

INSTALLATION, OPERATION & MAINTENANCE MANUAL ENERGY RECOVERY VENTILATOR

HE2XRT



MODEL: HE2XRT





ABOUT RENEWAIRE

For over 30 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).

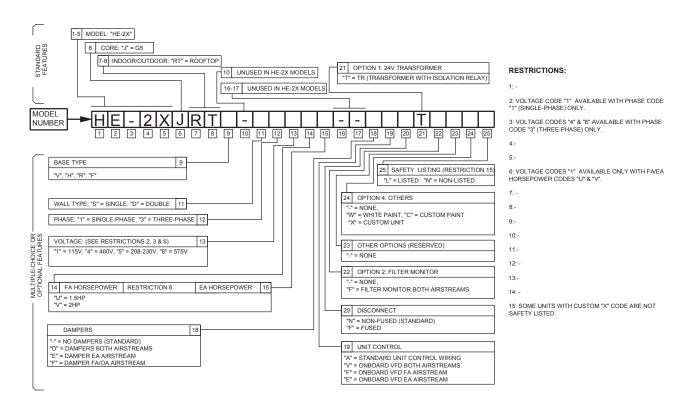
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As the pioneer of static-plate core technology in North America, RenewAire is the largest ERV producer in the USA. We're committed to sustainable manufacturing and lessening our environmental footprint, and to that end our Madison, WI plant is 100% powered by wind turbines. The facility is also one of the few buildings worldwide to be LEED 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.

HE2XRT INFO

HE2XRT CONFIGURATION CHART











ROOFTOP UNIT



SPECIFICATIONS

Ventilation Type:

Static plate, heat and humidity transfer

Typical Airflow Range: 500-2,000 CFM AHRI 1060 Certified Core: Two L125-G5

Standard Features:

TEFC Premium efficiency motors Motor starters

Non-fused disconnect

24 VAC transformer/relay package

Filters:

Total qty. 4, MERV 8: 20" x 20" x 2"

Unit Dimensions & Weight:

87 1/2" L x 43 1/2" W x 42 1/2" H 498-643 lbs., varies by option(s)

Max. Shipping Dimensions & Weight (on pallet):

96" L x 47" W x 50" H 740 lbs.

Motor(s):

Qty. 2, Belt drive blower/standard motor packages with adjustable sheaves (see table below)

Options:

Fused disconnect

Double wall construction

Factory supplied and mounted variable frequency drives (VFDs) - one or both airstreams

Motorized isolation dampers - OA, EA or both airstreams

Qty. 2, Factory mounted filter alarms Exterior paint - white, custom colors

Accessories:

Filters - MERV 13, 2" (shipped loose)

Roof curb - standard 14"

Curb wind clip

Engineered combo curb for Carrier RTU

Engineered combo curb for Trane RTU

Digital time clock - wall mount (TC7D-W),

in exterior enclosure (TC7D-E)

Motion occupancy control - ceiling mount (MC-C), wall mount (MC-W)

Carbon dioxide control - wall mount (CO2-W),

duct mount (CO2-D)

Electric duct heater - EK series (1-60 kW); designed for indoor ductwork installation only

AIRFLOW PERFORMANCE

Motor HP		Sheave	External Static Pressure (in. w.g.)													
	Blower RPM	Adj. Turns	0.	0.00 0.25 0.50 0.75 1.00		1.25		1.50								
		Open	SCFM	ВНР	SCFM	ВНР	SCFM	ВНР	SCFM	ВНР	SCFM	ВНР	SCFM	ВНР	SCFM	ВНР
1.5	1192	4	1560	0.7	1460	0.7	1300	0.6	1100	0.5	845	0.4				
	1348	2	1765	1.1	1685	1.0	1560	0.9	1380	0.8	1210	0.7	975	0.6	650	0.4
	1504	0	1970	1.5	1900	1.4	1800	1.3	1670	1.2	1500	1.1	1345	1.0	1135	0.8
2.0	1516	2	2087	1.6	2000	1.5	1915	1.4	1775	1.2	1635	1.1	1475	1.0	1260	0.8
	1594	1	2194	1.8	2110	1.7	2035	1.6	1920	1.5	1765	1.3	1630	1.2	1470	1.1
	1671	0					2145	1.9	2050	1.7	1905	1.5	1775	1.4	1640	1.3

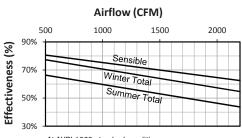
Note: Brake Horse Power (BHP) is for one blower motor package only. Operation in this zone will likely exceed FLA limits. Operation in this zone outside of core airflow limits.

Note: Airflow performance includes effect of clean, standard filter supplied with unit.

ELECTRICAL DATA

	Standard Electrical Specifications							Optional Factory Installed VFD Electrical Specifications				
НР	Volts	HZ	Phase	FLA per motor	Min. Cir. Amps	Max. Overcurrent Protection Device	FLA per motor	Min. Cir. Amps	Max. Overcurrent Protection Device			
1.5	120	60	Single	15.2	34.2	45						
1.5	208-230 208-230 460 575	60 60 60	Single Three Three Three	8.2-7.6 4.6-4.8 2.4 1.8	18.5 10.8 5.4 4.1	25 15 15 15	4.6-4.8 4.6-4.8 2.4 1.8	20.6 11.9 5.9 4.5	25 15 15 15			
2.0	120	60	Single	20.0	45.0	60						
2.0	208-230 208-230 460 575	60 60 60 60	Single Three Three Three	10.8-10.0 6.1-5.8 2.9 2.4	24.3 13.6 6.5 5.4	35 15 15 15	6.1-5.8 6.1-5.8 2.9 2.4	26.0 15.0 7.2 5.9	30 15 15 15			

