



200DX RecoupAerator Manual & Installation Guide



p.740.594.2277
800.535.3448
ultimateair.com
info@ultimateair.com

178 Mill Street Athens, Ohio 45701



Introduction

Thank you for your recent purchase of the most advanced air filtration and energy recovery ventilation available today. Your RecoupAerator is designed to bring fresh filtered air indoors to your home or business while simultaneously exhausting stale air.

The 200DX is an Energy Recovery Ventilator (ERV), meaning the RecoupAerator captures temperature and moisture from the stale, outgoing air and transfers it to the incoming Fresh Air. No matter what the season, you will be comfortable breathing fresh clean air.



In addition to having an energy transfer rating of 96%, the RecoupAerator moderates indoor humidity in the winter and turns away outdoor humidity in the summer.

- Automatically self-balances air flow
- 96%+ heat recovery efficiency
- 95% filtration at 1.8 microns (MERV 12)
- Up to 75% moisture transfer capability (depending on season)
- UL listed and certified
- ECM motors with Permanently lubricated Ball Bearing
- Optional Pressure Transmitter (senses and adjusts for changes in indoor air pressure)
- Optional CO₂Guard™ (senses and adjusts for elevations in CO₂)
- EconoCool™ (brings in cool, filtered night air in summer)
- Compatible with many IAQ monitors and fans
- Automatic frost prevention down to 10° F
- Variable blower speed
- Quiet operation
- Low/easy maintenance
- Exceeds ASHRAE 62.2 ventilation recommendations
- No drain required
- Filter service indicator
- Fully insulated
- 5-year Warranty

Specifications

Model	RecoupAerator 200DX Energy Recovery Ventilator (ERV). Includes pre-filters, patented energy transfer/filtration material, fans, controls, and motors.
Airflow Capacity	~30– 200CFM
Sensible Apparent Efficiency	96%
Heat Exchange Type	Patented rotary random matrix polymer
Filtration	Energy transfer/filtration material 95% effective at 1.8 microns (MERV 12), replaceable, with washable aluminum pre-filter
Electrical Ratings	120 VAC, 60 Hz., 6.0 amp (start up)
Fuse (low voltage)	¼ Amp, 250V 3AG slow blow fuse
Dimensions	25 in. H x 19 in. W x 25 in. D (63.5 cm H x 48.25 cm W x 63.5 cm D)
Unit Weight	72 lb (32 kg)
Shipping Weight	80 lb (36 kg)
Mounting	May be mounted by vertically or horizontally by suspending from floor joists, or placed on floor or shelf in conditioned spaces such as attics, basements, and utility rooms. Collars (four) are 6" in diameter.
Maintenance	Clean filters approximately every 6 months and replace when necessary

General Information

Application	The 200DX is an Energy Recovery Ventilator (ERV), meaning that the RecoupAerator captures temperature and moisture from the stale, outgoing air and transfers it to the incoming air stream.
Controls	RecoupAerator is equipped with a variable speed controller, unlimited boost function capability (i.e., you can add timers and controllers), “check filter” indicator light, EconoCool™ equipped, auxiliary IAQ and timer inputs, furnace wiring terminals, and auxiliary output. These controls allow you to adjust the airflow as needed to maintain a comfortable level of fresh air. The “check filter” indicator light is designed to let you know when to check and/or clean/replace your pre-filters and energy transfer/filtration material. For systems in which constant ventilation is not required, a remote on/off switch, timer, and/or furnace inputs can be wired directly to the unit.
Frost Control	Programmed to regulate heat exchange automatically to prevent frost build-up down to approximately 10° F. During this mode, the Wall Dials green light will be flashing.

Installation Guide

We strongly recommend a licensed HVAC technician install this product, because of complex considerations such as airflow dynamics and condensation issues. Read these instructions carefully before beginning any installation procedure. Failure to follow them closely may reduce ventilation effectiveness, cause a hazardous condition, and/or invalidate your warranty. Installation by non-licensed HVAC personnel may void the warranty.

Unpack your RecoupAerator and check to make sure that the following are included and undamaged:

- UltimateAir RecoupAerator 200DX Energy Recovery Ventilator with four (4) starter collars packaged inside the RecoupAerator.
- Literature package with maintenance guide, parts list, registration card, and warranty.
- Wall mount control dial (pre-wired for test run, and shipped inside the RecoupAerator).
- Control options if ordered.

When installing:

1. **Test Run the RecoupAerator by plugging into a power outlet and adjust the blower speed with the included Wall Dial.**

Familiarize yourself with the intake and outlet duct configuration and installation dimensions. Decide how you will mount the unit. We recommend ACCA's manuals D & J for proper load calculations and duct sizing.

2. After installation is complete, fill in contractor's name and phone number on the last page of this manual, and be sure to **complete the Warranty Registration** to validate the installation.

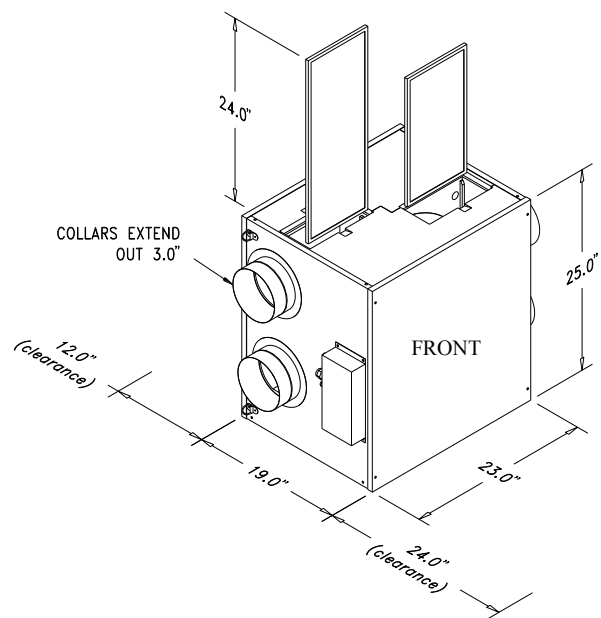
CAUTION

Always disconnect the power supply before wiring to prevent electrical shock and/or equipment damage.

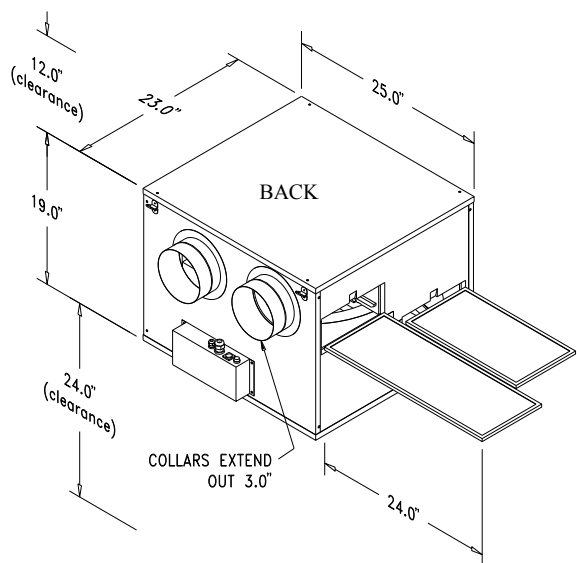
The RecoupAerator is equipped with a three-pronged grounding plug for your protection against shock hazards and should be plugged directly into a properly grounded, 120V, 15 amp, three-pronged wall receptacle. If only a two-pronged outlet is available, it must be replaced with a properly grounded three-pronged receptacle in accordance with the National Electrical Code and local codes and ordinances. A qualified electrician should do this work. Use proper circuit protection. If you have any doubts about the grounding in your house, contact a qualified electrician.

Initial Considerations

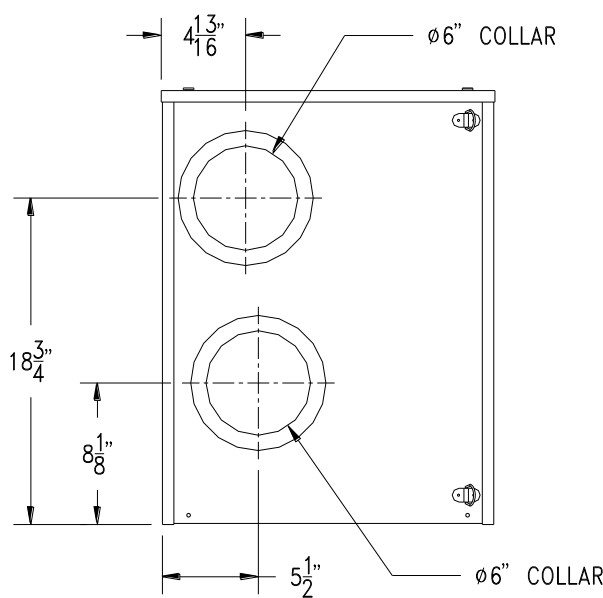
Vertical Installation



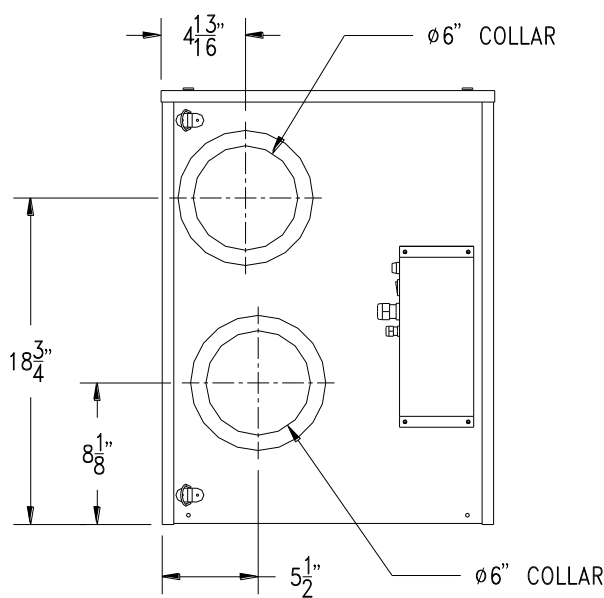
Horizontal Installation



Connect to the Inside



Connect to the Outside



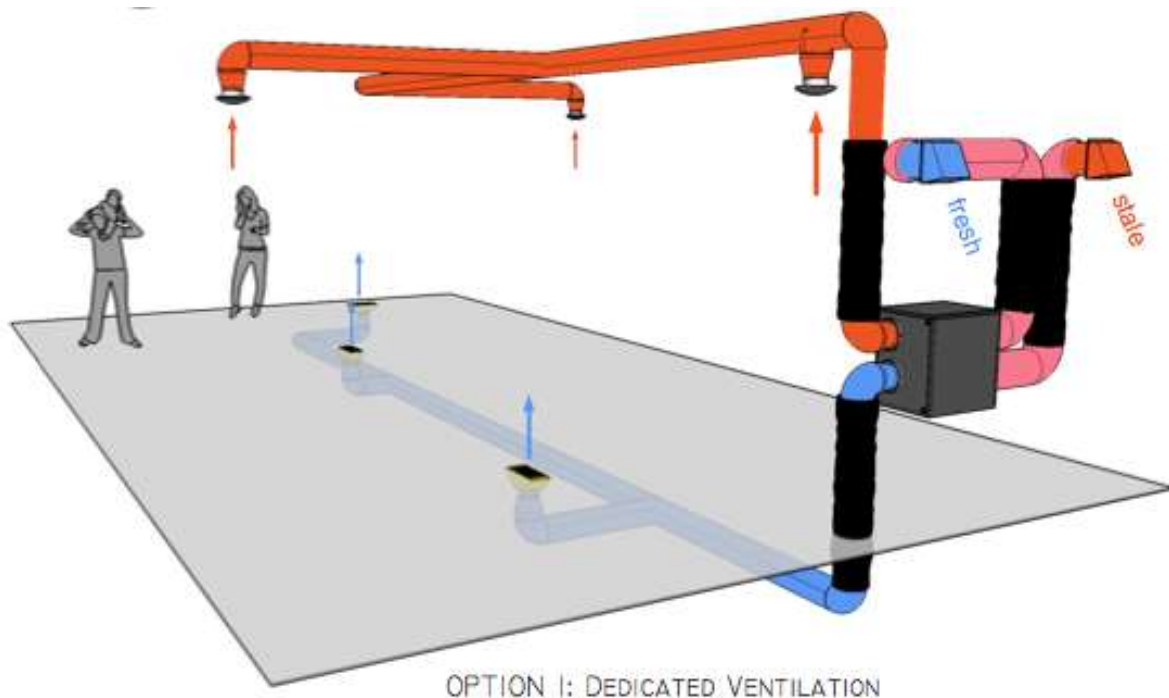
Installation Options

Option 1: Dedicated Ventilation Ducting

This is the most complete installation option and is ideal for new construction. Use option 1 when a home or business is especially concerned with health issues (e.g., when an occupant has asthma or severe allergies). Option 1 is the only option for homes and businesses without existing forced air ductwork. Option 1 is also used for homes employing radiant heat flooring or geothermal heating.

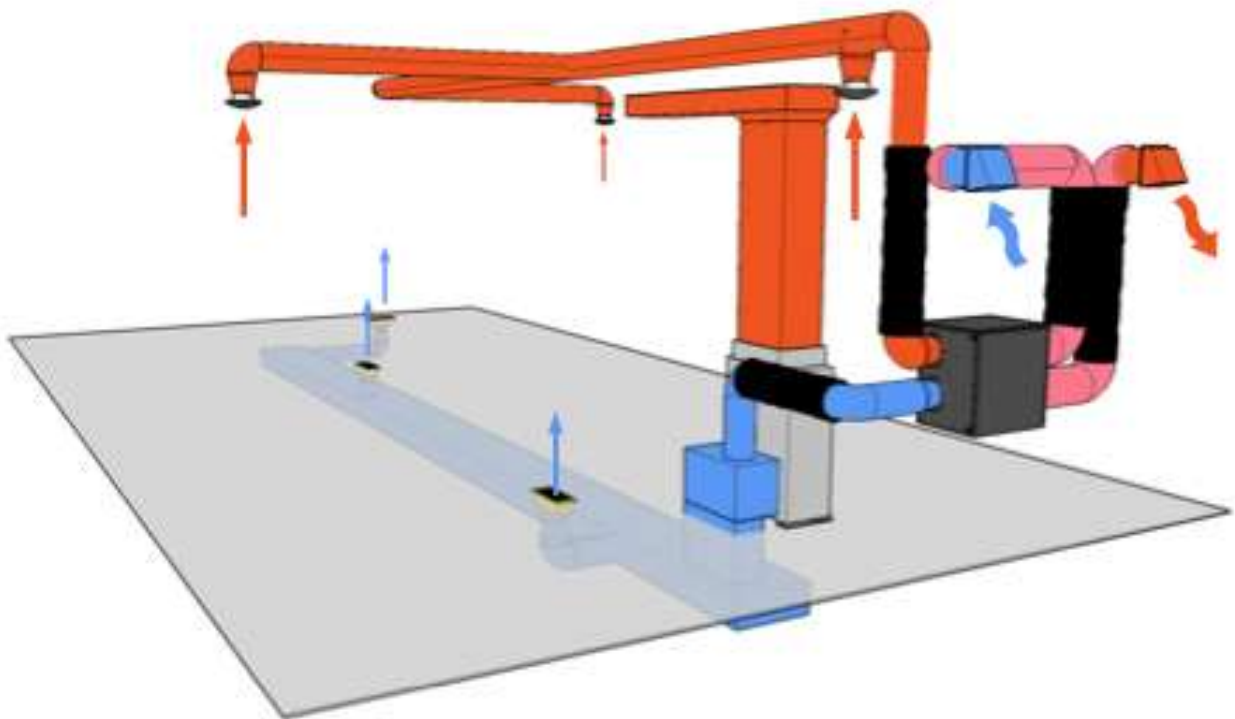
The more rooms to which ductwork is run, the more effective the system will be. Dedicated ductwork is installed for the exhaust intake and the fresh air delivery. The kitchen, laundry room, and other areas with high contamination should contain registers for the exhaust intakes. Areas such as the living room, den, and bedrooms should receive the full benefit of the fresh air being brought in, and a good installation will feature supply vents in these locations. As a general note, fresh air is generally supplied at floor level, and stale air is removed at ceiling level.

