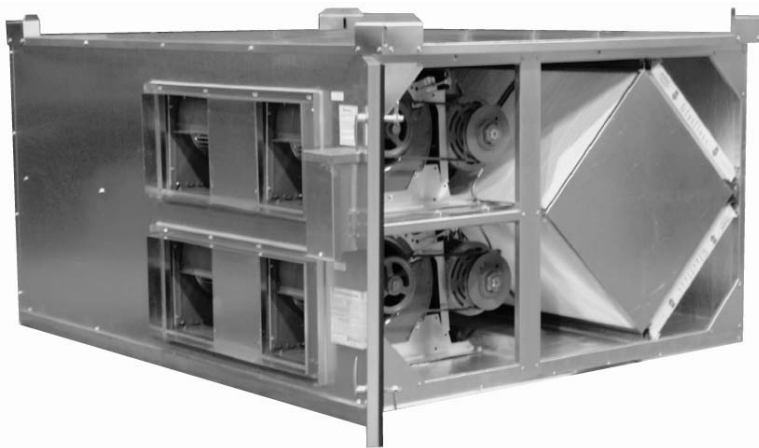


INSTALLATION AND OPERATION MANUAL

HE4XINH



A Participating Company in the ARI
1060 Certification Program

⚠ WARNING

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

1. 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 de-energize the equipment for servicing.
2. This installation manual shows the suggested installation method. Additional measures may be required by local codes and standards.
3. Installation work and electrical wiring must be done by qualified professional(s) in accordance with all applicable codes, standards and licensing requirements.
4. Any structural alterations necessary for installation must comply with all applicable building, health, and safety code requirements.
5. This unit must be grounded.
6. 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.
7. Use the unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
8. 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.
9. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
10. If installed indoors this unit must be properly ducted to the outdoors.

CAUTION

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

Placement of HE4XINH

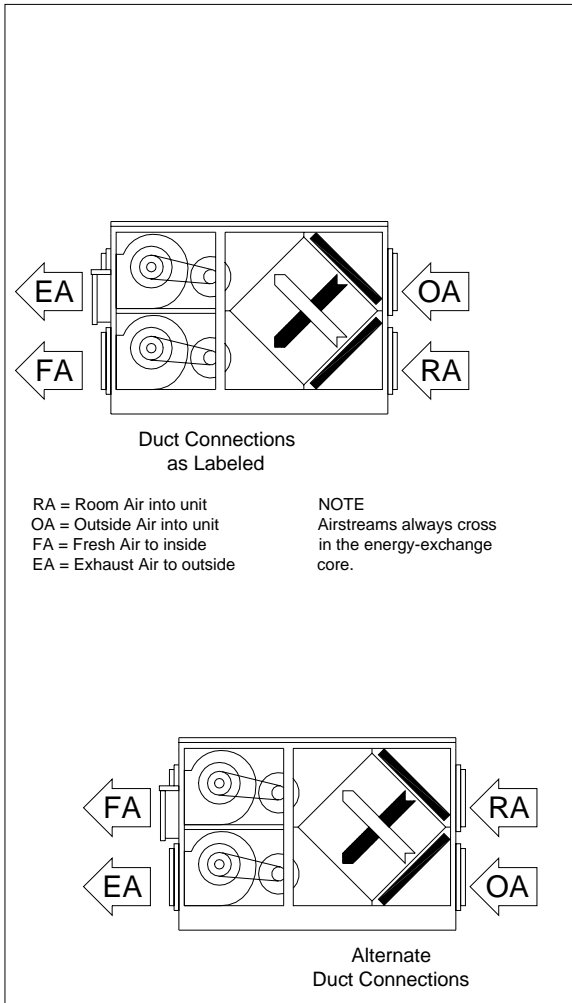
The HE4XINH is designed for installation in a sheltered location, out of the weather.

The preferred mounting location is sitting on a concrete floor. Unit base may be bolted to floor. The concrete will isolate any blower vibration.

Select a location that is central to the inside duct runs, and close to both the exhaust duct (to the outside) and the fresh air duct (from the outside).

The exhaust outlet should not dump air into an enclosed space or any other structure. The inlets and outlets should be screened against insects and vermin and shielded from the weather to prevent the entry of rain or snow.

Install the ERV where you can open the door for cleaning the core and filter, and where you can get at the wiring for installation and service.



