



Outside Air Requirements...  
**SOLVED!**



*Advancing Ventilation™*

# The Whole Building Ventilation Standard

With houses and buildings being built as tightly as possible, we are plagued by unbalanced ventilation systems. This means we can have positive air pressure caused by exhausted air not being ventilated as fast as supply air comes in. Or, vice versa. There can be negative pressure with supply air not being brought in as fast as air is exhausted. This leads to too much moisture in the home or building and increased loads on the heating and cooling system. Poor ventilation can also cause unpleasant odors and buildup of contaminants such as radon, formaldehyde, and VOCs.



Ventilation is very important in an energy-efficient home. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has established the 62.2 standard which applies to all residential spaces that are “intended for human occupancy” in single family homes and multi-family structures up to three stories. These spaces include living rooms, bedrooms, kitchens, bathrooms, hallways, closets, store rooms, laundry rooms, garages, and basements. There are two components of the ASHRAE 62.2 standard that relate to ventilation fans: Whole Building Ventilation & Local Exhaust.



The 62.2 Standard (2013) Whole Building Ventilation requires that a home’s living area should be ventilated at a CFM rate determined by adding 1% of the conditioned space floor area to 7.5 times the number of bedrooms plus one [formula: minimum required CFM =  $0.01A + 7.5 (\# \text{ bedrooms} + 1)$ ]. Mechanical ventilation is required in tight homes to meet the minimum CFM requirement.

## Mechanical Ventilation for Whole Building Systems

There are four basic mechanical whole-house ventilation systems -- exhaust, supply, balanced, and energy recovery. Each system is briefly described in the following chart:

System	Description
Supply Ventilation System	<ul style="list-style-type: none"><li>• Fan used to pressurize the home, air leaks out of home through holes in the shell and exhaust fans</li><li>• Fresh air drawn in through air intake</li><li>• Air distributed using fan or duct system</li><li>• Ideal for hot or mixed climates</li></ul>
Exhaust Ventilation System	<ul style="list-style-type: none"><li>• Indoor air continuously exhausted to outdoors, typically by bathroom exhaust fan(s)</li><li>• Slightly depressurizes home</li><li>• Ideal for cold climates</li></ul>
Balanced Ventilation System	<ul style="list-style-type: none"><li>• Equal quantities of air brought into and exhausted out of the home</li><li>• Usually two fans, one for exhaust and one for supply</li><li>• Neither pressurizes or depressurizes the home</li><li>• Ideal for all climates</li></ul>
Energy Recovery	<ul style="list-style-type: none"><li>• Controlled ventilation of home that minimizes energy loss</li><li>• Heat Recovery Ventilator (HRV) or Energy Recovery Ventilator (ERV)</li><li>• Transfer heat in the winter and cools incoming air in the summer</li><li>• ERVs can remove or add humidity in winter and summer respectively</li></ul>

### Solutions from S&P

S&P is the world's leading producer of air movement products. We offer solutions for all four basic mechanical whole-house ventilation systems. In this brochure we will introduce our solution for Supply Ventilation Systems and the supply side of a Balanced Ventilation System. Refer to our Exhaust Ventilation or Energy Recovery Brochures for information on other Whole Building Ventilation solutions.



### reFresh for Supplying Outside Air

All-in-one units to introduce fresh air from the outside into the residence. The reFresh series is specifically engineered to meet building and energy codes that call for ASHRAE 62.2 CFM requirements. These units feature a high quality, efficient S&P backward inclined motorized impeller, heavy-duty galvanized construction, and integral metal duct collars designed for 6" round duct. The reFresh is designed for easy installation and maintenance, giving the homeowner the best IAQ solution in an all-in-one unit.



### reFresh Specifications

- Economical and efficient solution to bring in fresh air
- Excellent option to meet IRC, IMC, IECC, and more
- Works independently of the HVAC system
- Compact housing, designed to fit in most locations

### Housing/Duct Connections

- Low profile, galvanized, 26 ga, insulated housing
- Overall Dimensions (without control):  
RF8 - 8-1/2 x 9 x 19",  
RF10 - 10 x 10-1/4 x 22"
- Available with or without installed ES24V Control
- 6" round duct connectors
- Test port for easy air flow measurement
- 2" wide filter slot
- Integral backdraft damper (RF10 only)
- Integral mounting tabs allow mounting in any orientation
- 6' power cord standard (omit on UL 2043 licensed models)



### Blower/Motor

- Backward inclined wheel
- AC or Brushless DC Motors
- Speed controllable motor
- 4 pole motor, permanently lubricated, thermally protected
- 115/120V, 60 Hz
- Internally mounted speed control to set required intake with High, Medium, and Low set points.