A simpler but somewhat less effective version of this system uses one exhaust and one or more delivery registers located strategically to encourage circulation throughout the house.



Option 2: Shared Forced Air Supply, Dedicated Stale-Return

This method partially uses the existing HVAC duct system. Fresh Air IN from the RecoupAerator® gets ducted into the cold air return side, or the supply side of the furnace. Stale Air Out thru the RecoupAerator® is ducted separately to strategically located points throughout the house from which you'd like to remove stale air (e.g., the kitchen, bathroom, open stairwell). This method allows for independent control between the HVAC air handler and the RecoupAerator® (i.e., the air handler and the RecoupAerator® are not interlocked and run independent of each other).

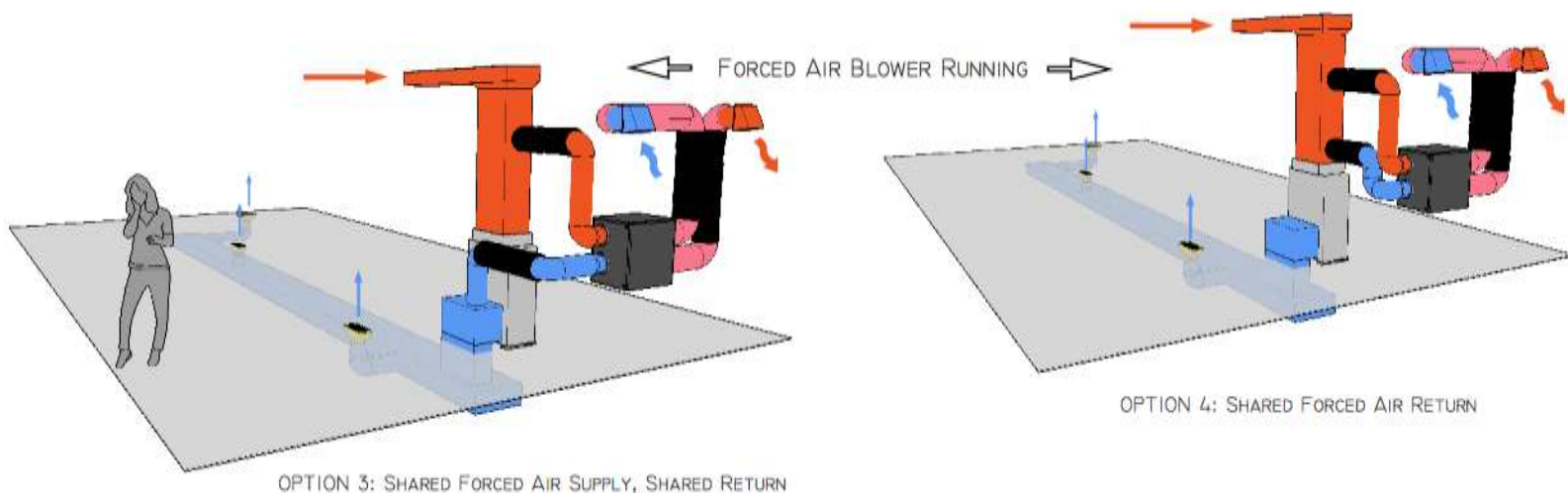


OPTION 2: SHARED FORCED AIR SUPPLY, DEDICATED RETURN

Option 3: Shared Forced Air Supply, Shared Return

This method uses the existing HVAC duct system completely.

Fresh Air IN from the RecoupAerator® is ducted to the main supply duct to the house. The Stale Air Out thru the RecoupAerator® is ducted into the cold air return duct of the furnace. If you use this method, we recommend that you wire your RecoupAerator® and your air handler to run simultaneously (i.e., they will be interlocked) to prevent recirculation shorting thru back past the furnace air handler.

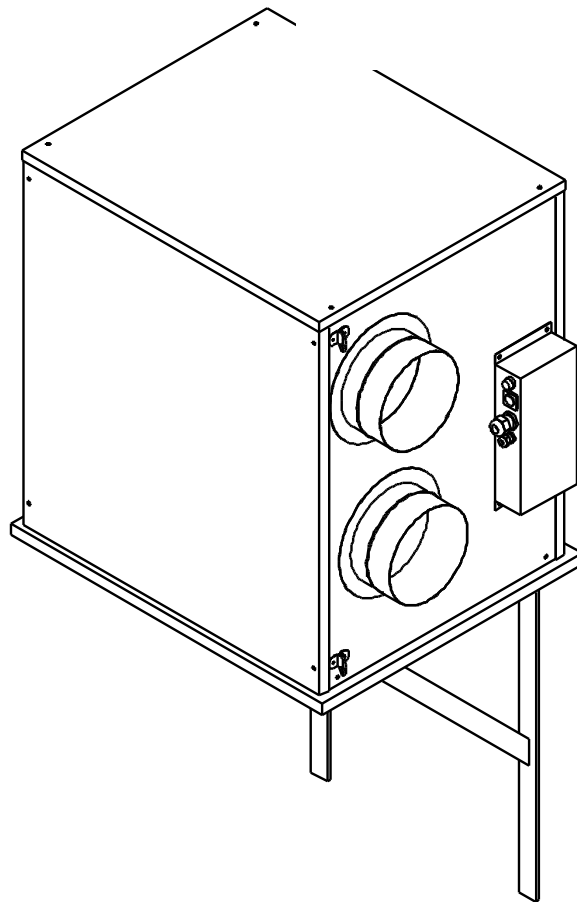


Option 4: Shared Forced Air Return

This method uses the existing HVAC duct system completely. Both the Stale Air Out and the Fresh Air IN from your RecoupAerator® are attached to the cold air return duct of your HVAC system. Be sure to keep at least three feet of space along the cold air return duct between the two RecoupAerator ducts. When using this method, your RecoupAerator® and your air handler must be wired to run simultaneously (i.e., they are interlocked).

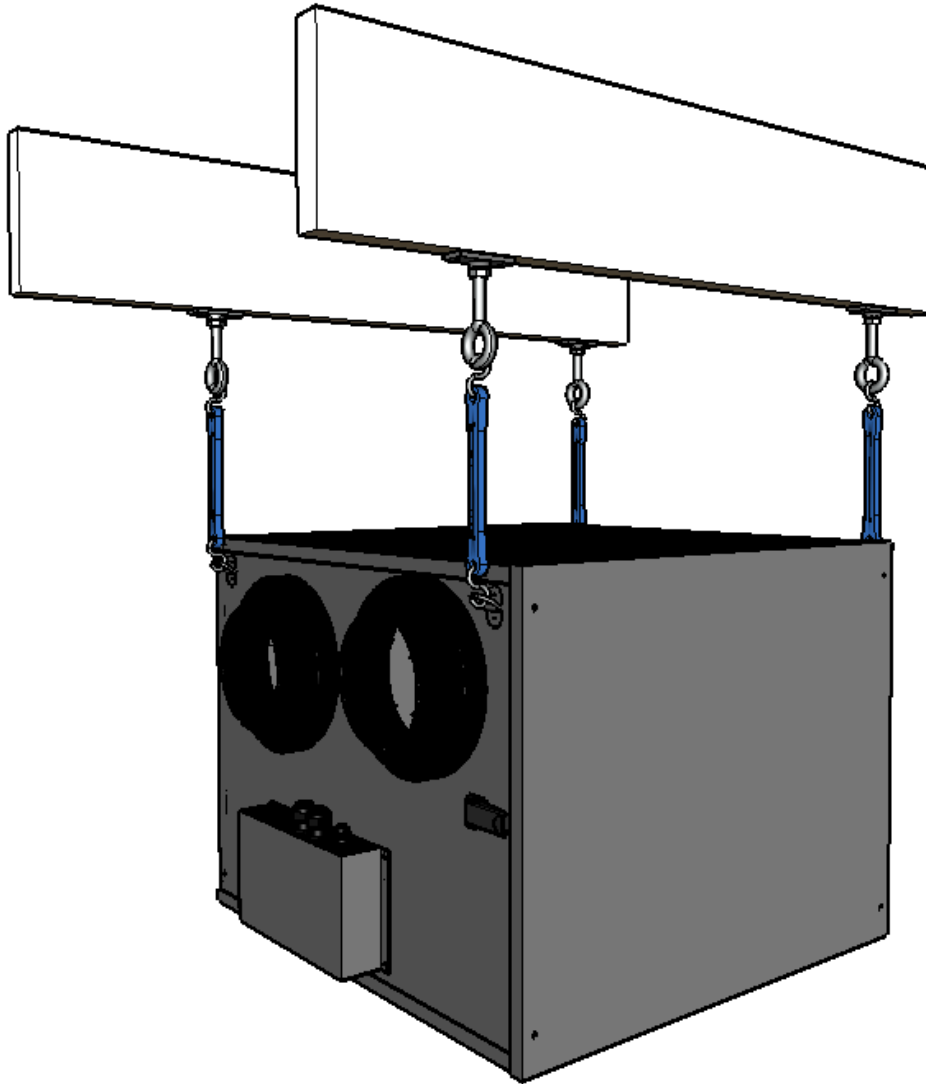
Positioning Your RecoupAerator

Position the RecoupAerator in a location convenient to existing ducting and furnace/forced air system. We don't recommend that the RecoupAerator be mounted in an unconditioned space, as this will affect the performance and longevity of the unit. If possible, locate equipment away from the quiet rooms (e.g., bedrooms) in the house. Avoid directly suspending the RecoupAerator from the mid-span area of joists. This can result in structural vibration. Allow adequate space for maintenance and service of the RecoupAerator.



Vertical Floor Mount. The RecoupAerator rests on four rubber feet when mounted vertically. Set the machine on a flat, dry, level surface at least 20" x 24" which is able to support a minimum of 85 lbs. Allow 24" above for removal of the top cover and pre-filters so they may be easily lifted away for service of the heat recovery/filtration material. Allow 24" on the front side of the unit for service and cleaning.

Horizontal. Use a Ceiling Mounting Kit to suspend the RecoupAerator from the “D” rings located on the four corners. Allow adequate space (12”) between the ceiling and the unit to allow for servicing. Allow 24” below the unit for servicing. Allow 24” on the filter access side of the unit.

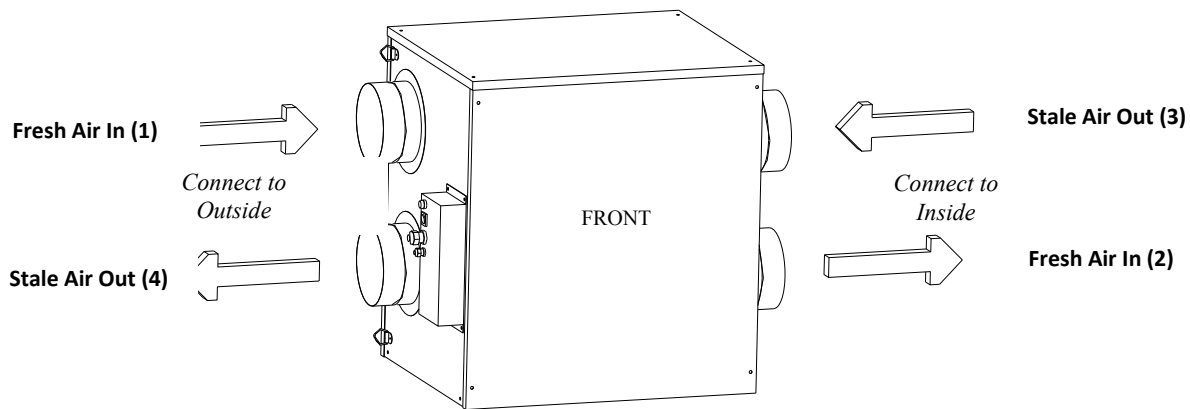


Ducting between the RecoupAerator and the outdoors must be insulated and sealed with a vapor barrier to prevent 'sweating'.

Planning the Duct Work

Locate all four collars and attach to the unit at each of the four 6" holes. Peel the backing from the double-sided tape on the collars and then attach them to the unit with three self drilling screws each (provided).

Two duct holes are labeled Connect to Outside. The other two duct holes are labeled Connect to Inside.



To ensure maximum airflow, use the largest practical duct for the installation. Design and installation of ductwork must be in accordance with HVAC standards and regulations to allow required quantities of fresh air to circulate through the building. Under no circumstances should the trunk duct size be less than six inches, as this will restrict the airflow considerably. Insulated flex ducts tend to reduce air noise levels but add airflow resistance, and galvanized ducts provide the least resistance to airflow, but may amplify noise. Duct connections inside each building will vary. The outside duct connections are the same for most installations and must be insulated..

General Duct Design Guidelines

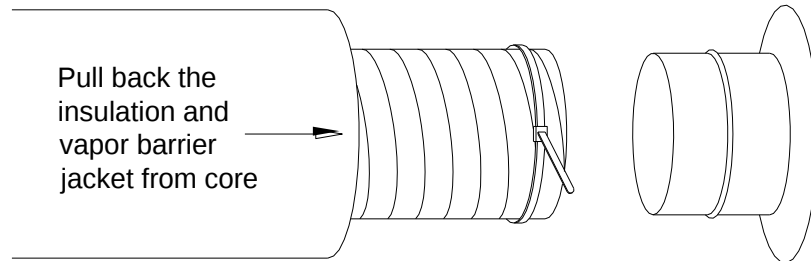
1. Use a minimum of six-inch-diameter round duct or equivalent for all connections to and from the RecoupAerator. Use of eight-inch ducts on main trunks is recommended, especially for ducts running to the outside. A licensed HVAC contractor should do the duct design calculations.
2. To minimize backpressure: Make the intake and exhaust duct runs as short and straight as possible. Always use 45-degree elbows instead of 90-degree where practical. Where flex duct is used, make sure that no “crimping” or “collapsing” of the duct occurs. Stretch flex duct evenly to avoid air restriction. Use “Y” connections instead of “T” connections wherever possible.
3. Position outdoor fresh air intakes away from known sources of pollution such as dryer vents, chimneys, and automobile exhaust. Locate fresh air intake and stale air exhaust at least six to ten feet apart, 40 inches from the corner of the building, and above the projected snow plane (above 18 inches if possible).
4. Position inside grill/register vents so that fresh air does not blow directly onto occupants or the thermostat.
5. Fasten joints between duct components with screws, sealant, and/or rivets and wrap them with metal foil duct tape to ensure no leaks.
6. Minimize any noise transmission through the ducts by using a short run (2-3 ft) of insulated flex duct on duct trunks coming from the unit and going to the inside of the house. If this isn’t enough, you can install an optional duct muffler.
7. If you install a RecoupAerator in an unconditioned space (not recommended), you must insulate the section(s) of the inside ducts, and possibly the unit itself, which are exposed to an unconditioned environment.
8. Ensure that ducting to the outdoors is installed above anticipated snow and flood lines, and is fitted with screened weather caps to prevent animal, insect, and debris entry.

Final duct system should exhibit less than 0.6 in. wg total external static pressure at maximum airflow. Lowering the static pressure will lessen the electrical usage.

