

INSTALLATION AND OPERATION MANUAL

HE8X



NOTE: Disconnect Switch and 24V Transformer Standard

In 2012, these ERVs may be ordered with new factory-installed features including Isolation Dampers and Variable Frequency Drives. Consult the supplemental Installation and Operation Manual(s) for these features if supplied.

⚠ 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. 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.
8. Use the unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
9. 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.
10. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
11. If installed indoors this unit must be properly ducted to the outdoors.

CAUTION

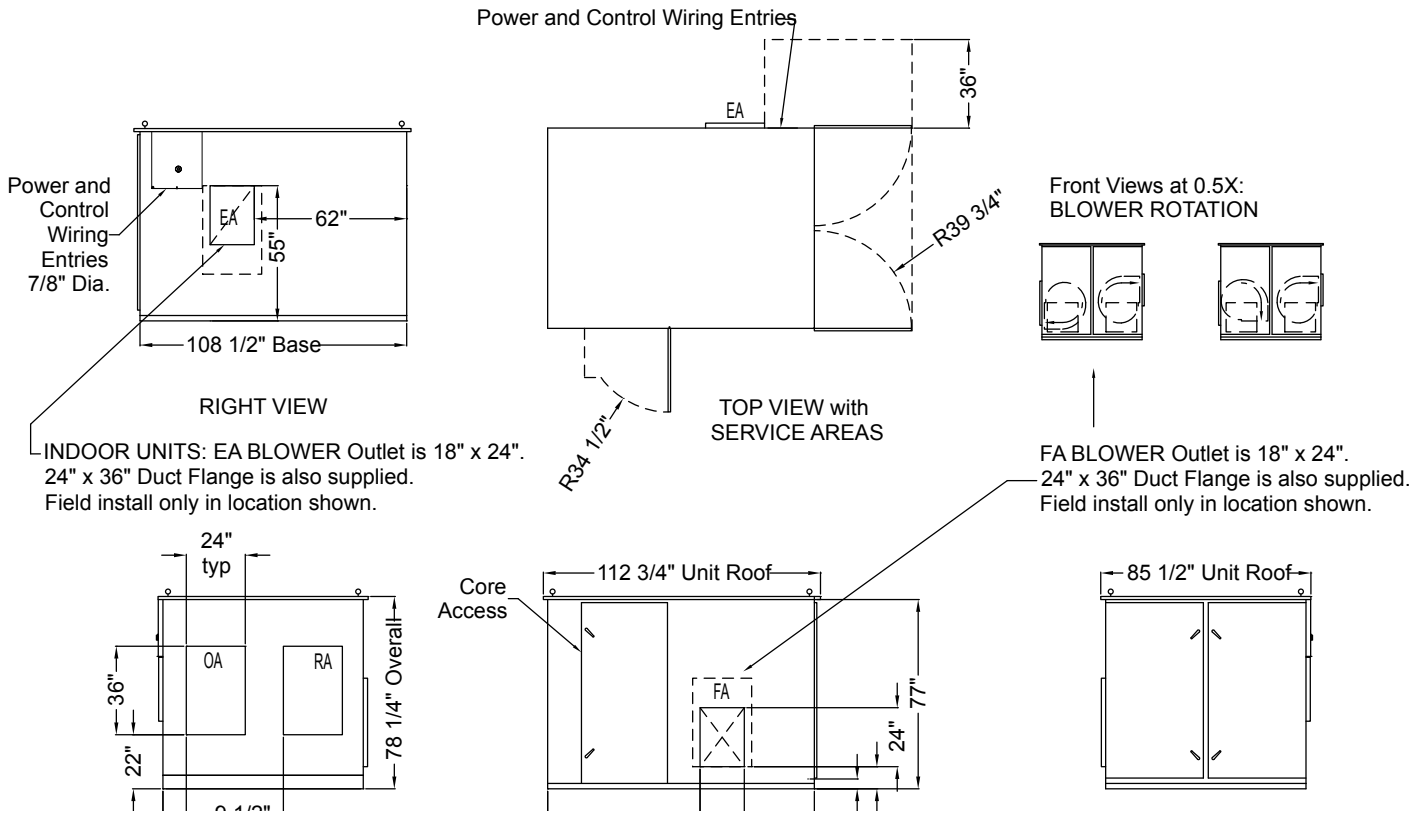
To avoid motor bearing damage and noisy and/or unbalanced impellers, keep drywall spray, construction dust, etc., out of unit.

