



INSTALLATION, OPERATION & MAINTENANCE MANUAL ENERGY RECOVERY VENTILATOR

HE6X



MODEL: HE6XIN



RENEWAIRE.COM

INDOOR UNIT



Download specification at:
renewaire.com/specifications

SPECIFICATIONS

Ventilation Type:

Static plate, heat and humidity transfer

Typical Airflow Range: 1,500-6,500 CFM

AHRI 1060 Certified Core:

Six L125-G5

Standard Features:

TEFC Premium efficiency motors
Motor starters
Non-fused disconnect
24 VAC transformer/relay package

Filters:

Total qty. 12, MERV 8: 20" x 20" x 2"

Unit Dimensions & Weight:

88" L x 113 1/2" W x 81 3/4" H
2,235-3,099 lbs., varies by option(s)

Max. Shipping Dimensions & Weight (on pallet):

116" L x 90" W x 90" H
3,439 lbs.

Motor(s):

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

Options:

Integrated programmable controls
Fused disconnect
Double wall construction
Factory supplied and mounted variable frequency drives (VFDs) - one or both airstreams
Shaft grounding ring on motors with VFDs
Class 1 low leakage motorized isolation dampers - OA, EA or both airstreams
Qty. 2, Factory mounted filter alarms
Exterior paint - white, custom colors
Bypass economizer (see bypass DIM drawing) - dry-bulb temperature controls (standard), enthalpy controls (option)

Accessories:

Filters - MERV 13, 2" (shipped loose)
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), EH series (61-175 kW)
Indirect gas-fired duct furnace - GH series (50-400 MBH), installed downstream of any fans

AIRFLOW PERFORMANCE

Motor HP	Blower RPM	Sheave Adj. 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
5.0	1460	4.5	5005	3.2	4800	3.2	4650	3.1	4475	3.0	4200	2.9	4000	2.8	3750	2.8	3400	2.7	3100	2.5
	1610	2	5550	4.2	5375	4.2	5250	4.1	5100	4.1	4900	4.0	4650	3.9	4500	3.8	4250	3.7	4000	3.6
	1725	0							5525	5.0	5475	5.0	5200	4.9	5050	4.8	4800	4.6	4600	4.5
7.5	1560	4.5	5275	3.7	5200	3.6	4900	3.5	4775	3.5	4550	3.4	4350	3.3	4125	3.3	3875	3.2	3575	3.1
	1740	2	5950	5.0	5825	5.0	5625	4.9	5490	4.9	5325	4.8	5125	4.7	4950	4.7	4750	4.6	4525	4.5
	1865	0	6500	6.5	6350	6.5	6225	6.4	6125	6.4	5910	6.3	5825	6.2	5625	6.1	5410	6.1	5300	6.0

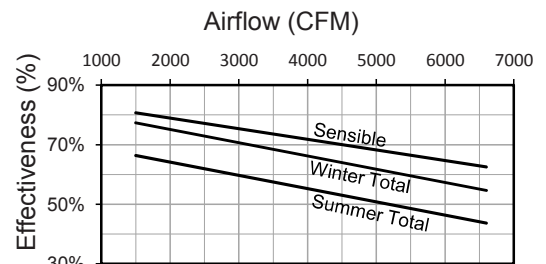
Note: Brake Horse Power (BHP) is for one blower motor package only. Operation in this zone will likely exceed FLA limits.

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

ELECTRICAL DATA

Standard Electrical Specifications							Optional Factory Installed VFD Electrical Specifications		
HP	Volts	HZ	Phase	FLA per motor	Min. Cir. Amps	Max. Overcurrent Protection Device	FLA per motor	Min. Cir. Amps	Max. Overcurrent Protection Device
5.0	208-230	60	Three	14.5-13.4	32.6	45	14.5-13.4	35.9	45
	460	60	Three	6.7	15.1	20	6.7	16.6	20
	575	60	Three	5.3	11.9	15	5.3	13.1	15
7.5	208-230	60	Three	21.0-19.0	47.3	60	21.0-19.0	52.0	60
	460	60	Three	9.5	21.4	25	9.5	23.5	25
	575	60	Three	7.6	17.1	20	7.6	18.8	20

