

VIPER INTAKE VENT™



An Intake/Mid-Ridge Vent for a Durable Roof

A Roof Intake Vent for all types of Roofing

VIPER INTAKE VENT™ is a patented, lightweight intake/mid-ridge vent developed and manufactured by Keene Building Products™. It is designed to work in conjunction with the full spectrum of roofing materials where the roof pitch ranges from 3:12 to 18:12. VIPER INTAKE VENT delivers superior performance, while providing a best in class visual aesthetic.

Important Notice

This document is provided for guidance only, it is not intended to cover all local code variations.

It is important that the amount of intake ventilation(soffit/mid-ridge) be equal to or greater than the amount of exhaust ventilation (ridge/hip). Ensure the proper amount of intake ventilation is installed before installing exhaust ventilation.

Before Beginning:

- Read these installation instructions completely from beginning to end.
- VIPER INTAKE VENT must be installed using industry accepted, best building practices that meet all local code requirements.
- Ensure the roof is free from any structural defects or flaws. Keene Building Products patented VIPER INTAKE VENT must only be applied over structurally sound surfaces.
- Before beginning any installation, review all applicable local building codes and thoroughly read all instructions provided by the manufacture of all products to be used during the installation.
- Depending on your geographic location and local code requirements, specific installation steps may vary.
- As always, follow the OSHA standards for roofing.

How it Works

VIPER RIDGE VENT and VIPER INTAKE VENT combined provide 15 square inches of net free vent area (NFVA) per linear foot (15 in²/LF) and 7.5 square inches of net free vent area (NFVA) per linear foot (7.5 in²/LF) respectively. VIPER VENT Roof Vent System is manufactures with a one of a kind double density edge. This Keene exclusive feature allows VIPER VENT to provide superior strength and rigidity, ensuring its ability to maintain a sleek finished look that makes it virtually invisible. In addition to its patented entangled net core, VIPER VENT incorporates a unique, nonwoven filter. Manufactured with extra thick fibers, the UV resistant textile is 40% thicker than the industry standard. This is important because it allows VIPER VENT to provide superior air flow over its lifetime, while continuing to inhibit water and dust penetration. Over time thinner fabrics become clogged with dust reducing the amount of air flow resulting in poor performance.

The combination of the patented entangled net with our extra thick, high air flow, non-woven filter fabric is what enables Keene Building Products to provide products that leads the industry in overall performance.

Table of Contents

Tools and Materials.....	page 2
Calculating Ventilation Required.....	page 2
Net Free Vent Area (NFVA) Quick Reference.....	page 3
Roof Slot - Intake.....	page 4 & 5
VIPER INTAKE VENT Installation.....	page 5
Additional Installation Options.....	page 6 & 7

Tools and Materials

Tools:

- Tape measure
- Caulk line
- Circular saw
- Extension cord
- Hammer or nail gun ¹
- Utility knife
- Caulk gun
- Pry bar
- Work gloves
- Eye protection
- Required safety equipment

Materials:

- VIPER INTAKE VENT
- Starter course shingles ²
- Roof Cement ³
- KeeneFlash 100 4 inch
- Nails ⁴
- Utility knife blades

Material and Hardware Specifications

Nail gun ¹ - If a pneumatic roofing nailer is used during the installation, confirm that the depth gauge is set so that the nail will completely penetrate the wood decking, or penetrate to a minimum depth of 3/4", or 1/8" through a APA rated roof sheathing. Air pressure is typically set between 80 and 90 PSI.

- Pneumatic Nail Requirements:
 - 11 or 12 Gauge
 - 3/8" minimum head diameter
 - Corrosion resistant
 - Meet or exceed ASTM D1667

Starter course shingles ² - follow all manufactures instructions pertaining to the installation of all shingles.

Roof Cement ³ - Roof cement must comply with ASTM D4586

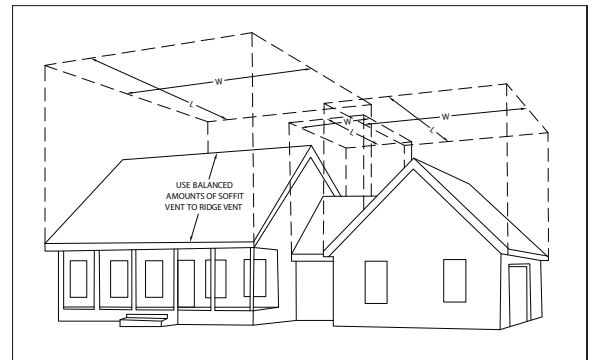
Nails ⁴ - All fasteners must be installed flush with the surface of VIPER VENT. Care must be taken not to overdrive the nails deforming the edge.

