

WARMroof

INSTALLATION GUIDE



JANUARY 2022
VERSION 2.9

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INTRODUCTION.

This universal guide provides a general overview of the installation of the WARMroof. Due to the nature of bespoke installations, any areas or details not covered in this guide can be discussed with our technical support team on **01254 871800**. The WARMroof is delivered as a pre-fabricated kit. You will have a clearly marked location plan showing the position of each pre-cut component, the numbers and letters on the plan correspond with those labelled on the components for ease of re-assembly. Please refer to these plans when requested to ensure measurements and components all relate. **READ OUR TIPS & TRICKS ON THE BACK PAGE!**

IMPORTANT NOTE: PLEASE READ BEFORE COMMENCING INSTALLATION

The WARMroof weighs approximately 53kg/m², this weight must be considered before installing the product to ensure the new or existing side walls are structurally capable of supporting the loadings of the WARMroof. It is the responsibility of the installation company to ensure that proper structural provision has been made during the design and build of the side wall system. Prefix Systems have a full range of structural solutions for both new and retro fit installations. These are available from stock and our Technical Team can be contacted to discuss options further on 01254 871800.

Check for damage and that all components have arrived. We recommend that all packaging is opened on delivery and the components checked against our packing lists. For any damaged or missing components please contact a member of our Customer Service Team on the same number as above.

Tool List - not exhaustive

- Tape Measure
- Drill bits Ø4.5mm Ø5.5mm, Ø8mm, 4mm steel bit
- Masonry Drill Bits (min 200mm reach) Ø8.0mm
- Battery Drill / Driver
- Screwdriver Bits PZ1,PZ2,PZ3,PH2
- Silicone Gun
- Foam Gun
- Working platforms

Health & Safety

It is the responsibility of the Installation Company to ensure the safety of the whole fitting team, and their customers.

A risk assessment should have been completed upon the survey to identify and reduce risks on site, which should have been understood before commencing the install. The use of ladders and safe working platforms should be used in line with BS EN 131. As stated on page 2, this roof system is substantially heavier than a traditional conservatory. Please take this into account when lifting heavy panels, aluminium sections and steel beams, using two man lifting techniques where necessary along with any lifting aids that may be of use.

Careful consideration should be given to the safe disposal of packaging materials.

Design Options

The WARMroof system is available in a range of styles including, Georgian, Victorian, Lean To and Gable. These roof styles can be enhanced to suit a wide variety of site scenarios with the use of Valleys, Drop Valleys, Box Gutters, Hipped Ends and Hybrid Glass Sections to create the most versatile warm roof on the market.

Roof Pitches

Envirotile Roofs:	12.5 - 40°
Tapco Tiles:	14 - 40°
When Using Velux®	Minimum Pitch is 15°

Aluminium Extrusions

Components used on the WARMroof are extruded in 6082 T6 and 6063 T6 Aluminium.

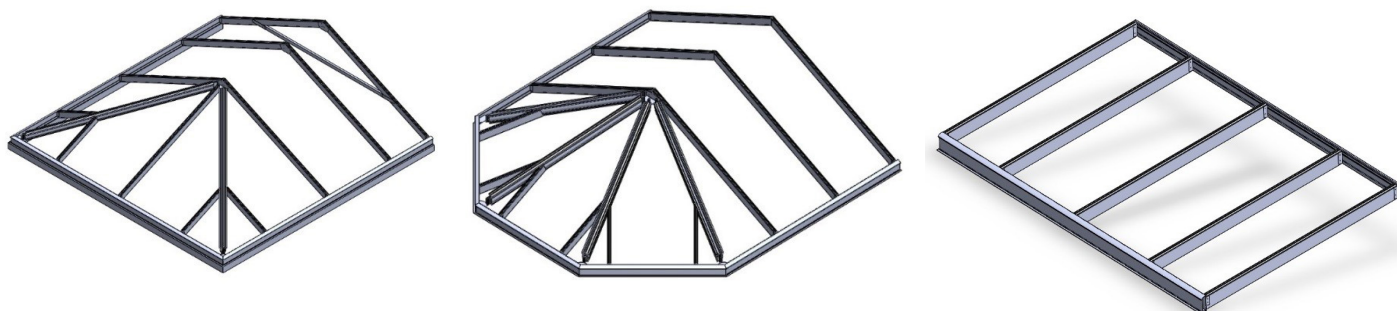
Tile options

Envirotile – Available in Black, Grey, Brown and Terracotta. Hips and Ridge finished with colour coded aluminium covers.

Tapco – Available in Black, Grey, Brown and Terracotta. Hips and Ridge finished with Tapco Hip and Ridge Slate (Other Tapco options available on request, but may incur an increase in price and lead time).

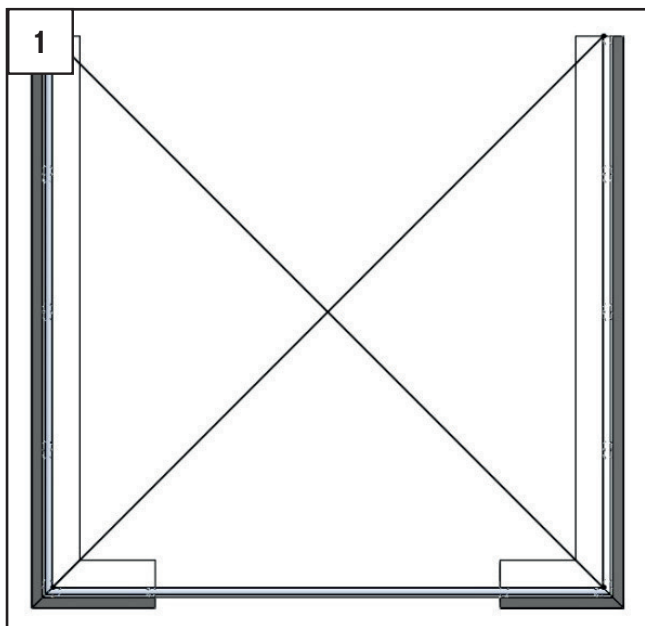
Concrete or Clay Tiles – Roof proven to accept concrete/clay tiles. Please contact Prefix technical with information on the tile specification to ensure the roof is designed accordingly (tiles sourced by others).

Internal Finish: Foil Back Plasterboard required when finishing internal face of WARMroof (not supplied by Prefix). If finishing in any other cladding, suitable vapour shield should be used.

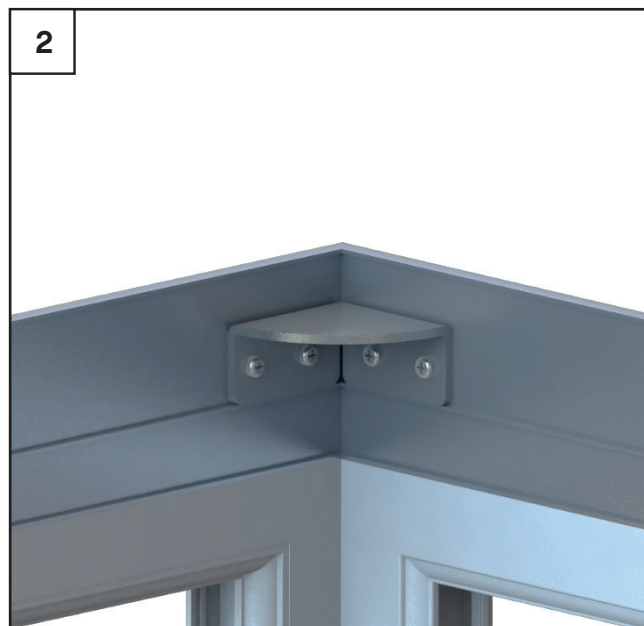


GEORGIAN INSTALLATION.

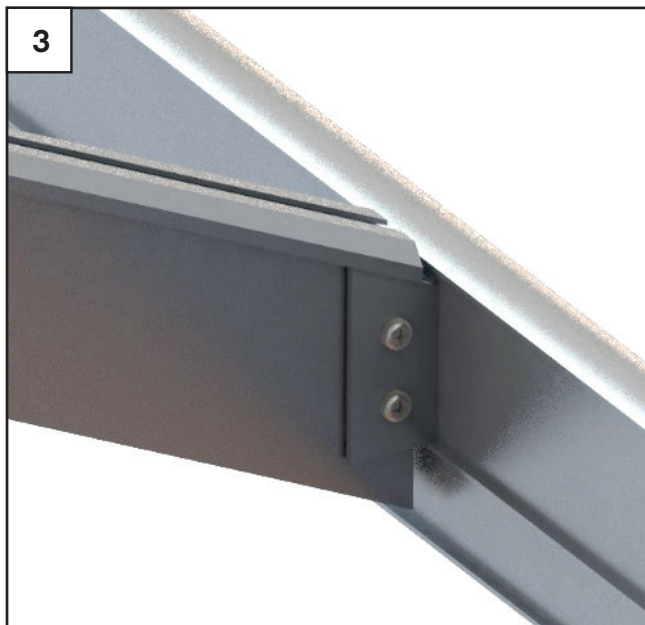
Frames & Eaves Beam



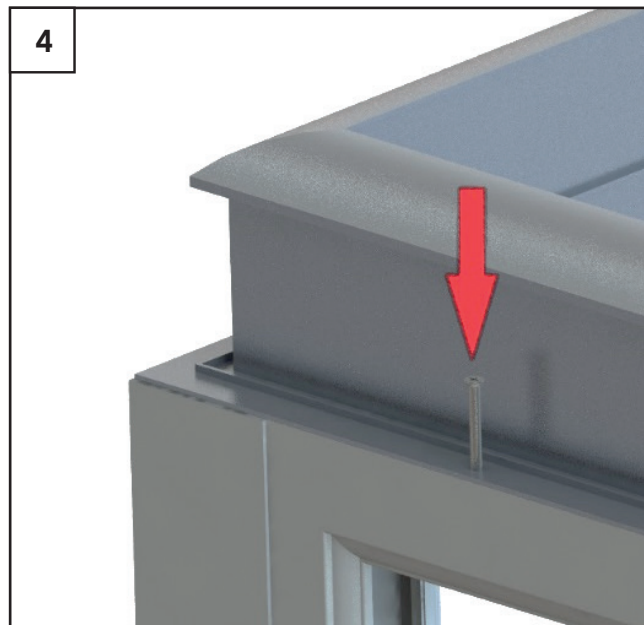
Float Eaves Beams on frames, line up with internal edge of frames/internal face of external skin of brick, checking all dimensions and diagonals are correct. Do not fix down until all A-frames and Rafters are in Position.



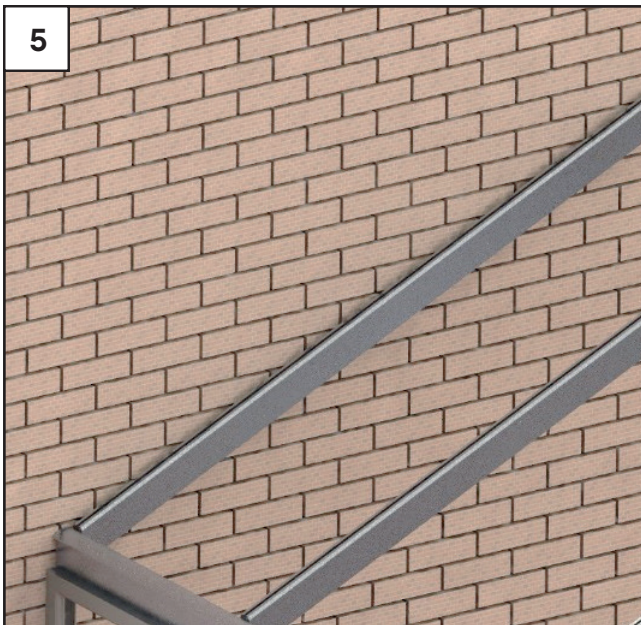
Eaves are connected at corners on back face using the corner brackets (90° Corner shown). Fix using 4 x M6x16mm Pan Pozi Self Tapping Screws.



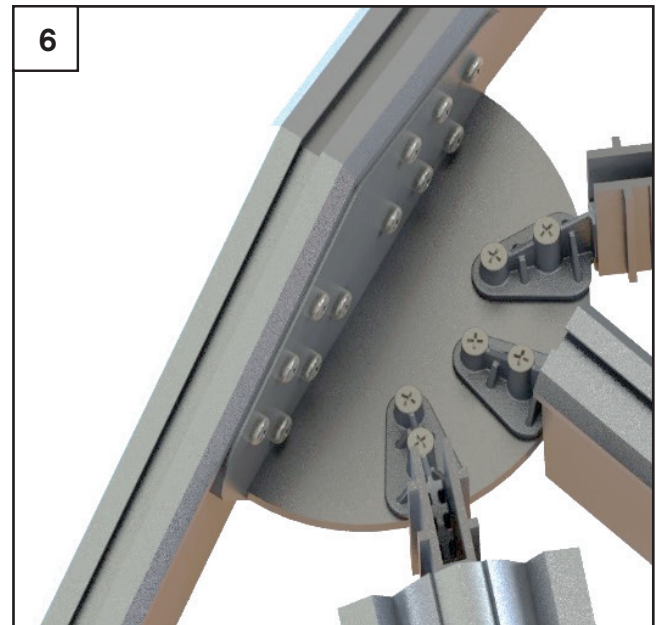
U-Channel Brackets will be pre-positioned on the back of the Eaves beam. Drop the A-Frames into the brackets (using Rafter Location Plan in Job paperwork). Shoulder of rafter should rest on the top of the bracket automatically setting A-Frame at correct height. Secure in position using 4 x M6x16mm Pan Pozi Self Tapping Screws - 2 x each side.



Once all bars are in position fix eaves beam down to frames. Fix at 450mm centres and 150mm from each corner. If fastening to brick work suitable fixing straps should be used (not supplied by Prefix). If fastening to new frames, fix up through unglazed frame into underside of eaves beam.

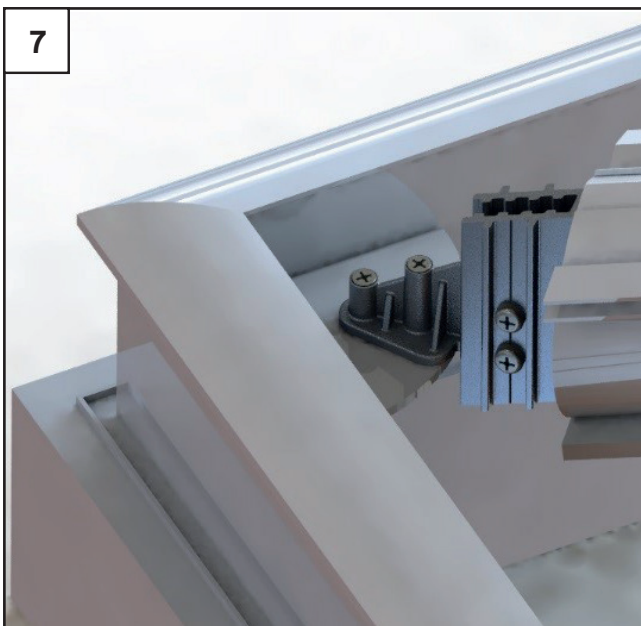


Starter A-frame set 25mm off house wall to allow for uneven host walls. Pack between ensuring A Frame remains vertical, and fix through A-Frame back to host wall using suitable substrate fixings, 150 from each end and every 500 centres. Strips of insulation sent out to fill any gaps at host wall.

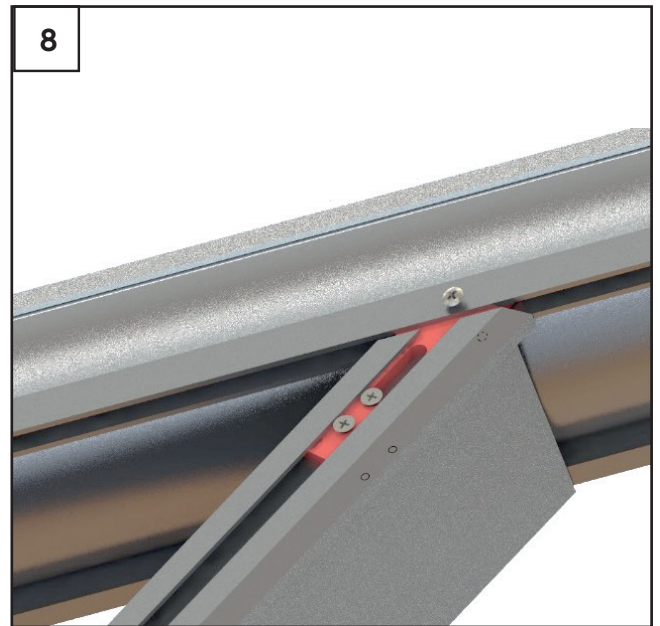


Hip Bars and Radius Ends

Position the Hip Bar Assembly or any spider bars on to the Rad End. Line up the Tennon to its marked location and fix down to radius end plate using 2 x M6x50mm Countersunk Taptite Self Tapping Screws.



Position the Hip Bar Assembly at the eaves. Line up Tennon to its marked location and fix down to the eaves corner bracket using 2 x M6x50mm Countersunk Taptite Self Tapping Screws.

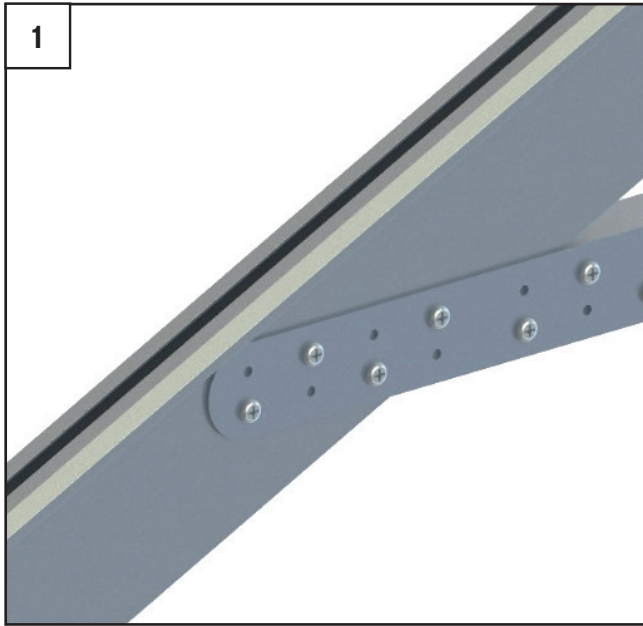


Jack Rafters

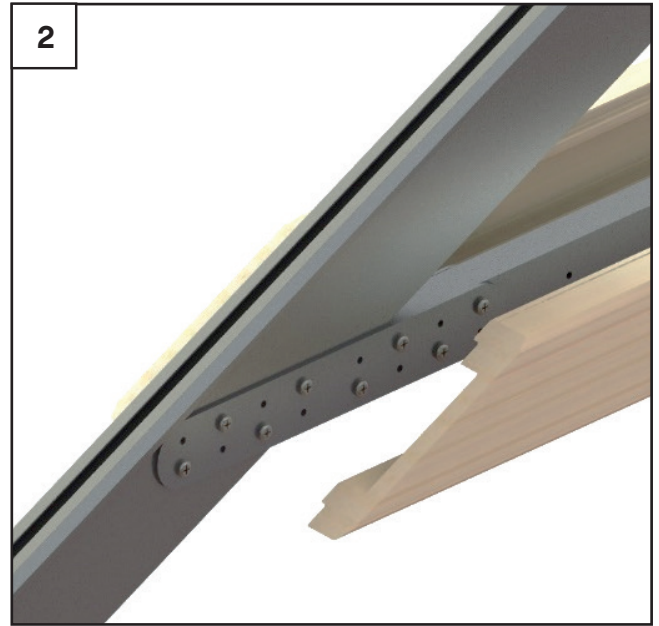
To fit Jacks to hips, back off screw in end of jack and slide connector plate back into end of bar. Drop Jack into rafter bracket on eaves beam and line up against marked position on Hip Bar. Once jack is in place, push the jack plate up into the slot in the side of the hip bar and tighten screw back up in the jack plate. Drill and fix another 3.8x40mm self-drilling screw through the jack plate into the rafter to ensure no slippage on the slot fixing. Fix another screw down through hip wing to secure plate.

Once all frame work is in position, double check to make sure all projections, dimensions and pitch are correct, square up on frames and secure to frames. Ensure all screws are securely fastened. Tie bars are usually pre-assembled on the A-Frame by Prefix, however if in any case they are not, fit them to the rafters at this point before any of the panels are installed. See page 6.

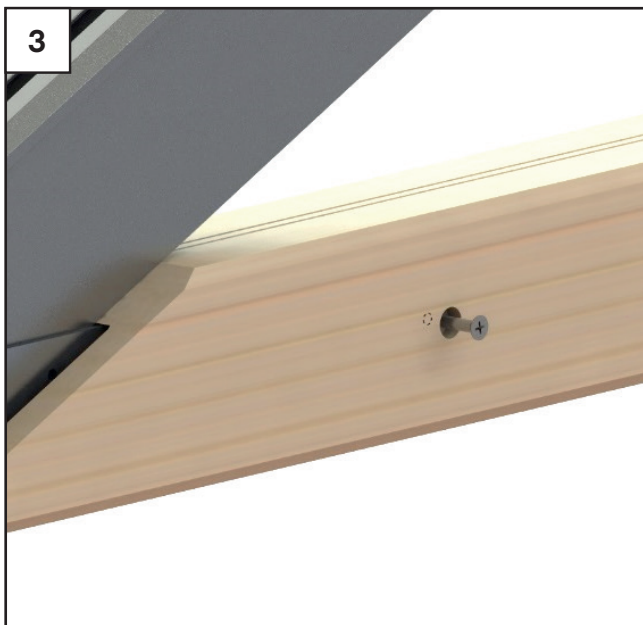
TIE BAR INSTALLATION.



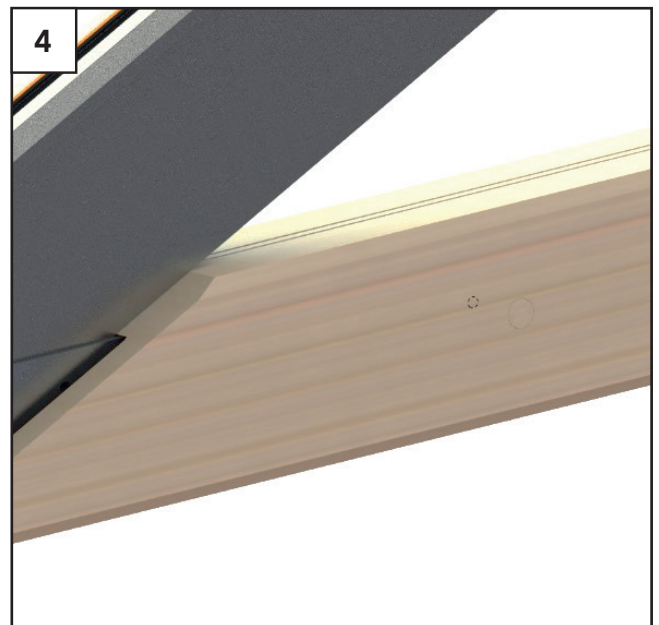
Slide Tie Bar into position from the underside until the mitre sits flush with the underside of the rafter. The plates should also sit tangent to the underside of the shoulder on the rafter as shown. Fix tie bar in position using 4 off M6x16mm Taptite screws per bracket. 4 brackets per tie bar. NOTE: not all holes need to be fixed through. Just fix 4 of the most suitable holes. Bracket designed to suit entire pitch range. See WARMroof Technical guide for further assistance if required.



To fit the claddings wrap timber round each side of Tie Bar. This is the same profile both sides which interlocks. Centralise using packers and clamp in position. Can be glued before clamping as an extra measure if required using wood adhesive.

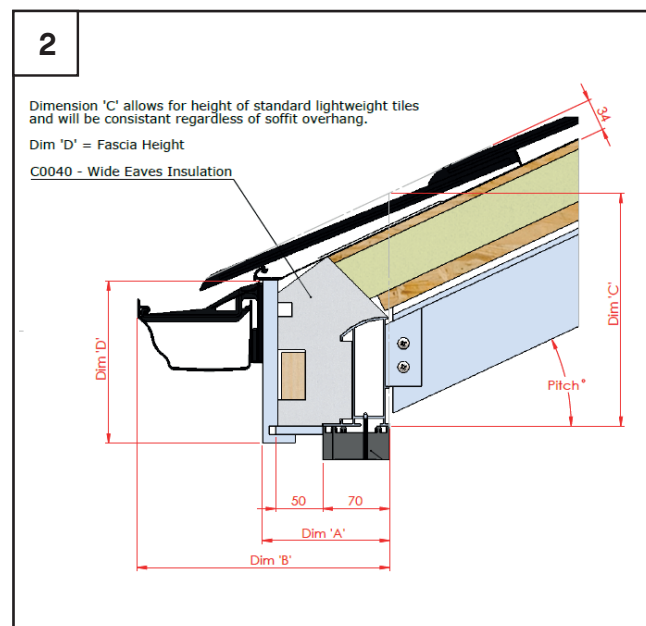
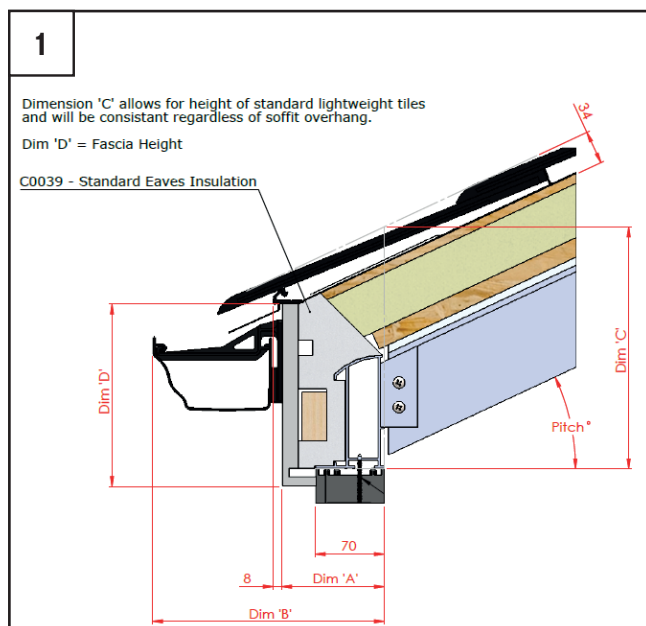


Using 4.8x30mm countersunk self-drilling screws secure OPUS claddings to Aluminium Tie Bar. Counter bored holes will already be in timber at set spacing's of approx. 500mm



Using the plugs provided, tap in until flush with external face of timber cladding. Range of plugs supplied, line up grains where possible to minimise visibility of the plugs. However due to the use of natural materials they will remain visible, yet subtle.

FASCIA AND SOFFIT CONFIGURATION.



Pitch °	Dimension D
5	203
10	197
15	192
20	187
25	184
30	183
35	182
40	182

Dimension 'Y' Fascia Height

86mm wide EPS Profile (C0039) on all pitches from 5-40°.

For jobs sat on frames all round only.

Pitch °	Dimension D
5	200
10	192
15	184
20	178
25	170
30	167
35	162
40	158

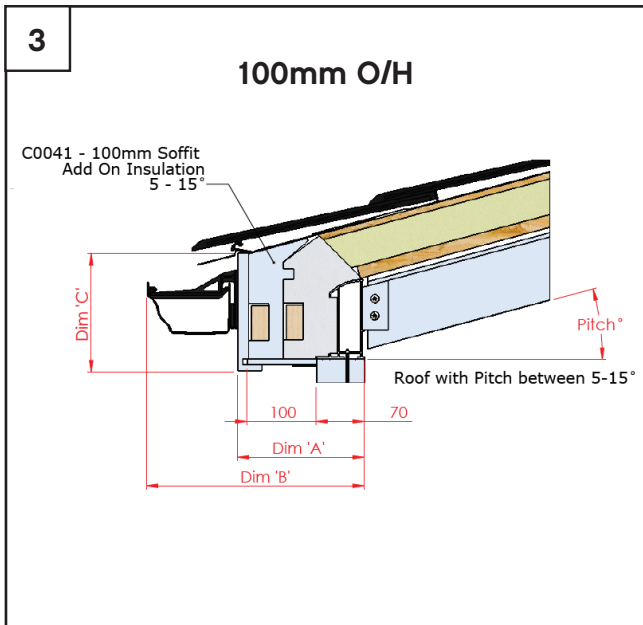
Dimension 'D' Fascia Height

50mm soffit overhang: 116mm EPS Profile (C0040) on all pitches from 5-40°. (Example shown above with 50mm soffit on 70mm frames).

The same insulation is used here when a roof sits on 100mm brickwork or brick columns (when fascia sits flush against brickwork).

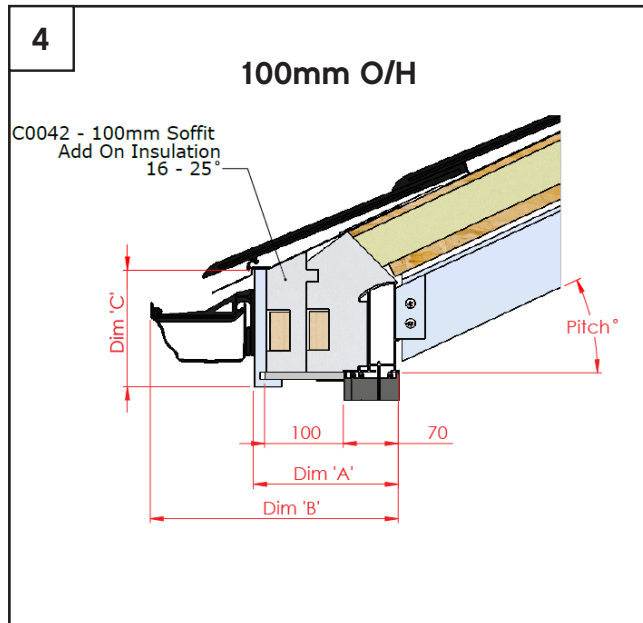
Soffit is supplied for window and door openings to run from fascia back to frames.

Continued on page 8...



Pitch °	Dimension D
5	200
10	183
15	171
20	160
25	148
30	136
35	127
40	116

Dimension 'C' Fascia Height



On roofs with 100mm soffit overhang, a 116mm EPS Profile is used to insulate the eaves beam on all pitches from 5-40°.

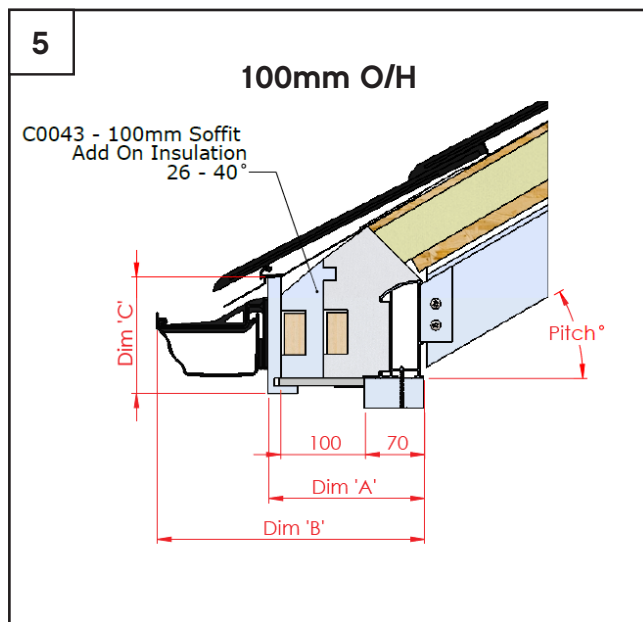
An additional EPS Add-On is required to achieve the 100mm overhang.

On pitches between 5-15° use product code C0041

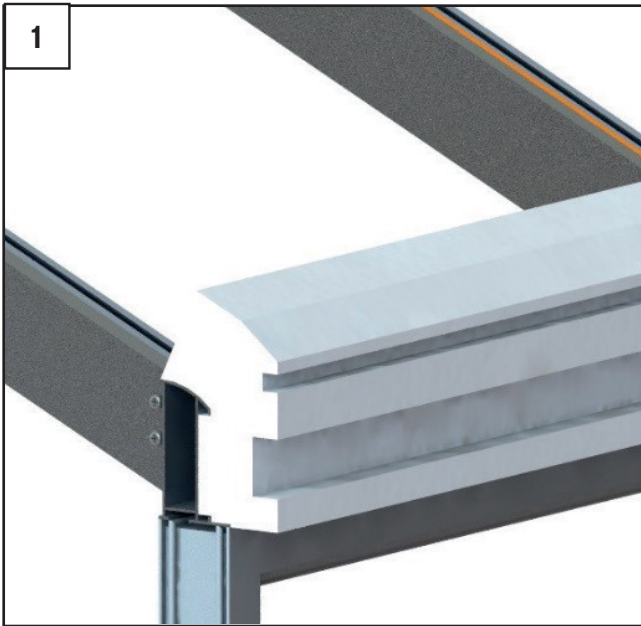
On pitches between 16-25° use product code C0042

On pitches between 26-40° use product code C0043

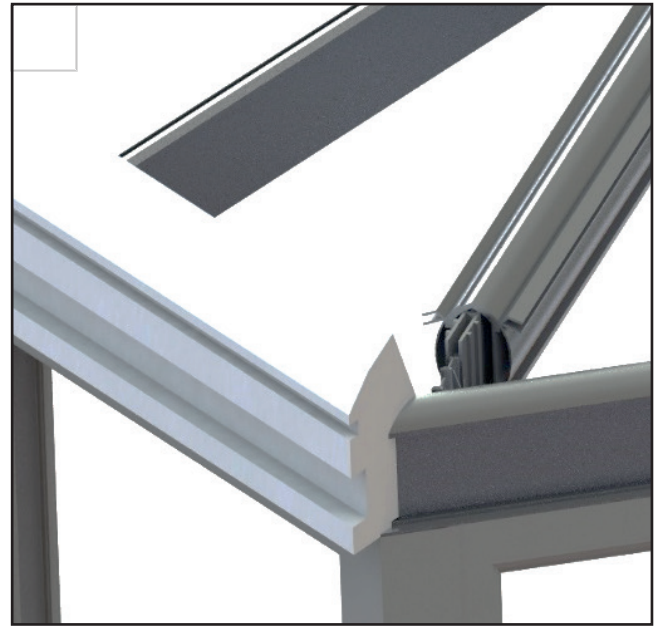
All EPS add-on profiles are fixed in position using a 25x50mm timber batten and 90mm woodscrews. See Connection Details on page 12 Fascia Installation.



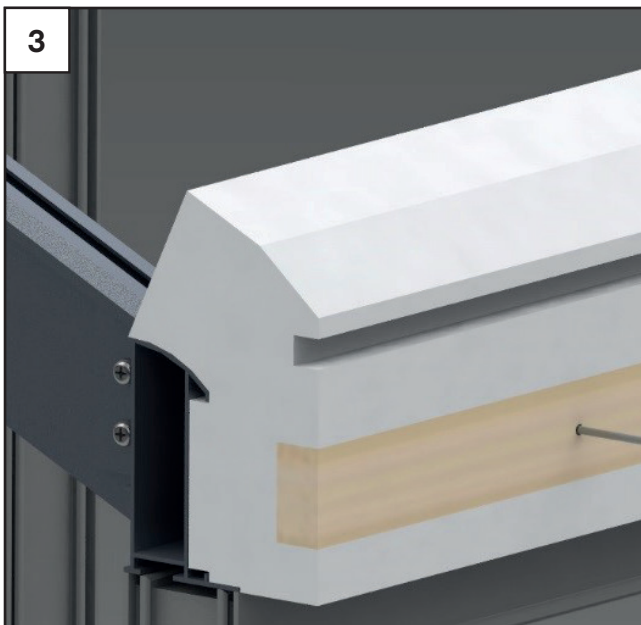
EAVES INSULATION INSTALLATION.



Wire cut EPS insulation push fits over the eaves beam to insulate the aluminium. See Fascia and soffit detail page 10 for more detail on which product has been supplied. Insulation as shown in this example is to suit a 100mm soffit.



Mitre eaves insulation at the corners as shown and cut down 1200mm lengths to suit the remainder. On gable ends, run insulation 50mm longer than eaves, to line up with edge of base panels.



Cut to length and fit 25x50mm timber batten into recess on front of insulation and fix through to Aluminium eaves beam to secure insulation.

60mm Bay pole screws supplied for 86mm narrow insulation.

109mm Bay pole screws supplied for 116mm wide insulation.



If the roof requires a soffit overhang. Additional EPS will be supplied. Push into front of eaves insulation until flush. Follow previous step cutting and fixing 25x50mm timber batten into front of insulation.

Secure in position by fixing through battens using 90mm woodscrews supplied.

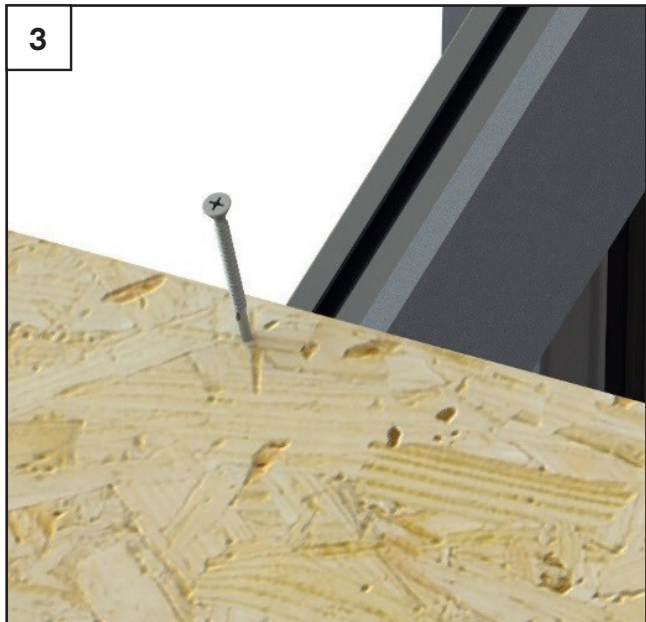
INSULATED BASE PANEL INSTALLATION.



Refer to your Base Panel Location Plan and start to slot the preformed insulated panels between the rafters, starting in alphabetical order as per your plan.

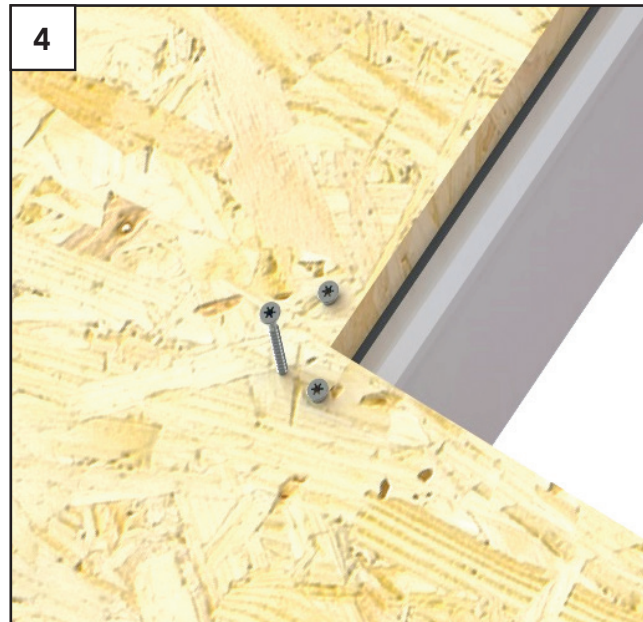


Fit all first row of panels around eaves beam first. Fitting these first will ensure all base panels hereafter will fit correctly. The top face of the panels are designed to fit 'tight' together, therefore they may need manipulating into position. Ensure the bottom end of the panels are all aligned.



Measure in 10mm from edge of 18mm OSB and mechanically fix OSB to Rafter using 5.5 x 60mm torx head tech fast countersunk self-drilling screw. 6 x fixing required per 1200 x 1200 panel, 1 in each corner.

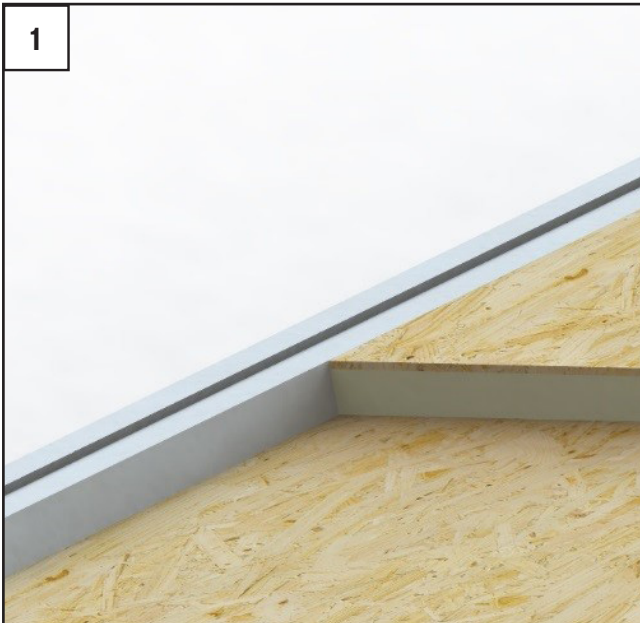
NOTE: Heavy Duty Rafters with Steel inserts will need pre-drilling before fixing (4mm drill bit).



Once bottom row are secure, continue to fit rest of base panels, as per plan making sure panels butt tight together. Fix each corner to secure panels.

Once all base panels are installed, fill any voids on the inside of the roof prior plasterboarding using the expanding foam insulation supplied

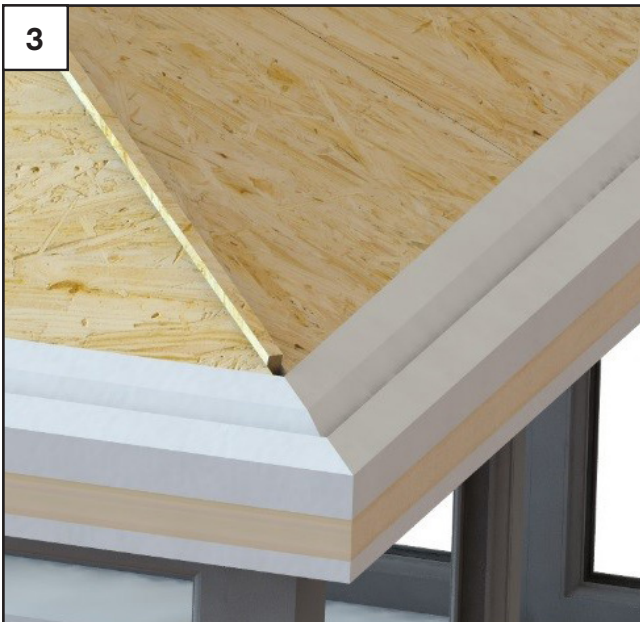
TOP PANEL INSTALLATION.



Top Panels are a pre-bonded 9mm OSB with 50mm PIR insulation. Refer to the location plan for position of panels. Drop Panels on top of base panels. First row should sit tight against the upstand of the EPS eaves insulation.

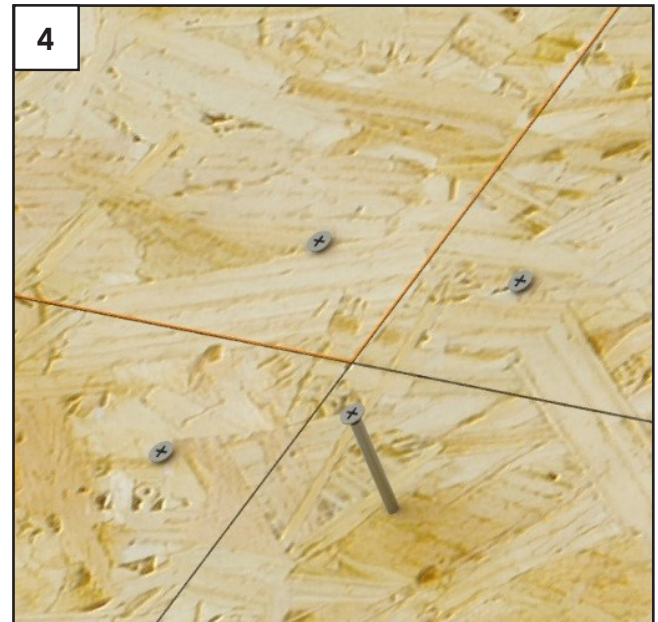


Fit remaining Top Panels in position. A visible 18mm Gap should be left at the ridge and hip positions to fit 18mm OSB timber spines.



Before fixing the top panels down, push fit the 18mm OSB timber spines into position on the hips and ridge. These are supplied at 1200mm long and may require trimming to size on site.

IMPORTANT: for hip soakers (see page 15 to fit correctly, Spines should protrude no more than 10mm above the edge of the top panels.