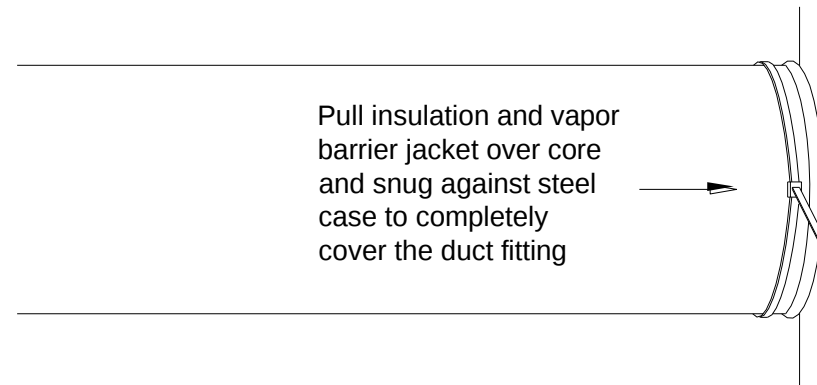
Flexible Ducting Tips

1. Ensure that your duct installation follows the following standards:
 - a. **Mechanical integrity** The system will remain as built for the life of the building, without developing leaks, obstructions, or insulation failures.
 - b. **Freedom from leaks** All air moved by the air handler will be drawn from and delivered to the intended conditioned spaces.
 - c. **Proper insulation** Conditioned air should not exchange heat with unconditioned spaces.
2. Size ductwork according to recognized industry standards such as Manuals D and J, published by the Air Conditioning Contractors of America (ACCA).
3. Follow guidelines and instructions provided with duct installation materials.
4. Tapes and sealants used on connections should be listed for UL 181B, *Closure Systems for Use with Flexible Air Ducts and Connectors*.
5. Assemble the tools to install non-metallic flexible duct:
 - a. **Knife or Scissors/Wire Cutter:** Use knife or scissors to cut duct wall. Use wire cutters to cut spiral wire helix.
 - b. **Foil Tape:** Use only tapes that have been listed and labeled to Standard UL 181B and labeled "181B-FX". Use two wraps of 1½" minimum width.
 - c. **Draw Band/Plastic Clamp/Clamp Tool:** Use for low-pressure systems up to four-inch wg (diameters of three to 10') and up to two-inch wg (diameters of 12" and over). To achieve proper tensioning of clamp, set clamp to max tension setting.
6. Use the minimum length of flexible duct necessary to make connections.
7. Support hardware (e.g., terminal devices, couplings, and fittings) independently of flexible duct using elbows or other devices.
8. Repair torn or damaged vapor barrier jacket. If internal core is penetrated, replace or splice flexible duct.
9. Install duct fully extended along straightest path possible.
10. Flexible duct shall be supported at manufacturer's recommended intervals, but at no greater distance than five feet, and the maximum permissible sag is ½" per foot of spacing between supports.
11. In no case will the hanger or saddle material supporting the flexible duct be less than 1½" wide.

Attaching flexible ductwork to RecoupAerator Collars



Apply mastic over the fitting and / or inside the duct core before pulling the inner lining at least 1-inch over the fitting.



Mechanically fasten the vapor barrier jacket with a draw band

Tips on Making a Noisy Duct System Quieter

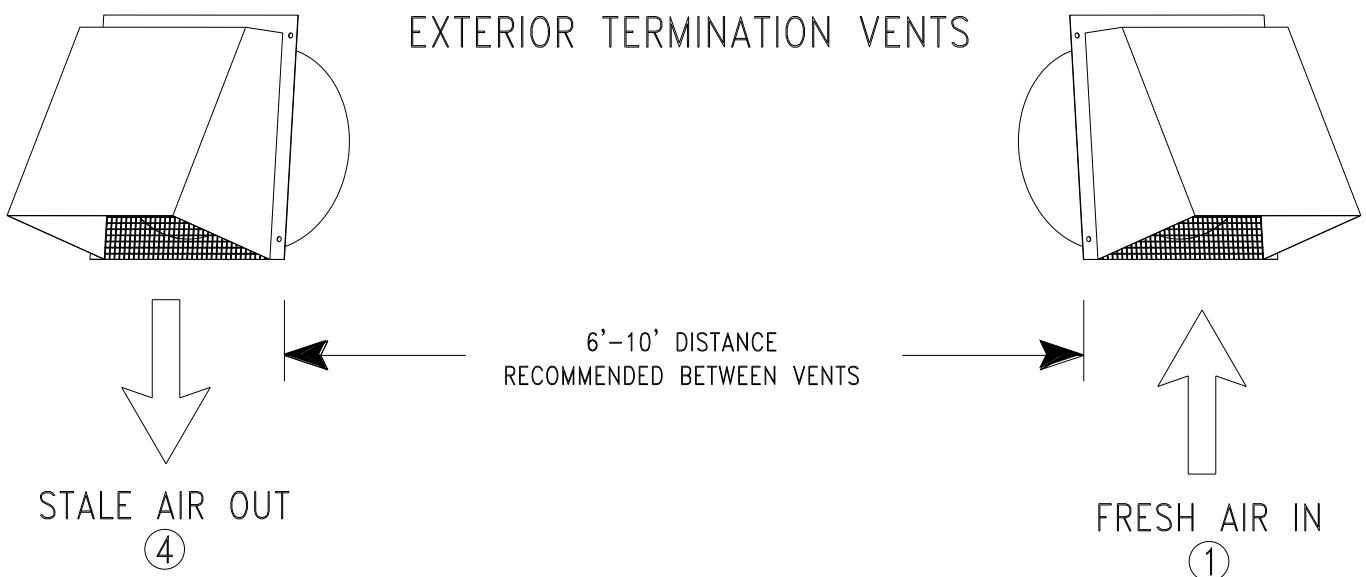
In some installations, the unit may be too noisy for the occupants. Here are some options for correcting the situation:

1. When installing the unit, allow for a three-foot section of insulated flexible duct to go from the starting collar on the unit to the rest of the ductwork (on all four collars). This will help dampen noise being transmitted from the unit into the home or business, at the source.
2. Locate the unit farther away from the source of the noise pollution area (e.g., if the unit is close to a living room vent where the noise is too loud, locate the unit farther away from this location). This will allow the noise to dissipate in the longer duct length.
3. Wire the RecoupAerator to run only with the furnace air handler.
4. Run at the lowest flow setting necessary for fresh air requirements.

Ducting to Outside

Note: The ducts to the outside must be insulated. The starting collars labeled *Connect to Outside* must be ducted to the outside of the building, and the following precautions should be taken.

1. The ends of the two ducts should be as far apart as practical (at least six feet, either horizontally or vertically) to minimize re-circulation of the exhaust air.
2. Terminate the ducts using exterior weather hoods. Ensure that the exterior weather caps have wire mesh to keep out birds, small animals, insects, and debris. Angle the weather caps down and away from each other and place them away from exhaust vents for other appliances such as dryers or hot water heaters. Avoid placing air intake vents near exhaust vents from adjacent buildings or sources of automobile exhaust. Never place an air intake in a garage, for instance.
3. Make sure that the joints between the termination vents and the walls are sealed to prevent air and moisture penetration.



Wiring and Controls

CAUTION

Before performing any service to your RecoupAerator, switch off the unit and disconnect power from the unit. You must disconnect power by either unplugging the unit or by switching the applicable breaker in your breaker box to off. Otherwise, the main power to the unit will remain hot and could cause serious bodily injury.

Basic Electrical Wiring

The RecoupAerator Model 200DX is supplied with two blower motors, one energy recovery wheel drive motor, and a detached wall controller that can be mounted near the unit or in a remote location. Follow all applicable electrical codes.

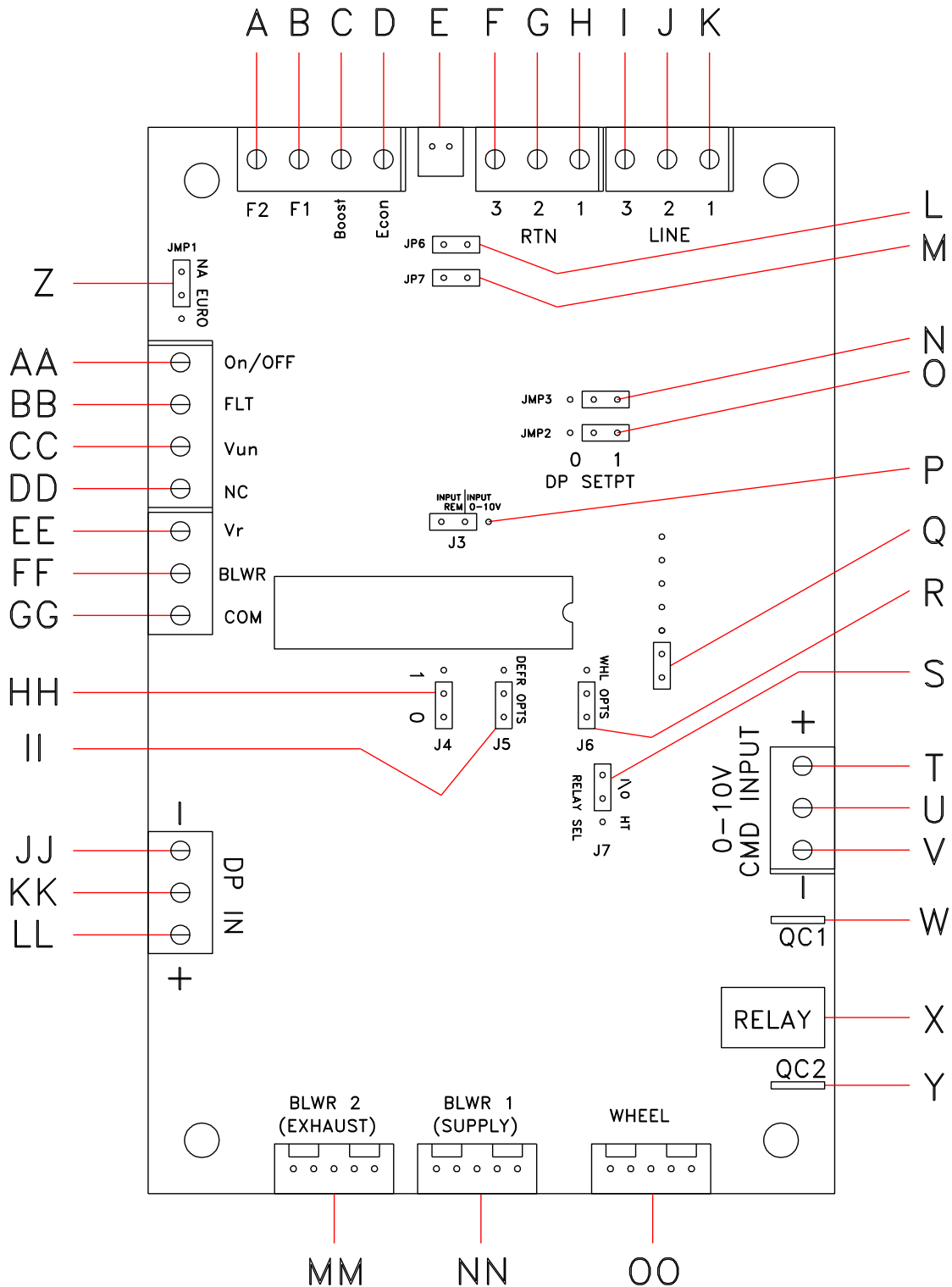
The RecoupAerator can be wired in a number of different ways depending on desired features. This section of the manual describes each benefit option and shows the wiring procedure to accomplish them.

Factory Default Settings

Airflow. This unit contains two blower motors, each independently controlling the airflow coming into the building (Blower 1, supply), and leaving the building (Blower 2, exhaust). The unit has the capability of lowering the airflow from the building going to the outside by a selectable set of offset jumpers on the three-motor control board. Factory settings provide for “balanced” airflow, that is, equal airflow both coming into the building and exiting the building.

Input. The RecoupAerator comes equipped to handle several different types of control input. From the factory, The RecoupAerator is wired with the North American Wall Dial Control, unless otherwise specified at the time of order.

EconoCool. This unit comes with an economic ‘night’ flush feature. There is a small silver toggle switch mounted next to the Main Power switch to turn EconoCool ON and OFF. Please see the ‘econocool’ section in this manual for further detail.



Three-motor Main Control Board

3-Motor Main Control Board

- A. F2: Wiring input from furnace. 24 VAC common. In some cases “C” post from thermostat wiring on the furnace. If wiring to furnace, REMOVE Jumpers at L and M (JP6 & JP7).
- B. F1: Wiring input from furnace. 24 VAC line. In some cases “G” post from thermostat wiring on the furnace. If wiring to furnace, REMOVE jumpers at L and M.
- C. Boost input. When this post receives a 24 VAC from I, J, or K, the unit will be turned on to high speed (max air flow).
- D. EconoCool input: When this post receives a 24 VAC signal from I, J, or K, the EconoCool function will be enabled.
- E. Temperature thermistor input. Temperature thermistor located in the incoming air stream (duct 1) is fed to the controller through this input.
- F. RET 3: 24 VAC return post. Common from the internal transformer.
- G. RET 2: 24 VAC return post. Common from the internal transformer.
- H. RET 1: 24 VAC return post. Common from the internal transformer.
- I. LINE 3: 24 VAC line post. Line voltage from the internal transformer.
- J. LINE 2: 24 VAC line post. Line voltage from the internal transformer.
- K. LINE 1: 24 VAC line post. Line voltage from the internal transformer.
- L. JP6: Jumper connects 24 VAC Line from internal transformer to F1.
- M. JP7: Jumper connects 24 VAC return from internal transformer to F2.
- N. JMP3: Offset / DP Set point jumper. Selects air flow offsets. See Air Flow offsets in this manual for further detail.
- O. JMP2: Offset / DP Set point jumper. Selects air flow offsets. See Air Flow offsets in this manual for further detail.
- P. J3: Control Input jumper. Selects control input from either the Wall Dial Control, or a 0-10V DC input voltage (at T and V). When J3 is in the 0-10V position, JMP1 MUST be in the EU position for the 0-10V input to work.
- Q. Programming jumper. Must be in place for to run RecoupAerator.
- R. J6: Wheel Options. Control for heat wheel rotation. Default ‘0’ position
- S. J7: Relay selection. Jumper selects whether the normally open relay (X) closes when the unit turns on (position I/O), or when the temperature thermistor reads below 10°F (position HT). Default is position I/O.
- T. 0-10V DC input post. When J3(P) is in the 0-10V position, a positive line voltage 0-10V DC may be used to control the RecoupAerator operation. When J3 is in 0-10V position, JMP1 MUST be in EU position for the 0-10V input to work.
- U. Not connected. Empty socket.

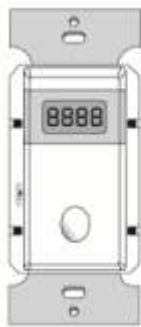
- V. 0-10V DC input post. When J3 is in the 0-10V position, this post connects to the negative side of the 0-10V DC control.
- W. QC1: Quick Connect 1. Used as an auxiliary output control option. QC1 will be electrically connected to QC2 when the relay (X) is closed. Max rating: 1A@24VAC.
- X. Low voltage pilot duty relay. Normally open. Closes according to selection made at J7 (S). Default: closes when the ERV is turned on.
- Y. QC2: Quick Connect 2. Used as an auxiliary output control option. QC2 will be electrically connected to QC1 when the relay (X) is closed. Max rating: 1A@24VAC.
- Z. JMP1: Remote control input selection. Default wall controller in the North American remote wall control (NA position). J3 (P) must be in REM INPUT position. When J3 is in 0-10V position, JMP1 MUST be in EU position for the 0-10V input to work.
- AA. On/Off terminal. For wiring to mating terminal on NA wall controller.
- BB. FLT terminal. For wiring to mating terminal on NA wall controller.
- CC. Vun terminal. For wiring to mating terminal on NA wall controller.
- DD. NC terminal. *Do not wire to this Empty terminal.*
- EE. Vr terminal. For wiring to mating terminal on NA wall controller.
- FF. BLWR terminal. For wiring to mating terminal on NA wall controller.
- GG. COM terminal. For wiring to mating terminal on NA wall controller.
- HH. J4: Blower control jumper. Default is '0' position for CFM control.
- II. J5: DEFR OPTS: Defrost Options Jumper. Default position is the '0'. Between 18°F - 8°F The wheel slows to prevent frost accumulation, and OFF when outside temperature is below 8°F. The '1' position will simply shut down the machine at below 8°F. Postion '1' is intended for use with a fresh air pre-heater.
- JJ. DP IN: Delta pressure control input, negative (-) side. Not functional without Pressure Control Transmitter option. Standard Recoupaerator has air flow offset capabilities, see Airflow Offsets.
- KK. Not connected. Empty socket.
- LL. DP IN: Delta pressure control input, positive(+0) side. Not functional without Pressure Control Transmitter option. Standard Recoupaerator has air flow offset capabilities, see Airflow Offsets.

Low Voltage Accessories:

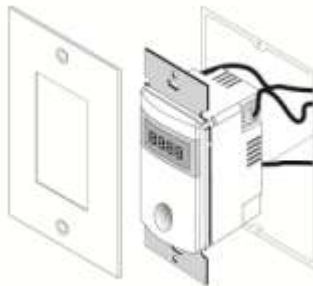
Your RecoupAerator is designed with the latest low voltage control technology. Equipped with a 20 volt-ampere (VA), 120 to 24 VAC transformer, this auxiliary low voltage power can be accessed at the three-motor Main Control board inside the power switch cover. Use the screw terminals labeled 24 VAC LINE (1, 2, or 3) and 24 VAC RETURN (1, 2, or 3) to power low voltage accessories.