### Certifications

- Meets codes: ASHRAE 62.2-2010, IRC 2012/2015, IMC 2012/2015, IECC 2015, CALGreen
- HVI certified performance with and without MERV13 filters
- RF10 models are AMCA Air and Sound Licensed with and without MERV13 filters
- Models with EC motors are ENERGY STAR® qualified
- cULus 705 listed for electrical reliability
- RF10 models are UL 2043 listed, Suitable for Use In Air Handling Spaces



## Model Overview

### RF8 – Low Profile Model Features

- Low profile, galvanized, 26 ga., insulated housing
- 6” round duct connectors with test port for easy air flow measurement
- 2” wide filter slot for optional 8 x 8 x 2” filters
- Integral mounting tabs allow mounting in any orientation
- Backward inclined wheel
- Speed controllable, AC or EC motor, 115/120V, 60 Hz
- 4 pole, permanently lubricated, thermally protected motor
- Internally mounted speed control to set required intake with high, medium, and low set points
- 6’ power cord
- EC motor models are ENERGY STAR® qualified
- HVI Certified performance with and without optional MERV13 Filters
- cULus 705 Listed

### RF10 – Standard Size Model Features

- Galvanized, 26 ga., insulated housing
- 6” round duct connectors with test port for easy air flow measurement
- Integral backdraft damper
- 2” wide filter slot for optional 10 x 10 x 2” filters
- Integral mounting tabs allow mounting in any orientation
- Backward inclined wheel
- Speed controllable, AC or EC motor, 115/120V, 60 Hz
- 4 pole, permanently lubricated, thermally protected motor
- Internally mounted speed control to set required intake with high, medium, and low set points
- Models with and without 6’ power cord
- EC motor models are ENERGY STAR® qualified
- AMCA Air and Sound licensed performance with and without optional MERV13 filters
- HVI Certified performance with and without optional MERV13 filters
- cULus 705 Listed
- Models with UL 2043 rating

Model #	Motor Description	CFM @ .2” SP (HVI Certified)*			ENERGY STAR® qualified	UL 2043 Listed	ES24V Control Included	Optional Filter Size (inches)
		Low Speed	Medium Speed	High Speed				
RF8-120AC	115V/60HZ, AC	40	90	140	No	No	No	8x8x2
RF8-120AC-ES24V	115V/60HZ, AC	40	90	140	No	No	Yes	8x8x2
RF8-120EC	115V/60HZ, Brushless DC	40	90	130	Yes	No	No	8x8x2
RF8-120EC-ES24V	115V/60HZ, Brushless DC	40	90	130	Yes	No	Yes	8x8x2
RF10-160AC	115V/60HZ, AC	40	100	170	No	No	No	10x10x2
RF10-160AC-ES24V	115V/60HZ, AC	40	100	170	No	No	Yes	10x10x2
RF10-160EC	115V/60HZ, Brushless DC	40	100	170	Yes	No	No	10x10x2
RF10-160EC-ES24V	115V/60HZ, Brushless DC	40	100	170	Yes	No	Yes	10x10x2
RF10-160AC-P	115V/60HZ, AC	40	100	170	No	Yes	No	10x10x2
RF10-160AC-P-ES24V	115V/60HZ, AC	40	100	170	No	Yes	Yes	10x10x2
RF10-160EC-P	115V/60HZ, Brushless DC	40	100	170	Yes	Yes	No	10x10x2
RF10-160EC-P-ES24V	115V/60HZ, Brushless DC	40	100	170	Yes	Yes	Yes	10x10x2

\*CFM shown is without filter

## reFresh Installation Options

S&P's reFresh units can be installed in any orientation, horizontal or vertical, and are suitable for the supply of both conditioned and un-conditioned airstreams.

### Stand-alone Supply Fan

A reFresh fan can be installed as a supply fan, completely separate from the HVAC System. In this installation the reFresh unit supplies outside air to specific locations in the dwelling. The supply air ducts should be installed to all bedrooms and living areas. The use of filter is highly recommended to pre-filter the outside air before it enters the dwelling. Additionally, in cold climates p S&P recommends using our DH6-120V in-line duct heater to pre-heat outside air in the winter.

### Supply to Return Side of HVAC System (most popular installation)

The reFresh unit is installed using between the outside of the dwelling and the return side of the HVAC System. Return air will be drawn in by the HVAC system while the reFresh unit will supply an equal amount of air into the return side of the HVAC system. In most installations, the air will be filtered by the HVAC System eliminating the need for an optional filter in the reFresh unit. In cold climates p S&P recommends using our DH6-120V in-line duct heater to ensure the outside air delivered to the HVAC system is never below the minimum temperature allowed by the manufacturer (generally 55°F).



## ES24V - Envirosense Ventilation Control Overview

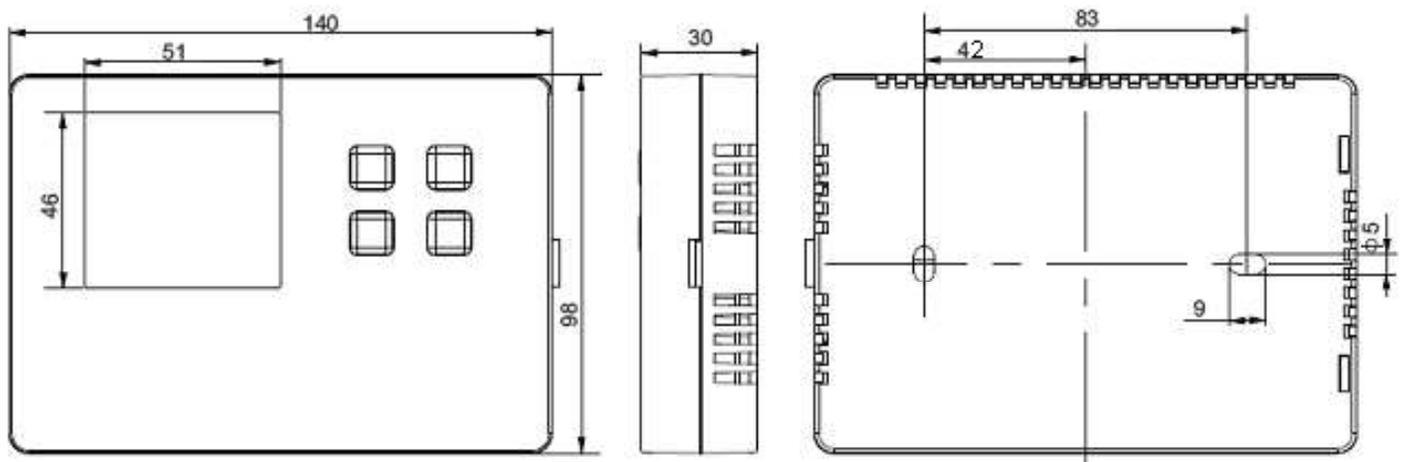
This S&P exclusive control, can be used with our TD-MIXVENT, TD-SILENT, PV-POWERVENT, or TR-ERVs; when paired with the reFresh supply fans the ES24V provides fully controllable fresh air into a residence. With three modes (Off, On, and Eco-Mode) the ES24v ensures compliance with today's outside air codes.