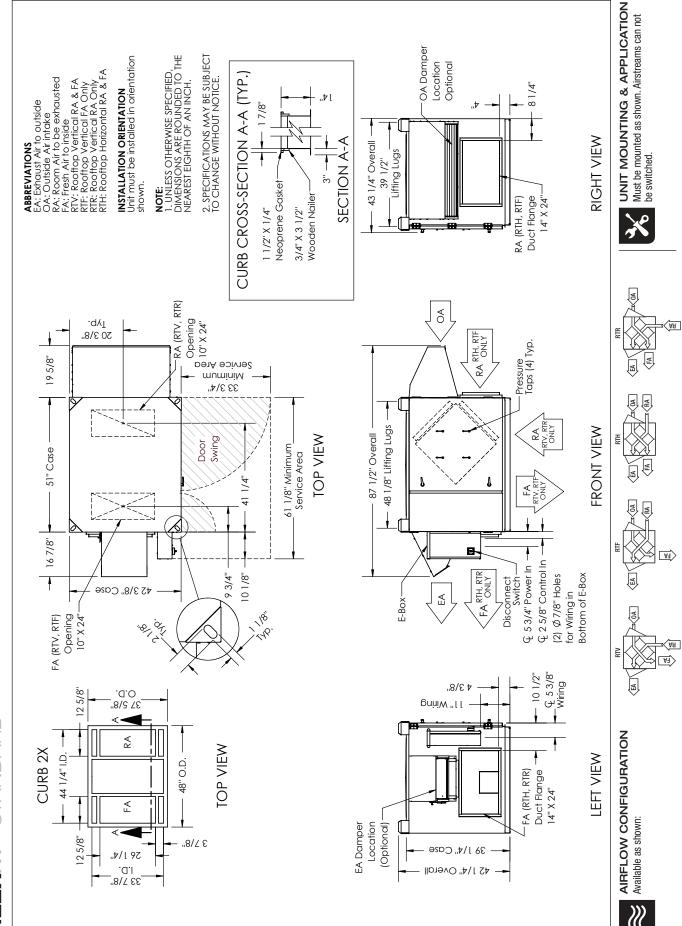
CORE PERFORMANCE



At AHRI 1060 standard conditions. See all AHRI certified ratings at www.ahrinet.org.

Specifications may be subject to change without notice.





MOUNTING OPTIONS

Provide service access to the unit to allow for cleaning the core and filter. The HE2XRT is available from the factory in four different configurations to meet different connection requirements:

OPTION CODE	DESCRIPTION OF DUCT CONNECTION CONFIGURATION	MOUNTING
HE2XRTV	Room Air [RA] enters bottom of unit. Fresh Air [FA] exits bottom of unit. Roof Curb	
HE2XRTR	Room Air [RA] enters bottom of unit. Fresh Air [FA] exits side of unit.	Roof Curb
HE2XRTF	Room Air [RA] enters side of unit. Fresh Air [FA] exits bottom of unit.	Roof Curb
HE2XRTH	Room Air [RA] enters side of unit. Fresh Air [FA] exits side of unit.	Roof Curb or Equipment Rail

PLANNING YOUR INSTALLATION

NOTE: There are always two ducts connected to every HE2XRT unit. Openings for these ducts will be located on the bottom and/or end(s) of the unit.

STANDARD CONFIGURATION

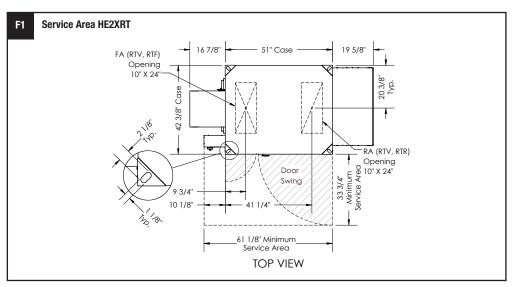
RA = Room Air into Unit

OA = Outside Air into Unit FA = Fresh Air to Inside

EA = Exhaust Air to Outside

PLACEMENT OF THE HE2XRT

The HE2XRT is designed for installation on a roof or other outside location. Select a location that is central to the inside duct runs, and close to any other air handler that might be part of the system.



CAUTION

Provide Adequate Service Access for Maintenance. The unit will require regular filter and core inspections. Install the unit where you can access the core for cleaning and replacing the filters, and where you can get at the wiring for installation and service.

CAUTION

It is the installer's responsibility to make sure that the screws or bolts used for securing the units are properly selected for the loads and substrates involved. Secure the HE2XRT so that it cannot fall or tip in the event of accident, structural failure or earthquake. See Rigging Information for unit weight.

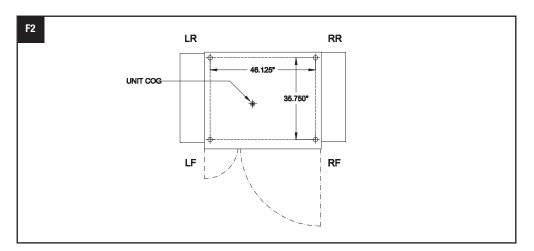
RenewAire strongly recommends that you secure rooftop units properly to the building structure.

Strong winds, tornados, and hurricanes can and do displace or remove rooftop equipment from rails or curbs. When this happens, the equipment, adjacent roof structure, and even vehicles parked near the building can be damaged, and rain typically enters the building. The equipment is put out of service and the collateral damage can be very expensive.



