



INSTALLATION, OPERATION & MAINTENANCE MANUAL ENERGY RECOVERY VENTILATOR

EV450IN



MODEL: EV450IN SHOWN



WWW.RENEWAIRE.COM

ABOUT RENEWAIRE

For over 30 years, RenewAire has been a pioneer in enhancing indoor air quality (IAQ) in commercial and residential buildings of all sizes. This is achieved while improving sustainability through fifth-generation, static-plate enthalpic-core, Energy Recovery Ventilators (ERVs) that maximize energy efficiency, lower capital costs via load reduction and decrease operational expenses by minimizing equipment needs, resulting in significant energy savings. Our ERVs are competitively priced, simple to install, easy to use and maintain and have a quick payback. They also enjoy the industry's lowest warranty claims due to long-term reliability derived from innovative design practices, expert workmanship and Quick Response Manufacturing (QRM).

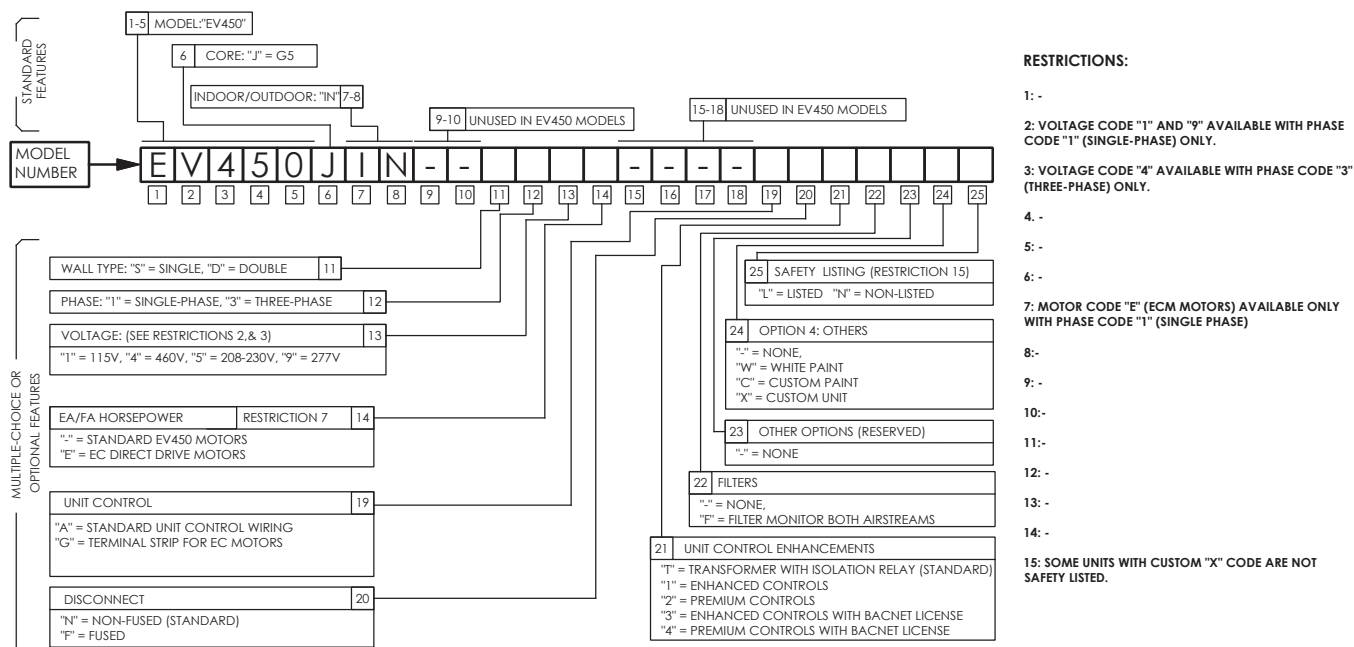
As the first manufacturer of static-plate energy recovery ventilators in North America, RenewAire presently has over 180,000 units in operation and is now one of the largest ERV companies in the USA. We're committed to sustainable manufacturing and lessening our environmental footprint, and to that end our Madison, WI plant is 100% powered by wind turbines. The facility is also one of the few buildings worldwide to be LEED- and Green Globes-certified, as well as having achieved ENERGY STAR Building status. In 2010, RenewAire joined the Soler & Palau (S&P) Ventilation Group in order to provide direct access to the latest in HVAC technologies. For more information, visit: www.renewaire.com.

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EV450IN INFO

EV450IN CONFIGURATION CHART



NOTE: RenewAire reserves the right to make changes in the design or specifications of products at any time without notice. Unless otherwise specified, dimensions are rounded to the nearest eighth of an inch

EV 450IN

Energy Recovery Ventilator Standard



INDOOR UNIT



Download specification at:
renewaire.com/specifications

SPECIFICATIONS

Ventilation Type:

Static plate, heat and humidity transfer

Typical Airflow Range: 200-540 CFM

AHRI 1060 Certified Core: One L85-G5

Standard Features:

Non-fused disconnect
24 VAC transformer/relay package

Filters:

Total qty. 2, MERV 8: 14" x 20" x 2"

Unit Dimensions & Weight:

54 1/2" L x 16 3/8" W x 36 3/4" H
137-199 lbs., varies by option(s)

Max. Shipping Dimensions & Weight (on pallet):

62" L x 42" W x 22" H
250 lbs.

