

VENTILATION VIEWS

ISSUE FOCUS:

Hip Roofs and Specialty Applications

News, opinions, ideas and technical advice from the ventilation specialists at Air Vent

Hip Roofs: An Attic Ventilation Challenge

Hip roofs can be challenging for attic ventilation for two reasons. First, hip roofs often create a large volume of space in the attic that needs to be ventilated. Second, while ridge vents are the preferred method to ventilate an attic, the length of the ridge on many hip roofs isn't long enough for a ridge vent to effectively ventilate the attic.

If you need to ventilate a hip roof, here are some solutions:

Solution #: Ridge Vents

Contrary to what many people think, a ridge vent – installed across the ridge – may be a solution for ventilating a hip roof design. How do you determine if this is a viable option? Follow these simple steps.

1 Measure the attic square footage to determine how much



Although a popular design, hip roofs pose attic ventilation challenges. There are two solutions: ridge vents and power attic ventilators.

net free area should be installed for proper ventilation. Most building codes require 1 square foot of net free area for every 300 square feet of attic floor space – if the ventilation system is balanced with 50% intake and 50% exhaust or a vapor retarder has been installed in the attic. Otherwise, the minimum code requirement is 1 square foot of net free area for every 150 square feet of attic floor space.

2 Measure the length of the ridge. Compare it to your net free area requirement. If you can get 40% of the total required exhaust ventilation using the available ridge, a ridge vent may be an option. See “Calculating Whether a Ridge Vent Will Work” on next page. If you cannot get 40%, go to “Solution #2.”

CONTINUED ON PAGE 2

A Ridge Vent on the Diagonal Hip is a Bad Idea.

Don't install a ridge vent on the diagonal hip. Here's why...

An opening on the diagonal hip of the roof can short-circuit the ventilation system by acting as an **intake vent** instead of as an exhaust vent. Consequently, as an intake vent, the ridge vent on the diagonal hip is prone to weather infiltration – rain, snow and other elements may enter the attic.

Of course, once the ventilation system is short-circuited, the airflow is limited to the area between the openings. Ideally, a ventilation system should be balanced where air is brought in at the lower edges of the attic (undereave or soffit vents) and cir-

culated up and out at the peak of the roof. This pattern, however, is interrupted if ridge vents are placed at the peak **and** along the diagonal hips.

Other potential problems exist:

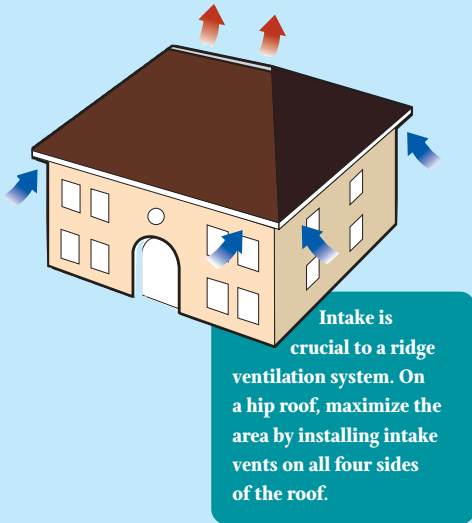
Ice dam infiltration If there is an ice dam, the water may back up into the ridge vent that's installed on the diagonal hip section of the roof.

Water may flow into the vent During rain storms, especially heavy rain storms, water may flow down the roof into the ridge vent that's installed on the diagonal hip section.

CONTINUED ON PAGE 2

HIP ROOFS continued from page 1

③ Install the maximum amount of intake venting. That means install intake vents on **all four sides** of the roof (every 2' or 4' apart if using undereave vents). Maximize the area.



④ Go with the baffle. Use a ridge vent with an external baffle, such as ShingleVent® II, a shingle-over ridge vent, or Multi-Pitch FilterVent®, an aluminum ridge vent from Air Vent. Only externally baffled ridge vents can create negative pressure to pull air from the attic through **both** sides of the vent.

