

O X Y G E N 8

PURA HP ERV

PAIRED WITH VERTICAL HEAT PUMP

Installation & Operation Manual



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135006-002

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1.0 GENERAL INFORMATION

This manual includes important instructions for safe connection of the air handling unit. Before connecting the unit, please read carefully and follow the instructions.

The manufacturer reserves the right to make changes, including changes in the technical documentation, without previous notification. Please keep this manual for future reference. Consider this manual a permanent part of the product.

This manual will show the manufacturers' recommended installation method. Please note that local codes and regulations may override these recommendations. The installation must follow local codes and standards.

The National Electric Code (NEC), the National Fire Protection Agency (NFPA), and the Canadian Electrical Code (CEC) must be followed. Installation of this product must be performed by a qualified and accredited professional in conformance with local and national codes, standards and licensing requirements.



Caution: This sign indicates a potentially hazardous situation, which may result in minor or moderate injury if not avoided. It may also alert against unsafe practices.



Warning: This sign indicates a situation that may result in equipment or property damage accidents.



Danger: This sign indicates a potentially hazardous situation, which could result in death or serious injury if not avoided.

2.0 SAFETY INFORMATION



Warning: To reduce the risk of fire, electric shock or injury, observe the following

1. Read all instructions carefully before installations, operation or maintenance of the unit. Failure to comply with instructions could result in personal injury and/or property damage.
2. Installation of the unit and the corresponding electrical wiring must be done by a qualified person and be in accordance with all municipal and national electrical codes and pertinent industry standards should be verified before installation.
3. Use this unit only in the manner intended by the manufacturer. If you have any questions, contact the manufacturer.
4. Moving parts: disconnect power supply before opening, ensure all nuts and screws are securely fastened before restarting the unit.
5. Before servicing or cleaning the unit, switch power off at the service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
6. When cutting or drilling into a wall or ceiling, make sure that you do not damage electrical wiring and other hidden utilities.
7. To reduce the risk of fire, use only metal ductwork. Do not use any accessories not recommended by the manufacturer.
8. When performing installation, servicing or cleaning of the unit, it is suggested to wear safety glasses and gloves.
9. Do not use this unit for commercial purposes.
10. For residential use only. The unit must be grounded.
11. Do not install in a cooking area.
12. This unit is not designed to exhaust combustion and/or dilution air for fuel burning appliances.

Packaging Inspection

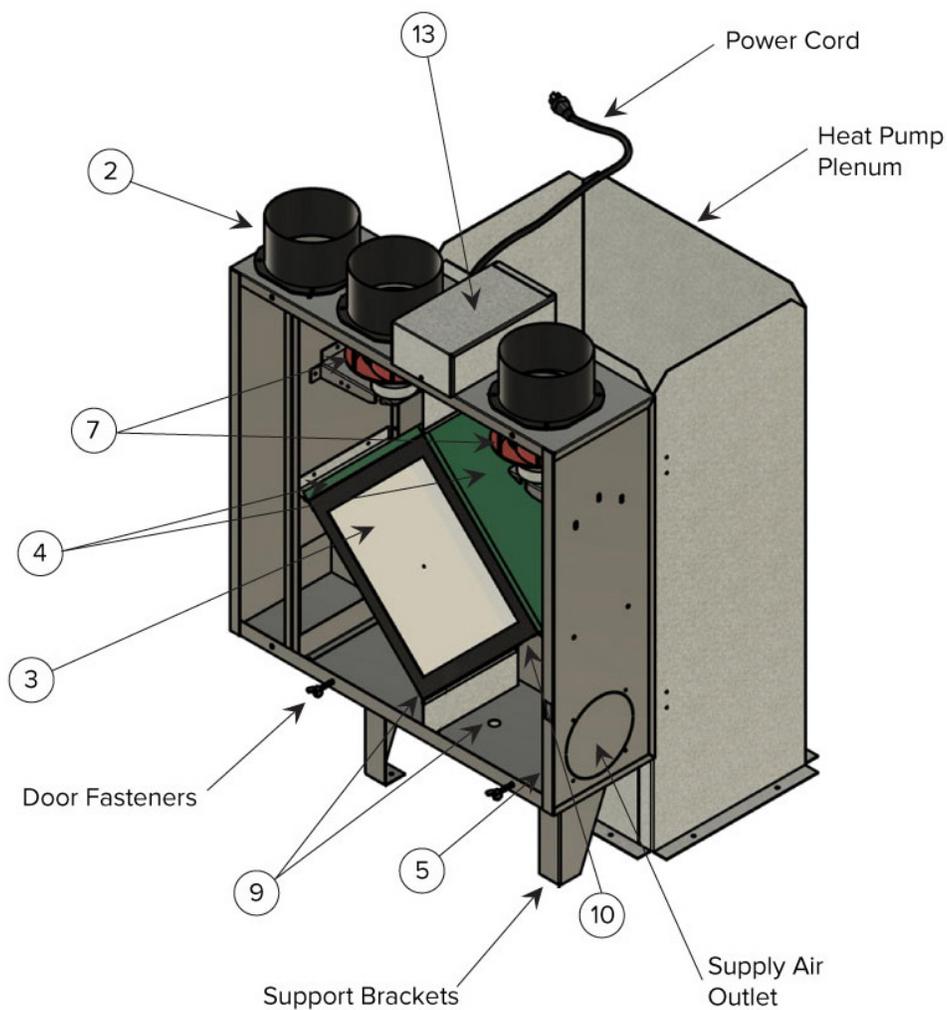
Open the box and check to make sure all of the parts and accessories are present and in good condition. If you find any parts missing or any shipping damage, please contact our factory or distributor immediately.



