

Panasonic

VENTILATION & IAQ SOLUTIONS





The Undisputed LEADER

HIGH PERFORMANCE VENTILATION FANS AND INDOOR AIR QUALITY SOLUTIONS

For over two decades, Panasonic has delivered innovative, high performance ventilation solutions that have set new standards for quiet operation and energy efficiency.

Leading the Way with High Performance Ventilation Fans and Indoor Air Quality Solutions

Panasonic is the premier manufacturer of powerful, energy-efficient ventilation fans that quietly exhaust unhealthy, unpleasant or moist air from your home or business. Contractors, builders, architects and homeowners rely on us for our quality and for the wide array of solutions we offer—from bathroom fans with both motion and humidity sensors to remote in-line fans.

Panasonic is proud to be recognized by the EPA for the **fifth** consecutive year, earning their most prestigious ENERGY STAR® honor, the Sustained Excellence 2014 Award. Sustained excellence is precisely what we strive for as evidenced by our legacy of providing high performance, energy-efficient ventilation solutions. In fact, for over two decades—highlighted by industry-leading quiet fans, revolutionary DC Motor technology, and leading-edge LED lighting—we've continued to demonstrate outstanding leadership, year after year.

Panasonic has been in the ventilation business for over 100 years and is the largest manufacturer of ventilation equipment globally. Panasonic produces the highest quality, most efficient and environmentally friendly products available in the market today. We do this by designing, engineering and manufacturing in our own facilities. Panasonic is known around the world for offering the quietest ENERGY STAR® fans in the industry!

Panasonic Advanced Ventilation Solutions

A LEGACY OF INNOVATION

1993	2003	2006	2007	2011	2012	2013	2014
WhisperCeiling™ VENTILATION FAN	WhisperFit™ VENTILATION FAN	WhisperGreen® VENTILATION FAN	WhisperValue™ VENTILATION FAN	WhisperComfort™ VENTILATION FAN	WhisperSense™ VENTILATION FAN	WhisperRecessed™ VENTILATION FAN	WhisperGreen LED™ VENTILATION FAN
Quiet Solution	Retrofit Solution	ASHRAE 62.2 Compliance Solution	Multi-Family Solution	Balanced Air Solution	CALGreen Compliance Solution	Design Solution	Ultimate Energy Efficient Fan/Light Solution
							WhisperGreenSelect™ VENTILATION FAN
							One Fan - Multiple IAQ Solutions Most Efficient 2014





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Panasonic Ventilation Fan Benefits

Certified & Code Compliant

Panasonic ventilation fans are certified by the Home Ventilating Institute (HVI) and ENERGY STAR® qualified, where guidelines exist. All models can be used to comply with ASHRAE 62.2, the ventilation standard required by LEED for Homes, ENERGY STAR® IAP, CALGreen, NAHB Green Building Standard, EarthCraft, Washington Ventilation Code and other building programs.

Powerful & Quiet

Fully enclosed DC and AC condenser motors assure remarkable performance and quiet operation at industry standard, 0.25" w.g. static pressure (Installed Performance).

Long Life

Permanently lubricated motors are engineered for trouble-free, continuous operation for 30,000 hours on AC motors, along with rust-proof paint and galvanized housing.

Easy Installation

Integrated duct adapters, adjustable mounting brackets (up to 24" o.c.), fan/motor units that easily detach from the housing and uncomplicated wiring all lend to user-friendly installation. Double-hanger bar systems allow for ideal positioning. Flex-Z Fast™ bracket with articulating joints provides even more flexible, fast and easy installation on select models.

Energy Savings

When it comes to energy efficiency, our wattage requirements are among the lowest in the industry ensuring low cost operation.



★★★★★ 5 YEARS IN A ROW

Safety

WhisperGreen Select™ models are protected by UL Class 2 Power Unit while all other models are equipped with thermal fuse protection. With the exception of the ERV and heater fans, all models are UL listed for tub/shower enclosure when used with a GFCI protected circuit.

Airflow

A built-in plastic or metal damper (depending on model #) in all ceiling-mounted models helps prevent backdraft. Built-in metal flange provides blocking for penetrations through drywall as an air barrier, and assists with the decrease in leakage in the building envelope during blower door testing.

Illumination

The fan/lights have ENERGY STAR® rated compact fluorescent lamps (CFLs) that can be used to comply with California Title 24, and have 10,000 hours of rated life. The CFL lighted models feature >70LPW, the highest Lumens Per Watt in the industry. A 4W night light is available on most models. Some models feature LED lighting that have 40,000 hours of rated life, along with a 1W LED night light.

Green Manufacturing

All fan only models are RoHS Approved. Restriction of Hazardous Substances Directive (RoHS) restricts the use of the following six substances in the manufacturing process: Lead, Mercury, Cadmium, Hexavalent chromium [CR(VI)], Polybrominated biphenyls (PBB), and Polybrominated diphenyl ether (PBDE).

Warranty

6-Year warranty on DC motor, 5-Year warranty on LED, 1 year on CFLs and 3-Year warranty on all other parts.



Why is ventilation necessary?

Today’s homes are designed and built to improve energy efficiency. However, these airtight homes may actually cause health problems due to the build-up of pollutants and uncirculated stale air. What do they need? Mechanical ventilation!

Airtight Homes

Homes designed and built in recent years are more airtight and energy efficient than in the past. To obtain this airtight design, house wraps, newly designed windows and doors, sealing caulks and other insulating materials are used to create better energy efficiency. The resulting benefit is fewer drafts, which lowers the cost to heat and air-condition a home. But pollutants retained in airtight buildings can be hazardous to their occupants and can jeopardize structural integrity. That’s why Panasonic stresses a “build tight and ventilate right” platform. Proper mechanical ventilation design can address poor indoor air quality, while retaining energy efficiency.

Biological Pollutants

Biological pollutants, to some degree, are found in all homes. These include mold, mildew, pollen, dust mites, pet dander, viruses and bacteria. Accumulation of these biological pollutants can result in hazardous health effects for the occupants, as well as structural damage to the building.

Volatile Organic Compounds (VOCs)

Volatile Organic Compounds are carbon-based compounds that easily evaporate. Formaldehyde and these types of gases are released from building materials, carpets, furniture and many other solid household items as part of aging, decomposition or curing, all of which are natural processes known as off-gassing. Some other household items that emit VOCs include hair sprays, paints, lacquers, finishes, oven cleaners and other cleaning solvents, pesticides, etc. Often colorless and odorless, VOCs can ultimately sensitize certain people to react to them.

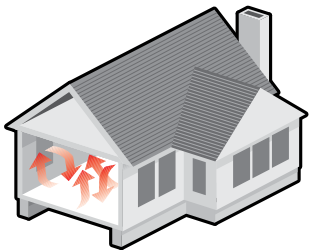
Ways to improve indoor air quality

The first step to improve indoor air quality should be to reduce or remove the source of the pollutants.

Unfortunately, indoor pollutants are virtually impossible to eliminate completely, creating the need for a second step to improve indoor air quality—mechanical ventilation. Mechanical ventilation is used to remove stale, moist, polluted air and replace it with fresh outside air.

Whole House Ventilation

All homes need to bring exhaust stale air and bring in fresh air for the health of the occupants. To meet Whole House Ventilation Standards, a typical solution is to exhaust air on a low, continuous basis and allow outdoor infiltration air to freshen



Bad

Pollutants such as smoke, formaldehyde, dust, humidity and VOCs accumulate in a poorly vented building.



Good

Ventilation fans help to maintain indoor air flow and air quality.

Ideally, an airtight home designed with both continuous and intermittent ventilation will contribute to a healthy and comfortable living environment for the entire family.

the home. However, it is also possible to mechanically bring in fresh air for Whole House Ventilation by running a fan at a higher speed on an intermittent basis. Either way, continuous or intermittent, it is important to insure fresh air routinely replaces the stale air within the home.

Local, or Source, Ventilation

Local, or source ventilation, sometimes referred to as spot ventilation, is used to capture and remove pollutants quickly at the source. Pockets of excessive moisture and pollutants can build up in the bathroom, kitchen, utility room, garage and home office. This secondary process serves to exhaust these problem areas quickly, before bad air can spread throughout the house. Just as important as Whole House ventilation, source ventilation complements the effort to improve indoor air quality.

Both systems exhaust pollutants from the air, but source ventilation is more effective in concentrated areas.

Sizing Information and Instructions

Properly sized ventilation in airtight homes helps to ensure healthy indoor air quality. Both source (spot) and whole house ventilation should be considered. Source ventilation is used to exhaust sources of moisture and odors, while whole house ventilation is used to remove accumulated indoor air pollutants.

Source (spot) ventilation:

The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) recommends the following minimums for source ventilation: [See ASHRAE on page 44]

- I. Bathrooms - 50 CFM minimum. A good rule of thumb for bathrooms is 1 CFM/sq.ft.
- II. Kitchens - 100 CFM. A good rule of thumb for kitchens is 2 CFM/sq.ft.

Whole house ventilation:

Most building codes have adopted the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standard 62. The most widely-used version, ASHRAE 62.2-2010, calls for continuous mechanical ventilation as shown in the following steps below.

The formula for calculating the needed whole house mechanical ventilation is as follows:

CFM fan = 0.01 A floor + 7.5 (Number of bedrooms + 1)
7.5 CFM/bedroom plus 7.5 CFM (assuming 2 people in the Master Bedroom) and add 1% of the square feet of the house or apartment.

Finally, it would be good to calculate the Equivalent Duct Length of the planned duct run. Bear in mind that some fans are not able to overcome the static pressure of a long, or difficult duct run to the exterior.

Static Pressure and Duct Run:

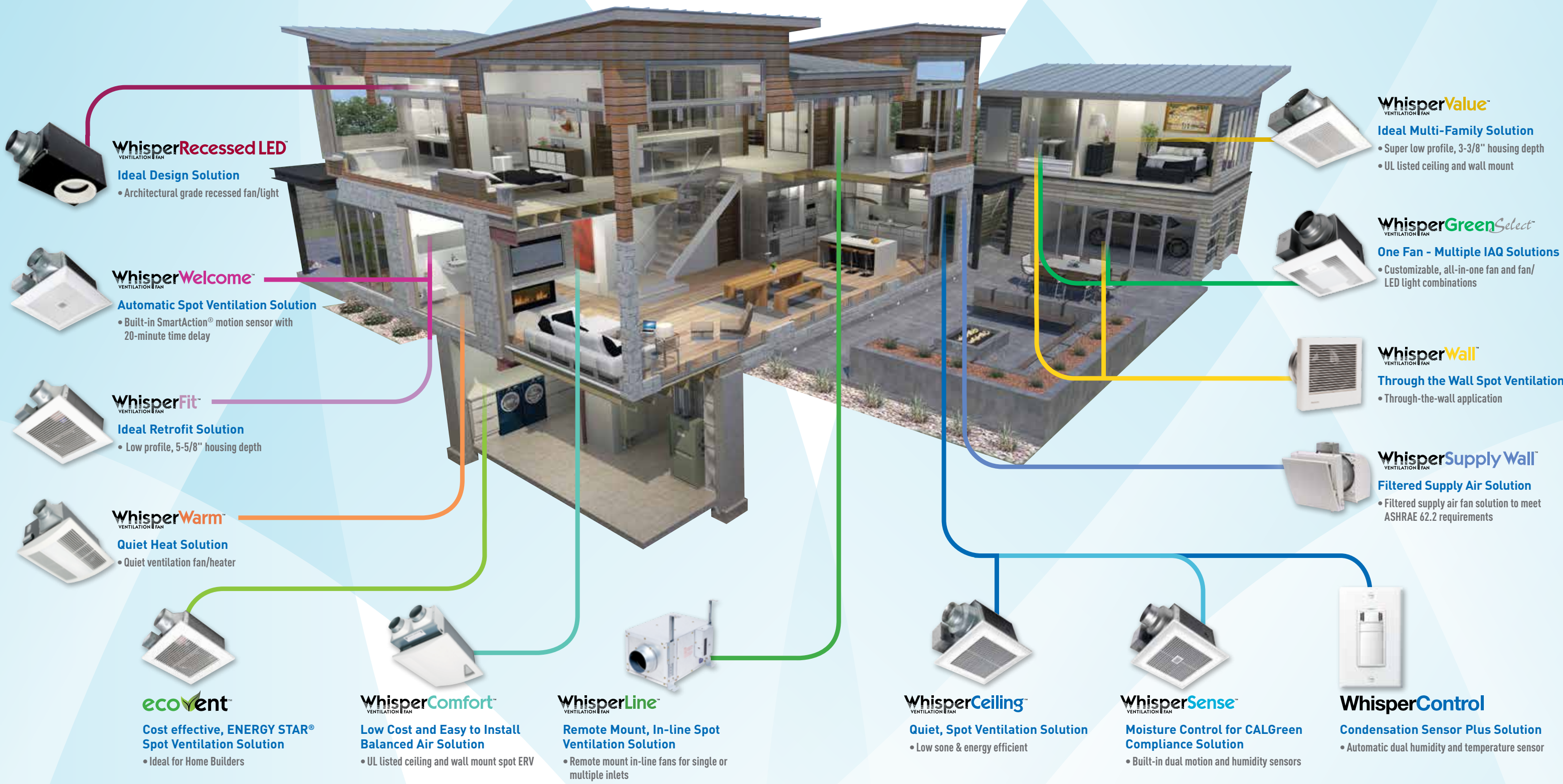
A ventilating fan must overcome resistance when pulling air through the grille and pushing it through the duct and cap to the outside of the building. This resistance is known as static pressure. The amount of static pressure depends on the duct length, type of duct, elbows and the roof jack or wall cap.

Fan Selection Guide

- 1. What is the size of the bathroom?
 - a. Need 1 CFM (cubic foot per minute) per square foot
 - b. Length x Width of floor space (sq.ft.) = CFM (length) x (width) = (Total CFM needed)
 - c. Example: 8 ft length x 10 ft wide = 80 CFM is needed to properly ventilate the bathroom
- 2. What features are needed/wanted?
 - Fan only? Light? Heat? Variable speed? Motion? Humidity? Time delay?
- 3. What type of access or truss height is available?
 - a. 2 x 8 construction – use any fan combination that we have
 - b. 2 x 6 construction – use our fan combinations that fit 2 x 6 or 2 x 4 construction
 - c. 2 x 4 construction – use our fan combinations that fit 2 x 4 construction

Now that you know the CFM needed, the features wanted and the construction size, you are ready to find your fan combination.

High Performance Ventilation & IAQ Solutions





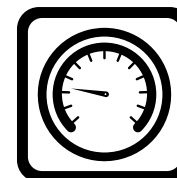
WhisperGreen Select™ VENTILATION FAN

One Fan - Multiple IAQ Solutions

WhisperGreen Select™ is a ground-breaking IAQ solution that is revolutionizing the vent fan industry with a unique set of features that enable customization and easy installation. To the builder and professional installer, Whisper Green Select™ provides unequalled installed performance and quietest operation at 0.25" w.g. static pressure. Its unique design and superior energy efficiency are achieved through engineering expertise, provided by a company who sets the standard for quality and value.

Panasonic brings you the next wave of technological innovation, with a built-in **Pick-A-Flow™** speed selector that provides the unique ability to select your required airflow (50-80-110 and 110-130-150 CFM models) with the simple flip of a switch.

WhisperGreen Select also offers a unique set of four patented **Plug 'N Play™** modules that allow you to further customize your fan.



Multi-Speed with Time Delay* (FV-VS15VK1)

Allows you to select the proper CFM settings to satisfy ASHRAE 62.2 continuous ventilation requirements. The fan runs continuously at a preset lower level (0, 30-100 or 0, 50-120 CFM, in 10 CFM increments), then elevates to a maximum level of operation (50-80-110 or 110-130-150 CFM) when the wall switch is turned on, or when the Motion Sensor or Condensation Sensor module is activated. A High/Low delay timer returns the fan to the preset CFM level after a period of time set by the user.

*Applies to both the pre-installed multi-speed with time delay, as well as the FV-VS15VK1 multi-speed with time delay Plug 'N Play module.



SmartAction® Motion Sensor (FV-MSVK1)

Automatically activates when someone enters the room. Once the settings have been applied, the fan becomes truly automatic. This module also activates a 20 minute delay off timer for the fan.



Condensation Sensor (FV-CSVK1)

Helps control bathroom condensation to prevent mold and mildew. Sensor technology detects relative humidity and temperature to anticipate dew point, automatically turning the fan on to control humidity. Built-in Relative Humidity (RH) sensitivity adjustment enables fine tuning for moist conditions and for satisfying CALGreen requirements. When the Condensation Sensor is used in conjunction with multi-speed functionality, the fan will ramp up to high speed when the Condensation Sensor detects moisture in the room. This module also activates a 20 minute delay off timer for the fan.



LED Night Light (FV-NLVK1)

A photocell automatically turns on the 1 watt LED night light when darkness is sensed in the room. High/Low brightness switch enables you to fine tune the photocell to work in conjunction with the darkness level of your bathroom. This module also activates an automatic 20 minute delay off timer for the fan.



NEW

WhisperGreenSelect | One Fan - Multiple IAQ Solutions

FV-05-11VKS1 30 to 110 CFM 4" or 6" Duct



- WhisperGreen Select Key Benefits:**
- Customizable, all-in-one fan
 - Pick-A-Flow™ speed selector – one fan, you choose the CFM
 - Pre-installed multi-speed control with high/low delay timer up to 60 minutes
 - Plug 'N Play™ modules provide up to **two** value added features (select from SmartAction® Motion Sensor, Condensation Sensor or NiteGlo™ LED Night Light) (See page 12-13 for details)
 - Revolutionary DC motor with SmartFlow™ technology for optimum CFM output
 - Flex-Z Fast™ installation bracket provides flexible, fast and easy installation
 - Integrated dual 4" or 6" duct adapter
 - Fits in 2 x 8 construction
 - UL listed for tub/shower enclosure when used with a GFCI protected circuit
 - Can be used to comply with ASHRAE 62.2, LEED, CALGreen, California Title 24, WA Ventilation Code and ENERGY STAR® for Homes 3.0

WhisperGreen Select		FV-05-11VKS1																	
Characteristics		(Base Fan with Pre-installed Multi-Speed with Time Delay)																	
Static pressure in inches w.g.		0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)		110	113	100	106	90	95	80	82	70	71	60	66	50	53	40	43	30	33
Noise (sones)		<0.3	0.8	<0.3	0.7	<0.3	0.6	<0.3	0.4	<0.3	0.4	<0.3	0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3
Power Consumption (Watts)		9.8	16.1	8.0	14.0	6.5	11.7	5.5	10.2	4.3	8.6	3.6	7.8	3.5	7.0	2.7	5.7	2.4	5.0
Energy Efficiency (CFMs/Watt)		11.5	7.2	13.0	7.9	14.5	8.5	15.3	8.4	17.2	8.7	17.5	8.8	15.1	8.1	16.3	8.2	14.2	7.6
Speed		931	1205	895	1179	852	1146	814	1131	772	1112	750	1107	747	1072	731	1073	718	1062
Current		0.10	0.16	0.09	0.14	0.07	0.12	0.06	0.10	0.05	0.09	0.04	0.08	0.04	0.07	0.08	0.06	0.03	0.06
Power Rating (V/Hz)		120/60																	



Pre-installed Multi-Speed with Time Delay



SmartAction® Motion Sensor* (FV-MSVK1)



Condensation Sensor* (FV-CSVK1)



NiteGlo™ LED Night Light* (FV-NLVK1)

*Optional Add-On Feature



Flex-Z Fast™



CALGreen



WhisperSense | Moisture Control for CALGreen Compliance Solution

FV-08VQC5 80 CFM 4" or 6" Duct
FV-11VQC5 110 CFM 4" or 6" Duct



- WhisperSense Key Benefits:**
- SmartAction® motion sensor automatically turns fan on when someone enters the room
 - Humidity sensor detects rapid rise in relative humidity (RH) and automatically turns fan on to remove moisture to help prevent mold and mildew
 - Dual sensor technology provides built-in redundancy that ensures proper fan operation.
 - Adjustable time delay – 30 seconds to 60 minutes
 - Auto shutoff feature helps eliminate unnecessary energy usage and further reduce operating costs
 - Integrated dual 4" or 6" duct adapter
 - Fits in 2 x 8 construction
 - UL listed for tub/shower enclosure when used with a GFCI protected circuit
 - Can be used to comply with ASHRAE 62.2, LEED, CALGreen and California Title 24

WhisperSense	FV-08VQC5		FV-11VQC5	
Characteristics				
Static pressure in inches w.g.	0.1	0.25	0.1	0.25
Air Volume (CFM)	80	59	110	91
Noise (sones)	<0.3	<0.3	0.3	0.5
Power Consumption (Watts)	15.8	15.6	24.3	24.2
Energy Efficiency (CFMs/Watt)	5.1	3.9	4.6	3.9
Speed	825	1110	957	1170
Current	0.14	0.14	0.22	0.21
Power Rating (V/Hz)	120/60		120/60	



Built-in Controls

Three ways the fan can function

- Motion on/Motion off
- Motion on/Humidity off
- Humidity on/Humidity off
- Variable humidity controls from 30-80% relative humidity (RH)
- Adjustable delay timer from 30 seconds to 60 minutes



CALGreen



WhisperWelcome™ | Automatic Spot Ventilation Solution

FV-05VFM2 50 CFM 4" or 3" Duct
FV-08VFM2 80 CFM 4" or 3" Duct



- WhisperWelcome Key Benefits:**
- Low profile housing design – ideal for remodeling
 - Built-in SmartAction® motion sensor automatically activates when the room is occupied
 - Built-in delay timer turns off the fan after 20 minutes
 - Provides flexibility for installation in 2 x 6 or larger construction
 - Detachable 4" to 3" duct adapter
 - Ideal for renovation since you can use the existing duct
 - UL listed for tub/shower enclosure when used with a GFCI protected circuit
 - Can comply with ASHRAE 62.2, LEED, ENERGY STAR® and California Title 24

