

Industrial Ventilators Installation Instructions

EcoPower[®] and Hurricane[®]

Non-Cyclonic

SYSTEM PRE-REQUISITES – Check Before Commencing

Before attempting to start the installation, please ensure that the following allowable roof pitch and make-up air requirements can be met.

Product	Make-up air* per ventilator - 100% open, evenly distributed open area	Allowable Roof Pitch
EcoPower 400 Hurricane 100 - 400	$\geq 0.3\text{m}^2$	up to 45°
EcoPower 600 Hurricane 450 - 600	$\geq 0.5\text{m}^2$	up to 45°
EcoPower 900 Hurricane 700 - 900	$\geq 0.9\text{m}^2$	up to 22.5°

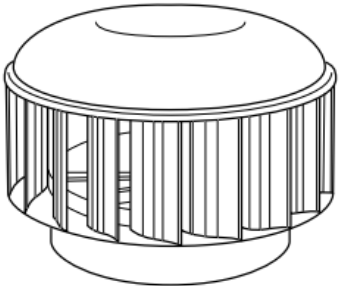
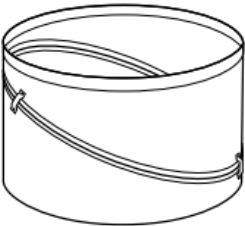
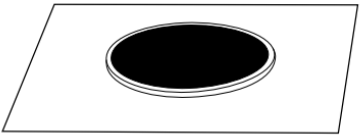
* Performance values are based on a 5Pa pressure loss across the make-up air opening.

Additional make-up air can be provided as per the recommendations in AS1668.2.

DO NOT PROCEED TO INSTALL THIS PRODUCT IF THE ABOVE REQUIREMENTS ARE NOT MET

1. PACKING LIST (for a standard complete product) – Check Before Commencing

Included Parts

Ventilator Head	Varipitch	Flashing
		

Additional Materials Required - Not Supplied

a. FASTENERS (Quantity and Type)

Product	Head to Varipitch	Varipitch to Flashing	Flashing to Roof
EcoPower 400 Hurricane 100 - 400	6	6	12
EcoPower 600 Hurricane 450 - 600	9	9	16
EcoPower 900 Hurricane 700 - 900	12	12	26
Fasteners	<i>Use 10G X 16MM Galvanised Self Drilling TEK Screws with Neoprene Washer or 5/32" (4.0mm) Rivets Aluminium/Steel Sealed</i>		

- b. **SUPPLEMENTARY FLASHING** required for installation away from the ridge – refer to section 4 for details.
- c. **PESTGUARD** (if required) to provide protection against the entry of vermin.

IMPORTANT: Note regarding lifting this product

Lift the product in its original packaging using a crane or similar equipment to the roof mounting location, prior to handling the product.

Caution During Lifting:

The ventilator top surface/dome can be easily scratched or deformed when placed upside down so always place it on a soft/smooth surface such as cardboard or a soft-foam mat.

SAFETY AND WARNINGS

- a. The installation of this product involves working at heights on a sloping surface and may be dangerous, including the potential of death, personal injury, or property damage.
- b. Follow the state or territory regulator OH&S guidelines for working at heights, electrical, working in elevated temperatures (e.g. roof space in summer). For more information on your State OH&S guidelines for working at heights, please refer to: <https://www.safeworkaustralia.gov.au/heights>
- c. All ventilation products must be installed by a qualified installer and all electrical wiring (where applicable) must be undertaken by a qualified electrician.
- d. EcoPower Hybrid Ventilators use 220V-240V AC power for the electrically powered components and electrical connections must only be undertaken by a qualified electrician.
- e. EcoPower Hybrid Ventilators are supplied with either a Smart Controller or Interface Box - these devices must not be tampered with and the hybrid ventilator must not be operated without either of these devices.
- f. Do not attempt to power up EcoPower Hybrid Ventilators when the product is not suitably roof mounted as the turbine will rotate without warning and may create a hazard.
- g. Due to the size and weight of the turbine, it is recommended that it is always lifted by 2 people or a crane. Refer to the lifting instructions.
- h. Damaged parts must be replaced with a genuine replacement part from CSR Bradford Ventilation.
- i. The turbine head of this product can rotate without warning (even during installation) – always keep body parts away from moving components.
- j. Please read this manual carefully before installing this product and keep it for future reference or provide it to the building owner/maintenance manager.

LIMITATIONS

Not suitable for use in cyclonic regions or BAL zones.

PRODUCT SUITABILITY

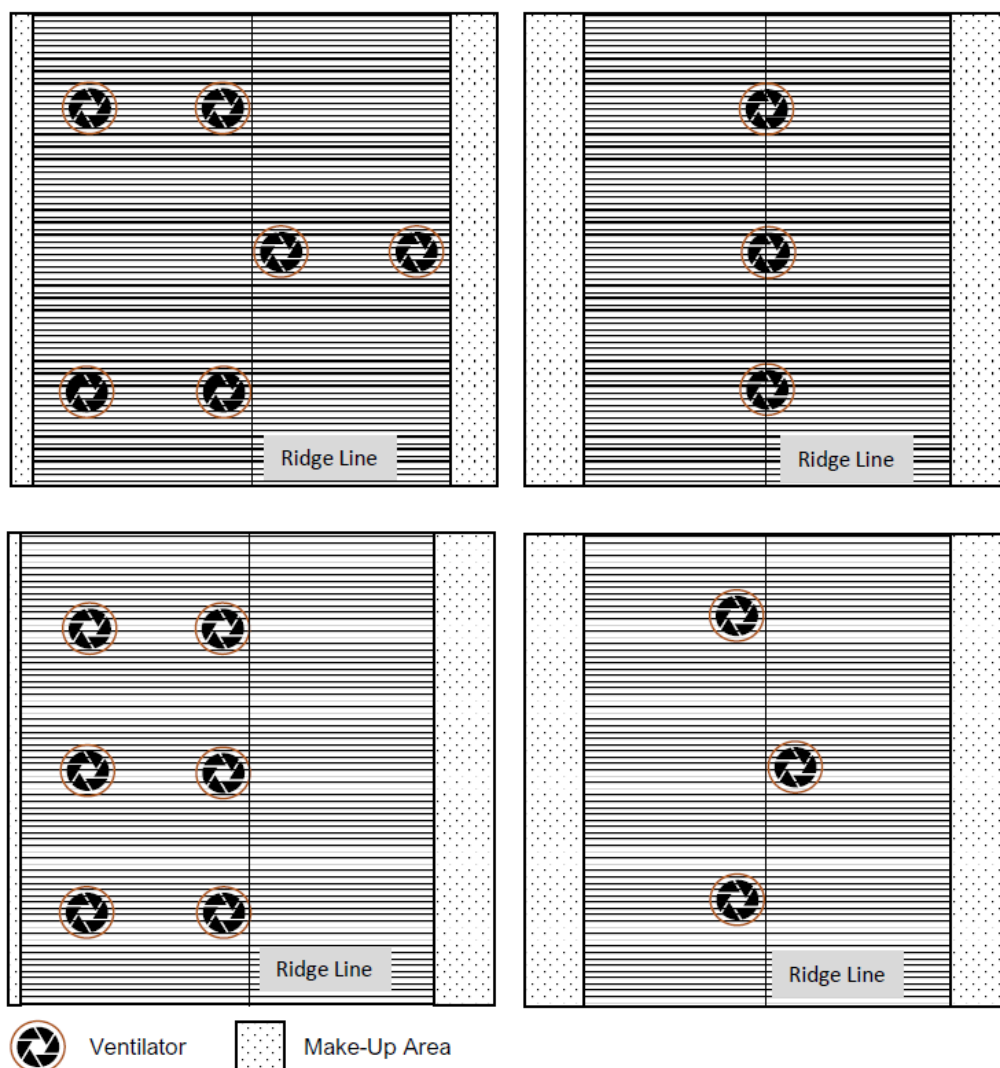
Always check product suitability & limitations of use prior to selection - refer to the Product Technical Statement (PTS) available online.

2. VENTILATOR POSITIONING & PROVISION FOR MAKE-UP AIR

CSR Bradford Ventilation recommends that ventilators are positioned 4m to 6m away from each other in all directions for effective and efficient performance. It is also recommended that ventilators of the same size are used together to prevent replacement air from being drawn between ventilators of different sizes. Ensure that the ventilators are not sheltered from the wind by surrounding objects, the shadow angle created by the roof ridge or by each other.

Make-up air is required for this ventilator to replenish the exhausted air. As a general guide, the largest make-up air entry should be positioned on the opposite side of the building to the largest ventilator demand. The make-up air location should be positioned at optimum height to provide efficient sweeping of the floor area.

The illustrations below provide a number of generic ventilator and make-up air layouts but it should be noted that a whole-of-building assessment, as per AS1668.2, should be conducted by a suitably qualified person prior to deciding upon site-specific ventilator and make-up air placement.