Exhaust & Fresh Air Ducts Between HE4XINH & Outside

Insulation

Ducts connecting the HE4XINH to the outside must be insulated, with sealed vapor barrier on both inside and outside of the insulation.

The exhaust outlet and fresh air inlet on the outside of the building should be at least ten feet apart to avoid cross-contamination.

⚠ WARNING

Danger of carbon monoxide poisoning!

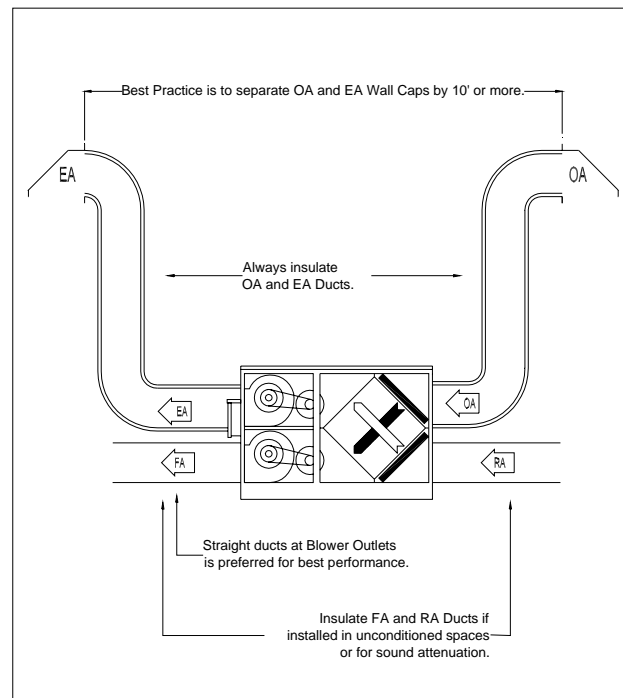
Outside air intake should be at least 10' away from sources of carbon monoxide or other toxic gasses; chimneys, furnace and water heater exhausts, or fume hood outlets.

Do not locate outside air intake where vehicles may be serviced or left idling.

Never locate the outside air inlet inside a structure.

Outside Wall Caps

Wall caps should be designed to exclude animals and rain. Wall caps should be sized for minimum pressure loss. To keep rain from being drawn in, the outside air intake should be large enough to keep inlet velocity below 500 feet per minute, (or as dictated by local practice).



Inside Ductwork System

Follow Engineer's Ductwork Design

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

Design Tips

Air Flow Rates

Design the system to provide the lowest air exchange rate that will accomplish the ventilation goals. At lower air flow rates, energy recovery effectiveness improves. See Product Data Sheet.

Duct Transitions

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.

Picking up Stale Air in the Building

Locate the stale air pick-ups high in rooms where moisture, odor, or other contaminants are generated.

Make the Ducts from the Stale Air Pick-ups to the HE4XINH as simple and direct as possible.

If some duct runs are much shorter than the others, install dampers so you can balance flows. Most rooms require only one stale air pick-up.

Duct Fresh Air from the HE4XINH into the heated space

Fresh Air from the HE4XINH often can be ducted into an existing HVAC air distribution system. Sometimes, however, it is more practical to install a separate distribution system for the Fresh Air.

The Fresh Air supplied by the HE4XINH will be somewhat cooler or warmer than room air in very cold or hot weather. Consider this when deciding how to distribute the Fresh Air.

Connection of Fresh Air from HE4XINH to ducted heating and cooling system:

Avoid a situation in which operation of the main air-handling blower unbalances flow through the HE4XINH. (see **Balance the Air Flows**, below). This is a particular concern if the HE4XINH is to be operated on a different schedule from the main air-handler. Minimize the effect of the air-handler on the HE4XINH by connecting Fresh Air from unit at a point well upstream from the air handler.

Balance the Air Flows

The air flow rate for both the Fresh Air and the Exhaust Air should be roughly equal (or "balanced") for best performance of the HE4XINH. If the HE4XINH is connected to an existing air-handling system it may be necessary to check for balance with and without the main air-handling blower in operation.

In some facilities a slight positive or negative pressure in the building is desired. RenewAire heat recovery ventilators can generally operate with a flow imbalance of up to 20% without appreciable loss in heat recovery efficiency. However, very low exhaust air flow rates may result in frosting of the core during extremely cold weather.

