



Ventilation Solutions



Panasonic

Panasonic Eco Solutions North America
Eco Products Division
Two Riverfront Plaza
Newark, NJ 07102
(201) 348-7000
us.panasonic.com/ventfans

Panasonic Customer Service
9 am – 8 pm (EST) Monday through Friday
Phone: (866) 292-7299
Fax: (888) 553-0723
www.panasonic.com/support
ventfans@us.panasonic.com





Follow the Leader.



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 fourth consecutive year, earning their most prestigious ENERGY STAR® honor, the Sustained Excellence 2013 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 the past 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

WhisperCeiling™
VENTILATION FAN

Quiet Solution

2003

WhisperFit™
VENTILATION FAN

Retrofit Solution

2006

WhisperGreen™
VENTILATION FAN

ASHRAE 62.2
Compliance Solution



2007

WhisperValue™
VENTILATION FAN

Multi-Family Solution

2011

WhisperComfort™
VENTILATION FAN

Balanced Air Solution

WhisperSense™
VENTILATION FAN

Cal Green
Compliance Solution

2012

WhisperRecessed™
VENTILATION FAN

Design Solution

2013

WhisperGreenLED™
VENTILATION FAN

Ultimate Energy Efficient
Fan/Light Solution



Panasonic



Table of Contents

Why is Ventilation Necessary? _____	6-7
Panasonic Ventilation Fan Benefits _____	8
WhisperGreen LED _____	9
Fans with Built-in Controls _____	10-11
Single Speed Fans (On/Off) _____	12-13
Fan/Lights with Built-in Controls _____	14-15
Single Speed Fans with Lights _____	16-19
Specialty Fans _____	20-23
Accessories _____	24-31
Useful Information:	
Performance Curves _____	32-39
Dimensional Drawings _____	40-45
Sizing Information and Instructions _____	46-47
Ventilation Controls _____	48
ENERGY STAR®/ Home Ventilating Institute _____	49
Installation _____	50-51
Green Building Programs and Green FAQs _____	52-53
Frequently Asked Questions _____	54-55



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.

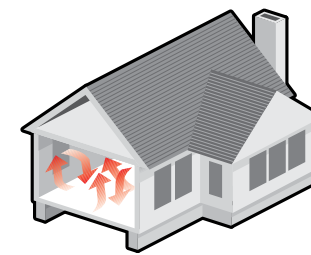
Ways to improve indoor air quality

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.

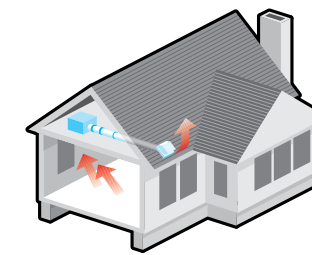
Whole House Ventilation

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 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.



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.

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.

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 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.

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/SqFt

II. Kitchens - 100 CFM. A good rule of thumb for kitchens is 2 CFM/SqFt

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

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



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, .25" w.g. (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 allowing for ideal positioning.

Energy Savings

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

Safety

WhisperGreen 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 prevents 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 (CFL'S) that can be used to comply with 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 an LED light engine that has 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, 3 years on CFL'S and 3-Year warranty on all other parts.



Revolutionary

WhisperGreen LED™
VENTILATION FAN

FV-08VKSE3, FV-08VKME3



Panasonic has combined two long-life technologies to develop the most robust, energy efficient fan/LED light solution. WhisperGreen LED™ includes all the advanced features that builders and contractors have come to love about WhisperGreen® and integrates LED technology to provide warm, energy efficient illumination that lasts 35 times longer, and is 75% more energy efficient than incandescent lamps.



LED - More Light, Less Heat



LED (Light Emitting Diodes)

The movement of electrons through a semiconductor material illuminates the tiny light sources we call LEDs. A small amount of heat is released backwards into a heat sink. In a well designed product, LEDs are basically cool to the touch. **LEDs release 20% of their energy as heat.**



Compact Fluorescents (CFLs)

Use an electric current driven through a tube containing gases. This reaction produces ultraviolet light that gets transformed into visible light by the fluorescent coating (called phosphor) on the inside of the tube. **CFLs release 80% of their energy as heat.**



Incandescent light bulbs

Create light by passing electricity through a metal filament until it becomes so hot that it glows. **Incandescents release 90% of their energy as heat.**

Fans with Built-in Controls



7-3/8" Depth

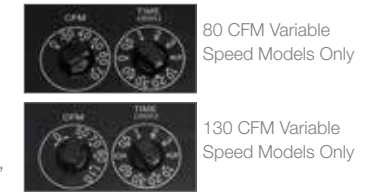
FV-08VKM3 80 CFM 4" or 6" Duct
FV-08VKS3 80 CFM 4" or 6" Duct

FV-13VKM3 130 CFM 6" Duct
FV-13VKS3 130 CFM 6" Duct



WhisperGreen Key Benefits:

- SmartFlow™ technology for optimal CFM output
- Fully enclosed DC motor for long life – rated for 60,000 hours continuous run
- SmartAction® motion sensor – (FV-08VKM3, FV-13VKM3)
- Built-in variable speed controls and high/low delay timer up to 60 minutes
- Integrated dual 4" or 6" duct adapter on 80 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, CALGreen, California Title 24 and WA Ventilation Code



80 CFM Variable Speed Models Only

130 CFM Variable Speed Models Only

WhisperGreen Characteristics	FV-08VKS3 FV-08VKM3												FV-13VKS3 FV-13VKM3									
	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	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	0.1	0.25
Air Volume (CFM)	80	79	70	75	60	59	50	54	40	39	30	32	130	135	110	111	90	93	70	71	50	53
Noise (sones)	<0.3	0.4	<0.3	0.4	<0.3	0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	0.7	<0.3	0.6	<0.3	0.6	<0.3	0.4	<0.3	<0.3	<0.3
Power Consumption (Watts)	7.0	11.0	5.4	10.1	5.0	8.7	4.3	7.5	3.7	6.6	3.2	5.8	11.6	21.1	8.7	15.1	6.0	12.1	4.1	9.6	2.4	5.8
Energy Efficiency (CFMs/Watt)	12.1	7.6	13.3	7.7	13.6	7.7	12.4	7.7	12.8	7.1	11.4	6.7	11.2	6.4	12.5	7.3	15.2	7.8	18.7	7.9	23.3	10.0
Speed	832	1130	791	1125	773	1106	749	1101	740	1093	745	1087	662	917	643	912	580	900	506	874	430	781
Current	0.02	0.01	0.03	0.01	0.05	0.01	0.05	0.02	0.05	0.03	0.06	0.04	0.01	0.12	0.03	0.09	0.02	0.07	0.04	0.01	0.06	0.03
Power Rating (V/Hz)	120/60												120/60									



7-3/8" Depth

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

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



WhisperSense Key Benefits:

- Built-in dual motion and humidity sensors with versatile functionality
- 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
- Auto shutoff feature helps eliminate unnecessary energy use and further reduce operating costs
- Integrated dual 4" or 6" adaptor
- 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 Characteristics	FV-08VQC5		FV-11VQC5	
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



5-5/8" Depth



INCLUDED:
4 to 3 inch adapter

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 someone enters the room
- Built-in delay timer turns off the fan after 20 minutes
- UL listed for tub/shower enclosure when used with a GFCI protected circuit
- Provides flexibility for installation in 2" x 6" and 2" x 8" construction
- Detachable 4" or 3" duct adaptor
- Ideal for renovation since you can use the existing duct
- Easy Installation (double hanger bar system)
- Rust-proof paint treatment on galvanized housing

- Can comply with ASHRAE 62.2, LEED, Energy Star and CA Title 24
- Built-in damper to prevent backdraft
- 3 year warranty

WhisperWelcome Characteristics	FV-05VFM2				FV-08VFM2			
	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			

Single Speed Fans (On/Off)

WhisperGreen
VENTILATION FAN



FV-05VK3 50 CFM 4" or 6" Duct
FV-08VK3 80 CFM 4" or 6" Duct
FV-11VK3 110 CFM 4" or 6" Duct



WhisperGreen Key Benefits:

- SmartFlow™ technology for optimal CFM output
- Fully enclosed DC motor for long life – rated for 60,000 hours continuous run
- Integrated dual 4" or 6" duct adapter included
- 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

WhisperGreen Characteristics	FV-05VK3		FV-08VK3		FV-11VK3	
Static pressure in inches w. g.	0.1	0.25	0.1	0.25	0.1	0.25
Air Volume (CFM)	50	54	80	79	110	112
Noise (sones)	<0.3	0.3	<0.3	0.4	0.3	0.8
Power Consumption (Watts)	4.3	7.5	7.0	11.0	11.5	16.2
Energy Efficiency (CFMs/Watt)	12.4	7.7	12.1	7.6	9.7	7.0
Speed	749	1101	832	1130	953	1229
Current	0.05	0.02	0.02	0.01	0.21	0.30
Power Rating (V/Hz)	120/60		120/60		120/60	

WhisperCeiling
VENTILATION FAN



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 (Refer to pages 8-19 for more details)
- Can be used to comply with ASHRAE 62.2, LEED, IAP, EarthCraft, California Title 24 and WA Ventilation Code
- 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

WhisperCeiling Characteristics	FV-05VQ5		FV-08VQ5		FV-11VQ5		FV-15VQ5	
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
VENTILATION FAN



INCLUDED:
4 to 3 inch adapter

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
- Detachable 4" to 3" duct adaptor 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 Characteristics	FV-08VF2				FV-11VF2			
	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			

WhisperValue
VENTILATION FAN



Lowest profile,
Actually fits
in a 2 x 4!

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-05-08VSA3	FV-05VSB3	FV-05VS3	4
FV-05-08VSA3	FV-08VSB3	FV-08VS3	4
FV-05-08VSA3	FV-10VSB3	FV-10VS3	4

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

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.

Optional 24 gauge, fire code rated 4" oval to 3" round duct adaptor, sold separately (Model # FV-VS43R)

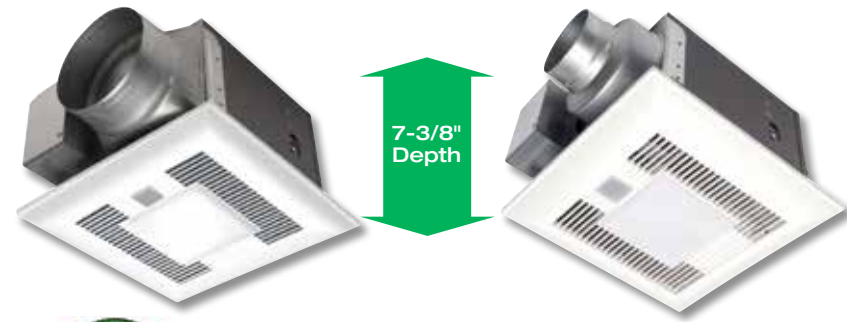
WhisperValue Key Benefits:

- 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 – actually fits in a 2 x 4 stud bay
- Wall installation eliminates the need for a radiation damper
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperValue Characteristics	FV-05VS3		FV-08VS3		FV-10VS3	
	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	

Fan/Lights with Built-in Controls

WhisperGreen LED™ VENTILATION FAN The best performing, most energy efficient fan/LED light solution



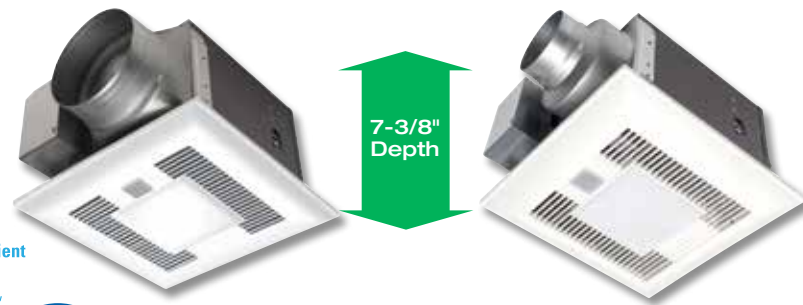
FV-08VKSE3 80 CFM
FV-08VKME3 80 CFM

WhisperGreen LED Key Benefits:

- Revolutionary 12W LED light engine with 1W LED night light
- Unequaled performance and quietest operation at .25" w.g. static pressure
- Brushless DC motor with SmartFlow™ technology ensures optimal CFM output
- Variable speed with built-in controls
- SmartAction® Motion Sensor(FV-08VKME3)
- Integrated dual 4" or 6" duct adaptor
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title-24 and WA Ventilation Code
- UL listed for tub/shower enclosure when used with a GFCI protected circuit

WhisperGreen LED Characteristics	FV-08VKSE3						FV-08VKME3					
	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
Air Volume (CFM)	80	86	70	73	60	61	50	54	40	44	30	39
Noise (sones)	<0.3	0.7	<0.3	0.5	<0.3	0.4	<0.3	0.4	<0.3	0.4	<0.3	0.4
Power Consumption (Watts)	7.5	13.3	5.8	11	5.1	9.5	4.3	8.4	4.1	7.1	3.4	6.5
Energy Efficiency (CFMs/Watt)	11.1	6.2	12.3	7.2	12.5	6.8	12.3	6.5	10.3	6.2	9.1	5.5
Speed	878	1200	830	1159	797	1149	770	1136	793	1120	740	1111
Current	0.07	0.11	0.06	0.10	0.05	0.09	0.05	0.08	0.05	0.07	0.04	0.06
Power Rating (V/Hz)	120/60	120/60	120/60	120/60	120/60	120/60	120/60	120/60	120/60	120/60	120/60	120/60

WhisperGreen-Lite™ VENTILATION FAN



FV-08VKML4 80 CFM 4" or 6" Duct
FV-08VKSL4 80 CFM 4" or 6" Duct
FV-13VKML4 130 CFM 6" Duct
FV-13VKSL4 130 CFM 6" Duct



INCLUDES: (2) 13W ENERGY STAR rated self ballasted GU24 base CFL lamps and a 4W night light. 3500Kelvin/HighCRI/997 Lumens per lamp/75 Lumens Per Watt/10,000 hours, rated average life/equivalent to (2) 75W incandescent lamps.



80 CFM Variable Speed Models Only



130 CFM Variable Speed Models Only

WhisperGreen-Lite Key Benefits:

- SmartFlow™ technology for optimal CFM output
- Fully enclosed DC motor for lone life – rated for 60,000 hours continuous run
- SmartAction® motion sensor – (FV-08VKML4, FV-13VKML4)
- Built-in variable speed controls and high/low delay timer up to 60 minutes
- Integrated dual 4" or 6" duct adapter for 80 CFM models included
- 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

WhisperGreen-Lite Characteristics	FV-08VKSL4 FV-08VKML4												FV-13VKSL4 FV-13VKML4											
	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	0.1	0.25	
Air Volume (CFM)	80	79	70	78	60	60	50	52	40	42	30	35	130	136	110	115	90	91	70	69	50	56		
Noise (sones)	<0.3	0.6	<0.3	0.6	<0.3	0.5	<0.3	0.5	<0.3	0.5	<0.3	0.5	0.8	1.3	0.6	1.2	0.3	1.1	<0.3	0.9	<0.3	0.8		
Power Consumption (Watts)	7.4	12.4	6.0	11.6	5.3	9.0	4.2	7.8	3.8	6.7	3.5	6.2	14.4	24.7	11.0	20.0	8.0	15.3	6.1	10.8	4.2	8.7		
Energy Efficiency (CFMs/Watt)	11.2	6.6	11.9	6.8	12.1	7.2	12.5	7.0	11.1	6.6	8.8	5.8	9.0	5.5	10.1	5.8	11.5	6.1	12.0	6.7	12.3	6.7		
Speed	866	1166	815	1157	675	941	765	1106	758	1084	611	879	742	968	707	972	676	969	669	932	648	939		
Current	0.01	0.02	0.03	0.02	0.05	0.09	0.04	0.02	0.06	0.05	0.04	0.06	0.04	0.15	0.05	0.12	0.03	0.09	0.03	0.01	0.04	0.01		
Power Rating (V/Hz)	120/60												120/60											

WhisperSense-Lite™ VENTILATION FAN



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



INCLUDES: (2) 13W ENERGY STAR rated self ballasted GU24 base CFL lamps and a 4W night light. 3500Kelvin/HighCRI/997 Lumens per lamp/75 Lumens Per Watt/10,000 hours, rated average life/equivalent to (2) 75W incandescent lamps.



Built-in Controls

WhisperSense-Lite Key Benefits:

- Built-in dual motion and humidity sensors with versatile functionality
- 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
- Auto shutoff feature helps eliminate unnecessary energy use and further reduce operating costs
- Integrated dual 4" or 6" duct adaptor
- Fits in 2 x 8 construction
- UL listed for tub/shower enclosure when used with a GFCI branch circuit wire
- Can be used to comply with ASHRAE 62.2, LEED, IAP, CALGreen, California Title 24 and WA Ventilation Code

WhisperSense-Lite Characteristics	FV-08VQCL6		FV-11VQCL6	
	Static pressure in inches w. g.	0.1	0.25	0.1
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	

Single Speed Fans with Lights (On/Off)

The Design Solution for Fan/Light Combinations

WhisperRecessed LED™
VENTILATION FAN



WhisperRecessed™
VENTILATION FAN



7-1/2" Depth



INCLUDED: One 14-Watt ENERGY STAR rated GU24 base LED lamp/3,000 Kelvin/>80CRI/575 Lumens/25,000 hours rated average life.



INCLUDED: One 18-Watt GU24 Spiral CFL/2700 Kelvin/84 CRI/1380 Lumens each/ENERGY STAR® qualified/10,000 hours rated average life/equivalent to 75-Watt incandescent lamp/integral electronic ballast for flicker-free operation.



FV-08VRE1 80 CFM 4" or 6" Duct
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
- Integrated dual 4" or 6" duct adaptor
- 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 Characteristics	FV-08VRE1/ FV-08VRL1	
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	

WhisperGreen-Lite™
VENTILATION FAN



7-3/8" Depth



INCLUDES: (2) 13W ENERGY STAR rated self ballasted GU24 base CFL lamps and a 4W night light. 3500Kelvin/High CRI/997 Lumens per lamp/75 Lumens Per Watt/10,000 hours, rated average life/equivalent to (2) 75W incandescent lamps.



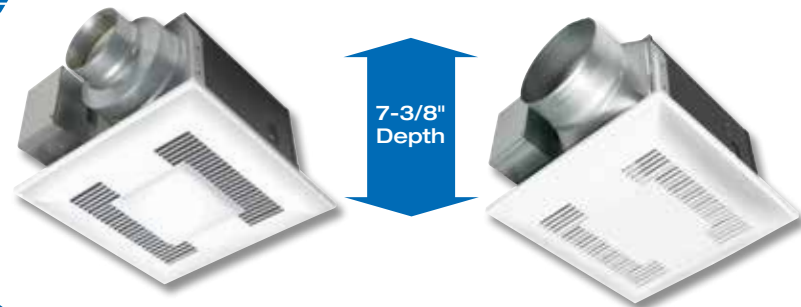
FV-08VKL4 80 CFM 4" or 6" Duct
FV-11VKL4 110 CFM 4" or 6" Duct

WhisperGreen-Lite Key Benefits:

- SmartFlow™ technology for optimal CFM output
- Fully enclosed DC motor for long life – rated for 60,000 hours continuous run
- Integrated dual 4" or 6" duct adapter included
- 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

WhisperGreen-Lite Characteristics	FV-08VKL4		FV-11VKL4	
Static pressure in inches w. g.	0.1	0.25	0.1	0.25
Air Volume (CFM)	80	79	110	108
Noise (sones)	<0.3	0.6	0.7	1.1
Power Consumption (Watts)	7.4	12.4	12.5	18.0
Energy Efficiency (CFMs/Watt)	11.2	6.6	8.9	6.0
Speed	866	1166	1019	1256
Current	0.01	0.02	0.25	0.34
Power Rating (V/Hz)	120/60		120/60	

WhisperLite™
VENTILATION FAN



7-3/8" Depth

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
- Integrated dual 4" or 6" duct adaptor 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 Characteristics	FV-08VQL6		FV-11VQL6		FV-15VQL6	
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	

Single Speed Fans with Lights (On/Off)



5-5/8" Depth

(with 3" duct adaptor)



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



INCLUDED:
4" to 3" adaptor



INCLUDES: (2) 13W ENERGY STAR rated self ballasted GU24 base CFL lamps and a 4W night light. 3500Kelvin/ High CRI/997 Lumens per lamp/75 Lumens Per Watt/10,000 hours, rated average life/equivalent to (2) 75W incandescent lamps.

WhisperFit-Lite Key Benefits:

- Low profile housing design – Ideal for remodeling projects and manufactured structured homes
- Fits in 2 x 6 and 2 x 8 construction
- Detachable 4" to 3" duct adaptor 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-Lite Characteristics	FV-05VFL4		FV-08VFL4		FV-11VFL4	
	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
Air Volume (CFM)	50	34	50	35	80	67
Noise (sones)	<0.3	0.4	<0.3	0.5	0.5	0.8
Power Consumption (Watts)	14.8	14.7	14.8	14.6	28.4	28.1
Energy Efficiency (CFMs/Watt)	3.6	2.4	3.4	2.4	2.8	2.4
Speed	692	962	747	983	803	1005
Current	0.12	0.12	0.12	0.12	0.24	0.24
Power Rating (V/Hz)	120/60		120/60		120/60	



3-3/8" Depth
Lowest profile, Actually fits in a 2 x 4!

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

WhisperValue-Lite U-Can Contractor Pack

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

The Contractor Pack includes 4 complete fans. The housing and motor/grille are packaged separately for flexibility during installation.

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



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 – actually fits in a 2 x 4 stud bay
- Wall installation eliminates the need for a radiation damper
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title 24 and WA Ventilation Code

WhisperValue-Lite Characteristics	FV-08VSL3		FV-10VSL3	
	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	

Specialty Fans

WhisperFit-Warm™ VENTILATION FAN



5-5/8" Depth



FV-07VFH3 70 CFM

WhisperFit-Warm Key Benefits:

- Ideal for remodeling and simple installation in small bathrooms
- Low profile housing design fits in 2" x 6" construction
- Unique slim line fan/heater design
- Aerodynamic fan design delivers whisper quiet operation
- 1 minute warm-up quickly heats up a room
- Minimum 20 Amp dedicated circuit required
- Detachable filter removes dust and is easy to clean
- 1300 Watt temperature regulating PTC* heater ensures safety and reliability
- 4" duct
- 3 Year Warranty on parts
- Can be used to comply with ASHRAE 62.2, LEED, IAP, California Title-24 and WA Ventilation Code

*PTC (Positive Temperature Coefficient) heating elements are small ceramic stones with self-limiting temperature characteristics. PTC stones have fast heating response times and level out once a pre-defined temperature is reached.

WhisperFit-Warm	FV-07VFH3	
Characteristics		
Static pressure in inches w. g.	0.1	0.25
Air Volume (CFM)	70	59
Noise (sones)	1.5	2.2
Power Consumption (Watts)	26.2	26.1
Energy Efficiency (CFMs/Watt)	2.7	2.3
Speed	1135	1305
Current	0.17	0.17
Power Rating (V/Hz)	120/60	120/60

WhisperWarm™ VENTILATION FAN



7-3/4" Depth



INCLUDES: (2) 13W ENERGY STAR rated self ballasted GU24 base CFL lamps and a 4W night light. 3500Kelvin/High CRI/997 Lumens per lamp/75 Lumens Per Watt/10,000 hours, rated average life/equivalent to (2) 75W incandescent lamps.