Motor(s), choice of:

Qty. 1, 0.6 HP (standard single phase)
Qty. 1, 0.5 HP (standard three phase)

Options:

Qty. 1, EC Motor (see EV450IN EC Motor submittal) -
0.5 HP 120V/1Ph/60HZ,
0.5 HP 208-230V/1Ph/60HZ
Integrated programmable controls
Fused disconnect
Qty. 2, Factory mounted filter alarms
Double wall construction
Exterior paint - white, custom colors

Accessories:

Filters - MERV 13, 2" (shipped loose)
Backdraft damper 10"
Wall cap 10" - galvanized, paintable galvanneal
Vibration isolation kit
Hanging bracket kit
Transition kit - 10" round, qty. 2
Flange kit - rectangular 12" x 8", 2 flanges
Solid state speed control kit - 115V, qty. 1,
208-230V, qty. 1
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)

Note: Indirect Gas-Fired Duct Furnace is not available on the EV450IN.

ELECTRICAL DATA

HP	Volts	HZ	Phase	FLA	Min. Cir. Amps	Max. Overcurrent Protection Device
0.6	120	60	Single	7.2	9.0	15
0.6	208-230	60	Single	3.9-3.6	4.9	15
0.6	277	60	Single	3.5	4.4	15
0.5	208-230	60	Three	1.7-1.5	2.1	15
0.5	460	60	Three	0.8	1.0	15

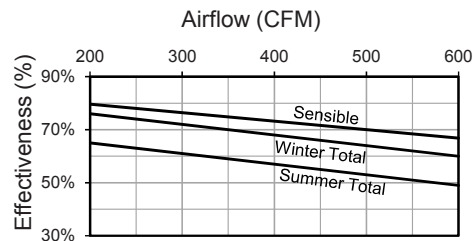
UNIT PERFORMANCE

Airflow CFM	ESP in H ₂ O	Watts	
		1P	3P
225	1.25	335	181
375	0.89	464	333
420	0.75	518	394
480	0.50	584	472
500	0.43	600	491
540	0.25	640	540
575	0.00	690	610

Note: Watts is for the entire unit.

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

CORE PERFORMANCE



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

EV450IN INFO

PRODUCT DIMENSIONS EV450IN

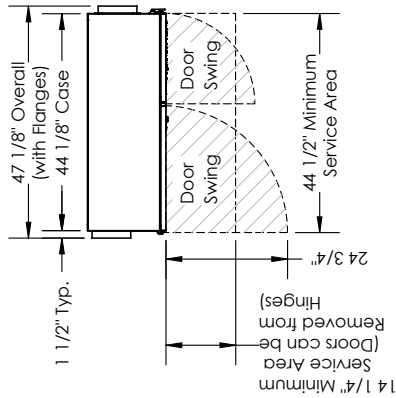
ABBREVIATIONS
EA: Exhaust Air to outside
OA: Outside Air intake
RA: Room Air to be exhausted
FA: Fresh Air to inside

INSTALLATION ORIENTATION

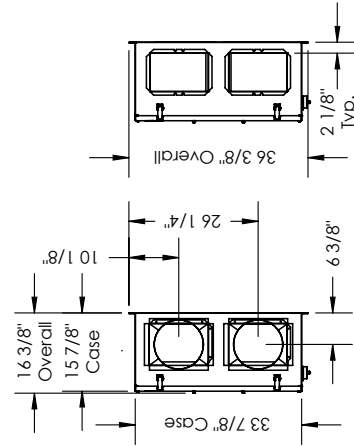
Unit may be installed in any orientation.

NOTE

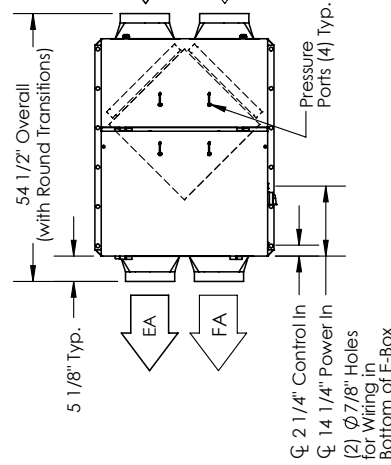
1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE ROUNDED TO THE NEAREST EIGHTH OF AN INCH.
2. SPECIFICATIONS MAY BE SUBJECT TO CHANGE WITHOUT NOTICE.