CAUTION

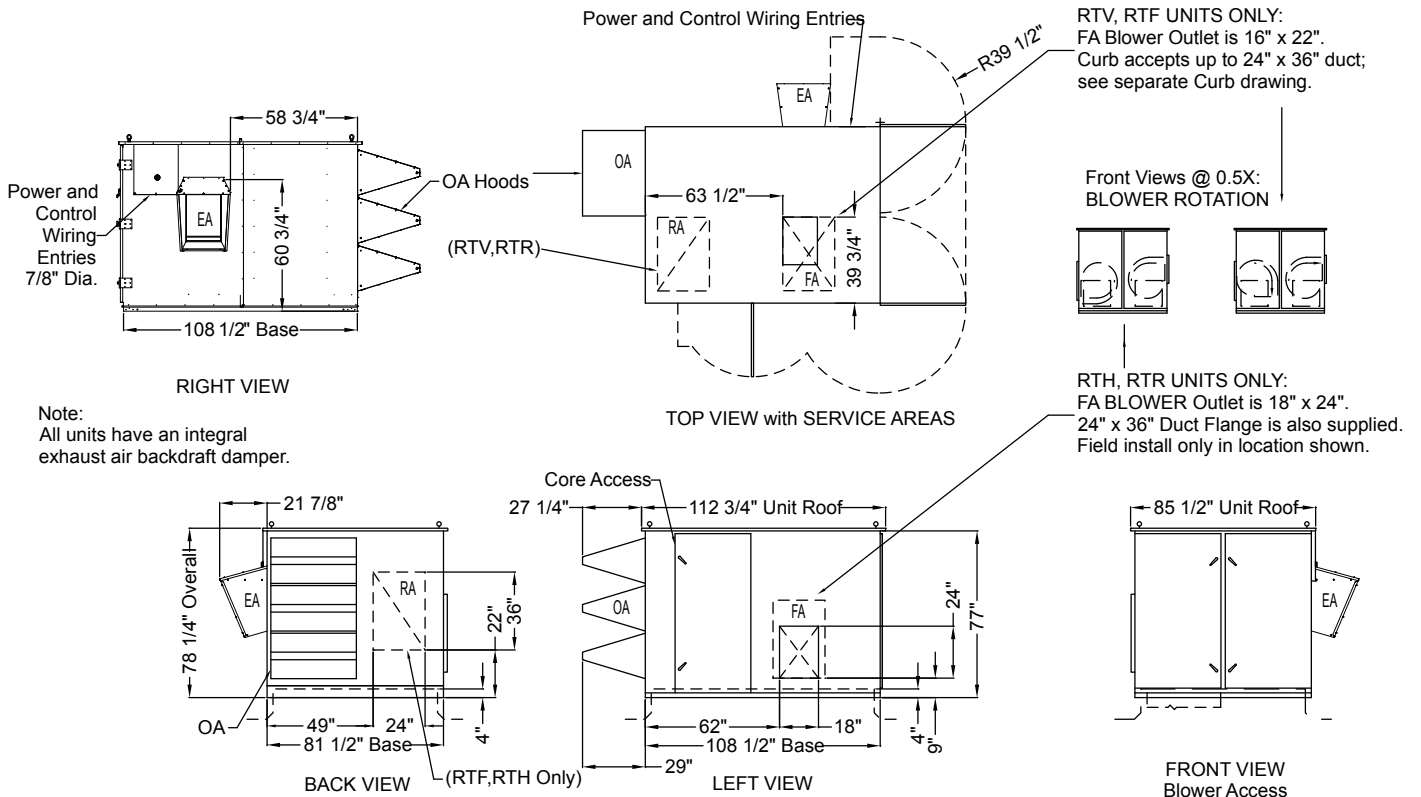
Do not remove or disable the wiring interconnection between the Overload Relays and the Contactors. Without this interconnection the motor(s) will not be protected against overload.