- “Off” allows for manual override as required by the code
- “On” allows for continuous operation
- “Eco-Mode” allows homeowner to set humidity and/or temperature minimum and maximums. When min and max are sensed the fan will not bring in outside air. When the outside air is within the min and max range the fan will operate at the set time limit or continuously to meet the code requirements, i.e. 15 minutes every 4-hours
- Control is installed on the outside of RF8 units that end in “-ES24V”.
- Control is installed inside the housing of RF10 units that end in “-ES24V”
- Compatible with TD-MIXVENT, TD-SILENT, PV-POWERVENT, SWF-SIDEWALL, and all TR ERVs.
- Transformer and relay are available for 120V compatibility.

### Features

- Easy to read, back-lit LCD screen
- 24-volt control
- Simple setup with four-button interface
- Can be set to run supply fan continuously or intermittently or using Eco Mode to turn fan off at set temperature/humidity
- Measures outdoor temperature to stop ventilation at adjustable high and low outdoor temperature lockouts
- Measures outdoor humidity to stop ventilation at adjustable high and low humidity lockouts
- Control programming maintains ASHRAE 62.2-2010 even during high and low temperature limit lockouts
- Installation flexibility – ability to override humidity and temperature control
- Inputs for optional duct heater and motorized damper



# HVI Certified Performance



## Models with AC Motors, No Filters

Model	CFM @ .2" SP			Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Amps @ .2" SP	Watts @ .2" SP	Efficacy (CFM/Watts) @ .2" SP
	LS	MD	HS		.1	.15	.2	.25	.3	.4			
RF8-120AC	40	90	140	1480	57	48	40	34	29	21	0.48	37.3	1.2
				2040	107	99	90	83	75	63	0.57	55.9	1.6
				2500	154	147	140	133	126	113	0.63	74.1	1.9
RF10-160AC	40	100	170	1630	58	48	40	33	26	16	0.46	36.2	1.5
				2050	116	108	100	91	82	65	0.54	51.3	2.1
				2600	186	178	170	163	156	143	0.61	72.5	2.5

RPM Speed is Nominal

## Models with AC Motors, with Optional MERV13 Filters

Model	CFM @ .2" SP			Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Amps @ .2" SP	Watts @ .2" SP	Efficacy (CFM/Watts) @ .2" SP
	LS	MD	HS		.1	.15	.2	.25	.3	.4			
RF8-120AC	30	70	110	1510	39	34	30	26	22	16	0.48	37.4	1.0
				2090	81	76	70	64	59	51	0.58	56.3	1.4
				2530	119	115	110	106	101	92	0.63	73.3	1.6
RF10-160AC	40	100	170	1640	42	36	30	25	20	13	0.47	36.4	1.2
				2060	106	98	90	82	74	59	0.54	50.9	1.8
				2590	160	155	150	144	139	127	0.61	72.5	2.2

RPM Speed is Nominal

## Models with EC Motors, No Filters

Model	CFM @ .2" SP			Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Amps @ .2" SP	Watts @ .2" SP	Efficacy (CFM/Watts) @ .2" SP
	LS	MD	HS		.1	.15	.2	.25	.3	.4			
RF8-120EC	51	90	130	1300	85	63	51	40	28	12	0.13	7.2	6.6
				1670	110	100	90	78	67	46	0.25	14.4	6.3
				2100	145	137	130	122	115	97	0.45	27.6	4.9
RF10-160EC	40	100	170	1340	65	53	40	27	8	-	0.13	7.5	7.1
				1730	120	110	100	91	78	52	0.25	15.6	6.9
				2300	185	177	170	163	155	139	0.54	34	5.1

RPM Speed is Nominal

## Models with EC Motors, with Optional MERV13 Filters

Model	CFM @ .2" SP			Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Amps @ .2" SP	Watts @ .2" SP	Efficacy (CFM/Watts) @ .2" SP
	LS	MD	HS		.1	.15	.2	.25	.3	.4			
RF8-120EC	20	60	100	1300	31	25	20	14	5	-	0.12	6.9	5.3
				1670	76	68	60	53	47	32	0.23	13.9	5.0
				2100	112	106	100	93	86	72	0.44	26.7	4.0
RF10-160EC	30	90	150	1340	52	42	30	19	6	-	0.13	7.2	5.6
				1730	108	99	90	78	68	46	0.26	15.6	5.8
				2300	162	156	150	143	136	121	0.56	35.5	4.2