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
- 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	

WhisperCeiling™ VENTILATION FAN



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
- 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	

Specialty Fans

WhisperWall™ VENTILATION FAN



FV-08WQ1 70 CFM



Exterior Hood included

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



WhisperComfort™ VENTILATION FAN

The affordable and easy to install balanced air solution



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



Supply and exhaust air flows through a single exterior opening

FV-WC04VE1 Optional Exterior Wall Cap
FV-EB04VE1 Optional Elbow

WhisperComfort Key Benefits:

- ERV balances air pressure by supplying fresh exterior air while exhausting stale interior air
- Low-rate continuous run 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 ceilings and 2 x 8 construction
- Sensible Energy Recovery 66%
- Latent Energy Recovery 32%
- Does not require a condensation 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		



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



WhisperLine Installation Kits					
Model No.	Description	Inlet Grille	Backdraft Damper	Clamp	Y-Adaptor
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-Adaptor	-	-	-	1 (8" - 6"x 2)

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	FV-10NLF1		FV-20NLF1		FV-30NLF1		FV-40NLF1					
Characteristics	0.2	0.3	0.4	0.2	0.3	0.4	0.2	0.3	0.4			
Static pressure in inches w.g.	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		



WhisperControl Condensation Sensor Control



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

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

WhisperControl Condensation Sensor Features & Benefits:

- Humidity Control – Automatically turns on when relative humidity and temperature meet dew point
- 30-minute countdown timer
- Manual On/Off Control
- Compatible with single-speed fans or fan/lights
- Stylish design with wall plate included
- Commercial grade – 8A max load/2-year warranty
- LED indicator
- Can be used to comply with ENERGY STAR®, LEED for Homes, ASHRAE 62.2, and CALGreen

One year additional fan warranty available when a Panasonic WhisperCeiling/Lite, WhisperValue/Lite or WhisperFit/Lite fan is controlled by a Panasonic condensation sensor.

Specifications	FV-WCCS1-W	FV-WCCS1-A	FV-WCCS2-W	FV-WCCS2-A
Ground	Grounding	Grounding	Grounding	Grounding
Feature	Blue LED Light	Blue LED Light	Blue LED Light	Blue LED Light
Amperage	15 Amp	15 Amp	15 Amp	15 Amp
Maximum Fan Load	1/8 hp or 3 Amps	1/8 hp or 3 Amps	1/8 hp or 3 Amps	1/8 hp or 3 Amps
Voltage	120 Volts	120 Volts	120 Volts	120 Volts
Termination	6" Leads	6" Leads	6" Leads	6" Leads
Connections (Copper Wire Connections)	Use #14 or #12	Use #14 or #12	Use #14 or #12	Use #14 or #12
Max. Fluorescent Light Load	NA	NA	400 Watt	400 Watt
Standard Certifications	UL/CSA Listed	UL/CSA Listed	UL/CSA Listed	UL/CSA Listed
Warranty	2 Year Limited	2 Year Limited	2 Year Limited	2 Year Limited

WhisperControl Switches



2 Function Control

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

WhisperControl Switches Features & Benefits:

- Multi-switch combination saves space and adds convenience
- Common feed shunted internally to all switches
- Includes matching wall plate
- Commercial grade
- Elegant styling provides multiple controls in a single-gang wall box
- 2 year warranty

Specifications	FV-WCSW21-W/A
Ground	Grounding
Feature	Single Pole/ Single Pole
Amperage	15 Amp
Voltage	120 Volt
Termination	Quickwire and side wired
Standards & Certifications	UL/CSA Listed
Warranty	2 Year Limited

WhisperControl Switches



3 Function Control

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

WhisperControl Switches Features & Benefits:

- 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 warranty

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

WhisperControl Switches



4 Function Control

FV-WCSW41-W (White only)

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

WhisperControl Switches 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

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

SmartExhaust™ Controls



Fan/Light Switch Delay Timer Wall plate not included

FV-WCPT1-W

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.

$$\frac{\text{Code Required Ventilation in CFM}}{\text{Fan CFM}} = \text{Hour Fraction}$$

$$\text{Hour Fraction} \times 60 \text{ Minutes} = \text{Ventilation Settings in Minutes}$$

CFM = Cubic Feet Per Minute

SmartExhaust™ Settings:

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

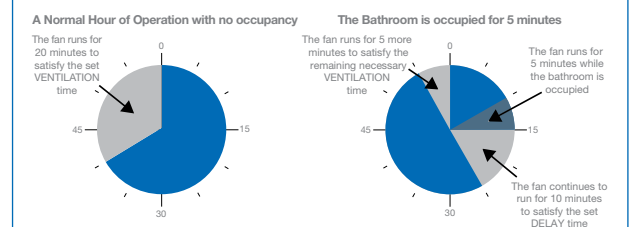
DELAY setting allows the user to set the number of minutes the fan should run after the bathroom light has been turned off. This setting provides additional run time for the fan to complete the remaining necessary ventilation after use. **SmartExhaust™** replaces an existing switch, there are no additional 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





Cross Reference for Applicable Combination of WhisperControl to Product

	Model	FV-WCCS1-W/A	FV-WCCS2-W/A	FV-WCSW21-W/A	FV-WCSW31-W/A	FV-WCSW41-W	FV-WCPT1-W
	Switch Type	Condensation Sensor On/Off	Condensation Sensor On/Off/Light	2 Function Control	3 Function Control	4 Function Control	SmartExhaust Fan/Light Switch
WhisperGreen	FV-05VK3	X					X
	FV-08VK3	X					X
	FV-11VK3	X					X
	FV-08VKL4		X	X	X		X
	FV-11VKL4		X	X	X		X
	FV-08VKSL4			X**			
	FV-08VKML4			X**			
	FV-13VKSL4			X**			
WhisperGreen LED	FV-08VKSE3			X**			
	FV-08VKME3			X**			
WhisperRecessed	FV-08VRL1		X	X			X
WhisperCeiling	FV-05VQ5	X					X
	FV-08VQ5	X					X
	FV-11VQ5	X					X
	FV-15VQ5	X					X
	FV-20VQ3	X					X
	FV-30VQ3	X					X
	FV-40VQ4	X					X
	FV-08VQL6		X	X	X		X
	FV-11VQL6		X	X	X		X
	FV-15VQL6		X	X	X		X
WhisperSense	FV-08VQCL6			X**			
	FV-11VQCL6			X**			
WhisperFit	FV-08VF2	X					X
	FV-11VF2	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
	FV-08VS3	X					X
	FV-10VS3	X					X
	FV-08VSL3		X	X	X		X
	FV-10VSL3		X	X	X		X
WhisperWall	FV-08WQ1	X					
WhisperFitWarm	FV-07VFH3			X			
WhisperWarm	FV-11VH2*			X			
	FV-11VHL2*					X*	
WhisperLine	FV-10NLF1	X					X
	FV-20NLF1	X					X
	FV-30NLF1	X					X
	FV-40NLF1	X					X
WhisperComfort	FV-04VE1			X			

WhisperWelcome, WhisperSense, and WhisperGreen S/M3 models are not compatible with the above switches.
*Needs 1 control per function; **Switch is for light and nightlight only.

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, WhisperGreen-Lite, WhisperGreen LED, WhisperCeiling 50-150 CFM, WhisperLite, WhisperSense, WhisperSenseLite, WhisperWelcome, WhisperFit, WhisperFit Lite, WhisperValue, Whisper Value-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: FV-13VKS3, FV-11VK3, FV-08VKS3, FV-08VK3, FV-05VK3

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

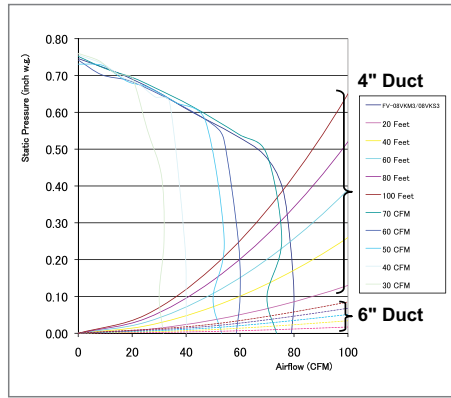
¹ Approved with applicable models.