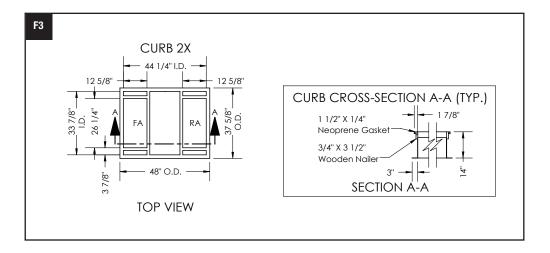
RIGGING INFORMATION

There are pairs of rigging holes at each upper corner of the unit. Use slings or shackles at all four corners. Spreader bars are recommended in order to avoid damage to the unit.



CURB SPECIFICATIONS

HE2XRT UNIT CORNER WEIGHTS (LBS.)										
SINGLE-WALL										
HP & PHASE UNIT LF LR RR RF										
(2) 2HP, 3-PHASE	514	177	125	94	118					
(2) 1.5HP, 3-PHASE	511	176	124	94	117					
(2) 2HP, 1-PHASE	516	178	127	94	117					
(2) 1.5HP, 1-PHASE	498	171	121	92	114					
		DOUBLE-\	WALL							
HP & PHASE	UNIT	LF	LR	RR	RF					
(2) 2HP, 3-PHASE	631	208	158	121	144					
(2) 1.5HP, 3-PHASE	628	207	157	121	143					
(2) 2HP, 1-PHASE	633	209	160	121	143					
(2) 1.5HP, 1-PHASE	615	202	154	119	140					
	* INDICATES LOCATIONS AT WHICH CORNER WEIGHTS ARE CALCULATED ALONG CENTERS OF CURB RAILS.									





$oldsymbol{\Lambda}$ warning

RISK OF FIRE, ELECTRIC SHOCK, OR INJURY. OBSERVE ALL CODES AND THE FOLLOWING:

- Before servicing or cleaning the unit, switch
 power off at disconnect switch or service panel
 and lock-out/tag-out to prevent power from
 being switched on accidentally. More than
 one disconnect switch may be required to deenergize the equipment for servicing.
- This installation manual shows the suggested installation method. Additional measures may be required by local codes and standards.
- Installation work and electrical wiring must be done by qualified professional(s) in accordance with all applicable codes, standards and licensing requirements.
- Any structural alterations necessary for installation must comply with all applicable building, health, and safety code requirements.
- 5. This unit must be grounded.
- 6. Danger of severe injury to bystanders and damage to unit or property if high winds move this unit. Secure this unit to the building!

- 7. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment that might be installed in the area affected by this equipment. If this unit is exhausting air from a space in which chimney-vented fuel burning equipment is located, take steps to assure that combustion air supply is not affected. Follow the heating equipment manufacturer's requirements and the combustion air supply requirements of applicable codes and standards.
- Use the unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- This unit is intended for general ventilating only. Do not use to exhaust hazardous or explosive materials and vapors. Do not connect this unit to range hoods, fume hoods or collection systems for toxics.
- When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.

PLANNING YOUR INSTALLATION

CAUTION

To avoid motor bearing damage and noisy and/or unbalanced impellers, keep drywall spray, construction dust, etc., out of unit.

CAUTION

Do not remove or disable the wiring interconnection between the Overload Relays and the Contactors. Without this interconnection the motor(s) will not be protected against overload.

SOUND ATTENUATION

GENERAL PRACTICES

Take these simple steps to attenuate noise from the unit.

Outside the building:

The exhaust hood is the primary source of noise outside the building. When practical, orient the exhaust air hood to point away from houses or public areas.

At the Curb:

Cut the holes in the roof deck to fit closely around the duct(s) passing through the roof deck. Seal all gaps around the duct(s) at the roof deck.

Ducts:

Make sure the ductwork at the unit outlets is stiff enough to resist the flexure and resulting booming associated with system start-up and shut-off, as well as the turbulent flow conditions at the blower outlets.

In general, provide smooth transitions from the ERV's outlets to the duct. The ducts connecting to the outlets should be straight for a sufficient distance, with gradual transitions to the final duct size.

These guidelines are consistent with SMACNA recommended duct layout practices for efficient and quiet air movement. Follow SMACNA guidelines.

RADIATED NOISE

The HE2XRT is insulated with high-density fiberglass. This provides significant attenuation of radiated sound from the unit itself.

The outlet ducts can be significant sources of radiated sound as well. The FA duct should be insulated for sound control. This insulation should start at the unit. At a minimum the first ten feet of duct should be insulated. All parts of the FA and RA ducts located in a mechanical space with noise-generating equipment also should be insulated for sound control, both to minimize sound radiation out of the FA duct, and also to control sound radiation into both ducts.

AERODYNAMIC (VELOCITY) NOISE

When sound attenuation is a design concern, the primary consideration is velocity noise at the unit's Fresh Air blower outlet. The average velocity at the Fresh Air blower outlet is 868 (RTV, RTF) and 1215 (RTV, RTF) FPM when the unit is operating at 2025 CFM. The average velocity at the Exhaust Hood outlet is 542 FPM when the unit is operating at 2025 CFM.



PLANNING YOUR INSTALLATION

DUCTS TO THE INSIDE

Double-flanged duct connections are provided on the HE2XRTR, RTF, and RTH units. These allow for connection of ducts insulated on the inside or the outside, or for installation of lined duct. Ducts are connected to the flanges with standard S-clips.

