FACTORS AFFECTING VENTILATION SYSTEMS
FOR BUILDERS CONTRACTORS AND HOMEOWNERS

- **Lack of undereave soffit ventilation.** This is the #1 reason for weather infiltration. There should be an equal or slightly greater amount of free area in the soffit regardless of the type of exhaust system used. Make sure that the soffit vents are not covered by insulation, light should be visible in the soffit area when one is standing in the attic.
- **Do not mix different exhaust products on a single home**, i.e., do not use roof vents with ridge vents, ridge vents with power vents, turbines with roof vents, etc.
- **Avoid using ridge vents or roof vents near gable vents.** Depending on the wind direction, the gable vents can act as exhaust vents and cause the ridge or roof vents to act as intake vents. If problems occur, make the gable louver non functional.
- **Keep roof vents at a single level on the roof.** Do not use them high and low. The lower vents may try to act as intake.
- **Keep roof vents on the same side of the ridge.** Do not place them across the ridge from one another. Depending on the wind conditions, one roof vent may try to feed the other roof vent.
- **Do not use roof louvers on the lower part of the roof for intake.** Roof louvers are designed to be exhaust vents and may not offer the desired weather protection when being used as intake vents.
- **Avoid placing ridge vents or roof vents on dormers** when the dormers are lower than the main ridge and connected to the main attic. If vents are put on lower dormers that are connected to the main attic, separate the dormer from the main attic and let the dormer be a "mini" attic.
- **If ridge vents are used on homes with multiple ridgeline heights,** it may be desirable to separate the attic areas where the ridgelines change. This may be done with plastic sheeting or roofing felt.
- **Cut the hole(s) correctly.** Holes that are cut too large can lead to weather infiltration. This is especially true for ridge vents since some of the internal baffling may be rendered ineffective.
- **If lanced or perforated soffit panels are used**, the ones that provide maximum ventilation should be used. In most cases, the panels should be used continuously around the soffit area. Panels with holes typically have more free area than panels that are lanced. Also, some lanced panels are often not lanced cleanly and can cause more resistance to air flow
- **How To Determine The Correct Amount Of Ventilation A Home Needs:**
  Use the Lomanco Selector Guide to determine the correct amount of ventilation the home will need. IMPORTANT: Attics Require 50 % Intake and 50 % Exhaust!

Questions ??? - Need Help ???

Thank you for using Lomanco Products.Should you have any questions, please contact your Lomanco representative or Lomanco, Inc.

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VENTILATION CALCULATIONS

Lomanco Engineering Department
June 1999

*** 1/300 Rule - Using Net Free Area ***

Most codes use the 1/300 rule for minimum residential attic ventilation recommendations. This means that for every 300 square foot of enclosed attic space, 1 square foot of ventilation is required - with half at the upper portion of the roof (exhaust) and the other half under the eaves (intake). These formulas are traditionally used for static roof vents which are rated for Net Free Area in terms of square inches.

Example for Figure 1 and Figure 2

Area of Attic = Length x Width = (50') x (30') = 1500 sq. ft.

1500 300 = 5 sq. ft. of ventilation required >>> 2 ‰ sq. ft. for exhaust and 2 ‰ sq. ft. for intake.

Sq. ft. x 144 = sq. in., so (2 ‰) x (144) = 360 sq. in. required for exhaust and 360 sq. in required for intake.

One Lomanco 750 has 50 sq. in. of free area, so eight (8) 750's would exceed the minimum required for exhaust. Eight 750's yields 400 sq. in. of free area, so one should make sure that soffit vents with at least 400 sq. in. of free area are also used for intake.

*** Attic Volume Method - Using CFM (Cubic Feet per Minute) ***

If the actual volume of the attic is known, one may divide the volume in cubic feet by six minutes and this will yield the CFM required to provide an air exchange ten times per hour. Again, one should always provide adequate free area in the soffit area.

Volume of Standard Attic (all gable with no hips) = (1/2) x Length x Width x Height

Volume of Hipped Portion of Attic = (1/3) x (Total Length - Ridge Length) x Width x Height

The Height is calculated using the Pitch and the Width and the formula is: Height = Pitch x ‰Width.

(Hint: 4/12 Pitch = 0.33, 6/12 Pitch = 0.50 and 8/12 Pitch = 0.67)

Example for Figure 1

Volume of Attic = (1/2) x Length x Width x Height = (1/2) x 50' x 30' x (2/3)15'

= (1/2) x 50' x 30' x 10' = 7500 cu. ft.