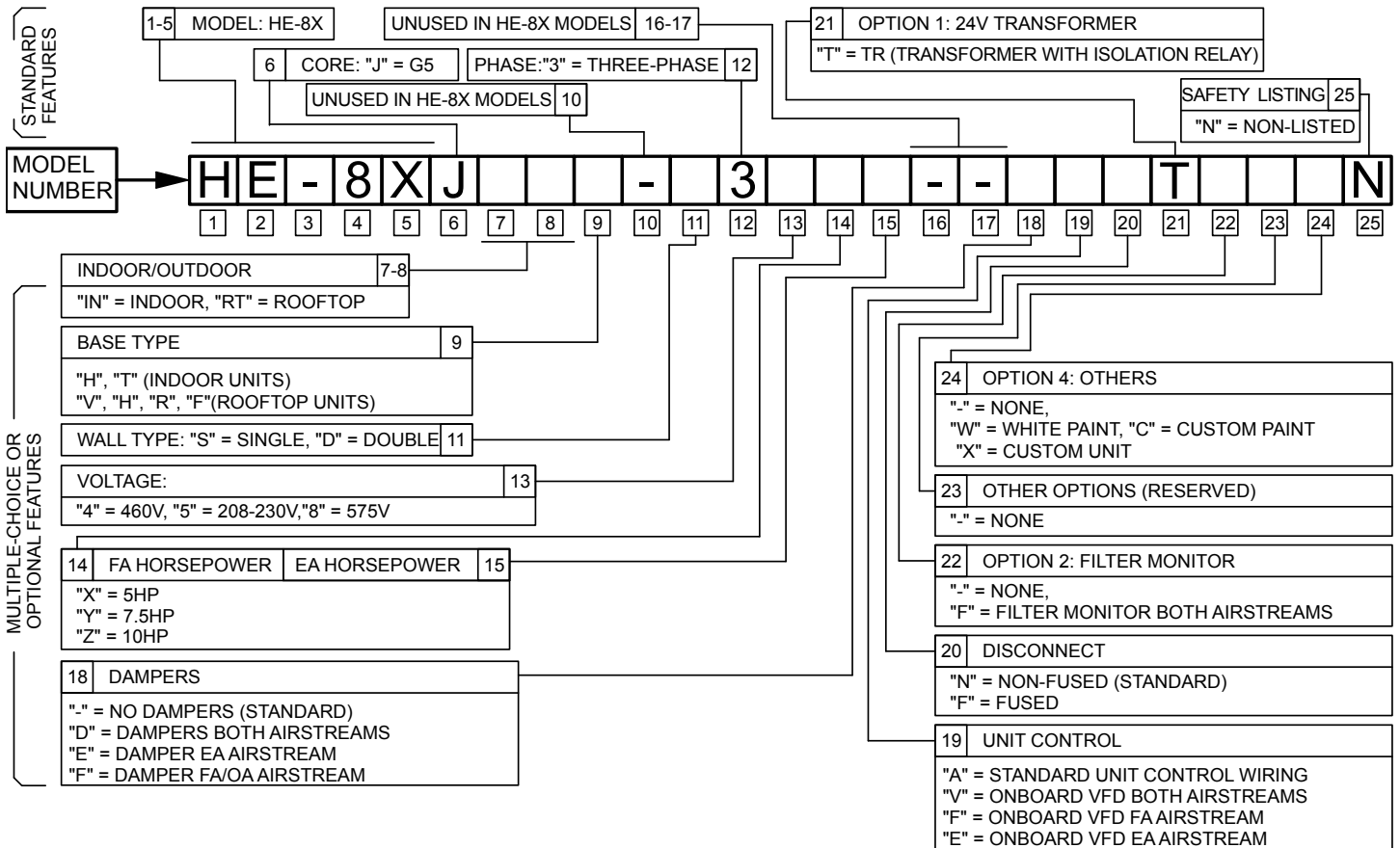
HE8XIN Dimensions



HE8XRT Dimensions



HE8X Product Configuration Chart



Basic Order of Installation

1. PREPARE ROOF CURB OR EQUIPMENT RAIL
2. LIFT UNIT INTO POSITION ON CURB OR RAIL
3. SECURE UNIT TO CURB OR RAIL
4. INSTALL EXHAUST HOOD
5. INSTALL EXTERNAL DUCTWORK IF APPLICABLE
6. MAKE ELECTRICAL CONNECTIONS
7. PERFORM START-UP AND CHECK-OUT PROCEDURES

Step 1: Prepare Roof Curb or Equipment Rail

Complete the installation of the curb or equipment rail before installing the unit.

Curbs or equipment rails should be attached to the structure sufficiently to transfer wind loads on the unit to the structure itself. See warning under Step 3.

Curbs or equipment rails should be installed where the structure is able to carry the weight of the unit.

Dimensioned drawings of RenewAire's standard roof curbs are available at www.renewaire.com.

On Roof Curbs:

Curb should be insulated. Apply roofing and counterflashing to curb as per standard practice.

Install appropriate gasket on top of Roof Curb around the perimeter and around the edges of ducts.

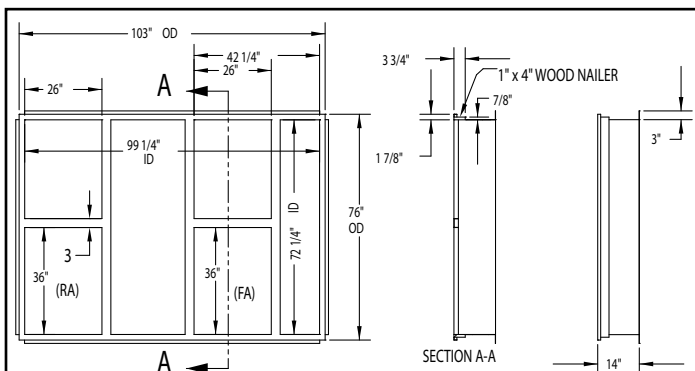
If unit is ducted through the curb the ducts should be installed before the unit is placed on the curb.

Ducts should be insulated.

Vibration Isolation Curbs: Corner weights are available for design purposes at www.renewaire.com.

On Equipment Rails:

Before installing the unit, apply roofing and counterflashing to Equipment Rails as per standard practice.



Dimensions of Standard Curb for HE8X Units

CAUTION

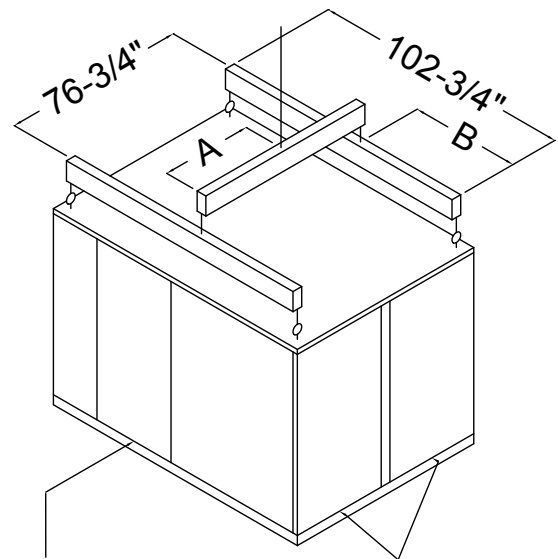
Air leakage from the conditioned space below the roof into the space between inside the curb can cause problems including:

- Condensation inside the curb in cold weather, to the point that water drips into the building and damages duct insulation or furnishings.
- Leakage of noise from the unit into the space below. Holes through the roof deck for the ducts should be cut close to the ducts and the gaps should be sealed.