Option Code	Room Air (RA) Inlet Inner/Outer	Fresh Air (FA) Outlet Inner/Outer
HE2XRTV	Bottom inlet: 10" x 24"/NA	Bottom outlet: 10" x 24"/NA
HE2XRTR	Bottom inlet: 10" x 24"/NA	Side outlet: 14" x 24"/16" x 26"
HE2XRTF	Side inlet: 10" x 30"/12" x 32"	Bottom outlet: 10" x 24"/NA
HE2XRTH	Side inlet: 10" x 30"/12" x 32"	Side outlet: 10" x 24"/12" x 26"

⚠ WARNING

The unit's fresh air inlet should be at least 10' away from any exhaust, such as dryer vents, chimneys, furnace and water heater exhausts, or other sources of contamination or carbon monoxide. Do not locate the fresh air inlet where vehicles may be serviced or left idling. Never locate the unit inside a structure.

Danger of damage or severe injury if high winds move this unit. Secure unit to structure. Observe local code requirements at a minimum.

INSIDE DUCTWORK SYSTEM

Follow Engineer's Ductwork Design

Ductwork should be designed by an engineer to allow the unit to provide the required airflow.

Duct Transition

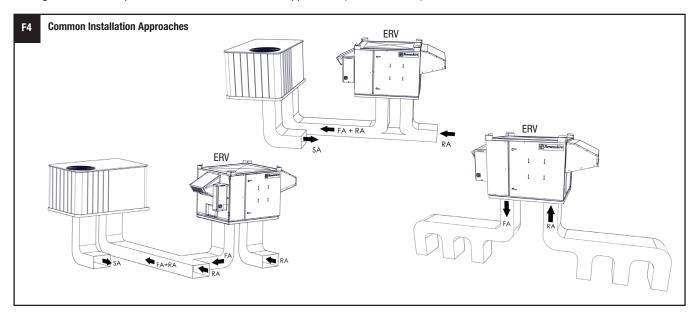
Ducts should enter and exit the unit through smooth gradual transitions.

Duct Insulation

If the inside ducts run through un-conditioned spaces, they must be insulated, with a sealed vapor barrier on both inside and outside of insulation.

APPLICATIONS

See figure F4 for examples of some common installation approaches (HE2XRT shown).





BASIC REQUIREMENTS

Always connect an RA and an FA duct to each Rooftop unit.

- With Rooftop units, the RA and FA ducts cannot be interchanged.
- With RTV units, both ducts are inside the building. In other units, such as the RTR/RTF and RTEC/RTH, that utilize the optional roof adapter, at least one of the ducts is outside and must be weatherized.
- Any weatherized duct must be thermally insulated to prevent condensation on the inside or outside of the duct. The duct lining must be vapor-sealed, and the duct exterior must be rain tight.

Duct(s) connected to the bottom of the HE2XRT are generally installed at this time. Install (2) ducts with HE2XRTV, (1) duct with HE2XRTR or RTF.

Ducts should be insulated on the inside or the outside:

- If insulation is applied to outside of duct, duct should be 12" x 12", with 2" or 3" lips turned out at the top.
- If insulation is applied to inside of duct, duct should be 14" x 1", with 1" or 2" lips turned out at the top.

Drop duct(s) into openings in top of roof curb. Install appropriate gasket on top of Roof Curb and edges of ducts.

CAUTION

Tape both inner and outer vapor barriers of insulated duct to collars on duct adapters. This is critical to prevent migration of moisture into insulation. Build-up of moisture can result in failure of the duct system and/or frost in the insulation. Make sure any tears in the inner and outer vapor barriers are sealed.

PLANNING YOUR INSTALLATION

INSTALLATION INSTRUCTIONS

MOUNTING THE UNIT ON ROOF CURBS

The base of the HE2XRT is designed for installation on typical Roof Curbs that come with 1½" wide wood nailers on the top edge. See figure 3 in PLANNING YOUR INSTALLATION for appropriate curb size.

Set HE2XRT in place. We recommend bolting through sides of unit base into the Roof Curb to secure the unit against high winds.

ON EQUIPMENT RAILS (HE2XRTH ONLY)

Review drawing of Roof Curb and specify Equipment Rail to fit. Before installing HE2XRT, apply roofing and counterflashing to Equipment Rails as per standard practice.

ELECTRICAL SPECIFICATIONS

Electrical Options are identified on the Unit Label (located near electrical box). Find the complete Unit Model Number in the lower left corner of the Unit Label.

⚠ WARNING

Danger of Electrical Shock when servicing an installed unit.

ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING! More than one disconnect switch may be required.

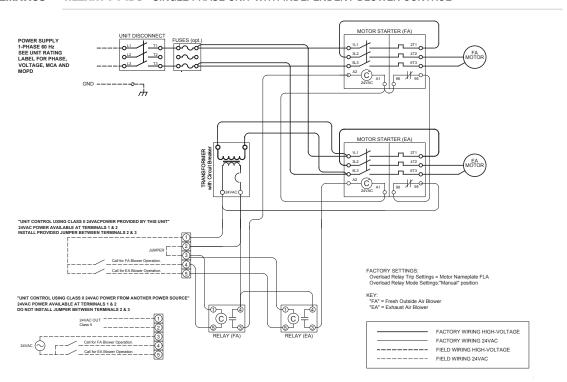
Proper Wiring Size Selection and Wiring Installation are the Responsibility of the Electrical Contractor.

