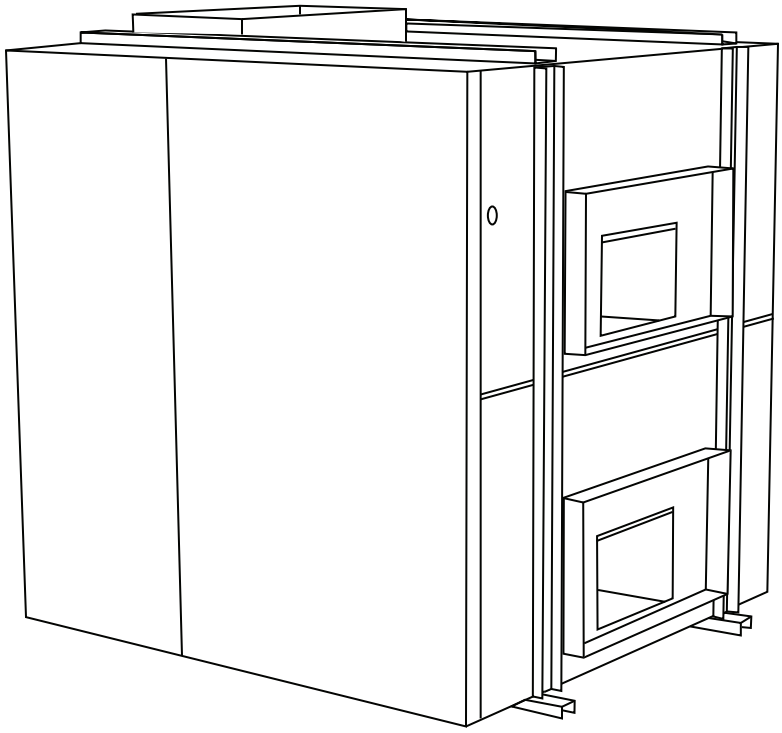
Models 700POOL , 1200POOL

LIFEBREATH®
INDOOR AIR SYSTEMS

Operation and Installation Manual



Indoor Pool and Spa Heat Recovery Ventilators (HRV)

NOW MANUFACTURED WITH
AIRCOM ELECTRONICS

Lifebreath Pool Room HRVs provide fresh clean air without sacrificing the savings of your energy conserving home. The aluminum cores of the HRV provide effective and efficient heat recovery and air exchange.

CAUTION ⚠

Pool room air/surfaces MUST have a heating appliance which does NOT include the pool water as its source.
The pool room and water MUST be continuously operated at its original design as any deviation from this could greatly effect the operation of the unit.
The pool unit MUST be fully commissioned after installation which includes confirming proper operation of the control, normal operation of the unit and drainage through the pans without unintentional leakage.

ISO 9001 REGISTERED

C US Conforms to UL Standards

R2000

69-POOL
0114

CAUTION ⚠

It is always important to assess how the operation of any HRV may interact with vented combustion equipment (ie. Gas Furnaces, Oil Furnaces, Wood Stoves, etc.).

CAUTION ⚠

Never install an HRV 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!

! ATTENTION

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

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Leave this manual with your customer!

TO BE COMPLETED BY CONTRACTOR AFTER INSTALLATION

Installing Contractor

Telephone / Contact

Serial Number

Installation Date Model

Introduction

High indoor humidity levels pose two threats to your pool room environment: health (IAQ) and building degradation.

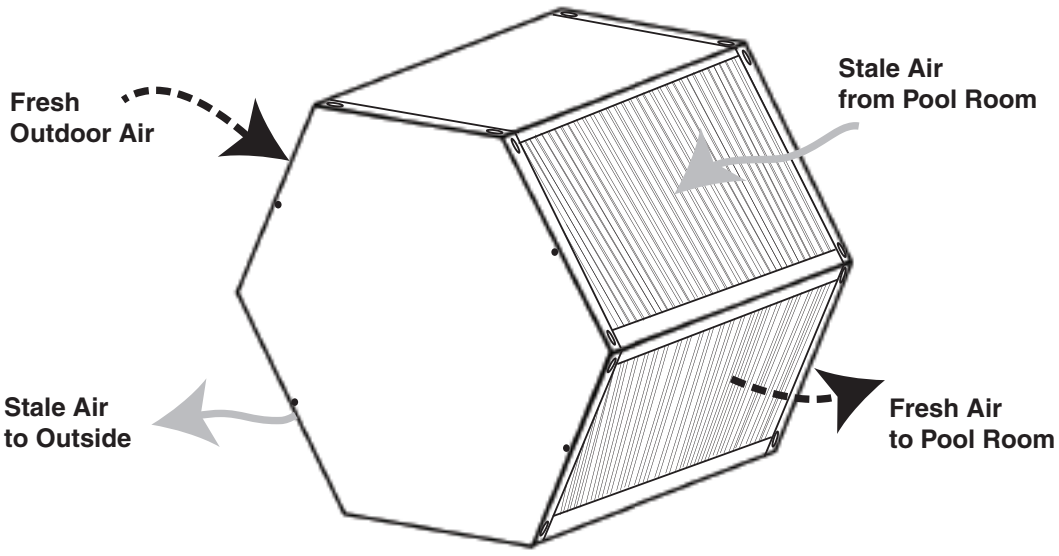
Humidity control is provided by an adjustable dehumidistat that is mounted in the pool room. The dehumidistat (included with the pool HRV) would be set to an acceptable humidity level (for example, in a range of 45% to 55% R.H.). Ventilation (the exhaust of humid indoor air and introduction of the dryer outdoor air) occurs when the adjustable HRV dehumidistat exceeds the set point.

When the humidity level of the pool room falls below the dehumidistat setpoint, the pool room air is recirculated by the HRV (no outside air will enter the system). Outside air is prevented from entering the HRV during recirculation by the supply damper closing off. The exhaust fan to the outside is shut off during this recirculation mode. Outside air does not enter the system again until the pool room humidity exceeds the setpoint of the dehumidistat.

The Recovery Core

HRV - Aluminum Core

A Heat Recovery Ventilator (HRV) is designed to provide fresh air into a building while exhausting an equal amount of stale air. During the winter months, the incoming cold fresh air is warmed by utilizing the heat recovered from the stale air before it is exhausted to the outdoors. During summer months when the indoor space is air conditioned, the Heat Recovery Ventilator will help in cooling the incoming fresh air with the stale air that is being exhausted.



LIFEBREATH®
THE ULTIMATE AIR EXCHANGER

CORES
The modular (2 section) patented aluminum heat recovery cores arranged for efficient counter flow ventilation meets the flame spread and smoke developed classifications of the National Building Code and NFPA 90A (1993 Edition)

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

FILTERS
Washable air filters in exhaust and supply air streams.

BLOWERS
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
Five - 14" x 8" H (356 mm x 200 mm H).

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

CASE
20 gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated with foil faced insulation duct liner where required to prevent exterior condensation.
Drain connections; two - 1/2" (12 mm) O.D.

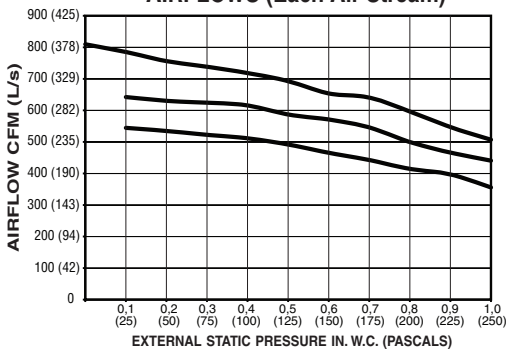
CONTROLS & FUNCTION
Integrated microprocessor circuit board. Built-in interlock contacts. Automatic Self Test. Remote dehumidistat included.

DEFROST
Supply bypass routes indoor air to defrost core.