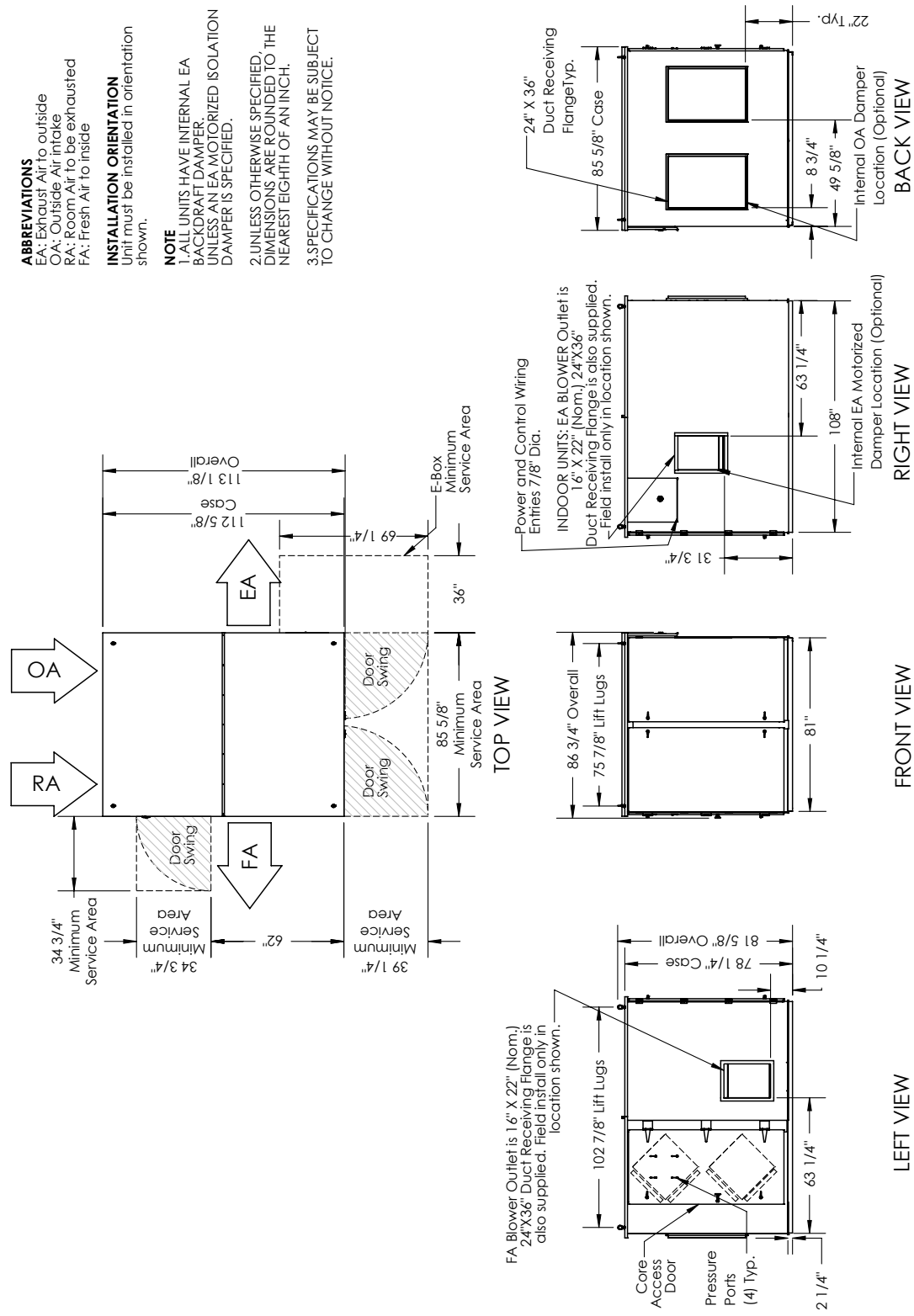
CORE PERFORMANCE



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

Specifications may be subject to change without notice.

HE6XIN Energy Recovery Ventilator Standard

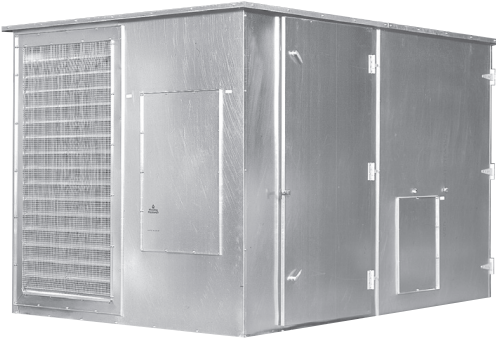


AIRFLOW CONFIGURATION
 Available as shown in dimension drawing.

UNIT MOUNTING & APPLICATION
 Must be mounted as shown. Airstreams can not be switched.

Specifications may be subject to change without notice.

ROOFTOP UNIT



Download specification at:
renewaire.com/specifications

SPECIFICATIONS

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Static plate, heat and humidity transfer

Typical Airflow Range: 1,500-6,500 CFM

AHRI 1060 Certified Core:

Six L125-G5

Standard Features:

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Motor starters

Non-fused disconnect

24 VAC transformer/relay package

Filters:

Total qty. 12, MERV 8: 20" x 20" x 2"

Unit Dimensions & Weight:

106 1/2" L x 113 1/2" W x 81 3/4" H

2,301-3,166 lbs., varies by option(s)

Max. Shipping Dimensions & Weight (on pallet):

116" L x 90" W x 90" H

3,599 lbs.

Motor(s):

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

Options:

Integrated programmable controls

Fused disconnect

Double wall construction

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

Shaft grounding ring on motors with VFDs

Class 1 low leakage 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),
EH series (61-175 kW); designed for indoor
ductwork installation only

Indirect gas-fired duct furnace - GH series
(50-400 MBH), installed downstream of any fans

AIRFLOW PERFORMANCE

Motor HP	Blower RPM	Sheave Adj. Turns Open	External Static Pressure (in. w.g.)																	
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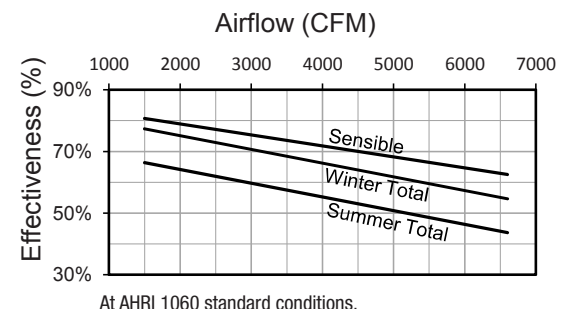
Note: Brake Horse Power (BHP) is for one blower motor package only. Operation in this zone will likely exceed FLA limits.