CAUTION

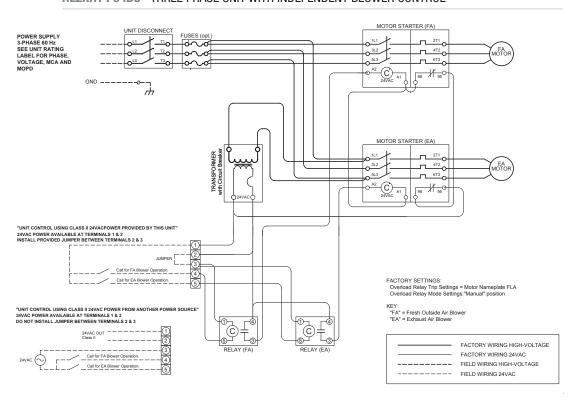
Before bringing power to the unit check unit nameplate to confirm it matches the voltage and phase of the power you are supplying. Remember that your field connections need to be accessible for inspection.



WIRING SCHEMATICS HE2XRT P1 IBC SINGLE PHASE UNIT WITH INDEPENDENT BLOWER CONTROL



HE2XRT P3 IBC THREE PHASE UNIT WITH INDEPENDENT BLOWER CONTROL





INSTALLATION INSTRUCTION

LOW VOLTAGE CONTROL SYSTEM

This ERV is provided with a Class II 24VAC power supply system that operates the unit's contactors. The ERV's 24VAC Power Supply can also be used to power the externally-installed controls system: up to 8VA of power is available.

The unit's power supply system includes isolation relays so you can use external controls whose contact ratings are as low as 50mA (1.2VA). Also, it is possible to operate the isolation relays with 24VAC power from an external source (with proper wiring connections).

A built-in circuit-breaker prevents damage to the transformer and other low-voltage components in the event of a short-circuit or overload. In extreme cases, the transformer itself is designed to fail safely.

SPECIFICATIONS

- Nominal Output Voltage under load: 24VAC
- · Typical Output Voltage at no load: 29-31V
- Minimum contact rating for connected control device: 50mA (1.2VA)
- · Circuit Breaker Trip Point: 3A

CAUTION

- 1. Connect only to components intended for use with 24VAC power.
- Do not undersize the low-voltage wires connected to this device. Observe the wire length and gauge limits indicated in this manual.
- 3. Do not overload this unit's 24VAC power supply system. Confirm that the power requirements of devices you connect to this power supply system do not exceed 8VA in total.
- 4. If an external source of 24VAC power is used to control the unit, consult the wiring schematics and connect the external power only to the specified terminals in order to avoid damaging the unit or external controls. Connect only CLASS II power to the control terminals of this unit.
- 5. Unit is not equipped to receive analog signals (such as 1-10vdc or 4-20mA).
- 6. Unit is not equipped to communicate directly with Building Management Systems (such as BACNET, LONWORKS, etc.). However, the unit can be controlled by powered or non-powered contacts operated by any kind of control system.

HOW TO RESET THE 24VAC CIRCUIT BREAKER

If the transformer is subjected to an excessive load or a short circuit, the circuit breaker will trip to prevent the failure of the transformer. When it trips the circuit breaker's button pops up. Shut off the primary-side power to the unit, and remove the excessive load or the short. The circuit breaker can be reset about fifteen seconds after it trips by pressing in the button.

LIMITS OF POWER OUTPUT

If limits on wire gauge and length are observed, you may connect control devices that draw up to 8VA to the blue and red wires. More than one device can be connected as long as total steady-state load does not exceed 8VA.

OBSERVE THESE LIMITS TO WIRE LENGTH AND GAUGE in order to ensure reliable operation of the control system. Wire Gauge #22 #20 #18 #16 #14 #12 **Circuit Length** 100' 150' 250' 400' 700' 1000' "Circuit Length" is distance from ERV to Control Device.

INSTALLATION NOTES

If primary-side voltage is 230VAC, move black primary-side lead from transformer's "208V" terminal to the transformer's terminal marked "240V" ("230V" in some units).

Do not move the black primaryside lead that is connected to the transformer's "COM" terminal.



CONTROL WIRING SCHEMATICS

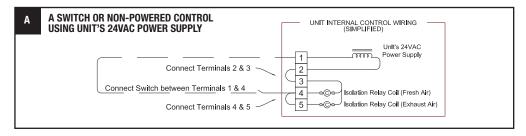
NOTE: The simplified schematics below show only the relevant portions of the low-voltage control circuit in the ERV unit and representational external control approaches. See the complete unit schematics elsewhere in this manual.

CONTROL WIRING EXAMPLES BY TYPE OF APPLICATION

A. Single 2-wire Control: Use schematic below if the control requires no power from the unit to operate and acts like a simple on/off switch. The control must not supply any power to the ERV unit. Install jumper (provided) between terminals 2 & 3. Connect the control's contacts to terminals 1 & 4 to operate the ERV's Isolation Relay for OA/FA Blower. Install jumper between terminals 4 & 5 to operate the ERV's Isolation Relay for the RA/EA Blower.

CAUTION

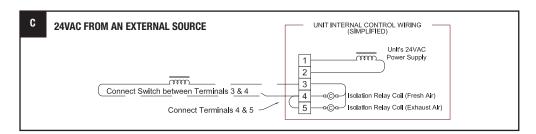
Make sure the control provides no voltage or current at its output terminals.