- Fasteners must be constructed from a corrosion resistant material and meet ASTM D1667.
- The minimum acceptable fastener head diameter is 3/8".
- The fastener must be long enough so that it will completely penetrate the wood decking, or penetrate to a minimum depth of 3/4", or 1/8" through a APA rated roof sheathing.

Calculating Ventilation Required

Net Free Vent Area is basically the total unobstructed open area a vent provides. It is expressed as an area per linear foot. VIPER VENT provides an industry leading 15 square inches of vent area per linear foot (15 in²/LF).

To determine the amount of ventilation a structure requires a ratio of attic area to ventilation area is used. It is expressed in square feet. There are two common ratios that are used, 150:1 and 300:1. Meaning you need 1 square foot of free ventilation for every 150 square feet of attic space. Using these ratio's properly will determine the minimum amount of attic ventilation provided by code.



150:1 – Where no moisture barrier is installed or the moisture barrier is in poor or unknown condition.

300:1 – A moisture barrier is installed, and is in good condition – or – for hip vents installation.

Before you calculate the amount of ventilation required for your installation you will need to determine whether or not a moisture barrier has been installed in your structure:

- If a moisture barrier is in place, follow the formula outline on page 3.
- If there is no moisture barrier or you have concerns about the integrity of the moisture barrier, use the formula on page 3 with the exception; In Step 3 replace the 300 with 150.

To ensure proper ventilation, it is important that the amount of ventilation be balanced between exhaust (ridge) and inlet (soffit). This means that the amount of soffit inlet vent needs to be equal to or greater than the amount of exhaust vent.

Example: How to calculate the amount of exhaust vent needed

A house has an attic space that measures 40' x 50'. Upon inspection you determine that the house has a moisture barrier installed, and it looks to be in good shape. In this example you will use 300:1.

Step 1 - Determine area of attic space:

$40' \times 50' = 2,000$ square feet (Ft²)

Step 2 - Determine if an intact moisture barrier is in place

In our example there is a moisture barrier and it is in good condition

Step 3 - Calculate the total amount of ventilation (inlet + exhaust) needed

$2,000 \text{ Ft}^2 \div 300$ (ratio for attics with moisture barrier installed) = 6.67 Ft²

Step 4 - Convert square feet (Ft²) to square inches (in²)

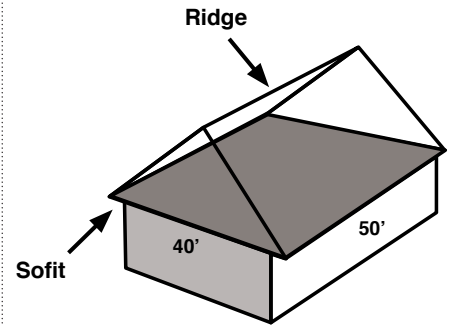
$6.67 \text{ Ft}^2 \text{ vent need} \times 144^a = 960 \text{ in}^2$ of vent needed

Step 5 - Divide by 2 (1/2 for intake and 1/2 for exhaust)

$960 \text{ in}^2 \text{ total vent} \div 2 = 480 \text{ in}^2$ Net Free Vent Area (NFVA) needed for both intake and ridge/hip exhaust to properly vent the attic space.

Step 6 - Determine the number of linear feet (LFT) of Viper Vent needed

$480 \div 7.5^b = 64$ linear feet of VIPER VENT needed



^a - 1' x 1' = 12" x 12", 12" x 12" = 144 square inches per square foot.

^b - VIPER INTAKE VENT provides 7.5 in² NFVA per linear foot.

