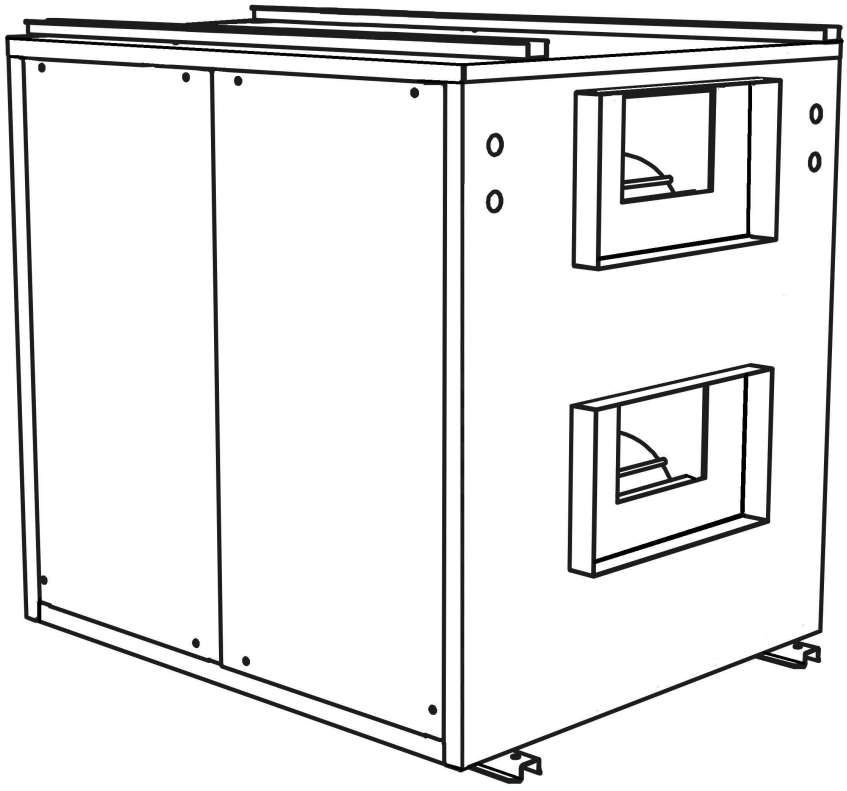
LIFEBREATH®

WWW.LIFEBREATH.COM

Operation and Installation Manual



Models

330ERV
730ERV
1230ERV

Energy Recovery Ventilators (ERV)

Manufactured with
Aircom Electronics

ISO 9001 REGISTERED

C SA US Conforms to UL Standards

R2000

HRAI YOUR ENVIRONMENT OUR EXPERTISE MEMBER COMPANY

AHRI CERTIFIED® www.ahridirectory.org
Globally Recognized. Industry Respected.

69-ComERV

040815

Table of Contents

ATTENTION

Do not apply electrical power to the unit until installation has been fully completed (including low voltage control wiring).

CAUTION ⚠

Assess how the operation of an ERV may interact with already installed vented combustion equipment (ie. Gas Furnaces, Oil Furnaces, Wood Stoves, etc.).

CAUTION ⚠

Never install an ERV in a situation where its normal operation, lack of operation or partial failure may result in the backdrafting or improper functioning of vented combustion equipment!

Leave this manual with your customer!

TO BE COMPLETED BY CONTRACTOR AFTER INSTALLATION

Installing Contractor

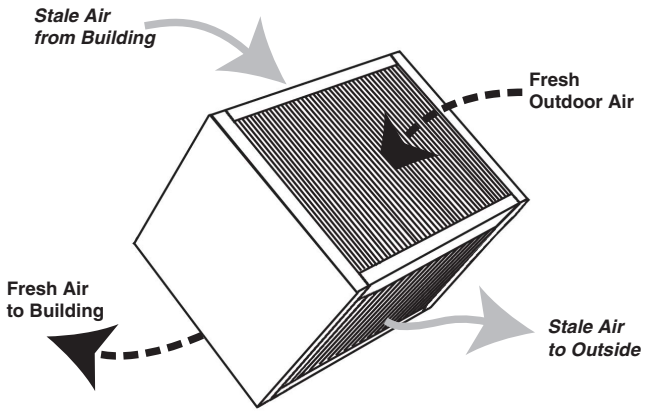
Telephone / Contact

Serial Number

Installation Date Model

The Benefits of ERV

Energy Recovery Ventilators (ERV) are designed to supply fresh air to a building while exhausting an equal amount of stale air from the building. An energy savings is experienced during the process by reducing the heating (or cooling) requirements.



ERV - Enthalpic Paper Core

An ERV is designed for use in warm humid areas with heavy air conditioning use. The ERV will transfer both sensible and latent heat from the incoming fresh air to the outgoing stale air thereby reducing the load (due to ventilation) on the air conditioning system.

ATTENTION!

- **ERVs are not recommended where temperatures fall below -10°F (-23°C) with less than 30% RH (indoor air) for more than five consecutive days.**

LIFEBREATH
WWW.LIFEBREATH.COM

330ERV

ENGINEERING DATA

TOTAL RECOVERY CORE
The cross-flow energy recovery core transfers heat and water vapor between the two airstreams. It is easily removed for cleaning or service.

MOTORS
Two PSC, 3 speed single shafted, 120 VAC, 1.92 Amps each (3.8 total on high speed). HP-1/6, 1625 RPM. MCA: 4.8 MOP: 15 Watts - total on high speed - 437.

FILTER
2" pleated MERV 8 filter in supply air stream.

BLOWERS
Slide easily in / out of unit. Centrifugal type rated at 500 CFM (236 L/s) free air delivery. Each air stream has one single shafted motor driving a centrifugal blower.

CONNECTION DUCT SIZES - Four - 8" x 8" (200 mm x 200 mm).

MOUNTING
Unit to be set on support brackets hung by threaded rod type apparatus (brackets and rods not provided).

CABINET
Unit has front and back access doors and electrical panel can be switched to either side giving installer flexibility in duct direction. 20 gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated with foil faced insulation where required to prevent exterior condensation.

ELECTRONICS
Integrated microprocessor circuit board. Built-in interlock contacts. Automatic Self Test. Optional remote speed control.

FROST PREVENTION
Temperature sensor activated, periodically shuts down supply motor. Drains not required.

WEIGHT **SHIPPING WEIGHT**

OPTIONAL CONTROLS

99-500 3 Speed Control - 3 Speed Fan setting (Low/Medium/High) (4 wire) 20 gauge wire (minimum)

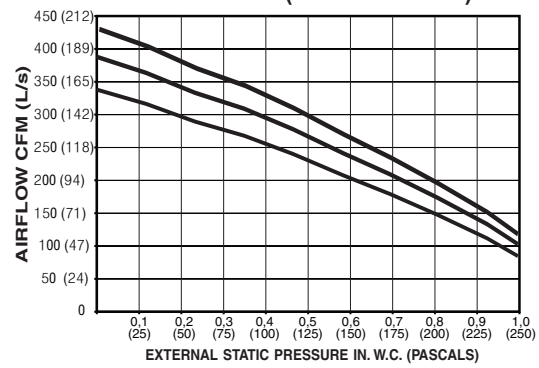
99-BC-01 Ventilation Control - 2 Speed Fan setting (Low/High) - Dehumidistat (3 wire) 20 gauge wire (minimum)

OPTIONAL TIMERS

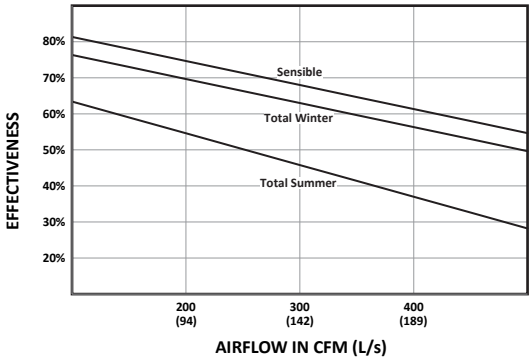
99-DET01 20/40/60 Minute Timer - Initiates high speed ventilation for 20, 40, 60 minutes. (3 wire) 20 gauge wire (minimum)

PERFORMANCE

AIRFLOWS (Each Air Stream)



TOTAL EFFECTIVENENSS



AHRI CERTIFIED® www.ahridirectory.org
Globally Recognized. Industry Respected.

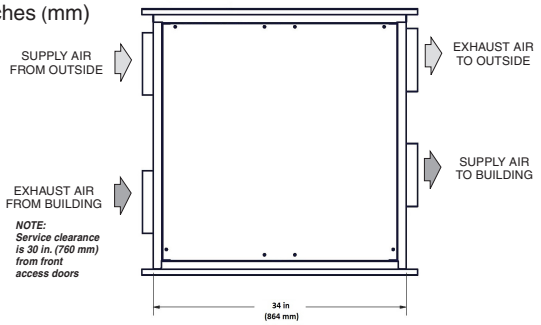
AHRI 1060 Certified Core:
Contains one 68-280

WARRANTY
All units carry a 10 year warranty on the heat recovery cores and a 5 year replacement parts warranty.

