ABOUT ENERZONE

Enerzone Inc. is a leading Canadian manufacturer of high-quality, energy efficient heating/cooling and ventilation solutions for high-rise apartments, condos, hotels, resorts and assisted-living buildings.

Based in London, Ontario, Enerzone offers decades of experience in creating value-oriented HVAC products that stand the test of time.

We take pride in maintaining a vibrant culture of innovation and customer-centric collaboration.

IQ BY ENERZONE™

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WHY IS ENERZONE THE BEST CHOICE?

Since 1994, Enerzone Inc. has manufactured and supplied tens of thousands of fan coils to the residential low-rise and high-rise marketplaces.

Canadian-owned and operated, Enerzone was incorporated in 1994 by Bob Henderson, its president. A highly recognized pioneer in the design and manufacturer of Heat Recovery Ventilators (HRVs), Henderson also founded Nutech Energy Systems Inc. in 1981, a company which he successfully built, then sold. While the CEO at Nutech, Henderson was instrumental in establishing Canadian Standards Association (CSA) performance and installation guidelines for HRVs.

Operating from its 30,000-square-foot, energy-efficient manufacturing plant in London, Ontario, Enerzone Inc. offers high-quality products created using its state-of-the-art CNC metal punching and forming equipment integrated with computer-assisted design and manufacturing techniques.

SPECIFICATIONS

All of our IQ by Enerzone HRV-ERV Integrated Vertical Fan Coils have been designed and engi-neered to maximize performance while minimizing energy consumption.

CONDITIONS

	HEATING	COOLING
EAT (DB)	70 °F	80 °F
EAT (WB)	n/a	67 °F

ENERGY CONSUMPTION

COMPONENT(S)	WATTS USED
BOTH BLOWERS AT 50 CFM	45 *
DAMPER MOTOR USED TO OPEN THE FRESH AIR SUPPLY PATH AND DEFROST	6

* Refers to total watts used by both blowers when installed in the ERV-HRV with core and air filters In place and against an external static pressure equivalent to 8 feet of 5" flex duct on both the outdoor duct flanges and 25 feet of 5" smooth duct on the exhaust from bathroom flange.

IFC SOUND DATA

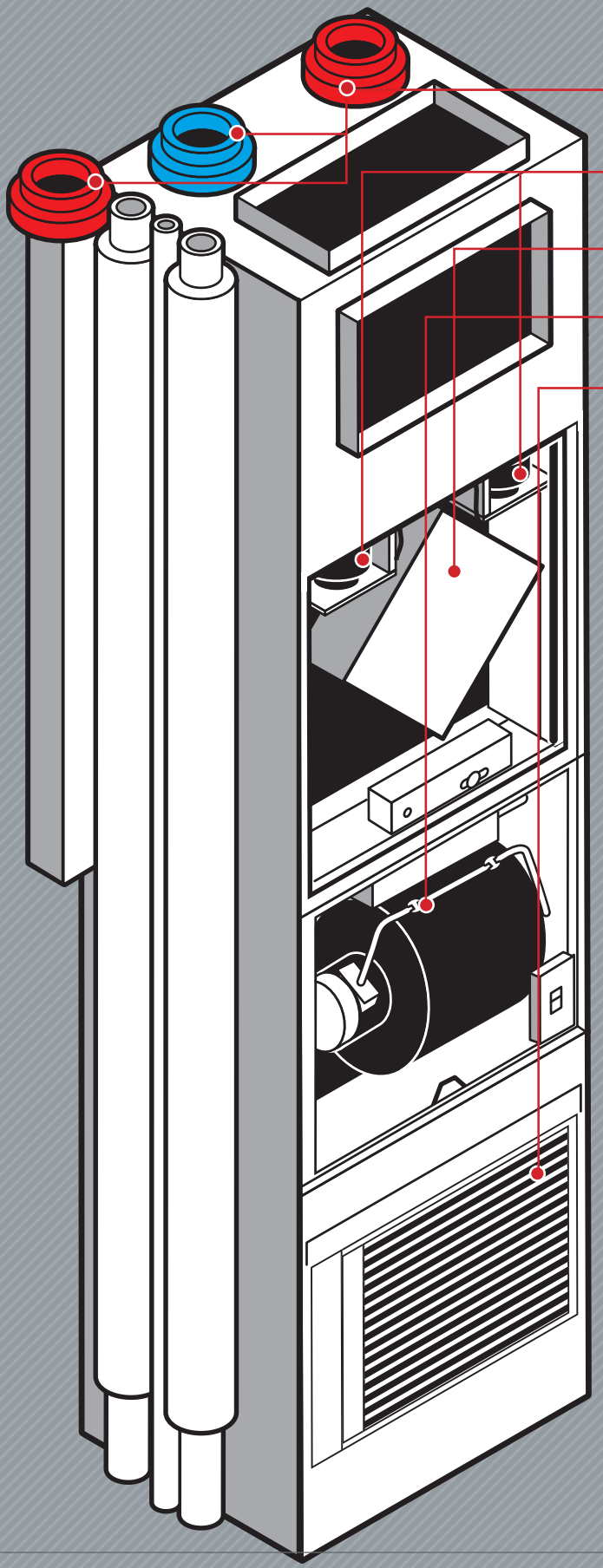
MODEL	MAIN BLOWER SPEED	HRV-ERV MOTORS SPEED	NOISE CRITERION (NC RATING)*
IFC 350	MEDIUM	LOW	32
IFC 450	MEDIUM	LOW	34
IFC 600	MEDIUM	LOW	34
IFC 800	MEDIUM	LOW	35

* As independently tested at Intertek Test Laboratories in May 2012

PERFORMANCE

						HEATING		COOLING			
MODEL	MAIN MOTOR HP	MAIN MOTOR WATTS	SUPPLY AIR CFM	EXT. STATIC PA	WATER FLOW GPM	TOT. HEATING CAPACITY	VOLTAGE	TOT. COOLING CAPACITY		CNST LOW CFM 1%	CNST LOW WATTS
IFC 350	1/3	65	350	62	2.0	3-5 KW	208V	9,000		270	32
IFC 450	1/3	90	450	62	2.0	3-5 KW	208V	12,000		288	32
IFC 600	1/3	163	600	62	2.0	3-5 KW	208V	18,000		310	32
IFC 800	1/3	321	800	62	3.5	3-5 KW	208V	24,000		310	35

IQ VFC-DX ERV - Net Zero Max core at 83% Effectiveness



* Supply/Return Risers Shown

TECHNICAL FEATURES

- Molded Duct Collars for HRV-ERV Connections
- Two Backward-Inclined Impellers for HRV-ERV
- HRV-ERV Core
- Main Blower Powered by Highly Efficient EC Motor
- Single Water-to-Air Coil for Heating and Cooling

ADVANCED FEATURES

POSITIVE PROTECT™ senses the temperature near the water bearing components and when it is 38˚F or lower, it creates a safe mode that turns off both HRV-ERV blowers, closes the fresh air inlet damper and opens the hot water actuator to prevent freezing conditions.

INTEGRAL HRV-ERV air flow balancing features are built into every unit enabling a trained installer to accurately balance incoming and outgoing air streams.

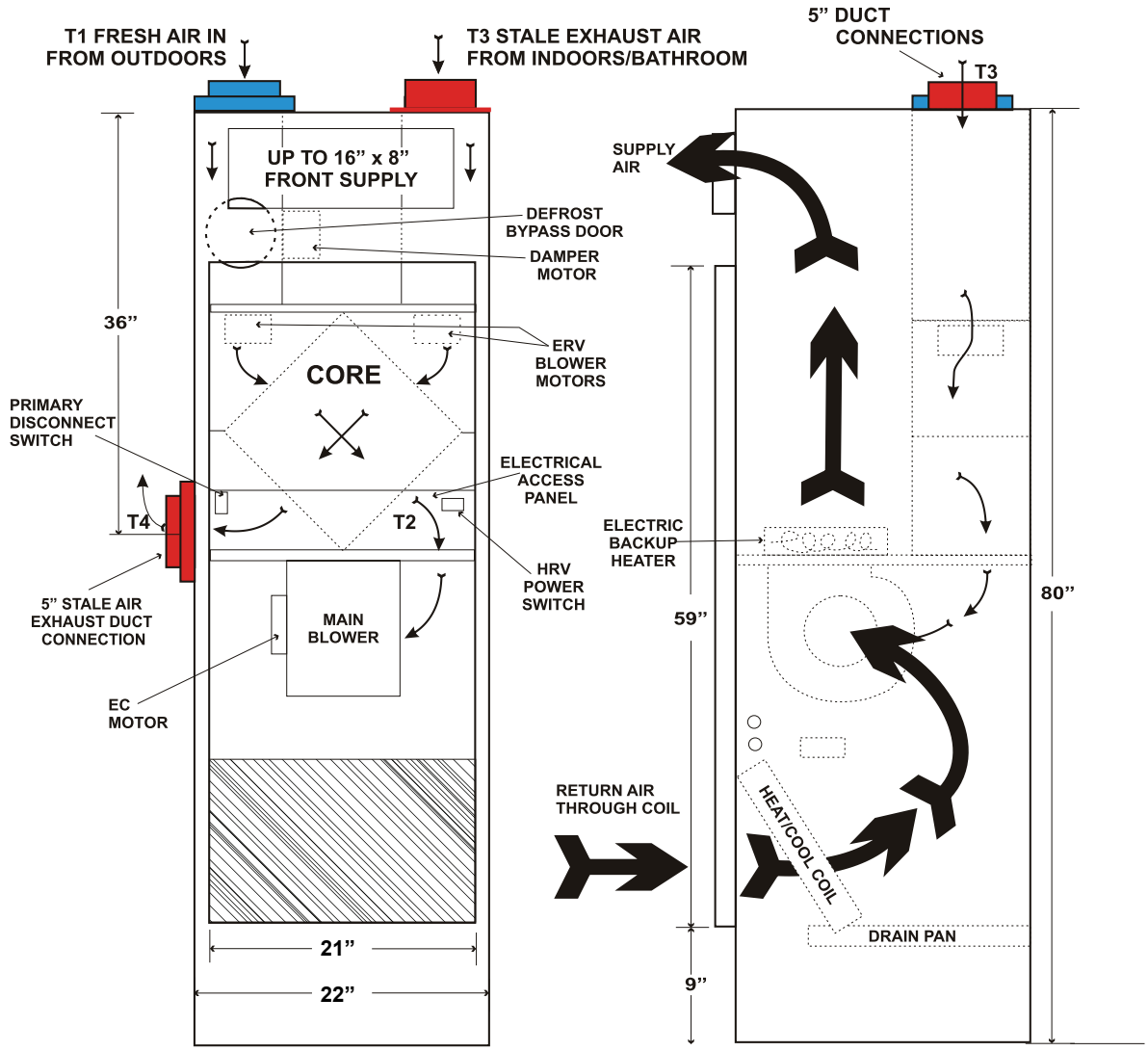
MEETS NOISE CRITERION (NC) 35. IQ by Enerzone HRV-ERV Integrated Fan Coils were independently sound-tested to meet NC 35 criteria at Intertek's Cortland, New York labs.