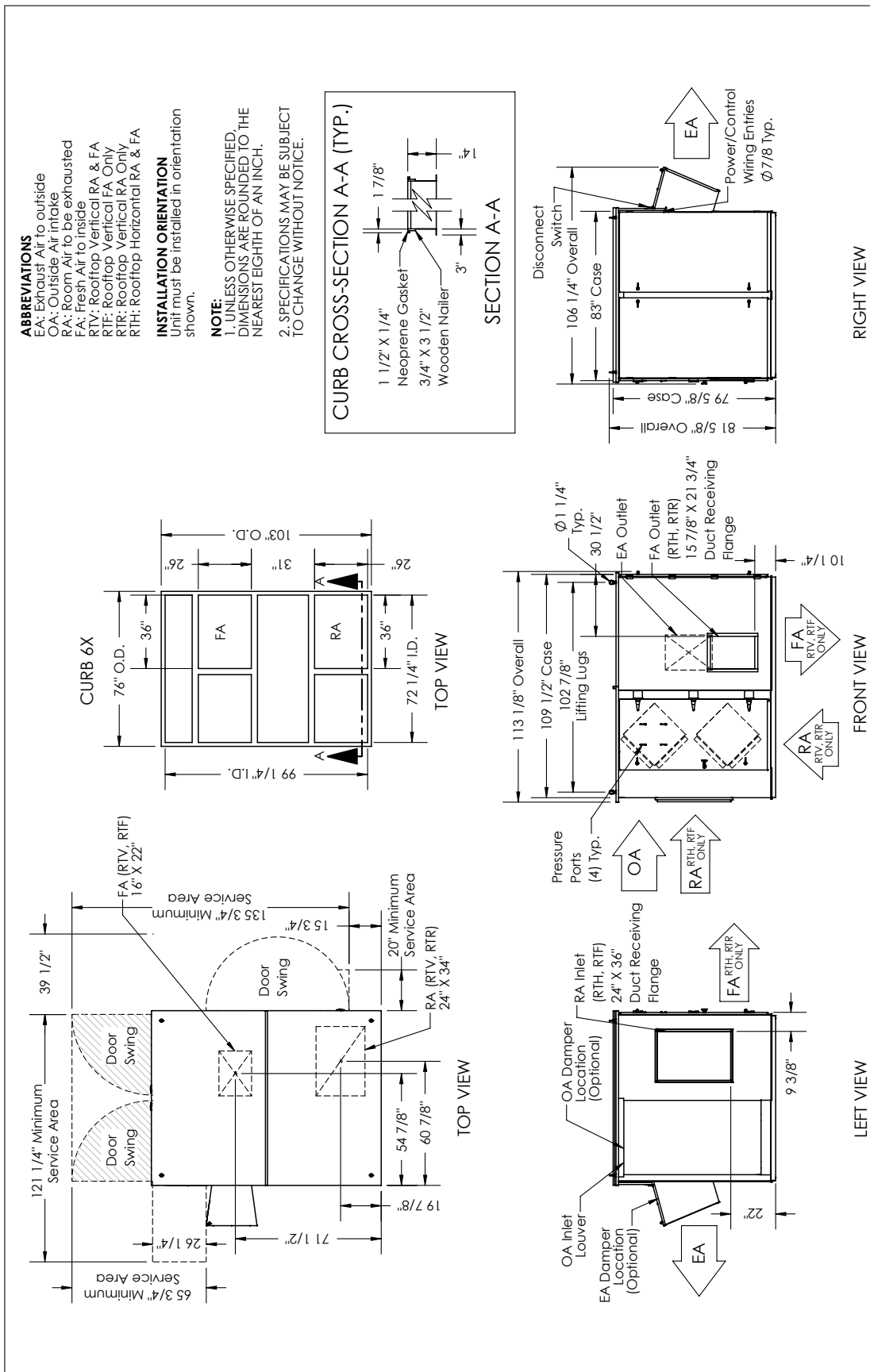
Note: Airflow performance includes effect of clean, standard filter supplied with unit.

ELECTRICAL DATA

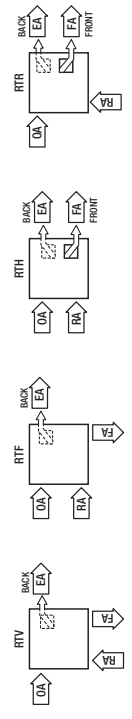
Standard Electrical Specifications							Optional Factory Installed VFD Electrical Specifications		
HP	Volts	HZ	Phase	FLA per motor	Min. Cir. Amps	Max. Overcurrent Protection Device	FLA per motor	Min. Cir. Amps	Max. Overcurrent Protection Device
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	460	60	Three	9.5	21.4	25	9.5	23.5	25
	575	60	Three	7.6	17.1	20	7.6	18.8	20

CORE PERFORMANCE





UNIT MOUNTING & APPLICATION
 Must be mounted as shown. Airstreams can not be switched.



AIRFLOW CONFIGURATION
 Available as shown:

Specifications may be subject to change without notice.

INSTALLATION

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.