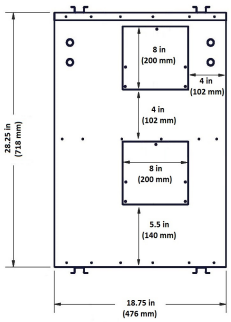
NOTE: All specifications are subject to change without notice

DIMENSIONS inches (mm)

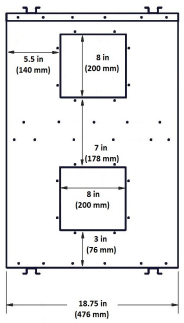
NOTE:
The 330ERV model may easily be reversed in the field. Refer to page 18 for installation intructions .



FRONT VIEW



DISCHARGE SIDE



INLET SIDE

Date: _____ Contractor: _____

Tag: _____ Qty: _____ Supplier: _____

Project: _____ Quote#: _____

Engineer: _____ Submitted by: _____

LIFEBREATH
WWW.LIFEBREATH.COM

730ERV

ENGINEERING DATA

TOTAL RECOVERY CORES
The cross-flow energy recovery cores transfer heat and water vapor between the two airstreams. They are easily removed for cleaning or service.

MOTORS
Two PSC, 3 speed single shafted, 120 VAC, 4.5 Amps each (9 total on high speed). HP- 1/4, 1450 RPM. MCA: 11.3 MOP: 15 Watts - total on high speed - 1032.

FILTERS
2" pleated MERV 8 filters in supply air stream.

BLOWERS
Slide easily in / out of unit. Centrifugal type rated at 700 CFM (329 L/s) free air delivery. Each air stream has one single shafted motor driving a centrifugal blower.

CONNECTION DUCT SIZES - Four - 14" x 8" (356 mm x 200 mm).

MOUNTING
Unit to be set on support brackets hung by threaded rod type apparatus (brackets and rods not provided).

CABINET
Unit has front and back access doors and electrical panel can be switched to either side giving installer flexibility in duct direction. 20 gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated with foil faced insulation where required to prevent exterior condensation.

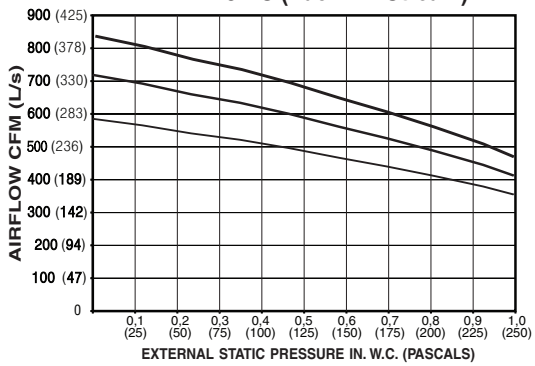
ELECTRONICS
Integrated microprocessor circuit board. Built-in interlock contacts. Automatic Self Test. Optional remote speed control.

FROST PREVENTION
Temperature sensor activated, periodically shuts down supply motor. Drains not required.

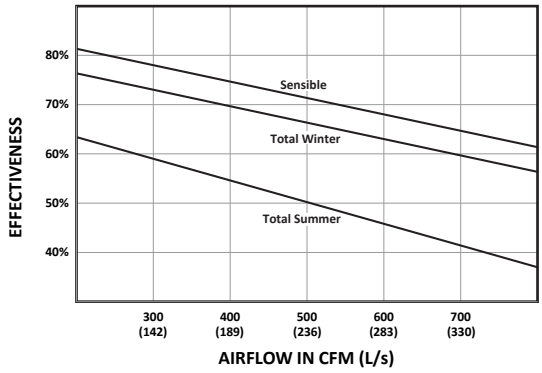
WEIGHT **SHIPPING WEIGHT**

PERFORMANCE

AIRFLOWS (Each Air Stream)



TOTAL EFFECTIVENENSS



AHRI CERTIFIED® www.ahridirectory.org
Globally Recognized. Industry Respected.

AHRI 1060 Certified Core:
Contains two 68-280

OPTIONAL CONTROLS

99-500 3 Speed Control - 3 Speed Fan setting (Low/Medium/High) (4 wire) 20 gauge wire (minimum)

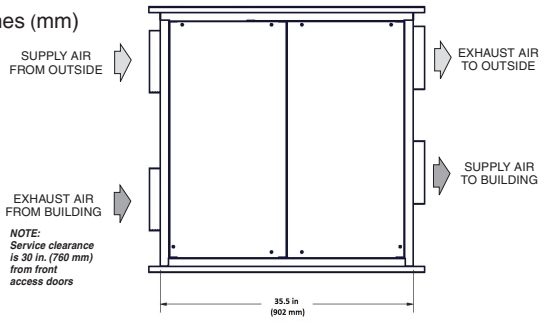
99-BC-01 Ventilation Control - 2 Speed Fan setting (Low/High) - Dehumidistat (3 wire) 20 gauge wire (minimum)

WARRANTY
All units carry a 10 year warranty on the heat recovery cores and a 5 year replacement parts warranty.

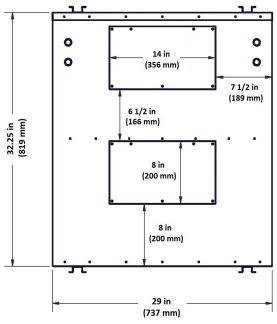
NOTE: All specifications are subject to change without notice

DIMENSIONS inches (mm)

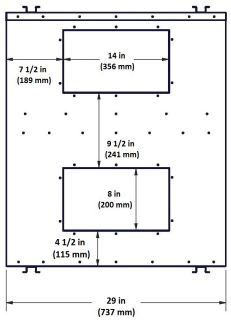
NOTE:
The 730ERV model may easily be reversed in the field. Refer to page 18 for installation intructions .



FRONT VIEW



DISCHARGE SIDE



INLET SIDE

Date: _____ Contractor: _____

Tag: _____ Qty: _____ Supplier: _____

Project: _____ Quote#: _____

Engineer: _____ Submitted by: _____

LIFEBREATH
WWW.LIFEBREATH.COM

1230ERV

ENGINEERING DATA

TOTAL RECOVERY CORES
The cross-flow energy recovery cores transfer heat and water vapor between the two airstreams. They are easily removed for cleaning or service.

MOTORS
Two PSC, 3 speed double shafted, 120 VAC, 9.4 Amps each (18.8 total on high speed). HP- 1/2, 1625 RPM. MCA: 23.5 MOP: 30 Watts - total on high speed - 2256.

FILTERS
2" pleated MERV 8 filters in supply air stream.

BLOWERS
Slide in / out easily of unit. Centrifugal type rated at 1200 CFM (566 L/s) free air delivery. Each air stream has one single shafted motor driving a centrifugal blower.

CONNECTION DUCT SIZES - Four - 20" x 8" (508 mm x 200 mm).

MOUNTING
Unit to be set on support brackets hung by threaded rod type apparatus (brackets and rods not provided).

CABINET
Unit has front and back access doors and electrical panel can be switched to either side giving installer flexibility in duct direction. 20 gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated with foil faced insulation where required to prevent exterior condensation.

ELECTRONICS
Integrated microprocessor circuit board. Built-in interlock contacts. Automatic Self Test. Optional remote speed control.

FROST PREVENTION
Temperature sensor activated, periodically shuts down supply motor. Drains not required.

WEIGHT **SHIPPING WEIGHT**

OPTIONAL CONTROLS

99-500 3 Speed Control - 3 Speed Fan setting (Low/Medium/High) (4 wire) 20 gauge wire (minimum)

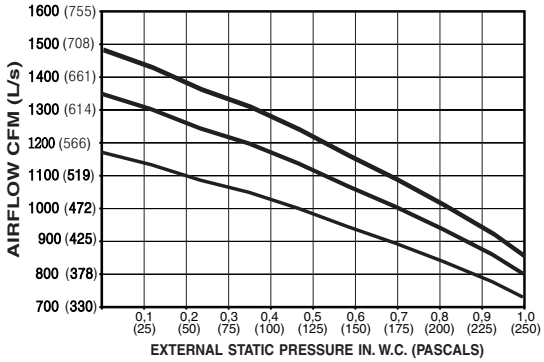
99-BC-01 Ventilation Control - 2 Speed Fan setting (Low/High) - Dehumidistat (3 wire) 20 gauge wire (minimum)

OPTIONAL TIMERS

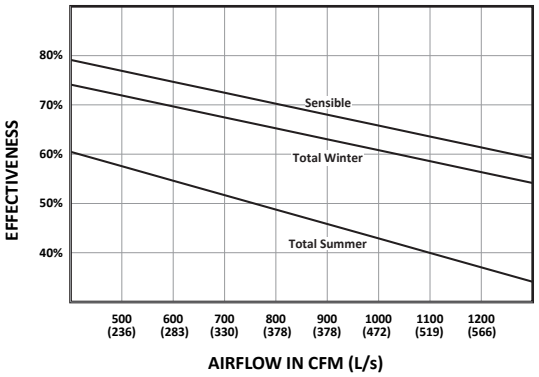
99-DET01 20/40/60 Minute Timer - Initiates high speed ventilation for 20, 40, 60 minutes. (3 wire) 20 gauge wire (minimum)

PERFORMANCE

AIRFLOWS (Each Air Stream)



TOTAL EFFECTIVENENSS



AHRI CERTIFIED® www.ahridirectory.org
Globally Recognized. Industry Respected.