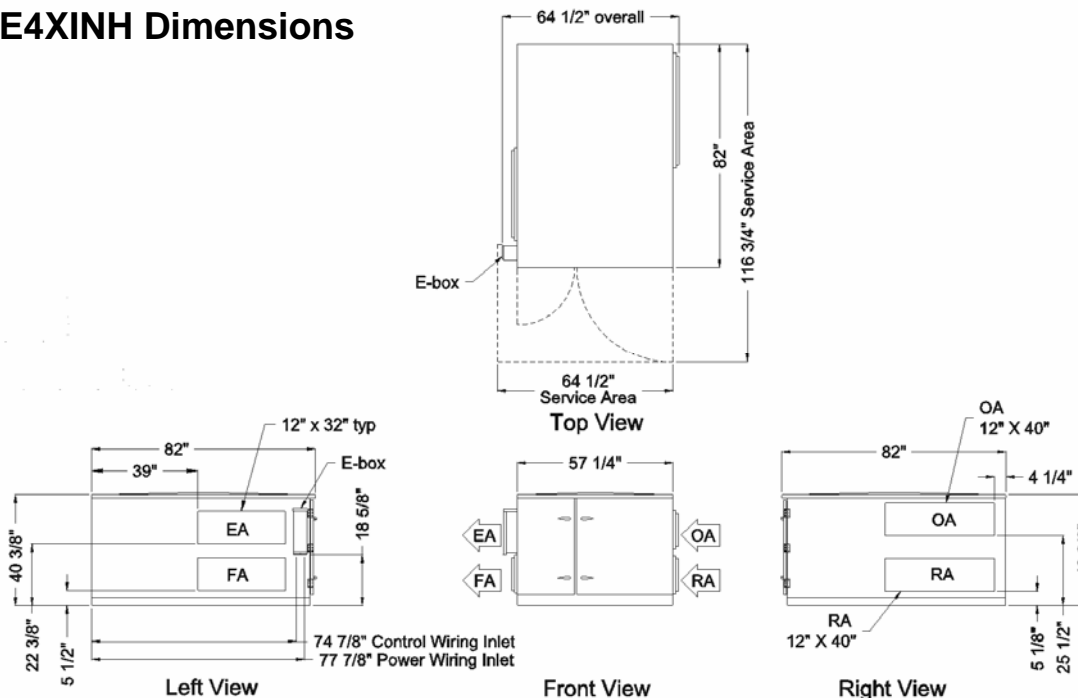
⚠ WARNING

Do not place any stale air pick-ups in garages, loading areas or in fume hoods.

Airflow Performance

ESP & BHP vs CFM and RPM																
Motor HP	Nom RPM	Turns open	0.0" ESP		0.25" ESP		0.50" ESP		0.75" ESP		1.0" ESP		1.25" ESP		1.50" ESP	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
2	1010	4.5	2489	0.9	2200	0.9	1715	0.8	1100	0.7						
	1210	2	2995	1.6	2290	1.5	2430	1.4	2005	1.3	1540	1.2				
	1370	0							2600	2.0	2215	1.9	1800	1.7	1100	1.5
3	1345	4.5	3295	2.1	3145	2.1	2840	2.0	2509	1.9	2116	1.8	1747	1.6	1135	1.5
	1535	2	2832	2.9	3682	2.9	3480	2.8	3170	2.6	2839	2.4	2449	2.3	1878	2.0
	1685	0									3409	3.0	3003	2.8	2465	2.4
5	1495	6	3718	2.7	3568	2.6	3345	2.6	3030	2.4	2686	2.2	2301	2.1	1722	1.9
	1675	3	4223	3.8	4083	3.7	3943	3.6	3659	3.4	3364	3.2	2994	2.9	2490	2.7
	1855	0							4287	4.9	4011	4.6	3760	4.3	3434	4.0