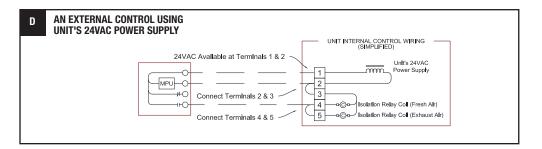
- B. Single 2-wire Control on separate Power Supply, no power present at Control Output: Wire as shown for the Single 2-wire control (A. above).
- **C.** Control Sending 24VAC "On" Signal (from an external power source) to ERV: Make sure jumper is NOT installed between Terminals 2 & 3. Now you safely can apply 24VAC to the Terminals 3 & 4 to operate the ERV's Isolation Relay for OA/FA Blower. Install jumper (provided) between terminals 4 & 5 to operate the ERV's Isolation Relay for the RA/EA Blower.

CAUTION

Supply only 24VAC (not VDC) from a Class II Power Source.



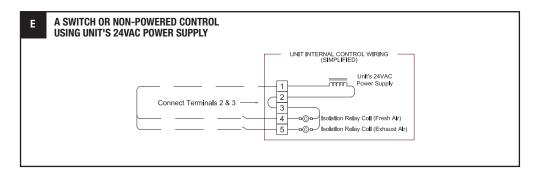
D. Control operating on Unit's 24VAC Power Supply: 24VAC power is available at the Terminals 1 & 2. CAUTION: external control system should not draw more than 8VA. Install jumper (provided) between terminals 2 & 3. Connect the switched output of the Control to Terminal 4 to operate the ERV's Isolation Relay for 0A/FA Blower. Install jumper between terminals 4 & 5 to operate the ERV's Isolation Relay for the RA/EA Blower.





E. Control System with 2 Non-powered Relay Contacts: Use this schematic if the external control system provides no voltage or current at its output contacts. Install jumper (provided) between terminals 2 & 3. Connect one side of each of the output contacts to Terminal 1. Connect the other side of the output contact to control the FA Blower to Terminal 4, and the output contacts to control the EA Blower to Terminal 5.

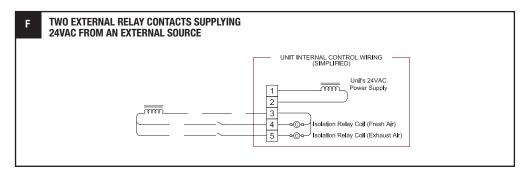
CONTROL WIRING SCHEMATICS



CAUTION

Make sure the control provides no voltage or current at its output terminals.

F. Control System Sending two 24VAC "On" Signals from an external power source: Make sure the jumper is NOT installed between Terminals 2 & 3. Now you safely can apply one of the 24VAC signals to Terminals 3 & 4 to operate the ERV's isolation relay for the Fresh Air Blower. Apply the second 24VAC signal to Terminals 3 & 5 to operate the ERV's isolation relay for the Exhaust Blower (make sure the polarity of each wire connected to Terminal 3 is the same).



CAUTION

Supply only 24VAC (not VDC) from a Class II Power Source.

G. Control System Operating Isolation Dampers with End Switches: Use Isolation Dampers with electrically separate end switches. The end switches are used to separately control the ERV unit's Isolation Relays. This ensures that each damper is open before the respective blower starts up.

NOTE: Because the ERV's Motor Starters will only be operating once the Dampers are open, the power draw of the Damper Actuators is allowed to be as much as 35VA while opening (including power draw of the external control system, if any). However, the power draw of the fully-opened (stalled) Actuators (and external control system if any) must be less than 8VA. (Most damper actuators have much lower power draws.)



OPERATION

PRINCIPAL OF OPERATION

The HE2XRT has one basic purpose: to exhaust air from a structure and bring in fresh air from outside, while transferring heating or cooling energy from the exhaust air to the fresh air.

The HE2XRT is a very simple device, and will accomplish this purpose as long as the blowers for both airstreams are able to move air through the energy-exchange core.

CHECKING THAT UNIT IS OPERATING

Air Flow

Airflow should be occurring in both airstreams. Sometimes the easiest place to confirm that air is moving is at the weatherhoods.

If exact airflow is critical, it may be desirable to permanently install flow measuring stations and manometers in the ductwork connected to the unit. These also can be used to determine when filters should be cleaned or changed.

Use Static Taps in Doors to Measure Airflow Rates

See "Cross-Core Static Drop" in MEASURING AIRFLOW table. These may be used to directly measure airflow in the unit.

Energy Exchange

Precise determination of installed sensible energy exchange effectiveness requires careful measurement of temperatures and air flows in all four air streams, and in practice is somewhat difficult.

It is possible to confirm that energy is being exchanged simply by feeling the ducts. If the Fresh Air duct from the unit into the room is closer to room temperature than to the outside temperature, energy is being recovered.

Operating Controls

A wide variety of control schemes may be selected by the engineer, installer, or owner to meet the ventilation needs of the facility. These may include timer clocks, occupancy sensors, dehumidistats (for cool-weather operation), carbon dioxide sensors, and others. DDC systems may also control the unit. Most control schemes will operate the unit only when needed.

CONTINUOUS OPERATION

Continuous operation is acceptable in virtually all conditions. Unit will not be damaged by continuous operation as long as air flow occurs. Blower motors may overheat if filters become completely blocked due to lack of maintenance. Motors are thermally protected. With continuous operation, some external frosting may occur in very cold weather (see OPERATION IN EXTREME COLD WEATHER).

OPERATION IN EXTREME COLD WEATHER

Unit is capable of operating at outside temperatures down to -10°F, with indoor humidities below 40%, without any internal frosting. Unit can operate at more severe conditions occasionally with little or no impact on its performance. At lower humidities, it can operate at lower outside temperatures without freezing the energy-exchange core.



MOTOR STARTERS

This unit uses IEC-style motor starters to protect the motors against overload.