WhisperWelcome	FV-05VFM2				FV-08VFM2			
Characteristics	4" Duct		3" Duct		4" Duct		3" Duct	
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	50	30	50	34	80	62	70	56
Noise (sones)	<0.3	0.7	0.4	0.8	0.9	1.1	0.8	1.0
Power Consumption (Watts)	16.3	16.0	16.1	16.0	24.5	24.3	24.3	24.0
Energy Efficiency (CFMs/Watt)	3.6	2.4	3.3	2.2	3.5	2.7	3.1	2.5
Speed	678	924	740	958	749	945	868	1003
Current	0.13	0.13	0.13	0.13	0.20	0.19	0.20	0.19
Power Rating (V/Hz)	120/60				120/60			



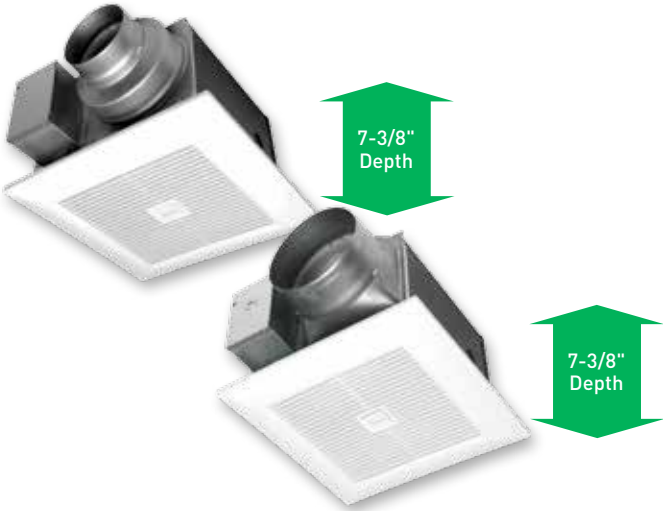
INCLUDED:
4" to 3" Duct Adapter



NEW

WhisperGreenSelect | One Fan - Multiple IAQ Solutions

FV-05-11VK1 50-80-110 CFM 4" or 6" Duct
FV-11-15VK1 110-130-150 CFM 6" Duct



WhisperGreen Select Key Benefits:

- Customizable, all-in-one fan
- Pick-A-Flow™ speed selector – one fan, you choose the CFM
- Plug 'N Play™ modules provide up to three value added features (select from Multi-Speed with Time Delay, SmartAction® Motion Sensor, Condensation Sensor or NiteGlo™ LED Night Light) (See page 12-13 for details)
- Revolutionary DC motor with SmartFlow™ technology for optimum CFM output
- Flex-Z Fast™ installation bracket provides flexible, fast and easy installation
- Integrated dual 4" or 6" duct adapter (50-80-110 CFM models)
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, CALGreen, California Title 24, WA Ventilation Code and ENERGY STAR® for Homes 3.0



Multi-Speed with Time Delay*
(FV-VS15VK1)



SmartAction® Motion Sensor*
(FV-MSVK1)



Condensation Sensor*
(FV-CSVK1)



NiteGlo™ LED Night Light*
(FV-NLVK1)

*Optional Add-On Feature

WhisperGreen Select	FV-05-11VK1 (Base Fan)						FV-11-15VK1 (Base Fan)					
Characteristics	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	110	113	80	82	50	53	150	151	130	130	110	110
Noise (sones)	<0.3	0.8	<0.3	0.4	<0.3	0.3	<0.3	0.7	<0.3	0.5	<0.3	<0.3
Power Consumption (Watts)	9.8	16.1	5.5	10.2	3.5	7.0	13.0	22.0	10.0	17.0	7.0	13.5
Energy Efficiency (CFMs/Watt)	11.5	7.2	15.3	8.4	15.1	8.1	11.5	6.8	13.1	7.8	15.7	8.2
Speed	931	1205	814	1131	747	1072	664	904	635	891	616	889
Current	0.10	0.16	0.06	0.10	0.04	0.07	0.13	0.21	0.10	0.17	0.07	0.13
Power Rating (V/Hz)	120/60											

WhisperGreen Select	FV-05-11VK1 + FV-VS15VK1 (Base Fan with Multi-Speed Time Delay Plug 'N Play™ Module)																	
Characteristics	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	110	113	100	106	90	95	80	82	70	71	60	66	50	53	40	43	30	33
Noise (sones)	<0.3	0.8	<0.3	0.7	<0.3	0.6	<0.3	0.4	<0.3	0.4	<0.3	0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3
Power Consumption (Watts)	9.8	16.1	8.0	14.0	6.5	11.7	5.5	10.2	4.3	8.6	3.6	7.8	3.5	7.0	2.7	5.7	2.4	5.0
Energy Efficiency (CFMs/Watt)	11.5	7.2	13.0	7.9	14.5	8.5	15.3	8.4	17.2	8.7	17.5	8.8	15.1	8.1	16.3	8.2	14.2	7.6
Speed	931	1205	895	1179	852	1146	814	1131	772	1112	750	1107	747	1072	731	1073	718	1062
Current	0.10	0.16	0.09	0.14	0.07	0.12	0.06	0.10	0.05	0.09	0.04	0.08	0.04	0.07	0.08	0.06	0.03	0.06
Power Rating (V/Hz)	120/60																	

WhisperGreen Select	FV-11-15VK1 + FV-VS15VK1 (Base Fan with Multi-Speed Time Delay Plug 'N Play™ Module)																			
Characteristics	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	150	151	130	130	120	121	110	110	100	102	90	96	80	84	70	72	60	62	50	51
Noise (sones)	<0.3	0.7	<0.3	0.5	<0.3	0.4	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.4	<0.3	0.4	<0.3	0.4	<0.3	0.4	0.4
Power Consumption (Watts)	13.0	22.0	10.0	17.0	7.4	14.1	7.0	13.5	5.6	11.3	4.9	10.7	4.4	9.6	3.8	8.6	3.6	7.7	3.1	6.8
Energy Efficiency (CFMs/Watt)	11.5	6.8	13.1	7.8	16.2	8.6	15.7	8.2	17.9	9.0	18.6	9.0	18.2	8.8	18.4	8.4	16.7	8.1	16.1	7.5
Speed	664	904	635	891	615	884	616	889	603	886	595	891	604	911	602	918	622	919	616	928
Current	0.13	0.21	0.10	0.17	0.08	0.14	0.07	0.13	0.06	0.11	0.06	0.11	0.05	0.10	0.05	0.09	0.04	0.08	0.04	0.07
Power Rating (V/Hz)	120/60																			



BUILT-IN SELF ADJUSTING
AIRFLOW TECHNOLOGY

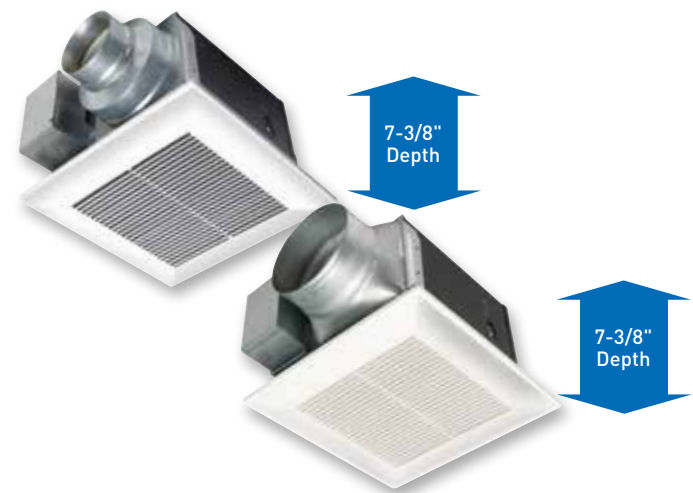


Flex-ZFast™



WhisperCeiling™ | Quiet, Spot Ventilation Solution

FV-05VQ5 50 CFM 4" or 6" Duct
FV-08VQ5 80 CFM 4" or 6" Duct
FV-11VQ5 110 CFM 4" or 6" Duct
FV-15VQ5 150 CFM 6" Duct



- WhisperCeiling Key Benefits:**
- Quiet, yet powerful – ideal for new and remodel residential applications
 - Large volume (190-390) CFM options available for light commercial use (See page 40-41 for more details)
 - Integrated dual 4" or 6" duct adapter on 50-110 CFM models
 - 80-150 CFM models fit in 2 x 8 construction
 - UL listed for tub/shower enclosure when used with a GFCI protected circuit
 - Can be used to comply with ASHRAE 62.2, LEED, IAP, EarthCraft, California Title 24 and WA Ventilation Code

WhisperCeiling	FV-05VQ5		FV-08VQ5		FV-11VQ5		FV-15VQ5	
Characteristics								
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume [CFM]	50	36	80	62	110	91	150	127
Noise [sones]	<0.3	0.4	<0.3	0.4	<0.3	0.5	<0.3	0.5
Power Consumption [Watts]	11.1	11.7	14.7	14.5	21.1	20.7	28.4	27.3
Energy Efficiency [CFMs/Watt]	4.7	3.2	5.8	4.5	5.3	4.5	5.3	4.7
Speed	731	1060	829	1089	950	1161	691	911
Current	0.09	0.10	0.12	0.12	0.18	0.17	0.24	0.23
Power Rating [V/Hz]	120/60		120/60		120/60		120/60	



WhisperFit™ | Ideal Retrofit Solution

FV-08VF2 80 CFM 4" or 3" Duct
FV-11VF2 110 CFM 4" or 3" Duct



- WhisperFit Key Benefits:**
- Low profile housing design – ideal for remodeling projects and manufactured structured homes
 - Fits in 2 x 6 or larger construction
 - Additional hanger bars for easier retrofit installation
 - Detachable 4" to 3" duct adapter included
 - UL listed for tub/shower enclosure when used with a GFCI protected circuit
 - Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperFit	FV-08VF2				FV-11VF2			
Characteristics	4" Duct		3" Duct		4" Duct		3" Duct	
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume [CFM]	80	60	70	53	110	94	90	78
Noise [sones]	0.8	1.0	0.8	1.1	1.5	1.5	1.5	2.0
Power Consumption [Watts]	24.5	24.3	24.5	24.2	33.1	32.8	33.0	32.7
Energy Efficiency [CFMs/Watt]	3.3	2.5	2.9	2.2	3.4	2.9	2.9	2.5
Speed	757	956	845	1007	830	1000	1029	1128
Current	0.20	0.20	0.20	0.20	0.27	0.28	0.27	0.28
Power Rating [V/Hz]	120/60				120/60			



INCLUDED:
4" to 3" Duct Adapter



WhisperValue™ | Ideal Multi-Family Solution

FV-05VS3	50 CFM	4" Oval Duct
FV-08VS3	80 CFM	4" Oval Duct
FV-10VS3	100 CFM	4" Oval Duct

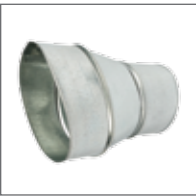


Fits in nearly every ceiling cavity.

WhisperValue Key Benefits:

- Ideal for residential construction (single and multi-family) and manufactured homes
- 3-3/8" housing depth – lowest profile ENERGY STAR® fan available
- UL approved for ceiling or wall mount – perfect fit in a 2 x 4 stud bay
- Wall installation eliminates the need and cost for a radiation damper
- Optional 24 gauge steel, fire code rated 4" oval to 3" round duct adapter, sold separately (Model # FV-VS43R)
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperValue	FV-05VS3		FV-08VS3		FV-10VS3	
Characteristics	4" Oval Duct		4" Oval Duct		4" Oval Duct	
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	60	53	80	72	100	92
Noise (sones)	0.4	1.0	1.0	1.2	1.4	1.5
Power Consumption (Watts)	15.9	16.3	21.2	21.5	29.6	29.9
Energy Efficiency (CFMs/Watt)	3.8	3.3	3.8	3.3	3.4	3.1
Speed (RPM)	706	980	778	997	868	1056
Current (amps)	0.13	0.14	0.18	0.18	0.25	0.26
Power Rating (V/Hz)	120/60		120/60		120/60	



Optional 4" Oval to 3" Round Duct Adapter (Model #: FV-VS43R)

WhisperValue U-Can Contractor Pack*

The Contractor Pack includes four complete fans. The housing and motor/grille are packaged separately for flexibility during installation.

Universal Housing Can	Motor/Grille Assembly	Complete Fan Unit	Master Pack
FV-05-10VSA3	FV-05VSB3	FV-05VS3	4
FV-05-10VSA3	FV-08VSB3	FV-08VS3	4
FV-05-10VSA3	FV-10VSB3	FV-10VS3	4

*Must order in quantities of 4, shipment will contain 1 box with 4 units.



Transfer Register Box

FV-JD

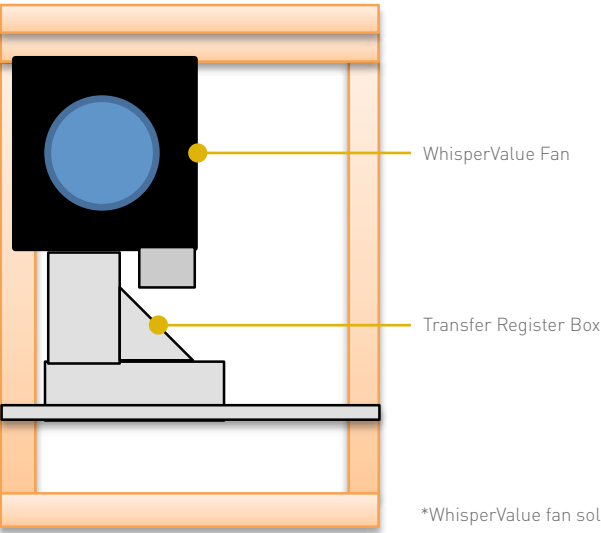


Transfer Register Box (TRB) – Room to Room Solution Key Benefits:

- Perfect for room-to-room powered circulation in Multi-family projects with ductless heat pumps
- Designed exclusively for use with WhisperValue™ fan and fan/light combinations
- Powered 60 CFM transfer at less than 0.3 sone (based on FV-05VS3 fan)
- 26 gauge steel, fire code rated accessory, sold separately as model #FV-JD
- No need for a radiation damper like on jump ducts
- Works with standard size HVAC registers – 4" x 10" HVAC supply grille
- Can be used to comply with ASHRAE 62.2, LEED for Homes, CALGreen and ENERGY STAR® for Homes 3.0*

*Specific to WhipserValue™ and WhisperValue Lite™ fans

WhisperValue Fan & Transfer Register Box



*WhisperValue fan sold separately.

NEW

WhisperGreenSelect™ | One Fan - Multiple IAQ Solutions

FV-05-11VKSL1 30 to 110 CFM 4" or 6" Duct



INCLUDES: (2) replaceable, 7W ENERGY STAR® rated, GU24 base LED lamps. 3000 Kelvin/80+ CRI/ 550 Lumens per lamp/ 80 Lumens per watt/ 40,000 hours rated average life.

WhisperGreen Select Key Benefits:

- Customizable, all-in-one fan/LED light combination
- Pick-A-Flow™ speed selector – one fan, you choose the CFM
- Pre-installed multi-speed control module with high/low delay timer up to 60 minutes
- Plug 'N Play™ modules provide up to **two** value added features (select from SmartAction® Motion Sensor, Condensation Sensor or NiteGlo™ LED Night Light) (See page 12-13 for details)
- Revolutionary DC motor with SmartFlow™ technology for optimum CFM output
- Two replaceable, 7W, GU24 base LED lamps
- Flex-Z Fast™ installation bracket provides flexible, fast and easy installation
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, CALGreen, California Title 24, WA Ventilation Code and ENERGY STAR® for Homes 3.0



BUILT-IN SELF ADJUSTING AIRFLOW CAPABILITY

WhisperGreen Select		FV-05-11VKSL1																	
Characteristics		(Base Fan with LED Light and Pre-installed Multi-Speed with Time Delay)																	
Static pressure in inches w.g.		0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)		110	114	100	105	90	94	80	86	70	71	60	62	50	53	40	43	30	35
Noise (sones)		0.4	0.9	<0.3	0.8	<0.3	0.6	<0.3	0.6	<0.3	0.4	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Power Consumption (Watts)		11.1	18.0	8.7	15.0	7.0	12.8	6.0	11.1	4.7	8.9	3.9	7.6	4.0	7.0	2.8	5.7	2.5	5.0
Energy Efficiency (CFMs/Watt)		9.9	6.3	11.6	7.1	13.1	7.5	13.3	7.7	15.3	8.2	15.9	8.4	12.8	7.7	14.6	7.7	12.8	7.4
Speed		960	1237	926	1213	872	1184	837	1157	796	1119	769	1102	740	1081	739	1077	731	1058
Current		0.12	0.17	0.09	0.15	0.08	0.13	0.07	0.12	0.05	0.09	0.05	0.08	0.04	0.07	0.04	0.06	0.03	0.06
Power Rating (V/Hz)		120/60																	



Pre-Installed Multi-Speed with Time Delay



SmartAction® Motion Sensor* (FV-MSVK1)



Condensation Sensor* (FV-CSVK1)



NiteGlo™ LED Night Light* (FV-NLVK1)

*Optional Add-On Feature



Flex-ZFast™



WhisperSense Lite™ | Moisture Control for CALGreen Compliance Solution

FV-08VQCL6 80 CFM 4" or 6" Duct
FV-11VQCL6 110 CFM 4" or 6" Duct



WhisperSense Lite Key Benefits:

- SmartAction® motion sensor automatically turns fan on when someone enters the room
- Humidity sensor detects rapid rise in relative humidity (RH) and automatically turns fan on to remove moisture to help prevent mold and mildew
- Dual sensor technology provides built-in redundancy that ensures proper fan operation
- Adjustable time delay – 30 seconds to 60 minutes
- Auto shutoff feature helps eliminate unnecessary energy usage and further reduce operating costs
- (2) 13W self ballasted GU24 base CFL lamps and a 4W night light
- Integrated dual 4" or 6" duct adapter
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, IAP, CALGreen, California Title 24 and WA Ventilation Code

WhisperSense Lite		FV-08VQCL6		FV-11VQCL6	
Characteristics					
Static pressure in inches w.g.		0.1	0.25	0.1	0.25
Air Volume (CFM)		80	62	110	89
Noise (sones)		<0.3	0.4	0.7	0.7
Power Consumption (Watts)		17.5	17.6	26.0	25.7
Energy Efficiency (CFMs/Watt)		4.7	3.6	4.3	3.5
Speed		881	1125	1017	1202
Current		0.16	0.15	0.23	0.22
Power Rating (V/Hz)		120/60		120/60	



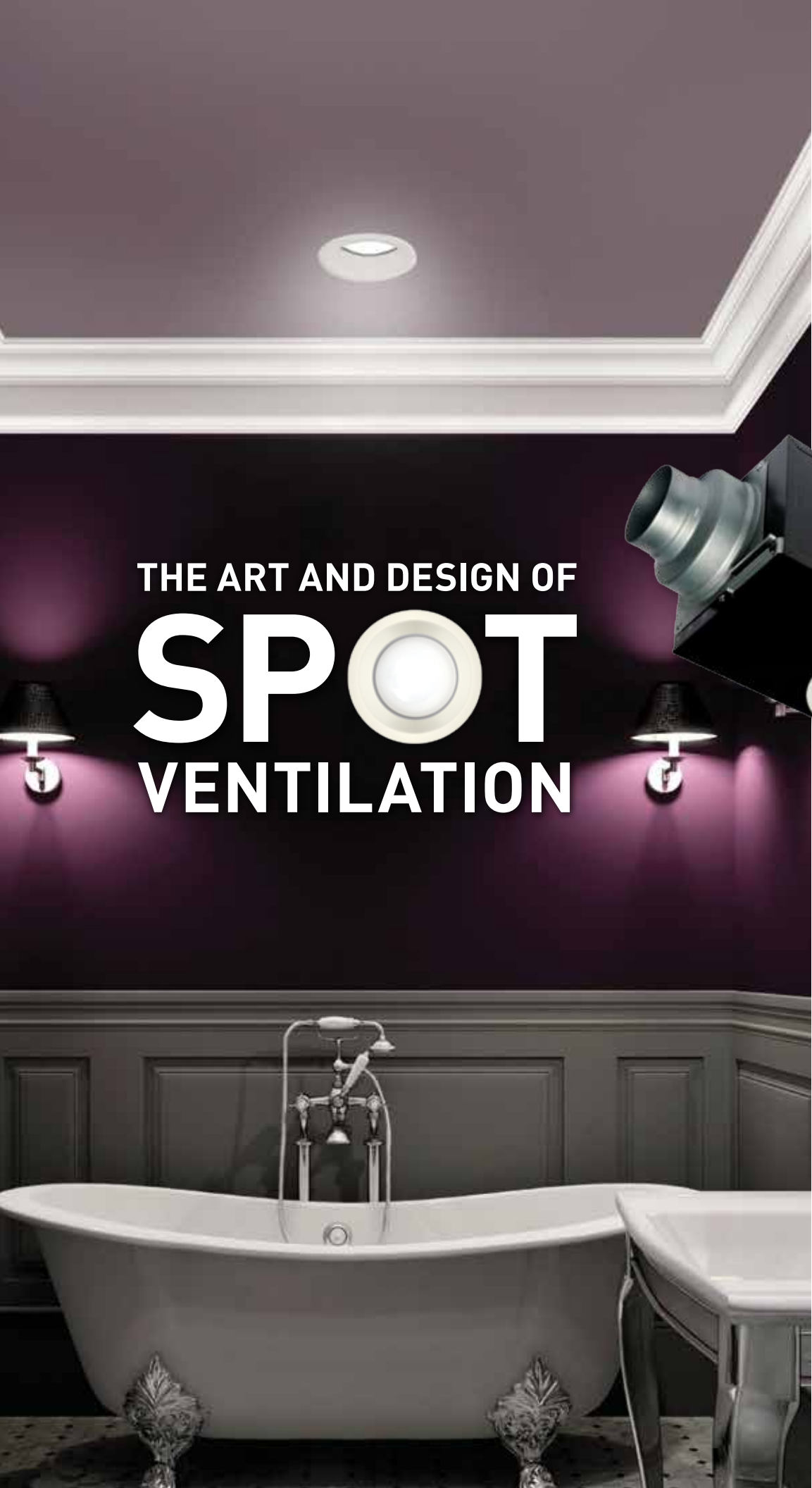
INCLUDES: (2) 13W ENERGY STAR® rated self ballasted GU24 base CFL lamps and a 4W night light. 3500 Kelvin/ 80+ CRI/997 Lumens per lamp/75 Lumens per watt/ 10,000 hours rated average life at 3 hours per start.