HE4XINH Dimensions

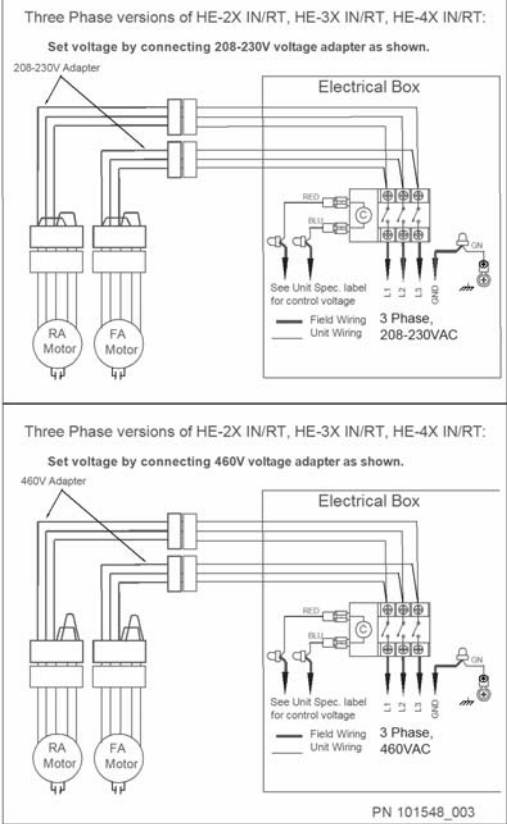


Electrical Specifications

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

Blower & contactor voltages are specified with order and set at factory. Brake Horsepower at various Blower RPM, Motor Rating, and ESP combinations are available on Spec Sheet or from factory. The Unit Model # contains the following codes that specify the blower and contactor voltages
Standard Unit Example: HE-4X K INH S B P3 V5 FK EK A _ _ _ _ _ L

Model Number _____
 Unit Configuration _____
 Unit Phase _____
 P1 = 1Ø; P3 = 3Ø
 Unit Voltage _____
 V1=115V; V4=460V; V5=208/230V;
 V7=208-230/460V; V8=575V
 Fresh Air Motor HP _____
 F2 = 2HP; F3 = 3HP; F5 = 5HP
 Exhaust Air Motor HP _____
 Same options as Fresh Air Motor _____
 Coil Voltage _____
 A = 24 V; B = 115 V; C = 230 V; D = Two 24V (IBC)



⚠ 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.

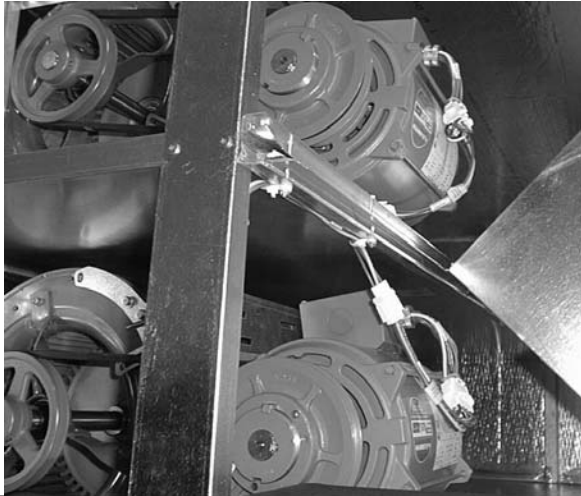
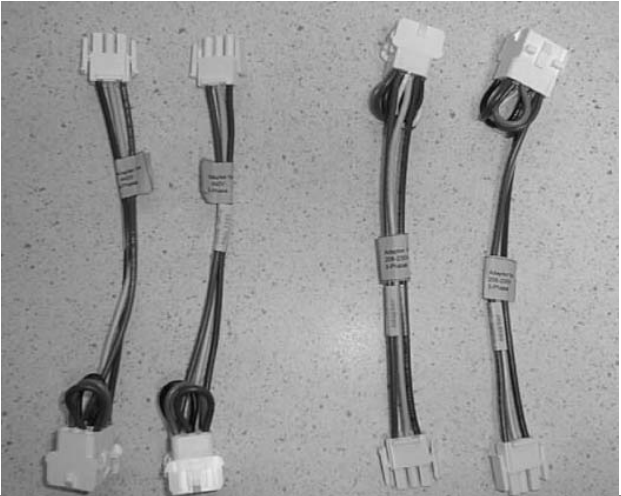
Connect the control signal to the pigtails in the control voltage compartment of the unit's electrical box. Make sure you are connecting the correct voltage to the control pigtails.

Setting Blower Voltage

HE4XINH Units require field-setting of the blower's operating voltage. Note: Single Phase and 575V units come hard wired and do not have voltage adapters.