Limitations: *Note that your RecoupAerator uses 4 VA under normal operating conditions, thus leaving 16 VA for optional accessories. When designing your control strategy, keep in mind that you can over draw the 20 VA.*

Below are accessories UltimateAir offers, along with their power usage.



Boost Timer 1.4 VA



CO₂ sensing switch 3 VA



Pressure Transmitter 3 VA

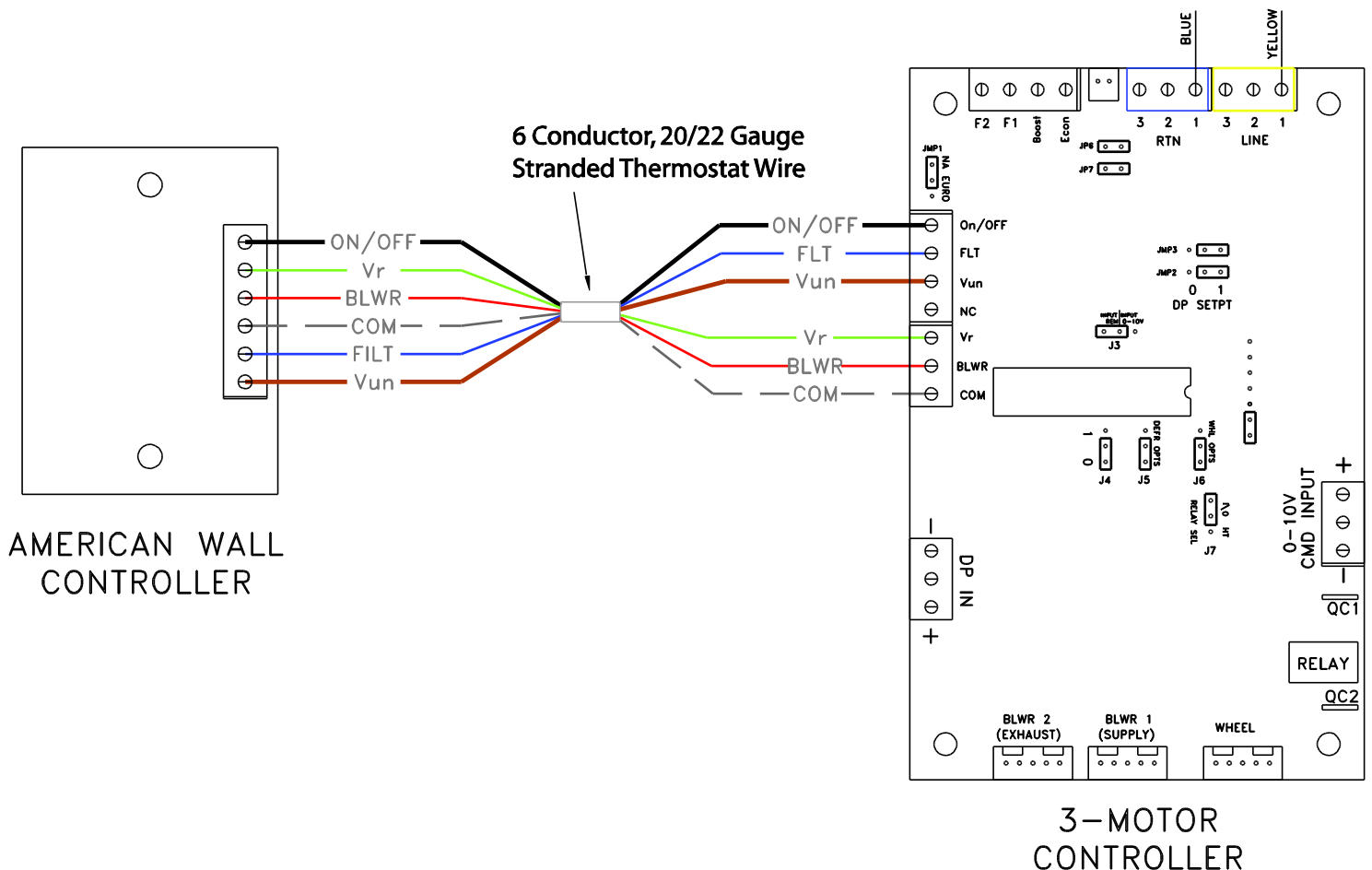
Wall Dial Flow Control – *Included with the RecoupAerator*

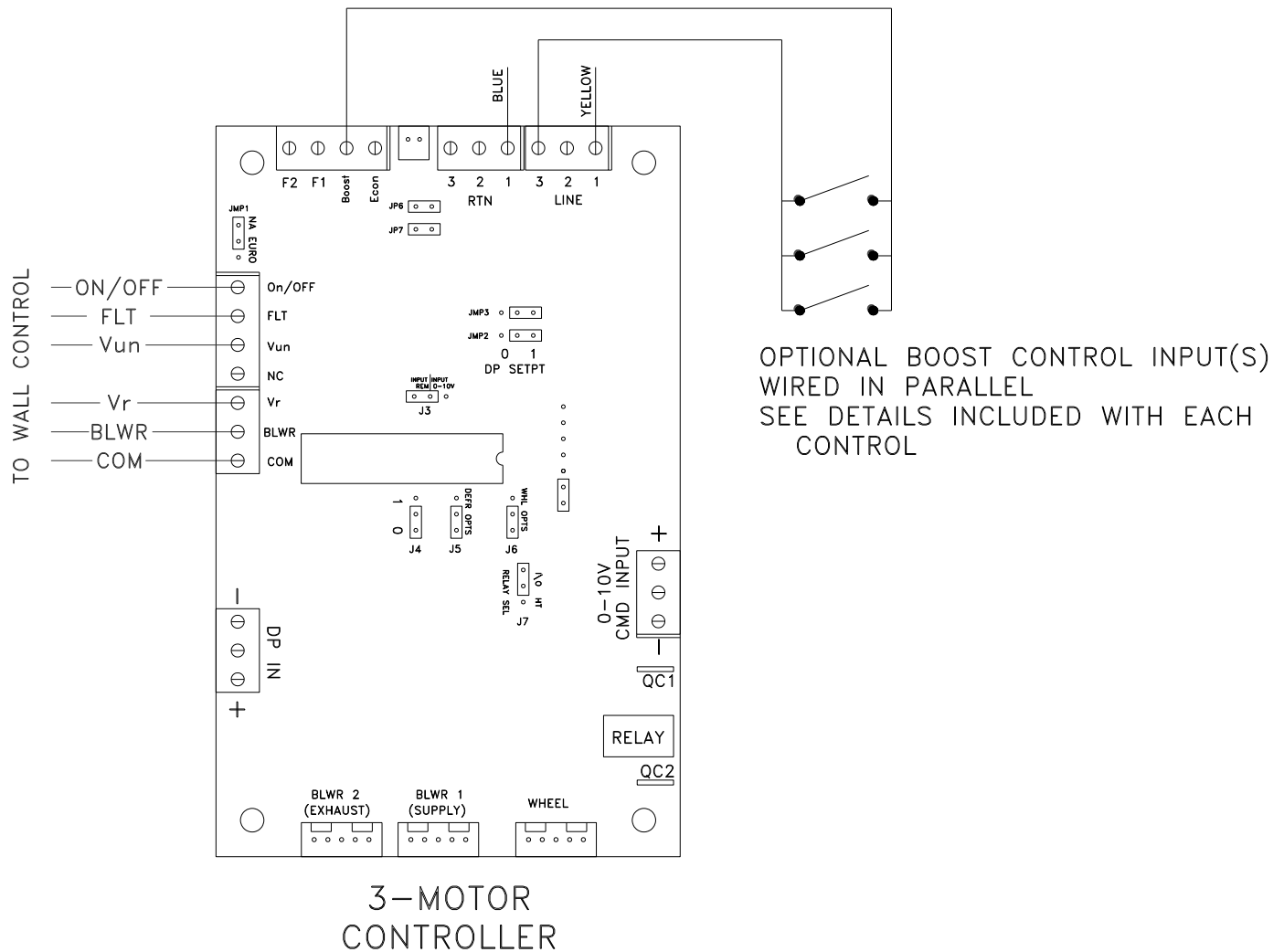


The 200DX comes equipped with this Wall Dial Flow Control pre-wired. Follow these steps to re-wire the dial control to a more convenient location.

1. Run the unit before un-wiring, to be sure that everything is working.
2. Following all applicable electrical codes, Determine the location where the Wall Dial will be mounted and the length of 6-conductor wire (20/22 gauge) necessary to run from the RecoupAerator to the Wall Dial
3. Be sure the RecoupAerator is switched OFF and unplugged. Using a flat screw driver or a 5/16 nut driver, remove the exterior electrical cover.

4. Un-wire the Wall Controller from the RecoupAerator, note the terminal labels.
5. After stripping 1/4" of insulation from each of the wire ends, complete the wiring by matching each labeled between the 3-Motor Main Control and the Wall Dial. Be sure all connections are secure by lightly pulling each wire.
6. If wiring to a furnace, you MUST REMOVE jumpers JP6 and JP7. If NOT wiring to a furnace, jumpers JP6 and JP7 MUST be in place. See furnace wiring for more detail in this manual.

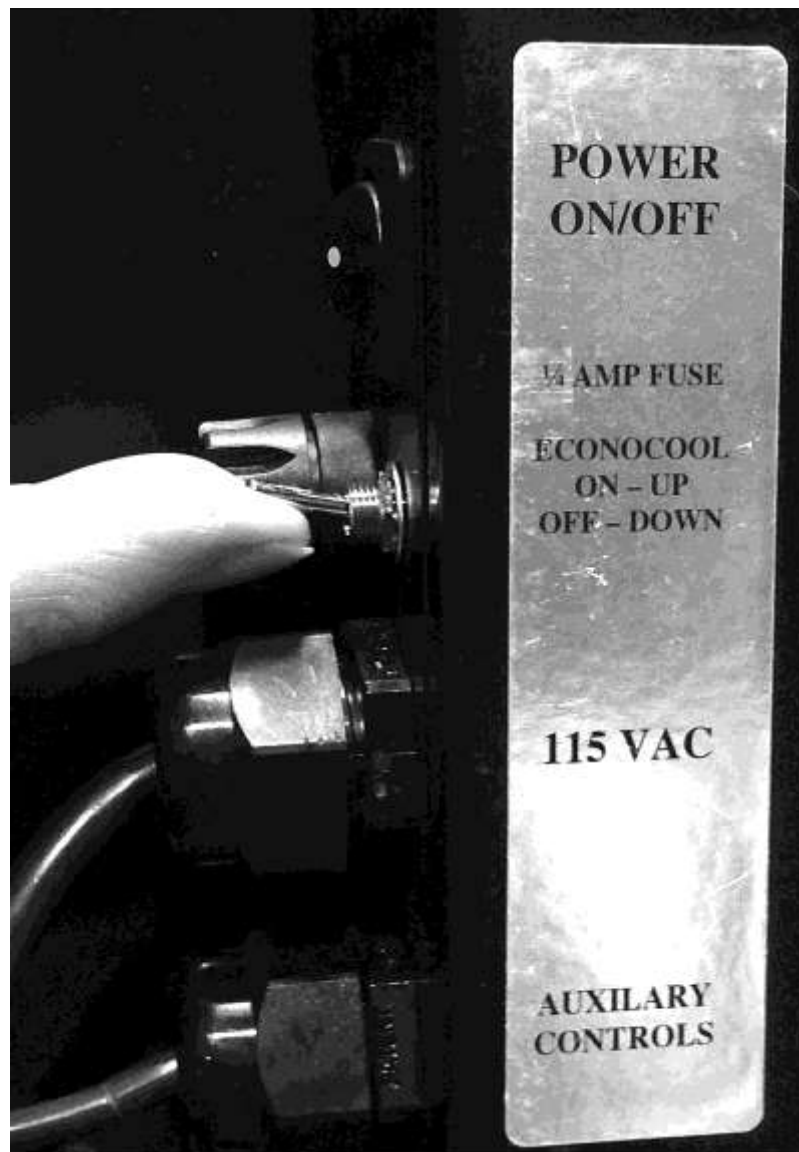


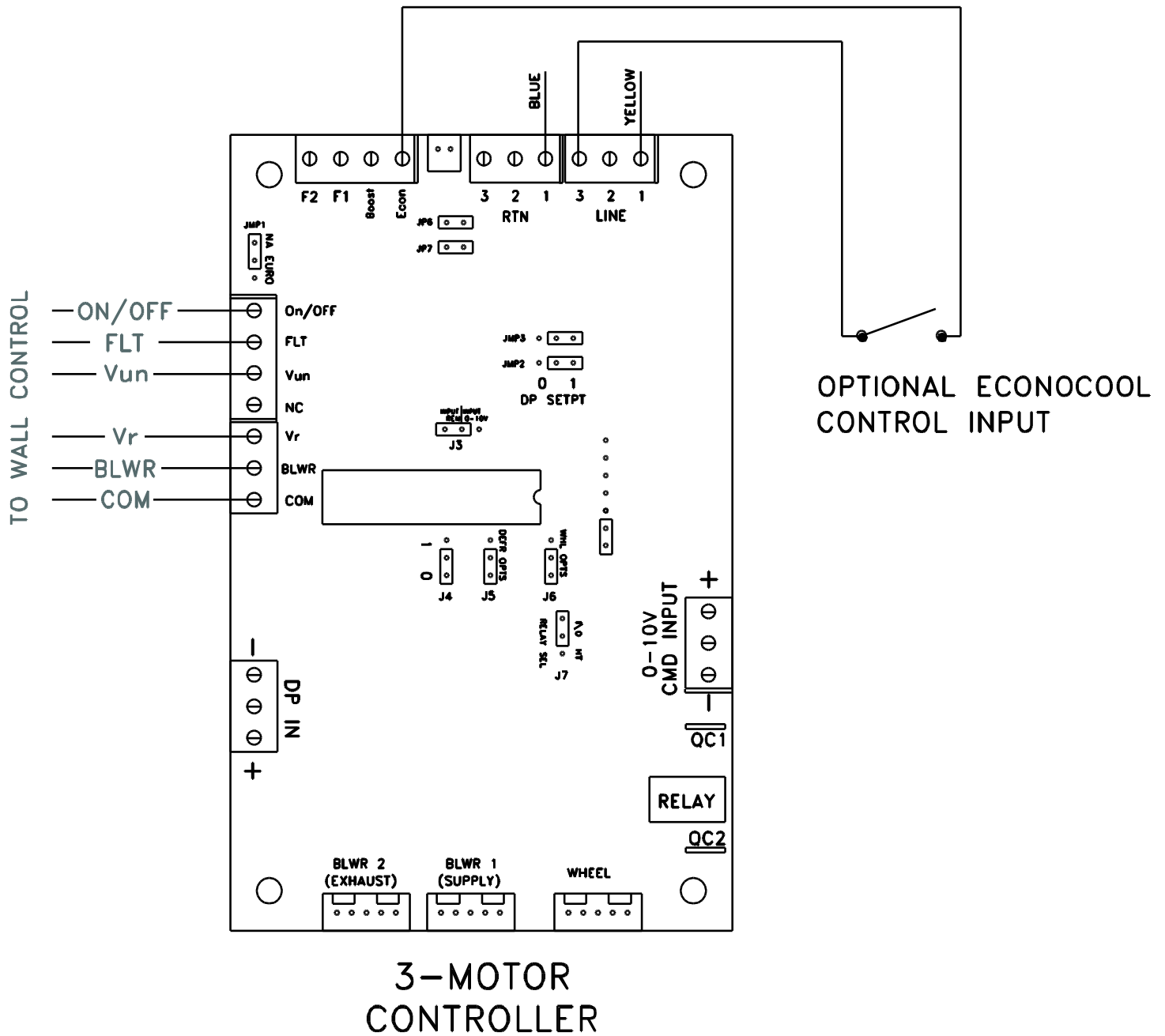


On the three-motor controller, there is one screw terminal specifically for **Boost** input. This feature allows for an override of the RecoupAerator's variable speed ability. Boost is useful for running at maximum air flow (200CFM) using a low-voltage signal input such as the optional Boost Timer. Typically, Boost inputs include bathroom timers, CO₂ monitors, and humidity monitors. Note that all Switch relays must be capable of switching LOW VOLTAGE (24vac). *High Voltage Contacts (110VAC) will often fail used with 24VAC because of the lack of required high voltage arcing to keep them clean and functional.*

EconoCool™

The RecoupAerator is EconoCool™ equipped, so the outside air during summer months may be utilized to cool your home or business (e.g., during the night), thereby providing AC energy savings and Comfort. The built-in temperature sensor on the incoming air stream automatically stops energy recovery between 55° and 70° Fahrenheit. The EconoCool™ toggle switch must be ON for this function to work.