IEC-style motor starters use Overload Relays to detect excessive current and interrupt the control circuit that engages the motor's contactors.

⚠ WARNING

The Overload Relay output contacts 95 & 96 must remain in series with the low-voltage control circuit! Altering this will create a hazardous situation in which the motor is not protected against overload!

Adhere to applicable local codes when adjusting the dial setting of the overload relays.

Overload Relays are sized to Full Load Amp (FLA) rating of the protected motor. The Overload Relays can be adjusted to trip (interrupt the control circuit) at a specific setting within a range.

Overload Relays should initially be set at the FLA rating of the motor (see Unit Rating Label). If necessary to prevent nuisance tripping at start-up, the Relays can be adjusted to trip no higher than 115% of the motor's FLA rating.

For safest operation, the overload relays should also be used in manual reset mode with trip test capability.

NOTE: As factory-wired, if one blower motor is shut down due to overload by its Motor Starter, the other motor will also be shut down.

NOTE: Terminals 96 & 97 of the Overload Relays and terminals 14 & 13 of the Contactors are normally-open dry contacts that may be used to signal that the contactors are closed and/or that the Overload Relays have tripped.

OPERATION

↑ WARNING

DANGER OF INJURY OR DAMAGE.

The relay must be set for correct FLA rating depending on the motor horsepower. See Unit Rating Label on motor for HP and FLA specifications.

⚠ WARNING

DANGER OF INJURY OR DAMAGE.

The motors in this unit must not be run at an amperage that exceeds the motor's rated full load amps and overload relays on the motor starters must be set at or below motor full load amps. For safest operation, the overload relays should also be used in hand reset mode with trip test capability.

It is the installer's responsibility to measure the operating amperage of each motor. If the full load amp rating is exceeded, the amp draw must be reduced by substituting a smaller motor pulley or by adjusting the variable sheave. Continue these adjustments until the actual amperage is no more than the motor's faceplate full load amps.

Failure to make this adjustment may result in unsafe motor winding temperatures or tripping of the supplied motor starter's overload relay motor protection devices set at full load amps.



MEASURING AIR FLOW

EQUIPMENT REQUIRED

- A magnehelic gauge or other device capable of measuring 0 to 1.5 in. water of differential pressure.
- 2 pieces of natural rubber latex tubing, 1/8" ID, 1/16" Wall works the best.

NOTE: Be sure to remove cap from pressure port before inserting tubing. Insure tubing is well seated in pressure ports.

NOTE: The tubing should extend in the pressure port approx. 1 inch.

CAUTION

The proper operating airflow range for this model is 500 - 2200 CFM.

CROSS CORE STATIC PRESSURE MEASUREMENT INSTRUCTIONS

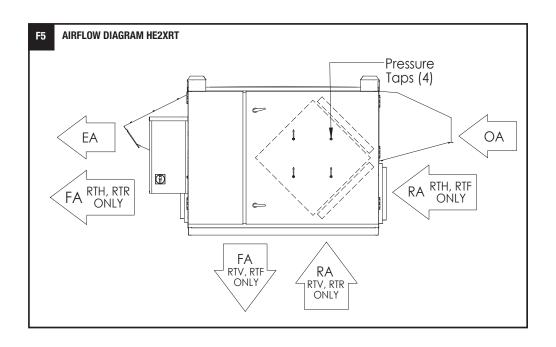
The individual differential static pressures (DSP) can be measured using the installed pressure ports located in the front of the units core access doors.

NOTE: These ports have been carefully located on the unit as to give you the most accurate airflow measurement. Do not relocate pressure ports.

- To read SCFM of Fresh Air (FA) install the "high" pressure side (+) of your measuring device to the Outside Air (OA) port and the "low" pressure side (-) to the Fresh Air (FA) port.
- To read SCFM of Room Air (RA) install the "high" pressure side (+) of your measuring device to the Room Air (RA) port and the "low" pressure side (-) to the Exhaust Air (EA) port.
- Use the reading displayed on your measurement device to cross reference the CFM output using the conversion chart.

NOTE: Be sure to replace cap into pressure port when air flow measuring is completed.

DIFFERENTIAL STATIC ACROSS CORE DSP VS. CFM									
L		DSP	0.20	0.30	0.40	0.50	0.60	0.70	0.80
HE2XRT	Fresh Air (FA)	CFM	550	820	1190	1370	1640	1920	2190
Ŧ	Room Air (RA)	CFM	560	850	1130	1410	1690	1970	2250

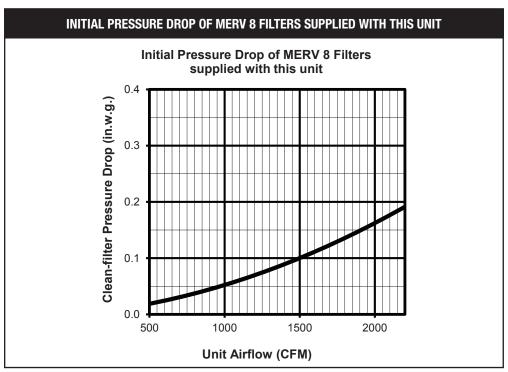




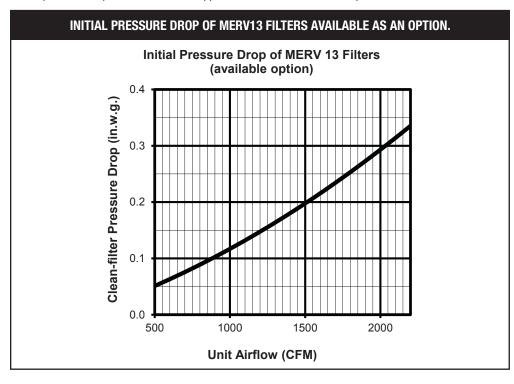
MEASURING AIR FLOW

FILTER SPECIFICATIONS

- (4) 20" x 20" x 2" (nominal) pleated filters. Actual size: 19.5" x 19.5" x 1.75".
- Unit shipped with MERV-8 Filters. Minimum recommended effectiveness: MERV-6