Fans with Built-in Controls — Performance Curves

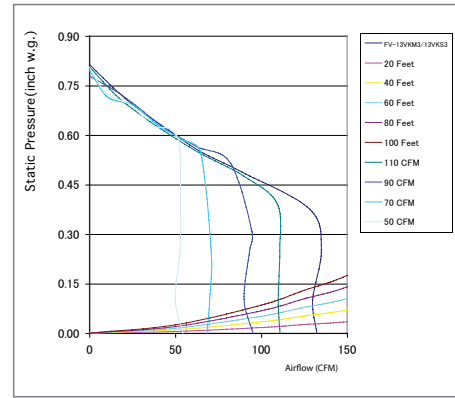
Single Speed Fans — Performance Curves



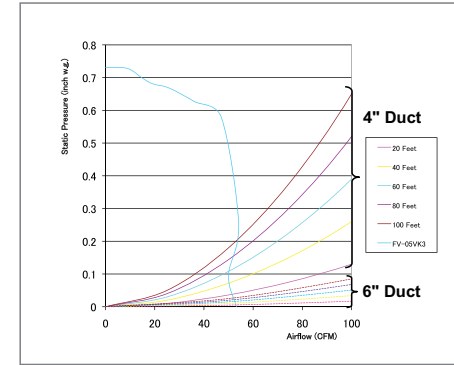
FV-08VKM3/S3 80/0 CFM 4" or 6" Duct



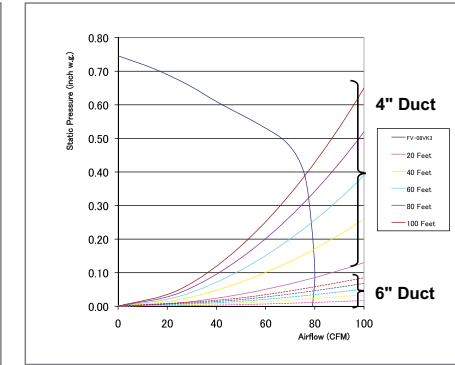
FV-13VKM3/S3 130/0 CFM 6" Duct



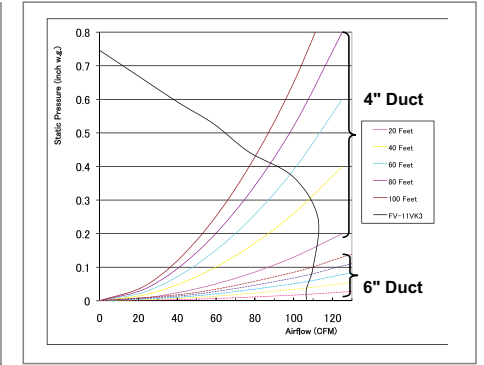
FV-05VK3 50 CFM 4" or 6" Duct



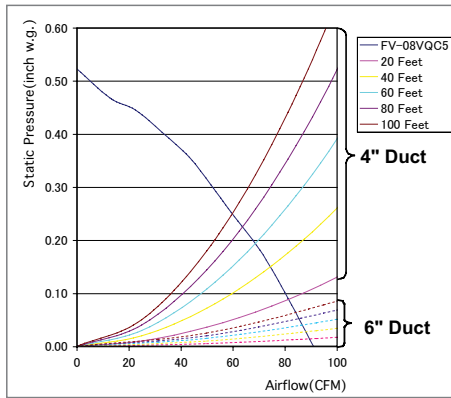
FV-08VK3 80 CFM 4" or 6" Duct



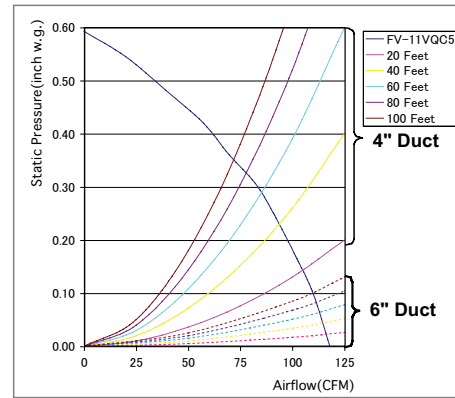
FV-11VK3 110 CFM 4" or 6" Duct



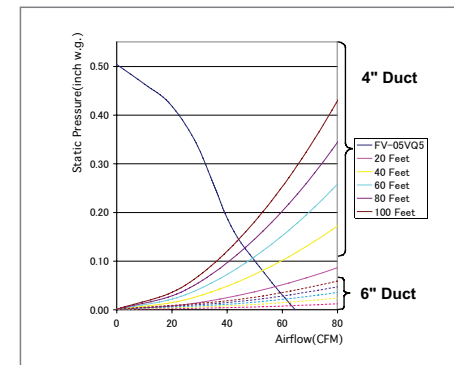
FV-08VQC5 80 CFM 4" or 6" Duct



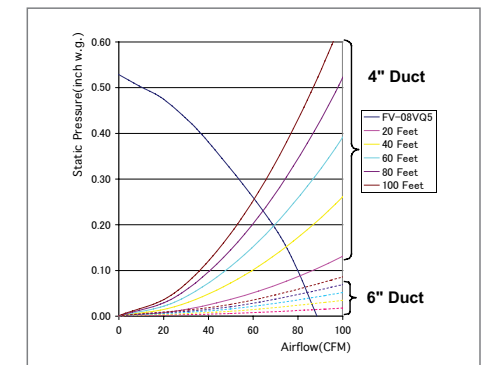
FV-11VQC5 110 CFM 4" or 6" Duct



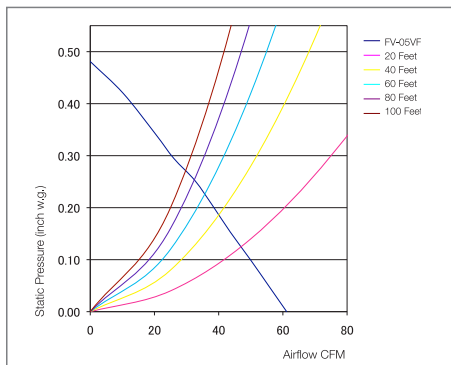
FV-05VQ5 50 CFM 4" or 6" Duct



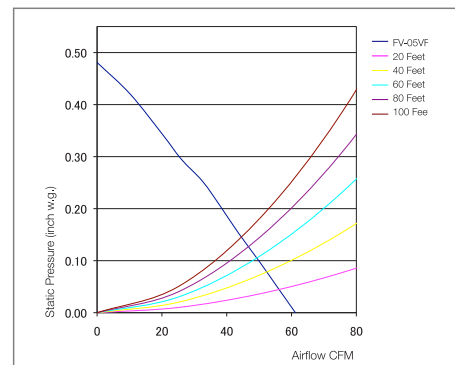
FV-08VQ5 80 CFM 4" or 6" Duct



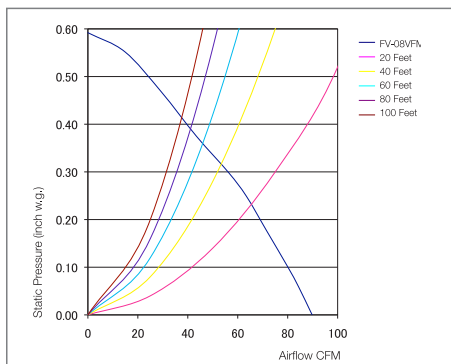
FV-05VFM2 50 CFM 3" Duct



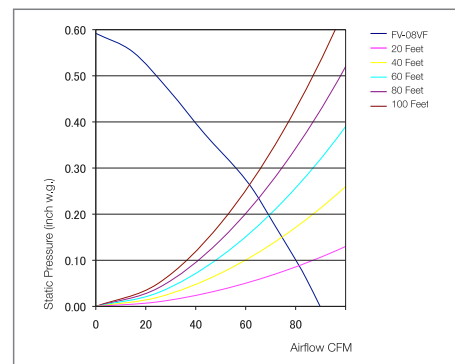
FV-05VFM2 50 CFM 4" Duct



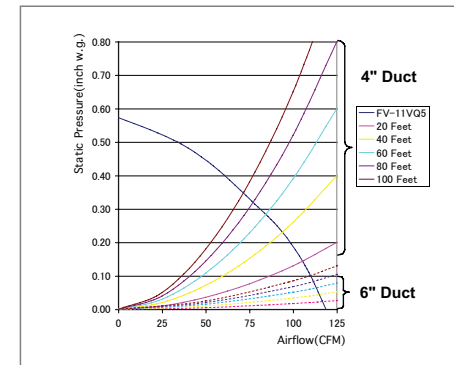
FV-08VFM2 80 CFM 3" Duct



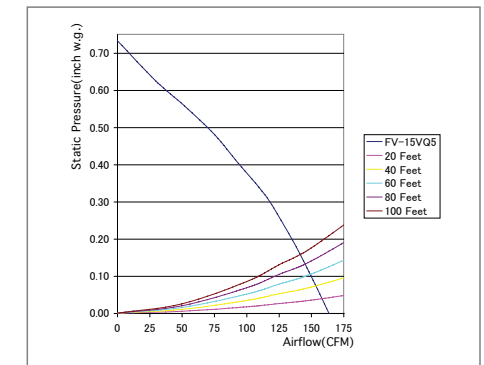
FV-08VFM2 80 CFM 4" Duct



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

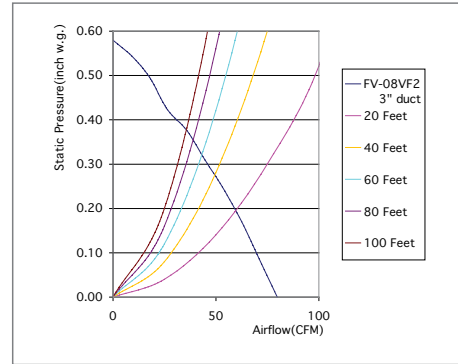


FV-15VQ5 150 CFM 6" Duct

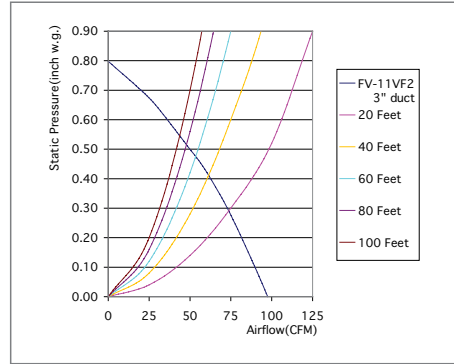




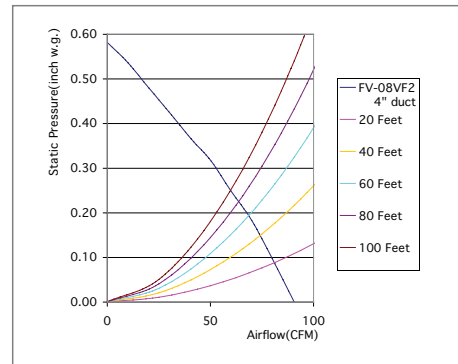
FV-08VF2 80 CFM 3" Duct



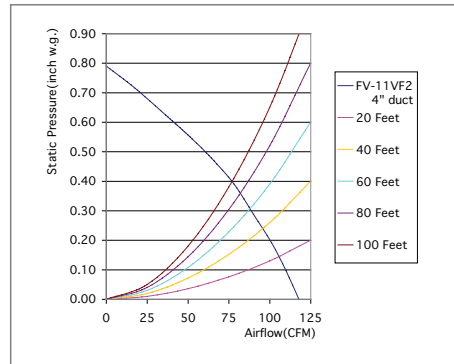
FV-11VF2 110 CFM 3" Duct



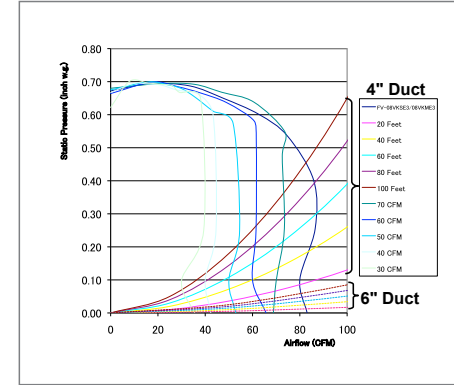
FV-08VF2 80 CFM 4" Duct



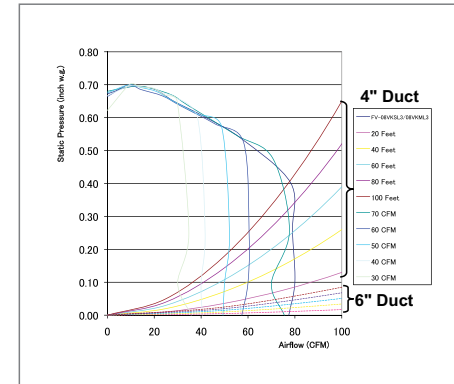
FV-11VF2 110 CFM 4" Duct



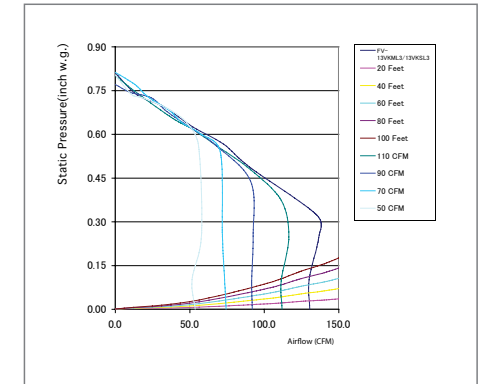
FV-08VKSE3/ME3 80/0 CFM 4" or 6" Duct



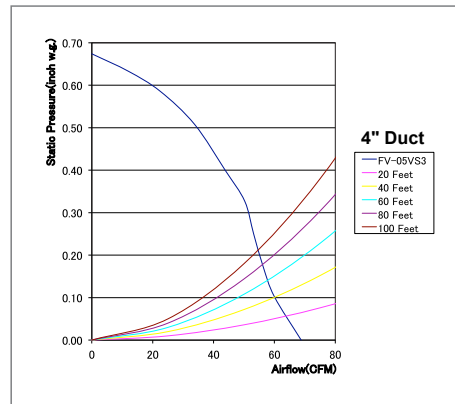
FV-08VKML4/SL4 80/0 CFM 4" or 6" Duct



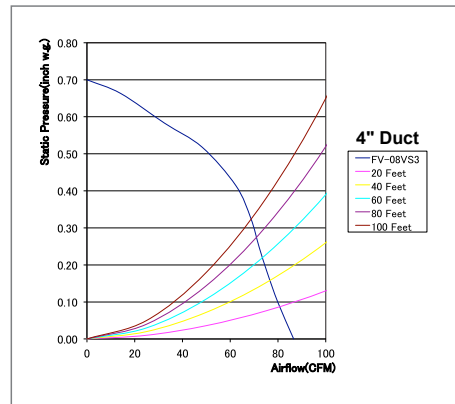
FV-13VKML4/SL4 130/0 CFM 6" Duct



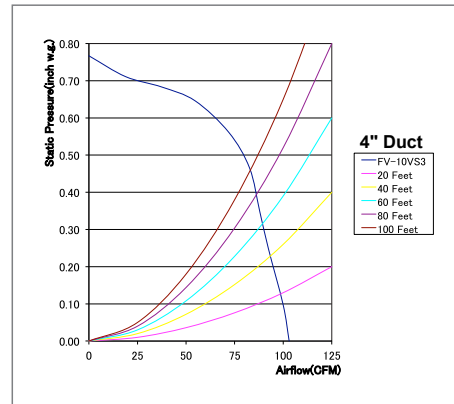
FV-05VS3 50 CFM 4" Oval Duct