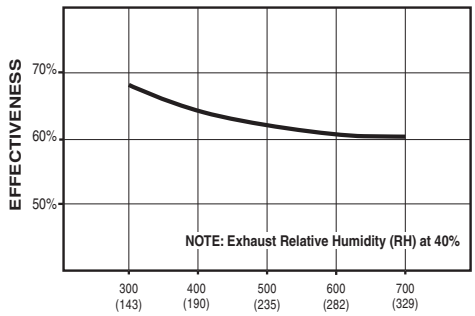
WEIGHT 180 lbs. (80 kg) **SHIPPING WEIGHT** 230 lbs. (100 kg)

PERFORMANCE

AIRFLOWS (Each Air Stream)

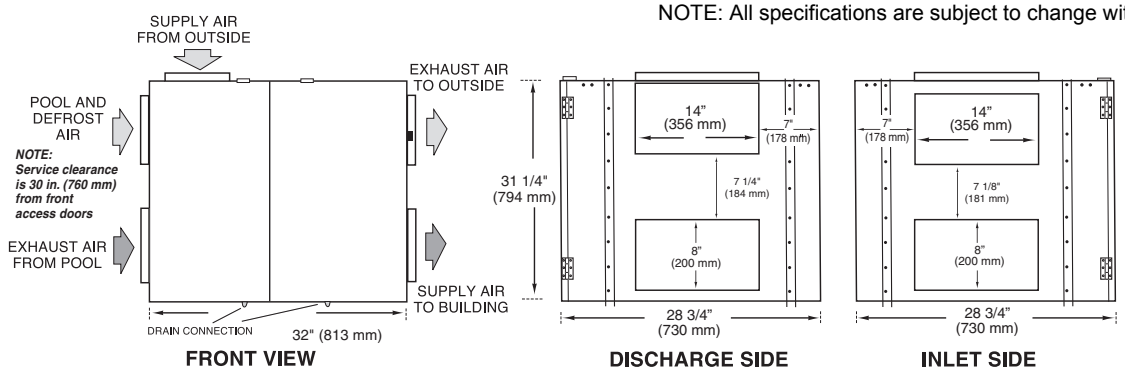


TEMPERATURE EFFECTIVENESS



NOTE: All specifications are subject to change without notice

700POOL DIMENSIONS inches (mm)



All units conform to CSA and UL standards.

WARRANTY
All units carry a 15 year warranty on the heat recovery cores and a 2 year replacement parts warranty.

Date: _____ Contractor: _____

Tag: _____ Qty: _____ Supplier: _____

Project: _____ Quote#: _____

Engineer: _____ Submitted by: _____

AIRIA BRANDS INC.
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ISO 9001 REGISTERED

LIFEBREATH®
THE ULTIMATE AIR EXCHANGER

CORES
The modular (3 section) patented aluminum heat recovery cores arranged for efficient counter flow ventilation meets the flame spread and smoke developed classifications of the National Building Code and NFPA 90A (1993 Edition).

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

FILTERS
Washable air filters in exhaust and supply air streams.

BLOWERS
Centrifugal type rated at 1200 cfm (566 L/s) free air delivery. Each air stream has one double shafted motor driving 2 centrifugal blowers.

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

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

CASE
20 gauge prepainted galvanized steel (G60) for superior corrosion resistance. Insulated with foil faced insulation duct liner where required to prevent exterior condensation.
Drain connections; two - 1/2" (12 mm) O.D.

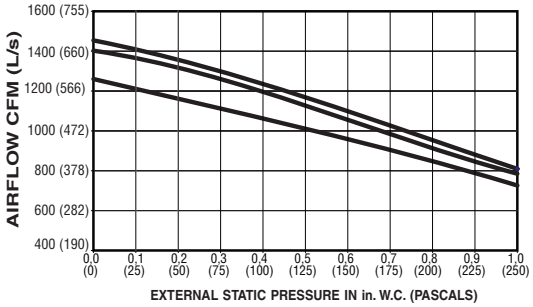
CONTROLS & FUNCTION
Integrated microprocessor circuit board. Built-in interlock contacts. Automatic Self Test. Remote dehumidistat included.

DEFROST CONTROLS
Supply bypass damper routes indoor air to defrost core.

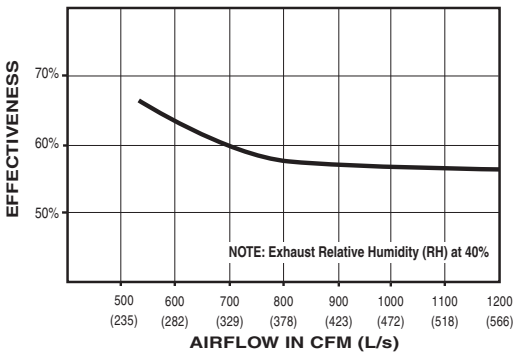
WEIGHT 240 lbs. (110 kg) **SHIPPING WEIGHT** 310 lbs. (140 kg)

PERFORMANCE

AIRFLOWS (Each Air Stream)

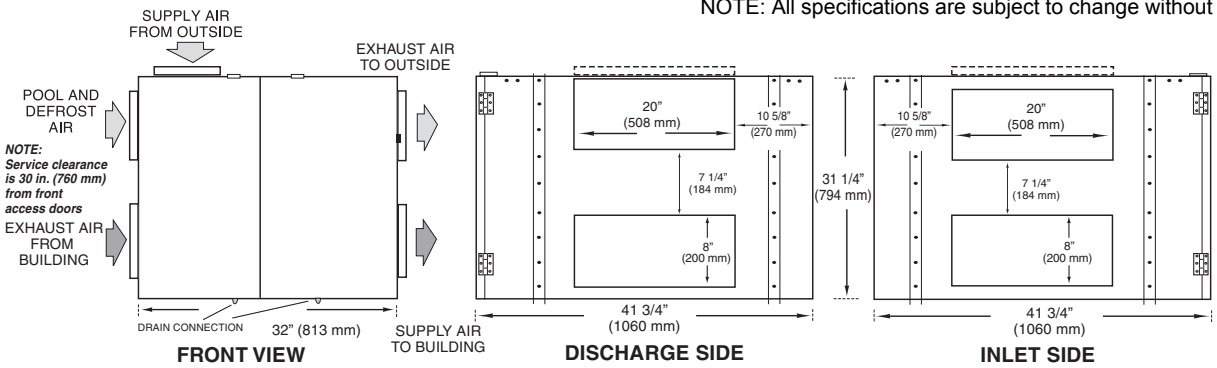


TEMPERATURE EFFECTIVENESS



NOTE: All specifications are subject to change without notice

1200 POOL DIMENSIONS inches (mm)



All units conform to CSA and UL standards.

WARRANTY
All units carry a 15 year warranty on the heat recovery cores and a 2 year replacement parts warranty.

Date: _____ Contractor: _____

Tag: _____ Qty: _____ Supplier: _____

Project: _____ Quote#: _____

Engineer: _____ Submitted by: _____

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Website: www.lifebreath.com

ISO 9001 REGISTERED

Calculating the Ventilation Rate for the Pool Room

Example:

Pool surface area	16’ x 32’ (512 sq ft)
*Indoor design air temperature	83°F
Pool water temperature	81°F
Relative Humidity	50 %
*Outdoor design air temperature	15 °F

**** Always use design temperatures for indoor and outdoor air temperatures. Outdoor design temperatures are published by organizations such as ASHRAE. Do not us day to day temperatures for this calculation.***

1. From Table 1, select the appropriate evaporation rate based on the room air temperature, water temperature, and relative humidity.

Evaporation Rate = 0.052

2. From Table 2, select the corresponding flow Rate factor depending on the indoor air temperature, outdoor temperature, and room relative humidity.

Flow Rate Factor = 21.70

3. Multiply the values obtained from step 1 and step 2 to obtain the minimum CFM required per square foot of pool surface area.

Evaporation rate	X	Flow Rate	=	CFM / square foot of water surface area
0.052	X	21.70	=	1.12

4. Multiply the value in step 3 by the area of the pool

Area of pool	X	Value for step 3	=	CFM
512	X	1.12	=	573

ATTENTION

Spas/Hot Tubs must be considered when calculating the ventilation rate for a pool room. This ventilation rate is calculated by adding 10cfm per ft^2 of Spa/Hot Tub surface area. For example, a 25 ft^2 Spa/Hot Tub will add 250cfm to your pool calculation.