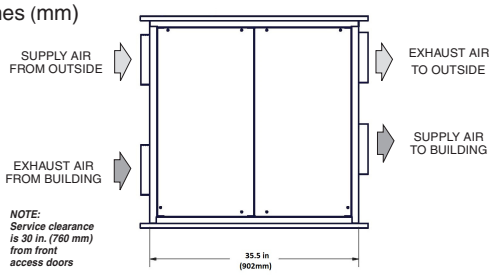
AHRI 1060 Certified Core:
Contains three 68-280

WARRANTY
All units carry a 10 year warranty on the heat recovery cores and a 5 year replacement parts warranty.

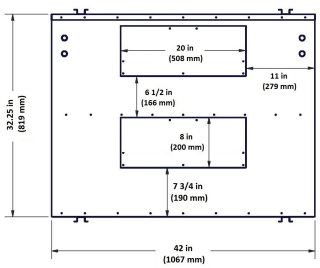
NOTE: All specifications are subject to change without notice

DIMENSIONS inches (mm)

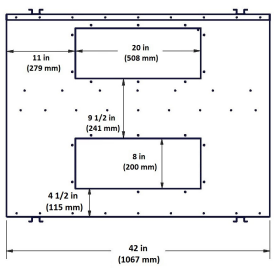
NOTE:
The 1230ERV model may easily be reversed in the field. Refer to page 18 for installation intructions .



FRONT VIEW



DISCHARGE SIDE



INLET SIDE

Date: _____ Contractor: _____

Tag: _____ Qty: _____ Supplier: _____

Project: _____ Quote#: _____

Engineer: _____ Submitted by: _____

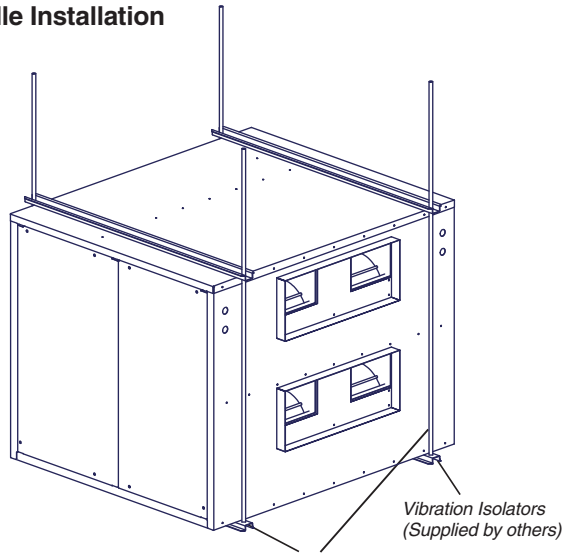
Location of the ERV for Mounting

The ERV must be located in a heated space where the surrounding air temperature does not fall below 60°F (16°C). The unit must be mounted level (horizontal) to obtain proper drainage of water from the heat exchange element and drip pans. The warranty will be void if these conditions are not met.

Typically, the ERV is positioned close to an outside wall or the roof to simplify the connections and keep the length of insulated ducting required for the fresh air intake to a minimum.

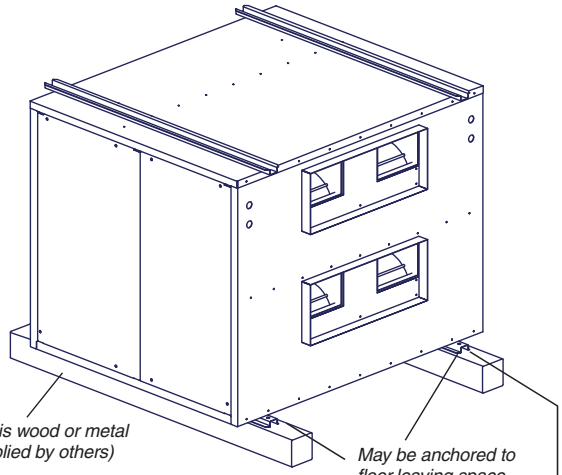
A minimum clearance of 30 inches (76 cm) in front of the ERV is recommended to service the heat exchanger cores and the filters. The ERV may be mounted on an equipment platform providing the drain hoses are clear and there is sufficient space to open the doors for servicing.

Saddle Installation



Hang unit with suspended rods and "U" channel members.

Curb Mounted



Mount unit on wooden or metal curb assembly. Unit must be raised an adequate height for installation and slope of drain lines.

ATTENTION

Flexible duct connectors should be installed between the EVR and the galvanized ductwork.

The Ductwork System

A properly designed ducting system will allow the ERV to operate at its maximum efficiency. (Air flow will be restricted by undersized ducting, use of too many elbows, tees, bends, etc.). Always try to keep duct runs as short and straight as possible.

NOTE: Fully insulated ducting with an integral vapor barrier must be used on all runs passing through unheated areas in order to avoid condensation problems and energy losses from the air steams.

All joints must be airtight, sealed and impervious to moisture. See specification sheets for each unit for exact duct sizes and location.

To minimize pressure drop and noise, galvanized metal ducts, properly sized, are recommended. Keep ducting as short as possible and use a minimum of elbows and tees. Connecting sections and shorter runs may be flexible ducting one size larger than the metal equivalent. Use flexible duct connectors at the ERV to avoid noise transmission.

All duct joints must be secured with screws, rivets or duct sealant and sealed with aluminum duct tape to prevent leakage.

ATTENTION

Fully insulated ducting with an integral vapour barrier must be used on all runs passing through unheated areas in order to avoid condensation problems and energy losses from the air systems.

Outside Weatherhoods

The weatherhoods must have built-in “bird” screen with 1/4 in (6.35 mm) minimum mesh to prevent birds and rodents from entering into the ductwork. **Do not** use smaller mesh as it will be very susceptible to plugging up. Gravity dampers at the vents must not be used as they will restrict air flow and often “seize up”. The preferred location of the outside weatherhoods is:

- no less than 10 ft. (3 m) apart from each other
- at least 18 in (46 cm) above snow line or ground level
- away from sources of contaminants, such as automobile exhaust fumes, gas meters, garbage cans, containers, etc.
- not exposed to prevailing winds

The outside perimeter of the weatherhood must be caulked to prevent leakage into the building.

The design and size of the weatherhoods or louvers chosen by the installer must allow for adequate free area. Water and debris penetration of the system is minimized when the airflow does not exceed 1000 FPM (5.08 m/s) free area velocity.

Ducting from the Weatherhoods

Galvanized sheet metal ducting with sufficient cross section with an integral single piece vapor barrier should be used to connect the ERV to the weatherhoods. **All ducting must meet UL Class 1 requirements.**

A minimum R value of insulation should be equal to 4 (RSI 0.75)

A good bead of high quality caulking (preferably acoustical sealant) and taping with a high quality aluminum foil tape is recommended to seal the duct to both the ERV and the weatherhood.

Stale Air Return System

The stale air return system is used to draw air from the points in the building where the worst air quality problems occur. Balancing dampers and/or adjustable grilles are recommended on all return air lines which are used during installation to help balance the "draw" from different areas of the building.

Alternately, the stale air may be drawn directly from the return air duct. When this system is used, the air handler's blower must constantly operate. The exhaust take-off connection must be at least 3 ft (1 m) from a directly connected ERV supply duct if both are connected to the same duct run. Note and compensate for the static pressure of the air handlers return system if the static pressure of the return in the air handler exceeds .1 to .15" W.C.

A damper located just prior to the ERV is required to balance the stale air exhausted with the fresh air supply entering the building.

Return air suction points should be located on the opposite side of the room from the fresh air inlet. The inlets may be located in the ceiling or high on the walls and fitted with inlet grilles.

Many commercial activities produce air contaminants in the form of dusts, fumes, mists, vapors and gases. Contaminants should be controlled at the source so they are not dispersed through the building or allowed to increase to toxic concentration levels. The ventilator allows for economical operation of the HVAC system while effectively removing contaminants from the space. In designing the exhaust portion of the system the exhaust grilles are situated to remove the contaminants while not allowing them to enter the breathing zone of the occupants.