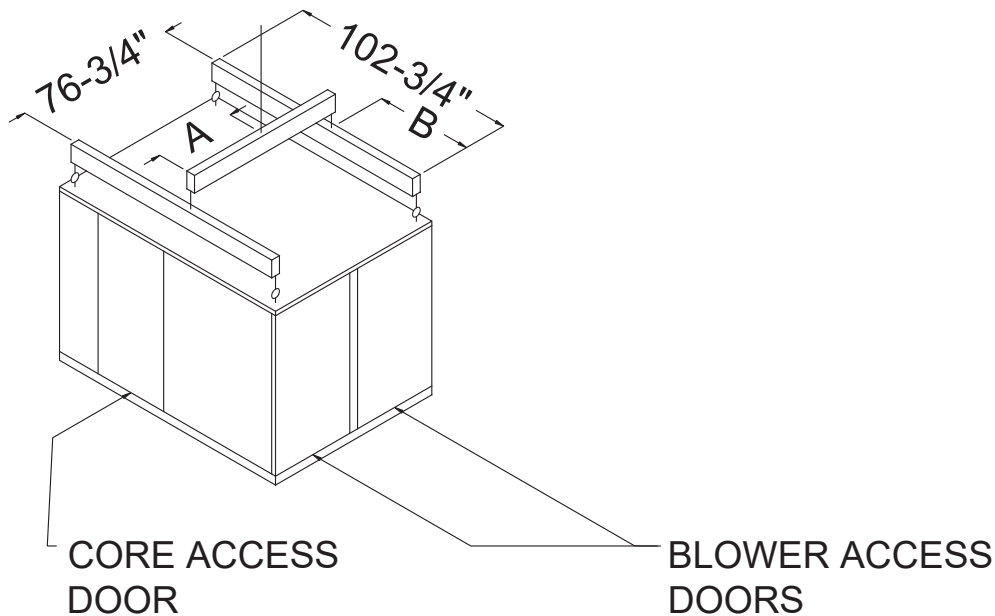
STEP 2: LIFT UNIT INTO POSITION ON CURB OR RAIL

Remove the shipping straps that hold the unit to its pallet before lifting. For Rooftop units, do not install outside air inlet hoods before lifting unit

**PLANNING
YOUR INSTALLATION****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 if applicable.
5. Install external ductwork if applicable.
6. Make electrical connections.
7. Perform start-up and check-out procedures.

F1

**NOTICE TO RIGGERS
USE SPREADER BARS!****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.

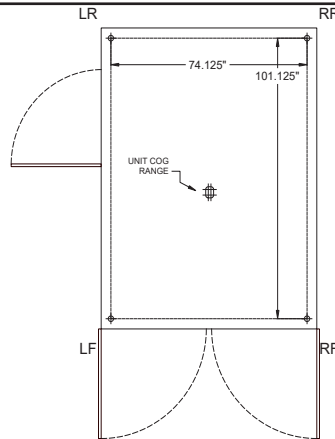
⚠ WARNING

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

INSTALLATION

CORNER
WEIGHTS

F2



HE6XIN UNIT CORNER WEIGHTS (LBS.)

SINGLE-WALL

HP & PHASE	UNIT	LF	LR	RR	RF
(2) 5HP	2235	622	498	493	622
(2) 7.5HP	2336	662	507	502	665

DOUBLE-WALL

HP & PHASE	UNIT	LF	LR	RR	RF
(2) 5HP	2659	741	608	586	724
(2) 7.5HP	2760	783	616	594	767

HE6XRT UNIT CORNER WEIGHTS (LBS.)

SINGLE-WALL

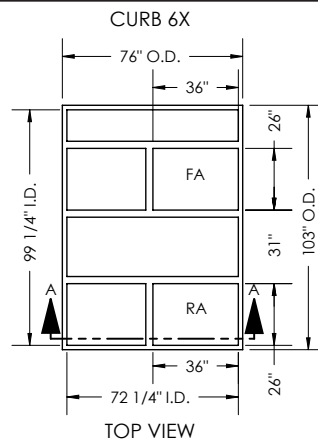
HP & PHASE	UNIT	LF	LR	RR	RF
(2) 5HP	2301	617	518	532	634
(2) 7.5HP	2402	660	525	539	677

DOUBLE-WALL

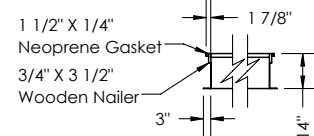
HP & PHASE	UNIT	LF	LR	RR	RF
(2) 5HP	2726	739	628	624	734
(2) 7.5HP	2827	782	635	631	778

⊕ INDICATES LOCATIONS AT WHICH CORNER WEIGHTS ARE
CALCULATED ALONG CENTERS OF CURB RAILS.

F3



CURB CROSS-SECTION A-A (TYP.)



SECTION A-A

INSTALLATION

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 EXHAUST AIR HOOD (ROOFTOP UNITS ONLY)**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.

STEP 5: INSTALL EXTERNAL DUCTWORK (IF APPLICABLE)**Rooftop 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.

Indoor 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.

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.

⚠ 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.

INSTALLATION

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.

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.