Built-in Controls

See page 15 for details on three ways this fan can function.





THE ART AND DESIGN OF SPOT VENTILATION



WhisperRecessed LED™
VENTILATION FAN

Design Solution for Fan/Light Combinations

Combining performance and beauty, WhisperRecessed LED™ incorporates a powerful yet quiet 80 CFM fan behind an elegant recessed LED light. Its stylish all-in-one design delivers the quietest, most efficient ENERGY STAR® certified recessed fan/light combo unit available. In fact, you'll only know it's working because of the clean, fresh air in your bathroom. The warm white dimmable LED lamp lasts up to five times longer and uses up to 20% less energy than CFLs.

Best of all, the environmentally friendly WhisperRecessed LED helps you comply with the industry's most stringent green building standards.

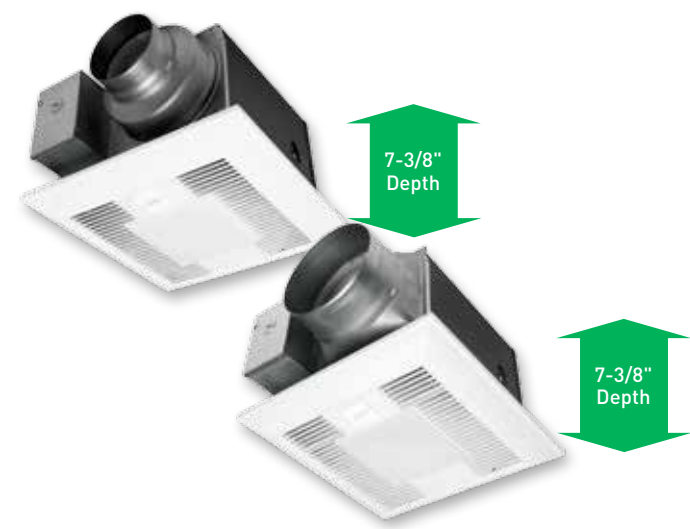
- ENERGY STAR® rated architectural grade recessed fan/LED light
- Quiet, energy efficient and powerful 80 CFM ventilation hidden above the ceiling
- Includes (1) replaceable 14W, ENERGY STAR® rated, GU24 base LED lamp
- Beautiful lighting with 6-1/2" aperture and advanced luminaire design
- LED lamp is dimmable
- Adjustable lamp positioning and deeper regression reduces glare



NEW

WhisperGreenSelect | One Fan - Multiple IAQ Solutions

FV-05-11VKL1 50-80-110 CFM 4" or 6" Duct
FV-11-15VKL1 110-130-150 CFM 6" Duct



WhisperGreen Select Key Benefits:

- Customizable, all-in-one fan/LED light combination
- Pick-A-Flow™ speed selector – one fan, you choose the CFM
- Plug 'N Play™ modules provide up to three value added features (select from Multi-Speed with Time Delay, SmartAction® Motion Sensor, Condensation Sensor or NiteGlo™ LED Night Light) (See page 12-13 for details)
- Revolutionary DC motor with SmartFlow™ technology for optimum CFM output
- Two replaceable, 7W, GU24 base LED lamps
- Flex-Z Fast™ installation bracket provides flexible, fast and easy installation
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, CALGreen, California Title 24, WA Ventilation Code and ENERGY STAR® for Homes 3.0



Multi-Speed with Time Delay*
(FV-VS15VK1)



SmartAction® Motion Sensor*
(FV-MSVK1)



Condensation Sensor*
(FV-CSVK1)



NiteGlo™ LED Night Light*
(FV-NLVK1)

*Optional Add-On Feature

WhisperGreen Select	FV-05-11VKL1 (Base Fan with LED Light)						FV-11-15VKL1 (Base Fan with LED Light)					
Characteristics	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	110	114	80	86	50	53	150	143	130	131	110	111
Noise (sones)	0.4	0.9	<0.3	0.6	<0.3	<0.3	0.6	0.9	<0.3	0.8	<0.3	0.6
Power Consumption (Watts)	11.1	18.0	6.0	11.1	4.0	7.0	16.5	24.0	12.0	21.0	8.5	16.0
Energy Efficiency (CFMs/Watt)	9.9	6.3	13.3	7.7	12.8	7.7	9.2	6.0	10.9	6.3	13.1	7.1
Speed	960	1237	837	1157	740	1081	730	941	679	926	652	914
Current	0.12	0.17	0.07	0.12	0.04	0.07	0.16	0.22	0.12	0.19	0.08	0.15
Power Rating (V/Hz)	120/60											

WhisperGreen Select	FV-05-11VKL1 + FV-VS15VK1 (Base Fan with LED Light and Multi-Speed Time Delay Plug 'N Play™ Module)																	
Characteristics	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	110	114	100	105	90	94	80	86	70	71	60	62	50	53	40	43	30	35
Noise (sones)	0.4	0.9	<0.3	0.8	<0.3	0.6	<0.3	0.6	<0.3	0.4	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Power Consumption (Watts)	11.1	18.0	8.7	15.0	7.0	12.8	6.0	11.1	4.7	8.9	3.9	7.6	4.0	7.0	2.8	5.7	2.5	5.0
Energy Efficiency (CFMs/Watt)	9.9	6.3	11.6	7.1	13.1	7.5	13.3	7.7	15.3	8.2	15.9	8.4	12.8	7.7	14.6	7.7	12.8	7.4
Speed	960	1237	926	1213	872	1184	837	1157	796	1119	769	1102	740	1081	739	1077	731	1058
Current	0.12	0.17	0.09	0.15	0.08	0.13	0.07	0.12	0.05	0.09	0.05	0.08	0.04	0.07	0.04	0.06	0.03	0.06
Power Rating (V/Hz)	120/60																	

WhisperGreen Select	FV-11-15VKL1 + FV-VS15VK1 (Base Fan with LED Light and Multi-Speed Time Delay Plug 'N Play™ Module)																	
Characteristics	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	150	143	130	131	120	122	110	111	100	102	90	90	80	82	70	71	60	62
Noise (sones)	0.6	0.9	<0.3	0.8	<0.3	0.6	<0.3	0.6	<0.3	0.5	<0.3	0.4	<0.3	0.4	<0.3	0.3	<0.3	0.3
Power Consumption (Watts)	16.5	24.0	12.0	21.0	9.5	16.9	8.5	16.0	6.9	13.5	5.7	11.6	5.0	10.4	4.3	8.8	4.0	7.9
Energy Efficiency (CFMs/Watt)	9.2	6.0	10.9	6.3	12.8	7.3	13.1	7.1	14.8	7.7	16.0	7.8	16.0	7.9	16.3	8.1	15.5	8.1
Speed	730	941	679	926	669	917	652	914	644	923	631	917	633	918	624	904	634	910
Current	0.16	0.22	0.12	0.19	0.10	0.17	0.08	0.15	0.07	0.14	0.06	0.12	0.06	0.11	0.05	0.09	0.05	0.08
Power Rating (V/Hz)	120/60																	



INCLUDES: (2) replaceable,
7W ENERGY STAR® rated,
GU24 base LED lamps.
3000 Kelvin/80+ CRI/
550 Lumens per lamp/
80 Lumens per watt/
40,000 hours rated
average life.



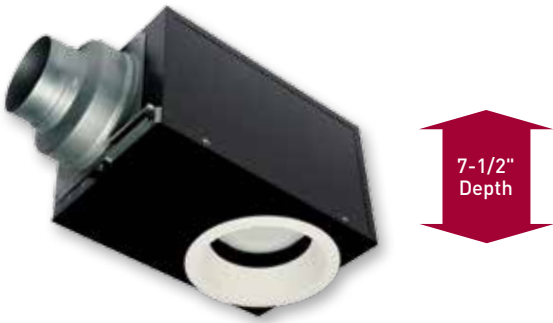
Flex-ZFast™



NEW

WhisperRecessed LED™ | Design Solution for Fan/Light Combinations

FV-08VRE1 80 CFM 4" or 6" Duct



WhisperRecessed LED Key Benefits:

- Architectural grade recessed fan/light
- Ideal for use in the bathroom, living room or laundry room
- Quiet and powerful 80 CFM ventilation hidden above the ceiling
- **(1) 14W GU24 base, dimmable LED lamp**
- Adjustable recessed light minimizes glare
- Beautiful lighting with 6-1/2" aperture and advanced luminaire design
- Integrated dual 4" or 6" duct adapter
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperRecessed LED	FV-08VRE1	
Characteristics		
Static pressure in inches w.g.	0.1	0.25
Air Volume (CFM)	80	66
Noise (sones)	0.8	0.7
Power Consumption (Watts)	20.5	19.5
Energy Efficiency (CFMs/Watt)	4.0	3.4
Speed	1378	1501
Current	0.17	0.17
Power Rating (V/Hz)	120/60	

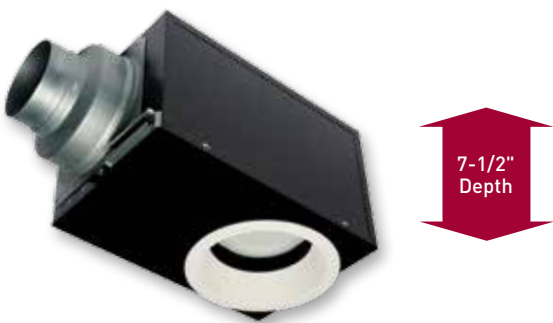


INCLUDED: (1) 14W ENERGY STAR® rated GU24 base LED lamp/ 3000 Kelvin/90+ CRI/575 Lumens/ 25,000 hours rated average life.



WhisperRecessed™ | Design Solution for Fan/Light Combinations

FV-08VRL1 80 CFM 4" or 6" Duct



WhisperRecessed Key Benefits:

- Architectural grade recessed fan/light
- Ideal for use in the bathroom, living room or laundry room
- Quiet and powerful 80 CFM ventilation hidden above the ceiling
- Adjustable recessed light minimizes glare
- Beautiful lighting with 6-1/2" aperture and advanced luminaire design
- **(1) 18W GU24 base CFL lamp**
- Integrated dual 4" or 6" duct adapter
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperRecessed	FV-08VRL1	
Characteristics		
Static pressure in inches w.g.	0.1	0.25
Air Volume (CFM)	80	66
Noise (sones)	0.8	0.7
Power Consumption (Watts)	20.5	19.5
Energy Efficiency (CFMs/Watt)	4.0	3.4
Speed	1378	1501
Current	0.17	0.17
Power Rating (V/Hz)	120/60	



INCLUDED: (1) 18W GU24 base CFL/2700 Kelvin/80+ CRI/ 1380 Lumens/10,000 hours rated average life at 3 hours per start/ integral electronic ballast for flicker-free operation.



WhisperLite® | Quiet, Spot Ventilation Fan/Light Solution

FV-08VQL6	80 CFM	4" or 6" Duct
FV-11VQL6	110 CFM	4" or 6" Duct
FV-15VQL6	150 CFM	6" Duct



WhisperLite Key Benefits:

- Quiet, yet powerful – ideal for new and remodel residential applications
- (2) 13W self ballasted GU24 base CFL lamps and a 4W night light
- Integrated dual 4" or 6" duct adapter on 80-110 CFM models
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperLite	FV-08VQL6		FV-11VQL6		FV-15VQL6	
Characteristics						
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	80	62	110	90	150	128
Noise (sones)	<0.3	0.4	0.5	0.6	0.9	1.0
Power Consumption (Watts)	14.9	14.7	23.4	23.0	31.8	30.9
Energy Efficiency (CFMs/Watt)	5.5	4.3	4.7	3.9	4.8	4.2
Speed	863	1117	1006	1193	800	988
Current	0.12	0.12	0.20	0.19	0.27	0.26
Power Rating (V/Hz)	120/60		120/60		120/60	

INCLUDES: (2) 13W ENERGY STAR® rated self ballasted GU24 base CFL lamps and a 4W night light. 3500 Kelvin/ 80+ CRI/997 Lumens per lamp/75 Lumens per watt/ 10,000 hours rated average life at 3 hours per start.



WhisperFit Lite™ | Ideal Retrofit Solution

FV-05VFL4	50 CFM	4" or 3" Duct
FV-08VFL4	80 CFM	4" or 3" Duct
FV-11VFL4	110 CFM	4" or 3" Duct



WhisperFit Lite Key Benefits:

- Low profile housing design – ideal for remodeling projects and manufactured structured homes
- Fits in 2 x 6 or larger construction
- Additional hanger bars for easier retrofit installation
- Detachable 4" to 3" duct adapter included
- (2) 13W self ballasted GU24 base CFL lamps and a 4W night light
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperFit Lite	FV-05VFL4				FV-08VFL4				FV-11VFL4			
Characteristics	4" Duct		3" Duct		4" Duct		3" Duct		4" Duct		3" Duct	
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	50	34	50	35	80	67	70	60	110	95	90	78
Noise (sones)	<0.3	0.4	<0.3	0.5	0.5	0.8	0.6	0.8	1.3	1.4	1.5	1.5
Power Consumption (Watts)	14.8	14.7	14.8	14.6	28.4	28.1	28.3	28.0	32.6	32.1	32.1	31.6
Energy Efficiency (CFMs/Watt)	3.6	2.4	3.4	2.4	2.8	2.4	2.6	2.3	3.4	3.0	3.0	2.7
Speed	692	962	747	983	803	1005	908	1064	897	1068	1077	1177
Current	0.12	0.12	0.12	0.12	0.24	0.24	0.24	0.24	0.27	0.27	0.27	0.27
Power Rating (V/Hz)	120/60				120/60				120/60			

INCLUDES: (2) 13W ENERGY STAR® rated self ballasted GU24 base CFL lamps and a 4W night light. 3500 Kelvin/ 80+ CRI/997 Lumens per lamp/75 Lumens per watt/ 10,000 hours rated average life at 3 hours per start.

INCLUDED:
4" to 3" Duct Adapter



WhisperValue Lite™ | Ideal Multi-Family Solution

FV-08VSL3 80 CFM 4" Oval Duct
FV-10VSL3 100 CFM 4" Oval Duct



Fits in nearly every ceiling cavity.

WhisperValue Lite Key Benefits*:

- Ideal for residential construction (single and multi-family) and manufactured homes
- 3-3/8" housing depth – lowest profile ENERGY STAR® fan available
- L-shaped bracket simplifies installation and provides strong support
- UL approved for ceiling or wall mount – perfect fit in a 2 x 4 stud bay
- Wall installation eliminates the need for a radiation damper
- (2) 13W self ballasted GU24 base CFL lamps and a 4W night light
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

*Optional 4" oval to 3" round duct adapter (FV-VS43R) and Transfer Register Box (FV-JD) sold separately. See page 22-23 for details.

WhisperValue Lite	FV-08VSL3		FV-10VSL3	
Characteristics	4" Oval Duct		4" Oval Duct	
Static pressure in inches w.g.	0.1	0.25	0.1	0.25
Air Volume (CFM)	80	72	100	91
Noise (sones)	1.0	1.2	1.4	1.5
Power Consumption (Watts)	22.5	22.9	30.2	30.3
Energy Efficiency (CFMs/Watt)	3.6	3.1	3.3	3.0
Speed (RPM)	825	1021	918	1087
Current (amps)	0.19	0.19	0.26	0.26
Power Rating (V/Hz)	120/60		120/60	



INCLUDES: (2) 13W ENERGY STAR® rated self ballasted GU24 base CFL lamps and a 4W night light. 3500 Kelvin/ 80+ CRI/997 Lumens per lamp/75 Lumens per watt/ 10,000 hours rated average life at 3 hours per start.



Optional 4" Oval to 3" Round Duct Adapter (Model #: FV-VS43R)



Optional Transfer Register Box (Model #: FV-JD)

WhisperValue Lite U-Can Contractor Pack*

The Contractor Pack includes four complete fans. The housing and motor/grille are packaged separately for flexibility during installation.

Universal Housing Can	Motor/Grille Assembly	Complete Fan Unit	Master Pack
FV-08-10VSLA3	FV-08VSLB3	FV-08VSL3	4
FV-08-10VSLA3	FV-10VSLB3	FV-10VSL3	4

*Must order in quantities of 4, shipment will contain 1 box with 4 units.





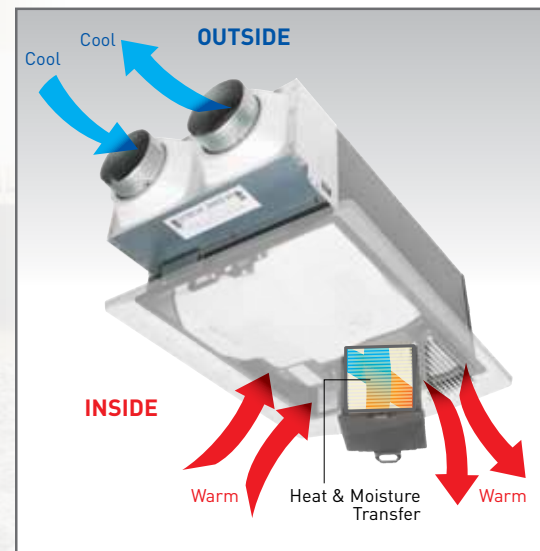
Low Cost and Easy to Install Balanced Air Solution

Ideal for tight single family homes and multi-family units, the WhisperComfort™ Energy Recovery Ventilator is a revolutionary, stand-alone system that provides balanced ventilation. Affordable and easy to install, WhisperComfort is energy efficient and provides fresh ventilated air while maintaining superior Indoor Air Quality (IAQ).

The Panasonic WhisperComfort ERV is designed to run continuously at a low CFM setting to exhaust stale air, moisture, and indoor pollutants, while bringing in clean, tempered air from outside. Homeowners and tenants will enjoy a healthier and cleaner home; while builders and installers comply with the industry's most stringent codes, including the Department of Energy's Zero Net Energy Ready program, ENERGY STAR® for Homes 3.0, Indoor airPLUS, LEED for Homes and CALGreen.

WhisperComfort is UL Listed for ceiling and wall mount applications, making it ideal for apartments where tenants may not run the air conditioner or bath exhaust fans on a regular basis. The WhisperComfort 'spot' ERV allows for regular air exchange which decreases the potential for maintenance or major renovation issues due to humid, stale air. WhisperComfort does not require connection to the central HVAC or the addition of a condensate line. As a result, installation and routine maintenance is hassle free making the 'spot' ERV an even more value-driven, cost-effective choice.

SPOT ERV TECHNOLOGY



Balanced Ventilation

Tightly built homes and buildings utilizing exhaust only fans can create negative pressure. WhisperComfort solves this by supplying air to replace exhausted air, helping to balance air pressure within the home. Balanced ventilation is appropriate for all Climate Zones*. By coupling a balanced approach with an energy recovery or heat recovery ventilator (H/ERV), incoming air can be conditioned and dehumidified, saving on heating and cooling expenses for the home.

Exchange Capillary Core

WhisperComfort's unique and patented capillary core is made from a paper-like material that allows the airstream of inside air to pass right next to airstreams of outside air. The airstreams don't touch each other or mix but the core design allows energy, or heat and moisture, to transfer to the other airstream. In winter, heat is transferred from the warm outgoing air to the cooler incoming air. In summer, heat is extracted from the warm incoming air and transferred to the cool outgoing air. The result is better air quality and lower energy bills.

Motor Technology

Panasonic uses a single AC condenser motor to run two highly efficient blower wheels. The motor is totally enclosed to ensure long-life and continuous quiet operation.

Filters

Two filters clean exhaust and supply air before passing through the ERV core, extending the life of the core.

Grille Design

The contemporary, low profile grille design incorporates spring clips for easy removal, making it easy to access and clean the filters and exchange capillary core.

*See page 54 for Recommended Zones Map

WhisperComfort™ | Low Cost and Easy to Install Balanced Air Solution

FV-04VE1 40/20 CFM or 20/10 CFM Two 4" Ducts



*See page 54 for Recommended Zones Map

WhisperComfort Key Benefits:

- ERV balances air pressure by supplying fresh exterior air while exhausting stale interior air
- Low-rate continuous ventilation ideal for multi-family dwellings
- UL listed for ceiling or wall mount, making it ideal for multi-family applications
- MERV 6 supply filter and damper employed
- Exchange capillary core recovers temperature and moisture
- Dual setting air volume for 40/20 or 20/10 CFM
- Ideal for new air-tight houses built to meet energy-efficiency standards
- Compact size fits in walls and ceilings, and 2 x 8 construction
- Sensible Energy Recovery 66%
- Latent Energy Recovery 32%
- Does not require a condensate line or drain
- Can be used to comply with ASHRAE 62.2, LEED, IAP, CALGreen, California Title 24 and WA Ventilation Code

WhisperComfort	FV-04VE1		
Characteristics	40 CFM	20 CFM	10 CFM
Static pressure in inches w.g.	0.1	0.1	0.1
Air Volume Exhaust (CFM)	40	20	10
Air Volume Supply (CFM)	30	20	10
Noise (sones)	0.8	<0.3	N/A
Power Consumption (Watts)	23	21	17
Speed	1479	1292	1095
Current	0.15	0.10	0.09
Power Rating (V/Hz)	120/60		

Supply and exhaust air flows through a single exterior opening



FV-WC04VE1
Optional Exterior Wall Cap



FV-EB04VE1
Optional Elbow



NEW

ecovent™ | Cost effective, ENERGY STAR® Spot Ventilation Solution

FV-07VBA1 + FV-07VBB1 70 CFM with Veri-Boost™ 4" Duct



EcoVent Key Benefits:

- Ideal for new residential construction
- Perfect cost effective ENERGY STAR® solution for Home Builders
- 70CFM – 1.1 sones at 0.1" w.g. (56 CFM/1.4 sones at 0.25" w.g.)
- Unique VeriBoost™ integral switch ensures the fan meets designed airflow requirements and provides Ventilation Verification Assurance: ≥50 CFM installed performance, to help meet the new ENERGY STAR® 3.0 standards
- Small grill design complements the aesthetics of your bathroom, powder room or laundry room
- Fits in 2 x 6 construction
- Available in contractor packs only – housing and motor/grille packaged separately reduces risk of parts being lost or damaged on site
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Can be used to comply with ASHRAE 62.2, LEED and ENERGY STAR® for Homes 3.0

EcoVent	FV-07VBA1 + FV-07VBB1			
Characteristics	Standard		Veri-Boost™ Activated	
Static pressure in inches w.g.	0.1	0.25	0.1	0.25
Air Volume (CFM)	70	56	90	75
Noise (sones)	1.1	1.4	1.5	2.0
Power Consumption (Watts)	20.0	20.0	24.0	24.0
Energy Efficiency (CFMs/Watt)	3.5	2.8	3.8	3.1
Speed	907	1200	1019	1266
Current	0.15	0.14	0.19	0.18
Power Rating (V/Hz)	120/60			

EcoVent U-Can Contractor Packs

Model #	Description	Contents	Master Pack*
FV-07VBA1	Universal Housing Can	Housing Can, Duct Adapter & Junction Box	4
FV-07VBB1	Motor/Grille Assembly	Motor & Grille	4

*Must order in quantities of 4, shipment will contain 1 box with 4 pieces of each item.