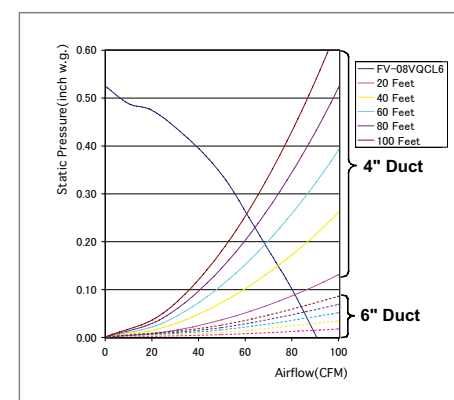
FV-08VS3 80 CFM 4" Oval Duct



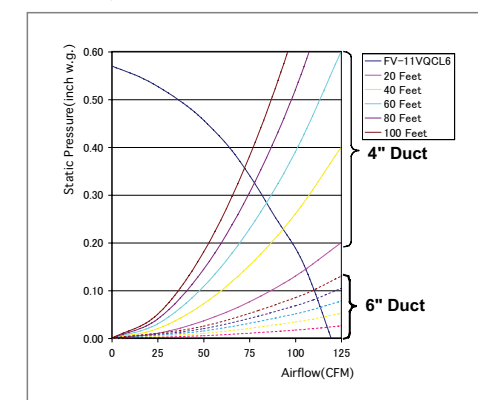
FV-10VS3 100 CFM 4" Oval Duct



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



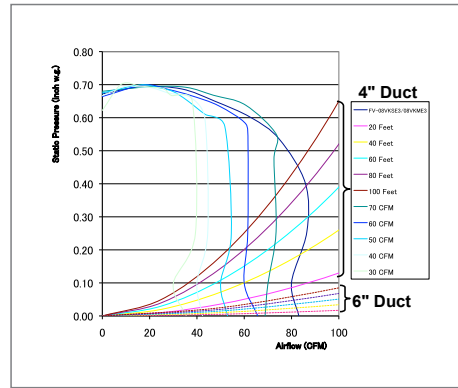
FV-11VQCL6 110 CFM 4" or 6" Duct



Single Speed Fans with Lights — Performance Curves

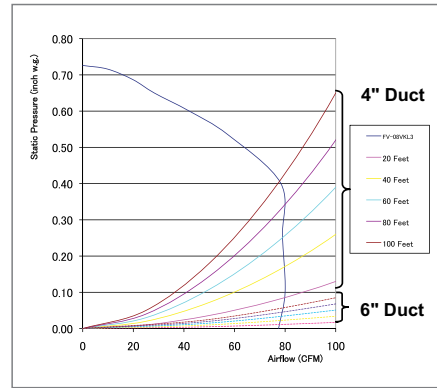
WhisperGreen LED™
VENTILATION FAN

FV-08VKSE3/ME3 80/0 CFM 4" or 6" Duct

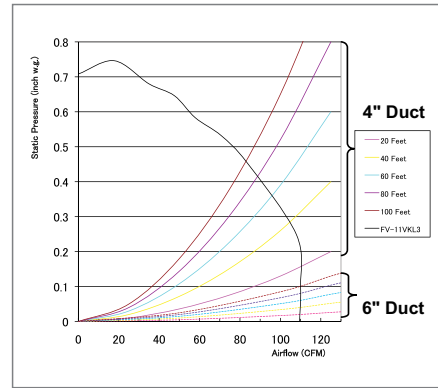


WhisperGreen-Lite™
VENTILATION FAN

FV-08VKL4 80 CFM 4" or 6" Duct

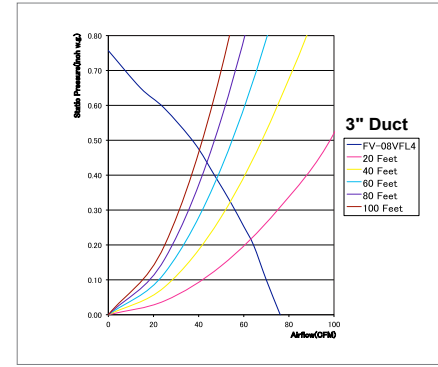


FV-11VKL4 110 CFM 4" or 6" Duct

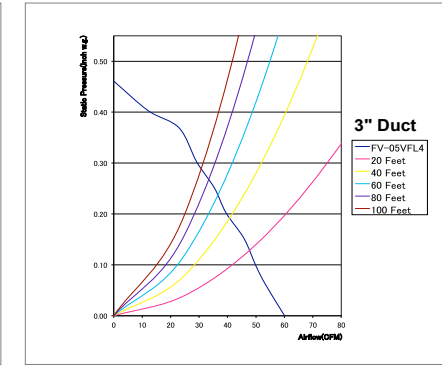


WhisperFit-Lite™
VENTILATION FAN

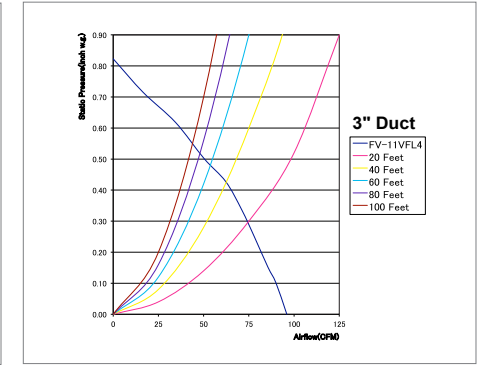
FV-05VFL4 50 CFM 3" Duct



FV-08VFL4 80 CFM 3" Duct

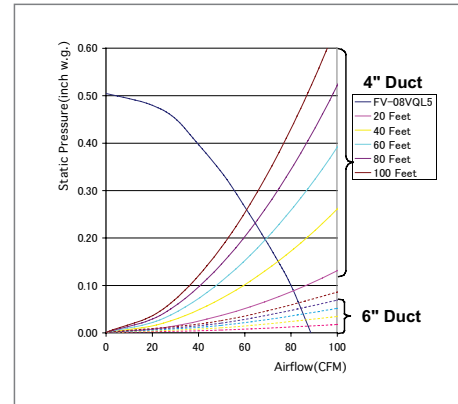


FV-11VFL4 110 CFM 3" Duct

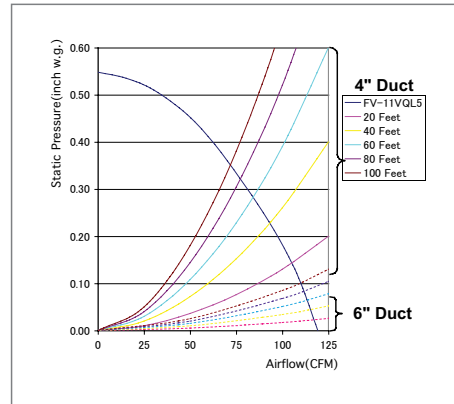


WhisperLite™
VENTILATION FAN

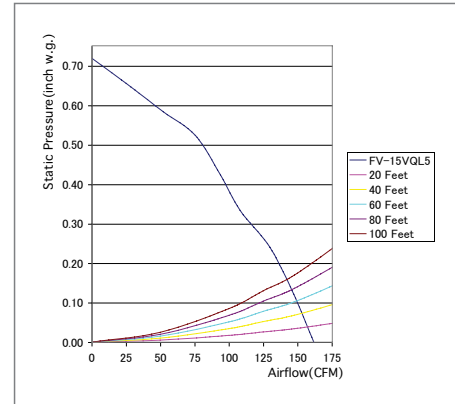
FV-08VQL6 80 CFM 4" or 6" Duct



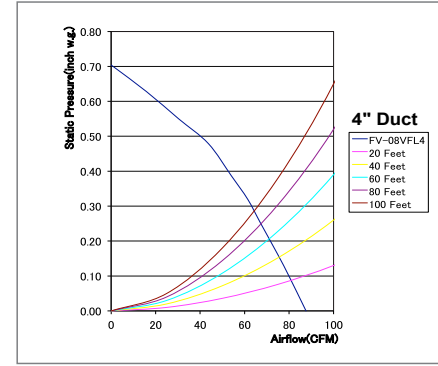
FV-11VQL6 110 CFM 4" or 6" Duct



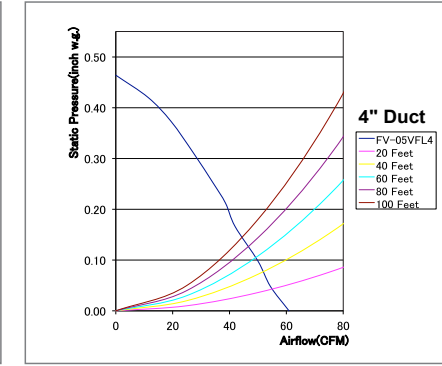
FV-15VQL6 150 CFM 6" Duct



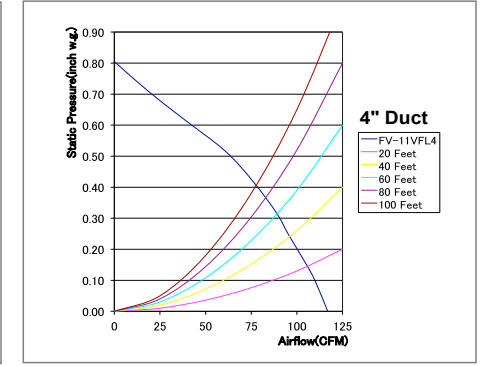
FV-05VFL4 50 CFM 4" Duct



FV-08VFL4 80 CFM 4" Duct

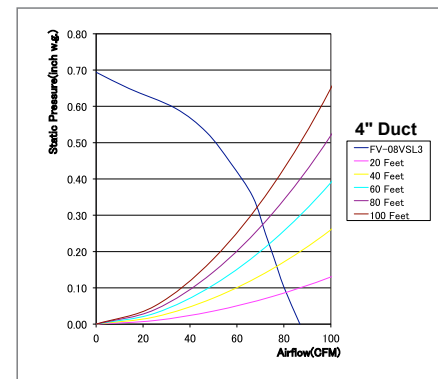


FV-11VFL4 110 CFM 4" Duct

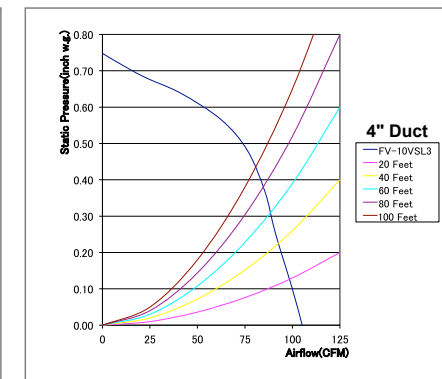


WhisperValue-Lite™
VENTILATION FAN

FV-08VSL3 80 CFM 4" Oval Duct

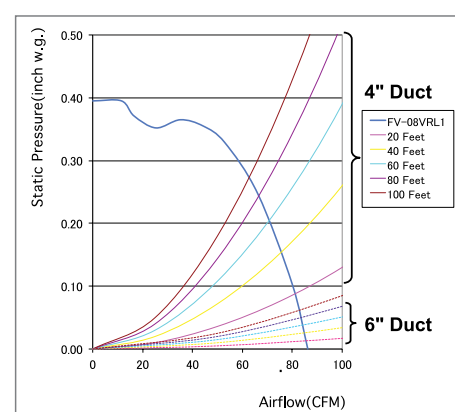


FV-10VSL3 100 CFM 4" Oval Duct



Whisper Recessed LED™
VENTILATION FAN

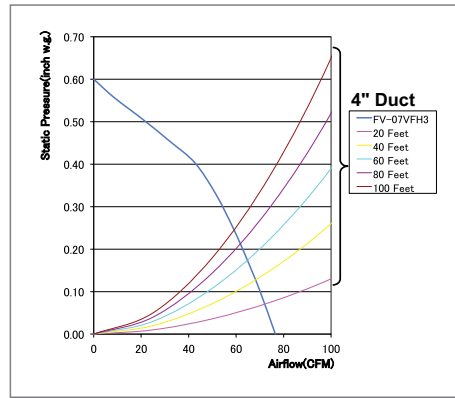
FV-08VRE1 80 CFM 4" or 6" Duct



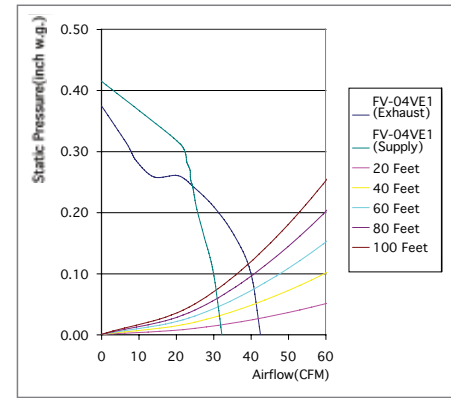
Specialty Fans — Performance Curves



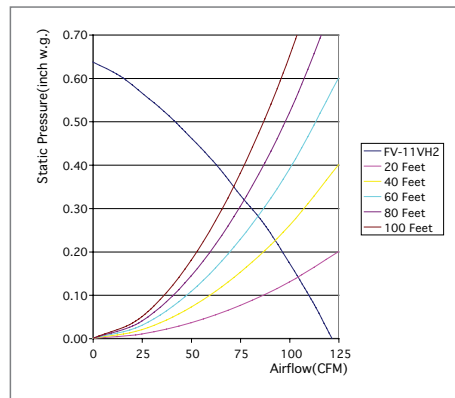
FV-07VFH3 70 CFM 4" Duct



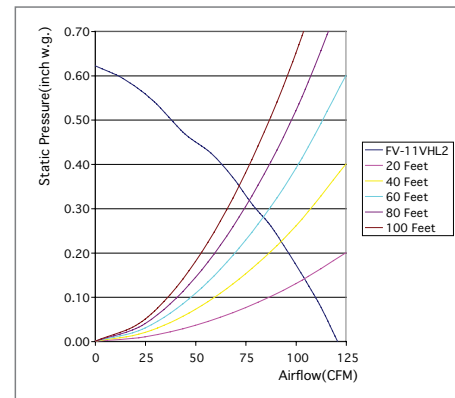
FV-04VE1 40/20 CFM or 20/10 CFM 2 x 4" Ducts



