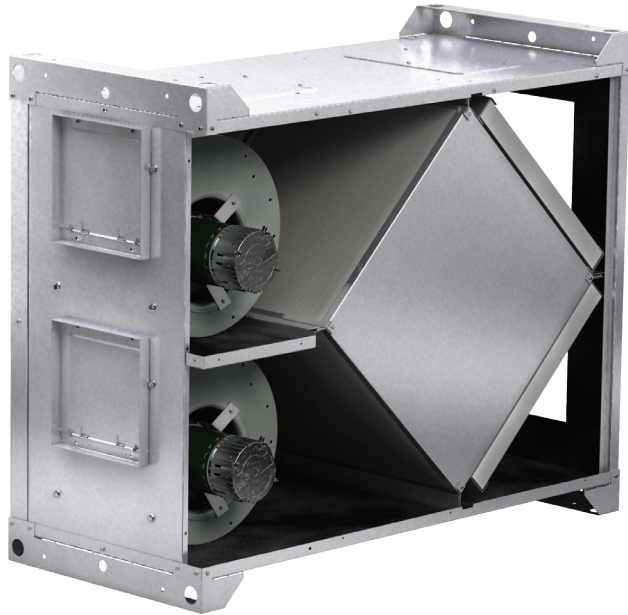


## Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with these instructions will result in voiding of the product warranty and may result in personal injury and/or property damage.



**Energy Recovery Technical Support**  
Call 1-800-240-0870 | Option 1  
**Energy Recovery Pre-Sale Support**  
Call 1-800-240-0870 | Option 3

## General Safety Information

Only qualified personnel should install this system. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions. Improper installation can result in electric shock, possible injury due to coming in contact with moving parts, as well as other potential hazards. Other considerations may be required if high winds or seismic activity are present. If more information is needed, contact a licensed professional engineer before moving forward.

### DANGER

Always disconnect power before working on or near this equipment. Lock and tag the disconnect switch or breaker to prevent accidental power up.

### CAUTION

When servicing the unit, the internal components may be hot enough to cause pain or injury. Allow time for cooling before servicing.

### CAUTION

Precaution should be taken in explosive atmospheres.

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC), the National Fire Protection Agency (NFPA), where applicable. Follow the Canadian Electrical Code (CEC) in Canada.
2. All moving parts must be free to rotate without striking or rubbing any stationary objects.
3. Unit must be securely and adequately grounded.
4. Do not spin fan wheel faster than maximum cataloged fan RPM. Adjustments to fan speed significantly affects motor load. If the fan RPM is changed, the motor current should be checked to make sure it is not exceeding the motor nameplate amps.
5. Do not allow the power cable to kink or come in contact with oil, grease, hot surfaces or chemicals. Replace cord immediately if damaged.
6. Verify that the power source is compatible with the equipment.
7. Never open access doors to the unit while it is running.

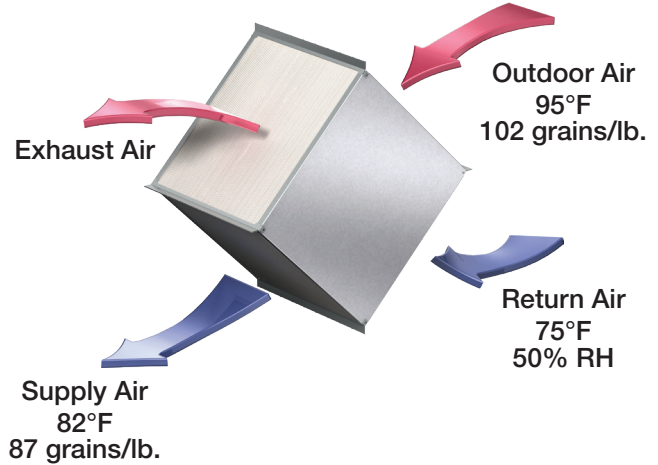
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## Unit Overview

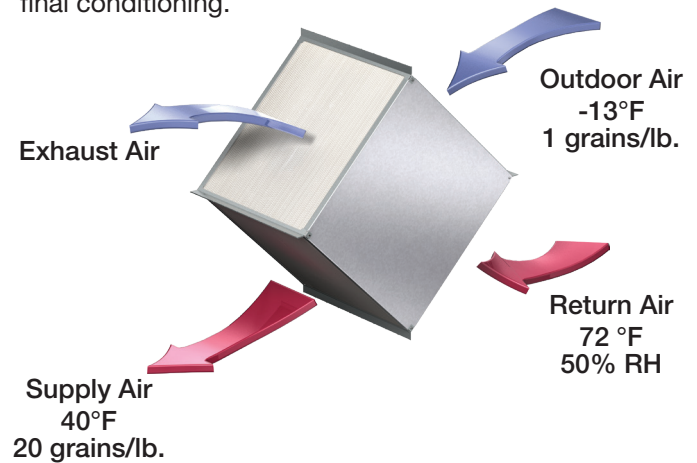
### Summer Operation

Outdoor air is preconditioned (temperature and moisture levels are decreased) by the transfer of energy from the cooler, drier return air through the energy recovery core. The preconditioned air is typically mixed with return air going back to the air handler for final conditioning.



### Winter Operation

Outdoor air is preconditioned (temperature and moisture levels are increased) by the transfer of energy from the warmer, more humid return air through the energy recovery core. The preconditioned air is typically mixed with return air going back to the air handler for final conditioning.



## Receiving

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This product may have been subject to road salt during transit. If so, immediately wash off all visible white residue from all exterior surfaces. Upon receiving the product, check to ensure all items are accounted for by referencing the delivery receipt or packing list. Inspect each crate or carton for shipping damage before accepting delivery. Alert the carrier if any damage is detected, **do not refuse shipment**. The customer shall make notation of damage (or shortage of items) on the delivery receipt and all copies of the bill of lading should be countersigned by the delivering carrier. If damaged, immediately contact your manufacturer's representative. Any physical damage to the unit after acceptance is not the responsibility of the manufacturer.

## Handling

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Units are to be rigged and moved by the lifting brackets provided or by the skid when a forklift is used. Location of brackets varies by model and size. Handle in such a manner as to keep from scratching or chipping the coating. Damaged finish may reduce ability of unit to resist corrosion.

## Unpacking

Verify that all required parts and the correct quantity of each item have been received. Inspect interior of unit cabinet for any shipped loose items. If any items are missing, report shortages to your local representative to arrange for obtaining missing parts. Sometimes it is not possible that all items for the unit be shipped together due to availability of transportation and truck space. Confirmation of shipment(s) must be limited to only items on the bill of lading.

## Storage

---

Units are protected against damage during shipment. If the unit cannot be installed and operated immediately, precautions need to be taken to prevent deterioration of the unit during storage. The user assumes responsibility of the unit and accessories while in storage. The manufacturer will not be responsible for damage during storage. These suggestions are provided solely as a convenience to the user.

The ideal environment for the storage of units and accessories is indoors, above grade, in a low humidity atmosphere which is sealed to prevent the entry of blowing dust, rain, or snow. Units designed for outdoor applications may be stored outdoors. All accessories must be stored indoors in a clean, dry atmosphere.