NOTE: pressure drop of <u>standard</u> filter supplied is included in unit airflow performance tables

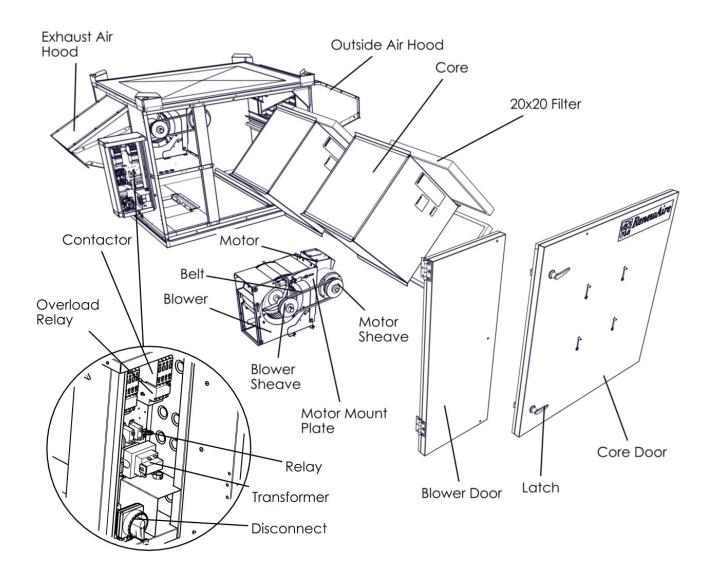




MAINTENANCE

SERVICE PARTS

HE2XRT





MAINTENANCE

REQUIREMENTS

⚠ WARNING

Danger of injury from un-guarded drive belts in unit. Disconnect power to unit before opening door. Danger of injury if unit starts unexpectedly. Switch power off at service disconnect. Lock-out/tag-out the disconnect.

TO CLEAN THE ENERGY EXCHANGE ELEMENT

Vacuum the face of the energy exchange element yearly. Dust collects only on the entering face of the energy exchange element, right where the filter sits. The interior of the energy exchange element stays clean even if the element faces are dust covered. The RenewAire core airflow paths are designed to transport the air in a laminar motion. The core flutes move the air in a laminar airflow such that particulate deposition is maintained at virtually nill.

- 1. Remove the filters.
- **2.** Vacuum the exposed faces of the energy exchange core with a soft brush.
- 3. Vacuum out dust from the rest of the unit case.
- 4. Install new filters.

INSPECT AND CHANGE THE FILTERS REGULARLY

Inspect and/or replace filters every two or three months when the unit is in regular use, or as needed.

- 1. Turn off unit completely! Lock-out and tag-out the unit disconnect switch.
- Open the Door. The door is secured with turn-type latches or draw latches, plus one Phillips-head securing screw. Keep the securing screw. NOTE: Always replace securing screw when reinstalling door for safety reasons.
- **3.** Remove and dispose of all (4) filters. Replace all (4) filters. **NOTE:** See chart for information on the initial resistance of the filters originally supplied with this unit. If replacement filters have higher resistance, the airflow of the system will be lower.
- 4. Close door; reinstall securing screw.

BLOWER INSPECTION

Inspect Blowers every time you change the filters.

- 1. Confirm bearings are still secure to blower shaft. It should not be possible to move the blower shaft back and forth along its length.
- **2.** Confirm blower wheel is not rubbing against the blower inlet or housing by rotating wheel manually.

BLOWER BELT TENSION

Check belt tension every time you change the filters.

- 1. Inspect belt(s) for cracking or uneven wear.
- 2. Check that sheaves are properly aligned so that belt runs straight.

Properly tensioned belt will deflect 0.25" when pressed at the center point with the following force: 1.5 and 2 HP BLOWER - 3 pounds

GENERAL CLEANING AND INSPECTION

Perform general cleaning and visual inspection when changing filters.

- 1. Remove dust from blower wheels periodically.
- 2. Remove paper, leaves, etc. from inlet and outlet screens.
- 3. Inspect for insect nests.

MOTOR MAINTENANCE

If the motors used in this ERV are equipped with grease fittings, motors must be lubricated as part of routine maintenance. Use Exxon Polyrex or equivalent at 2500 operating hour intervals.

RenewAire* Energy Recovery Ventilation

CAUTION

DO NOT WASH THE ENERGY EXCHANGE CORE.

Keep it away from water or fire to avoid damaging it. Always handle the core carefully.

Filters must be used or the energy exchange core will become blocked by dust and reduce unit efficacy. In extreme cases components may be damaged.

CAUTION

Incorrect Belt Tension will damage this blower and bearings.





UNMATCHED VENTILATION SUPPORT

As much as our unsurpassed quality and performance, our customers can also depend on our professional support staff for swift, professional assistance with all their technical, application, and service needs. **Every time. Anywhere.**

At RenewAire — unlike other ventilation suppliers — advanced ventilation solutions are all we do. Our sole passion. Which is why for all commercial projects, we are the "V" in HVAC... and the only name you need to know.

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