Step 2: Lift Unit Into Position on Curb or Rail

Remove the shipping straps that hold the unit to its pallet before lifting.

NOTICE TO RIGGERS USE SPREADER BARS!



CORE ACCESS DOOR

BLOWER ACCESS DOORS

HE8XIN UNIT CENTER OF GRAVITY (in) AND WEIGHT (POUNDS)

HP	WEIGHT	A	B
SINGLE WALL			
(2) 5HP	2261	38-1/4	45-1/2
(2) 7.5HP	2362		44-1/4
(2) 10HP	2517		42-1/4
DOUBLE WALL			
(2) 5HP	2685	37-1/2	46
(2) 7.5HP	2786		45
(2) 10HP	2941		43-1/4

WEIGHTS SHOWN DO NOT INCLUDE OUTSIDE AIR INLET HOODS. DO NOT INSTALL OUTSIDE AIR INLET HOODS BEFORE LIFTING UNIT.

⚠ WARNING

Risk of severe injury or death when unit is being lifted!
Lifting must be performed by qualified personnel only!

Step 3: Secure Unit to Curb or Rail

RenewAire strongly recommends that you secure rooftop units properly to the curb or equipment rails, and thus 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.

At a minimum, observe locally applicable codes, but note that even if local codes require some attachment means that may not be enough to withstand common wind occurrences.

Step 4: Install Outside Air Inlet Hood and Exhaust Air Hood

Outside Air Inlet Hoods and the Exhaust Air Louver for HE8X units are shipped unattached to the unit (in some versions Exhaust Air Louver is pre-installed).

See Dimension drawings, page 2, for a depiction of the unit with the Hoods and Louver installed.

To install the Outside Air Inlet Hoods:

Start with the top hood. Center the hood on the opening. Slide the hood all the up to the underside of the roof overhang (Figure 1). Install with (3) screws on each side, and (2) screws in the top flange. Screws are supplied. Check for horizontal with a level for best appearance (as in Figure 2).

Slide the middle hood up under the top hood. Install with (3) screws on each side. Check for horizontal with a level for best appearance (Figure 2).

Install the bottom hood in the same way. Install Plate to cover gap below the Bottom Hood, using (5) screws (Figure 3).

To install the Exhaust Air Hood:

Exhaust Air Hood is shipped in the Exhaust Air Blower compartment, along with a bag of screws. Install Hood over exhaust air outlet using pre-drilled holes.



Figure 1 - Install Top Hood First



Figure 2 - Install Center Hood



Figure 3 - Install Bottom Hood and Plate

Step 5: Install External Ductwork (if applicable)

Outside units:

Any exposed ductwork attached to the unit must be properly insulated and weatherproofed.

Units ordered in RTH, RTR or RTF configurations have side openings for connection of ductwork.

Room Air (air returning to the unit to be exhausted):

Units are shipped with 24" wide by 36" high duct flanges installed.

Fresh Air (air leaving the unit to be ducted into the building):

24" x 36" duct flanges are shipped loose. For best airflow performance, install this duct flange even with the bottom of the Fresh Air blower outlet, and centered side-to-side.

Alternately, duct flanges as small as 18" x 24" (the blower outlet size) can be used along with transitions to the final duct size.

Inside units:

Ducts between the unit and the outside air must be insulated. See caution to right.

Select locations for the outside air intake weatherhood and exhaust weatherhood carefully. See caution to right.

Outside Wall Caps:

Wall caps should be designed to exclude animals and rain. Size wall caps to minimize pressure drop.

To keep rain out, select the outside air intake weatherhood so inlet velocity is below 500 feet per minute (or less, if so dictated by local codes or practices).

Install catches for rubber Door Restraints:

Doors for the Fresh Air Blower and the Core and Filter compartments are equipped with rubber Door Restraints. For units with a Fresh Air Outlet duct fitted to the side, the catches for these Door Restraints are mounted on the duct.

⚠WARNING

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

CAUTION

Ducts connecting the unit to the outside air must be insulated with sealed vapor barriers inside and out. Otherwise condensation and/or freezing may occur in the insulation, causing damage and/or allowing mold growth.

⚠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.

⚠WARNING

Danger of electrical shock when wiring or servicing this unit. Always disconnect power source before servicing. More than one disconnect switch may be required to de-energize unit.

Operation

Principal of Operation

The HE8X 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 HE8X 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 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.