Table 1 - Evaporation Rate

Indoor Air Temp. °F	Indoor Relative Humidity																	
	40%	50%	60%	40%	50%	60%	40%	50%	60%	40%	50%	60%	40%	50%	60%	40%	50%	60%
	Evaporation Rate lb/(sq. ft-hr.)																	
68	0.069	0.063	0.056	0.079	0.073	0.066	0.090	0.084	0.077	0.102	0.095	0.089	0.115	0.108	0.102	0.129	0.122	0.116
70	0.068	0.060	0.053	0.078	0.070	0.063	0.088	0.081	0.074	0.100	0.093	0.086	0.113	0.106	0.099	0.127	0.120	0.113
72	0.065	0.058	0.050	0.075	0.068	0.060	0.086	0.079	0.071	0.098	0.090	0.083	0.111	0.103	0.096	0.125	0.117	0.110
74	0.063	0.055	0.047	0.073	0.065	0.057	0.084	0.076	0.068	0.096	0.088	0.079	0.109	0.101	0.092	0.123	0.115	0.106
76	0.061	0.052	0.043	0.071	0.062	0.053	0.082	0.073	0.064	0.094	0.085	0.076	0.107	0.098	0.089	0.121	0.112	0.103
78	0.059	0.049	0.039	0.069	0.059	0.049	0.080	0.070	0.060	0.091	0.082	0.072	0.104	0.095	0.085	0.118	0.109	0.099
80	0.056	0.046	0.035	0.066	0.056	0.045	0.077	0.067	0.056	0.089	0.079	0.068	0.102	0.091	0.081	0.116	0.105	0.095
82	0.053	0.042	0.031	0.063	0.052	0.041	0.074	0.063	0.052	0.086	0.075	0.064	0.099	0.088	0.077	0.113	0.102	0.091
84	0.050	0.039	0.027	0.060	0.049	0.037	0.071	0.060	0.048	0.083	0.071	0.060	0.096	0.084	0.073	0.110	0.098	0.087
86	0.047	0.035	0.022	0.057	0.045	0.032	0.068	0.056	0.043	0.080	0.068	0.055	0.093	0.080	0.068	0.107	0.094	0.082
8 8	0.044	0.031	0.017	0.054	0.041	0.027	0.065	0.052	0.038	0.077	0.063	0.050	0.090	0.076	0.063	0.104	0.090	0.077
Water Temp. °F	78			81			84			87			90			93		

Table 2 - Flow Rate Factor

Outside Air Temp. °F	Indoor Relative Humidity																	
	40%	50%	60%	40%	50%	60%	40%	50%	60%	40%	50%	60%	40%	50%	60%	40%	50%	60%
	Flow Rate Factor (cfa-hr./lb.)																	
-30	39.70	31.50	26.10	35.70	28.30	23.40	32.10	25.50	21.10	29.00	23.00	19.00	26.10	20.70	17.20	23.60	18.70	15.50
-25	40.20	31.80	26.20	36.10	28.50	23.60	32.40	25.70	21.20	29.20	23.10	19.10	26.30	20.90	17.20	23.80	18.80	15.60
-20	40.80	32.10	26.50	36.50	28.80	23.80	32.80	25.90	21.40	29.50	23.30	19.20	26.60	21.00	17.40	24.00	19.00	15.70
-15	41.60	32.60	26.80	37.20	29.20	24.00	33.30	26.20	21.60	29.90	23.60	19.40	26.90	21.20	17.50	24.20	19.10	15.80
-10	42.60	33.20	27.20	38.00	29.70	24.40	34.00	26.60	21.90	30.40	23.90	19.60	27.30	21.50	17.70	24.60	19.30	15.90
-5	43.90	34.10	27.80	39.00	30.40	24.80	34.80	27.10	22.20	31.10	24.30	19.90	27.90	21.80	17.90	25.00	19.60	16.10
0	45.70	35.10	28.50	40.40	31.20	25.40	35.90	27.80	22.70	32.00	24.80	20.30	28.60	22.20	18.20	25.60	20.00	16.30
5	48.10	36.50	29.40	42.30	32.30	26.10	37.40	28.70	23.20	33.20	25.50	20.70	29.50	22.80	18.60	26.30	20.40	16.60
10	51.50	38.40	30.60	44.90	33.80	27.00	39.40	29.80	24.00	34.70	26.40	21.30	30.70	23.50	19.00	27.30	21.00	17.00
15	56.20	41.00	32.20	48.50	35.80	28.30	42.10	31.40	25.00	36.80	27.60	22.10	32.40	24.50	19.60	28.60	21.70	17.50
20	63.40	44.70	34.50	53.70	38.50	30.00	46.00	33.50	26.30	39.70	29.30	23.10	34.60	25.70	20.40	30.30	22.70	19.10
25	74.90	50.10	37.60	61.70	42.50	32.40	51.80	36.40	28.10	44.00	31.50	24.50	37.80	27.40	21.50	32.70	24.10	19.00
30	95.90	58.70	42.30	75.30	48.50	35.80	61.00	40.80	30.60	50.50	34.70	26.40	42.50	29.80	23.00	36.20	25.90	20.10
35	112.78	69.62	46.60	84.08	54.75	38.60	66.18	44.71	32.53	57.46	37.32	27.77	46.85	31.63	23.99	39.10	27.20	20.83
40	129.66	80.53	50.90	92.86	61.0	41.40	71.36	48.63	34.46	64.43	39.94	29.13	51.20	33.47	24.97	42.0	28.50	21.57
45	146.54	91.45	55.20	101.64	67.25	44.20	76.54	52.55	36.40	71.39	42.56	30.50	55.55	35.30	25.95	44.90	29.80	22.30
50	163.42	102.37	59.50	110.42	73.50	47.0	81.72	56.47	38.30	78.36	45.18	31.87	59.90	37.13	26.93	47.80	31.10	23.03
55	180.30	113.28	63.80	119.20	79.75	49.80	86.90	60.38	40.26	85.33	47.80	33.23	64.25	39.96	27.92	50.70	32.40	23.76
60	243.30	124.20	68.10	127.98	86.0	52.60	92.08	64.30	42.20	92.30	50.40	34.60	68.60	40.80	28.90	53.60	33.70	24.50
Indoor Air Temp. °F	68			71			74			77			80			83		

Location of the HRV for Mounting

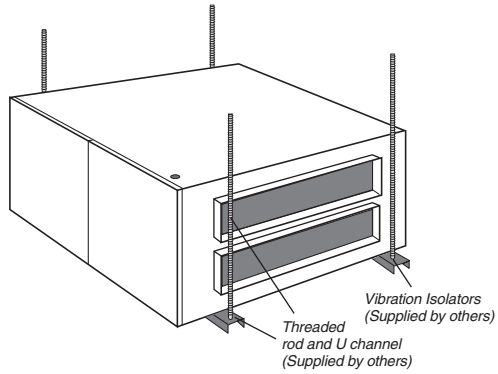
The HRV must be located in a heated space where the surrounding air temperature does not fall below 60°F (16°C). The unit must be mounted level (horizontal) to obtain proper drainage or water from the heat exchange element and drip pans. The warranty will be void if these conditions are not met.

Typically, the HRV 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 HRV is recommended to service the heat exchanger cores and the filters. The HRV may be mounted on an equipment platform providing the drain hoses are clear and there is sufficient space to open the doors for servicing.

Install the drain pans in the bottom of the HRV so the drain connections protrude through the holes provided. Use drain hoses with hose clamps to connect the drain pan outlets to a floor drain or standpipe. Make sure the drain line slopes down to the outlet. If this is not possible a condensate pump will be required for positive removal of the water. Protect the drain line from freezing.

Saddle Installation

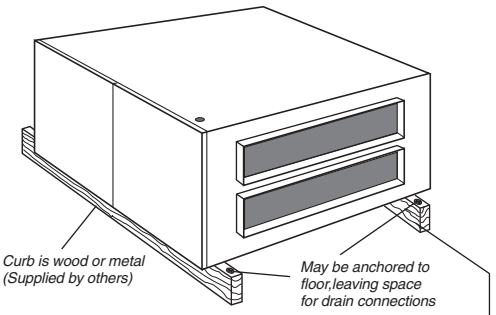


Hang unit with suspended rods and "U" channel members.