Net Free Vent Area (NFVA) Quick Reference

Table A

150:1 NVFA No or Damaged Moisture Barrier			
Attic area (Ft ²)	Ridge Vent (In ²)	Soffit Vent (In ²)	VIPER INTAKE VENT (LFT)
1000	480	480	64
1250	600	600	80
1500	720	720	96
1750	840	840	112
2000	960	960	128
2250	1080	1080	144
2500	1200	1200	160
2750	1320	1320	176
3000	1440	1440	192

Table B

300:1 NVFA Moisture Barrier Installed			
Attic area (Ft ²)	Ridge Vent (In ²)	Soffit Vent (In ²)	VIPER INTAKE VENT (LFT)
1000	240	240	32
1250	300	300	40
1500	360	360	48
1750	420	420	56
2000	480	480	64
2250	540	540	72
2500	600	600	80
2750	660	660	88
3000	720	720	96

Roof Slot - Ridge

1. Ridge Vent:

A. SEE DIAGRAM 1 & 2.

Determine the type of roof construction.

- **Soffit:** Go to Step B. [Diagram 1]
- **Exposed Truss:** Go to Step C. [Diagram 2]

Diagram 1

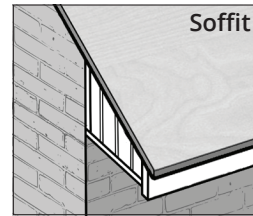
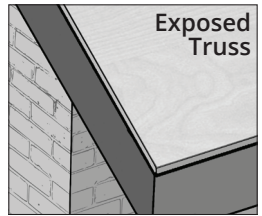


Diagram 2



B. SEE DIAGRAM 3, 4 & 5.

For installations where there is an enclosed soffit, lay out the location of the slots to be cut, ensure the total length of the slots equals the minimum amount of VIPER INTAKE VENT required.

- Install metal drip edge along edge per manufactures instruction & local building code requirements.
- Install a self adhering flashing material such as KeeneFlash 12" or ice guard directly to the roof deck & over the drip edge. Begin installation at the drip edge. [Diagram 3]
- Measure & make a mark 6 in and 7 in from edge of drip.
- Snap two lines parallel to the roof edge – this lays out the top & bottom edge of the ventilation slot. [Diagram 4]
- Establish & mark the end points for each ventilation slot.
- The slot must end. [Diagram 5]
 - 6 in from the rake edge or 6 in from the inside edge of the side/end wall, whichever is greater.
 - 12 in from all hip, ridge or other obstruction such as chimney.
 - 24 in from all valleys.

Diagram 3

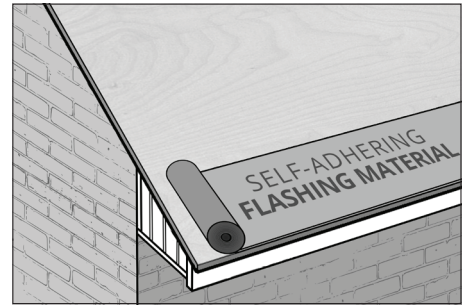
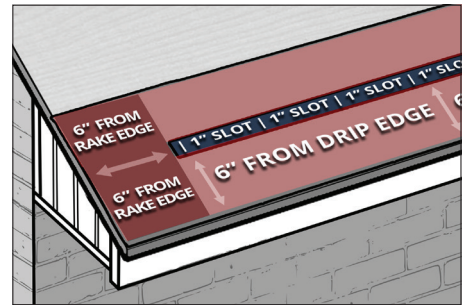


Diagram 4

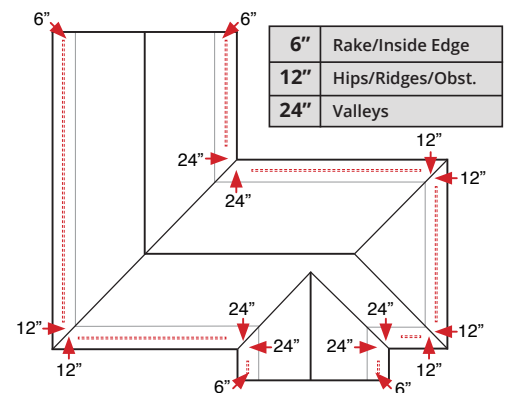


C. SEE DIAGRAM 6, 7, 8 & 9.

For installations with exposed truss (**no enclosed soffit space**), Lay out the location of the slots to be cut, ensure the total length of the slots equals the minimum amount of VIPER INTAKE VENT required.