Caution: This sign indicates a potentially hazardous situation, which may result in minor or moderate injury if not avoided. It may also alert against unsafe practices.

1. Turn the unit OFF during construction or repair to avoid filter blockage.
2. Exhaust air outside - Do not intake/exhaust air into spaces within walls, crawl spaces, garage or into attics.
3. The unit must be installed in accordance to National and Local Building Codes.
4. When leaving the house for a long period of time (more than two weeks), a responsible person should check if the unit operates adequately.
5. Published efficiencies are based on balanced air-flows on supply and exhaust.

3.0 COMPONENTS



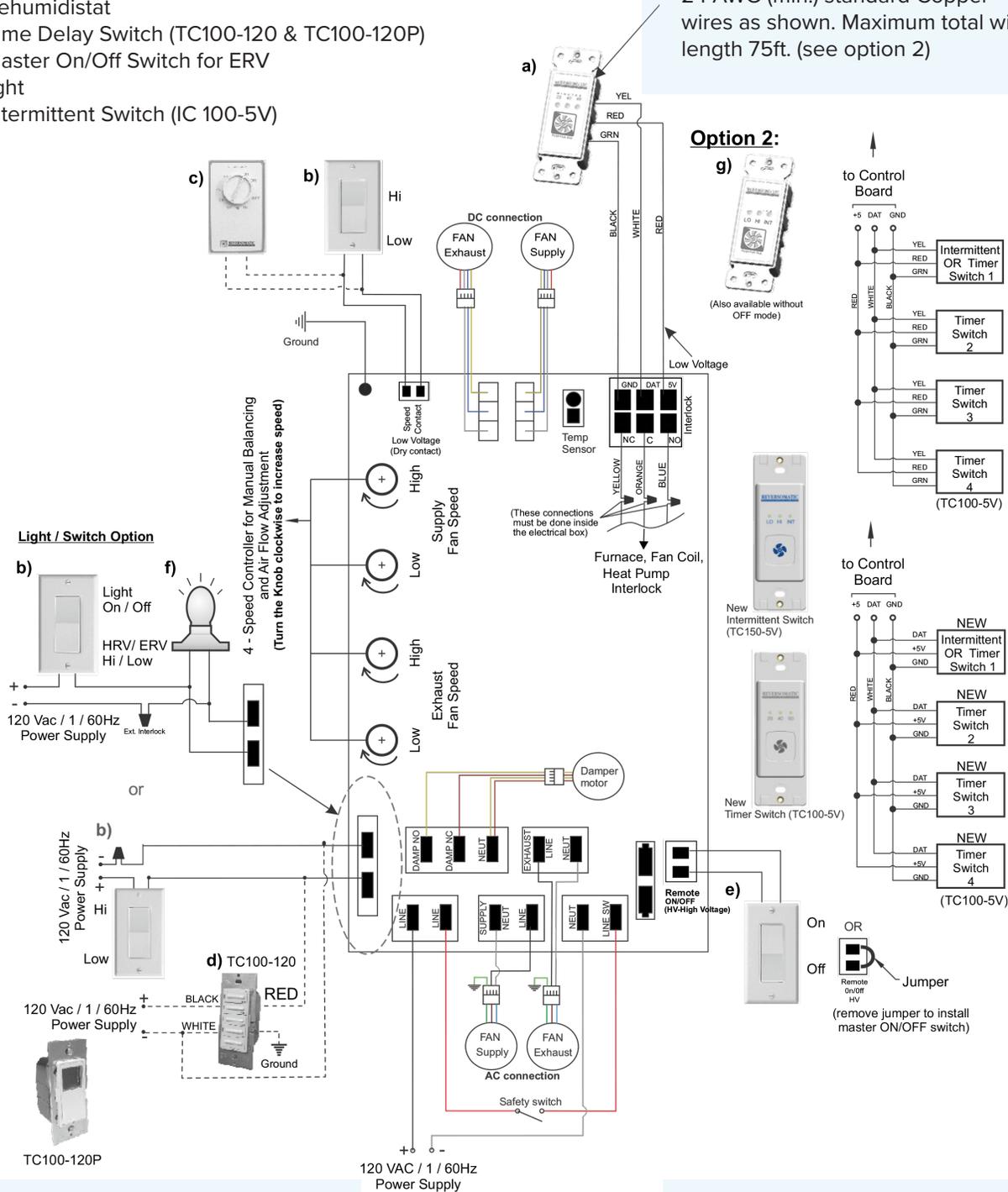
No.	Description	Part No.	Qty.
1	ERV - lid, Pan Assembly	9315	1
2	Polypropylene Collar 5" Dia.	014043C	2
3	Counterflow Plastic Core	CF100	1
4	Filter 7" x 12" (MERV-8 and MERV-13)	9358	2
5	Temperature Sensor	9326	1
7	ECM Motors	9319	2
9	Drain Spout Assembly	9320	2
10	Core Locking Bracket	9321	1
13	Main Control Board	9361	1