IN-HOUSE, PURPOSE DESIGNED AND BUILT HRV-ERV lowers costs and reduces redundant metal components—truly a more sustainable approach.

PROPRIETARY, CUSTOM CIRCUIT BOARD offers superior control of essential operating parameters.

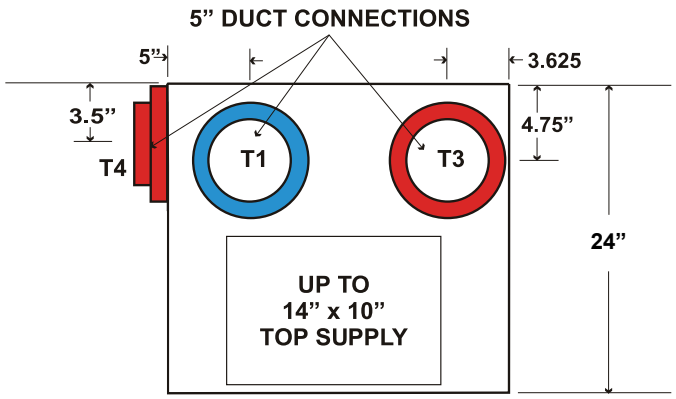
DEDICATED IN-HOUSE ENERGY EFFICIENCY LAB enables Enerzone to achieve the absolute lowest power consumption. We believe every watt saved makes for a better world.

AIR FLOW & DIMENSIONS



FRONT VIEW WITH ACCESS PANELS REMOVED

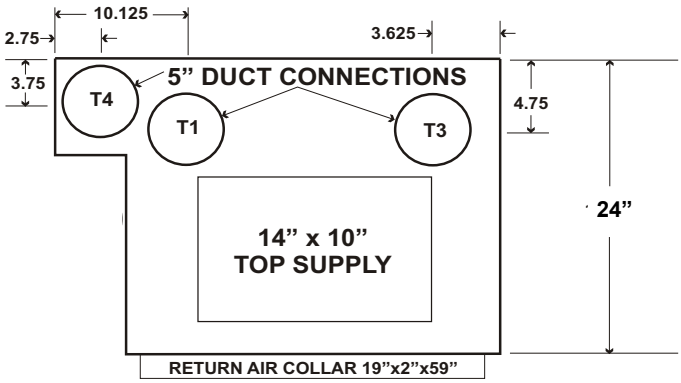
RIGHT SIDE VIEW GHOSTED TO SHOW AIR FLOW



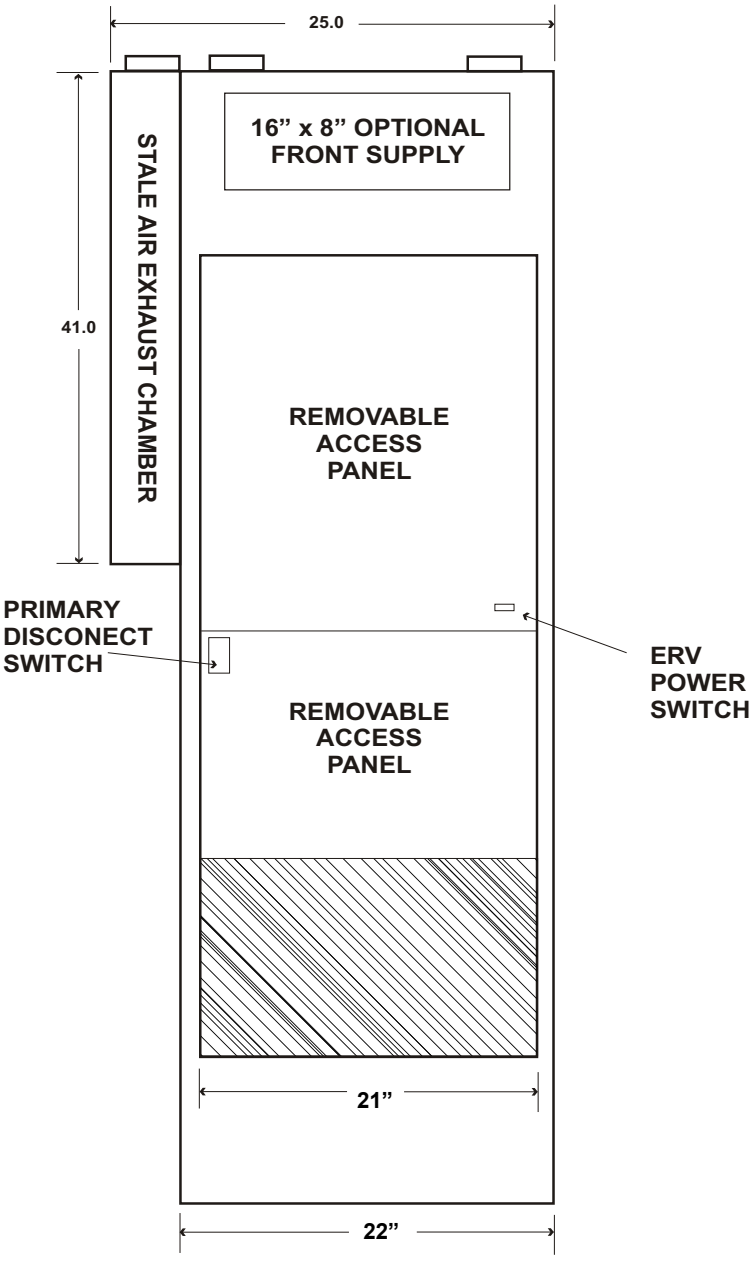
T1 FRESH AIR FROM OUTDOORS
T2 FRESH OUTDOOR AIR AFTER ERV CORE
T3 STALE EXHAUST AIR FROM INDOORS/BATHROOM
T4 EXHAUST AIR TO OUTDOORS

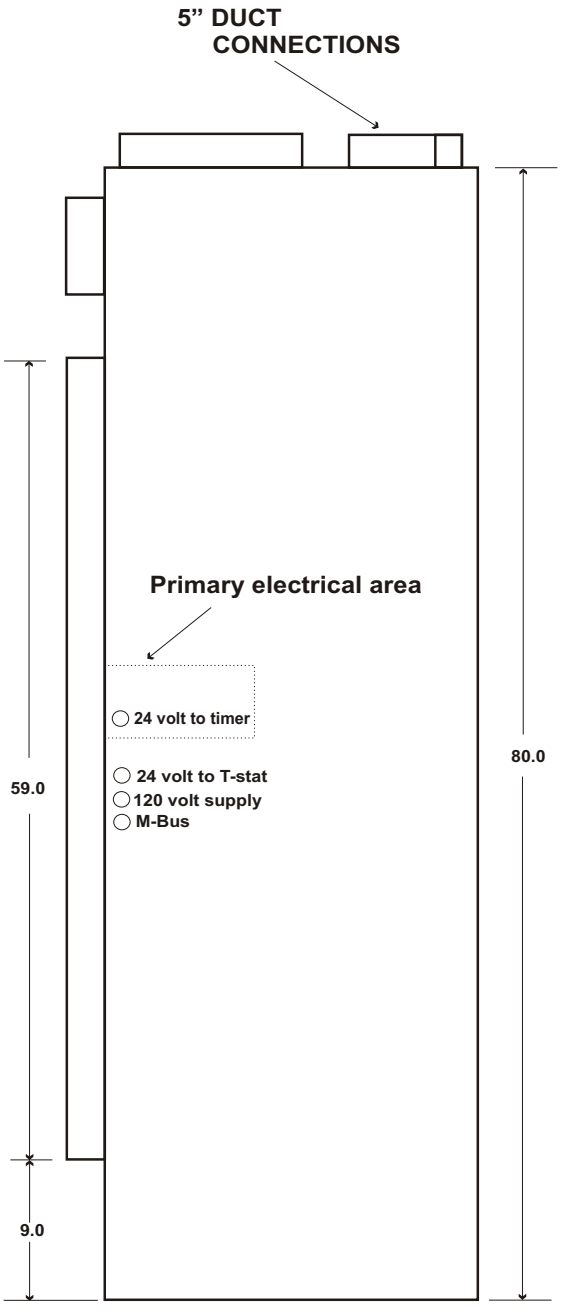
NOTE FOR LEFT AND RIGHT RISERS:
T3 IS ON THE SIDE OPPOSITE TO RISERS
T1 & T4 ARE ON THE RISER SIDE