RADIATED NOISE

The HE6X 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

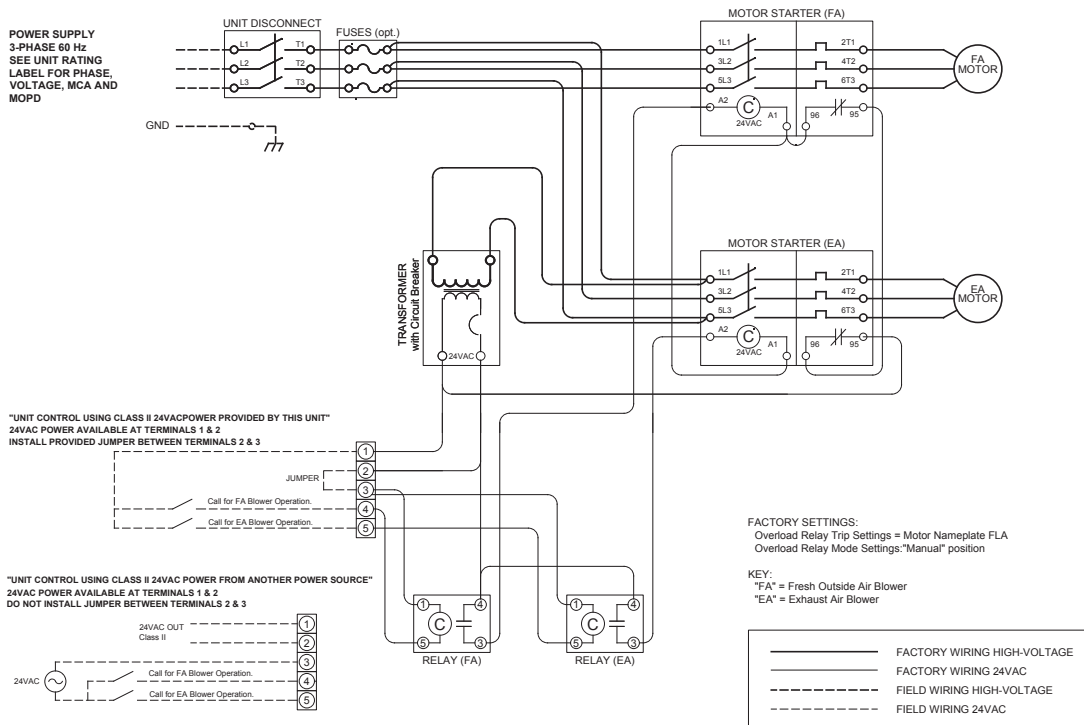
When sound attenuation is a design concern, the primary consideration is velocity noise at the unit's Fresh Air blower outlet. The average velocity at the Fresh Air blower outlet is 1090 when the unit is operating at 6500 CFM. The average velocity at the Exhaust Hood outlet is 1765 FPM when the unit is operating at 6500 CFM.

INSTALLATION

WIRING SCHEMATICS

HE6X P3 IBC THREE PHASE UNIT WITH INDEPENDENT BLOWER CONTROL

Schematics shown are representative of standard units. See Unit Schematic label for detailed information.



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.

INSTALLATION INSTRUCTIONS

INSTALLATION

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.
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.

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

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.						

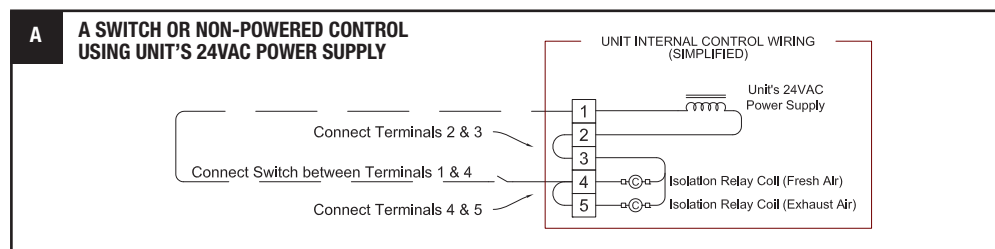
INSTALLATION

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 SCHEMATICS

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.

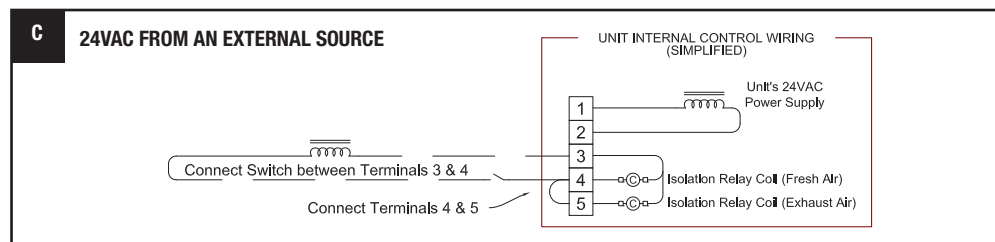


CAUTION

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).

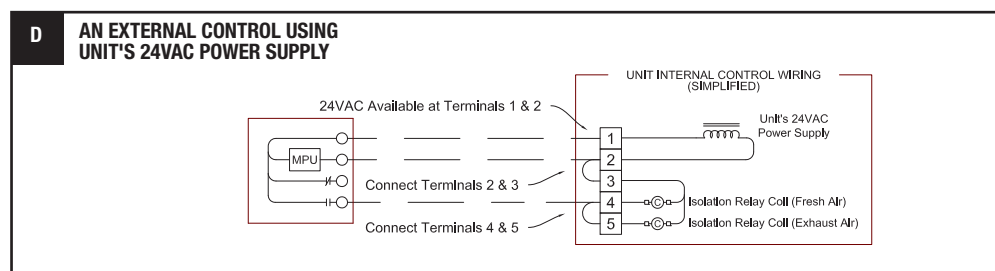
C. Control Sending 24VAC "On" Signal (from an external power source) to ERV: Make sure jumper is NOT installed between Terminals 2 & 3. Now you safely can apply 24VAC to the Terminals 3 & 4 to operate the ERV's Isolation Relay for OA/FA Blower. Install jumper (provided) between terminals 4 & 5 to operate 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 OA/FA Blower. Install jumper between terminals 4 & 5 to operate the ERV's Isolation Relay for the RA/EA Blower.