4.0 WIRING DIAGRAMS

Optional Accessories (Not Supplied)

- a. Time Switch (TC100)
- b. Wall Switch
- c. Dehumidistat
- d. Time Delay Switch (TC100-120 & TC100-120P)
- e. Master On/Off Switch for ERV
- f. Light
- g. Intermittent Switch (IC 100-5V)

Note: Up to 4 Time Switches (TC 100-5V) and one intermittent switch (IC 100 5V) can be connected to control board of HRV/ERV by using three 24 AWG (min.) standard Copper wires as shown. Maximum total wire length 75ft. (see option 2)



Note: Same power source can be used for wall switch, Time delay switch (TC100-120 & TC100-120P) and HRV/ERV

Note: Ensure the Line is connected to Line and Neutral is connected to Neutral. The unit will not function if not connected correctly.

5.0 INSTALLATION

The standard PuraHP plenum is designed for field-pairing with the Daikin FXTQ (up to 3 tons). For compatibility with other fan coil models or to verify plenum sizing, please consult the Oxygen8 Applications team.

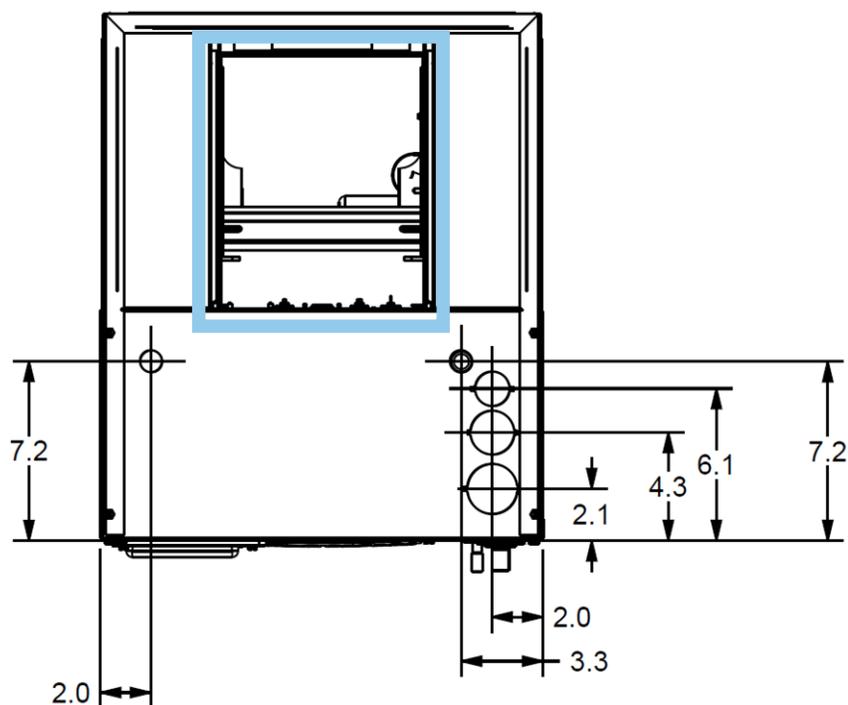
5.1 Field Assembly of the PuraHP ERV with the Daikin FXTQ

Required Materials (Supplied with the Unit)