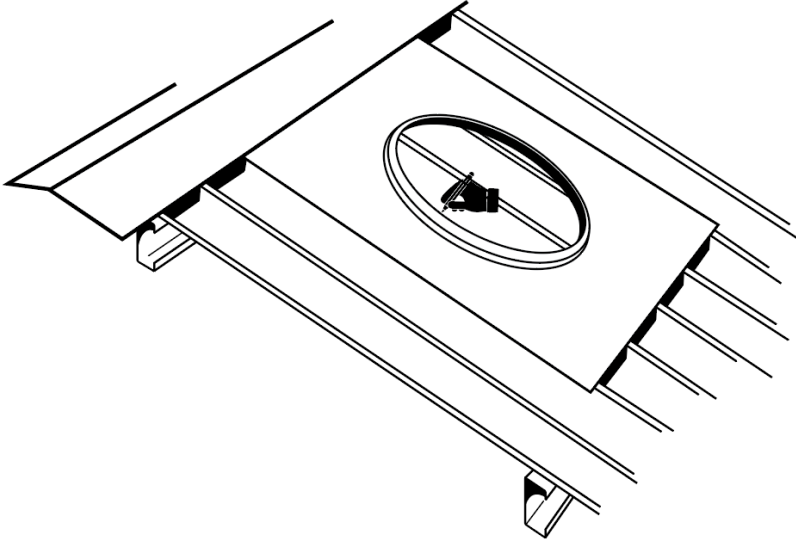


IMPORTANT: If external make-up air is insufficient, the ventilators will draw make-up air from each other – this will both diminish the effectiveness of the system and increase the risk of the system drawing external water into the building during periods of rain. It is also recommended that ventilators of the same size are used together to prevent replacement air from being drawn between ventilators of different sizes.

3. INSTALLATION UNDER THE RIDGE

Note: See Section 4 for installation away from the ridge.

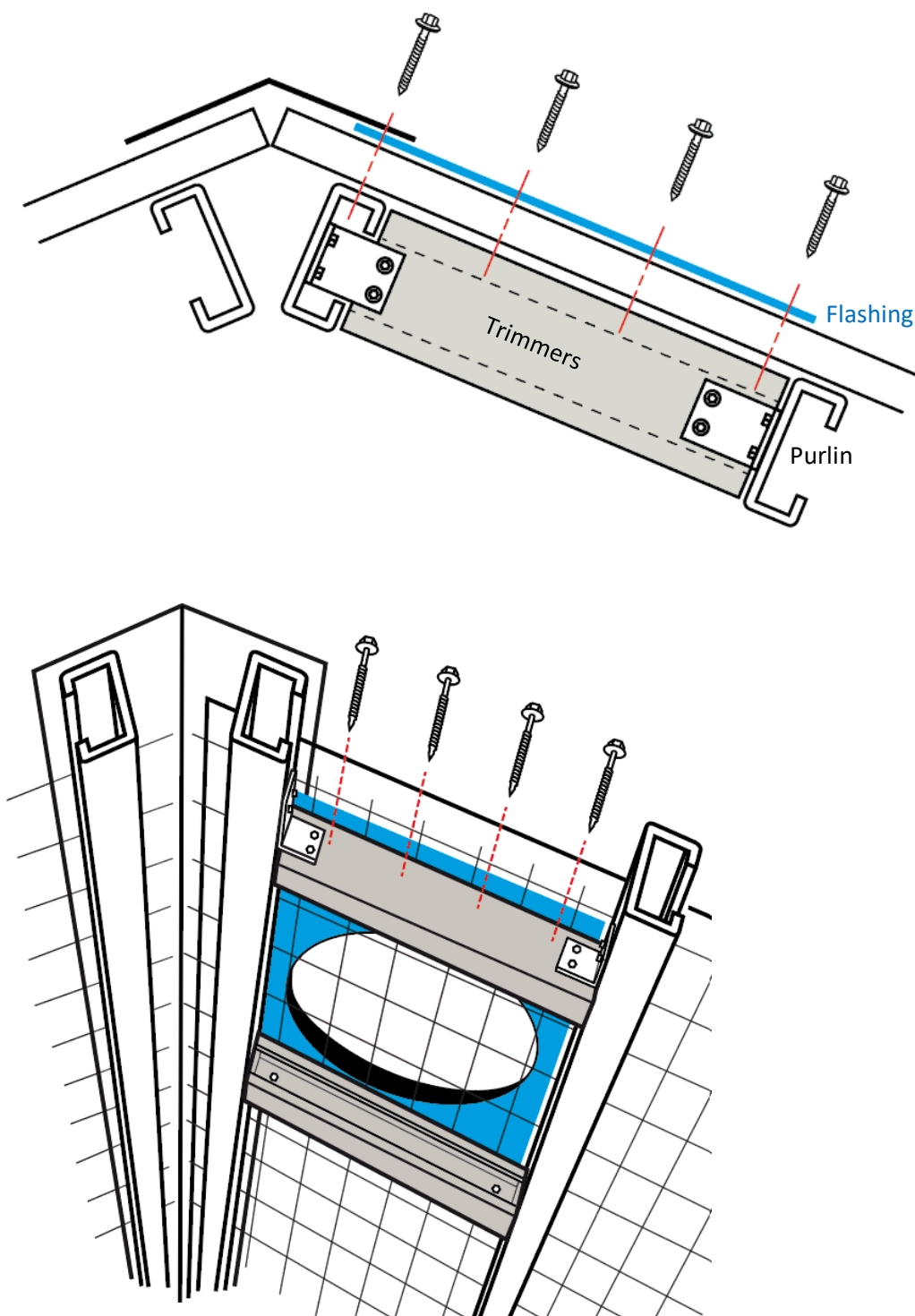
- a. **Set Position:** Place the base flashing under the ridge cap at the required position and adjust the position to avoid structural roof members below the roof sheet. Ensure the flashing covers the corrugation or ribs equally on each side of the flashing, then mark a circle on the roof using the hole in the flashing as a template.



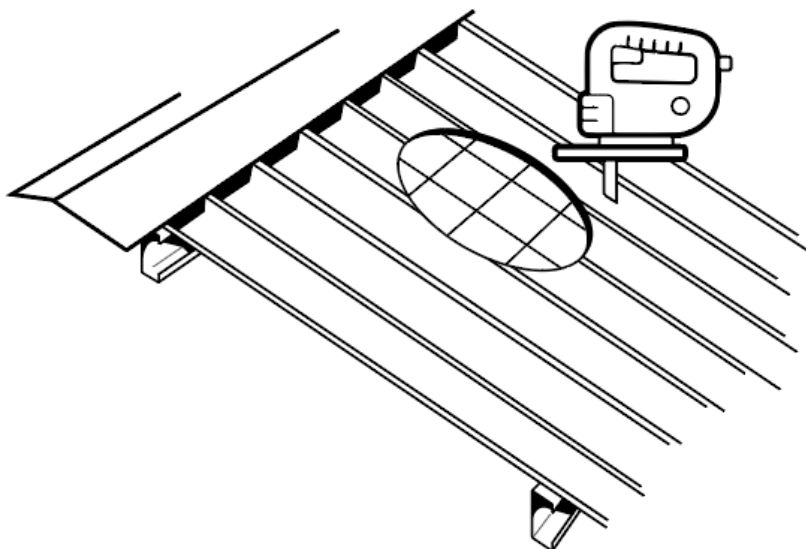
Important Note Regarding Roof Structural Support:

EP400 - EP600 & H100 – H600 – If the purlin spacing is larger than 600mm, trimmers are required. Install the trimmers between the purlin on either side of the opening. Do not cover the openings.

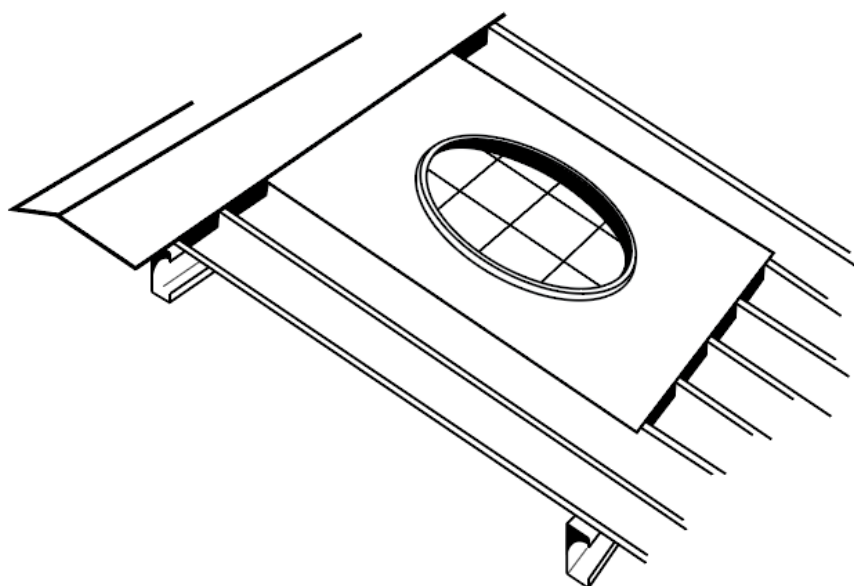
EP900 & H700 – H900 – If the purlin spacing is larger than 1000mm, trimmers are required. Install the trimmers between the purlin on either side of the opening. Do not cover the opening.

