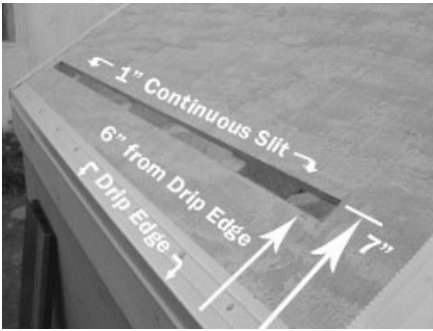


SmartVent™ Eave Edge Installation Instructions

STEP 1: Cut a slit 1" wide (or a series of 1 3/4" holes at 3" on center) into the roof decking 6" to 7" up from the drip edge. SmartVent™ is rated 9NFA.

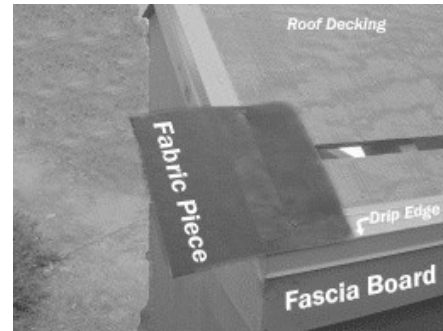
- Ensure drip edge has been installed.
- Do not cut slit within 12" of any side or valley/wall intersection, or any other obstruction.
- Do not cut into the rafters.
- Ensure insulation or other obstructions are not blocking the flow of air extending from the cut slit to the roof's ridge, or other exhaust devices.
- Properly sized ridge or off ridge exhaust vents are required.



STEP 2: Place the fabric piece half way on the roof rake side edge and even along the drip edge.

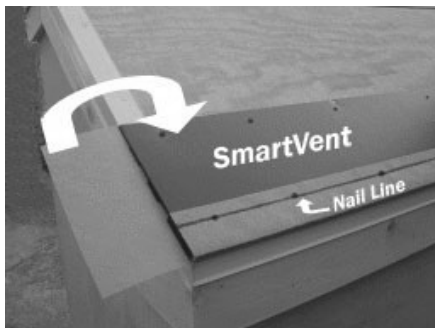
(Fabric sheets included in each box)

- Half of the fabric should hang over the rake side edge of the roof.
- Nail the fabric in place with 2 roofing nails, one high and one low.
- SmartVent™ Tapered End-Caps (sold separately) are available for terminating an installation prior to an obstruction such as a wall, chimney, hip, valley or pipe.



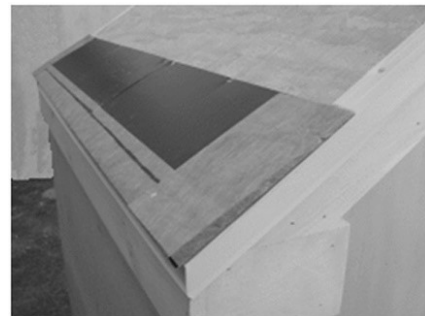
STEP 3: Lay the 3' piece of SmartVent™ even with the drip edge and at the roof rake drip edges.

- Starting 2" from each end of the SmartVent™ piece, nail the SmartVent™ to the roof decking at the top edge with 4 nails spaced evenly.
- Nail the bottom with four nails matching the spacing from the top row of nails along the nail line.
- Each section requires a total of 8 nails (nails should be a minimum of 1 1/2", enough to penetrate through the roof decking).
- Wrap the end fabric tightly so it covers the outer edge of the SmartVent™ and nail it in place using two nails, one high and one low.



STEP 4: Continue installing SmartVent™ until the last piece.

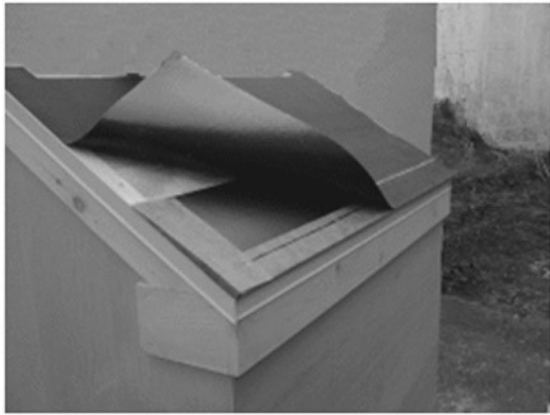
- Repeat steps 2 and 3 before laying the final SmartVent piece on the other end of the roof.
- SmartVent™ should align flush with rake fascia on all gable sides & wrapped with enclosed fabric as shown.
- 36" wide ice & water membrane gets installed as the next step over the SmartVent™ and against the upper wood roof deck.