Follow these steps:

1. Determine voltage of the power supply for the unit.
2. Open the unit's electrical box and find the four loose wiring harnesses. These are the "voltage adapters" (see picture below). Select the two adapters labeled for the unit's power supply. Set the other two aside – they will be discarded.
3. Open the unit door to get access to each motor.
4. Install the two voltage adapters. Each adapter connects one motor to the main wiring harness (see picture below).



HE4XINH Due to continuing product development, specifications are subject to change without notice. © 2007 RenewAir LLC

Operation

Principal of Operation

The HE4XINH 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 HE4XINH is a very simple device, and will accomplish this purpose as long as the blowers for both air streams are able to move air through the energy-exchange core.

Checking that Unit is Operating

Air Flow

Air flow should be occurring in both air streams. Sometimes the easiest place to confirm that air is moving is at the external wall caps.

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

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

Service Disconnect

Unit comes from factory with contactor suitable for switching with externally-supplied power (24VAC or 115 VAC — **set at factory**). Electrical contractor should install near-by service switch to disconnect all power from unit for inspection, filter changes, etc.

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

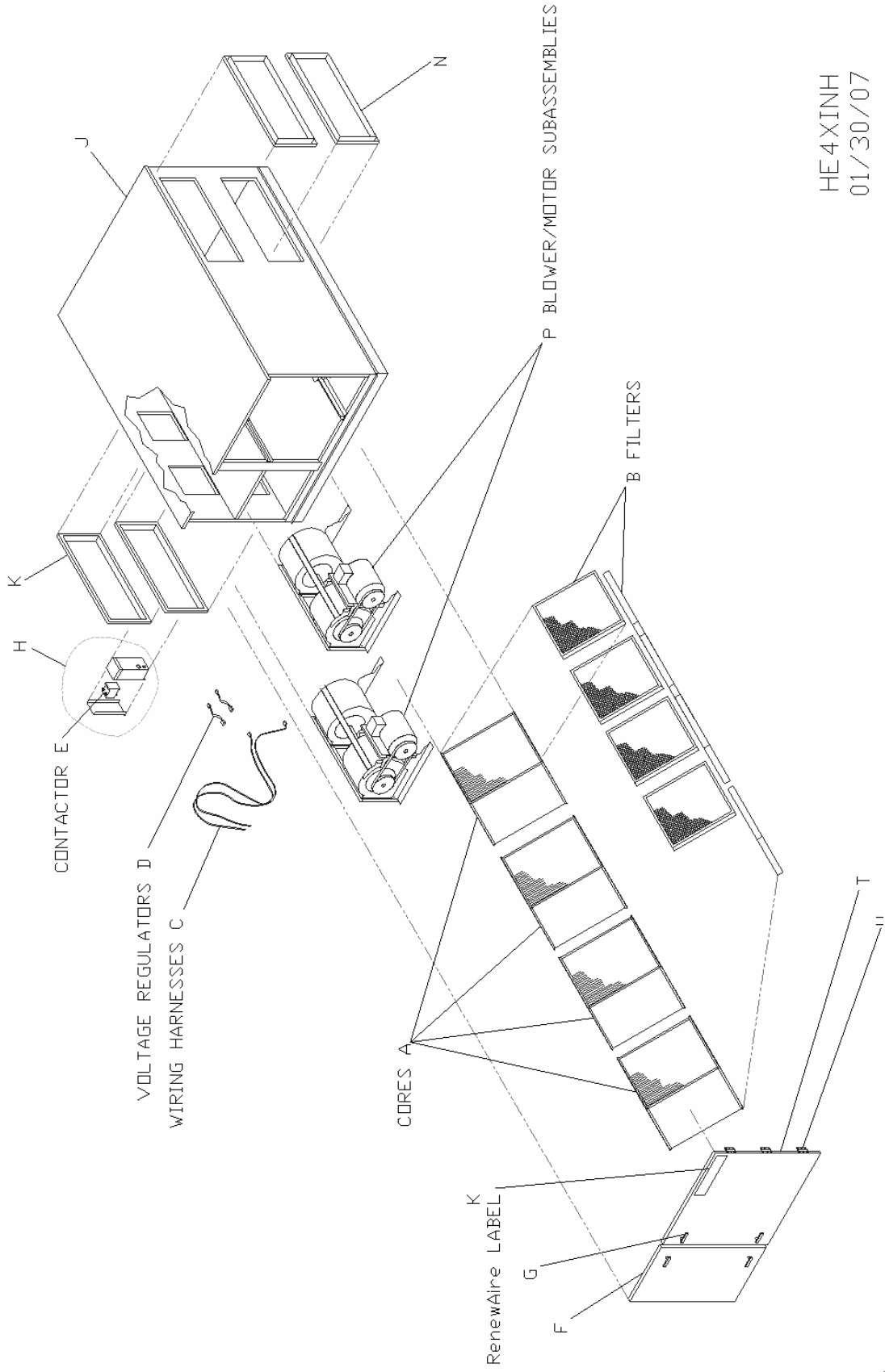
Continuous operation is acceptable in virtually all conditions. Unit will not be damaged by continuous operation as long as air flow occurs. Blower motors may overheat if filters become completely blocked due to lack of maintenance. With continuous operation, some external frosting on case may occur in very cold weather (see below).