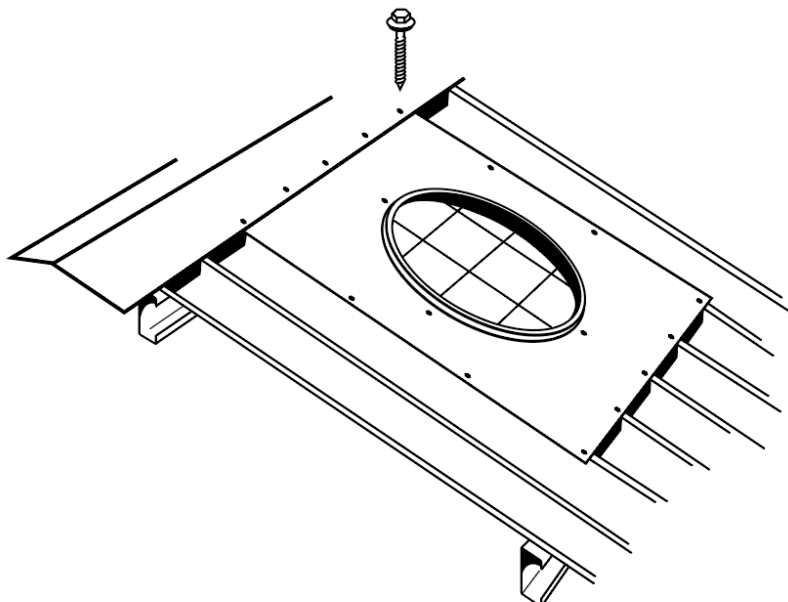


- b. **Cut Hole:** Carefully cut the hole, remembering that there may be insulation and other roof members under the roof sheet. Once the hole has been cut, fold up the edge of the corrugations or pans. Ensure the roofing safety mesh/net integrity is maintained after the installation.



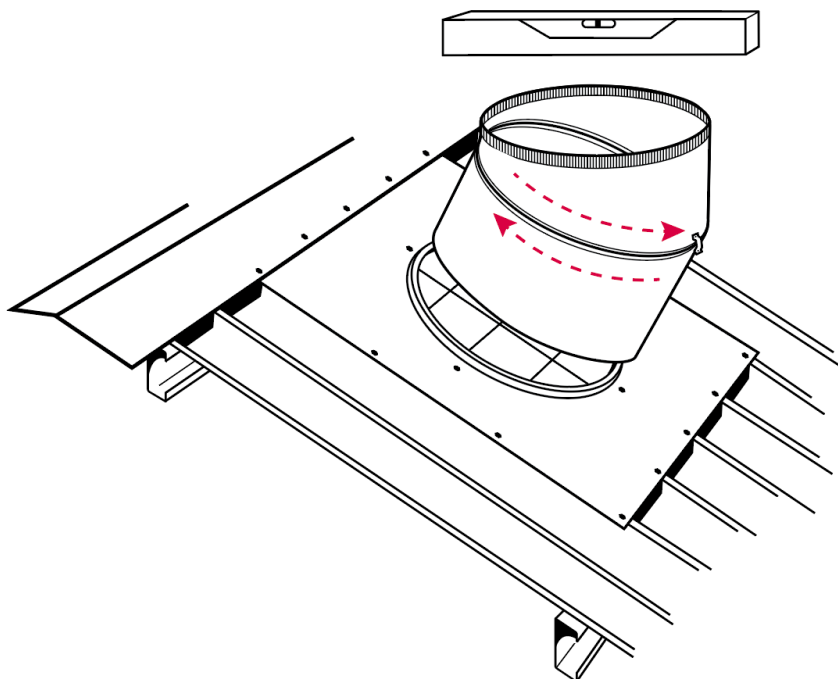
- c. **Secure Flashing:** Attach the flashing under the ridge cap and apply sealant prior to final fixing (refer to the table below for the required number of fasteners). If trimmers are used ensure the flashing is secured to the trimmers. Seal all fasteners with a suitable sealant to ensure they are weatherproof.



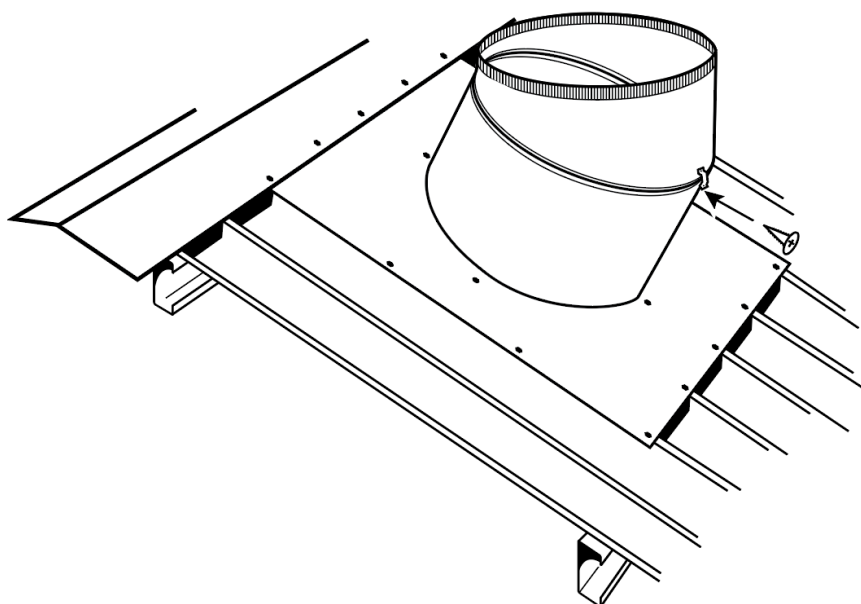


Model	Fasteners to secure flashing to roof
EcoPower 400 Hurricane 100 - 400	12 (4 near throat)
EcoPower 600 Hurricane 450 - 600	18 (4 near throat)
EcoPower 900 Hurricane 700 - 900	26 (4 near throat)
Use 10G X 16MM Galvanised Self Drilling TEK Screws with Neoprene Washer or 5/32" (4.0mm) Rivets Aluminium/Steel Sealed	

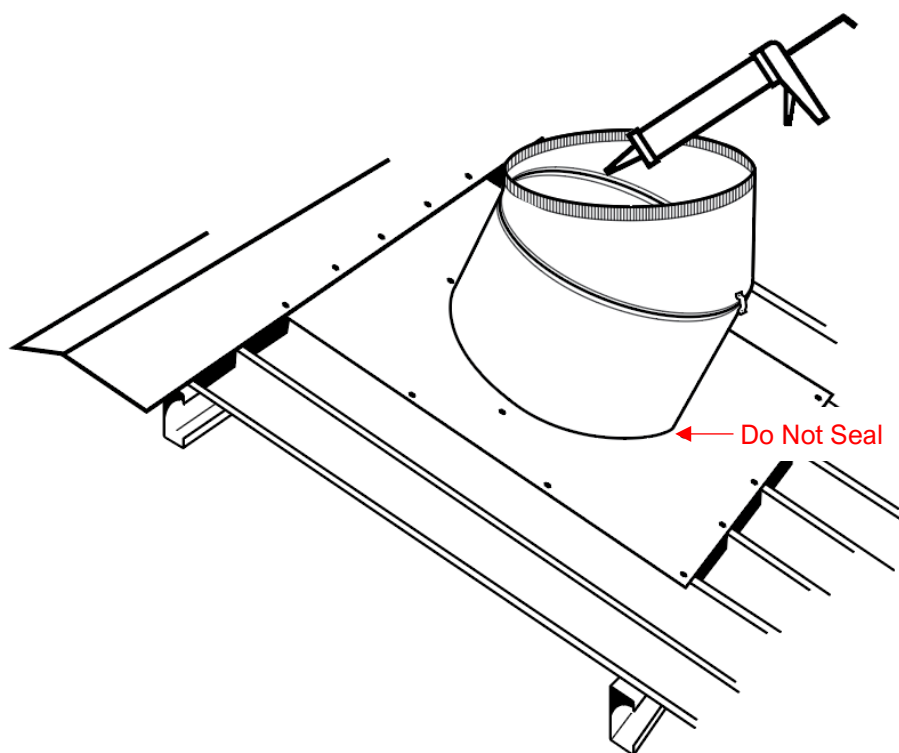
- d. **Assemble the Varipitch:** When a Varipitch throat is being used, position the Varipitch on the flashing and rotate the top and bottom halves until the top of the Varipitch is level (horizontal) - it is recommended that an electronic or spirit level is used to ensure that the top edge of the throat is horizontal in all directions.



- e. **Secure the Varipitch Angle:** With the Varipitch upper throat positioned horizontally, lock it into position using the supplied Varipitch clip. Use either self-tapping screws or blind rivets to secure all the clips between the two halves of the Varipitch.

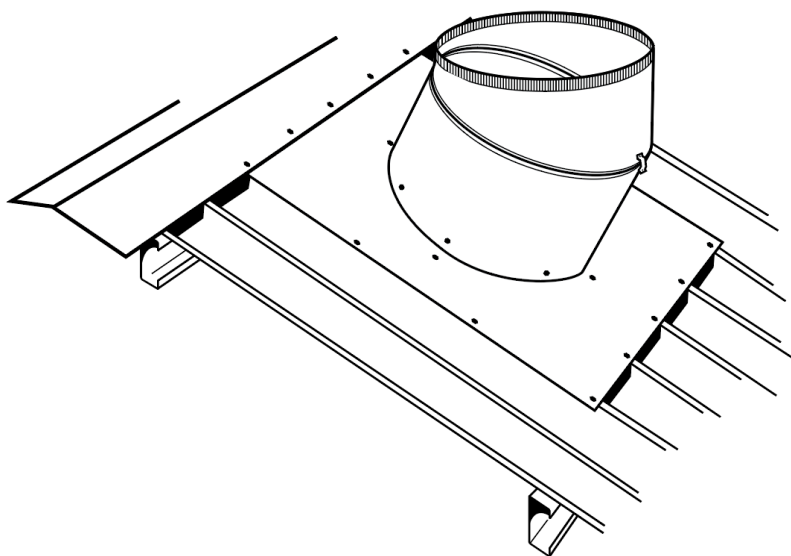


- f. **Weather Sealing:** Seal the Varipitch seam on the inside with a bead of weather-resistant suitable sealant.



