speed that must fully stop rotating prior to accessing the inside of the unit.• Always assess the operation of the ventilation system how it may interact with vented combustion equipment (ie. Gas Furnace, Oil Furnace, Combustion, Appliances, etc.)

LIMITED WARRANTY	APPLICATIONS	
<p>All our products are backed by the best limited warranty in the industry, for your peace of mind.</p> <p>You benefit from a 3 year limited warranty on the polymer membrane core, a 2-year limited warranty on our ventilation motors and a 2-year limited warranty on all other components.</p>	<ul style="list-style-type: none">• Schools• Locker Rooms• Conference Rooms• Restrooms• Barber Shops• Office Buildings• Bars & Grills	<ul style="list-style-type: none">• Classrooms• Airports• Floral Shops• Veterinary Hospitals• Stores• Large Homes• Restaurants

TABLE OF CONTENTS

1. Installation	4
2. Optional Reversible Application	4
3. Mounting or Hanging the ERV.....	5
4. Outside Fresh Air and Exhaust Air Hoods	6
5. Installation Ducts Warm Side to the ERV	6
6. Balancing the Unit with the Duotrol System	7
7. Types of Installations.....	8-9
8. Operating of the Duotrol System.....	10
9. Modes of Operations	11
10. Controls Connection	12
11. Maintenance.....	13
12. Wiring Diagram LCH-4E.....	14
13. Wiring Diagram LCH-7E	15
14. Wiring Diagram LCH-12E	16
15. Limited Warranty.....	17

Greentek Product Numbers Explained

LCH-4E

L = Light

C = Commercial

H = Horizontal Configuration

4 = 450 CFM

H = Energy Recovery (ERV)

LCH-7E

L = Light

C = Commercial

H = Horizontal Configuration

4 = 750 CFM

H = Energy Recovery (ERV)

LCH-12E

L = Light

C = Commercial

H = Horizontal Configuration

4 = 1200 CFM

H = Energy Recovery (ERV)

1. INSTALLATION

LOCATION

The ERV must be located in a conditioned area where it will be possible to conveniently service the unit. 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 variation, 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 ERV It is not recommended, including:

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

These appliances may cause lint, dust or grease to collect in the ERV, damaging the unit or risk of hazard.



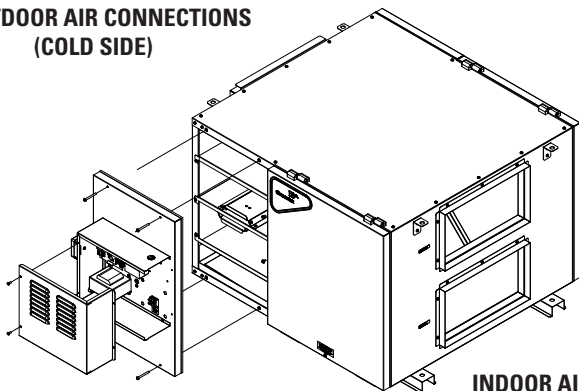
Connecting any of these type of appliances to the ERV will void warranty

2. OPTIONAL REVERSIBLE APPLICATION

LCH-H series has dual has access doors on the front and back. Also, the main electrical control panel may be moved from front to back allowing for ducting layout.

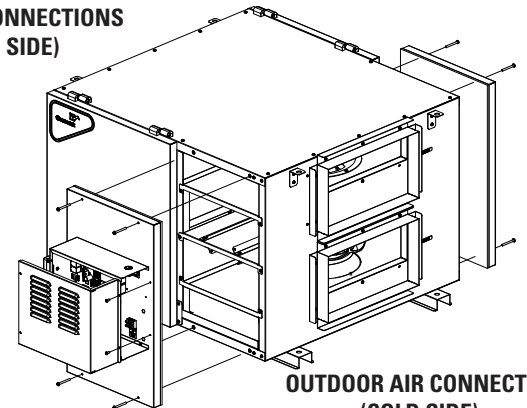
LCH-4E, LCH-7E, LCH-12E

**OUTDOOR AIR CONNECTIONS
(COLD SIDE)**



**INDOOR AIR CONNECTIONS
(WARM SIDE)**

**INDOOR AIR CONNECTIONS
(WARM SIDE)**



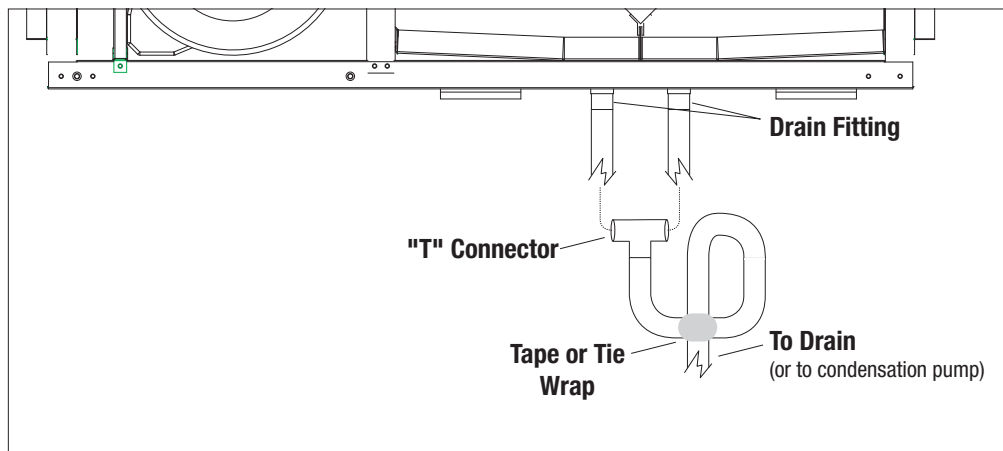
**OUTDOOR AIR CONNECTIONS
(COLD SIDE)**

Default Configuration. Unit may be easily reversed in field.