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.

Some condensation or even frost may form on the **outside** or drip off of the case during very cold conditions, particularly if the unit runs continuously. Exterior condensation during extreme conditions can be reduced or prevented by periodically cycling the unit off for several minutes to allow the case to warm up.

Replacement Parts



HE4XINH
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MAINTENANCE

SUMMARY MAINTENANCE REQUIREMENTS:

- Change Filters
- Inspect Blower
- Tension Blower Belt
- General Cleaning and Inspection
- Clean Energy Exchange Cores

CHANGING THE FILTERS

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

- Turn off unit completely! Lock-out and tag-out the unit disconnect switch.
- Open the Door. The door is secured with turn latches, plus one Phillips-head securing screw. Keep the securing screw.
NOTE: Always replace securing screw when reinstalling door.
- Remove and dispose of all (4) filters. The filters in each bank are connected by small clips for easier removal.
- Replace all (8) filters, re-installing the connecting clips.
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.
- Close door; reinstall securing screw.

Filter Specifications:
 (8) 20" x20" x2"(nominal) pleated filters
 Actual size: 19.5" x19.5" x1.75"
 Unit shipped with MERV-8 Filters
 Minimum recommended effectiveness: MERV-6

Blower Inspection:

Inspect Blowers every time you change the filters.

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

Blower Belt Tension:

Check belt tension every time you change the filters.

- Inspect belt(s) for cracking or uneven wear.
- 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:	
2 HP BLOWER	3 pounds
3 HP BLOWER	4 pounds
5 HP BLOWER	5 pounds

GENERAL CLEANING AND INSPECTION:

Perform general cleaning and inspection when changing filters.

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

TO CLEAN THE ENERGY EXCHANGE CORE:

Clean the core annually.

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

⚠ WARNING

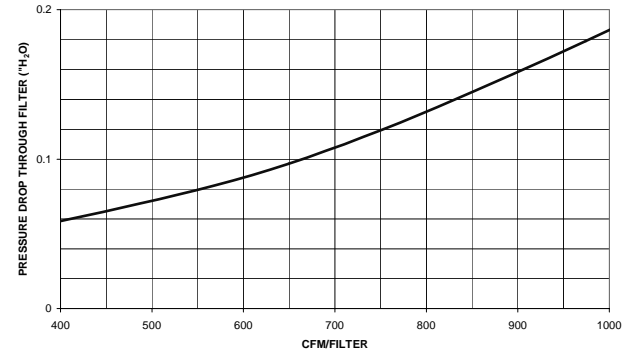
Danger of injury from un-guarded drive belts in unit. Disconnect power to unit before opening door.

Danger of injury if unit starts unexpectedly.

Switch power off at service disconnect. Lock-out/tag-out the disconnect.

Initial Resistance of Filters supplied with this unit:

INITIAL PRESSURE DROP: 20" x 20" MERV 8 FILTERS
 RENEWAIRE SERVICE PART NUMBER 990083



CAUTION

Filters must be used or the energy exchange core will become blocked by dust and the unit will not do its job. In extreme cases components may be damaged.

CAUTION

Incorrect Belt Tension will damage this blower!

CAUTION

Do not wash the energy exchange core. Keep it away from water or fire to avoid damaging it. Always handle the core carefully.