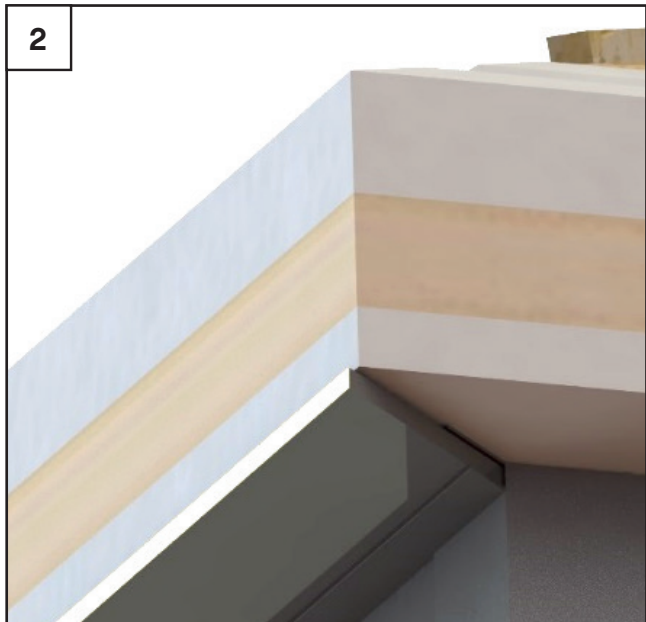
Fix the top panels down to the base panel OSB using 4.8 x 90mm woodscrews provided. Ensure you fix 9 screws per panel, 1 in each corner 75mm in from edge of panels, and across the mid-points. Fix triangle panels with appropriate quantity of fixings.

Secure Hip Spines to top panels on alternate sides up the hip using 4.8 x 90mm woodscrews supplied.

SOFFIT - IF SPECIFIED.

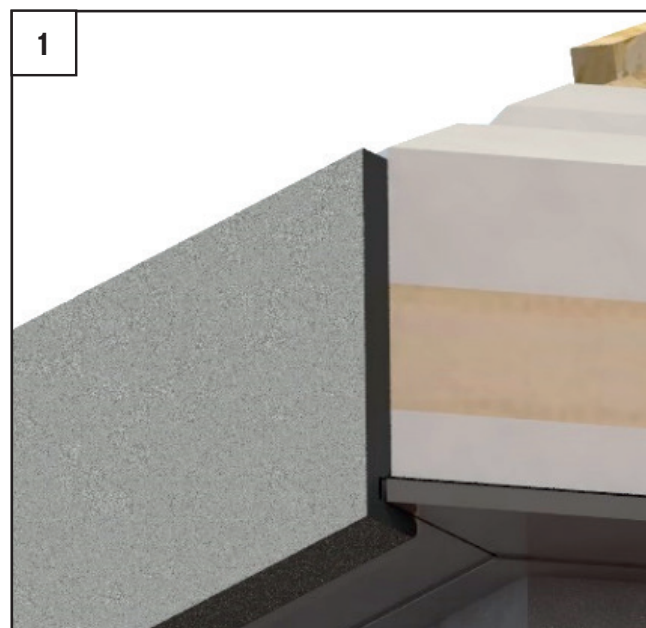


First fix the J-Channel to accept the soffit board. Offer this channel up to the roof/frames, measure and cut. Angle back to suit mitred corner joint. Fix the channel into the window frame, as tight to the underside of the insulation as possible.

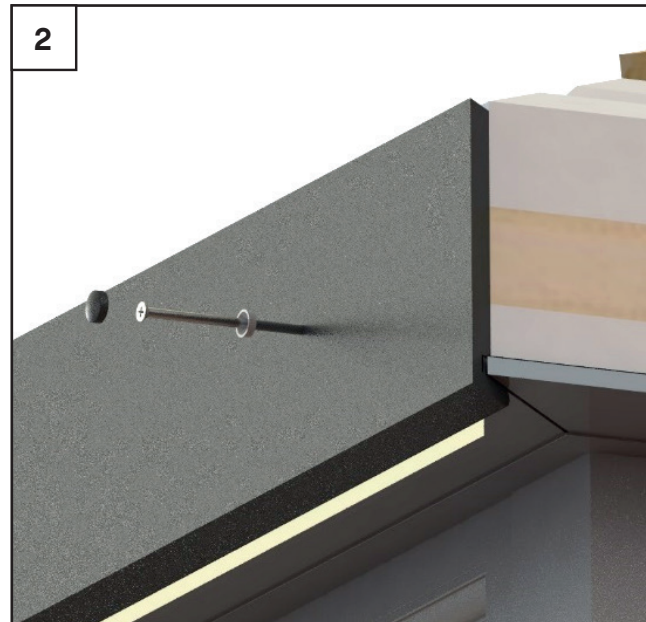


Offer the soffit board up to the roof sitting the board into the channel already in place. Mark the board and angle at corners to suit. Repeat around the perimeter of the roof. Using a soffit jointer (H Section, supplied in 30mm lengths) for any angles or in-line joints.

FASCIA INSTALLATION.

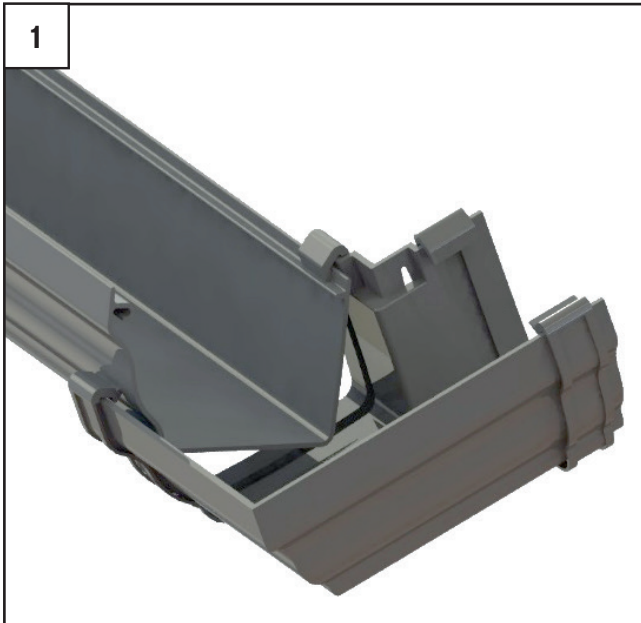


Offer the fascia board up to roof and position to suit. If using a soffit board locate it into the rebate on the back of the fascia board and check level at this point. Mark and notch out any fascia corners ready for fixing.

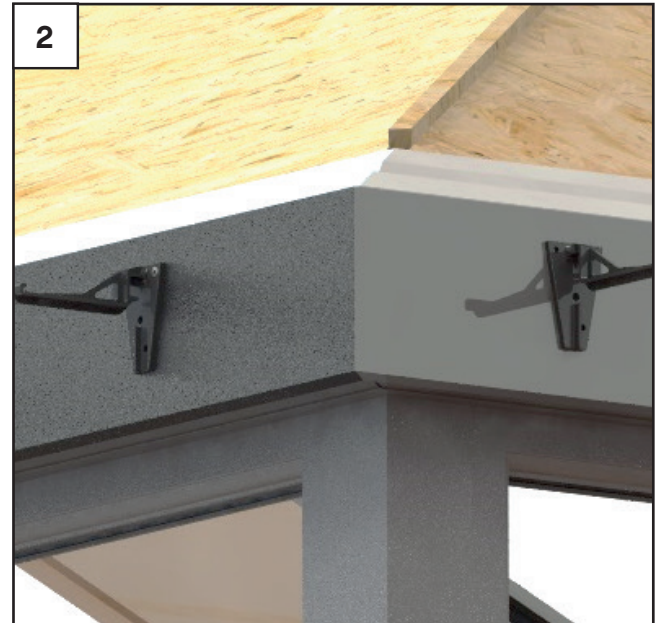


Fix the fascia board using 4.0x60mm woodscrews supplied (colour coded cover caps included). Measure approx. 65mm from bottom of fascia and draw a line down length of the fascia protection film to fix along. Check for level when fixing, maximum 500mm centres along the length. Joint covers are supplied for any in-line or corner joints.

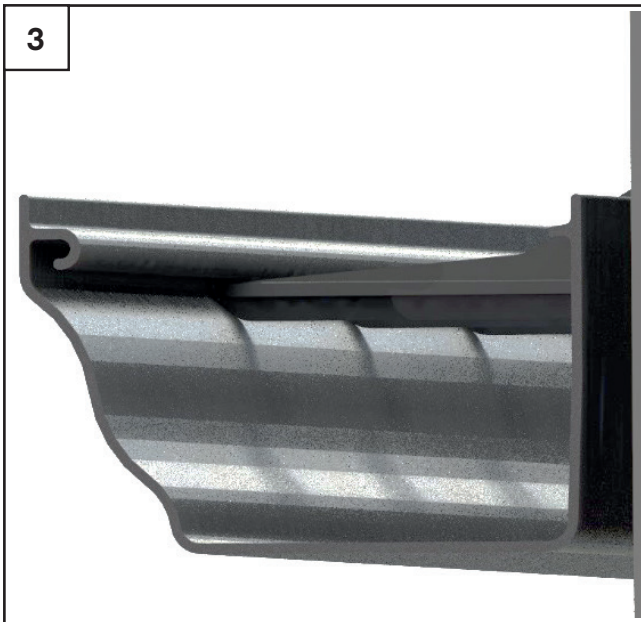
GUTTER INSTALLATION.



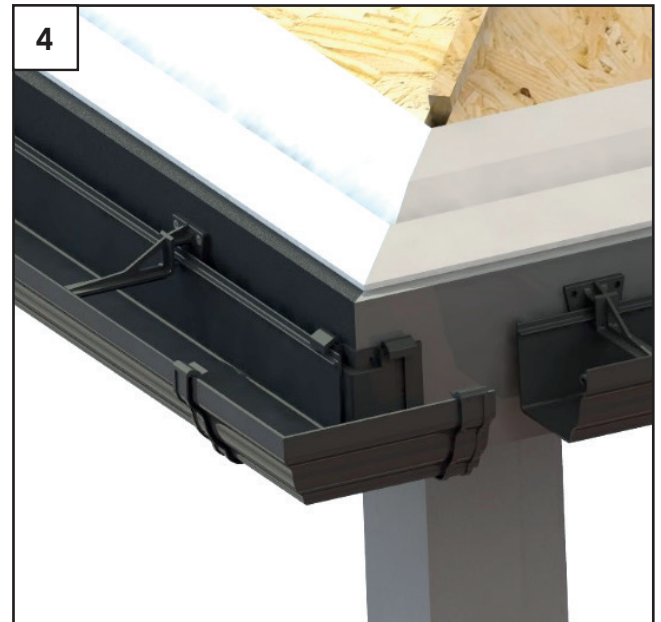
1
Measure fascia and cut gutter to length. On the ground build up the guttering fitting any gutter jointers and corners to 1 length of the guttering. Fit items by rolling under the back edge. Snap the integral clips on the adapters over the gutter.



2
Fit the face fix gutter brackets to the fascia board using 4.0x40mm stainless screws provided at approx 500mm centres and 200mm from ends. Line top of bracket 25mm down from top of fascia board.



3
Clip the front lip of the gutter into the brackets.



4
Ensure all clips are engaged and guttering is pushed up to insertion depths on all joints, corners and stop ends. Fit any drainage pipes.

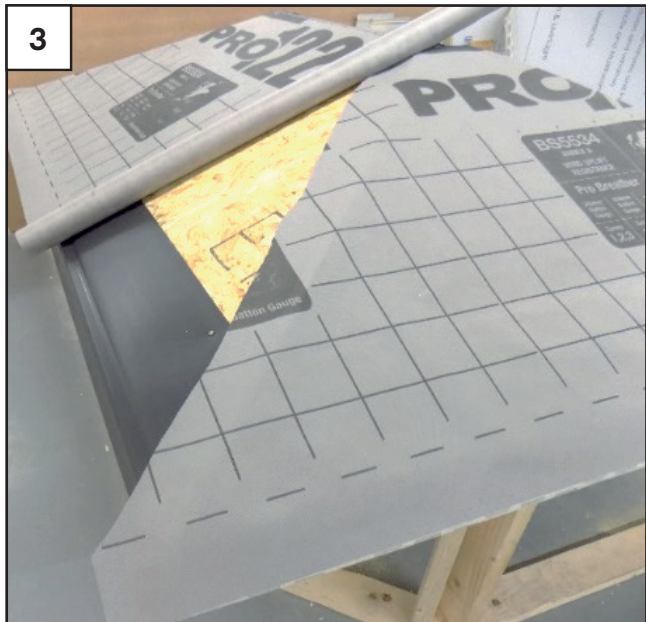
EAVES PROTECTION BOARD & MEMBRANE INSTALL.



Before laying the membrane, ensure that the eaves protector is installed directly onto board and over the fascia detail, it should sit on the fascia to provide an adequate overhang into the gutter of no less than 50mm.



Mitre and notch around any hip spines to provide a tight fit. Seal all joined sections of overlap of 150-200mm on straight joints.



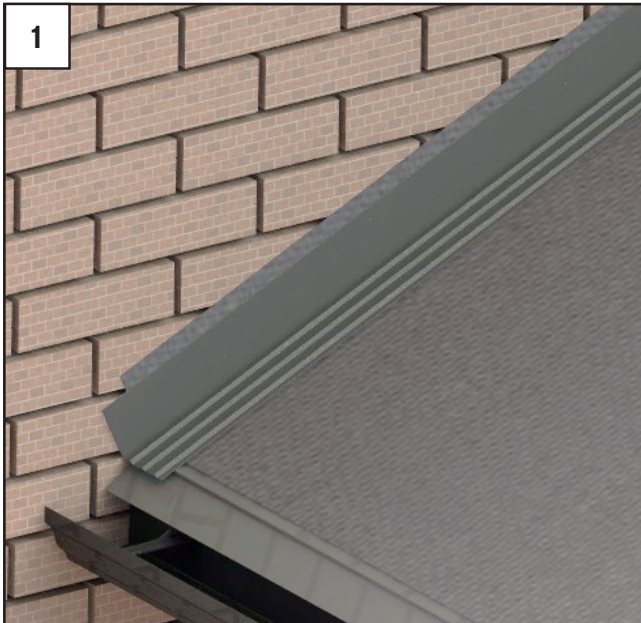
Roll out the breathable membrane over the top panels, ensure the membrane overlaps the eaves protection boards. Working from the bottom up overlap the membrane by the sizes shown in table below. Allow for membrane to return 100mm up host walls and cover battens on any gable end (see page 19, step 2)



Ensure whole roof is sufficiently covered and staple membrane to top boards.

Roof pitch	Breather Membrane Overlap
Greater than 25°	100mm
20° - 25°	200mm
Less than 25°	300mm

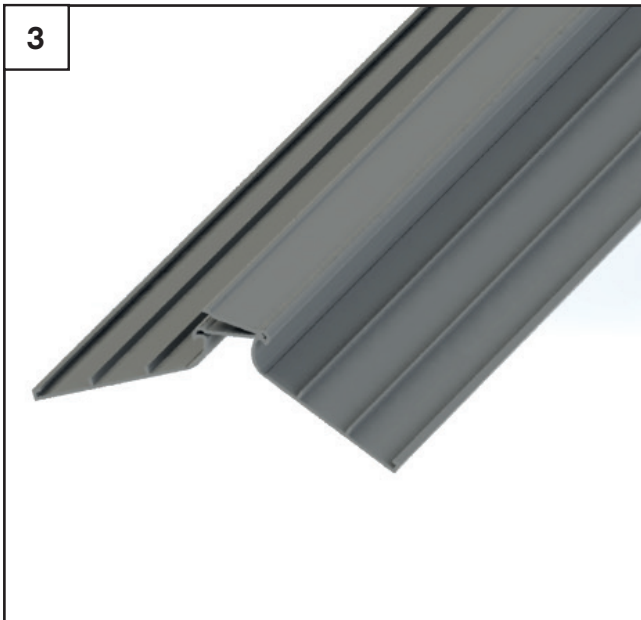
WALL SOAKER & HIP SOAKER INSTALLATION.



1
Lap the breathable membrane up onto the host wall 100mm to sit behind the soaker trim. Position the soaker against the host wall ensuring the bottom overhangs into the gutter. If fixing in place is required. Fasten back to host wall, NOT down into roof.



2
Mitre soaker at ridge then dress your lead or CONSERVAFLASH onto the soaker. Check flashing fully weatherproof before continuing.

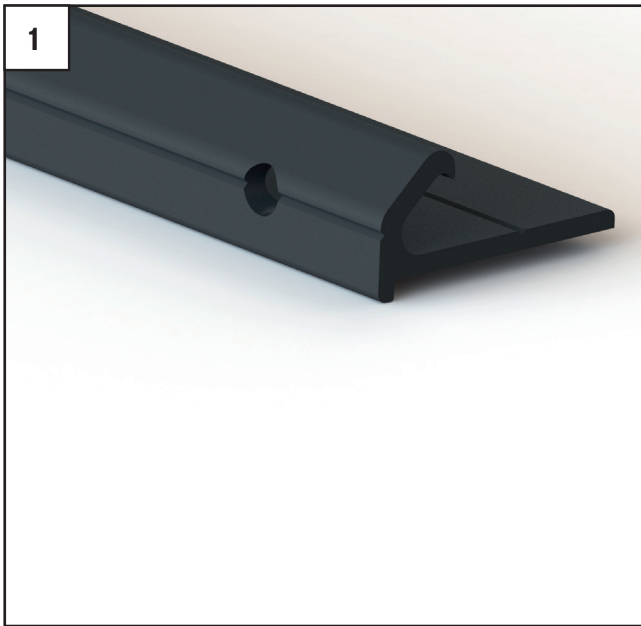


3
Take two hip soaker wings and squeeze them together along the mid seam. They should clip into place.

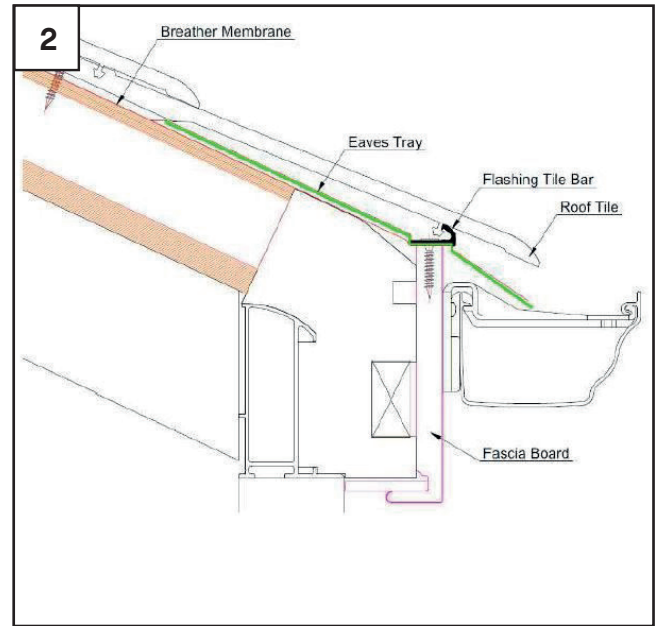


4
Position the assembled soaker on to the hip spine. Mitre the soaker at the Ridge or wall plate. Mitre at the bottom end of the soaker parallel to each eaves overlapping into the gutter as shown. Fix down into timber spines using 40mm stainless screws.

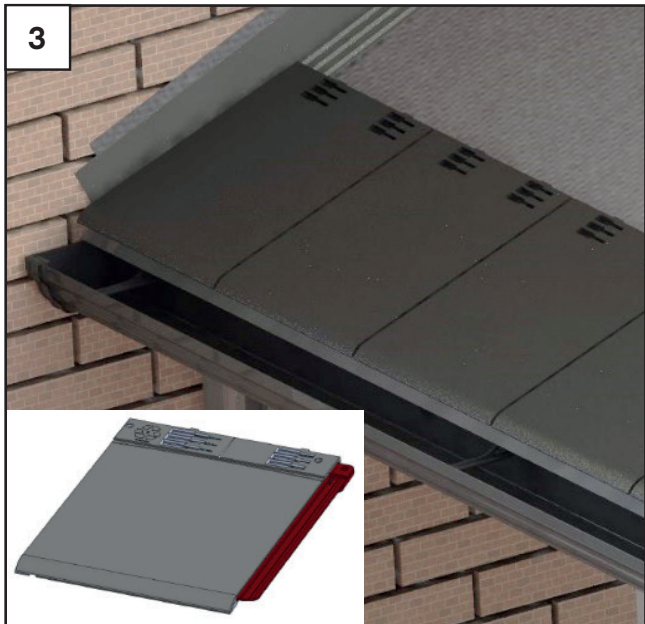
ENVIROTILE INSTALLATION.



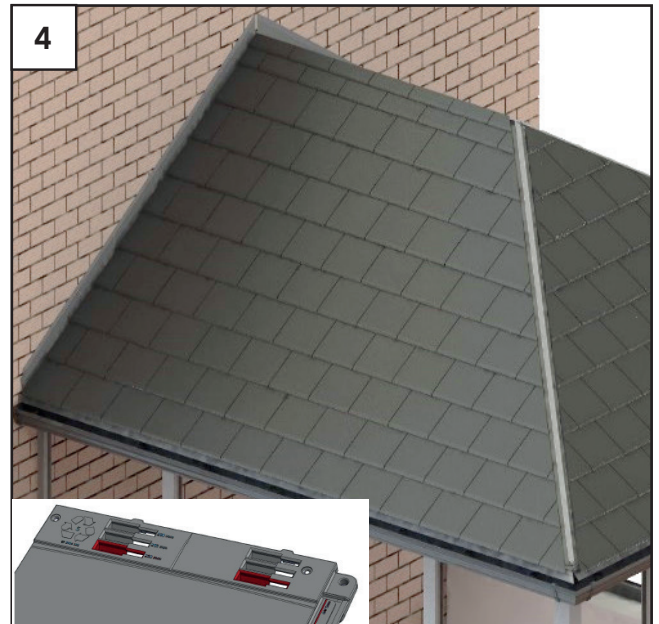
Mark and drill Ø5mm holes in front face of tile bar 100mm in from each end and 1m centres. Alternatively tile bar can be installed on 6mm packers to allow ventilation and drainage.



Line the tile bar with the lip of the eaves protector, up to edge of the wall soaker. Offer a tile into position to ensure sufficient overhang into gutter. Ensure the rail runs parallel to eaves. Fix starter rails down using 40mm stainless steel screws provided at 300mm centres and 100mm max from each end.

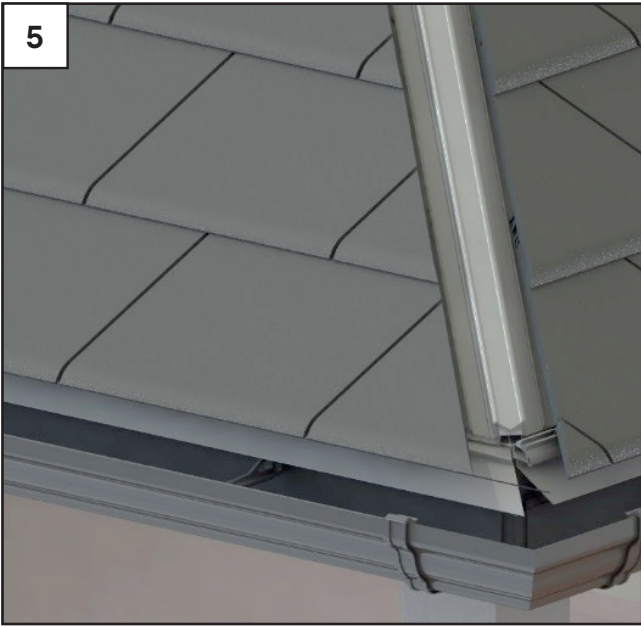


Position 1st tile into the starter rail, ensuring the locking tabs hook under the tile rail and fix using 40mm stainless steel screws. Continue along eaves leaving a 5mm gap between tiles. Prior installation on the RH roof face the last tile against the wall need the male joint tab removing in order to locate tile against wall. Note: An expansion gap is required of 5mm between tiles, this is marked on each tile.



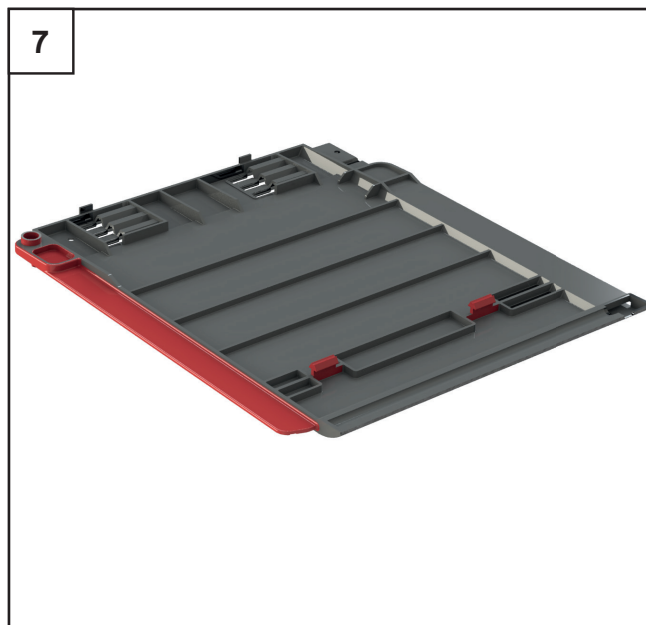
Tile remainder of roof. Fix tiles using the 40mm stainless steel screws provided, one screw per tile using the preformed fixing point, it is important not to over tighten the screws into the tile.

Note: As a general rule use the bottom slot (250mm overlap) when laying the tiles, as this gives the most coverage to suit all pitches

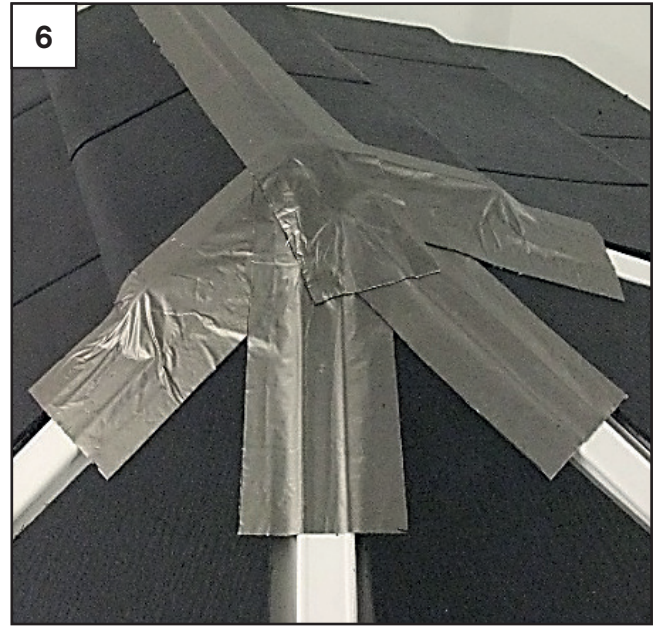


Using a panel saw cut down the last tile into the ridge / hip to suit. Tiles will also need to be cut or angled to suit on hip details, gable ends and against house walls. **Note: Not to be fixed to roof in sub zero temperatures**

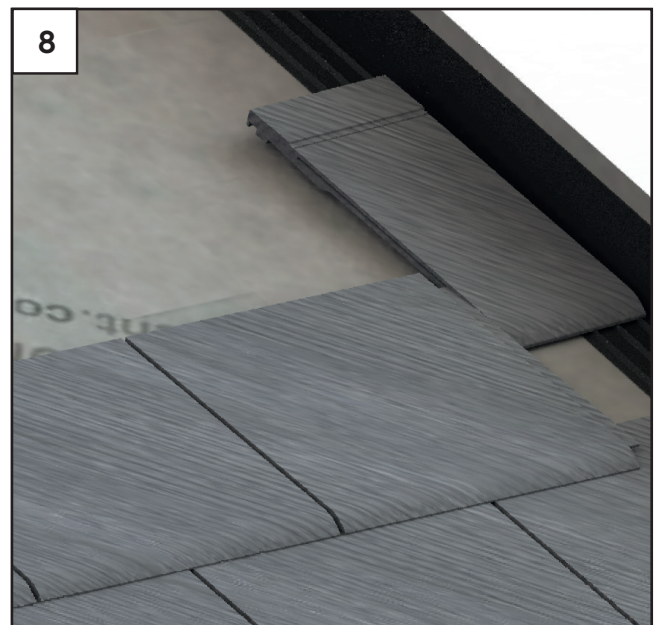
IMPORTANT – Ensure that the hip soakers are positioned beneath the last tile at the hip point (not ridge), this acts as a secondary drainage channel, should any water enter this channel it will be diverted away from the hip junctions and into the gutter system.



When installing tiles up against wall or Velux, remove highlighted tab (where necessary) and reduce size of arrow head carefully using stanley knife. By cutting 1 half of the arrow head off.



Once tiling is complete seal the full length of the ridge and 250mm down each hip using the roll of flash band provided, ensure fully weatherproof.

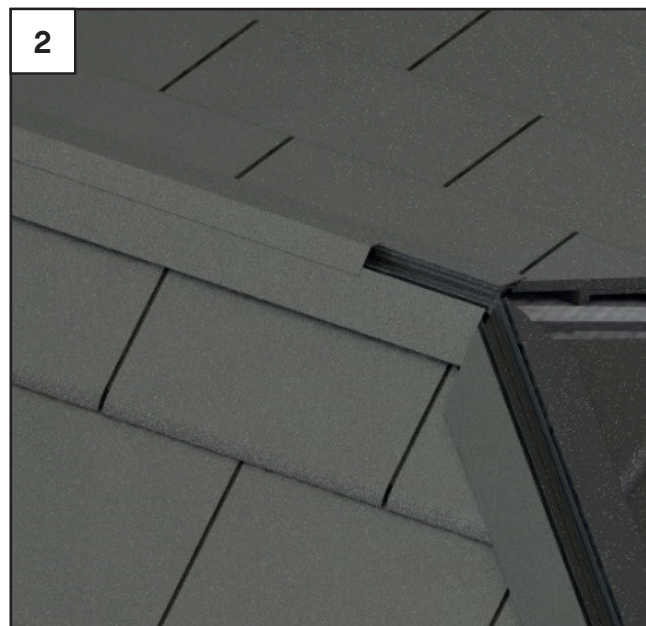


Slide roof tile into previous tile from above and knock arrow head into slot of the tile below. For details on tile at Velux flashing kit see details on page 23 - Velux Installation.

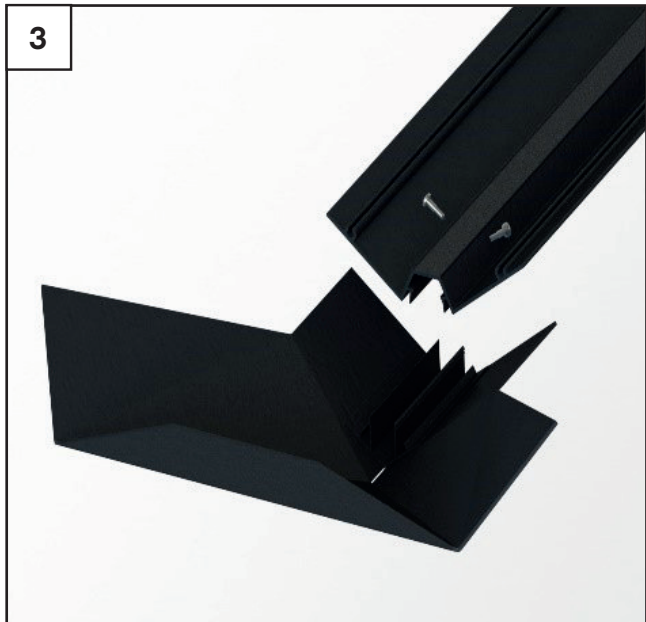
HIP & RIDGE CAP INSTALLATION.



Position Ridge cap on roof. Drill and fix base of ridge down to ridge spine using 40mm stainless screws provided then clip in the cover rail. When using an aluminium radius end cover, cut back the clip in profile by approximately 120mm.

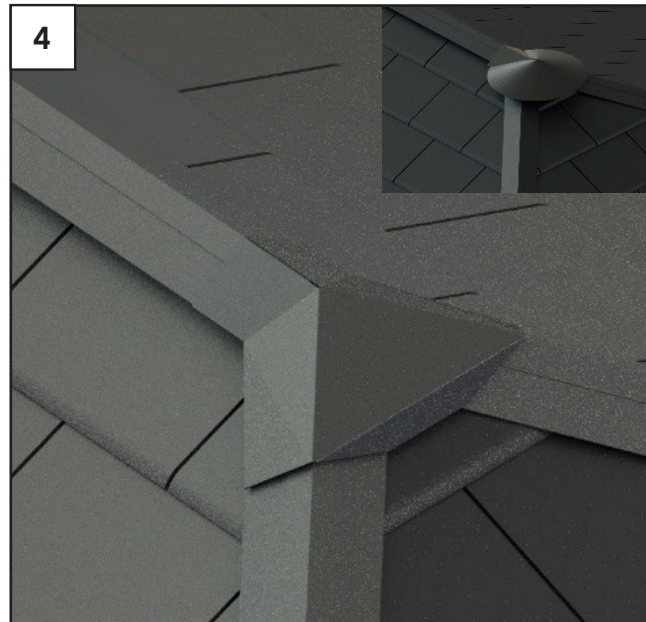


Place hip caps in position on roof so top of ridge lines through with the top of the hip caps, mark out and cut so they mitre in at the radius end. Drill and fix base of hips down to hip spines using 40mm stainless steel screws provided and clip in the top cap cover profile. Seal the mitred joints at the ridge.



Prior to screwing down Ridge Cap to the roof, run silicone along underside of radius end cover 10mm in from edge, clip radius end cover into position on the Ridge Base Capping and turn over.

Using 2 Ø3.8 x 13mm self-drilling screws, fix through base capping into the legs on the radius end cover to secure cover in place.

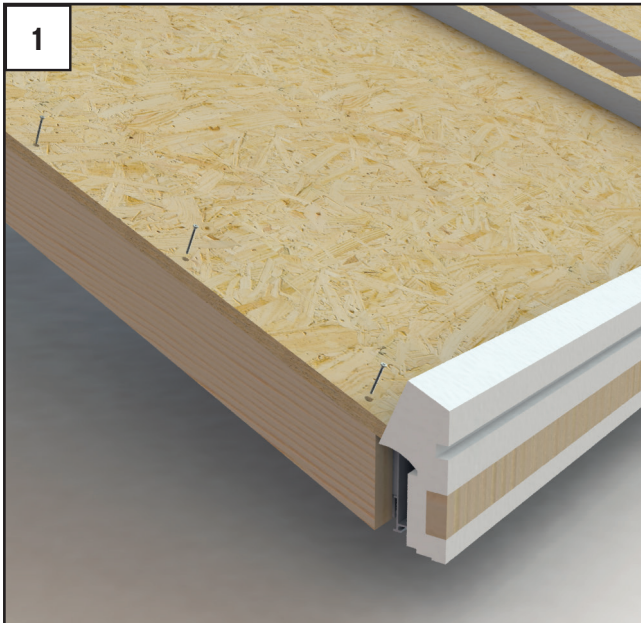


Position Ridge back on roof and screw into OSB spines using 40mm stainless steel screws provided. Using the cut down top profile, clip into Ridge capping and slide under the back edge of the Radius End Cover. Lead flash over ridge at host wall ensuring water tight.

(Note: Radius End Cover can also be fitted at the end and fixed down from the top using colour coded cover caps over the screws in scenarios where step 3 cannot be achieved).

On unequal pitched roofs a Round Radius End Cover will be supplied.

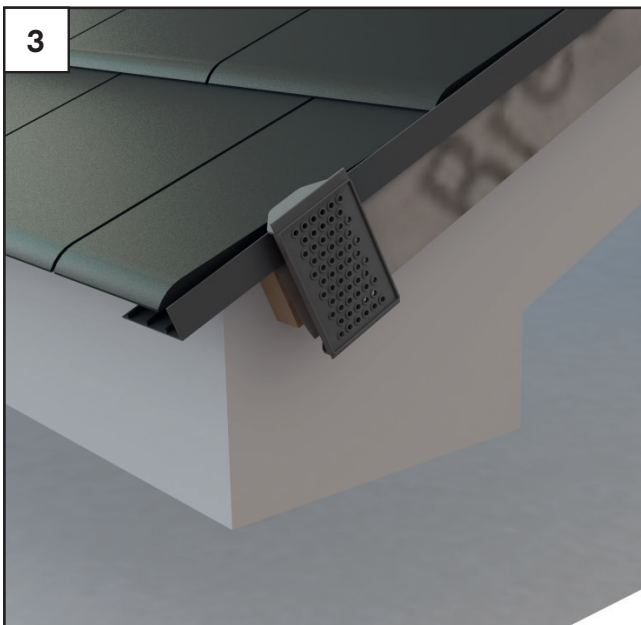
GABLE END INSTALLATION.



Fix 100x38mm timber (down through OSB) to the underside of base panels, flush with the edge of base panels.

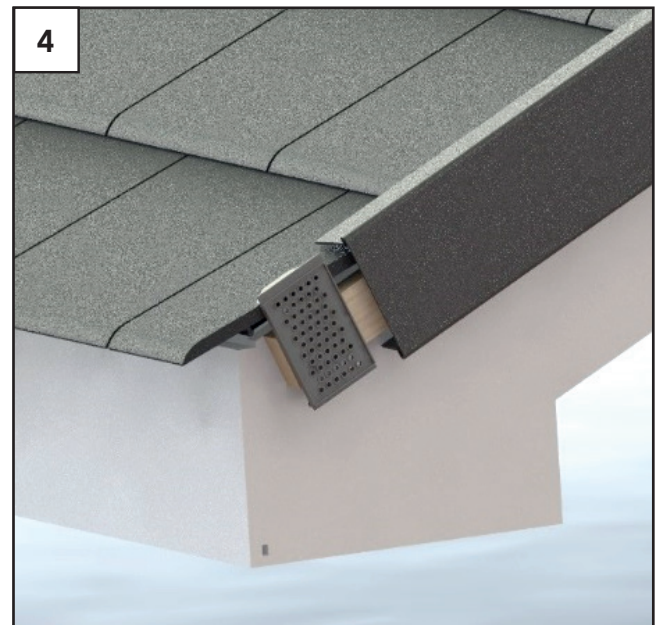


After Fixing the Fascia Board to the Gable End or Lean-to End Timbers, fold back overlapping membrane and fix 25 x 50mm batten along the full length aligned to the upper edge and mitre as necessary. 70mm Wood screws are provided. Fold the membrane down over the batten and staple into place continuing to tile the roof as normal making sure the tiles finish flush with the front edge of the batten.

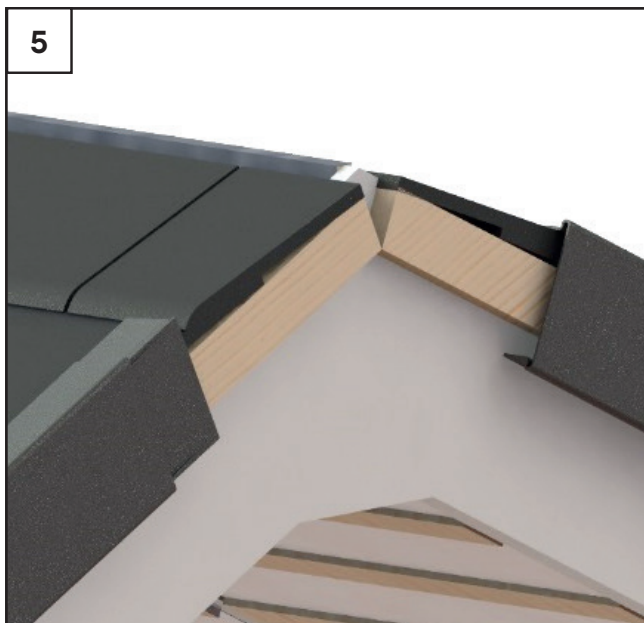


Using 40mm stainless steel screws, securely fix a Fixing Clip to the end of the fixing batten at the eaves. It is important to ensure that the flange of the fixing clip that is labelled "top" faces upwards. Screw through an appropriate hole so that it penetrates the centre of the batten.

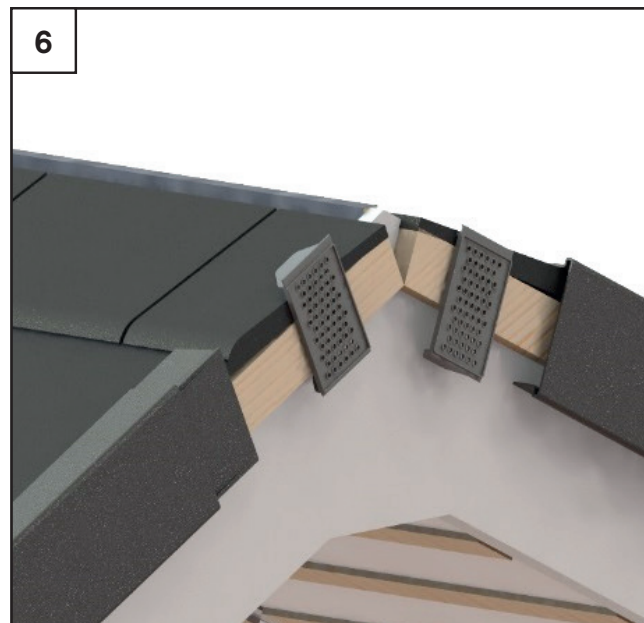
When installing, it is important that the dry verge rests upon the highest point of the tiles. (Do NOT pull down when fastening to fascia).



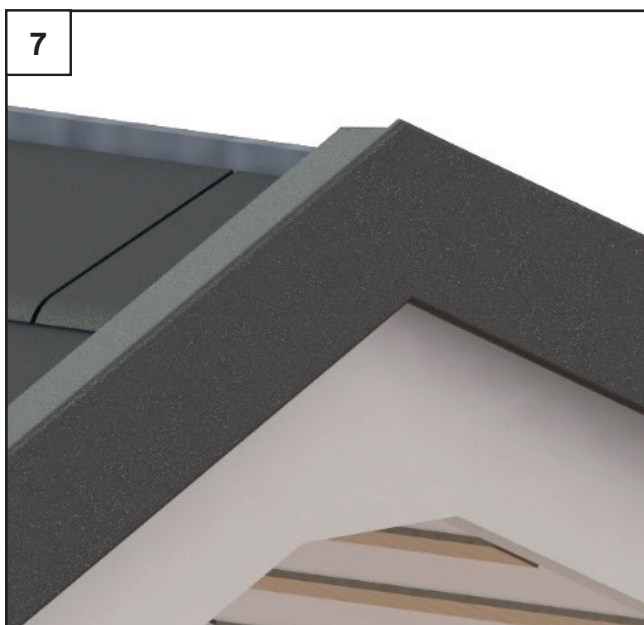
Hook the Linear Verge Unit over the top of the Fixing Clip and press firmly until it engages. Screw the tail end of the linear verge unit using 40mm stainless steel screws, through an appropriate hole so that the screw penetrates the centre of the batten strip. **Avoid fixing too tight to tiles to avoid warping after expansion and contraction.**



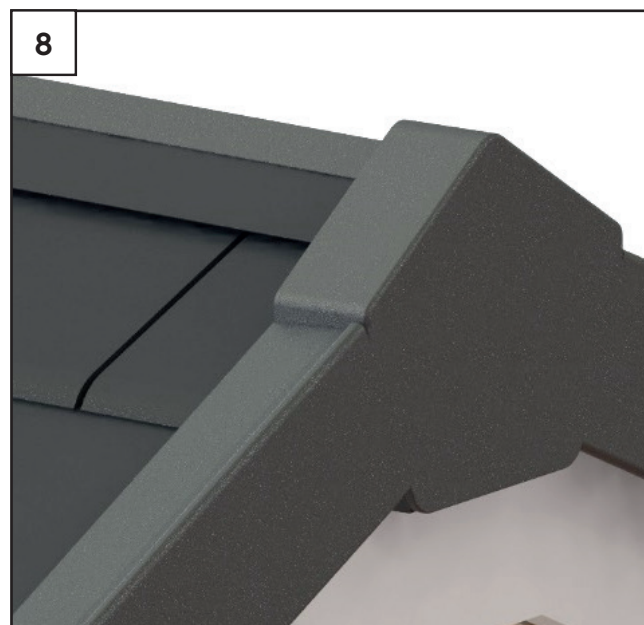
Continue to fit full lengths of the linear units up the run of the verge until all tiles have been covered or no full lengths can be fitted as shown. Once one hand of the verge is completed repeat steps 3 & 4 on the opposing verge, this time using the other hand of Linear verge units. **Always allow a 3mm gap between each dry verge connection.**



For the final piece(s) of verge, fit another fixing clip approx. 100mm down from the apex (on both sides for a gable).

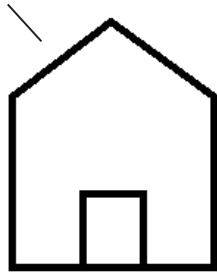


Cut down and mitre the final verge sections together install and seal as shown above.

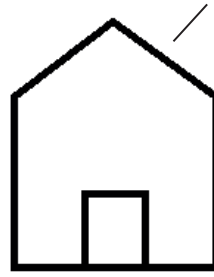


Install the Ridge Capping in the usual way to make sure it runs to the edge of the new verge. Attach the foam tape and silicone in front to prevent driving rain from tracking under the capping. Reattach and fix with the screws provided in the kit. Trim the Ridge Cover along the edge shown to allow a closer fit with ridge top cap.

DRY VERGE IMPORTANT NOTES.



