



▶ New photo here that represents the title of workshop.

Presents

Ventilation Concepts and Troubleshooting Techniques

LO195_0612

OVERVIEW

Ventilation concepts, system design, and troubleshooting techniques for:

- Distributors
- Dealers
- Builders
- Contractors
- Architects
- Inspectors

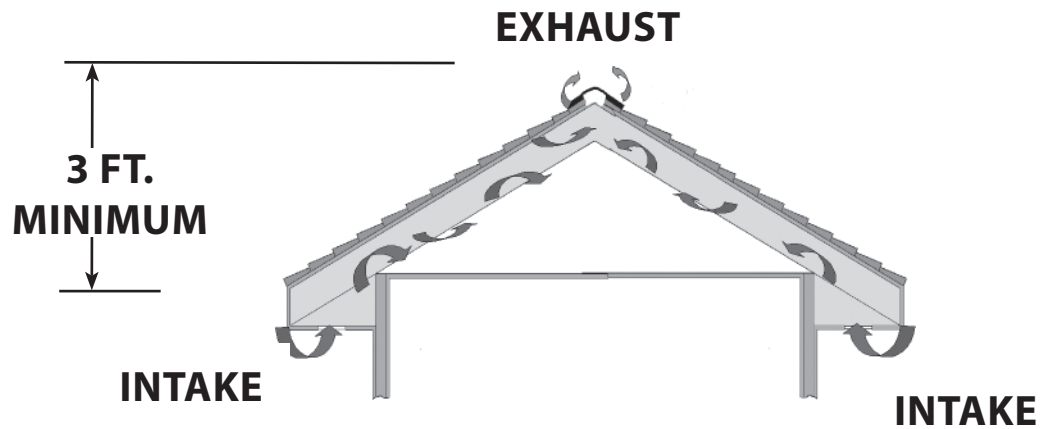
TOPICS OF DISCUSSION

- ▶ What is ventilation?
- ▶ Why ventilate?
- ▶ Who are the major promoters?
- ▶ What is the market for ventilation products?
- ▶ How to properly size a ventilation system.
- ▶ How much does it cost?
- ▶ Does product design influence attic air exchanges?
- ▶ Factors affecting attic ventilation.
- ▶ Three ***MUST DO*** steps to attic ventilation.



This is your "WORK" book! Take notes during this program. Space is provided throughout this booklet for this purpose. See page 27 also.

WHAT IS VENTILATION?



- ▶ Simply the process of supplying a continuous supply of air through the attic space.
- ▶ 50% intake/ 50% exhaust.
- ▶ Exhaust must be at least 3 feet higher than the intake system.
- ▶ Intake should be under eave.
- ▶ Exhaust should be near or at peak.



Ventilation = Good Air In, Bad Air Out! Intake vents allow fresh air in. Exhaust vents let heat and moisture out of the attic.



WHY VENTILATE?

- ▶ Enemies are HEAT and MOISTURE
 - ▶ Evident in all geographical areas year round
- ▶ HEAT
 - ▶ Unventilated attics often are 140 to 150 degrees
 - ▶ Damages shingles, roof sheathing, and radiates into living area
- ▶ MOISTURE
 - ▶ Moisture is the #1 enemy
 - ▶ Causes rot, mildew, mold, paint blisters, and ineffective insulation
- ▶ HEAT and MOISTURE
 - ▶ Result in "sick attics" - Toxic mold and mildew

MOLD FACTS

- ▶ Attics, crawl spaces, and basements are prime sources for excess moisture.
- ▶ Spores need a food source, **heat** and **moisture**, to begin colonizing.
- ▶ Usually improper intake is the culprit in moisture related problems in attics.
- ▶ Extreme caution should be exercised if an odor or colony is detected.



Remember when installing kitchen and bathroom fans; **DON'T** vent them into the attic space. These heat and moisture sources must be ventilated outside.

IMPROPER VENTILATION

(ACTUAL PHOTOS OF INADEQUATELY VENTILATED ATTICS)



- ▶ Mold spores colonize on wood members which provide food source.
- ▶ Wet insulation compacts and loses its R-value.



- ▶ Moisture can become frost in the attic. When the frost thaws, it can literally "rain" in your attic, damaging insulation and ceiling drywall.



Attics that are not properly ventilated have moisture created by simple condensation. Air inside an improperly ventilated attic will be warmer than the air outside. When this warmer, moist air comes in contact with the colder roof sheathing, condensation will occur. In effect, it can "rain" in your attic.