ATTENTION

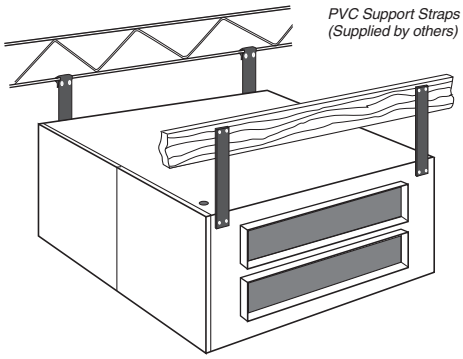
Flexible duct connectors should be installed between the HRV and the galvanized ductwork.

Curb Mounted



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

Suspended



Unit Suspended using Polyester reinforced PVC support straps.

The Ductwork System

It is necessary to design and size the duct distribution system for both the supply and the exhaust air streams.

Proper duct design & duct sizing will:

- Minimize air flow requirements.
- Ensure a comfortable environment by using reheat if required.
- Optimize humidity control, including eliminating condensation on windows by blanketing the windows with airflow.

Refer to Sample Duct Layout 1 and 2 for typical duct system designs.

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 HRV 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 snow 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 HRV 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 HRV and the weatherhood.

Warm-side Ducting - General

Ducting from the HRV to the different areas in the building should be galvanized metal whenever possible.

To minimize airflow losses in the ductwork system, all ducts should be as short as possible and with as few bends or elbows as possible. 45° elbows are preferred to 90° elbows. Use “Wye” (Y) fittings instead of “Tees” (T) whenever possible.

All duct joints must be fastened with screws, rivets or duct sealant and wrapped with a quality duct tape to prevent leakage. We recommend aluminum foil tape.

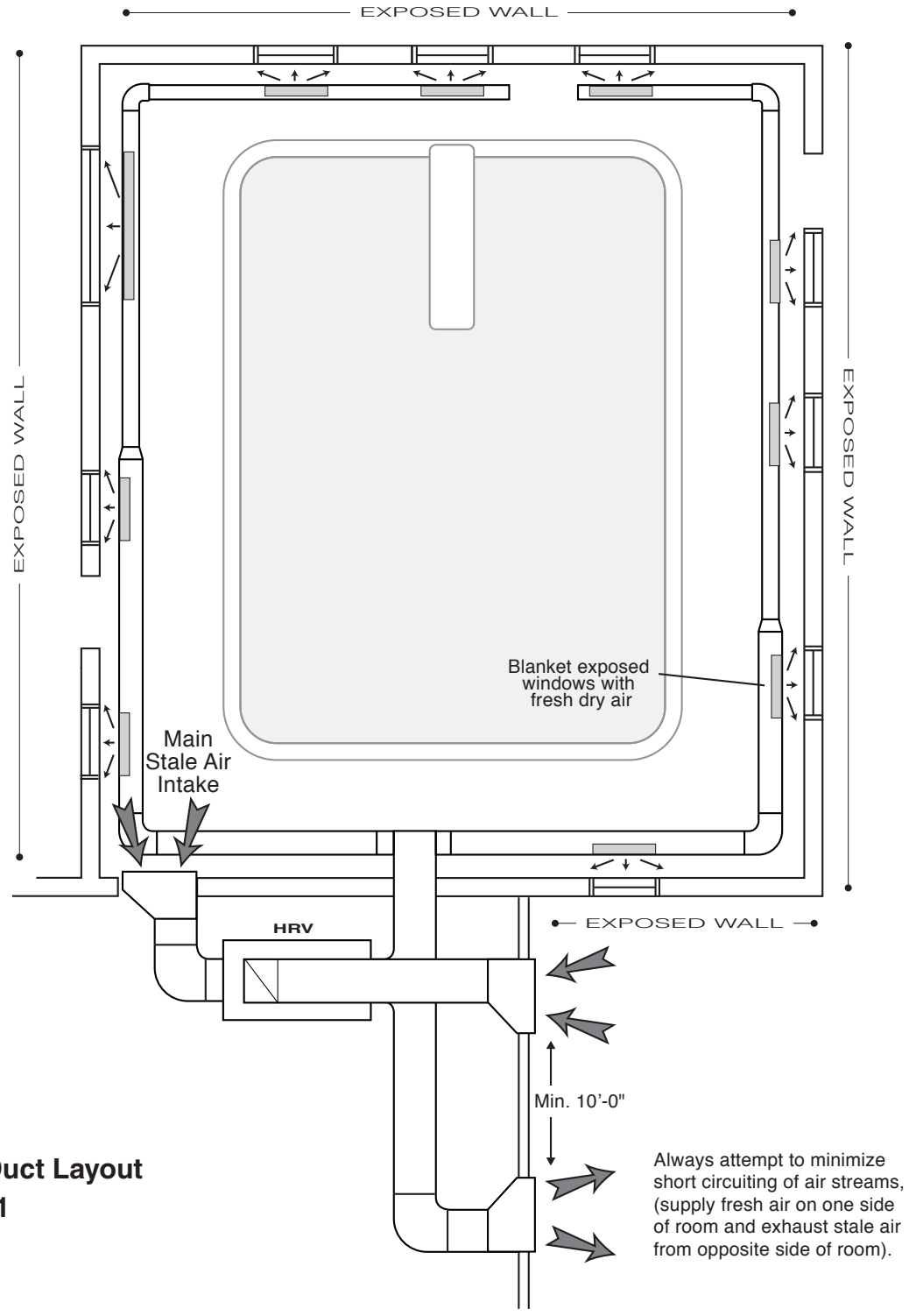
Sample Duct Layout 1

System Installation

It is necessary to design and size the duct distribution system for both the supply and the exhaust air streams.

Proper duct design will

- Minimize air flow requirements
- Ensure a comfortable environment by using reheat if required.
- Optimize humidity control, including eliminating condensation on windows by blanketing the windows with airflow.