Right Hand Dry Verge



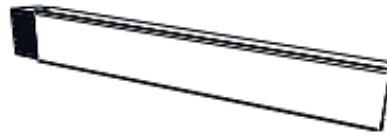
Left Hand Dry Verge

Note: Careful attention should be taken when specifying 'Right' & 'Left'

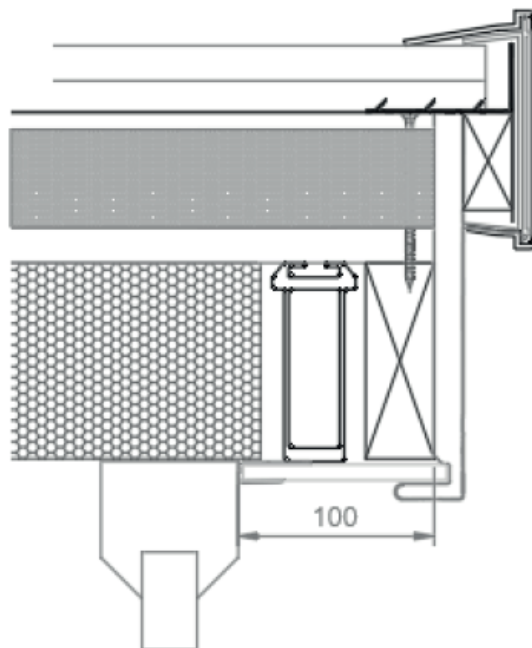
Lean-To roof designs will follow the same procedure using only the appropriate hand of components. Where a Lean-to meets the wall – the verge should be mitred finished and flashed over with the appropriate flashing.



Right Hand Dry Verge Unit



Left Hand Dry Verge Unit

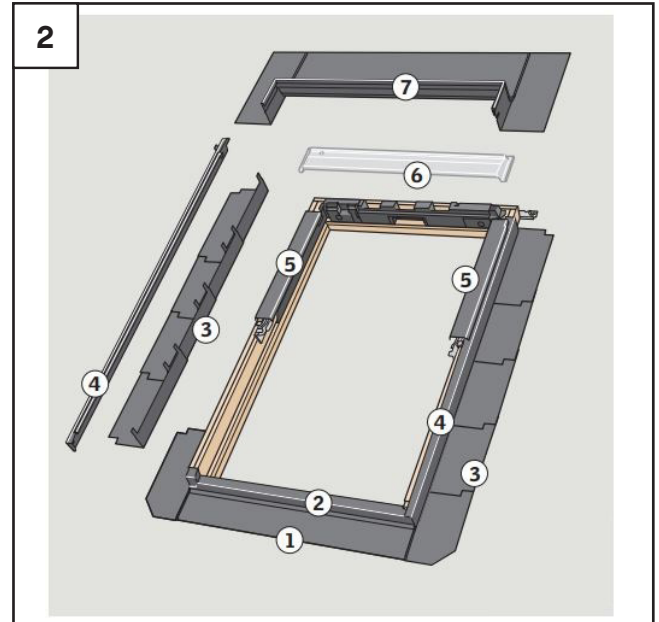
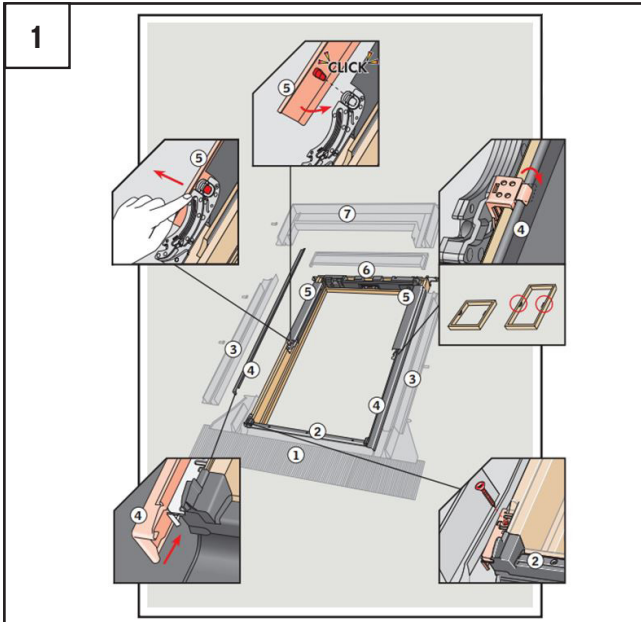


When installing, it is important that the Dry Verge rests upon the highest point of the tiles (do not pull down when fastening to fascia) A 3mm expansion gap is required between each Dry Verge connection.

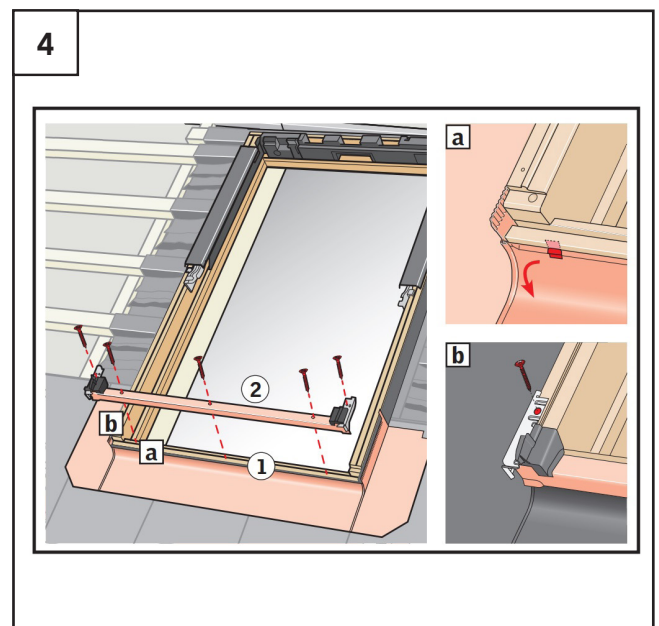
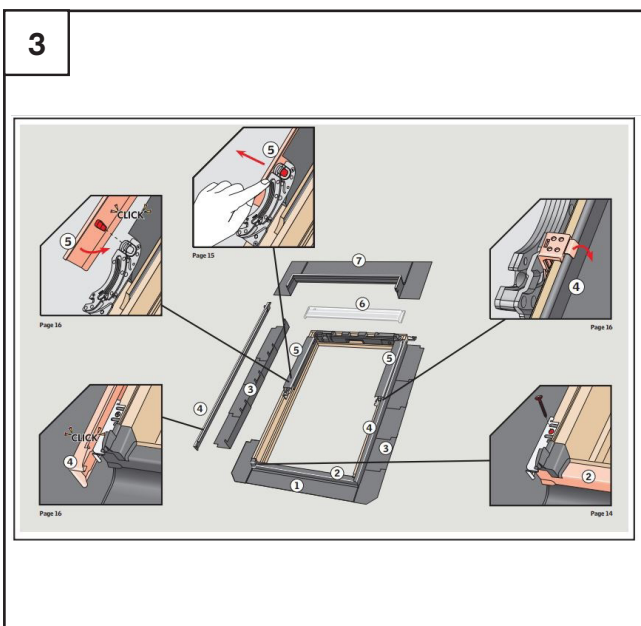
VELUX ROOF LIGHT INSTALLATION.

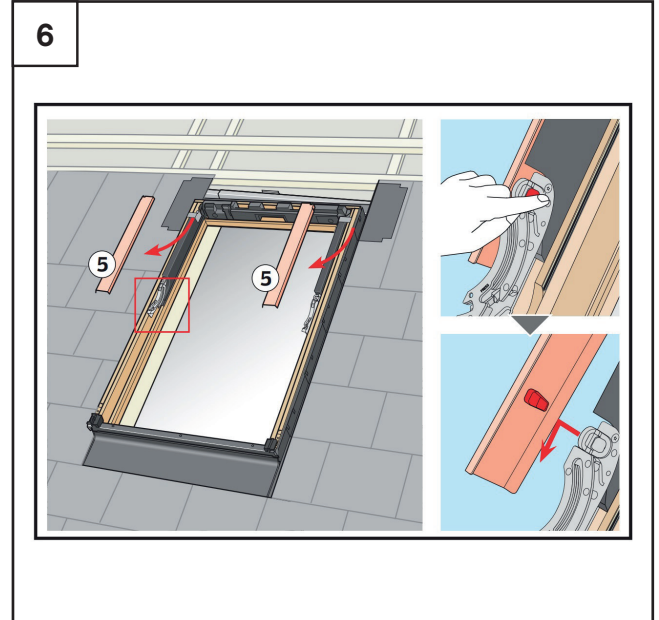
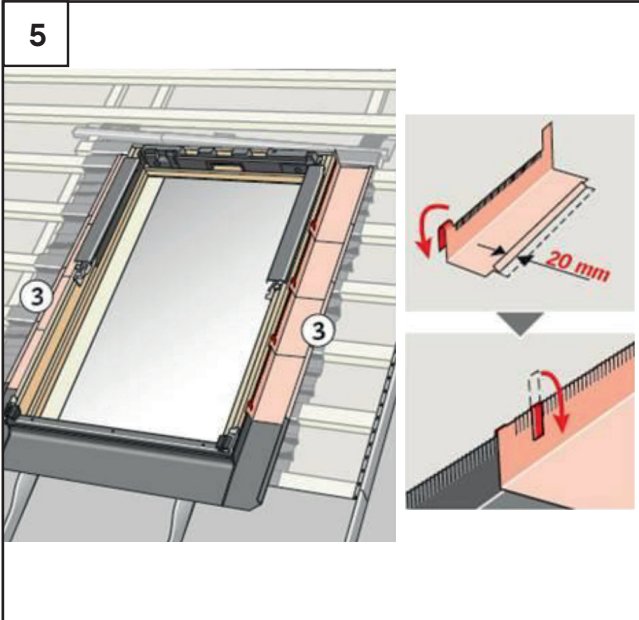


The mainframe of the Velux Roof light is Pre-fitted into the panel for ease of installation. Tile up to the bottom of the Velux Roof light at that point fit the flashing kit as per the drawing on next page, once flashing kit is installed continue to tile the rest of the roof as normal. Cut tile to suit around flashing.

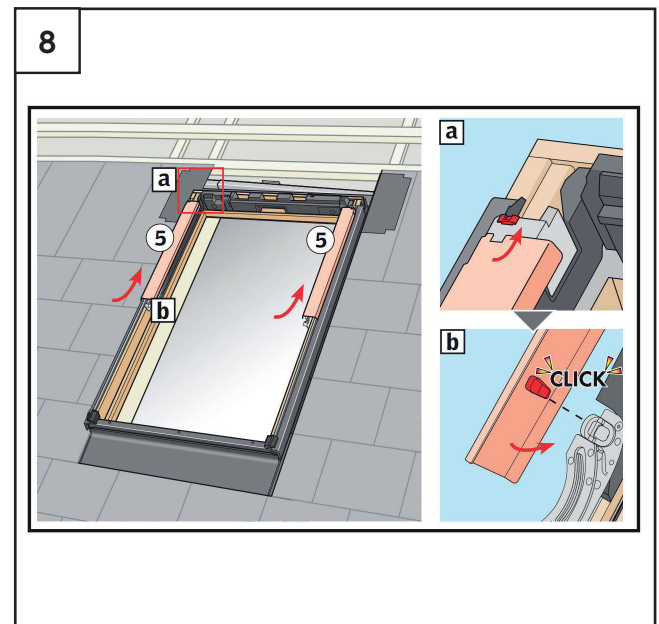
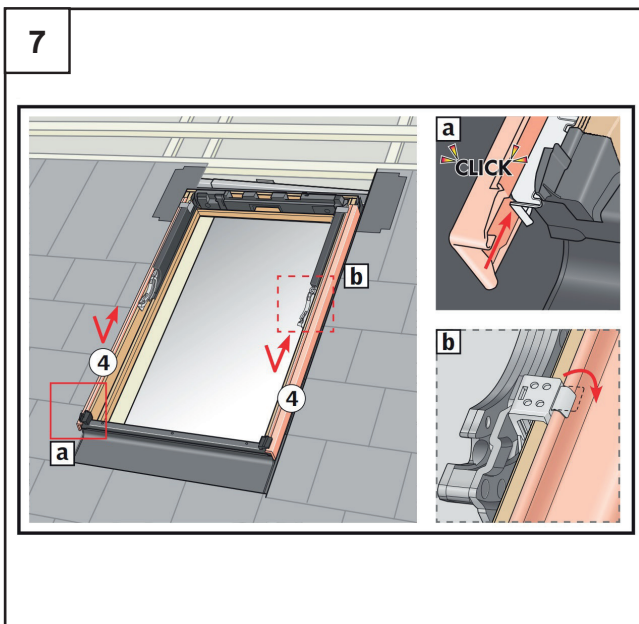


When Tapco Slate is selected on a WARMroof, the existing EDL Flashing Kit will be specified. This is still the best suited product for slate finish up to 8mm thick.

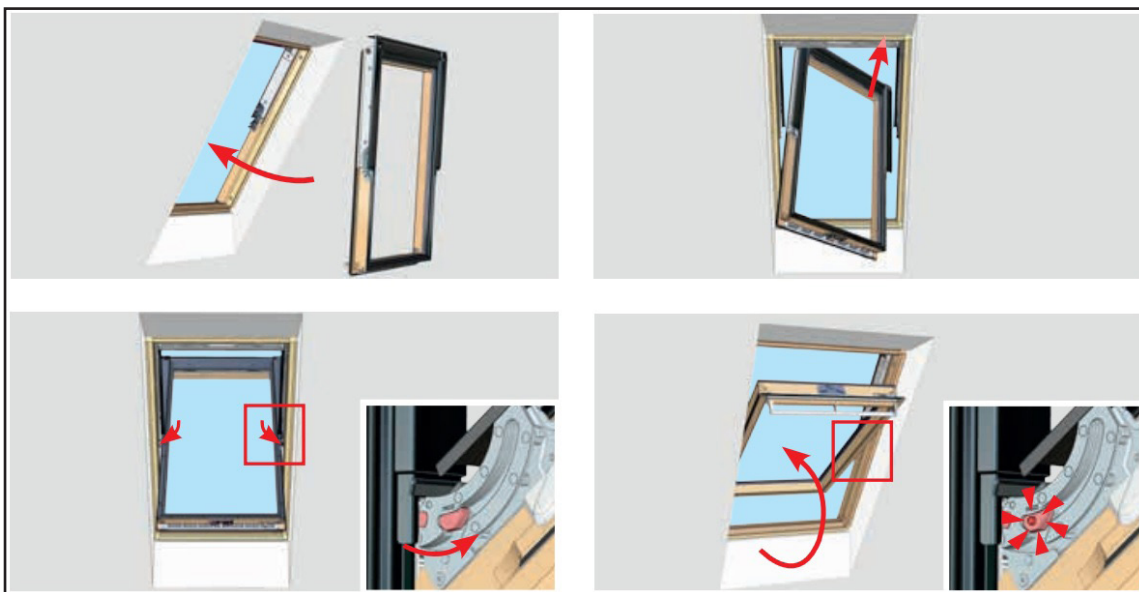
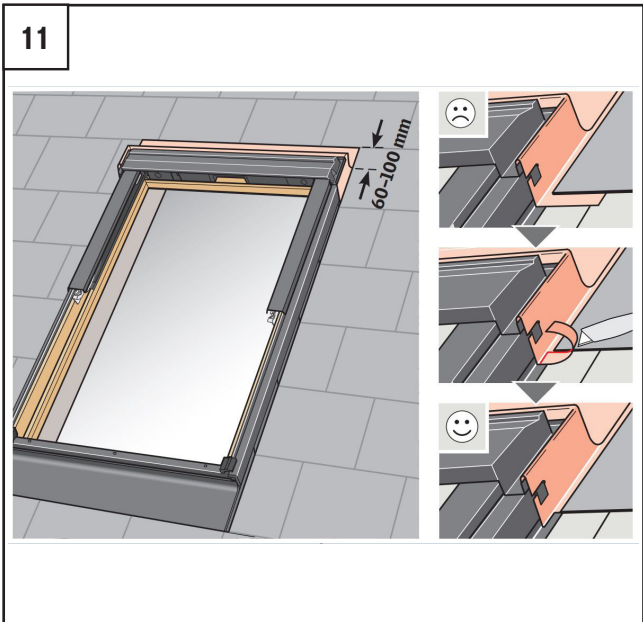
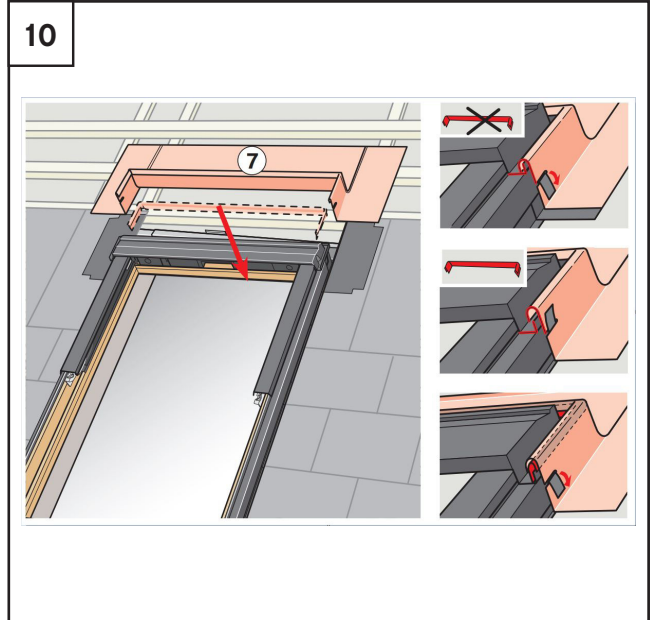
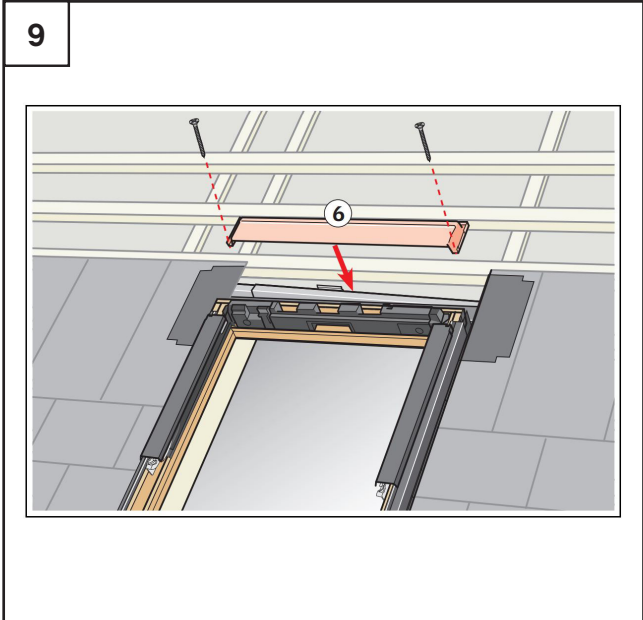




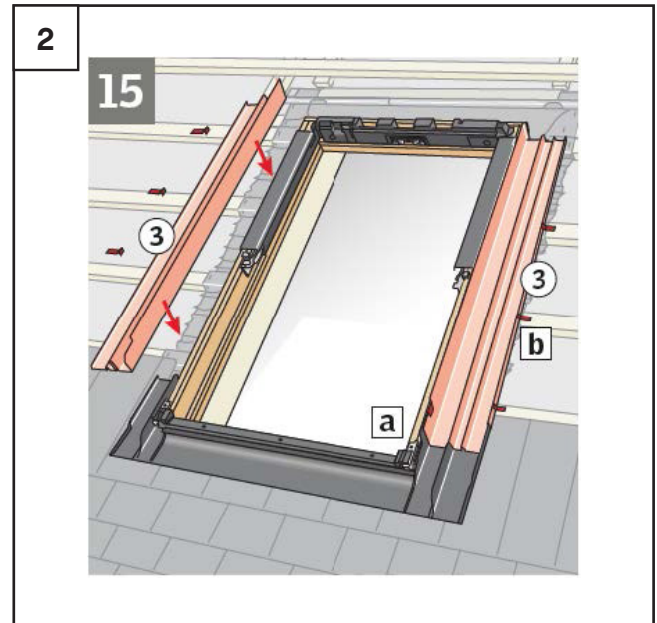
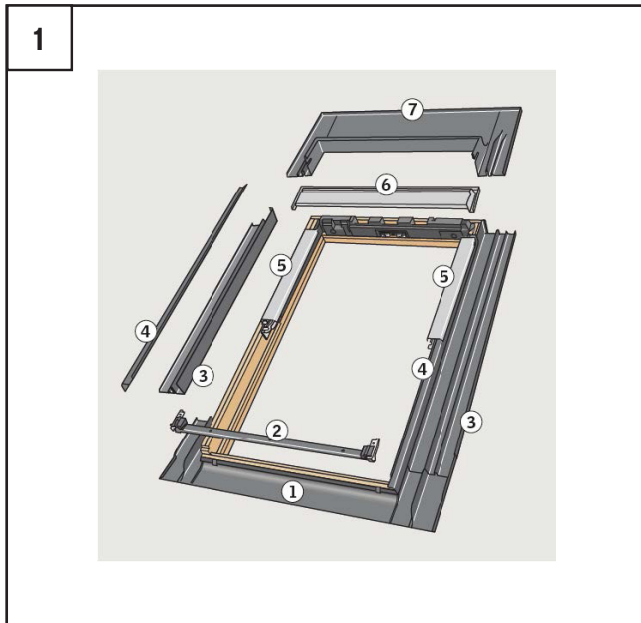
Envirotile only: Fold edge of flashing kit back on itself using block and hammer to create lip to direct any rain water down the roof.



Tile up to bottom of frame. Add bottom apron, add trims and fold. RH side repeat step on tile (page 17) Apron should line up with edge of tile in most scenarios.



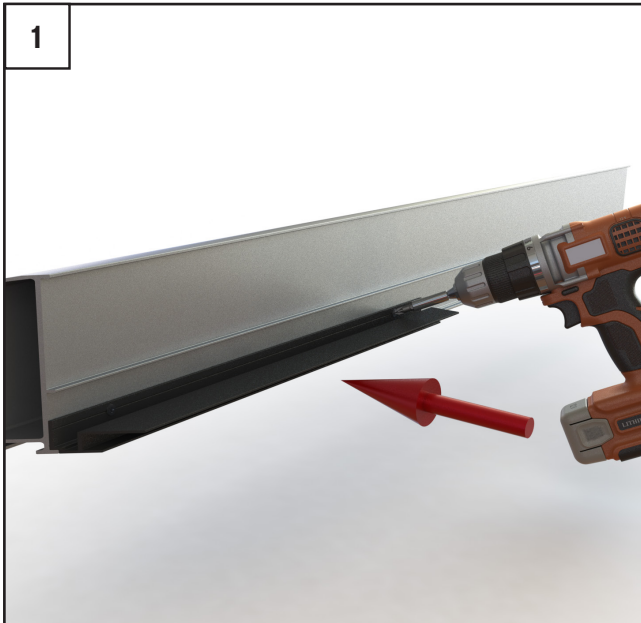
VELUX WITH ENVIROTILE



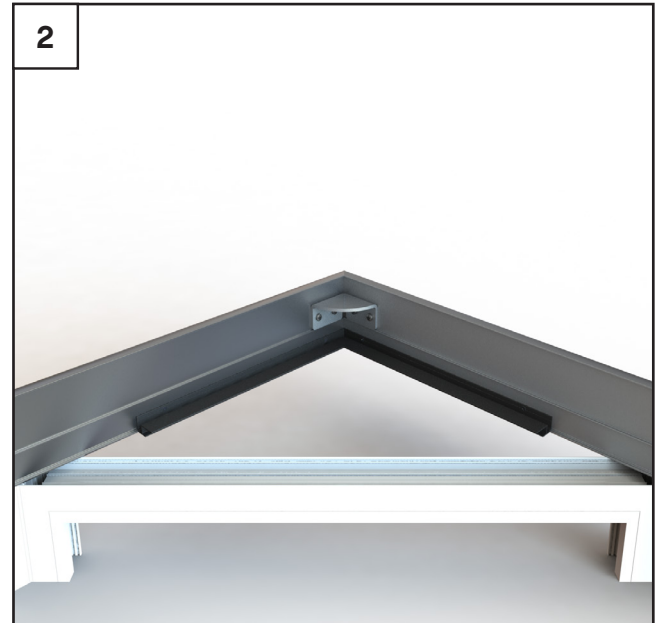
Products updated in VS software to specify EDS Flashing kits when Envirotile is selected.

Installation Tip: If bottom tray (1) overlaps the top edge of its supporting tile, pack below the top edge of the tray, level with the supporting tile to avoid bottom flashing kicking up. This can be done using An off-cut of tile or 9mm OSB.

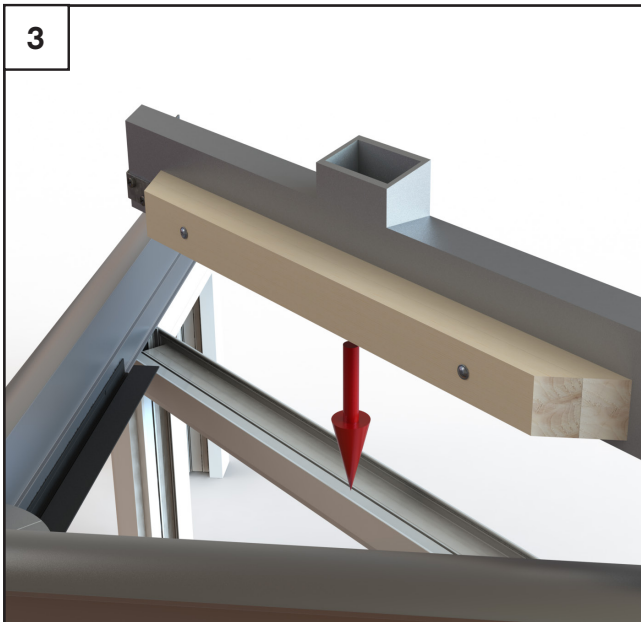
GEORGIAN OVERHANGS ON VICTORIAN FRAME



Where a Georgian roof is supplied to fit on Victorian Frames, the Eaves and Hip will cantilever over the frames requiring support to the underside of the Hip bar and cladding off of the open cavities. If not already attached, locate and fix PVC pelmet rail to eaves beam using 4.8 x 25mm CSK Self Drilling Screws provided (F0022).



Position eaves on top of frames. Once square with A Frames in place, fix eaves to head of the frames. Complete the next steps before installing Hip Bar and panels to allow better access.



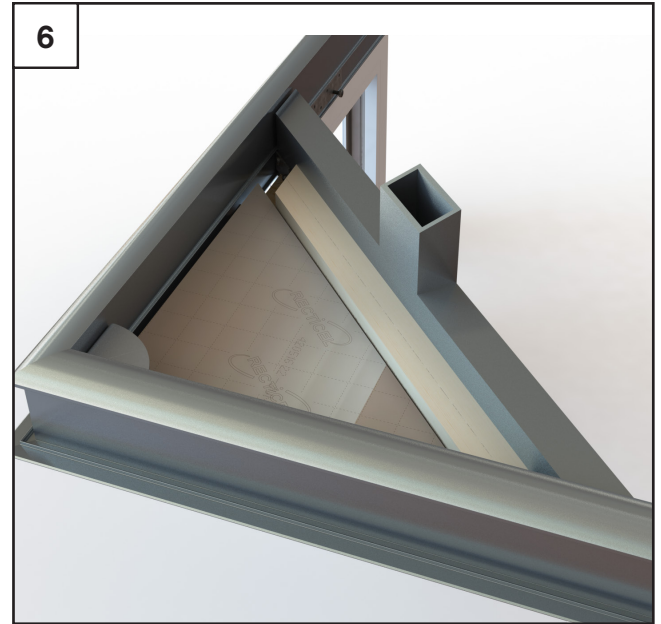
Locate pre-fabricated Aluminium Cross Support Assembly and position on head of frames over the facet 18mm outboard of internal frame.



Secure beam in position by fixing the straps into back face of eaves using 2 x M6 x16mm Tapitite screws provided per bracket. Additional fasteners can be used to fix through support beam into head of frames. (Pilot hole required through top surface of box section to allow fixing through bottom face of beam into frames. Not supplied by Prefix).



Ensuring 25 x 50mm timber stops are attached to the cross member. Push 9mm OSB triangle into cavity from below, sliding the outer edges into the PVC rail on the eaves and butting the edge adjacent to the frames up to the timber stop. Fix in position using 4.0x40mm Stainless steel screws (F0021).

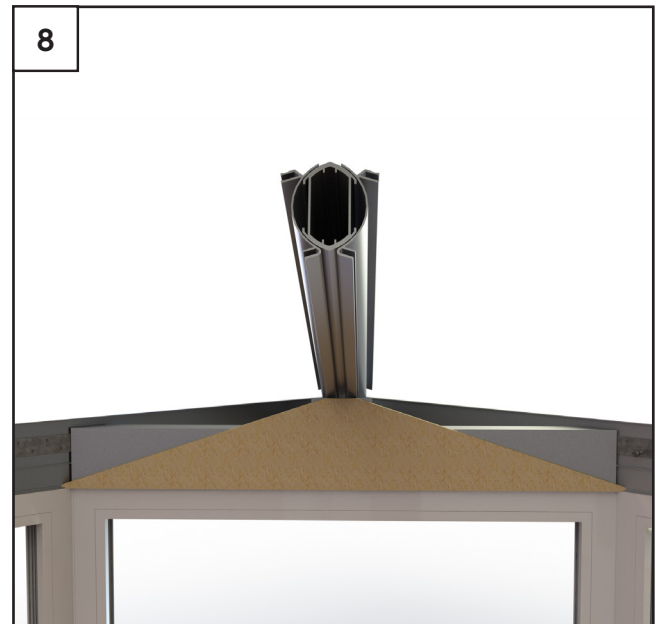


Drop in 25mm PIR triangle insulation from above to insulate the void.

Area now ready to accept soffit board.



Install the hip bar and all remaining rafters to the roof. Underside of hip bar should rest on Aluminium upstand to reduce deflection of the overhanging roof area.

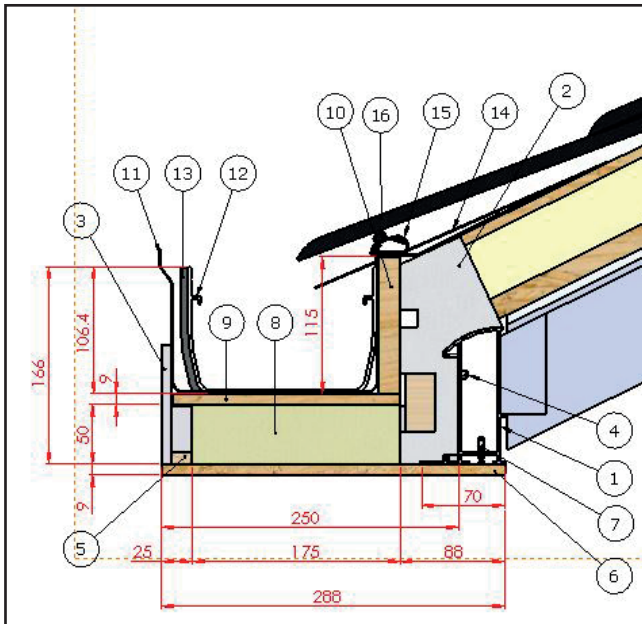


To provide a surface to fix internal plasterboard, position and fix 18mm OSB to internal face of cross member, with bottom edge of OSB flush to the head of the frames.

NOTE: Base panel insulation will require notching locally over Aluminium cross beam on site.

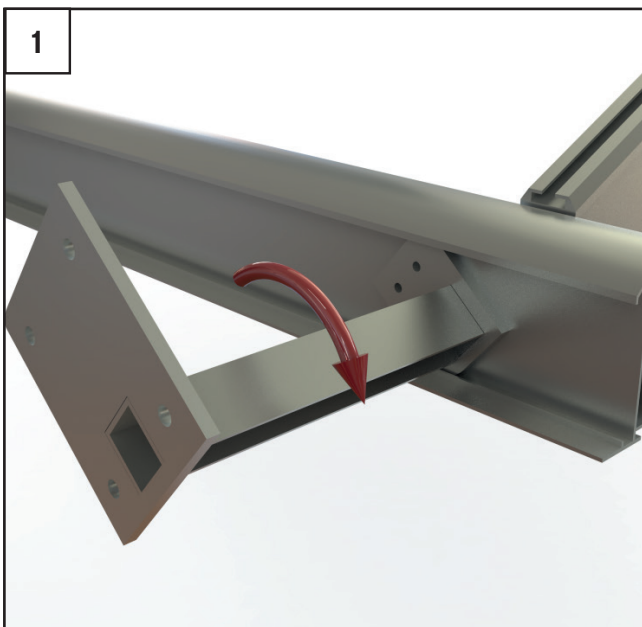
BOX GUTTER INSTALLATION.

Note: Box gutters should not span any further than 2000mm without support unless an alternative solution has been structurally approved.

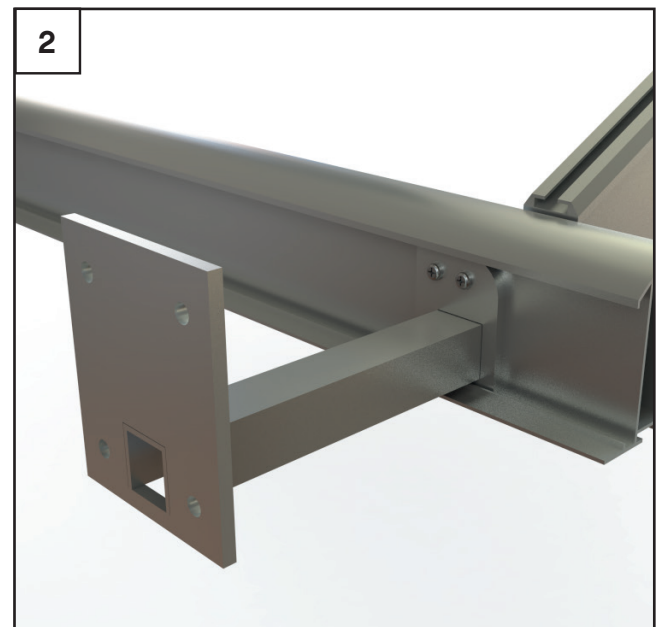


Item Number	Part Description
1	Eaves Beam
2	Eaves Beam Insulation 88mm (2000059)
3	Eaves Support Bracket Assembly
4	M6 x 16mm Taplite Screw
5	25 x 50mm Timber Batten
6	9mm OSB Under Cladding
7	4.8 x 32mm Countersunk Self Drilling Screw
8	50mm Xtratherm Insulation (PIR)
9	9mm OSB Upper Cladding
10	18mm OSB Upstand
11	600mm Wide Strip Membrane (box gutter)
12	Prefix Box Gutter
13	Box Gutter Foil Back Insulation
14	Eaves Protector Board
15	Tile Rail Assembly (Top & Bottom)
16	Envirotile

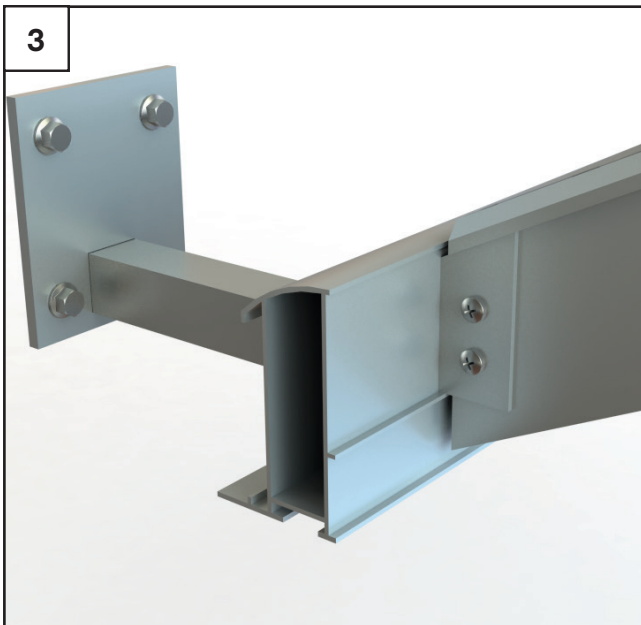
Section through showing box gutter and components. See table on the right for part description.



Set Eaves Beam 288mm away from host wall (internal frame). Quarter turn brackets into eaves beam loose. Position accordingly (in line with A-Frames where possible) and mark position on host wall and eaves beam.

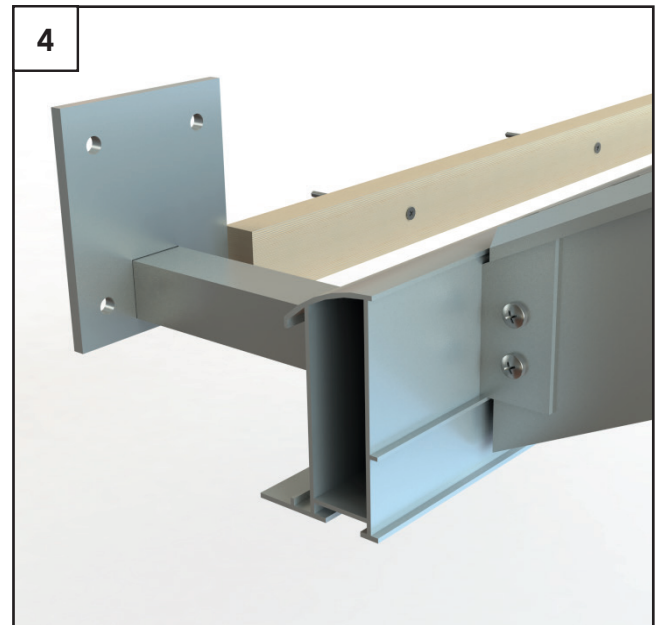


Move eaves beam to a suitable working position then drill and fasten brackets to eaves beam using M6 x 16mm Taplite screws provided (5.5mm drill bit)

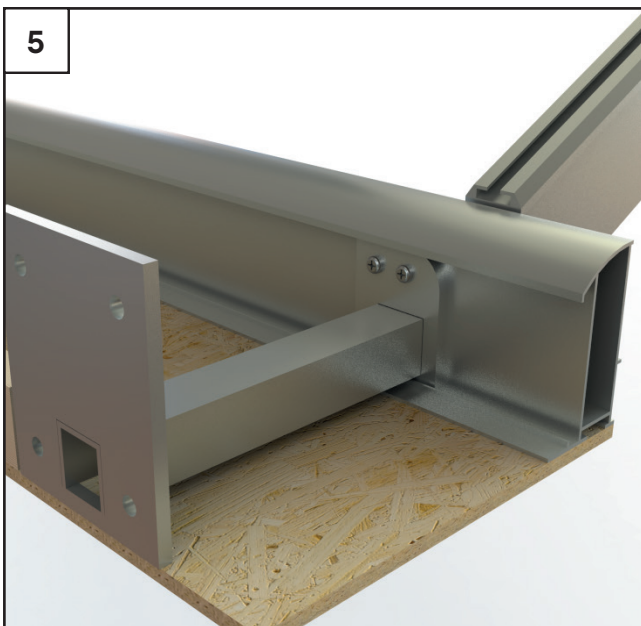


Set Eaves beam back into position and fasten to Host Wall using substantial substrate fixings. (To be supplied by installer)

Note it is important eaves beam sits square with rest of roof. Pack behind brackets where host wall runs out of square. Use of props may be handy.

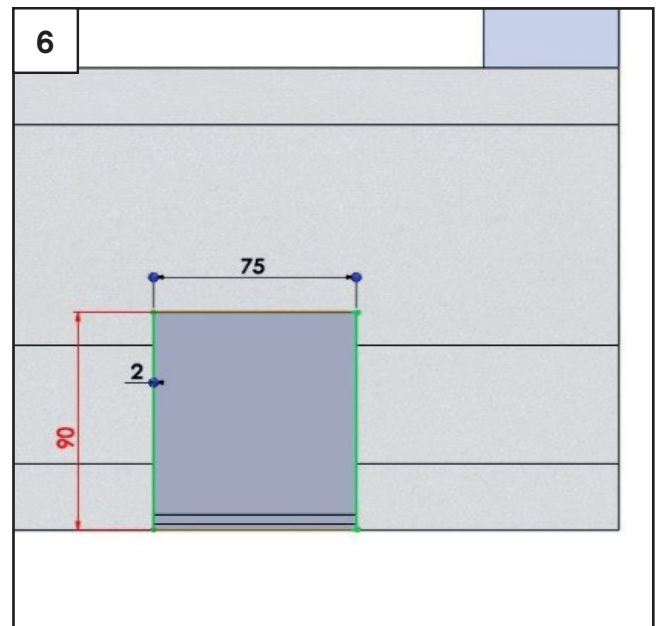


Cut and fix 50 x 25mm timber batten to host wall in between brackets making sure underside of timber is in line with underside of eaves beam (Top of frame height).

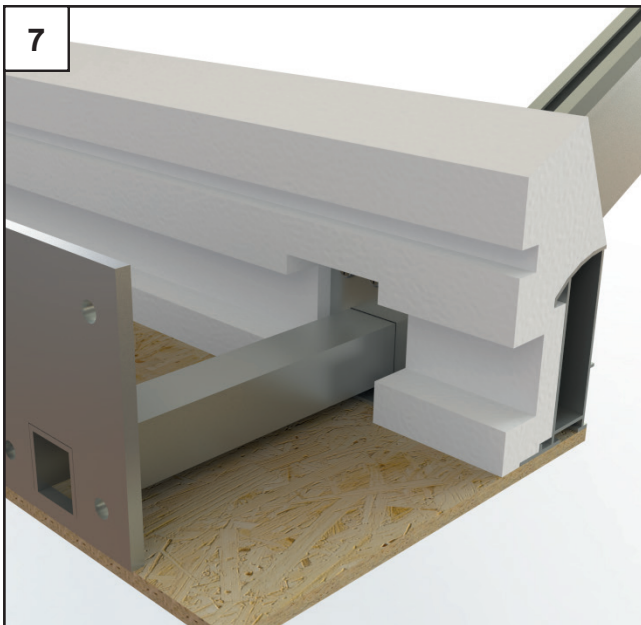


Fix 9mm OSB to underside of Eaves beam and batten. Using 4.8x32mm countersunk self-drilling screws provided.

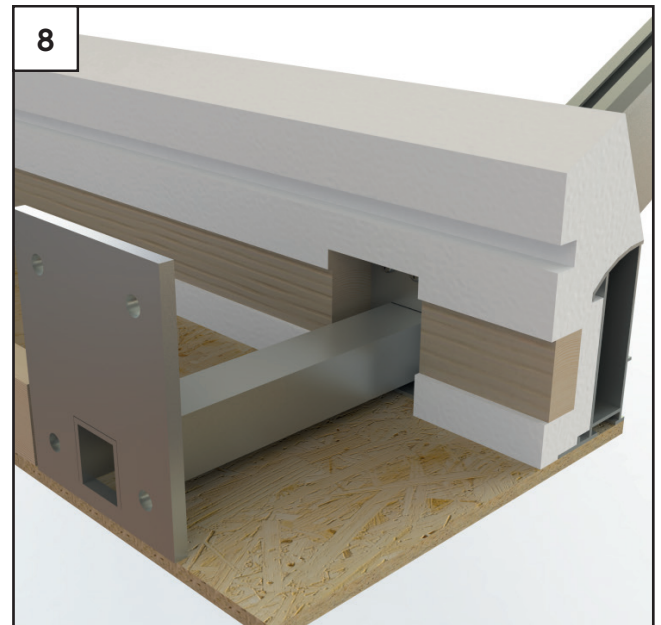
Batten – Mark 12.5mm in from edge of OSB
Eaves – Mark 20mm in from Edge of OSB.



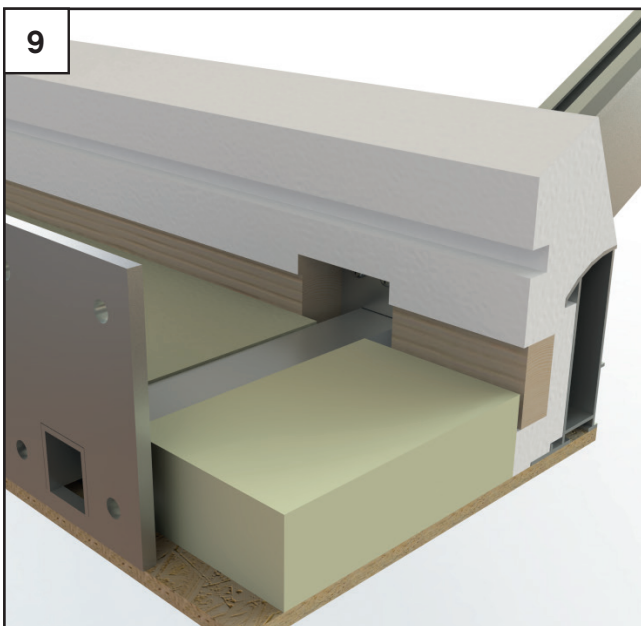
Mark 75 x 90mm Notches in Eaves Insulation and cut out to fit over support brackets where applicable.



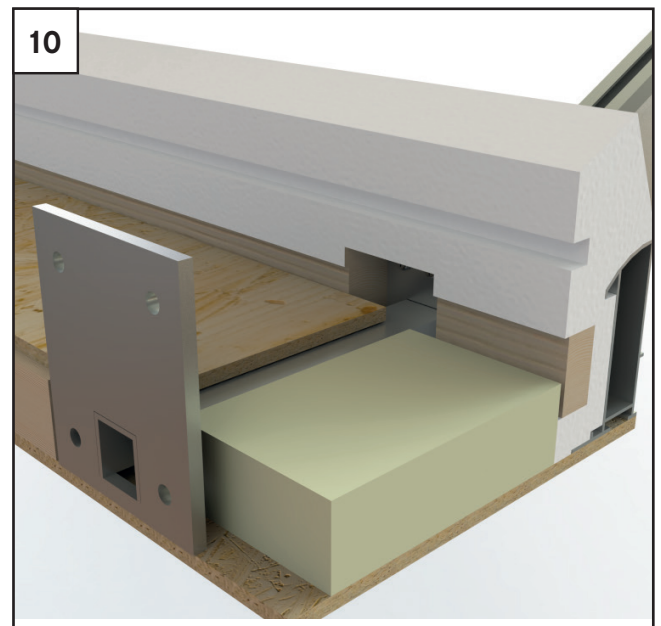
Push Eaves Insulation over Eaves beam and support brackets. 2000059 86mm Eaves insulation to be used in all cases on box gutters.