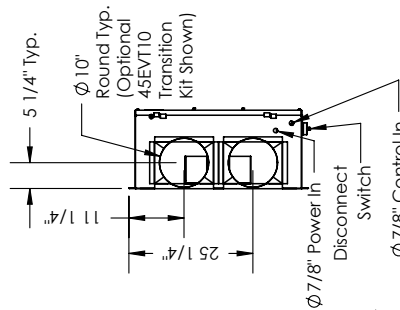
TOP VIEW



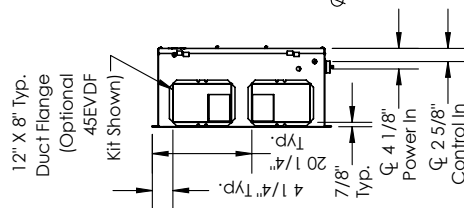
RIGHT VIEW



FRONT VIEW



LEFT VIEW



INSTALLATION

PLACEMENT OF THE EV450IN

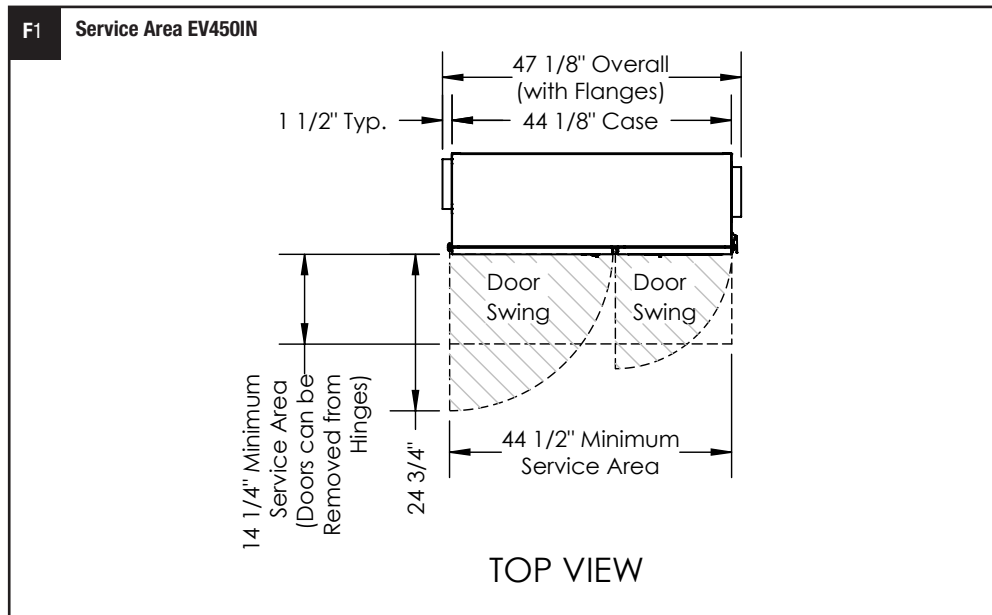
The EV450IN is designed for installation indoors. Select a location that is central to the inside duct runs, and close to both the exhaust duct (to the outside) and the fresh air duct (from the outside). The unit can be installed in any orientation but the contractor is responsible for safe installation of the unit.

For maximum air performance minimize the number of elbows, and do not place elbows within three feet of the EV450IN's discharges. For applications where duct noise is a critical issue, use noise attenuating techniques such as duct isolation, insulation, and proper duct design per SMACNA or ASHRAE standards.

PLANNING
YOUR INSTALLATION

CAUTION

Provide Adequate Service Access for Maintenance. The EV450IN will require regular filter and core inspections. Install the EV450IN where you can remove the doors for cleaning the core and replacing the filters, and where you can get at the wiring for installation and service.



INSTALLATION

PLANNING YOUR INSTALLATION

DUCTS TO THE OUTSIDE

The EV450IN requires four ducts:

- Exhaust Air Duct
(insulated duct from unit to outside);
- Outside Air Duct
(insulated duct from outside to unit);
- Room Air Duct (from room to unit);
- Fresh Air Duct (from unit to room).

Ducts from unit to the outside must be insulated with sealed vapor barrier on both inside and outside of the insulation or with closed-cell foam insulation. We recommend you use either:

- 8" X 12" insulated duct OR
- 10" I.D. flexible insulated duct

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

USING FLEX DUCT TO CONNECT EV450IN TO OUTSIDE

When connecting 10" flexible insulated duct to the Exhaust Air and Outside Air ports on the unit use the optional Duct Adapter Kit (45EVT10) (or fabricate equivalent). Duct need not be flexible, but must have continuous vapor barrier on both inner and outer face of insulation. Position the duct adapters over the openings. Install them with supplied self-drilling screws.

Keep insulated duct runs as short and direct as possible. Suspend or support duct per manufacturer's instructions.

CAUTION

Tape both inner and outer vapor barriers of insulated duct to collars on duct adapters and on wall caps. 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.

CAUTION

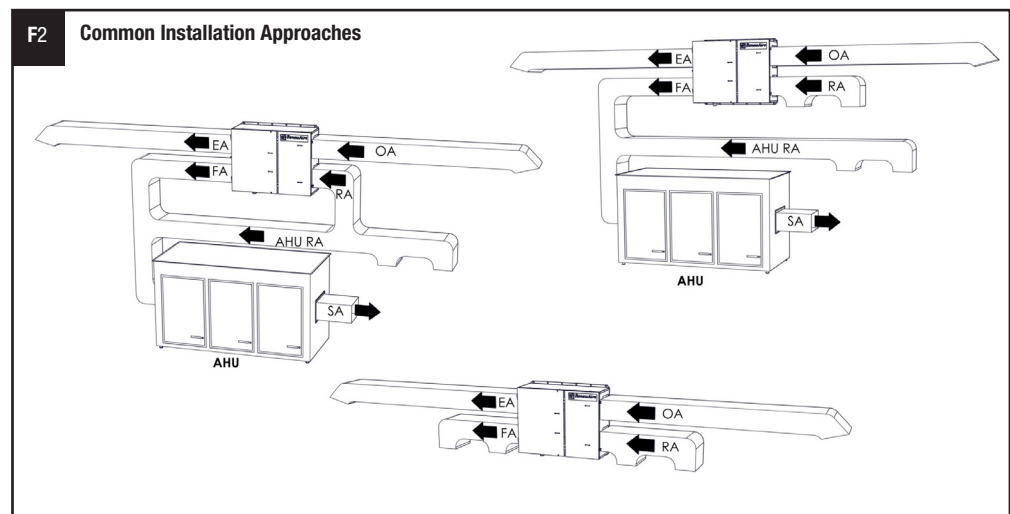
Do not vent exhaust duct up through roof. Condensate will form in cold weather and run back into unit. Instead, slope duct slightly downhill to a horizontal-discharge wall cap, which will allow any condensate to drain to the outside.