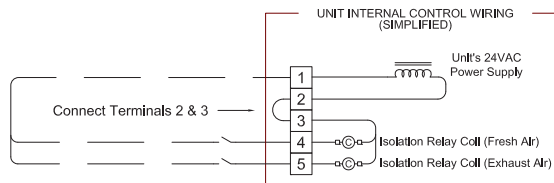


INSTALLATION

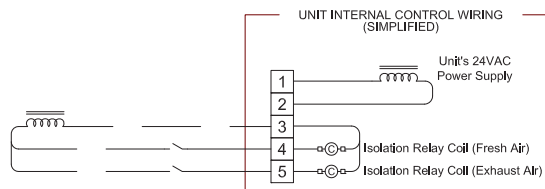
CONTROL WIRING
SCHEMATICS**CAUTION**

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

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.

**E A SWITCH OR NON-POWERED CONTROL
USING UNIT'S 24VAC POWER SUPPLY**

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).

**F TWO EXTERNAL RELAY CONTACTS SUPPLYING
24VAC FROM AN EXTERNAL SOURCE****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.)

START-UP & OPERATION

PRINCIPAL OF OPERATION

The HE6X 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 HE6X 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.

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.

START-UP & OPERATION

OPERATION 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.

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.

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.

START-UP & OPERATION

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.

MEASURING AIR FLOW

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.

CAUTION

The proper operating airflow range for this model is 1,500 - 6,500 CFM.

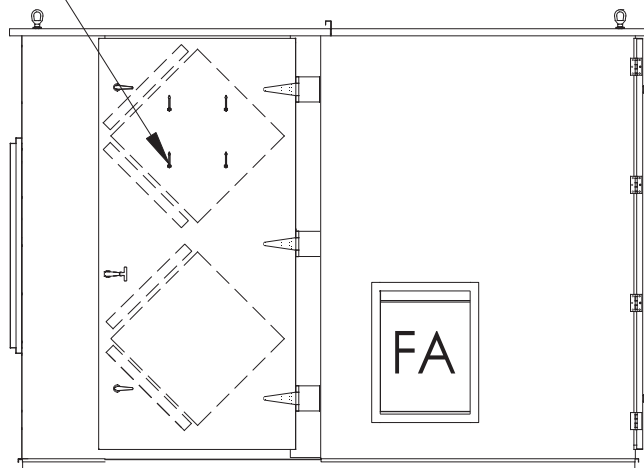
DIFFERENTIAL STATIC ACROSS CORE DSP VS. CFM

HE6X		DSP	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.0
	Fresh Air (FA)	CFM	1720	2430	3060	3680	4220	4660	5110	5555	6000
	Room Air (RA)	CFM	1600	2290	2860	3430	4000	4450	4890	5340	5780

F4

PRESSURE PORT DIAGRAM HE6XIN

Pressure Ports (4)



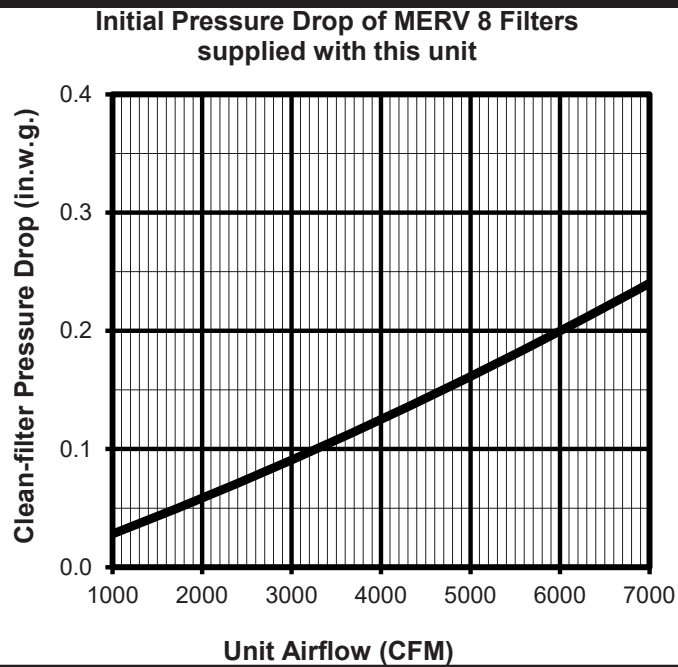
START-UP & OPERATION

MEASURING AIR FLOW

FILTER SPECIFICATIONS

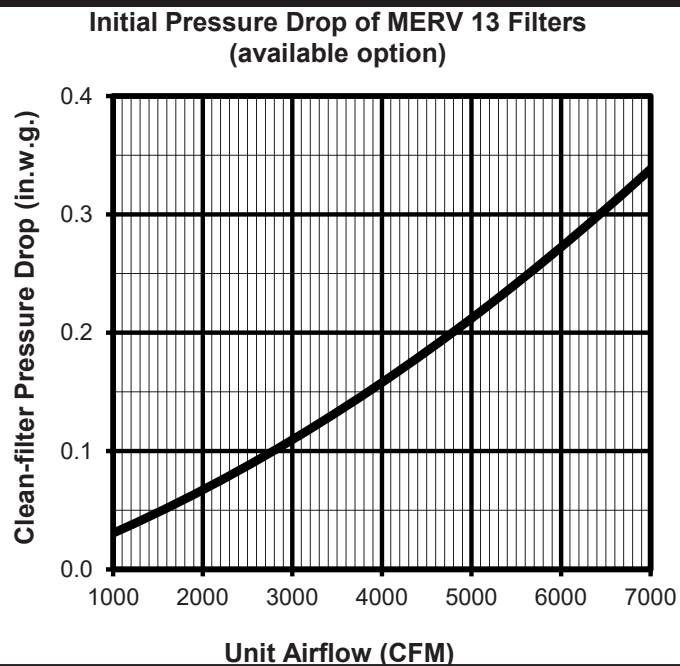
- (12) 20" x 20" x 2" (nominal) pleated filters. Actual size: 19.5" x 19.5" x 1.75".
- Unit shipped with MERV-8 Filters. Minimum recommended effectiveness: MERV-6