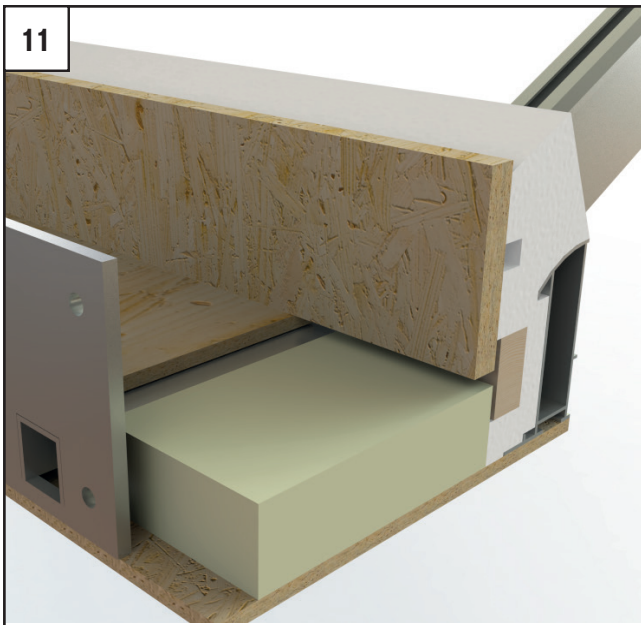
Cut 25 x 50mm batten to push fit into eaves insulation between the brackets.



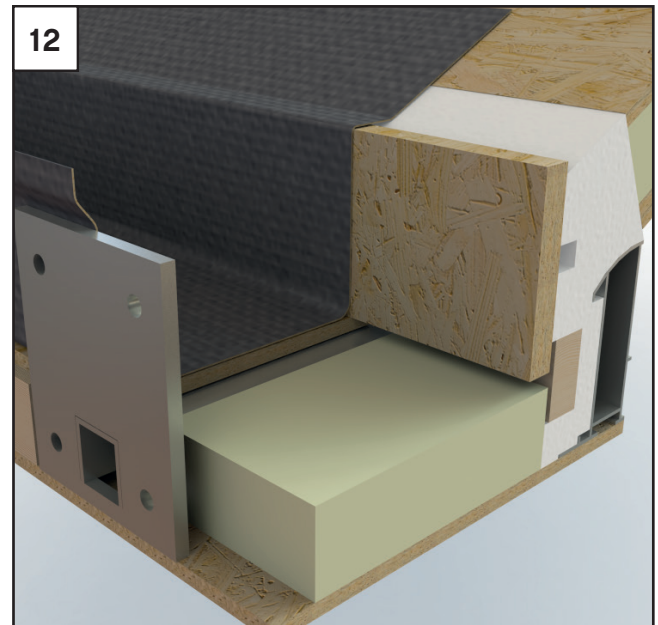
Measure and cut 50mm PIR insulation to length and push fit in between support brackets on to 9mm OSB.



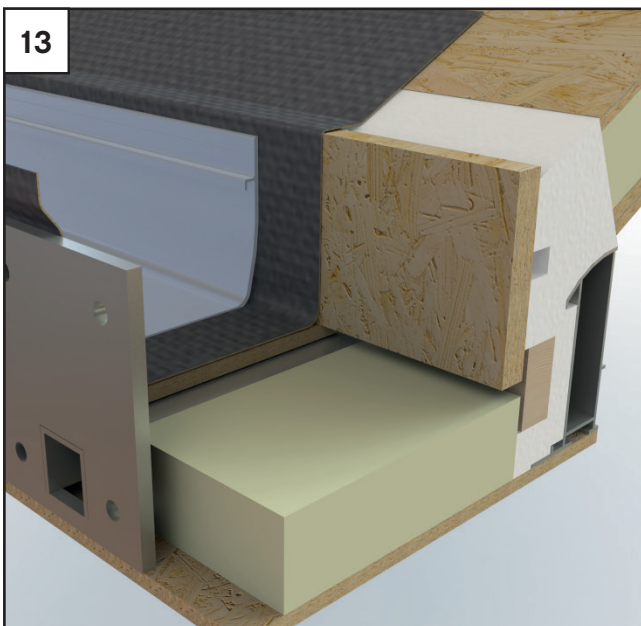
Fit 9mm OSB board over the top of the insulation and support brackets fixing into the support brackets and timber batten at the host wall to secure in position using 4.8x40mm countersunk self-drilling screws provided.



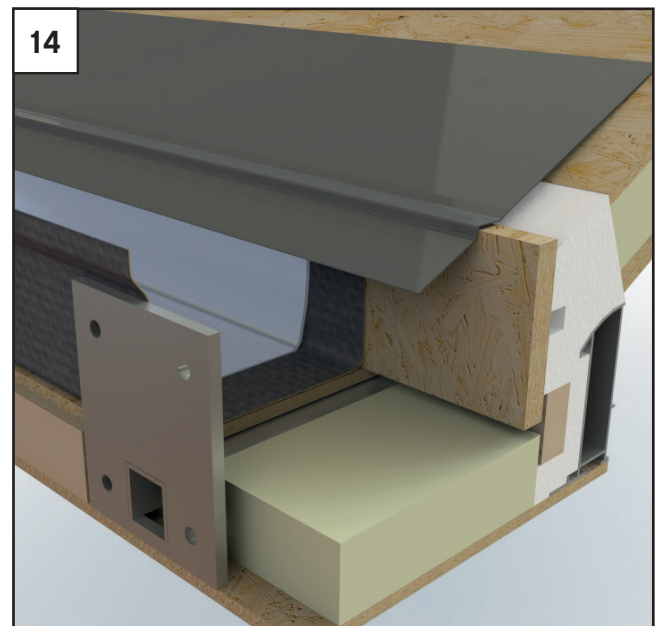
Fit 18mm OSB board over the top of the 9mm OSB vertically against the Eaves Insulation. Fix diagonally down into the Eaves Batten to hold in position.



Line OSB with Strip of Membrane, Lapping up approx. 200mm over the Top Panel. Overall Width of Membrane Approx. 600mm

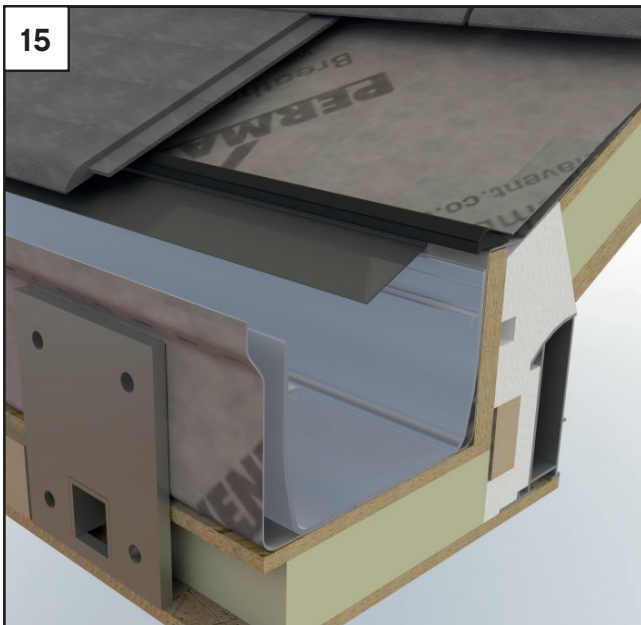


Lift box gutter into position with foam insulated edge against the host wall. Any Joints in box gutter should be sealed properly and adapters sealed in position. Drill and fasten box gutter back to host wall using sufficient fixings (not supplied) Back fill any gaps between host wall and box gutter with expanding foam. Lead flash down into box gutter, ensuring fully sealed and water tight.



(At this point it may be worth lining up gutter and gutter brackets around rest of roof before installing eaves protector and tiles for ease of installation).

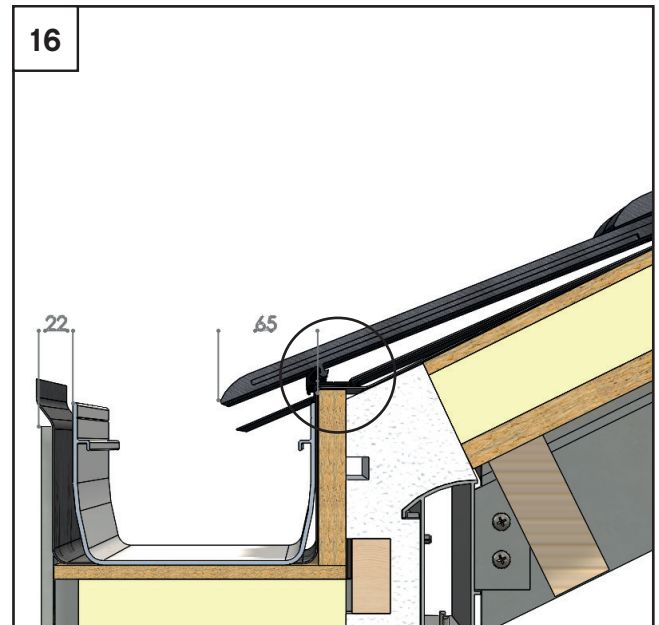
Fit Eaves Protector Board over top panels and box gutter membrane with drip edge dropping into box gutter.



Fasten tile rails in position over top of 18mm OSB Upstand. Continue as per rest of roof and Tile.

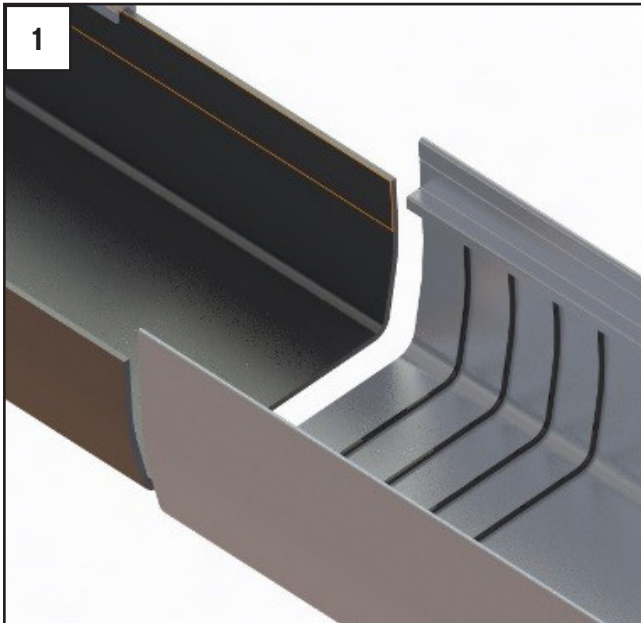
If using Tapco remember to double layer the first row and allow sufficient overhang into the box gutter.

Box gutter approx. 22mm away from host wall to allow for any bolt heads or anomalies in brickwork. Back fill gaps with expanding foam gun before lead flashing.

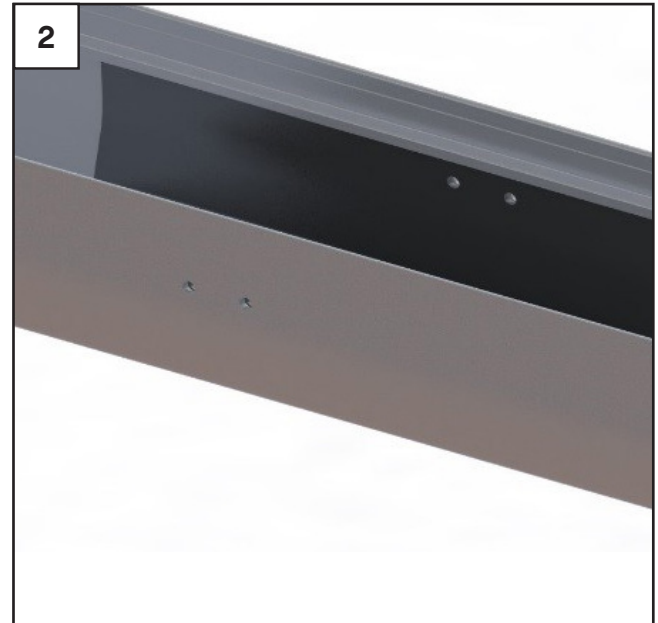


It is recommended to back fill any gaps with expanding foam gun prior to lead flashing.

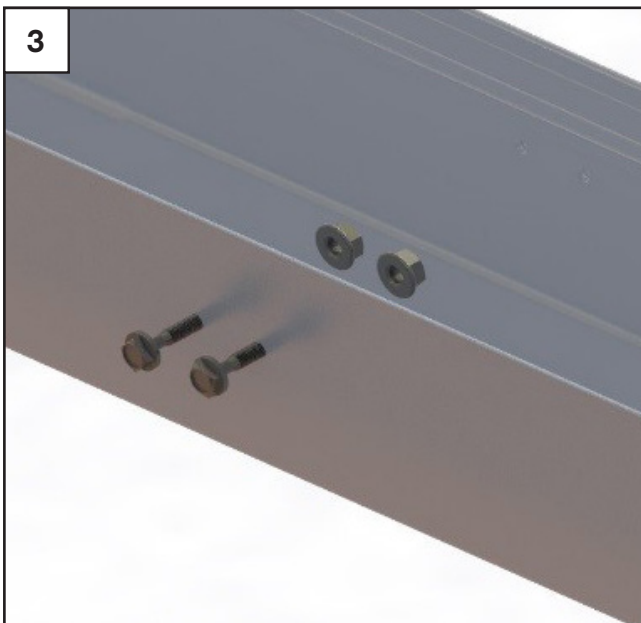
BOX GUTTER JOINTING.



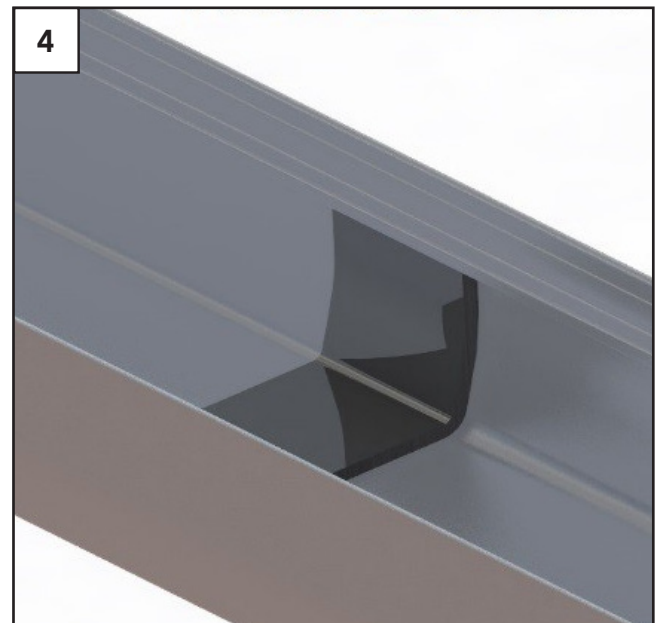
Thoroughly clean box gutter mating parts to remove any dirt or grease. Apply generous beads of low modulus neutral silicone to the clean area where the internal sleeve locates ensuring full face of sleeve will be sealed.



Push sleeve into other half of box gutter until both faces are flush together. Drill 6.5mm holes through the box gutter and sleeve both sides within 50mm of the edge of the joint.

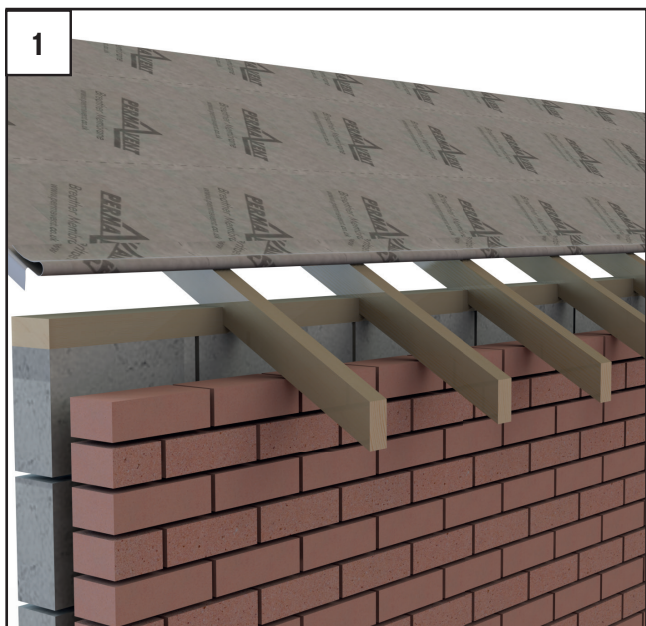


Fix using the nuts, bolts and washers provided in the joining kit. Seal over all the exposed bolt heads on both inside and outside of the box gutter.

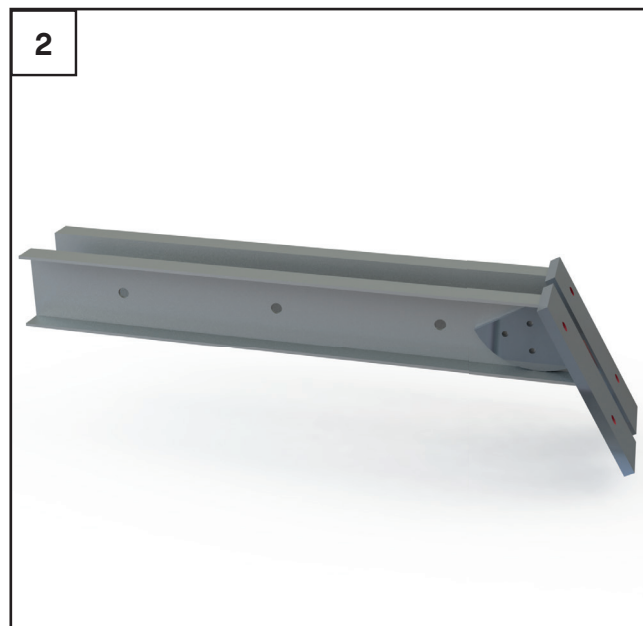


Check surface is dry, clean and grease free. Degrease if necessary. Heat both sealing tape and the box gutter with a heat gun and position the tape firmly across the joint of the sleeve and box gutter ensuring no air gaps.

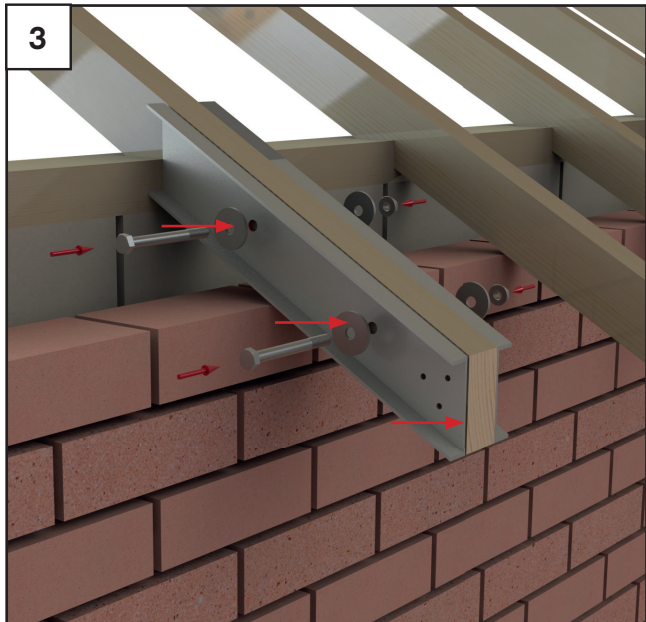
BOX GUTTERS AGAINST HOUSE FASCIA & SOFFIT.



Locally remove existing house fascia board, tile rows and membrane to reveal house rafters.

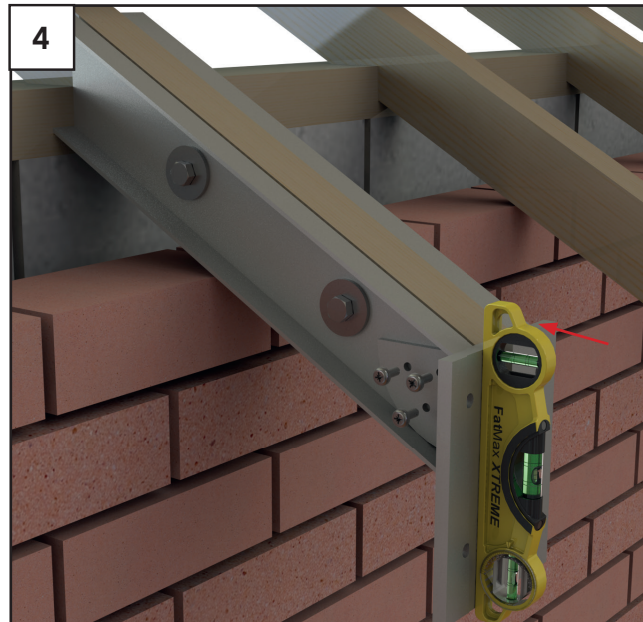


Adjustable rafter straps suit pitches from 0-60°,
0-29.9° - Fixing plate fastens to square cut end
30-60° Fixing plate fastens to angled end. Prior
installation, please determine correct orientation.

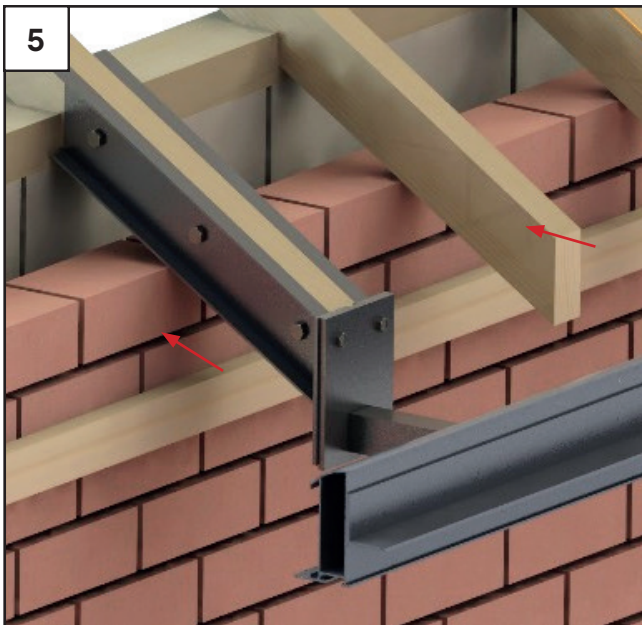


Line rafter strap C channel up with top of house rafter and flush against end of rafter. Mark and drill holes 11mm to suit M10 fixings. Fix through straps using M10x75 hex bolts, washers and nylon nuts provided. 3 fixings recommended per bracket where possible.

NB: Rafter straps in some cases may need cutting down as shown in image due to variations in height, soffit and cavity depths. **DO NOT cut brackets down to less than 300mm in length.**

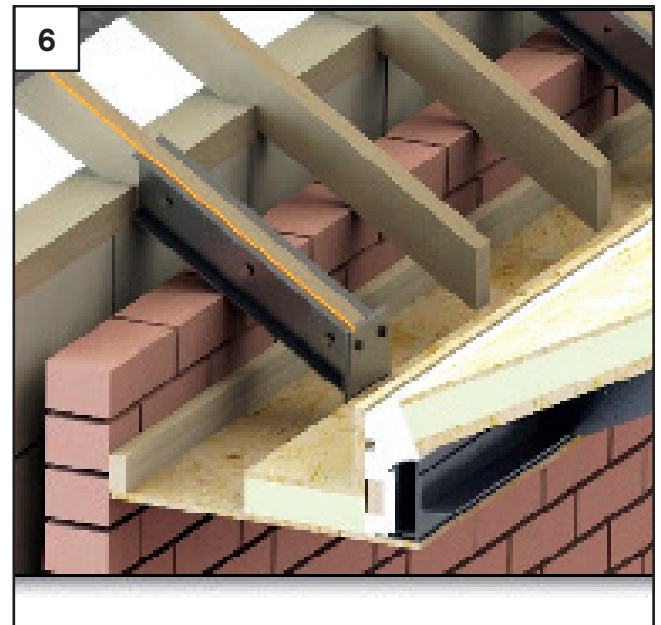


Position house rafter fixing plates against the inner face of the C channel. Using spirit level, check face of plate is plumb. Mark fixings positions from holes in plate on to the C channel and drill 3 x 05.5 holes per side through rafter strap and timber rafter. Fix plates in position using 3 x M6 x 16 pan head taptite screw provided (per side)

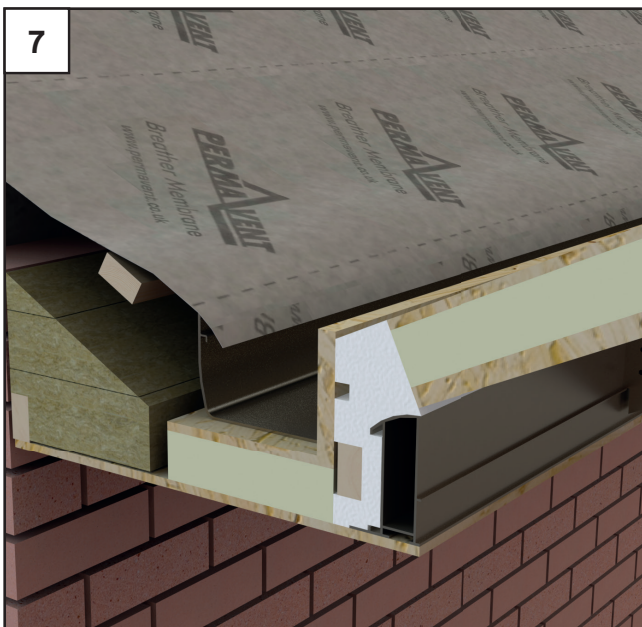


Offer support bracket up to rafter plate and mark position on eaves beam. **(In line with WARMroof Rafters Where possible)** Follow Box Gutter Install Step 2 Page 25.

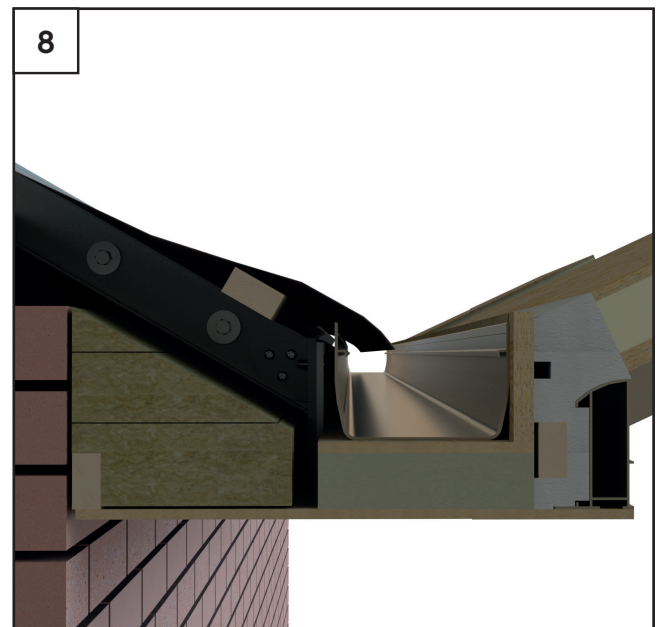
Mark and Drill 9.5mm holes in House Rafter Strap Plate. With Support brackets now fixed to the eaves, line back up to house rafter plates and fasten using 2 x M10x30mm Taptite Hex Head Screws provided. **Underside of Rafter plates may need cutting back if protruding below underside of Eaves level**



Following Box Gutter Installation pages 26 – 29 fit batten to host wall in line with underside of eaves. Secure all insulation and OSB in position following steps 4-16.

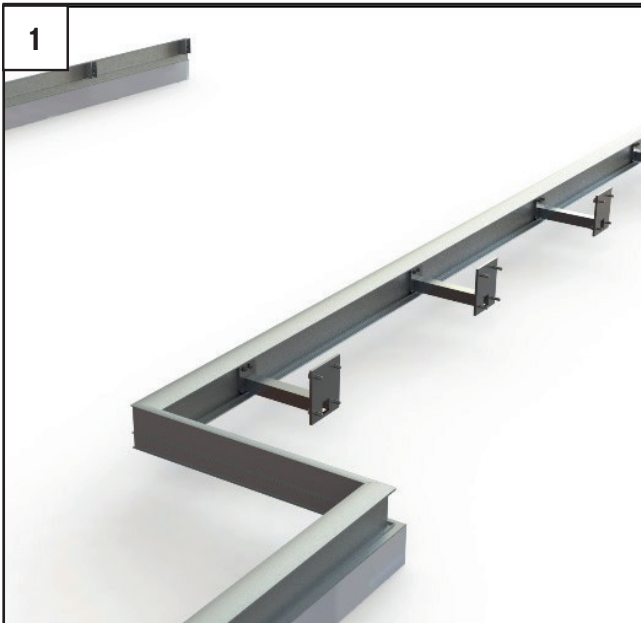


Fill any voids and areas between house rafters with expanding foam, or Rockwool Insulation (not supplied).

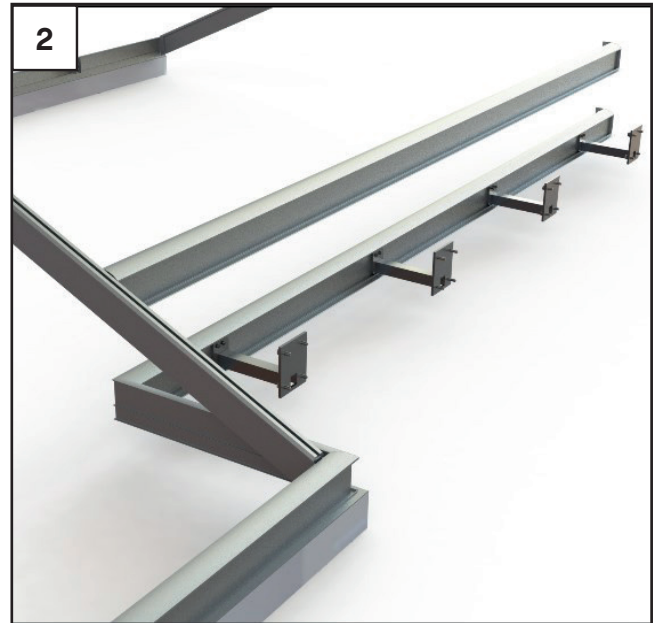


Where site surveys alter from this typical example please contact the Prefix Technical Department for guidance on an alternative solution prior to Installation.

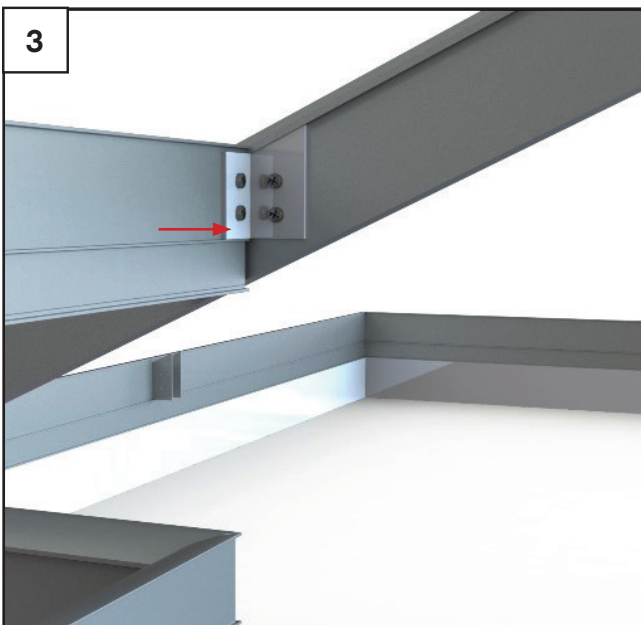
RAISED BOX GUTTER



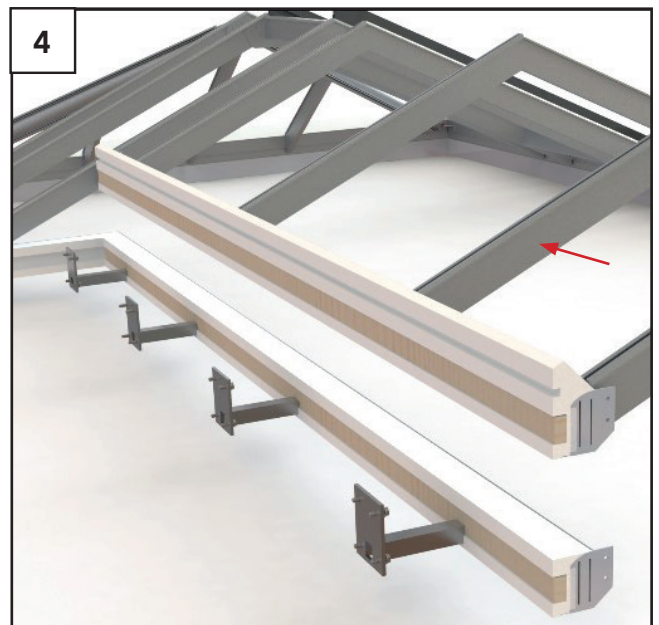
Follow steps 1 and 2 Page 28 box gutter installation to locate and fix support brackets. Using site installation paperwork, lay eaves beams out over frames and set eaves at box gutter 288mm from host wall/fascia to internal face of eaves. Secure back to host wall using suitable substrate fixings (not supplied by Prefix). Follow installation steps over previous pages to secure support plates to host wall/House rafters.



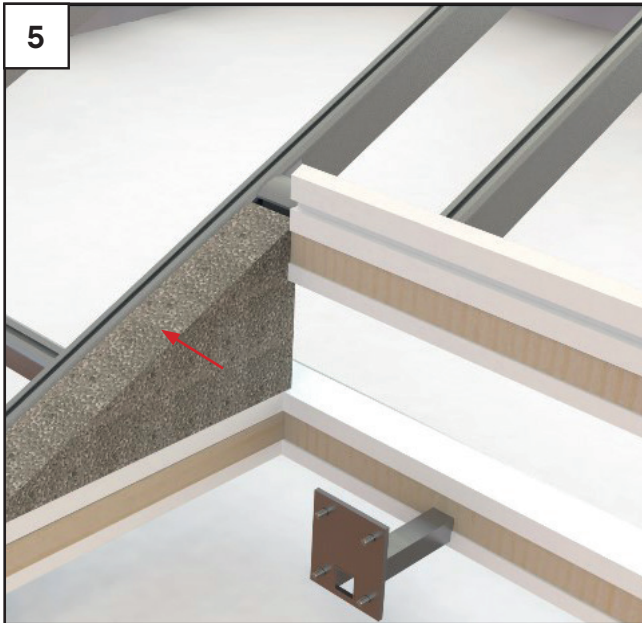
Looking at Rafter Plan drawing, fix first full A-Frame in position to support the upper eaves at the box gutter. Locate upper eaves beam (this will be the one with rafter brackets on). Using the setting height given in site paperwork, vertically line internal eaves line with lower eaves, and secure to host wall using suitable substrate fixings (not supplied by Prefix).



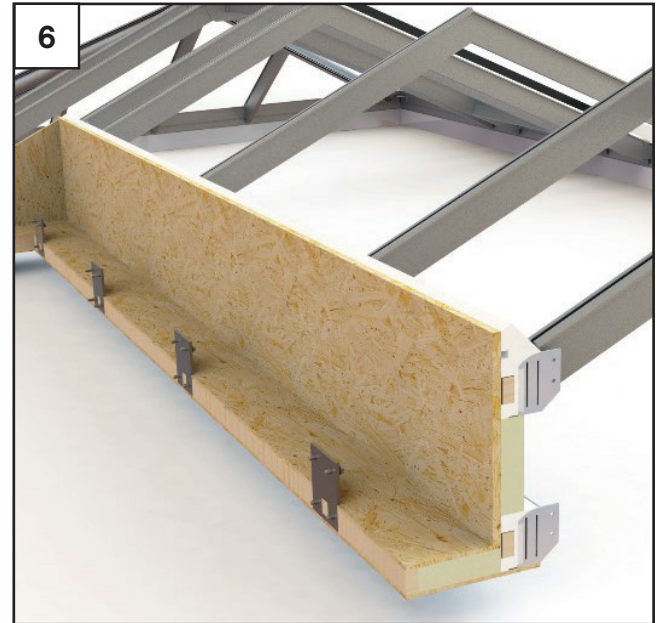
Fix upper eaves beam into A-Frame using 2 x M6x16mm Taptite screws ensuring top of eaves is square, level and tangent to the top face of the rafter. Fix in position remaining A-Frames, Rafters and Hips.



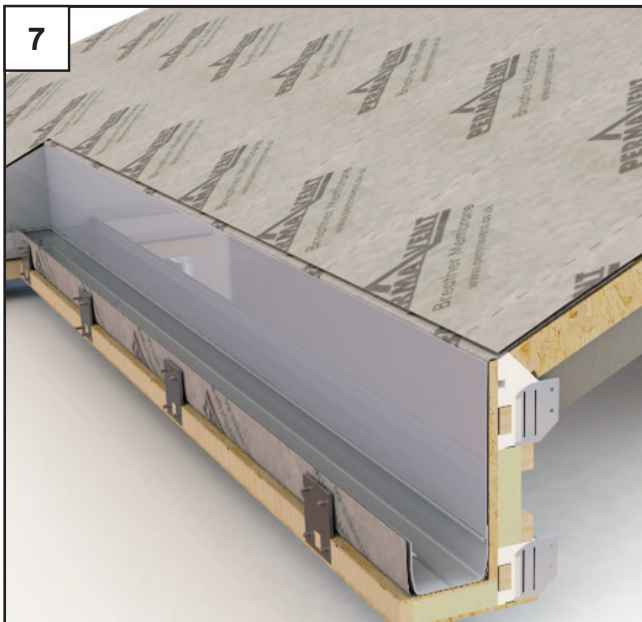
Insulate Eaves beam around roof. (Narrow Insulation always used at Box Gutter). Lower eaves to be insulated using the 115mm tall ripped down eaves insulation pieces. (Note: notching required at bracket locations).



Use 100mm EPS insulation wedge between rafter and box gutter to insulate the void.

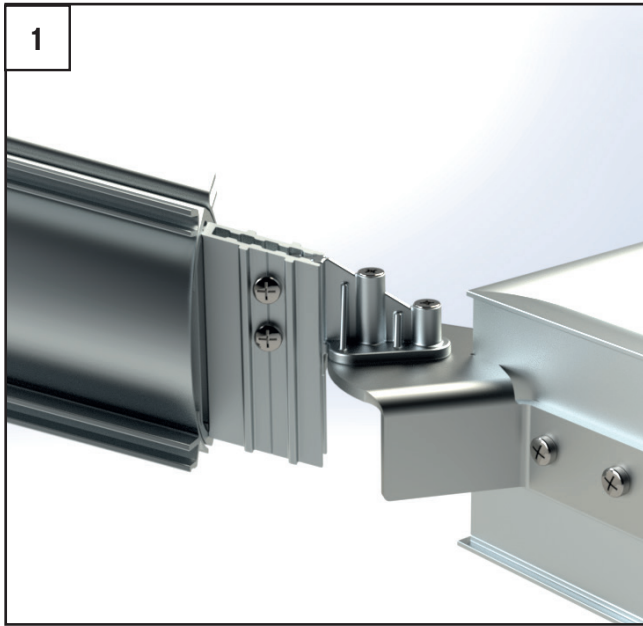


Following the same method as a standard box gutter install, insulate and clad box gutter with 50mm PIR and OSB panels. Extra insulation and timbers supplied to pack out between upper and lower eaves beam prior to plaster boarding.

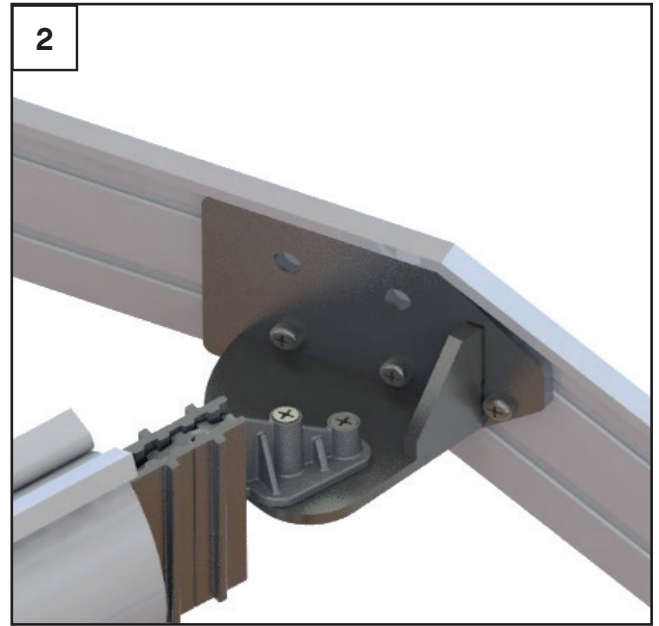


Follow rest of guide for installation steps for rest of roof and box gutter procedures. Install box gutter ensuring secure and weathertight.

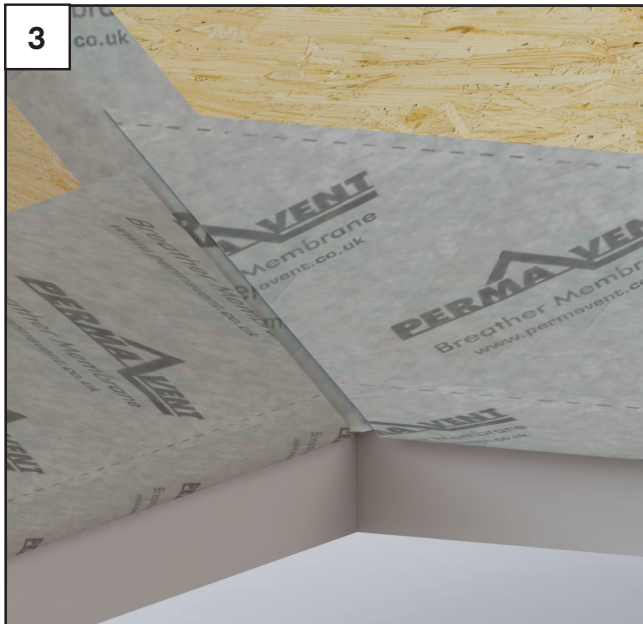
VALLEY INSTALLATION.



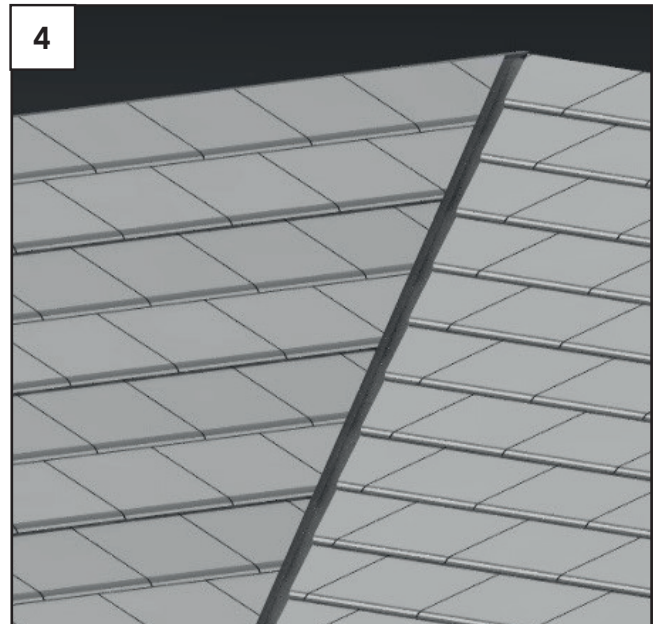
Position the Valley Bar Assembly at the eaves. Line up Tennon to its marked location and fix down to the valley corner bracket using 2 x M6x50mm Countersunk Taptite Self Tapping Screws. (Note: Valley assembly is same as hip bar assembly but inverted).



Position the Hip Bar Assembly or any spider bars on to the Rad End. Line up the Tennon to its marked location and fix to radius end plate using 2 x M6x50mm Countersunk Taptite Self Tapping Screws.

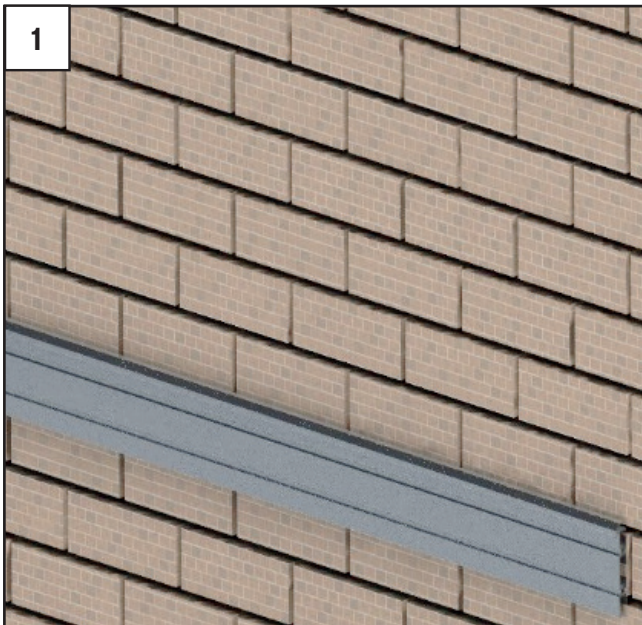


Run membrane across the roof. Make sure an extra strip runs down the full length of the valley for each side membrane to run on to. Position GRP Valley tray in position. Mark and cut top and bottom to shape ensuring enough overhang into the gutter. If fixing down, pin along outside edges, away from where any running water will reach using 38mm stainless screws.