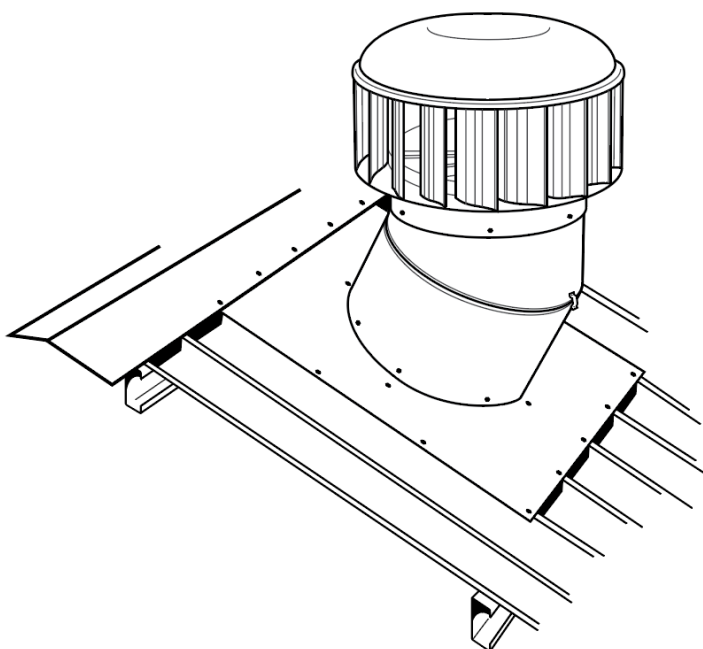
NOTE: DO NOT apply sealant to the joint between the flashing and Varipitch. This is a natural gutter to release any trapped condensation. See details in section (i) below.

- g. **Secure Varipitch to Flashing:** Reposition the Varipitch on the Flashing and check it is horizontal - secure the Varipitch to the flashing using the recommended number of screws shown in the table below – **DO NOT SEAL** this connection.



Model	Fasteners to secure varipitch to flashing
EcoPower 400 Hurricane 100 - 400	6
EcoPower 600 Hurricane 450 - 600	9
EcoPower 900 Hurricane 700 - 900	12
Use 10G X 16MM Galvanised Self Drilling TEK Screws with Neoprene Washer or 5/32" (4.0mm) Rivets Aluminium/Steel Sealed	

- h. **Assemble Turbine:** Assemble the turbine head to the Varipitch. Re-check if the assembly is level (horizontal) and adjust the turbine by tilting the throat slightly if required. Ensure the knurling (the tapered section of the Varipitch) is fully inside the ventilator throat and secure the ventilator throat by fastening it to the top of the Varipitch with the number of fasteners shown in the table below.

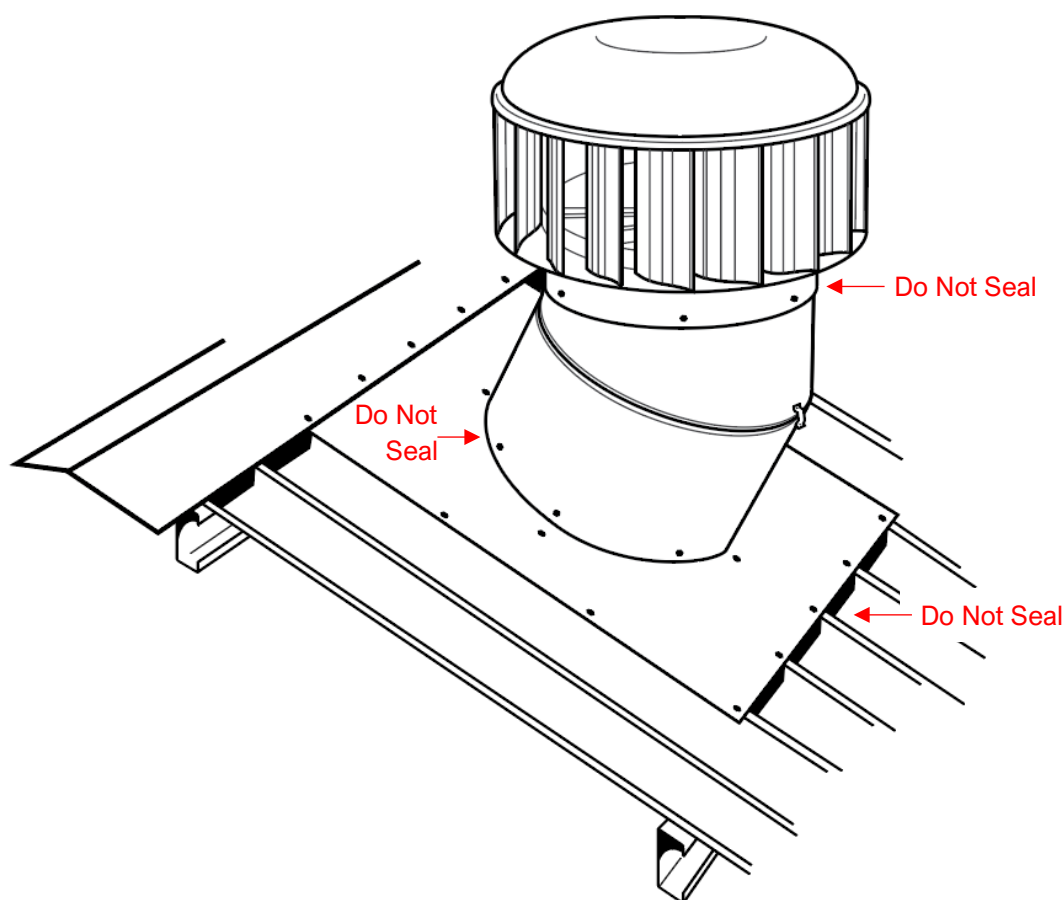


Model	Fasteners to secure turbine to varipitch
EcoPower 400 Hurricane 100 - 400	6
EcoPower 600 Hurricane 450 - 600	9
EcoPower 900 Hurricane 700 - 900	12
Use 10G X 16MM Galvanised Self Drilling TEK Screws with Neoprene Washer or 5/32" (4.0mm) Rivets Aluminium/Steel Sealed	

NOTE: DO NOT apply sealant to the joint between the turbine and Varipitch. This is a natural gutter to release any trapped condensation. See details in section (i) below.

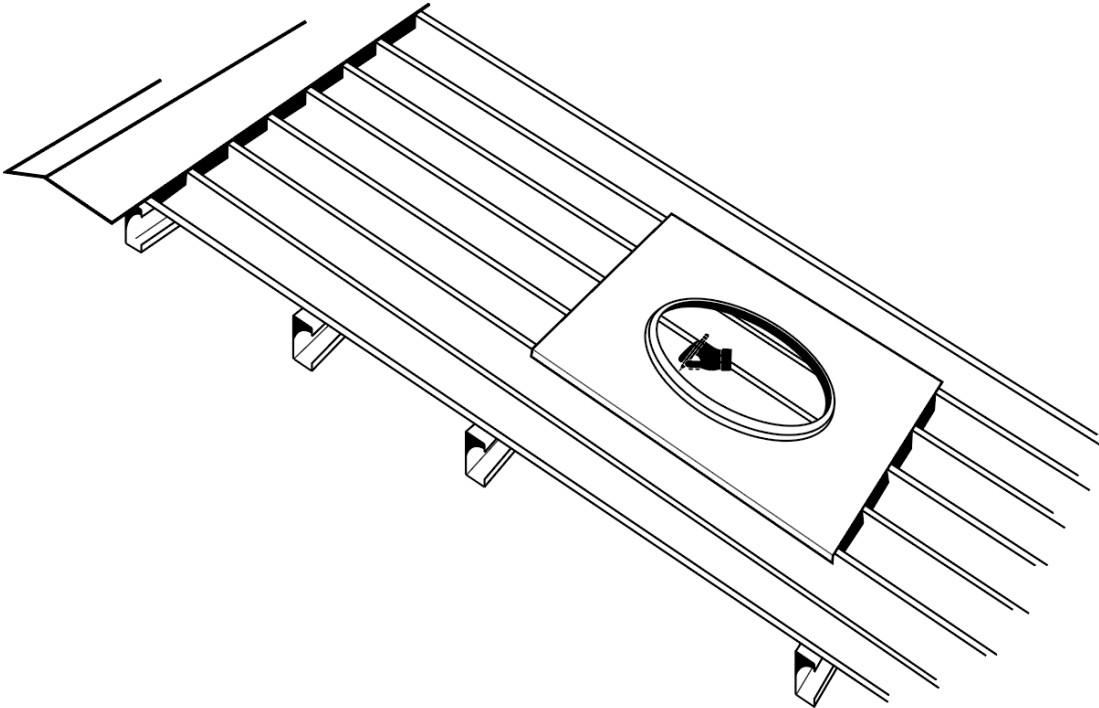
- i. Sealing is crucial for this product to ensure no leaking occurs during its lifespan, but there is also a requirement for drainage. To ensure that only the required areas are sealed and the drainage path is left open, follow this guide carefully:

Location Area	Sealing Requirement
All fasteners	Seal
Flashing perimeter to roof	Seal
Varipitch seam (inside throat)	Seal
Turbine to varipitch	Do Not Seal
Varipitch to flashing	Do Not Seal
Flashing bottom edge to roof	Do Not Seal