NOTE: To prevent the entry of rain through the outside air inlet duct, observe the following:

1. velocity at face of inlet hood should not exceed 500 feet per minute (fpm)
2. inlet duct must be at least 12" inside diameter
3. centerline length along duct from weather hood to unit inlet must be at least 48"
4. centerline of inlet hood must be at least 18" below the centerline of the unit inlet
5. outlet duct must pitch downward to the outside with a slope of at least 1/4" to the foot

APPLICATIONS

See figure F2 for examples of some common installation approaches.



INSTALLATION

INSIDE DUCTWORK SYSTEM

Use optional 8" X12" to 10" round transitions (45EVT10) (or fabricate equivalent) to connect 10" duct to Room Air and Fresh Air Ports on unit. Position duct adapters over openings. Install with supplied self-drilling screws.

OR

Use optional 8" X 12" duct flange (45EVDF) to connect 8" X 12" duct to Room Air and Fresh Air Ports on unit. Position duct adapters over openings. Install with supplied screws.

Or fabricate equivalent, by forming a flange on the first duct section and screw it to the EV450IN. Make sure appropriate duct sealant or tape is used to provide an air tight seal.

NOTE: 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. In a heated space, uninsulated duct is acceptable, but insulated duct resists break out noise better. Duct sealing improves ventilation performance.

Most installations will not require complicated duct systems to provide good ventilation performance. If ventilating several spaces, evaluate whether the air in the spaces is regularly mixed by the heating/cooling system; if not, provide a room air pick-up and fresh air supply in each space. If air is regularly mixed by the heating/cooling system, one room air pick-up and one fresh air supply may be all that is needed.

Connecting to an existing air-circulation system

It is often convenient and effective to connect the Fresh Air duct from the EV450IN to a return duct of an existing heating/cooling system. This way, whenever the heating/cooling system is running, fresh air from the EV450IN is distributed throughout the area served by the heating/cooling system.

Connect the Fresh Air duct to a branch return duct at some distance from the heating/cooling system's air handler. This minimizes the amount of air that the air handler can pull through the EV450IN when outside air ventilation is not desired.

If the EV450IN is running when the main air handler is not, fresh air will flow into the space through the branch's return grille. Choose the return branch for your connection accordingly (see next paragraph).

Ducting Fresh Air Directly into Space

In cold or hot weather, the fresh air will be somewhat cooler or warmer than the room air (though always much closer to room temperature than the outside air!). Avoid complaints by locating the Fresh Air supplies where they will not blow directly on occupants.

See drawings below for examples of some common installation approaches:

**PLANNING
YOUR INSTALLATION**

INSTALLATION

PLANNING YOUR INSTALLATION

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.
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. This unit must be properly ducted to the outdoors.

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.

SOUND ATTENUATION

Take these simple steps to attenuate noise from the unit.

OUTSIDE THE BUILDING

Exhaust velocity noise is the primary cause of unit-related noise outside the building. Size the exhaust duct and grille for less than 1000 fpm air velocity. When practical, orient the exhaust air hood to point away from houses or public areas.

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 outlet ducts can be significant sources of radiated sound as well. The FA and EA ducts (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 EA ducts located in the mechanical space should be insulated for sound control, both to minimize sound radiation out of these ducts and also to control sound radiation into the ducts.

AERODYNAMIC (VELOCITY) NOISE

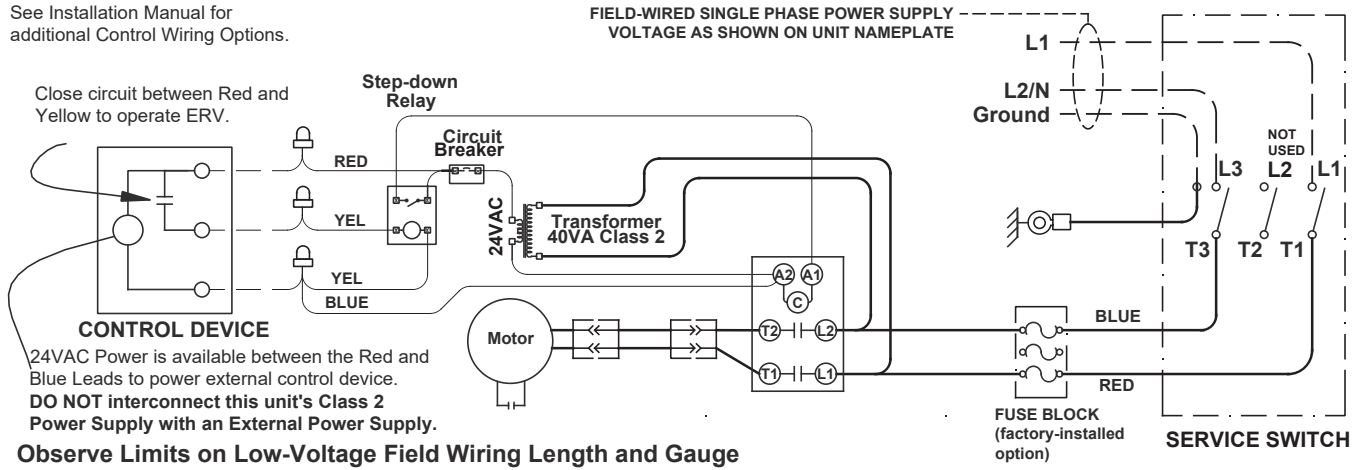
When sound attenuation is a design concern, the primary consideration is velocity noise at the unit's Fresh Air blower outlet. The average velocity at the blower outlets is 1100 FPM when the unit is operating at 600 CFM.