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: (Rooftop units)

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 HE8X 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 Outlet ducts 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

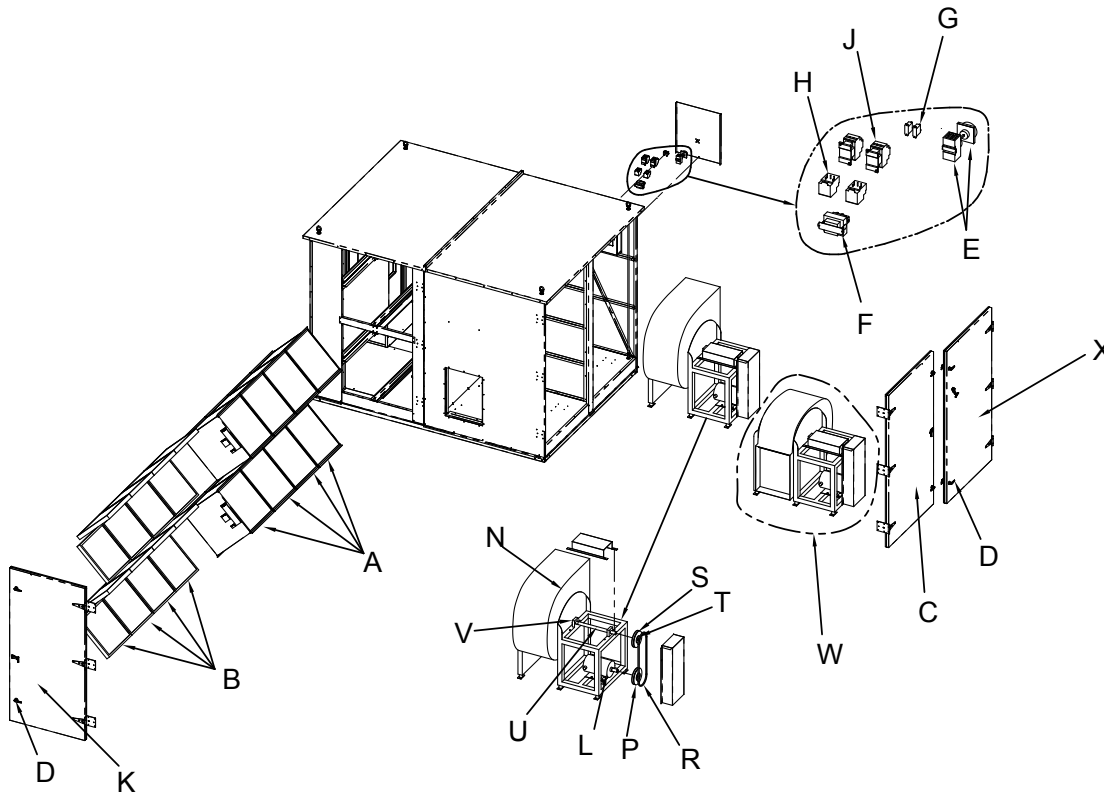
When sound attenuation is a design concern, the primary consideration is velocity noise at the unit's Air blower outlets. The average velocity at the ducted blower outlet is 1325 FPM when the unit is operating at 7950 CFM. The average velocity at the Exhaust Hood outlet is 2160 FPM when the unit is operating at 7950 CFM.

Step 6: Electrical Connections

Proper selection, sizing and installation of supply wiring and branch circuit protection is required and must be performed by a qualified professional.

- All wiring must comply with applicable local and national electrical codes.
- Always provide a dedicated Disconnect Switch for this unit (available as a pre-installed option.)
- Minimum Circuit Ampacity (MCA) and Maximum Fuse Size (MFS) for this unit are marked on its Electrical Rating Label, near its electrical box.