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WHO ARE THE MAJOR PROMOTERS OF VENTILATION?

- ▶ Other than Lomanco, who says ventilation is important?
 - ▶ SHINGLE MANUFACTURERS
 - ▶ INSULATION MANUFACTURERS
 - ▶ PAINT MANUFACTURERS
 - ▶ WINDOW MANUFACTURERS
 - ▶ BUILDING CODES
 - ▶ UTILITY COMPANIES
 - ▶ HVAC COMPANIES

All promoters stress the need for adequate or proper ventilation.



Did you know? Shingle manufacturers void their warranty if shingles are installed over improperly ventilated attics.

WHAT IS THE MARKET FOR VENTILATION PRODUCTS?

- ▶ Industry Statistics – Less than 10% of existing homes are properly ventilated. This lack of ventilation is not due to cost – it is due to the lack of knowledge.
- ▶ Every roofing package sold should include ventilation.
- ▶ Ventilation should be checked or quoted on every insulation package sold.
- ▶ Shingle Truckload Formula



By properly ventilating , you are extending the life of shingles, insulation, and other building components.



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MARKET FOR VENTILATION PRODUCTS Shingle Truckload Formula

VENTILATION SALES OPPORTUNITY

$\frac{\text{Squares of Shingles On a Truck}}{\text{Squares of Shingles On a House}}$	X	$\text{Trucks of Shingles Per Year}$	X	$\text{Retail to Ventilate house}$	=	$\text{Ventilation Sales Based on Shingles}$
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$\frac{210 \text{ Squares}}{30 \text{ Squares}}$	X	?	X	\$135	=	\$,000
--	----------	----------	----------	--------------	----------	----------------

7	X	_____	X	\$135	=	\$,000
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Not only is ventilation necessary for a proper roof system, it also adds value to your shingle project.



MARKET FOR VENTILATION PRODUCTS

Shingle Truckload Formula

Shingles:

(30 Year Architectural) _____

Average Cost per Square = _____

Average Profit Margin = _____

Gross Profit per SQ. = _____

Average # Squares per T/L = 210

Gross Profit per T/L =(a) _____

Ventilation:

Average Cost per Home = _____

Average 7 homes per T/L = _____

Gross Profit on Vents = _____

(Selling at \$945) = _____

Gross Profit on Vents =(b) _____

% More Gross profit if Ventilation sold with Shingles.

(b/a) _____

Notes -



HOW TO PROPERLY SIZE A VENTILATION SYSTEM

1/300 rule = For every 300 square feet of attic floor space, 1 square foot of net free area of ventilation must be provided. (50% in exhaust and 50% in intake)

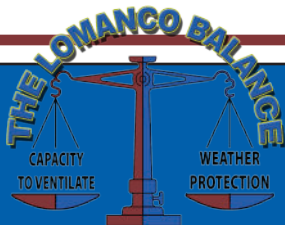
1/300 rule meets minimum code requirements: Universal Building Code, Council of American Building Officials, Building Officials and Code Administration, Southern Building Code Congress International, ETC...

1500 Square Foot House Example

- ▶ $1500 / 300 = 5$ square feet of ventilation needed
- ▶ $2\frac{1}{2}$ square feet of intake & $2\frac{1}{2}$ square feet of exhaust
- ▶ Convert to square inches: $2\frac{1}{2} \times 144 = 360$ square inches of exhaust & 360 square inches of intake
- ▶ Using 750's and C816's determine # of vents needed
- ▶ Exhaust = 750's - $360 / 50 = 7.2$ or 8
Intake = C816's - $360 / 65 = 5.5$ or 6
- ▶ Same results using the slide rule calculators

Which is better – too much intake or too much exhaust?

If an exhaust product is looking for intake and balanced intake is not provided, the exhaust product could use another exhaust product for intake. Therefore, adequate or slightly more intake is better.



Can I over ventilate my attic?

As long as you have a "balanced" system, you will not over ventilate your attic.



How MUCH DOES IT COST?