For contaminants lighter than air, grilles should be located high on the wall. If contaminants are heavier than air, a lower placement of the grilles will be required. Information on a contaminants specific gravity and toxicity should be available from chemical data sheets.

Fresh Air Supply System

The fresh air supply ductwork from the ERV may be directly connected to the return air duct of the forced air system. Check the air flow balance of the ERV with the air handler blower both "ON" and "OFF" to determine that it does not imbalance the ERV more than 10%. Also, it is advisable to include a short length of flex duct or other non-metallic connector in this hard ducted line in order to keep the ERV acoustically isolated and separately grounded (electrically) from the air handler. This will avoid a possible shock hazard to service people if a short to ground develops in one of the devices.

It may be necessary to install a separate fresh air supply ductwork system if the heating is other than forced air.

When installing an ERV, the designer and installer should be aware of local codes that may require smoke detectors and/or firestats in the HVAC or ERV ductwork.

Because an ERV is designed to bring fresh air into the building, structures may require supply voltage interrupt when smoke or flame sensors are triggered, or when a central fire alarm system is activated.

Supply air grilles may be ceiling or high wall mounted. Avoid locating incoming fresh air grilles that could cause a direct draft on the occupants as the incoming air may be below room temperature. A reheat duct heater can be installed to improve occupant comfort.

Adjustable Grilles

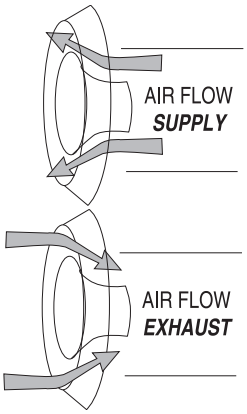
The use of balancing dampers or adjustable grilles as supply air diffusers and air exhaust covers are recommended. TECHGRILLES™ are round, efficient, sound absorbing devices available in 4", 5", 6" and 8" (100, 125, 150, and 200 mm) models.

Part# 99-EAG4 4" diameter Techgrille

Part# 99-EAG5 5" diameter Techgrille

Part# 99-EAG6 6" diameter Techgrille

Part# 99-EAG8 8" diameter Techgrille



The Integrated HVAC System

The ERV has become an integral component of the HVAC system. Figure A shows an ERV unit providing fresh air directly to the return air plenum of a rooftop heat/cool unit.

In the balanced airflow system, the ERV exhaust removes stale room air (eg. from lunch room, storage or copy area) and returns to the space an equal amount of fresh outdoor air, making the use of an economizer obsolete in conjunction with an ERV.

Many buildings have ceiling return air plenum as in Figure B. Fresh air from the ERV can be introduced directly into the ceiling space but this should occur near the air handler's intake.

By operating the ERV on a 24 hour/7 day battery backed timer, the unit can be set to operate only when occupancy or indoor conditions require the air exchange.

In installations where it is satisfactory to provide general exhaust from the space, the air to be exhausted may be taken directly from the return air plenum to the ERV as it is drawn back to the air handler. Fresh air supplied by the ERV is then introduced directly into the return air plenum but at a location closer to the air handler. The air handler would have a constant running blower to effectively distribute the fresh air and remove the stale air. Balancing dampers would be located in both the ERV supply and exhaust ducts between the return air plenum and the ERV.

NOTE: At no time should the air handler T.E.S.P. on the return duct exceed that of the ERV .

CAUTION ⚠

When interlocking a rooftop unit with an ERV, ensure the fans of both units operate in the correct rotation.

Figure A

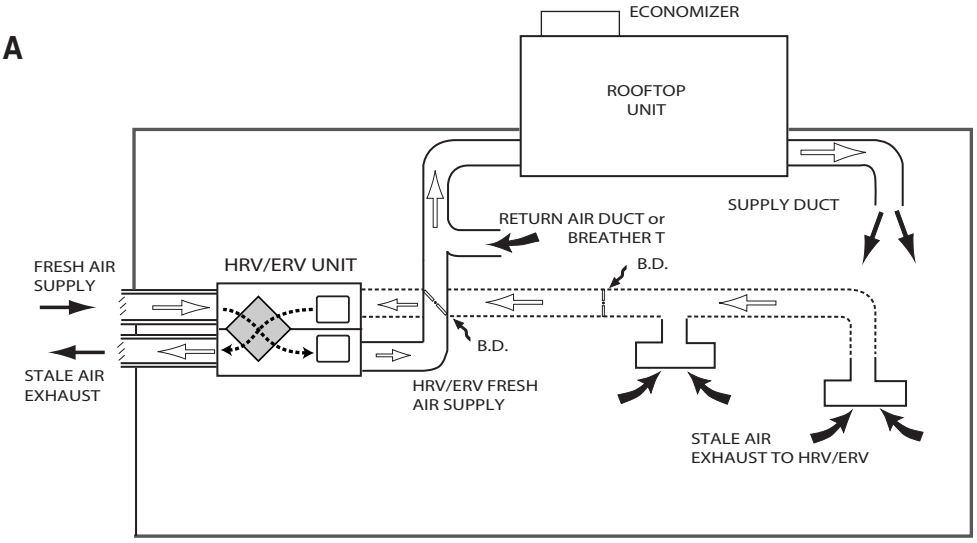
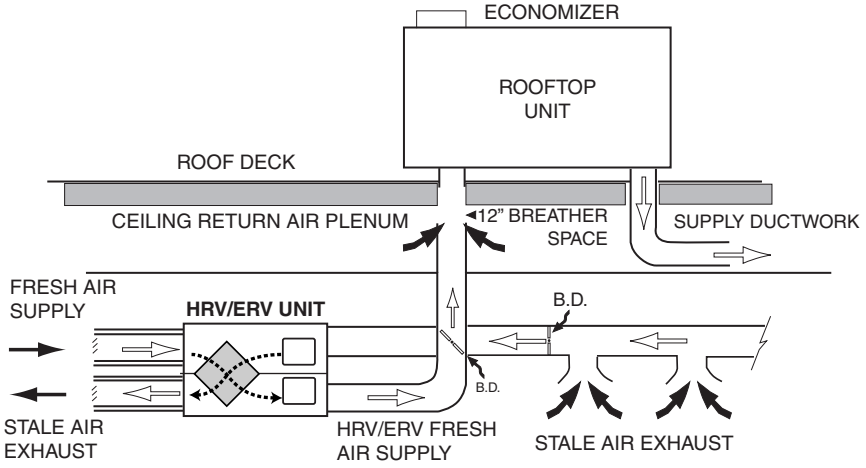


Figure B



Electrical Connections

Electrical Connections

It is recommended that a licensed electrician make all electrical connections. It is very important that the unit be properly grounded. It is recommended that a separate 15 amp/120 volt circuit be used.

WARNING: In order to prevent electric shock when cleaning or servicing the ERV, it is extremely important to confirm the polarity of the power line that is switched by the safety (disconnect) switch whose control arm is located on the outside of the electrical control box area. The hot line (black) is the proper line to be switched. To confirm the proper polarity, use a voltmeter or test lamp to make sure there is no power after the switch when the door is open. Check between that point and ground (on the cabinet). This must be done as occasionally some buildings are improperly wired. Always make sure the ERV is properly grounded.

Optional Timers

The timer will override the Operational Mode (regardless of the settings) and initiate high speed ventilation. Upon completion of the timer cycle, the ERV will return to your selected Operational Mode and speed setting.

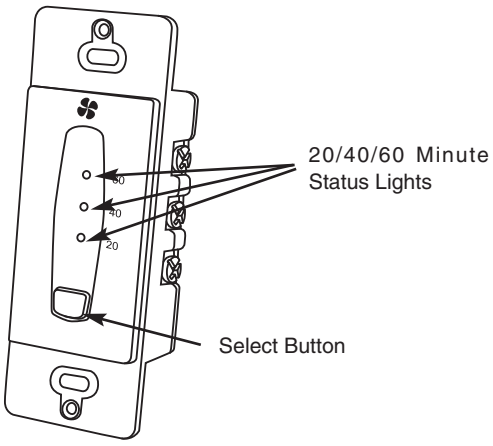
Lifestyle 20/40/60 Minute Timer

Part # 99-DET01

Initiates high speed ventilation for 20, 40 or 60 minutes. The 20/40/60 Minute Status Lights indicate high speed operation.

Lockout Mode is useful if you wish to disable the timer. Set lockout by holding the Select Button for 5 seconds. Unlock by holding for 5 seconds.

Connect to 3 wire 20 gauge low voltage wire. Mounts in a standard 2" x 4" electrical box.



Optional Ventilation Control Part #99-BC-01

The optional 2 speed Ventilation Control offers ON/OFF, High Speed/Low speed plus an electronic dehumidistat.

Key Features

- 2 Speed Fan setting (Low/High)
- Electronic Dehumidistat
- Instruction Card is inserted in the control
- Slim-line design
- Connect to 3 wire 20 gauge low voltage wire.