ENERZONE INC.
December 2012



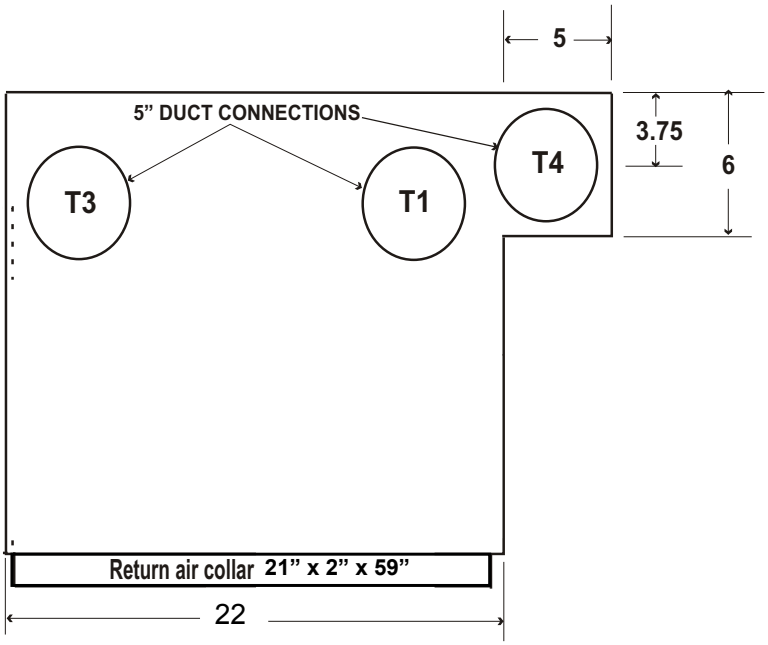
T3 STALE EXHAUST AIR FROM INDOORS/BATHROOM
T1 FRESH AIR FROM OUTDOORS
T4 EXHAUST AIR TO OUTDOORS





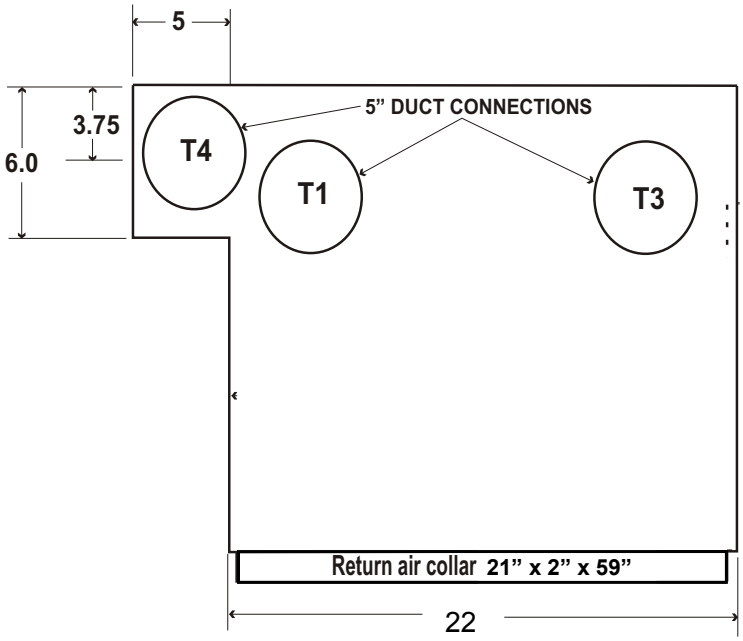
IQ VFC-DX ERV - Net Zero Max core at 83% Effectiveness

350,450,600 AND 800 MODELS (Left Hand model shown)



Riser shown on left Hand

Model 350-800:
Width 22"
Depth 24"
Height 80"

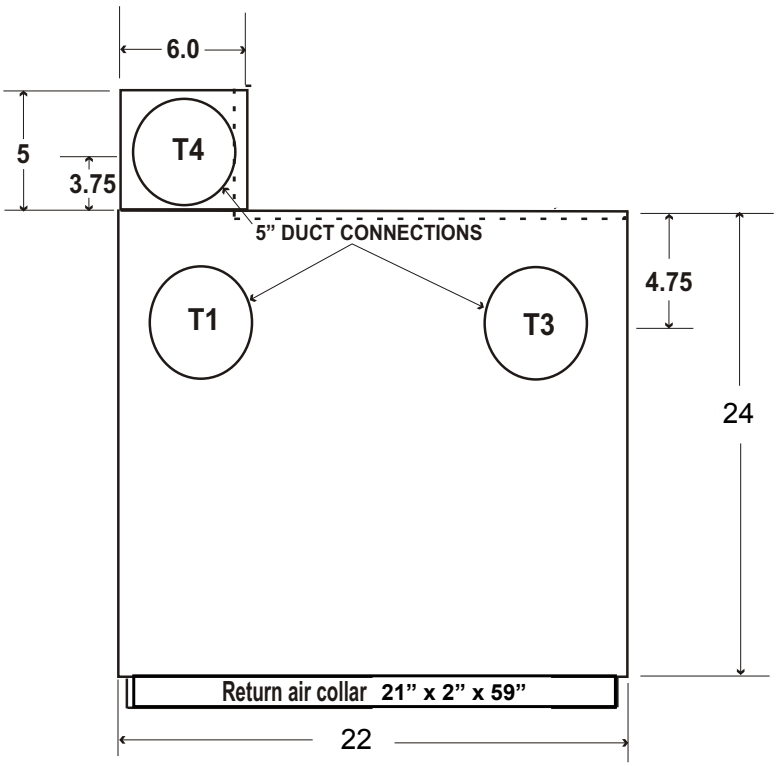


Riser shown on Right Hand

T1 FRESH AIR FROM OUTDOORS
T3 STALE EXHAUST AIR FROM INDOORS/BATHROOM
T4 EXHAUST AIR TO OUTDOORS

FROM ENERZONE

VFC-ERV FAN COIL RISER DETAIL AND SLEEVE LOCATION



Left Back Exhaust Location shown, Right is opposite

ERV 350 thru 800 Model

FROM ENERZONE

VFC-ERV FAN COIL RISER DETAIL AND SLEEVE LOCATION FOR BACK RISER UNITS

EMR-309-381-200-CL-S

General Information

Model:	Residential, M-Series	**Elevation:**	0 **ft**	**Weight:**	8.01 **lbs.**
Frame Type:	Plastic, Coroplast L Frame	**Pressure:**	1013 **mbar**	**Tag:**	

Design Conditions

	Summer		Winter		
	Outdoor	Return	Outdoor	Return	
Standard Airflow:	50	50	50	50	CFM
Dry Bulb Temp:	95	75	-13	70	F
Wet Bulb Temp:	79.1	64.6	-13.2	60.1	F
Relative Humidity:	49.4	57	87.5	56.1	%

Product Dimensions

A-Width:	15 **in**
B-Plate Size:	12.2 **in**
C-Plate Spacing:	2 **mm**
D-Diagonal:	17.3 **in**
G-Number of Sections:	1

	Summer		Winter	
	Outdoor (OA)	Return (RA)	Outdoor (OA)	Return (RA)
Airflow CFM:	50	50	50	50
Dry Bulb Temp °F:	95	75	-13	70
Wet Bulb Temp °F:	79.1	64.6	-13.2	60.1
Enthalpy (H) kW:	42.48	29.65	-2.75	26.44
Moisture Ratio (MR) grains/lb:	124.66	74.31	2.39	61.6
Energy (Q) Btuh:	9746	29.65	-630	6067

	Summer		Winter	
	Exhaust (EA)	Supply (SA)	Exhaust (EA)	Supply (SA)
Airflow CFM:	50	50	50	50
Dry Bulb Temp °F:	91.6	78.5	1.9	55.6
Wet Bulb Temp °F:	75.9	68.7	1.9	49.8
Enthalpy (H) kW:	39.26	32.88	1.38	20.16
Moisture Ratio (MR) grains/lb:	109.48	89.49	6.05	43.74
Energy (Q) Btuh:	9006	7543	317	4625

	Summer	Winter
Supply pressure drop (PD) in.wg:	0.11	0.11
Exhaust pressure drop (PD) in.wg:	0.14	0.14
Sensible effectiveness %:	82.7	82.7
Latent effectiveness %:	69.8	69.8
Total effectiveness %:	74.9	78.5
Energy Recover Ratio %:	74.9	78.5
Supply air face velocity SFPM:	40	40
Exhaust air face velocity SFPM:	40	40
Moisture removed grains/lb:	1.15	1.36
Total energy saved Btuh:	2204	5256
Energy balance %:	82.7	82.7
Water balance %:	69.8	69.8

EMR-309-381-200-CL-S

General Information

Model:	Residential, M-Series	**Elevation:**	0 **ft**	**Weight:**	8.01 **lbs.**
Frame Type:	Plastic, Coroplast L Frame	**Pressure:**	1013 **mbar**	**Tag:**	

Design Conditions

	Summer		Winter		
	Outdoor	Return	Outdoor	Return	
Standard Airflow:	60	60	60	60	CFM
Dry Bulb Temp:	95	75	-13	70	F
Wet Bulb Temp:	79.4	65	-13.2	60.6	F
Relative Humidity:	50.2	58.5	87.5	58.1	%