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Market price of 1500 SF Home = \$ _____ (varies by market)

Retail Price of Materials only – Proper Ventilation System

8 (750's) x \$15.00 = \$120.00

6 (C816's) x \$2.50 = \$15.00

\$135.00 (based on national averages)

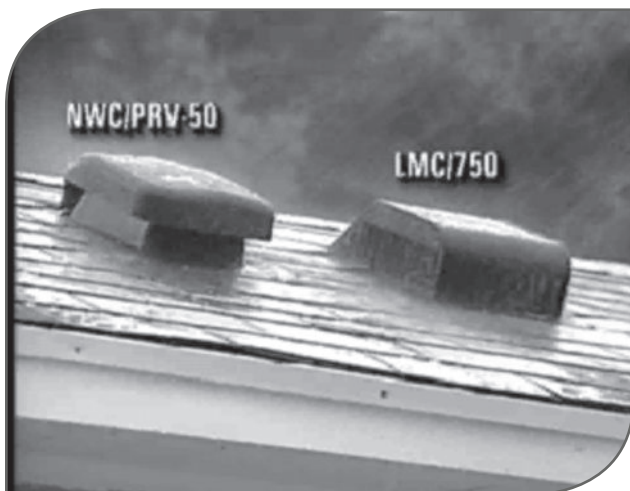
- ▶ Very Cheap Insurance
 - ▶ Inadequate ventilation becomes apparent when problems occur in the form of ineffective insulation, leaking roofs, rotting sheathing, peeling paint, high utility cost, etc.
- ▶ If our price is high, what are we really talking about?
 - ▶ If our quality products are 10% higher than others on the market, there would only be \$13.50 savings on the above example. Considering a Lomanco vent is at least a 30 year vent, the cost would be 45 cents per year.



Whether you are a home builder or owner, the best return on investment for protecting the longevity of your house is the proper installation of a balanced ventilation system with the proven performance and quality of Lomanco Vents.

DOES PRODUCT DESIGN INFLUENCE ATTIC AIR EXCHANGES?

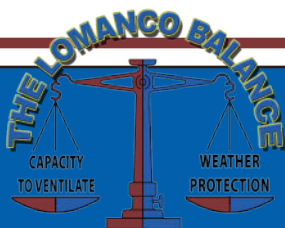
- ▶ Capacity to Ventilate is affected by four factors: Thermal Effect, Wind Pressure, Centrifugal Force, and Location on the Roof.
- ▶ Weather Protection can not be sacrificed, even though ventilation is the ultimate goal.
- ▶ There are 5 basic types of ventilators – Static Exhaust Vents, Wind Driven Exhaust Vents, Standard Power Exhaust Vents, Solar Powered Exhaust Vents and Intake Ventilators.



50 sq. in. static roof louver comparison shows the Lomanco 750 has superior weather protection.



Testing proves the effectiveness of an exterior baffle. The Lomanco Shingle Over Omni Series Vents provide unique omni baffles, therefore product works regardless of wind direction.



Lomanco incorporates the "Lomanco Balance" in the design of all of our products. You get the maximum ventilation capacity balanced with the best weather protection.

DOES PRODUCT DESIGN INFLUENCE ATTIC AIR EXCHANGES?



Are You Baffled?



Exterior baffles are necessary for ridge vent to function properly. From the ground level, with or without the exterior baffle, there is no noticeable difference.



DON'T FORGET TO...Install air chutes between every rafter tail area to allow the maximum amount of soffit intake air into the attic area.



DOES PRODUCT DESIGN INFLUENCE ATTIC AIR EXCHANGES?

Can You Find The Whirlybirds?



Whirlybirds accelerate the airflow. When painted units are properly installed, the Whirlybirds blend well with the roof scape.



"Go Green" with turbine ventilators. Lomanco® Whirlybird® turbines are wind powered and guaranteed for life.



FACTORS AFFECTING ATTIC VENTILATION

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INADEQUATE UNDER EAVE SOFFIT VENTILATION



65

65 IN²
NFA



5.37

5.37 IN²
NFA



Inadequate intake is the **NUMBER ONE** reason a ventilation system fails.

i




FACTORS AFFECTING ATTIC VENTILATION

Examples of Mixing Exhaust Systems



Do not mix different exhaust products on a single home.



 Only install one type of exhaust ventilation within a common attic area. Exhaust vents pull air from the easiest intake source. The use of two or more types of exhaust vents, such as ridge vent with power vents or turbines with roof louvers, can cause one of these vents to act as intake for the other. You can short circuit the system and cause weather infiltration when you mix exhaust products.



FACTORS AFFECTING ATTIC VENTILATION



Keep roof vents at a single level on the roof.