## Indoor

Maintain temperatures evenly to prevent condensation. Remove any accumulations of dirt, water, ice, or snow and wipe dry before moving to indoor storage. To avoid condensation, allow cold parts to reach room temperature. Leave coverings loose to permit air circulation and to allow for periodic inspection.

The unit should be stored at least 3½ in. (89 mm) off the floor. Clearance should be provided to permit air circulation and space for inspection.

## Outdoor

The unit should be placed on a level surface to prevent water from leaking into the unit. The unit should be elevated so that it is above water and snow levels. Ensure sufficient support to prevent unit from settling into soft ground. Locate parts far enough apart to permit air circulation, sunlight, and space for periodic inspection. To minimize water accumulation, place all unit parts on blocking supports so that rain water will run off.

Do not cover parts with plastic film or tarps as these cause condensation of moisture from the air passing through heating and cooling cycles.

## Inspection and Maintenance

While in storage, inspect units once per month. Keep a record of inspection and maintenance performed.

If moisture or dirt accumulations are found on parts, the source should be located and eliminated. At each inspection, rotate the fan wheel by hand ten to fifteen revolutions to distribute lubricant on motor. If paint deterioration begins, consideration should be given to touch-up or repainting. Units with special coatings may require special techniques for touch-up or repair.

Machined parts coated with rust preventive should be restored to good condition promptly if signs of rust occur. Immediately remove the original rust preventive coating with petroleum solvent and clean with lint-free cloths. Polish any remaining rust from surface with crocus cloth or fine emery paper and oil. Do not destroy the continuity of the surfaces. Wipe thoroughly clean with Tectyl® 506 (Ashland Inc.) or the equivalent. For hard to reach internal surfaces or for occasional use, consider using Tectyl® 511M Rust Preventive, WD-40® or the equivalent.

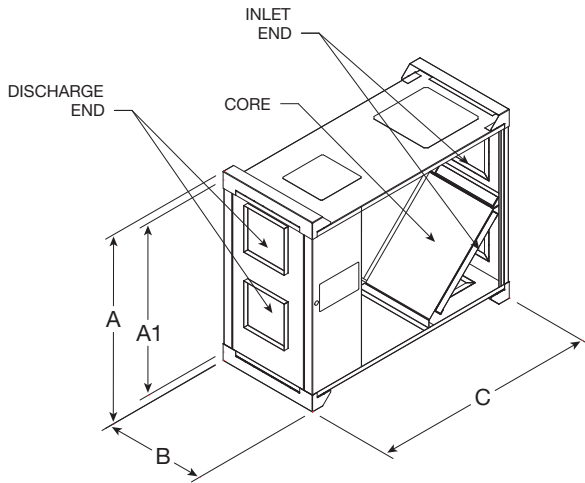
## Removing from Storage

As units are removed from storage to be installed in their final location, they should be protected and maintained in a similar fashion until the equipment goes into operation.

Prior to installing the unit and system components, inspect the unit assembly to make sure it is in working order.

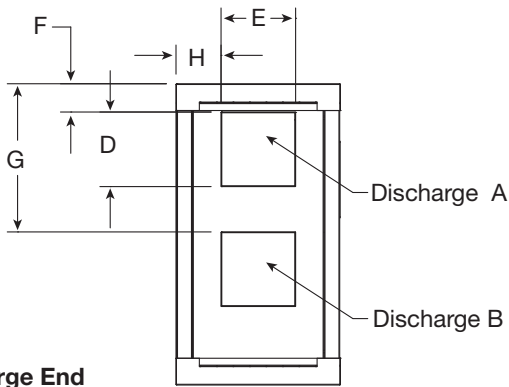
1. Check all fasteners, set screws on the fan, wheel, bearings, drive, motor base, and accessories for tightness.
2. Rotate the fan wheel(s) by hand and assure no parts are rubbing.

## Dimensional Data and Weights

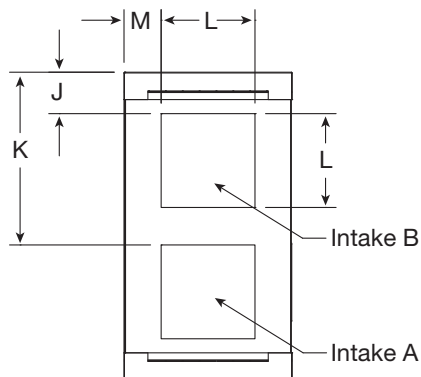


MiniCore	A	A1	B	C	Weight (lbs.)
5	39.4	34.4	16.3	47.3	215
10	39.4	34.4	21.5	47.3	245

All dimensions are in inches.



Discharge End



Intake End

MiniCore	D	E	F	G	H	J	K	L	M
5	9.7	9.7	3.7	19.8	3.3	5.3	22.1	12	2.2
10	9.7	9.7	3.7	19.4	5.9	5.3	22.1	12	4.8

All dimensions are in inches.

## Service Clearances and Access Panel Locations

### Recommended Service Clearances

The MiniCore requires minimum clearances to perform routine maintenance, such as filter replacement, energy core cleaning and fan inspection. Fan and motor assemblies, energy recovery core, and filter sections are provided with a service door or panel for proper component access.

MiniCore	Inches
5	20
10	30

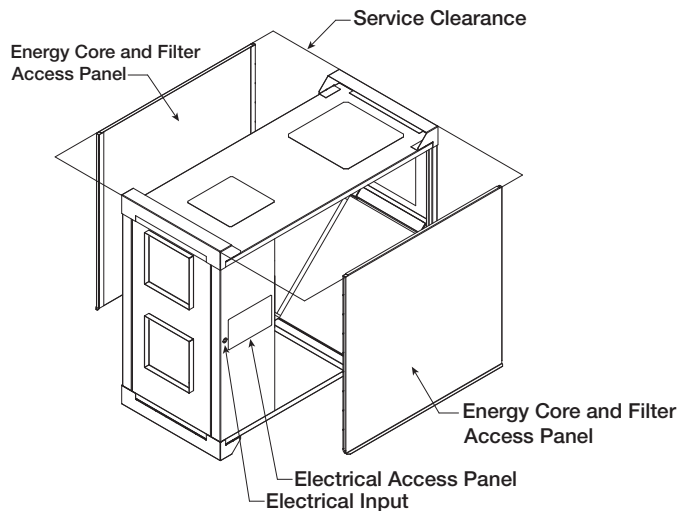
When mounted on its side, the MiniCore only requires access on one side of the unit. It is recommended that access is kept on the electrical input side.

Minimum service clearance should be provided on the side of the unit for routine service and component removal should it become necessary.

If the MiniCore unit is to be mounted on its side (*Reference the Mounting Options sections of this IOM*), then service clearance should be on the electrical input side.