Wiring to a Furnace /AC air handler

For this purpose, never use a device that cycles the main power to the UltimateAir 200DX. Cycling main power ON/OFF is detrimental to the system electronics and will void the warranty.

When installing the UltimateAir 200DX with existing forced air ductwork, you may need to operate in conjunction with the furnace/AC air handler. To wire the UltimateAir 200DX to run with the existing forced-air system, use the existing furnace wiring diagram in conjunction with the directions below.

1. On the Furnace Air Handling Device, locate the 24 VAC (low voltage) output and common connections. Furnace outputs are usually marked G for Go and C for Common; refer to the furnace manual for details.
2. On the UltimateAir 200DX, REMOVE jumpers JP6 and JP7, located just under the temperature sensor input.
3. Run two wires (20/22GA) from the furnace to the input terminals on the UltimateAir 200DX main control marked **F1** (24 VAC Line) and **F2** (24 VAC common). The UltimateAir 200DX will now run only when the furnace air handler is ON.

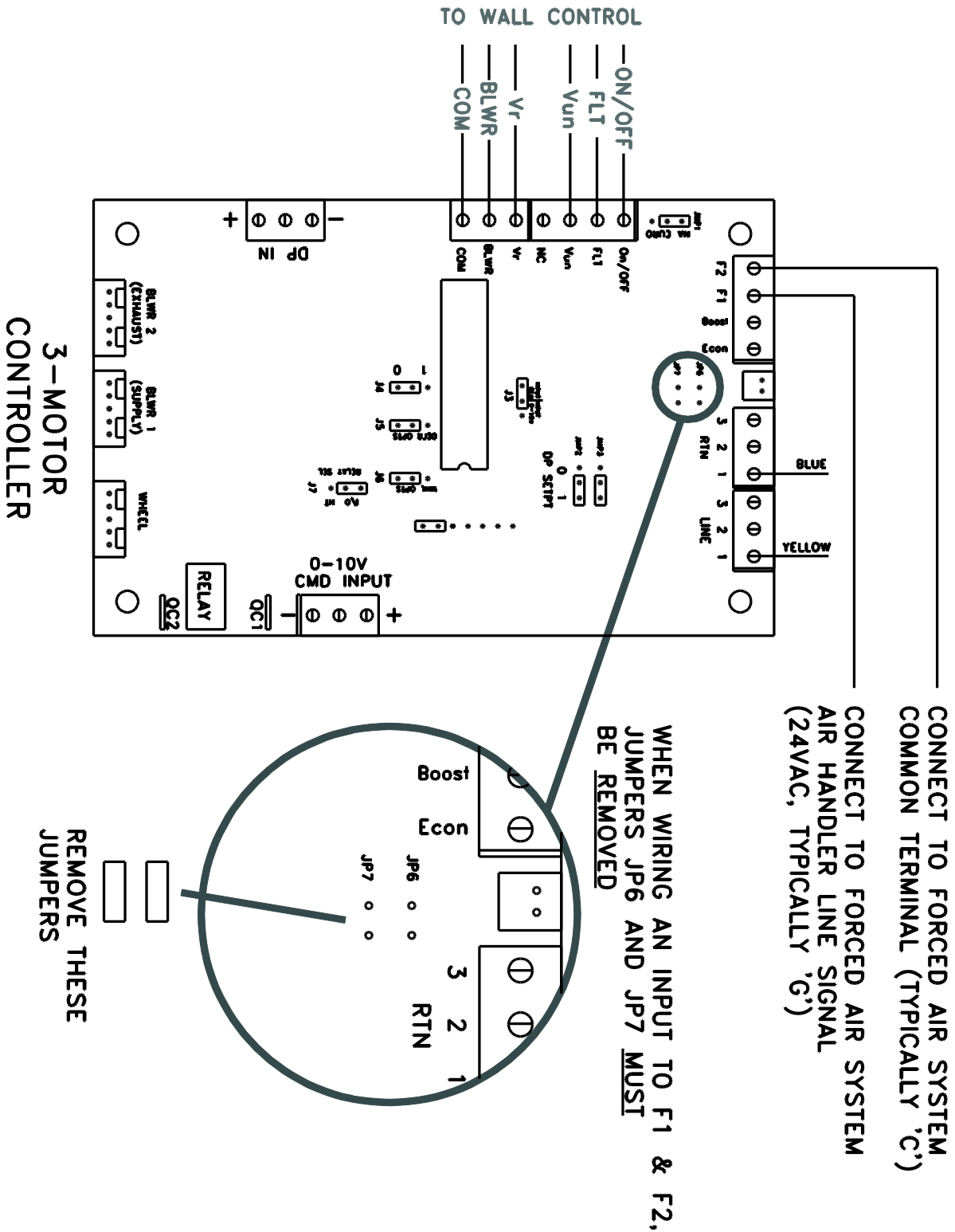
See the 3Motor Main Controller diagram in this manual.

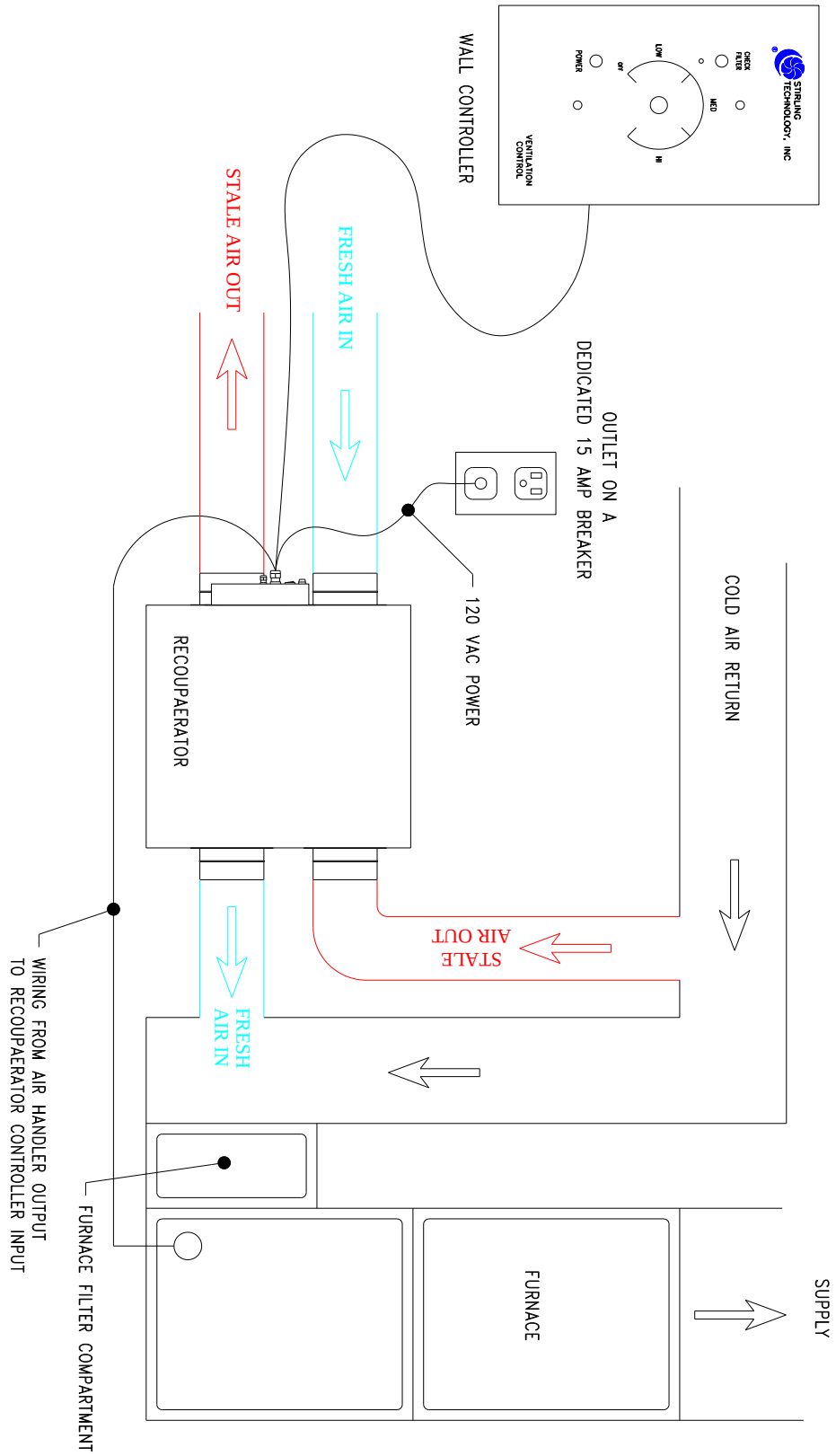
Note- When wired to run with the furnace blower, the UltimateAir 200DX will run at the Flow Speed Setting on the 200DX Wall Dial. The green light on the Wall Dial will flash when the furnace blower is not running.

Connecting to IAQ Ventilation Devices or similar Dry Contact non-powered switches

This control scenario will utilize the UltimateAir 200DX internal 24Vac transformer power for ON/OFF function via any external contact switch.

On the UltimateAir 200DX 3Motor Main Board, REMOVE jumper JP6, located just under the temperature sensor connection. Run one Wire from the LINE Terminal to the Dry Contact Device you want to use. Run a second wire back from the Dry Contact Device to the UltimateAir 200DX **F1** Terminal.





Optional Pressurization / Airflow Offset

(Boost mode will over-ride any pressurization offset)

Your RecoupAerator can affect your home's or business's indoor air pressure by allowing for an air flow offset between the incoming and outgoing air streams, thus discouraging moisture and gases from entering the wall cavities . Implement the optional airflow offset only if you're a qualified specialist familiar with indoor pressure-related issues. The factory setting for this feature is balanced air flow into and out of the space with respect to outside.

****Note:** the standard airflow offset feature is different from the Pressure Control Transmitter option, which continuously samples indoor and outdoor pressure and adjusts airflow to provide desired indoor air pressure.

1. To offset airstreams, locate the Three-Motor Main Control Board mounted under the power switch cover.
2. Inside on the Main Control Board, locate the jumpers labeled JMP2 and JMP3, which determine the offset between the two air streams at maximum air flow. Notice on the board directly beside these jumpers are the numbers "0" and "1". These numbers refer to the position of the jumpers. The factory setting is: JMP2 = JMP3 = 1, which means no offset is in effect and the unit will provide balanced supply and exhaust air flow.
3. Shut OFF the main power switch and disconnect the 110VAC power source.
4. Move the jumpers to set the jumper configurations for their corresponding air flow offset as follows:

JMP2 & JMP3= 1 no offset balanced default setting

JMP2= 1, JMP3= 0 ~20 cfm offset

JMP2= 0, JMP3= 1 ~40 cfm offset

JMP2= 0, JMP3= 0 ~60 cfm offset

***Note:** airflow is approximate.

***See following diagram for further instruction**

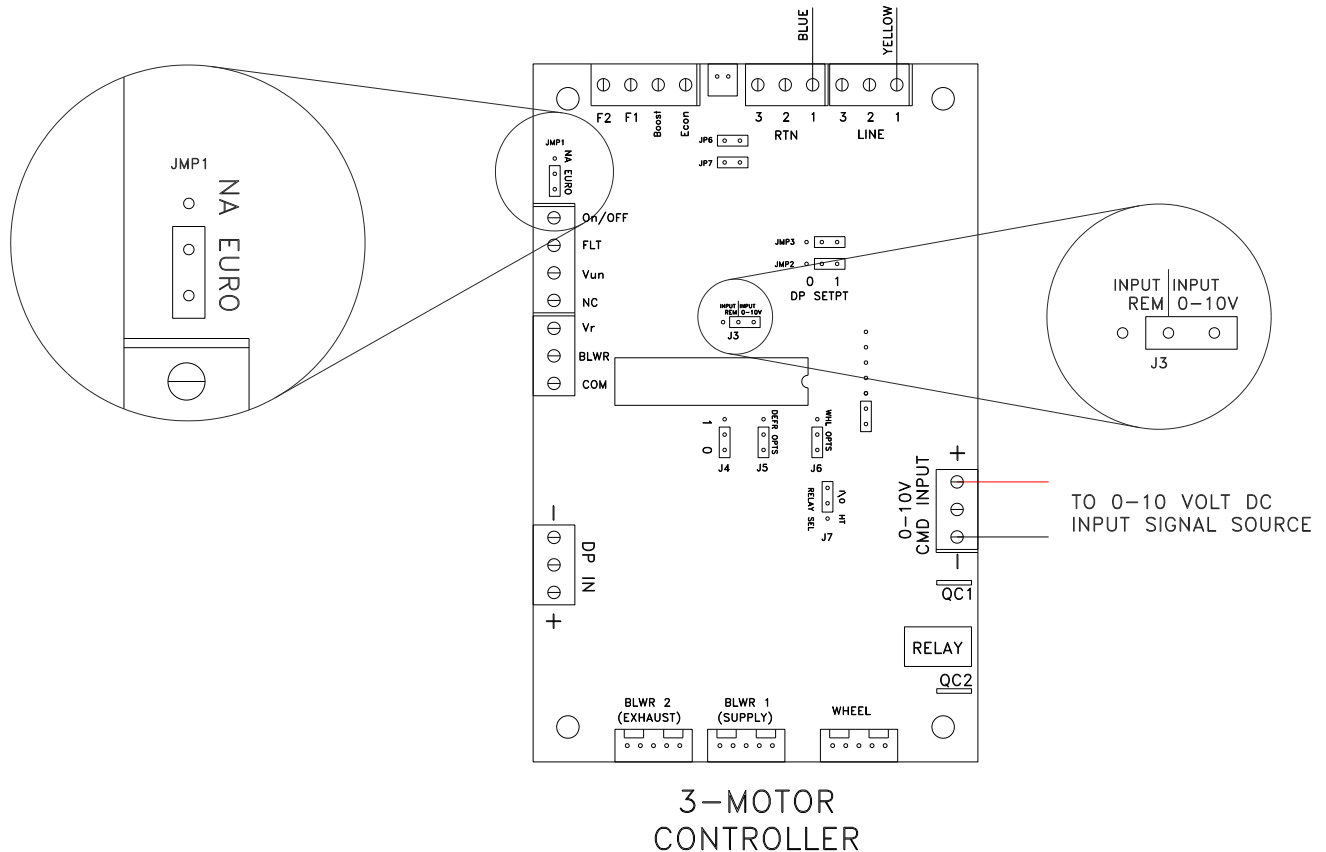
When an offset is selected, the unit will drop the exhaust air flow by the specified amount at the maximum air flow setting. At lower air flow settings, the air streams will become proportionally closer together until they are equal at the minimum air flow.



