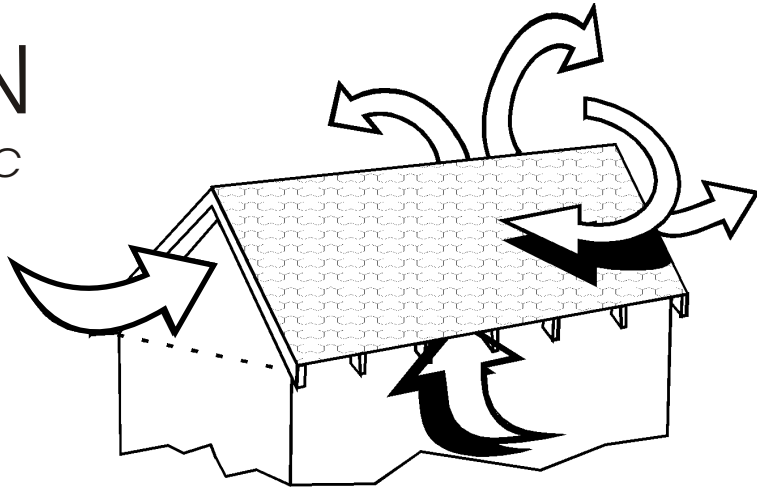




VENTILATION

DESIGNING A PROPER ATTIC VENTING SYSTEM

Ventilation above the insulation in the attic of a residential building structure is necessary both winter and summer. In winter, the insulation keeps heat inside the living space below while allowing moisture vapor to escape. In the summer the moving air reduces attic heat build-up. Energy conscious designs and construction such as proper attic ventilation will save energy, cost less to operate, and have less of a negative impact on the natural environment. An understanding of the basic design process is helpful in order to assure proper attic ventilation.



Typical air movement in attic space.

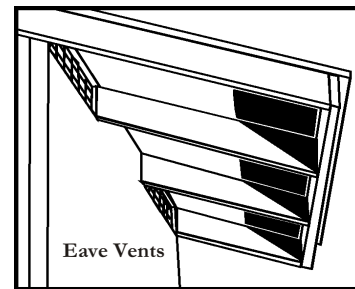
The roof has the maximum amount of sun exposure compared with any other building component. Roof temperatures can reach more than 140°F on a summer day. This heat passes through the roof to the attic space below. The lower the temperature in the attic space, the more effective the ceiling insulation is at maintaining a comfortable living area below. Natural ventilation can be used to take away the heat that penetrates the attic space. Venting the hot air to the outside and replacing it with cool air with an eave to ridge ventilation system creates a continuous circulation flow naturally with external airflow across the roof. Roof or attic vents properly located will allow good cross ventilation from end-to-end and top to bottom of the cavity. Vents should be equipped with screen or wire cloth to keep out pests and bugs and louvers to keep out rain or snow. Some of the different types of vents in use today are:

Eave Vents

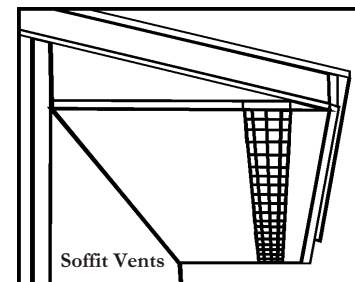
Screened or louvered vents placed between roof rafters at the plate line. Eave vents are used primarily when there is not an enclosed soffit or roof overhang.

Soffit Vents

A continuous screened or perforated vent usually on the underside of the eaves and running the length of the roof line.



Eave vents are installed between roof rafters underneath the overhang.

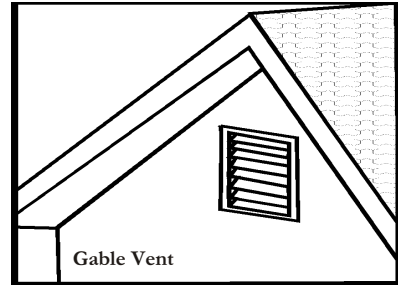


Soffit vents allow for inflow air from underneath the roof overhang.



Gable End

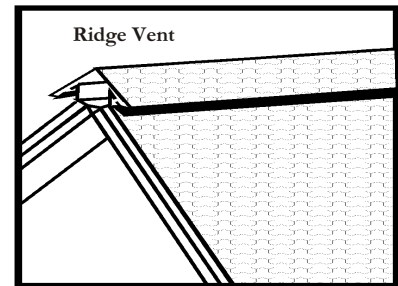
These vents are usually installed at the peak of the gable ends and on opposite sides of the roof. Manufactured in a variety of designs and shapes, these vents affect the side-to-side circulation.



Gable vents allow for cross ventilation.

Ridge Vents

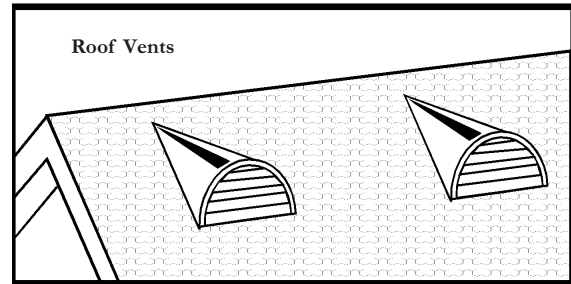
Typically a continuous vent applied to the entire length of the roof ridge. Many of today's ridge vent products are design as a concealed portion of the roofing material.



Installed along the ridge line, ridge vents release air from the upper-most attic cavity.

Roof Vents

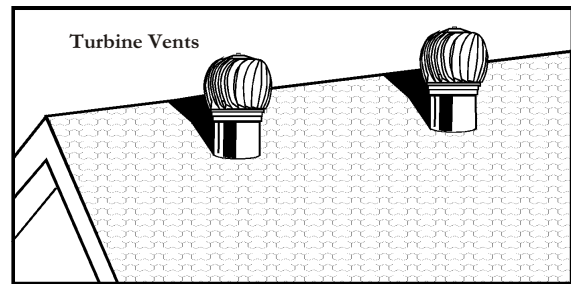
Passive roof vents come in a variety of shapes and sizes. These vents can be installed both high and low on the roof to provide top to bottom ventilation or with other types of roof vents for cross ventilation.



Roof vents can be installed both high and low on the roof to provide top-to-bottom ventilation.

Turbines

Sometimes called rotary vents, these are louvered spinning balls attached to a solid base. As warm air rises through the vent it causes the turbine to spin which in turn draws more air out of attic space.



As warm air rises, or the wind blows, it cause the turbine vent to spin which in turn draws air out to the attic cavity.

In many instances these ventilating products become a functioning part of the architectural design. Gable vents of various shapes and surrounds as well as ornate dormer vents work to enhance style and décor while serving their intended purpose. Designers more and more require that if the vent product must be present then it must become a design component.

Building Codes dictate the requirements for proper attic ventilation. These are as follows:

- 1 (one) square foot of venting for each 150 square feet of ceiling area.
- 1 (one) square foot of venting for each 300 square feet of ceiling area if vapor barrier is present, or if 50% to 80% of vents are located in the upper portion of the roof.

Of the total venting, 50% should be soffit venting and 50% roof, gable, or ridge venting, equally distributed on opposite sides of the roof creating the ideal cross ventilation process.

Proper attic ventilation offers a variety of positive results to the effective design and construction equation. Heating and moisture vapor transfer, reduced energy costs, increased life span of insulation and roofing materials, enhanced design capabilities all add up to increase the value and performance of good building.