INSTALLATION

EV450 P1 SINGLE PHASE UNIT - STANDARD

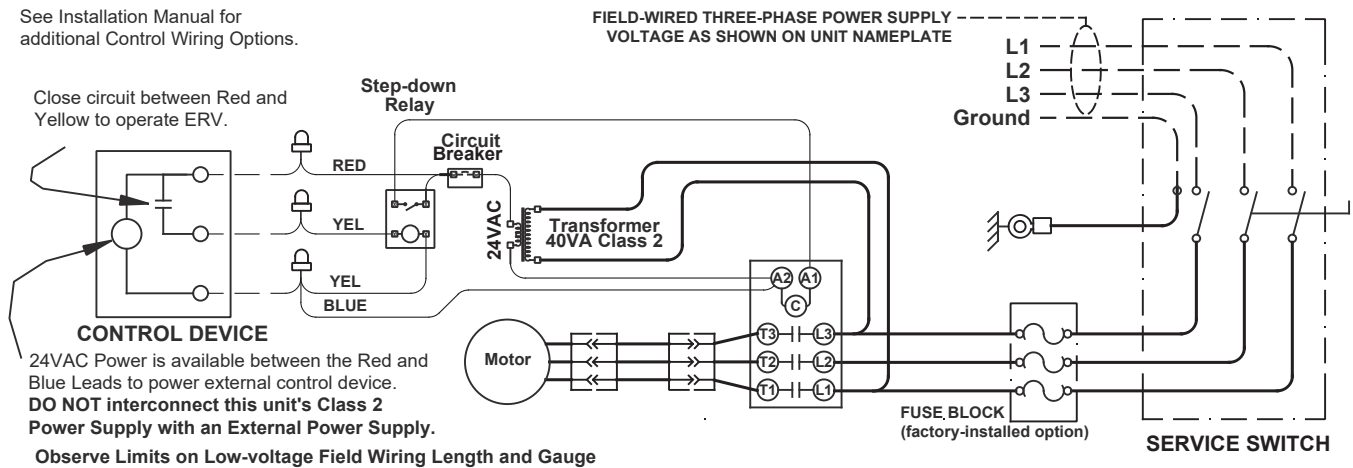
WIRING SCHEMATICS

See Installation Manual for additional Control Wiring Options.



EV450 P3 THREE PHASE UNIT - STANDARD

See Installation Manual for additional Control Wiring Options.



INSTALLATION

INSTALLATION INSTRUCTION

CAUTION

The EV450IN weighs approximately 135 lbs. It is the installer's responsibility to make sure that the screws or bolts used for securing the units are properly selected for the loads and substrates involved. Secure the EV450IN so that it cannot fall or tip in the event of accident, structural failure or earthquake.

CAUTION

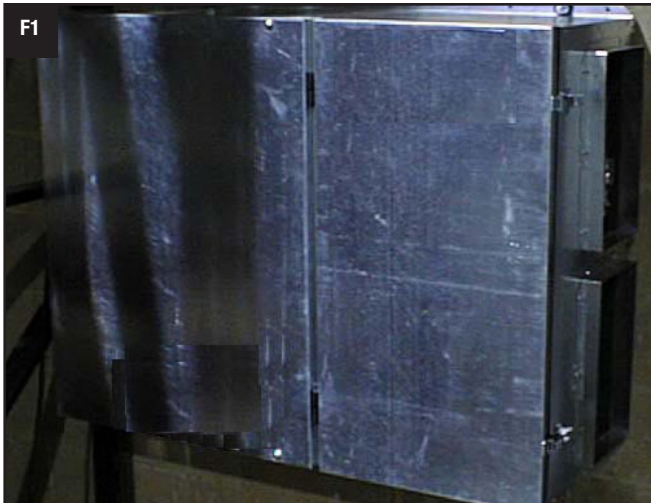
Do not stand on the unit. Do not stack or store items on the unit when installed.