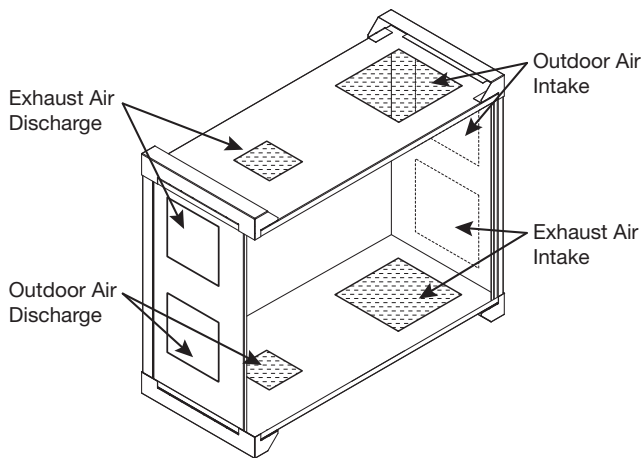
### Access Panel Locations

- Outdoor and exhaust fans, and motor
- Electrical connection
- Energy core and internal filters



## Intake and Discharge Locations

The MiniCore comes standard with end connections. The option for configurable intake and discharge connections (shaded in below drawing) are available and can be interchanged based on application in the field.



### Changing the Discharge Location

**Step 1** - Disconnect and lockout all power switches.

**Step 2** - Remove the sheet metal block off from the desired discharge location.

**Step 3** - Cut the insulation from the desired discharge location opening.

**Step 4** - Remove the backdraft damper from its current position and reinstall in the desired discharge location. The hinged door should be on the discharge end of the unit.

**Step 5** - Glue the cut out insulation to the sheet metal block off. Install where the damper had been located.

**Step 6** - Using a 1/2-inch wrench, remove the four (4) bolts from the discharge end of the unit that holds the blowers.

**Step 7** - Remove the four (4) plastic plugs from the desired discharge location and reinstall the plastic plugs in the holes where the bolts were removed from in Step 6.

**Step 8** - Position the blowers to line up with the desired discharge location. The motor needs to be on the discharge end of the blower and unit. If the motor is positioned on the return side of the blower/unit, the motor/blower will interfere with the energy recovery core. The blower adjacent to the control center needs to be rotated 90°. The blower not adjacent to the control center needs to be flipped and rotated such that the motor is now opposite the control center side of the unit. It may be necessary to unwire the motors.

**Step 9** - Bolt the blowers in their desired locations. Securely reconnect and fasten all wires.

### Changing the Inlet Location

**Step 1** - Remove the metal cover for optional inlet location by unfastening the four (4) sheet metal screws holding it in place.

**Step 2** - Hand bend flanges out to form a duct collar in the newly uncovered intake opening.

**Step 3** - Cut insulation.

**Step 4** - Hand bend flanges in on original intake and replace metal cover removed in Step 1.

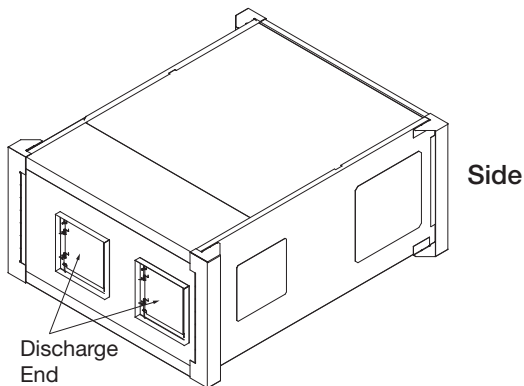
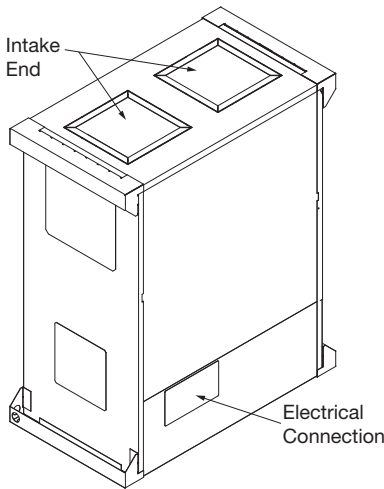
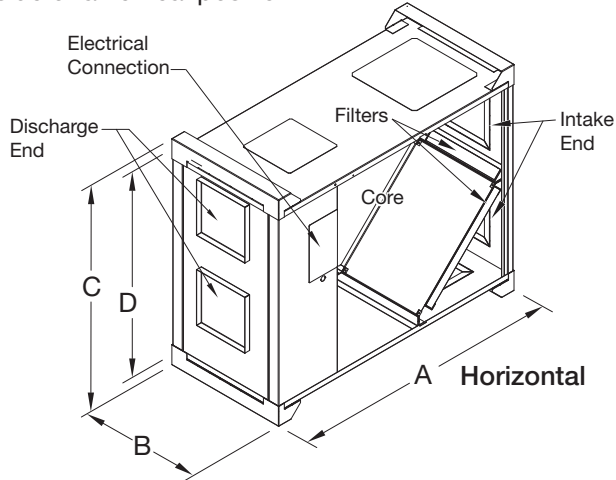
# Installation

## IMPORTANT

The MiniCore unit can be hung in any orientation. The installation contractor is responsible for safely mounting the unit to provide appropriate removal or access to the panels and unit components.

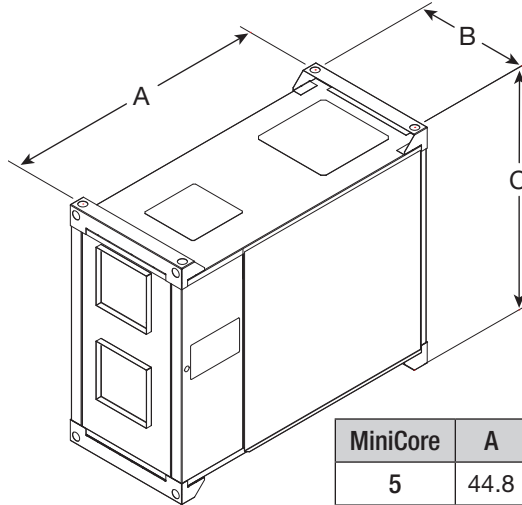
The system design and installation should follow accepted industry practices, such as described in the ASHRAE Handbook and SMACNA.

As standard, the MiniCore is to be mounted in a horizontal orientation but can also be mounted on its side or a vertical position.



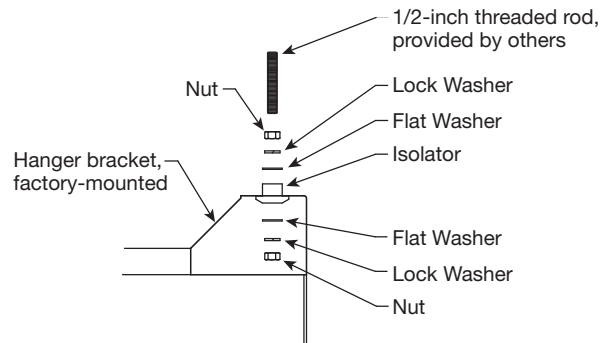
## Hang Mounting with Hanging Vibration Isolators

- The hanging isolator kit includes four (4) isolators and required hardware.
- Locate the support rods as shown in the drawing.
- Assemble each isolator as shown below.