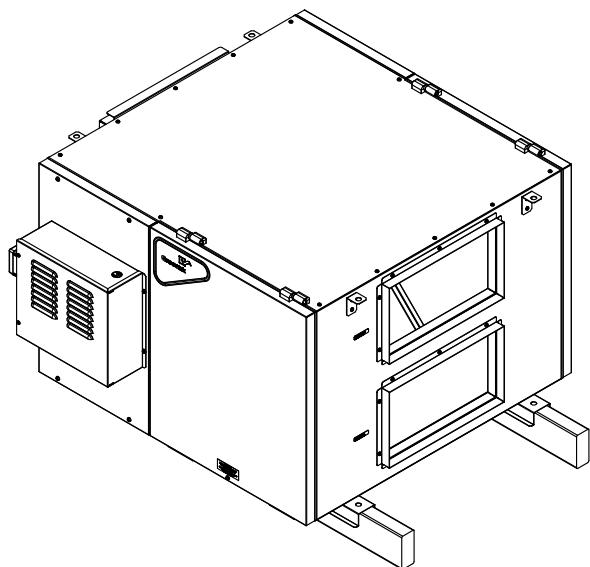
CONDENSATION DRAIN LINE

Through normal operation and including defrost sequence, the ERV may produce some condensation. The excess condensation should flow into a nearby drain if no drain is available a condensation pump will be required. The ERV and all condensate lines must be installed in a conditioned space where the temperature is maintained above the freezing point. A "P" trap is required in the drain line. This will prevent odors from being drawn back up into the unit.

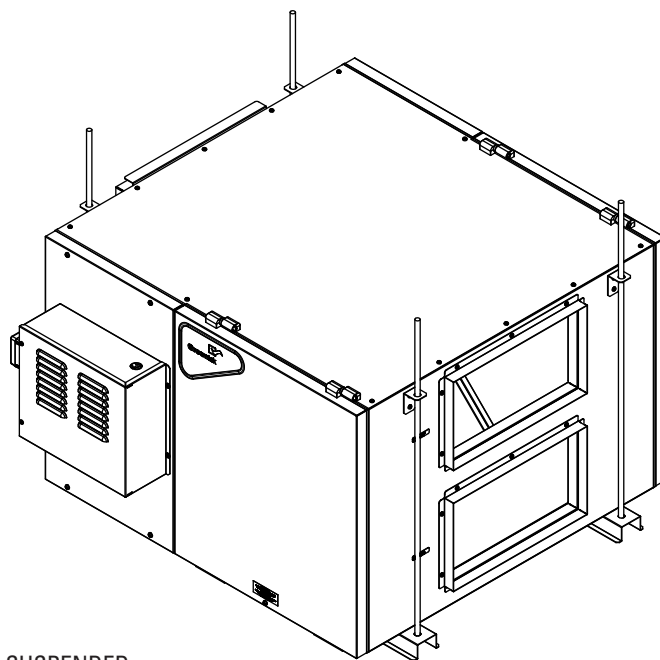
Connecting the drain hose with recommended "P" trap



3. MOUNTING OR HANGING THE ERV



SADDLE
INSTALLATION



SUSPENDED
INSTALLATION

To insure a quiet operation, vibration isolators (not included) are recommended for both applications.

4. OUTSIDE FRESH AIR AND EXHAUST AIR HOODS

OUTSIDE WEATHER HOODS

The weatherhoods must have built-in screens to prevent birds and rodents from entering into the ductwork. 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.

GOOD INSTALL PRACTICES

- Minimum distance not less than 10 ft. (3 m) apart from each other.
- Minimum 18 inches (457.2 mm) above snow line or ground level.

Outdoor intake air weather hood should be located to avoid contamination from sources such as:

- Exhaust Air openings
- Parking lots (auto exhaust)
- Combustion appliances
- Gas meters, oil fill pipes
- Garbage containers
- Attics or crawlspaces
- Under a deck or other areas of questionable air quality.

DUCTING TO AND FROM THE ERV

Galvanized sheet metal ducting with cross section, insuring all joints and seams are sealed with an approved commercial grade duct sealant of aluminum foil tape. The outdoor air and the exhaust air duct from the weather hoods to the ERV must be fully insulated to minimize heat loss or heat gain and to avoid potential condensation. Insulated flex duct may be used in moderation, if sized and installed properly. (Consult local or national safety & building codes.)

5. INSTALLATION DUCTS WARM SIDE TO THE ERV

To maximize airflow in the ductwork system, all ducts should be kept as straight as possible avoiding bends as possible. Insuring all joints and seams are sealed with an approved commercial grade duct sealant of aluminum foil tape.

Tips:

Supply air ducting

In buildings without a forced air systems, fresh air is supplied to all main living areas. To maximize comfort the fresh air distribution ensure to install the grilles or diffusers from a high wall or ceiling locations.

NOTE TO INSTALLER:

The ERV is a balanced ventilation system is designed to introduce outdoor air to the building while exhausting the same amount from the building. The designer and installer must comply in accordance to local or national safety & building codes.

IMPORTANT: Insure the ERV runs in conjunction with the forced air system (Ref. wiring diagram for interlock connection)

6. BALANCING THE UNIT WITH THE DUOTROL™ SYSTEM (LCH-4E & LCH-7E ONLY)

The light indicator shows you in which mode the Duotrol™ System is in.



GREEN LIGHT Mode Selector



YELLOW LIGHT Balancing Mode

USING THE SELECTOR SWITCH

NOTE TO INSTALLER

When on Balancing Mode, the Selector Switch allows you to choose the motor you want to set.

Closed Duotrol Cover

1. INTER (Exhaust Motor)
2. CONT (Both Motors)
3. OFF (Supply Motor)

Step 1 Press the (+) and (–) buttons on the Duotrol™ simultaneously until you see the yellow light. Once the indicator light turns yellow and the unit goes to high speed you are in balancing mode. When in balancing mode the selector switch on the Duotrol™ becomes the motor selector switch:

INTER = Exhaust Airflow Motor

CONT = Both Motors

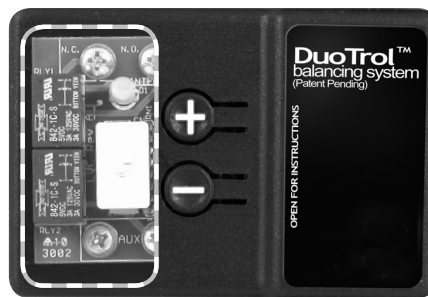
OFF = Supply Airflow Motor

Step 2 To adjust the **(fresh air)**, select the «OFF» position on the Duotrol™. To adjust the airflow rates, press the (–) button to decrease or press the (+) button to increase the airflow rates until you reach the calculated fresh airflow requirements.

Step 3 To adjust the **(stale air)** select the «INTER» position on the Duotrol™. To adjust the airflow rates, press the (–) button to decrease or press the (+) button to increase the airflow rates until you reach the calculated stale airflow requirements.