Turning on the Control

Press and release the ON/OFF button. The "ON Indicator Light" will illuminate.

Adjusting the Ventilation Speed

The unit will normally operate at low speed. Press and release the SPEED button to initiate high speed ventilation. The "High Speed Indicator LED" will illuminate.

Humidity Control

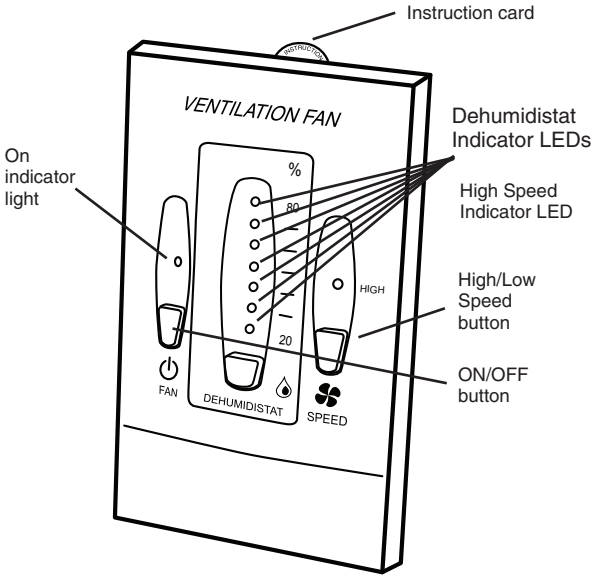
Your unit will produce a dehumidifying effect when outdoor humidity levels are lower than indoor humidity levels. Never use the dehumidistat feature when outdoor temperatures are above 59 F (15 C).

Setting the Dehumidistat

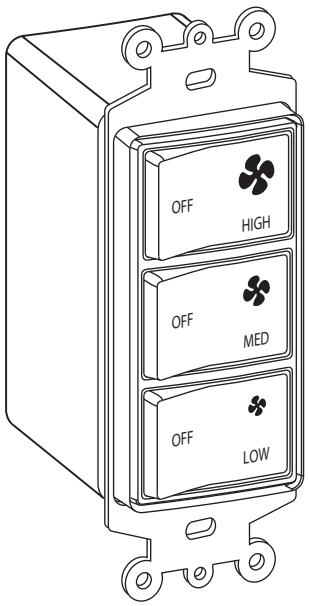
Press and release the DEHUMIDISTAT button until the DEHUMIDISTAT LED is at the desired setting. After 5 seconds the dehumidistat light will either flash or be on continuous.

A flashing light indicates the humidity level is higher than the setting and the unit is operating on high speed ventilation. A continuous light indicates the humidity level is lower than the setting. Refer to the unit's Operation & Installation Manual for instructions on how the Dehumidistat works.

Note - Only 1 dehumidistat should be active on a system.



Optional 3 Speed Control - Part #99-500



The Optional 3 Speed Control offers ON/OFF and high, medium and low speeds - 3 Speed Fan setting

(Low/Medium/High)
(4wire) 20 gauge wire (minimum)

- Connect to Red, White, Yellow, Green.

ATTENTION

The 99-BC-01 Control must be ON for the 99-500 Control to operate. The 99-BC-01 will override the 99-500 Control when the Dehumidistat is operating or the control is set to HIGH speed.

Basic Functions

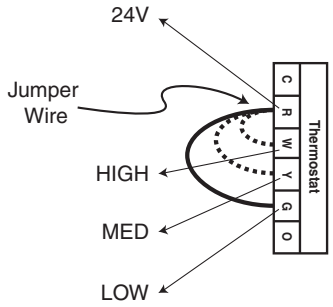
Speed control is obtained by powering 24V to one of the designated speed taps.

Example:

A jumper between the **R** terminal and the

G terminal will result in <u>low</u> speed operation.

Jumper Wire Placement on Micro Processor Board



Setup

Select appropriate operational speed by installing the jumper wire between one of the designated speed taps. (A jumper wire is factory installed in the low speed position.)

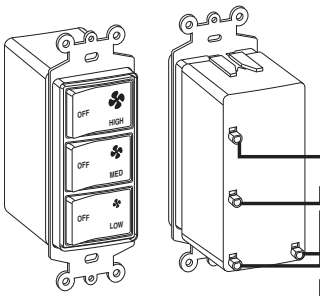
Note:

It is recommended to use the optional speed control Part # 99-500 in order to obtain 3 speed fan control.

SPEED	JUMPER	
High	R	W
Medium	R	Y
Low	R	G

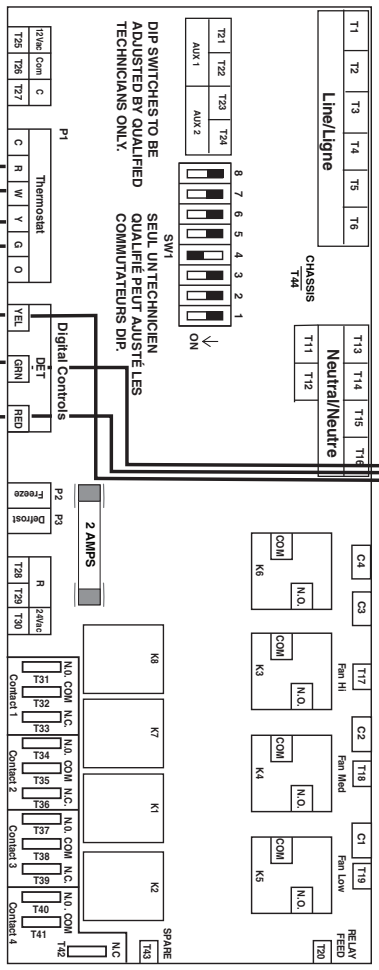
Optional Speed Control (Part #99-500)

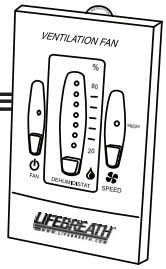
Connect to Red, White, Yellow, Green



Front View *Back View*

Micro Processor Board





Optional Digital Electronic Timer (DET) Part #99-DET01

Connect up to 4 (maximum)

Boosts to high speed for 20, 40, 60 minutes

Connect to Yellow, Red & Green

Refer to "Connecting Optional Digital Controls" in this manual for instructions on connecting the optional Ventilation Control (Part# 99-BC-01).

Connect to Yellow, Red & Green

Connecting Optional Digital Controls

Standard Series Controls may be installed onto a flush mounted 2" x 4" electrical switch box or it may be surface mounted onto a wall.

Only 1 master control should be installed to a ventilation system (the Face Plate on this illustration may not be exactly the same as yours).

1. Remove the *Operating Instructions Card* from the top of the Control (Figure A).
2. Separate the *Face Plate* from the *Back Plate* by firmly pulling apart (Figure B). Be careful not to damage Face Plate Contact Pins.
3. Place the *Back Plate* of the control in the desired location on the wall and pencil mark the wall in the center of the *Wire Opening, Top Screw Hole* and *Bottom Screw Hole* (Figure C).
4. Remove the *Back Plate* and drill a 3/8" opening in the wall to allow for the *Wire Opening* and a 1/8" hole for the *Wall Anchors* for the top and bottom screw holes (Figure D).
5. Pull 3/20 wire through the opening in the wall and the *Wire Opening* of the *Back Plate* (Figure C).
6. Connect Red, Green and Yellow to the *Wiring Terminals* located on the *Back Plate* (Figure C).
7. Secure a single wire to the *Wire Retainer* located on the *Back Plate* (Figure C).
8. Attach the *Back Plate* to the wall using the 2 supplied screws and anchors.
9. Attach the *Face Plate* to the *Back Plate* (Figure B). Note: Be careful to correctly align the *Face Plate* to avoid damaging the *Face Plate Contact Pins*.
10. Insert the *Operating Instructions Card* into the control (Figure A).
11. Connect the 3/20 wire to the *Terminal Block* located on ventilator (Figure E).

