RenewAire
Energy Recovery Ventilation

SL SERIES

Installation, Operation and Maintenance Manual

SL75
SL75H

Model: SL75 and SL75H shown

C ETL LISTED US
Intertek

⚠ CAUTION

RISK OF ELECTRIC SHOCK OR EQUIPMENT DAMAGE

Whenever electrical wiring is connected, disconnected or changed, the power supply to the ERV and its controls must be disconnected. Lock and tag the disconnect switch or circuit breaker to prevent accidental reconnection of electric power.

⚠ CAUTION

RISK OF CONTACT WITH HIGH SPEED MOVING PARTS

This appliance has two high speed fans that can cause injury or be damaged if objects come into contact with the impellers when they are spinning. The fans may be controlled by external controlling devices and switch on at any time. When working in the area of the fans, electric power to the unit must be disconnected.

IMPORTANT

All ductwork is to be designed and installed in accordance with SMACNA guidelines.

IMPORTANT

This ERV is intended for ducted ventilation only. Ducting at least 40 inches [1 meter] in length must be installed on all four airstreams.

⚠ CAUTION

RISK OF INJURY FROM FALLING OBJECTS

Installation of this unit requires hoisting hardware overhead and working directly beneath heavy objects during the installation process. Observe all OSHA-approved work practices. Always wear OSHA-approved Personal Protective Equipment (PPE).

IMPORTANT

Only persons who have been properly trained and authorized are to access the ERV electrical box and the controller. Changes to the controller are to be made only by trained and authorized personnel.

IMPORTANT

This equipment is to be installed by following industry best practices and all applicable codes. Any damage to components, assemblies, subassemblies or the cabinet which is caused by improper installation practices will void the warranty.

READ AND SAVE THIS MANUAL/LIRE ET CONSERVER CE MANUEL

NOTICE

This manual has space for recording operating settings at time of unit commissioning that must be completed by the installer. See Sections 5.1 and 5.2 of this manual.

Information that is recorded is specific to just one ERV. If additional ERVs are being documented, please make copies of these pages and identify each copy by its unit tag.

UNIT INFORMATION

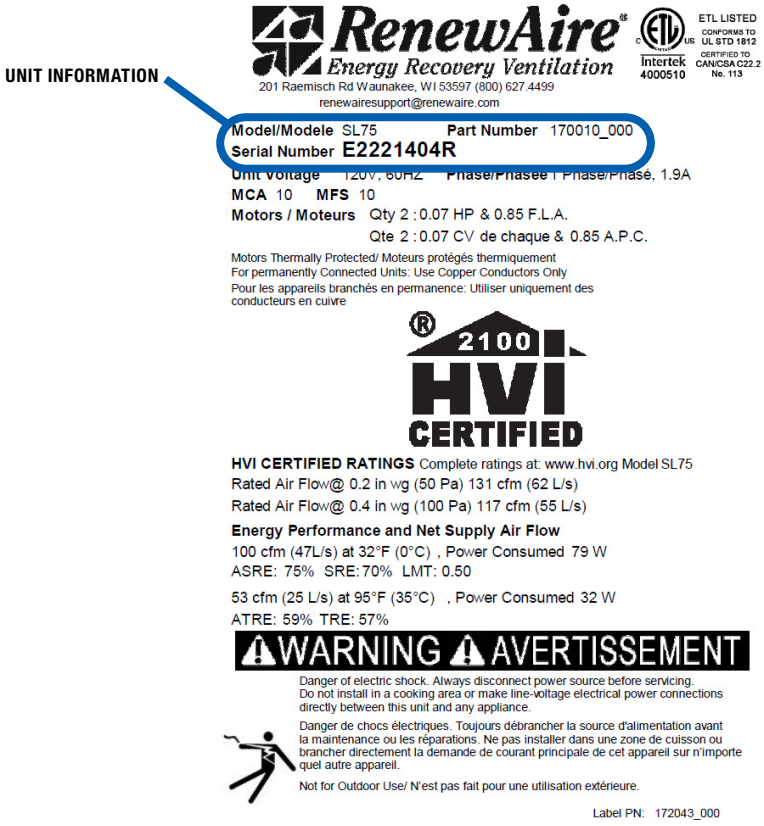
Record information as shown below. In the unlikely event that factory assistance is ever required, this information will be needed.

Locate the RenewAire unit label, to be found outside of the appliance, near the terminal block. Record the model and serial numbers below.

NOTE: This information is for purposes of identifying the specific air handling appliance. Unit-specific option data can then be obtained, as needed, from the Model Number.

ERV Model: ☐ SL75
☐ SL75H

Serial Number: _____



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1.0 OVERVIEW

1.1 DESCRIPTION

The SL75 & SL75H ERVs are multi-speed air-to-air energy recovery ventilators that are designed for residential application and have multiple installation options. They can be installed between joists that are spaced a minimum of 24" on center, they can be suspended from chains, or they can be mounted on a wall or other object. Each type of installation can be accomplished by a single person. The SL75 and SL75H are identical except for the method of wiring the power source to the unit. The SL75 has an integral line cord, ready to be plugged into a standard 120VAC receptacle, while the SL75H is to be hard-wired by the installer.

The ERV exhausts stale Return Air (RA) while transferring both latent and sensible energy between an incoming fresh outdoor airstream (OA). Energy recovery is accomplished by a static plate heat exchanger core. Each airstream has a 120V EC fan, which provides airflow from 30 to 130 CFM.

The airflow rate can be changed from Continuous to Boost at any time, using many different optional sensors or control devices.

The unit may operate with balanced or unbalanced airflow. However, balanced airflow provides the best energy recovery. Airflow can be adjusted using the motor potentiometers and the values read via the door pressure taps.

The hinged door has an opening for viewing and access to the potentiometers. The entire cabinet is lined with foil-backed 1" thick foam insulation.

NOTE: This unit is an Energy Recovery Ventilator, or ERV. It is commonly referred to throughout this manual as an ERV.

NOTE: Sensible energy is often referred to as "heat energy."

NOTE: Latent energy is often referred to as "moisture energy."

1.2 OPERATING MODES

The SL75 & SL75H have two different operating modes: Continuous and Boost. Continuous mode should be set to provide the minimum ventilation requirement. Boost mode can be used to supply and exhaust a greater volume of air, up to 130 CFM.

The two operating modes are selectable and controlled independently so that different controlling methods can be used to switch back and forth. Example: an IAQ sensor could be used to switch the unit to Boost mode.

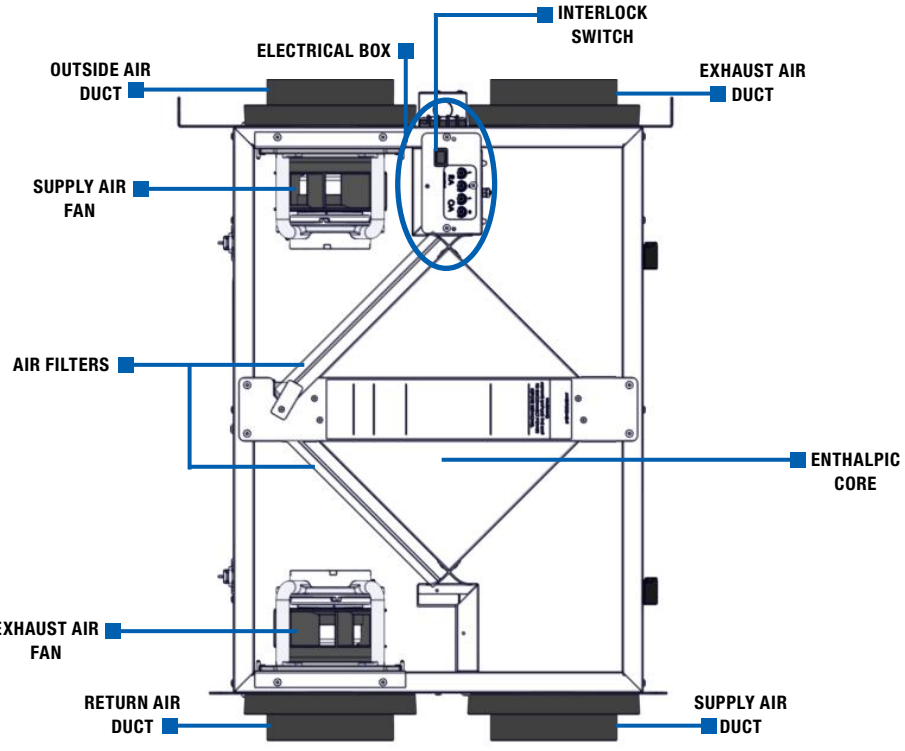

FIGURE 1.2.0 SL75/H CUTAWAY VIEW

1.3 UNIT WEIGHTS

The hanging weight of each SL75/H is approximately 35 pounds.

The shipping weight of each SL75/H is approximately 41 pounds.

2.0 COMPONENT DESCRIPTION

2.1 CABINET

The cabinet is built of 22 gauge (0.64 mm) galvanized steel and is painted white. It has a hinged, removable door. The exterior of the unit boasts four air pressure test ports, one low-voltage terminal strip, an access/viewing port, and locations for four duct connectors, (6" or 8", shipped loose).