SmartVent™ Eave Edge Installation Instructions

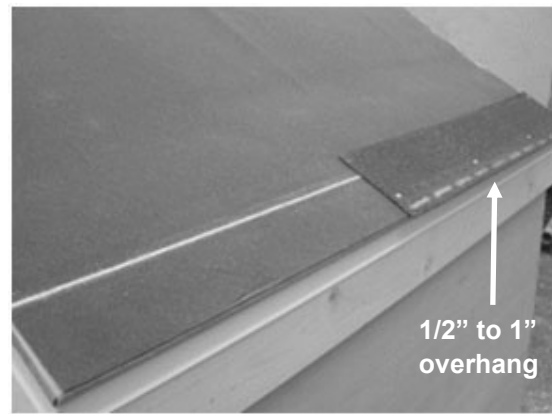
STEP 5: Install ice and water membrane on top of the SmartVent™ .

- Full width ice & water membrane (36") is required to be installed over the SmartVent™ in all environments. Install ice & water membrane flush with lift edge of SmartVent™ and flush on rake edges.
- Ensure the upper underlayments are lapped over the lower underlayments/ice & water membrane at all areas of the roof.



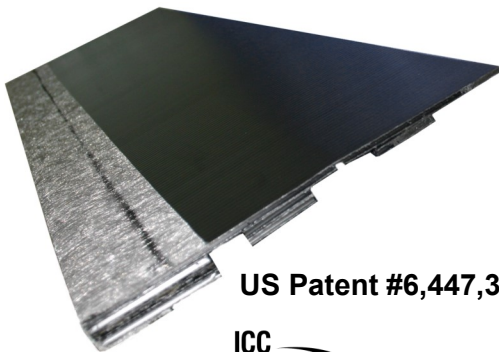
STEP 6: Shingle the roof as usual.

- Beginning with starter course, shingles must overhang SmartVent™ by at least 1/2" and no more than 1".
- Never install shingles flush with fabric edge on the eaves or rake edge.

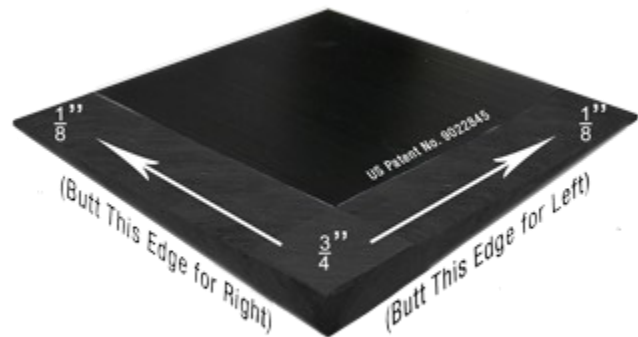


NOTES:

- SmartVent™ can be installed under virtually any shingle course when proper installation techniques are used.
- SmartVent™ is nail gunnable.
- SmartVent™ should be installed on shingled roofs with a minimum 4/12 pitch. There is no maximum slope installation.
- Use of ridge or off-ridge exhaust vents is required.
- Use SmartVent™ Tapered End Caps when terminating SmartVent™ within the shingled area of the roof.



US Patent #6,447,392



SmartVent™ Tapered End Cap

IPS item 80751

SmartVent™ Mid-Roof, Off-Wall, & Off-Peak Installation Instructions

STEP 1: Shingle up to the area that requires SmartVent™.

- Do not install any underlayment or shingles above the location of the SmartVent™ prior to the completion of SmartVent installation.
- Cut or stop underlayment at top of shingle course where 1" slit will be cut.

