



UltimateAir®

Web: www.ultimateair.com

*Pressure Control Option
Instruction / Installation Guide*



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Pressure Control Option

Thank you for purchasing the Pressure Control Option for your **RecoupAerator**®. This option will enable the **RecoupAerator**® to continuously monitor and automatically adjust supply and exhaust airflow to maintain* the selected indoor to outdoor pressure differential.

Indoor and Outdoor Pressure

Residential homes today are being built more and more tightly to try to minimize energy losses. As a result, ventilation is exponentially becoming more important. On average, the tight residential home has a slight negative pressure, relative to the outdoor environment. This allows for raw outdoor air to be pulled into the home through unintentional leaks in the homes shell, ultimately bringing in ambient air that is too hot or too cold along with excessive amounts of humidity, and airborne contaminants. A balanced, or slightly positive, indoor air pressure relative to the outside will very effectively minimize the amount of harmful contaminants (both harmful for the occupants and for the structure) being brought inside the structure. This is also an effective method to prevent mold growth both inside the wall cavities, and inside the structure.

The RecoupAerator is equipped with two blower motors, one controlling air coming into the home (Blower 1, or Supply), and one controlling air leaving the home (Blower 2, or Exhaust). When the unit senses a negative indoor pressure, Blower Motor 2 will be reduced in airflow using a patented control algorithm as necessary to control* to the pressure set point selected.

Installation

The Pressure Control Option comes with three additional components. Two small pressure taps (static pickup tubes), and the pressure transducer. The pressure transducer must be mounted in a conditioned space, in the most convenient location for wiring the transducer to the RecoupAerator, and to connect the transducer to the two pressure taps (see the layout diagram). It can be screwed to a wall, floor joist, or any other indoor stationary location. The indoor pressure tap should be mounted to an interior wall, which could be considered the central most open point in the residence. The outdoor pressure tap should be located on an exterior wall, which is exposed to the outdoor environment. A garage, crawl space, or attic space may be a good location for this pressure tap, if either of these spaces are not considered part of your conditioned envelope and are vented to the outside. Avoid mounting the outdoor pressure tap in a windy location. You will need to run ¼” tubing (flexible or non-flexible), from the “hi” port on the transducer, to the indoor pressure tap, and from the “lo” port on the transducer to the outdoor pressure tap.

Deciding on the Pressure Selection

While wiring to the 3-motor controller at the RecoupAerator, you should now make a decision about what pressure differential you want the RecoupAerator to control* to. The main objective (most simply described) is to keep humidity from entering the wall cavities,



which will lead to mold problems. In most installations, you will want to select a ‘balanced’ or zero pressure differential because high humidity levels will oscillate from inside to outside during the year for a given climate. If your climate has higher outdoor humidity than indoor humidity all year around, then you should select the 1 or 2.5 Pascal positive pressure selection. The final position, or the ‘off’, disables the pressure control feature, and allows the unit to operate as a balanced airflow ventilation system. Make your jumper selection according to these parameters and the diagram in this manual.

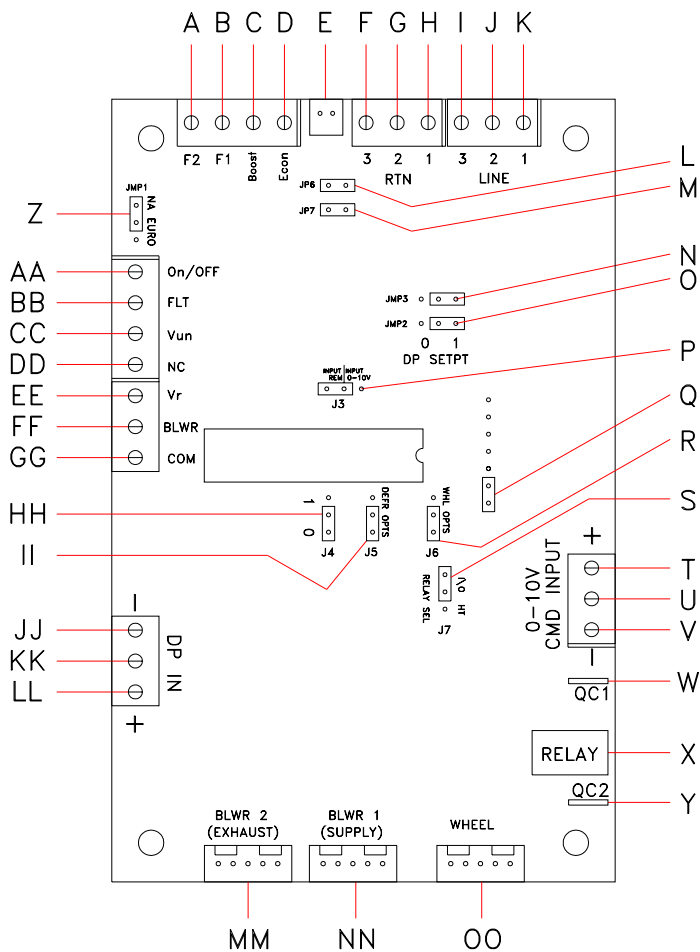
*The ability of the unit to maintain (control) pressure differential is directly dependant on the overall amount of negative/positive pressure it must overcome.