MiniCore	A	B	C
5	44.8	14	39.4
10	44.8	19.2	39.4

All dimensions are in inches.



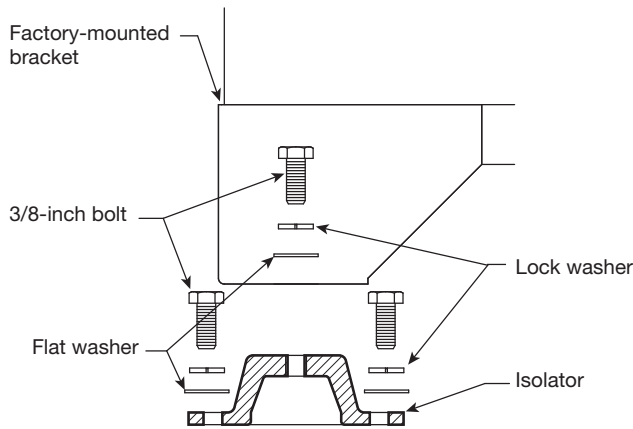
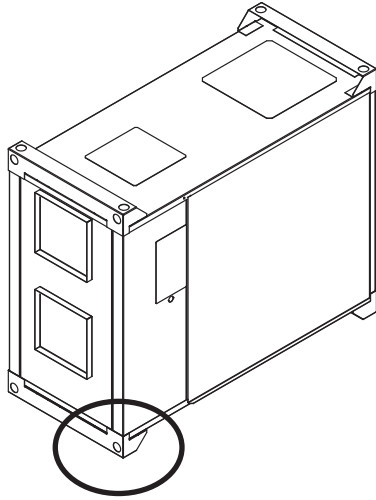
**Hanging Vibration Isolator Assembly**



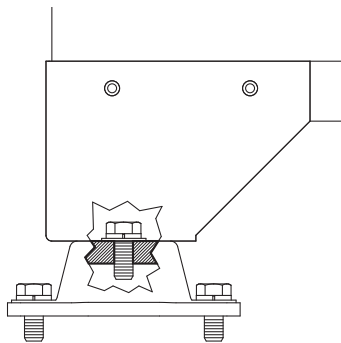
# Installation

## Base Mounting with Base Vibration Isolators

- The base isolators kit includes four (4) isolators, four (4) brackets and required hardware.
- Assemble and mount the isolators as shown in the figures below.



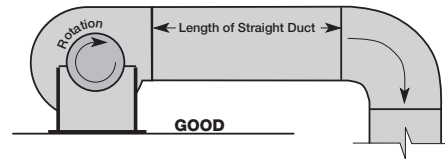
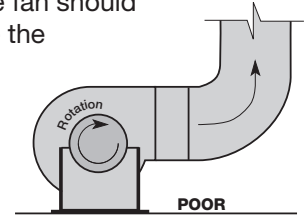
**Base Vibration Isolator Assembly**



**Assembled and Mounted Isolator Detail**

## Ductwork Connections

Examples of poor and good fan-to-duct connections are shown. Airflow out of the fan should be directed straight or curve the same direction as the fan wheel rotates. Poor duct installation will result in low airflow and other system effects.



## Recommended Discharge Duct Size and Length

MiniCore	Duct Size	Straight Duct Length
5	9.75	3
10	9.75	3

- Recommended duct sizes are based on velocities across the cfm range of each model at approximately 800 feet per minute (FPM) at minimum airflow and up to 1600 fpm at maximum airflow. Recommended duct sizes are only intended to be a guide and may not satisfy the requirements of the project. Refer to plans for appropriate job specific duct size and/or velocity limitations.
- Straight duct lengths were calculated based on 100% effective duct length requirements as prescribed in AMCA Publication 201. Calculated values have been rounded up to nearest foot.

# Electrical Connections

Before connecting power to the unit, read and understand the following instructions and wiring diagrams. Complete wiring diagrams are attached inside the blower door of the unit.

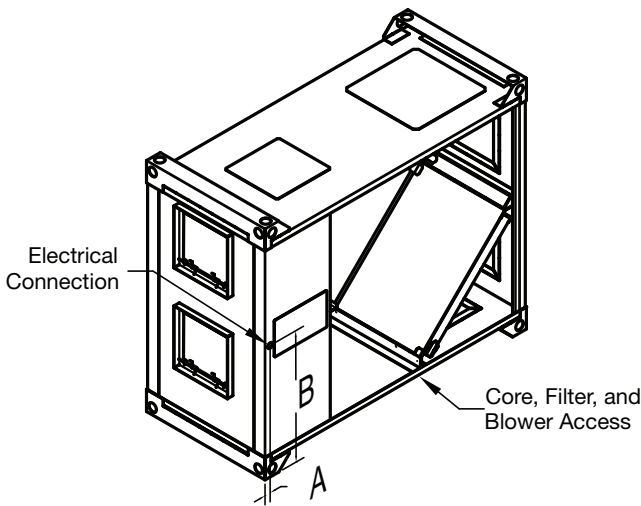
All wiring should be done in accordance with the National Electrical Code ANSI/NFPA 70 latest edition and any local codes that may apply. In Canada, wiring should be done in accordance with the Canadian Electrical Code. The equipment must be properly grounded.

<b>CAUTION</b>
If any of the original wire must be replaced, the replacement wire must have a temperature rating of at least 105°C.
<b>DANGER</b>
High voltage electrical input is required for this equipment. This work should be performed by a qualified electrician.

### Electrical Connection Location

MiniCore	A	B
5/10	1	20.6
5/10 with disconnect	2.4	25.5

All dimensions are in inches.



### Sequence for Wiring Unit

1. The unit's nameplate contains the voltage and total amperage required. The wire supplying power to the unit should be sized accordingly.
2. The main power line should be connected to the appropriate terminal blocks.  
Power may be routed to the unit through the opening on the underside of the unit. The locations for the opening are provided in the figure to the right.
3. Refer to the wiring diagrams in this manual or in the unit for controlling the unit.

### Frost Control

Extremely cold outdoor air temperatures can cause moisture condensation and frosting on the energy recovery wheel. Frost Control timer is a selectable timer control that will prevent control wheel frosting. Frost control uses a Thermo-O-Disc P/N: 314886 T-O-D 60T11 (L15-10F) mounted in the outdoor air intake compartment. Thermo-O-Disc has pre-set temperature of 5°F and uses the normally closed contacts; contacts open on temperature rise. Use the test procedure for troubleshooting.

### Frost Control Test Procedure

1. Remove power from unit.
2. Jumper the temperature indicating thermodisc in the unit control center. Thermodisc has a pre-set temperature of 5°F.
3. Set the frost control timer scale for T1 and T2 to 5m. Set the timer settings for T1 and T2 to 0.
4. Add power to the unit. Blower should cycle on for 5 minutes, then turn off for 5 minutes.
5. Remove power from unit and remove jumpers that were placed. Re-set timer settings.
  - T1 timer ON setting set to 5 for 30 minutes of wheel on time.
  - T2 timer OFF setting set to 0 for 5 minutes of wheel off time.

