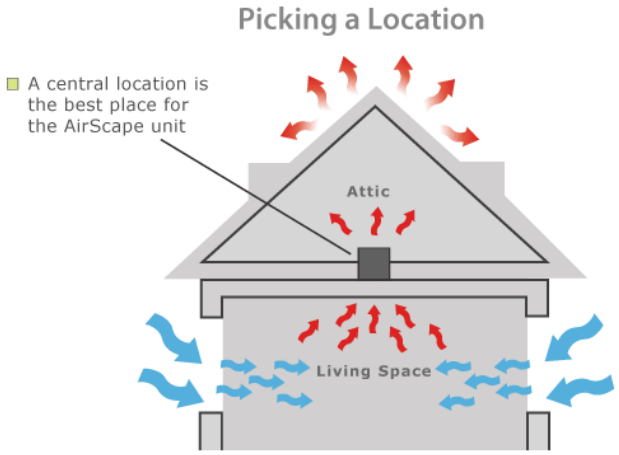
Theory of Operation

As a home heats up during the day, a large amount of heat is retained in its structure and contents. These materials give up their heat slowly and continue to heat the home's interior even if the outdoor temperature is comfortable. Homeowners are then forced to endure either uncomfortable hot indoor temperatures, or the expense of air conditioning. AirScape® and Ventura® whole house fans resolve this dilemma by exhausting hot indoor air out of, and drawing cool outdoor air into, the home.

Each of our fans has been designed for quiet and efficient operation. As such, we strongly recommend running this fan through the night to extract the maximum possible amount of heat from the home. This not only helps maintain a comfortable indoor temperature, but essentially "pre-cools" the home ahead of the next day's rise in temperature, which reduces, or can even eliminate, the need for traditional air conditioning.

Fan Location Guidelines

- Locate this fan in a central location away from windows that will be opened to promote an even replacement of air throughout the home and greater the cooling effect.
- Locate this fan at the highest point possible to exploit natural convection and help exhaust the hottest indoor air from the home.
- In a two-story home, the ideal location for this fan is typically in the the open area at the top of the stairs.
- Avoid locating this fan in a narrow space or over hard flooring as the reflection of sound off of hard surfaces can amplify its percieved noise.
- We specifically recommend against locating this fan in a bedroom as humans' perception of noise is far greater when the surrounding environment is quiet (such as within a bedroom at night).
- Within the attic, locating the fan near an electrical outlet or power supply can minimize the need for additional electical work.



Installing the unit centrally ensures air is replaced evenly throughout your house

Ceiling or Wall?

AirScape dampers can be mounted horizontally or vertically. We recommend installing this fan's damper in the ceiling in an horizontal orientation, keeping in mind that locating the fan as high as possible helps exhaust the hottest indoor air from the home.

Required Attic Ventilation

It is *critical* that the attic be sufficiently ventilated for this fan to operate properly. Without adequate ventilation, hot air cannot easily escape from the attic, which creates back-pressure that can substantially reduce the fan's performance. Specifically, operating this fan in an attic with less net free ventilation area pthan recommended will decrease its airflow and energy efficiency.

Whole House Fan Model	Min.Net Free Ventilation Area
AirScape 1.0	2 ft.²
AirScape 1.7	4 ft.²
AirScape 3200	6 ft.²
AirScape 3400	7 ft.²
AirScape 4300	9 ft.²
AirScape 5300	10 ft.²
Ventura 3200	7 ft.²
Ventura 3400	6 ft.²
Ventura 4300	9 ft.²
Ventura 5300	10 ft.²

Venting requirements vary by fan. We recommend *a minimum* of 1 square feet of "net free" ventilation area per 500 cfm at a fan's highest speed. The minimum attic venting requirements for each model of AirScape® and Kohilo® whole house fan is given in the chart at right.

Net free ventilation area can be provided by any combination of gable, eyebrow, roof cap, soffit, or ridge vents, or any other method of ventilating the attic space.

However, the openings of most vents are partially obstructed by grilles, louvers, and/or screens. A vent's "net free" ventilation area is then the surface area of its opening minus the surface area of any grilles, louvers, or screening covering it. Different types of vents have different ratios of net free area to total area.

Manufacturers typically publish their vents' net free ventilation areas and/or ratios in their products' specification documents. If this information is unavailable, a ratio of 50% net free area to total area is usually a good rule of thumb. The most notable exception to this rule of thumb are ridge vents. The industry standard net free ventilation area for ridge vents is 13% of the vent's length in feet. Thus, a ten foot ridge vent would provide 1.3 sq. ft. of net free venitilation area.

While in our experience most properly constructed homes have adequately ventilated attics, not all do. Because sufficient ventilation is so critical to this fan's performance, it is important that the home's existing ventilation be verified before it is installed.

Since most attics have multiple vents, often of different types, it is necessary to count each vent, noting its type and size. Apply the appropriate ratio to the dimensions of each vent to find its net free area, and sum these values to find the attic's total ventilation. An example of how these calculations are made is given in the chart below.

Vent Type	Dimensions	Total Area	Net Free Area Ratio ("NFA")	Net Free Ventilation Area (=Total Area x NFA)
Louver	24" × 24"	24" × 24" ÷ 144 = 4 ft.²	50%	4 ft.² × .50 = **0.89 ft.²**
Ridge	10 feet	n/a	13%	10 feet × .13 = **1.33 ft.²**
Round Soffit	10" diameter	3.14 × 5" × 5" ÷ 144 = .55 ft.²	50%	.55 ft.² × .50 = **.28 ft.²**
			Total Net Free Ventilation Area	1.57 ft.²

You can use our online Attic Venting Calculator to assist you in determining your attic venting. This calculator is located at http://www.airscapefans.com/system-builder/attic-vent.php.

Please consult a roofing professional if the attic's net free ventilation area remains uncertain.