The following chart lists the approximate amount of net free area in square inches provided by various types of intake vents.

Intake Vents	Net Free Area Provided* (in square inches)
16" x 8" Undereave Vent	56
16" x 6" Undereave Vent	42
16" x 4" Undereave Vent	28
Continuous Soffit Vent and Vented Drip Edge (8 foot length)	72
Perforated Aluminum Soffit (1 square foot)	14
Lanced Aluminum Soffit (1 square foot)	4-7

*Be sure to check specifications for individual products to determine actual net free vent area.

Solution #2: Power Attic Ventilators

A roof-mount power attic ventilator may be the best option to ventilate a hip roof. A power attic ventilator, especially a model with a combination thermostat/humidistat, can quickly and efficiently ventilate the area when needed. Here's how to specify a power attic ventilator.

① Measure the attic. Again, you'll need to know the size of the attic to choose the right size power attic ventilator. Multiply the attic square footage by 0.7 to determine the required CFM (cubic feet of air moved per minute) capacity of the fan needed.

Note: 0.7 is a predetermined calculation that provides 10-12 air exchanges per hour and is recommended by the Home Ventilating Institute.

② Choose a CFM. Choose a power attic ventilator with the CFM capacity to ventilate the attic.

③ Position it correctly. Install the power attic ventilator on the **back** side of the roof, close to the ridge. Make sure the power attic ventilator is centered over the attic area for maximum effectiveness.

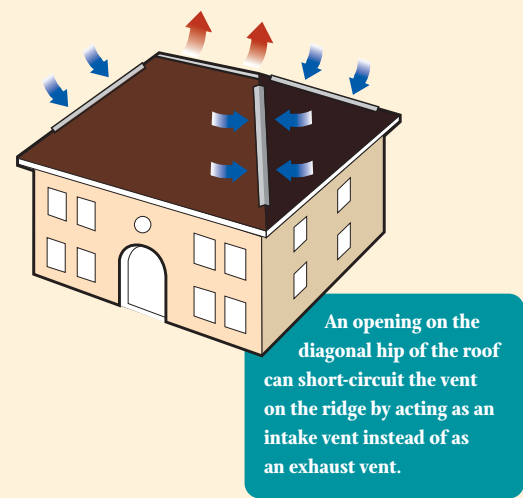
④ Don't forget intake (see chart). Install intake ventilation that's adequate for the power attic ventilator to operate efficiently. Divide the CFM by 300 to determine the square feet of intake venting needed.



BAD IDEA continued from page 1

Some manufacturers make a hip vent, which is a ridge vent designed to be installed on the diagonal hip. To protect the vent from weather, the vent's opening needs to be protected. Most methods of protecting it will choke-off or minimize airflow, defeating the original purpose – venting the attic.

That's why Air Vent recommends not installing a ridge vent on the diagonal hip of a roof.



Calculating Whether a Ridge Vent Will Work on a Hip Roof

The chart to the right is designed for calculating hip roof ventilation requirements.

Find the total square footage of the attic floor area. Round your calculations up to the next highest number. Look across to the number under the column “Minimum Length of Ridge.” If the ridge meets the minimum length requirement listed, you’ll get 40% of the net free area at the ridge. Install the rest at the eaves. The chart is a guideline. (Other combinations may work.)

Attic Square Footage	Minimum Length of Ridge
1200	13
1500	16
1800	19
2100	22
2400	26
2700	29
3000	32
3300	35

Note: The calculations are based on 1 square foot of ventilation for every 300 square feet of attic floor space. The “Minimum Length of Ridge” indicates 40% of net free area at the ridge. Calculations are based on ShingleVent II and Multi-Pitch FilterVent which provide 18 square inches of net free area per linear foot.