Typical Duct Layout Sketch #1

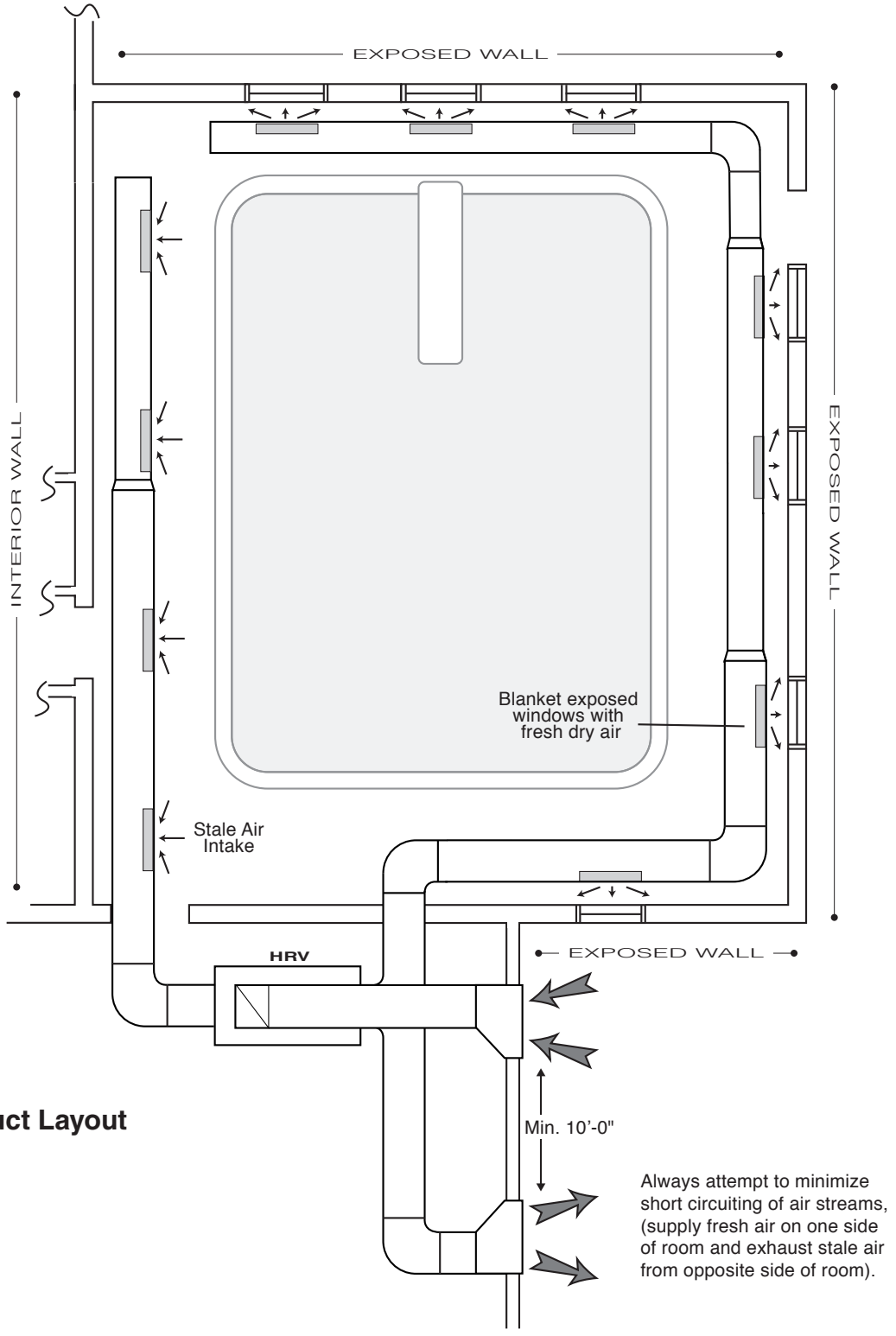
Sample Duct Layout 2

System Installation

It is necessary to design and size the duct distribution system for both the supply and the exhaust air streams.

Proper duct design will

- Minimize air flow requirements
- Ensure a comfortable environment by using reheat if required.
- Optimize humidity control, including eliminating condensation on windows by blanketing the windows with airflow.

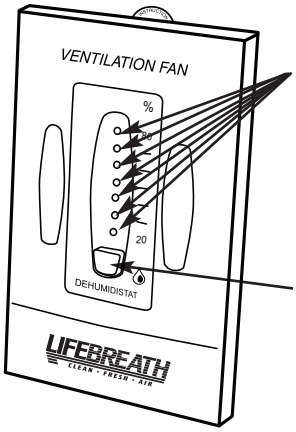


Typical Duct Layout Sketch #2

Humidity Control

Humidity is controlled through the adjustable dehumidistat (included with the pool HRV). The dehumidistat should be wall mounted in an accessible location of the pool room about 5 feet above floor level. The operator should set the dehumidistat dial at an acceptable humidity level (45% to 55% RH). The pool HRV will enter ventilation mode when the pool room's humidity level exceeds the dehumidistat set point.

The pool HRV will revert to recirculation with no outside air entering the system when the indoor humidity level falls below the dehumidistat set point.



Dehumidistat LEDs
Set to the desired humidity level. High speed ventilation will initiate when the indoor moisture level exceeds the set point on the control.

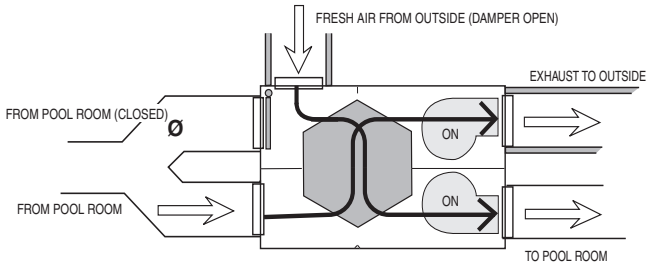
Dehumidistat Adjust Button

Mode of Operation for the Pool HRV

Ventilation Mode

In ventilation mode, both motors are running and air is being exchanged with the outside through the supply and exhaust ducts.

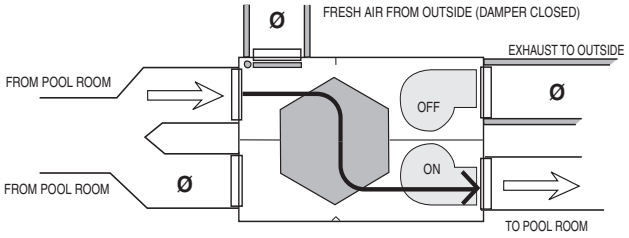
1. VENTILATION MODE



Recirculation Mode

In recirculation mode the supply motor continues to run and a damper moves to block off air entering from outside, drawing air instead from the conditioned space. The exhaust to outside motor is OFF when in recirculation mode.

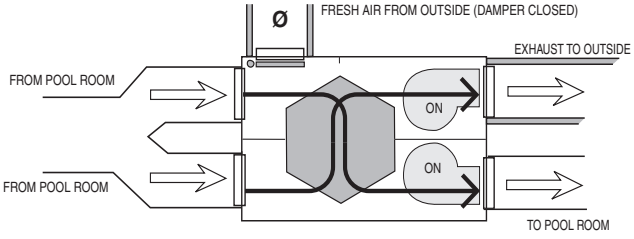
2. RECIRCULATION MODE



Defrost Mode

All pool HRVs have an electronically controlled damper defrost mechanism. The defrost timer is activated when outside temperatures drop below 27°F (-3°C). A motor driven damper door mechanism opens the "pool and defrost air "port and closes off the "supply air from outside" port. This defrost cycle operates for about 3 minutes and then the damper reverts to its previous "run time" position.

3. DEFROST MODE



Stale Air Return System

The stale air return system is used to draw air from the points in the building where the highest humidity levels exist. 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 pool room.

Alternately, the stale air may be drawn directly from the return air duct in situations where a dedicated pool room air handler or forced air furnace is present. The air handler or furnace blower motor must constantly operate when this system is used.

The exhaust takeoff connection must be at least a 3 ft (1 m) from a directly connected HRV supply duct if both are connected to the same duct run. Static pressure of the air handlers return system should be noted and compensated for if, it is apparent that the static pressure of the return in the air handler will exceed .1 to .15” W.C.

A damper located just prior to the HRV 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.

Fresh Air Supply System

Normally the fresh air system is designed to deliver air across the pool room windows as illustrated in Sample duct Layout #1 and #2.

The designer and installer should be aware of local codes that may require smoke detectors and/or firestats in the HVAC or HRV ductwork. A supply voltage interrupt may be required to shut the system down when triggered by smoke, flame or a central fore alarm. Check with your local building authority.

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.

The use of balancing dampers or adjustable grilles to balance the flow rates into various rooms is recommended.

Connecting the HRV to a Dedicated Pool Room Air Handler/Furnace

The fresh air supply ductwork from the HRV may be directly connected to the furnace return air duct when a dedicated forced air system is present for the pool room. Check the air flow balance of the HRV with the air handler blower both "ON" and "OFF" to determine that it does not imbalance the HRV 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 HRV 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.

Adjustable Grilles

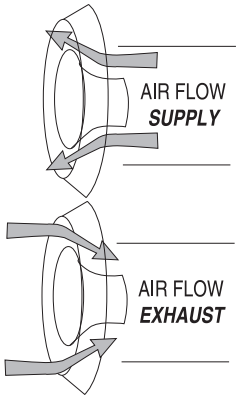
The use of balancing dampers or adjustable grilles as supply air diffusers and air exhaust covers are recommended. TECHGRILLES™ are round, efficient, sound absorbing devices available in 4”, 5”, 6” and 8” (100, 125, 150, and 200 mm) models.