RPM Speed is Nominal

# RF10 - AMCA Certified Performance

## RF10 Models with AC Motors, No Filters

Model	Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Sones @ .2" SP	Amps @ .2" SP	Watts @ .2" SP
		.1	.15	.2	.25	.3	.4			
RF10-160AC	1510	60	52	45	38	32	25	2.1	0.46	33.6
	1990	120	107	97	89	81	68	3.3	0.55	50.7
	2540	196	188	180	172	163	148	5.2	0.61	70.9

RPM Speed is Nominal

## RF10 Models with AC Motors, with Optional MERV13 Filters

Model	Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Sones @ .2" SP	Amps @ .2" SP	Watts @ .2" SP
		.1	.15	.2	.25	.3	.4			
RF10-160AC	1600	52	46	40	35	32	26	2.3	0.46	34.3
	2000	91	83	77	70	65	55	3.7	0.54	47.7
	2570	163	157	151	145	140	128	5.1	0.61	71.6

RPM Speed is Nominal

## RF10 Models with EC Motors, No Filters

Model	Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Sones @ .2" SP	Amps @ .2" SP	Watts @ .2" SP
		.1	.15	.2	.25	.3	.4			
RF10-160EC	1330	88	77	64	48	26	-	1.5	0.12	8.2
	1730	133	124	114	103	93	70	3.4	0.23	15.7
	2300	197	190	182	174	167	152	6.0	0.49	35.1

RPM Speed is Nominal

## RF10 Models with EC Motors, with Optional MERV13 Filters

Model	Speed (RPM)	CFM @ Static Pressure (inches w.g.)						Sones @ .2" SP	Amps @ .2" SP	Watts @ .2" SP
		.1	.15	.2	.25	.3	.4			
RF10-160EC	1330	72	60	49	25	12	-	1.4	0.12	7.5
	1730	113	104	95	86	77	56	3.7	0.22	15.7
	2300	169	162	156	150	144	131	5.0	0.48	35.8

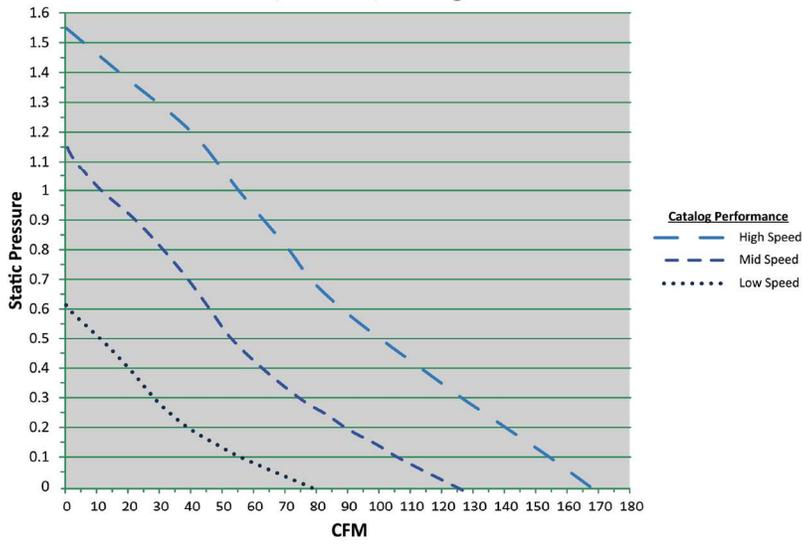
RPM Speed is Nominal

Performance certified is for installation type D: Ducted inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances.

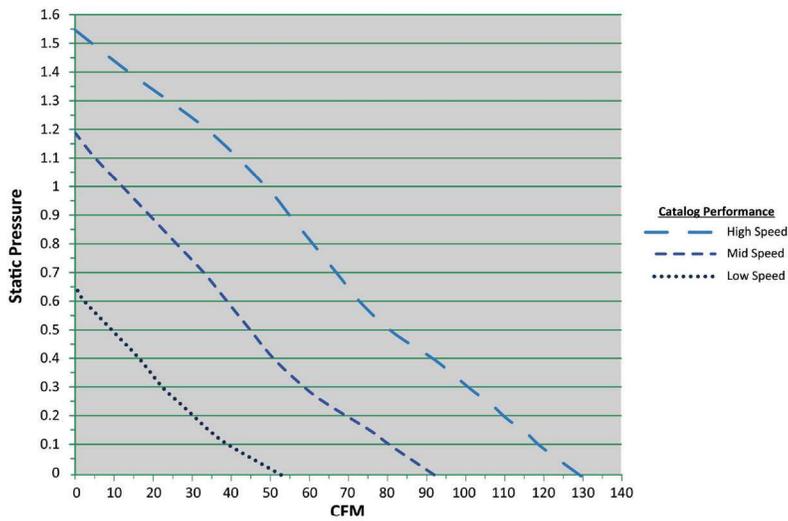


S&P USA Ventilation Systems, LLC., Div. of Soler & Palau Ventilation Group, certifies that the Models RF10 shown herein are licensed to bear the AMCA Seal. The ratings shown are based on test and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirement of the AMCA Certified Ratings Program.