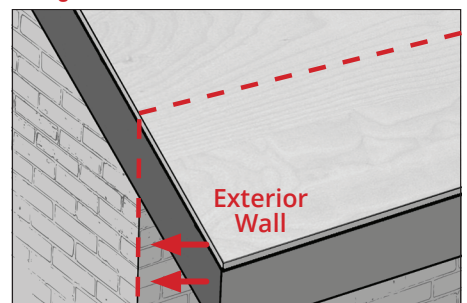
- Determine the location of the exterior wall in relation to the roof line. [Diagram 6]
- Install a self-adhering flashing or ice guard directly to the roof deck. Ensure the flashing/ice guard extends a minimum of 10 in up from the edge of the roof. Begin installation at the drip edge. [Diagram 7]
- Care must be taken to ensure the flashing material extends all the way to the ventilation slot to be cut in Step D.
- Measure up 6 in and 7 in from the interior face of the exterior wall.
- Snap two lines parallel to the roof edge – this lays out the top and bottom edge of the ventilation slot. [Diagram 8]
- Establish & mark the end points for each ventilation slot.
- The slot must end. [Diagram 9]
 - 6 in from the rake edge or 6 in from the inside edge of the side/end wall, whichever is greater.
 - 12 in from all hip, ridge or other obstruction such as chimney.
 - 24 in from all valleys.

Diagram 5



CAUTION: Care must be taken to ensure that the cut will ONLY penetrate the decking. The saw depth must be set to ensure the cut WILL NOT penetrate the roof frame. It is recommended that a test cut be performed between the roof trusses to ensure the proper cut depth is used.

Diagram 6



D. SEE DIAGRAM 10, 11 & 12.

Cut the ventilation slot and remove the unwanted roof decking material.

- Ensure that the cut is only as deep as the sheathing. Take care to not cut into the trusses.
- When measuring VIPER INTAKE VENT it is important to remember:
 - For soffit installation the bottom edge of the intake vent must line up with the leading edge of the drip edge. [Diagram 10]
 - For exposed truss installation the bottom edge of the VIPER INTAKE VENT lines up with the outside face of the exterior wall. [Diagram 11]

2. Cut VIPER INTAKE VENT to length

A. To obtain optimal visual appeal install VIPER INTAKE VENT so that it extends from rake edge to rake edge and butts up flush against any obstructions that are located on the roof line or the plane on which the intake vent is installed.

B. It is always recommended that whenever possible full pieces of VIPER INTAKE VENT be used, seaming is not recommended. For installations where full complete pieces can not be used, cut pieces such that they will butt up tightly against the adjoining piece. Care must be taken to ensure no gaps between the adjoining pieces of VIPER INTAKE VENT are present. In climates where ice damming may occur see seaming instructions in **annex A**.

C. Detail all edges as needed.

For terminations that end at rake edge, see **annex B**.

For terminations that occur in a valley see **annex C**.

3. Nail VIPER INTAKE VENT along the top edge approximately every 18 in.

4. To ensure proper performance - lift up the partially installed VIPER INTAKE VENT and install a bead of asphalt roofing cement 3" from the bottom and side edges of the ventilation slot. Do not install a bead of roof cement across the top. [Diagram 10 and 11]

- A.** The bead must run uninterrupted along all three edges of the ventilation slot. This will help fill in any gaps between the VIPER INTAKE VENT and the roof deck.
- B.** The asphalt roofing cement must meet or accede the requirements of ASTM D4586.

5. Finish securing the section of VIPER INTAKE VENT with a nail approximately every 8 in allonge the entire roof line. Care must be taken not to over compress the vent. Over compression may effect performance.

6. Once VIPER INTAKE VENT has been properly secured, install a 36 in wide piece of flashing or ice guard over the vent.

- A.** Care must be taken not to extend the Ice Guard over the leading edge of the VIPER INTAKE VENT
- B.** Install the Ice Guard per the manufactures Instructions.
- C.** Roll the up-slope edge of the Ice Guard with a J roller to ensure proper adhesion to the roof deck.
- D.** Ensure that no fish mouths occur on the leading edge and the upslope edge of the flashing or ice guard as this may lead to potential future leaks.