HE8X Replacement Parts

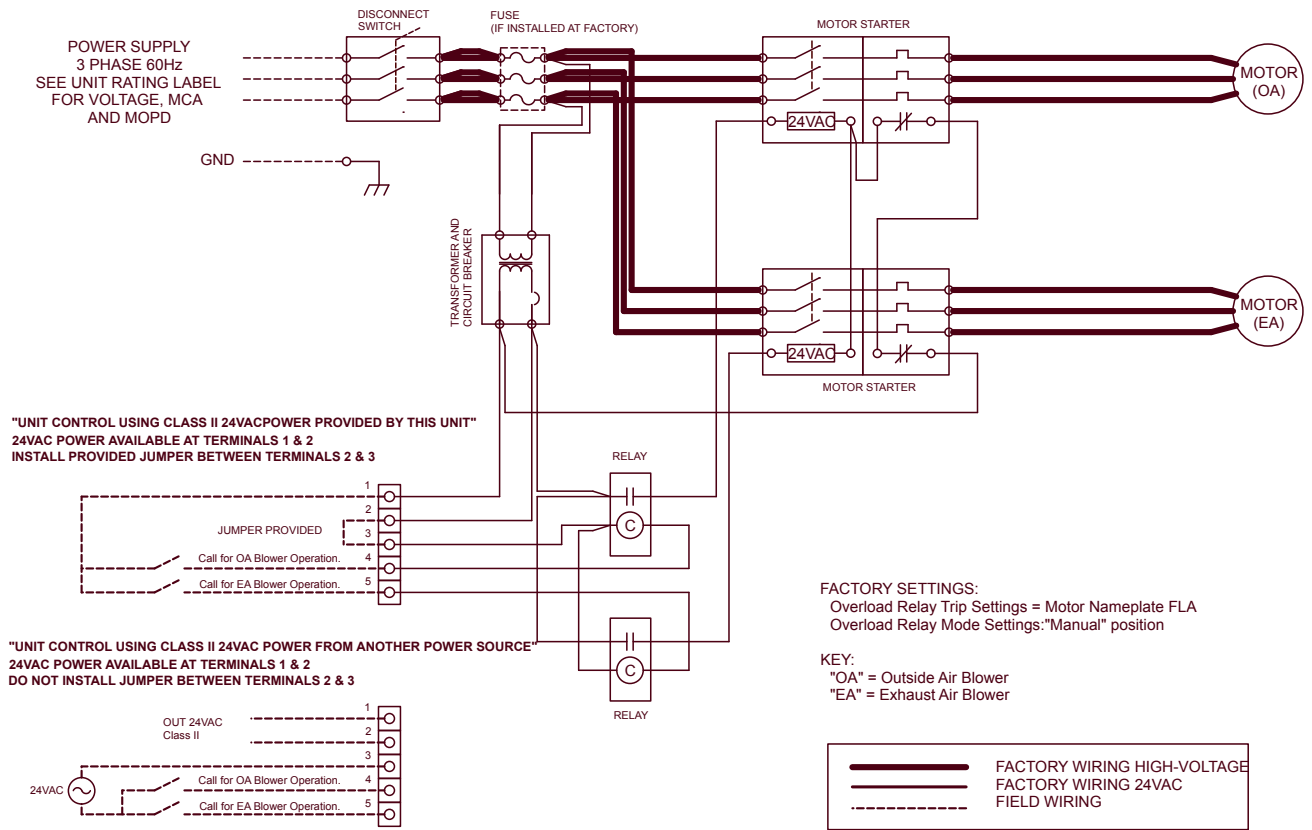


A	CORES
B	FILTERS
C	LEFT BLOWER DOOR
D	TURN LATCH
E	DISCONNECT SWITCH
F	TRANSFORMER
G	ISOLATION RELAY
H	OVERLOAD RELAY
J	CONTACTOR
K	CORE DOOR
L	MOTOR
N	BLOWER
P	MOTOR SHEAVE
R	BELT
S	BLOWER SHEAVE
T	BLOWER BUSHING
U	BLOWER SHAFT
V	BLOWER BEARINGS
W	BLOWER MOTOR KIT
X	RIGHT BLOWER DOOR

HE8X Airflow Performance

Motor HP	Blower RPM	Turns Open	External Static Pressure (in. w.g.)																	
			0.00		0.25		0.50		0.75		1.00		1.25		1.50		1.75		2.00	
			CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
5	1460	4.5	5575	2.5	5425	2.5	5200	2.5	5000	2.5	4775	2.3	4550	2.1	4270	1.9	4000	1.7	3625	1.5
	1610	2	6200	4.1	6010	4.1	5875	4.0	5700	4.0	5500	4.0	5325	3.9	5125	3.9	4900	3.7	4625	3.6
	1725	0	6650	5.2	6500	5.2	6375	5.2	6200	5.2	6050	5.1	5875	5.1	5700	5.1	5490	5.0	5250	4.9
7.5	1560	4.5	6000	3.1	5850	3.1	5650	2.9	5475	2.9	5275	2.9	5100	2.7	4875	2.7	4600	2.5	4300	2.3
	1740	2	6700	5.1	6575	5.1	6400	5.1	6300	5.1	6125	5.1	5950	5.0	5750	5.0	5575	4.9	5325	4.9
	1865	0	7225	7.6	7075	7.6	6950	7.6	6800	7.5	6675	7.5	6500	7.5	6375	7.4	6200	7.4	6000	7.3
10	1810	4.5	7000	3.5	6875	3.5	6750	3.5	6600	3.3	6425	3.3	6275	3.3	6100	3.0	5925	2.8	5875	2.8
	2020	2	7850	7.6	7745	7.6	7625	7.6	7450	7.5	7350	7.5	7200	7.3	7050	7.3	6925	7.3	6775	7.2
	2105	1					7950	9.1	7800	9.1	7725	9.1	7600	9.0	7450	9.0	7300	8.9	7150	8.9

HE8X P3 Wiring Schematics with Independent Blower Control



24VAC Power Supply Provided with this ERV Unit

This ERV is provided with a Class II 24VAC power supply system that operates the unit's contactor(s) for EV450 and HE1X. 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 relay(s) 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.

CAUTION

1. Connect only to components intended for use with 24VAC power.
2. 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.

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

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.

NOTE: INSTALLING CONTRACTOR:

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 primary-side lead that is connected to the transformer's "COM" terminal.

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.

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!

⚠WARNING

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.

⚠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.

⚠WARNING

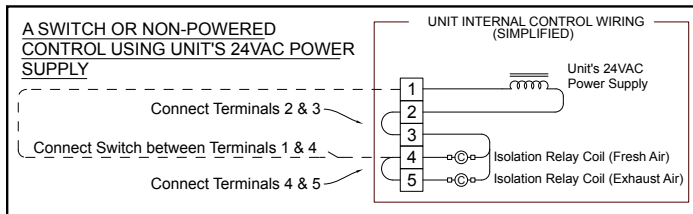
DANGER OF INJURY OR DAMAGE.

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.

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.

- A. **Single 2-wire Control, unpowered:** 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 (provided) between terminals 4 & 5 to operate the ERV's Isolation Relay for the RA/EA Blower.