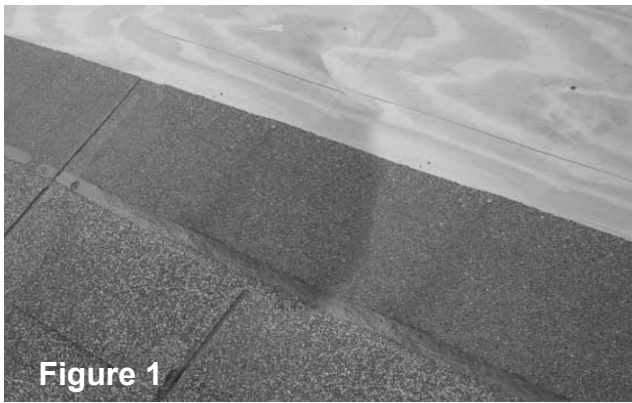


Figure 1

STEP 2: Make lines at the 6" and 7" marks as shown below.

- At the location of the shingle course (where the SmartVent™ is to be located) measure up from the bottom edge of that shingle 6" to 7" before installing that course of shingle.
- Strike chalk lines to mark the 1" cutout. Use a circular saw to cut plywood. Do Not Cut Into Rafters!
- See step 3 before cutting through the top of the previously installed shingle and plywood along the chalk lines.



Figure 2

STEP 3:

- When cutting the 1" slit, stay 12" in from the roof edges, walls, valleys, hips, pipes or any other obstruction. Use a circular saw.
- Using the circular saw, use safety when cutting and set blade depth so you do NOT cut into the rafters!



Figure 3

STEP 4: Remove the plywood decking after the continuous cut and ensure the airflow is unobstructed from the cut slit to the ridge or off-ridge exhaust vent.

- Ensure insulation is not blocking airflow.
- Ensure the full roll width (36") of ice & water membrane installs on top of SmartVent™
- Shingles must have a 1/2" overhang beyond the lifted edge of the vent.



Figure 4

SmartVent™ Mid-Roof, Off-Wall, & Off-Peak Installation Instructions

STEP 5: Nail the SmartVent™ so that it is even with the bottom of the edge where the next course of shingle would be installed. If starting at the rake edge, install the fabric method by wrapping the fabric around the end of the vent (see SmartVent™ eave vent directions steps 2, 3 & 4). If starting or ending within the shingled area use the SmartVent™ Tapered End Cap method shown on the last page.

- Starting 2" from each end of the SmartVent™ piece, nail the SmartVent™ to the roof decking at the top edge with 4 nails spaced evenly (use nail line in fabric) **See Below**
- Nail the bottom with four nails matching the spacing of the top row of nails at the nail line in the fabric.



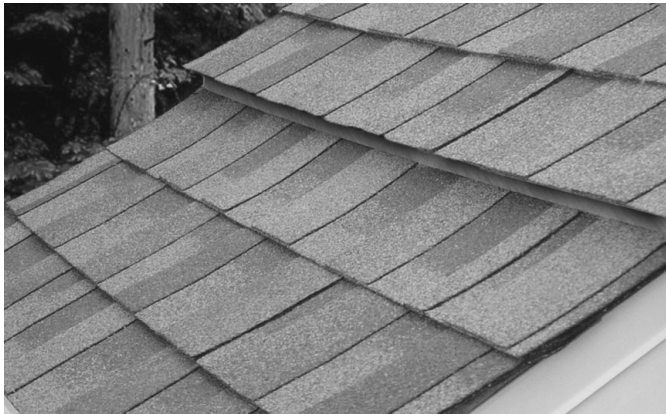
STEP 6: Apply a roll of ice and water membrane on top of the SmartVent™ and directly to the plywood above the SmartVent™.

- If underlayment was already installed, tuck the ice and water membrane under the higher course of underlayment so there is a 3" overlap
- Ensure the ice and water membrane adheres to the SmartVent™ and wood decking and not the existing underlayment.



STEP 7: Install a starter course of shingle overhanging the SmartVent™ edge by at least 1/2" and not more than 3/4".

- Note that the shingle course being installed over the SmartVent™ is 1/2" to 3/4" past the lift edge of the SmartVent™. Do Not install shingles even with the vent, they must overhang.



STEP 8: Install the shingles over the starter course and continue to shingle the roof normally.

Note: SmartVent™ mid-roof valley installation is required to be terminated and the use of a SmartVent™ Tapered End Cap is to be used to start and stop the SmartVent on each side of the valley.