7. Install roof shingle per manufactures instructions.

CAUTION: Care must be taken to ensure that the cut will ONLY penetrate the decking. The saw depth must be set to ensure the cut WILL NOT penetrate the roof frame. It is recommended that a test cut be performed between the roof trusses to endure the proper cut depth is used.

Diagram 7

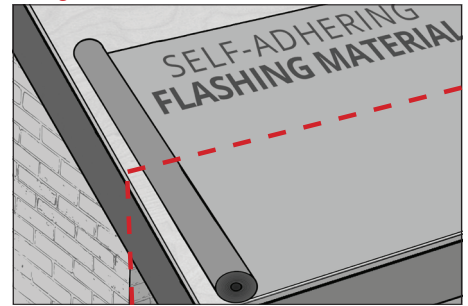


Diagram 8

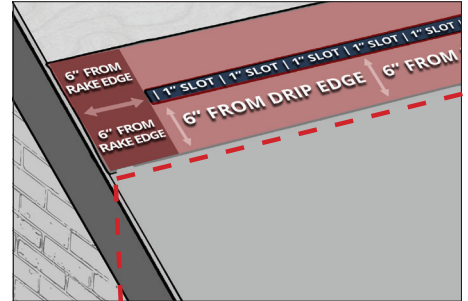


Diagram 9

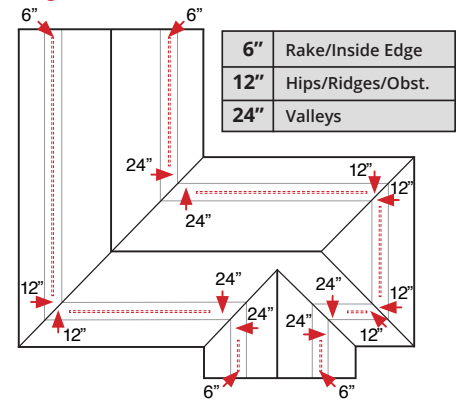


Diagram 10

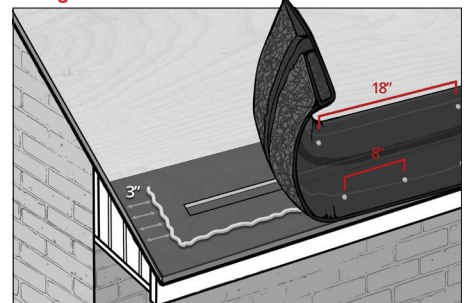
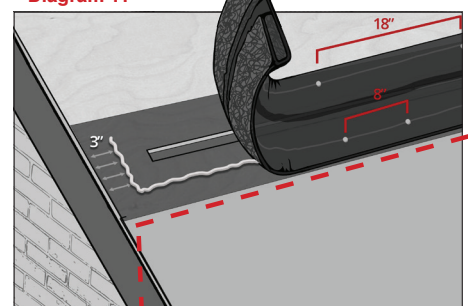


Diagram 11



Additional Installation Details

Annex A

SEE DIAGRAM A, B, & C.

Seaming

1. Cut a strip of KeeneFlash 100 4" approximately 16 in long. [Diagram A]
2. Lift VIPER INTAKE VENT away from roof.
3. Lay the flashing flat on roof with the adhesive side facing up and one end flush with the slot cut into the roof deck. [Diagram B]
4. Peel back approximately 7 in of the protective film exposing the adhesive.
5. Press the VIPER INTAKE VENT firmly into flashing tape.
6. Remove the remainder of the protective film.
7. Grasping firmly, stretch the flashing tape around the edge and over the top of the intake vent, be sure to keep constant pressure on the flashing tape to insure a tight fit. [Diagram C]
8. Press the flashing tape firmly onto the intake vent to ensure good adhesion.

Annex B

SEE DIAGRAM D, E & F.

End Detail

1. Cut a strip of KeeneFlash 100 4" approximately 11 in long. [Diagram D]
2. Remove the protective film from the adhesive.
3. Line up the flashing tape along the edge with the end inline with the top edge of the VIPER INTAKE VENT. [Diagram E]
4. Keeping constant uniform pressure, wrap the KeeneFlash 100 around the edge of the VIPER INTAKE VENT and onto the bottom of the vent. [Diagram F]
5. Press firmly with hand to ensure good adhesion.