Keep roof vents on the same side of the ridge.



Install all exhaust vents at the same height within a common attic area. Installation of vents at more than one level on a roof allows the upper exhaust vent to pull air in from lower exhaust vents rather than pull from the soffit Intake Vents.



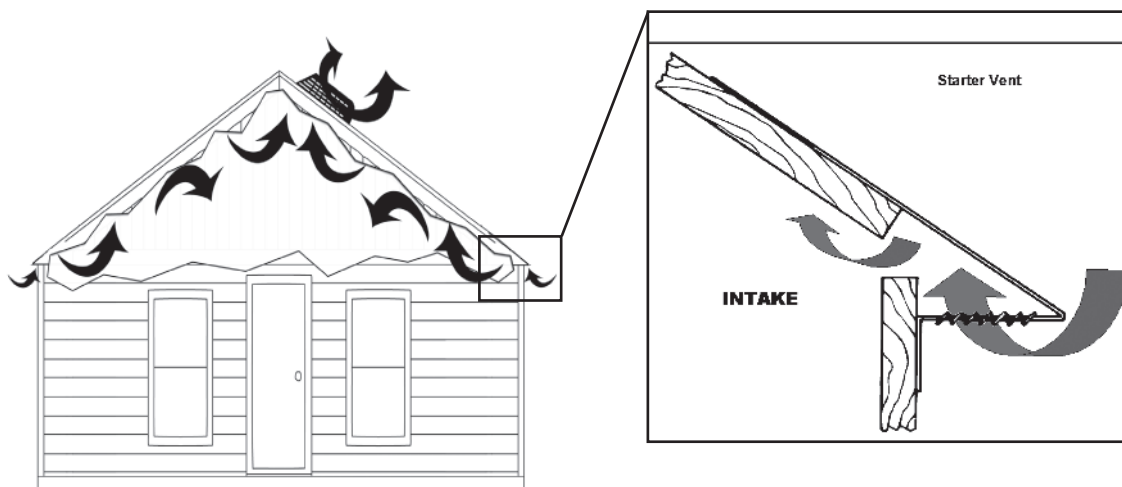


FACTORS AFFECTING ATTIC VENTILATION



Do not use roof louvers on the lower part of the roof for intake.

- ▶ Using a **Roof Louver** low on the roof for intake may cause serious weather infiltration problems.



- ▶ Using a **Starter Vent** is one solution for providing intake on homes with little or no soffit overhang.



DON'T...install exhaust vents at different heights The highest exhaust vent will pull air from a gable vent or lower roof line vent if it is easier than pulling air from the soffit area. This could allow for only a small portion of the attic to be properly ventilated.



FACTORS AFFECTING ATTIC VENTILATION



Do not use ridge vents on hips.

- ▶ **Ridge Vents** are designed as exhaust. When installed on hips, the exhaust/intake systems are indefinable.



A ridge vent on the hip is a bad idea. An opening on the hip can short-circuit the system and act as intake. Consequently, the vent will be prone to weather infiltration.



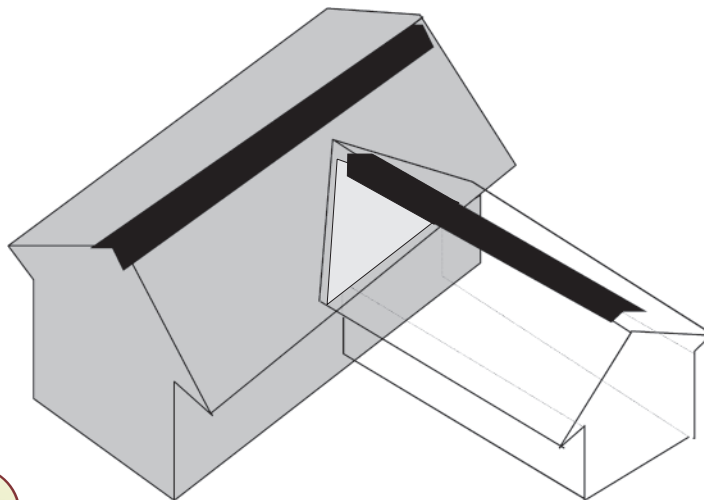


FACTORS AFFECTING ATTIC VENTILATION



- ▶ Avoid placing ridge vents or roof vents on dormers when dormers are lower than the main ridge and connected to the main attic.