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

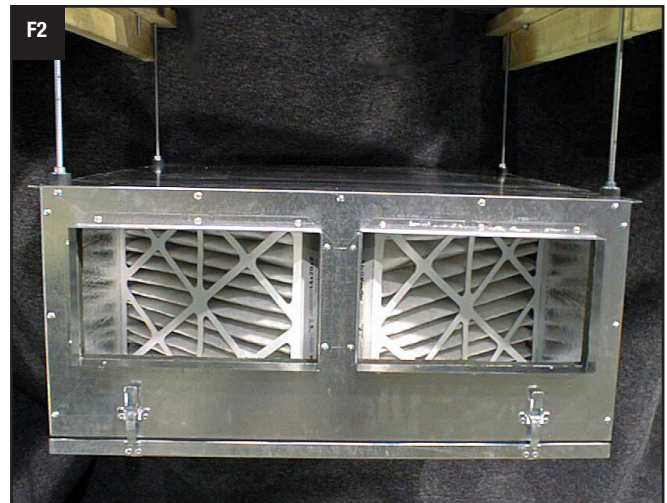
MOUNTING THE UNIT

1. The EV450IN has integral flanges for mounting to a wall (Figure 1) or hanging from a ceiling (Figure 2).
2. An optional vibration isolator kit, 45VIB, is available for hanging the unit.
3. The vibration isolator kit includes four rubber isolation mounts and eight washers. Figures 5 and 6 show how to install this mounting hardware for different installations.
4. Please note that the threaded rod, bolts, nuts, or other fasteners are not included. If hanger bolts or threaded rod are used each must be capable of carrying the weight of the unit and must be no less than 3/8" diameter.
5. An optional hanging bracket kit, 45EVHB, is available for hanging the unit from a ceiling with doors opening horizontally (Figure 3). The 45EVHB kit can also be used for floor mount legs (Figure 4). With all installations, adequate clearance for the filter access door latches must be provided.
6. Figures 7 and 8 show the rubber door keepers. In order to remove doors these keepers must be removed.

See drawing below for examples of some common installation approaches:



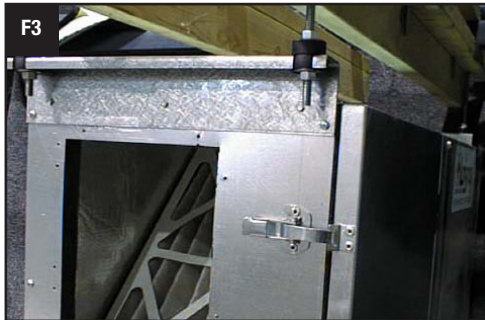
Unit mounted to wall using integral mounting flanges.



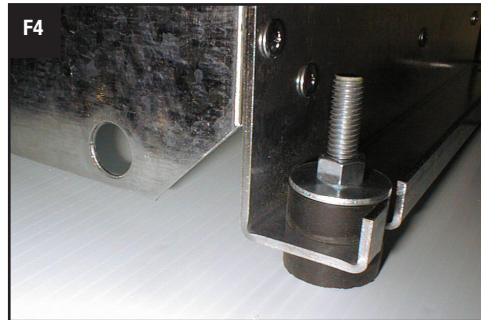
Unit hung from ceiling using integral mounting flanges.

INSTALLATION

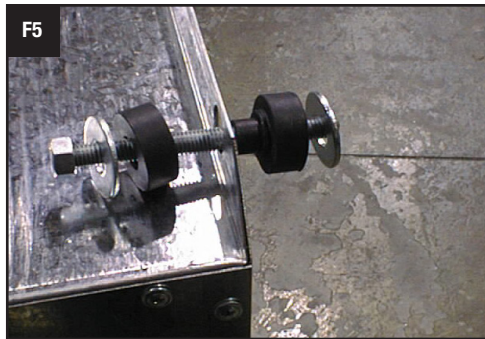
INSTALLATION INSTRUCTION



Unit hung from ceiling using optional hanging bracket kit, 45EVHB. To install hanging bracket, identify the corners of unit you wish to hang it from. Remove existing screws from unit pan. Attach hanging bracket to unit using screws provided with the hanging bracket.



Unit secured to floor using optional hanging bracket kit, 45EVHB.



Vibration isolator kit installed on integral mounting flange for wall installation. Note: threaded rod, bolts, nuts, and other fasteners are not included in kit.



Vibration isolator kit shown installed on optional hanging bracket for ceiling installation.



Rubber Door Keeper installed on Blower Access (large) Door.



Rubber Door Keeper installed on Filter Access (small) Door.

INSTALLATION

INSTALLATION
INSTRUCTION

ACCESSORIES

These ERVs may be ordered with factory-installed features including Electronically Commutated Motors. Consult the supplemental Installation and Operation Manual(s) for these features if supplied.

NOTE: Standard EV450IN with single phase original equipment motors are suitable for use with solid state speed control.

Le EV450IN avec moteurs d'équipement d'origine monophasés sont adaptés pour une utilisation avec régulateur de vitesse électronique.

 **WARNING**

Three phase motors are NOT suitable for use with solid state speed control.

Single phase ECM motors are NOT suitable for use with solid state speed control. They already have speed control built into the motor electronics.

Moteurs de trois phase ne convient pas pour utilisation avec régulateur de vitesse électronique.

Moteurs d'une phase de l'ECM ne conviennent pas pour une utilisation avec régulateur de vitesse électronique. Ils ont déjà le contrôle de vitesse intégré dans le moteur électronique.

ELECTRICAL SPECIFICATIONS

NOTE: If your unit is equipped with EC Motors, please refer to "EC Motor Manual Supplement for RenewAire Light Commercial Units" for more detail.

Use conduit, strain reliefs, etc. as required by code to secure the field wiring.

Electrical Options are identified on the Unit Label located near electrical box on the outside of the unit. Find the complete Unit Model Number in the lower left corner of the Unit Label. Use the configuration chart on the page 2 to determine motor power and voltage installed in your EV450IN.

 **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.

You must make sure to provide the correct voltage and phase power supply. Installing the incorrect voltage and phase will destroy the motor and possibly lead to injury!

Follow these steps:

1. Confirm the voltage of the power supply matches the unit.
2. Remove both unit access panels, i.e., the larger motor door and small filter door.
3. Remove electrical box cover by removing two or three screws. Connect the units power field wiring to the terminals of the disconnect switch
4. Connect service ground to ground wire pigtail.
5. Connect the control system to the pigtails in the control voltage compartment of the units electrical box. Make sure you are connecting the correct voltage, 24VAC, to the control pigtails. See Control Wiring Schematics.