2.1.1 Removable Door with Interlock Switch

The insulated access door is hinged on one side and has two securing latches on the other side. The hinges are separable to allow for removal of the access door for servicing. The door has an access/viewing port built in to permit adjustment of the fan potentiometers. Directly behind the access door is a pressure-sensitive interlock switch that will shut off power to the unit if the door is opened during operation. Also installed on the door are four air pressure test ports, used for connecting a manometer and taking air pressure measurements.

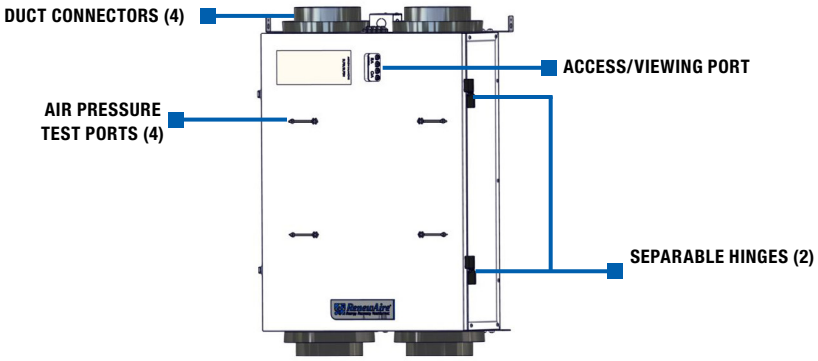

FIGURE 2.1.0 PRESSURE PORT LOCATIONS

2.2 FANS

The SL75 & SL75H have two advanced, high efficiency electronically commutated (EC) 120VDC variable speed fans. One fan is used for intake air (Outdoor Air/Supply Air) and the other fan is for the exhaust airstream (Return Air/Exhaust Air). The speed of each fan is controlled independently by a 0–10VDC signal from the controller.

2.3 CONTROLLER

The controller provides the signal to the EC motors using integral potentiometers. Incoming line voltage powers both fans and also a step-down Class II transformer which provides 24VAC to the externally-mounted low-voltage terminal strips. The controller has four potentiometers that are adjusted by the user to establish fan speeds for each operation mode.

2.3.1 Controller Power Supply

Each SL75 & SL75H have one terminal strip mounted on the end of the unit. The terminal strip is a 24VAC power supply terminal. The unit control board provides up to 12VA (approximately 0.5A) which can be used to power the various optional control accessories.

2.4 DUCTS

IMPORTANT

It is important to understand and use the equipment airstream terminology as it is used in this manual. The airstreams are defined as:

- Outside Air (OA): Air taken from the external atmosphere and, therefore, not previously circulated through the system.
- Supply Air (SA): Air that is downstream of the enthalpic core and is either supplied to the occupied space or to an additional conditioner.
- Conditioned Air (CA): Air that is supplied to an occupied space.
- Return Air (RA): Air that is returned to a heating or cooling appliance from a conditioned space.
- Exhaust Air (EA): Air that is removed from a heating or cooling appliance and discharged.

SL75 & SL75H units are supplied with a set of 4 duct connectors that must be field-installed. The connectors can be used for either 6" or 8" round ducts. It is preferable to keep duct runs short and straight to maximize performance.

For all installations, SMACNA guidelines for duct installation should be followed. The most commonly-used ducting is 6" diameter flexible due to ease of installation, sound attenuation, and cost, however, rigid ducting is preferred because there is less resistance to airflow, resulting in less power consumption to deliver the same amount of air.

A total of four duct runs will generally be used:

- One duct will provide clean outdoor air (Outside Air) to the SL75/H. This duct will normally be capped by an air inlet cap mounted on the exterior side wall of a residence and equipped with a bird screen.

  Wall intakes must be located at least 10' from any appliance vent or any vent opening from a plumbing drainage system. Wall intakes must also be 10' from any exhaust fan discharge outlet unless that outlet is 3' or more above the intake location. (IRC 2006, Section M1602.2)
- One duct will be needed to exhaust stale air (Exhaust Air) to the outdoors. This duct will normally end at an exhaust cap located on an exterior wall of a residence.
- One duct will be needed to deliver fresh, conditioned air (Supply Air) from the SL75/H to a desired location in the residence. The Supply Air duct may end in a floor or wall grate with an area of at least 28 square inches. Alternatively, the Supply Air duct may be connected directly into the return air duct or the supply air duct for the main heating and cooling system. When connecting to the main return air duct, it must be at least 3' from the return plenum to minimize suction from the furnace blower.
- One duct is used to collect indoor air (Return Air), running from return grilles through the energy exchange core in the SL75/H before being exhausted to the outdoors.

If the unit is located in a conditioned space, only the OA and EA ducts need to be insulated.

For unconditioned space installations such as an attic or crawl space all four ducts must be insulated and have the application evaluated by a HVAC design professional or RenewAire.

NOTE: Ducts inside a building that are connected to the outside must be insulated with a sealed vapor barrier on both the inside and the outside of the insulation.

Insulation must have an R-value of at least R-6, but R-8 is recommended.

NOTE: If a combined exhaust/intake termination is used with non-kitchen exhaust, then no minimum separation is required as long as the exhaust air concentration within the intake airflow does not exceed 10% as established by the manufacturer. (ASHRAE 62.2-2019, Section 6.68)

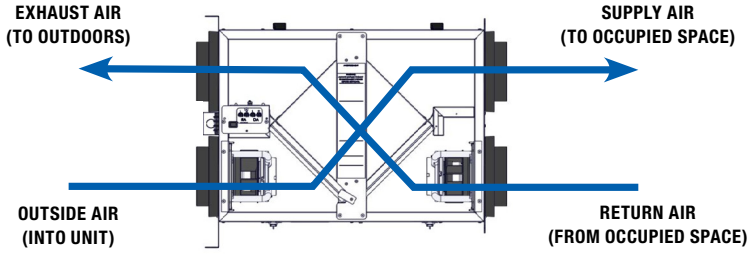

FIGURE 2.4.0 AIRSTREAM ILLUSTRATION

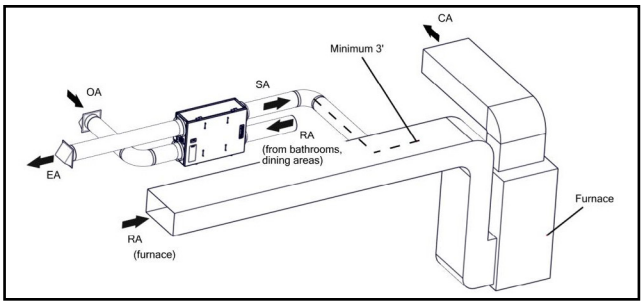

FIGURE 2.4.1 SEPAREATE RETURN AIR PICK-UP—SUPPLY AIR TO FURNACE RETURN AIR TRUNK

NOTE: ERV blower may be operated separate from furnace blower.

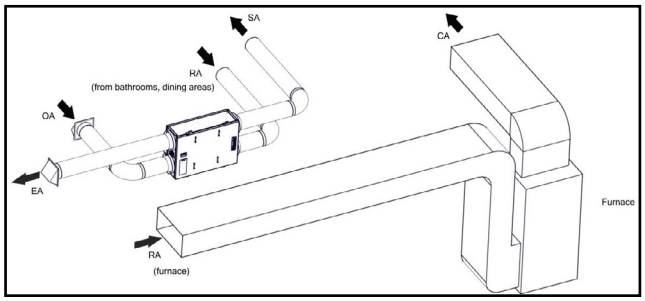

FIGURE 2.4.2 SEPARATE RETURN AIR AND SUPPLY AIR

NOTE: ERV blower may be operated independently from furnace blower.

Use caution to introduce SA at low velocity and where good mixing will occur to minimize discomfort from drafts.

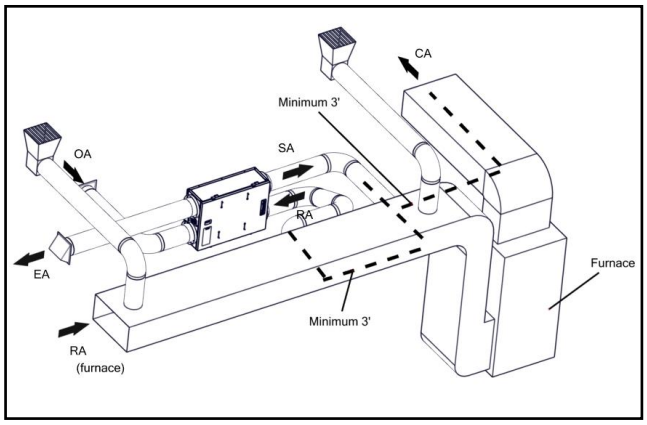

FIGURE 2.4.3 FURNACE RETURN AIR BACK INTO RETURN AIR

NOTE: For the setup in Figure 2.4.3, the furnace blower must be operated any time the ERV is operated. Use furnace fan “on” continuous low speed or optional FM control to cycle furnace fan on ERV.