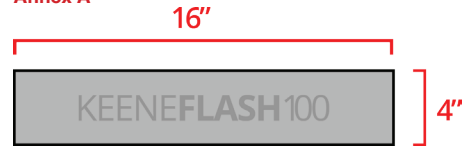
Annex C

SEE DIAGRAM G, H, I, J & K.

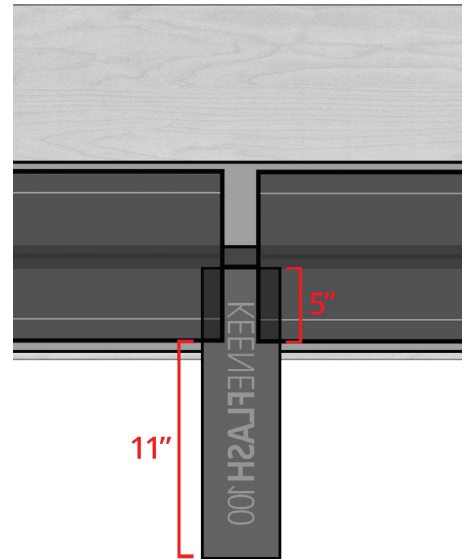
Valley Tapered End Detail

1. Starting with the edge of the VIPER INTAKE VENT closes to the valley, measure 11 in across the top of the vent. Mark the spot. [Diagram G]
2. Measure and mark a spot 22 in along the bottom of the vent. [Diagram G]
3. Draw a line from the bottom corner of the vent to the 11 in mark along the top edge of the vent. [Diagram H]
4. Draw a line from the 11 in mark at the top of the vent to the 22 in mark along the bottom of the vent. [Diagram H]
5. Cut out the resulting right triangle. [Diagram I]
6. You should now have two triangular pieces of vent, discard the largest.
7. Rotate triangle at 90° such that the tapered edge is perpendicular, the leading edge of the vent. [Diagram J]
8. Secure the piece with a strip of KeeneFlash 100 4 in. [Diagram K]

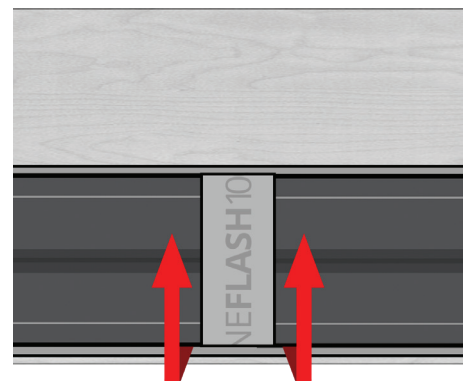
Annex A



Annex B



Annex C



Annex D

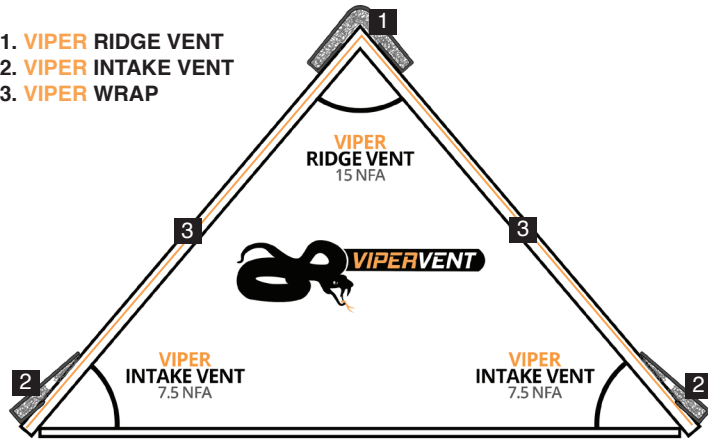


Annex E



ILLUSTRATION A:
A BALANCED VENTILATION SYSTEM
WITH VIPER VENT PRODUCTS

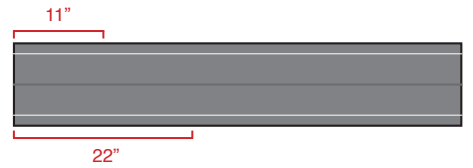
1. **VIPER RIDGE VENT**
2. **VIPER INTAKE VENT**
3. **VIPER WRAP**



Annex F



Annex G



Annex H



Annex I



Annex J



Annex K



For additional product information visit Keenebuilding.com.