Special Applications

Specialty Ridge Vents

Some jobs call for special ridge vents, such as where a roof meets a vertical wall or when the ridge slot needs to be cut extra wide. For such applications, Air Vent manufactures Specialty Ridge Vents. Each of the vents described below features Air Vent’s unique combination of an external baffle and an internal weather filter.



Flash FilterVent provides ventilation where a roof meets a vertical wall. It delivers 9 square inches of Net Free Area per linear foot. Flash FilterVent comes with an extra reverse flashing which helps prevent water backup in areas

where snow can drift over the vent or in heavy run-off areas against high vertical walls.

Available in black, brown, gray, bronze and copper.

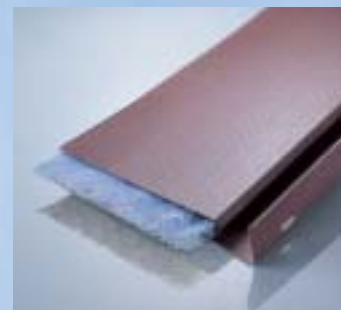


Peak FilterVent is designed for contemporary roofs formed by a pitched roof and a vertical wall that drops off from the pitched roof. It provides 9 square inches of Net Free Area per linear foot.

Available in black, brown, gray and bronze.

Utility FilterVent can be used when you need to build your own ridge vent. For example, an oversized ridge board that calls for an extra wide slot. The general application is to cut the slot where needed to provide the airflow opening, place the vent on wood blocks to maintain its shape, and continue shingling above it similar to a shingle-over ridge vent. Utility FilterVent has 9 square inches of Net Free Area per linear foot.

Available in black, brown, gray and bronze.



Tile FilterVent has special adapters that cover the ends of tile, shakes or metal roofs. It provides 18 square inches of Net Free Area per linear foot.

Available in black, brown, white, gray and mill.





YES!
 Send me a FREE
 "Why Homes Need
 Attic Ventilation"
 CD-ROM.
 (Complete and return
 this card, or call
 1-800-AIR-VENT.)

NAME _____

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Have you ever used ridge vents? Yes No If yes, what brands?

Comments...

Air Vent's CD-ROM Makes Homeowner Presentations Easier.

Here's a tool that will help with your homeowner presentations: "Why Homes Need Attic Ventilation" CD-ROM. The 4-minute CD plays on a laptop or any computer that plays CD-ROMs. It is narrated, animated and packed with useful information to help you explain the need for proper attic ventilation to homeowners.

- Animated graphics show intake and exhaust airflow
- Photographs reveal the potential damages resulting from improper attic ventilation
- Building code and shingle warranty requirements are referenced to support the need for ventilation
- Air Vent's ShingleVent® II ridge vents, PowerCool™ power attic ventilators and intake vents are featured

There's a handy index that allows you to reverse or fast forward to any topic. And there is a built-in stop after each section to give you time to add your own comments or answer questions.

The CD-ROM, a \$5.95 value, is yours free when you complete and return the card above or call 1-800-AIR-VENT.

How Much Intake is Needed with a Power Attic Ventilator?

Use the following formula to determine the amount of intake venting required with a power attic ventilator:

CFM rating of the power attic ventilator ÷ 300 = square feet of intake ventilation needed

For example, 700 (CFM) ÷ 300 = 2.3 square feet of intake ventilation required. (Note: Dividing by 300 is a predetermined calculation established by the Home Ventilating Institute.)

To turn that number into square inches, which is the common method of specifying net free area, multiply it by 144 (there are 144 square inches in a square foot).

For example: 2.3 (square feet) x 144 = 331 square inches of net free intake area.

Sizing Up Power Attic Ventilators

Power attic ventilators are rated in CFM – cubic feet per minute of air movement. The higher the CFM, the more powerful the ventilator and the more air exchanges per hour it provides. Explaining this to your customers gives you an opportunity to sell-up to high-performance models.

To determine the correct CFM rating needed for an attic, multiply the attic square footage by 0.7, which is a predetermined calculation that provides 10-12 air exchanges per hour and is recommended by the Home Ventilating Institute.