When running tiles in to the valley, ensure no fixings go through GRP. Run tiles over the shoulder minimum of 25mm (distance between tiles meeting to the discretion of the installer). Note: when tiling into a valley with Envirotile 28mm glazing end channel (RAL 7016) is sent out to flash over cut edge of tiles down full length of valley below tiles.

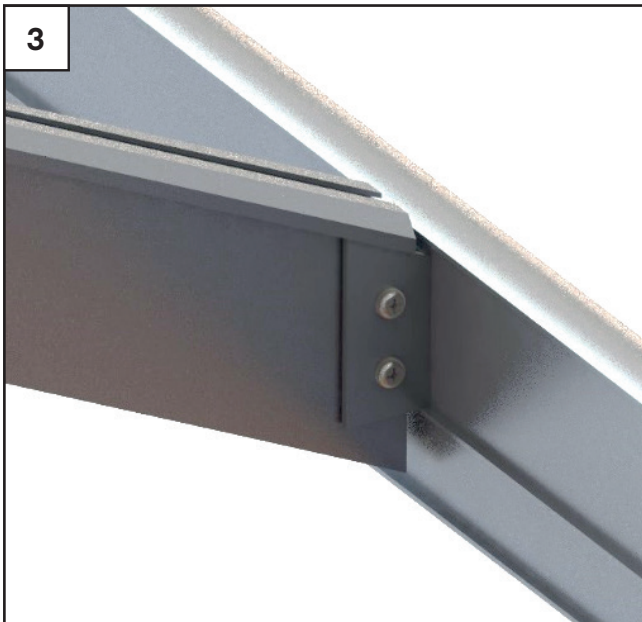
LEAN TO ROOF INSTALLATION.



On a Lean To style roof. Mark height to underside of wall plate on host wall (shown on paperwork). Take wall plate and offer up against wall. Ensure level and support in position.



Once level, Drill and fix back to host wall using sufficient substrate fixings max centres 500mm (**Not supplied by Prefix**).

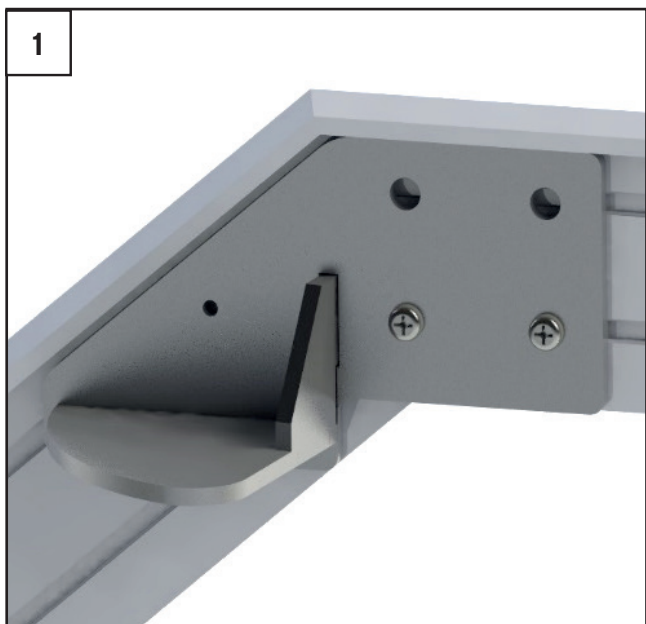


Rafters drop in to preset eaves brackets as shown on page 5 of this Installation Guide. Drill any necessary hole into rafters using 5.5mm drill bit. Fix using 4 x M6 x 16 Taptite Screws.

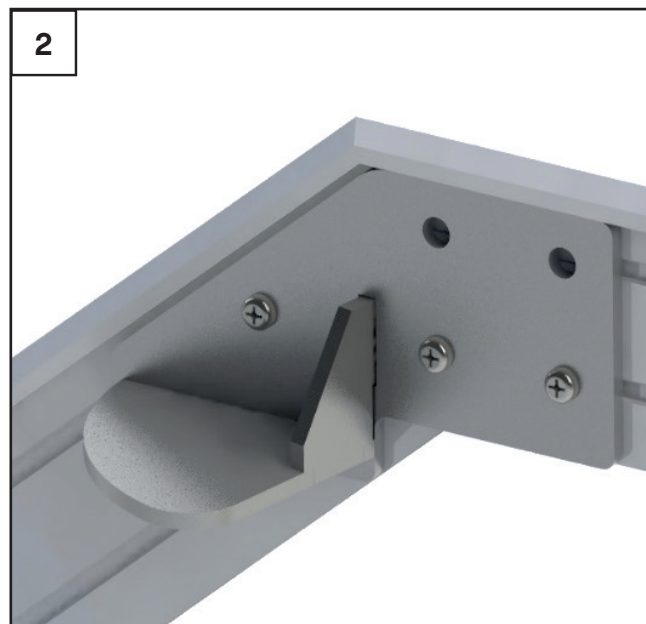


Rafters drop in to preset brackets as shown on the wall plate. Drill any necessary hole into rafters using 5.5mm drill bit. Fix using 4 x M6 x 16 Taptite Screws. Continue rest of roof as shown earlier in this guide. Refer to Gable end section of this guide for Lean to Gable ends.

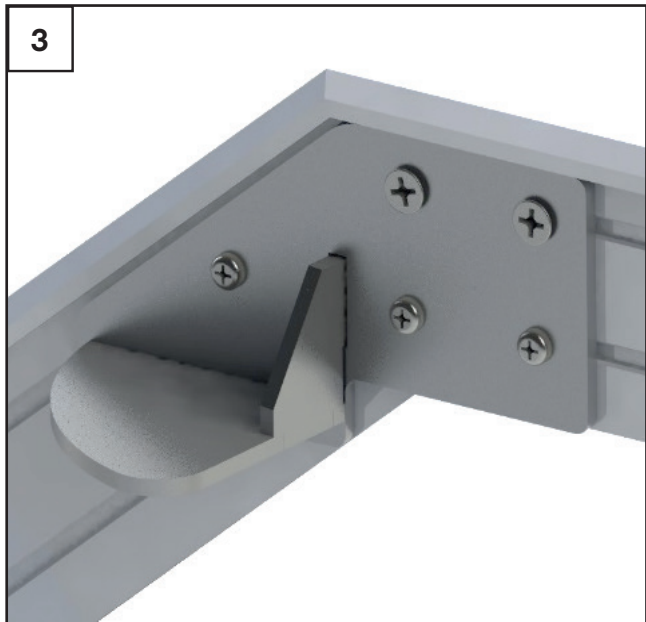
HIPPED LEAN TO ROOF INSTALLATION.



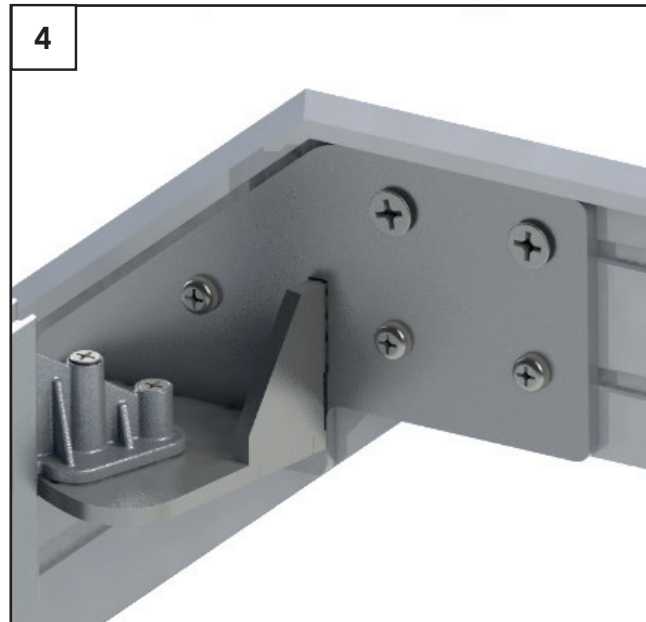
Position starter bar up to mitred edge of wall plate. Wall plate radius end should already be fixed to the wall plate. This can be done prior to fitting against wall.



Once in position, Drill and fix bracket to starter bar using 5.5mm drill bit and fix using M6x16mm Taptite screw.

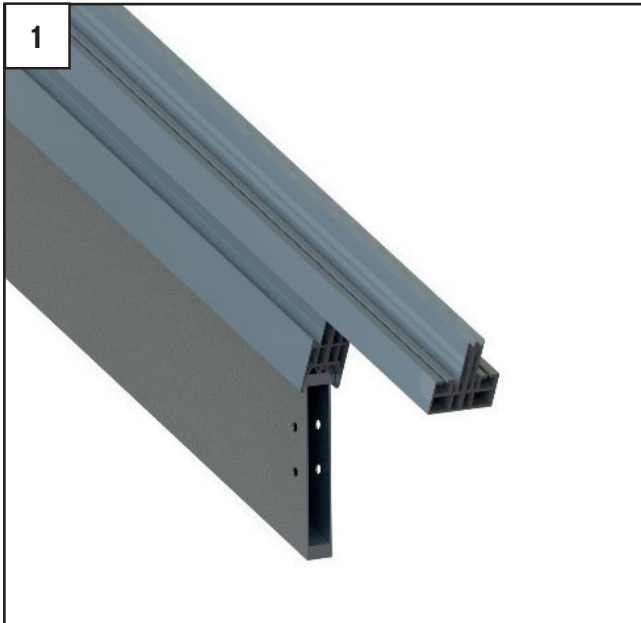


Mark height to underside of wall plate on host wall (shown on paperwork). Offer wall plate assembly up against wall. Ensure level and support in position. Drill 2x holes through wall plate and host wall and fasten using sufficient substrate fixings. **(Not supplied by Prefix).**

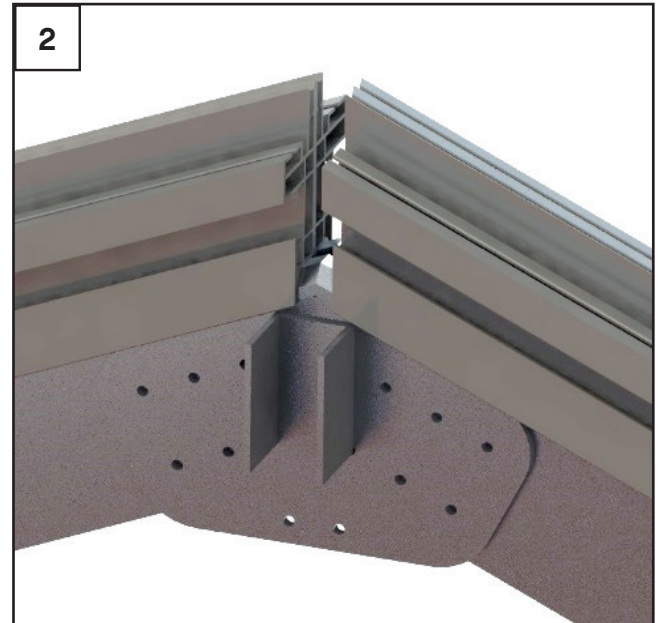


Fix hip bar in to position on radius end as shown. Fix down using 2 x M6x50mm Countersunk Taptite Screws.

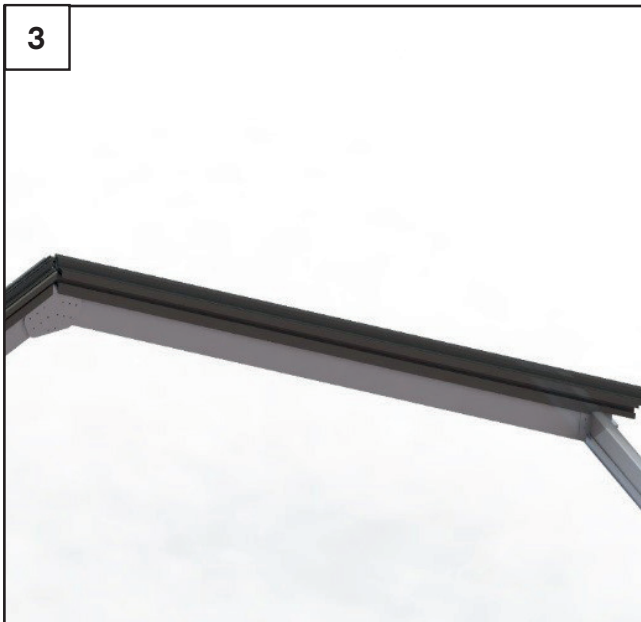
HYBRID ROOF INSTALLATION - CENTRAL RIDGE.



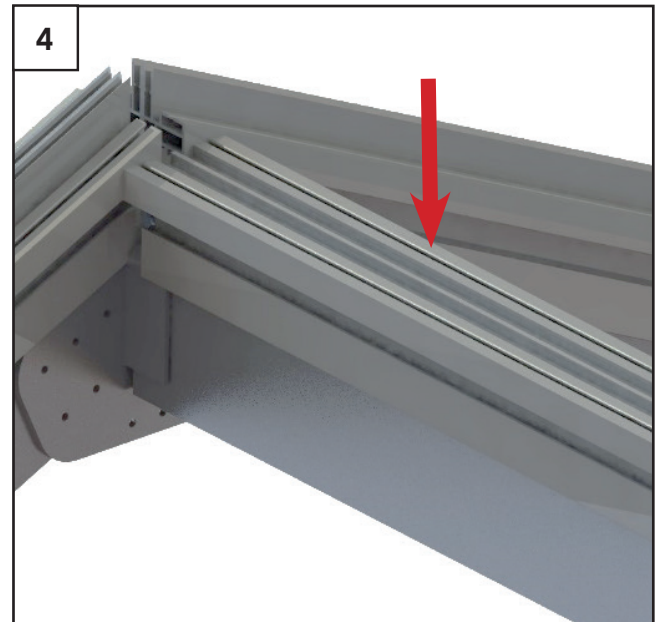
Prior installation, ensure the PVC thermal breaks have been connected to the applicable rafter, with the notched end at the bottom. On A-Frames against the host wall, back to back thermal breaks are used as shown above



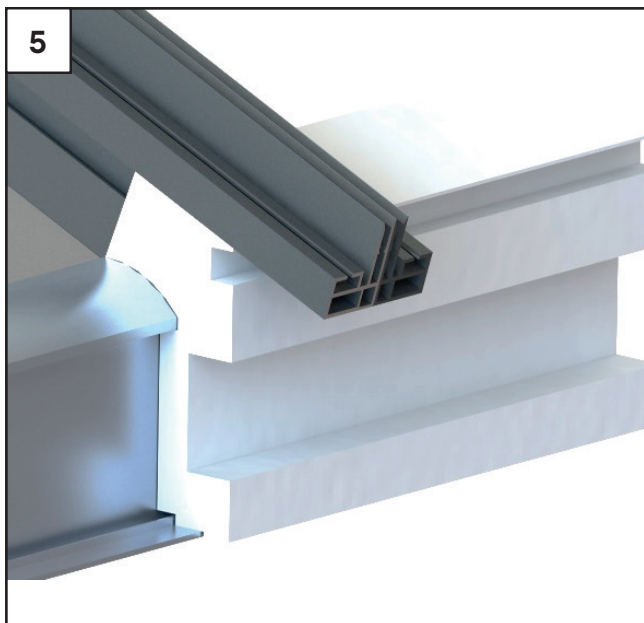
Leave an 18mm gap between each thermal break at the apex of the A-Frames (9mm each side) to allow for the OSB ridge support to run through.



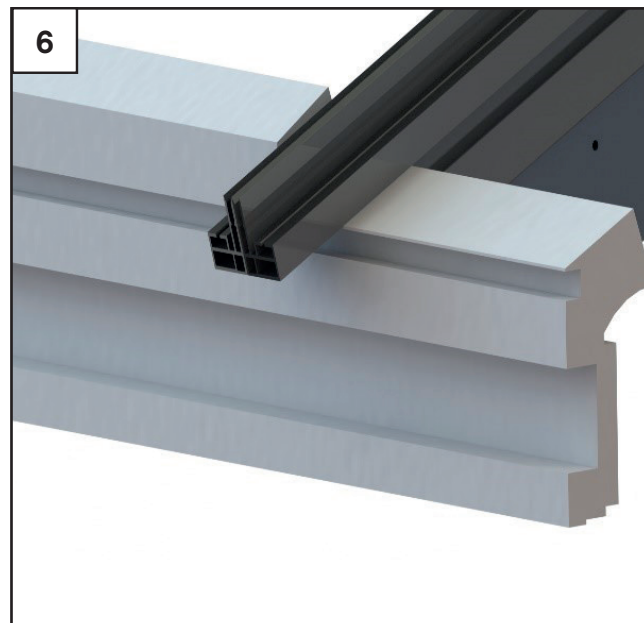
Drop the assembled A-Frame inside the uchannel brackets at the pre-set positions on the eaves. At house wall, pack out between bar and wall and fasten A-frame to house wall at approx. 500mm centres using substantial substrate fixings (**Not supplied by Prefix**).



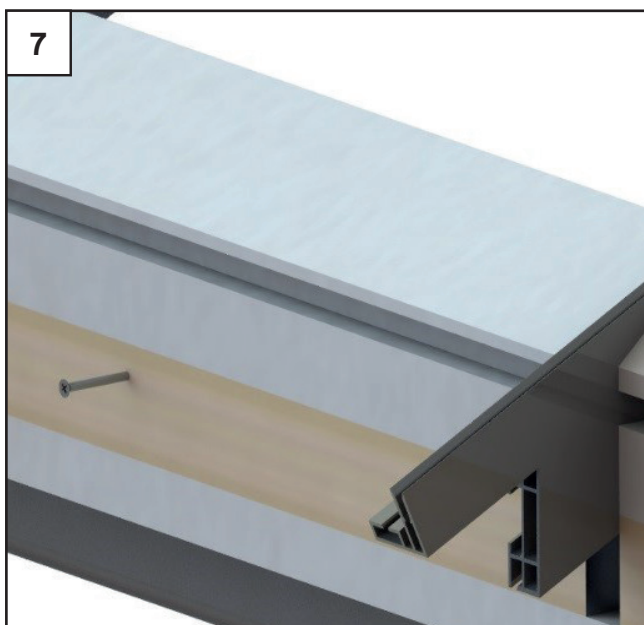
When locating A-Frames, drop ridge rafter into the u-channels on the A-Frame gusset plates until shoulder of rafter sits on to top of bracket. This may require positioning before fully locating A-Frames into Eaves Brackets. PVC on ridge should sit up to PVC on rafters. Fix using 2 x M6 x 16mm Taptite screws each side.



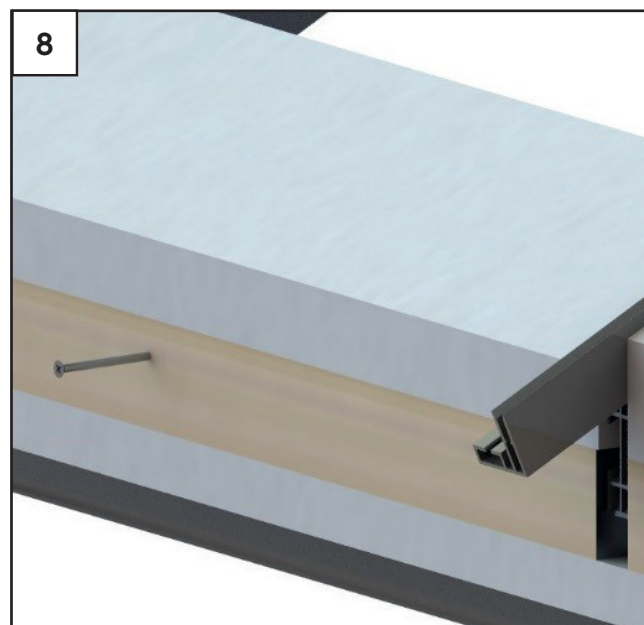
Thermal Break will be notched over the eaves to run past fascia board and support the glass. The eaves insulation and fascia board will be notched to suit.



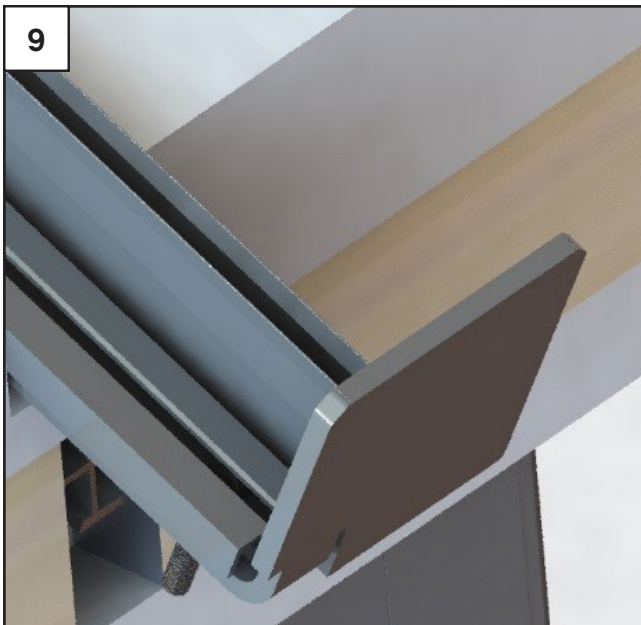
Locate pre-notched eaves insulation between the rafters, this may need splitting to fit in around thermal break. Top of insulation should sit flush with gasket channel in the PVC extrusion.



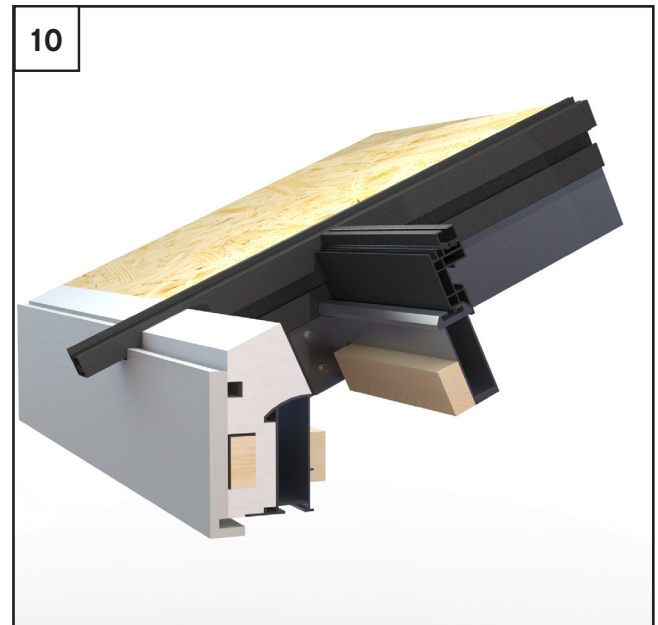
Insert 25x50mm timber batten into recess in the front of the eaves insulation. This may need cutting between the PVC rafters. Fix through timber into the aluminium eaves beam using the bay pole screws provided to secure the insulation in place.
86mm insulation = 60mm bay pole screws.
116mm insulation = 100mm bay pole screws.



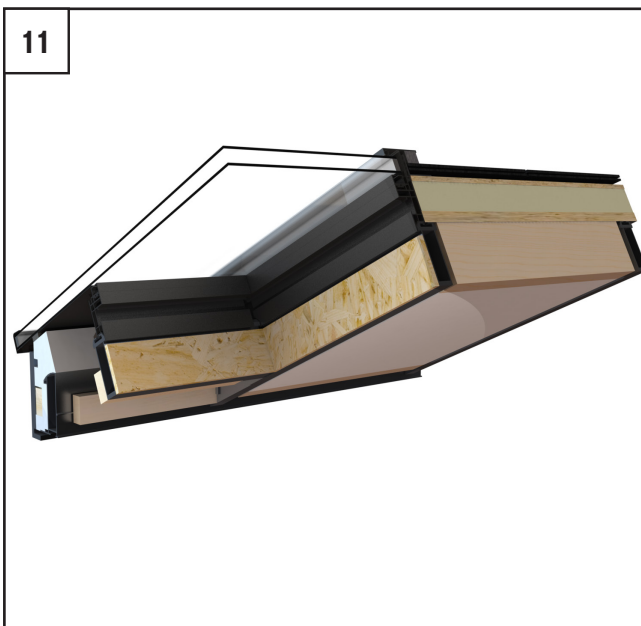
If an overhang is required, repeat steps 6 & 7 locating the insulation and batten in position. Fix through battens using 90mm woodscrews provided.



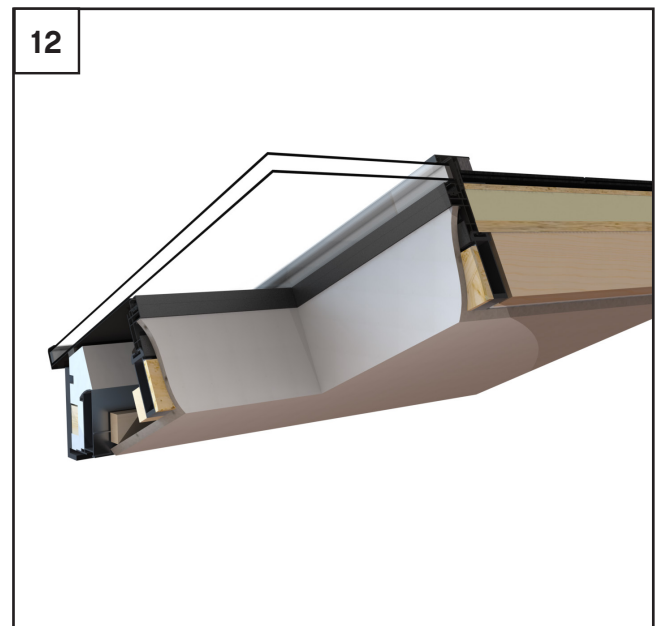
Take glazing bar end caps/glass stops and slide inside chamber below gasket chamber or position on underside if notched away. Fix through using 2 x M6x25mm square head nuts and secure with m6 bolts supplied. Note: these caps are handed.



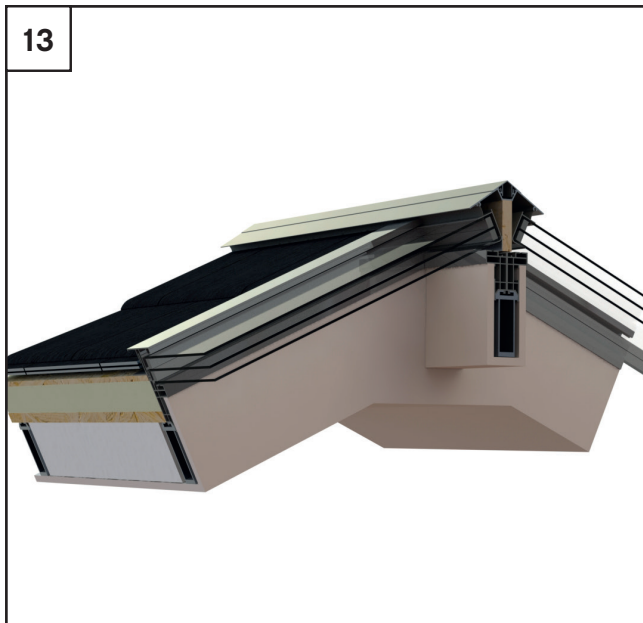
Line up cross rafter with drilled hole positions in A-Frames and fix using 2 x M6 x 16mm Taptite Screws Provided. Ensure timber batten is fixed to back face of cross rafter and eaves beam as fixing point for internal plasterboard



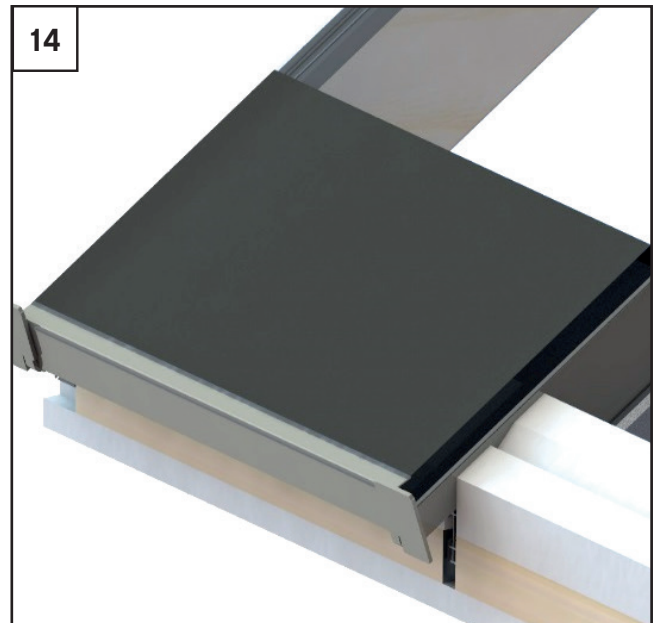
Locate 80 x 1200 x 9mm OSB packers. Position underside of packer with bottom edge of Rafter and fix using 4.8 x 25mm self drilling screws to allow plasterboard to sit square on PVC thermal break. (Cross Sections on Page 46).



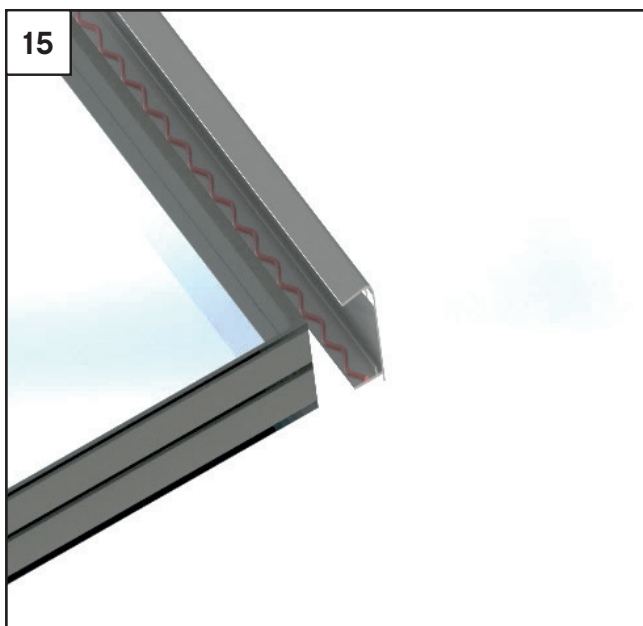
Once the rest of the roof is panelled and water tight, internal surface can be clad using Foil Back Plasterboard (**not supplied by Prefix**) See cross sectional images on page 47.



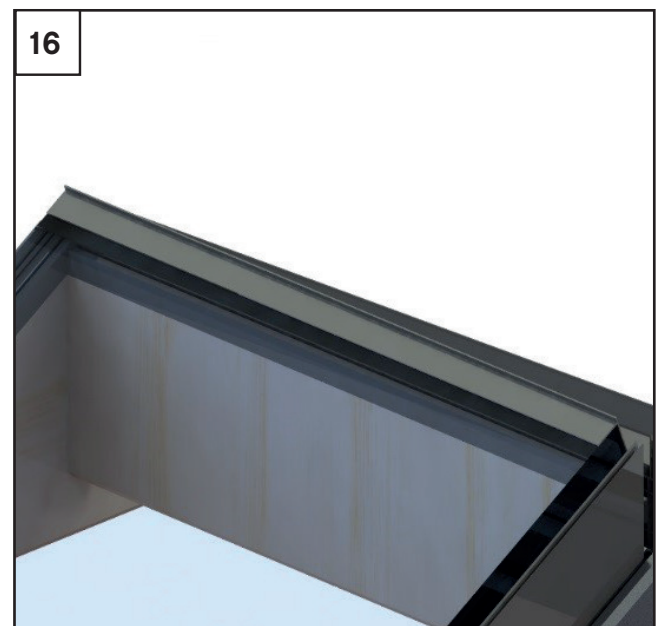
Where ridge rafter is used follow steps 11 and 12 to fix plasterboard using cross sections on page 46 as a visual reference.



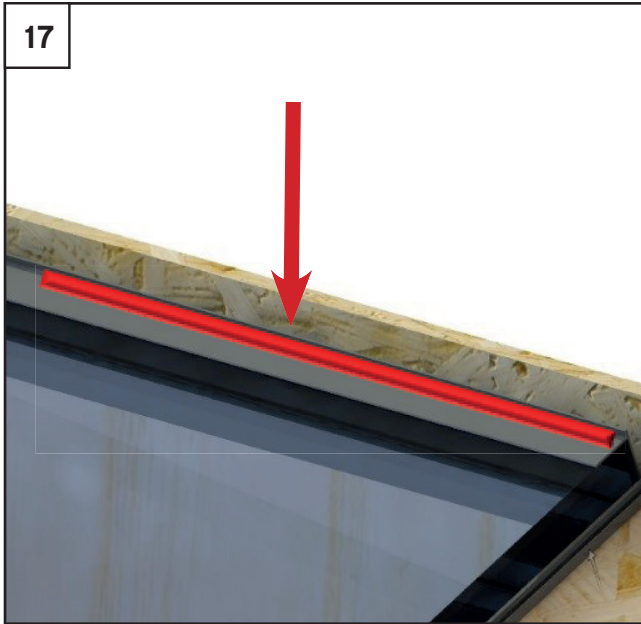
Ensure E gasket is fitted down the PVC channel and insert glass units. Ensure Glazing bar end caps are bolted in position at bottom of thermal break, before fitting glass as these act as glass stops. Black out film to sit on internal face of glass at the eaves to mask the internal structure of the roof through the glass.



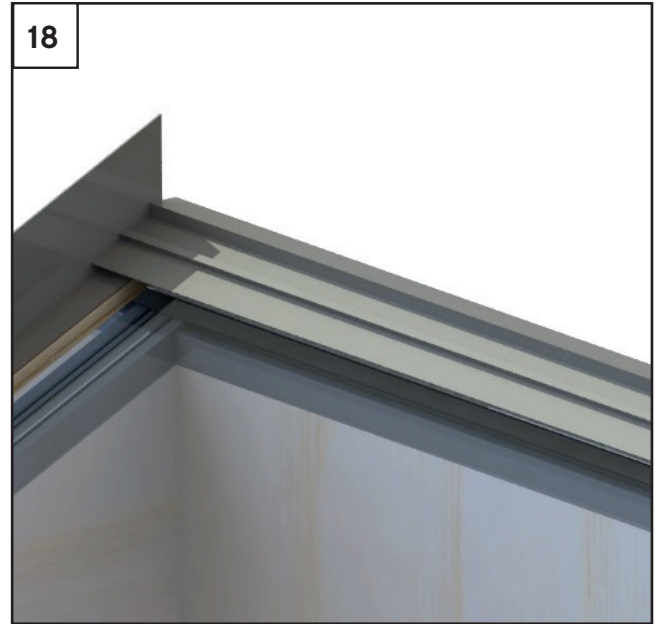
Take 44mm PVC end channel and run a bead of suitable MS polymer sealant along the top and bottom internal faces and slide over the top and bottom edges of the glass units. **Note: at the bottom of the unit the tab on the PVC should face down. On the top of the unit the tab should face upwards. (28mm units will be supplied with an aluminium end channel)**



Once glass is located. Insert base panels, top panels, OSB spines, fascia and gutter, as per earlier on in installation guide.



Run expanding foam along edge between OSB ridge and the 44mm glazing end channel to fill and seal this area.



Run flash band seal over the whole ridge and onto the glazing end channel, ensure watertight.

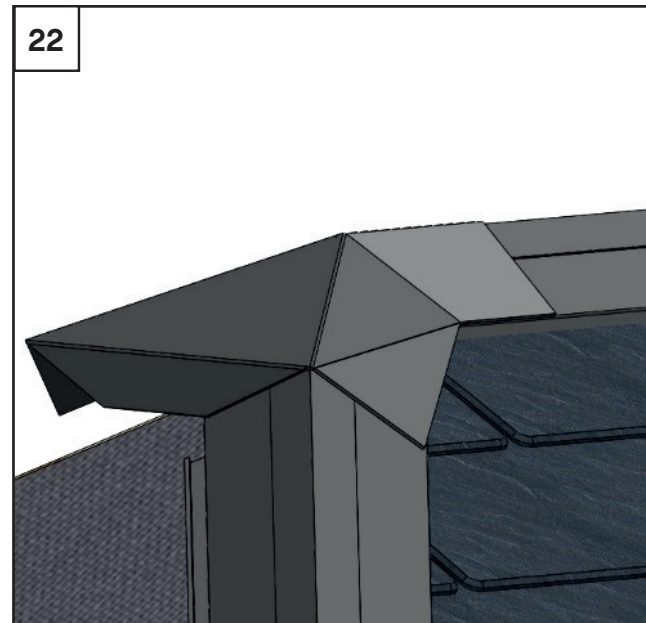
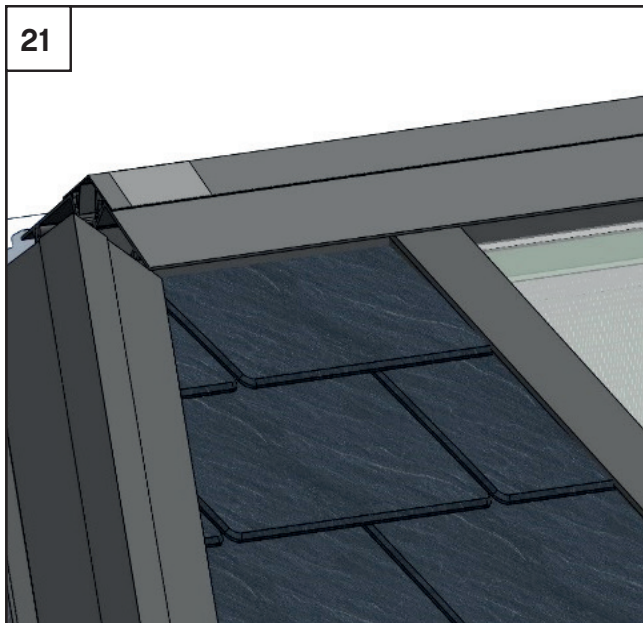


Lay membrane across rest of WARMroof, leaving extra at glass to lap up behind soaker rail. Take soaker rail with the ripped down upstand (approx. 25-30mm) and position tight up to edge of panels/ back of PVC thermal break.
(Note: glazing bar end cap omitted from this view for clarity)



Tile rest of roof. Leave approx. 20mm gap between end of tiles and soaker rail upstand to allow glazing bar top cap fit. Push glazing bar top cap down securely into PVC Thermal break, ensuring even seal on the gasket onto the glass. Expanding foam seal should expand to fill voids against the tiles.

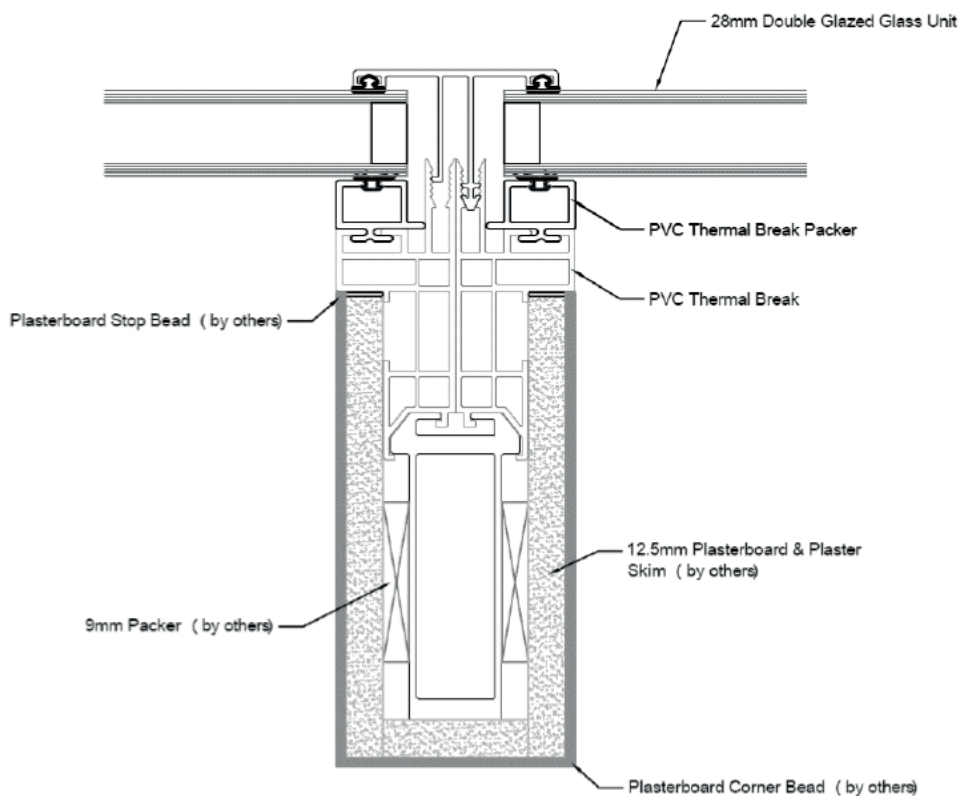
Fit new end cap covers prior to installing gutter.



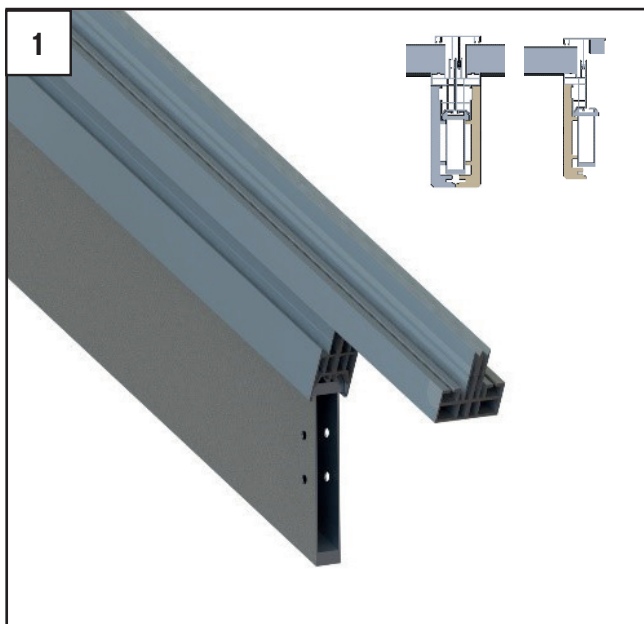
Fit top cap as per WARMroof install guide drill through aluminium at approx. 500mm centres fixing down into OSB ridge spine using 40mm stainless steel screws supplied. **Note: ensure top layer of tiles is packed up appropriately for capping gasket to seal against the tile. This may require cutting an additional row of tiles in to make work. Or packing below tiles with OSB.**

Prior to fitting the top cap cover, Notch back the top cover rail accordingly to allow radius end cover cap to clip into the top cap base. Using colour coded sealant, seal underside of radius end cover and clip into Ridge Top Cap Base. Ensure good amount of sealant to ensure radius end cover seals against ridge and hips and glass.

Typical section details of a back to back Hybrid unit. 9mm packers required to space 12.5mm foil backed plasterboard off the rafter (plasterboard and packers not supplied by Prefix). Typical approx internal finished width is 82mm.



HYBRID ROOF INSTALLATION - DROP RIDGE.

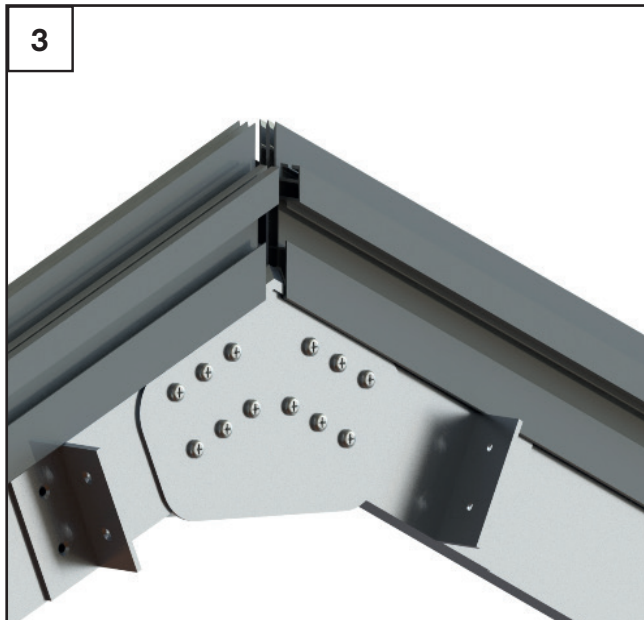


Note: The Opus A-Frames may have already been pre-assembled in manufacture.