Part# 99-EAG4 4” diameter Techgrille

Part# 99-EAG5 5” diameter Techgrille

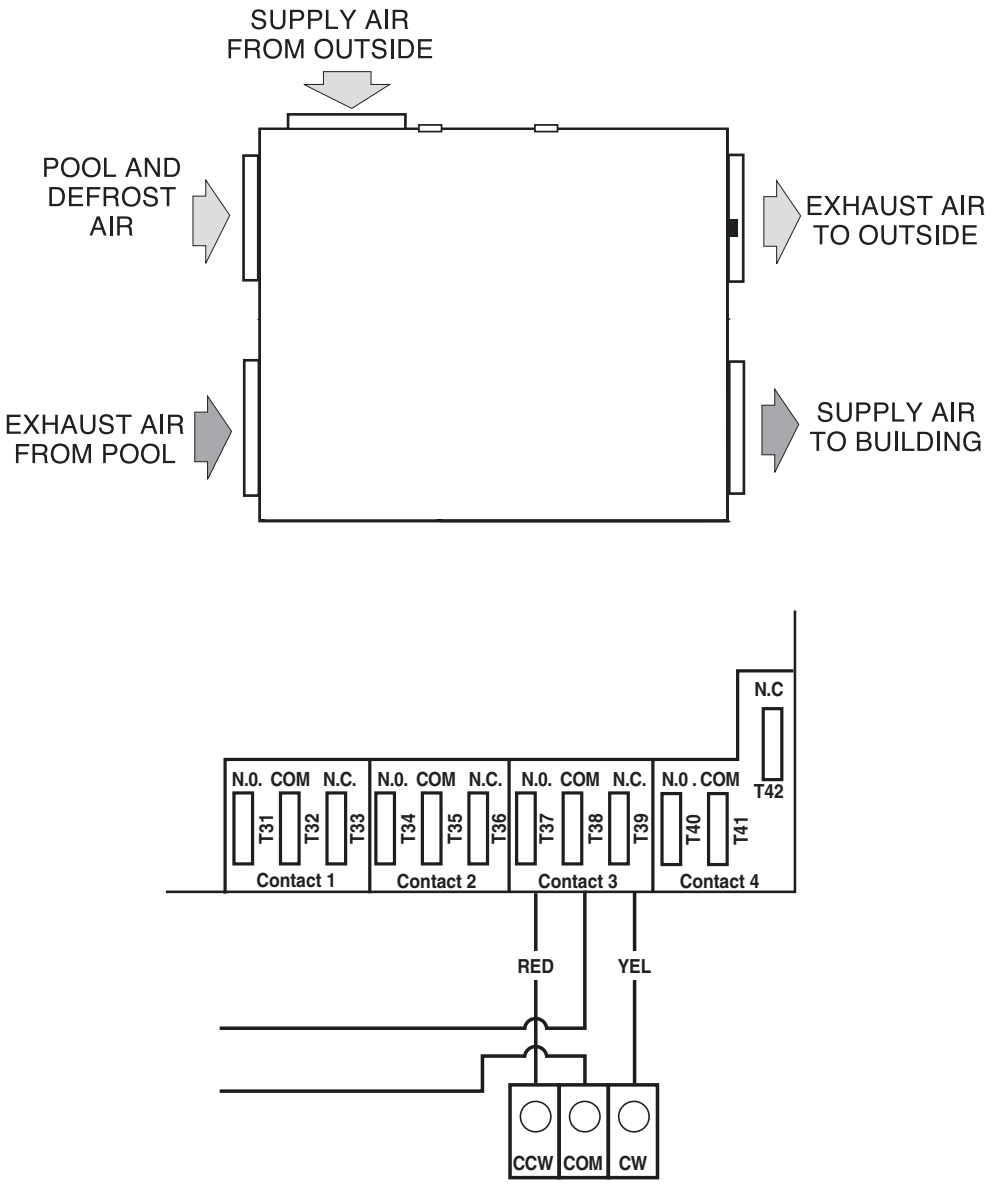
Part# 99-EAG6 6” diameter Techgrille

Part# 99-EAG8 8” diameter Techgrille



Reversing the Supply and Defrost Air Ports

Sometimes installation is easier if the "Supply Air from Outside" is ducted from the upper left side port (Pool and Defrost Air) instead of the top port. Changing the functionality of these two ports is easily accomplished by switching the red and yellow defrost motor wires at the circuit board. Switch T37 and T39 on the Aircom circuit board.



Switch T37 (red wire) and T39 (yellow wire) on the Aircom circuit board if you wish to reverse the "Supply Air From Outside" and "Pool and Defrost Air" ports.

This illustration shows the factory configuration.

Function and Controls

Basic Functions

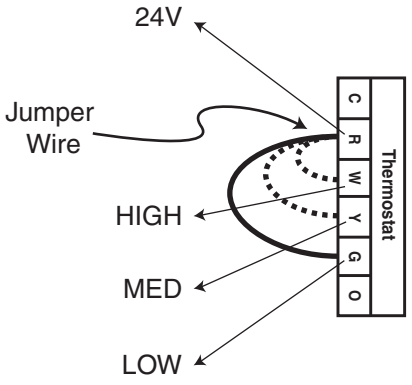
Pool units normally operate in recirculation mode at the selected speed. When the dehumidistat senses moisture above the setpoint, the HRV will switch to ventilate mode and operate at the same speed. Once the dehumidistat is satisfied. the HRV reverts back to recirculation mode.

Setup

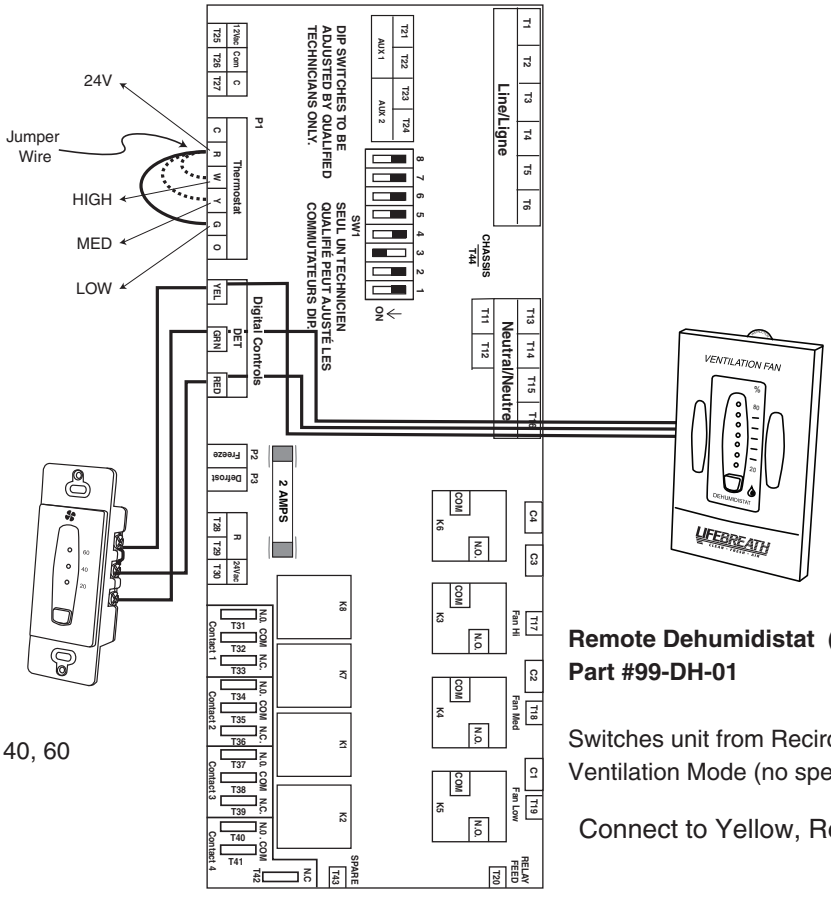
Select appropriate operational speed by installing a jumper wire between one of the designated speed taps. (A jumper wire is factory installed in the low speed position.)

Example:

A jumper between the **R** terminal and the **G** terminal will result in low speed operation.



Micro Processor Board



Optional 20/40/60 Minute Timer
Part# 99-DET01

Boost unit to Ventilation Mode for 20, 40, 60 minutes (no speed change).