Built-in Veri-Boost™ switch provides a 20 CFM boost



FIELD ADJUSTABLE
AIRFLOW CAPABILITY



WhisperWarm™ | Quiet Heat Solution

FV-11VH2 110 CFM 4" Duct
FV-11VHL2 110 CFM 4" Duct



- WhisperWarm Key Benefits:**
- Durable 1400W stainless steel sheathed heating element
 - Totally enclosed condenser motor for long life – rated 30,000 hours continuous run
 - Thermal fuse protection on motor and 3-level safety device for heater
 - Quick 1 minute warm-up
 - Light option includes (2) 13W self ballasted GU24 base CFL lamps and a 4W night light
 - Minimum 20 Amp dedicated circuit required
 - For optimum performance, install heater no more than 8 feet from floor to ceiling
 - Fits in 2 x 8 construction

WhisperWarm	FV-11VH2		FV-11VHL2	
Characteristics				
Static pressure in inches w.g.	0.1	0.25	0.1	0.25
Air Volume (CFM)	110	89	110	89
Noise (sones)	0.6	1.0	0.7	1.0
Power Consumption (Watts)	30.7	30.5	30.6	30.5
Energy Efficiency (CFMs/Watt)	3.6	2.9	3.6	2.9
Speed	778	935	812	956
Current	0.25	0.25	0.25	0.25
Power Rating (V/Hz)	120/60		120/60	

INCLUDES: (2) 13W ENERGY STAR® rated self ballasted GU24 base CFL lamps and a 4W night light. 3500 Kelvin/ 80+ CRI/997 Lumens per lamp/75 Lumens per watt/ 10,000 hours rated average life at 3 hours per start.



WhisperCeiling™ | Quiet, Spot Ventilation Solution

FV-20VQ3 190 CFM 6" Duct
FV-30VQ3 290 CFM 6" Duct
FV-40VQ4 390 CFM 6" Duct



- WhisperCeiling Key Benefits:**
- Quiet, yet powerful, large volume exhaust fans ideal for light commercial applications
 - Fits in 2 x 8 construction
 - UL listed for tub/shower enclosure when used with a GFCI protected circuit
 - Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperCeiling	FV-20VQ3		FV-30VQ3		FV-40VQ4	
Characteristics						
Static pressure in inches w.g.	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	190	145	290	257	390	356
Noise (sones)	0.8	1.4	2.0	N/A	3.0	3.0
Power Consumption (Watts)	43.7	42.9	64.0	62.0	111.4	109.6
Energy Efficiency (CFMs/Watt)	4.6	3.6	4.5	4.1	3.5	3.3
Speed	761	949	877	990	793	874
Current	0.34	0.33	0.53	0.52	0.99	0.98
Power Rating (V/Hz)	120/60		120/60		120/60	



NEW

WhisperSupply Wall™ | Filtered Supply Air Solution

FV-01WS2 10 CFM/On/Off switch 4" Duct
FV-04WS2 20 CFM/40 CFM/Off switch 6" Duct



- WhisperSupply Wall Benefits:**
- Filtered supply air fan solution to meet ASHRAE 62.2 requirements for make-up/supply air
 - Easy installation in new construction or retrofits
 - Designed for use in conjunction with furnace blower in Combustion Appliance Zone (CAZ) depressurization situations
 - Interior deflector enhances airflow for improved Indoor Air Quality (IAQ)
 - Merv 8 filter included
 - Includes interior wall duct and exterior ventilation cap
 - Can be used to comply with ASHRAE 62.2, LEED, and California Title 24

WhisperSupply Wall	FV-01WS2	FV-04WS2
Characteristics		
Static pressure in inches w.g.	0.3	0.3
Air Volume (CFM)	10	20
Noise (sones)	<0.3	<0.3
Power Consumption (Watts)	3	5.2
Energy Efficiency (CFMs/Watt)	4.7	4.8
Speed	2662	1738
Current	0.03	0.06
Power Rating [V/Hz]	120/60	120/60



WhisperWall™ | Through the Wall Spot Ventilation Solution

FV-08WQ1 70 CFM 8" Duct



- WhisperWall Key Benefits:**
- UL listed for through-the-wall application
 - 10" galvanized sleeve and steel exterior hood included
 - UL listed for tub/shower enclosure when used with a GFCI protected circuit
 - Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperWall	FV-08WQ1
Characteristics	
Static pressure in inches w.g.	0.03
Air Volume (CFM)	70
Noise (sones)	1.1
Power Consumption (Watts)	18.0
Energy Efficiency (CFMs/Watt)	4.3
Speed	660
Current	0.20
Power Rating [V/Hz]	120/60



Exterior Hood included



WhisperLine™ | Remote Mount, In-line Spot Ventilation Solution

FV-10NLF1	120 CFM	4" Duct
FV-20NLF1	240 CFM	6" Duct
FV-30NLF1	340 CFM	6" Duct
FV-40NLF1	440 CFM	8" Duct



WhisperLine Key Benefits:

- Remote mount in-line fan for single or multiple inlets
- Insulated housing to prevent condensation and noise
- Tapered duct adapter for easy connection
- 5 positions for installation
- Joist or truss attachment brackets included
- Suspension brackets included
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperLine Characteristics	FV-10NLF1			FV-20NLF1			FV-30NLF1			FV-40NLF1		
Static pressure in inches w.g.	0.2	0.3	0.4	0.2	0.3	0.4	0.2	0.3	0.4	0.2	0.3	0.4
Air Volume (CFM)	120	105	82	240	225	200	340	322	302	440	421	407
Power Consumption (Watts)	36.2	35.0	33.5	55.5	53.5	51.1	95.2	93.5	91.5	136	132	130
Energy Efficiency (CFMs/Watt)	3.5			4.1			3.2			3.2		
Speed	1590			1260			1337			1150		
Current	0.31			0.46			0.86			1.10		
Power Rating (V/Hz)	120/60			120/60			120/60			120/60		

WhisperLine Installation Kits					
Model No.	Description	Inlet Grille	Backdraft Damper	Clamp	Y-Adapter
FV-NLF04G	4" Inlet Grille + Metal Plate	1 (4")	-	-	-
FV-NLF06G	6" Inlet Grille + Metal Plate	1 (6")	-	-	-
PC-NLF04S	4" Single Inlet Kit	1 (4")	1 (4")	6	-
PC-NLF06S	6" Single Inlet Kit	1 (6")	1 (6")	6	-
PC-NLF04D	4" Double Inlet Kit	2 (4")	2 (4")	12	1 (4"- 4"x 2)
PC-NLF06D	6" Double Inlet Kit	2 (6")	2 (6")	12	1 (6"- 6"x 2)
PC-NLF64D	6"-4" Double Inlet Kit	2 (4")	2 (4")	12	1 (6"- 4"x 2)
PC-NLF86Y	8"-6" Y-Adapter	-	-	-	1 (8"- 6"x 2)



NEW

WhisperControl

Condensation Sensor Plus

On/Off—
FV-WCCS1-W (White),
FV-WCCS1-A (Light Almond)
On/Off/Light—
FV-WCCS2-W (White),
FV-WCCS2-A (Light Almond)



FV-WCCS1-W



FV-WCCS2-A

Condensation Sensor Plus
Features & Benefits:

- Intelligent and advanced sensor technology monitors humidity and temperature to anticipate dew point, automatically operating the fan to control moisture
- Automatic seasonal adaptability with optional Moisture Sensitivity Selector allows fine tuning for dry or moist environments
- Adjustable Minutes Per Hour (MPH) Fan Timer ensures consistent and controlled ventilation throughout the day for compliance with ASHRAE 62.2
- Automatic Fan Control – 30 minute countdown timer initiates after moisture returns to normal levels
- Manual Fan Control – 20 minute countdown timer initiates once fan is turned on
- Blue LED indicates when the fan is on
- Commercial Grade – 8 Amp max load, 2 year limited warranty*
- Engineered to efficiently control current LED lighting and DC motor loads
- For indoor use. Includes matching wall plate
- Can be used to comply with ASHRAE 62.2, LEED, ENERGY STAR® 3.0 and CALGreen

*One year additional fan warranty available when a Panasonic WhisperCeiling/Lite, WhisperValue or WhisperFit/Lite fan is controlled by a Panasonic Condensation Sensor Plus.

WhisperControl Condensation Sensor Plus	FV-WCCS1-W/A	FV-WCCS2-W/A
Ground	Grounding	Grounding
Feature	Blue LED	Blue LED
Amperage	15 Amp	15 Amp
Maximum Fan Load	8 Amp	8 Amp
Voltage	120 Volts	120 Volts
Termination	6" Leads	6" Leads
Dry Contact Switching	24 Volt AC Input/Output	24 Volt AC Input/Output
Connections (Copper Wire Connections)	Use #14 or #12	Use #14 or #12
Max. Fluorescent Light Load	NA	400 Watt
Standard Certifications	UL/CSA Listed	UL/CSA Listed
Warranty	2 Year Limited	2 Year Limited

Moisture Sensitivity Selector Settings



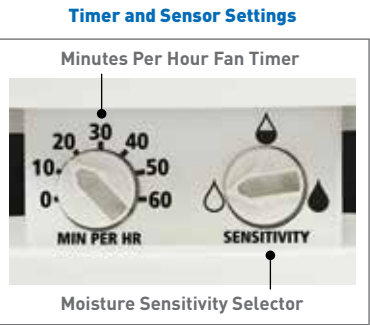
High Sensitivity – Setting the Condensation Sensor Plus to it's most sensitive setting covers the widest range of humidity. This is a setting for dryer climates and/or larger rooms. In a very dry environment, higher sensitivity is needed.



Average Sensitivity – The Condensation Sensor Plus comes factory set to this most common setting.



Low Sensitivity – The least sensitive setting is used in hotter and more humid climates. In a very moist environment, low moisture sensitivity may be needed to avoid excessive fan run-time.



NEW

WhisperControl

Preset Countdown and Hourly Timer

On/Off—
FV-WCD01-W (White),
FV-WCD01-A (Light Almond)
On/Off/Light—
FV-WCD02-W (White),
FV-WCD02-A (Light Almond)



FV-WCD01-W



FV-WCD02-A

Preset Countdown and Hourly Timer
Features & Benefits:

- Preset the fan timer anywhere from 5-60 minutes
- Adjustable Minutes Per Hour (MPH) Fan Timer ensures consistent and controlled ventilation throughout the day for compliance with ASHRAE 62.2
- Manual On/Off Fan Control
- Blue LED indicates when the fan is on
- Commercial Grade, 8 Amp max load, 2 year limited warranty
- Engineered to efficiently control current LED lighting and DC motor loads
- For indoor use. Includes matching wall plate
- Can be used to comply with ASHRAE 62.2, LEED and ENERGY STAR® 3.0

Preset Countdown and Hourly Timer	FV-WCD01-W/A	FV-WCD02-W/A
Ground	Grounding	Grounding
Feature	Blue LED Light	Blue LED Light
Amperage	8 Amp	8 Amp
Dry Contact Switching	24V AC input/output	24V AC input/output
Max. Fluorescent Light Load	N/A	400 Watt
Termination	6" Leads	6" Leads
Standard Certifications	UL/CSA Listed	UL/CSA Listed
Warranty	2 Year Limited	2 Year Limited

Timer Settings



ecoswitch

FV-WCSW11-W (White)
FV-WCSW11-A (Light Almond)



1 Function EcoSwitch Features & Benefits:

- Fan On/Off Switch
- Engineered to efficiently control current LED lighting and DC motor loads
- Back and side wiring terminals accept both solid and stranded wire to ease installation
- Full-rated current capacity with fluorescent or resistive loads. Motor capacity is 80% of switch rating
- Fits single gang box / Includes matching wall plate
- Commercial Grade

Specifications	FV-WCSW11-W/A
Ground	Grounding
Feature	Single Pole
Amperage	15 Amp
Voltage	120 Volt
Terminations	Quickwire Push-in, and Side Connection
Standards & Certifications	UL/CSA Listed
Warranty	2 Year Limited



ecoswitch

FV-WCSW21-W (White)
FV-WCSW21-A (Light Almond)



2 Function EcoSwitch Features & Benefits:

- Multi-switch combination devices save space and add convenience
- Engineered to efficiently control current LED lighting and DC motor loads
- Common feed shunted internally to all switches
- Elegant decorator styling provides multiple controls in a single-gang wall box
- Fits single gang box / Includes matching wall plate
- Commercial Grade

Specifications	FV-WCSW21-W/A
Ground	Grounding
Feature	Single Pole / Single Pole
Amperage	15 Amp
Voltage	120 Volt
Terminations	Side Connection
Standards & Certifications	UL/CSA Listed
Warranty	2 Year Limited



ecoswitch

FV-WCSW31-W (White)
FV-WCSW31-A (Light Almond)



3 Function EcoSwitch Features & Benefits:

- Multi-switch combination devices save space and add convenience
- Engineered to efficiently control current LED lighting and DC motor loads
- Common feed shunted internally to all switches
- Elegant decorator styling provides multiple controls in a single-gang wall box
- Fits single gang box / Includes matching wall plate
- Commercial Grade

Specifications	FV-WCSW31-W/A
Ground	Grounding
Feature	Single Pole / Single Pole / Single Pole
Amperage	15 Amp
Voltage	120 Volt
Terminations	Quickwire Push-In, and Side Connection
Standards & Certifications	UL/CSA Listed
Warranty	2 Year Limited



ecoswitch

FV-WCSW41-W (White only)

Designed for model FV-11VHL2
Heater/Fan/Light/Night-light



4 Function EcoSwitch Features & Benefits:

- Single pole/double throw on-off-on top switch, two single pole on-off switches
- Multi-switch combination saves space and adds convenience
- Common feed shunted internally to all switches
- Commercial grade
- Includes matching wall plate
- Elegant styling provides multiple controls in a single-gang wall box
- 2 year limited warranty

Specifications	FV-WCSW41-W/A
Ground	Grounding
Feature	Single pole / double throw on-off-on top switch, two single pole on-off switches
Individual Switch Amperage	15 Amp
Total Switch Amperage	20 Amp
Voltage	120 Volt
Terminations	Quickwire and wire leads
Standards & Certifications	UL/CSA Listed
Warranty	2 Year Limited



SmartExhaust™

Controls

FV-WCPT1-W

Fan/Light Control
Delay Timer
Wall plate not included



SmartExhaust™ Features & Benefits:

- Earn LEED and ENERGY STAR® points for enhanced exhaust ventilation
- Replaces both fan and light switches for one easy operation
- Microprocessor technology provides precise ventilation times
- Programmable DELAY and VENTILATION settings
- Excess manual and/or delay operation is subtracted from the next hours programmed ventilation time
- Works with ALL incandescent, CFL, fluorescent and LED lights
- Make standard bath fans ASHRAE 62.2 complaint when used with ASHRAE 62.2 complaint fans

Configuring Ventilation Time

In order to properly set the VENTILATION time on your SmartExhaust™, you will need to know the code required CFM (Cubic Feet Per Minute) for your home and the Fan CFM. Follow this simple equation to calculate the VENTILATION minutes per hour.

Code Required Ventilation in CFM		Fan CFM		=	Hour Fraction
Hour Fraction	×	60 Minutes	=	Ventilation Settings in Minutes	

CFM = Cubic Feet Per Minute

SmartExhaust™ Settings:

VENTILATION setting allows the user to set the number of minutes per hour the fan should run.

DELAY setting allows the user to set the number of minutes the fan should run after the bathroom light has been turned off. This setting provides additional run time for the fan to complete the remaining necessary ventilation after use. **SmartExhaust™** replaces an existing switch, there are no additional labor costs required for installation. Simple and economical fan and light operation is provided by one switch.

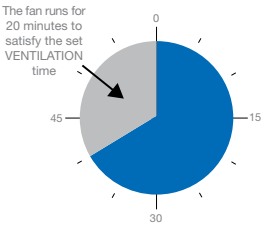
Example

The SmartExhaust™ has a microprocessor in it that reads the two settings dials. If for example the VENTILATION dial is set to 20 minutes/hour, the microprocessor will subtract 20 minutes from 60 minutes and determines that the SmartExhaust™ needs to come on 40 minutes into the hour and run for the remaining 20 minutes of that hour.

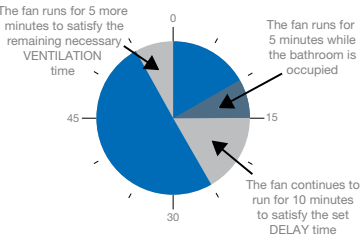
If the DELAY dial is set to 10 minutes and the light/fan switch is manually turned on for 5 minutes, the microprocessor will keep track of the 5 minutes of use. When the switch is turned off after the 5 minutes, the microprocessor will continue to run the fan for the 10 minutes of DELAY setting adding up to a total of 15 minutes. The 15 minutes will be subtracted from the total required 20 minutes of VENTILATION time. 55 minutes into the hour, the fan will turn on and run for the 5 additional minutes needed to complete the required ventilation.

See diagram for more details

A Normal Hour of Operation with no occupancy



The Bathroom is occupied for 5 minutes



Ceiling Radiation Damper

PC-RD05C4



Radiation Damper Features:

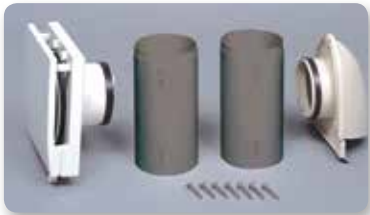
- UL classification (UL standard 555C) for use in 1, 2 or 3 hour fire-rated floor/ceiling and roof/ceiling designs
- Compatible with 50-150 CFM fans, fans with motion sensor and select fan/lights
- Galvanized steel frame with 165°F fusible link
- High temperature, non-asbestos, reinforced fiber thermal fabric

Damper Model PC-RD05C4	Fan Model approved for:
	WhisperGreen Select™, WhisperCeiling 50-150 CFM, WhisperLite, WhisperSense, WhisperSense Lite, WhisperWelcome, WhisperFit, WhisperFit Lite, WhisperValue, WhisperValue Lite



Passive Inlet Vent

FV-GKF32S1



Inlet Vent Features:

Panasonic Passive Inlet provides make-up air to help balance indoor vs. outdoor air pressure.

- Foam pad reduces outdoor noise and condensation
- Insulation lining to prevent condensation
- Durable ABS and PP resin body
- 7 stainless steel installation screws included
- Sturdy open/close lever
- 2-position air delivery

Passive Inlet		FV-GKF32S1
Specifications	Air Volume Positions	2
	CFM Settings	12 & 18
Features	Open/Close Louver Setting	Yes
	Washable Air Filter	Yes
	Bug Screen	Yes
	3" x 12" Sleeve Included	Yes
	Body	ABS & PP
Installation	Wall Opening (diameter)	3 inch
	Installation Screw Included	Yes

Designer Grilles



FV-GL3TDA



FV-GL3TDB

Designer Grille Features:

- Easy and affordable to change
- Change your grille to fit your room decor without compromising the performance and quality of the unit
- Applicable Models
 - WhisperGreen Select™ (Fan only models):** FV-05-11VK1, FV-11-15VK1, FV-05-11VKS1
 - WhisperCeiling:** FV-15VQ5, FV-11VQ5, FV-08VQ5, FV-05VQ5
 - WhisperFit:** FV-11VF2, FV-08VF2

	FV-GL3TDA	FV-GL3TDB
Characteristics		
Grille Size (inches sq.)	13	14-1/5
Shipping Gross Weight (lbs)	1.1	1.3
Trend Style Category	Traditional	Traditional
Material	ABS	ABS
UL Approved ¹	Yes	Yes
HVI Certified ¹	Yes	Yes
Mfg. in ISO 9001 Certified Facility	Yes	Yes

¹ Approved with applicable models.