See the diagrams on the following pages for a complete layout, wiring diagram, and pressure selection options.



3 – Motor Controller

Located on the outside of the unit, under the exterior electrical cover is the 3 motor controller. This controller is slightly different than the 3 motor controller on a standard 200DX without PressureGuard. Please refer to the below 3 motor controller, and not the one listed in the owner manual / installation guide which came with the unit, when doing any wiring to the ERV.



Three-motor 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.
- 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 signal (from I, J, or K), the unit will be turned on, and commanded to high speed (max air flow).



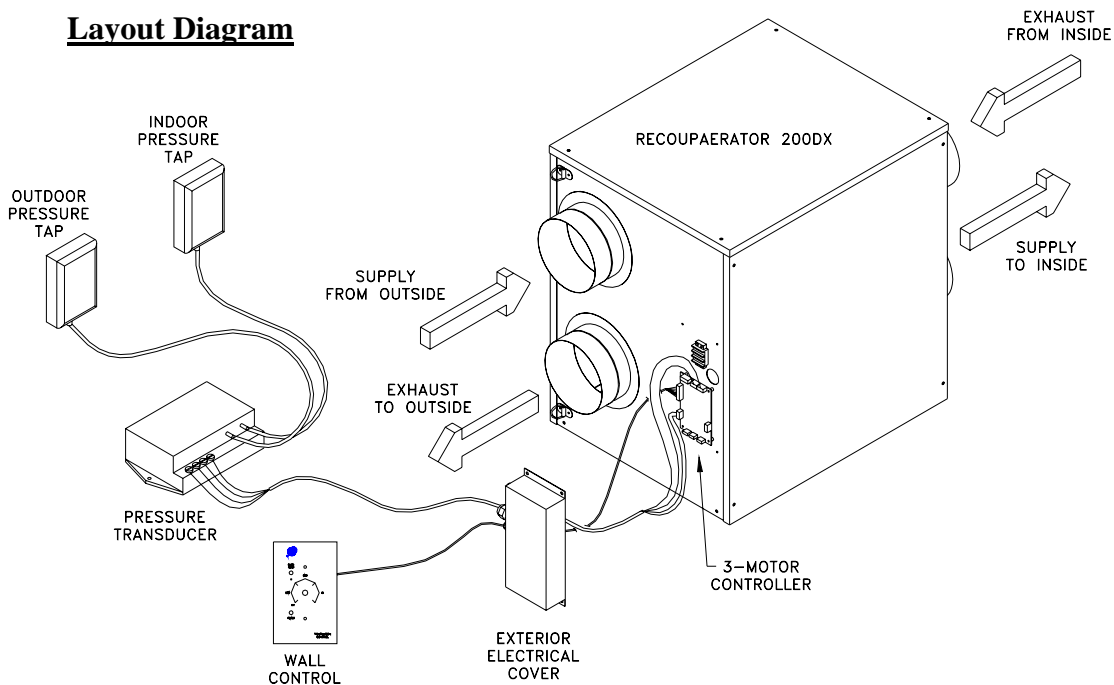
- D. EconoCool input: When this post receives a 24 VAC signal (from I, J, or K), the EconoCool function will be enabled. See EconoCool in this manual for further information.
- E. Temperature thermistor input. Temperature information from the temperature thermistor located in the incoming air stream (duct 1) is fed to the controller through this input.
- F. RET 3: 24 VAC return post. Common terminal from the internal transformer.
- G. RET 2: 24 VAC return post. Common terminal from the internal transformer.
- H. RET 1: 24 VAC return post. Common terminal 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 connecting 24 VAC line voltage from internal transformer to F1.
- M. JP7: Jumper connecting 24 VAC return from internal transformer to F2.
- N. JMP3: Offset / DP Set point jumper. Selects the pressure differential between the inside and outside that the ERV will try to maintain.
- O. JMP2: Offset / DP Set point jumper. Selects the pressure differential between the inside and outside that the ERV will try to maintain.
- P. J3: Control Input jumper. Selects control input from either the remote wall controller, or a 0-10V DC input voltage (at T and V).
- Q. Programming jumper. Must be in place for unit operation.
- R. J6: Wheel Options. Selects control for heat wheel rotation. (default '0' position)
- S. J7: Relay selection. This 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 is in the 0-10V position, this post accepts the positive line voltage 0-10V DC command from an outside control source.
- U. Not connected. Empty socket.
- V. 0-10V DC input post. When J3 is in the 0-10V position, this post accepts the negative side 0-10V DC command from an outside control source.
- 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 the REM INPUT position. When J3 is in the 0-10V position, JMP1 MUST be in the EU position for the 0-10V input to work.