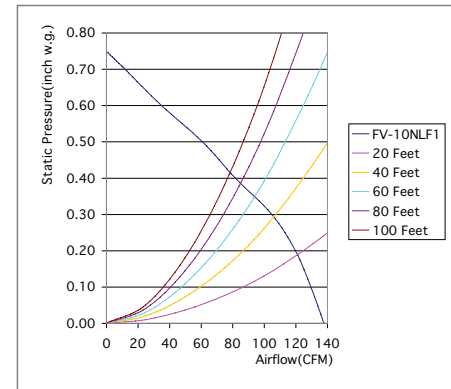
FV-11VH2 110 CFM 4" Duct



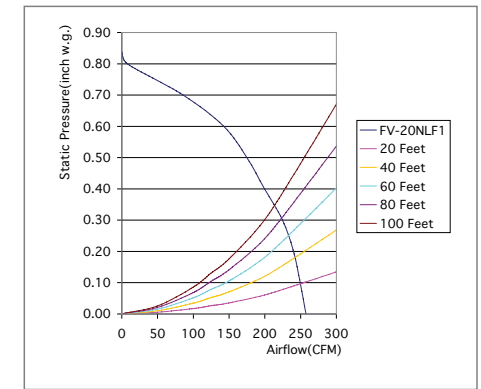
FV-11VHL2 110 CFM 4" Duct



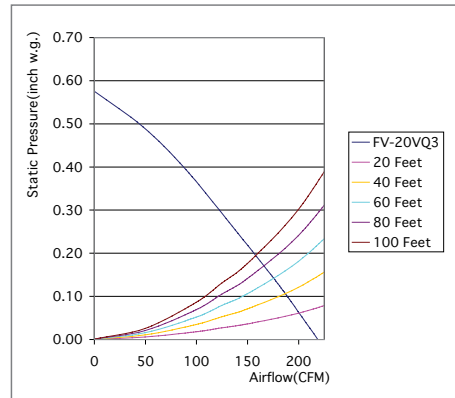
FV-10NLF1 120 CFM 4" Duct



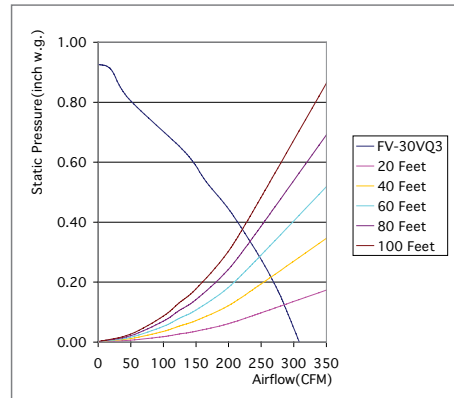
FV-20NLF1 240 CFM 6" Duct



FV-20VQ3 190 CFM 6" Duct

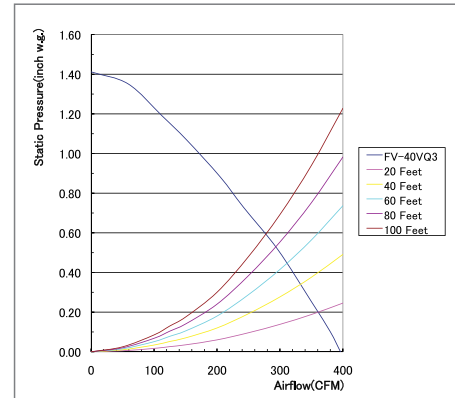


FV-30VQ3 290 CFM 6" Duct

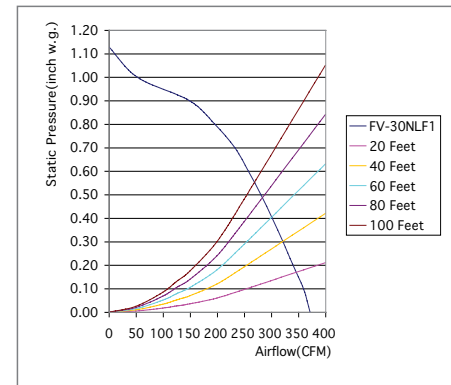


FV-40VQ4

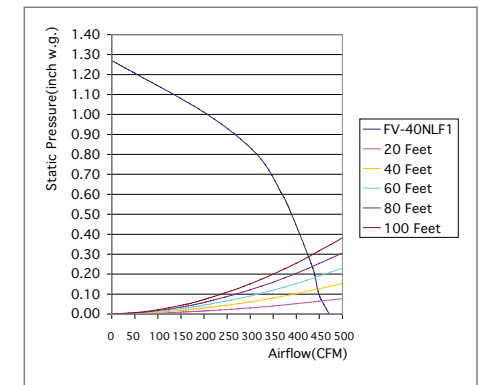
FV-40VQ4 390 CFM 6" Duct



FV-30NLF1 340 CFM 6" Duct



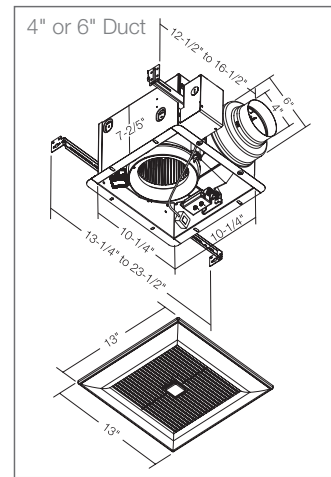
FV-40NLF1 440 CFM 8" Duct



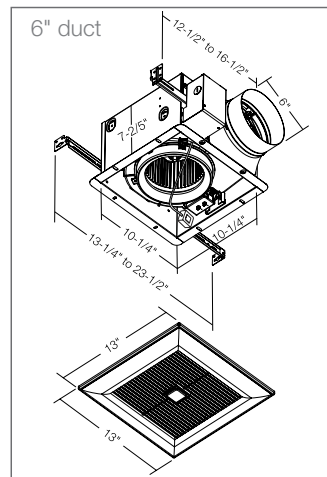
Fans with Built-in Controls — Dimensional Drawings