Recommended Zones Map for WhisperComfort ERV (See page 36-37 for product details)



Cross Reference for Applicable WhisperControl & EcoSwitch to Panasonic Fans

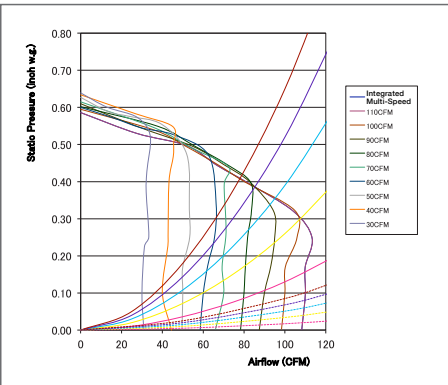
	Model	FV-WCCS1-W/A	FV-WCCS2-W/A	FV-WCD01-W/A	FV-WCD02-W/A	FV-WCSW11-W/A	FV-WCSW21-W/A	FV-WCSW31-W/A	FV-WCSW41-W
	Switch Type	Condensation Sensor On/Off	Condensation Sensor On/Off/Light	Countdown & Hourly Timer	Countdown & Hourly Timer	1 Function Control	2 Function Control	3 Function Control	4 Function Control
WhisperGreen Select	FV-05-11VK1	X		X		X			
	FV-11-15VK1	X		X		X			
	FV-05-11VKS1	X		X		X			
	FV-05-11VKL1		X		X		X		
	FV-11-15VKL1		X		X		X		
	FV-05-11VKS1				X		X**		
WhisperRecessed/ Recessed LED	FV-08VRL1		X				X		
	FV-08VRE1		X				X		
WhisperCeiling	FV-05VQ5	X		X		X			
	FV-08VQ5	X		X		X			
	FV-11VQ5	X		X		X			
	FV-15VQ5	X		X		X			
	FV-20VQ3	X		X		X			
	FV-30VQ3	X		X		X			
	FV-40VQ3	X		X		X			
	FV-08VQL6		X		X		X	X	
	FV-11VQL6		X		X		X	X	
	FV-15VQL6		X		X		X	X	
WhisperSense Lite	FV-08VQCL6				X		X**		
	FV-11VQCL6				X		X**		
WhisperFit	FV-08VF2	X		X		X			
	FV-11VF2	X		X		X			
	FV-05VFL4		X		X		X	X	
	FV-08VFL4		X		X		X	X	
	FV-11VFL4		X		X		X	X	
WhisperValue	FV-05VS3	X		X		X			
	FV-08VS3	X		X		X			
	FV-10VS3	X		X		X			
	FV-08VSL3		X		X		X	X	
EcoVent	FV-07VBA1	X		X		X			
	FV-07VBB1	X		X		X			
WhisperSupply Wall	FV-01WS2	X		X		X			
	FV-04WS2	X		X					
WhisperWall	FV-08WQ1	X		X		X			
WhisperWarm	FV-11VH2*			X*		X*			
	FV-11VHL2*			X*	X				X*
WhisperLine	FV-10NLF1	X		X		X			
	FV-20NLF1	X		X		X			
	FV-30NLF1	X		X		X			
	FV-40NLF1	X		X		X			
WhisperComfort	FV-04VE1						X		

WhisperWelcome, WhisperSense, and WhisperGreen Select S/M models are not compatible with the above switches.
*Needs 1 control per function; **Switch is for light and night-light only.

Fans with Built-in Controls — Performance Curves



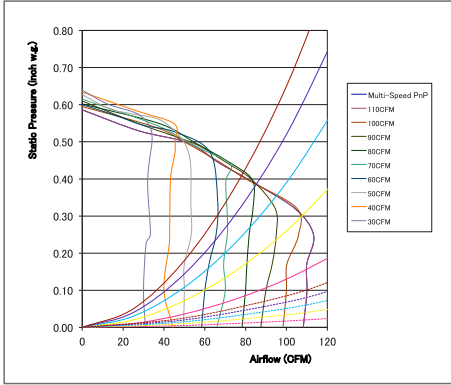
FV-05-11VKS1 30-110 CFM 4" or 6" Duct



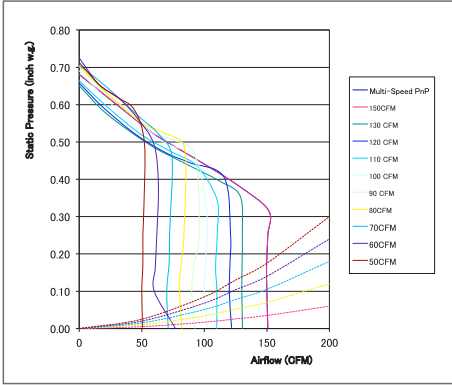
Single Speed Fans — Performance Curves



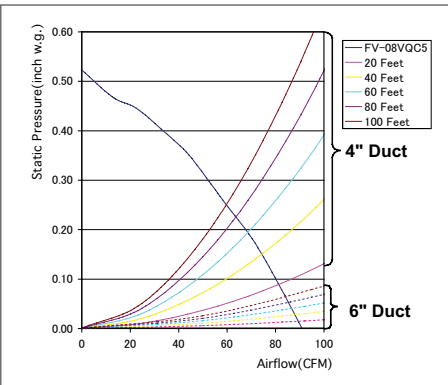
FV-05-11VK1 50-80-110 CFM 4" or 6" Duct



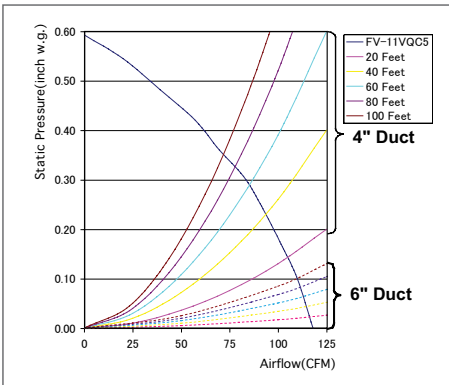
FV-11-15VK1 110-130-150 CFM 6" Duct



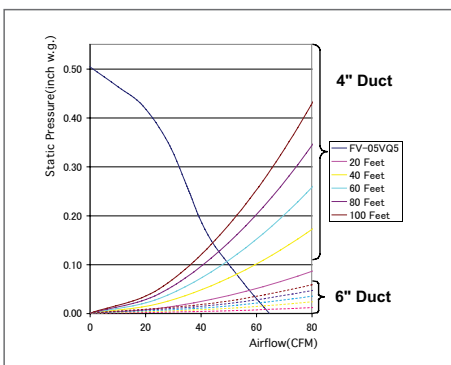
FV-08VQC5 80 CFM 4" or 6" Duct



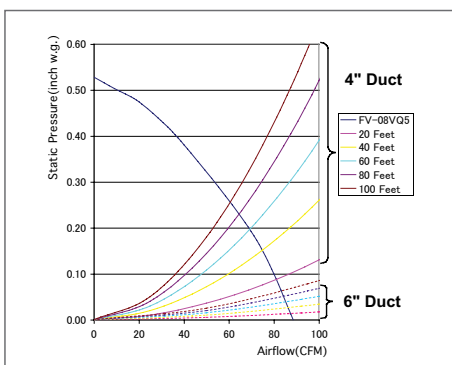
FV-11VQC5 110 CFM 4" or 6" Duct



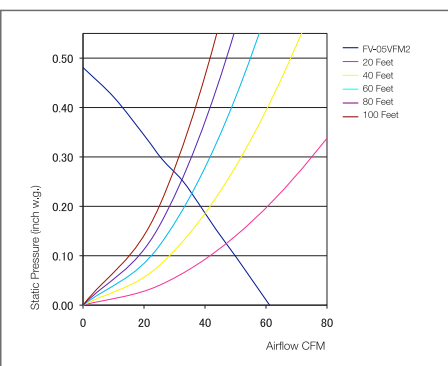
FV-05VQ5 50 CFM 4" or 6" Duct



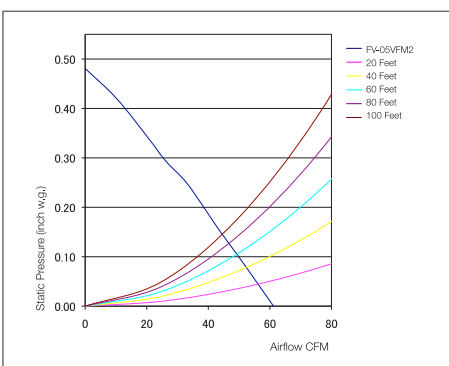
FV-08VQ5 80 CFM 4" or 6" Duct



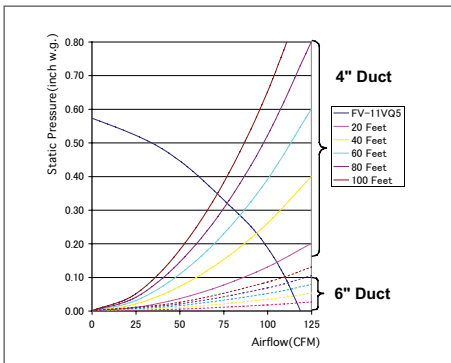
FV-05VFM2 50 CFM 3" Duct



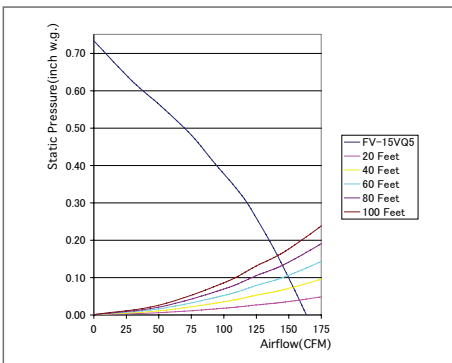
FV-05VFM2 50 CFM 4" Duct



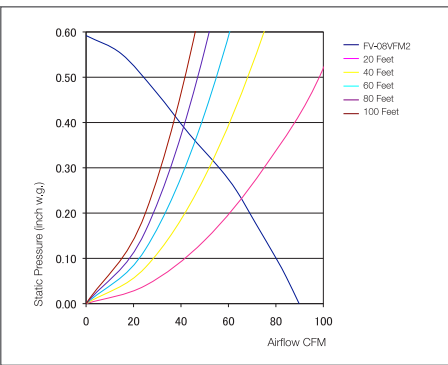
FV-11VQ5 110 CFM 4" or 6" Duct



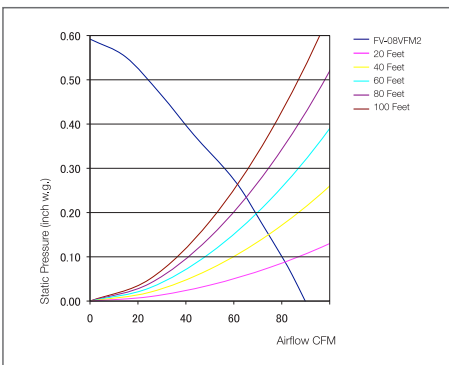
FV-15VQ5 150 CFM 6" Duct



FV-08VFM2 80 CFM 3" Duct



FV-08VFM2 80 CFM 4" Duct

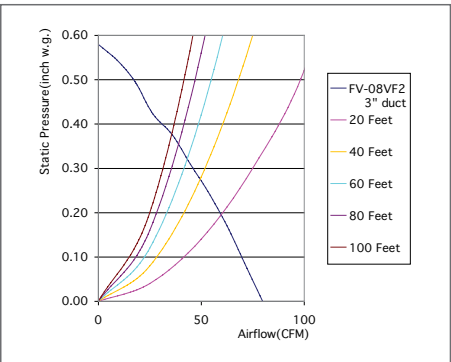


Single Speed Fans — Performance Curves (cont'd)

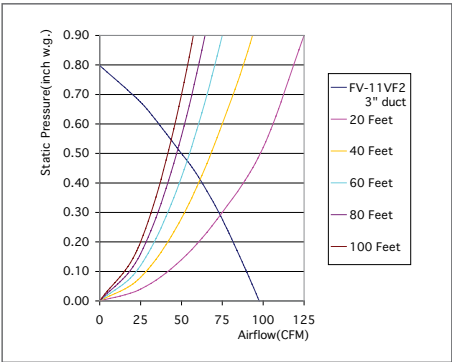
Fan/Lights with Built-In Controls — Performance Curves



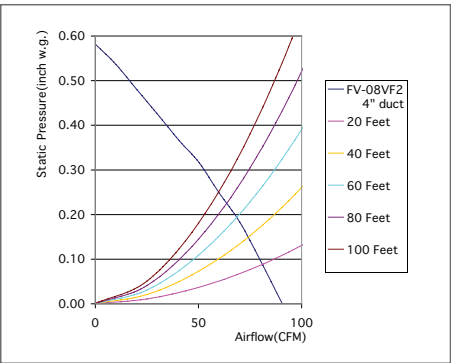
FV-08VF2 80 CFM 3" Duct



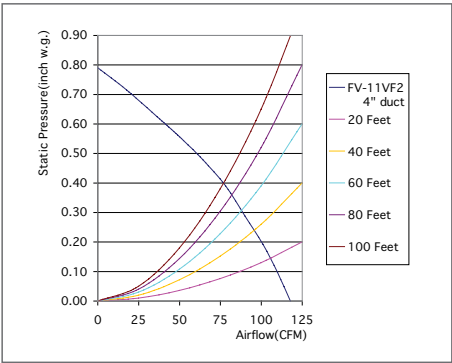
FV-11VF2 110 CFM 3" Duct



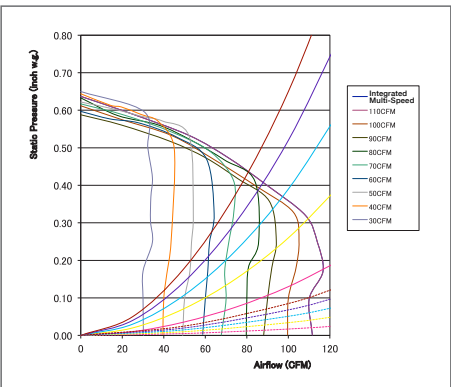
FV-08VF2 80 CFM 4" Duct



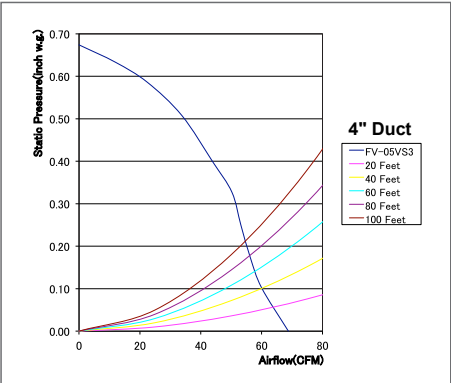
FV-11VF2 110 CFM 4" Duct



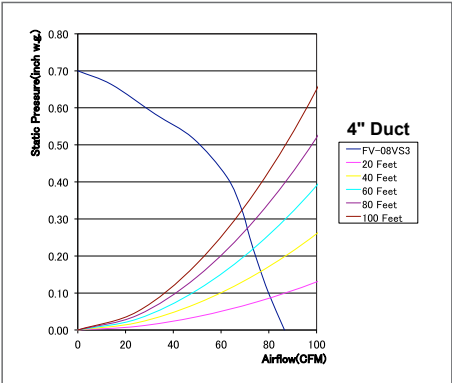
FV-05-11VKS1 30-110 CFM 4" or 6" Duct



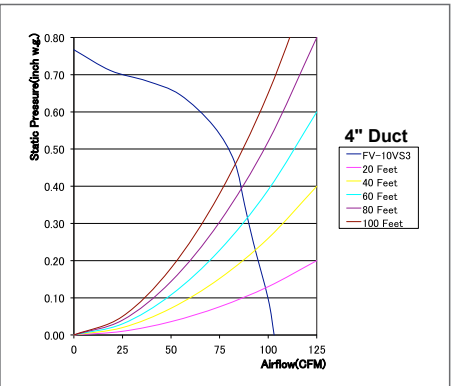
FV-05VS3 50 CFM 4" Oval Duct



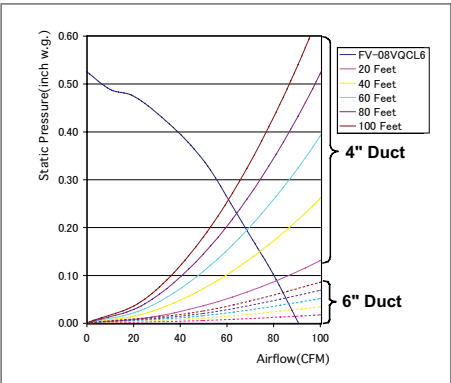
FV-08VS3 80 CFM 4" Oval Duct



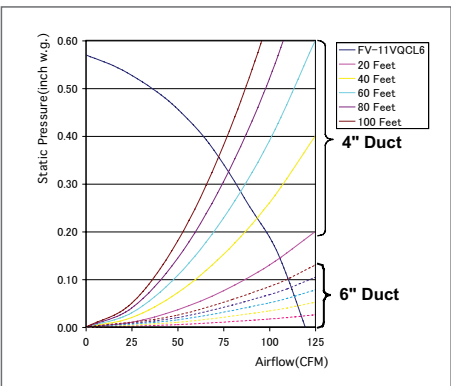
FV-10VS3 100 CFM 4" Oval Duct



FV-08VQCL6 80 CFM 4" or 6" Duct



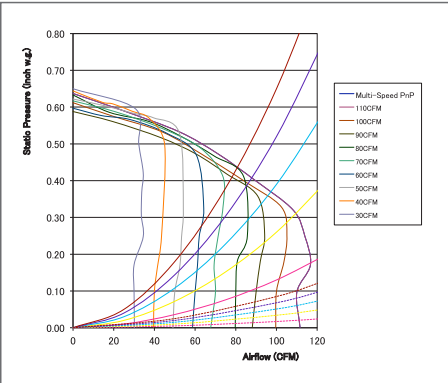
FV-11VQCL6 110 CFM 4" or 6" Duct



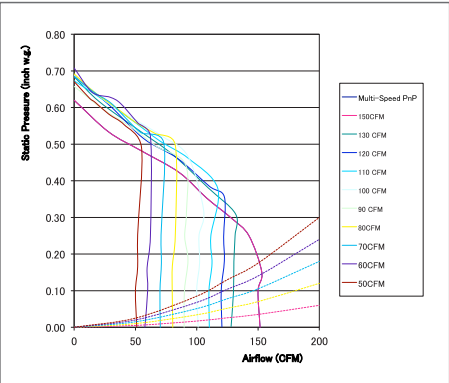
Single Speed Fans with Lights — Performance Curves



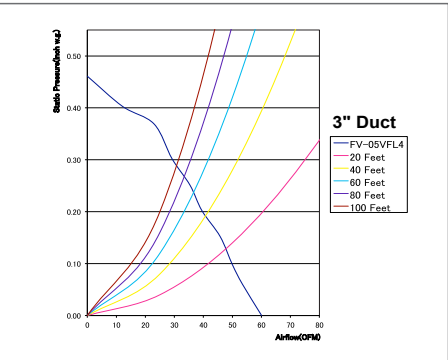
FV-05-11VKL1 50-80-110 CFM 4" or 6" Duct



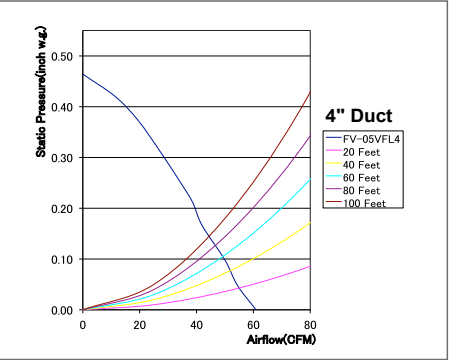
FV-11-15VKL1 110-130-150 CFM 6" Duct



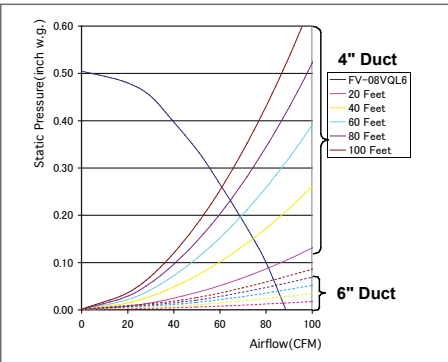
FV-05VFL4 50 CFM 3" Duct



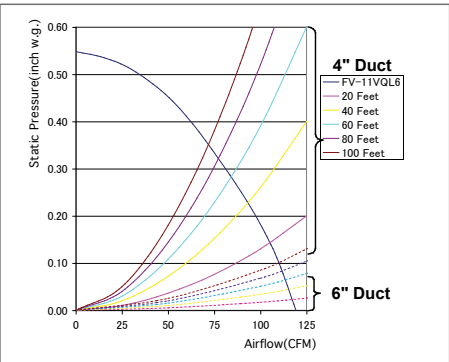
FV-05VFL4 50 CFM 4" Duct



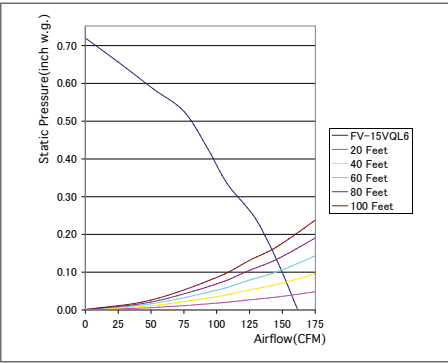
FV-08VQL6 80 CFM 4" or 6" Duct



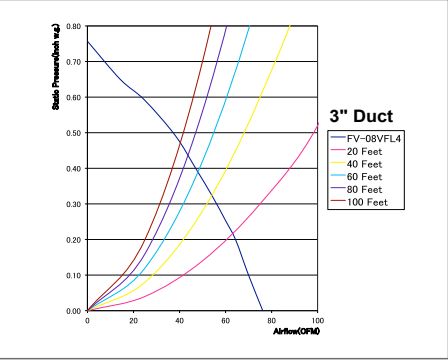
FV-11VQL6 110 CFM 4" or 6" Duct



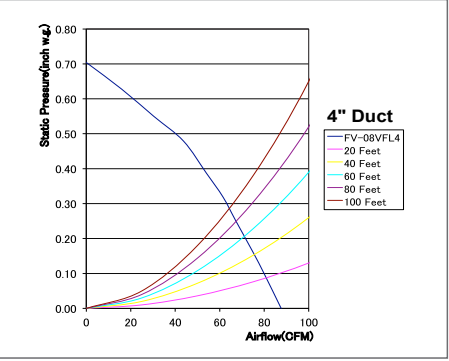
FV-15VQL6 150 CFM 6" Duct



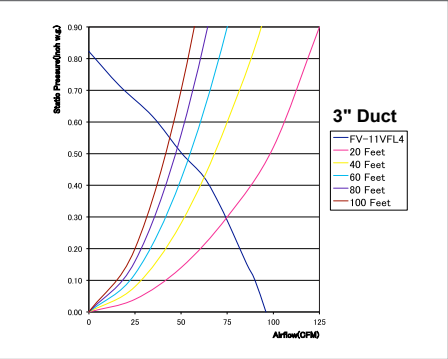
FV-08VFL4 80 CFM 3" Duct



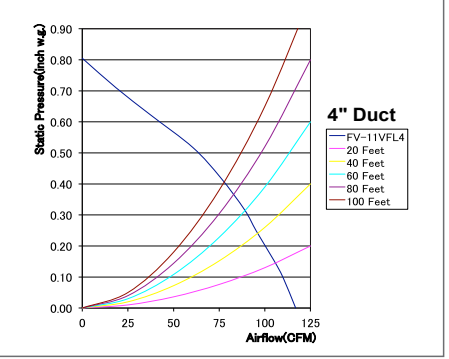
FV-08VFL4 80 CFM 4" Duct



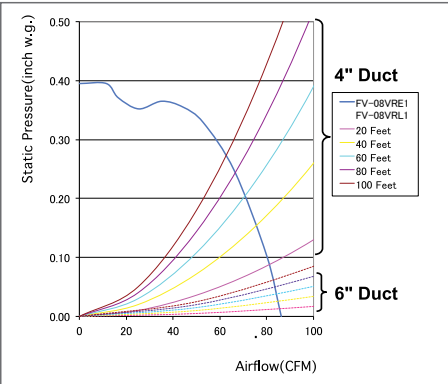
FV-11VFL4 110 CFM 3" Duct



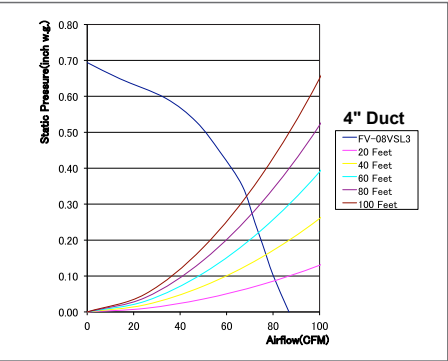
FV-11VFL4 110 CFM 4" Duct



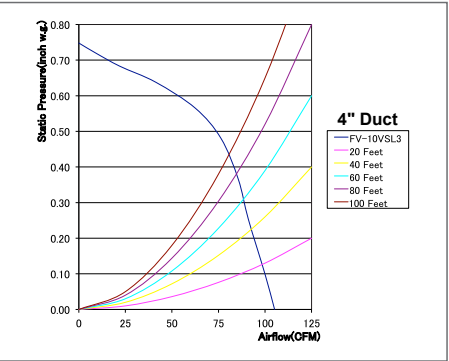
FV-08VRE1 & FV-08VRL1 80 CFM 4" or 6" Duct