Step 4 Once this is completed and you have balanced the airflow rates required for your application. Proceed to exit the balancing mode you must press (+) and (–) buttons on the Duotrol™ simultaneously until solid green LED appears then release. The indicator light will turn green to indicate normal operation mode.

Step 5 Mark down the balanced air flow rates information. Apply the



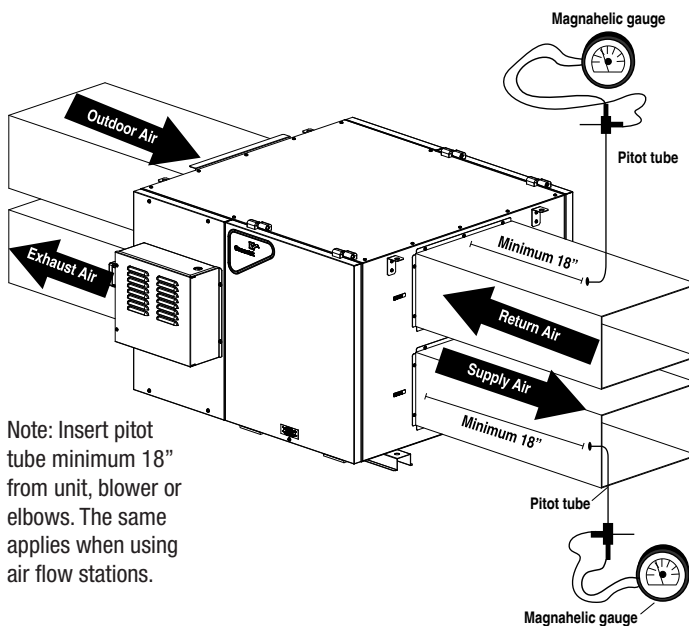
Duotrol™ System

label to the ERV access door for future reference (e.g. date, balance airflow rate, your name, phone number and business address).

Step 6 Once the ERV is balanced, switch to «CONT» on the Duotrol™. By using (+) and (–) buttons you can set the continuous speed if required.

Note : When selecting the **CONT** mode: The ERV will continuously exhaust stale indoor air to the outside and will introduce fresh outdoor air continuously on low speed except when there is a request for ventilation by one of the remote controllers then the ventilation system will exchange at high speed. **(Recommended for maximum indoor air quality.)**

When selecting the **INTER** mode: The only ERV will only run on high speed when there is a request for ventilation. At this time the unit will run on high speed until the level of humidity is below the set point. The T-3 timer has completed its time period or once the cycles per hour has completed its cycle.



NOTICE: To balance the LCH-12E it will require balancing damper in the ductwork since the Duotrol does not offer this balancing feature at the current moment.

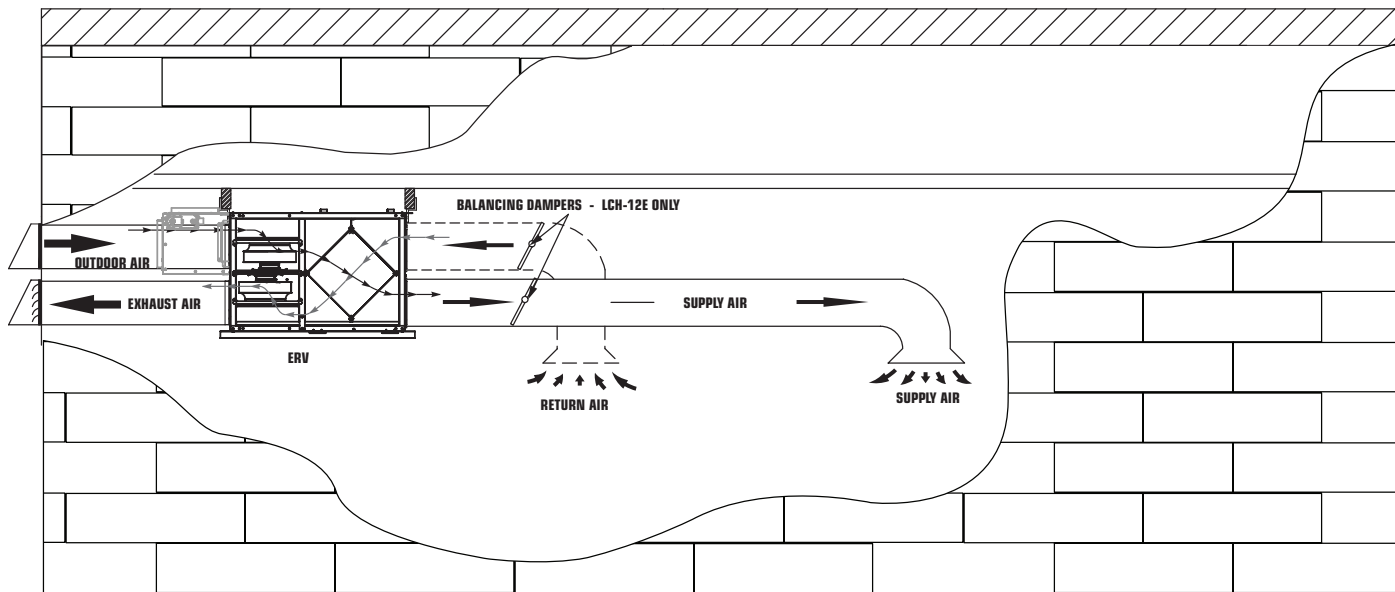
7. TYPES OF INSTALLATIONS

* Illustration & example, port locations and airflow directions may vary, consult unit specification sheet and drawings.

It is important the duct design is sized accordingly to the application to insure the system related to the ERVs airflow and performance specifications. 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.