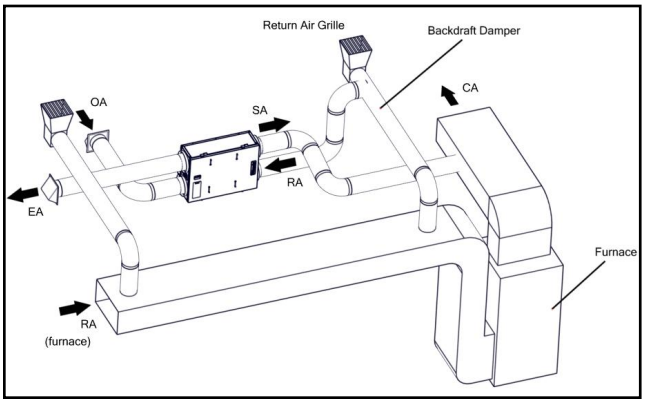

FIGURE 2.4.4 FURNACE RETURN AIR BACK INTO SUPPLY AIR

NOTE: ERV blower may be operated separate from furnace blower.

NOTE: The cores used in all ERVs are static plate enthalpic cores. They are commonly referred to in this manual as “cores.”

2.5 ENTHALPIC CORE

Each SL75 & SL75H has a static-plate, cross-flow core separates the outgoing, polluted indoor airstream from the incoming supply airstream—while simultaneously transferring total energy (heat and water vapor) between the two. Airstreams do not mix, and pollutants are not transferred across partition plates.

2.6 FILTERS

Each SL75 & SL75H is equipped at the factory with mesh-type anti-microbial MERV 8 filters on both the OA and RA sides of the core. If desired, the mesh-type OA filter can be replaced with an optional MERV 13 pleated paper filter accessory, which will ship loose.

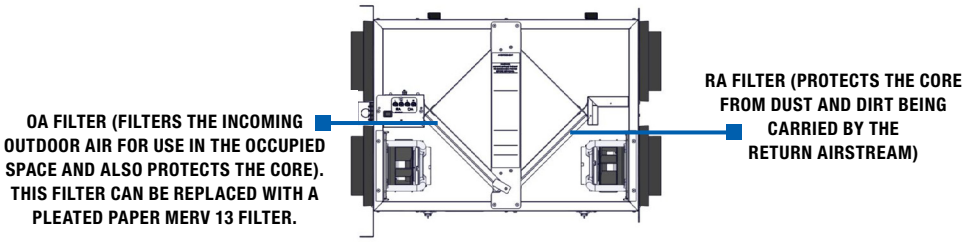

FIGURE 2.6.0 SL75/H FILTER LOCATIONS

2.7 CONTROLS TERMINAL STRIP

A single terminal strip is located at the end of each SL75 & SL75H, providing a 24VAC connection to Boost mode or to control accessories. For detailed information, see the Low-Voltage Wiring Diagrams in Section 4.11 of this manual.

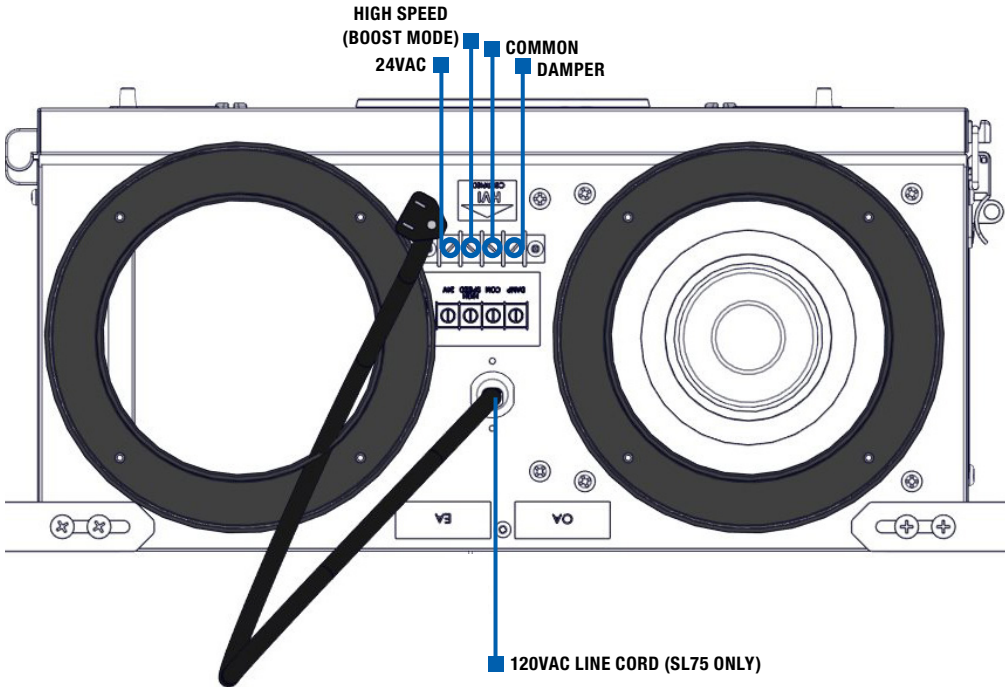

FIGURE 2.7.0 CONTROLS TERMINAL STRIP

RenewAire Energy Recovery Ventilation

3.0 UNIT PLACEMENT

RenewAire recommends installation of the SL75 & SL75H by a professional HVAC installer with knowledge of local building codes who is able to properly balance the airstreams prior to use. The SL75 & SL75H can be installed by one person.

3.1 INSTALLATION HARDWARE

A variety of installation hardware is shipped with each unit, providing for mounting between wood joists, hanging from owner-supplied and installed chains with vibration isolation springs or mounting on a vertical surface, such as a wall or other support panel.

Supplied with all units:

- Four duct collars, to be field-installed on the SL75/H with factory-provided sheet metal screws.
- One package of sheet metal screws for installation of the duct collars. The enclosed washers are not needed for this application.

3.1.1 Horizontal Installation Between Wood Joists

Supplied with all units:

- Two long L-Brackets and two short L-Brackets, to be field-installed on the SL75/H.

For horizontal installation between wood structural members (joists) only. The short L-brackets are used on the hinge side of the unit, the long L-brackets are used on the latch side. The installer must provide thread-lock, one drop per machine screw, and must provide four 1-1/4 #10 pan head screws for anchoring the brackets to wood joists. The minimum distance between joists is 22" and the maximum distance is 23".

3.1.2 Horizontal Installation Hanging From Chains

⚠ CAUTION

Risk of injury when lifting unit and installing it overhead.

Supplied with all units:

- Four Chain Support Brackets and four vibration isolation springs, to be field-installed on the SL75/H.

Chain support brackets are field-installed on each corner of the SL75/H with two of the factory-supplied machine screws per bracket. Installer must provide thread-lock, one drop per machine screw. Installer must provide chain with a minimum load-bearing rating of 90 pounds and all anchoring/connecting hardware. Supporting chains are to be angled outward from the brackets to the anchor points to reduce sway. Vibration Isolation Springs are to be installed on each of the four installed support chains as shown in Section 4.4 of this manual. Support chains are attached to the chain support brackets by S-hooks supplied by others, and then crimped shut.

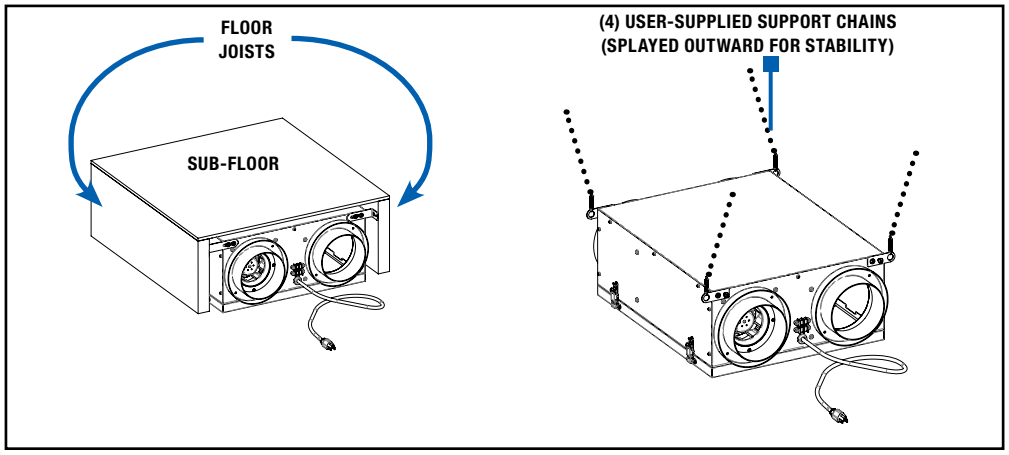

FIGURE 3.1.0 RECOMMENDED HORIZONTAL MOUNTING OPTIONS

3.1.3 Vertical Installation on a Wall or Panel

Optional Vertical Installation Kit:

For vertical installation on stud walls or user-supplied support/backing panels. The installer must provide eight #10 x 2" coarse thread pan head sheet metal screws for installation in wood studs, two screws per stud per bracket. Installer to provide #10 fine thread pan head screws for installation into steel studs. When mounted on field-supplied plywood panel, the panel should be a minimum of 3/4" thick. Mounting screws should be #12 x 3/4" pan head. Factory-provided mounting screw holes will have to be enlarged.