Using a 0-10 VDC Input Signal Control System

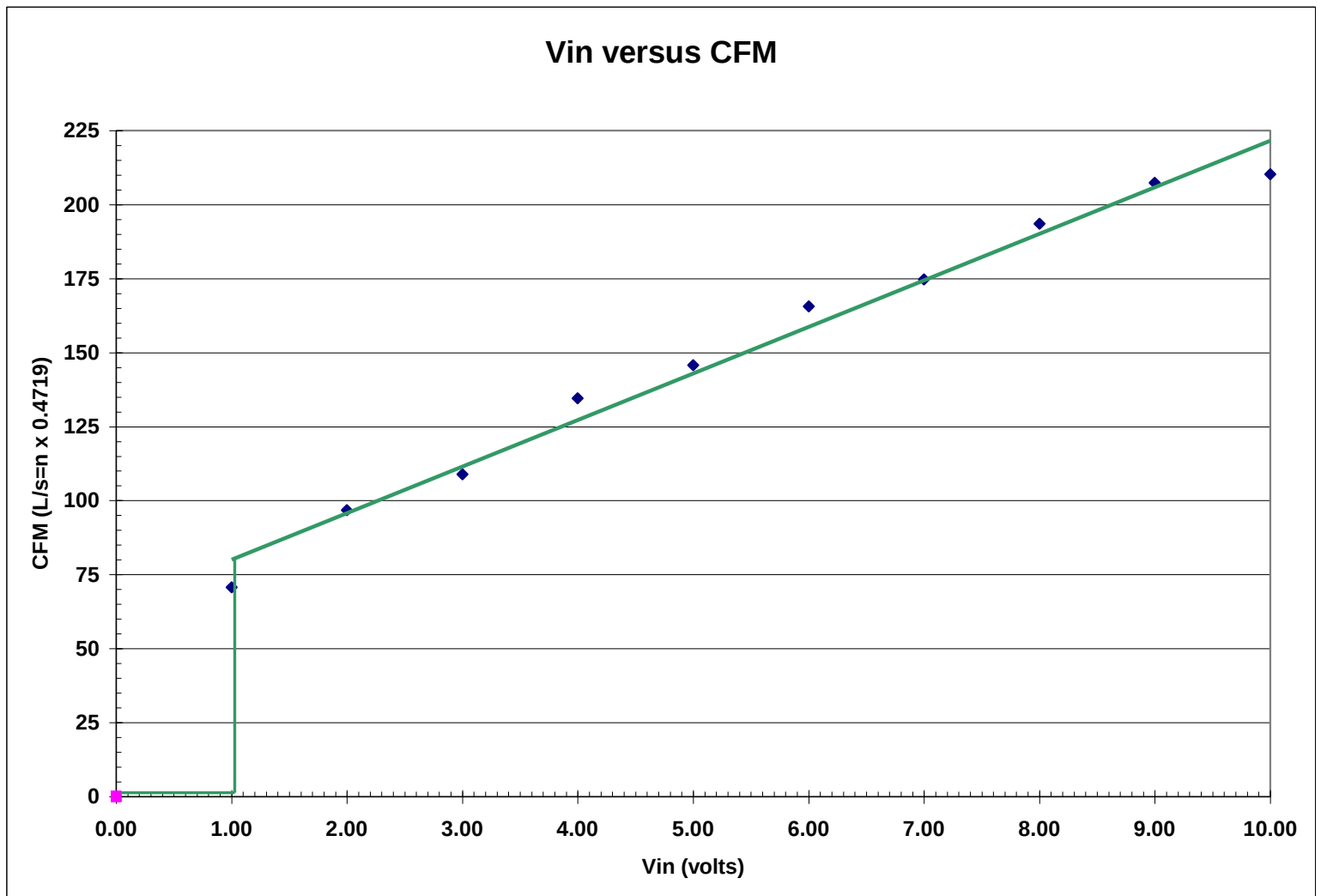
Your RecoupAerator can be programmed into a “smart house” control, so that it can be controlled remotely or using any 0-10 VDC control signal. To set up a 0-10 VDC input signal control system, **disconnect all power to the unit.**

1. Set jumpers JMP1 to the EU position, and J3 to the 0-10V INPUT position on the three-motor controller as shown in the drawing below to enable the 0-10 VDC control input.
2. If a Wall Dial Control is attached to the unit, remove it. You do not need a Wall Controller when operating the unit with a 0-10VDC input control signal.
3. Locate the two screw terminals labeled “0-10V CMD INPUT”, as shown above, and connect the signal control wires to these posts as indicated.



Boost, EconoCool™, air flow offsets, and furnace input functions are still operational when using the 0-10V input signals to control the unit. Review following graph for the input VDC versus airflow relationship to help program your control.

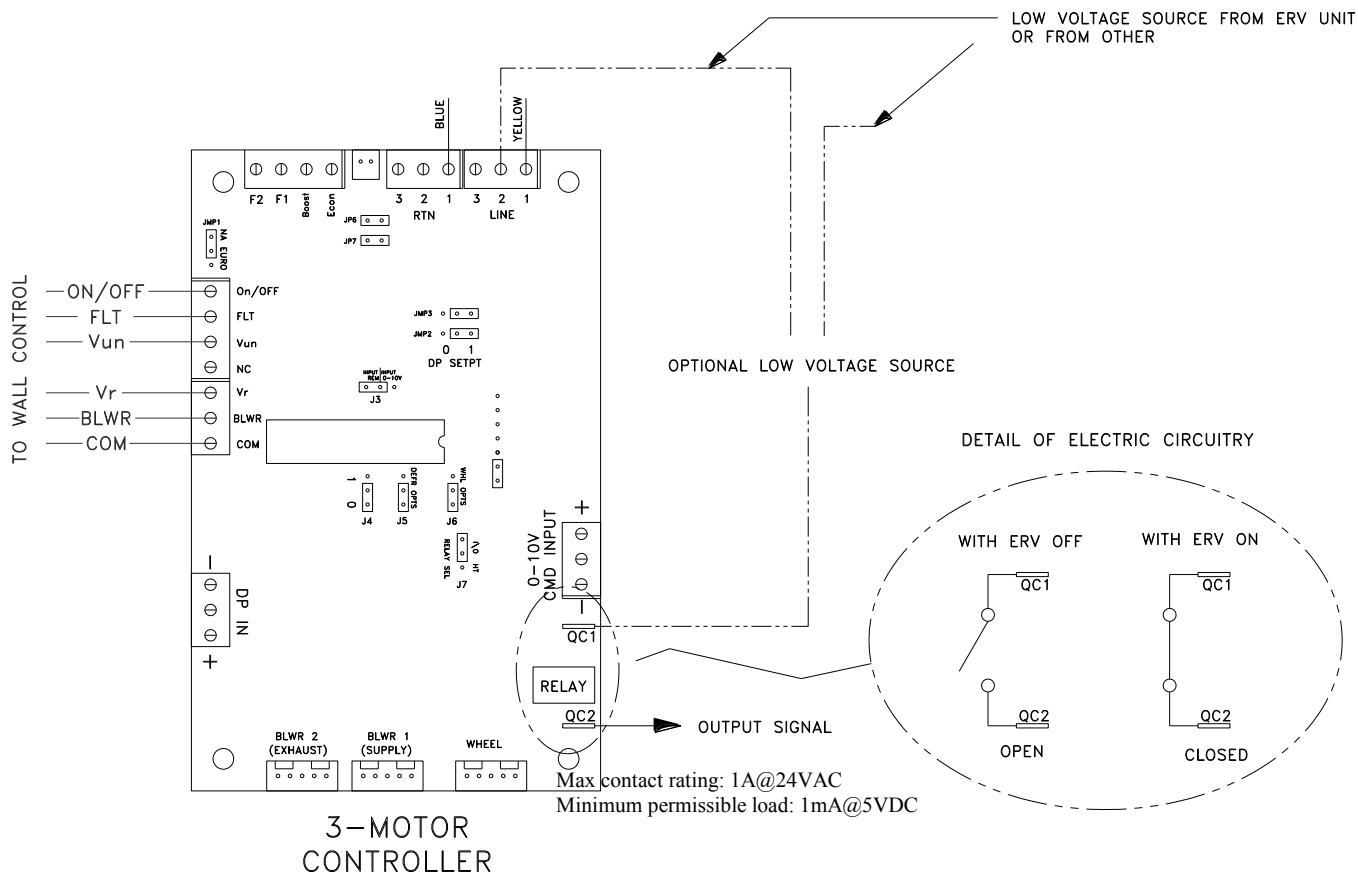
Using a 0-10 VDC Input Signal Control System cont...



Note: Curves are generated from actual test data but should only be used as general guidelines. Actual results may vary.

Optional Auxiliary Output

Your RecoupAerator allows you to run auxiliary options, such as duct power dampers, fans, humidifiers, and dehumidifiers. For instance, you can use the auxiliary output to turn on the furnace fan. Your RecoupAerator is equipped with a low-voltage pilot-duty relay (normally open) on the three-motor controller (denoted 'X' in the 3 motor controller description). The relay controls any auxiliary options you may want to operate in conjunction with your ventilation unit. When the RecoupAerator is turned on by the Wall Dial Control or by other means (e.g., fan, furnace, boost, and building input), the relay switches from normally open to closed, completing the circuit between QC1 (1/4" quick-disconnect tab) and QC2 (1/4" quick-disconnect tab), denoted as "W" and "Y" on the 3 Motor Main Control description. Jumper J7 must be in the I/O position for this relay to activate on unit start.



Service & Maintenance

CAUTION

Before performing any service to RecoupAerator, switch off and disconnect power to the unit. You must disconnect power by either unplugging the unit or by switching the applicable breaker in your breaker box to OFF. Otherwise, the main power to the unit will remain hot and could cause serious bodily injury.

Maintenance Check List

- ✓ Check pre-filters and energy transfer/filtration material every six months or when the *Check Filter* light comes on. The *Check Filter* light comes on every 90 days of continuous operation. Turn off the *Check Filter* light using the directions in “Check Filter LED” below.
- ✓ Clean pre-filters every 3 to 4 months if continuously operated, or every 6 months otherwise.
- ✓ Replace energy transfer/filtration material when necessary.
- ✓ Check exterior weather caps regularly.
- ✓ Lightly vacuum or dust the cabinet interior yearly.

Check Filter Light on the Wall Dial

The “check filter” indicator light is located on the front side of the wall controller and will light up (red) after a continuous operation of 90 days. Because of differences in indoor and outdoor environments, the filters may or may not need cleaning/replacement every 90 days. The light is only an indication to check the filtration material. To reset the light (turn it off), locate the small hole in the faceplate of your control cover just below the red check filter light. Using a small-diameter object, such as a paper clip, hold 2 seconds until the light goes OFF. The light will come on again after approximately 90 days. Check your pre-filters and energy wheel transfer/filtration material for cleanliness at this time.

***To order replacement filtration materials, visit us online at:
www.ultimateair.com***

Exterior Weather Hoods

Check your exterior weather hoods periodically throughout the year to ensure that the fresh air inlet and stale air exhaust hoods mounted on the outside of the building do not become clogged with debris such as leaves, grass, snow, or nests. Remove any debris by hand or wipe out the caps with a dry cloth.



Aluminum Pre-filters

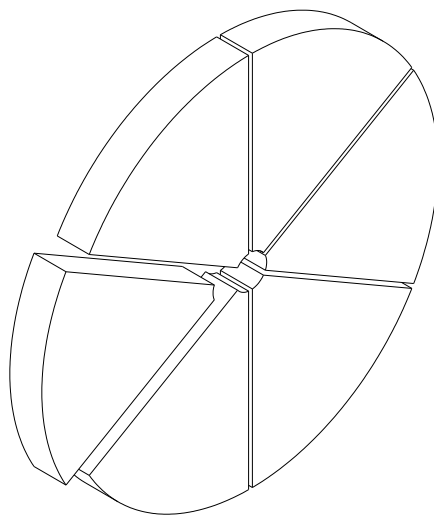
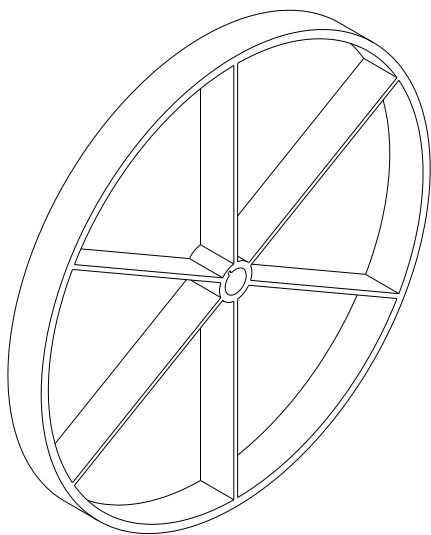
Clean the aluminum pre-filters at least once every six months. Clean more frequently if necessary. To clean the filters:

1. Disconnect power to the RecoupAerator
2. Unlatch the filter access cover
3. Remove the two rectangular filter cover inserts. They will easily lift free
4. Slide the two aluminum pre-filters out (one from each opening), there is one long pre-filter and one short pre-filter.
5. Check the pre-filters for build-up. The pre-filters may be cleaned by soaking in warm soapy water, then rinse. If they are clogged a new set should be purchased from UltimateAir. Pre-filters should be mostly dry before reinstalling.
6. Replace the filter cover insert blocks and access cover
7. Restore power to the unit.

To order replacement filtration materials, visit us online at:
www.ultimateair.com

Energy Transfer/Filtration Material (“Filter Pies”)

The UltimateAir’s patented energy transfer wheel contains six removable filter pie wedges which periodically require replacement. These pies are also known as ‘energy transfer/filtration material’ because they not only filter incoming air, they also transfer heat and moisture from one air stream to the other giving the machine the 96% Heat/Energy recovery rating.



1. Disconnect power to the RecoupAerator
2. Unlatch the filter access cover
3. Remove the two rectangular filter cover insert blocks.
4. Remove the long aluminum pre-filter as explained in the Aluminum Pre-Filter section on the previous page.
5. If the energy transfer/filtration material is dark gray or darker, it should be hand washed or replaced. Pull out the exposed filter material “pie wedges”, manually rotating the wheel to access the remaining wedges.
6. Rotate the wheel by hand, making sure that the pieces are completely and evenly replaced below the level of the spokes so that none drag as the wheel rotates. Access both sides of the wheel to adjust the wedges.
7. Replace the aluminum pre-filters, rectangular insert blocks, and the access cover and restore power.

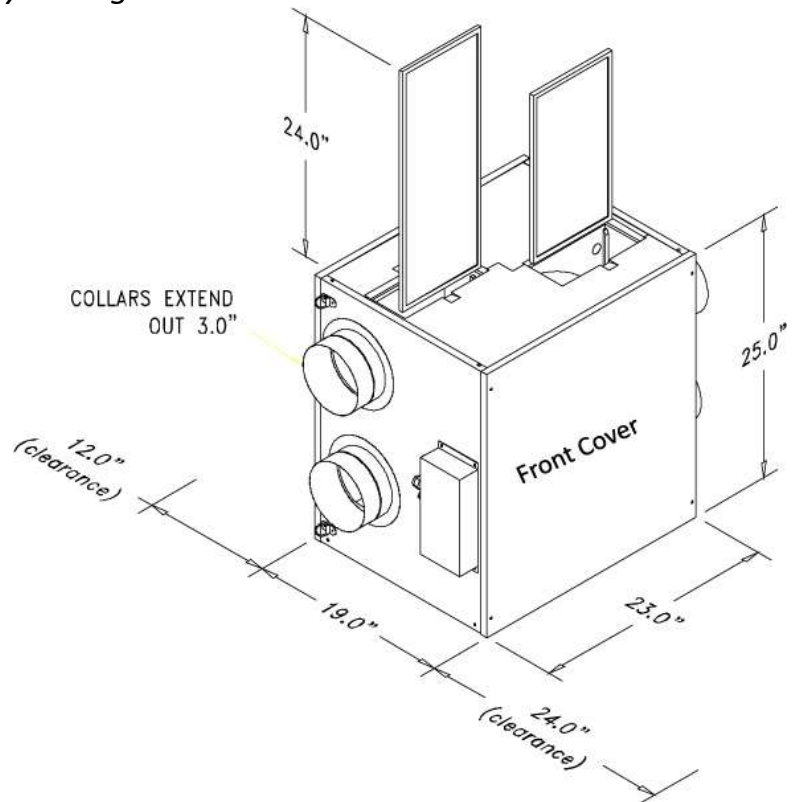
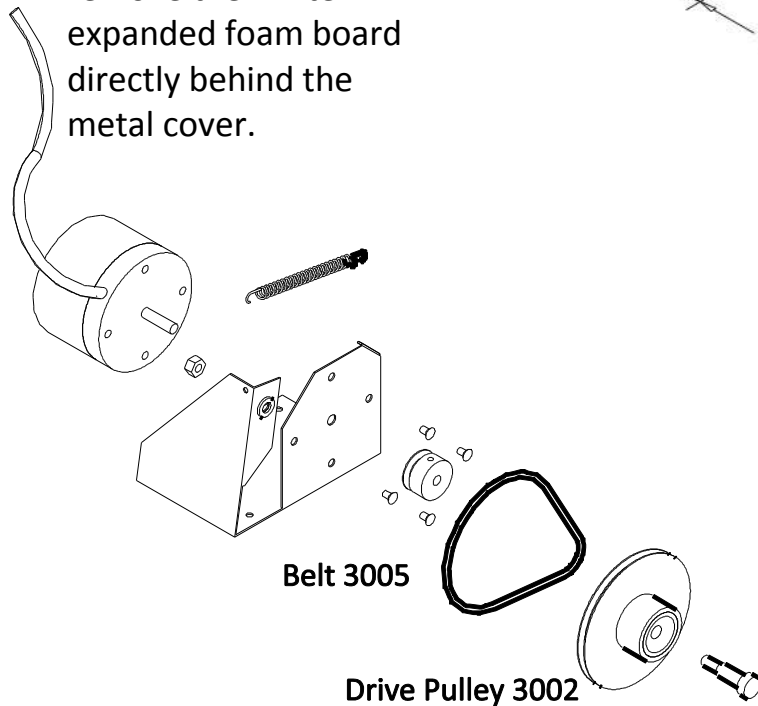
Changing the Belt Part #3005

The Drive Roller Belt connects the drive motor to the rubber drive roller, which rotates the energy recovery wheel. Please follow these steps to replace the Drive Roller Belt.