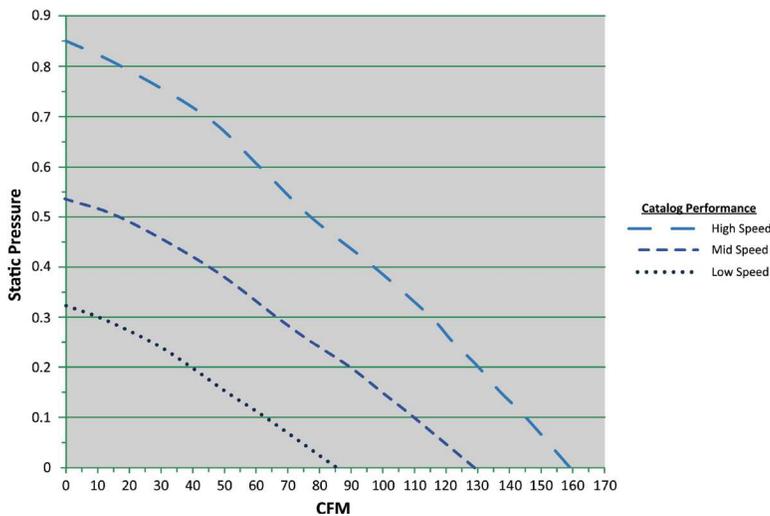
# RF8-120AC, No Filter



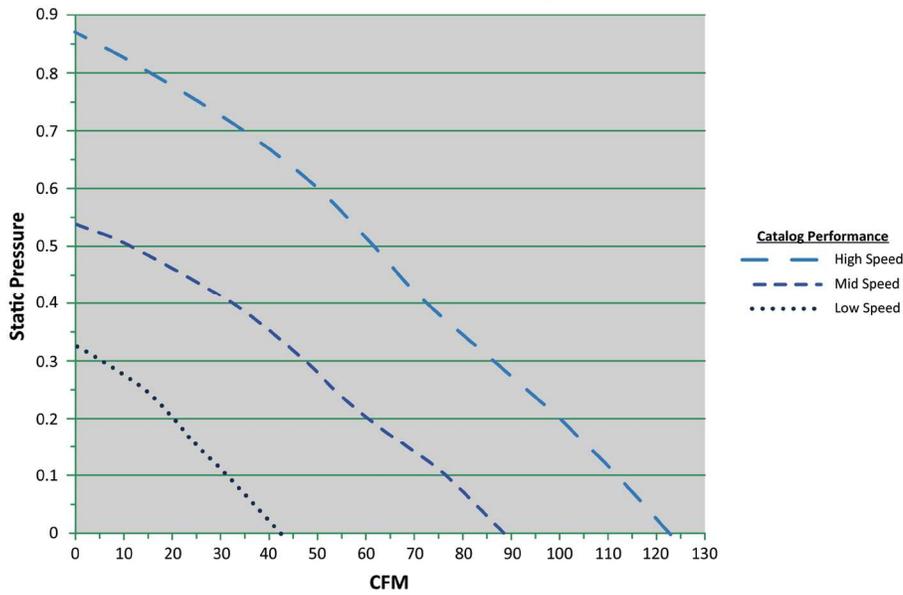
# RF8-120AC, MERV 13 Filter



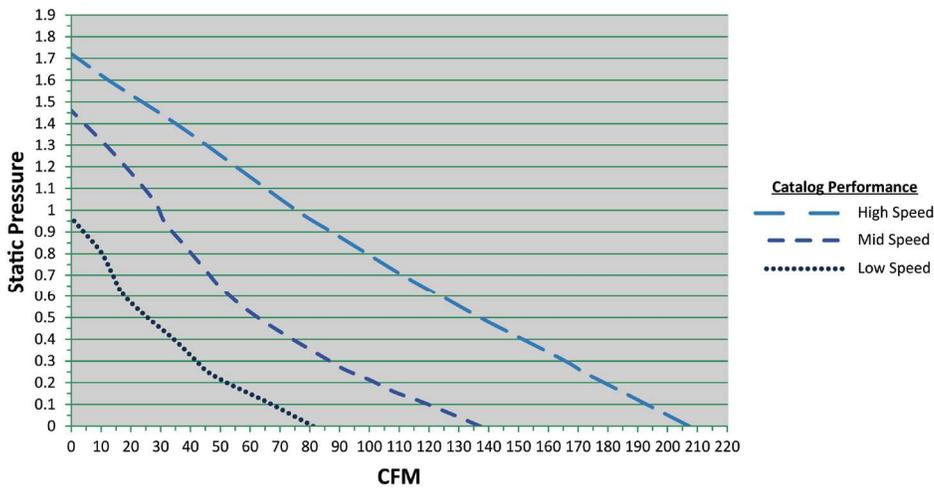
# RF8-120EC, No Filter



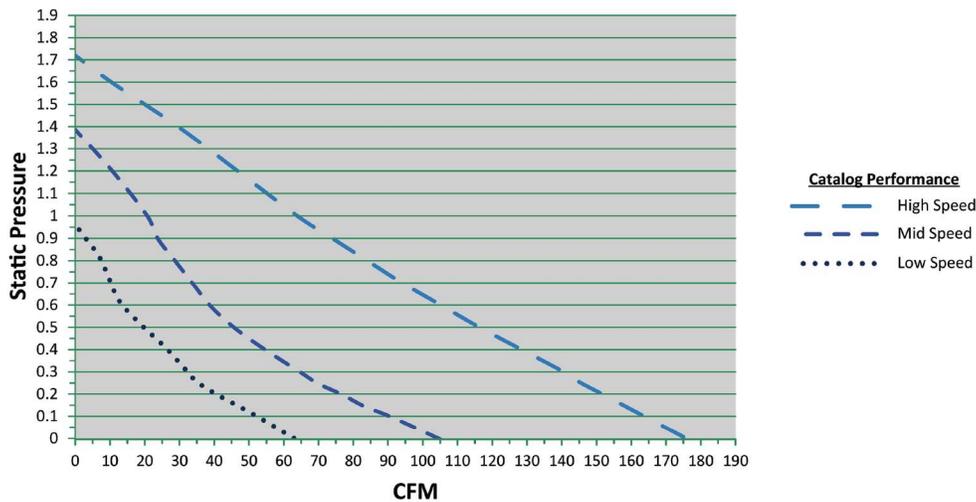
# RF8-120EC, MERV 13 Filter



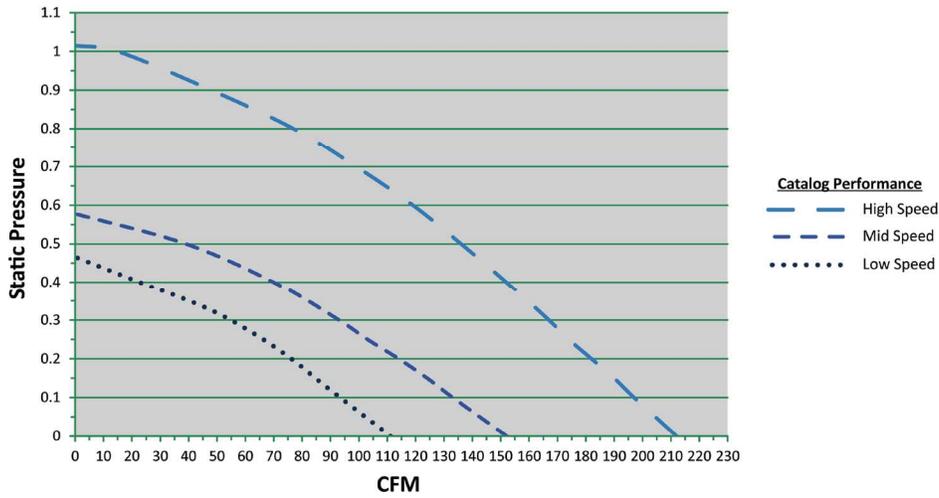
# RF10-160AC, No Filter



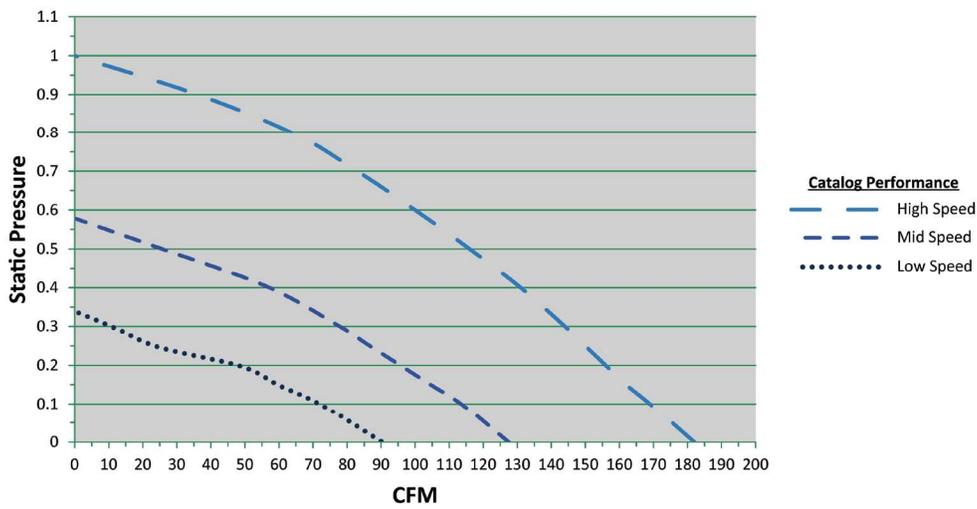
# RF10-160AC, MERV 13 Filter



# RF10-160EC, No Filter

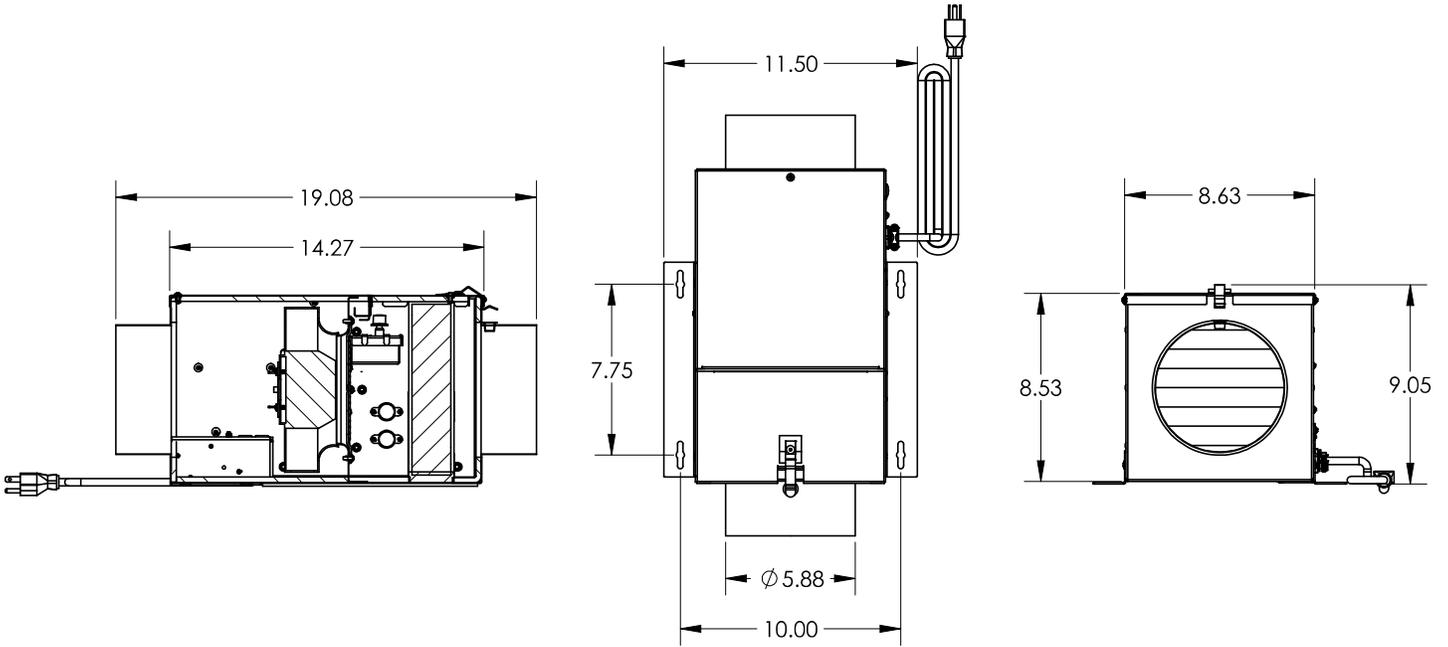


# RF10-160EC, MERV 13 Filter

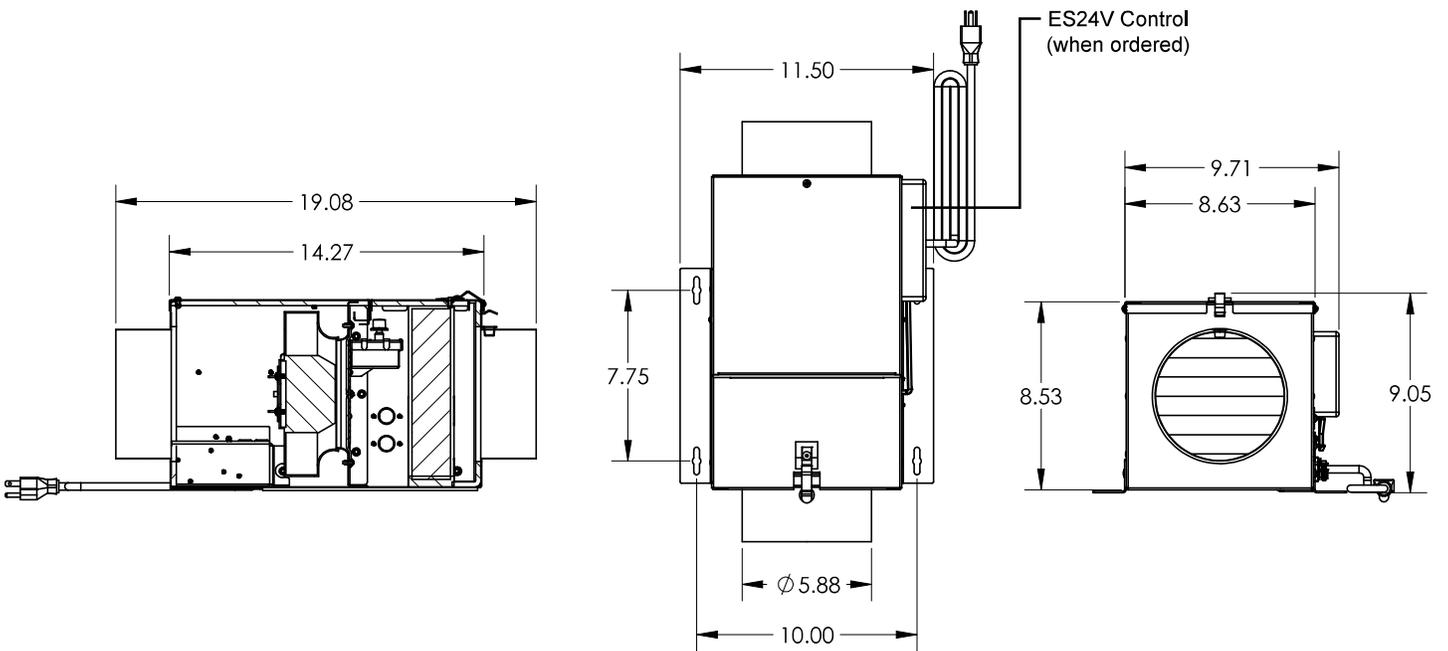