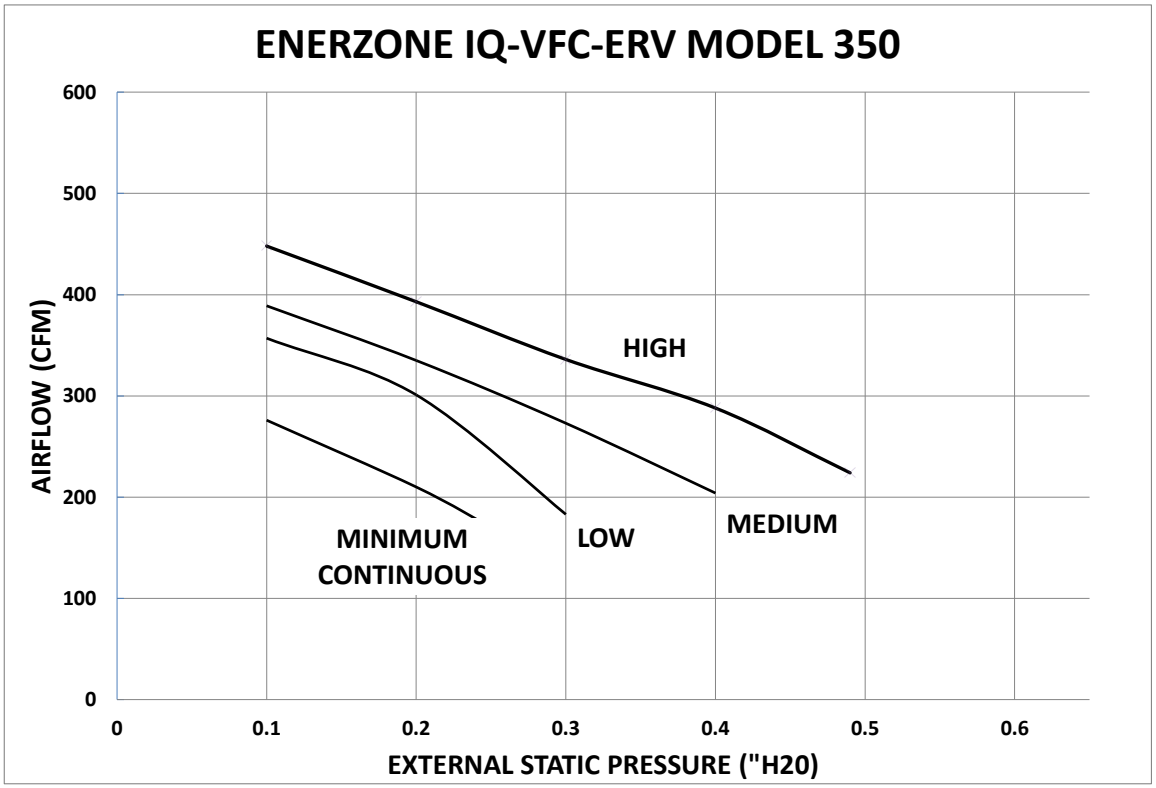
Product Dimensions

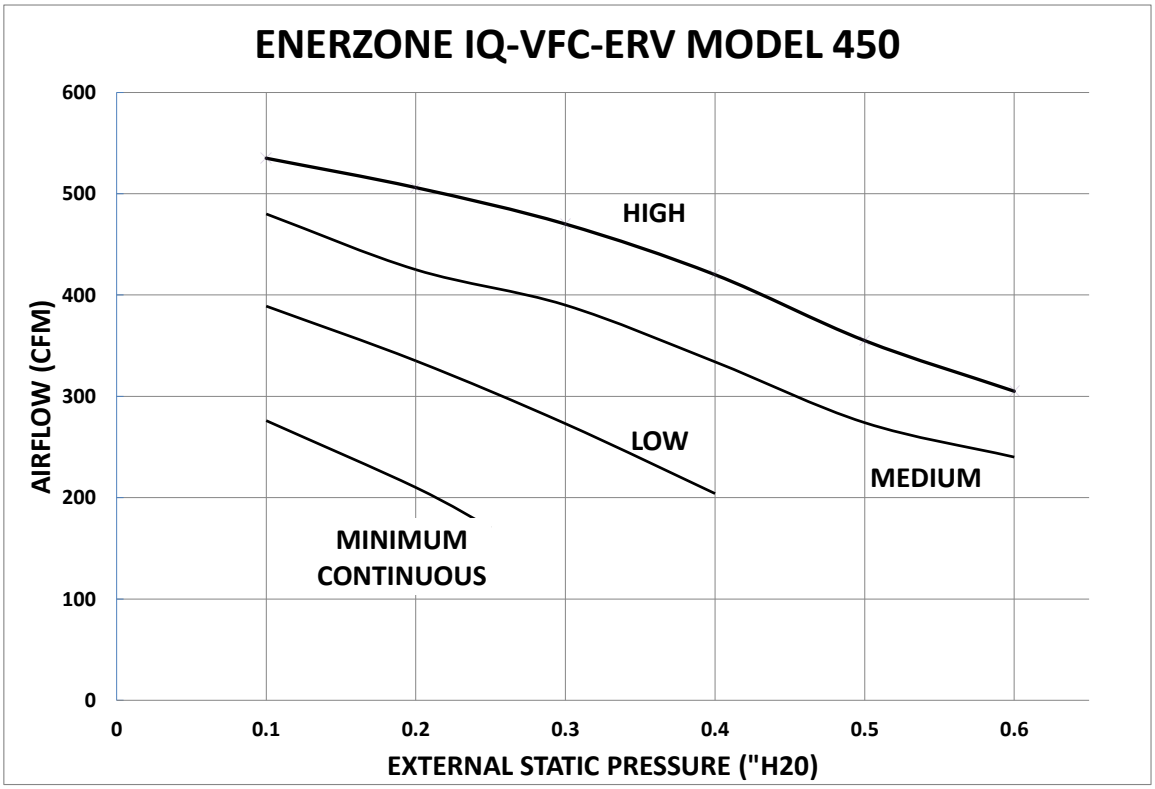
A-Width:	15	**in**
B-Plate Size:	12.2	**in**
C-Plate Spacing:	2	**mm**
D-Diagonal:	17.3	**in**
G-Number of Sections:	1	

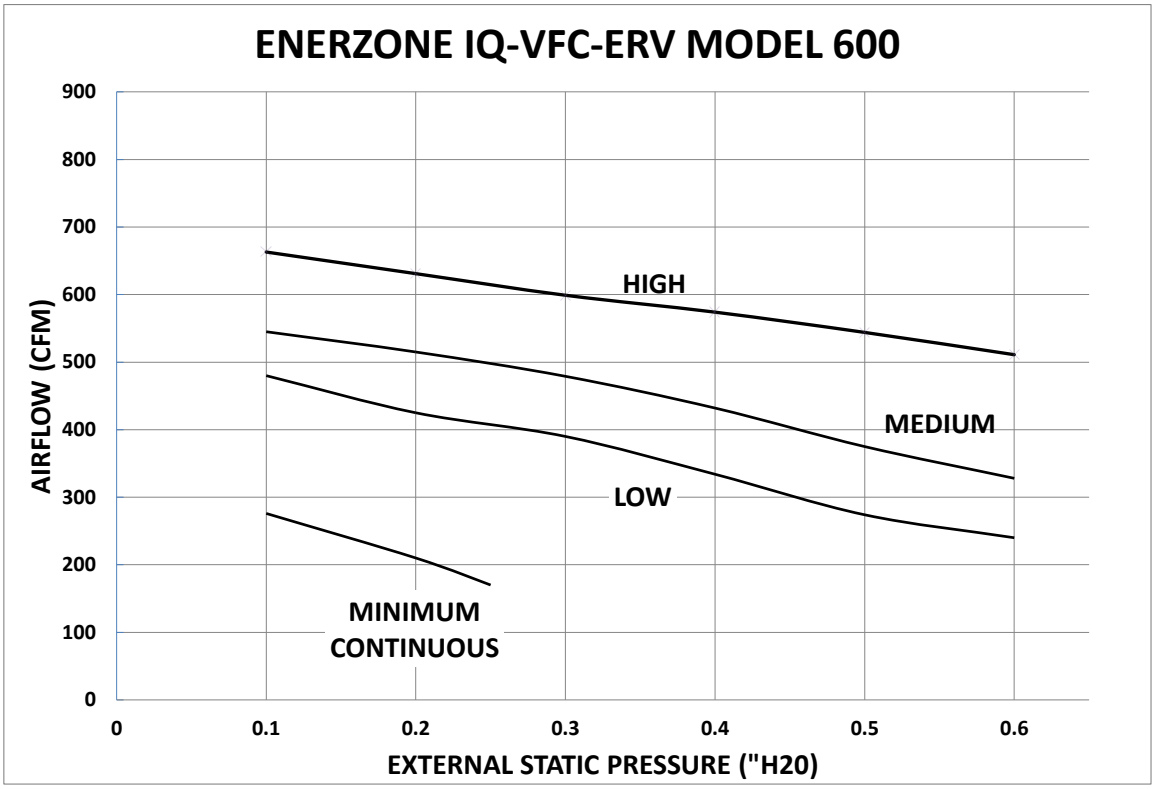
	Summer		Winter	
	Outdoor (OA)	Return (RA)	Outdoor (OA)	Return (RA)
Airflow CFM:	60	60	60	60
Dry Bulb Temp °F:	95	75	-13	70
Wet Bulb Temp °F:	79.4	65	-13.2	60.6
Enthalpy (H) kW:	42.8	29.96	-2.75	26.79
Moisture Ratio (MR) grains/lb:	126.68	76.26	2.39	63.81
Energy (Q) Btuh:	11783	29.96	-756	7375

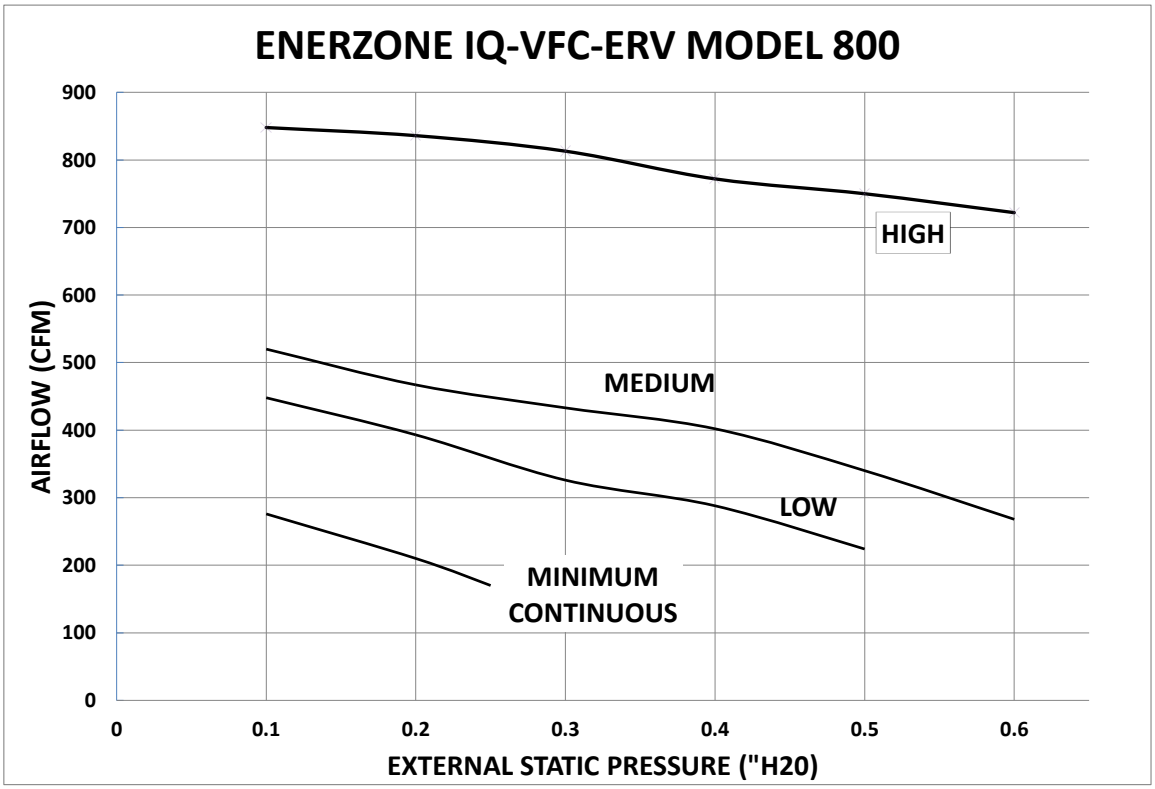
	Exhaust (EA)	Supply (SA)	Exhaust (EA)	Supply (SA)
Airflow CFM:	60	60	60	60
Dry Bulb Temp °F:	91.5	78.6	2.6	54.9
Wet Bulb Temp °F:	76	69.3	2.6	49.6
Enthalpy (H) kW:	39.39	33.37	1.61	20.05
Moisture Ratio (MR) grains/lb:	110.59	92.35	6.3	44.21
Energy (Q) Btuh:	10844	9186	443	5520