SmartVent™ Valley Miter & Continuously Vented Valley Installation Instructions

Decide if you will miter (**Figure 1**) or vent the valley (**Figure 2**). If miter skip to **Step 4** and see **Figure 1**.

STEP 1: First strike a chalk line at 6 ½" away from the centerline of the valley on each side of the roof deck.

STEP 2: Drill 1 ¼" holes at 3" on center along the chalk lines (or 15" wafer cuts at 6" intervals at 6" to 7" from the centerline). Do not drill or cut through any rafters. Install a 12" x 12" square piece of ice and water membrane at the bottom edge of the plywood roof deck where it meets the metal drip edge and fascia board before installing the lower SmartVent piece. This membrane will cover the metal drip edge mitered joint completely.

STEP 3: Install one SmartVent with the smooth side up and the thick edge toward the valley. Install a second SmartVent on the opposing side matching the thick edges together at the centerline. Install with eight nails, four along the upper edge and four along the lower edge of each SmartVent piece. Angle cut the SmartVent as shown in Figure 2.

STEP 4: Make sure you install a 12" x 12" square piece of ice and water membrane at the bottom edge of the plywood roof deck where it meets the metal drip edge and fascia board before installing the lower SmartVent piece. This membrane will cover the metal drip edge mitered joint completely. Cut and/or miter the SmartVent with a razor knife at the bottom and the top of the valley to conform to the valley angle. Wrap the enclosed fabric on any exposed edges of SmartVent when installing.

STEP 5: Install your choice of valley protective membrane over the top of the SmartVent after the vent is installed. Continue your roof shingling per manufacturer's instructions.

SmartVent Valley Miter Diagram

SmartVent mitered at the valley and continued on the adjacent roof. Use a standard utility knife to cut the valley angle. 1" slit is stopped about 12" from the centerline.