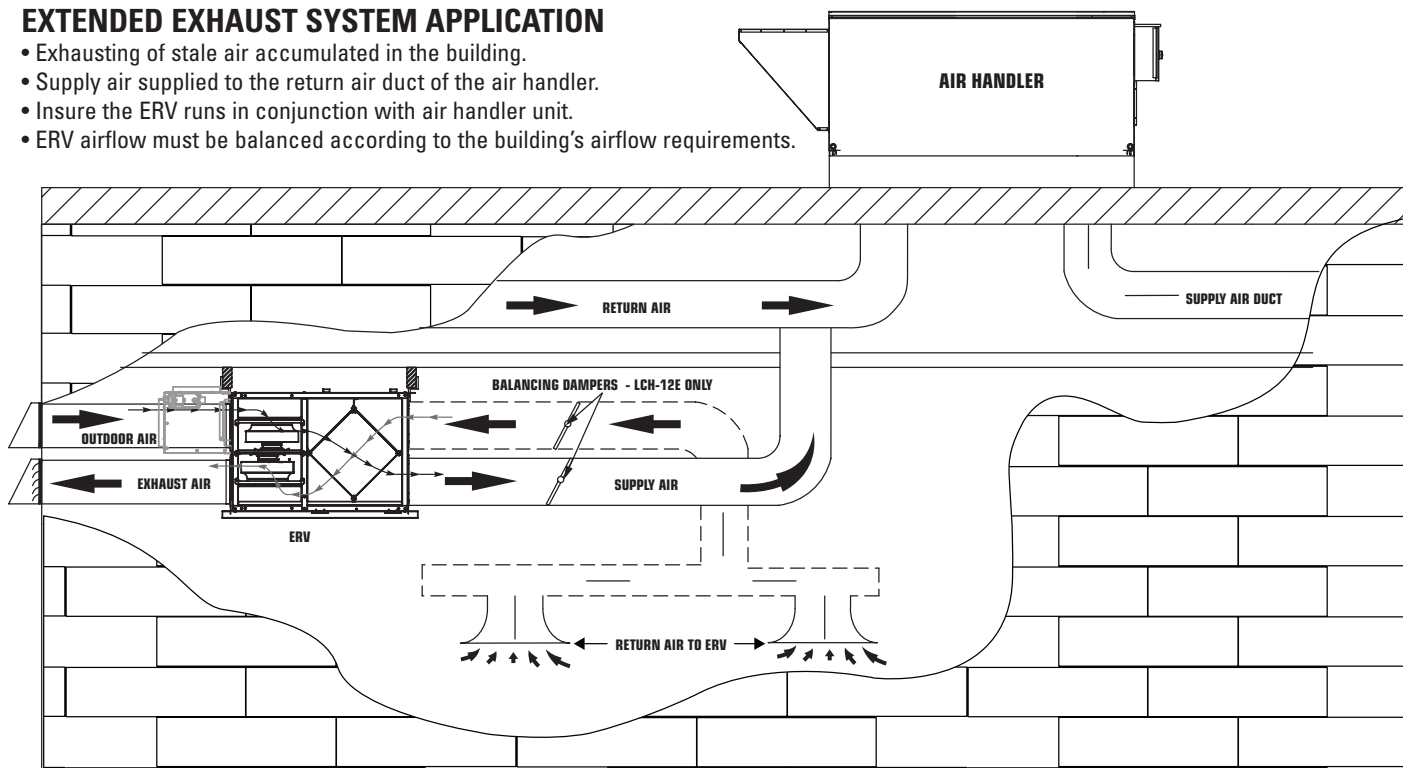
DIRECT DUCTED SYSTEM APPLICATION

- Exhausting of stale air accumulated in the building.
- Supply air supplied to main living areas.
- ERV airflow must be balanced according to the building's airflow requirements.
- Optional : External heating or cooling coil may be to insure maximum comfort.



EXTENDED EXHAUST SYSTEM APPLICATION

- Exhausting of stale air accumulated in the building.
- Supply air supplied to the return air duct of the air handler.
- Insure the ERV runs in conjunction with air handler unit.
- ERV airflow must be balanced according to the building's airflow requirements.

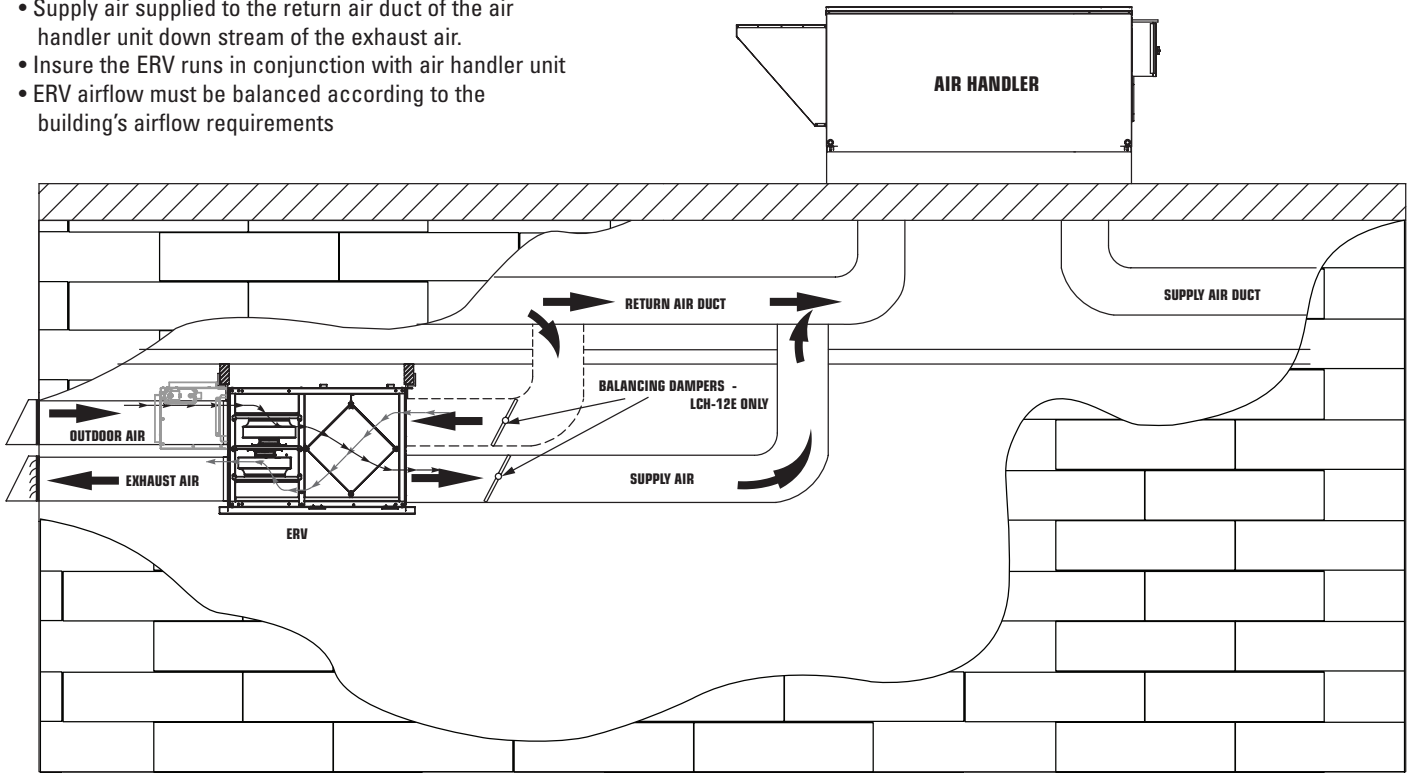


7. TYPES OF INSTALLATIONS (CONT..)

* Illustration & example, port locations and airflow directions may vary, consult unit specification sheet and drawings.