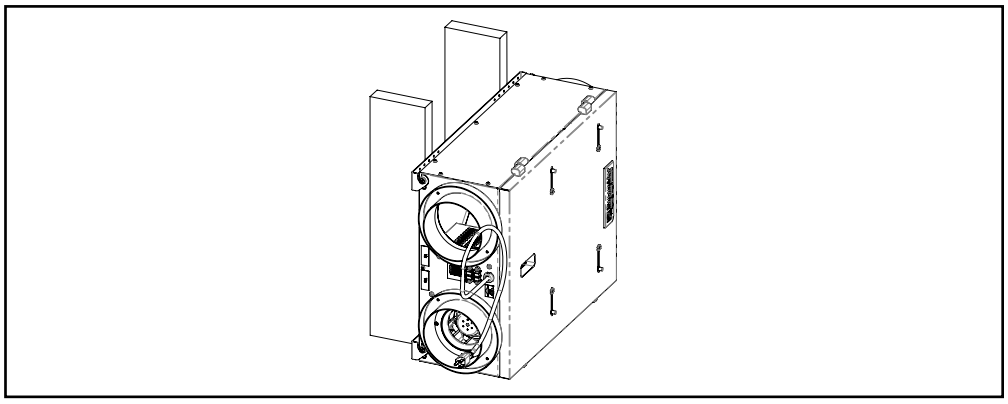

FIGURE 3.1.1 OPTIONAL VERTICAL MOUNTING OPTION

3.2 SERVICE CLEARANCES

Primary consideration is sufficient space to open door latches and for the door to be able to swing open at least 90°. See the dimensioned drawing in the front of this manual for required clearances.

3.3 AC POWER SOURCE

3.3.1 Model SL75

Power requirements: 120VAC, 3.0 amps

The SL75 has an integral 34" long power supply cord. The installer must provide a standard, grounded 120VAC outlet in the proximity of the ERV. Check all local codes.

3.3.2 Model SL75H

Power requirements: 120VAC, 3.0 amps

The SL75H must be hard-wired by the installer. Check all locals codes before wiring. A disconnect switch on the AC supply line may be required.

3.4 LOAD BEARING CAPACITY OF SUPPORTS

The SL75 & SL75H ERVs are to be installed by attachment to building structural members such as joists, bar joists, beams, wall studs, and columns. It is not be supported by attachment to fixtures such as ductwork or air handlers unless the fixtures are permanently installed and capable of providing adequate support. Whenever an ERV is installed on or supported by a fixture, the installation must be approved by a design engineer.

4.0 INSTALLATION

⚠ CAUTION

RISK OF INJURY FROM FALLING OBJECTS

Installation of this unit requires hoisting hardware overhead and working directly beneath heavy objects during the installation process. Observe all OSHA-approved work practices. Always wear OSHA-approved Personal Protective Equipment (PPE).

4.1 USER-SUPPLIED INSTALLATION MATERIALS

RenewAire suggests the use of a duct hoist for hoisting the SL75 & SL75H into position.

For all installations:

- Medium-strength thread-lock,
- UL-181—rated mastic for duct connections,
- Common hand tools such as pliers, drill, screwdriver bits, stud finder, etc.

For wall bracket installations between wood joists:

- Four #10 x 1-1/4" coarse thread sheet metal screws

NOTE: Hex head sheet metal screws may be substituted for pan head sheet metal screws.

For chain-suspended installations:

- Chain with a 90 pound load rating,
- Anchoring hardware as needed,
- Attaching hardware such as “S” hooks to connect the chains to the unit support brackets.

NOTE: Wall brackets must be supported by two wall studs. If the desired location of the SL75/H does not permit support by two wall studs, the SL75/H must be mounted on a user-supplied 3/4" thick plywood panel that is anchored on two wall studs.

For wall bracket installations:

- 24" level,
- Framing square (optional),
- 8 screws for attaching the brackets to the studs or to a plywood panel.

4.2 VERIFY INSTALLATION REQUIREMENTS

Verify required clearances, availability of 120VAC, access to motor potentiometers, visibility of LEDs, clearances for ductwork and length of ductwork. See Section 3.0 of this manual.

4.3 L-BRACKET INSTALLATION

NOTE: When hanging an SL75/H between joists, the unit may be lowered so that it hangs below the joists. When this is done, the L-brackets must still be anchored to the joists a minimum of 1" above the bottoms of the joists.

NOTE: When installing machine screws into the rivet nuts on the SL75/H, do not over-tighten the screws. The threads in the rivet nuts can be stripped.

User-supplied materials required:

- 1-1/4" x #10 coarse thread pan head sheet metal screws (4)
- Thread-lock

Installation instructions:

See Section 3.1.1 Horizontal Installation Between Wood Joists

- Install the four duct collars on the ends of the SL75/H, using the sheet metal screws provided.
- Loosely install the four L-brackets on the SL75/H using the factory-provided 1/4–20 machine screws. Apply a drop of thread-lock to each screw as it is installed. The L-brackets should be positioned toward the center of the SL75/H, providing clearance for the unit when it is raised into position.
- Raise the SL75/H into its final location.
- Screw the two brackets on one side to its support joist with user-supplied 1-1/4" #10 coarse thread sheet metal screws.
- Screw the other two brackets on the other side of the SL75/H to the other support joist.
- Adjust the SL75/H side-to-side, as desired and then tighten all four L-brackets.

Alternate Installation instructions:

An alternate method of installing an SL75/H is to provide temporary support screws in the joists and then hang the unit on those screws by means of the second set of pre-punched holes in the L-brackets.

NOTE: These instructions are intended for when a duct hoist is not available and installation is being performed by a single person.

- Install the four duct collars on the SL75/H, using the sheet metal screws provided.
- Loosely install the four L-brackets on the SL75/H using the factory-provided 1/4–20 machine screws. Apply a drop of thread-lock to each screw as it is installed. The L-brackets should be positioned toward the center of the SL75/H, providing clearance for the unit when it is raised into position between the joists.
- From the underside of the joists, identify where the unit is to be located.
- On either side of the joist space the unit will occupy, mark four screw locations, one for each of the corner L-brackets. Space the marks such that they are 1" or more below the underside of the sub-floor and 27-1/4" apart. Mark one joist first, then transfer the marks to the second joist, ensuring that the marks on both joists are aligned.
- Use a scratch awl to start each screw hole and install four 1-1/2" x #10 pan head sheet metal screws, leaving them about 1/4" out.
- Raise the SL75/H into position and slip the large bracket holes onto the temporary screws.
- Install and tighten four 1-1/4" x #10 coarse thread pan head sheet metal screws through the smaller holes in the L-brackets.
- Adjust the SL75/H side-to-side as desired. Ensure there is adequate clearance for the door latches to open and for the door to swing open at least 90 degrees.
- Tighten the eight 1/4–20 machine screws that secure the L-brackets in place.
- Remove the temporary holding screws.

4.4 CHAIN INSTALLATION

User-supplied materials required:

- Chain with a minimum load bearing capacity of 90 pounds
- S-hooks for attaching the chains to the SL75/H mounting brackets
- Fastening hardware for attaching the chains to supports
- Thread-lock, medium strength

Installation instructions:

See Section 3.1.2 Horizontal Installation Hanging From Chains

- Install the four duct collars on the SL75/H, using the sheet metal screws provided.
- Attach the four corner brackets to the SL75/H using the factory-supplied 1/4–20 machine screws. Apply a drop of thread-lock (provided by installer) to each machine screw when it is installed.
- Install the four support chains from support points. Chains should be located so that they are splayed slightly outward from the SL75/H, providing sway resistance.
- Install an S-hook on each support chain.
- Raise the SL75/H and slip the S-hooks onto the mounting brackets. Crimp the S-hooks shut.
- Install a Vibration Isolator Spring onto each chain such that it shortens the chain and permits the springs to support the SL75/H. Correctly installed springs and chains should result in the springs extending about 1" each.

NOTE: When installing machine screws into the rivet nuts on the SL75/H, do no over-tighten the screws. The threads in the rivet nuts can be stripped.

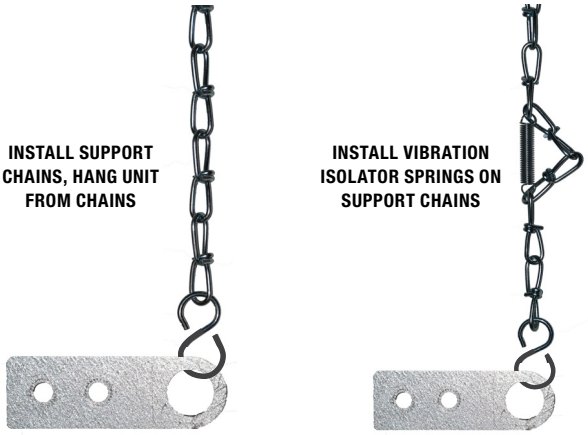

FIGURE 4.4.0 SUPPORT CHAIN INSTALLATION

4.5 WALL BRACKET INSTALLATIONS

User-supplied materials required:

- Thread-lock
- 2" x #10 pan head sheet metal screws (8) if installing directly into wood wall studs
- 3/4" x #12 pan head sheet metal screws (8) if installing on a user-supplied plywood panel
- 3/4" thick plywood for mounting panels if two wall studs can not be spanned

Installation instructions:

See Section 3.1.3 Vertical Installation on a Wall or Panel

- Install the four duct collars on the SL75/H, using the sheet metal screws provided.
- Using a spirit level, draw a level line 26-1/4" long on the wall or the mounting panel. This represents (approximately) the bottom edge of the SL75/H.
- Draw a second level line exactly 17-1/4" above the first level line.