### Timer Settings:

T1 ON Timer	T2 OFF Timer
0 = 5 MIN	0 = 5 MIN (default)
1 = 10 MIN	1 = 10 MIN
2 = 15 MIN	2 = 15 MIN
3 = 20 MIN	3 = 20 MIN
4 = 25 MIN	4 = 25 MIN
5 = 30 MIN (default)	5 = 30 MIN
6 = 35 MIN	6 = 35 MIN
7 = 40 MIN	7 = 40 MIN





## General Safety Information

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Only qualified personnel should install this product. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions. Improper installation can result in electric shock, possible injury due to coming in contact with moving parts, as well as other potential hazards. For more information, contact a licensed professional engineer before moving forward.

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the National Fire Protection Agency (NFPA), where applicable. Follow the Canadian Electrical Code (CEC) and ULC-S650 if installing this product in Canada.
2. Verify that the power source is compatible with the equipment

## Receiving

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Upon receiving the product, check to ensure all items are accounted for by referencing the delivery receipt or packing list. Inspect each crate or carton for shipping damage before accepting delivery. Alert the carrier of any damage detected. The customer will note damage (or shortage of items) on the delivery receipt and all copies of the bill of lading which is countersigned by the delivering carrier. If damaged, immediately contact your local representative. Any physical damage to the unit after acceptance is not the responsibility of the manufacturer.

## Unpacking

Verify that all required parts and the correct quantity of each item have been received. If any items are missing, report shortages to your local representative to arrange for obtaining missing parts. Sometimes it is not possible that all items for the unit be shipped together due to availability of transportation and truck space. Confirmation of shipment(s) must be limited to only items on the bill of lading.

## Storage

---

Controls are protected against damage during shipment. If the control cannot be installed and operated immediately, precautions need to be taken to prevent deterioration of the control during storage. The user assumes responsibility of the control and accessories while in storage. The manufacturer will not be responsible for damage during storage. These suggestions provide solely as a convenience to the user.

## Indoor

The ideal environment for the storage of controls and accessories is indoors, above grade, in a low humidity atmosphere that is sealed to prevent the entry of blowing dust, rain or snow. Care must be taken to protect controls and accessories from dirt, moisture, and extreme temperature during storage.

**NOTE:** Improper storage which results in damage to the product will void the warranty.

## Control Components

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Verify that all of the following parts and hardware have been received prior to beginning installation. Contact your local representative or the manufacturer if replacement parts are required.

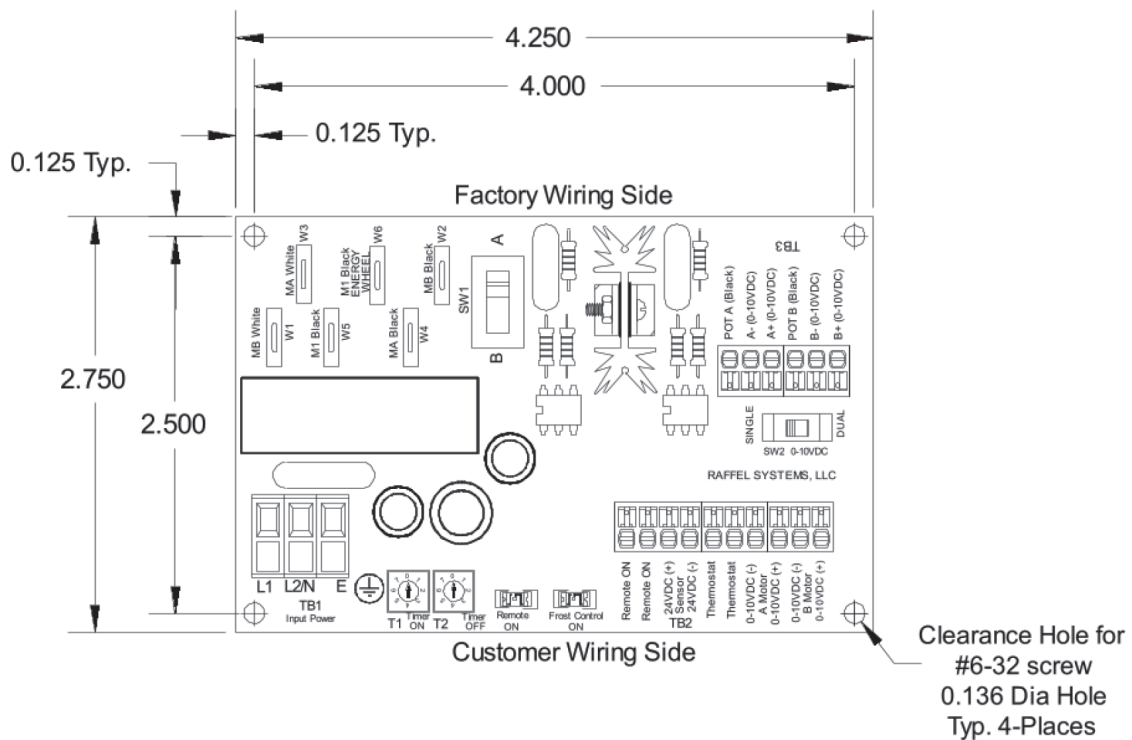
**NOTE:** Additional parts (provided by others) may be required to complete the control installation, including additional wiring and hardware for mounting the control to the building structure.

**NOTE:** See following page for diagram of provided mounting kit and control components.

# Mounting & Wiring

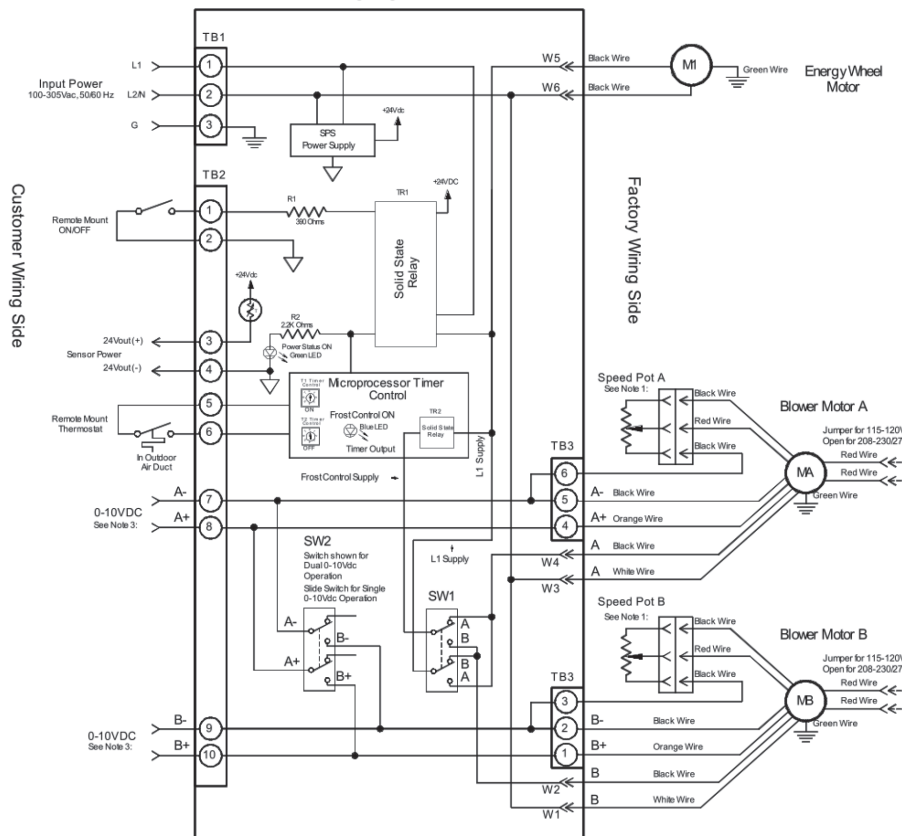
## HOA Controller Mounting

ERV Control PCB GPN: 387192



## HOA Wiring

387192 ERV Controller Wiring Diagram



## ERV Specifications

### AC Input Power

1115Vac, 230Vac, 277Vac 50/60 Hz.