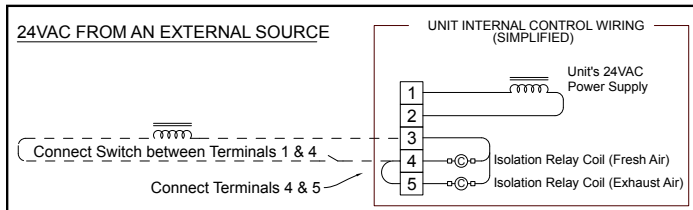


- B. **Single 2-wire Control on separate Power Supply, no power present at Control Output:** Wire as shown for the Single 2-wire control (A. above).

CAUTION

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

- 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.

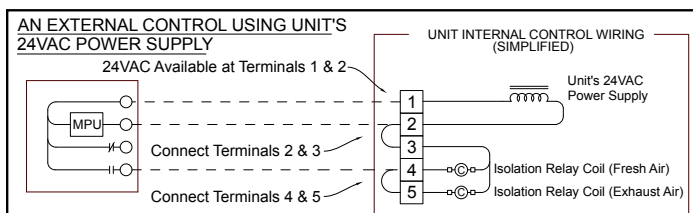


CAUTION

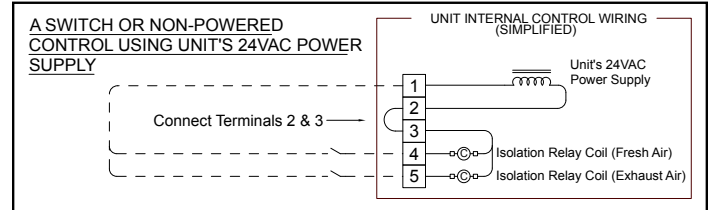
Supply only 24VAC (not VDC) from a Class II Power Source.

- 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.

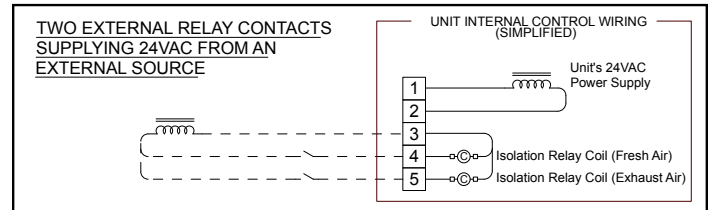
Connect the switched output of the Control to Terminal 4 to operate the ERV's Isolation Relay for OA/FA Blower. Install jumper (provided) between terminals 4 & 5 to operate the ERV's Isolation Relay for the RA/EA Blower.



- 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.



- 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.)

CAUTION

Failure to follow start-up procedures may cause early equipment failure!

Step 7: Start-Up and Check-Out Procedures

Before placing unit in service:

- Check belt tension (see Blower Maintenance Information)
- Inspect blower (see Blower Maintenance Information)
- Blower bearings are pre-lubricated at factory and do not require initial lubrication (however, scheduled lubrication is required, see Maintenance Section.)

As part of first start-up:

- Check running amps of each motor.
- Confirm the motor starter overload relays are properly set.

After 24 - 36 hours of unit operation:

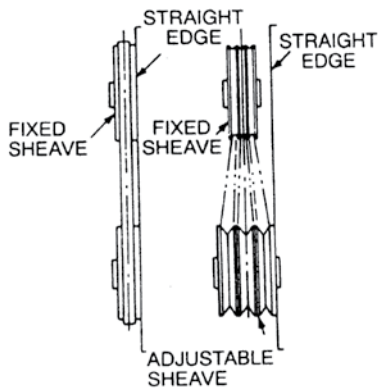
- Re-torque bearing setscrews to 75 inch-pounds. Use 1/8" hex bit with a separate extension shaft (use of long hex bits may cause inaccurate torque readings.)

Test and Balance Procedures

Test and Balance Procedures are outside the scope of this Manual, and should be performed by qualified personnel.

If sheaves are adjusted in order to adjust air flow, belts should be re-tensioned following the procedure on page 11.

Sheaves should also be adjusted so that belts run straight, as shown below:



Service Information

Blower bearing replacement:

1. Wheel and shaft must be supported before any dismantling is attempted.
2. Remove drives, loosen and remove bearing bolts. Next loosen the retaining set screws on the bearing collars. Remove the bearings from the shaft only after the wheel and shaft are securely supported.
3. Shaft Removal: After following the steps listed for the removal of the bearings, loosen the set screws in the wheel hub. With the wheel securely blocked, pull the shaft from the wheel.
4. Wheel Replacement: Remove the bolts on the inlet upright support. Loosen set screws on wheel hub and lift wheel from housing.

Blower Vibration Isolator Specifications:

5HP and 7.5HP		10HP	
Height:	1.5"	Height:	1.875"
Deflection Range:	0.20 - 0.040"	Deflection Range:	0.25 - 0.50"
Weight Range:	40 - 75 pounds	Weight Range:	80 - 175 pounds
Cap Screw:	5/16-18	Cap Screw:	3/8-16

CAUTION

Improperly aligned belts can cause early sheave or bearing failure.