NOTE: Wall brackets are to be supported by two wall studs, with two screws per bracket at each wall stud location. If the SL75/H must be positioned such that the brackets can not span two wall studs, a 3/4" thick plywood mounting panel that is large enough to span two wall studs must be provided and installed.

NOTE: When installing machine screws into the rivet nuts on the SL75/H, do not over-tighten the screws. The threads in the rivet nuts can be stripped.

- Place a framing square on the lower level line and extend a plumb line onto both the upper and the lower lines. This will establish the left-to-right positions of the two wall brackets. Alternatively, use a spirit level to make a plumb line.
- Carefully install one wall bracket directly ABOVE the lower level line. The wall bracket must be lined up exactly with the plumb line and must rest precisely above the level line. Pre-drill the holes into the wall studs to prevent the screws from wandering when they are driven in.

  If the bracket is being anchored directly into wood wall studs, use two 2" x #10 coarse thread pan head sheet metal screws per bracket per stud.

  If the bracket is being anchored on metal studs, use two 2" x #10 fine thread pan head sheet metal screws per bracket per stud.
  - If the bracket is being mounted on a plywood mounting panel, use two 3/4" x #12 coarse thread pan head sheet metal screws per bracket, with two screws at each end of the bracket.
  - If #12 screws are being used, the pre-punched holes in the brackets will have to be enlarged.
- Carefully align and install the second wall bracket above the upper line.
- Using four of the factory-supplied 1/4–20 machine screws, place a grommet on each screw and install the screws in the rivet nuts as shown in Figure 4.5.0. Apply a drop of thread-lock on each screw and leave the screws loose, to help in aligning and installing the unit on the two brackets.
- Raise the SL75/H into position and slide the grommets into the hooked part of each bracket end.
- Tug the SL75/H away from the wall to seat the grommets in the brackets and then tighten all four of the machine screws. Do not over-tighten.

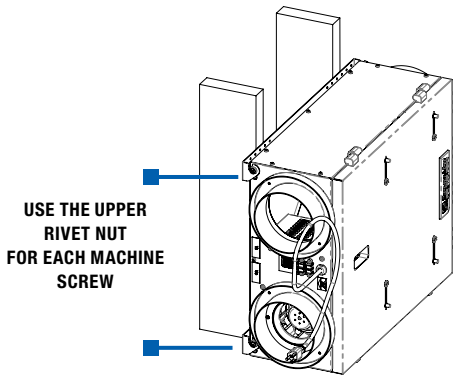

FIGURE 4.5.0 VERTICAL INSTALLATION

⚠ CAUTION

RISK OF ELECTRIC SHOCK OR EQUIPMENT DAMAGE

Whenever electrical wiring is connected, disconnected or changed, the power supply to the ERV and its controls must be disconnected. Lock and tag the disconnect switch or circuit breaker to prevent accidental reconnection of electric power.

4.6 FACTORY-RECOMMENDED ELECTRIC SERVICE ENTRY

4.6.1 SL75

The SL75 have a factory-installed 34" line cord that will need to be plugged into a 120V receptacle for operation.

4.6.2 SL75H

The SL75H are to be hard-wired by the installer. Entry of electric supply wiring is to be through the junction box provided on the unit. The junction box measures 2" x 2" and contains 4" of free length of wire leads. The knockouts in the junction box support 1/2" trade size metal conduit. It may be easier to mount the unit and connect to the junction box before installing the provided duct collars and ductwork.

NOTE: Airflow volumes can be changed at any time by the user as experience dictates. Whenever changing airflow volumes for either Continuous (low speed) or Boost (high speed) modes, the fans should again be balanced.

4.7 FACTORY-RECOMMENDED LOW-VOLTAGE SERVICE ENTRY

All low-voltage connections are made on the exterior of the unit on the low-voltage terminal strip. Field-installed low-voltage wiring does not enter the unit.

4.8 ATTACHING DUCTS

Ducts are to be fabricated and installed per SMACNA guidelines. Use a combination of zip ties, UL-181—rated duct mastic and then secure the duct from slipping off by means of a screw, positioned behind one or more ribs in the duct. Observe Industry Best Practices when installing and supporting the ducts.

4.9 SELECTING AIRFLOW SETTINGS

For assistance in determining correct airflow settings, go to *https://www.renewaire.com/how-to-buy/home-ventilation-solutions/*. This site will provide a basic low-speed (Continuous) air volume for a residence based on factors such as square footage and the number of bedrooms that are to be entered by the user. The resulting airflow volume is to be used as a guide and modified as desired.

The need for boost mode varies by situation. For example, boost mode could be tied to bathroom and shower usage. Alternatively, boost mode might be set for specific times of the day when more people will be in the space being ventilated. In all cases, an HVAC professional should be consulted to determine how to best set the airflow volumes to provide maximum benefit to the inhabitants.

Airflow volumes are set by taking pressure readings at the pressure ports in the unit door and then adjusting the potentiometers, first the two low speed ones, then the two high speed ones. Normally, the low-speed OA and RA potentiometers are set and then the readings are compared to the chart in Section 5.2.1 of this manual. Measuring the pressure drop across the core for each airstream is used to determine the airflow volume.

4.10 BALANCING AIRFLOWS

SL75 & SL75H ERVs provide the ability to deliver and exhaust completely balanced airflows, or to modify them as desired. While balanced airflow is preferred, many owners will prefer to have a slight imbalance, providing a slight excess of Outdoor Air to reduce air infiltration into a home. Some homes may require an imbalance because a furnace or water heater is not direct-vented. Again, an HVAC professional will be able to advise balance settings that will best address the circumstances in each home.

Balancing an airflow is done by setting the Outdoor Air fan speed and then adjusting the Return Air fan speed to eject the same or somewhat less air to the outdoors.

Equipment required for testing airflows:

- A magnehelic gauge (or manometer) or other device capable of measuring 0–1.0 inches water gauge of differential pressure.
- 2 pieces of natural rubber latex tubing, 1/8" I.D., 1/16" wall thickness works best.

Manometers are relatively inexpensive devices that are readily available from online retailers; accuracy within the range of 0–1.0 in. w.g. is the critical measure. Water manometers generally have graduations of 0.1" that are difficult to accurately determine. For all manometers, there are two plastic tubes that connect at the manometer and then the other ends go to pressure ports on the SL75 & SL75H.

Individual differential static pressures (DP) are measured ACROSS the core and filters, using the installed pressure ports located on the removable door.

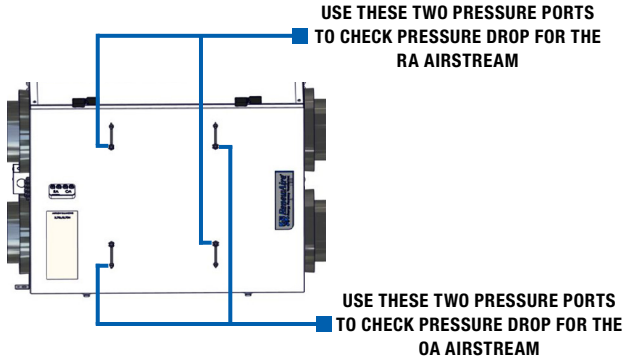

FIGURE 4.10.0 PRESSURE PORT LOCATIONS

- Verify the unit has clean filters in place.
- Open the pressure port caps for the OA airstream and then insert the tubing into the openings about 1".
- Take a differential pressure reading for the OA airstream by installing the “high” pressure side (+) of the measuring device to the OA port and the “low” pressure side (-) to the SA port. Compare the pressure drop to the chart in section 5.2.1 to obtain the CFM. Adjust the fan speed potentiometer (See figure 4.10.1) to obtain the desired CFM. Enter the CFM information in the box in section 5.2.2.
- Take a differential pressure reading for the RA airstream by installing the “high” pressure side (+) of the measuring device to the RA port and the “low” pressure side (-) to the EA port. Compare the pressure drop to the chart in section 5.2.1 to obtain the CFM. Adjust the fan speed potentiometer (See figure 4.10.1) to obtain the desired CFM. Enter the CFM information in the box in section 5.2.2.
- Install a jumper on the low-voltage terminal to force the unit into Boost (high speed) mode. See the wiring diagram in Section 4.11.
- Repeat the process for both airstreams to set both the CFM and balance. Enter the information in the boxes in Section 5.1.
- After adjusting the potentiometers, take additional readings as needed to verify that fan speed settings are correct. See Figure 4.10.1.

NOTE: Adjust low speed fan settings by using the potentiometers marked “L.” Adjust high speed fan settings by using the potentiometers marked with “H.”