INITIAL PRESSURE DROP OF MERV 8 FILTERS SUPPLIED WITH THIS UNIT



NOTE: pressure drop of standard filter supplied is included in unit airflow performance tables

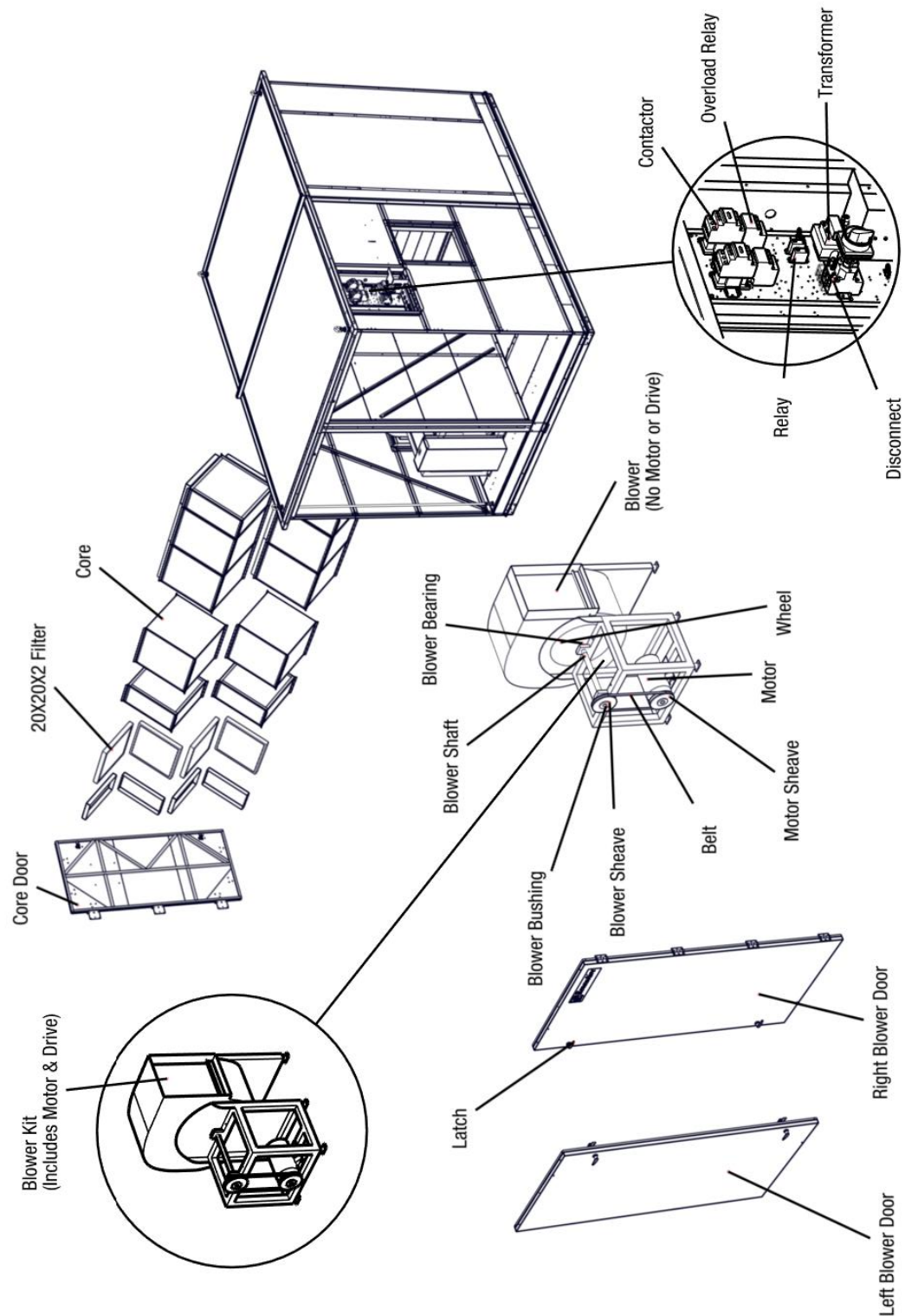
INITIAL PRESSURE DROP OF MERV13 FILTERS AVAILABLE AS AN OPTION.