This should be done by a HVAC installer.

Technical support is available by calling UltimateAir 800.535.3448

1. Disconnect power, and turn the main switch OFF (white dot will be out).
2. Remove the filter access cover.
3. Remove the four hex head (5/16") screws holding the 'front' metal cover then remove the white expanded foam board directly behind the metal cover.



Continued...

1. The wiring remains connected. Remove the two screws holding the motor mount/ drive roller assembly in place. They are visible and closest to you. The rear of the motor mount sits on two snap top posts.

2. Once the screws are out, reach in and firmly rock the motor mount assembly to unsnap the rear posts.

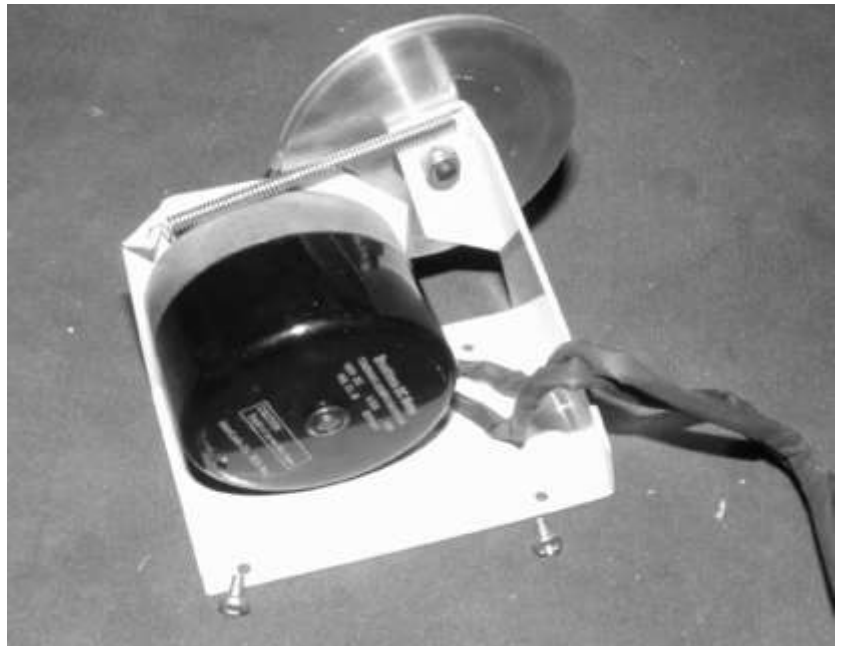
3. *Replace Drive Roller Belt by stretching and rolling the new belt onto the pulleys.*

4. Install motor mount / drive roller assembly back into the unit by first snapping the rear posts, then replacing the two screws.

5. Install white foam board then the metal front cover.

6. Operate unit with wheel visible through top door to verify rotation.

7. Replace the filter access cover.

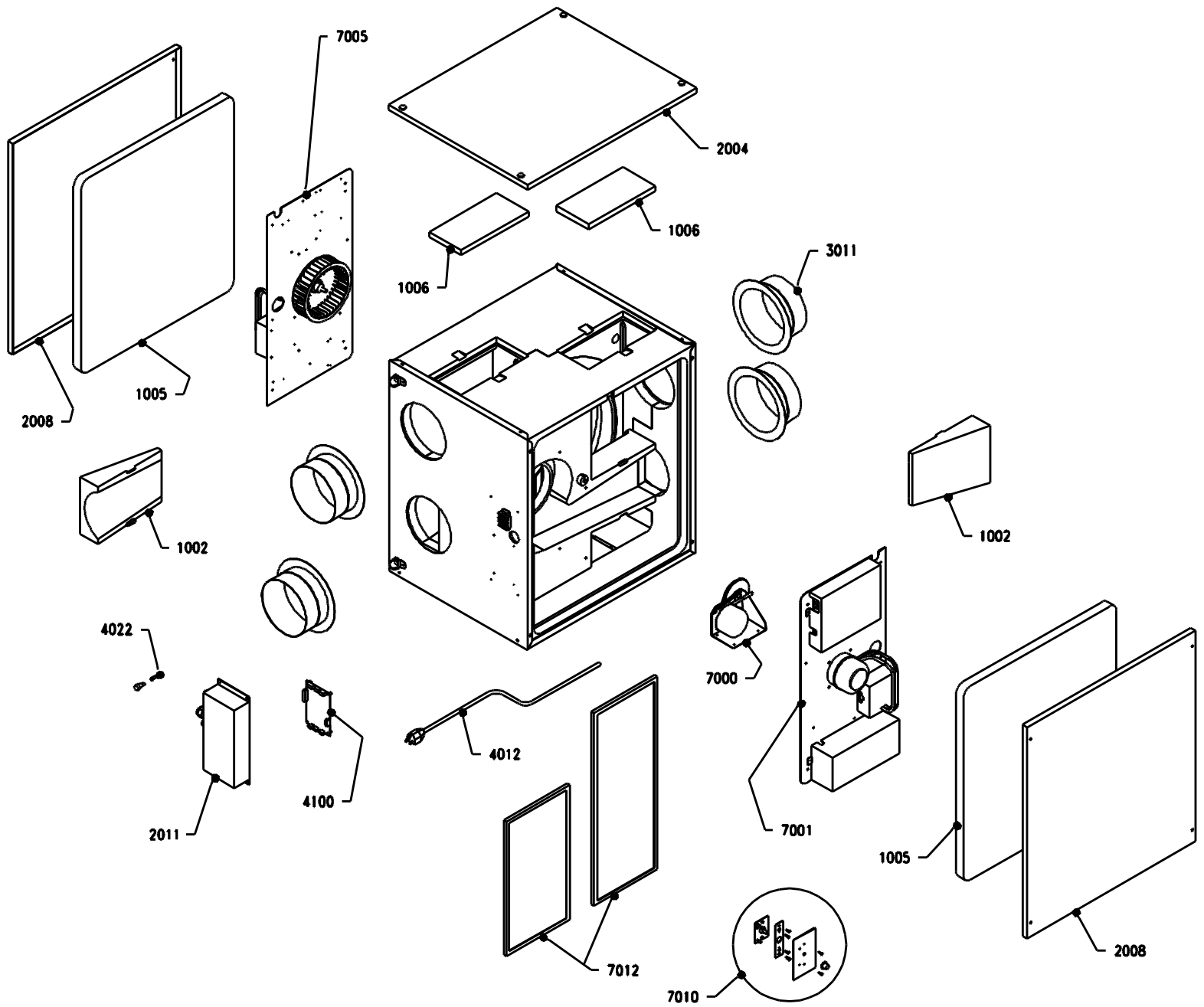


Troubleshooting

Problem	Possible Cause	Recommended Solution
Green Light on Wall Dial Control does not come on	Power switch mounted on machine is Off.....	Check that Main 110VAC switch
	Accessories connected to the unit are not powered or wired correctly	Use a jump wire from LINE 24V on the Main Board mounted inside the power switch cover to the boost BST terminal on the same board to see if machine responds by running at full flow. The problem may be in the Wall Dial if Boost works correctly.
	Blown fuse.....	Check and replace the main fuse. ¼ amp
Green Light on Wall Dial Flashing	Connections may not be grounded properly	Verify all connections and replace any loose wiring
	At least 100 VAC may not be reaching the machine	
	Jumpers on three-motor controller may not be in the correct position	Make sure that NA/EURO jumper is in the correct position.
	Wires from the Main Control Board in the power switch cover to the wall Dial may be crossed, Notice order of wire labels	
	Wires may not be securely connected in terminals	
Green Light on Wall Dial Flashing	The RecoupAerator shuts off automatically at below 10° F to protect from frost forming inside the machine	Wait for outside temperatures to rise above 10° F or Purchase an efficient pre-heater option from UltimateAir for operation below 10° F. Temperature Probe Problem?

Problem	Possible Cause	Recommended Solution
Excess humidity	Flow speed set too low (during heating season) RecoupAerator not operating continuously (during heating season) Moisture-producing source (e.g., indoor pool, hot tub, or unvented crawl space)	Set speed higher at wall controller Operate RecoupAerator continuously Consider additional exhaust fans in moisture-producing areas (e.g., bathrooms and kitchens)
What's that sound?	Small noises in the system Obstructions in pre-filters and ducts Heat recovery wheel rubbing on insulation	Short, insulated duct runs will minimize noise transmission through ductwork Insulated Flexible duct connected to the machine for 3 feet will minimize noise transmission through hard duct Clear airways of any and all obstructions, including termination vents and pre-filters Make sure pies are flush with heat recovery wheel edge and not rubbing
Poor air flow	Leaves or similar may be obstructing vents Restrictions in ductwork Dirty energy filtration material Ductwork too long, too many bends/elbows Wall controller is not at the right setting	Remove obstructions from any and all airways Remove any duct obstructions, excessive bends, and improperly Contact your HVAC service professional to fix ducting Adjust wall controller setting
Cold air	Un-insulated duct in unconditioned air space Heat recovery wheel not rotating or one of the two blowers is not running	Insulate all duct work in unconditioned air spaces Check for broken or slipping wheel drive belt

Assembly & Parts Diagrams



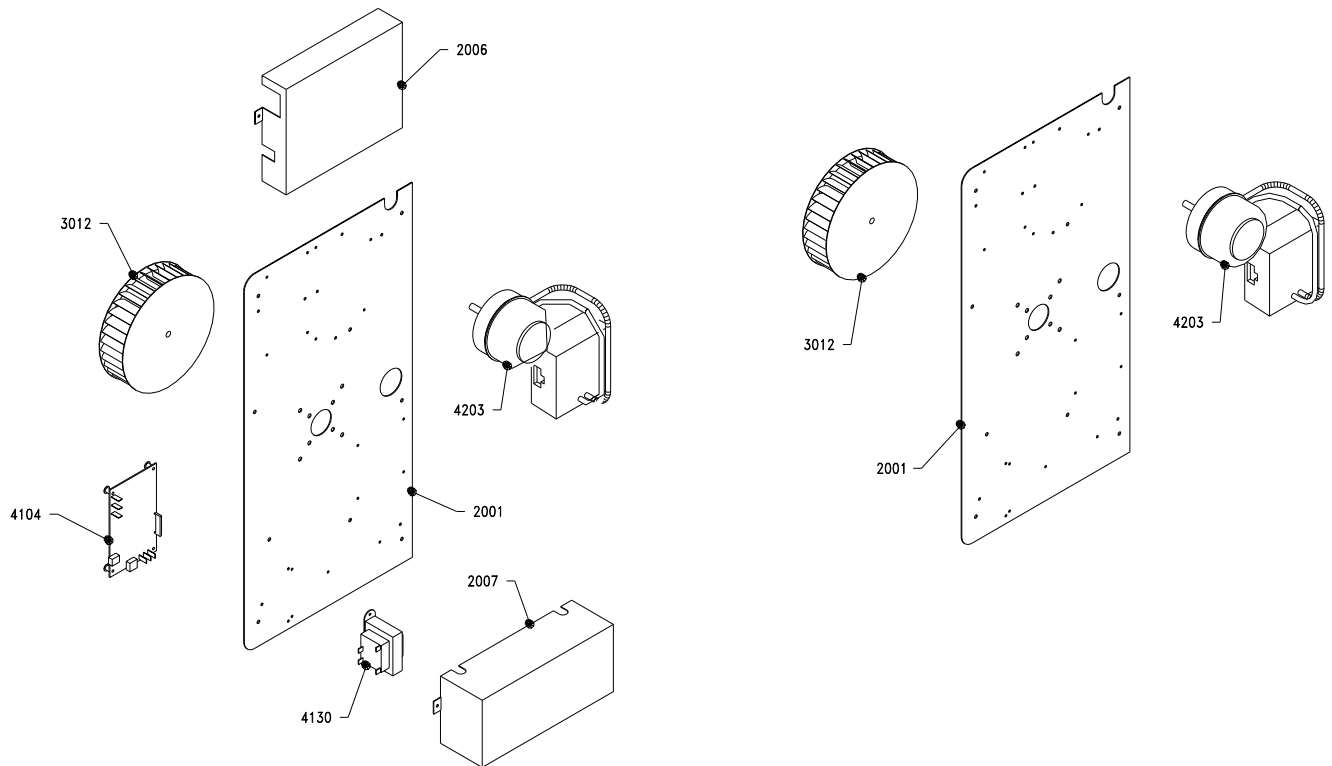
General RecoupAerator 200DX Assembly

Part No.	Part Description	Qty
1002	Transition Cover	2
1005	Door Insulation	2
1006	Filter Door Insulation	2
2004	Top Door	1
2008	Front Door	2
2011	Exterior Electronics Cover	1
3011	6" Starter Collars	4
4012	Power Cord	1
4022	1/4 Amp Fuse	1
4100	Three Motor Controller	1
7000	Drive Roller / Motor Mount Assembly	1
7001	Front Motor Plate Assembly	1
7005	Back Motor Plate Assembly	1
7010	American Wall Controller Assembly	1
7012	Pre-Filter Set	1

Assemblies 7001

&

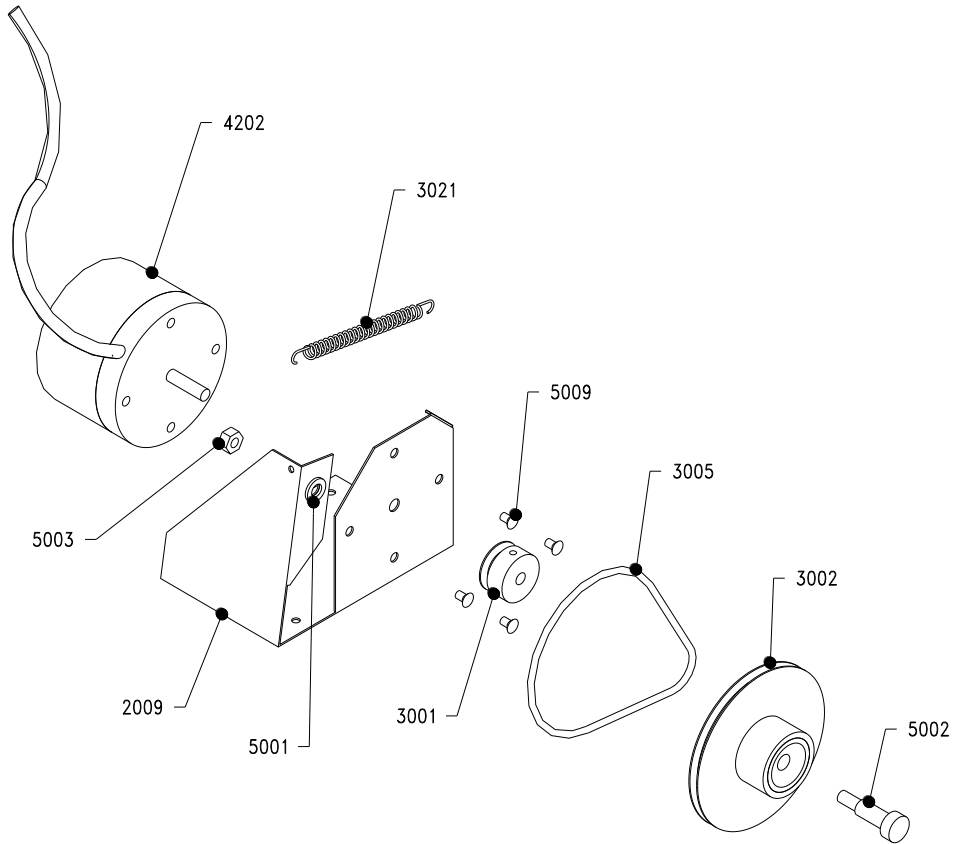
7005



Electronics Assemblies

Part No.	Part Description	Qty
2001	Electronics Plate	2
2006	Electronics Cover 1	1
2007	Electronics Cover 2	1
3013	Impeller	2
4104	Wheel Drive	1
4130	Transformer	1
4201	Blower Motor	2