	Summer	Winter
Supply pressure drop (PD) in.wg:	0.12	0.12
Exhaust pressure drop (PD) in.wg:	0.15	0.15
Sensible effectiveness %:	81.8	81.8
Latent effectiveness %:	68.1	68.1
Total effectiveness %:	73.4	77.2
Energy Recover Ratio %:	73.4	77.2
Supply air face velocity SFPM:	48	48
Exhaust air face velocity SFPM:	48	48
Moisture removed grains/lb:	1.35	1.64
Total energy saved Btuh:	2597	6277
Energy balance %:	81.8	81.8
Water balance %:	68.1	68.1


ENERZONE IQ-VFC-ERV MODEL 350
AIRFLOW (CFM)
600
500
400
300
200
100
0
0
0.1
0.2
0.3
0.4
0.5
0.6
EXTERNAL STATIC PRESSURE ("H20)
HIGH
MEDIUM
LOW
MINIMUM
CONTINUOUS


ENERZONE IQ-VFC-ERV MODEL 450
AIRFLOW (CFM)
600
500
400
300
200
100
0
0
0.1
0.2
0.3
0.4
0.5
0.6
EXTERNAL STATIC PRESSURE ("H20)
HIGH
LOW
MEDIUM
MINIMUM
CONTINUOUS


ENERZONE IQ-VFC-ERV MODEL 600
AIRFLOW (CFM)
900
800
700
600
500
400
300
200
100
0
HIGH
MEDIUM
LOW
MINIMUM
CONTINUOUS
0
0.1
0.2
0.3
0.4
0.5
0.6
EXTERNAL STATIC PRESSURE ("H20)

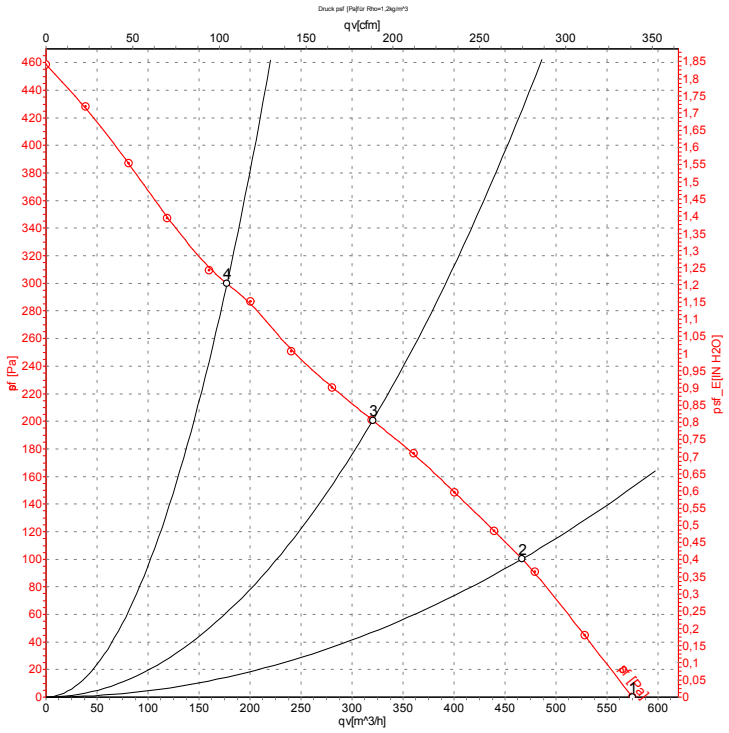

ENERZONE IQ-VFC-ERV MODEL 800
AIRFLOW (CFM)
900
800
700
600
500
400
300
200
100
0
HIGH
MEDIUM
LOW
MINIMUM
CONTINUOUS
0
0.1
0.2
0.3
0.4
0.5
0.6
EXTERNAL STATIC PRESSURE ("H20)

R2E190-RA50-16

AC centrifugal fan - RadiCal

backward curved, single inlet

Charts: Air flow 60 Hz



Measurement: LU-128367

Air performance measured as per ISO 5801 Installation category A. For detailed information on the measuring set-up, please contact ebm-papst. Suction-side noise levels: LwA measured as per ISO 13347 / LpA measured with 1m distance to fan axis. The values given are valid under the measuring conditions mentioned above and may vary according to the actual installation situation. With any deviation from the standard set-up, the specific values have to be checked and reviewed with the unit installed.

1.4" @ 75 CFM

Measured values

	U	f	n	P_e	I	qv	p_{sf}
	V	Hz	min^{-1}	W	A	m^3/h	Pa
1	115	60	2750	60	0.53	580	0
2	115	60	2575	63	0.55	465	100
3	115	60	2450	66	0.59	320	200
4	115	60	2630	62	0.54	175	300

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SEQUENCE OF OPERATIONS
IQ Vertical Fan Coil [VFC] with ERV and Positive Protect™

Principal System Components include:

- ECM Motor on main blower
- ERV with two small blowers and motorized damper system for defrost/outside air entry
- Motorized water control valve
- Remote-mounted low voltage thermostat with On/Auto and 3 Speed Operation

1. When the front-mounted system switch is “OFF”, the complete system is off.

NORMAL OPERATION MODE

2. By switching the front-mounted switch to the “ON” position, the VFC’s main blower fan will run in a continuous low speed mode.

3. By switching the front-mounted ERV switch to the “ON” position, the ERV’s two blowers will operate continuously in low speed and motorized damper will be activated thus allowing outside fresh air to enter the ERV.

4. When the remote mounted thermostat has its Fan setting on “AUTO”, it will cause the blower to operate at increased speed(s) to meet the heating or cooling demand as called for by the temperature setting on the thermostat. When there is a call for heating or cooling, the motorized water control valve opens in concert with the increased blower speed to allow hot or cool water to flow through the water-to-air coil. After the heat/cool demand is met, the blower will drop back to a continuous low speed and the water control valve will close.

5. In Summer, when there is chilled water in the system, should there be a call for HEAT [as can happen regularly in the “shoulder seasons”], the motorized water control valve will remain closed, the auxiliary electric heater will be activated and the blower speed increased. After the HEAT demand is met, the blower will go back to a continuous low speed and the electric heater de-activated.

6. When the remote-mounted thermostat has its Fan switch in the “Low”, “Medium”, or “High” setting, the blower will maintain those settings indefinitely.

7. The ERV will OPERATE in a continuous low speed mode [both the supply air and exhaust air blowers] until the low-voltage remote switch [bathroom mounted] is activated, then the blowers will move to HIGH speed for 20/40/60 minutes as selected by occupant. Re-activating the remote switch anytime after the 20 minutes will cause the ERV to operate on HIGH speed for 20/40/60 minutes again.

8. The ERV has an automatic DEFROST mode that is activated when a temperature sensor in the fresh air supply stream sees a condition of -5°C or less. In defrost mode, the fresh air supply is blocked by a motorized damper which simultaneously opens the supply air path to ambient [warm] room air to assist in a speedy defrost. Both ERV blowers continue to operate during defrost. This will continue for a period of 5 minutes and then return to normal operation for a period of 20 minutes. When the temperature in the fresh air supply stream is -25°C or lower, the defrost time automatically moves to 10 minutes (from 5 minutes).

9. The POSITIVE PROTECT mode is designed to help protect the VFC’s water-bearing components from freezing should some condition occur that allows the temperature in the blower/water coil area to drop below 38°F. A temperature sensor that is mounted opposite the blower air inlet will signal the control circuit board if a condition below 38°F occurs and that will cause three (3) actions to occur:

    a. The water control valve will open to allow warm/hot water to flow.
    b. The ERV blowers will de-activate.
    c. The ERV air inlet/defrost damper will be de-energized and close via its spring return.

    This operation will continue as long as the sensor sees a condition lower than 38°F.

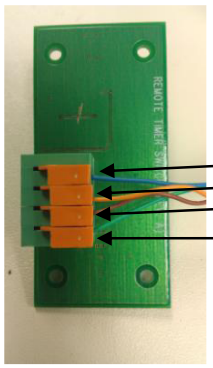
WIRING the Switches for the HRV /ERV Control System

Overview

This document provides you a detailed description of how to connect the switches to the main circuit board, inside the fan coil.

Figure 1: Wire Connections on the Switch

Make sure that you connect the switch like the picture. First position the switch to look like the picture. Insert the wires by simply pushing them into the appropriate opening. They should lock in place. If you make a mistake and need to remove a wire, slide the orange lever back to release it.