INSTALLATION

LOW VOLTAGE CONTROL SYSTEM

This ERV is provided with a Class II 24VAC power supply system that operates the unit's contactor for EV450. 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 an isolation relay so you can use external controls whose contact ratings are as low as 50mA (1.2VA). Also, it is possible to operate the isolation relay 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

INSTALLATION INSTRUCTION

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.

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.

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.

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

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.

CAUTION

Be careful if the external control system provides 24VAC power at its control output: make sure blue and red leads are separately capped and not connected to any other wires.

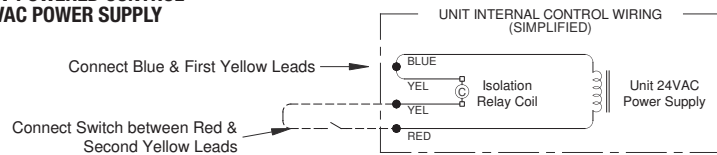
CONTROL WIRING EXAMPLES BY TYPE OF APPLICATION

A. Single 2-wire Control: Use this schematic if the control requires no power to operate and acts like a simple on/off switch. The control must not supply any power to the ERV unit. Connect the blue lead to one yellow lead. Connect the control's contacts to the red lead and the remaining yellow lead.

Control on separate Power Supply, no power present at Control Output:
Wire as shown for the Single 2-wire control.

CAUTION

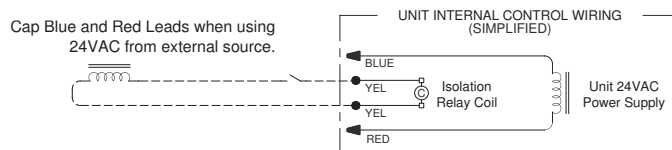
Make sure the control provides no voltage or current at its output terminals.

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

B. Control Sending 24VAC "On" Signal (from an external power source) to ERV: Make sure the blue and red leads are separately capped and not connected to any other wires. Now you safely can apply 24VAC to the two yellow leads to operate the ERV's isolation relay.

CAUTION

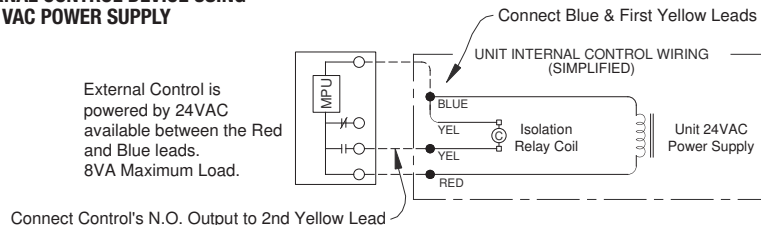
Supply only 24VAC (not VDC) from a Class II Power Source.

B 24VAC FROM AN EXTERNAL SOURCE

C. Control operating on Unit's 24VAC Power Supply: 24VAC power is available at the blue and red leads. Connect one of the yellow leads to the blue lead. Connect the switched output of the Control to the red lead to operate the ERV's isolation relay.

CAUTION

External control system should not draw more than 8VA.

C AN EXTERNAL CONTROL DEVICE USING
UNIT'S 24 VAC POWER SUPPLY

START-UP

EQUIPMENT REQUIRED

- A magnehelic gauge or other device capable of measuring 0 to 1.0 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 (DP) are measured using the installed pressure ports located in the front of the units core access doors.

NOTE: These ports are carefully located on the unit to give 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.

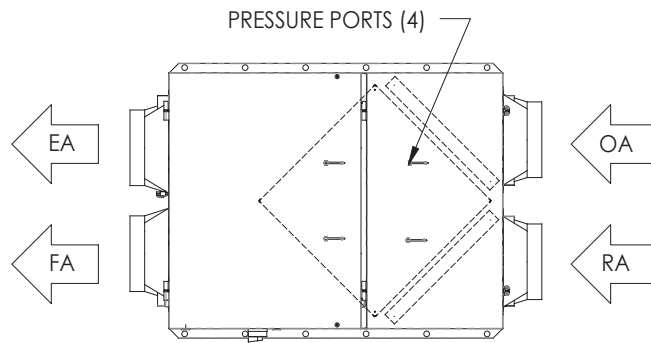
NOTE: Be sure to replace cap into pressure port when airflow measuring is completed.

NOTE: For best performance the airflow rate for both the Fresh Air and the Exhaust Air should be roughly equal ("balanced"). In some facilities a slight positive or negative pressure in the building is desired. RenewAire energy recovery ventilators can generally operate with a flow imbalance of up to 20% without significant loss in energy recovery efficiency.

CAUTION

Make sure clean filters are installed before balancing air flow. Dirty or clogged filters reduce airflow through the unit.

AIRFLOW DIAGRAM EV450IN



DIFFERENTIAL STATIC ACROSS CORE DSP VS. CFM

EV450IN	DP (H ₂ O)	DSP	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
	Fresh Air (FA)	CFM	190	230	275	315	360	400	445	485	530	570
	Room Air (RA)	CFM	190	230	275	315	360	400	445	485	530	570

START-UP

MEASURING AIR FLOW

FILTER SPECIFICATIONS

- (2) 14" x 20" x 2" (nominal) pleated filters. Actual size: 13.5" 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.