FV-08VSL3 80 CFM 4" Oval Duct



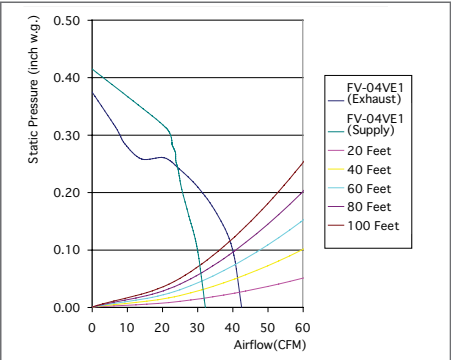
FV-10VSL3 100 CFM 4" Oval Duct



Specialty Fans — Performance Curves

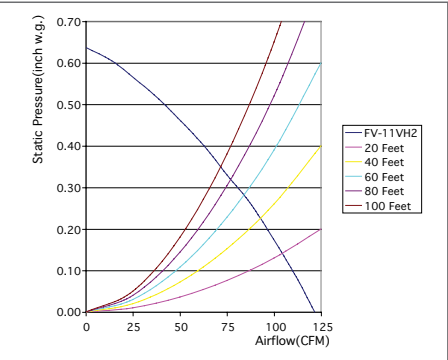
WhisperComfort™
VENTILATION FAN

FV-04VE1 40/20 CFM or 20/10 CFM 2 x 4" Ducts

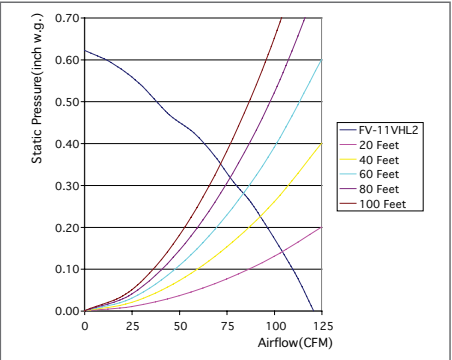


WhisperWarm™
VENTILATION FAN

FV-11VH2 110 CFM 4" Duct

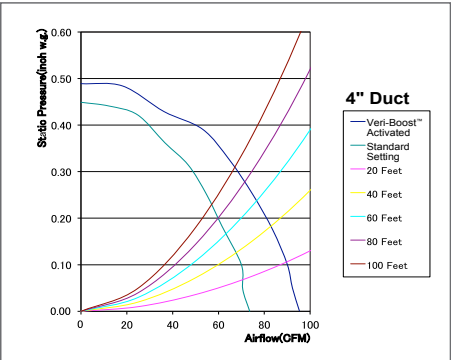


FV-11VHL2 110 CFM 4" Duct



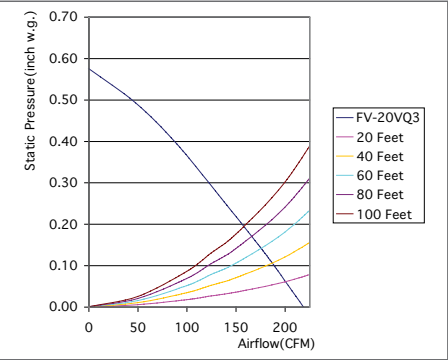
ecovent™
VENTILATION FAN

FV-07VBA1 + FV-07VBB1 70 CFM with Veri-Boost™ 4" Ducts

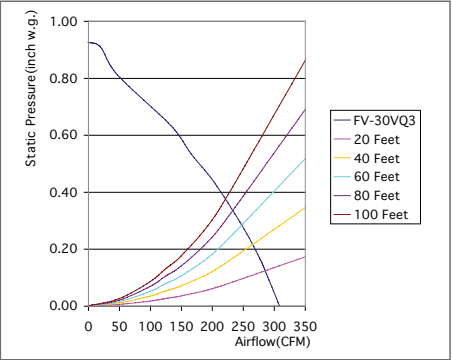


WhisperCeiling™
VENTILATION FAN

FV-20VQ3 190 CFM 6" Duct

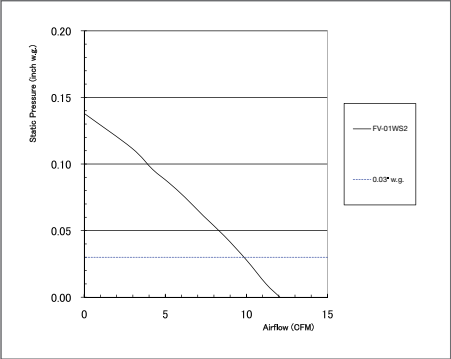


FV-30VQ3 290 CFM 6" Duct

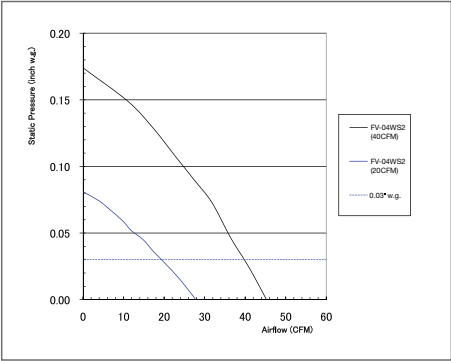


WhisperSupplyWall™
VENTILATION FAN

FV-01WS2 10 CFM 4" Duct

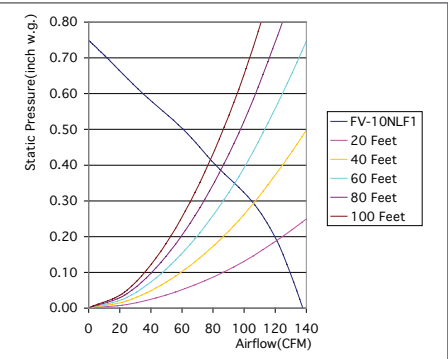


FV-04WS2 20 CFM & 40 CFM 6" Duct

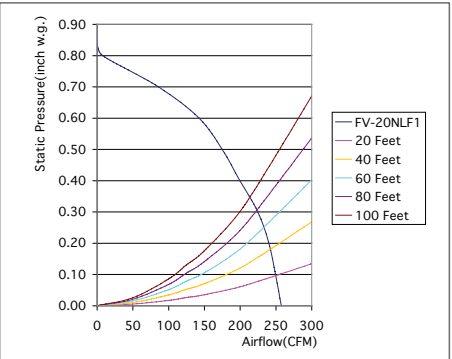


WhisperLine™
VENTILATION FAN

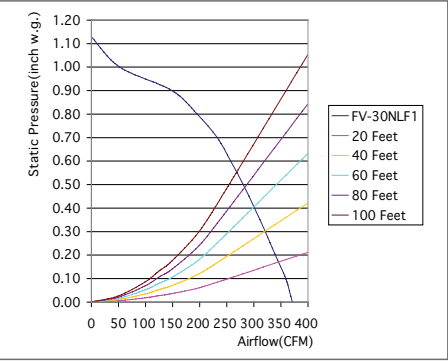
FV-10NLF1 120 CFM 4" Duct



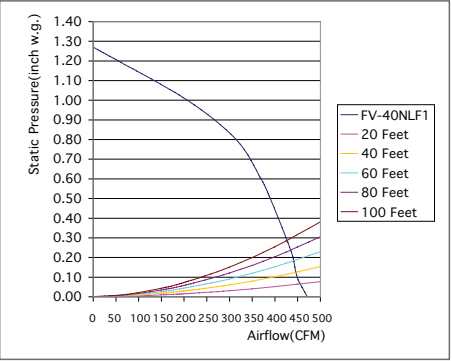
FV-20NLF1 240 CFM 6" Duct



FV-30NLF1 340 CFM 6" Duct

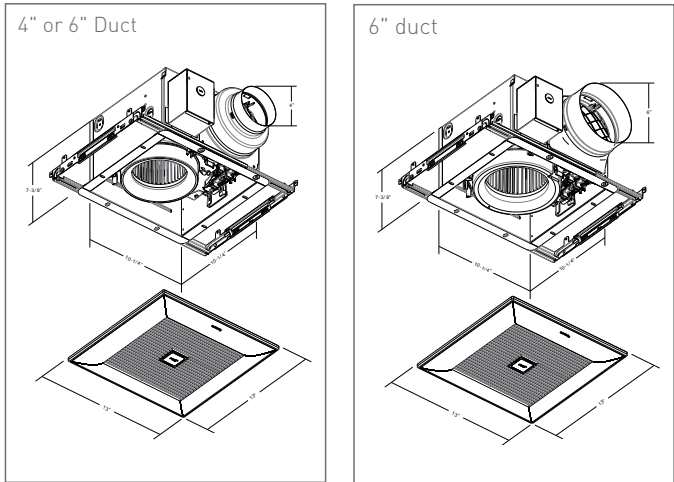


FV-40NLF1 440 CFM 8" Duct



Fans with Built-in Controls — Dimensional Drawings

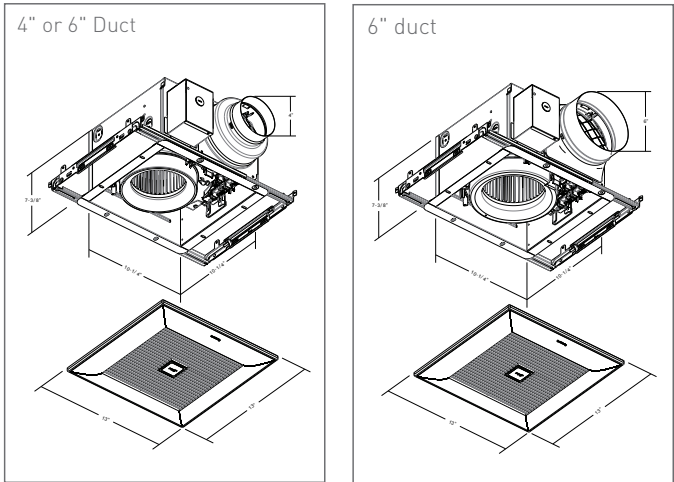
WhisperGreenSelect™
VENTILATION FAN



FV-05-11VK1 FV-11-15VK1

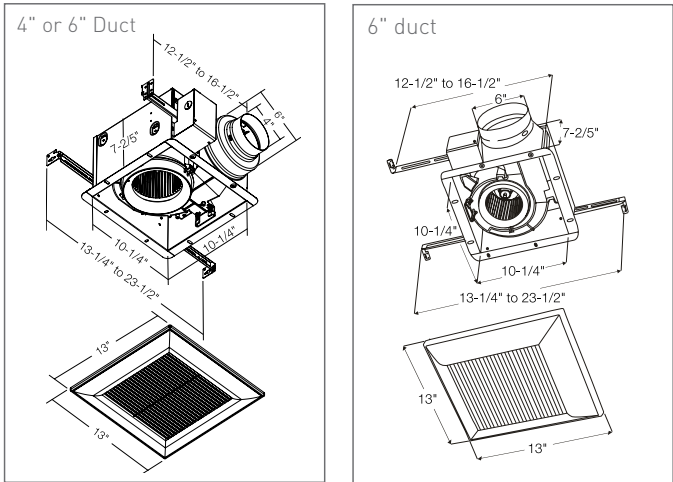
Single Speed Fans — Dimensional Drawings

WhisperGreenSelect™
VENTILATION FAN



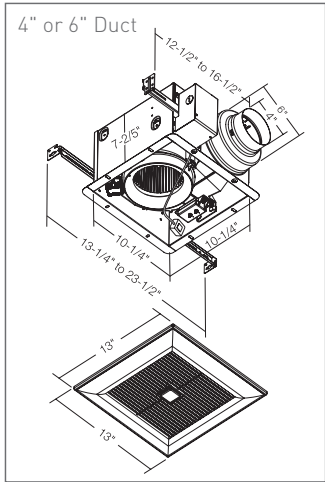
FV-05-11VK1 FV-11-15VK1

WhisperCeiling™
VENTILATION FAN



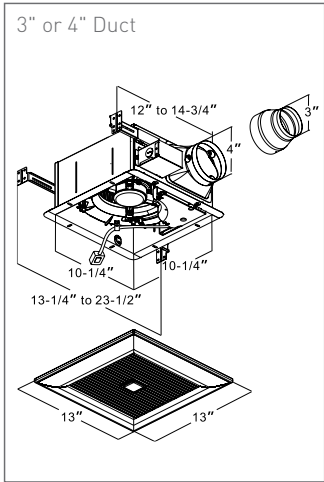
FV-05VQ5 / FV-08VQ5 / FV-11VQ5 FV-15VQ5

WhisperSense™
VENTILATION FAN



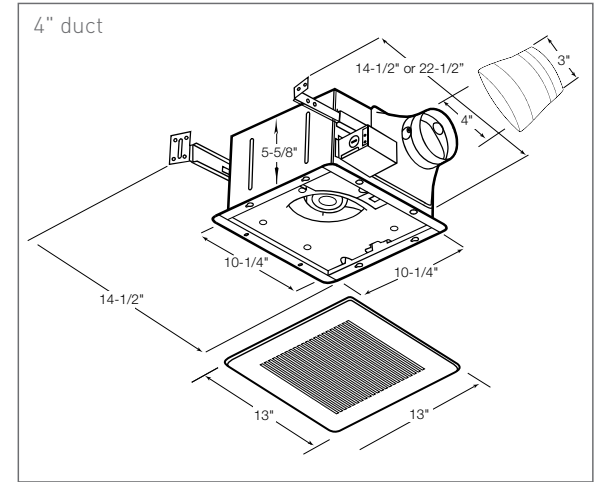
FV-08VQC5 / FV-11VQC5

WhisperWelcome™
VENTILATION FAN



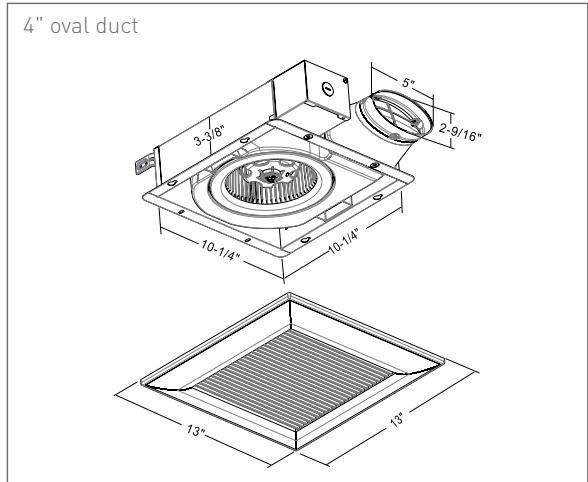
FV-08VQC5 / FV-11VQC5

WhisperFit™
VENTILATION FAN



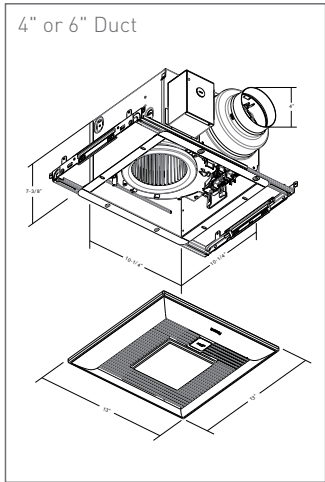
FV-08VF2 / FV-11VF2

WhisperValue™
VENTILATION FAN



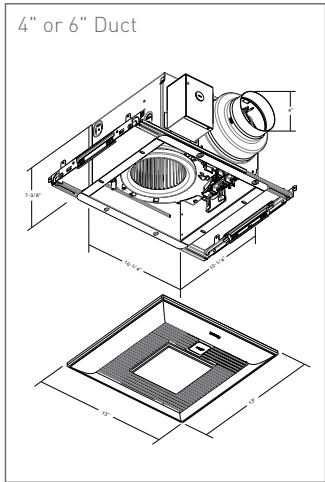
FV-05VS3 / FV-08VS3 / FV-10VS3

WhisperGreenSelect™
VENTILATION FAN

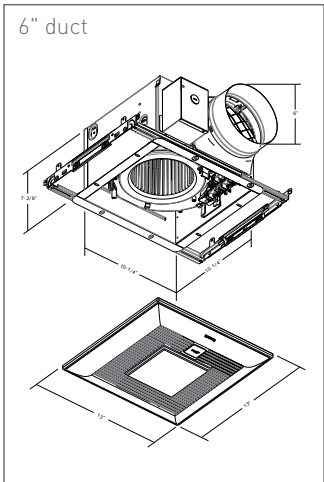


FV-05-11VKSL1

WhisperGreenSelect™
VENTILATION FAN

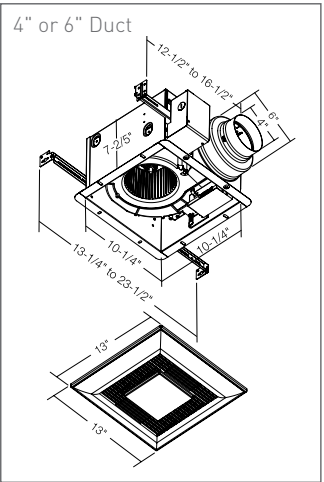


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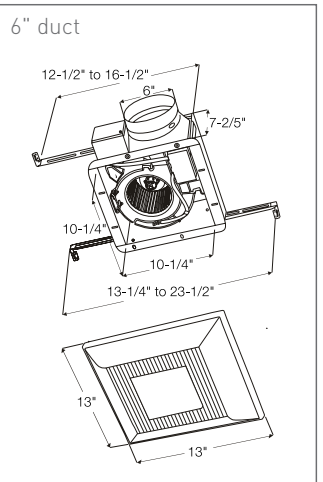


FV-11-15VKL1

WhisperLite®
VENTILATION FAN

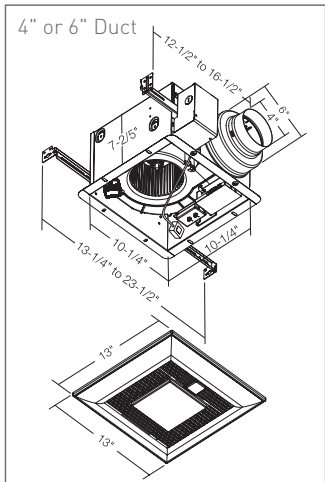


FV-08VQL6 / FV-11VQL6



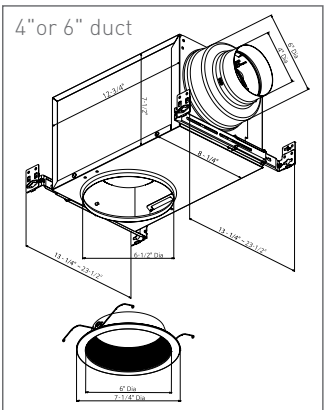
FV-15VQL6

WhisperSense Lite™
VENTILATION FAN



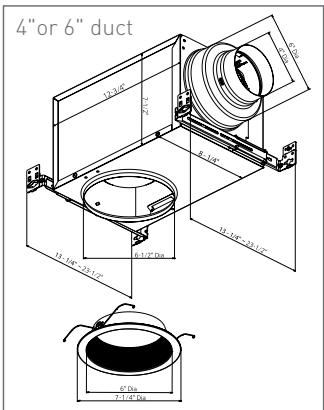
FV-08VQCL6 / FV-11VQCL6

WhisperRecessed LED™
VENTILATION FAN



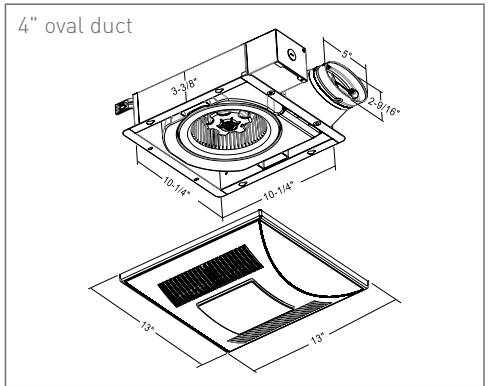
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WhisperRecessed™
VENTILATION FAN