# Dimensions

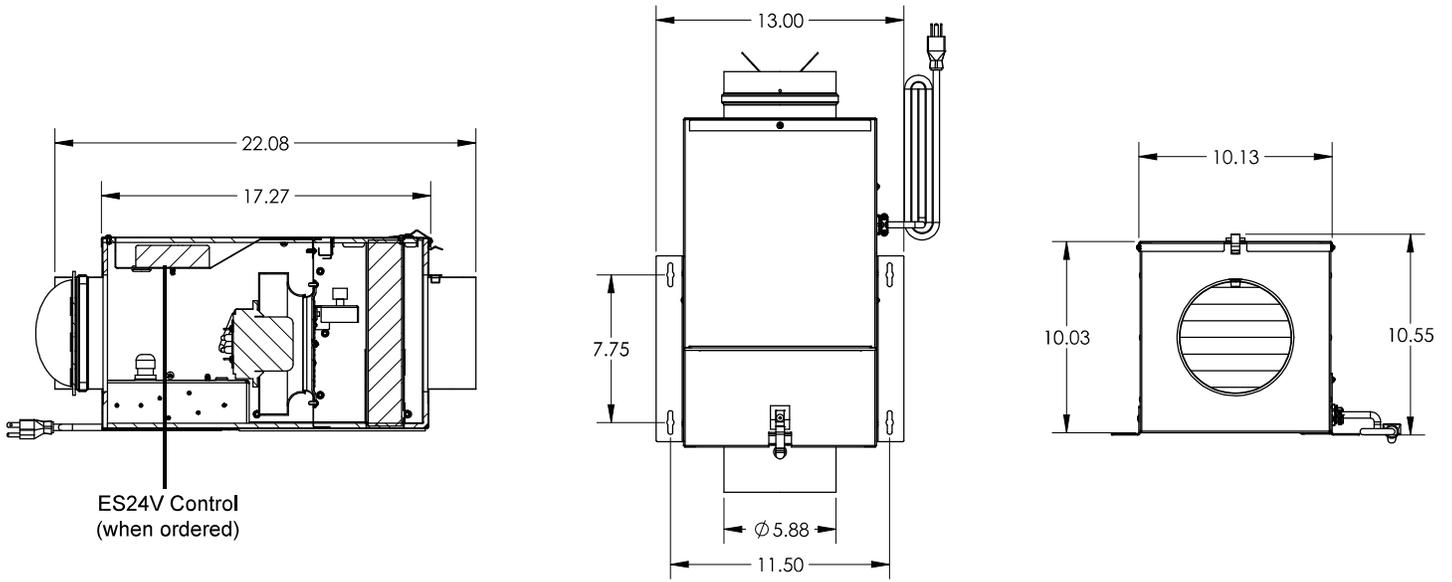
## RF8-120AC and RF8-120EC



## RF8-120AC-ES24V and RF8-120EC-ES24V (ES24V control mounted on exterior of RF8 units)



**Dimensions** RF10-160AC, RF10-160EC, RF10-160AC-ES24V, RF10-160EC-ES24V  
(ES24V is mounted on interior of RF10 unit)

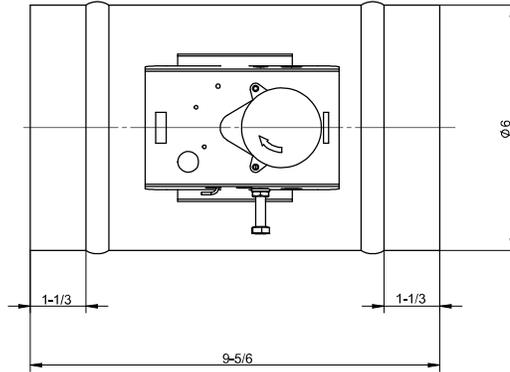


# Outside Air Accessories

## MD6 – Motorized Damper

This normally closed, power open, 24V motorized damper for 6” round duct. The MD6 can be used to bring fresh air in through a forced-air systems.

Round Duct Size (Inches)	Frequency	Voltage	Current	Number of Speeds	RPM	Ins Class	Duty	Rated Ambient (°C)