4. INSTALLATION AWAY FROM RIDGE

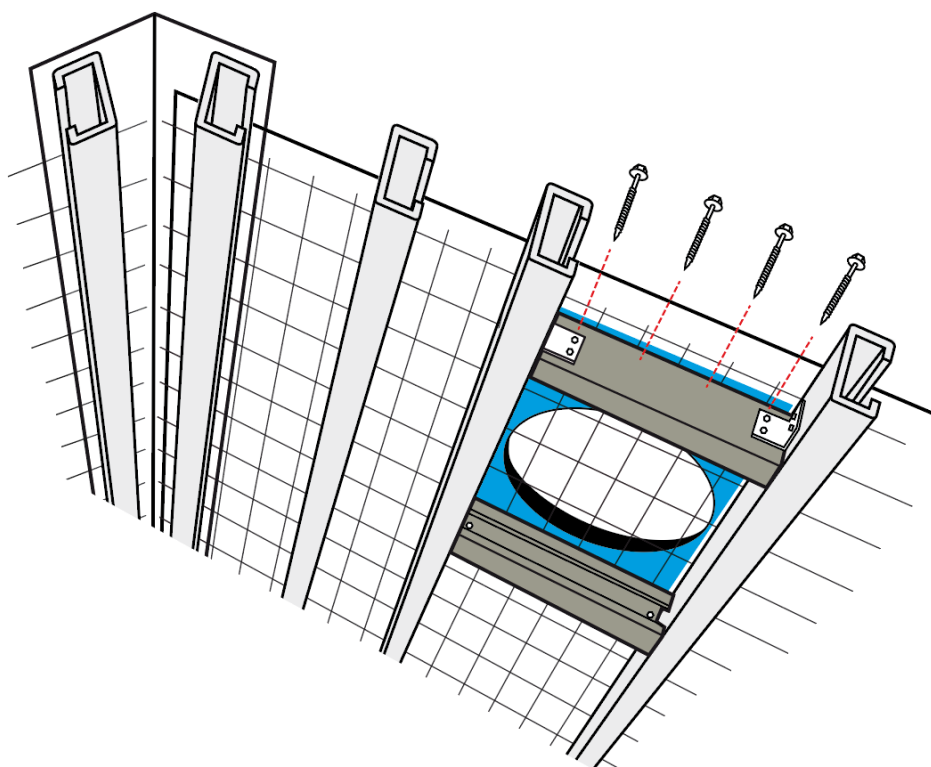
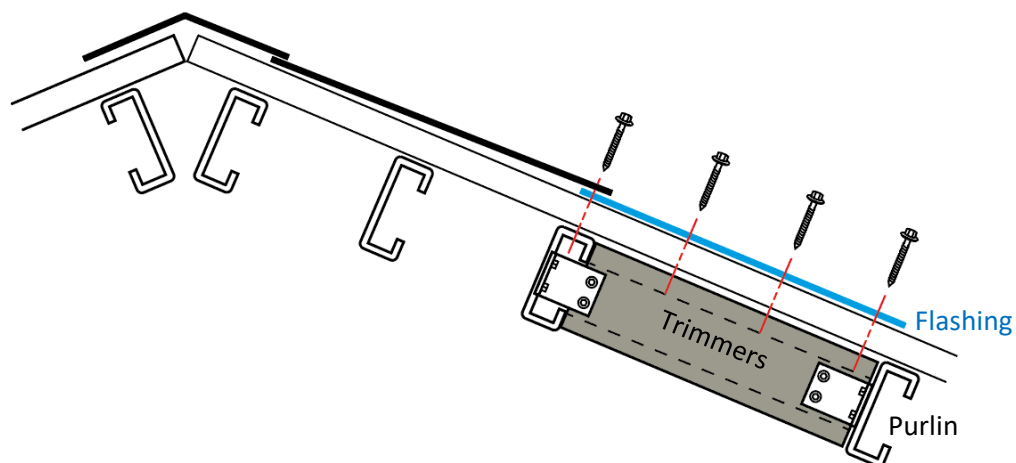
- a. **Set Position:** Place the base flashing at the required position and adjust the position to avoid structural roof members below the roof sheet. Ensure the flashing covers the corrugation or ribs equally on each side of the flashing, then mark a circle on the roof using the hole in the flashing as a template.



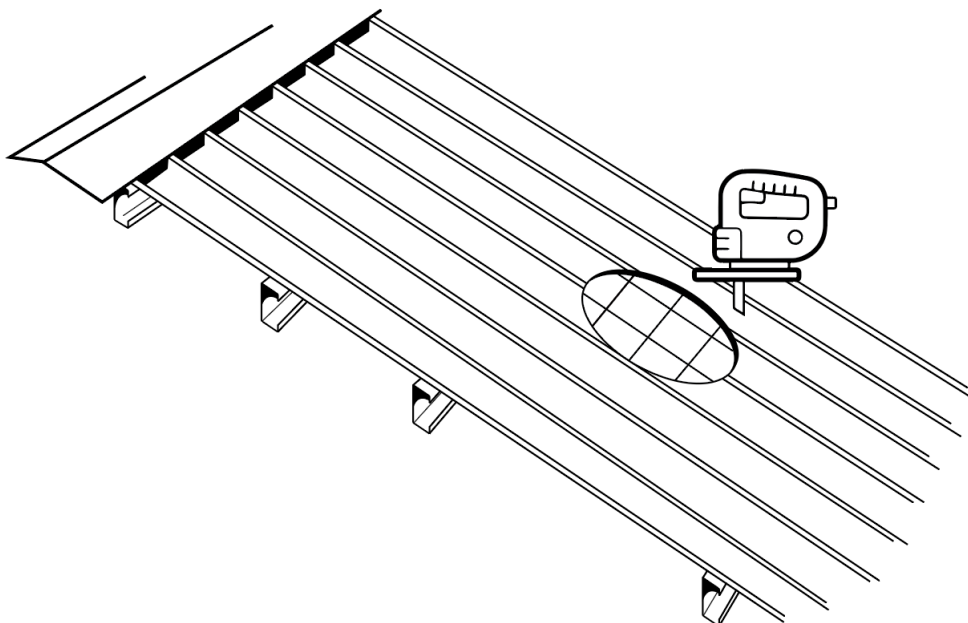
Important Note Regarding Roof Structural Support:

EP400 - EP600 & H100 – H600 – If the purlin spacing is larger than 600mm, trimmers are required. Install the trimmers between the purlin on either side of the opening. Do not cover the openings.