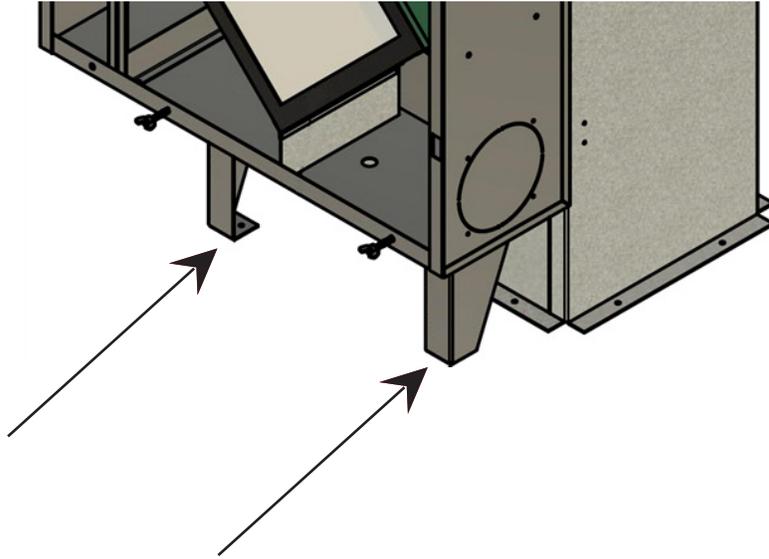
- 50" x 1/8" x 1" strip foam gasket
- 12 x self-drilling screws (#8, 1/2")

Installation

1. Apply 1/8"x1" strip foam gasket around the perimeter of the upturned flanges on the top surface of the heat pump. Be sure to overlap at the corners.