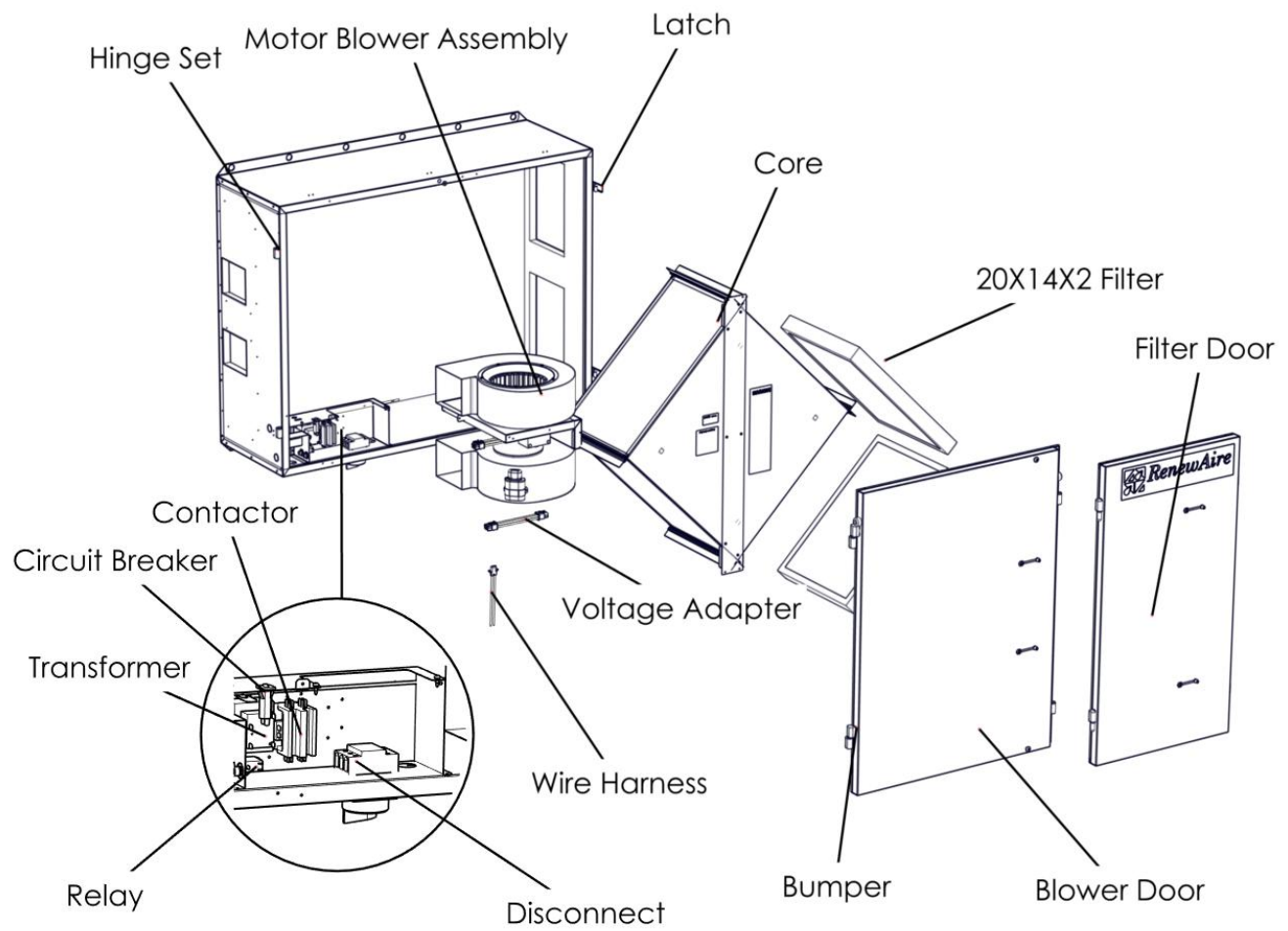
INITIAL PRESSURE DROP OF MERV 13 FILTERS AVAILABLE AS AN OPTION.



NOTE: Filter Monitor available as an option.

MAINTENANCE

SERVICE PARTS EV450IN



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.

 **WARNING**

Danger of injury from un-guarded blower 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.

Keep your ERV performing at its best by cleaning it as described below:

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.

1. Remove the filters (see below)
2. Vacuum the exposed faces of the energy exchange element with a soft brush attachment
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 EV450IN is in regular use, or as needed. 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.

1. To access the filters unlatch the access doors. The access doors may be removed.
2. Pull the dirty filters out and replace with new filters.

NOTE: The filters supplied in the unit are usually able to keep the energy exchange core clear for several months. Finer filters can be used but must be cleaned more often. If using finer filters, their increased resistance to flow must be allowed for in the system design.

MOTOR MAINTENANCE

The motor needs no lubrication. If necessary vacuum clean the blower wheels at the same time you clean the face of the energy exchange element (annually).

 **WARNING****RISK OF INJURY OR DAMAGE.**

Motor may have a manual reset thermal protector. Disconnect power before servicing or resetting motor thermal protector. Use caution, motor may be hot. Allow the motor to cool before resetting the thermal protector.

If the motor thermal protector tripped, correct the issue that caused the motor to overheat (e.g. over motor rated amperage or locked rotor).

If the motor has a manual reset thermal protector, the red thermal protector reset button is located on the motor body, on or near the lead end of the motor. If the button does not reset, the motor may still be too hot. Allow the motor to fully cool to reset the thermal protector, you should feel or hear a click when the thermal protector resets while pushing the reset button.



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

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