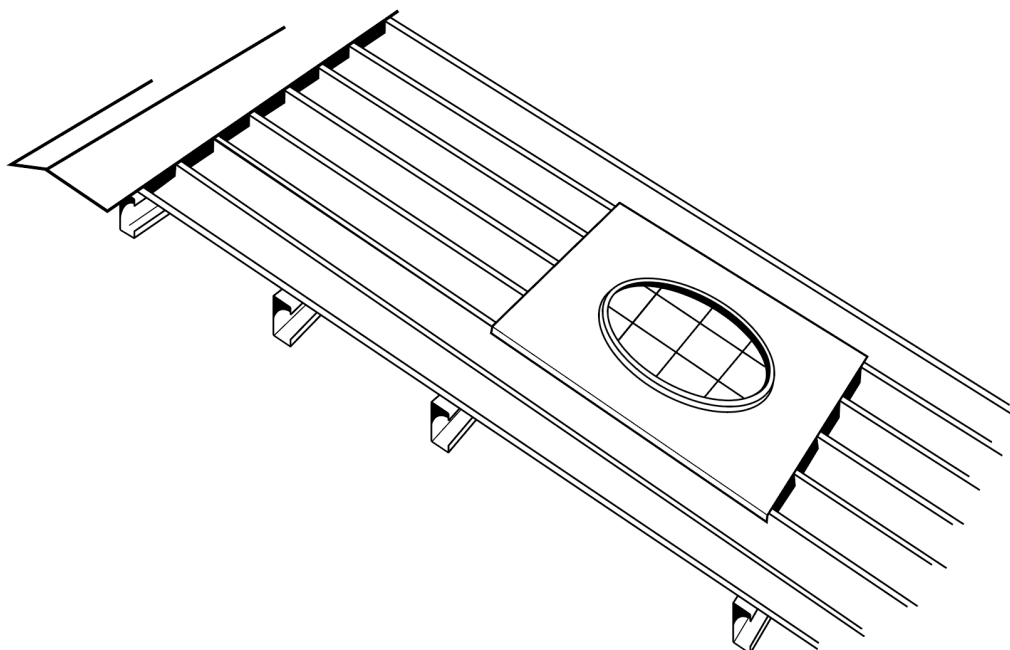
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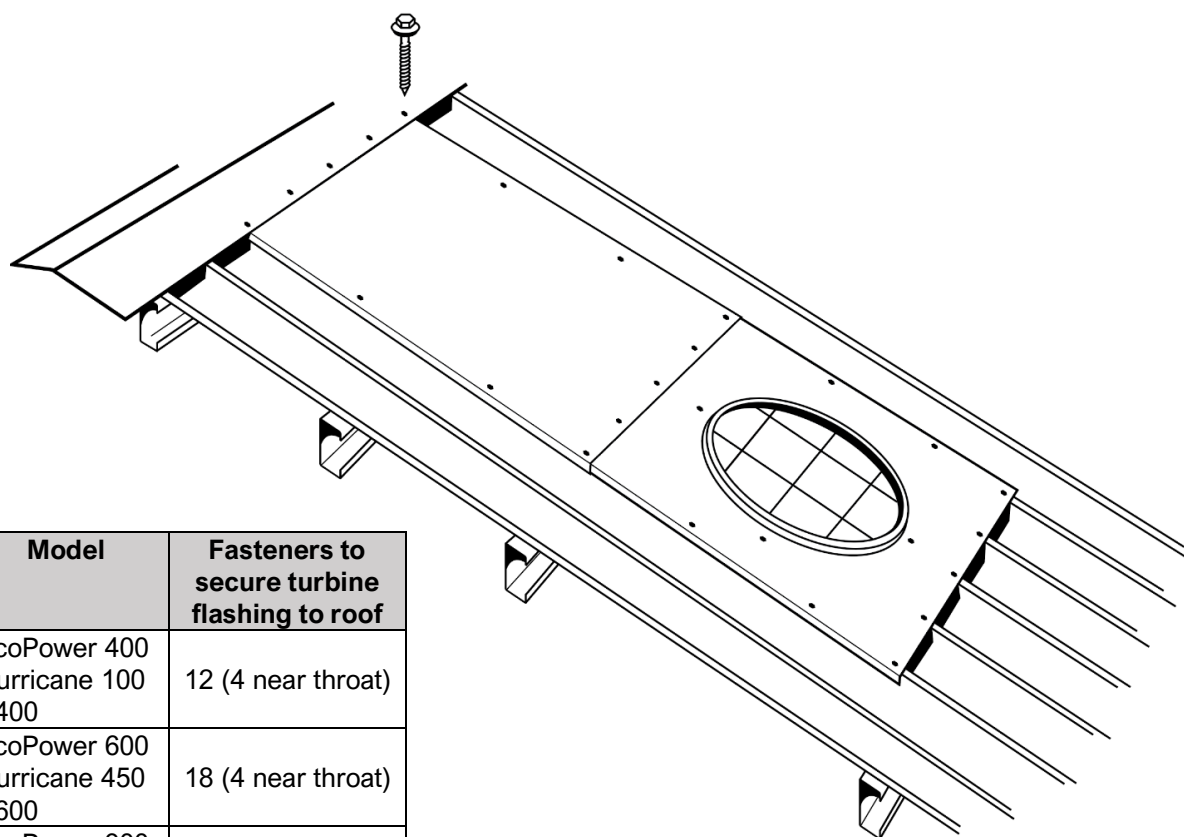
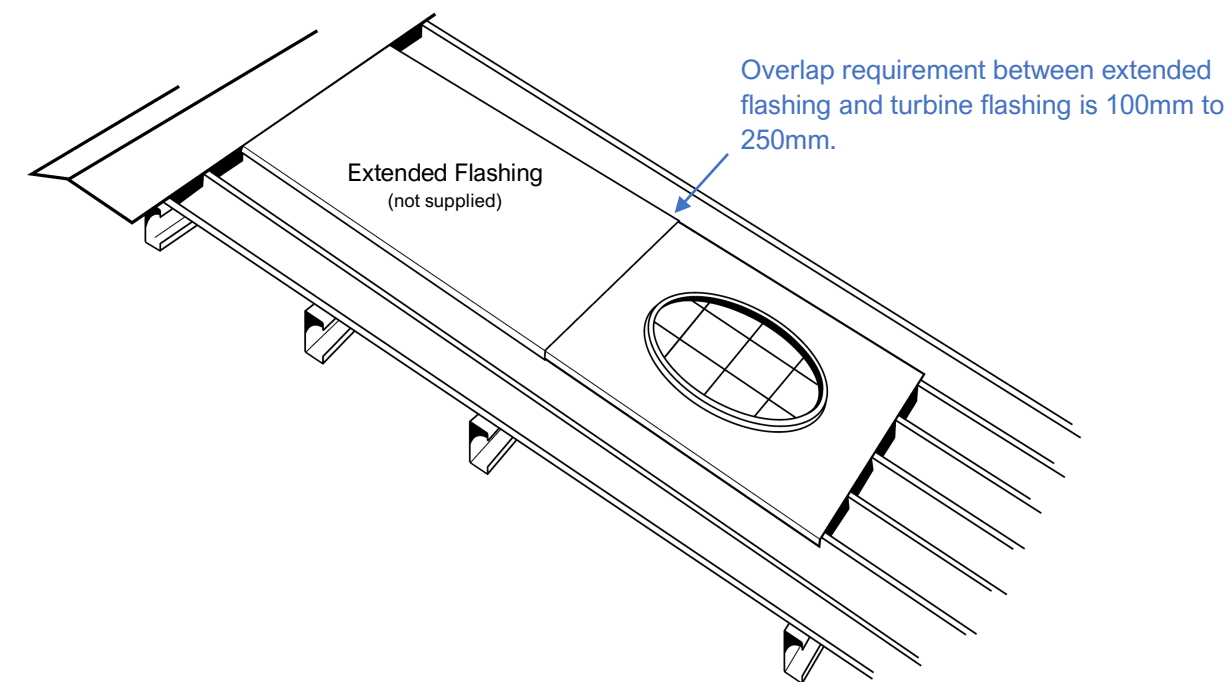


- b. **Cut Hole:** Carefully cut the hole, remembering that there may be insulation and other roof members under the roof sheet. Once the hole has been cut, fold up the edge of the corrugations or pans. Ensure the roofing safety mesh/net integrity is maintained after the installation.



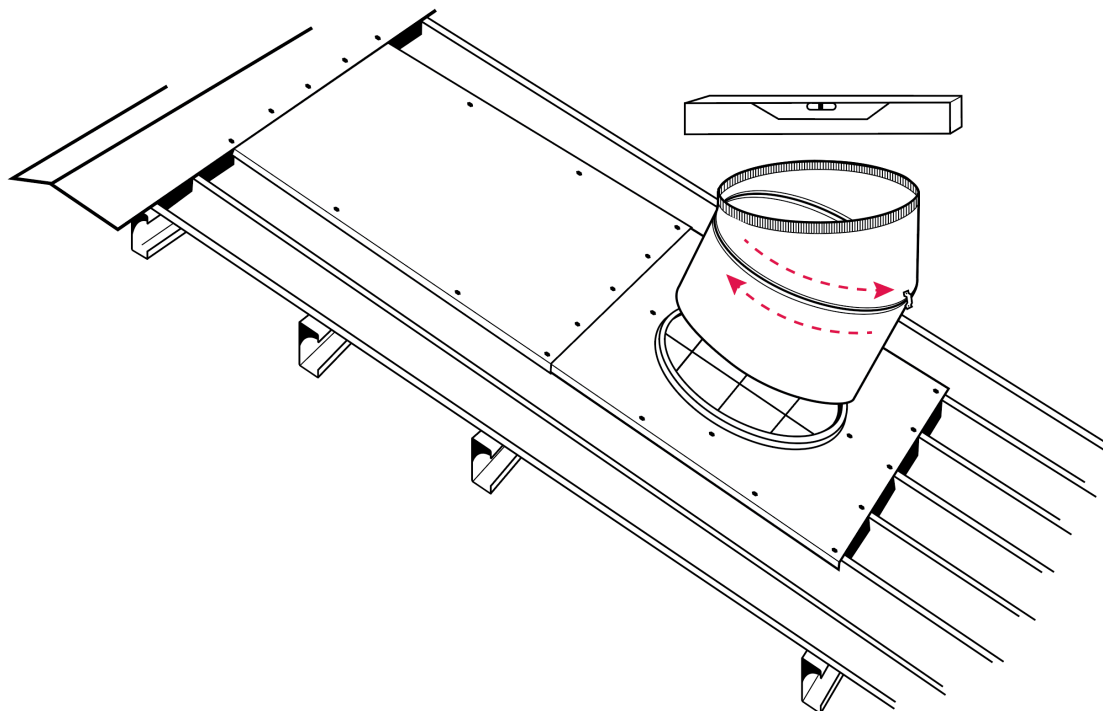
- c. **Secure Flashing:** Attach the flashing over the roof hole and back flashing tray to extend the ridge to the ventilator's flashing. Apply sealant prior to final fixing (refer to the table below for the required number of fasteners). If trimmers are used ensure the flashing is secured to the trimmers. Seal all fasteners with a suitable sealant to ensure they are weatherproof.



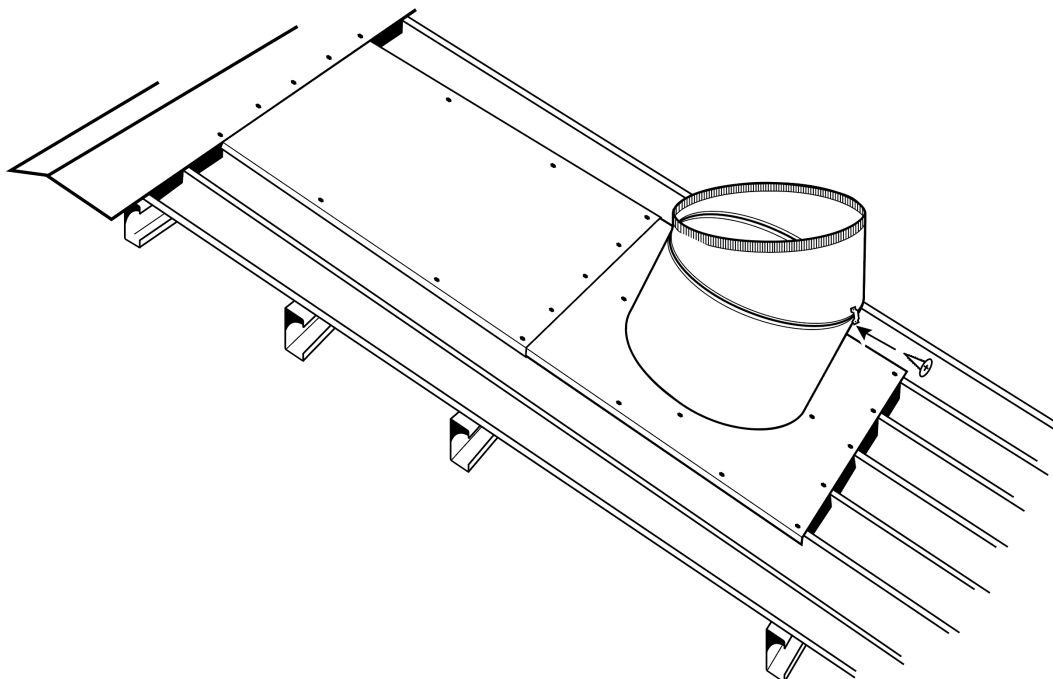


Model	Fasteners to secure turbine flashing to roof
EcoPower 400 Hurricane 100 - 400	12 (4 near throat)
EcoPower 600 Hurricane 450 - 600	18 (4 near throat)
EcoPower 900 Hurricane 700 - 900	26 (4 near throat)
Use 10G X 16MM Galvanised Self Drilling TEK Screws with Neoprene Washer or 5/32" (4.0mm) Rivets Aluminium/Steel Sealed	