SIMPLIFIED SYSTEM INSTALLATION

- Exhausting of stale air accumulated in the building from the return air duct of the air handler.
- Supply air supplied to the return air duct of the air handler unit down stream of the exhaust air.
- Insure the ERV runs in conjunction with air handler unit
- ERV airflow must be balanced according to the building's airflow requirements



8. OPERATING OF THE DUOTROL™ SYSTEM

Our Duotrol™ System is state of the art technology simplified for quick and easy operation. The Duotrol™ System serves two purposes:



1. ACTS AS A MODE SELECTOR IN RUN MODE (OFF, CONT & INTER)

- **OFF:** When the selector switch is in the OFF position the ventilation system will not come on even if there's a request for ventilation from any remote controllers.
- **CONT:** When the selector switch is in the CONT position the ventilation system will exhaust stale indoor air to the outside and will introduce fresh outdoor air continuously on low speed except when there is a request for ventilation by one of the remote controllers then the ventilation system will exchange at high speed. (**Recommended for maximum indoor air quality.**)
- **INTER:** When the selector switch is in the INTER position the ventilation system will only run on high speed when there is a request for ventilation. At this time the unit will run on high speed until the level of humidity is below the set point. The T-3 timer has completed its time period or once the cycles per hour has completed its cycle.

TIP: During hot and humid days, it is recommended that you put the system on INTERM mode. This will reduce the amount of warm and humid fresh air coming inside the dwelling.

NOTE: The following controls (EHC1.0, EHC1.5, RD-2, RD-3P, RD-4P) will override any setting on the Duotrol™ all except when in the OFF position.



2. ACTS AS VARIABLE SPEED SELECTOR (LCH-4E & LCH-7E only)

- When the (+) button is pushed this will increase the CONT speed of both ventilation system motors from the previous settings.
- When the (-) button is pushed this will decrease the CONT speed of both ventilation system motors from the previous settings.

NOTE: When the LED stops blinking the unit is at its maximum high speed or at its maximum low speed.

IMPORTANT: If speed setting is too high, extreme dryness can occur in home during winter months. If speed setting is too high, extreme humidity levels can occur during hot humid days.

IMPORTANT: If speed setting is too low, above normal humidity, stale and contaminated air levels can occur in dwelling.

9. MODES OF OPERATIONS

1. Continuous

When the selector switch is in the CONT position the ventilation system will exhaust stale indoor air to the outside and will introduce fresh outdoor air continuously on low speed except when there is a request for ventilation by one of the remote controllers then the ventilation system will exchange at high speed. **(Recommended for maximum indoor air quality.)**

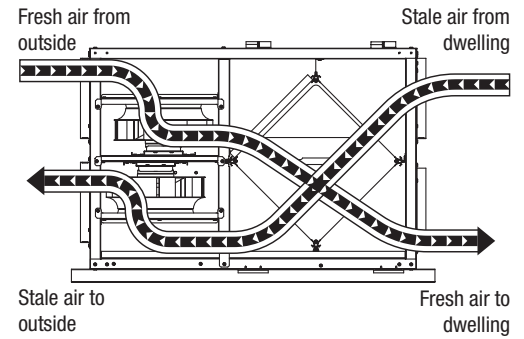
DEFROST CYCLE TYPES:

Defrost sequence type: Evacuation (Ref. Supply fan shut down)

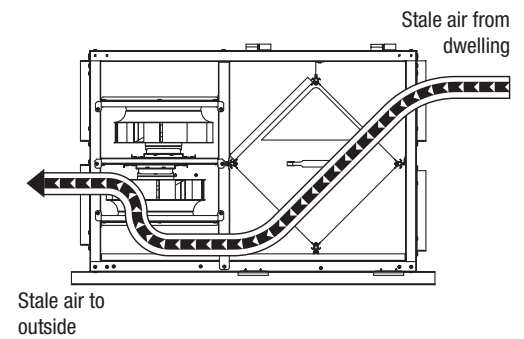
An automatic defrost sequence is activated at an outdoor measured temperature of -5°C (23°F) and colder.

During the electronically controlled defrost sequence, the supply motor (incoming air) shuts down while the exhaust motor continues to run to exhaust distribute warm ambient air through the core. This eliminates the risk of the ERV core from building up with ice and freezes.

Normal



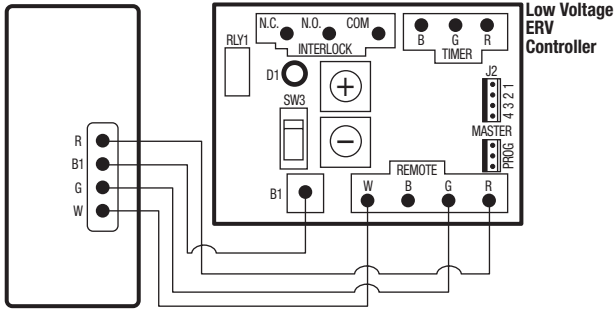
Evacuation



10. CONTROLS CONNECTION

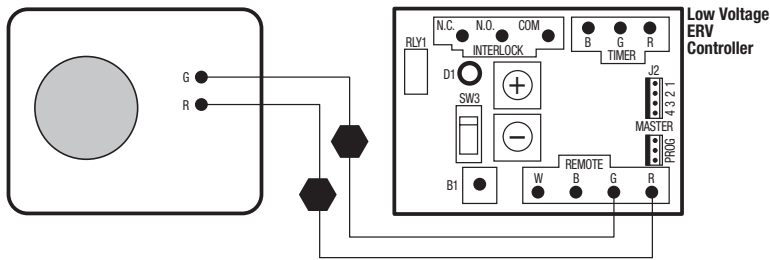
VECTRA SERIES - MODEL EHC 1.0 & EHC 1.5 (4 WIRES)

Installation of a Vectra Series main wall control with your ERV will improve comfort and may significantly reduce the product's energy use.