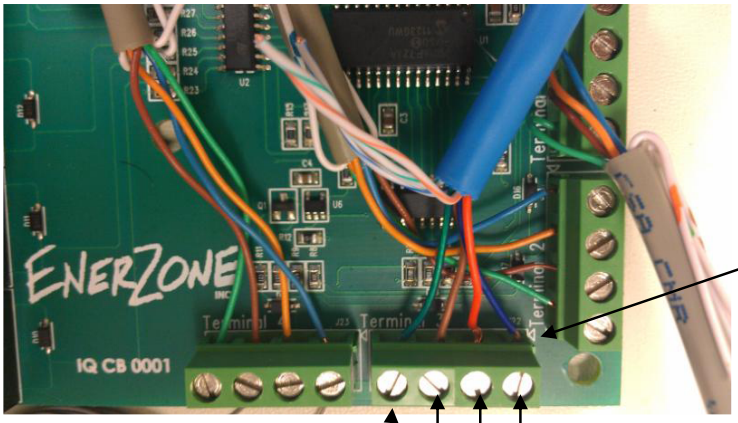


The following wires are plugged in from top to down of the diagram

Blue—Power wire
Orange— Ground wire
Brown—Signal input wire
Green—Signal output wire

Figure 2: Connecting the Switches to the Board.

*Note there is a terminal for each of the switches and the connections are the same for all. Below is an example of how to connect one terminal. Do the same for all. Use a screw driver to unscrew the terminals and place the wires in and tighten the screws back.

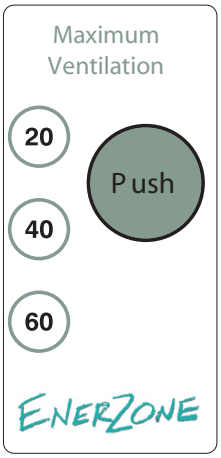


The small arrow on the board will help indicate where to position the first wire This is typical for each terminal connector for the speed switch..

Blue—Power wire
Orange—Ground wire
Brown—Signal input
Green—Signal output

IMPORTANT: If the wires are incorrectly connected you may short out the board/switches. Also if the wires are loose, the light sequence on the switches will not work correctly.

Maximum Ventilation Push Button Timer Switch Operation



This shows the timer switch that may be controlling the ventilation speed of the HRV/ERV portion of the Fan coil unit.

When not in use the switch will display no lights and the blowers in the HRV/ERV will be running at their constant low speed.

Pressing the Push area of the switch once will advance the ventilation to high speed for a period of 20 minutes. A light will also appear behind the number 20 on the switch plate.

A second push of the switch will advance the ventilation to high speed for a period of 40 minutes. A light will also appear behind the number 40 on the switch plate.

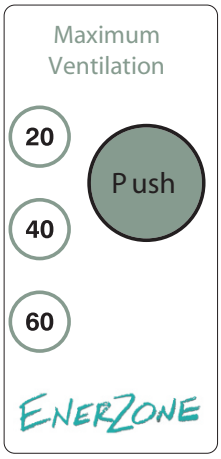
A third push of the switch will advance the ventilation to high speed for a period of 60 minutes. A light will also appear behind the number 60 on the switch plate.

Pressing the Push area of the button while the 60 minute cycle is indicated will return the ventilation speed back to continuous low speed and all the lights will be "off".

20 minute cycle time indicator light

40 minute cycle time indicator light

60 minute cycle time indicator light



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Owner maintenance Manual

Energy Recovery Ventilator

ERV

The Energy recovery ventilator portion of you integrated fan coil is an integral part of you home's ventilation design. This new and innovative system provides state of the art performance in high-rise residential condominiums. Simply put, your ERV allows better air quality by the delivery of fresh air directly into your home, while recovering 60% to 70% of the energy of you outgoing air.

Operation:

In the winter, as warm, stale air is exhausted from you living space, the heat from this air stream is used to warm the fresh, cold incoming air before it is mixed with conditioned air being distributed by the Integrated Fan coil. In summer, the cooler, air conditioned exhaust is used to cool the incoming fresh air in the same manner. The two air streams never mix but they transfer or "share" the energy so that it saves you money while working to save the environment.

The ERV portion of your integrated Fan coil is controlled from a wall mounted switch usually located in the bathroom. The unit runs at a constant low continuous speed all the time in order to maintain a calculated number of exchanges per hour.

The wall switch located in the bathroom can be used to cycle the unit to high speed for a period of 20, 40, or 60 minutes for those times when more ventilation is required.

Main air filter:

Located in the return air panel should be replaced on a regular basis. Most commonly every 6 months. Only use a filter of exactly the same size as the replacement. Using a different filter with a high pressure drop will affect the performance capability of the unit.

ERV filters: (Clean twice per year)

Located on the top left and right side of the ERV core should be cleaned every 6 months. To access these filters you must remove the core access panel to expose the ERV core. Remove the two wing nuts being careful not to drop them into the blower area. Then pull the access door forward at the top of the door until the threaded bolts clear the door panel. Once you have the door clear of the bolts you can lift the door up and remove the panel completely.

You will now be able to see the filters. The filters are a mesh contained in an aluminum fame. You will be able to slide the filters forward out of the filter guides located on the top centre of the core.

Filters can be rinsed with water or a combination of mild soap and water. Do not clean in dishwasher. Allow to dry after washing and put back in place.

ERV Core: (Clean once per year)

Vacuum only, with a soft bristle brush to remove any dust or debris.
Do Not pressure wash or put in dishwasher.
Core can be removed by carefully grabbing the ends of the core and pulling/sliding it towards you. The core is held in place by four plastic channels on its corners. Once the core has been pulled out of the channels you will be able to lift the core above the electrical area and move to an area to be cleaned.

To re-install the clean core do the following.

First ensure the core is being positioned with the labels frontward, and the text in the upright position.
Align the bottom core guide with the sheet metal locater in the drain pan.
Start the core guide onto the sheet metal guide approximately ¼" (6mm)
Do the same for both the left and right side, and then align the top in the same manner as the bottom.
With all four core guides started, push gently but positively in the centre of the core until the core makes contact with the back of the unit.
The core may appear to stick out from the opening a tiny bit. This is normal so as to produce a tight seal when the door panel is replaced.

HRV/ERV Motors:
These motors are maintenance free. They can also be vacuumed with a soft bristle brush if necessary, if there is a dust buildup on them.

If you notice dirt or debris in the side walls of the air chambers you can use a damp cloth to wipe them down.

Main Blower Area:

Any work done in this area other than seasonal cleaning should be performed by a qualified HVAC technician!

Turn electrical power "OFF" to the unit at the main breaker panel. Severe injury can occur from various components in this area!

To access the main blower you must remove the lower door panel. This is accomplished by removing the two screws located in the top corners of the door panel. You can then tilt the top of the door panel towards you and lift up slightly removing the lower flange of the door from its sealing position

You can vacuum the water coil to remove dust and dirt if necessary. Care must be taken when doing this as the coil fins are aluminum and can be damaged very easily. A soft bristle brush must be used gently if there is dirt present that needs to be dislodged from the fins.

Drain pan:
The condensate drain pan has a clear plastic hose that forms a P-trap underneath the drain pan that connects your unit to the main condensate riser. A visual inspection of the clear hose should be done prior to the cooling season to be sure that no debris has clogged the line. Water may or may not be present in the trap area due to evaporation. A cup of water can be poured into the drain pan to check the flow and also fill the trap.

Please see Thermostat instructions for any questions related to programming or trouble shooting.

Any electrical work should be done by a qualified electrician.

Any plumbing issues related to the fan coil must be done by a qualified plumber that is familiar with the building system as each unit is connected to the entire building system. The isolation valves in the unit must be in the "OFF" position prior to any plumbing associated work. It is a recommended practice that the main riser be drained before working on any of the internal plumbing components.

Warranty claims and replacement parts.

Only factory supplied replacement parts should be used if failure occurs. When ordering a part, please provide the unit model number and serial number which can be found in the electrical area of the upper section.
All warranty claims must have a warranty claim form filled out. All warranty parts orders must have a purchase order number so that an invoice can be issued. Upon receipt of the defective part, a credit may be issued if part is found to be defective after inspection by factory technician.

OPTIONAL

AMERICAN aldes VENTILATION CORPORATION

Constant Airflow Regulator
Model CAR Classic

PRODUCT SPECIFICATIONS and ENGINEERING INFORMATION

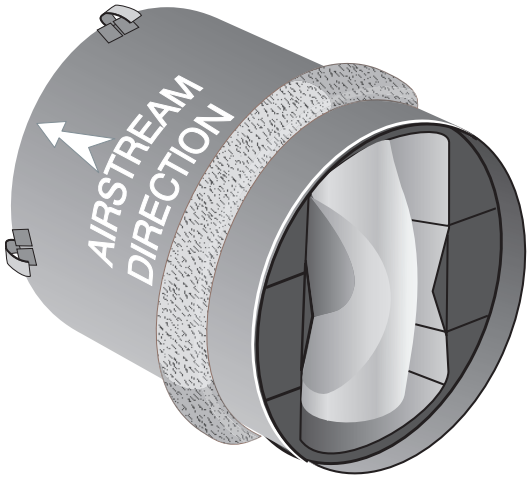
0810

General: The model CAR Constant Airflow Regulator is a modulating orifice that automatically regulates airflows in duct systems to constant levels. The passive control element responds to duct pressure, and requires no electric or pneumatic sensors or controls.

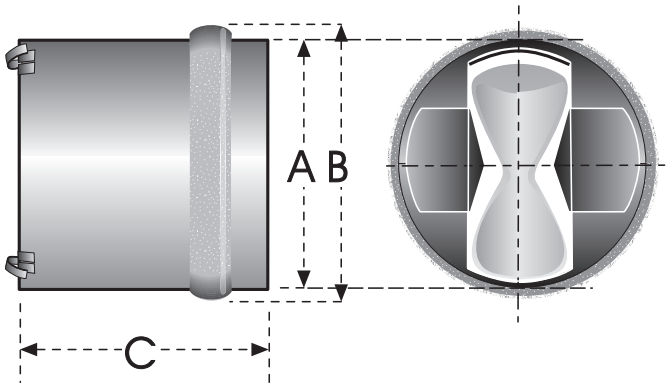
The CAR compensates for changes in duct pressure caused by thermal stack effect, building pressure, dust clogging of filters, etc. The CAR also provides a low cost solution to balancing forced air systems for heating, air conditioning and ventilation, eliminating the need for on-site balancing. The CAR will regulate airflow in supply, return or exhaust duct systems.