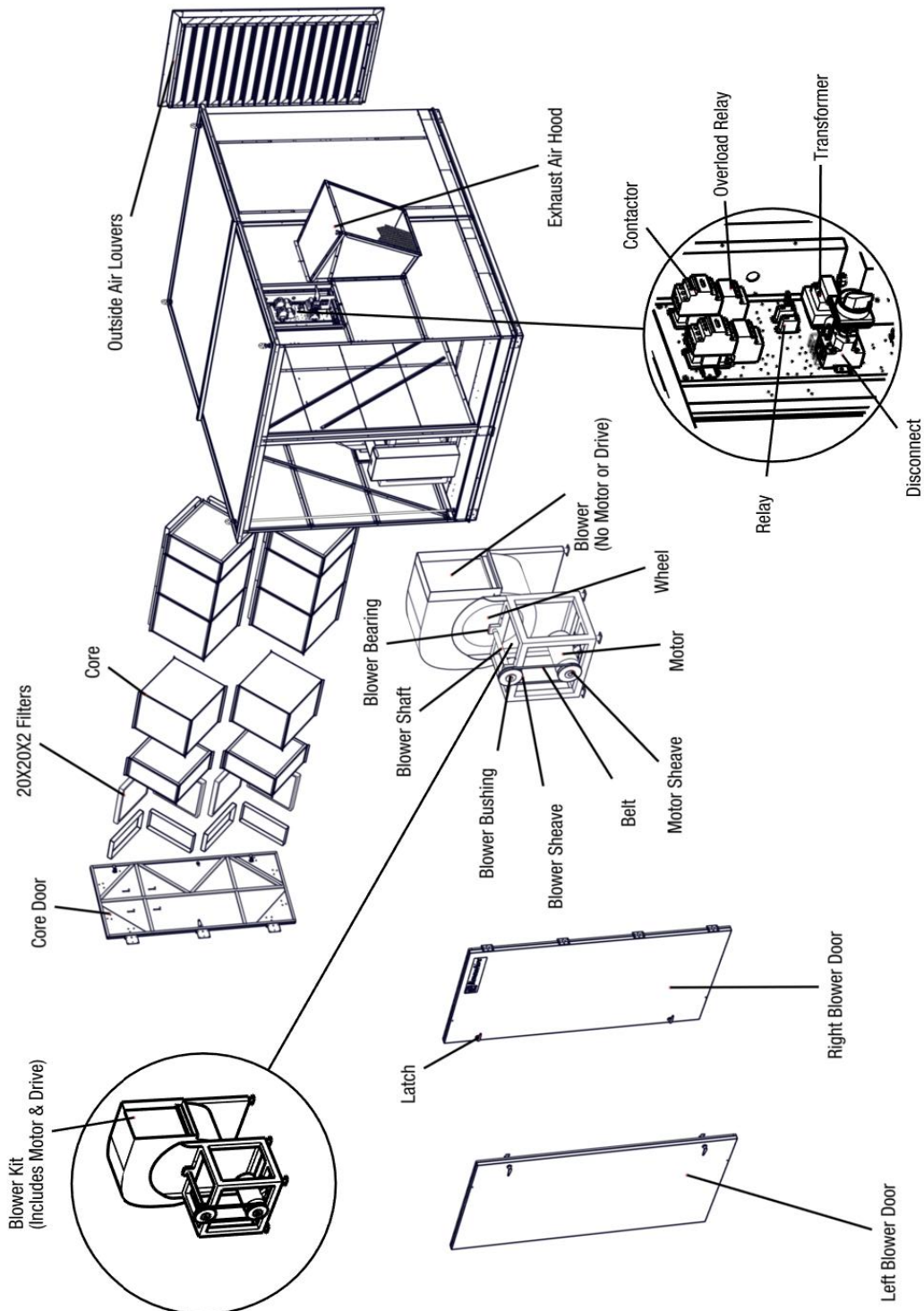


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MAINTENANCE

SERVICE PARTS HE6XIN





MAINTENANCE

REQUIREMENTS

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.

⚠ 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 nil.

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.
2. 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 (16) filters. Replace all (16) 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:

- 5 HP BLOWER - 6 pounds
- 7.5 HP BLOWER - 4 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.

MAINTENANCE

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.

BLOWER BEARING LUBRICATION

Scheduled lubrication is mandatory.

Lubrication interval:

2200 operating hours or 6 months, whichever comes first.

Lubrication Procedure

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

Approved lubricants:

Recommended: Exxon/Mobit 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.

CAUTION

Bearings must be lubricated properly to avoid early blower failure!

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 screw on wheel hub and lift wheel from housing.

BLOWER VIBRATION ISOLATOR SPECIFICATIONS

Height: 1.5"
Deflection Range: 0.20 - 0.040"
Weight Range: 40 - 75 pounds
Cap Screw: 5/16-18



ABOUT RENEWAIRE

For over 30 years, RenewAire has been a pioneer in improving people's health, cognitive function, productivity and wellbeing by enhancing indoor air quality (IAQ) in homes and buildings of every type. This is done energy-efficiently, cost-effectively and sustainably via our fifth-generation, static-plate, enthalpy-core Energy Recovery Ventilators (ERVs) and Dedicated Outdoor Air Systems (DOAS) that reuse otherwise-wasted energy to condition incoming outdoor air. This process optimizes energy efficiency, lowers capital costs by reducing HVAC loads and decreases operational expenses by downsizing equipment, resulting in major energy and cost savings. RenewAire technologies also enjoy the industry's best warranty with the fewest claims due to tremendous reliability, flexibility and ease of use.

RenewAire was the first innovator with static-plate, enthalpy-core technology in the U.S., and is currently one of the largest ERV companies in the country. Committed to sustainability and protecting the environment, our manufacturing facility in Madison, WI is 100% powered by renewable energy and is on track to be one of the few buildings worldwide with LEED Gold, Green Globes and ENERGY STAR certifications. Our technology excels in every geography, every climate, every building and every application, enabling RenewAire to be everywhere. In 2010, RenewAire joined the Soler & Palau Ventilation Group, providing direct access to state-of-the-art, air-moving technology. For more information, visit: www.renewaire.com.

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