Connect up to 4 maximum
Connect to Yellow, Red & Green

Remote Dehumidistat (Included)
Part #99-DH-01

Switches unit from Recirculation Mode into Ventilation Mode (no speed change)

Connect to Yellow, Red and Green

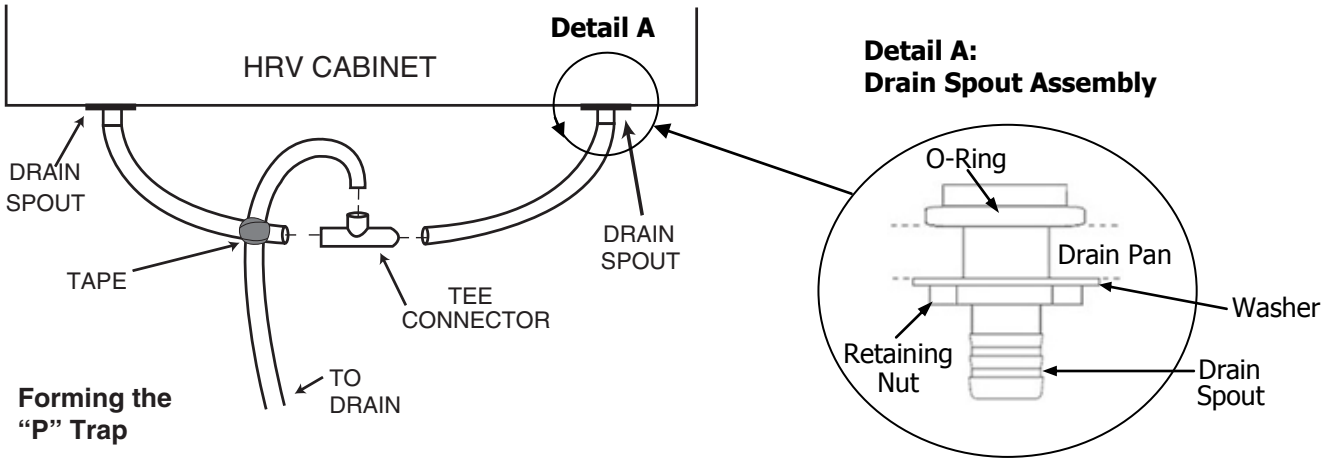
Drain Connections

Installation Notes:

The HRV will produce some condensation while running. This water should flow into a nearby drain, or be taken away by a condensate pump. The HRV cabinet has pre-punched holes for the drain (see below).

Installation Steps:

1) Insert the drain spout through the hole in the drain pan. Be sure to install the "O-ring" (if supplied) which seals each spout to the pan.
2) Hand tighten the washer and lock nut which hold the drain spout in place.
3) Construct a P-trap using the plastic tee connector.
4) Cut two lengths of 1/2 in drain hose (not included) and connect the other ends to the two drain spouts.
5) Position the tee connector to point upward and connect the drain line.
6) Tape or fasten base to avoid any kinks.
7) Slowly pour water into the drain pan of the HRV after the drain connection is complete. This is to ensure that the drain assembly is functional and also creates a water seal which will prevent odours from being drawn up the hose and into the fresh air supply of the HRV.



CAUTION ⚠

The HRV 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.

CAUTION ⚠

Drain trap and tubing MUST be below bottom of door with 1/4" per foot downwards slope away from unit.

Electrical Connections and Self Test

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 for the 700 and a 25 amp/120 volt circuit for the 1200.

CAUTION ⚠

The HRV is designed to operate with ducting. When first starting the HRV, measure the amp draw to each motor to ensure it is operating at or below the max rating.

	Maximum AMP Rating		
	HIGH	MED.	LOW
1200 POOL	9.4	6.0	4.5
700 POOL	4.5		

WARNING ⚠

In order to prevent electric shock when cleaning or servicing the HRV, 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 HRV is properly grounded.

It is necessary to have balanced air flows in an HRV. 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 HRV 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 HRV 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 HRVs 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 HRV 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 HRV using a Pitot tube, advantageous in situations when flow stations are not installed in the ductwork. Procedure should be performed with the HRV 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 HRV itself and the forced air furnace or air handler if applicable. This will provide the maximum pressure that the HRV 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:

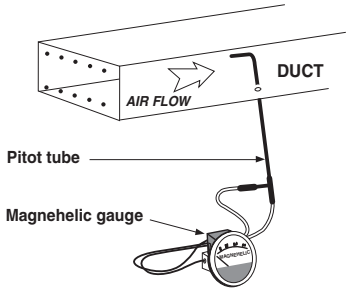
640 ft./min. X 0.2 square feet = 128 cfm

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

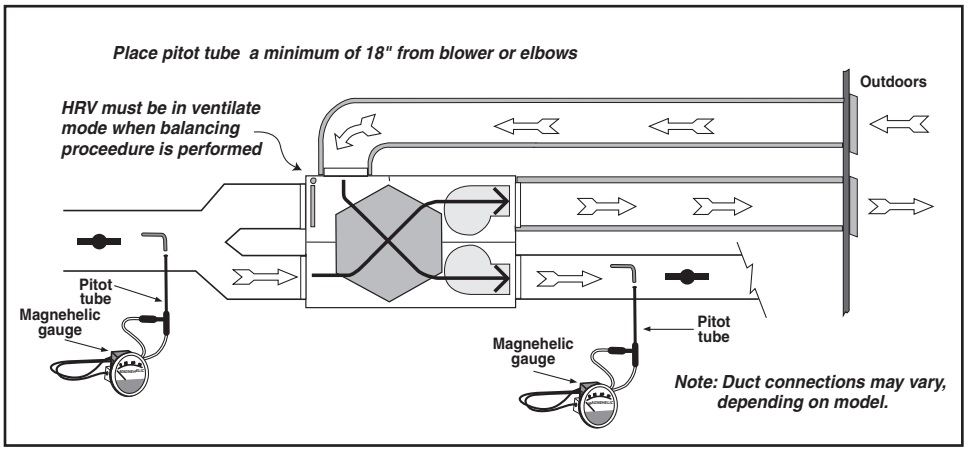
The accuracy of the air flow reading will be affected by how close to any elbows or bends the readings are taken. Accuracy can be increased by taking an average of multiple readings as outlined in the literature supplied with the Pitot tube.

Pitot tube and gauge



Pitot Tube Air Flow Balancing Kit

c/w magnehelic gauge, Pitot tube, hose and carry case.
PART NO. 99-167



Make Up Heat

Make up heat is usually necessary for pool HRVs that are installed as a Fully Dedicated Duct System. An electric in line duct heater or hydronic coil will be necessary to bring the Supply Air to Building back up to room temperature.

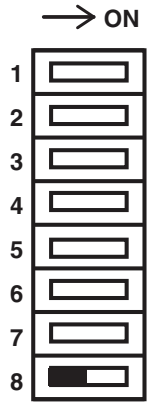
Contact your distributor for duct heater sizing and pricing information.

Defrost Time Adjustment

DIP switch #8 will adjust the defrost time. Do not change any of the other DIP switch settings. (Only available when unit is operating in ventilation mode).

ATTENTION

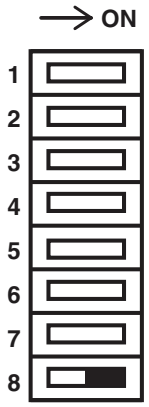
Change DIP switch #8 only as illustrated on this page. Do not adjust any other switches.



Factory Setting (DIP Switch 8 OFF)

The HRV enters defrost mode when outdoor temperatures drop below 27°F (-3°C).

The factory defrost cycle is 4 minutes defrost with a 30 minute run time.



Increased Defrost Time (DIP Switch 8 ON)

Cooler climates may require a more aggressive defrost cycle.

Positioning DIP switch 8 to ON will initiate a 4 minute defrost with a 20 minute run time.

Service your HRV on a regular schedule for optimum operating efficiencies and a prolonged life of the equipment.

Motor

Access the motor through the front service doors. Note the heat exchanger core can be removed to provide more room. See **CORE** in this section.

If the motor does not have oil tubes, no maintenance is required.

Access the wick through the oil tubes, (two per motor) located in the motor case, itself. These oil tubes are either capped with yellow plugs (which require removal for oiling) or have clear tubes protruding from them.

In either case, use an oiling device such as an "Oil Telespout" filled with 20 S.A.E. non-detergent electric motor oil to oil the tubes. A few drops of oil once a year will do.

DO NOT OVER OIL!

HRV Core

Access the heat exchange core through the front service door. Provide special care and attention to this component: the edges may be sharp and the core, itself, susceptible to damage if dropped.

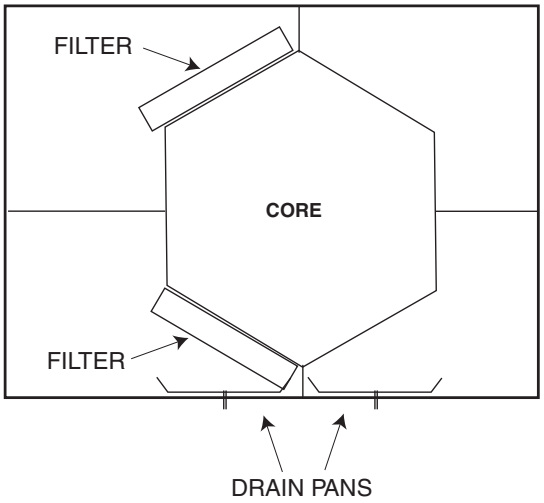
When removing the core, note the location from which it is removed. Remove the core by carefully pulling it outward from the unit and sliding it evenly along its guide rail supports (found on the top and bottom corners and on either side of the core). Note the core may have some resistance when sliding out. Avoid tilting the core as this will result in its edges catching the guide rails and temporarily preventing its removal.