Note: Ice shield on top of the SmartVent

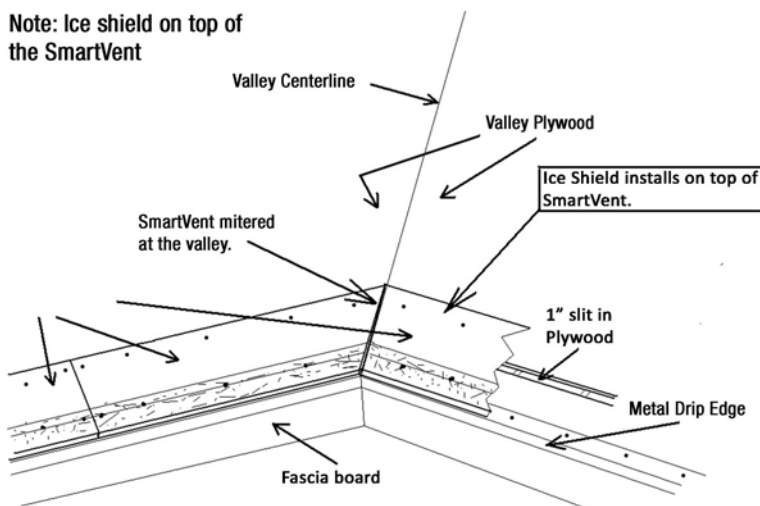


Figure 1



SmartVent Venting the Valley

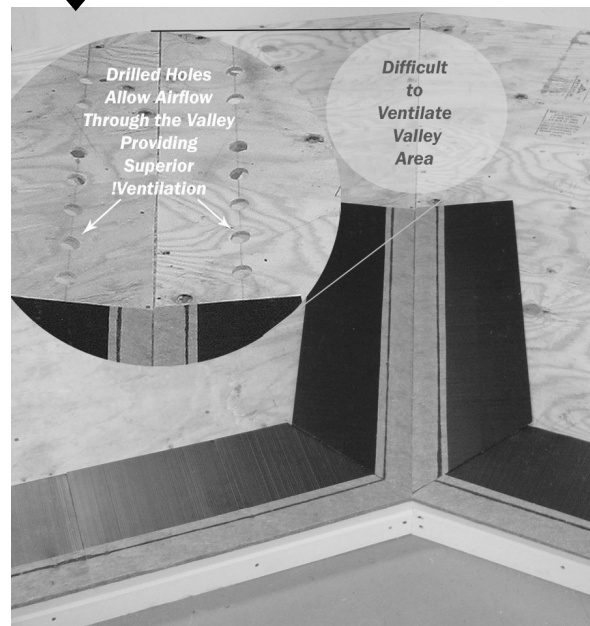
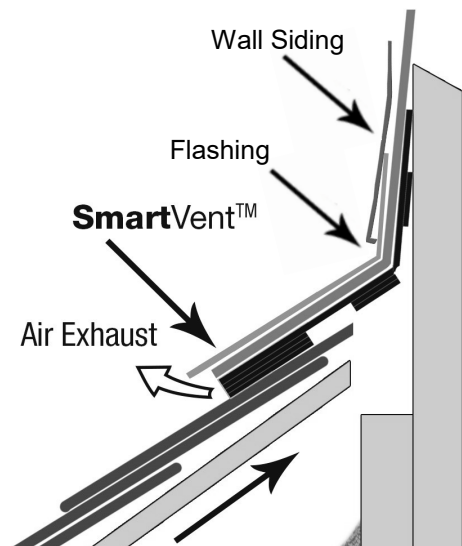


Figure 2

SmartVent™ Shed Roof or Roof-to-Wall Installation Instructions

STEP 1: Shingle up to the area that requires the SmartVent™ Roof to Wall vent application. Ensure there is proper continuous intake ventilation below proposed Roof to Wall ventilation.

STEP 2: Measure 3" out from the wall where the SmartVent™ will bend up on the wall. Strike a chalk line at the 3" mark along the roof decking and cut out the roof decking (leave about 12" of decking uncut at each roof edge or before any wall, valley, hip, etc.). Ensure the cuts do not penetrate the roof rafters. Remove roof decking and ensure there is at least 1" of clear space between roof decking and any header board. This allows the air to escape. Complete the shingling to the slit cutout but ensure the shingles do not cover the cutout opening.



STEP 3: Install the SmartVent™ end fabric at the roof edge hanging half, 5.25", beyond the roof edge and nailing fabric to roof deck (Note: The fabric can be folded to 6" X 10.5" to fit properly before nailing to cover the SmartVent™ roof edge. Fabric is not required on the section of SmartVent™ attached to the wall, only the roof area). Use SmartVent™ Tapered End Cap (last page of direction booklet) when wall vent is short from gable/rake edge. You may need to cut end cap to fit around the corner post. Next, install the SmartVent™ by bending at the routed hinge and having the smooth side of the vent facing you. The built-up side will be down against the roof and wall and nailed at 2" in from ends (along the nail line in the fabric) and two nails evenly spaced between them. Nail the vent to the wall with matching spacing of nails. Ensure the vent is nailed at each edge 2" in. Nail length should penetrate through roof decking. Ensure the SmartVent™ is placed tight against the roof and wall before securing with nails. Butt each piece tightly against the previous one. Continue to the opposing roof end.

STEP 4: Complete the SmartVent™ end of the run by installing the end fabric at the shingle edge by folding one side over to make a 6" X 10.5" piece of fabric. Nail half on the roof (5.25") and leave half (5.25") hanging over the roof edge and placing the last cut piece of SmartVent™ over the fabric but even with shingle gable edge. Wrap the remaining fabric tightly over the top of the SmartVent™ even with the shingle end and nail. If stopping short of the shingle edge/rake edge, use the SmartVent™ Tapered End Cap to start or terminate the vent run.

STEP 5: It is recommended to install ice and water membrane on top of the SmartVent™ extending up the wall about 12" to ensure a weather tight seal, lapping under any house wrap so water can drain over the ice & water membrane. Next, shingle above the SmartVent™ to the wall, overhanging the top shingle past the SmartVent™ lifted edge by ½" and then install a flashing that covers at least 4" of the shingle and extends up the wall at least 4". Metal or vinyl flashing can be used. Ensure all openings in the wall above the roof to wall area are completely sealed such as lower and upper window corners and flashing details around windows, doors and trim boards. When metal flashing is used instead of shingles over the SmartVent™, ensure the metal flashing overhangs the SmartVent™ lift end by ½" and up the wall 4" minimum. Secure flashing to wall. SmartVent™ is rated at 9 NFVA.