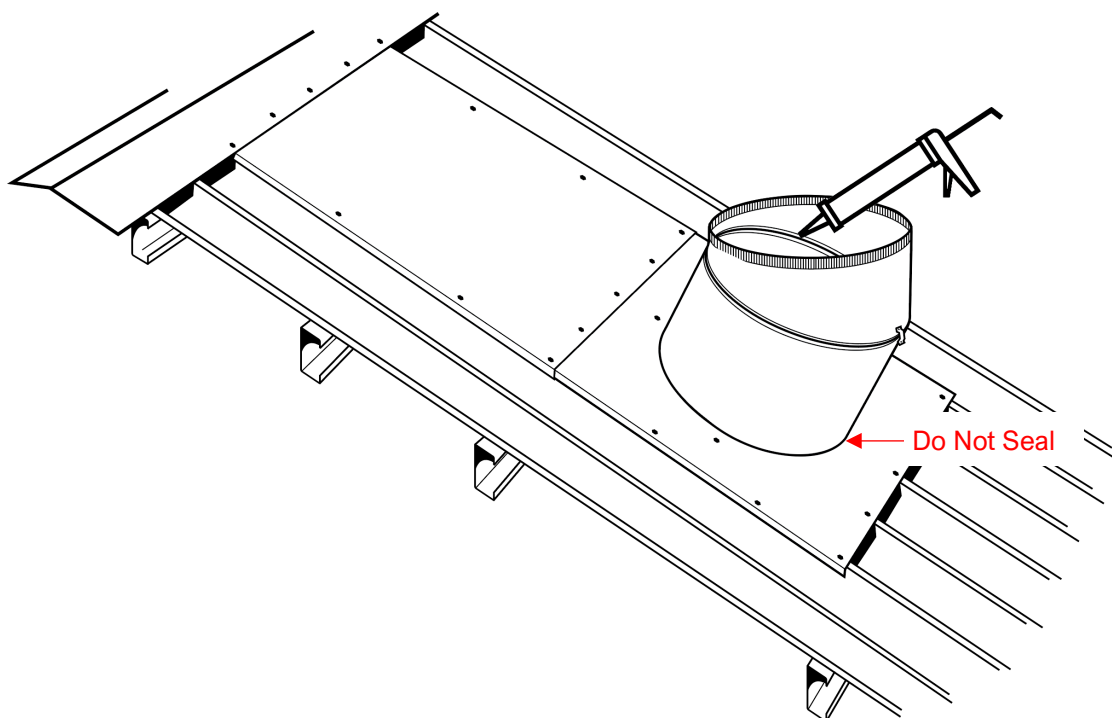
- d. **Assemble the Varipitch:** When a Varipitch throat is being used, position the Varipitch on the flashing and rotate the top and bottom halves until the top of the Varipitch is level (horizontal) - it is recommended that an electronic or spirit level is used to ensure that the top edge of the throat is horizontal in all directions.



- e. **Secure the Varipitch Angle:** With the Varipitch upper throat positioned horizontally, lock it into position using the supplied Varipitch clip. Use either self-tapping screws or blind rivets to secure all the clips between the two halves of the Varipitch.

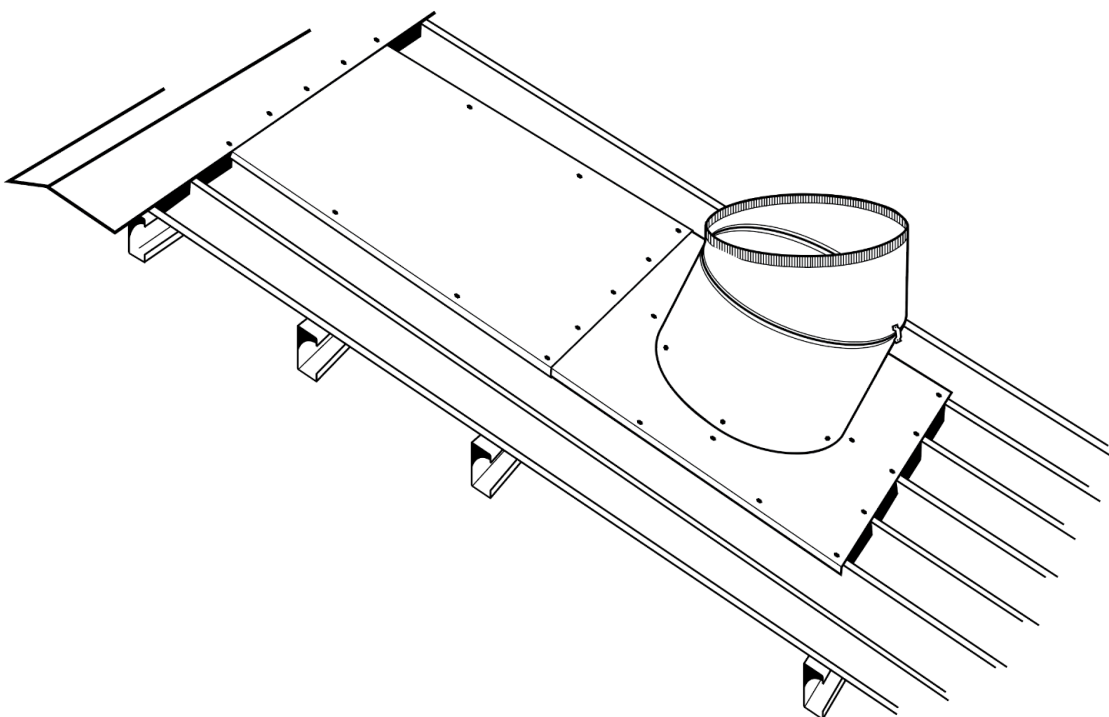


- f. **Weather Sealing:** Seal the Varipitch seam on the inside with a bead of weather-resistant suitable sealant.

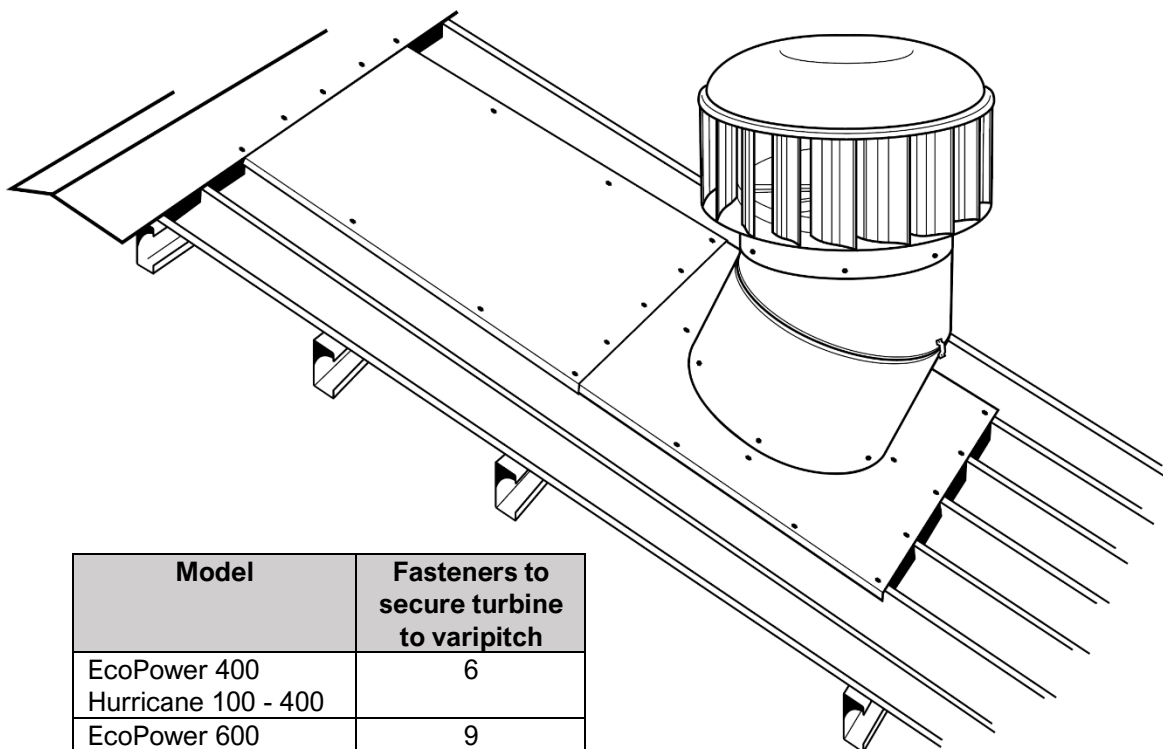


NOTE: **DO NOT** apply sealant to the joint between the flashing and Varipitch. This is a natural gutter to release any trapped condensation. See details in section (i) below.