ATTENTION

Pay special attention not to damage the Contact Pins when attaching and detaching the Face Plate. (Figure B)

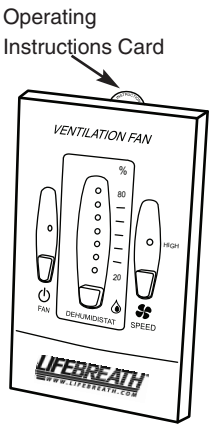


Figure A - Face Plate
(Illustration of Face Plate may vary from actual control)

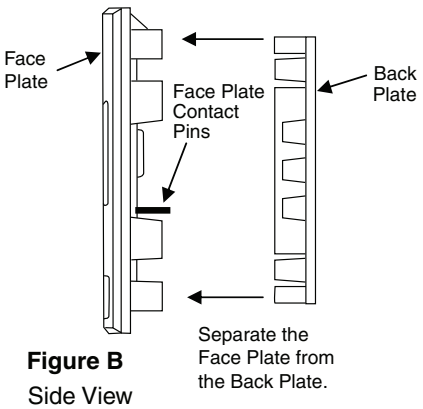


Figure B
Side View

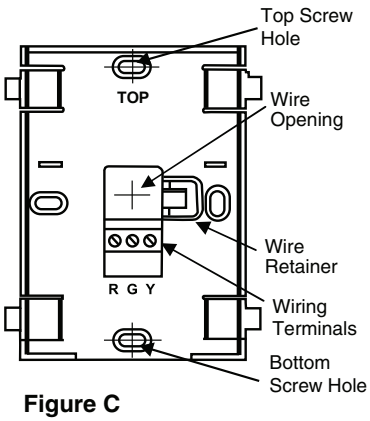


Figure C
Front View of Back Plate

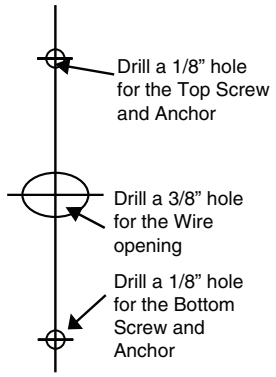


Figure D
Drill holes in wall

The Aircom terminal strip located on the Aircom circuit board.

Figure E
Connect optional digital controls to the Digital Controls terminal strip located on the Aircom Circuit Board.

- Yellow to YELLOW
- Red to RED
- Green to GREEN

Use 3/20 wire

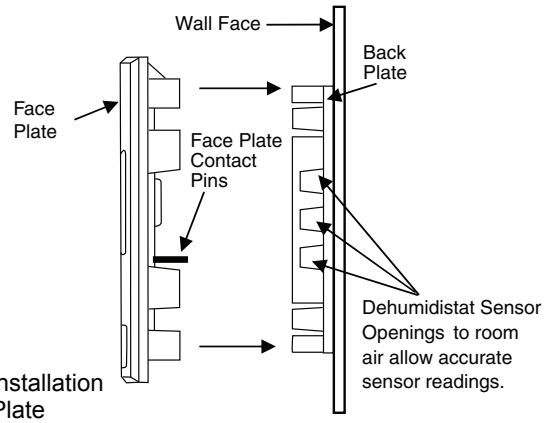


Figure F
Correct Installation of Back Plate

It is necessary to have balanced air flows in an ERV. The volume of air brought in from the outside must equal the volume of air exhausted by the unit. If the air flows are not properly balanced, then;

- The ERV may not operate at its maximum efficiency
- A negative or positive air pressure may occur in the house
- The unit may not defrost properly
- Failure to balance ERV properly may void warranty

Excessive positive pressure may drive moist indoor air into the external walls of the building where it may condense (in cold weather) and degrade structural components. May also cause key holes to freeze up.

Excessive negative pressure may have several undesirable effects. In some geographic locations, soil gases such as methane and radon gas may be drawn into the home through basement/ground contact areas. Excessive negative pressure may also cause the backdrafting of vented combustion equipment.

Prior to balancing, ensure that:

1. All sealing of the ductwork system has been completed.
2. All of the ERV's components are in place and functioning properly.
3. Balancing dampers are fully open.
4. Unit is on HIGH speed.
5. Air flows in branch lines to specific areas of the house should be adjusted first prior to balancing the unit. A smoke pencil used at the grilles is a good indicator of each branch line's relative air flow.
6. After taking readings of both the stale air to the ERV duct and fresh air to the house duct, the duct with the lower CFM ([L/s] velocity) reading should be left alone, while the duct with the higher reading should be dampered back to match the lower reading.
7. Return unit to appropriate fan speed for normal operation

Balancing Procedure

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

The first step is to operate all mechanical systems on high speed, which have an influence on the ventilation system, i.e. the ERV itself and the forced air furnace or air handler if applicable. This will provide the maximum pressure that the ERV will need to overcome, and allow for a more accurate balance 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 or other manometer capable of reading from 0 to 0.25 in. (0-62 Pa) of water, preferably to 3 digits of resolution. The tube coming out of the top of the pitot is connected to the high pressure side of the gauge. The tube coming out of the side of the pitot is connected to the low pressure or reference side of the gauge.

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 (supply or return) duct. Determine which duct has the highest airflow (highest reading on the gauge). Then damper that airflow back to match the lower reading from the other duct. The flows should now be balanced. Actual airflow can be determined from the gauge reading. The value read on the gauge is called the velocity pressure. The Pitot tube comes with a chart that will give the air flow velocity based on the velocity pressure indicated by the gauge. This velocity will be in either feet per minute or meters per second. To determine the actual airflow, the velocity is multiplied by the cross sectional area of the duct being measured.

This is an example for determining the airflow in a 6" duct.

The Pitot tube reading was 0.025 inches of water.

From the chart, this is 640 feet per minute.

The 6" duct has a cross sectional area of $= [3.14 \times (6" \div 12)^2] \div 4$

$= 0.2$ square feet

The airflow is then:

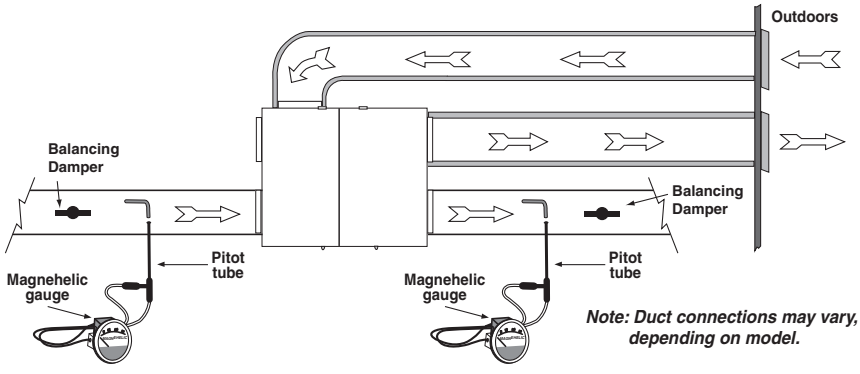
640 ft./min. X 0.2 square feet = 128 cfm

For your convenience, the cross sectional area of some common round duct is listed below:

DUCT DIAM. (inches)	CROSS SECTION AREA (sq. ft.)
5	0.14
6	0.20
7	0.27

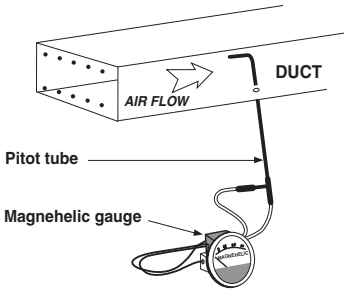
The accuracy of the air flow reading will be affected by how close to any elbows or bends the readings are taken. Accuracy can be increased by taking an average of multiple readings as outlined in the literature supplied with the Pitot tube.

Place pitot tube a minimum of 18" from blower or elbows



Measure Exhaust Air from Building **Measure Supply Air to Building**

Pitot tube and gauge



Pitot Tube Air Flow Balancing Kit

c/w magnehelic gauge, Pitot tube, hose and carry case.

PART NO. 99-167

Servicing your ERV on a regular schedule will result in optimum operating efficiencies and prolonged life of the equipment.

Due to numerous applications in which this equipment can be installed, it is difficult to predict servicing intervals. In certain situations where there is heavy smoke, servicing the equipment every one - two months may be needed; whereas ventilating a meeting room for carbon dioxide may only need service every six months to a year.

Motor

Access to the motors is through the front service doors. Note energy recovery core(s) can be removed to provide more room. See **ERV CORE** in this section for information on removing the core(s)..

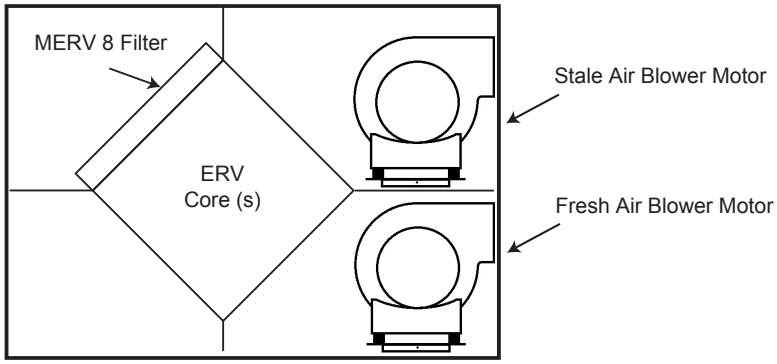
The motor is a permanent split capacitor type (PSC) which uses a sleeve mechanism to steady the shaft.

ERV Core

Remove core(s) and vacuum or use low pressurized air to clean core(s). Do not wash or submerse in water.

With the core(s) in its proper position, place the bottom corner into its guide rail support, then place the left side, the right side and finally the top corner into place in the same fashion. Once the core(s) is in place, push the core evenly into the cabinet until it reaches the back.