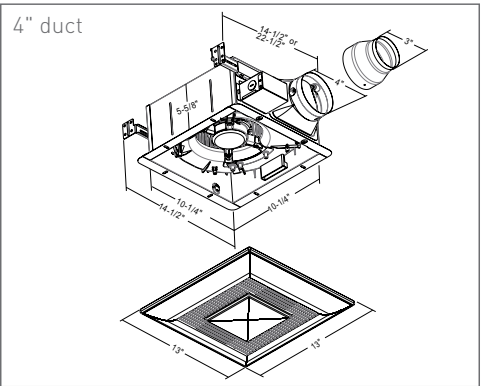
FV-08VRL1

WhisperValue Lite™
VENTILATION FAN



FV-08VSL3 / FV-10VSL3

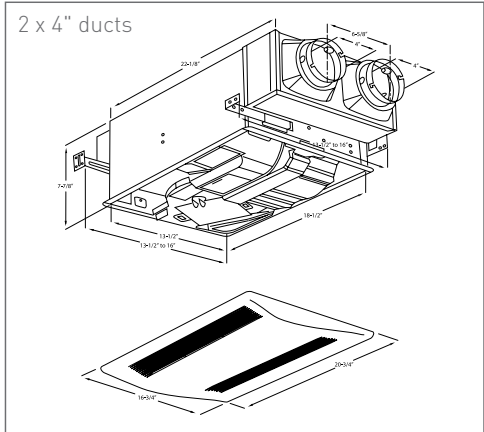
WhisperFit Lite™
VENTILATION FAN



FV-05VFL4 / FV-08VFL4 / FV-11VFL4

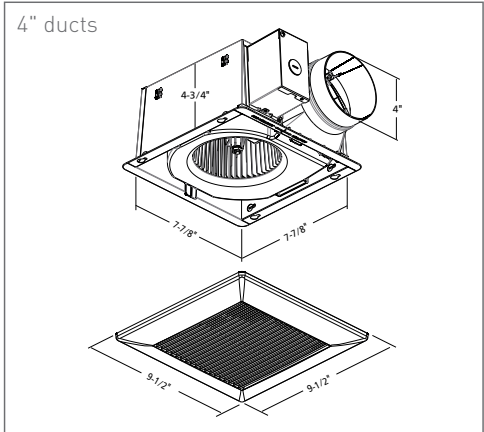
Specialty Fans — Dimensional Drawings

WhisperComfort™
VENTILATION FAN



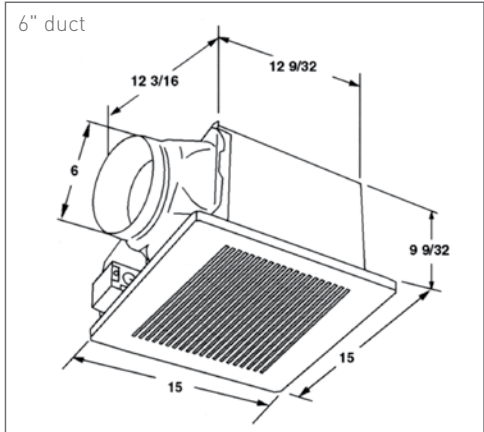
FV-04VE1

ecovent™

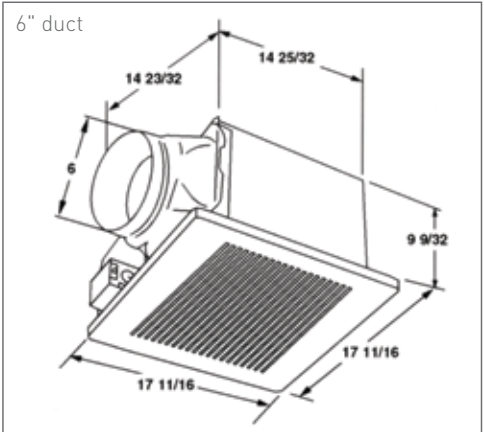


FV-07VBA1 + FV-07VBB1

WhisperCeiling™
VENTILATION FAN

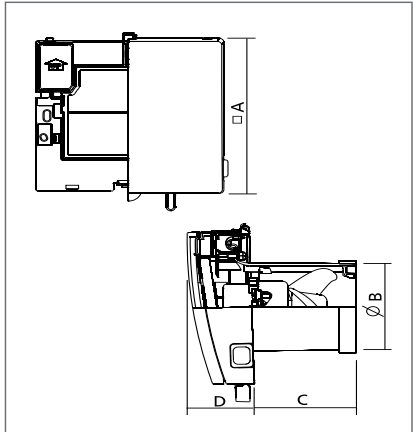


FV-20VQ3 / FV-30VQ3

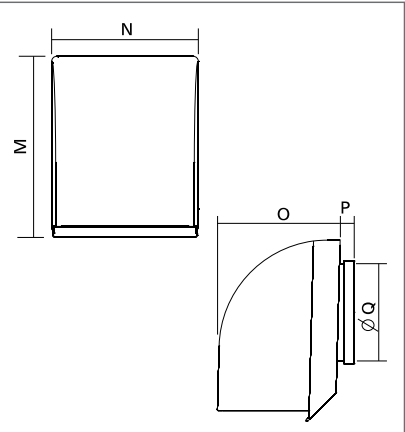
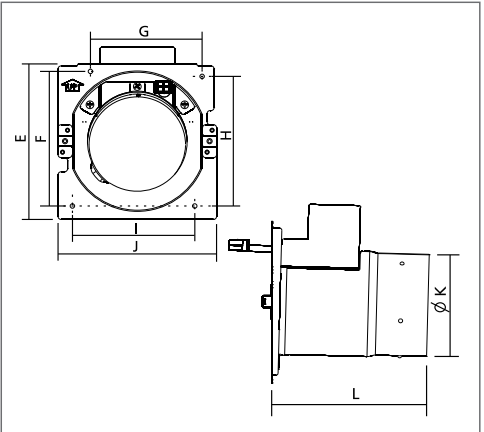


FV-40VQ4

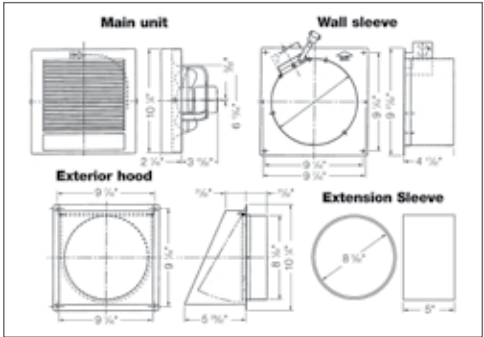
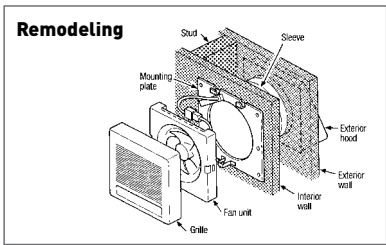
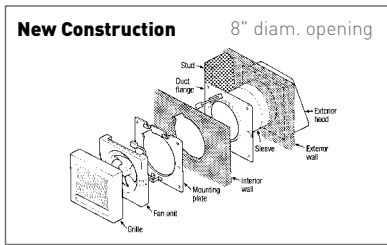
WhisperSupply Wall™
VENTILATION FAN



FV-01WS2 / FV-04WS2

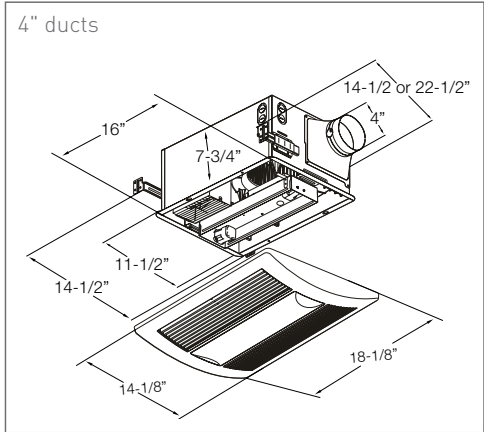


WhisperWall™
VENTILATION FAN

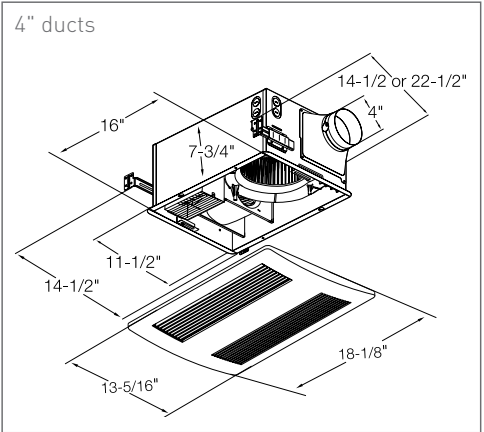


FV-08WQ1

WhisperWarm™
VENTILATION FAN

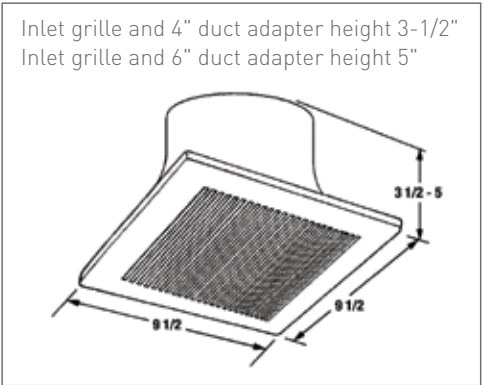
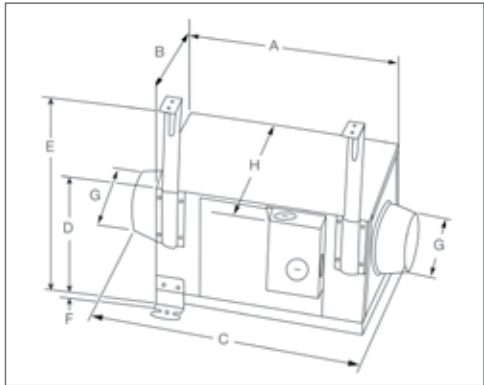


FV-11VHL2



FV-11VH2

WhisperLine™
VENTILATION FAN



WhisperLine Installation Kits								
Fan Model	A	B	C	D	E	F	G	H
FV-10NLF1	13-3/8"	9-1/2"	17-5/16"	7-7/8"	12-5/8" - 22-3/4"	5/16"	4"	11"
FV-20NLF1	13-3/8"	9-1/2"	21-5/8"	9-7/16"	12-5/8" - 24-7/16"	5/16"	6"	11"
FV-30NLF1	15-11/32"	10-5/8"	23-5/8"	11"	12-5/8" - 26"	5/16"	6"	12-1/8"
FV-40NLF1	16-1/2"	13-3/8"	22"	11"	12-5/8" - 26"	5/16"	8"	14-7/8"



Sizing Information and Instructions

Equivalent Duct Length (EDL): The Equivalent Duct Length Table (Figure B) shows you how to calculate the equivalent straight duct length in order to overcome static pressure. The EDL chart helps ensure fan performs as expected under the airflow resistance caused by the listed components.

A ventilating fan’s performance is plotted on a graph called a performance curve. The performance curve shows airflow in cubic feet per minute (CFM) along the horizontal axis and static pressure (resistance) along the vertical axis. Figure A shows how a performance curve works. The fan with a “Closed Duct” has high static pressure and no airflow; and the fan with “No Duct” has low static pressure and high airflow. In reality, an installed fan will be somewhere in between these two points.

Performance Curves are listed on **pages 56-63**.

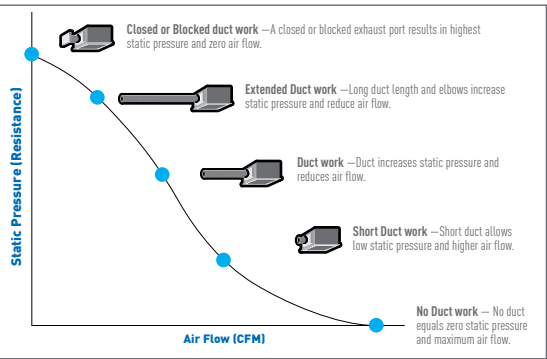


FIG. A

Equivalent Duct Length					
		Duct Diameter			
		3"	4"	6"	8"
Duct	Smooth Metal	Same as measured duct length			
Material	Flex Aluminum	1.25 X duct length	1.25 X duct length	1.5 X duct length	1.5 X duct length
	Insulated Flex	1.5 X duct length	1.5 X duct length	1.75 X duct length	1.75 X duct length
Terminal	Wall Cap	30 feet	30 feet	40 feet	40 feet
Device	Roof Jack	30 feet	30 feet	40 feet	40 feet
Elbow	Adjustable	15 feet	15 feet	20 feet	20 feet

FIG. B

Sizing and selecting a Ceiling Mounted Fan:

Proper sizing requires that you determine the needed CFM, the square footage of the room or home, and the length and type of duct.

Example: Sizing for an 8 ft x 10 ft x 8 ft ceiling bathroom using 12 foot long, 4 inch diameter aluminum flex duct, one elbow, one wall cap.

Step 1: Determine application

Bathroom = 1 CFM/square foot

Step 2: Calculate the area to be ventilated in square feet.

Assuming an 8 ft ceiling: room length x width = area in square feet

8 ft x 10 ft = 80 sq.ft.

Step 3: Calculate your required CFM

1 CFM x 80 sq.ft. = 80 CFM

Step 4: Use the Equivalent Duct Length chart above to calculate duct run.

4a. 12 ft aluminum flex duct x 1.25 = 15 ft

4b. One elbow = 15 ft EDL

4c. One wall cap = 30 ft EDL

15 ft + 15 ft + 30 ft = 60 ft EDL

This is the equivalent duct length (or resistance) the fan must overcome to move air through the duct to the outside.

Step 5: Review models in catalog pages to find a model with desired feature. Features may include light fixture, heater or low-profile housing.

Note: Check with your local building inspector to confirm that these methods are accepted in your area.

Step 6: Use the EDL calculated in Step 4 to check on the performance curve for the fan selected in Step 5. Performance curves for all Panasonic fans can be found on pages 56-63. Compare your calculated EDL to the curves for different EDLs on the performance curve for your selected product. Where they cross will tell you what airflow to expect. For the 60 feet of EDL in the example, interpolate between the curve for 50 feet and the one for 75 feet.



Ventilation Controls

Selecting a suitable control that runs ventilation at the proper time and duration will ensure that both the occupant’s health and building structure are protected.

There are several types of manual and automatic controls that can be applied to ventilation systems. Some controls are more suitable for intermittent or continuous ventilation. Select Panasonic fans incorporate built-in speed, delay and occupancy controls, making them ideal for both intermittent and continuous ventilation. However, note that for Panasonic’s multispeed fans we do not recommend the use of any additional controls.

Manual controls: Manual controls require the occupant to activate the ventilation fan when needed. An example of a basic manual control is the Panasonic FV-WCSW21 On/Off rocker switch for light and fan control. There are other controls with functions available that may be more suitable to the occupant’s lifestyle.

Manual timers: Electronic timers are more decorative and allow the occupant to select a time duration with the push of a button. Electronic timers do not produce the sometimes annoying ticking sound that crank timers are known for. WhisperGreen Select™ and WhisperSense fans incorporate quiet electronic controls.

Occupancy (motion) sensors: Occupancy sensors are suitable for intermittent ventilation. An advantage is that the ventilation system will operate without having to rely on the occupant’s interaction. The ventilation system will remain “on” and continue working for a duration after the occupant has left the room, much like a delay off timer. WhisperGreen Select fans can be customized to include an occupancy feature with the SmartAction® Motion Sensor Plug ‘N Play™ module. WhisperSense fans have occupancy sensors integrated in the fan grille.

Humidity and moisture sensors: Dehumidistats and Condensation Sensors can be used to turn a ventilation system on/

off when relative humidity reaches a certain level. These controls are most likely to be used in bathrooms to evacuate excessive moisture. Dehumidistats have a few disadvantages. One disadvantage is that seasonal changes in outdoor relative humidity necessitate seasonal readjustments to function optimally. Finally, it does not automatically remove odors. The new Panasonic FV-WCCS1 Condensation Sensor Plus features intelligent and advanced sensor technology that monitors humidity and temperature to anticipate dew point, automatically operating the fan to control moisture. It’s built-in automatic seasonal adaptability with optional Moisture Sensitivity Selector also allows fine tuning for dry or moist environments. Panasonic’s WhisperSense fans include both motion and humidity sensors for ultimate moisture control.

Automatic timers: Automatic timers operate fans at programmed times throughout the day. Typically a 24-hour programmable timer is used to run a fan in morning and evening hours when there is a high demand for ventilation. For continuous ventilation, the control can be programmed to operate throughout the day to help evacuate any accumulation of VOCs or other indoor air pollutants.

Controls can also be used in combination with each other to provide both intermittent and continuous ventilation. For example, a programmable timer may be used to cycle the fan on and off throughout the day to address overall indoor air quality. WhisperGreen Select fans with multi-speed capability, either pre-installed in or through the Plug ‘N Play module, have been designed as an ideal double-duty fan providing both intermittent and continuous ventilation with a DC motor activated by built-in speed, delay and occupancy controls. *The key to selecting the right control or combination of controls is to first understand the occupant’s lifestyle and ventilation needs. Then select a control that provides proper ventilation with little or no involvement by the occupant.*



ENERGY STAR®

www.energystar.gov

The **ENERGY STAR®** program was created by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) to help customers identify products that can save them money and protect the environment by saving energy. When it comes to ventilation fans, ENERGY STAR® qualified products feature super-quiet operation (low sone levels) and high CFM to Watt efficiency. As an ENERGY STAR® Partner of the Year for 2010, 2011, 2012, 2013 and 2014, all Panasonic ventilating fans exceed ENERGY STAR® standards where guidelines exist and have been labeled accordingly. Panasonic ventilation fans may qualify for an energy

ENERGY STAR®	Min.	Max.	Min.	Rated
Specifications	CFMs/Watt	Sones	Warranty	Airflow (0.25 in. w.g.)
Bath Fans -10 to 89 CFM	1.4	2.0	1 year	60%
Bath Fans -90 to 130 CFM	2.8	2.0	1 year	70%
Bath Fans -140 to 500 CFM	2.8	3.0	1 year	70%
In-line Fans	2.8	N/A	1 year	N/A

saving rebate. Rebate programs are often provided by local utility companies and based on ENERGY STAR® guidelines. Check with your local utility company or state ENERGY STAR® Homes Program for details.

Panasonic WhisperGreen Select have also been awarded ENERGY STAR®’s 2014 Most Efficient. This distinguished award recognizes these ventilation fans as being some of the most energy efficient among those that qualify for ENERGY STAR®.



Home Ventilating Institute

www.hvi.org

All **Panasonic** ventilation fans are tested and certified by the Home Ventilating Institute (HVI). The HVI label is your assurance that the certified airflow and sound rating of Panasonic ventilation fans are the results of testing by an independent laboratory.

HVI is a non-profit association comprised of manufacturers of home ventilation products. HVI offers a variety of services including, but not limited to, test standards, certification programs for airflow, sound and energy performance. For more information about HVI contact:

Home Ventilating Institute - HVI
Email: hvi@hvi.org
Website: www.hvi.org
1000 North Rand Road, Suite 214
Wauconda, IL 60084
Phone: (847) 526-2010
Fax: (847) 526-3993





Installation

A practical guide to Panasonic fan installation

Proper fan installation is necessary to optimize performance. The following points outline installation techniques to help achieve optimum performance.

IMPORTANT: In order to reduce elbows and optimize fan performance, install the fan with the exhaust port pointed in the direction of the termination point. Be sure to use the duct diameter size specified for the selected fan. Reducing the duct diameter (at any point in the duct run) will create substantial static pressure and reduce the fan's performance by as much as 90%. Increasing the duct size almost always improves both sound and airflow performance

Selecting Duct: A smooth surface duct allows for optimum airflow. See Figure C. For best results, use galvanized sheet metal or possibly PVC. Flexible aluminum duct is durable, easy to install and often used. However, the ridges in aluminum flexible duct increase static pressure and can reduce air flow and fan performance. This results in lower CFMs, higher noise levels and higher energy consumption. The degree to which performance is affected depends on the length of duct, number and degree of elbows.

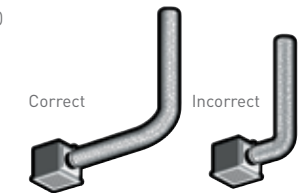
Sagging or weaving a fan duct will also increase static pressure and reduce a fan's performance. When using a flexible aluminum duct, support the entire length of the duct with braces or hangers to keep it as straight as possible for the entire run. If the duct lies across the attic, do not allow it to sag between each joist. Also, avoid weaving duct through trusses.

Using dryer duct connectors made of nylon or vinyl is not recommended due to high static pressure caused by its ridges and curvature. Insulated flexible duct must be fully extended to avoid added resistance.

Elbows: Rule number one is to avoid elbows and bends whenever possible. However, the fact is that many installations require at least one elbow, as shown in Figure D. There are two precautions you can take when installing elbows to achieve optimum airflow.

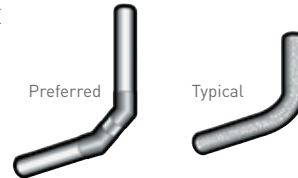
First, allow a 2-3 foot straight run out of the fan before the first elbow. This allows airflow to be uniform before passing through the first elbow. An installation that has a 90-degree elbow immediately after the fan exhaust port will cause air to flow back into the fan. This will reduce fan performance and increase noise. (Figure D)

FIG. D



Second, use a long radius angle, as shown in Figure E, to help ensure optimum airflow and minimum airflow noise.