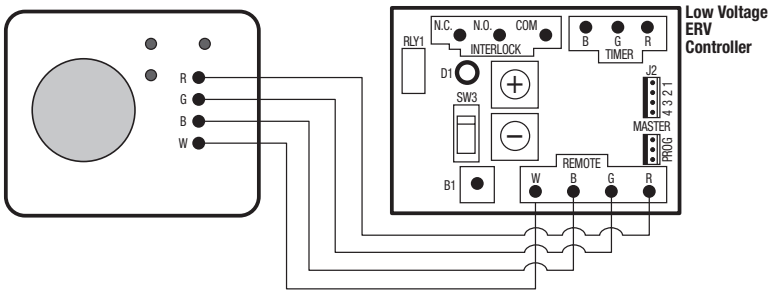
RD-1 (2 WIRES)

Installation of a RD-1 main wall control with your ERV will improve comfort and may significantly reduce the product's energy use.

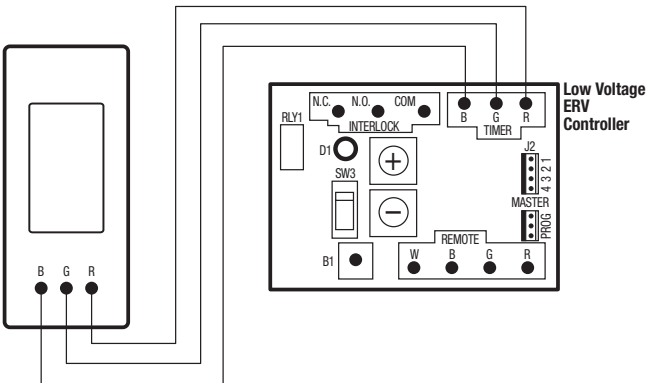


RD-2, RD-3P, RD-4P (4 WIRES)

Installation of a RD-Series main wall control with your ERV will improve comfort and may significantly reduce the product's energy use.



T3 TIMER (3 WIRES)



CAUTION: Minimum wire requirements is LVT18 CSA/UL 4 strain to insure proper connection.

11. MAINTENANCE



WARNING BE SURE TO DISCONNECT THE ELECTRICAL POWER BEFORE SERVICING THE SYSTEM.

ROUTINE MAINTENANCE REQUIRED

SEVEN-STEP SCHEDULE

With routine prevention maintenance, you can avoid unnecessary problems and ensure the effectiveness of your ERV and prolong its life. For specific routine maintenance please contact your local HVAC contractor.

1. Clean or replace air filters. Filters, which are located within the ERV should be cleaned every two to three months. Filters should be vacuumed first, then washed with a mild soap and water. Most washable filters will last several years before needing to be replaced.

2. Clean the exterior intake and exhaust vents of obstructions. Check the outside vents regularly to ensure that the screen openings are not obstructed by grass, bushes, leaves, snow or other debris.

3. Clean and inspect the energy recovery core twice a year and clean it as required (consult your owner's manual for instructions on inspecting and cleaning the core). A build-up of dust and dirt can restrict airflow and reduce the efficiency of your ERV. After inspection and cleaning, make sure the core is replaced right-side-up.

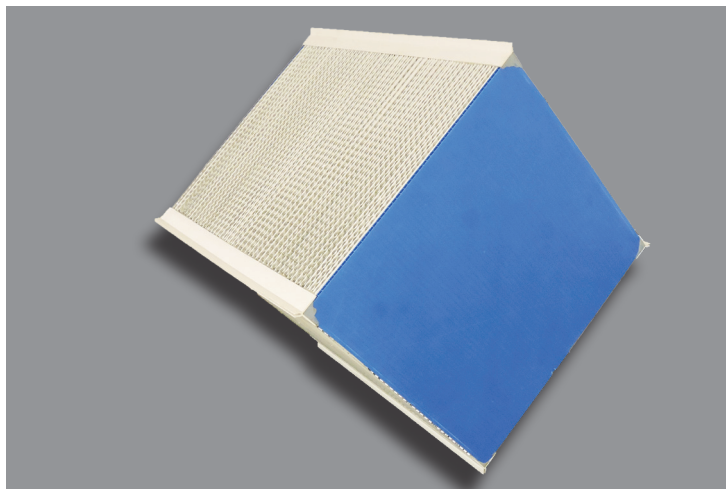
4. Clean the condensate drain and pan. Twice a year, check the condensate drain and tubing to ensure that they are open and free-flowing. The tubing can be disconnected for cleaning. The condensate drain must have a "trap" in the tubing that traps a quantity of water – to prevent air from entering the ERV via this tubing.

5. Service the fans. The fans on the ERV's are designed to operate continuously without lubrication. Inspect the blower fans periodically for dirt on the blades, and remove it by gently brushing the blades or using a vacuum cleaner.