Single Speed Fans — Dimensional Drawings

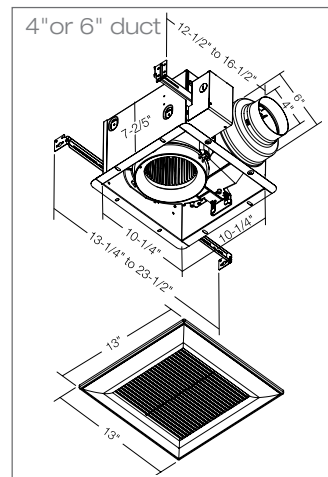
WhisperGreen
VENTILATION FAN



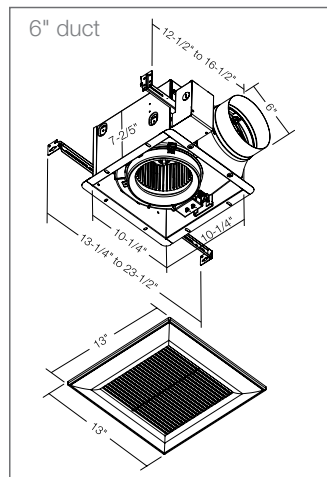
FV-08VKM3



FV-13VKM3

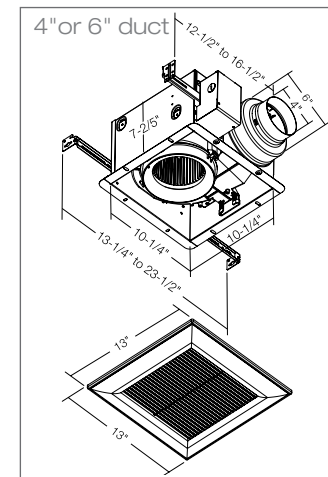


FV-08VKS3



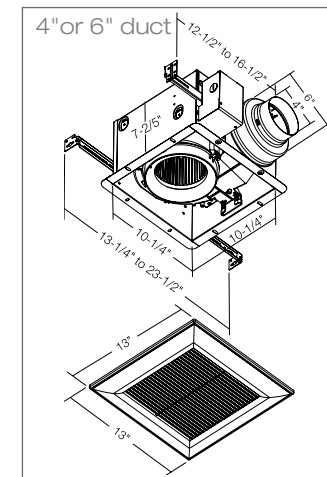
FV-13VKS3

WhisperGreen
VENTILATION FAN

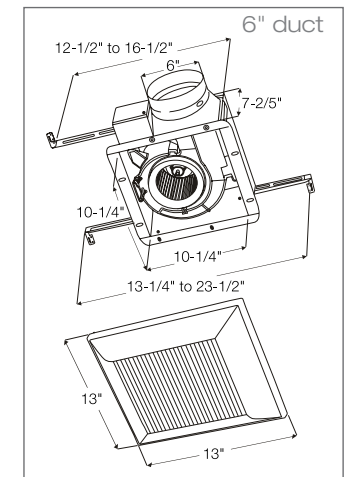


FV-05VK3/FV-08VK3/FV-11VK3

WhisperCeiling
VENTILATION FAN

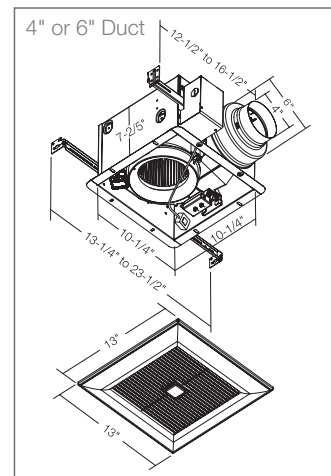


FV-05VQ5 / FV-08VQ5 /
FV-11VQ5



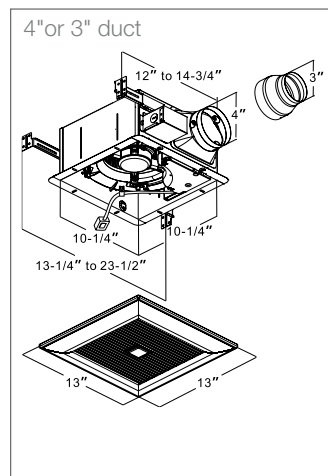
FV-15VQ5

WhisperSense
VENTILATION FAN



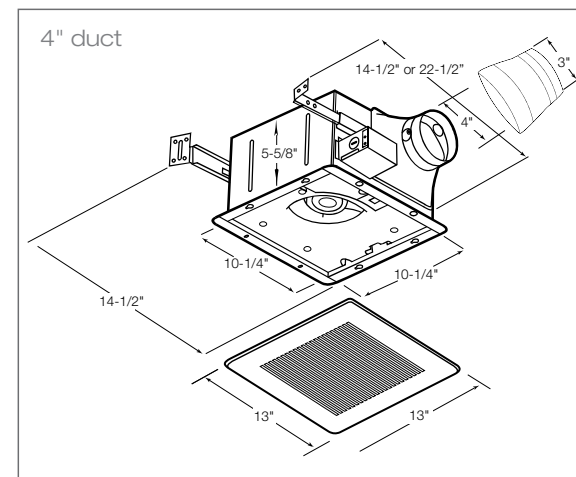
FV-08VQC5 / FV-11VQC5

WhisperWelcome
VENTILATION FAN



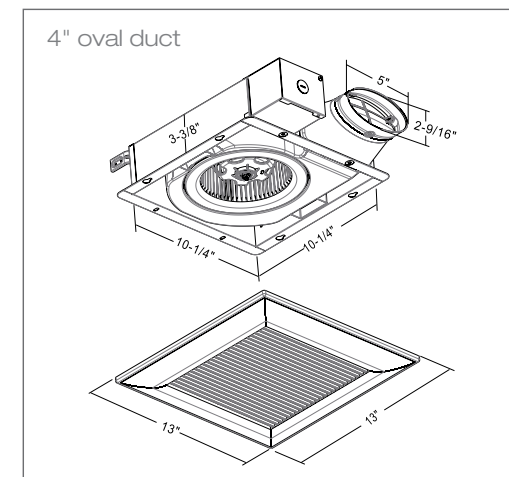
FV-05VFM2 / FV-08VFM2

WhisperFit
VENTILATION FAN



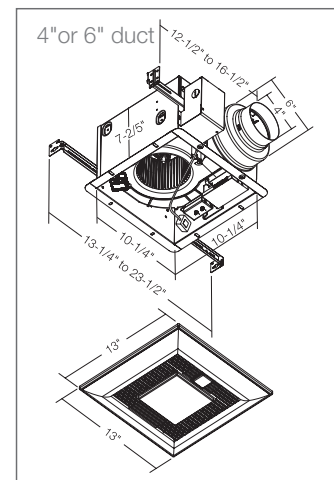
FV-08VF2 / FV-11VF2

WhisperValue
VENTILATION FAN

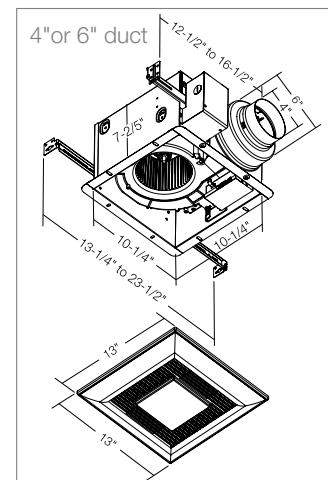


FV-05VS3 / FV-08VS3 / FV-10VS3

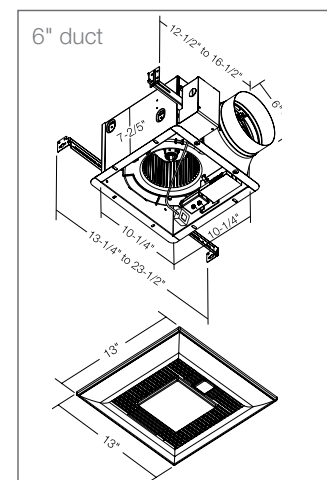
WhisperGreen-Lite™
VENTILATION FAN



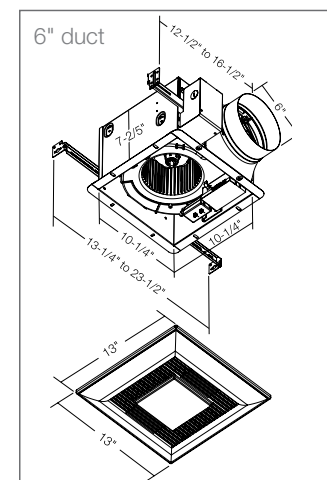
FV-08VKML4



FV-08VKSL4

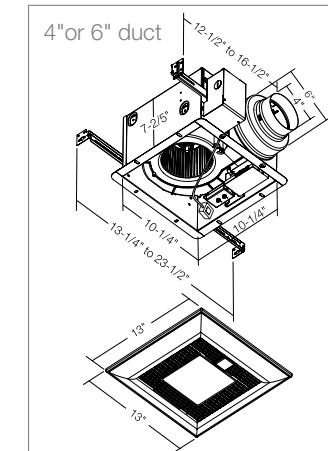


FV-13VKML4



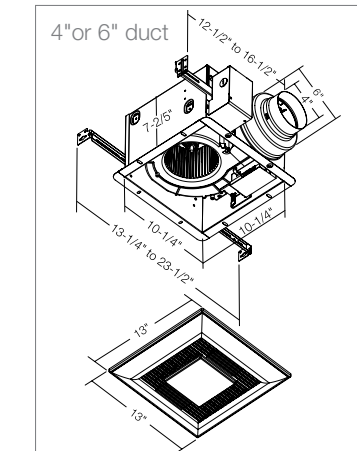
FV-13VKSL4

WhisperGreen LED™
VENTILATION FAN



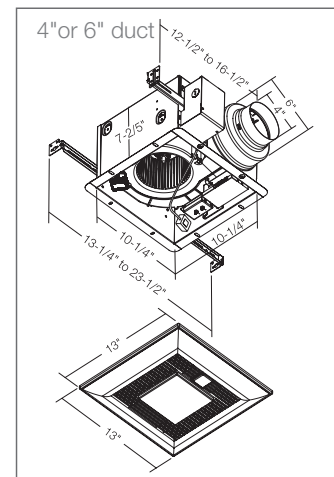
FV-08VKSE3 / FV-08VKME3

WhisperGreen-Lite™
VENTILATION FAN



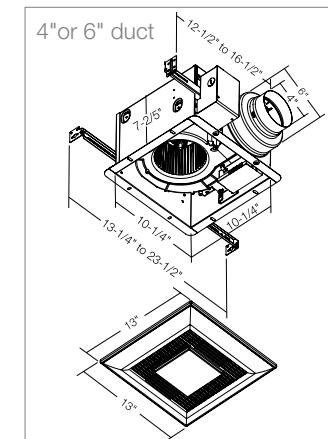
FV-08VKL4 / FV-11VKL4

WhisperSense-Lite™
VENTILATION FAN

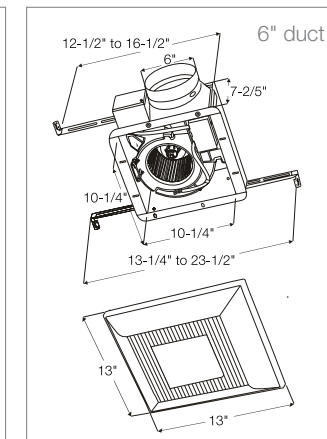


FV-08VQCL6 / FV-11VQCL6

WhisperLite™
VENTILATION FAN

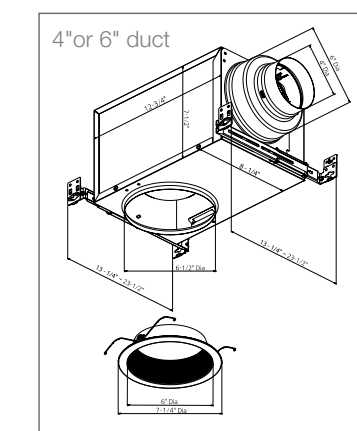


FV-08VQL6 / FV-11VQL6



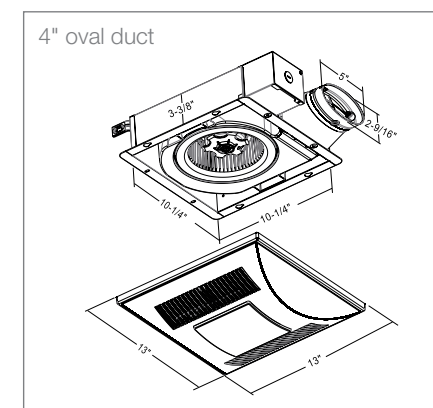
FV-15VQL6

WhisperRecessed LED™
VENTILATION FAN



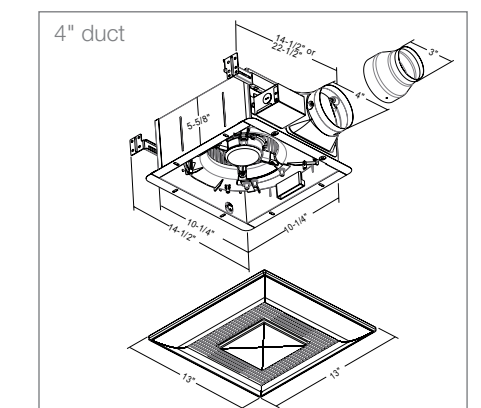
FV-08VRE1

WhisperValue-Lite™
VENTILATION FAN



FV-08VSL3 / FV-10VSL3

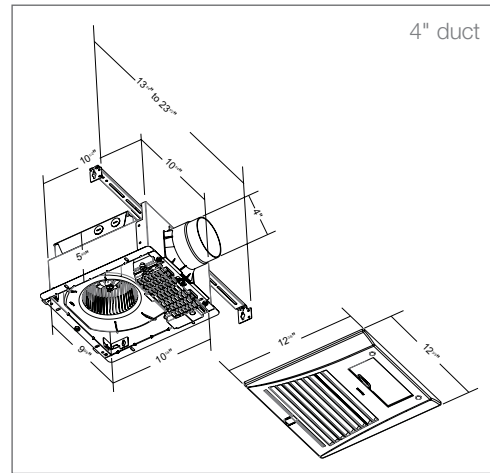
WhisperFit-Lite™
VENTILATION FAN



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

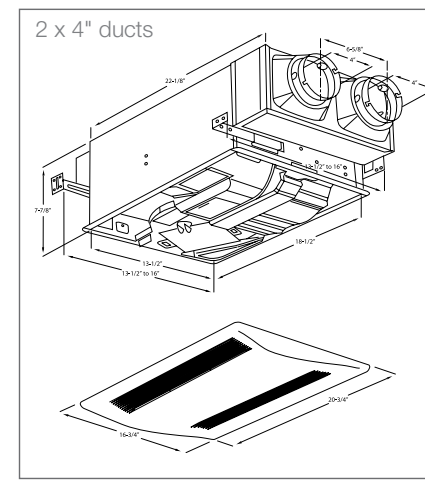
Specialty Fans — Dimensional Drawings

WhisperFit-Warm™
VENTILATION FAN



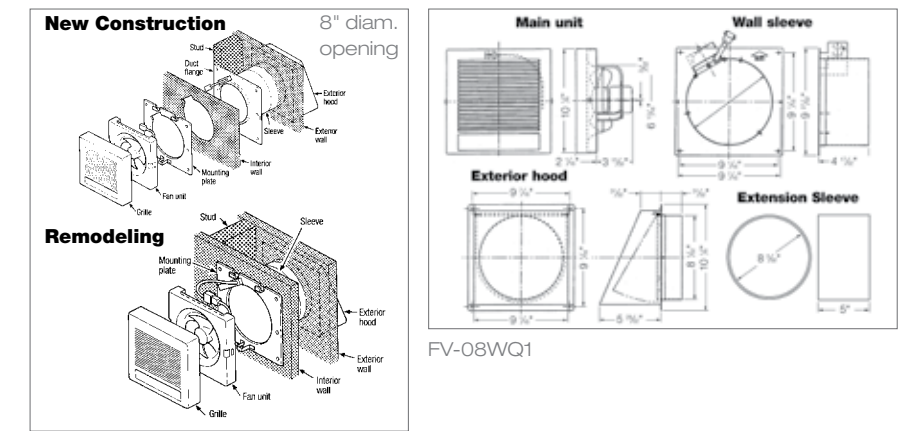
FV-07VFH3

WhisperComfort™
VENTILATION FAN



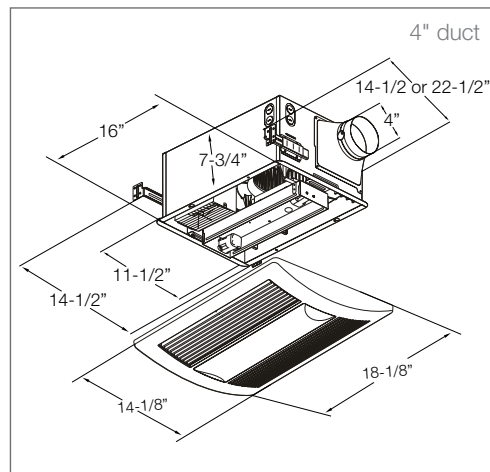
FV-04VE1

WhisperWall™
VENTILATION FAN

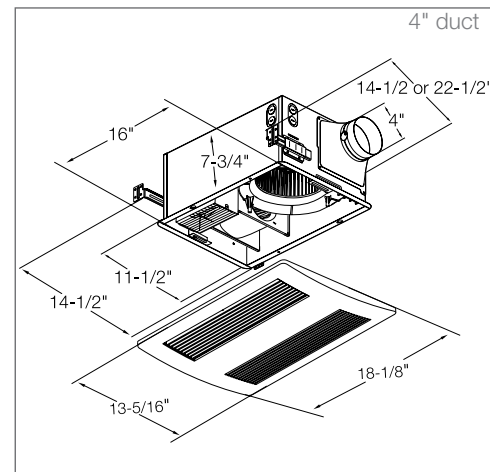


FV-08WQ1

WhisperWarm™
VENTILATION FAN

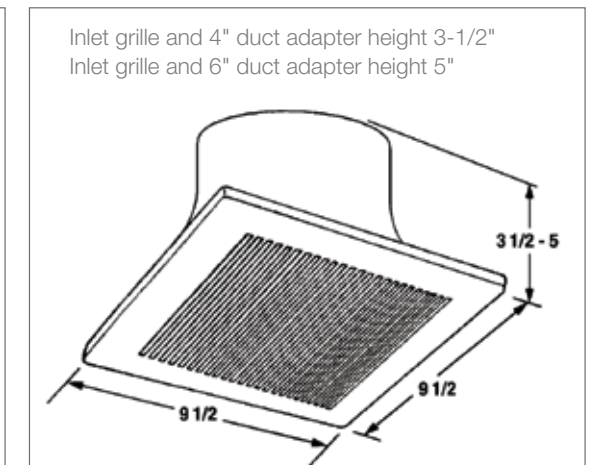
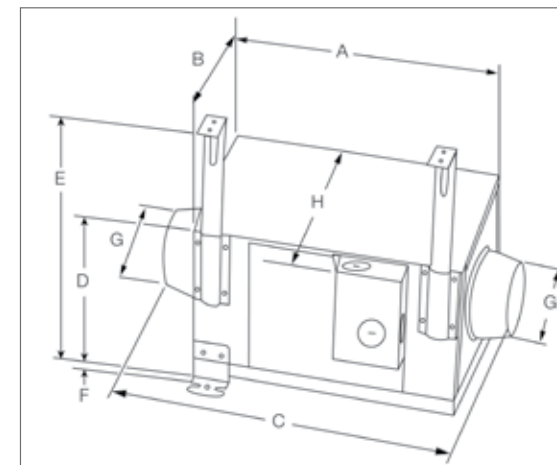


FV-11VHL2



FV-11VH2

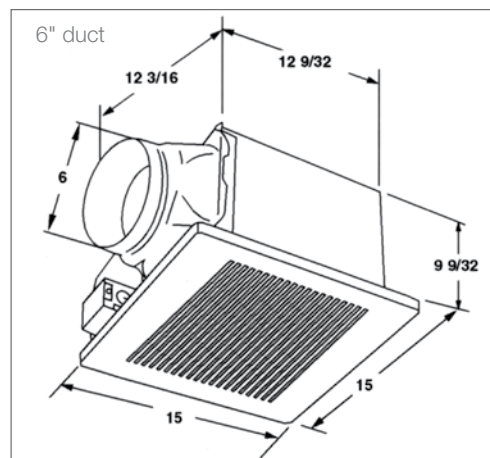
WhisperLine™
VENTILATION FAN



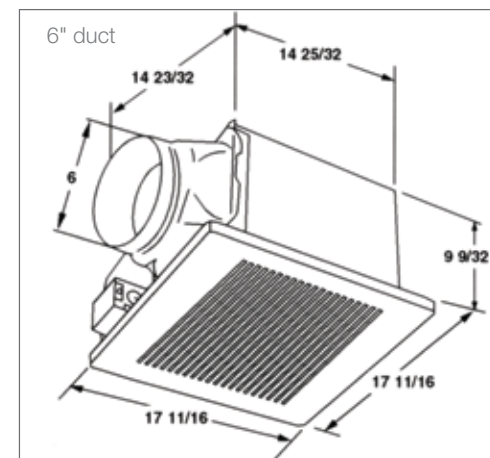
WhisperLine Installation Kits

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"

WhisperCeiling™
VENTILATION FAN



FV-20VQ3 / FV-30VQ3



FV-40VQ4



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 26-33**.

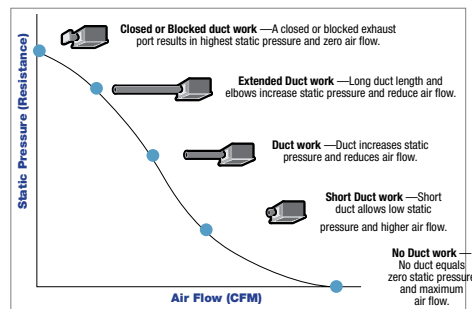


FIG. A

		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

$$8 \text{ ft} \times 10 \text{ ft} = 80 \text{ sq ft}$$

Step 3: Calculate your required CFM

$$1 \text{ CFM} \times 80 \text{ sq ft} = 80 \text{ CFM}$$

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

$$15 \text{ ft} + 15 \text{ ft} + 30 \text{ ft} = 60 \text{ ft EDL}$$

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 28-33. 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. (NOTE that we have discontinued the single switch). 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 but 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 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. Select WhisperGreen and WhisperSense fans have occupancy sensors integrated in the fan grille. Dehumidistats 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 checks both Relative Humidity (RH) and temperature to anticipate condensation and exhausts humidity by turning on the fan. Also, Panasonic's new 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. Select WhisperGreen fans 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

