



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 applies to all multi-family dwelling structures (in which the occupants are nontransient), regardless of height. 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 (2016) Whole Building Ventilation requires that a home's living area should be ventilated at a CFM rate determined by adding 3% of the conditioned space floor area to 7.5 times the number of bedrooms plus one [formula: minimum required CFM =  $0.03A + 7.5 (\# \text{ bedrooms} + 1)$ ]. 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>• Pre-heats air in the winter and pre-cools air in the summer</li><li>• Adds humidity in winter and removes humidity in summer</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
- Can be independent or integral to 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 10-1/2 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 EC Motors
- Speed controllable motor
- 4 pole motor, permanently lubricated, thermally protected
- 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 507 listed for electrical reliability
- Only RF10 models with "-P" in the model name are UL 2043 listed, Suitable for Use In Air Handling Spaces



Our **reFresh Full Size 160EC** models have been recognized by Energy Star as "**ENERGY STAR® Most Efficient 2019**"! The ENERGY STAR Most Efficient Mark is an extension of the ENERGY STAR brand and is designed to recognize and advance the most efficient products among those that qualify for the ENERGY STAR.



**Most Efficient  
2019**

[www.energystar.gov](http://www.energystar.gov)



# 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, 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 507 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, 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 507 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, EC	40	90	130	Yes	No	No	8x8x2
RF8-120EC-ES24V	115V/60HZ, EC	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, EC	40	100	170	Yes	No	No	10x10x2
RF10-160EC-ES24V	115V/60HZ, EC	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, EC	40	100	170	Yes	Yes	No	10x10x2
RF10-160EC-P-ES24V	115V/60HZ, EC	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 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 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 the required 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 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).

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## RFV8 - reFresh Value Series

### RFV8 Specifications

- Economical and efficient solution to bring in fresh air
- Excellent option to meet IRC & IMC
- Can be independent or integral to the HVAC system
- Compact housing, designed to fit in most locations

### Features

- Low profile, galvanized, 26 ga, housing
- Overall Dimensions (without control): RFV8 - 8-1/2 x 9 x 19"
- Factory installed ES24V Control
- 6" round duct connectors
- Test port for easy air flow measurement
- Integral backdraft damper
- Integral mounting tabs allow mounting in any orientation
- 6' power cord standard

### Blower/Motor

- Backward inclined wheel
- AC motor
- 4 pole motor, permanently lubricated, thermally protected
- 120V, 60 Hz

### Certifications

- Meets codes: ASHRAE 62.2-2010, IRC 2012/2015, IMC 2012/2015
- cULus 507 listed for electrical reliability



# Outside Air Accessories



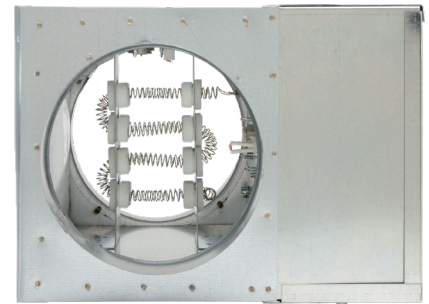
## MD6 – Motorized Damper

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 system.

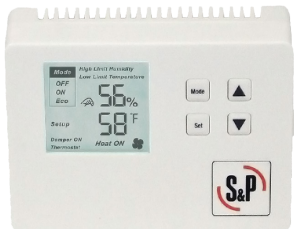
Round Duct Size (Inches)	Frequency	Voltage	Current	Number of Speeds	RPM	Ins Class	Duty	Rated Ambient (°C)
6	60HZ	24	0.3 A	1	6	A	Int	40

## 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 convection providing there is a temperature difference.



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



## 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 reRefresh 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.







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