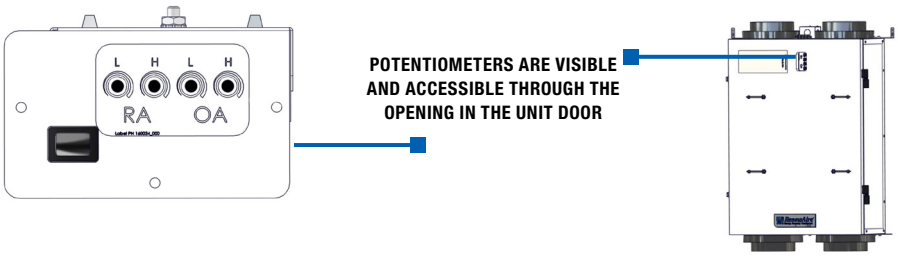

FIGURE 4.10.1 FAN SPEED CONTROL POTENTIOMETERS

4.11 WIRING SCHEMATICS

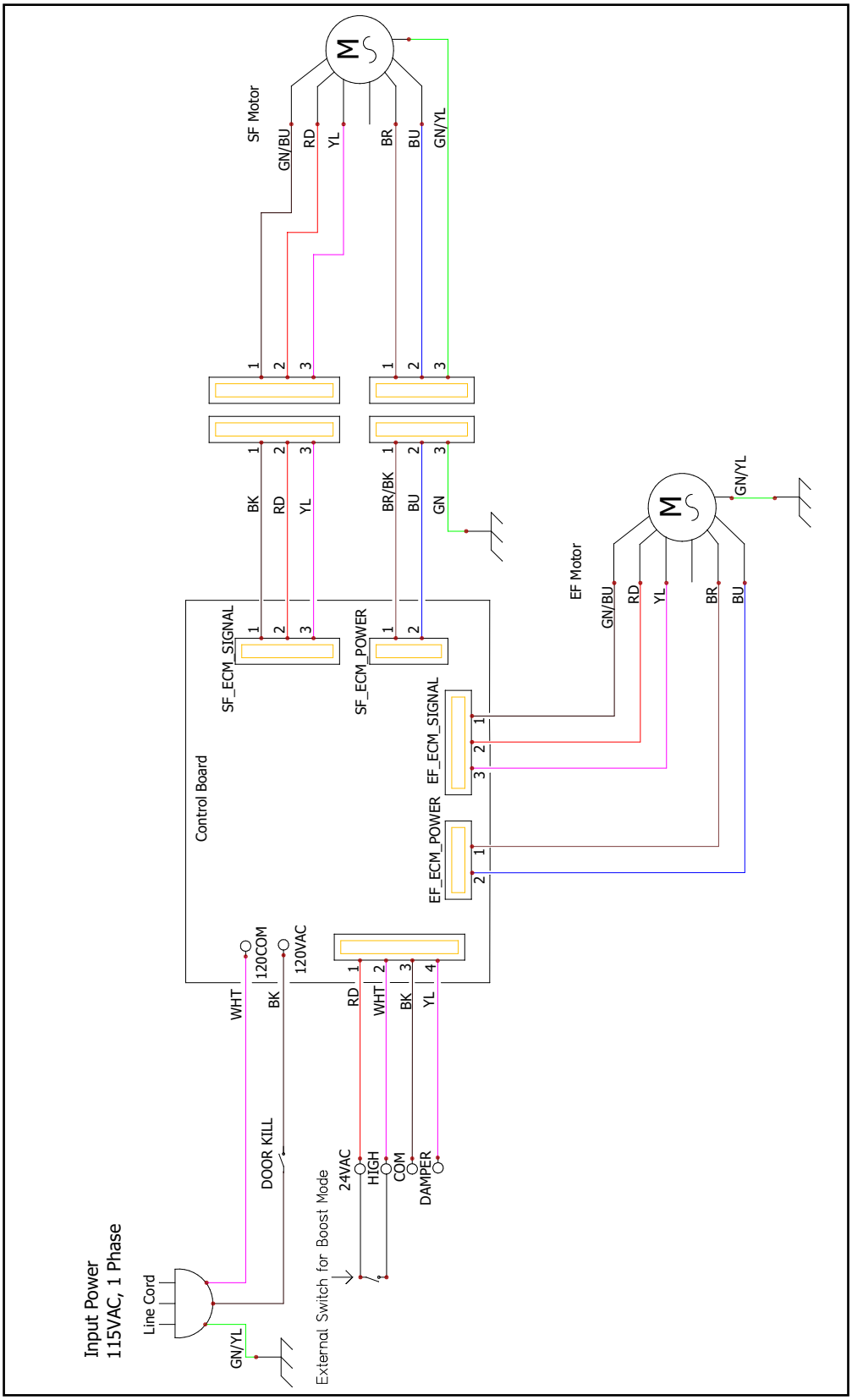

FIGURE 4.11.0 SL75 WIRING SCHEMATIC

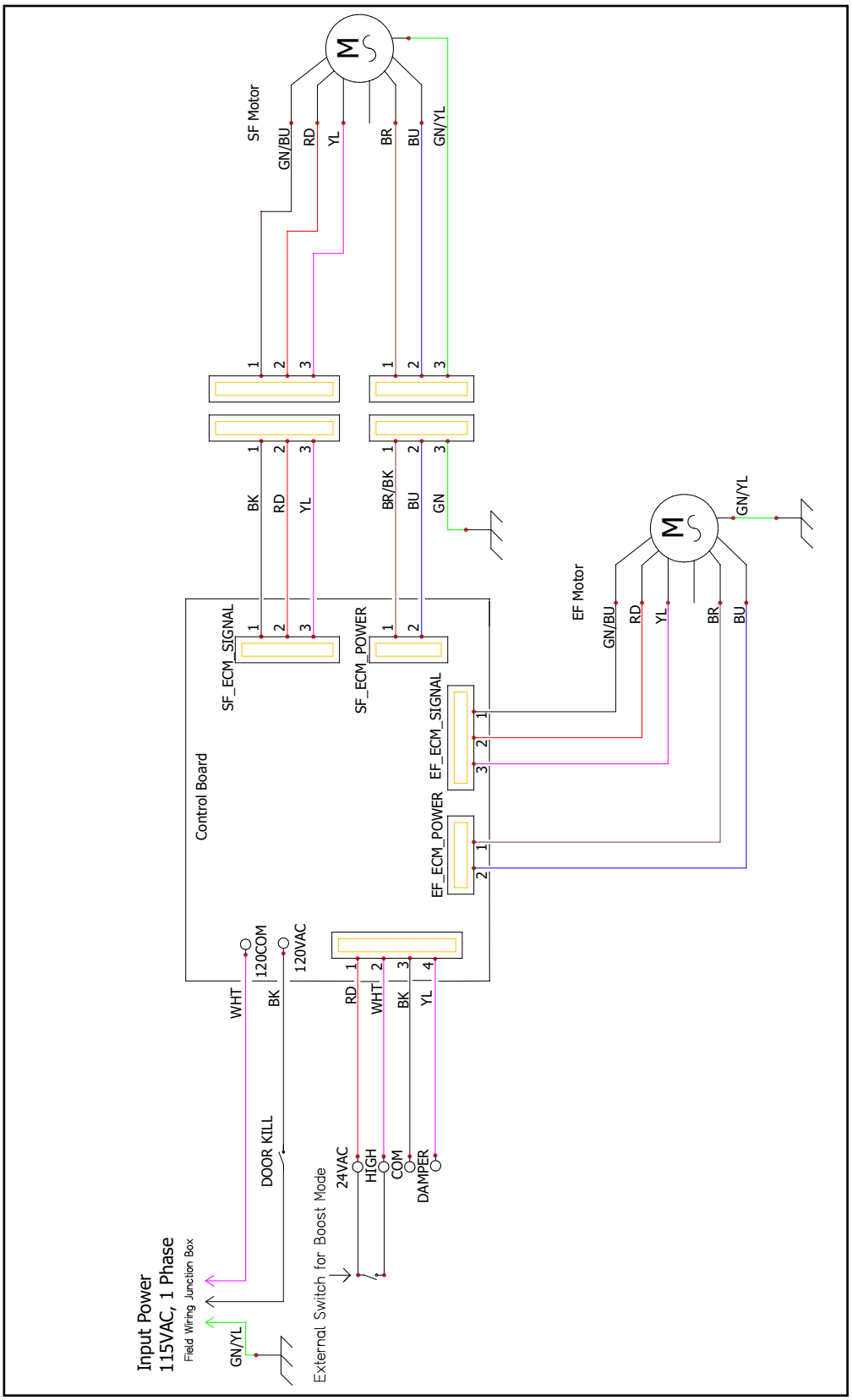

FIGURE 4.11.1 SL75H HARD-WIRED WIRING SCHEMATIC

4.12 LOW-VOLTAGE WIRING DIAGRAMS

4.12.1 Single Speed Mode CONTINUOUS

When plugged in, the unit will run constantly at Low Speed. If the unit is to operate constantly at a single airflow, adjust the OA and RA low speed potentiometers to the desired airflow as described in section 4.10. The high speed potentiometers are not needed for this application.

4.12.2 Low Speed CONTINUOUS/High Speed SWITCHED

The SL75 can be installed to run constantly at Low Speed (Continuous mode) and then switch periodically to Boost Mode in response to a controlling device. To achieve this, the external controlling device, such as a PBT control or an occupancy sensor that is to trigger Boost mode (High Speed), is connected to the 24VAC terminal and to the High Speed terminal.