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

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 and 2013, all Panasonic ventilating fans exceed ENERGY STAR standards where guidelines exist and have been labeled accordingly.

Panasonic ventilation fans may qualify for an energy 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 line of fans, including the new LED, have also been awarded Energy Star's 2013 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.

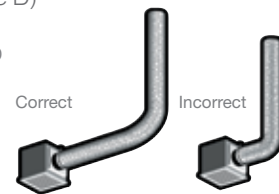
Sagging or weaving a fan duct will also increase static pressure and reduce a fan's performance. When using a flexible aluminum duct, support the entire length of the duct with braces or hangers to keep it as straight as possible for the entire run. If the duct lies across the attic, do not allow it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

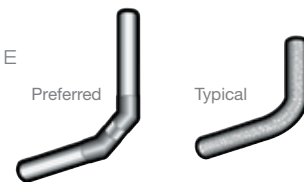
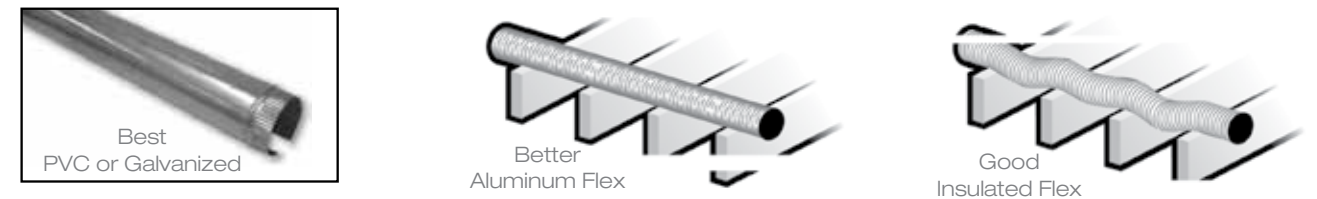


FIG. C



*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'.

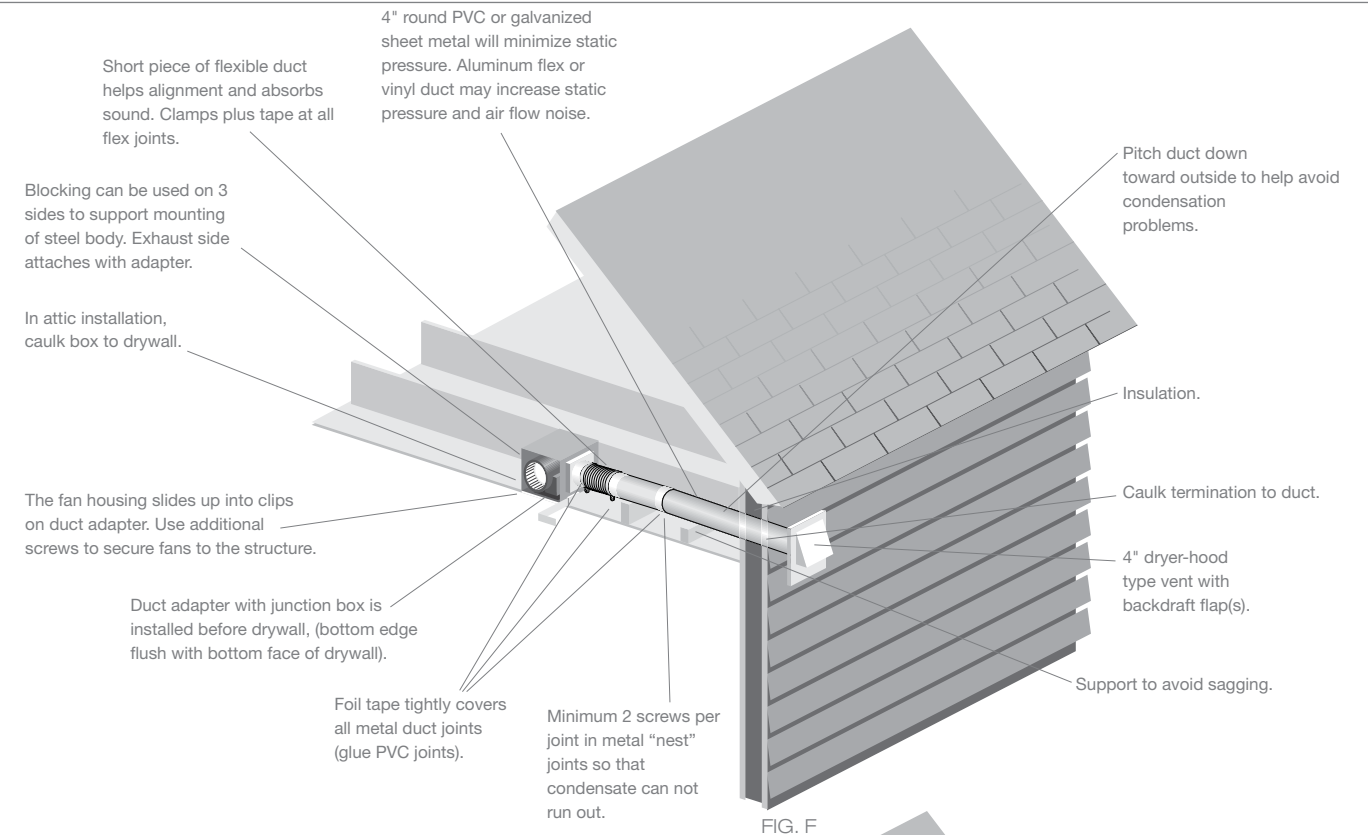


FIG. F

FIG. G

2-3 ft straight run before elbow.

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.

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

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 some level not to exceed 1.0. Panasonic's full line of ventilation fans including

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

LEED 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 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 models are 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 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 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 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 \$6.39 per year to have a fan that provides indoor air quality.

What does the motion sensor or the switch on WhisperGreen models with built-in controls do?

When the motion sensor 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 fan has a high speed of 80 or 130 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 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 is not in use, why doesn't the fan slow down right away?

Your WhisperGreen fan features a built-in adjustable delay-low timer. 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.

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

Sizing example (based on ASHRAE 62.2):

Two Bedrooms at 1600 SQ. FT.	
Master Bedroom (7.5 CFM X 2) =	15 CFM
Second Bedroom =	7.5 CFM
1600 SQ. FT. X .01 =	16 CFM
Total	38.5 CFM

"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."

To comply with ASHRAE 62.2, a WhisperGreen FV-08VKM3 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 continuous ventilation fans can be utilized to fulfill the standards set by ASHRAE 62.2.

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 aerodynamic 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 series incorporates a totally enclosed DC motor designed for extremely quiet, energy efficient operation.

All other Panasonic fan series incorporate a totally enclosed four-pole condenser 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:

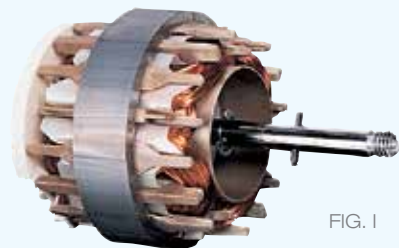


FIG. 1

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 is a more sensitive way to control a fan to avoid condensation because it measures both relative humidity and air temperature."