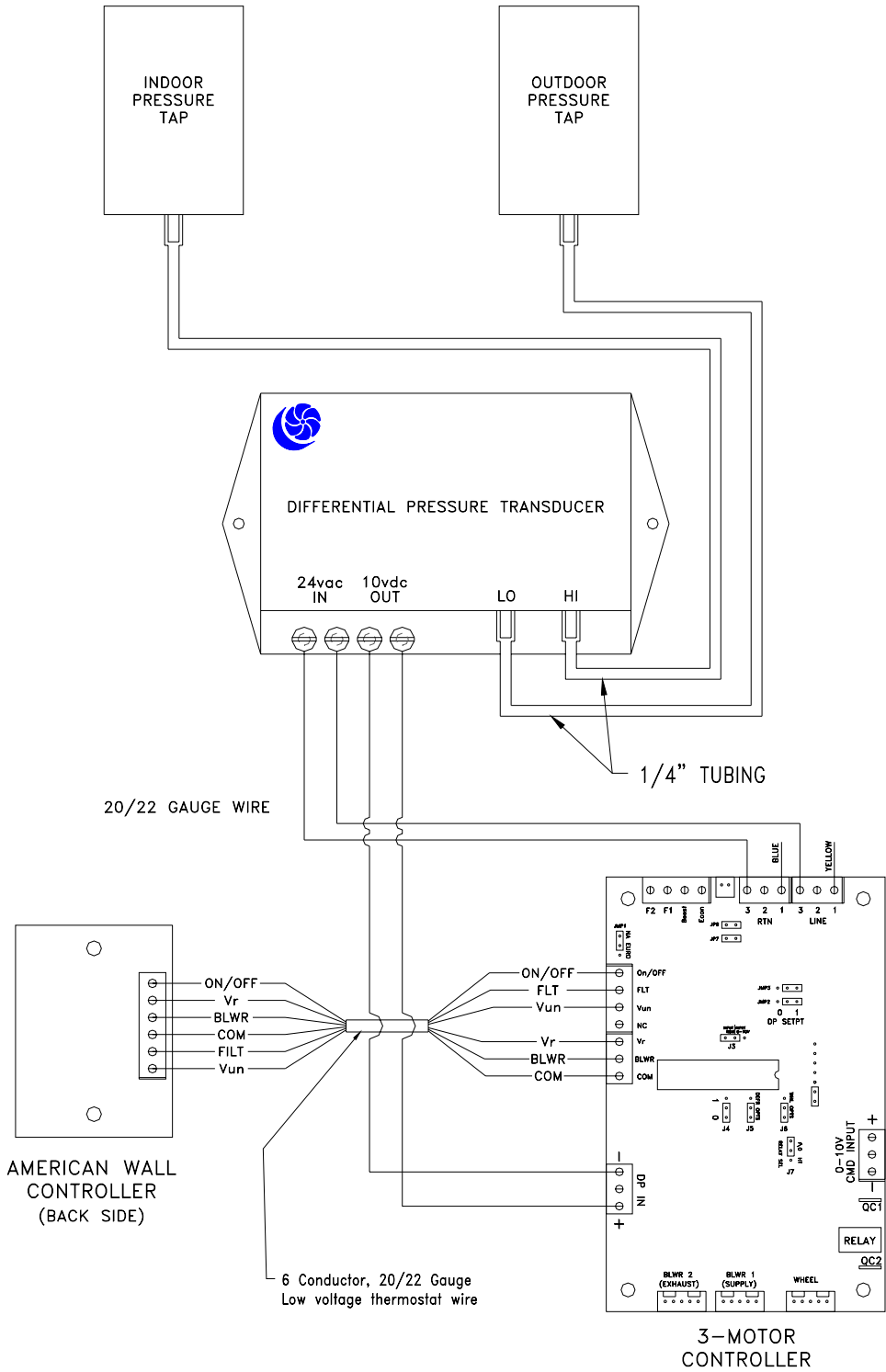
- AA. On/Off terminal. For wiring to mating terminal on NA wall controller.
- BB. FLT terminal. For wiring to mating terminal on NA wall controller.
- CC. Vun terminal. For wiring to mating terminal on NA wall controller.
- DD. NC terminal. Empty terminal. Do not wire to this terminal.
- EE. Vr terminal. 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. DEFR OPTS: Defrost Options jumper. Default position is the '0' position. Unit will be in defrost mode between 18°F - 8°F, and OFF when outside temperatures are below 8°F.
- JJ. DP IN: Delta pressure control input, negative side. Input from pressure transmitter for pressure guard.
- KK. Not connected. Empty socket.
- LL. DP IN: Delta pressure control input, positive side. Input from pressure transmitter for pressure guard.