Maintenance (cont. from page 12)

Blower Belt Tension

- Check belt tension every time you lubricate bearings:
- Belt tension must be properly maintained.
- Remove belt guard. Check and if necessary adjust belt tension.
- Inspect belt(s) for cracking or uneven wear.
- Check that sheaves are properly aligned so that belt runs straight (see Illustration on page 6).
- Re-install belt guard.

Properly tensioned belt will deflect 0.25" when pressed at the center point with the following force:

5 HP BLOWER - 6 pounds

7.5 HP BLOWER - 4 pounds

GENERAL CLEANING AND INSPECTION

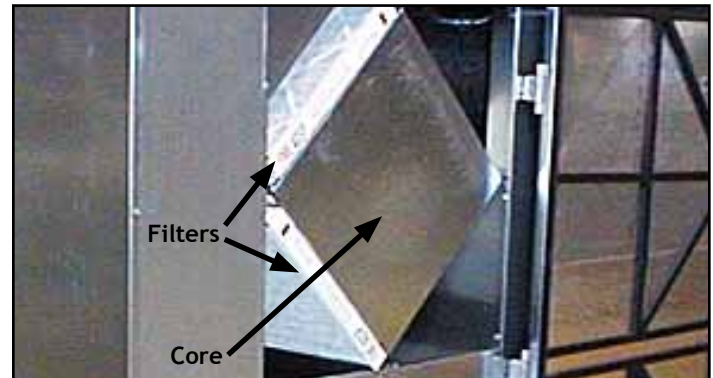
Perform general cleaning and inspection when changing filters.

- 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.
- DO NOT WASH THE ENERGY EXCHANGE CORE. Always handle the core carefully. Keep it away from water or fire to avoid damaging it. The energy exchange core can be replaced, but is expensive.



Maintenance

SUMMARY MAINTENANCE REQUIREMENTS

Change Filters
Lubricate Blower Bearings
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.

The upper and lower banks filter the Return Air entering the unit to be exhausted and protect the cores and exhaust blower from dust build-up.

The center banks filter the Outside Air which the unit will deliver to the conditioned space; these filters remove particulate from the ventilation air in addition to protecting the cores and fresh-air blower.

- Turn off unit completely! Lock-out and tag-out the unit disconnect switch.
- Open the Core Access Door and secure it in the open position with the rubber Door Restraint.
- The door is secured with turn-type latches, plus one Phillips-head securing screw. Keep the securing screw. NOTE: Always replace securing screw when reinstalling door.
- Remove and dispose of all (16) filters. The filters in each bank are connected by small clips for easier removal.
- Replace all (16) filters, re-installing the connecting clips. NOTE: See "Service Information" 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.

BLOWER BEARING LUBRICATION

Scheduled lubrication is mandatory.

LUBRICATION INTERVAL

5 & 7.5 HP Blowers - 2200 operating hours or 6 months, whichever comes first. 10 HP Blowers - 1500 operating hours or 3 months, whichever comes first.

Lubrication Procedure:

- Clean zerk fittings on bearings and the end of the grease gun.
- Turn on the blower being serviced.
- For both bearings, pump in a small amount of lubricating grease until a thin bead appears around the bearing.
- Turn off blower.
- Clean excess grease from bearing and zerk fitting.

Approved Lubricants:

- Recommended: Exxon/Mobil Polyrex EM
- Alternate: Shell Oil Alvania RL2
- Minimum requirement: NLGI #2 compatible grease, with lithium thickener, mineral base oil and operating range of at least -10 to +260F.

Blower Inspection

Inspect Blowers every time you lubricate bearings.

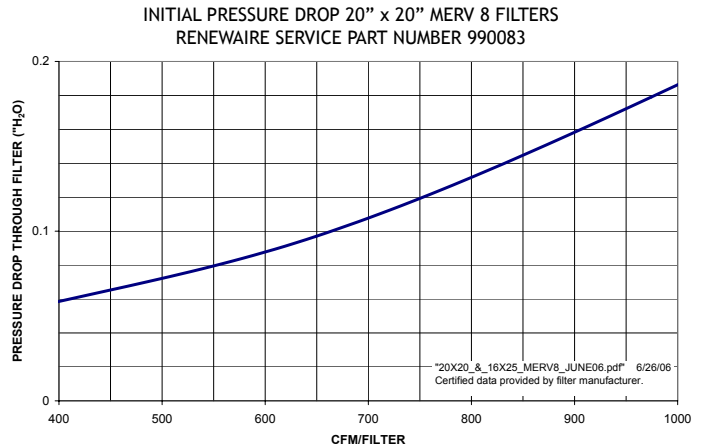
- Confirm bearings are still secure to blower shaft. It should not be possible to move the blower shaft back and forth along its length.
- Confirm blower wheel is not rubbing against the blower inlet or housing.

⚠ WARNING

Danger of severe injury if unit starts unexpectedly during maintenance!

Before opening unit doors, always switch power off at service disconnect. Lock-out/tag-out the disconnect switch.

Initial Resistance of Filters supplied with this unit:



Filter Specifications:

(16) 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

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

Bearings must be lubricated properly to avoid early blower failure!

⚠ WARNING

Danger of Injury due to moving parts!

The blower, motor and belts will be running as you lubricate the blowers.

Use extreme caution!

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.

MAINTENANCE INFORMATION CONTINUED ON PAGE 11