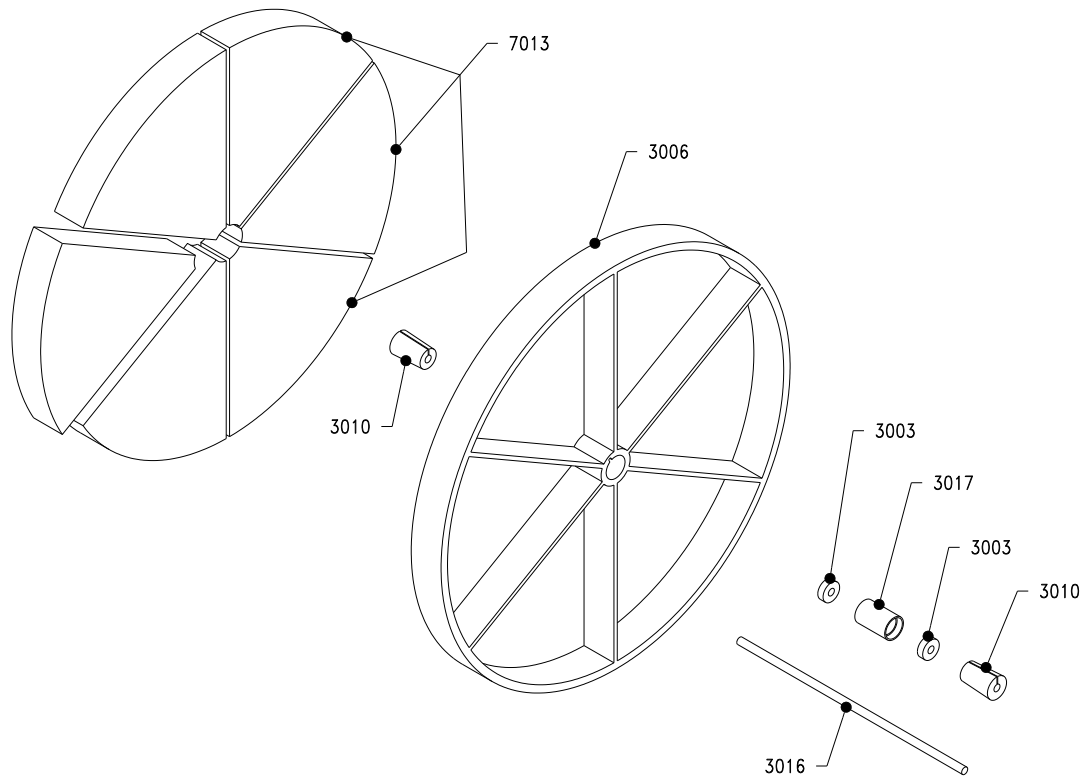
Assembly 7000



Drive Motor Assembly

Part No.	Part Description	Qty
2009	Drive Roller / Motor Mount	1
3001	Small Motor Pulley	1
3002	Drive Roller Pulley Assembly	1
3005	Driver Roller Belt	1
3021	Drive Roller Spring	1
4202	HRW Drive Motor	1
5001	M6 Metric Masher	1
5002	Metric Shoulder Screw	1
5003	Metric Locknut	1
5009	Flat Head Machine Screw	4

Assembly 7014

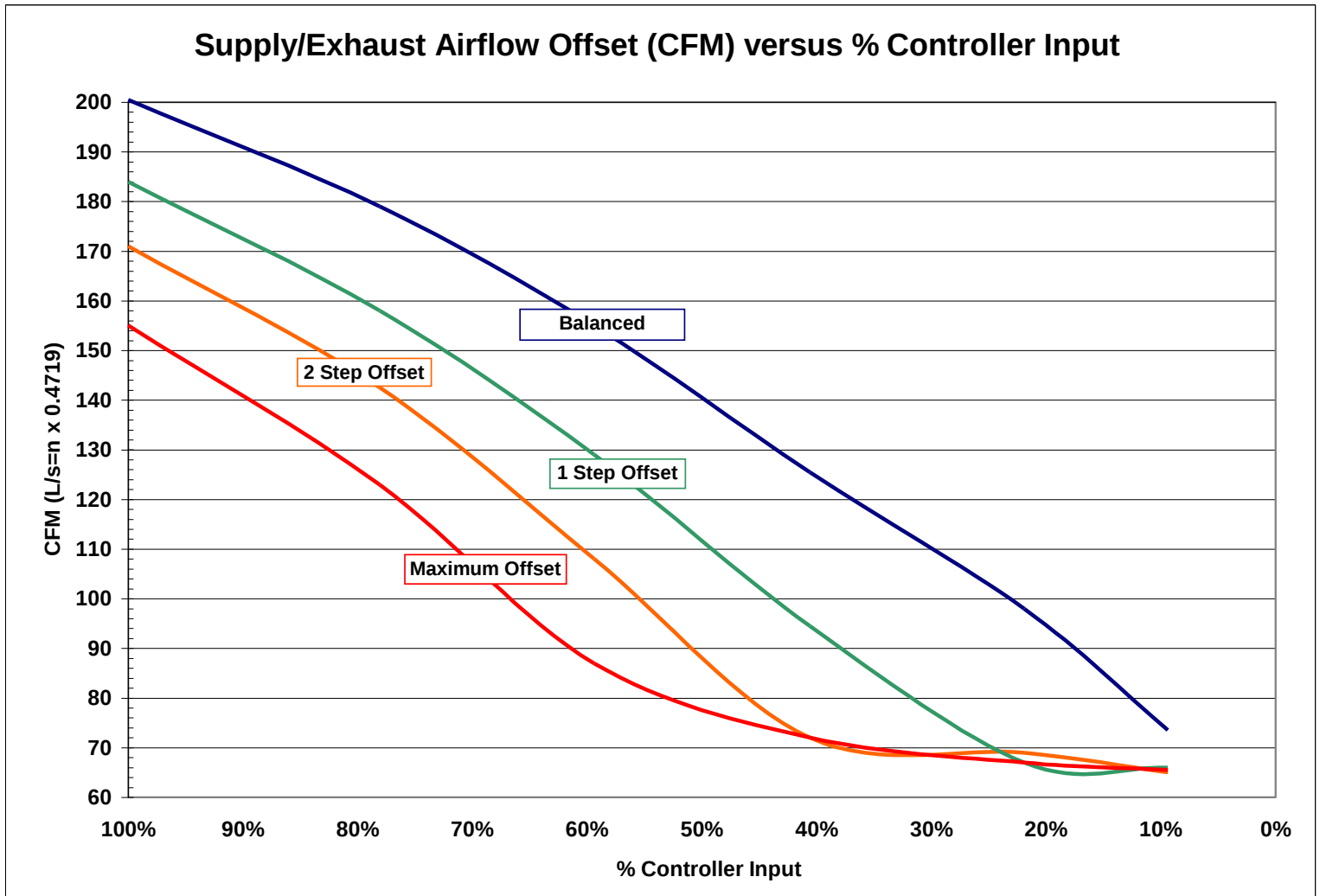


Heat Recovery Wheel Assembly

Part No.	Part Description	Qty
3003	Bearings	2
3006	Energy Recovery Wheel	1
3010	Centering Cone	2
3016	Shaft	1
3017	Hub	1
7013	Energy Transfer/Filtration Material (set of 6 "pies")	1

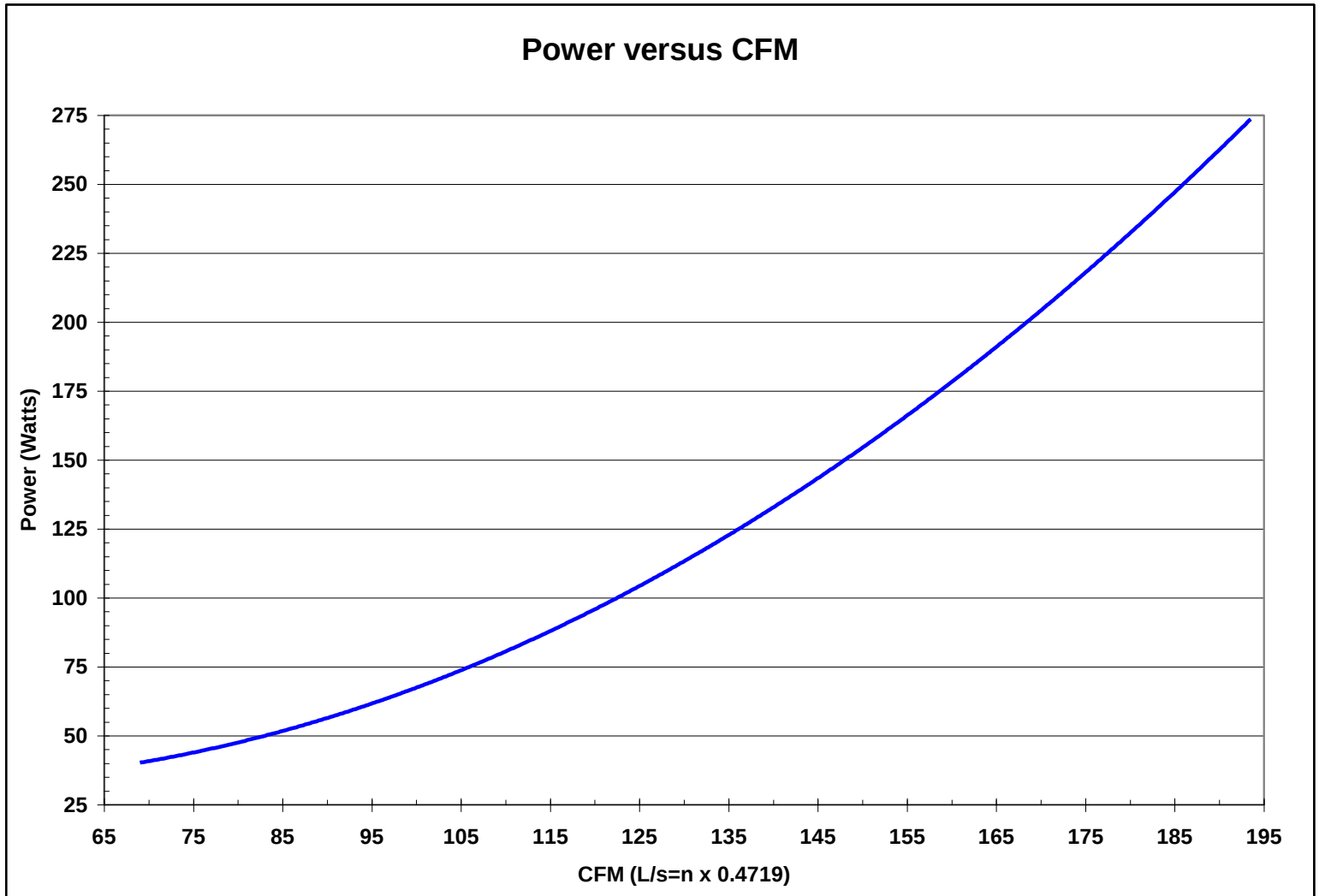
Technical Data

Airflow Curve



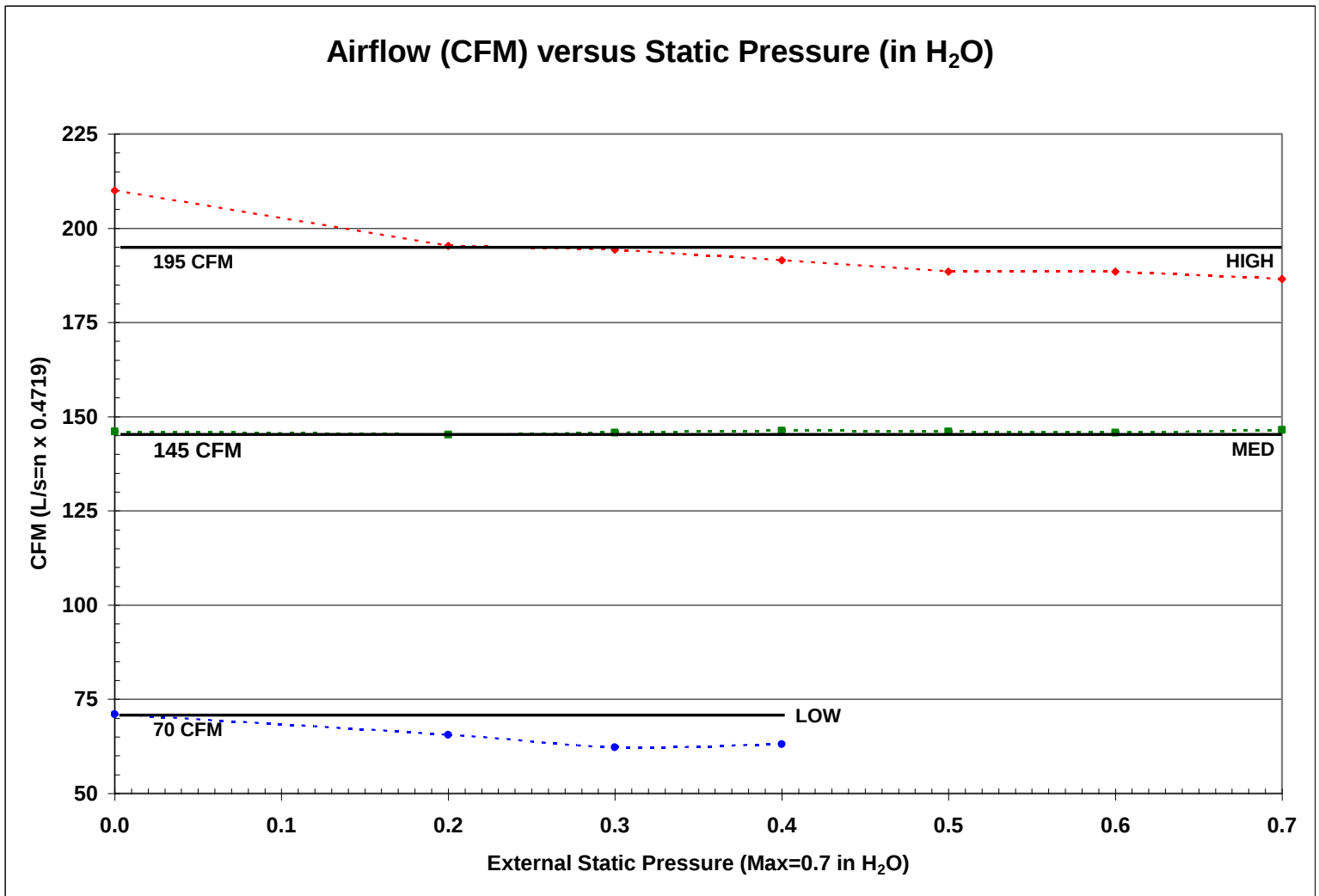
Note: Curves are generated from actual test data but should only be used as general guidelines. Actual results may vary.

Power Curve



Note: The power curve was generated using the average air flow rate over all four ducts.

Fan Curves



Note: Curves are generated from actual test data and should only be used as general guidelines. Actual results may vary.

Installation Record

Date of Purchase:			Model #:		
Date of Install:			Serial #:		
Contractor Info					
Company			Contact Person		
Address					
City, State Zip			Phone		
Notes					

General Warranty Information

Be sure to promptly return your warranty registration to ensure your product is registered.

Your RecoupAerator is guaranteed to be free from defects in materials or workmanship for five (5) years from the date of purchase. See Warranty document (not part of this manual) for complete warranty information. If you have lost your warranty or have questions concerning your warranty protection, email us at info@ultimateair.com.