The American wall controller and the pressure transducer will need to be wired as shown in the following diagrams. A pressure set point will also **need to be selected**. The 3 motor controller default is “Pressure Control Off”, as the unit is test run in from the factory in this configuration. **Please see below to select a different set point.** The unit will have the most pressure influence only at high speed on the wall control.

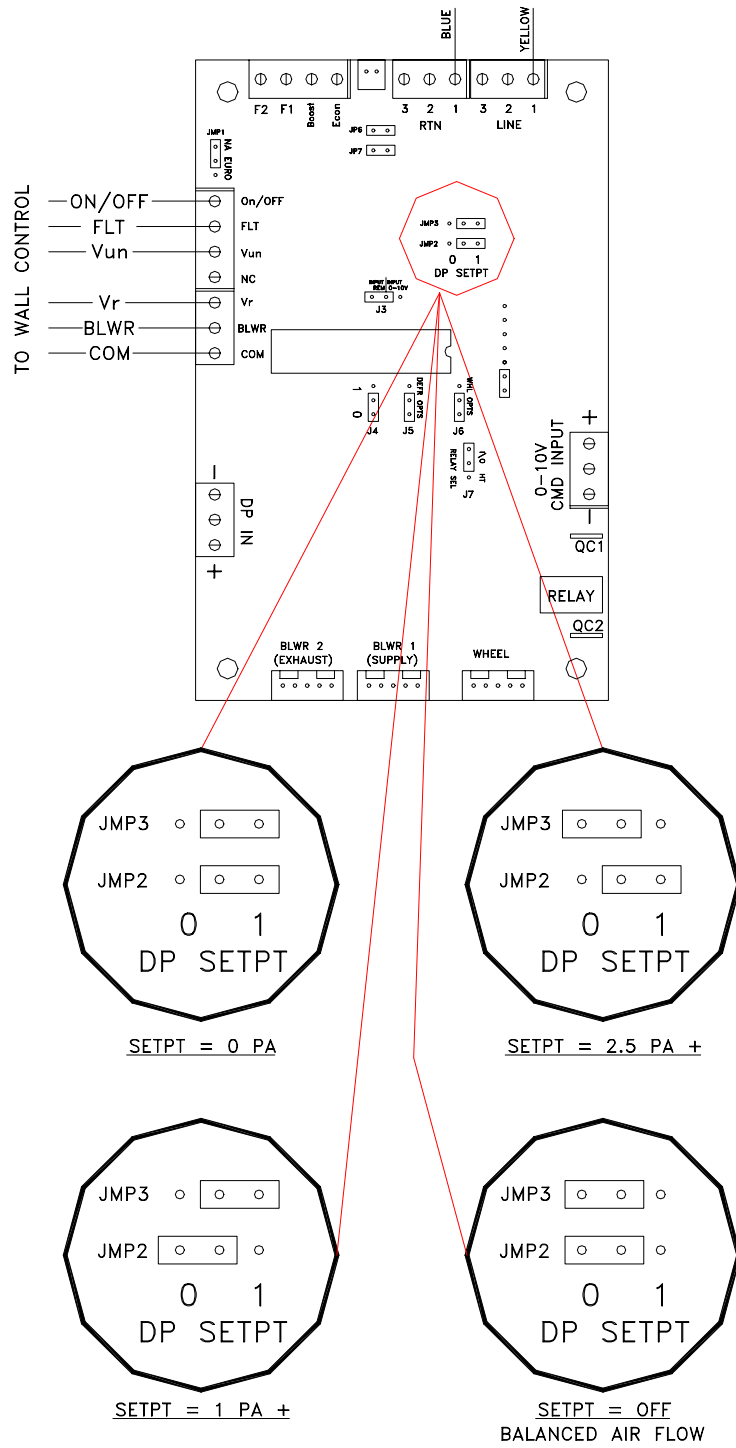
Layout Diagram



****NOTE: TRANSDUCER MUST BE LOCATED IN A CONDITIONED SPACE****



Wiring Schematic



Pressure Set Point Selection