Note the core(s) will protrude slightly out from the front of the cabinet, this is so the access doors, when closed, ensures a tight fit.



When removing cores and filters note their location and arrangement.

Filters

Open front service door to access the filters located in both supply and exhaust air streams. Note to remove and install filters, it may be easier to first remove the core(s). See **ERV CORE**.

The filters are designed to stop large particles from entering in the core. The filters are fastened in place by a metal spring rod. To remove filters from core(s) simply pull the rod from one end, outward until free from core lip, and remove.

The time between filter service will depend on the application the ERV has been installed in. It can be as often as one - two months or at the very least, cleaned every six months.

Duct Work

It is a good idea to inspect ducting, outside weather hoods (wall caps), and grilles for blockage and dirt buildup, at least every six months.

Outside weatherhoods should be protected by a bird screen which can plug up with debris. Also, it is a good idea to visually confirm that the fresh air supply is free from any sources of contamination, such as other vented combustion equipment added after the fact.

General Maintenance

As a final step in a routine maintenance schedule, it is a good idea to confirm operation of the system, checking speed control functions and remote control operation, if applicable.

Wipe the inside of the cabinet to remove dust and cob webs as needed.

It is a good idea to keep a service/maintenance log of the unit.

Troubleshooting Your ERV System

SYMPTOM	CAUSE	SOLUTION
Poor Air Flows	• 1/4" (6 mm) mesh on the outside hoods is plugged • filters plugged • core obstructed • building grilles closed or blocked • dampers are closed if installed • poor power supply at site • ductwork is restricting ERV • improper speed control setting • ERV airflow improperly balanced	• clean exterior hoods or vents • remove and clean filter • remove and clean core • check and open grilles • open and adjust dampers • have electrician check supply voltage • check duct installation • increase the speed of the ERV • have contractor balance ERV
Supply air feels cold	• poor location of supply grilles, the airflow may irritate the occupants • outdoor temperature extremely cold	• locate the grilles high on the walls or under the baseboards, install ceiling mounted diffuser or grilles so as not to directly spill the supply air on the occupant (eg. over a sofa) • turn down the ERV supply speed. A duct heater may be necessary to temper the air • placement of furniture or closed doors is restricting the movement of air in the building • if supply air is ducted into furnace return, the furnace fan may need to run continuously to distribute ventilation air comfortably
Humidity Levels are too High Condensation is appearing on the windows	• moisture coming into the building from an unvented or unheated crawl space • moisture is remaining in the washroom and kitchen areas • condensation seems to form in the spring and fall • ERV is set at too low a speed • dehumidistat is set too high	• vent crawl space and place a vapor barrier on the floor of the crawl space • ducts from the washroom should be sized to remove moist air as effectively as possible, use of a bathroom fan for short periods will remove additional moisture • on humid days, as the seasons change, some condensation may appear but the building air quality will remain high with some ERV use • increase speed of the ERV • set dehumidistat lower
Humidity Levels are too Low	• dehumidistat control set too low • blower speed of ERV is too high • ERV air flows may be improperly balanced	• set dehumidistat higher • decrease ERV blower speed • humidity may have to be added through the use of humidifiers • have a contractor balance ERV airflows
ERV and / or Ducts Frosting up	• ERV air flows are improperly balanced • malfunction of the ERV defrost system	• Note: minimal frost build-up is expected on cores before unit initiates defrost cycle functions • have HVAC contractor balance the ERV
Condensation or Ice Build Up in Insulated Duct to the Outside	• incomplete vapor barrier around insulated duct • a hole or tear in outer duct covering	• tape and seal all joints • tape any holes or tears made in the outer duct covering • ensure that the vapor barrier is completely sealed

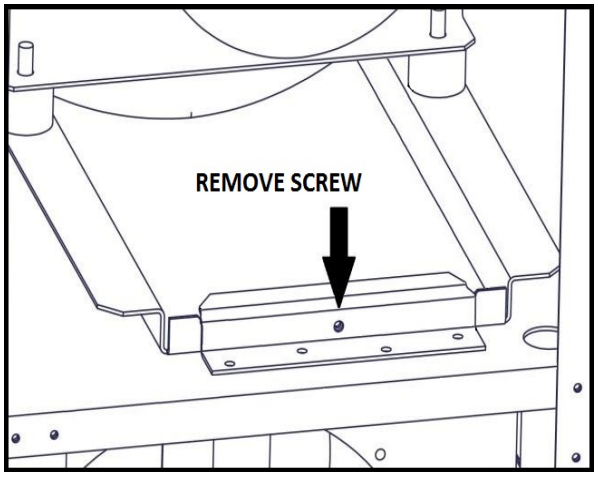
Reverse Installation of the ERV

Electrical Box Removal:

1. Remove the door panels from the ERV by loosening the screws located on the face of the doors.
2. Remove the electrical box cover by removing the 4 screws fastening the cover in place.
3. Disconnect the motor wires coming through the bottom of the electrical box from the circuit board, capacitors and relays, and remove from the electrical box.
4. Pull motor wires for lower blower through hole in blower divider panel.
5. Disconnect thermistor from circuit board and remove from electrical box.
6. Remove the 4 screws securing the electrical box to the cabinet of the ERV.
7. Cut cable tie fastening thermistor wire to bracket, disconnect thermistor from circuit, and remove thermistor.

⚠ Attention

8. Remove the ground continuity screw from both the upper and lower blower pans securing them to the pan stops.



9. Remove the plastic snap bushing from the hole in the top core support panel where the damper wires were removed from, and install a snap plug to seal the hole, found in the manual bag.
10. Remove the snap plug from the hole in the top core support panel, and install a plastic snap bushing in hole.

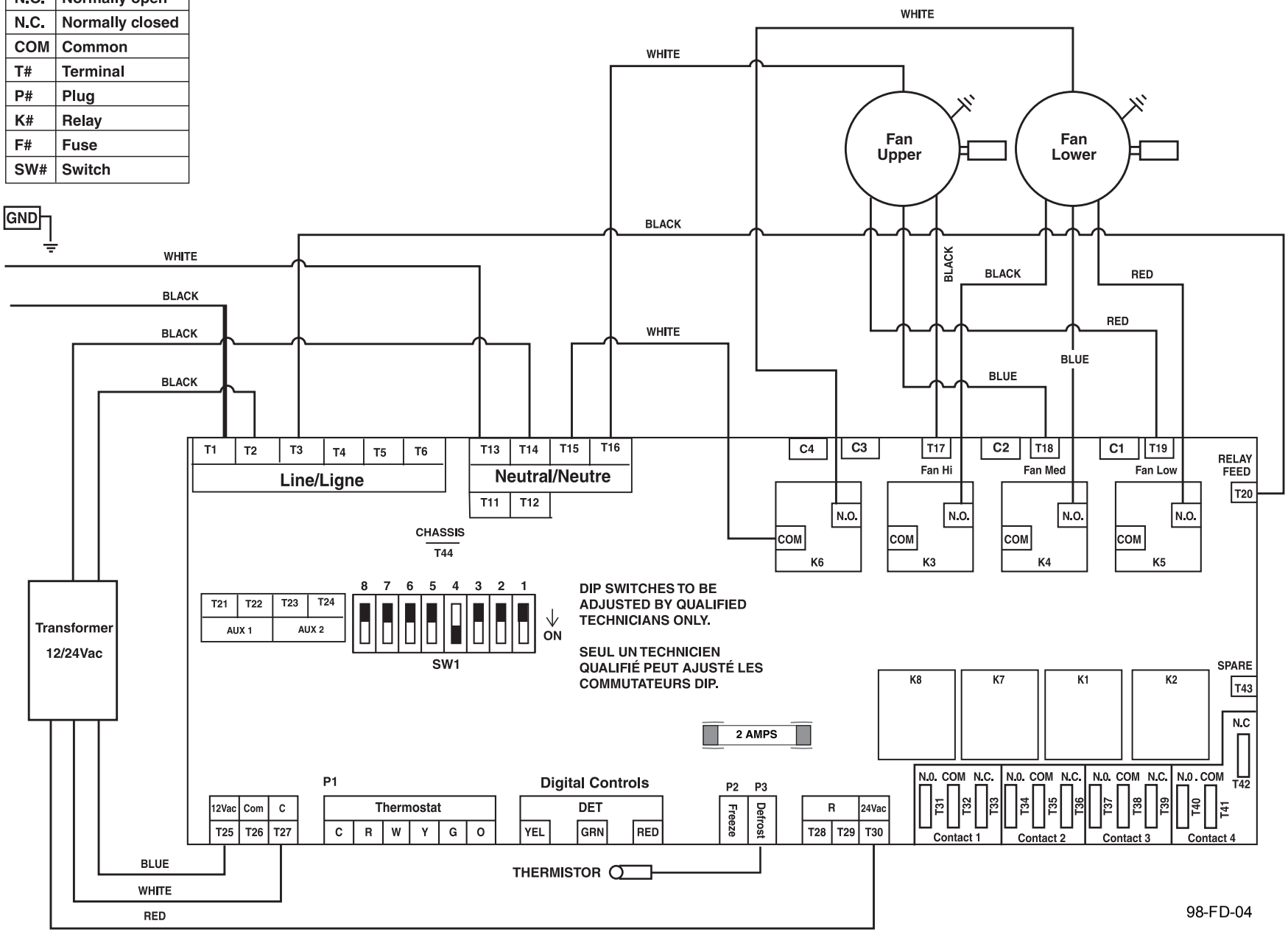
Reinstalling the Electrical Box:

21. Remove the two snap plugs from the opposite side of the cabinet for electrical and control wires.
22. Install the two snap plugs in the cabinet holes on the side of the ERV which electrical box was originally removed from.
23. Route wires for both blower motors to opposite side of ERV cabinet where electrical box is to be installed.
24. Install the grounding continuity screw in both the upper and lower blower assemblies on the opposite side of the ERV where electrical box is now installed.
25. Fasten the electrical box to the cabinet of the ERV using the 4 screws that were previously removed.
26. Remove the snap plug from the blower divider panel and install plastic snap bushing provided in manual bag.
27. Install snap plug in hole in blower divider panel where lower blower motor wires were originally removed from.
28. Route the lower blower motor wires through the hole in the divider panel into the electrical box.
29. Route upper motor wires into the electrical box.
32. Route thermistor wire from electrical box, through hole in the top core support panel, and secure the blue end to the thermistor bracket in front of the damper motor using a plastic cable tie.
33. Connect the thermistor to the circuit board in the electrical box.
34. Putty holes closed in blower divider panel and top core support panel with wires protruding through.
35. Install the large single door panel on the now back of the cabinet where electrical box was removed from and fasten using the eight machine screws.
36. Reversing of the ERV is now complete. Continue with the installation of the ERV.

CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY

Commercial Wiring Diagram for Fan Defrost

N.O.	Normally open
N.C.	Normally closed
COM	Common
T#	Terminal
P#	Plug
K#	Relay
F#	Fuse
SW#	Switch

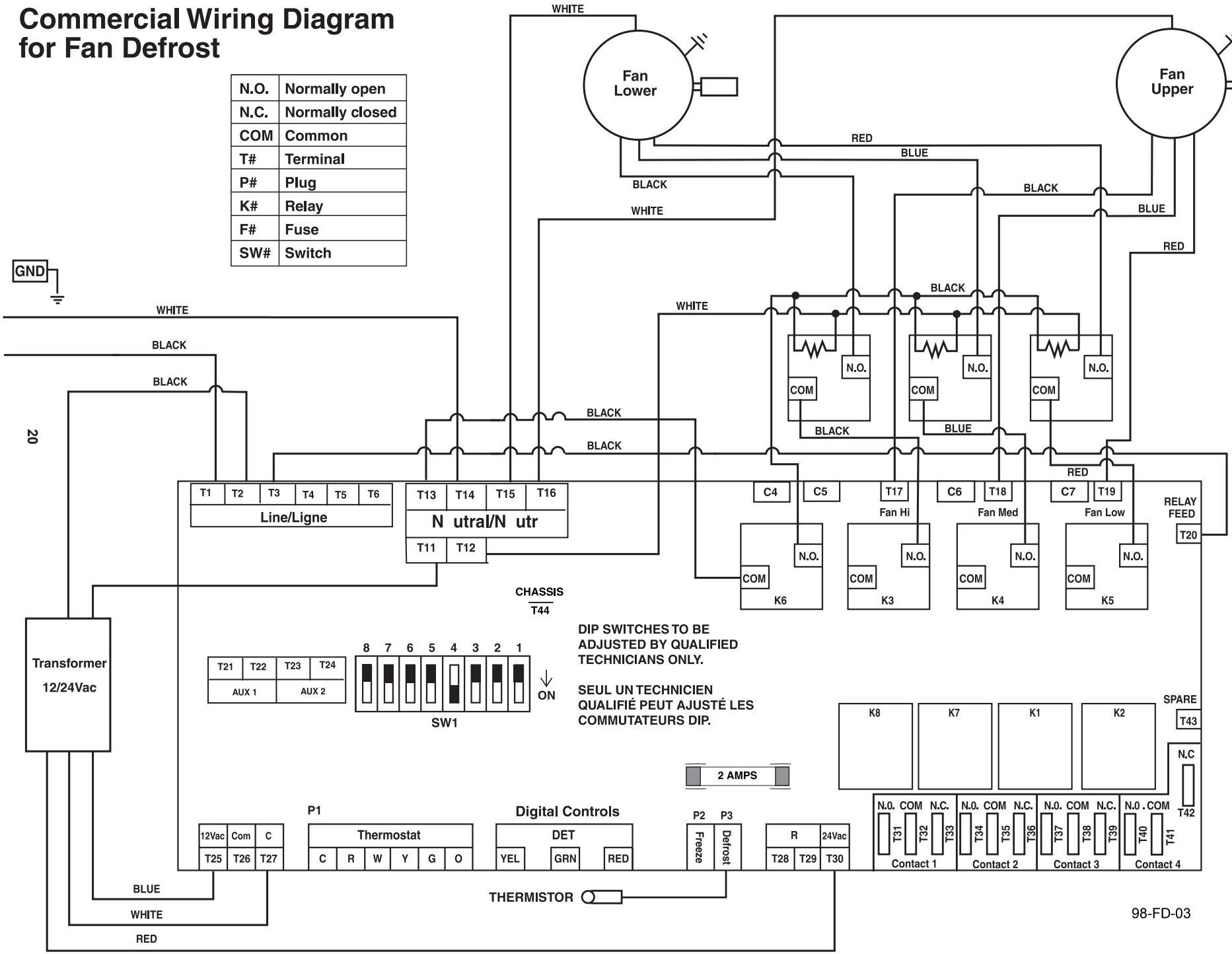


98-FD-04

CAUTION ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY

Commercial Wiring Diagram for Fan Defrost

N.O.	Normally open
N.C.	Normally closed
COM	Common
T#	Terminal
P#	Plug
K#	Relay
F#	Fuse
SW#	Switch



98-FD-03

COMMERCIAL LIFEBREATH®
ENERGY RECOVERY VENTILATORS

• 5 Year Limited Warranty • 10 Year ERV Core Warranty

AIRIA BRANDS INC.® (AIRIA) warrants to the original purchaser of the Commercial LIFEBREATH® model and accessories referred to below, to be free from manufacturing defects.

This Warranty is personal to AIRIA® and is in effect from the date of the original purchase for a period of five years, save and except that a 10 YEAR WARRANTY is given to the LIFEBREATH® ERV core should they develop a condensation leak or become damaged during normal use.

Damage resulting from all other causes, including but not limited to: lightning, hurricane, tornado, earthquake or any other acts of God; improper installation, modification, alteration or misuse of the LIFEBREATH® or its operation in a manner contrary to the instructions accompanying the unit at the time of sale; accidental or intentional damage, neglect, improper care, or other failure by the owner to provide reasonable and necessary maintenance of the product; any attempt at repair by an unauthorized service representative or not in accordance with this warranty; or any other causes beyond the control of AIRIA®, are excluded from this warranty.

If you feel that the LIFEBREATH® you purchased is not free from manufacturing defects, please contact AIRIA BRANDS INC.®, 511 McCormick Blvd., London, Ontario N5W 4C8, 519-457-1904 or fax 519-457-1676 to find the name of your nearest dealer in order to repair the product. The labour required to install any replacement part(s) shall be dealt with at the option of the customer in either of the following ways:

(a) the customer may supply labour at their own expense: or
(b) if the product was purchased from a dealer, then the dealer may supply labour at cost to the customer.

AIRIA® reserves the right to replace the entire unit or to refund the original purchase price in lieu of repair.

AIRIA® MAKES NO EXPRESS WARRANTIES, EXCEPT FOR THOSE THAT ARE SET FORTH HEREIN AND SHALL NOT BE LIABLE FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES WITH RESPECT TO LIFEBREATH® COVERED BY THIS WARRANTY. AIRIA'S COMPLETE LIABILITY AND THE OWNER'S EXCLUSIVE REMEDY BEING LIMITED TO REPAIR OR REPLACEMENT ON THE TERMS STATED HEREIN. ANY IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY AND OF FITNESS FOR ANY PARTICULAR PURPOSE, ARE EXPRESSLY EXCLUDED.
NO PERSON IS AUTHORIZED TO CHANGE THE WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY UNLESS SUCH CHANGES ARE MADE IN WRITING AND SIGNED BY AN OFFICER OF AIRIA®.

MODEL NO.: _____

UNIT SERIAL NO.:_____

INSTALLED BY: _____

DATE:_____

TI-38HRV/ERV