The active control element of the CAR is a flexible bulb, which inflates and deflates in response to the static pressure difference across the control. This operation regulates the free-area opening through the control, resulting in maintenance of velocity and specific airflow set points. Each CAR is designed and produced for control of air in temperatures ranging from -25° to 140° F (-32° to 60° C.)

Construction: The round CAR regulating element is housed in a heavy gauge rolled galvanized steel sleeve. Each sleeve is seam welded to prevent leakage. The assembly is sized to fit inside standard rigid round ducting, as well as fittings such as take-offs, tees, etc. A brush or flex-type ring seal gasket around the circumference ensures a tight, no-leak fit. Spring action metal clips on the housing grip the interior of the duct or fitting to secure the control firmly in place with minimal installation effort.



Dimensional Data



Duct	CAR	A	B	C
4”	4	3.9	4.1	3.1
5”	5	4.8	5.0	5.4
6”	6	5.7	6.3	5.4
8”	8	7.7	8.1	6.1
10”	10	9.7	10.0	7.5

All sizes shown in inches

Performance: The CAR airflow regulators control airflow accurately to within 10% of rated flow (15% for units 50 cfm or less), throughout the target operating pressure range of 0.2 to 0.8 in. w.g. (50 to 200 Pa). Each CAR is factory tested and calibrated to the rated set point before shipping. On-site field adjustment of airflow set points can be made for supply air applications (contact factory). Each diameter of CAR regulator is available in multiple factory calibrated set points (see performance curves).

Maintenance: The CAR needs no maintenance when used in normal conditions. There is no risk of dust deposit or obstruction because the CAR has no airways subject to clogging. If the intended application includes air heavily loaded with grease or dust, a fitting with an access panel or door, such as that used for flame dampers, should be provided.

Warranty: Guaranteed for 5 years, from date of shipment, against all defects in material or workmanship, provided that the material has been installed and utilized under normal conditions. This warranty is limited to the repair or replacement of the material.

Typical Applications

- **Supply and exhaust air of offices.**
- **Balancing exhaust and supply airflows in high-rise building duct risers.**
- **Bathroom exhaust in nursing homes, hotels, motels, dormitories, apartment buildings, offices, etc.**
- **Clean room air supply balancing for ceiling filter modules. Maintains constant airflow even as filter resistance increases.**
- **Regulation of makeup air.**
- **Balancing supply airflow from packaged roof top A/C units.**
- **Balancing supply and exhaust of heat recovery ventilation systems**
- **Regulating outdoor air injection from central supply fan into individual room fan coil units, or heat pumps.**
- **Balancing airflows on series fan powered terminal unit systems.**
- **Supply air to sleeping quarters in military facilities, submarines, etc.**

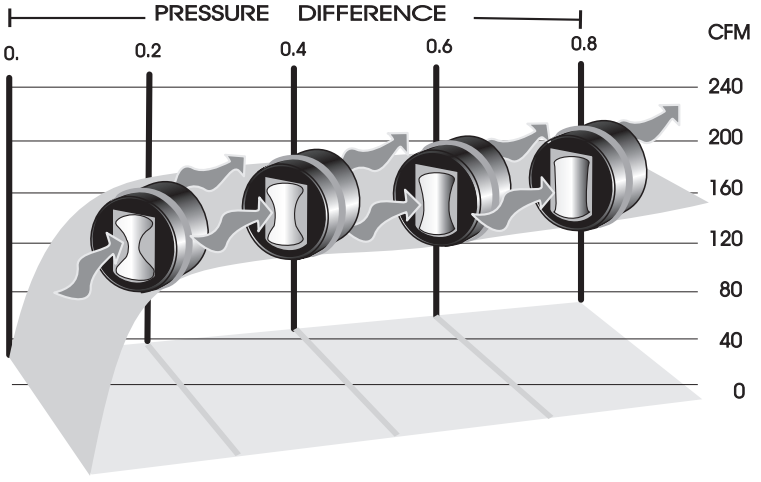
Typical Specification

Model CAR Constant Airflow Regulators by **American ALDES Ventilation Corporation,** Sarasota, Florida, shall solely operate on duct pressure and require no external power supply. Each regulator shall be preset and factory calibrated requiring no field adjustment to the airflows as indicated on the schedule, and shall be rated for use in air temperatures ranging from -25° to 140° F *(-32° to 60° C.)*

Constant airflow regulators shall be capable of maintaining constant airflow within +/- 10% of scheduled flow rates *(15% for units 50 cfm or less)*, within the operating range of 0.2 to 0.8 in. w.g. differential pressure, or 0.6 to 2.4 in. w.g. on high-pressure models. Sound power levels shall not exceed those for each size and cfm rating as scheduled. Regulators shall be provided as an assembly consisting of a flame resistant plastic body with self-inflating silicon element housed within a .75mm galvanized steel sleeve or flanged plate for mounting in either round or rectangular duct. Each round sleeve must be fitted with a brush gasket to assure perimeter air tightness with the interior surface of the duct. All Constant Airflow Regulators will require no maintenance and must be warranted for a period of no less than five years. Constant Airflow Regulators shall be installed in tight ducting systems in accordance with all applicable codes and manufacturer's instructions..

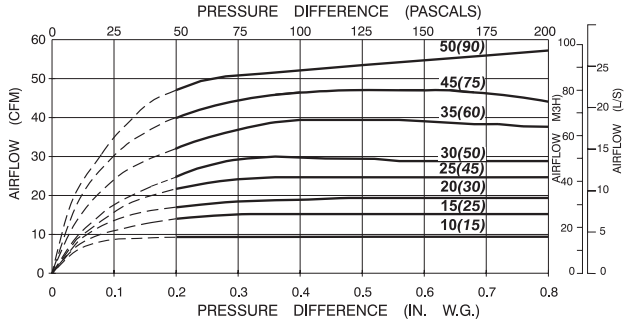
How the CAR Works

How the CAR Works: Constant airflow is achieved by the inflating action of CAR's bulb. At minimum static air pressure, the bulb is deflated and has the shape similar to an hourglass. As the static pressure increases across the bulb, it inflates, thereby reducing the free area around the bulb. At the same time, the higher static pressure increases the air velocity resulting in CONSTANT AIRFLOW. This occurs regardless of pressure differences in the range of 0.2 to 0.8 in. w. g. *(50 to 200 Pa).* The air velocity in the duct is in the range of 60 to 700 ft/min. *(0.3 to 3.5 m/s).*



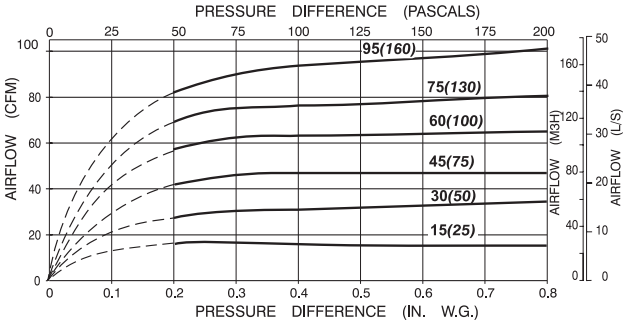
CAR Airflow Performance Data: Performance charts reflect airflow measurements taken at 68° (20° C) at 1 atmosphere pressure. CAR's designed for system pressures above 0.8 in. w.g. are also available. Consult the factory for information.

4"DIA. (100mm)



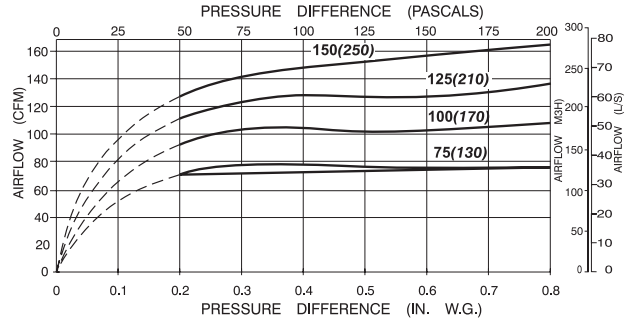
P/N #16 330 **10 cfm** *(15 m3/h)*
#16 336 **15 cfm** *(25 m3/h)*
#16 331 **20 cfm** *(30 m3/h)*
#16 332 **25 cfm** *(45 m3/h)*
#16 337 **30 cfm** *(50 m3/h)*
#16 333 **35 cfm** *(60 m3/h)*
#16 334 **45 cfm** *(75 m3/h)*
#16 335 **50 cfm** *(90 m3/h)*

5" DIA. (125mm)



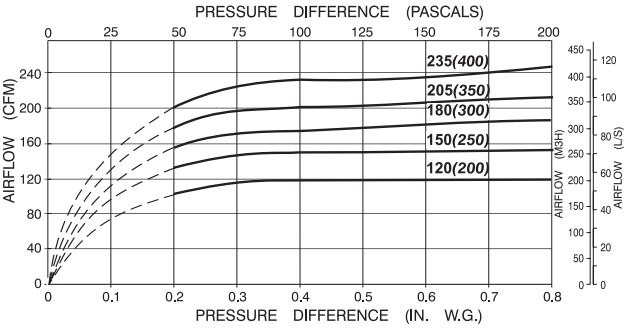
P/N #16 340 **15 cfm** *(25 m3/h)*
#16 341 **30 cfm** *(50 m3/h)*
#16 342 **45 cfm** *(75 m3/h)*
#16 343 **60 cfm** *(100 m3/h)*
#16 344 **75 cfm** *(130 m3/h)*
#16 345 **95 cfm** *(160 m3/h)*

6" DIA.(150mm)