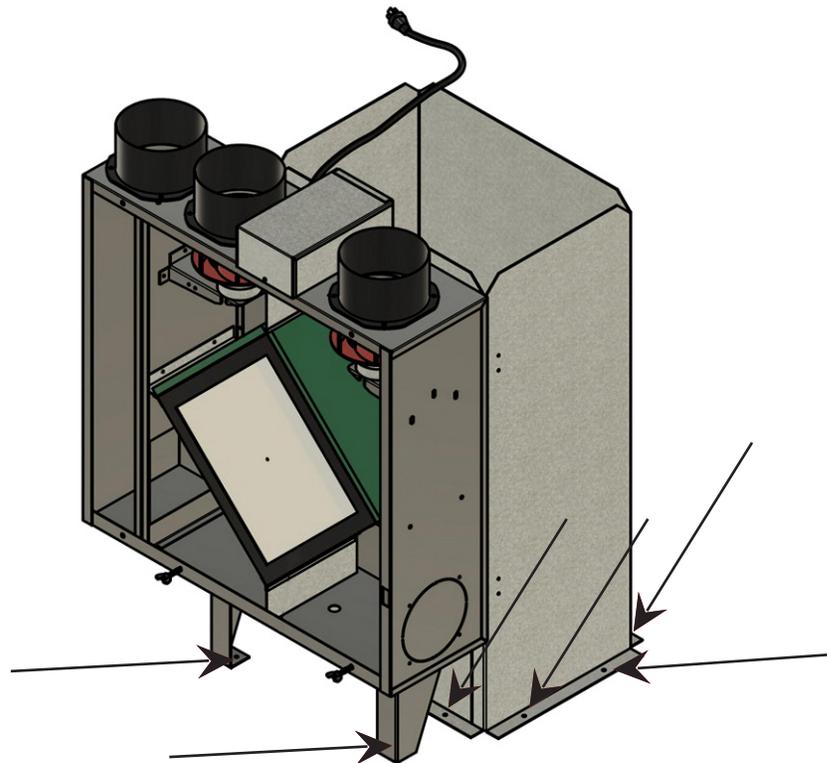


2. Apply 1/8"x1" strip foam gasketing to the underside of the ERV support legs that will contact the top of the FXTQ.

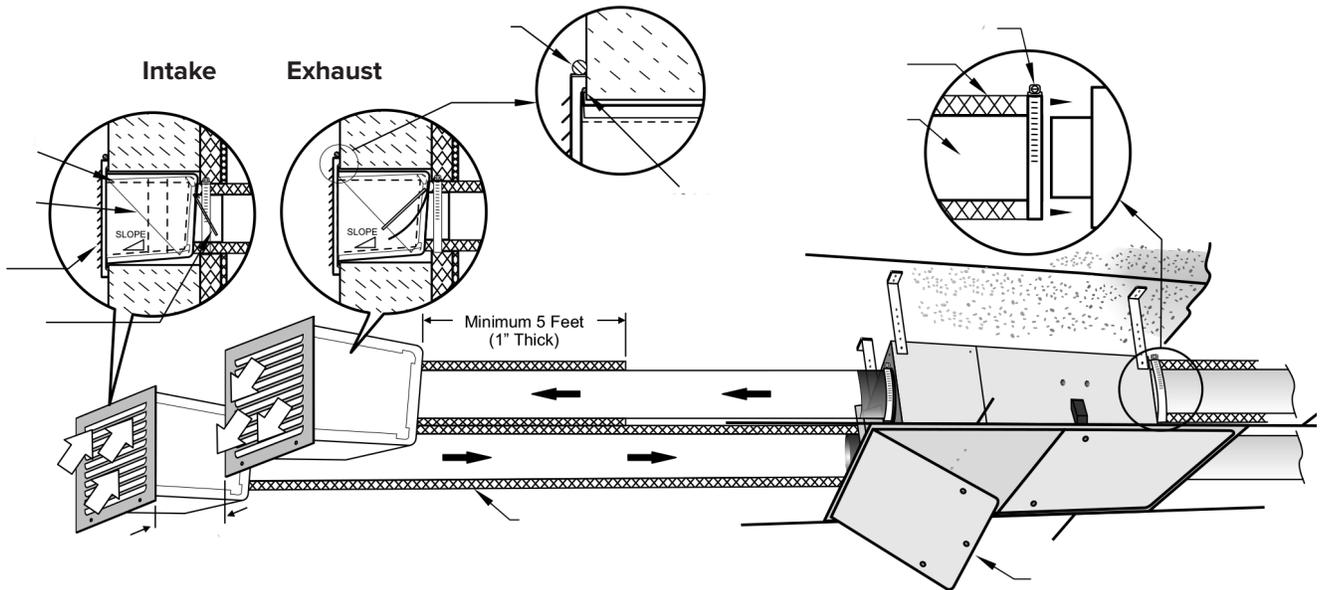


3. To assemble with the heat pump unit, set the ERV-plenum assembly on top of the heat pump, aligning the plenum with the upturned flanges on the top surface of the heat pump. Ensure all gasketing is continuous and intact before assembling.

4. Using self-drilling screws, fasten the base flanges of the plenum and ERV support brackets to the top panel of the heat pump.



5.2 Typical Installations of Single Vents and Access Door



Note: Horizontal Pura unit is depicted; refer to mechanical drawings for Pura HP layout.

Fresh air intake and supply duct must be totally insulated. The Exhaust duct must be 5' insulated from the wall. In colder climates, it is recommended to insulate all exhaust and supply ducts.

Check building codes for insulation requirements.

Use appropriate access door sizes and install on the correct location for easy access to all ERV components for routine check and maintenance of the unit.

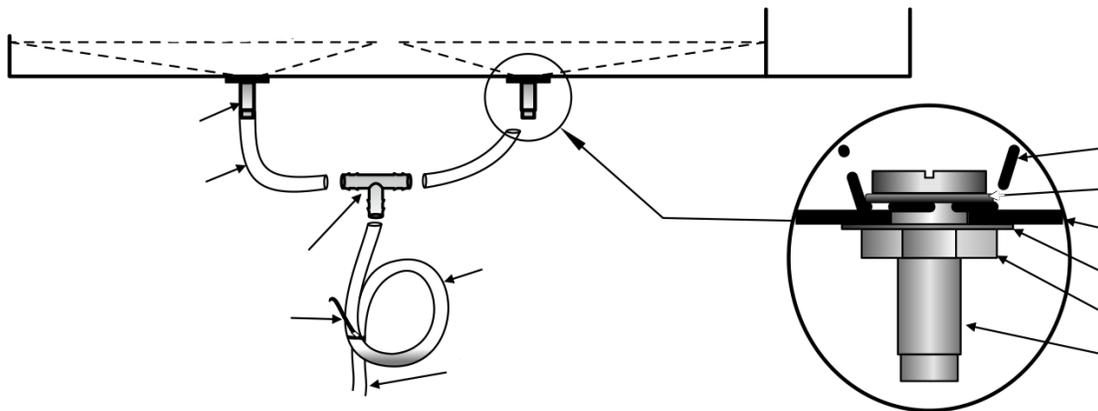
5.3 Drain Connection

During the defrost cycle, the ERV unit may produce some condensation and the water should flow into a nearby drain.

The ERV cabinet has pre-punched holes (two on the side and one on the door) for the drain, in order to keep the drain pan intact, hand tighten the plastic drain spout to the unit using the gasket and nuts.

For Vertical Installation

Cut two sections of ½” drain pipe and connect the other ends to the drain spout, then connect to a “T” connector. Connect a drain line and create a P-Trap to prevent the unit from unpleasant odors from the drain source. Tape or fasten the base to avoid any bends.



Caution: The ERV and all condensate lines must be installed in a space where the temperature is maintained above the freezing point or freeze protection must be provided.

6.0 AIR FLOW BALANCING

6.1 Balancing Procedure

It is required to have balanced airflows in an ERV. The volume of air brought in from the outside must equal the volume of air exhausted by the unit while running at a normal speed. If the airflows are not properly balanced, then:

The ERV may not function at its maximum efficiency.

A negative or positive air pressure may occur in the house or condo.