- g. **Secure Varipitch to Flashing:** Reposition the Varipitch on the Flashing and check it is horizontal - secure the Varipitch to the flashing using the recommended number of screws shown in the table below – **DO NOT SEAL** this connection.



- h. **Assemble Turbine:** Assemble the turbine head to the Varipitch. Re-check if the assembly is level (horizontal) and adjust the turbine by tilting the throat slightly if required. Ensure the knurling (the tapered section of the Varipitch) is fully inside the ventilator throat and secure the ventilator throat by fastening it to the top of the Varipitch with the number of fasteners shown in the table below.

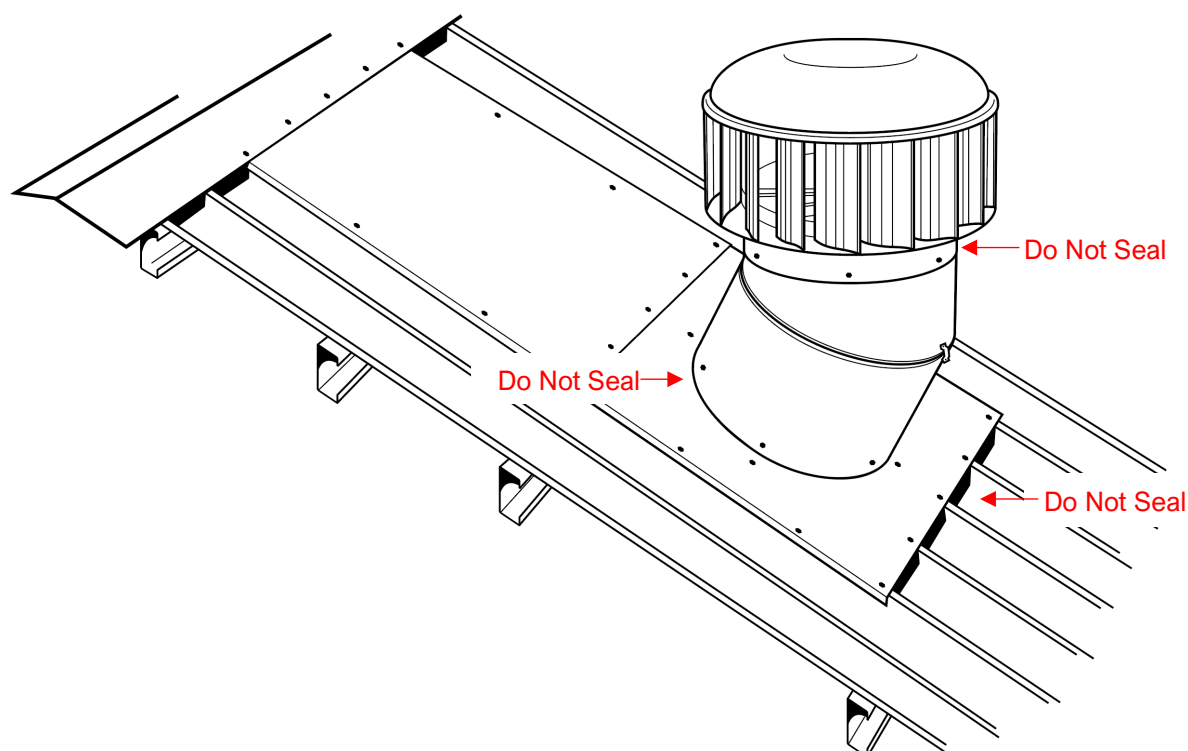


Model	Fasteners to secure turbine to varipitch
EcoPower 400 Hurricane 100 - 400	6
EcoPower 600 Hurricane 450 - 600	9
EcoPower 900 Hurricane 700 - 900	12
Use 10G X 16MM Galvanised Self Drilling TEK Screws with Neoprene Washer or 5/32" (4.0mm) Rivets Aluminium/Steel Sealed	

NOTE: DO NOT apply sealant to the joint between the turbine and Varipitch. This is a natural gutter to release any trapped condensation. See details in section (i) below.

- i. Sealing is crucial for this product to ensure no leaking occurs during its lifespan, but there is also a requirement for drainage. To ensure that only the required areas are sealed and the drainage path is left open, follow this guide carefully:

Location Area	Sealing Requirement
All Fasteners	Seal
Back Flashing perimeter	Seal
Turbine Flashing perimeter to roof	Seal
Varipitch Seam (inside throat)	Seal
Turbine to Varipitch	Do Not Seal
Varipitch to Flashing	Do Not Seal
Flashing bottom edge to roof	Do Not Seal





5. MAINTENANCE




Regular maintenance of this product is essential to ensure its safe and long-term operation. The building owner or manager is responsible for outlining the maintenance program throughout the product's lifespan based upon the site-specific application and environmental conditions. As a general guideline, this product should be inspected at least once every 12 months, with adjustments made according to the site-specific conditions. The following components should be inspected on a regular basis:

WARNING: Prior to inspecting the ventilator ensure that the power is turned off and that the ventilator head is held in a static position by another person using a gloved hand on the top surface of the turbine (away from the turbine blades) – this should not be undertaken on a windy day when the turbine head cannot be safely slowed.

- Rotating/turbine head – check for excessive movement/contact between components, unusual noise during rotation, listen for noises and assess visual wear & tear.
- Fasteners – check all are in situ and well-sealed.
- Flashing Connections – check joints that are meant to be sealed remain sealed and that those that are meant to be unsealed are clear of obstruction.
- Pestguard (if provided) – ensure this is clear of debris.
- Electrical component and connections – check connections for wear or exposure damage.

6. TROUBLESHOOTING GUIDE

No	Failure Mode / Potential Cause(s)	Image / Description
1	<p>Issue: Water or rain leakage</p> <p>Potential Cause: Varipitch connection not sealed.</p> <p>Action: Seal Varipitch connection with flexible, weatherproof sealant.</p> <p>Additional Information: The photo in the sidebar shows the possible outcome if the Varipitch connection has been slightly separated during angle adjustment or has not been sealed.</p>	
2	<p>Issue: Water or rain leakage</p> <p>Potential Cause: Ventilator throat gutter blocked.</p> <p>Action: Remove blockage – refer drainage diagram in these instructions</p> <p>Additional Information: Placing sealant around the bottom of the vent throat where it contacts the flashing blocks the vent gutter at the base of the throat, preventing the release of internal condensation and mist from the inside of the throat.</p>	

3	<p>Issue: Water or rain leakage</p> <p>Potential Cause: Insufficient turndowns along the front edge of the back-flashing due to low roof pitch and driving rain.</p> <p>Action: Extend turndown or re-flash</p>	
4	<p>Issue: Water or rain leakage</p> <p>Potential Cause: No back-flashing provided</p> <p>Action: Extend back-flashing to under sheet above or roof ridge cap</p>	
5	<p>Issue: Water or rain leakage</p> <p>Potential Cause: Ventilator throat shortened or not used which allows rain 'bounce' to drive water off roof into ventilator</p> <p>Action: Install recommended ventilator throat</p>	
6	<p>Issue: Condensation Drip (after hours) for ventilator with damper.</p> <p>Potential Cause: Inadequate make-up air after hours.</p> <p>Action: Set the damper to an open position to allow air movement during inactive hours where make-up air could not be provided via open windows shutter or louvres.</p>	
7	<p>Reliance upon flexible sealants.</p> <p>Through expansion and contraction of building components over time, flexible sealants such as silicon may develop cavities or cracks which then permit water ingress. It is always recommended that mechanically overlapped seals are created with metal components to provide water protection and that flexible sealants are used to provide secondary protection. While it is recommended that silicon be applied over roofing screws - it is more reliable to use high quality blind rivets or roofing screws with integrated washers.</p>	
8	<p>Failure to Use Ventilator Throat.</p> <p>It is crucial that the ventilators are installed with a Varipitch to ensure the turbine has adequate clearance from the flashing. Failure to comply with this recommendation could lead to rain ingress through the vanes resulting in leakage.</p>	

9	<p>Creation of Negative Pressure in a Building Leading to Back-drafting.</p> <p>The demand for make-up air by ventilators can lead to the creation of sufficient negative pressure in the building that some vents which are working less efficiently can be forced to supply air to the other vents in order to equalise pressure. During wet weather, this can lead to rain being inadvertently drawn into the building via the ventilators and giving the appearance of a leak.</p> <p>The characteristics of this phenomenon occur when:</p> <ol style="list-style-type: none"> The building is very air-tight and make-up air is not balanced. Vents are located at different levels on the roof with the majority adjacent to the ridge and a lesser number down slope. <p>The ventilators located at the higher levels create pressure and draw air through the ventilators at the lower levels due to greater stack effect ($\Delta T \times \text{building height}$) plus clearer access to wind. This issue can be addressed by installing louvres or low-level static vents to assist in balancing the air pressure.</p>
10	<p>Understanding and Managing Condensation</p> <p>Ventilators with dampers which are unable to allow the warm humid air to escape through the ventilator may be at risk of condensation. This is due to the damper becoming the interface between warm and cool environments, which causes dew point to be reached and condensation to occur on the damper. This may lead to condensation dripping inside the building.</p> <p>Building designers need to consider the condensation risk when selecting products with dampers as there are no preventive measures available to minimise the occurrence other than opening the damper to reduce the temperature differential.</p>