Air exchange every six minutes = 7500 cu. ft. 6 min. = 1250 cfm required.

Example for Figure 2

Volume of Main Ridge = (1/2) x Ridge x Width x Height

= (1/2) x 30' x 30' x 10' = 4500 cu. ft.

Volume of Hip Areas = (1/3) x (Length - Ridge) x Width x Height

= (1/3) x 20' x 30' x 10' = 2000 cu. ft.

Total Volume of Attic = 6500 cu. ft. 6500 cu. ft. 6 min. = 1083 cfm required.

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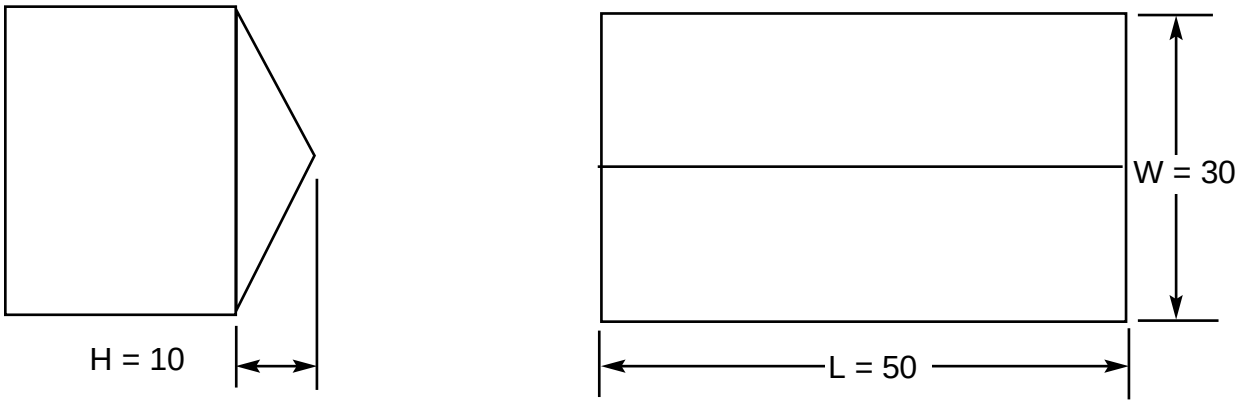
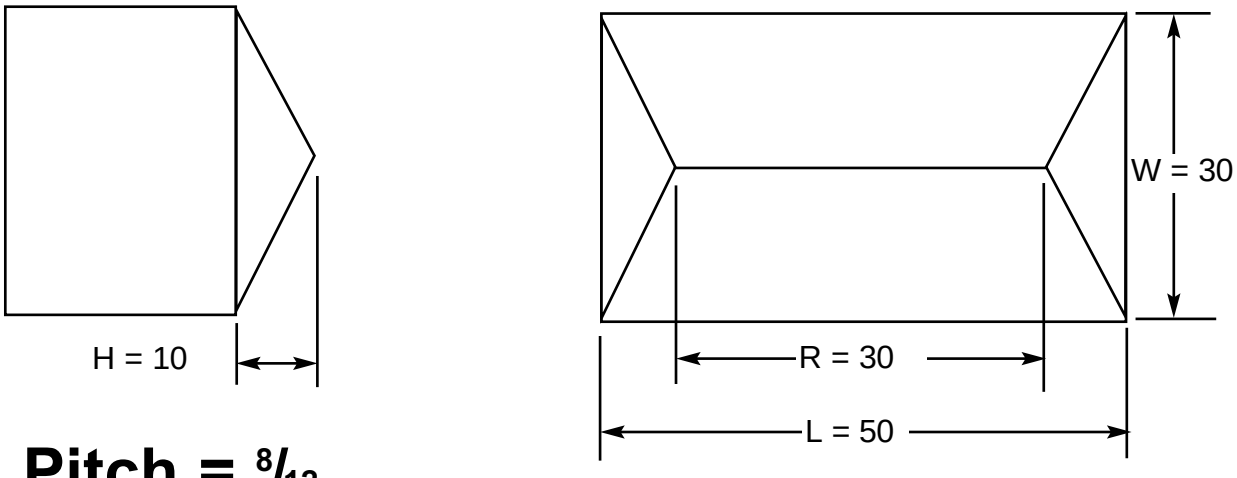
Illustrations for Ventilation Calculations

FIGURE 1



Pitch = 8/12

FIGURE 2



Pitch = 8/12

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