- ▶ The main ridge will look at the closest vent for intake air. There is a high probability that the dormer vent will allow weather infiltration.



- ▶ Separate the attic areas using plastic sheeting or wood to create a stand alone attic.



 If ridge vents are used on homes with multiple ridge line heights, it may be desirable to separate the attic areas where the ridge lines change. This may be done with plastic sheeting or wood.



FACTORS AFFECTING ATTIC VENTILATION



Example of proper multilevel exhaust systems
(Separate attic areas upper & lower ridge lines)



Example of improper multilevel exhaust systems
(Common attic areas upper & lower ridge lines)



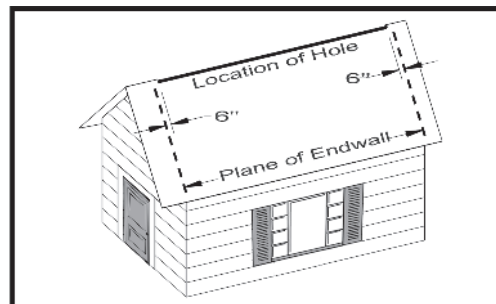
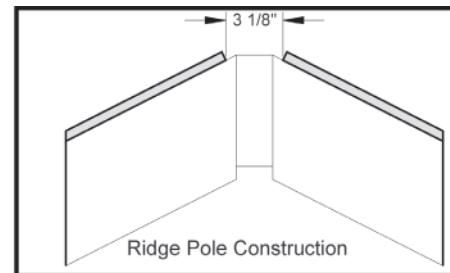
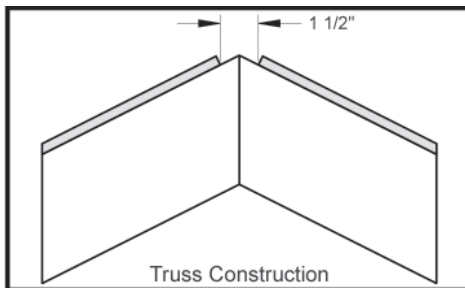
Avoid placing ridge vents or roof vents on dormers when the dormers are lower than the main ridge and connected to the main attic. If vents are put on lower dormers which are connected to the main attic, separate the dormer from the main attic and let the dormer be a "mini" attic.





FACTORS AFFECTING ATTIC VENTILATION

- ▶ 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.



Examples of improper ridge vent openings



Wider is not better! There is no benefit to cutting a wider slot. There is a potential for weather infiltration if the slot is cut too wide.



THREE MUST DO Steps to Attic Ventilation

1 Install all Exhaust Ventilation at the **SAME HEIGHT** within a common attic area.

Installation of exhaust vents at more than one level on a roof allows the upper exhaust vent to pull air in from lower exhaust vents rather than from the soffit Intake Vents. Intake air must come from the soffit vent area to properly ventilate the total attic area and eliminate weather infiltration.

2 Install **ONLY ONE TYPE** of Exhaust Ventilation within a common attic area.

Exhaust Vents pull air from the easiest intake source. The use of two or more types of exhaust vents such as Power Vents with Roof Vents or Gable Vents with Ridge Vents or Roof Vents could make one of these vents act as intake for the other. Intake air must come from the soffit vent area to properly ventilate the total attic area and eliminate weather infiltration.

3 Install a **BALANCED SYSTEM** of Intake and Exhaust Ventilation.

50% Intake Vents - Soffit Panel Systems are a common source of intake ventilation in today's homes. Please keep in mind that it takes ten or more ventilated soffit panels to equal the ventilation capacity of one 16 x 8 soffit vent. We highly recommend that you install all ventilated soffit panels and use air chutes in every rafter/truss soffit opening.

50% Exhaust Vents - Use your Lomanco Ventilation Selector Guide to determine the number of vents needed to properly ventilate an attic to meet the Ventilation Minimum Property Standard. Roof Shingle and Insulation Warranties require it!