STEP 1: Prepare Roof Decking

The first step is to prepare the roof decking by cutting or leaving a 1" slit on both sides of the roof peak away from any 1½" ridge beam (a total width of 3½" is required with or without a ridge beam and that is the maximum width). Do not cut at least 12" in from the gable ends or other obstacles. This is most easily done when laying the roof decking by cutting the last piece of roof decking ¼" short of the roof peak on both sides of the ridge (**Figure A**).

NOTE: The proper amount of soffit ventilation is required to maximize your ridge vent effectiveness.

Wider ridge beams above 1½" require special installation techniques. Contact IPS for more information.

STEP 2: Install Shingles & SmartVent™ on Lift Side First Which is the Steeper Pitch Side at 4/12 or Greater.

After roof shingles are installed on the lift side of the roof, begin at one end of the roof. A nailing area on SmartVent™ is approximately 2" in from the edge of the product on either side with four nails per side equally spaced starting at the edge and ending at the opposite edge. Nail SmartVent™ to the roof decking using 1½" - 2" roofing nails. Ensure nails penetrate all the way through the roof decking. Use at least four nails per side per piece.

In the SmartVent™ box are pieces of fabric (approx. 10½" square) that will be used to seal the gable ends. Wrap the fabric around the end of a piece of SmartVent. When using the fabric, install the piece so that an equal amount of fabric is on top and on the bottom. Nail the fabric to the roof and bend it around the piece of SmartVent.

Position the SmartVent™ piece over the ridge so that it is nearly centered over the ridge opening. Fold SmartVent™ over the ridge and secure to the roof decking using 1½" roofing nails minimum (ensure nail goes through the roof decking). Ensure you start flush with the gable edge & wrap the end fabric over the SmartVent. Attach the next piece of SmartVent™ by butting the end of the piece up tightly against the end of the previously installed piece. Continue butting 3' pieces of SmartVent™ until the end of the roof. Cut the final piece to fit flush with gable end and repeat step 2 to seal the end & install gable end fabric. Hang cap shingles 1/2" to 3/4" past all edges of SmartVent™.

STEP 3: Install Shingles/Rubber Roof on No-Lift Side

After the SmartVent™ is installed, complete the no-lift side of the roof by extending the underlayment, shingles or rubber roof over the SmartVent™ by at least 9" or over the peak & flush with the lift side. Install cap shingles over SmartVent™ as you normally would. Ensure that about ½" of the shingle cap extends past the lift edge. SmartVent™ is strong enough to stand up to nail guns during shingle installation. Use extra long roof nails (1½" to 2" nails) for securing the shingles. Shingle cap nails should penetrate through vent and roof deck. (**Figure B**)

NOTE: Low slope roofs less than 4/12 must have the No-Lift side nailed to the low slope side. On the No-Lift side rubber roof or shingles extend over the SmartVent™ sealing the No-Lift edge from weather conditions. The No-Lift edge is nailed under the underlayment & rubber or shingles install over the No-Lift side to the lift side & nailed on the lift side. Install cap shingles as you normally do.