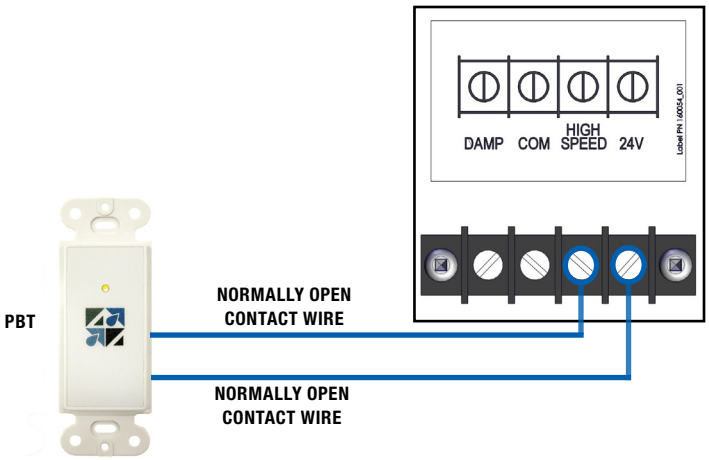

FIGURE 4.12.0 LOW-VOLTAGE WIRING DIAGRAM 1

NOTE: Do not connect either wire from PBT to the COM terminal on the unit.

If multiple controls are desired to operate the unit in Boost mode for different purposes, they may be wired in parallel. The unit control board provides 12VA so the combined power demand for desired accessories must be lower than this threshold. For example, a PBT controller may be wired to a SL75/H unit and up to 6 PBL controls may be connected to the PBT PB terminals in parallel. For additional information see the installation manuals for the control(s) you select for wiring diagrams and specific instructions.

4.12.3 Single Speed Mode SWITCHED (Intermittent)

If the unit is to operate intermittently without a continuous flow, an external controlling device will need to be used as in figure 4.12.0. To achieve this operation, turn the low speed potentiometers fully counterclockwise and connect the desired controlling accessory to the 24V and High Speed terminals on the unit. Set the high speed potentiometers to the desired flow rate for the intermittent operation. When the unit is plugged in, there will be no airflow until the control accessory signals the unit to operate in High Speed mode.

4.13 DAMPER OPERATION

When the ERV is connected to a ducted return of the HVAC system, outdoor air may be pulled through the ERV via the HVAC fan. This can be prevented by installation of a damper at the fresh air outlet of the ERV. RenewAire's MD-Series 24-volt dampers can be wired to a SL75/H unit for this purpose. For more detailed information on installation, please refer to the MD series damper manual.

4.13.1 Damper installation for Continuous ERV Operation

If the ERV is set up to provide continuous airflow, an MD series damper can be wired to the 24VAC and COM terminals on the unit terminal block. The damper will open whenever the unit has 120VAC power and close when power is lost.

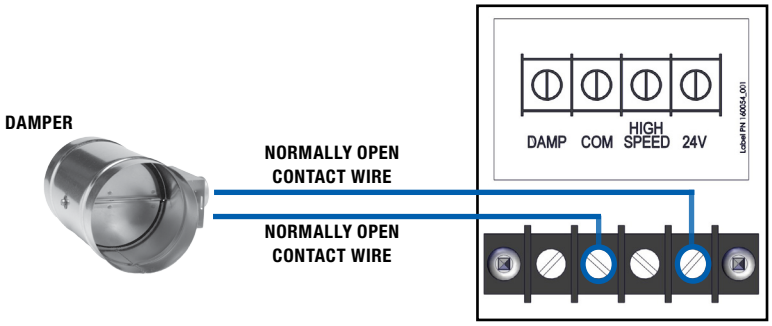

FIGURE 4.13.0 LOW-VOLTAGE WIRING DIAGRAM 2

4.13.2 Damper Installation for Intermittent ERV Operation

If the ERV is intended to operate intermittently as described in section 4.12.3, turn the low speed potentiometers fully counterclockwise and wire a control to the 24V and High speed terminals. Wire the damper to the DAMP and COM terminals. The unit will remain off, and the damper closed until the control activates the high speed terminal. When the High Speed terminal is activated, the unit fans will operate at the flow corresponding to the High Speed potentiometers and the damper will open.

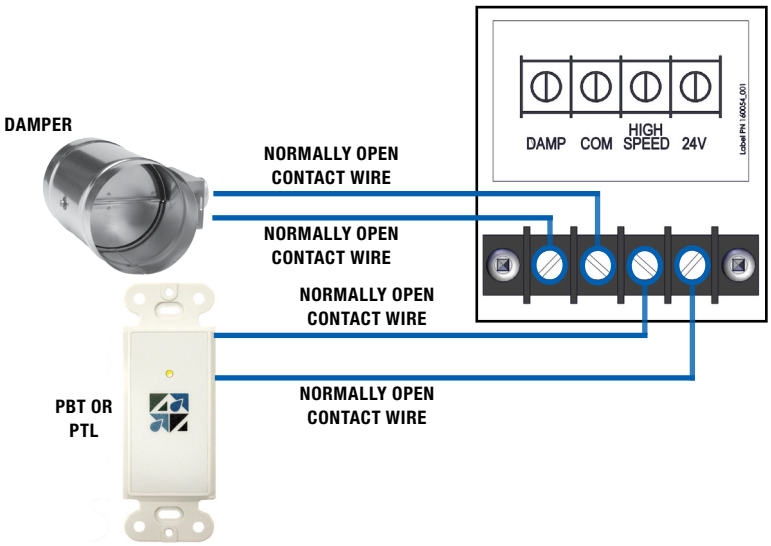

FIGURE 4.13.1 LOW-VOLTAGE WIRING DIAGRAM 3

5.0 OPERATION

5.1 MANOMETER READINGS AT COMMISSIONING

Return Air Pressure Port	In. w.g.:		Pressure Drop:	
Exhaust Air Pressure Port	In. w.g.:			
Outside Air Pressure Port	In. w.g.:		Pressure Drop:	
Supply Air Pressure Port	In. w.g.:			

5.2 AIRFLOW READINGS AT COMMISSIONING

5.2.1 Conversion of Pressure Drop to Airflow

See the tables below.

(Units equipped with clean MERV 8 filters.)

To determine the airflow in CFM, obtain the manometer readings shown above and calculate the differences between them. Then apply the following formula to convert the readings to CFM:

SL75/H: [Airflow in CFM] = 183 x [Pressure Drop in inches w.g.]

EXAMPLE: 1 in. w.g. of pressure drop corresponds to 183 CFM, 0.5 in. w.g. corresponds to 91.5 CFM, and so on.

(Units equipped with a MERV 13 filter in the OA airstream. Formulas below are for OA airstream only.)

SL75/H: [Airflow in CFM] = 154 x [Pressure Drop in inches w.g.]

EXAMPLE: 1 in. w.g. of pressure drop across the core corresponds to 154 CFM, 0.5 in. w.g. corresponds to 77 CFM, and so on.

SL75/H		
Pressure Drop (In. W.G.)	**Airflow with MERV 8 Filters (CFM)**	**Airflow with MERV 13 Filters (CFM)**
0.1	18	15
0.2	37	31
0.3	55	46
0.4	73	62
0.5	92	77
0.6	110	92
0.7	128	108

FIGURE 5.2.0 PRESSURE DROP TO AIRFLOW CONVERSIONS

5.2.2 Continuous Mode (low speed)

Outdoor Airflow:	CFM	
Return Airflow:	CFM	

5.2.3 Boost Mode (high speed)

Outdoor Airflow:	CFM	
Return Airflow:	CFM	

IMPORTANT

This unit is only to be used after completion of building construction. It is not to be used during construction.

6.0 MAINTENANCE

The primary maintenance requirement is filter replacement. Filters are not to be cleaned, they must be replaced. The standard filter as shipped from the factory is a mesh-type, anti-microbial MERV 8. These standard filters are NOT to be sprayed with filter treatments or dust adhesives. The standard mesh-type OA MERV 8 filters may be replaced with pleated paper MERV 13 filters post-construction, if desired. Both filters should be replaced every three months, or more frequently, if needed, based on the clenliness of the OA and RA air entering the unit.

The enthalpic core should be vacuumed annually. Remove the hinged access door by sliding it horizontally on its pin hinges and then remove the filters for access to the core. Use a soft-bristled nozzle on a good vacuum and carefully vacuum the inlet faces of the core.

Ducts should be inspected annually. Ensure all ducts and joints are free from damage, contaminants, or leaks in order for the system to behave properly.

6.1 MAINTENANCE AFTER 30 DAYS OPERATION

After 30 days of unit operation, check/tighten all mounting and support hardware. Inspect filters for cleanliness. There is often construction dust collected during initial operation. If filters appear dirty, replace them.

6.2 RECALIBRATION OF AIRFLOWS

Whenever there is a reconfiguration of the heating system in a residence, to include changing damper positions, the fan speed potentiometers on the SL75/H should be re-calibrated for optimum performance. If the residence undergoes significant structural changes, such as an addition to the home, the SL75/H should also be re-calibrated. If optional MERV 13 filters are installed, recalibration is also required.

6.3 DOOR REMOVAL

The hinged door is held in place by two separable hinges on one edge and two security latches on the other edge. The separable hinges have a spring-loaded detent to prevent accidental separation. To remove the door, first disconnect power to the unit. Unlatch and open the door and then strike the edge of the door, pushing the door toward the OA/EA side of the unit.