### Motor and Aux Input

115Vac — 208Vac Input, 50/60 Hz.

230Vac — 277Vac Input, 60/60 Hz.

### Motor Output

QTY (2) 115Vac 8.8FLA 3/4HP

QTY (1) Wheel Motor 115Vac 0.75 FLA

### Remote ON Input

Provide a close contact between TB2-1 and TB2-2 will active the ERV Controller.

### Sensor Remote Power

+24VDC Pin 3 of TB2 and GND Pin 4 of TB2 is available for source powering sensors. (Maximum 100ma).

### Frost Control

Extremely cold outdoor air temperatures can cause moisture condensation and frosting on the energy recovery wheel. Frost Control timer is a selectable timer control that will prevent control wheel frosting. Frost control uses a Therm-O-Disc P/N: 314886 T-O-D 60T11 (L15-10F) mounted in the outdoor air intake compartment. Thermo-O-Disc has pre-set temperature of 5°F and uses the normally closed contacts; contacts open on temperature rise. Use the test procedure for troubleshooting.

### Remote Thermostat/Therm-O Disc Input:

Wire between Pins 5 and 6 of TB2.

#### Timer Settings:

T1 ON Timer	T2 OFF Timer
0 = 5 MIIN	0 = 5 MIN (default)
1 = 10 MIN	1 = 10 MIN
2 = 15 MIN	2 = 15 MIN
3 = 20 MIN	3 = 20 MIN
4 = 25 MIN	4 = 25 MIN
5 = 30 MIN (default)	5 = 30 MIN
6 = 35 MIN	6 = 35 MIN
7 = 40 MIN	7 = 40 MIN

### Single Mode Speed Control

Place SW2 slide switch on ERV PCB to the Single position. Provide a 0- 10Vdc command signal to Pin 7 (-) and Pin 8 (+) of TB2. This will control the speed of both A and B motors.

### Dual Mode Speed Control

Place SW2 slide switch on ERV PCB to the dual mode. Provide a 0-10Vdc command signal to Pin 7 (-) and Pin 8 (+), of TB2 for speed control of Motor A. Provide another 0-10V command signal to Pin 9 (-) and Pin 10 (+) of TB2 for speed control of Motor B.

### Inlet/Outlet Motor Swap

In the event the Inlet and Exhaust vents are swapped, slide SW1 switch on ERV PCB A and B motors to reverse.

### Agency Approval: UL E479135

#### Conditions of Acceptability

1. ERV Controller must be mounted in a suitable end-use enclosure.
2. Load motors rated 3/4HP shall be R/C (XDNW2) Electronically Protected Motor with Locked Rotor Protection.

## Operation

**IMPORTANT:** Ensure all wiring is complete before applying power to the ERV controller.

### Check Voltage

Before starting the ERV Controller, compare the supplied voltage with the unit's nameplate voltage and the motor voltage.

### Initial Setup

1. Apply power to the ERV controller.
2. Remote ON: To turn "ON" the ERV Controller, provide a close contact between Pins 1 and 2 of TB2 on ERV PCB. The Green LED will illuminate when activated {"ON"}
3. Validate Motor operation: With Remote "ON" activated, verify Energy Wheel, Inlet and Exhaust motors are functioning.  
**Note:** If A or B motor is "OFF", check the following:
  - a. Frost control maybe activated depending on the Thermostat input Pins 5 and 6 of TB2.
  - b. 0-10Vdc Speed Controls settings are too low. From 0-1.9V, the A and B motor(s) will be off and will operate within the 2-10V range.
4. Validate Inlet and Outlet (Exhaust) motor operation with setting of SW1 on the ERV Controller. Make sure SW1 is in the correct position A or B. If the Inlet and Outlet (Exhaust) are reserved, simply slide SW1 switch on the ERV PCB to the opposite position. This will swap Inlet and Outlet motors without re-wiring.
5. If +24VDC is required for Remote sensor power, , validate +24Vdc between Pins 3 and Pin 4 (GND) of TB2. (Maximum 100ma).

## HOA Troubleshooting

387192 ERV Troubleshooting Guide		
Symptoms	Potential Issues	Fix
Unit is NOT operating	<ul style="list-style-type: none"> <li>✓ Loss of Input Power</li> <li>✓ Incorrect wiring</li> <li>✓ Green LED is not illuminated for Remote ON</li> <li>✓ No contact closure between Pins 1 &amp; 2 of TB2 for Remote "ON"</li> </ul>	<ul style="list-style-type: none"> <li>✓ Check Breaker</li> <li>✓ Check input power Wiring</li> <li>✓ Validate correct Input Power to Terminal Block TB1</li> <li>✓ Validate a short between Pins 1 &amp; 2 of TB2 for Remote "ON"</li> <li>✓ Validate Green LED is illuminated for Remote ON</li> </ul>
Energy Wheel Motor does not turn ON	<ul style="list-style-type: none"> <li>✓ No contact closure between Pins 1 &amp; 2 of TB2 for Remote "ON"</li> <li>✓ Validate Motor wiring to W5 and W6 (1/4") Spade Faston tabs on ERV Controller</li> </ul>	<ul style="list-style-type: none"> <li>✓ Validate Motor Wiring</li> <li>✓ Validate Green LED on ERV Controller is illuminated "ON"</li> <li>✓ Energy Wheel is stuck and is not free. Turn the energy recovery wheel by hand to verify free operation</li> <li>✓ Replace motor</li> </ul>
A Motor does not turn ON	<ul style="list-style-type: none"> <li>✓ No contact closure between Pins 1 &amp; 2 of TB2 for Remote "ON"</li> <li>✓ Validate Motor wiring to W3 and W4 (1/4") Spade Faston tabs on ERV Controller</li> <li>✓ Validate speed potentiometer is above &gt; 2.0Vdc</li> </ul>	<ul style="list-style-type: none"> <li>✓ Validate Motor Wiring</li> <li>✓ Validate 0-10V Motor command Voltage at Motor. Motor command voltage must be &gt; than 2.00V</li> <li>✓ Validate Frost control is not activated. Check SW1 Inlet/Outlet switch</li> </ul>
B Motor does not turn ON	<ul style="list-style-type: none"> <li>✓ No contact closure between Pins 1 &amp; 2 of TB2 for Remote "ON"</li> <li>✓ Validate Motor wiring to W1 and W2 (1/4") Spade Faston tabs on ERV Controller</li> <li>✓ Validate speed potentiometer is above &gt; 2.0Vdc</li> </ul>	<ul style="list-style-type: none"> <li>✓ Validate Motor Wiring</li> <li>✓ Validate 0-10V Motor command Voltage at Motor. Motor command voltage must be &gt; than 2.00V</li> <li>✓ Validate Frost control is not activated. Check SW1 Inlet/Outlet switch</li> </ul>
No Frost Control	<ul style="list-style-type: none"> <li>✓ Validate Thermostat Wiring Pins 5 and 6 of TB2</li> <li>✓ Validate Blue LED is Illuminated</li> <li>✓ Inlet and Exhaust vents are swapped simply slide SW1 switch on ERV PCB A and B motors to reverse setting</li> </ul>	<ul style="list-style-type: none"> <li>✓ Validate Frost control is not activated.</li> <li>✓ Validate SW1 Inlet/Outlet switch is set correctly.</li> <li>✓ Validate Timers T1 and T2 for correct settings.</li> </ul>
No remote +24V Sensor Power	<ul style="list-style-type: none"> <li>✓ Check wiring to Pins 3 and 4 of TB2.</li> <li>✓ Measure Voltage at Pins 3 and 4 of TB2 for +24Vdc</li> </ul>	<ul style="list-style-type: none"> <li>✓ Check input power Wiring</li> <li>✓ Validate correct Input Power to Terminal Block TB1</li> <li>✓ Remove wires at Pins 3 and 4 of TB2 and measure the voltage for +24Vdc. If +24Vdc is measured, there is too much current draw (sensor can be damaged or drawing too much power) Check Breaker</li> </ul>