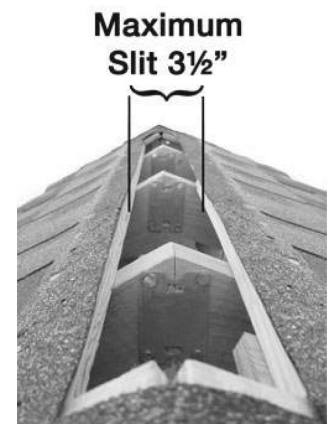


Figure A

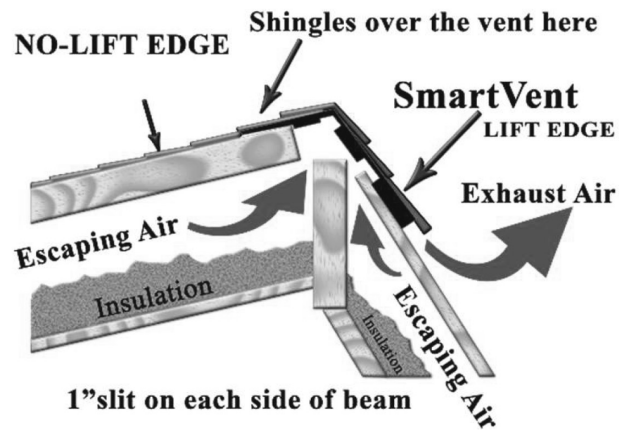
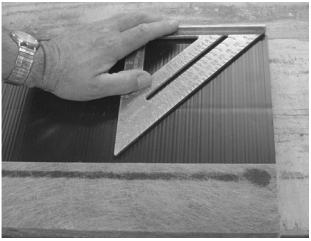
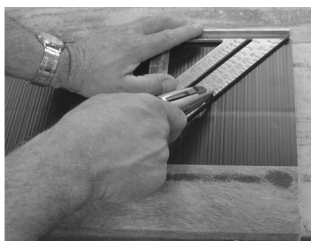
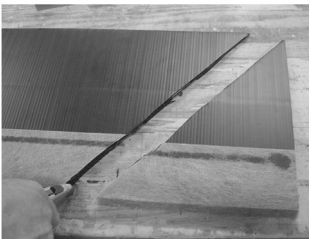
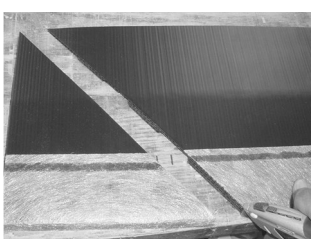

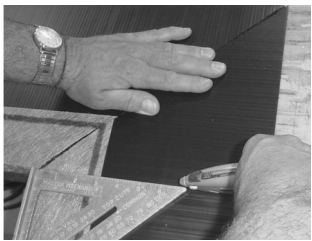
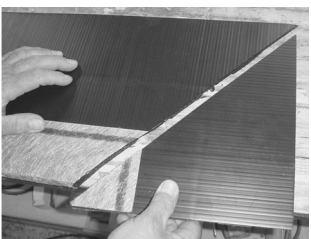





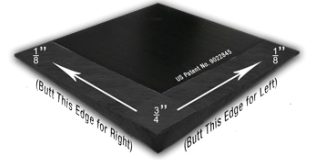
Figure B

How to Make a SmartVent™ Tapered End Cap

NOTE: SmartVent Tapered End Caps (item #:80751 Sold Separately) are available for convenience. Ask your supplier for ordering information.

Use the following steps to achieve the best results for ventilation and curb appeal when installing SmartVent on a transitional roof.

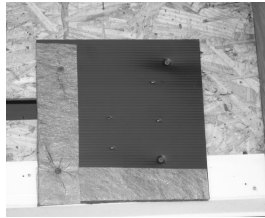
<p>1 Cut 45° angle with razor knife starting from the tapered edge working toward the fabric exterior.</p> 	<p>2 Cut angle.</p> 
<p>3 Discard cut-off piece.</p> 	<p>4 Another SmartVent make opposite cut. Discard cut-off piece.</p> 
<p>5 Install tight & cut flush with lift edge (continues in step 6)</p> 	<p>6 Using a square & razor knife.</p> 
<p>7 Place end cap to the SmartVent™ & place fabric 1/2 below.</p> 	<p>8 Nail SmartVent™ end cap in place with fabric 1/2 showing</p> 
<p>9 Take the fabric and wrap it over the vent & nail it tight. Install ice & water membrane & shingles.</p> 	 <p>Finished Installation. Ensure shingle overhangs 1/2" past the lift edge.</p>



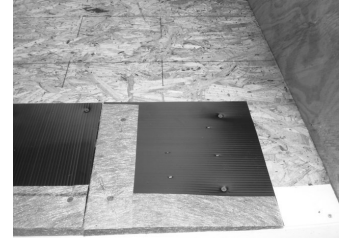
(Do Not Use End Caps on Gable/Rake Edges of the Roof — Use Fabric Squares)

For Installation at the eaves edge near a wall or obstacle to create a sloped shingle transition to zero lift-up at the wall flashing. **Note:** When using the SmartVent™ Tapered End Cap on a mid-roof application, leave about a 18" space between hips and valleys so not to interfere with the flashing or cap shingles installation. SmartVent™ Tapered End Caps are universal for right or left installations.