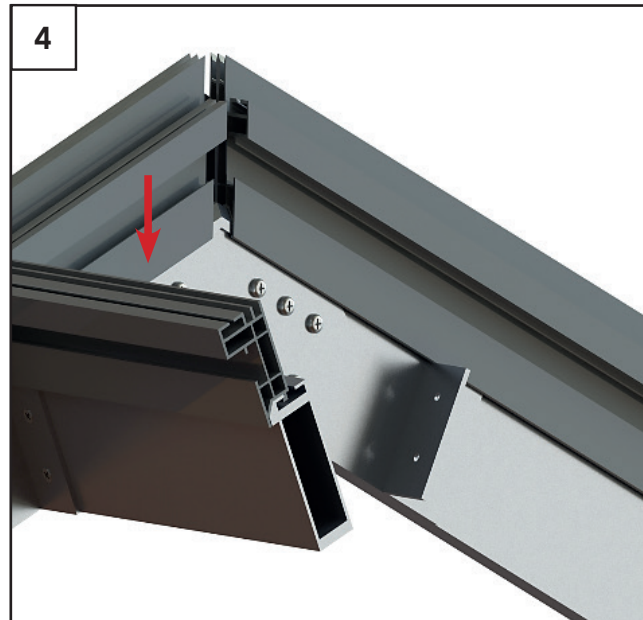
Slide the PVC thermal Break up the applicable rafter, with the notched end at the bottom. On A-Frames against the host wall, back to back thermal breaks are used as shown above.



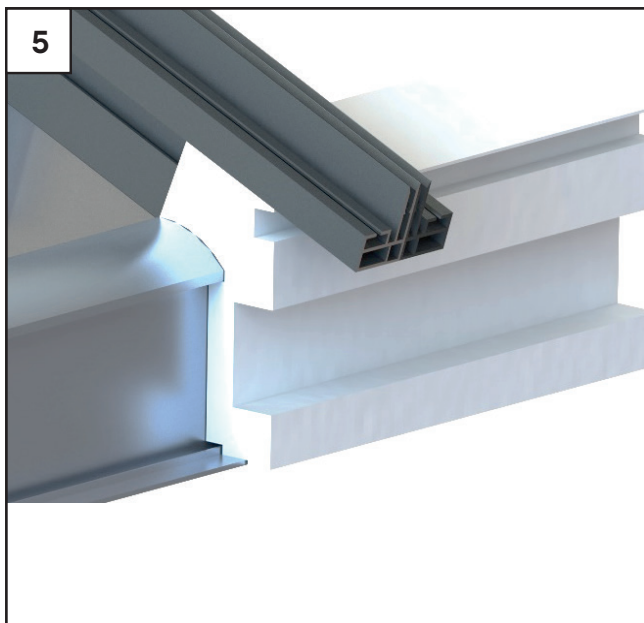
Drop the assembled A-Frame into the prepositioned brackets on the eaves. Always pack starter A-Frame off wall and fasten to host wall 250mm from ends and at max. 500mm centres using substantial substrate fixings (**Not supplied by Prefix**).



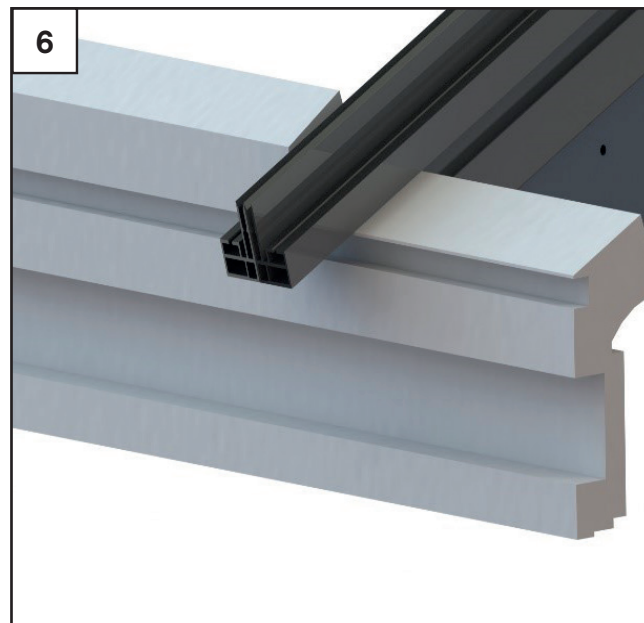
Ensure Brackets located on rafter are pointing inwards on the sections where the glass units will be placed. There should be one at the ridge and one at the eaves to position the cross rafters.



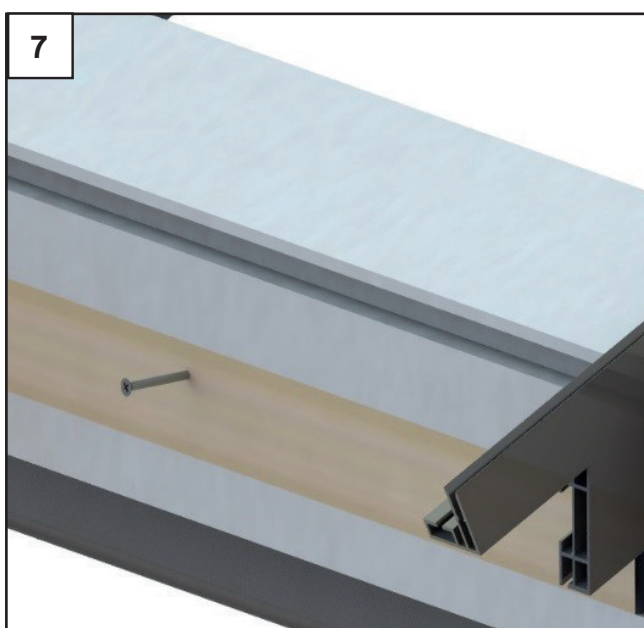
Once A-Frames are installed, select the appropriate cross rafters (using paperwork supplied) and drop into positions at ridge and eaves. Fix using 2 x 4.8 x 32mm countersunk self-drilling screws provided per bracket.



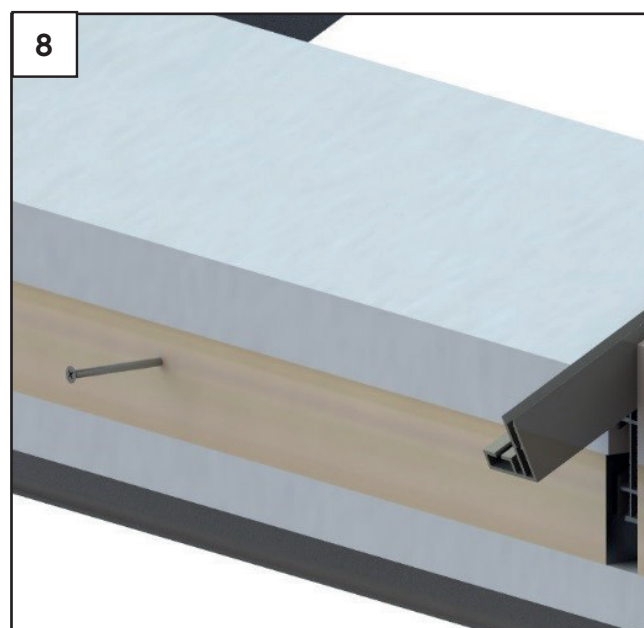
Thermal Break will be notched over the eaves to run past fascia board and support the glass. The eaves insulation and fascia board will be notched to suit.



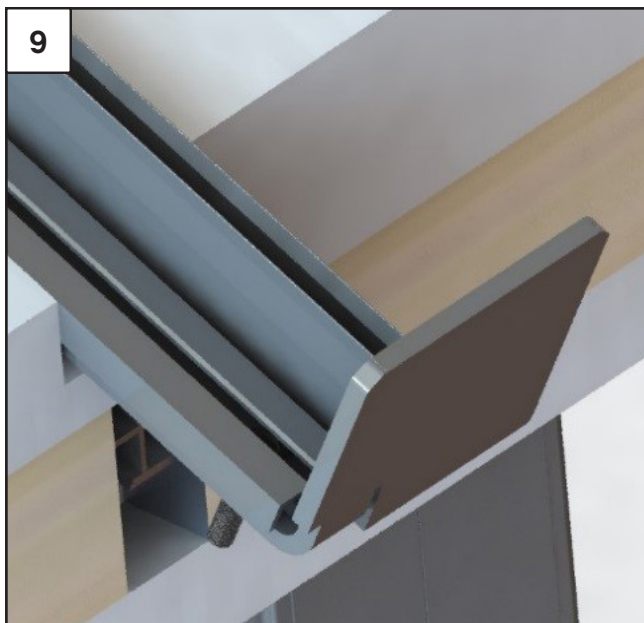
Locate pre notched eaves insulation between the rafters, this may need splitting centrally to fit in around thermal break. Top of insulation should sit flush with gasket channel in the PVC extrusion.



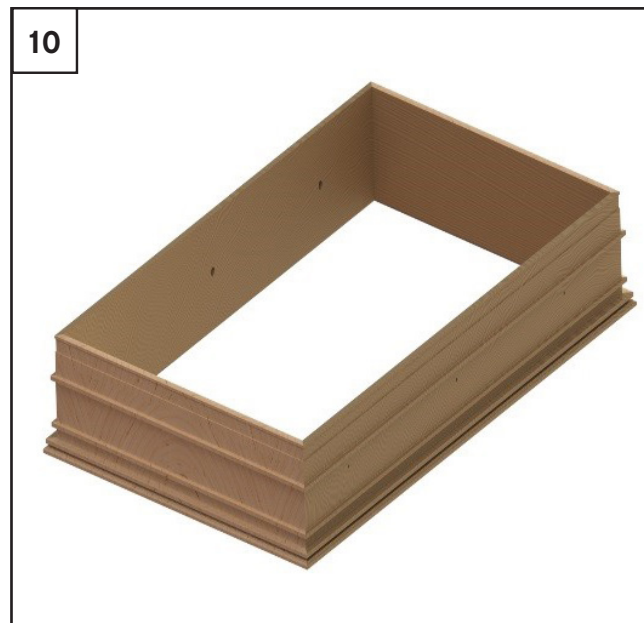
Insert 25x50mm timber batten into recess in the front of the eaves insulation. This may need cutting between the PVC rafters. Fix through timber into the aluminium eaves beam using the bay pole screws provided to secure the insulation in place.
86mm insulation = 60mm bay pole screws.
116mm insulation = 100mm bay pole screws.



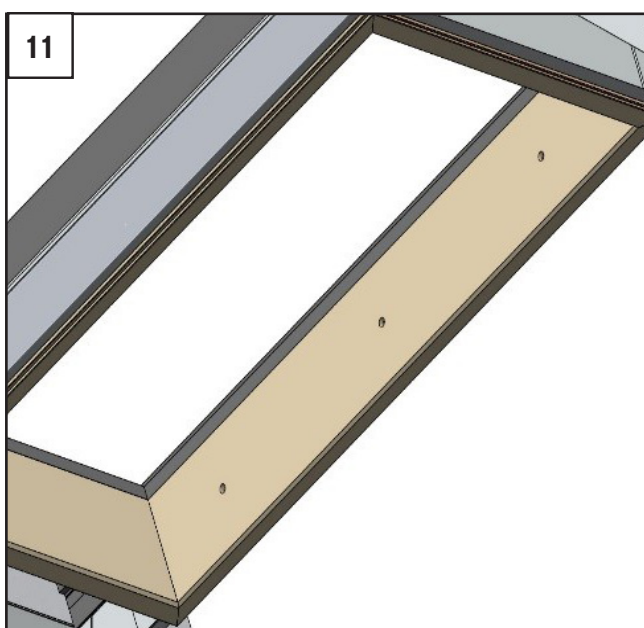
If an overhang is required, repeat steps 6 & 7 locating the insulation and batten in position. Fix through battens using 90mm woodscrews provided.



Take glazing bar end caps/glass stops and slide inside chamber below gasket chamber or position on underside of PVC if the lower channel is notched away. Fix through using 2 x M6x25mm square head nuts and secure with M6 bolts supplied. Note: these caps are handed.



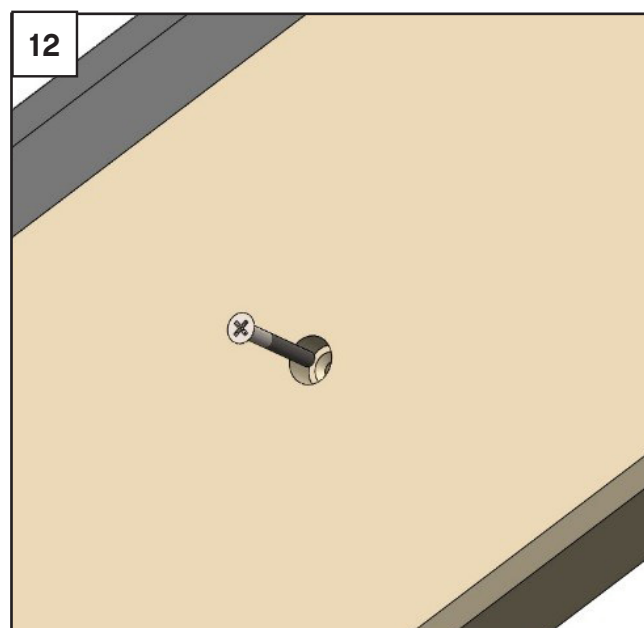
Locate all Opus timber boxes and ensure they are rigid and not damaged.



Position Opus cladding into glazing rebate in the framework. Push up till the timber sits flush to the thermal break (timber should sit flush with internal edge of PVC).

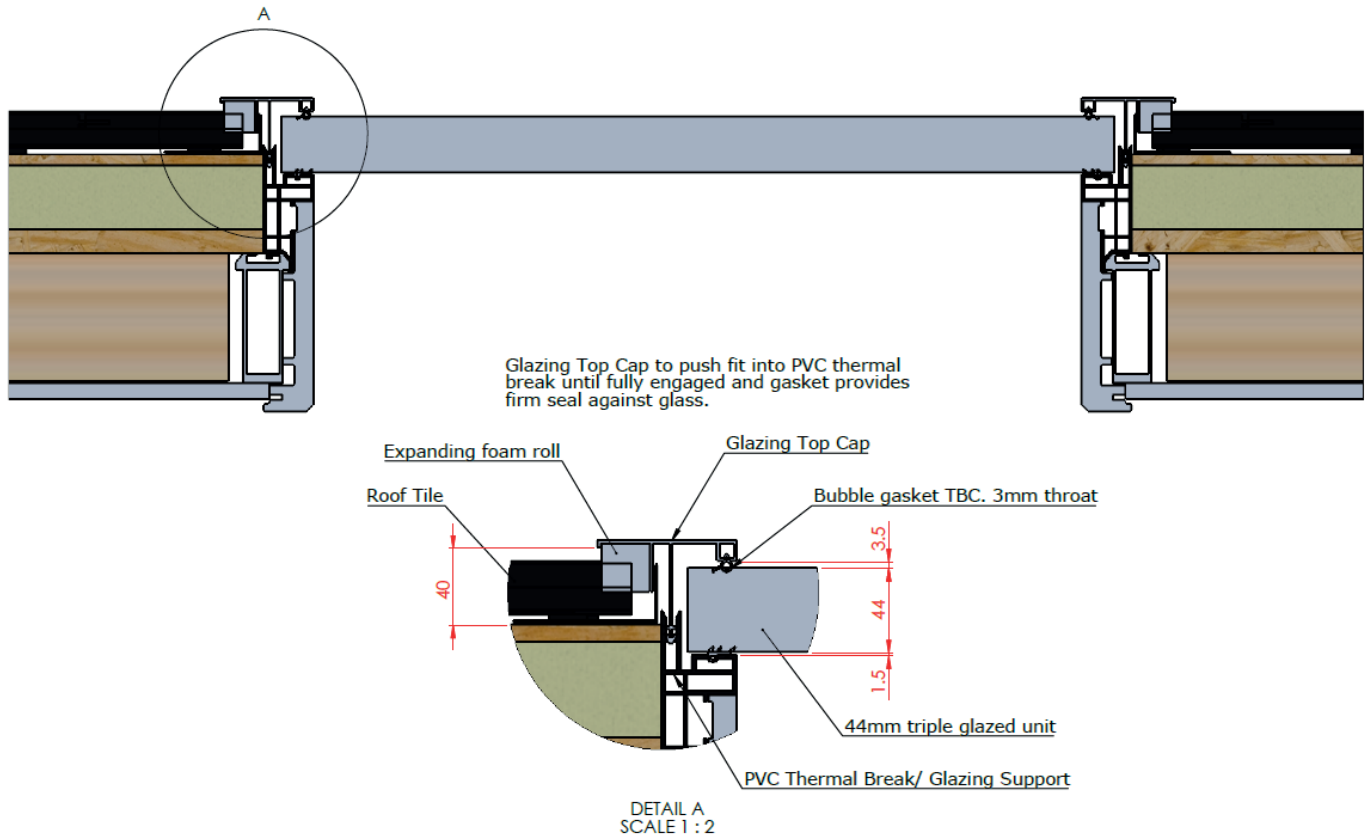
Prefix recommend fitting timber once the roof is weather tight.

For rest of Hybrid Installation follow steps 17-26 on pages 42-43 "Hybrid Installation".

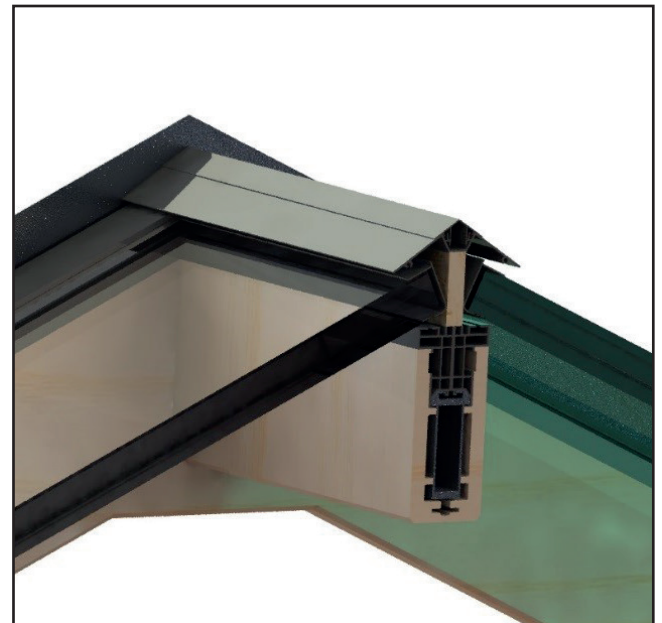


Holding the box in position, secure through pre-drilled holes in to aluminium rafter using the Ø4.8 x 32mm countersunk self-drilling screws provided into the pre-drilled hole positions in the timber. Using the plugs provided, tap in until flush with external face of timber cladding. Range of plugs supplied, line up grains where possible to minimise visibility of the plugs. However due to the use of natural materials they will remain visible, yet subtle.

HYBRID SECTION THROUGH.

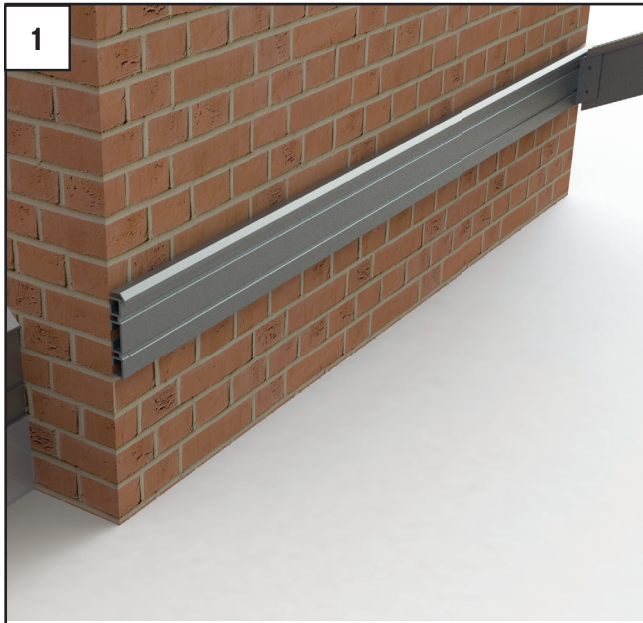


If 28mm units have been supplied, the thermal break will come with a factory fitted packer.



If using plasterboard to finish reveals, pack off aluminium using 80 x 1200 x 9mm OSB strips to ensure plasterboard sits flush to edge of thermal break. Self drilling screws still required to fix plasterboard into aluminium.

FLASHING TRAY DETAIL.



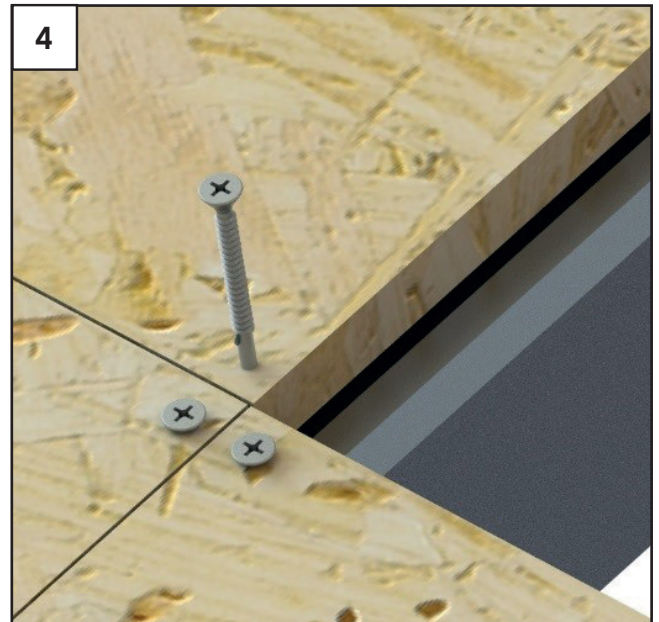
Using drawing pack (provided) measure and mark position of wall plate on host wall. Fix in position 150mm from each end and at approx. 500mm centers using suitable fixings.



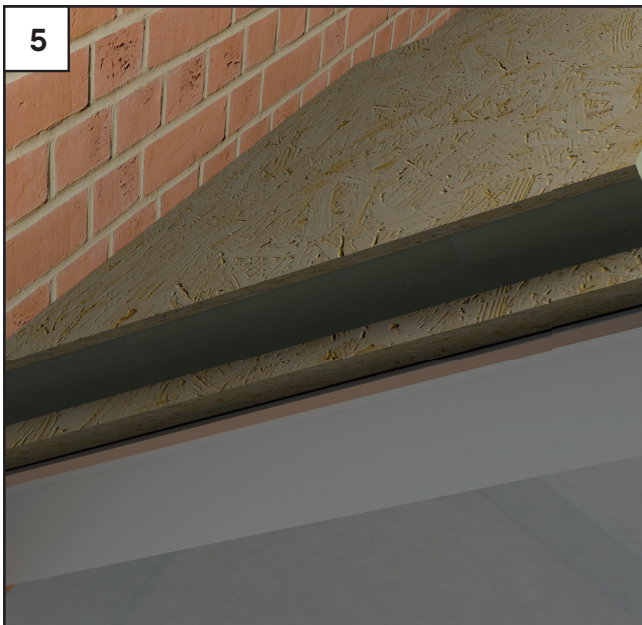
From information provided, identify and locate the rafters. Using M6x16mm Taptite screws, fix the rafters as per standard detail over the uchannel brackets on the wall plate.



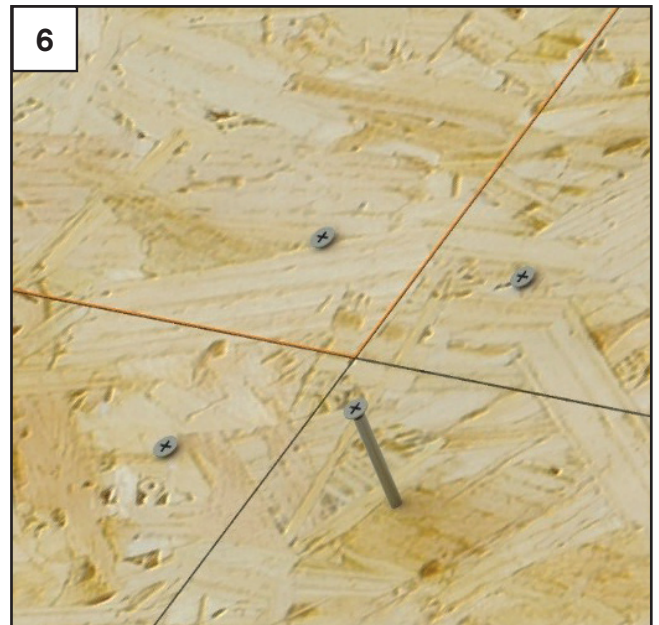
Identify and fit base panels into position. Ensure the top edge of the base panel sits against the host wall and the internal timber against the edge of the wall plate.



Secure base panels to rafters 10mm in from edge of base panels. Fix using 5.5 x 60mm self-drilling tek-screws provided.



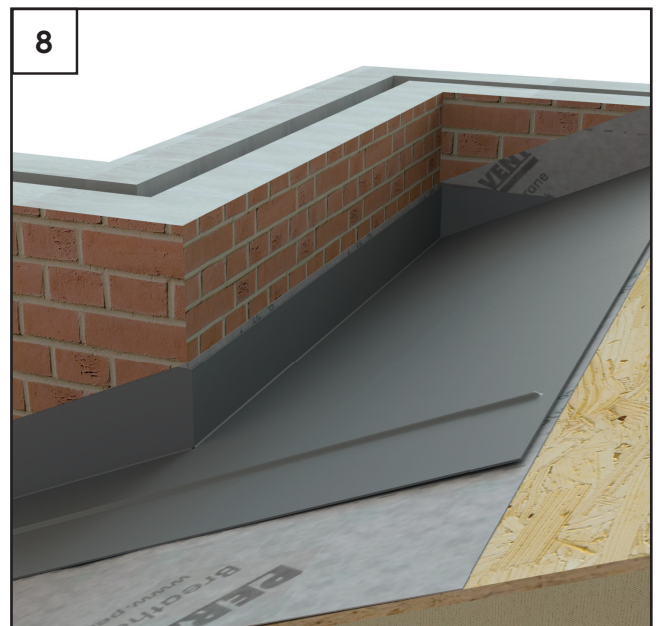
Identify and locate top panels. Top panels in this area will be mitered to suit the pitch and should sit flush against house wall.



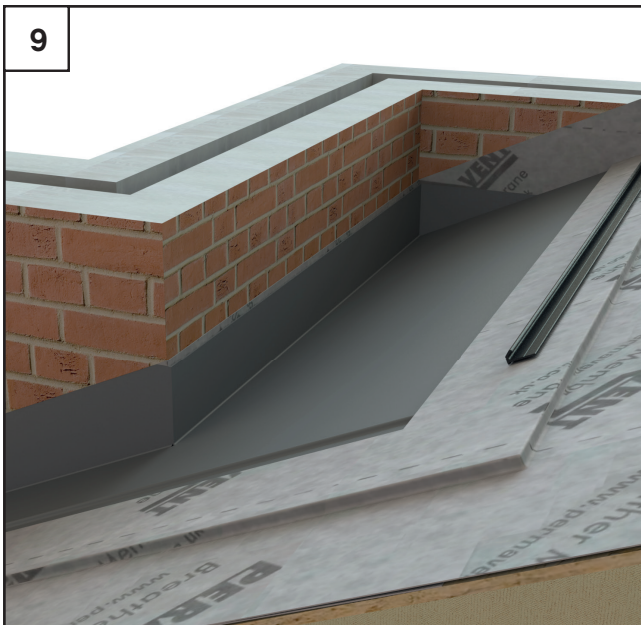
Fix top panels to base panels approx. 75mm in from the edge of the panel, using 4.0 x 90mm woodscrews provided.



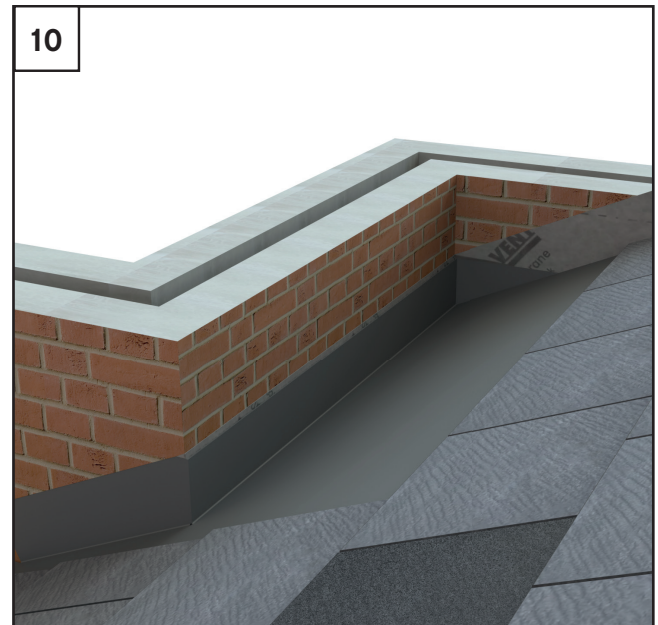
Flash roof and house wall with membrane where the flashing tray is to be installed. Take care where membrane runs up the wall into or around a corner.
Note: Ensure membrane always has a min. 150mm overlap



Position flashing tray against host wall. It is recommended to seal the tray to the host wall using a suitable sealant (low modulus silicone or lead sealant). Dress lead work over the flashing upstand.



Measure position of tile rail on flashing tray. It is recommended that generous bead of sealant is applied along the length of the tray beneath the tile rail prior fixing into position. **Note: Always ensure that full tiles are set along the tray (higher than the tray upstand where possible).**

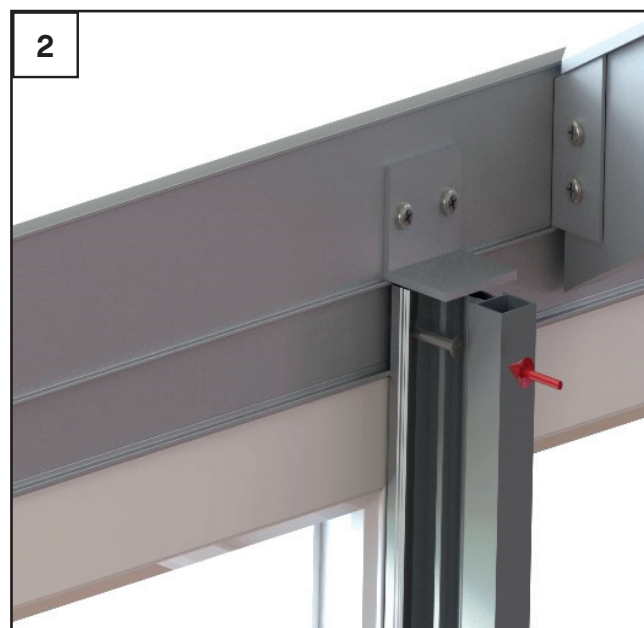


Continue to install breather membrane on the rest of the roof as previously described in the installation guide ensuring the breather membrane overlaps is adhered to and tile accordingly. **Note: Always ensure that the membrane has a minimum 150mm overlap.**

RETRO FIT POST INSTALLATION.

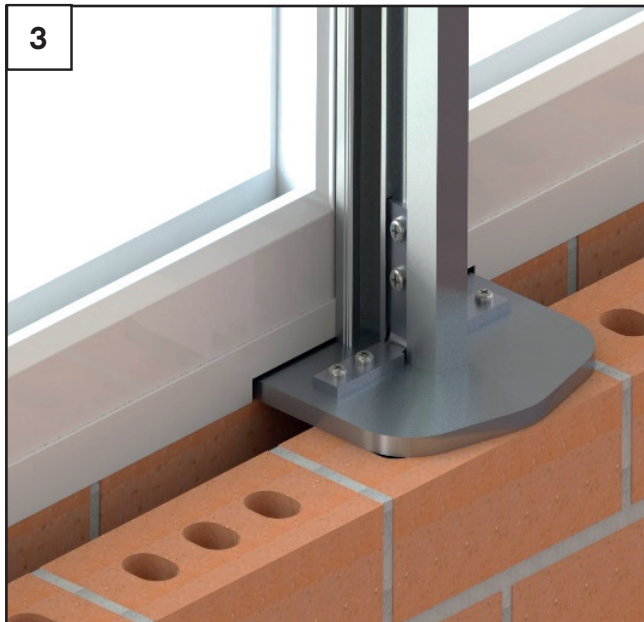


Prior to installation ensure base plate spans the cavity (supported by both the inner and outer skin of brickwork). Pack up or notch out the back of the window cill to enable base plate to sit on to outer skin of brick

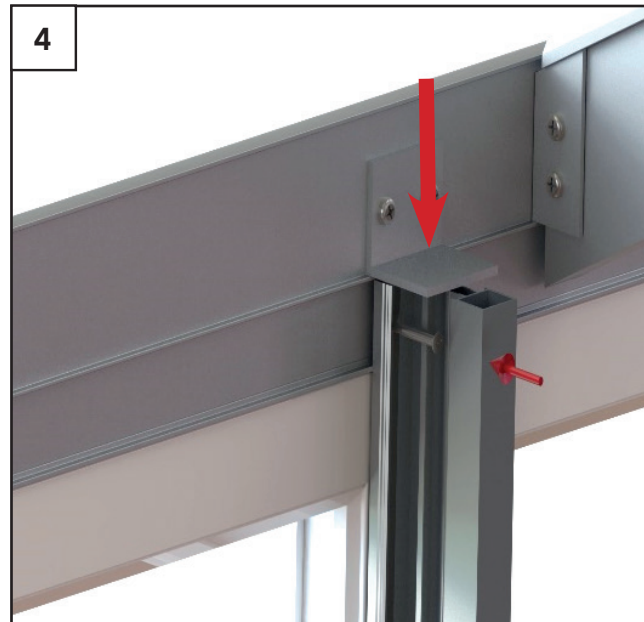


Identify mullion/post position, mark and fix 50x50mm angle bracket into eaves beam using 2 x M6 x 16mm Taptite Screws. (Ø5.5mm pilot hole required). Cut post to size to fit tight from underside of bracket to the baseplate.

Note: If post inline with rafter.



Slide 90° brackets into the end of the post and fix using M5x12 Taptite screws (Ø4.5mm pilot hole required). Position support post on base plate (see details on sheet 054) and fix to base plate using M5x12 Taptite screws.



Ensuring post is plumb, fix either side of post into back of eaves beam using 2 x 4.8x32mm countersunk self-drilling screws. Fix post into frames no more than 200mm from top and bottom and at 500mm centres using the 32mm countersunk self-drilling screws.



When installing the window board, mark and notch around the post to suit. Some notching or packing to the underside of the window board may be necessary.



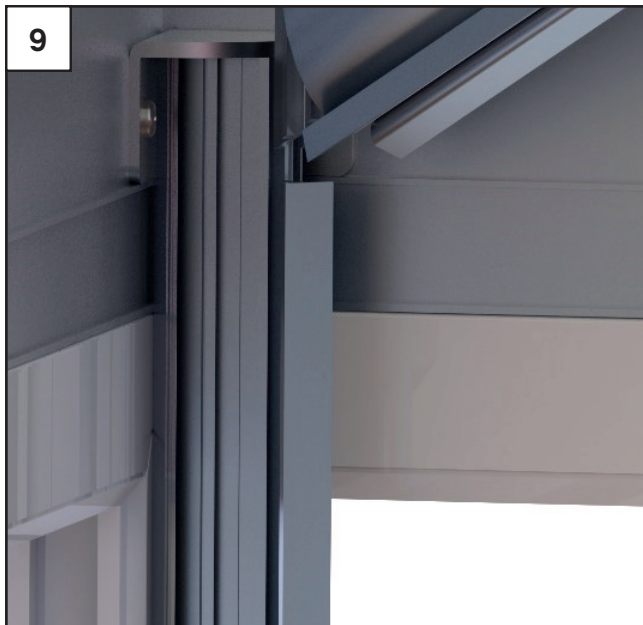
Before installing the base panels mark and notch out bottom edge of base panel approx. 70mm wide to clear top of retrofit post and eaves angle. Back fill any gaps in the insulation with expanding foam.



Measure and cut the PVC cladding to the underside of the pitched roof and knock onto post using a nylon mallet.



Cladding should sit flush against window board.

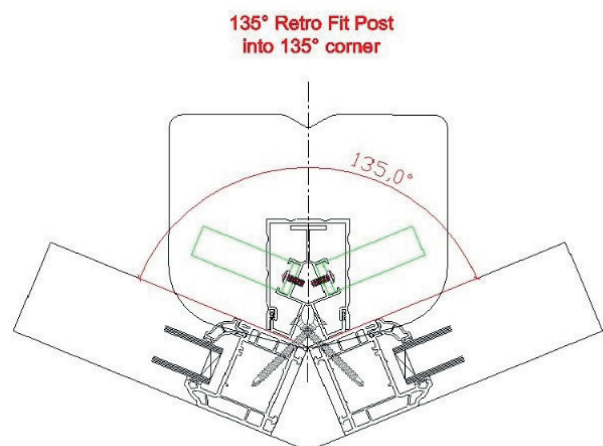
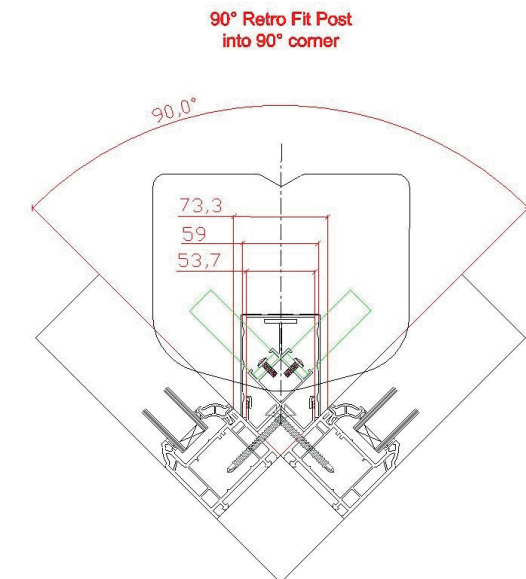
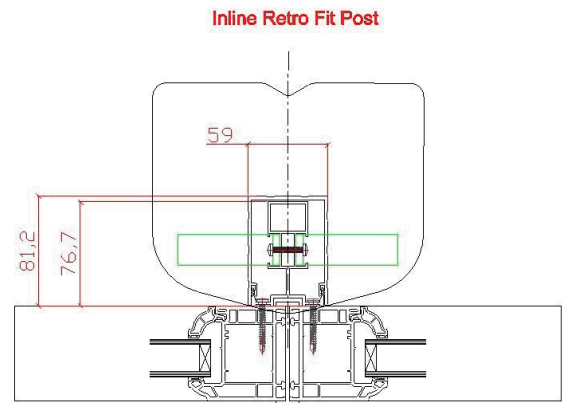


On a corner post. Remove the 2 inner M6 screws from the corner bracket. Line post up and cut to size to fit beneath the corner plate.

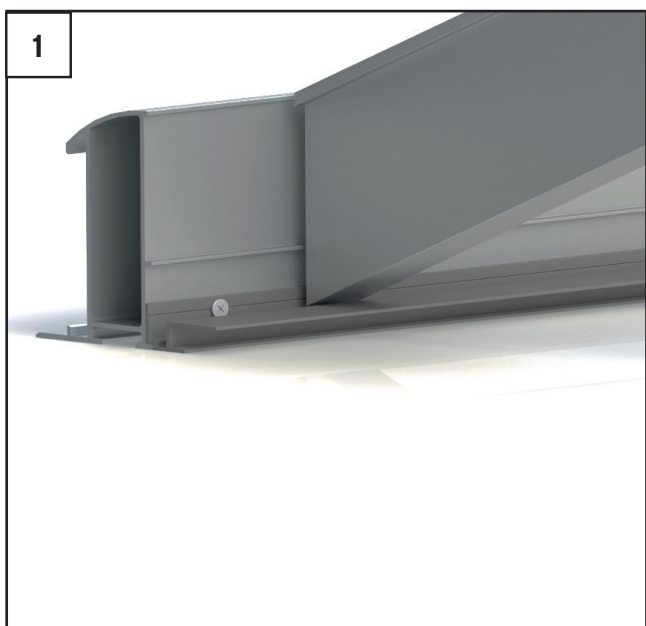
Mark and Notch the top internal edge of post to clear bottom edge of hip bar. Position post and fasten through post into the back of the eaves beam and frames using 2 x Ø4.8x70mm countersunk self-drilling screws.



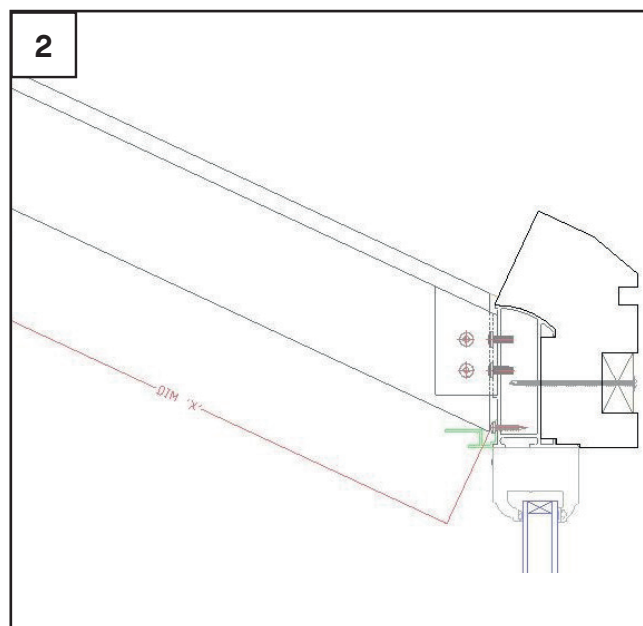
Follow Steps 5 and 8 notching, window board and cutting cladding in at the top and knocking into place, making sure cladding sits flush against window board.



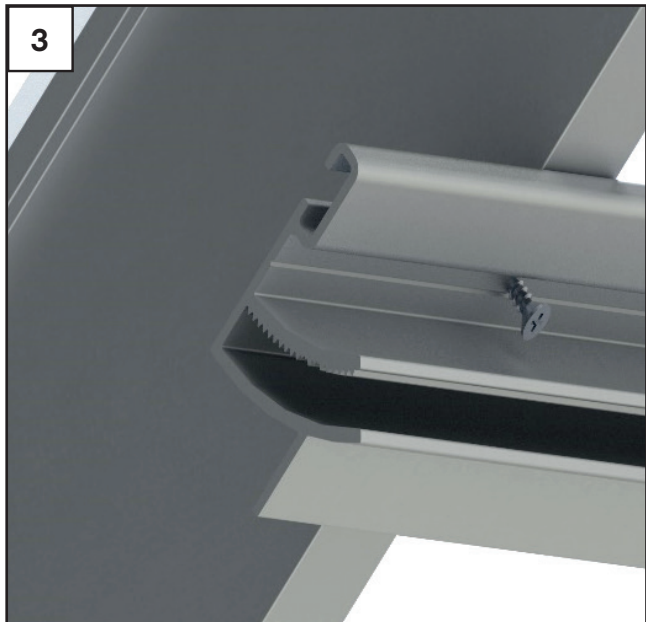
PELMET INSTALLATION.



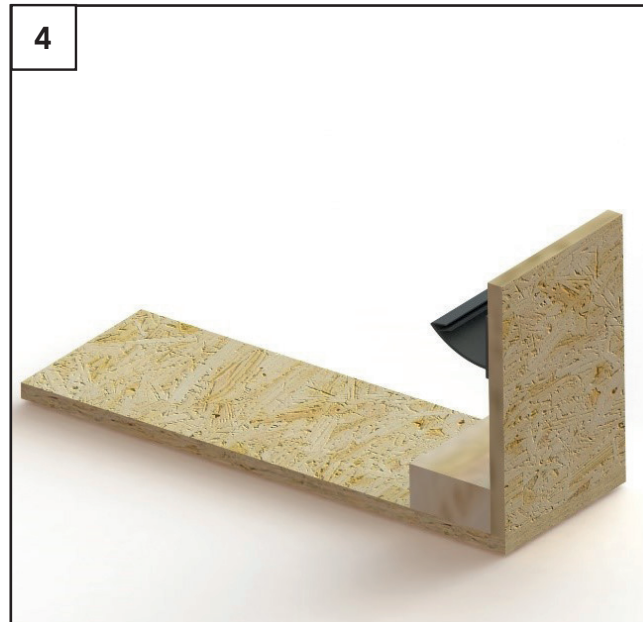
Prior installation of the pelmet, ensure PVC rails are connected to perimeter of eaves beam. **Prefix recommend fitting all pelmet rails before installing the base panels.**



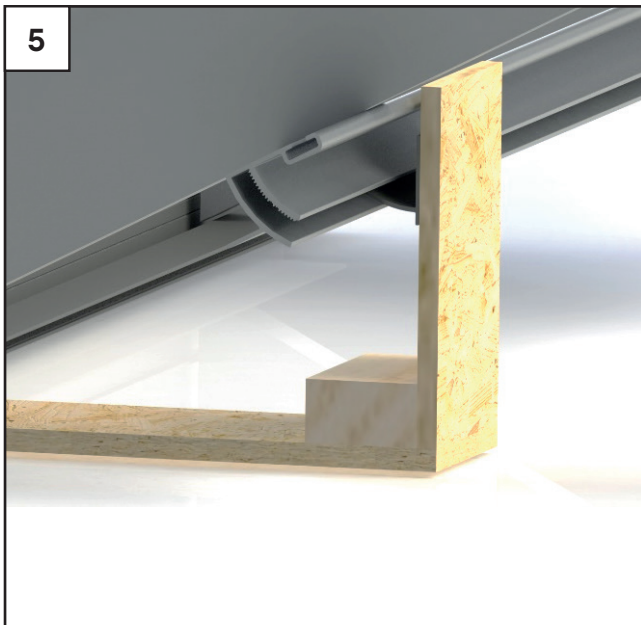
Using the location plan provided, find Dim 'X' and measure up from the bottom edge on the underside of the bar and mark the bottom of each rafter. If pitches are unequal this dimension will vary to keep the vertical pelmet size the same around the roof.