For example: 1500 square feet x 0.7 = 1050 CFM. Thus, a fan rated 1050 CFM is needed.

The chart at right provides the required CFM for a variety of attic sizes.

Attic Square Footage CFM Required

1200	840
1400	980
1600	1120
1800	1260
2000	1400
2200	1540
2400	1680

Note: For roofs with a 7/12 roof pitch or higher, you may want to add 20% more CFM to handle the larger volume of attic space, and 30% more CFM for roofs with an 11/12 pitch or higher. Be sure to increase the intake ventilation accordingly.



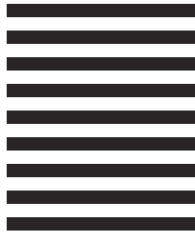
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Ask Your Supplier for PowerCool™

Power Attic Ventilators that Deliver Strong Performance

Air Vent PowerCool Plus™ roof-mount power attic ventilators can help protect a home by quickly and efficiently exhausting heat and humidity from the attic.

- Each model features a balanced motor and blade design for maximum CFM performance and motor efficiency.
- All models feature a factory-wired, pre-set adjustable thermostat that's

Only the High-Performance PowerCool Plus™ 15 and PowerCool Plus™ 12, with a combination automatic thermostat/humidistat, help prevent heat and moisture buildup in the attic.



easy to install – only two wires to connect!

- Motors have thermal overload protection. This important safety feature means the motor will shut off if the fan overheats.
- Large, low-profile 25" domes are positioned high to enhance airflow.
- Flashing is 24" x 24" making it easy to position, nail and shingle-over without removing the dome.

- All warranties feature Replacement Plus protection which provides reimbursement for labor costs, for a limited time, incurred in removing and replacing any parts found to be defective.

Battling Humidity, Too

Besides heat, it's also important to remove humidity which can seep into the attic in the winter. Air Vent's PowerCool Plus™ 15 and PowerCool Plus™ 12 models feature a combination thermostat/humidistat for year-round ventilation. The thermostat reduces heat buildup. The humidistat reduces moisture.

There are a variety of PowerCool models to choose from...

Model	CFM	Warranty	Colors
High-Performance PowerCool Plus 15 with combination automatic thermostat/humidistat	1500	Lifetime Limited and 5-year Replacement Plus protection	Gray, Brown, Black and Weatherwood
High-Performance PowerCool Plus 12 with combination automatic thermostat/humidistat	1170	10-year limited and 5-year Replacement Plus protection	Gray, Brown, Black and Weatherwood
PowerCool BR28 metal dome with automatic thermostat	1320	10-year limited and 5-year Replacement Plus protection	Gray and Weatherwood
PowerCool BR26 metal dome with automatic thermostat	1170	5-year limited with 2-year Replacement Plus protection	Gray, Brown, Black and Weatherwood
PowerCool BR26 plastic dome with automatic thermostat	1170	5-year limited with 2-year Replacement Plus protection	Gray, Black and Brown

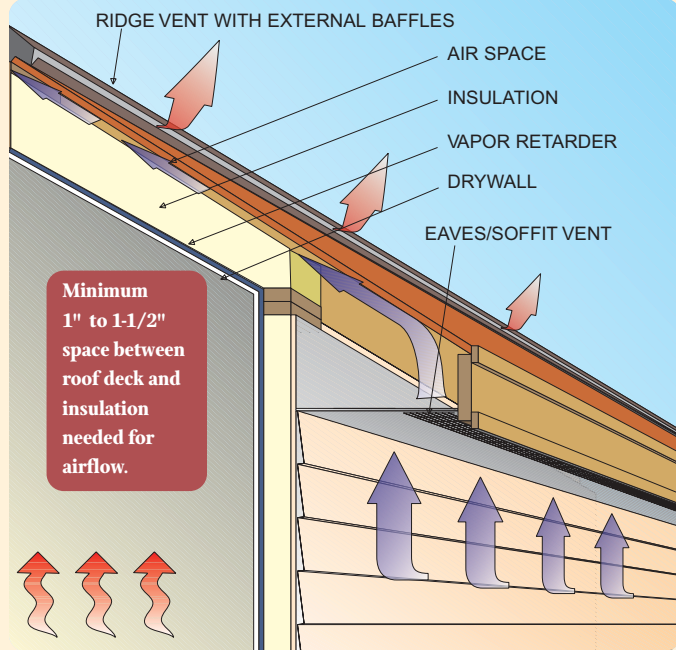
Ask your supplier for Air Vent PowerCool roof-mount power attic ventilators.