# System Start-Up

## DANGER

Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit to OFF at disconnect switch(es). Unit may have multiple power supplies.

## CAUTION

Use caution when removing access panels or other unit components, especially while standing on a ladder or other potentially unsteady base. Access panels and unit components can be heavy and serious injury may occur.

## CAUTION

Do not operate without the filters installed. They prevent the entry of foreign objects such as leaves, birds, etc.

## CAUTION

Do not run unit during construction phase. Damage to internal components may result and void warranty.

## WARNING

Do not jumper any safety devices when operating the unit. This may damage components within or cause serious injury or death.

## SPECIAL TOOLS

- Voltmeter
- Incline manometer or equivalent
- Tachometer
- Amperage meter

Every installation requires a comprehensive start-up to ensure proper operation of the unit. As part of that process, the following checklist must be completed and information recorded. Starting up the unit in accordance with this checklist will not only ensure proper operation, but will also provide valuable information to personnel performing future maintenance. Should an issue arise which requires factory assistance, this completed document will allow unit experts to provide quicker resolve. Qualified personnel should perform start-up to ensure safe and proper practices are followed.

### Unit Documentation Record

Unit Model No. \_\_\_\_\_  
 Unit Serial No. \_\_\_\_\_  
 Start-Up Date \_\_\_\_\_  
 Start-Up Personnel Name \_\_\_\_\_  
 Start-Up Company \_\_\_\_\_  
 Phone Number \_\_\_\_\_

### Pre-Start-Up Checklist

- Disconnect and lock-out all power switches
- Remove any foreign objects that are located in the energy recovery unit.
- Check all fasteners, set-screws, and locking collars on the fans, bearings, drives, motor bases and accessories for tightness.
- Rotate the fan wheels by hand to ensure no parts are rubbing.
- Confirm the EC motor voltage is correct. Reference unit wiring diagram.
- Filters can load up with dirt during building construction. Replace any dirty pleated filters and clean the aluminum mesh filters in the intake hood (refer to Routine Maintenance section).
- Verify that non-motorized dampers open and close properly.
- Check the tightness of all factory wiring connections.
- Verify control wire gauge (refer to the Electrical Connections section).

### Start-Up Checklist

The unit will be in operational mode during start-up. Use necessary precautions to avoid injury. All data must be collected while the unit is running. In order to measure volts & amps, the control center door must be open, and the unit energized using a crescent wrench to turn the disconnect handle.

- Check line voltage at unit disconnect
  - \_\_\_\_\_ L1-L2 volts
  - \_\_\_\_\_ L2-L3 volts
  - \_\_\_\_\_ L1-L3 volts
- Motor Amp Draw
 

<ul style="list-style-type: none"> <li>• Supply Fan</li> <li>_____ L1 amps</li> <li>_____ L2 amps</li> <li>_____ L3 amps</li> </ul>	<ul style="list-style-type: none"> <li>• Exhaust Fan</li> <li>_____ L1 amps</li> <li>_____ L2 amps</li> <li>_____ L3 amps</li> </ul>
-------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------
- Fan RPM
 

_____ Supply Fan	_____ Exhaust Fan	
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- Correct fan rotation direction
 

Supply Fan	Yes / No
Exhaust Fan	Yes / No

## System Start-Up

### General

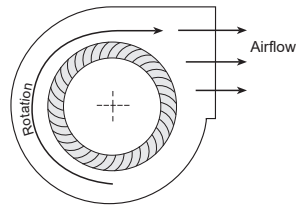
Check all fasteners and set screws for tightness. This is especially important for bearings and fan wheels. Also, if dampers are not motorized, check that they open and close without binding.

### Check Voltage

Before starting the unit compare the supplied voltage with the unit's nameplate voltage and the motor voltage.

### Check Blower Wheel Rotation

First, hand rotate the blower to ensure that the wheel is not rubbing against the scroll. If the blower is rotating in the wrong direction, the unit will move some air but not perform properly.



Forward Curved

To check the rotation, open the blower access panel, and run the blower momentarily to determine the rotation.

### Air Volume Check and Measurement

Along with the building balance, the unit's airflow (cfm) should be measured and compared with its rated air volume. The unit is directly driven, therefore balancing dampers or speed controls are required for airflow balancing. Air volume measurement must be conducted with access doors on the unit.

The most accurate way to measure the air volume is by using the pitot traverse method in the ductwork away from the blower. Other methods can be used, but should be proven and accurate.

To adjust the air volume, change the fan rpm or the system static pressure.

With all access panels on the unit, compare measured amps to the motor nameplate full load amps and correct if overamping.

### Measure Motor Voltage, Amperage and Fan RPM

With all access panels installed, run the measurement leads through the electrical access hole in the bottom access panel of the MiniCore. Measure and record the input voltage and motor amperage(s).

Compare measured amps to the motor nameplate full load amps and correct if overamping.

## Routine Maintenance

### WARNING

Disconnect all electrical power to the MiniCore prior to inspection or servicing. Failure to comply with this safety precaution could result in serious injury or death. Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment.

After the MiniCore has been put into operation, an annual inspection and maintenance program should be set-up to preserve reliability and performance.