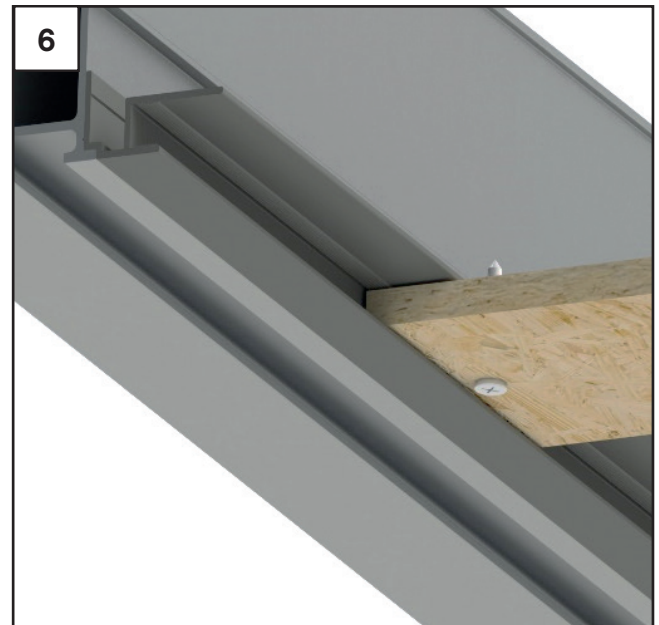
Aluminium rail supplied at Internal Eaves length. If running into a hip, measure along the reference line (step 2) the length of the rail and cut to size. Position rail with top edge up to the reference line. Prefix recommend clamping rail to rafters using quick clamps. Fix through aluminium rails into the underside of the rafters using $\text{Ø}4.8 \times 32\text{mm}$ countersunk self-drilling screws.



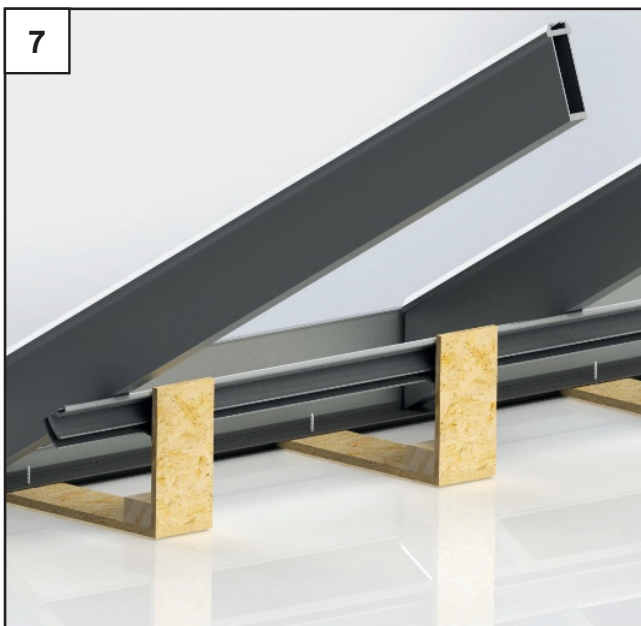
Identify pre-assembled pelmet brackets. If roof pitches are unequal find the different width brackets and group separately.



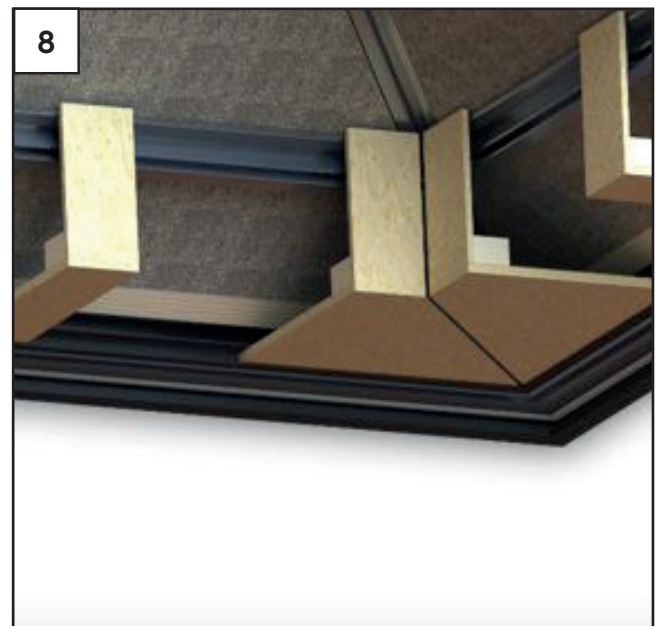
Start to engage the PVC Clip on the Bracket into the Aluminium Pelmet rail. Make sure the bottom edge of the bracket locates into the PVC eaves rail then knock the bracket firmly into the rail and checking that upright OSB is vertical.



Fix horizontal OSB up into the PVC eaves rail using $\text{Ø}4.8 \times 32\text{mm}$ countersunk self-drilling screws.

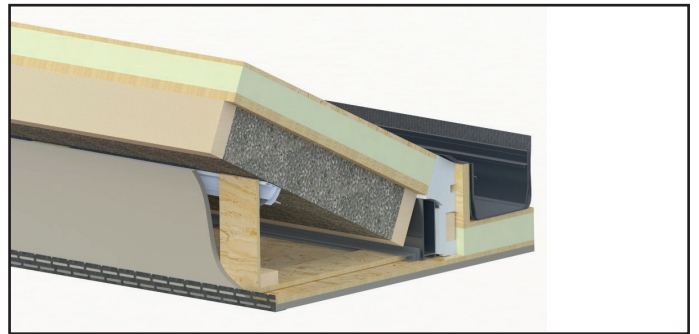
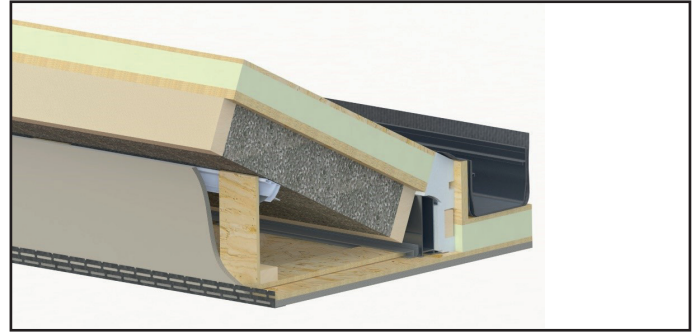
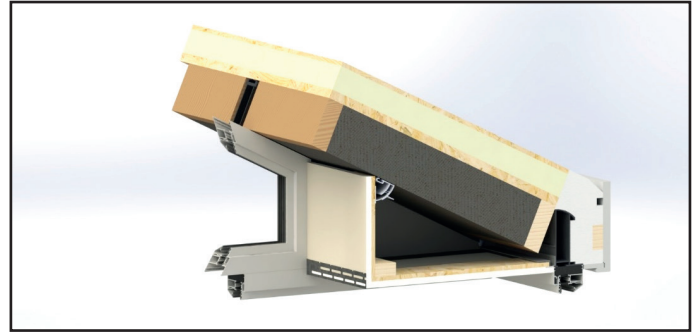


Continue to install brackets around the roof at 450-500mm centres. If roof pitches are unequal, make sure the correct width brackets go on the correct face of the roof to ensure pelmet remains a constant height around the room.



At the internal corners, the underside of OSB will run in to the corner as a fixing point for the plasterboard. When installing second corner piece it may be necessary to fit away from hip, then knock the bracket towards the hip with a nylon mallet to the correct position before fixing bracket at the eaves.

9



Finish pelmet by fixing 12.5mm foil backed plasterboard (not supplied by Prefix), to the pelmet brackets around the roof.

Refer to Technical Guide for more details on the Pelmet system, including configurations and details at Gable Ends and box gutters.

Note: Please do not order gable frames on roofs before speaking to one of our WARMroof Team Members as these may vary when pelmets are used.



Fixing Guide

November 2020

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Please note that the following Accessory fixing guides are also available on our website as downloads:

- | | | |
|-----------------------------------|-----------------------|--------------------------|
| • TapcoSlate Care and Maintenance | • Inline Slate Vent | • Eaves Ventilation Kits |
| • RidgeMaster Plus & HipMaster | • Cowl Vent | • Rafter Roll Ventilator |
| • Dry Verge | • Abutment Ventilator | |

Visit: www.TapcoRoofingProducts.com/product-guides

- Product Information -

No Special Tools Required

- Hand fastened (hammered or screwed) or fastened with a nail/screw gun.
- Sharp utility blade or a standard circular saw.
- Tape measure, pry bar, tin snips.
- Chalk line with blue chalk (do not use red chalk as this can stain the product).

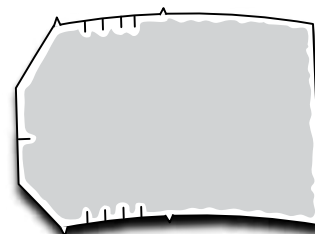
Storing the Product

For proper installation, the slates need to be stored on the original pallet on a flat surface. Proper storage of the product at the job site is important. Classic slates are cambered to ensure that maximum pressure is transferred to the leading edge of the slate during installation and should be stacked face down (as originally delivered). **Do not double stack pallets.**

Conditions: Perform work when existing and forecasted weather permits. Work should be performed in a safe and professional manner and when ambient weather conditions are within the limits established by Tapco Roofing Products.

Storage: TapcoSlates should not be stored on roof decks in such a manner as to over-stress and/or damage the deck and supporting structure.

Cold Weather Installation: TapcoSlates should be stored in original packaging in a storage facility where the temperature meets or exceeds 7°C. Use protective coverage over all pallets while being temporarily stored on-site. TapcoSlates must be conditioned at a temperature no lower than 7°C for twenty-four (24) hours prior to use. TapcoSlates may be installed at temperatures as low as 0°C but must be hand fastened, the use of a pneumatic gun below 7°C will result in cracking and webbing in the fastened area. Be sure to follow the manufacturer’s installation requirements for all underlay or membrane and any other applications. Comply with any and all local building regulations. **Note of Caution:** The slates can be slippery under certain conditions and job site safety procedures should be enforced.



Product Description

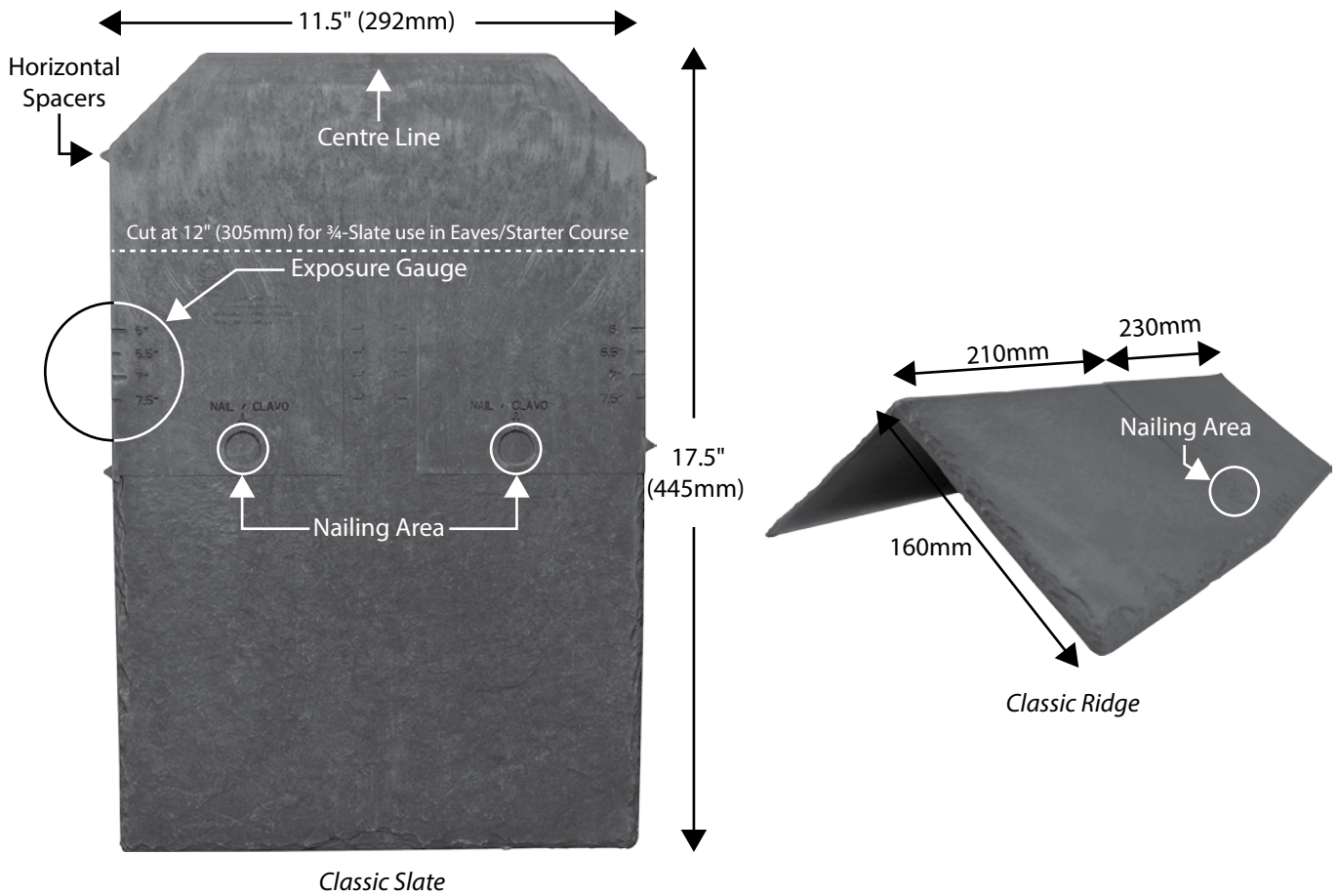
TapcoSlates are manufactured from a blend of limestone and virgin polypropylene, and are made from multiple natural patterns. TapcoSlate is not made from recycled materials but can be recycled at the end of its long lifespan.

WARRANTY:	40 Years	ROOFING BOARD:	0.7" (18mm) OSB.
WEIGHT (CLASSIC SLATE):	0.7 kg	MINIMUM PITCH:	14° (Felt & Batten and Fully Boarded).
WEIGHT (CLASSIC RIDGE):	0.7 kg	MAXIMUM PITCH:	90° (Felt & Batten and Fully Boarded).
DRILLING:	No drilling required	SORTING:	No sorting required.
PACKAGING (CLASSIC 12"):	Pallet: 1600 slates (1.04 tonnes), Bundle: 25 slates (16.25 kg).	BATTEN SIZE:	2" x 1" (50mm x 25mm) treated battens (minimum).
ROOFING MEMBRANE:	Recommended use of impermeable (non-breathable) Type HR roofing membrane.	CUTTING:	Fine-toothed handsaw, jigsaw, circular saw, or sharp utility blade (score and break).
FIXING:	Large 10mm diameter head, galvanised 1.2" (30mm) by 0.1" (2.5mm) steel nails or 1.2" (30mm) by 0.14" (3.5mm) outdoor Phillips bugle screws (using hammer/screwdriver or nail/screw-gun). Longer 2" (50mm) nail or outdoor Phillips bugle screw required for fixing ridges and hips. Corrosion resistant fasteners are always recommended, especially in coastal areas. In Scotland we recommend the use of Stainless Steel nails for fixing. 7.1mm diameter nail heads are recommended when using a nail gun.		

Please note: the diagrams in this guide are for illustration purposes only, actual sizes/placement may vary from those shown. If in doubt, please contact your local area manager for advice, or contact our technical department: +44 (0)1482 880478.

IMPORTANT: Advice from our technical department should be sought when installing on high buildings and/or in exceptionally windy areas. Telephone: +44 (0)1482 880478.

TapcoSlate Information



Pitch, Gauge, and Coverage

TapcoSlate Classic

ROOF PITCH	GAUGE	SLATES PER M ²	RIDGE & HIP CAPS	1 METRE LENGTH
14* to 25 degrees (fully boarded or felt & battens)	6" (152mm)	22	Ridge Cap	6 Units
25 to 27.5 degrees (fully boarded or felt & battens)	6.5" (165mm)	20	Hip Cap	6 Units
27.5 to 30 degrees (fully boarded or felt & battens)	7" (178mm)	19		
above 30 degrees (fully boarded or felt & battens)	7.5" (191mm)	18		

* The minimum recommended pitch and lap may be influenced by special circumstances, please contact our technical department for advice.

Recycling

TapcoSlate is 100% recyclable, but because the product is not marked with a recycling symbol or logo the contractor should contact a local recycler to make the necessary arrangements, stating that the product is "mineral-filled Polypropylene" plastic. If there is any difficulty in locating a recycling facility, please contact us.

Fastener Recommendations

Slates should be applied using two (2) large 10mm diameter head, galvanised 1.2" (30mm) by 0.1" (2.5mm) steel nails or 1.2" (30mm) by 0.14" (3.5mm) outdoor Phillips bugle screws (using hammer/screwdriver or nail/screw-gun). Corrosion resistant fasteners are always recommended, especially in coastal areas. In Scotland we recommend the use of Stainless Steel nails for fixing. 7.1mm diameter nail heads are recommended when using a nail gun. All slates will be attached with two fasteners, as per these instructions.

The length of the Hip & Ridge fastener should be a minimum length of 2" (50mm) over the slates and 3" (75mm) over ridge vent.

Note: Caution should always be used to ensure against over/under penetration of the fastener. **Do not over-drive the fastener.** The fastener head should be contacting the slate within the centre of the nailing target circle.

Improper fastening can compromise the roof system and voids the manufacturers' warranty.

Roof Decking Materials

- Minimum of 23/32" (18mm) plywood decking, solid wood decking, or oriented strand board (OSB).

Roofing Membrane/Underlay

TapcoSlate Classic roofing slates are classed as **insufficiently air-open** products and therefore, following the guidance within BS 5250, a **vapour impermeable (HR)** roof membrane/underlay should be used. Tapco Roofing Products recommends *Protect Wunderlay* for TapcoSlate Classic and offers the following guidance:

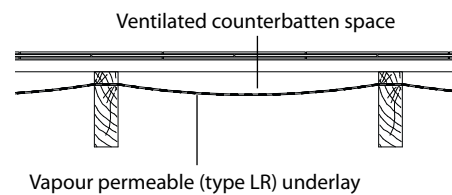
Air Permeability

The detail below explains how a vapour permeable (LR) roofing membrane allows water vapour to escape the structure and requirements for ventilation of the counter batten space when using a roof covering that is insufficiently air-open.

Roof coverings and batten space ventilation using vapour permeable underlays (type LR)

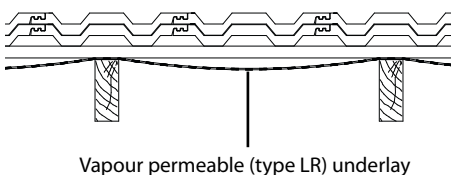
Where vapour permeable underlays (type LR) are used in both cold and warm roofs to contribute to the control of condensation, they do so by allowing water vapour to escape through the material by diffusion. It is important that this water vapour can escape through the roof covering to atmosphere from the tiling batten space. BS 5250 defines the level of air openness required of the roof covering and the test method. Traditional concrete and clay tiles should be sufficiently air open, but advice should be sought from the roof covering manufacturer/supplier.

Roof covering insufficiently air-open



For roof coverings that do not meet the required air openness, provide a counterbatten space at least 25mm deep, with ventilation of 25 000mm²/m at eaves or low level and 5000mm²/m at ridge or high level. This is in addition to the ventilation already specified for cold and warm roofs.

Roof covering sufficiently air-open



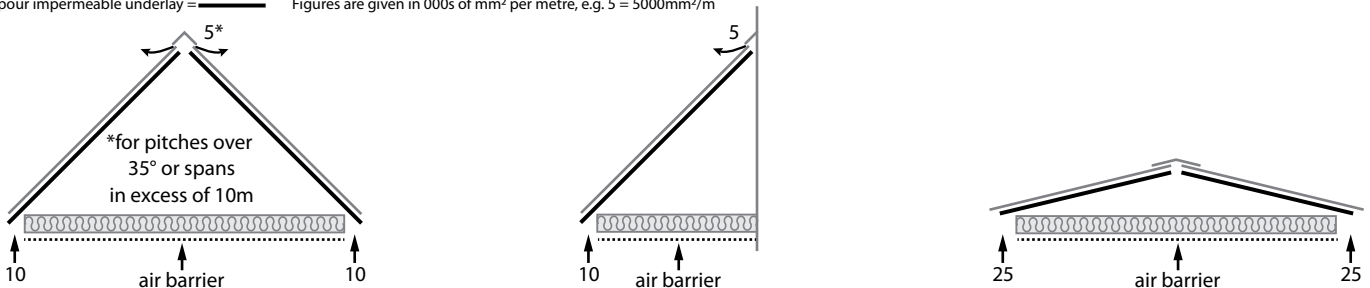
With impermeable underlays (type HR) this ventilation is unnecessary as there will be relatively little moisture transfer from within the building to the batten space.

Cold Roof Applications

When installing TapcoSlate Classic onto either battens or OSB a **vapour impermeable (type HR)** roof membrane/underlay should be used. When installing directly onto OSB, ventilation in accordance with BS 5250 to the loft void should be adhered to. Insulation should be installed on the horizontal ceiling below. To further enhance this construction, improving thermal performance of all insulation by reducing convection flow and help to avoid interstitial condensation risk within insulation in accordance with BS 5250, we would recommend installing an air barrier on the warm side of the insulation, a suitable product would be *Protect BarriAir* – an air barrier membrane with some vapour control properties.

Cold Roof: with large voids above horizontal insulation using impermeable underlays (type HR)

Vapour impermeable underlay = Figures are given in 000s of mm² per metre, e.g. 5 = 5000mm²/m



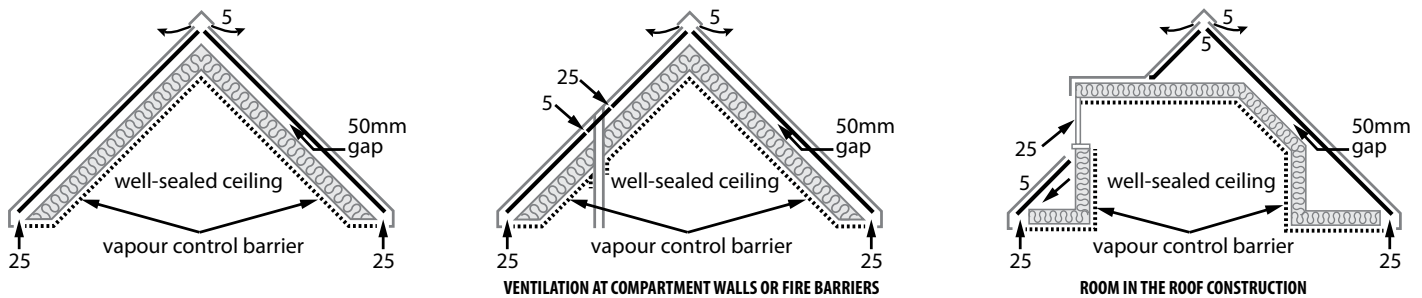
Warm Roof Applications

When installing TapcoSlate Classic onto either battens or directly onto OSB a **vapour impermeable (type HR)** roof membrane/underlay should be used. Insulation should follow the line of rafters, with a 50mm deep void between the top of the insulation and the underside of the underlay/OSB. This void to be ventilated in accordance with BS 5250. An air and vapour control barrier membrane to the warm side of the insulation must also be installed, we recommend the *Protect VC Foil Ultra* – low emissivity air and vapour control layer product.

Please note that the preceding is purely manufacturers guidance and should not supersede local building authority recommendations.

Warm Roof: with small or no voids above sloping insulation using impermeable underlays (type HR)

Vapour impermeable underlay = Figures are given in 000s of mm² per metre, e.g. 5 = 5000mm²/m



– Installation Guidelines –

Spacing Between the Slates

0.25" (6mm) spacer tabs are provided on every Classic slate to aid in maintaining consistent spacing. The spacers will allow for any movement of the roof deck and expansion/contraction of the slate (although thermal expansion is highly unlikely in European climates). **DO NOT remove the spacer tabs** unless finishing at the end of the course.

Laying Out ½ Slates or Cut Slates

When beginning or finishing with a cut piece of slate, the cut edge should be installed inward. The manufactured edge should be installed to the outside edge of the roof. This is to maintain an acceptable roof appearance along the gable edge of the roof.

The centre mark of the slate can be used as a guide to cut ½-slates. This can also be used as a guide to keep courses straight and to assist in maintaining the proper Classic slate 0.25" (6mm) spacing when aligning with intermittent vertical chalk lines. **DO NOT install slates smaller than 3" (76mm).**

Preparation

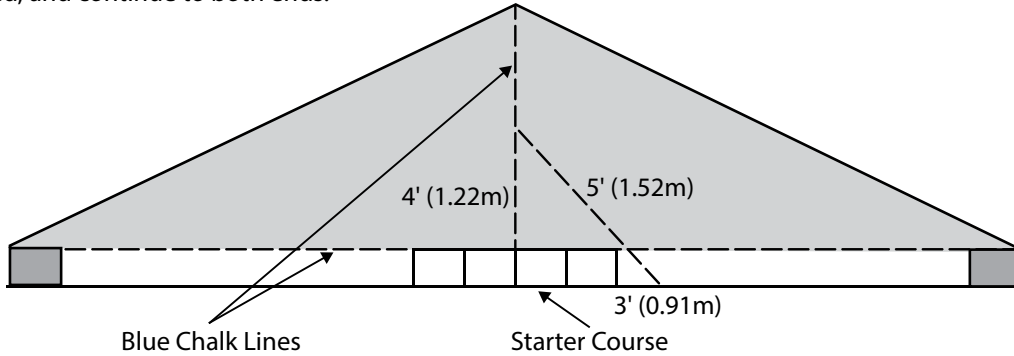
Inspect all areas of the roof surface to be covered.

1. The surface area must be uniformly flat, smooth, sound, clean and free of irregularities.
2. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking and/or metal clips.
3. Verify that substrate is sloped for drainage and completely anchored to sound framing. Any foreign particles shall be cleaned from interlocking areas to ensure proper seating and to prevent moisture intrusion and ice damming. Proper provisions must be made for flashings and roof penetrations.
4. Even though metal flashing and other specialty flashings may not be the responsibility of the roofing contractor, these items must be in place prior to the roof slate installation. Work by other trades which penetrate the roof plane must be completed.

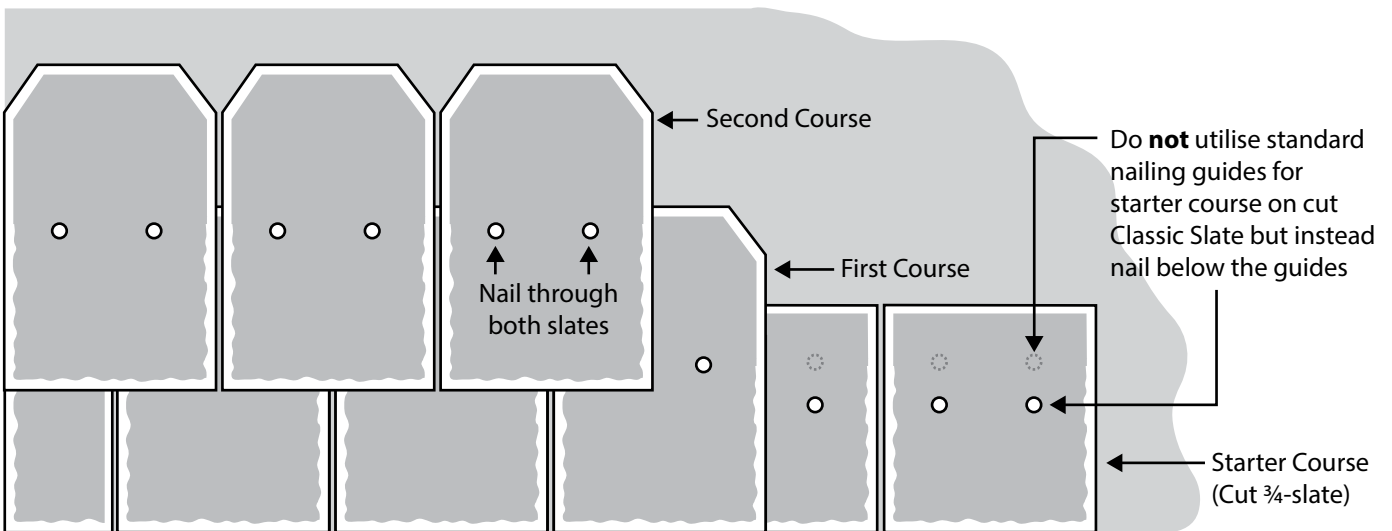
Hip Roof Layout

1. Initial starting points may be from left side, right side or centre of the area to be installed. Mechanical 0.25" (6mm) spacer tabs are provided on every Classic slate.
2. A full Classic slate should be cut into ¾ size, approximately 12" (305mm), to create an eaves or starter slate for the starter course and at the ridge if necessary.

3. One method of starting on a hip roof is to locate the centre of the roof area to be covered. From both ends, position starter pieces and snap a horizontal line from the tops of the starters between these two points. Next, snap a vertical perpendicular line. This can be done easily by marking 3ft (0.91m) along the eave, then where 4ft (1.22m) and 5ft (1.52m) intersect will form a perpendicular line. As long as the ratio 3:4:5 stays the same this will hold true, for example, 21:28:35. More horizontal and vertical lines may be snapped to ensure the roof slates will stay true and plumb throughout installation. Begin by placing an eaves slate on the right and left side of the vertical line maintaining a 0.25" (6mm) or 0.5" (13mm) spacing, depending on slate type used, and continue to both ends.

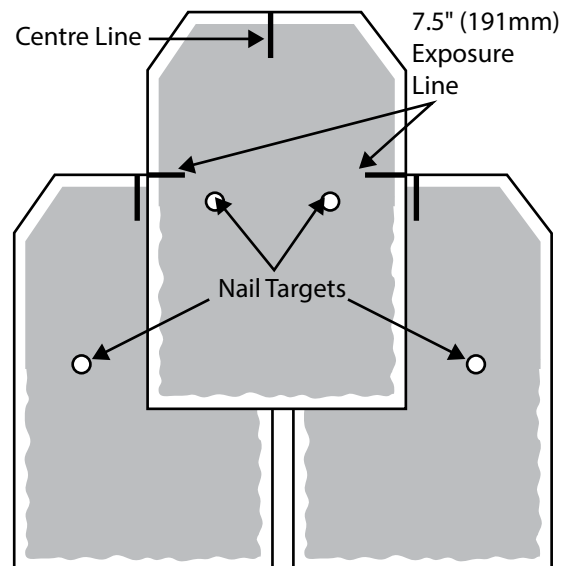


4. The eaves and first course should overhang a maximum of 1½" (38mm) at the eaves for the gutter oversail.
5. Begin the first course. With a full slate, align centre locator line of the slate directly over the vertical blue chalk line. Continue to both ends, maintaining the 0.25" (6mm) spacing, depending on slate type used, between slates. (See diagram above.)



6. After installing the underlay or membrane and before installing the TapcoSlate, clean the surface of debris and dirt. Foreign particles shall be cleaned and removed from interlocking areas to ensure proper seating of the product and to prevent moisture intrusion and ice damming. All roof penetrations shall be properly flashed and secured into position with deck and underlay or membrane fasteners properly driven and not protruding prior to installing TapcoSlate Classic.

- a) The eaves or starter slates will be used as the first row at the eaves of the roof.
- c) To create the offset from course-to-course, use the centre mark provided on each slate and cut the slate lengthwise. This ensures that the nail holes are covered with the next course of slates and no through-joints are exposed to the deck.
- d) Strike the chalk lines horizontally, at the exposure level desired, to ensure that the slates are installed straight and uniform. Vertical chalk lines will help maintain consistency in the key-ways.

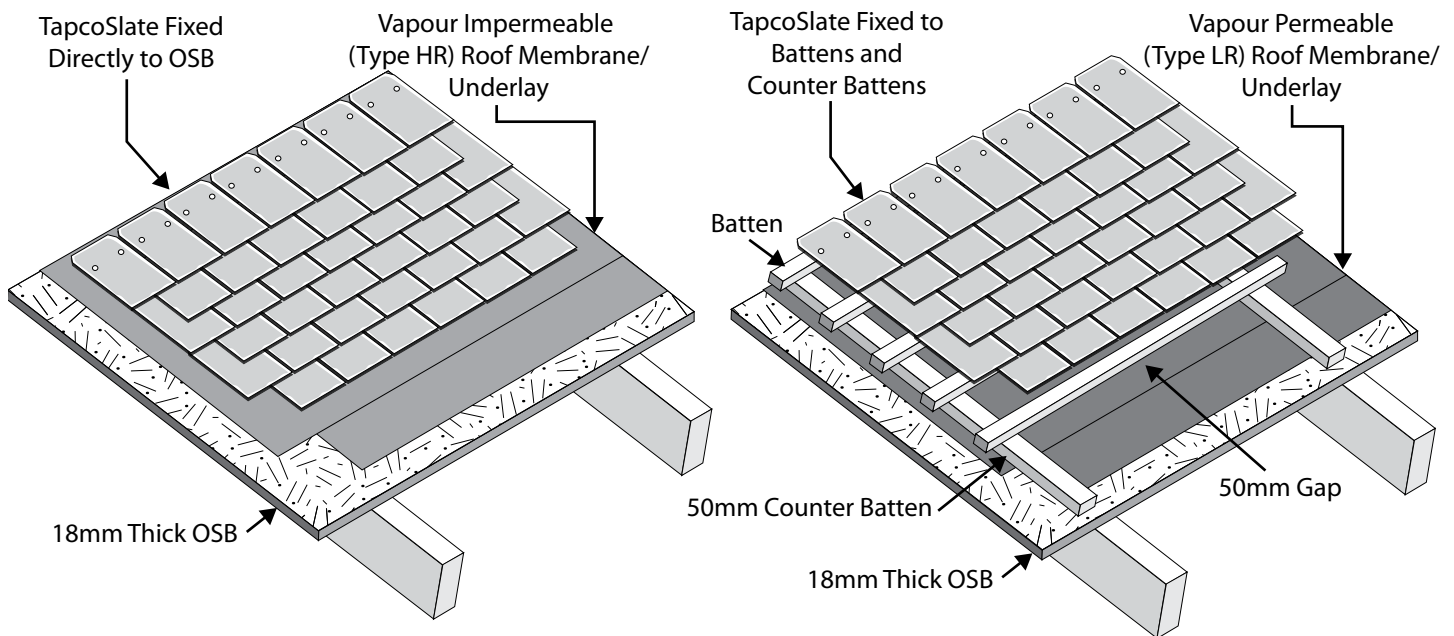


- e) Spacer tabs are provided on each Classic slate to ensure consistent spacing between slates.
 - f) There shall be no through-joints from the roof surface to the underlay or membrane.
7. Each slate shall be fastened with a minimum of two galvanised, stainless steel or outdoor roofing fasteners (clout nails or screws).
- a) It is required that the fasteners be placed within the two nailing targets on each slate. Flatten slate then fasten. Fastener must penetrate decking at least 23/32" (18mm).
 - b) Caution should be taken where the underside of the roof decking is exposed to view, such as in an overhanging eaves, where the nails or screws should be long enough to penetrate the roof decking but not so long that they may be driven through the decking.
8. Continue the second course with a full standard slate set back from the course below, the finished edge facing the gable edge. Align the full roof slate between the centreline locators from the lower course. Next, adjust the roof slate up or down to align the desired exposure lines with the top edge of the lower course. (See diagram on page 9, and roof pitch table information on page 4 for which exposure line to use.)

Fully Boarded Roof

The following instructions are just a guide, and standard roofing procedures should be applied. Apart from the lightness and ease-of-use that TapcoSlate affords, there is very little difference between it and standard slate in fully-boarded roof application. The **most cost-effective way** to fix TapcoSlate to OSB is to first use a **vapour impermeable** roof membrane/underlay, along with, we recommend, either an air barrier on the warm side of the insulation for Cold Roof applications or an air and vapour control barrier membrane to the warm side of the insulation for Warm Roof applications (see the "Roofing Membrane/Underlay" section on page 5 for more details). Alternatively, a vapour permeable roof membrane/underlay can be used along with the application of counter battens on top of the membrane. The same vapour/air barriers are also recommended for Cold/Warm Roof applications using this counter batten method and a vapour permeable roof membrane/underlay.

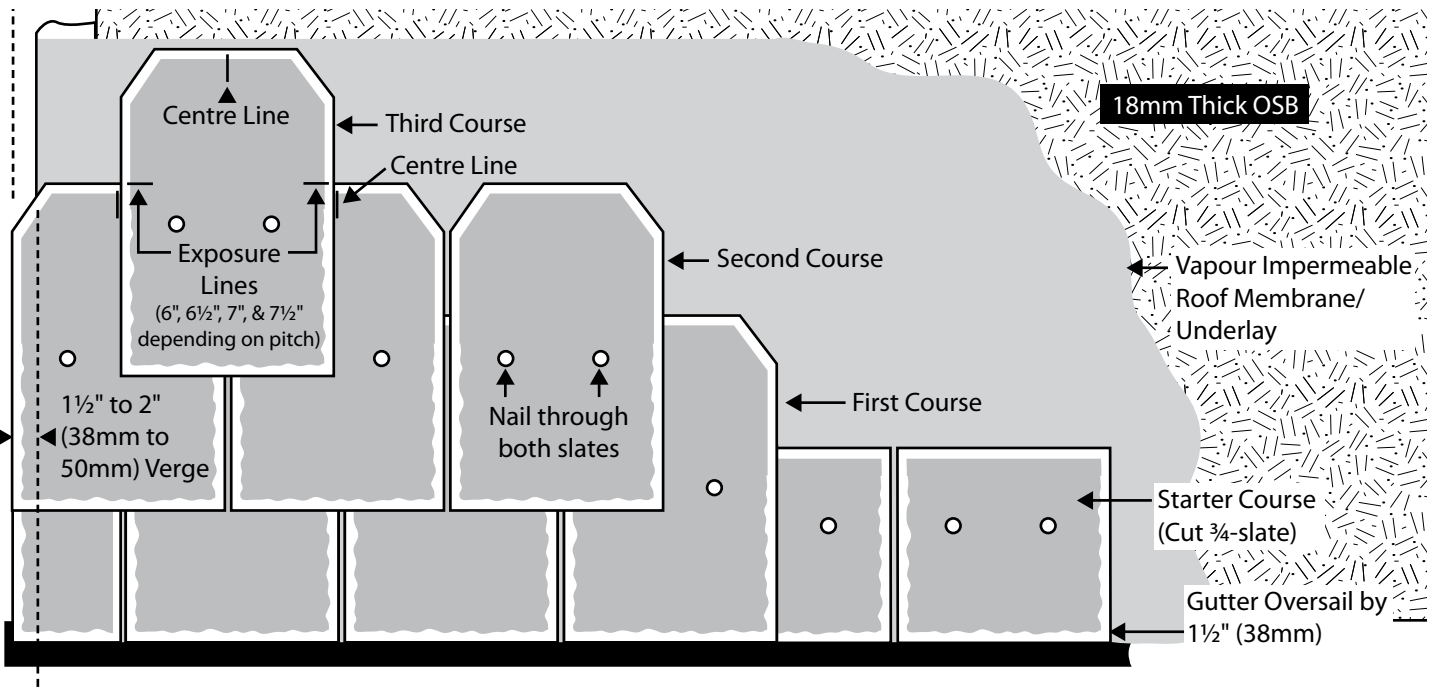
The Different Roof Structures Using Vapour Impermeable and Vapour Permeable Membrane



Being a laminar product, TapcoSlate repels water and does not absorb it, this means that water penetration is non-existent from the roof surface itself. However, vapour/air barriers minimise the risk of moisture accumulating on the underside of the slates/OSB as the most common source of moisture is generated inside the property itself. Using a **vapour impermeable** roof membrane/underlay reduces this risk even further.

The OSB sheeting should be a minimum 18mm thickness.

Layout of a Fully Boarded Roof Using Vapour Impermeable Membrane/Underlay

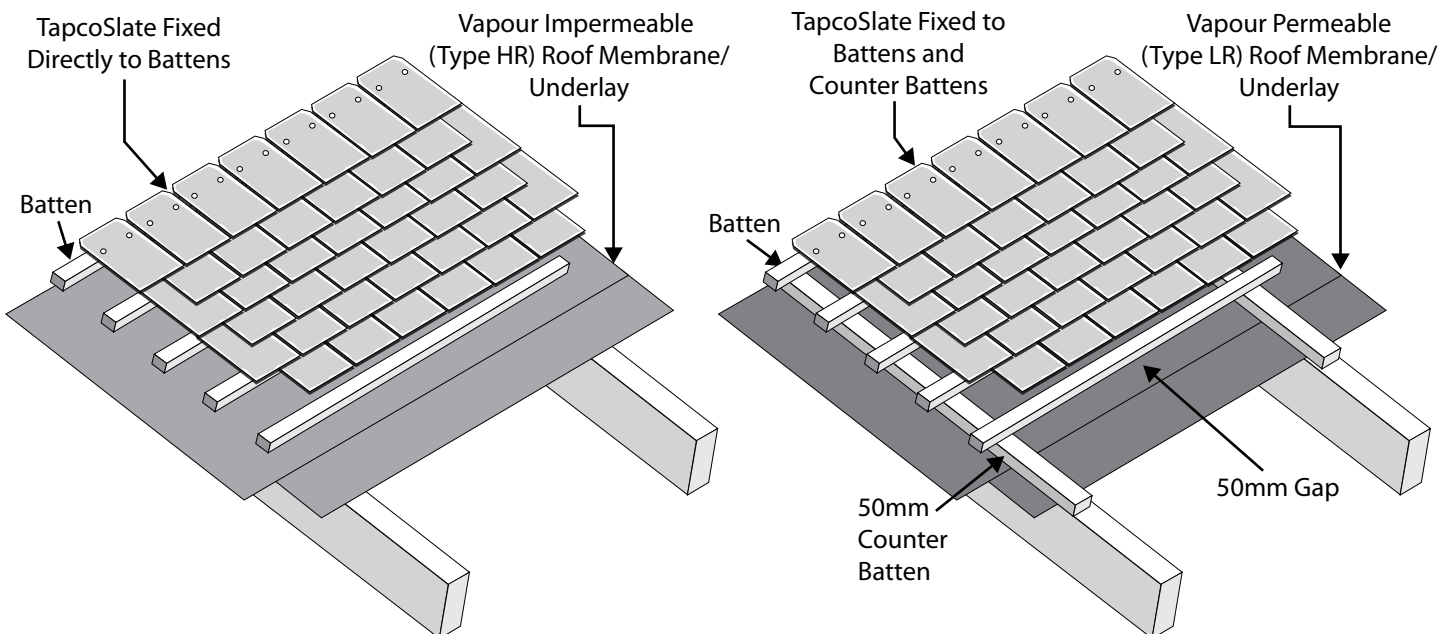


As can be seen by the above diagram, TapcoSlates can be nailed or screwed directly onto the OSB when using a **vapour impermeable** roof membrane/underlay. This is the **most cost-effective method** of fixing TapcoSlate onto a fully-boarded roof.

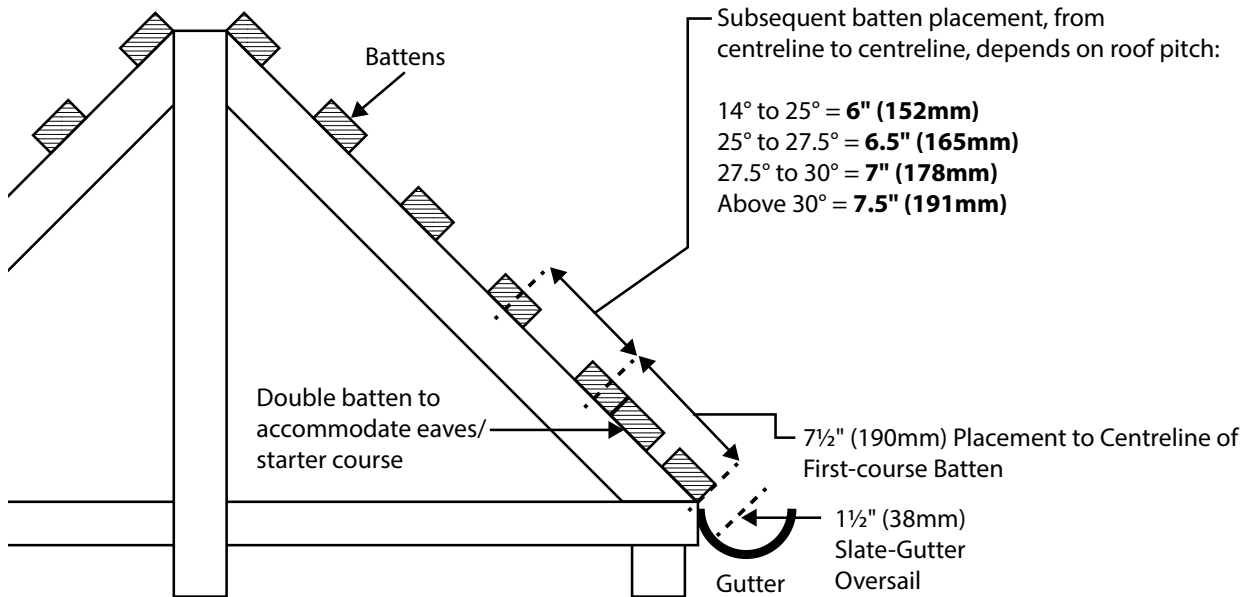
Felt and Batten Roof

The following instructions are just a guide, and standard roofing procedures should be applied. Apart from the lightness and ease-of-use that TapcoSlate affords, there is very little difference between it and standard slate in batten roof application. The **most cost-effective way** to fix TapcoSlate to battens is to first use a **vapour impermeable** roof membrane/underlay, along with, we recommend, an air and vapour control barrier membrane to the warm side of the insulation for Warm Roof applications (see the "Roofing Membrane/Underlay" section on page 5 for more details). No other barrier membrane is needed when using the **vapour impermeable** membrane in a Cold Roof situation. Alternatively, a vapour permeable roof membrane/underlay can be used along with the application of counter battens on top of the membrane. The same air and vapour control barrier membrane is also recommended for Warm Roof applications using this counter batten method and a vapour permeable roof membrane/underlay.