In most cases, all the core requires is a wash in a mild detergent and warm water to completely clean it. Do not use harsh chemicals, as their use may cause corrosion in the HRV. The time required between each core service depends on the application in which the HRV is installed.

Service may be required as often as one month, two months or at the very least, cleaned every six months. **When reinstalling the core, note the foam location and drip edge location for proper core placement** (see diagram below).

With the core 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 is in place, push the core evenly into the cabinet until it reaches the back.

Note the core will protrude slightly from the front of the cabinet, this is so the access door, when closed, ensures a tight fit.



Note location and arrangement of cores and filters when removing.

Filters

Open front service door to access the filters located in both supply and exhaust air streams. It may be easier to first remove the core before removing the filters.

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.

Use warm water with a mild detergent to wash the filters. Do not use harsh chemicals.

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

Condensate Drains

The condensate drains consist of two drain pans which may collect water after the HRV initiates a defrost cycle, and a drain line to remove the condensate.

Maintenance on this portion of the system should be done as often as possible and should not exceed six months. Note bacterial growth in standing water is a major concern to healthy indoor air quality, and should be avoided whenever possible.

To clean these components, open the front service door and flush the pans with water. Ensure that the pans drain completely and in a reasonable amount of time. Note if the water does not drain right away, check for blockage in the drain line, also check that the drain line has a good slope to it. (1/8 - 1/4" per foot)

The drain line itself should have a "P" trap in it below the HRV which is to be filled with water to prevent odors or gases from entering back into the unit.

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 weather hoods 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.

Damper Motor

The damper motor, (if applicable) is a self contained motor and does not require service. The damper door attached to the motor could use a little lithium grease on the shaft opposite the motor, where it enters its holder, once every two - three years.

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.

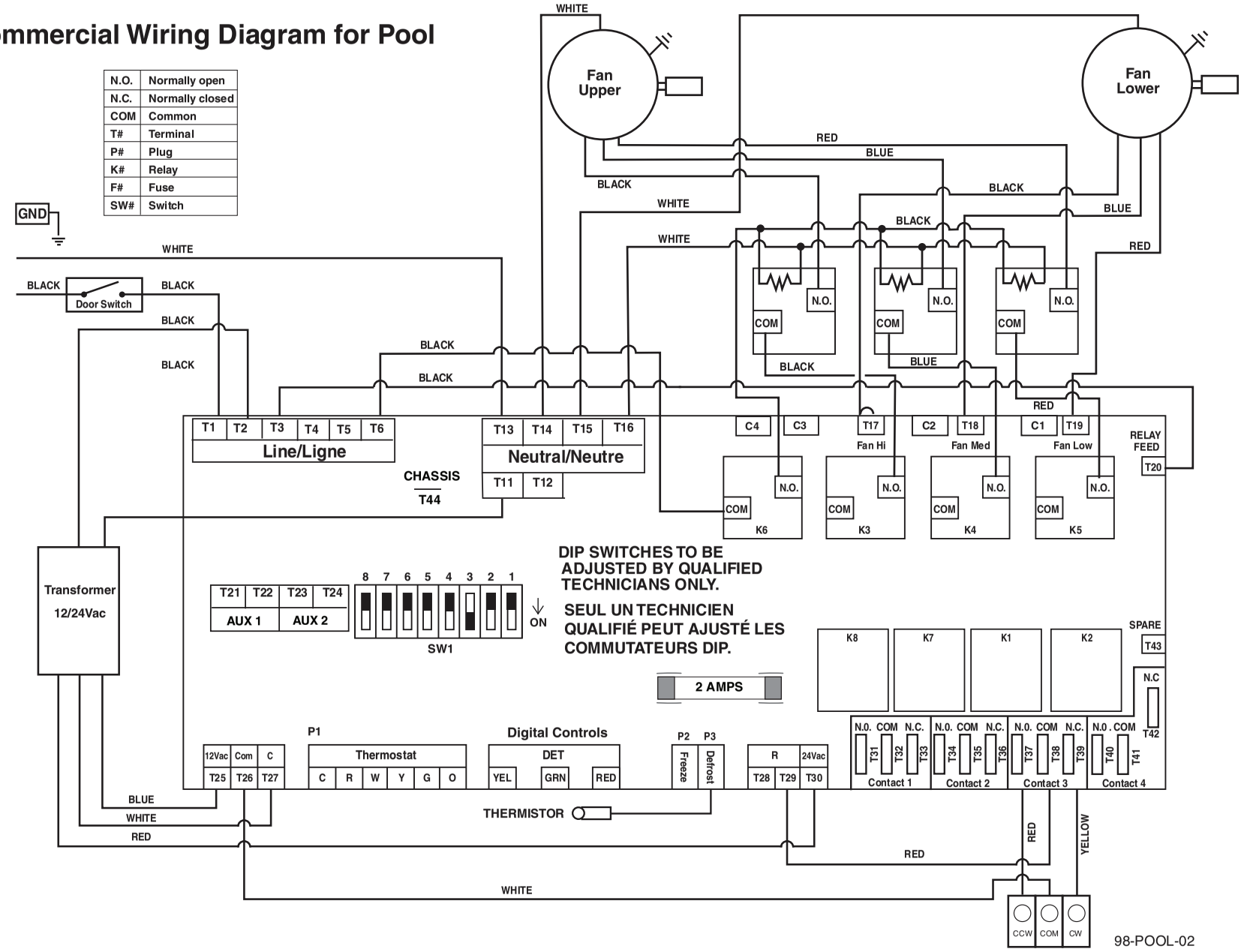
Troubleshooting your HRV System

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 HRV • improper speed control setting • HRV 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 at house • check duct installation • increase the speed of the HRV • have contractor balance HRV
Supply air feels cold	• poor location of supply grilles, the airflow may irritate the occupant • 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) • 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
Dehumidistat is not Operating	• improper low voltage connection • external low voltage is shortened out by a staple or nail • check dehumidistat setting it may be on OFF	• check that the correct terminals have been used • check external wiring for a short • set the dehumidistat at the desired setting
Humidity Levels are too High Condensation is appearing on the windows	• dehumidistat is set too high • HRV is undersized to handle a hot tub, indoor pool, etc. • lifestyle of the occupants • the room air temperature is cooler than the pool water temperature. • condensation seems to form in the spring and fall	• set dehumidistat lower • cover pools, hot tubs when they are not in use • avoid hanging clothes to dry • increase the room air temperature or decrease the pool water temperature. • 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
Humidity Levels are too Low	• dehumidistat control set too low • blower speed of HRV is too high • lifestyle of occupants • HRV air flows may be improperly balanced	• set dehumidistat higher • decrease HRV blower speed • humidity may have to be added through the use of humidifiers • have a contractor balance HRV airflows
HRV and / or Ducts Frosting up	• HRV air flows are improperly balanced • malfunction of the HRV defrost system	Note: minimal frost build-up is expected on cores before unit initiates defrost cycle functions • have HVAC contractor balance the HRV
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
Water in the bottom of the HRV	• drain pans plugged • improper connection of HRVs drain lines • HRV is not level • drain lines are obstructed • HRV heat exchange core is not properly installed	• ensure O-Ring on drain nozzle sits properly • look for kinks in line • check water drain connections • make sure water drains properly from pan

CAUTION: ELECTRICAL CONTROL PANEL, SERVICE BY ELECTRICIAN ONLY

Commercial Wiring Diagram for Pool

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



COMMERCIAL LIFEBREATH®
HEAT RECOVERY VENTILATORS

• Two Year Limited Warranty • 15 Year 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 two years, save and except that a 15 YEAR WARRANTY is given to the LIFEBREATH® core should it develop a condensation leak or become perforated due to corrosion caused by 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 labor 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 labor at their own expense: or
(b) if the product was purchased from a dealer, then the dealer will supply labor 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: _____