Notes -



Solar Powered Vents

Omni Solar Vent™

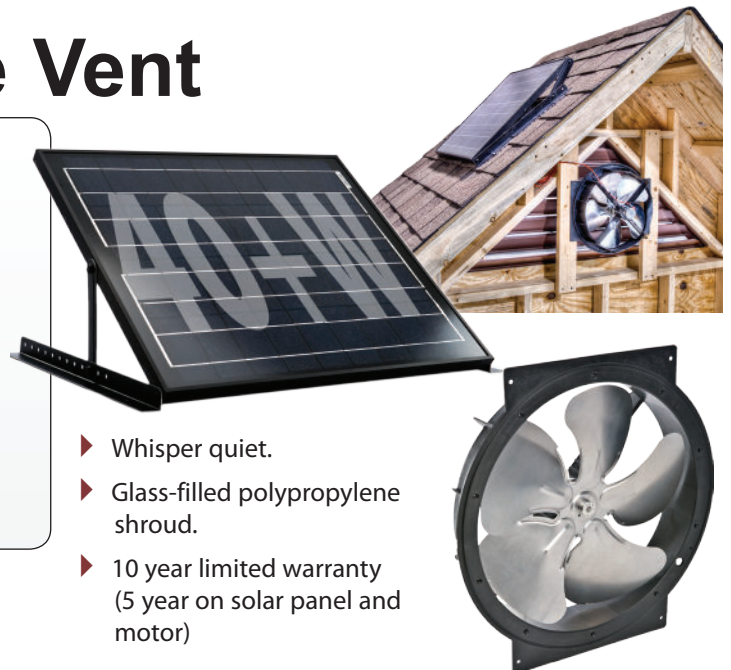
MIAMI-DADE COUNTY
APPROVED

- ▶ **Proven Best Performer** for solar powered attic ventilation.
- ▶ 40+ watt solar panel.* Largest standard solar panel offered on solar attic vents.
- ▶ Heavy duty aluminum construction.
- ▶ Available in black, white, brown and weathered bronze.
- ▶ Low profile construction blends well with roof profile.
- ▶ Upward exhaust protects against roof discoloration.
- ▶ Solar panel remotely mounted for optimum energy collection.
- ▶ 15 foot power cord.
- ▶ Internal screen for insect protection.
- ▶ Easy installation. No electrician required.
- ▶ 10 year limited warranty, 5 year on solar panel & motor.



Omni Solar Gable Vent

- ▶ 40+ watt solar panel.* Largest standard solar panel offered on solar attic vents.
- ▶ Easy Installation. No electrician required.
- ▶ Quiet precision balanced 5 blade fan.
- ▶ 10 year limited warranty, 5 year on solar panel and motor.
- ▶ Solar panel remotely mounted for optimum energy collection.
- ▶ 768 square inches of intake Net Free Area required for each vent.



- ▶ Whisper quiet.
- ▶ Glass-filled polypropylene shroud.
- ▶ 10 year limited warranty (5 year on solar panel and motor)

*Rated Power: 40W – Power Tolerance (W): 0, +4.99



Adding a ventilation system can bring your home into compliance with building codes.

TEST YOUR VENTILATION KNOWLEDGE!

1. Ventilation is? _____
2. Why ventilate? _____
3. Name 2 products which ventilation prolongs their lifetime:
 - (1) _____
 - (2) _____
4. According to government statistics, what % of existing homes are ventilated? _____
5. Compute the # of the following products required for a 1500 SF system:
750's = ___ C816's = ___
6. How much would the system in #5 cost?

7. Name the necessary factors in development of ventilators at Lomanco:
"Lomanco balance" = _____ and _____
8. Let's look at factors affecting attic ventilation systems:
 - (1) What is the #1 reason for weather infiltration in most vent systems?

 - (2) Name 2 exhaust ventilation products which should not be mixed when installed on a common attic: _____

 - (3) Roof vents should be placed across the ridge from one another.
 True False
 - (4) Roof vents are exhaust ventilators. They may not provide the desired weather protection if used as intake ventilators.
 True False
 - (5) What is the best configuration of venting multi-ridged common attic areas? _____

 - (6) What type of vent is especially affected by incorrectly cut openings?

9. How would you rate this presentation on a scale of 1 – 10?
(10 being highest) 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
10. How can Lomanco better serve your business? _____

Tear Out - Fold and Mail



Question Number	1	2	3	4	5	6	7	8-1	8-2	8-3	8-4	8-5	8-6
Answer Page	3	4	6	7	10	11	12	15	16	17	18	20	22

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Workshop Location: _____

Name: _____ Phone: _____

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City: _____ State: _____ Zip Code: _____

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Customer Satisfaction.
A Lomanco Tradition
Since 1946.**



**You have
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We have
Ventilation Answers!
Ask The VentPro!**

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