6	60HZ	24	0.3 A	1	6	A	Int	40

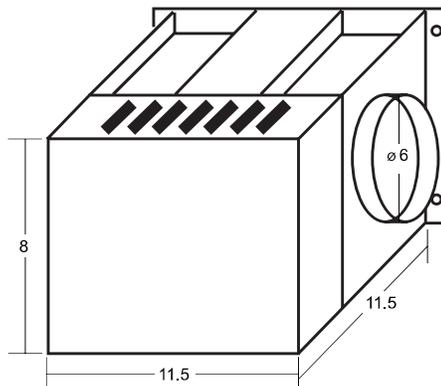


## DH6-120V Inline Duct Heater

This 120V inline duct heater for 6” round duct is designed for both horizontal and vertical mounting. The DH6-120V has a heating element which converts electricity into heat through Resistance – the process by which the passage of an electric current thru a conductor (wire) releases heat. The resulting heat is transferred by convention providing there is a temperature difference.

- Zero clearance for horizontal operation
- 1 in /2.cm for a distance of 6 ft/1.8 m downstream for vertical operation
- Flex duct can be mounted directly to unit (250°F / 121°C rated), no transition or extra metal duct required
- Factory installed airflow switch and probe, no need to specify right or left airflow, superior design allows for operation in either direction
- Single Point Power Connection
- cULus Listed

Round Duct Size (Inches)	Performance	Phase	Frequency	Voltage	Power	Current	Minimum Air Flow
6	32-108°F/ 0-42°C	1	60 Hz	120	1 kW	8.33 a	30 CFM





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