FIG. E



The shortest, smooth inner surface duct with the least number of elbows will provide optimum fan airflow

FIG. C



*A straight run over joists is better than the duct 'dipping' into each joist bay which will increase static pressure and, eventually, deposit water in the 'dips'.

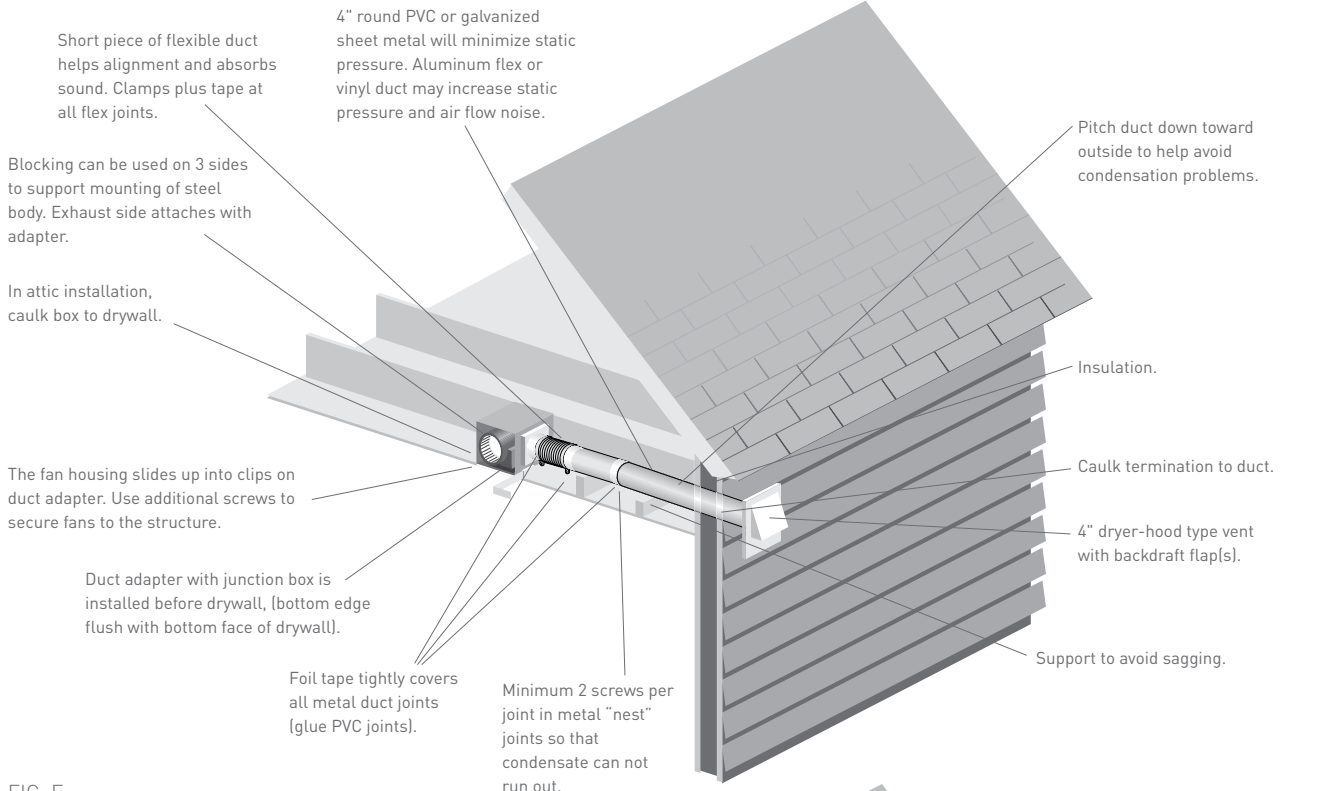


FIG. F

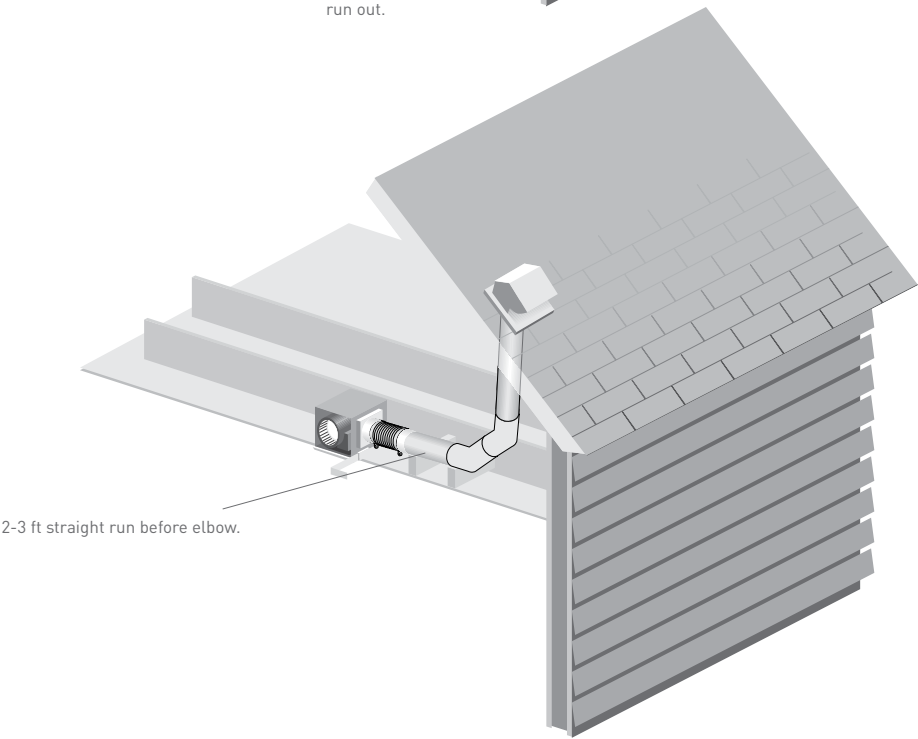


FIG. G

Note: If duct is in the attic, to avoid possible condensation problems, be sure it is either under loose fill insulation or it is fully insulated to minimum of R-6 with duct wrap.

Troubleshooting Advice:

1. During fan installation, the tape on the duct connector holding the damper shut must be removed.
2. Confirm with your contractor if screws were used to attach the duct to the fan. The damper may not open if obstructed by screws.
3. Check that the backdraft dampers on wall caps and roof jacks are able to move freely. Routine inspections are recommended as birds and other pests may inhabit these areas.
4. Ductwork must be connected securely to wall caps and roof jacks.

Green Building Programs & Green FAQs

Green Building Programs

Green building is the practice of increasing energy efficiency and health for people and their environment. Effective green building can reduce operating costs through less energy consumption; improve occupant health by enhancing indoor air quality and lessening the impact on the environment.

ASHRAE 62.2-2010 and 2013

There are several green building programs within the United States and nearly all adhere to the standards set by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) for the HVAC industry. ASHRAE Standard 62.2 is the national ventilation standard of design for low-rise residences up to three-story multi-family buildings. 62.2 requires continuous mechanical ventilation for the entire house to be 7.5 CFM per person (master bedroom x 2) plus 1 CFM per 100 sq.ft. with sone level not to exceed 1.0. Panasonic’s full line of ventilation fans including WhisperGreen

Select™ and WhisperComfort are affordable and are an efficient way to meet this ventilation standard.

USGBC and LEED for Homes

The US Green Building Council (USGBC www.usgbc.org) offers the Leadership in Energy and Environmental Design (LEED) program for commercial buildings and the LEED for Homes program for residential buildings. Neither program offers specific product certification, but both require using mechanical ventilation to meet ASHRAE Standard 62.1 for commercial projects or 62.2 for residential projects.

ENERGY STAR® Homes Program

The US Environmental Protection Agency (EPA) manages the ENERGY STAR® Homes Program. This program offers certification of the home as energy efficient based on an evaluation of energy use and construction features. Both the ENERGY STAR® Homes program and the Indoor airPLUS (IAP) require meeting ASHRAE Standard 62.2 – 2010.

California Title 24

As the required code for California Title 24 is the shorthand name for the Building Energy Efficiency Standards for Residential and Non-Residential Buildings. Developed by the California Energy Commission and first published in 1978, the standards were recently updated for 2012 and will be effective in 2014, including the requirement to meet ASHRAE Standard 62.2.

National Association of Home Builders (NAHB) Green Building Standard

A voluntary standard developed by NAHB to provide a design guide and rating system for houses. Similar to the LEED for Homes program but less stringent, it has both required and optional measures that can give a house a third-party certification. This program does not require meeting the ASHRAE 62.2 Standard though it can be worth ‘points’ in the program. However, most Local Codes require meeting some level of indoor mechanical ventilation, usually that means meeting ASHRAE 62.2. The more options utilized such as fulfilling ASHRAE 62.2 provides a higher rating.

Green FAQs

Programs like LEED for Homes and ENERGY STAR® IAP, all require various levels of insulation, use of renewable building and finishing products. They also require compliance with the ventilation requirements of 62.2. ASHRAE 62.2 allows the designer or builder to choose the method that fits their project, climate, or budget. It only sets the whole house continuous rate and provides guidance on how to increase the flow to allow for intermittent operation. Essentially, the higher rate is the reciprocal of the run time. If it operates one-third of the time, it must be increased to three times the continuous rate in the table, but it still cannot exceed 1.0 sones. The easiest way to meet the requirements is to use a WhisperGreen Select fan operating continuously. Most of the single speed Panasonic fans under 1.0 sone can be used to meet 62.2, but the rated flow at 0.25 inches of water gauge must meet the required flow. ASHRAE 62.2-2013 and many local programs require field measurement of the airflow. So WhisperGreen Select with either pre-installed multi-speed or with the multi-speed Plug ‘N Play module is the preferred choice.

Where is my make-up air coming from if the house is airtight?

All houses leak to some extent. ASHRAE 62.2 assumes an average new construction tightness level that is based on national testing and that will allow some leakage. Air leaks in (if exhausting) or out (if supplying) of the house when the fan operates, through the cracks and holes in the building between building materials, around windows and doors, and through utility penetrations. Ideally, the house will be ‘tight’ and not have much infiltration but will have mechanical exhaust and supply so the air can be ‘controlled’ by the occupant.

While not required by 62.2, through-the-wall inlets from Panasonic and others can be installed to ensure some of the leakage happens through those inlets.

Am I creating a negative pressure when exhausting air all the time?

The low exhaust rates required by 62.2 will seldom create enough negative pressure to cause a combustion device to backdraft. High flow fans, such as large range hoods and clothes dryers, can create enough negative pressure to create a backdraft if natural draft combustion devices are used in a tight house. Building Performance Institute (BPI) sets a limit based on the potential for backdrafting of combustion appliances may occur within the home.

What makes a WhisperGreen Select fan a Green product?

The Green concept is a combination of energy efficiency, sustainability, improved interior environment (IAQ), and operating cost. The ‘green’ of WhisperGreen Select is the energy efficiency, low noise and long term warranty which means the fan will be running for very little cost for a very long time to insure the occupants live in a healthier indoor environment.

If the fan is running all day, aren't I wasting electricity?

The WhisperGreen Select fan features a DC motor, which makes very efficient use of electricity. Your fan, operating at 50 CFM continuously, uses 6.6 Watts of electricity. Using the national average kWh rate of \$.1105, it costs \$.639 per year to have a fan that provides indoor air quality.

What does the SmartAction® motion sensor Plug ‘N Play module plugged into WhisperGreen Select models do?

When the SmartAction® motion sensor Plug ‘N Play module senses motion,

or when the switch is turned on, the fan boosts from its low, continuous ventilation speed to its high “spot” ventilation speed. The WhisperGreen Select fan has a high speed of 50-80-110 or 110-130-150 Cubic Feet per Minute. When the fan is in this mode it is operating as a traditional bathroom exhaust fan.

When I turn my switch to the “on” position or when the motion sensor is blinking green, I don’t hear a big boost in speed.

Another feature of the WhisperGreen Select fan is “SmartFlow” technology. Static pressure, the resistance that lies within the duct system and point of exhaust, can severely inhibit a standard bath fan’s performance. For example, a fan designed to deliver 50 CFM of airflow at 0.1 inch of pressure might only be operating at 31 CFM due to high static pressure. “Smart Flow” technology allows the DC fan motor to react to higher static pressure situations so that when the fan is set at 50 CFM, you get 50 CFM. When the motion sensor “sees” movement or the boost switch is turned on, the fan slowly boosts to the 80 CFM or 130 CFM maximum airflow, so you may not hear a big increase in noise.

When I turn the switch to the “off” position or when the motion sensor Plug ‘N Play module is not in use, why doesn’t the fan slow down right away?

Each WhisperGreen Select Plug ‘N Play module activates a 20 minute fan features a delay-low timer when plugged in. This allows the fan to operate at the higher speed for a longer time to help remove excess moisture from the bathroom, after a shower.

2010 Required Continuous Ventilation Rate (CFM)					
Floor Area	0-1 BR	2-3 BR	4-5 BR	6-7 BR	>7 BR
<1500	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500	105	120	135	150	165

2010 Sizing Example (based on ASHRAE 62.2):

Two Bedrooms at 1600 sq.ft.

Master Bedroom (7.5 CFM x 2)	=	15.0 CFM
Second Bedroom	=	7.5 CFM
1600 sq.ft. x 0.01	=	16.0 CFM

Total 38.5 CFM

To comply with ASHRAE 62.2, a WhisperGreen Select FV-05-11VKS1 set at 40 CFM provides the ideal solution. Or to keep air pressure balanced inside the home, WhisperComfort provides supply air and complies with 62.2 by setting the exhaust fan at 40 CFM. For larger homes or whole house ventilation, a combination of WhisperComfort and/or WhisperGreen Select continuous ventilation fans can be utilized to fulfill the standards set by ASHRAE 62.2.

2013 Required Continuous Ventilation Rate (CFM)					
Floor Area	1	2	3	4	>5
<500	30	40	45	55	60
500-1000	45	55	60	70	75
1001-1500	60	70	75	85	90
1501-2000	75	85	90	100	105
2001-2500	90	100	105	115	120
2501-3000	105	115	120	130	135
3001-3500	120	130	135	145	150
>3501	135	145	150	160	165

2013 Sizing Example (based on ASHRAE 62.2):

Two Bedrooms at 1600 sq.ft.

Master Bedroom (7.5 CFM x 3)	=	15.0 CFM
Second Bedroom	=	7.5 CFM
1600 sp.ft. x 0.03	=	48.0 CFM

Total		70.5 CFM
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The 2013 edition of 62.2 increases that calculation to 3 CFM per 100 sq.ft. In areas where 62.2-2013 has been adopted, multifamily units must use that higher rate but single family homes can deduct the calculated leakage rate obtained by a blower door test.

FAQs

Frequently Asked Questions

1. What is a sone?

A sone is an internationally recognized measurement of sound output. The smaller the sone, the more quiet it is. Likewise, the higher the sone, the louder the sound. According to HVI, one sone is equivalent to the sound of a quiet refrigerator.

2. What is CFM?

CFM, or Cubic Feet per Minute is a measurement of rate of air flow. The larger the CFM, the more powerful the fan.

3. What is static pressure?

Static pressure is a measure of the resistance against flow as the fan pushes air through a duct. Static pressure is measured in inches of water column or water gauge (w.g). It is expressed as 0.1" w.g. or 0.25" w.g. to show that the resistance is equal to a column of water one-tenth or one-quarter of an inch tall. Most bath fans sold in North America are rated and certified at 0.1" w.g. by the Home Ventilating Institute (HVI).

4. Why are Panasonic Fans so quiet?

Tip Speed.

Fan noise comes from the amount of the blower wheel blade tip speed – the tip speed is in proportion to the revolutions per minute (RPM) of the wheel or fan blade. A small wheel turning very fast will create more noise than a large wheel turning more slowly for a given airflow. Panasonic fans use a compact blower wheel with aero dynamic blades that moves a large amount of air at reduced RPMs. The Panasonic blower wheel is designed more efficiently than most competitor models, so it turns at lower RPMs, reducing tip speed and noise.

Quiet Motor.

Panasonic is the first ventilation fan manufacturer to incorporate a DC motor in residential mechanical ventilation fans. Panasonic WhisperGreen Select series features a removable, permanently lubricated, plug-in DC motor. The totally enclosed DC brushless motor technology is rated for continuous run and are designed for extremely quiet, energy efficient operation. Panasonic DC motors consume 30% less energy than AC motors and each one comes equipped with a thermal cutoff fuse for added protection and safety.

All other Panasonic fan series incorporate a totally enclosed four-pole condenser AC motor, which is an advanced version of a Permanent Split Capacitor (PSC) motor. These are among the most energy efficient fan motors made. The four-pole design helps the fan to rotate smoothly and evenly due to a more stable electrical field that keeps the fan shaft turning more evenly than shaded-pole motors used in mid-range fans or C-frame motors used in inexpensive fans.

5. What makes Panasonic Fans so highly energy efficient?

The input wattage readings on the Panasonic fans are among the lowest in the industry. This means that for a given airflow, Panasonic fans will use fewer kilowatt hours and cost less to operate than other fans. This lower wattage draw is accomplished in a number of ways:

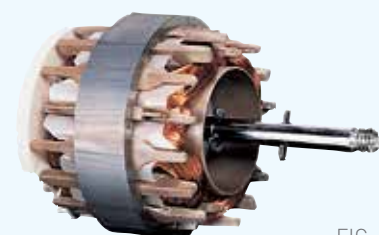


FIG. 1

Unique Motor Design.

Panasonic's DC brushless motor provides unparalleled energy efficiency with its magnetic rotor and printed circuit board. The magnetic rotor prevents energy loss while standard AC motors that utilize aluminum die cast rotors expend energy. Also, Panasonic's DC motor is the only one to incorporate a print circuit board containing a unique IC chip which monitors and directs the RPM of the fan blade. The combination of these two unique features allows the DC motor to have higher energy efficiency than an AC motor.

Panasonic uses a four-pole condenser motor, which is composed on a main coil and a sub coil. The coils in a motor are essentially small electromagnets that are turned on and off to create an electrical field to "pull" the fan shaft around, making the fan blower wheel turn. The condenser is connected with the sub coil, which helps with rotation. The condenser acts like a capacitor to store electrical energy and deliver it quickly and in exact amounts to the coil. This improves the electrical efficiency of the motor and reduces power draw.

Selective Application.

Panasonic builds its own motors and components, which means tight control over quality. Panasonic engineers also optimize efficiency by matching the exact motor characteristics with the desired performance of the fans.

6. Why do Panasonic Fans have such a long life?

Panasonic fans are designed to give the consumer trouble-free continuous operation for many years. These fans utilize high quality components and permanently lubricated motors. This leads to fans that provide a

long operational life because their components wear very slowly. That is why Panasonic stands behind its products with one of the longest warranty periods in the industry.

Motor Production.

Panasonic motor production is fully automated, with an automatic defect detecting system. The quality assurance program is exemplary, leading to a defect rate of less than 0.0006%.

ISO 9001 and ISO 14001 plant.

The production facilities that build Panasonic fans have earned the distinction of being recognized by the International Standards Organization (ISO) under the ISO 9001 and 14001 Quality Assurance program. Meeting ISO 9001 and 14001 means that these factories have met the highest quality standards in the world.

Fan Housing.

The fan housing is made of heavy-gauge zinc-galvanized steel and painted to protect it from rust. Built-in metal flange provides blocking for penetrations through drywall as an air barrier, and assists with the decrease in leakage in the building envelope during blower door testing.

7. Can insulation material be used over fans installed in the ceiling?

YES. Loose fill or batt insulation can be placed directly over the fan housing in the attic. Panasonic fans and fan/light combination units do not create excessive heat that is a common problem with recessed light fixtures or some competitors' fan/light combinations. Our efficient, cool-running motors and our fluorescent bulbs do not create enough ambient heat to be subject to these limitations.

8. Can a Panasonic fan be used over a bathtub and in showers?

YES. All Panasonic fans, with the exception of heater and Spot ERV models, are listed by Underwriters Laboratories for installation over tubs and showers, provided they are protected by a Ground Fault Circuit Interrupter (GFCI). GFCI is mandated by the National Electrical Code. While not specifically listed by UL as an application, the fan can also be installed in a steam shower enclosure. Keep in mind, however, that any ventilation device located in a damp environment such as a shower enclosure may have a reduced life due to the high humidity and potential for corrosion. Fans installed in a high humidity environment should be operated for longer periods of time to ensure the removal of the moisture and to reduce the potential for condensation in the fan body or ducting.

9. Can a Panasonic fan be used above a kitchen range?

No. Panasonic fans are not currently rated by UL for above-range installation since it was not designed to handle both grease and high temperature. However, Panasonic fans can be used to provide auxiliary kitchen ventilation. An approach that works well in large kitchens is to use a ducted range hood or downdraft exhaust and a Panasonic ventilation fan to exhaust the general odors and moisture in the greater kitchen area.

10. Why are Panasonic fans not required to be IC rated?

Fans are not required by UL to be IC (Insulation Contact) rated because they do not have high temperature sources like recessed can lights. The Panasonic fan/light combo units use fluorescent lamps that are mounted in a light kit

that is considered to be surface mounted, so they do not create high temperatures within the fan housing that would require an IC rating.

11. What's better, a motion sensor or humidity sensor?

While the humidity sensor checks the amount of moisture at the ceiling, a motion sensor "sees" the occupant coming into the room. The humidity sensor has to be set to either Rate of Rise or Relative Humidity. Depending on how the fan is set up, it may or may not turn on in certain conditions. For instance, if set for Rate of Rise (how quickly moisture builds up in a room), it might not turn on at all when there is a slow, steady build up of humidity over time. On the other hand, a motion sensor will go on once it senses motion to capture both moisture, odors and contaminants from the cleaners and chemicals that may be kept underneath the sink. Panasonic's WhisperSense fans include both motion and humidity sensors for ultimate moisture control. "Panasonic's Condensation Sensor Plus is a more sensitive way to control a fan to avoid condensation because it measures both relative humidity and air temperature."

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