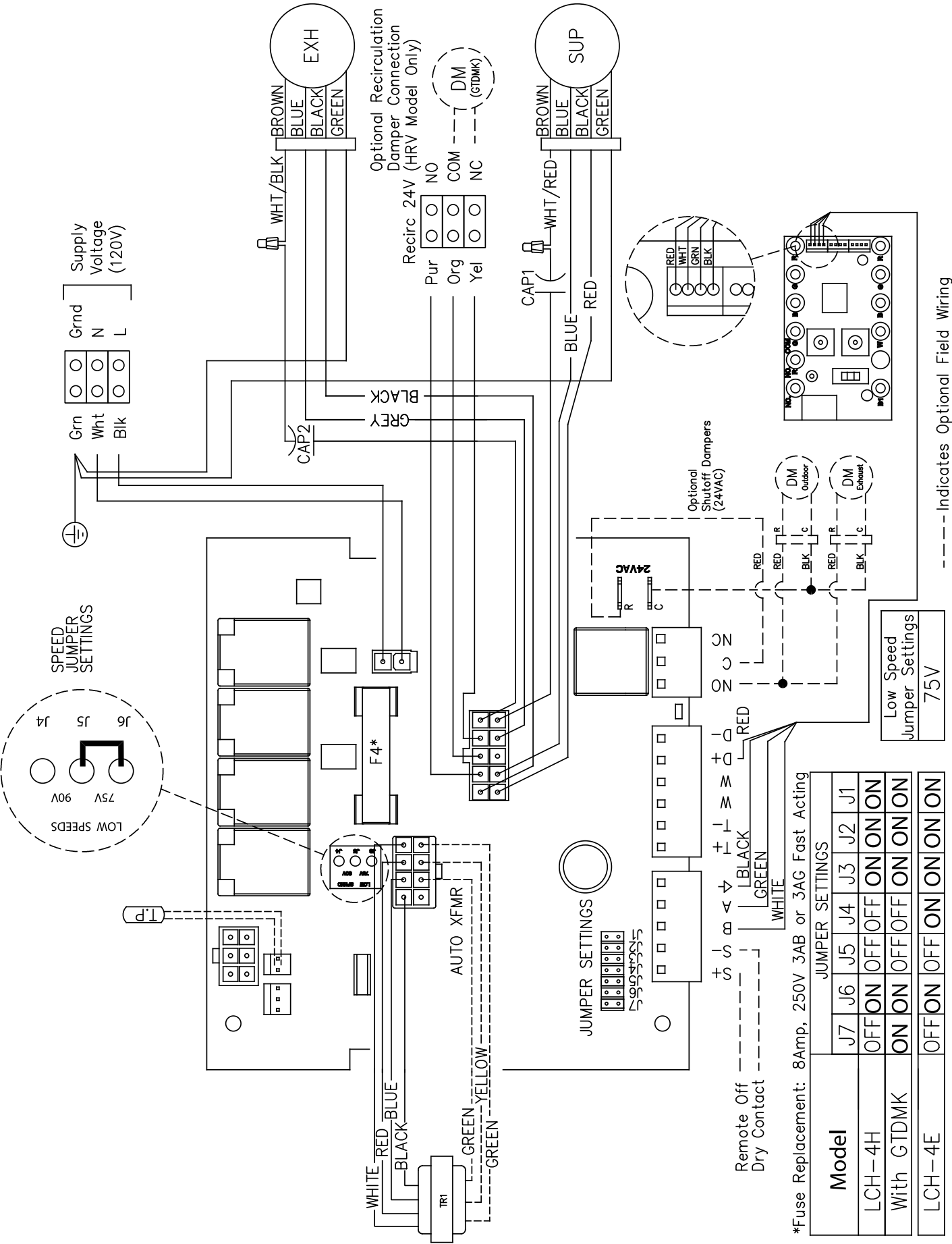
6. Clean the grilles and inspect the ductwork. Clean the grilles when they are dusty. At least once a year, visually inspect the ductwork leading to and from the ERV. Damaged ducts can lead to condensation problems, including wet insulation, water on the floor and, ice build-up. If the insulation itself is damaged.

7. Arrange for an annual servicing. Your ERV should undergo annual general servicing by a certified contractor and who is familiar with your ERV. If possible, have your furnace and ERV serviced at the same time; this will result in less inconvenience and cost than two separate visits.