The MiniCore energy recovery ventilator requires very little maintenance. However, small problems left unchecked, over time, could lead to loss of performance or early motor failure. We recommend that the unit be inspected once a year.

### Fasteners and Set Screws

Any fan vibration has a tendency to loosen mechanical fasteners. A periodic inspection should include checking all fasteners and set screws for tightness. Particular attention should be paid to set screws attaching the fan wheel to the shaft. Loose bearing set screws will lead to premature failure of the fan shaft.

### Removal of Dust and Dirt

The fan motor and wheel(s) should be checked for dust and dirt accumulation. Dirt buildup clogs cooling openings on the motor housing and causes motor overheating. Dirt buildup can contaminate bearing lubricant and collect on fan wheel blades causing loss of performance or premature failure. Cleaning can be accomplished by brushing off any dust that may have accumulated. Under no circumstances should motors or bearings be sprayed with steam or water. Even filtered units can accumulate build up and should be checked when cleaning filters.

Maintenance to these components is achieved through the provided access panels.

### Internal Filter Maintenance

Opening the access panel provides access to the two inch deep, pleated MERV 8 (30% efficient) filters. These filters should be checked regularly, cleaned, or replaced as needed.

MiniCore	Internal Filter Size (in.)	Quantity
5	15 x 20	2
10	20 x 20	2

After the MiniCore has been put into operation, an annual inspection and maintenance program should be set-up to preserve reliability and performance.

The MiniCore energy recovery ventilator requires very little maintenance. However, small problems left unchecked, over time, could lead to loss of performance or early motor failure. We recommend that the unit be inspected once a year.

## Routine Maintenance

### Energy Recovery Core

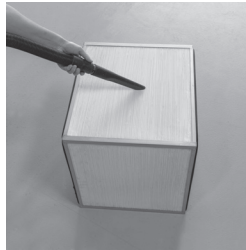
#### Fiber Membrane

**Frequency of cleaning** - A regular cleaning cycle must be established for the energy recovery core in order to maintain optimum sensible and latent energy transfer. In reasonably clean environments such as schools, offices or retail stores, the energy recovery core should be inspected annually and cleaned as needed. Failure to follow a regular cleaning cycle for the energy recovery core can result in significant energy transfer performance losses.

**Accessing the energy recovery core** - Disconnect the power to the unit. Remove access panel.

**Removing the energy recovery core** - Once the energy core access doors are removed, the core can be pulled from the housing. To replace the core, reverse the procedure.

**Recommended cleaning procedure** - Once the core is removed, gently vacuum the surfaces of the core to remove the dirt and debris that has accumulated.



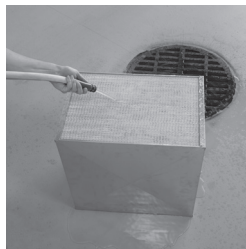
#### Polymer Membrane

**Frequency of cleaning** - A regular cleaning cycle must be established for the energy recovery core in order to maintain optimum sensible and latent energy transfer. In reasonably clean environments such as schools, offices or retail stores, the energy recovery core should be inspected annually and cleaned as needed. Failure to follow a regular cleaning cycle for the energy recovery core can result in significant energy transfer performance losses.

**Accessing the energy recovery core** - Disconnect the power to the unit. Remove access panel.

**Removing the energy recovery core** - Once the energy core access doors are removed, the core can be pulled from the housing. To replace the core, reverse the procedure.

**Recommended cleaning procedure** - Once the core is removed, ensure that the plates are orientated in a way for proper draining. Use low pressure tap water to clean the core. If the core is extremely dirty, use a mild detergent such as Dawn® in a solution no less than 1:100 parts water to soap.



#### WARNING

Do not use a high pressure water source (pressure washer) or harsh, corrosive detergents. This will result in a damaged core and will not be covered by the warranty.

#### WARNING

Energy core shall not be subjected to temperatures greater than 140°F. This will result in a damaged core and will not be covered by warranty

## Standard Components

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### Vari-Green® Electronically Commutated Motor

#### Features

- Soft Start – All motors feature soft-start technology which eliminates inrush current at start-up. The motors will reliably start at any speed setting.
- Overload Protection – If the motor becomes overloaded, it will automatically reduce its speed until it is no longer overloaded. This means that the motor will never operate in the “service factor” which is possible with many AC motors.
- Locked Rotor Protection – If the motor ever encounters a locked-rotor scenario, the motor will automatically shut itself down. It will try to restart up to 3 times and if after the 3rd time the motor will still not rotate, the motor will not attempt to start again until power is cycled.
- Thermal Protection – The motors will have an internal thermal protection which electronically regulates the RPM limit until an acceptable temperature is met.



#### Operation and Wiring

These motors have the ability to accept a plug in potentiometer for speed adjustment AND the ability to accept a 0-10V signal for remote control.

- Motor Potentiometer - Turn the dial with your fingers to adjust. To increase the speed, rotate the dial clockwise. To decrease the speed, rotate the dial counterclockwise. Turning the dial full counterclockwise will turn the motor off.
- 0-10 VDC Signal - From 0-1.9V, the motor will be off and will operate within the 2-10V range. This motor does not require 24V power for operation.

#### Dampers

Gravity backdraft dampers are always included at the discharge positions.



## Troubleshooting

Symptom	Possible Cause	Corrective Action
Unit is NOT operating	Electrical	Check fuses/circuit breakers, replace if needed. Check for On/Off switches. Check for correct supply voltage.
	Motor	Check motor horsepower is correct and not tripping overloads.
Excessive noise	Fan wheel rubbing on inlet	Adjust wheel and/or inlet cone. Tighten wheel hub or bearing collars on shaft.
	Bearings	Replace defective bearing(s). Lubricate bearings. Tighten collars and fasteners.
	Wheel out of balance	Clean, replace or rebalance.
Low airflow (cfm)	Fan speed too low	Increase fan speed.
	Dirty filters or energy core	Replace filters and/or follow the cleaning procedures.
	High static pressure	Incorrect fan-to-duct connections. Make sure dampers open appropriately. Increase fan speed
High airflow (cfm)	Fan speed too high	Decrease fan speed.
	Low static pressure	Make sure grilles, filters and access doors are installed. Decrease fan speed.

Always provide the unit model and serial number when requesting parts or service information. Always check motor amps and compare to nameplate rating.

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# Maintenance Log

Date \_\_\_\_\_ Time \_\_\_\_\_ AM/PM

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## Our Commitment

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*As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.*

Product warranties can be found online at [Greenheck.com](http://Greenheck.com), either on the specific product page or in the literature section of the website at [Greenheck.com/Resources/Library/Literature](http://Greenheck.com/Resources/Library/Literature).

Greenheck's Energy Recovery Ventilators, Preconditioners, Models MiniVent, ERV, ERVe, MiniCore, ECV and ERM catalog provides additional information describing the equipment, fan performance, available accessories, and specification data.

AMCA Publication 410-96, Safety Practices for Users and Installers of Industrial and Commercial Fans, provides additional safety information. This publication can be obtained from AMCA International, Inc. at [www.amca.org](http://www.amca.org).