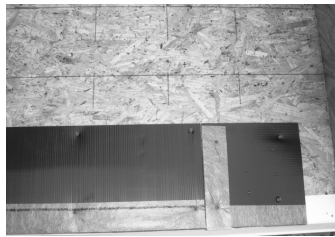
Step 1- Ensure the 1" roof cutout was completed to 12" before the end of the run and the metal drip edge was previously installed. Nail the SmartVent™ Tapered End Cap as shown with the bottom edge flush with the drip edge. Leave about 3" to 6" of roof deck showing from the wall. Nail at all four corners using nails that penetrate through the roof sheathing.



Step 2- Butt the SmartVent™ 36" section against the SmartVent™ Tapered End Cap tightly and nail per SmartVent directions.

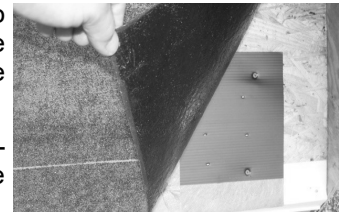


Step 3- Continue installing the remaining SmartVent™ over the roof deck sheathing and previously installed drip edge.



Step 4- Install 36" wide ice & water membrane only over the SmartVent™ and SmartVent™ Tapered End Cap tight against side wall and continuously across the roof. Keep 36" ice & water membrane flush to the SmartVent™ lift edge which will cover the entire top surface of the vent.

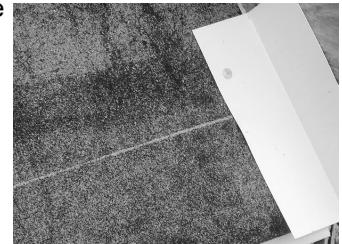
Install ice & water membrane a few inches up the wall when possible.



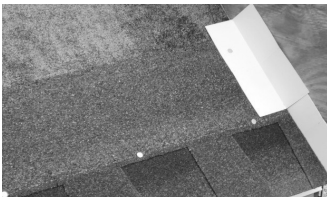
Step 5- Ensure the ice & water membrane is only over the vent and tight against the wall for eave edge installations.



Step 6- Install wall step flashing over ice & water membrane and up the wall. Allow a ½" to 1" eave edge overhang for shingles. Ensure step flashing is installed at each shingle course.

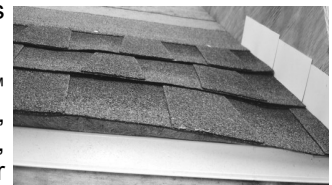


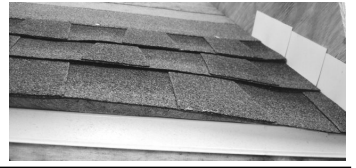
Step 7- Install starter course and shingles with a ½" to 1" overhang beyond the lift edge of the SmartVent™. Ensure step flashing is installed at each course with the proper coverage.



Step 8- Continue installing underlayment and shingles up the roof with step flashing. The SmartVent™ Tapered End Cap slopes the shingles down to the level of the wall flashing as shown.

Note: Use SmartVent™ Tapered End Caps around, chimneys, skylights, pipes, valleys, hips and any other obstructions.





SmartVent™ Tapered End Cap

SmartVent™ Tapered End Cap - Each piece can be used for either a right side or left side tapered end cap.

U.S. PATENT 9022845

Use the SmartVent™ Tapered End Cap when terminating the SmartVent™ within the shingled area, so the vent tapers down to the roof smoothly. Smooth side installs up. Shingles will slope as the SmartVent™ ends. ** see sub-note

Shingle over underlayment and plywood roof decking to the 1" slit

Fabric is factory attached

SmartVent™ Tapered End Cap
Detail of Left Installation

10.5"

10.5" SQUARE

• Butt the SmartVent™ three foot pieces to this edge.

• The end cap comes with the fabric already attached and is tapered for right or left hand use. Simply nail gun it to the roof and butt the square edge of the SmartVent™ to it.

• Universal Right or Left Cap

** DO NOT USE SmartVent™ Tapered End Caps at the gable rake edges. Take SmartVent™ to the rake edges and wrap with fabric provided.

SmartVent™ Tapered End Cap (Left)

Remember: always install ice & water membrane and shingles over the SmartVent™. Factory installed fabric installed. Ensure underlayment / ice & water membrane laps properly over the entire roof.

SmartVent™ Tapered End Cap