The unit may not defrost properly.

Prior to balancing, ensure that:

1. All of the ERV components are in place and functioning properly.
2. All sealing of the ductwork system has been completed.
3. Set the unit to normal speed.
4. Airflows in branch to specific areas of the house should be adjusted first prior to balancing the unit.
5. After taking a reading of both the stale air to the ERV duct and fresh air to the house duct, the duct with the lower CFM reading should be left alone while the duct with the higher airflow should be slowed down to match the lower reading by adjusting the dial/speed controller on the control board.
6. Return the unit to the appropriate fan speed for normal operation.

Note: For units without built-in Automatic Electronic Air Balancing and for cross verification only.

6.2 Pilot Tube Airflow Balancing

The following is a method of field balancing an ERV using a Pitot tube in situations when flow stations are not installed in the ductwork. This procedure should be performed with the ERV on normal speed.

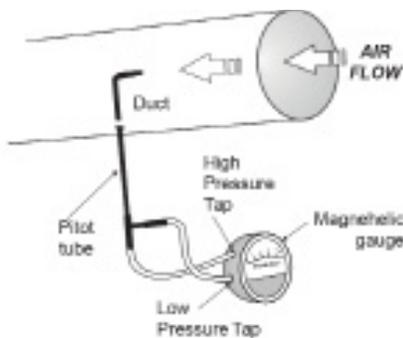
The first step is to operate all mechanical systems on the most desired speed, which will have an influence on the ventilation system, i.e. the forced air furnace or air handler is applicable. This will provide the maximum pressure that the ERV will need to overcome, and allow for a more accurate balancing of the unit.

Drill a small hole in the duct (about 3/16"), three feet downstream of any elbows or bends, and one foot upstream of any elbows or bends. These are recommended distances but the actual installation may limit the amount of straight duct.

The Pitot tube should be connected to a magnehelic gauge capable of reading from 0 to 0.25 in. (0-62 Pa) or other digital airflow meter. The tube coming out of the top of the pitot is connected to the high-pressure side of the gauge/meter and the tube coming out of the side of the pitot is connected to the low pressure or reference side of the gauge/meter.

Insert the Pitot tube into the duct, pointing the tip into the airflow. For general balancing, it is sufficient to move the pitot tube around in the duct and take an average or typical reading. Repeat this procedure in the other duct. Determine which duct has the highest airflow (highest reading on the gauge), then slow down that motor speed by adjusting the dial/speed controller on the control board to match the lower reading from the other duct. The flows should now be balanced. The actual airflow can be determined from the gauge/meter reading. The value read on the gauge is called the velocity pressure and on the flow meter is called the air velocity (FPM). The Pitot tube comes with a chart that will give the air flow velocity based on the velocity pressure indicated by the gauge.

Pitot Tube and Gauge



Note: Place the magnehelic gauge on a level surface and adjust it to zero.

This velocity will be in either feet per minute or meters per second. To determine the actual airflow, the velocity is measured by the cross sectional area of the duct being measured.

6.3 Airflow Balancing Duct

Note (Option 2): For balancing, the extension box cover plate is provided with 3 holes on the supply side and 3 holes on the exhaust side.

Do not use the Pitot tube to open holes in the insulation as it may block/damage the Pitot tube.

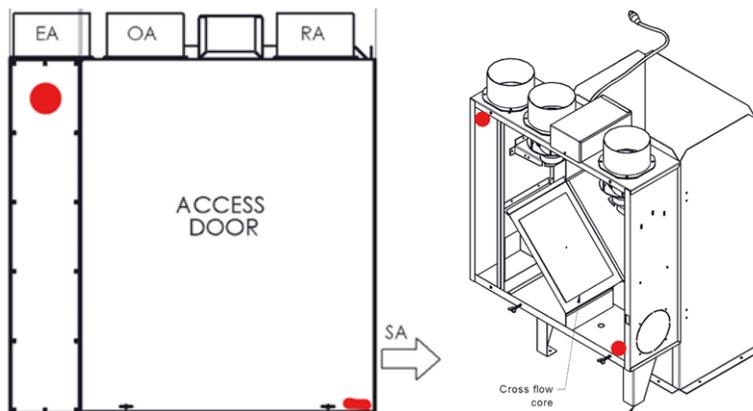
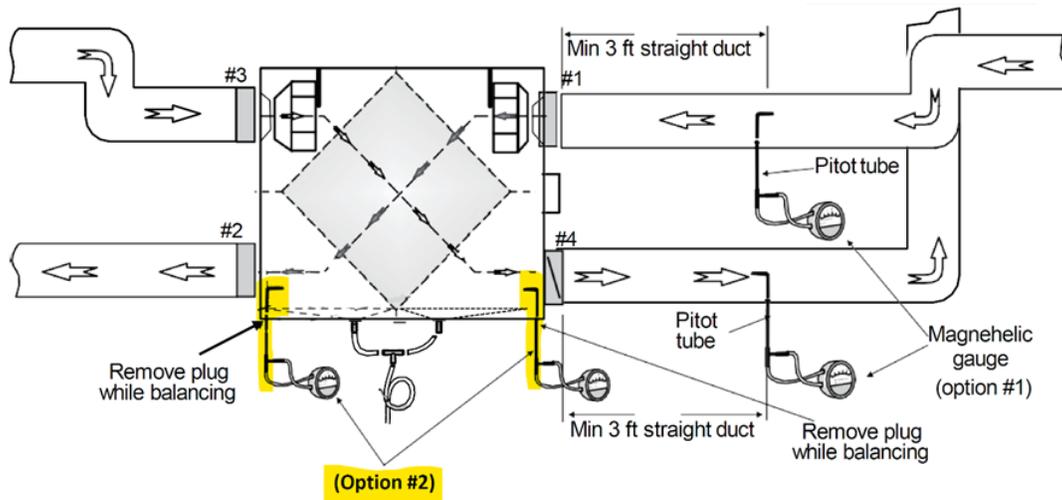
Take 3 readings on each hole and average all 9 readings for supply and same for exhaust.