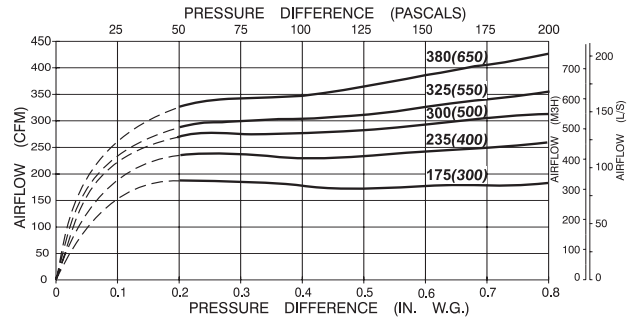
P/N #16 370 **75 cfm** *(130 m3/h)*
#16 371 **100 cfm** *(170 m3/h)*
#16 372 **125 cfm** *(210 m3/h)*
#16 373 **150 cfm** *(250 m3/h)*

8" DIA. (200mm)



P/N #16 360 **120 cfm** *(200 m3/h)*
#16 361 **150 cfm** *(250 m3/h)*
#16 362 **180 cfm** *(300 m3/h)*
#16 363 **205 cfm** *(350 m3/h)*
#16 364 **235 cfm** *(400 m3/h)*

10" DIA. (250mm)



P/N #16 366 **175 cfm** *(300 m3/h)*
#16 365 **235 cfm** *(400 m3/h)*
#16 367 **300 cfm** *(500 m3/h)*
#16 368 **325 cfm** *(550 m3/h)*
#16 369 **380 cfm** *(650 m3/h)*

ACOUSTIC PERFORMANCE

AIRFLOW				0.2 In. w.g. (50 PA)									0.4 In w.g. (100 PA)									0.6 In. w.g. (150 PA)									0.8 In w.g. (200 PA)								
CAR DIA.	CFM	m3/h	L/s	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Lw - dB (A)	Lw - NR	Lw - NC	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Lw - dB (A)	Lw - NR	Lw - NC	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Lw - dB (A)	Lw - NR	Lw - NC	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	Lw - dB (A)	Lw - NR	Lw - NC
TEST WITHOUT ACOUSTICALLY LINED DUCT	10	15	4	15	14	12	9	11	11	18	17	15	15	14	21	22	11	12	24	21	20	21	14	21	25	11	12	27	25	23	22	14	25	29	19	12	31	29	28
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100mm	50	90	25	25	27	26	23	16	12	28	23	21	32	38	35	31	27	24	37	32	30	36	43	40	34	31	30	42	37	35	37	36	44	39	32	32	43	40	39
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TEST WITH ACOUSTICALLY LINED DUCT	15	25	7	-	-	-	-	-	-	<15	<10	<10	25	15	20	-	-	-	19	15	14	26	17	22	-	-	-	20	17	15	26	19	24	-	-	-	22	20	17
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TEST WITHOUT ACOUSTICALLY LINED DUCT	15	25	7	21	14	17	12	11	12	20	18	15	27	21	30	22	16	12	29	26	24	28	23	32	23	19	17	31	28	26	28	25	34	25	21	20	33	30	29
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TEST WITH ACOUSTICALLY LINED DUCT	15	25	7	-	-	-	-	-	-	<15	<10	<10	25	15	20	-	-	-	19	15	14	26	17	22	-	-	-	20	17	15	26	19	24	-	-	-	22	20	17
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TEST WITHOUT ACOUSTICALLY LINED DUCT	75	130	36	18	27	31	20	21	11	31	27	25	29	34	38	26	30	22	37	34	33	29	37	43	31	32	25	42	39	38	34	41	44	33	34	27	44	41	39
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150mm	75	130	36	16	23	25	-	-	-	23	21	19	27	30	32	11	-	-	30	29	26	27	33	37	16	17	-	35	33	32	32	37	38	18	-	11	36	33	33
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TEST WITH ACOUSTICALLY LINED DUCT	125	210	58	16	25	27	12	-	-	25	23	21	32	31	34	16	10	-	32	31	29	35	37	39	20	23	13	37	34	34	38	41	43	24	16	19	41	39	38
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TEST WITHOUT ACOUSTICALLY LINED DUCT	120	200	56	25	28	28	22	18	12	28	24	22	32	39	37	31	31	20	39	34	32	34	41	42	34	33	26	41	38	39	36	44	44	37	34	30	45	41	39
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	120	200	56	24	25	20	-	-	-	21	15	14	31	36	29	-	-	-	30	26	24	33	38	34	-	-	13	33	30	29	35	41	36	12	-	17	36	33	31
	150	250	69	26	25	20	-	-	-	21	15	14	31	32	28	-	-	-	28	24	22	34	38	34	-	-	13	34	30	29	39	41	37	12	-	18	37	33	32
TEST WITH ACOUSTICALLY LINED DUCT	180	300	83	28	25	22	-	-	-	22	17	15	32	31	29	-	-	-	28	24	23	34	38	34	10	-	16	34	30	29	39	40	37	13	12	21	37	33	32
	205	350	97	27	24	23	-	-	-	22	18	16	31	32	29	-	-	17	29	24	22	34	38	34	10	11	18	34	30	29	42	44	39	16	15	23	39	35	34
	235	400	111	29	26	24	-	-	-	23	20	17	34	33	29	10	-	17	29	25	22	39	40	36	13	12	18	34	31	31	43	45	41	16	15	23	40	36	36
TEST WITHOUT ACOUSTICALLY LINED DUCT	175	300	83	26	28	31	23	20	13	30	27	25	33	40	38	32	32	21	39	36	33	35	42	43	34	35	27	43	38	38	37	45	45	38	35	31	45	41	40
	235	400	111	28	28	30	23	22	16	30	26	24	33	38	37	32	31	21	38	35	32	37	43	42	34	34	28	42	37	37	40	45	46	38	35	33	46	42	41
	300	500	139	30	28	32	27	26	19	33	30	26	34	37	38	31	32	25	39	36	33	36	42	43	36	35	29	43	38	38	41	46	46	39	38	35	47	42	41
	325	550	153	30	29	32	29	28	18	34	32	28	34	37	38	35	34	32	41	37	35	37	43	42	36	36	30	43	40	37	44	48	48	42	42	36	49	45	44
10"	380	650	181	31	30	33	32	27	20	35	32	31	36	39	39	36	34	32	42	37	35	41	45	44	39	39	32	46	42	40	45	50	50	42	42	37	50	47	46
250mm	175	300	83	26	25	23	-	-	-	22	19	16	33	37	30	-	12	-	31	36	24	35	39	35	-	15	15	35	33	30	37	42	37	13	15	19	37	33	32
	235	400	111	28	25	22	-	-	-	22	18	15	33	35	29	-	11	-	30	35	23	37	40	34	-	14	16	35	33	29	40	42	38	13	15	21	38	34	33
	300	500	139	30	25	24	-	-	-	23	20	17	34	34	30	-	12	13	30	36	24	36	39	35	11	15	17	35	32	30	41	43	38	16	18	23	38	34	33
TEST WITH ACOUSTICALLY LINED DUCT	325	550	153	30	26	24	-	-	-	23	20	17	34	34	30	10	14	20	30	37	24	37	40	34	11	16	18	35	31	29	44	45	40	19	22	24	40	36	35
	380	650	181	31	27	25	-	-	-	24	21	18	36	36	31	11	14	20	32	37	25	41	42	36	14	19	20	37	33	31	45	47	42	19	22	25	42	38	37

SOUND PERFORMANCE TESTED USING ROUND DUCT.

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IQ VFC-DX ERV
- Net Zero Max core at 83% Effectiveness

CONSTRUCTION INFORMATION

PROJECT:

UNIT CASING: Satin Coat Galvanized steel lined with 0.5" Linacoustic (or equivalent) insulation.

COIL: 3/8" x 0.014" copper tubes and 3/8" x 0.020" copper 'U' bends mechanically bonded to 0.0045" aluminum fins. Galvanized steel end plates. Our three (3) circuit coil is "state of the art" and allows for lower fluid velocity and lower water pressure drop across the air coil (hence, less wear over time on copper). Maximum working pressure of the coil not to exceed 300 PSI.

COIL BRANCHES: 1/2" type 'L' copper attached to the riser stubs using 5% silfos.

ELECTRICAL DISCONNECT:

To meet electrical code, a unit mounted 25 Amp power disconnect switch is provided along with a 15 Amp "Littlefuse" for the electric heater and an appropriately sized "Littlefuse" for the electric motor.

BLOWER MOTOR:

Three speeds, thermally protected, ECM type

208/1/60

THERMOSTAT:

Honeywell TB7100A1000 24 VAC remote thermostat in standard white finish. Its controls offer a programmable temperature control with digital temperature readout.

The thermostat has a large clear display with backlight and push button switches including the following:

- System & fan button (heat, off, cool)
- Fan /auto
- Fan speed low/med/high
- Schedule button
- Clock and more button

ELECTRIC HEATING COIL:

208/1/60, All standard fan coils and ERV units have 3-5 KW electric heaters as per unit schedule.

AIR FILTER:

A. During construction, a 1" thick disposable glass-fiber media filter is supplied.

B. A 1" thick Merv 8 filter for units is supplied to the contractor to use when appropriate after construction.

UNIT MOUNTED SUPPLY AIR GRILLES:

OPTIONAL

Double deflection style with adjustable louvers. Opposed blade balancing dampers are included on the unit mounted grilles which are on the fan coils which have a top opening (ducted). Grilles are mounted to the fan coil unit with spring clips. Refer to the fan coil schedule for sizes.

REMOTE (DUCT MOUNTED) GRILLES:	Are to be supplied by the ventilation contractor and installed by the ventilation contractor.
RETURN AIR GRILLES:	Fixed horizontal blades. Mounted to the fan coil unit using friction clips and screws. 21”x 59” opening for IQ VFC-DX ERV models.opening for
GRILLE MATERIAL:	Light gauge steel construction, pre-painted in standard white paintable colour.
DUCT EXTENSIONS:	Are to be supplied by the ventilation contractor and installed by the ventilation contractor.
ERV CORE:	As supplied by D-Point
ERV BLOWER MOTORS:	Two high efficiency, backward inclined rotor blowers made by EBM Co. or equivalent.