Handling Specialty Applications: Cathedral Ceilings

Like hip roofs, cathedral ceilings present special ventilation challenges. Ongoing research and debate suggests that cathedral ceilings may be prone to condensation problems, whether insulated or not, and therefore are likely to benefit from ventilation. A ridge vent combined with a balanced soffit vent system may be the only dependable choice for cathedral ceilings.

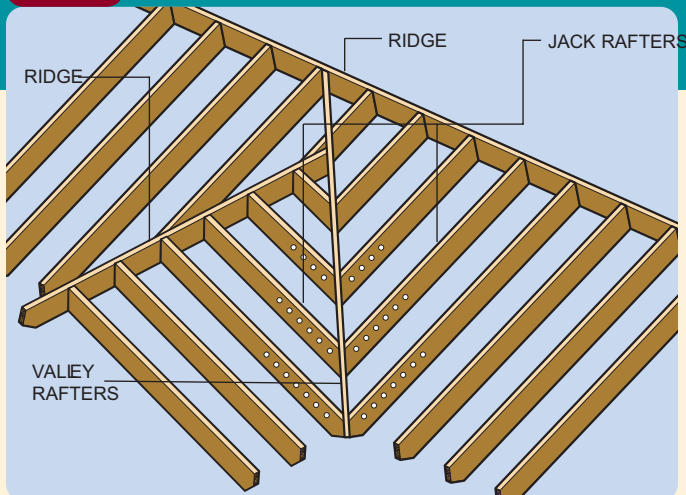
Particular cathedral ceiling designs where the presence of air blockages interfere with airflow between the ridge and eaves can be difficult to ventilate. To the right are two common situations.

Cathedral Ceiling



A ridge vent with a balanced soffit vent system may be the only dependable choice to properly ventilate cathedral ceilings, which otherwise may be prone to ice and condensation problems.

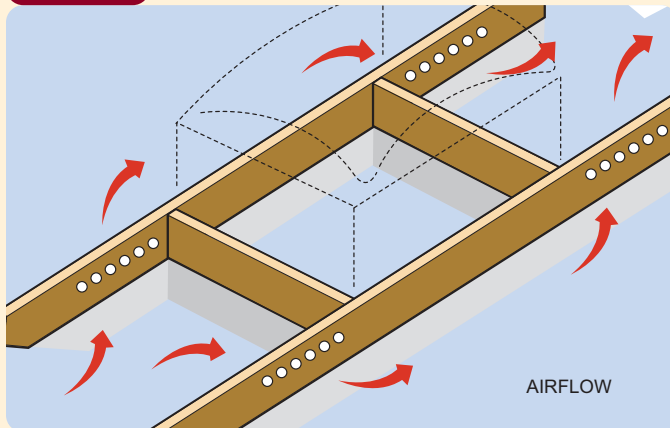
Valleys



When a cathedral ceiling ends in a valley you can't access the soffit vents for intake ventilation. The solution is to drill six 1" holes in the rafter that intersects with the valley. These openings will allow intake ventilation.



Skylights



When a skylight is installed in a rafter bay, it basically blocks the rafter bay. To unblock it, drill six 1" holes (horizontally) in the rafter *below and above* the skylight or other rafter bay obstruction, such as a chimney.



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