After balancing is finished, plug all six holes with the plastic plugs provided with the unit.

Duct Diam.	Cross Sect. Area	$\Delta P''$		CFM
		5"	6"	
5"	0.136 sq. ft.	0.010	0.004	50
6"	0.196 sq. ft.	0.012	0.006	60
		0.016	0.008	70
		0.022	0.010	80
		0.027	0.013	90
		0.034	0.016	100
		0.041	0.020	110
		0.048	0.023	120
		0.057	0.027	130

$\Delta P'' =$
Velocity Pressure in inches

$\Delta P''$		CFM
5"	6"	
0.010	0.004	50
0.012	0.006	60
0.016	0.008	70
0.022	0.010	80
0.027	0.013	90
0.034	0.016	100
0.041	0.020	110
0.048	0.023	120
0.057	0.027	130



Note: To take more accurate readings, use option #1 if possible. The accuracy of the flow reading will be affected by how close to any elbows or bends the readings are taken. Accuracy can be increased by taking an average of multiple readings as outlined in the literature with the Pitot tube.

7.0 MAINTENANCE

7.1 Regular Maintenance

1. Turn off the unit and disconnect the power supply.
2. Carefully unscrew the door wing nuts and remove the access door panel by angling the bottom edge towards you and slide down to remove.
3. Clean the inside of the door and drain pan with a damp cloth to remove dirt and debris that may be present.
4. Clean the filters (twice a year)
 - a. Remove the filters, b. Vacuum to remove most of the dust, c. Wash with a mixture of warm water and mild soap. Rinse thoroughly and shake filters to remove water and let dry.
5. Check the airflow sensors twice a year for lint/duct accumulation. If necessary, clean the sensors with a lint-free cloth. Take extra care while handling. Ensure the sensor goes back to the supply diffuser and the exhaust sensor goes back to the exhaust diffuser on the same original position.
6. Check the exterior fresh air supply hood:
Make sure there are no leaves, twigs, grass, ice or snow that could be drawn into the vent.
Partial blocking of this air vent could cause the unit to malfunction.
7. Reassemble the components, filters and door (the door is secured when you hear a click).
8. Reconnect the power and turn on the unit.

**Attention:**

Do not use a cleaning solution for the ERV core.

Do not use a pressure washer on the ERV core

Do not place the ERV core in the dishwasher

Do not use bleach or chlorine

7.1 Annual Maintenance

Repeat steps 1-5 from section 8.1 and continue with the following steps:

1. **Clean the ERV Core:** Remove the filters, loosen the core locking bracket, remove the core by carefully gripping the ends of the core and pull evenly outward. Remove any dust using a vacuum cleaner or rinse with cold water. Soak and rinse the ERV core in warm soapy water. Remove any dust using a vacuum cleaner.
2. **Motors:** Maintenance free and permanently lubricated.
3. **Drain Tube and Drain Pipe:** Inspect the drain pipe, drain tube and “P” trap for blockage, mold or kinks. Flush with warm soapy water and replace if worn, bent to unable to clean.
4. **Clean Ductwork if Required:** Wipe and vacuum the duct once every year. The ductwork running to and from the ERV may accumulate dirt. You may wish to contact a heating/ventilation company to do this.
5. **Cleaning the Fans:** Fans may accumulate dirt causing an imbalance and/or excessive vibration on the ERV. A reduction in airflow may also occur. In new construction, this may result within the first year due to heavy dust and may occur periodically after that over time depending on the outdoor conditions.
 - a. Open the service door, b. Remove the core, c. Disconnect the fan motor wires, d. Pull the fan assembly out of unit, e. Check for any accumulation on the blades, f. Clean with a small brush if necessary: scrub individual fan blades until clean, vacuum and wipe, g. Put the components back in place, h. Reconnect the power supply and turn the unit back on.
6. **Cleaning the Airflow Sensors:** Dirt/lint may accumulate on the airflow sensors located on supply (#1) and exhaust (#2) sides and may cause “E3” or “E5” error on wall display. To clean the sensors, a. mark both supply and exhaust sensors position and location on the diffuser, b. remove screws & remove sensors gently, c. clean the circuit board/sensors with a lint free cloth, d. replace both sensors to their original positions, e. tighten the screws.