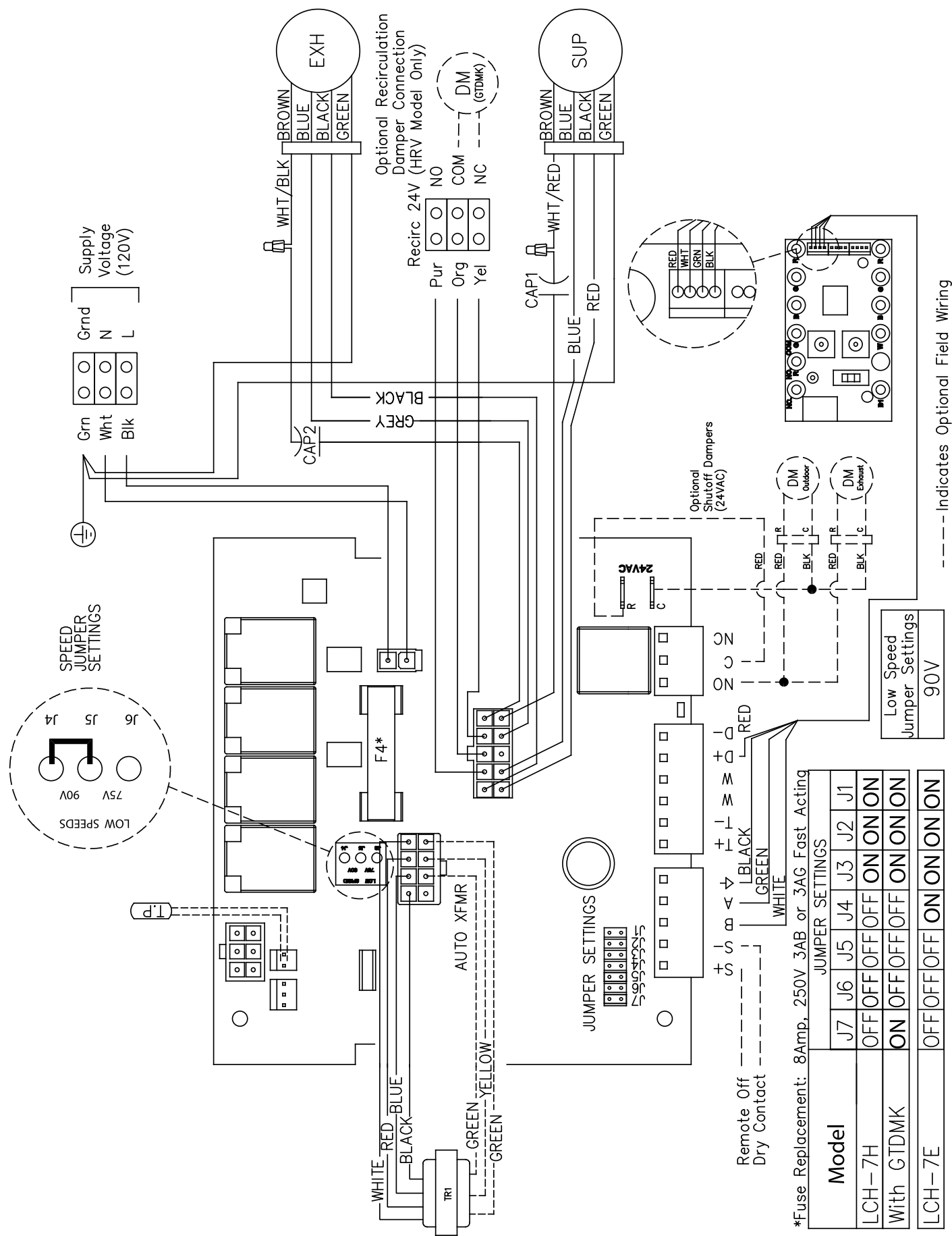
ALUMINUM CROSS-FLOW ERV CORE



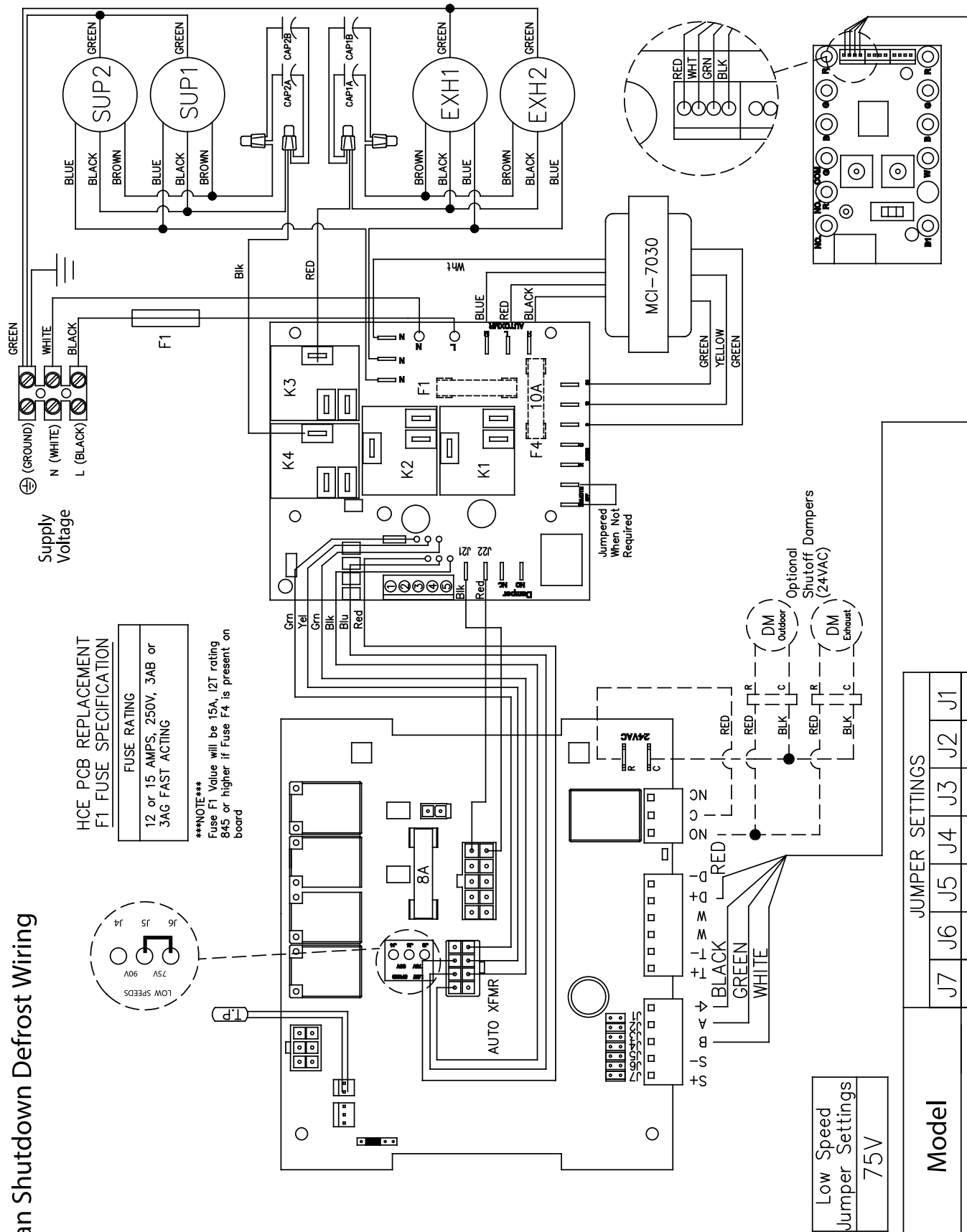
12. WIRING DIAGRAM LCH-4E



13. WIRING DIAGRAM LCH-7E



Fan Shutdown Defrost Wiring



--- Indicates Optional Field Wiring

SHEET 1 OF 2

15. LIMITED WARRANTY

2-YEAR LIMITED WARRANTY ON COMPONENTS - Greentek warrants the components (controls, sensor & electronics) to be free from defects in material and workmanship. If a defect is found within the models warranty period from date of original installation of the product (whether or not actual use begins on that date). Greentek will provide a new or re-manufactured part, at its' discretion, to authorize replacement of defective part, without charge for the part itself.

2-YEAR LIMITED WARRANTY ON VENTILATION MOTORS – Greentek warrants the ventilation motors against defects in material and workmanship within the models warranty period from the date of original installation. Greentek will provide a new or re-manufactured part, at its' discretion, to authorize replacement of defective part, without charge for the part itself.

3-YEAR LIMITED WARRANTY ON POLYMER MEMBRANE ENERGY RECOVERY CORE – Greentek warrants the polymer energy recovery core against defects in material and workmanship for a lifetime from the date of original installation. Greentek will provide a new or re-manufactured part, at its' discretion, to authorize replacement of defective part, without charge for the part itself.

1-YEAR LIMITED WARRANTY – Greentek warrants replacement parts that have been replaced after the standard period of the previous limited warranty, to be free from defects in material and workmanship. If a defect is found within one year from date of original installation of replacement part, (whether or not actual use begins on that date) Greentek will provide a new or re-manufactured part, at its' discretion, to authorize replacement of defective part, without charge for the part itself.

WARRANTY CONDITIONS – Warranties apply only to Greentek products installed in their original location. Installation, use, care, and maintenance must be normal and in accordance with instructions contained in the Owner's Manual and service information. Defective parts must be returned to the distributor through a registered servicing dealer for credit. All work shall be performed by a certified technician.

GREENTEK WILL NOT BE RESPONSIBLE FOR – Normal maintenance, installation, including filter cleaning and/or replacement, damage or repairs required as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation. Damage as a result of floods, winds, fires, lightning, accidents, corrosive environments or other conditions beyond the control of Greentek. Parts not supplied or designated by Greentek, or damages resulting from their use.

NOTICE: None of these warranties include labor or other costs incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts, or replacement parts, or new units.



50 Kanalfakt Way., Bouctouche, NB E4S 3M5
1-888-724-5211 Fax 1-866-426-7430
www.greentek.ca