6.4 SERVICE PARTS

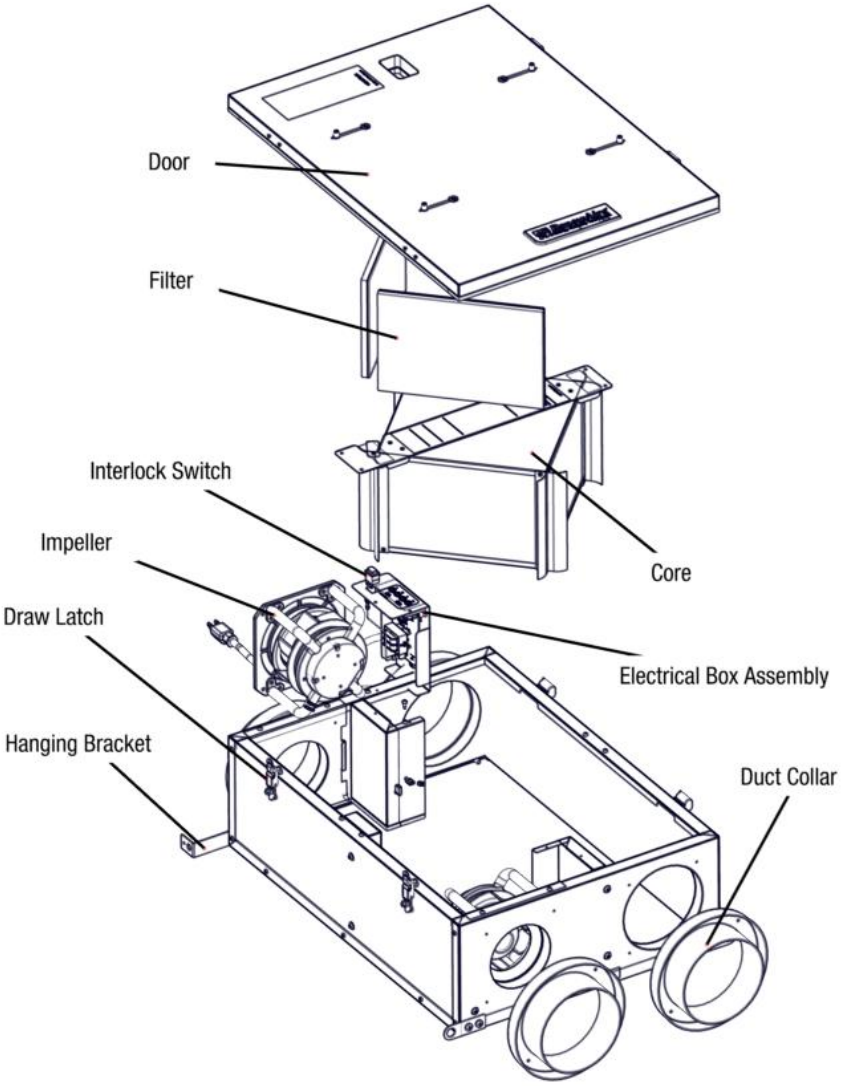

FIGURE 6.4.0 SL75/H SERVICE PARTS

7.0 TROUBLESHOOTING

7.1 INDICATION OF PROBLEM

⚠ CAUTION

Many of the troubleshooting steps described herein require working with or near live high-voltage. Take appropriate precautions against electric shock and use Personal Protective Equipment (PPE) as a safeguard. Wear gloves, safety glasses and protective head gear, as necessary.

Indications of a problem with the ERV may be the perception that fresh air is not being delivered. The first step in resolving an apparent problem with an SL75/H ERV is to verify that there actually is a problem.

Regardless of the reason for thinking there is a problem with the ERV, the first steps in troubleshooting are to check the air filters to make sure they're clean and properly positioned, and then do a hard restart of the unit. A hard restart involves unplugging the unit for several seconds and then plugging it back in. It takes a few moments for the control board to discharge. After reapplying power, check to see if resetting the circuit has solved the problem.

Because there are many different ways of ducting the Supply Air into a dwelling, it's often difficult to say with certainty that the fresh air provided by the SL75/H is not reaching its intended destination or if the ERV is simply no longer providing enough fresh air. Determine where and how the fresh air is supposed to be delivered—if it is being carried in a dedicated duct directly to the air outlet, check for airflow at the outlet.

- Verify that dampers are still correctly positioned (open). If the ERV is being ducted into a main air handling system, shut the air handling system down so that airflow at the ducts can be detected.
- Check for airflow at the air openings nearest to the ERV, not at the far end of the house. It may be necessary to hold a thin strip of tissue paper in front of a vent to realize whether or not there is airflow.
- Check for airflow in both low speed and high speed settings. It will be easier to detect airflow in the high speed setting.
- Check ducts and duct runs and problems with bends, sagging, etc.

7.2 ERV HAS AIRFLOW BUT IS MAKING NOISE

Feel the ERV while it is running to see if there is excessive vibration from the fans. Fan noise and vibration can be caused by an imbalance in the rotors or possibly by a bad bearing. Turn off power to the unit and rotate the fan impellers by hand. Make sure impellers rotate freely. Use wet swabs to clean any dust/dirt buildup off the impeller blades. If problem continues, a fan may have a bad bearing.

7.3 NO APPARENT AIRFLOW FROM THE ERV

If it seems that there is no apparent airflow, verify that it has power.

- If it does not have power, trace the power supply back to its source and isolate the problem or symptoms. Look for a switch turned off, a blown fuse or a tripped circuit breaker. If necessary, use a multimeter to trace the power supply and isolate the problem.
- If it has power and the fans will not run, disconnect all power to the unit and check the disconnect switch with an ohmmeter.
- If it has power, check to see if the fans are running by listening for fan noise and feeling the unit for vibration from the fans.
- If it has power and the fans are running, CHECK THE FILTERS TO MAKE SURE THEY ARE CLEAN. Check the entire length of the ducts, all the way from the outdoor vent hoods to the indoor vent openings. Make sure a duct has not fallen off or that a flexible duct has not been pinched. In rare cases, there may be obstructions inside the duct. Look to see if a louver in an outdoor vent cap is stuck or blocked or if an indoor louver has been shut.
- If it has power but only one fan is running, disconnect all power to the unit and check the fan connectors to make sure they are still making contact.

7.4 INADEQUATE OR REDUCED AIRFLOW FROM THE ERV

If the unit has power and both fans are running, use a manometer to check the pressure differential across the core. See Section 4.10 Balancing Airflows in this manual. The results of a pressure differential test will provide correct information on how much air the unit is moving and also how the volume of air compares to when the unit was first installed. Check both low speed and high speed settings by changing the jumpers on the low-voltage terminal strip, as shown in section 4.11 in this manual. Check ducts for bends, blockages, or leaks.

7.5 ERV FAILS TO RUN IN EITHER LOW SPEED OR HIGH SPEED MODE

The low-speed and high-speed modes operate independently of each other so there can be a failure in just one mode and it does not appear in the second mode. If one mode does not work, the problem can be isolated to either the controlling device or to an internal failure by bypassing the controlling device.

- Remove all wiring from the terminal strip as shown in Section 4.11 of this manual. Mark the wires so they can be reconnected in their proper locations.
- With no jumper present, check for proper operation.
- Install a jumper wire from the 24VAC terminal to the High Speed terminal. Check for proper operation. Remove the jumper wire and reinstall the control device wiring.

7.6 NO APPARENT REASON FOR LOW AIRFLOW

The final step in troubleshooting an ERV problem is to reset the fan potentiometers. Use a manometer and follow the instructions in Section 4.10 Balancing Airflows in this manual. Restore the pressure differential settings to their original airflow settings (CFM), as recorded in Section 5.1.

8.0 FACTORY ASSISTANCE

In the unlikely event that you need assistance from the factory for a specific issue, make sure that you have the information called for in the Unit Information page in the front of this manual. The person you speak with at the factory will need that information to properly identify the unit.

To contact RenewAire Customer Service:

Call 800-627-4499

Email: RenewAireSupport@RenewAire.com

About RenewAire

For over 40 years, **RenewAire has been a pioneer in enhancing indoor air quality (IAQ)** in commercial and residential buildings of every size. This is achieved while maximizing sustainability through our fifth-generation, static-plate, enthalpic-core **Energy Recovery Ventilators (ERVs) that optimize energy efficiency**, lower capital costs via load reduction and decrease operational expenses by minimizing equipment needs, resulting in significant energy savings. Our ERVs are competitively priced, simple to install, easy to use and maintain and have a quick payback. They also enjoy the industry's best warranty with the lowest claims due to long-term reliability derived from innovative design practices, expert workmanship and **Quick Response Manufacturing (QRM)**.

As the pioneer of static-plate core technology in North America, RenewAire is the largest ERV producer in the USA. We're **committed to sustainable manufacturing** and lessening our environmental footprint, and to that end our Waunakee, WI plant is 100% powered by wind turbines. The facility is also one of the few buildings worldwide to be LEED® Gold and Green Globes certified, as well as having achieved ENERGY STAR Building status. In 2010, RenewAire joined the Soler & Palau (S&P) Ventilation Group in order to provide direct access to the latest in energy-efficient air-moving technologies. For more information, visit: renewaire.com

201 Raemisch Road | Waunakee, WI | 53597 | 800.627.4499 | RenewAire.com

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