Attention: Electrical shock hazard. Can cause injury or death.

Before attempting to perform and service or maintenance, always disconnect the unit from its power source.

8.0 TROUBLESHOOTING

Problems	Possible Causes	Solution
1. Airflow is too low	<p>HRV airflow is improperly balanced (for units without built-in Automatic Electronic Air Balancing)</p> <p>Filter clogged</p> <p>Core Obstructed</p> <p>Exterior fresh air supply blocked</p> <p>Ductwork is restricted</p> <p>Power supply is low (low voltage)</p>	<p>Have professional balancer or contractor balance the unit</p> <p>Remove and clean filter</p> <p>Remove and clean core</p> <p>Remove and clean the blockage</p> <p>Inspect the duct installation</p> <p>Switch off the unit immediately and call the electrician to check the voltage</p>
2. Senses cold air from supply	<p>Exhaust hood outside the house is blocked</p> <p>HRV airflow improperly balanced (for units without built-in Automatic Electronic Air-Balancing)</p> <p>Outdoor temperature is extremely cold</p>	<p>Remove the blockage and clean the hood</p> <p>Have professional balancer or have a contractor balance the unit</p> <p>Placement of furniture or closed door is restricting the movement of air in the home</p> <p>Install a duct heater</p>
3. Water in the bottom of the HRV	<p>Drain pans, drain tube, drain pipe and "P" trap are clogged</p>	<p>Check for blockage and for kinks in line</p> <p>Check connections</p> <p>Make sure water drains properly</p>
4. Time switch 20 / 40 / 60 minute / Intermittent Switch light doesn't stay on	<p>Loose connection</p> <p>The switch may be defective</p> <p>Turn off the HRV breaker</p>	<p>Check connection</p> <p>Replace the timer switch</p> <p>Reset the main controller</p>
5. Unit is not defrosting properly	<p>Fresh air duct may be frozen</p> <p>HRV airflow is improperly balanced</p> <p>Temp. sensor may be defective</p>	<p>Check and remove ice</p> <p>Have a professional balancer or contractor balance the unit</p> <p>Replace the temperature sensor</p>
6. All 3 LEDs of timer switch blink	<p>Control board reports error</p> <p>Lost communication with control board</p>	<p>Refer to problem 4.</p> <p>Check all wire connections on timer switch and main control board</p>
7. LEDs on the Main Control Board and the remote all mount Timer Switch flashes 0.5 seconds On, 2 seconds Off, then repeats the cycle	<p>Exhaust fan open circuit</p> <p>a. Motor burned</p> <p>b. Fan overheated</p>	<p>Replace the motor</p> <p>Call a technician (if possible, replace the fan)</p>
8. LEDs on the Main Control Board and the remote wall mount Timer Switch flashes 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On, then 2 seconds Off, then repeats the cycle	<p>Damper obstructed</p> <p>Exhaust fan jam/over-current</p>	<p>Check backdraft damper, no screw must interfere with the function of the damper</p> <p>Replace the fan</p>
9. LEDs on the Main Control Board and the remote wall mount Timer Switch flashes 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On, 2 seconds Off, then repeats the cycle	<p>Supply fan open circuit</p> <p>a. Motor burned</p> <p>b. Fan overheated</p>	<p>Replace the motor</p> <p>Call a technician (if possible, replace the fan)</p>

Problems	Possible Causes	Solution
<p>1. LEDs on the Main Control Board and the remote wall Timer Switch flashes 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On, 2 seconds Off, then repeats the cycle</p>	<p>Damper obstructed Supply fan jam</p>	<p>Check back-draft damper, no screw must interfere with the function of the damper Replace the fan</p>
<p>2. LEDs on the Main Control Board and the remote wall mount Timer Switch flashes: 0.5 seconds On / 0.5 seconds Off / 0.5 seconds On, 2 seconds Off, then repeats the cycle</p>		<p>Replace the temperature sensor</p>



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Rev Date: 02-20-2026 | oxygen8.ca

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