The Different Roof Structures Using Vapour Impermeable and Vapour Permeable Membrane



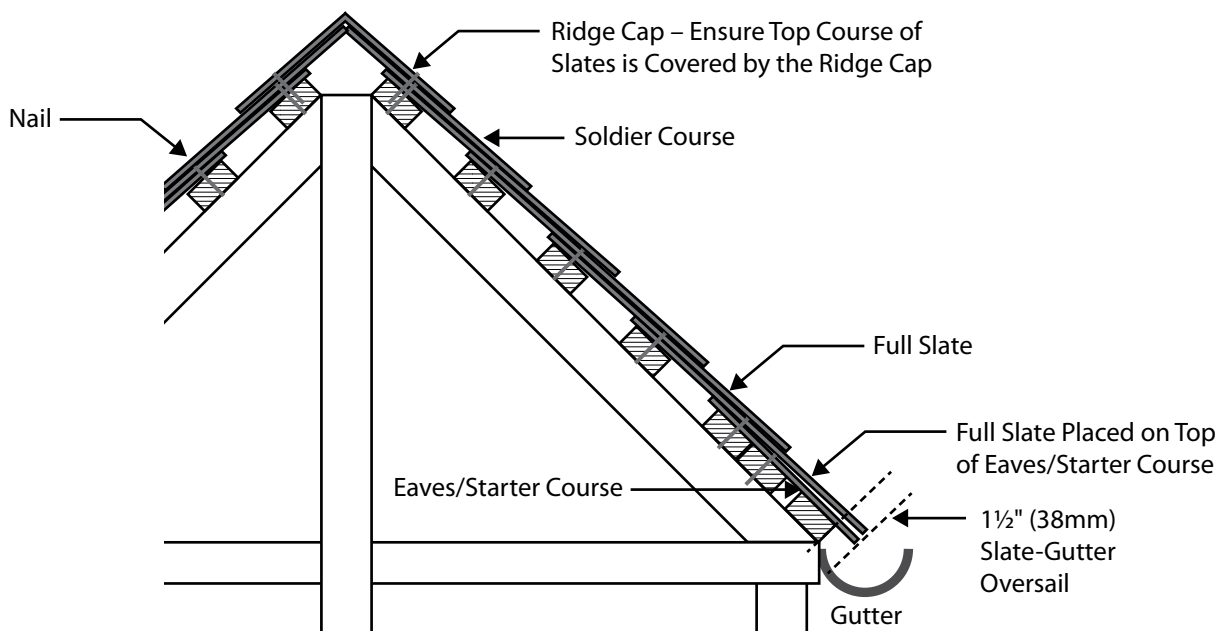
For felt and batten roofs, start by fixing battens – minimum size of 2" (50mm) by 1" (25mm) treated battens – over underlay to the required gauge. The first course and eaves (starter) course should oversail the fascia by at least 1½" (38mm), so the first course batten should be placed approximately 7½" (190mm) centrally from the start of the roof (see diagram). A second batten should then be placed directly under the first course batten to accommodate the eaves or starter course (made from a cut ¾-slate).



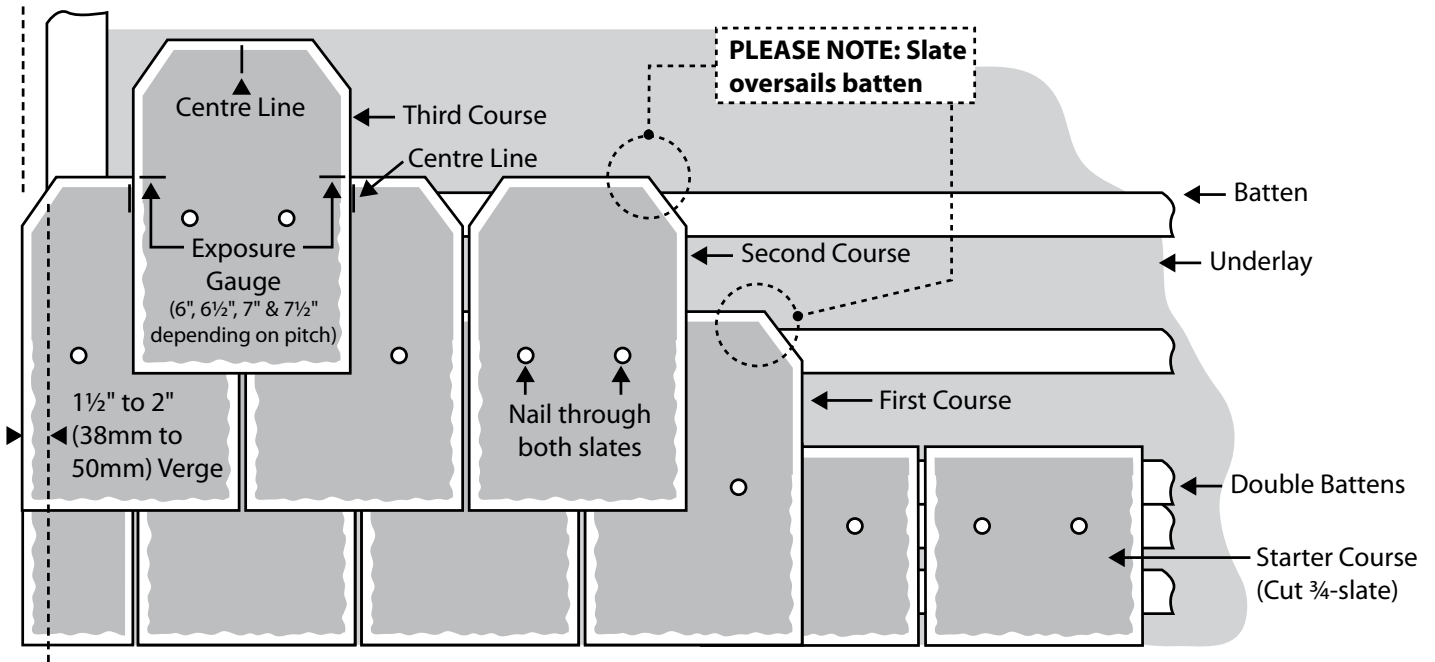
The distance from the first course batten to the second course batten, and beyond, is dependent on the roof pitch and subsequent slate exposure gauge settings. Please see the diagram of the TapcoSlate and the Pitch, Gauge, and Coverage table on page 4. The diagram above also shows an approximate guide to subsequent batten placement.

The position of the top battens should then be established to ensure that the top course of slates will be covered by the ridge cap.

Fix eaves, or starter course using a ¾-cut slate for Classic Slate which can be easily cut to size from a full slate using a fine-toothed hand/circular saw or a sharp utility blade. As stated earlier, the first course and eaves (starter) course should oversail the fascia by at least 1½" (38mm). This ensures water disperses into the centre of the gutter. This must be taken into account when calculating the gauge and positioning the battens.



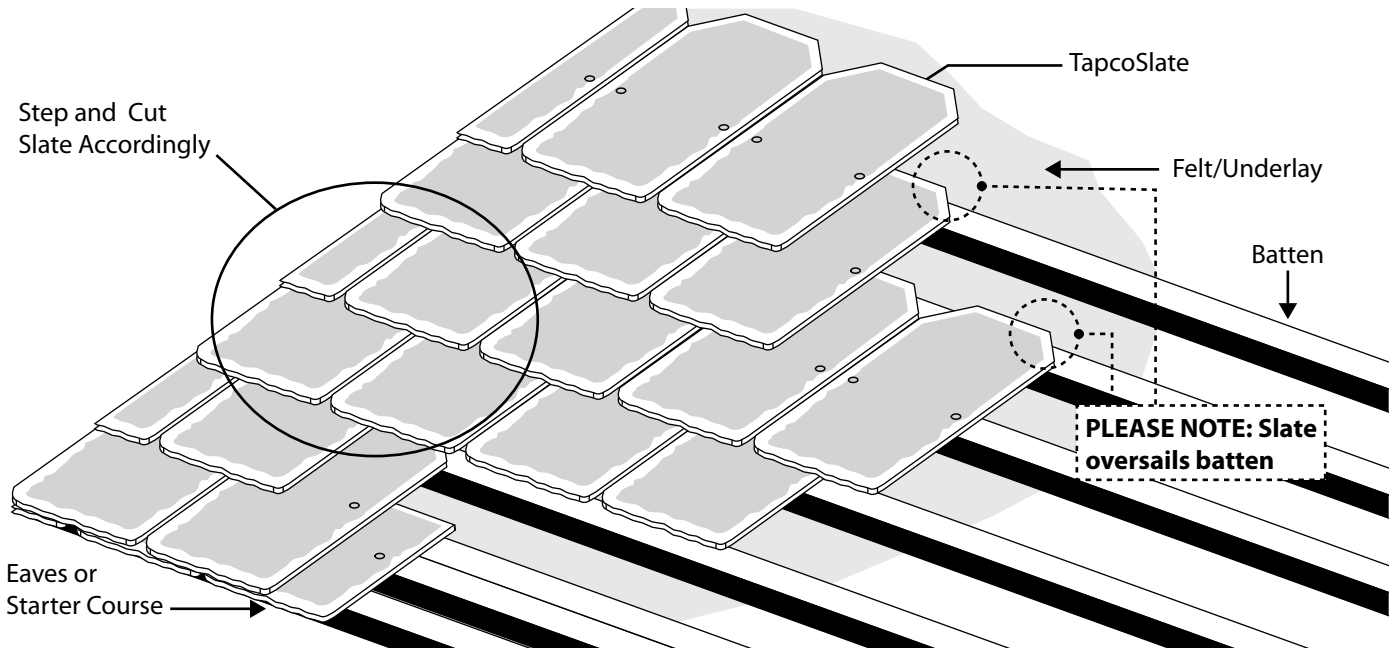
The required gauge and number of courses can then be calculated. The first course should sit on top of an eaves course. Double batten as shown in the diagram to accommodate the eaves slates.



Verge slates should oversail the brickwork/barge board by 1½" (38mm), and may need to be cut to size at either end.

Lay the first course of full slates over the eaves course and fix to the second batten. Ensure that the first course and eaves course are laid "broken bond" so that the joints do not line up and the weatherproofing integrity is maintained.

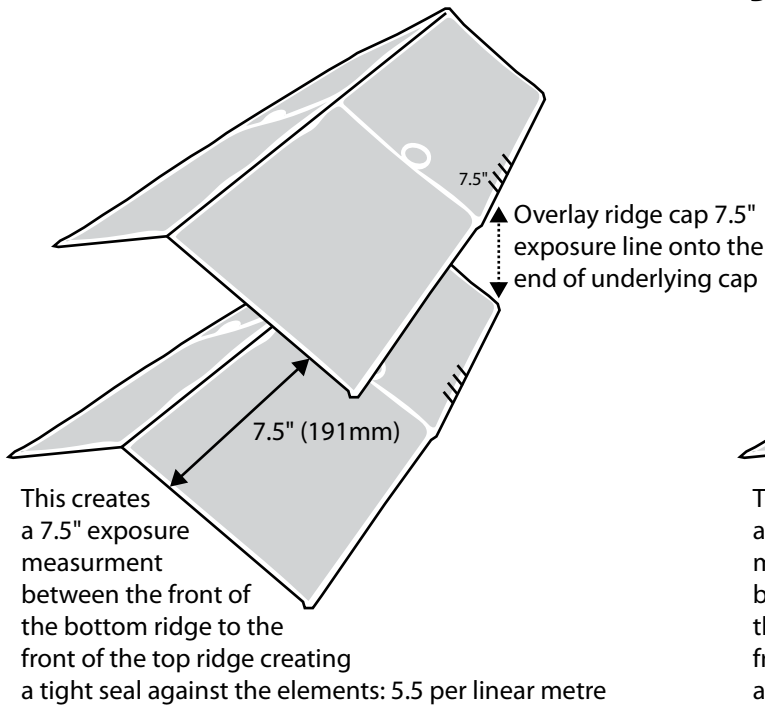
Lay subsequent courses "broken bond" as illustrated. It will be necessary to cut to start and finish every other course.



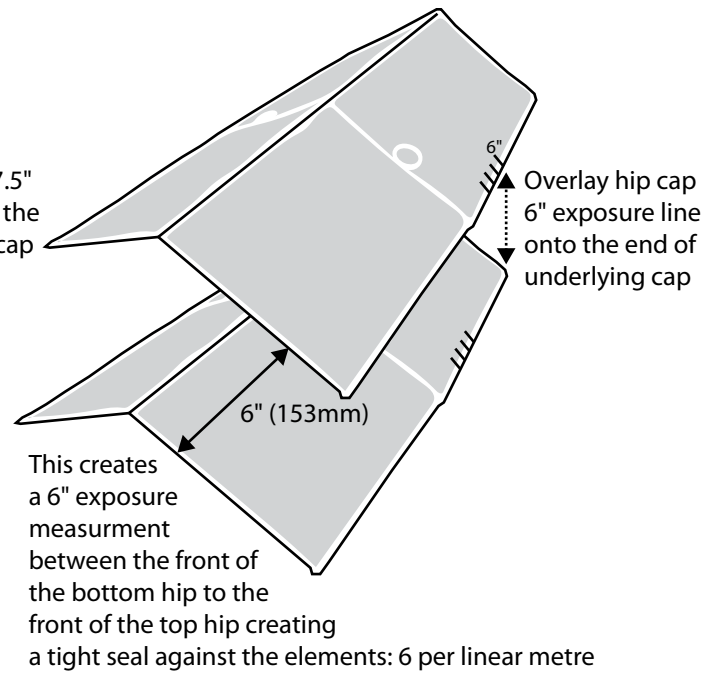
Fixing TapcoSlate Ridge/Hip Caps

Just like our slate tiles, our ridge and hip caps have an exposure guide embossed onto them. Caps on the ridge must be fitted at a maximum of 7.5" exposure, we recommend the minimum exposure of 6" for high-wind/driving rain exposed areas. Caps on the hips **must** be fitted at a 6" exposure. All caps should be nailed/screwed through the one below, similar to the tile layout, and must be secured in the indicated spaces provided using two fixings – once completed this gives four fixing points on all but the last end cap. Do not over-expose the caps. The minimum number of caps per linear meter is 5.5 (at a 7.5" exposure). The maximum number of caps per linear meter is 6 (at a 6" exposure).

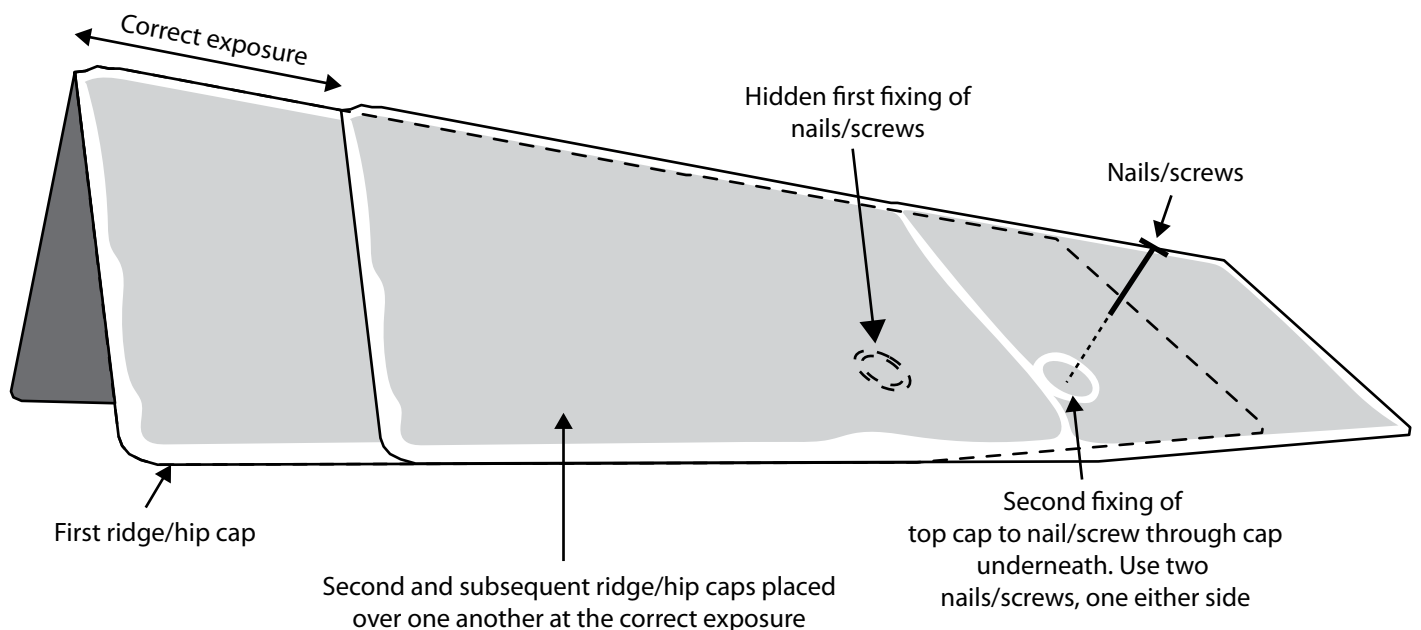
Maximum Classic Ridge Cap Exposure (7.5")



Minimum Classic Ridge Cap Exposure and Definitive Classic Hip Cap Exposure (6")



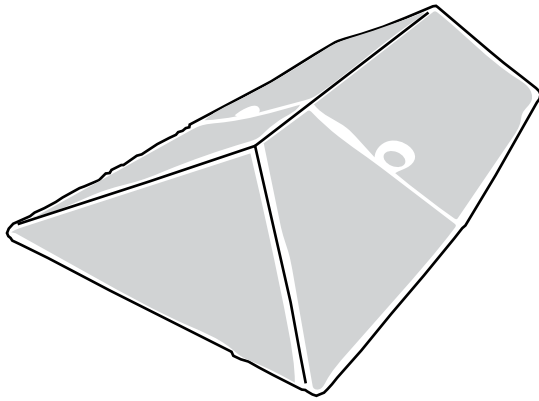
Ridge and Hip Cap Fixing



Ridge/Hip Cap Finishing

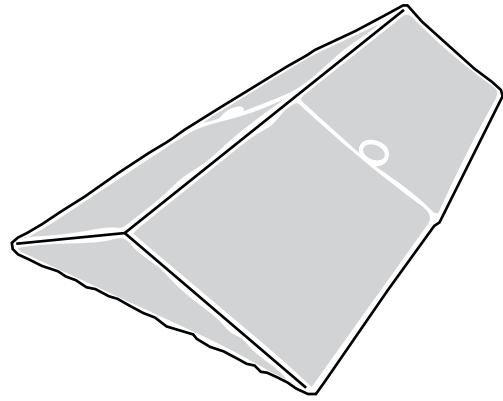
Tapco Roofing Products produces pre-formed TapcoSlate Classic Angled Ridge-to-Hip Junctions and TapcoSlate Classic Ridge 90° End Caps for the following roof pitches:

Classic Angled Ridge-to-Hip Junction



Available in:
 14 to 17°
 18 to 23°
 24 to 30°
 Roof Pitches

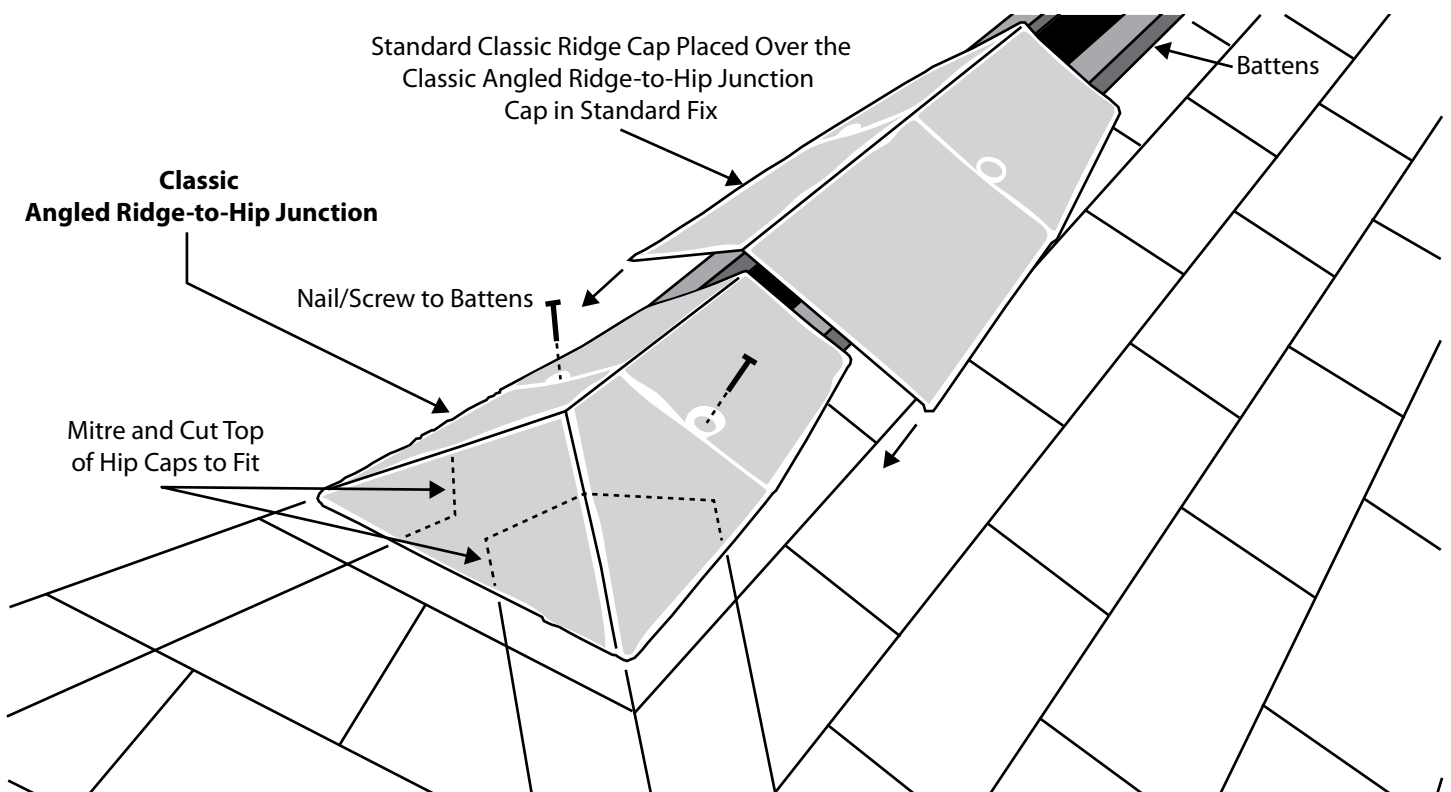
Classic Ridge 90° End Cap



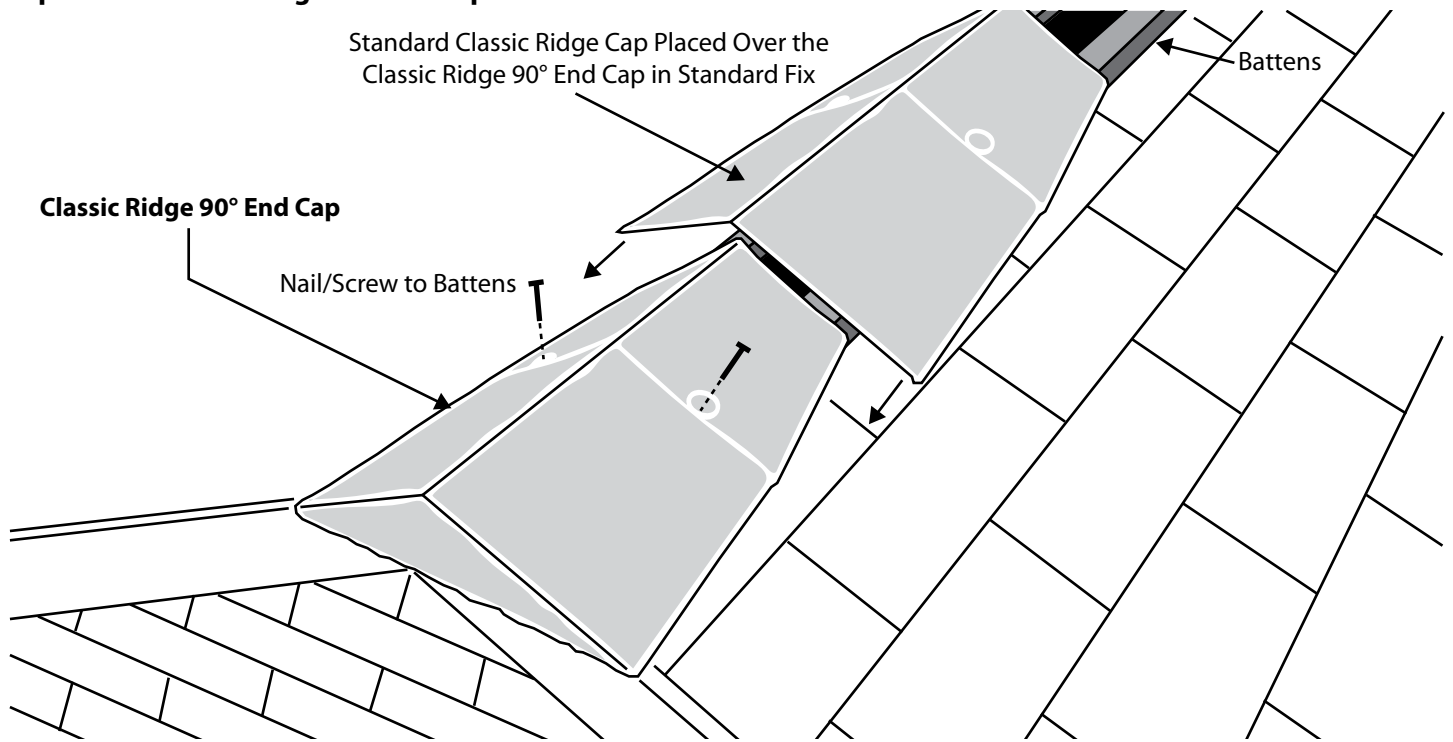
Available in:
 25 to 29°
 30 to 34°
 35 to 40°
 Roof Pitches

The TapcoSlate Classic Angled Ridge-to-Hip Junctions and TapcoSlate Classic Ridge 90° End Caps are fixed in place the same way as standard hip and ridge caps, two 3" (76mm) galvanised or stainless steel clout nails or outdoor Phillips Bugle screws. Care should be taken to store and transport these units safely. If a unit is to be used at both ends, the last unit can be cut in half and sculpted using a sharp craft knife to mimic the notched look of a cut slate: nails and screws in the top surface can be disguised by painting the heads in bitumen, or alternatively a colour-matched screw cap can be used or black tacks.

TapcoSlate Classic Angled Ridge-to-Hip Junction (Also 3-Way for Edwardian Conservatories)



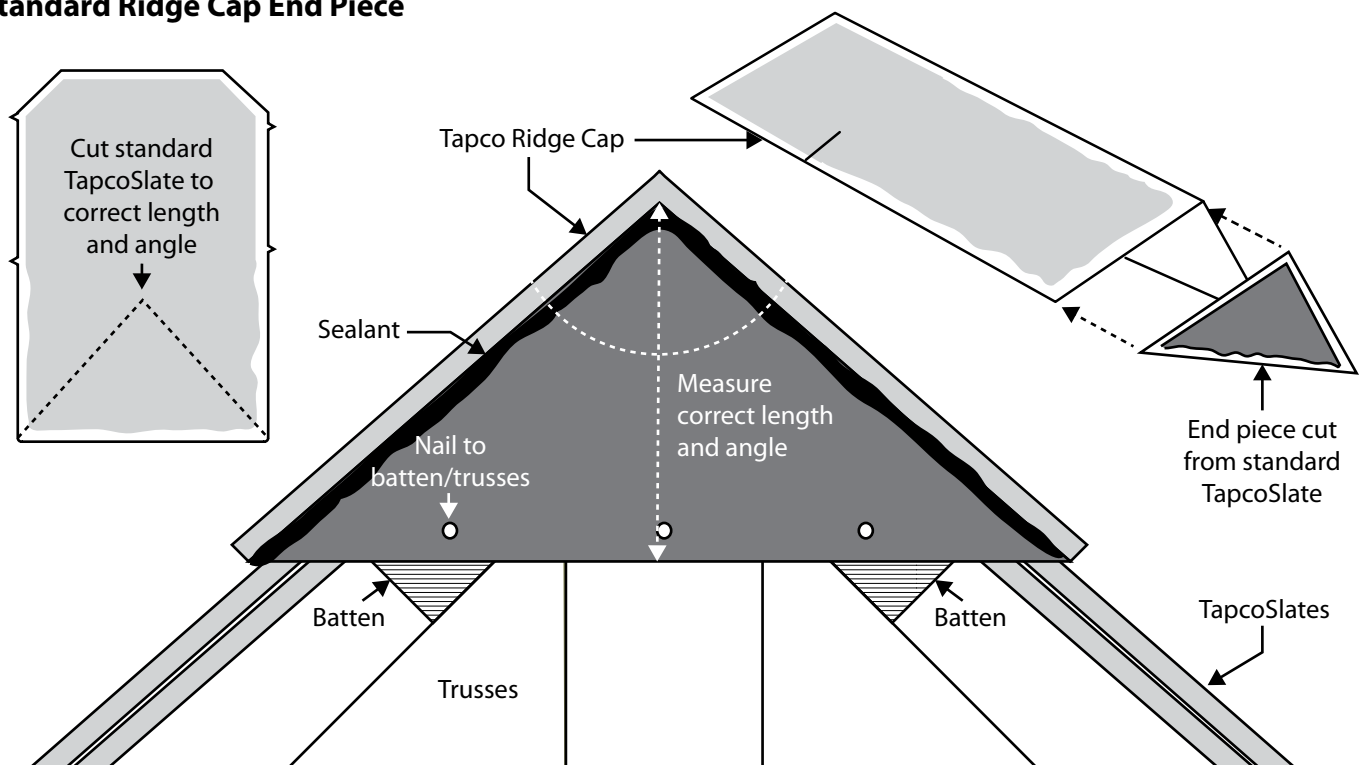
TapcoSlate Classic Ridge 90° End Cap



Alternate Ridge/Hip Cap Finishing

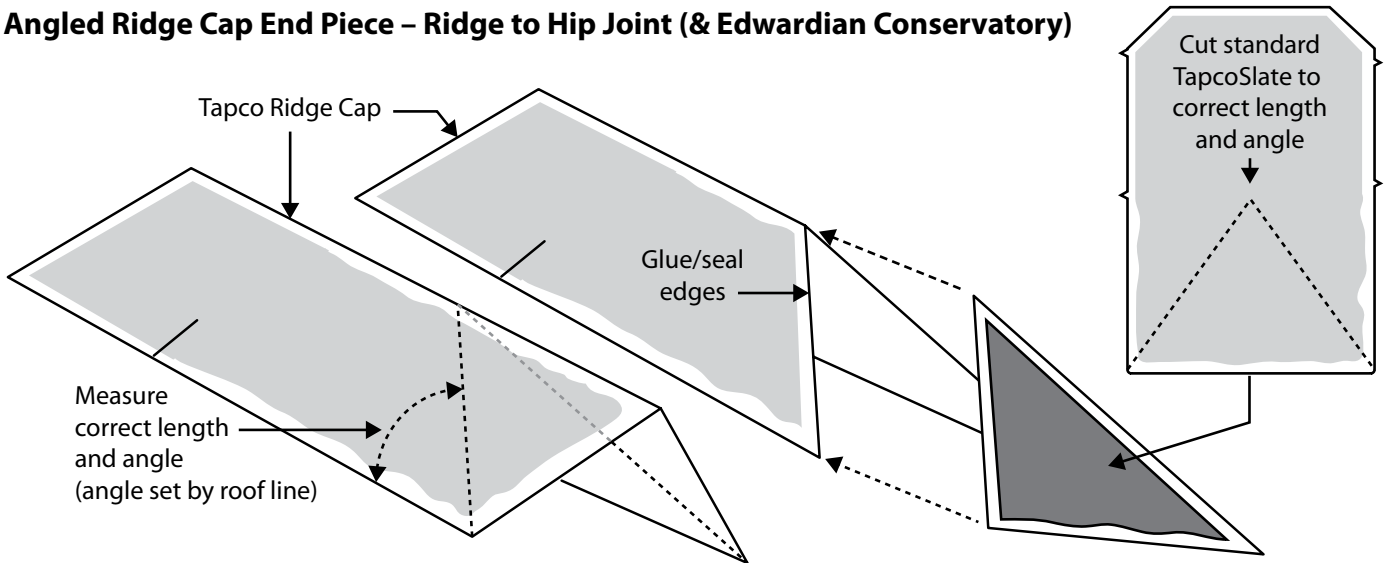
If you cannot use the pre-formed accessories mentioned due to pitch fitment or if you prefer to make your own the following is a guide on how to make similar finishes. Tapco Ridge Caps can be finished by cutting a standard TapcoSlate at the end of the ridge into a triangle or diamond shape of the right size to cover the end gap. The resulting material should then be nailed in place into the end-battens and/or truss. The material can be sealed by using a good quality butyl or bitumen sealant (do not use silicone as this will not adhere). Alternatively, the material can be joined to the Ridge Cap by using a strong epoxy glue (adhering to the manufacturers instructions). Nail heads should be disguised with coloured sealant or paint.

Standard Ridge Cap End Piece



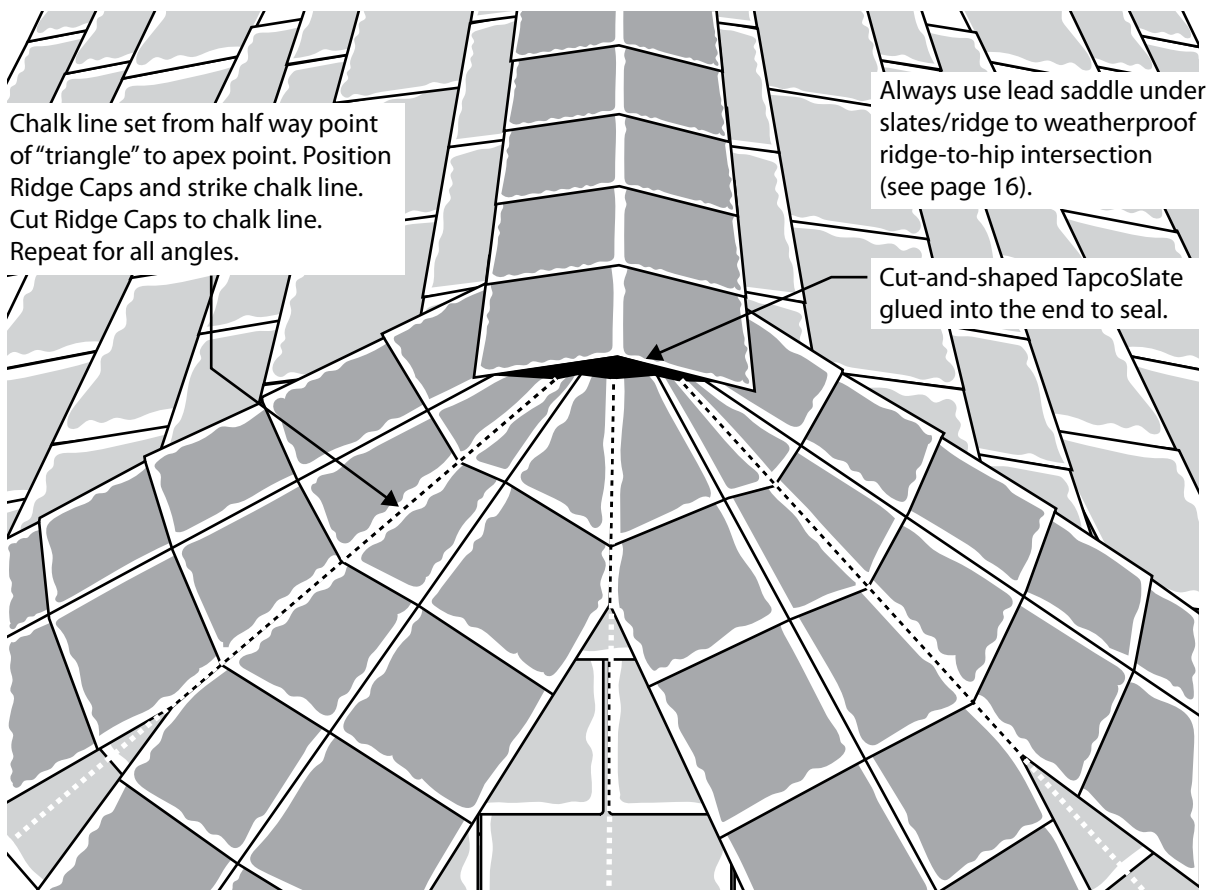
The same principle for finishing Tapco Ridge Caps can be applied to an angular finish roof by measuring the roof angle and cutting a Tapco Ridge Cap to suit. A similar measurement can be applied to a standard TapcoSlate to cut the right size and angle to cover the end hole in the Ridge Cap. Note that with an angular finish the material may have to be joined by using a strong epoxy glue (adhering to the manufacturer's instructions), unless there is enough batten/truss material to nail to.

Angled Ridge Cap End Piece – Ridge to Hip Joint (& Edwardian Conservatory)



The 5-way ridge-to-hip intersection can be formed by setting chalk lines from the centre point of the three, flat triangular shapes created to the point (apex) of the roof. By placing TapcoSlate ridge caps under these lines and then striking the chalk line onto the caps, the Hip Caps can be cut to form the shapes similar to the above diagram. The Ridge Caps should be set as normal (no cutting necessary) and a cut-and-formed piece of TapcoSlate can be glued in place to fill the front edge. Please note, it is recommended to use a lead saddle at the ridge/hip joint to add another layer of weatherproofing (see page 16).

5-way Ridge to Hip Joint (Victorian Conservatory)

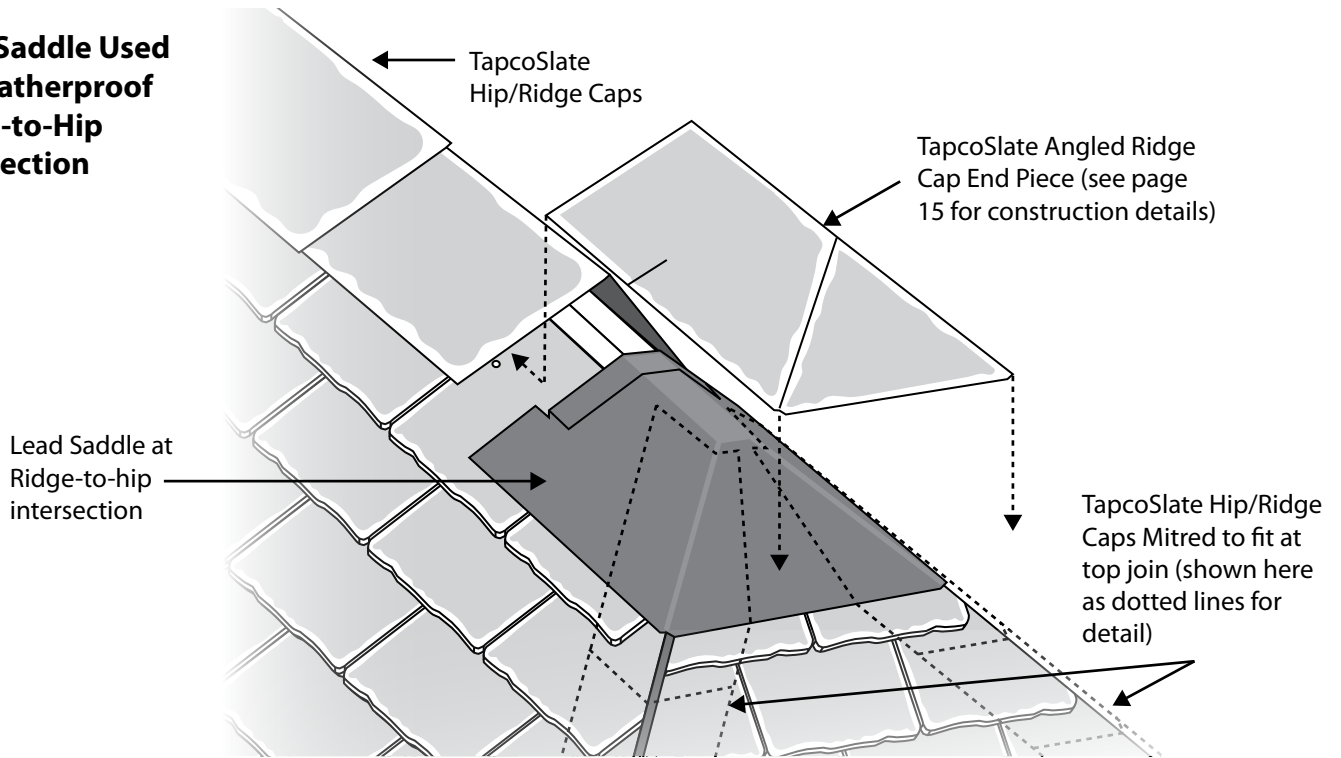


Weatherproofing the Ridge-to-Hip Intersection

When making your own ridge-to-hip intersections and/or ridge end caps it will be necessary to weatherproof this intersection (not needed when using TapcoSlate pre-formed accessories). A lead saddle should be fitted to cover the intersection between the ridge tile and the mitred hip tiles. TapcoSlate hip tiles cut easily without splintering or cracking to effect a tidy mitred joint.

This principal can be utilised for any sized or shaped intersection.

Lead Saddle Used to Weatherproof Ridge-to-Hip Intersection

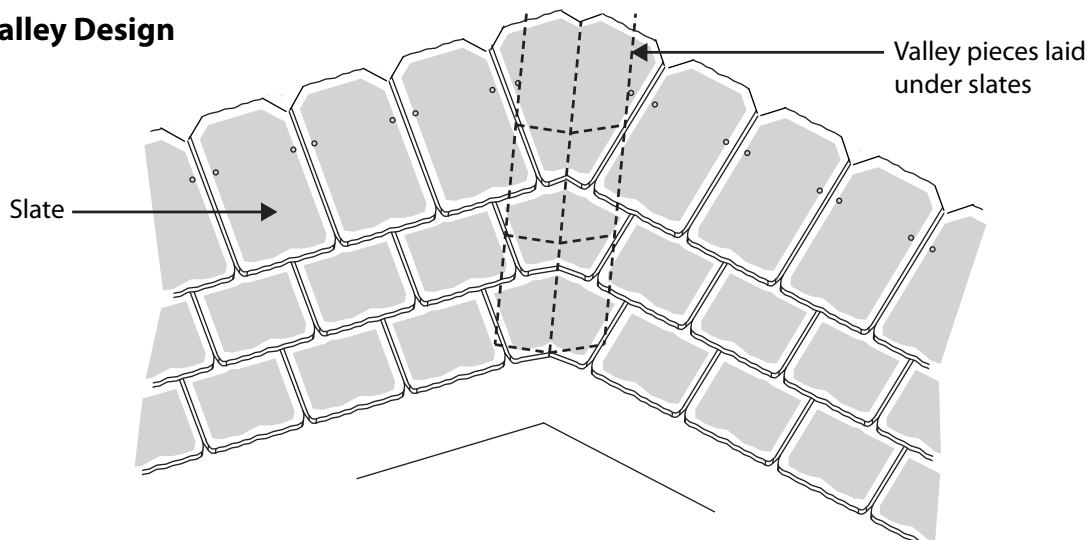


Valleys

Closed Valley Design

Closed valleys are formed by laying slates tight to the valley line and placing valley pieces under the slates. The length of the slate and the slope of the adjoining roof section determine the size of the valley. Valley material should extend 2" (51mm) above the top of the slate course that it will be applied to so that it may be fastened directly to the roof deck. Each valley piece should lap the piece below by at least 3" (76mm) and set in back of the butt edge of the slate above in order to be concealed. Each valley piece should be wide enough to extend 7" (178mm) from the centre of the valley to the roof surface. With a closed valley design, cut the slates in a straight line to fit no closer than 3/8" (10mm) against slate of adjoining roof slope.

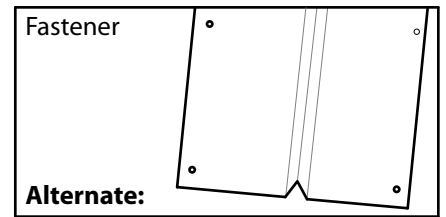
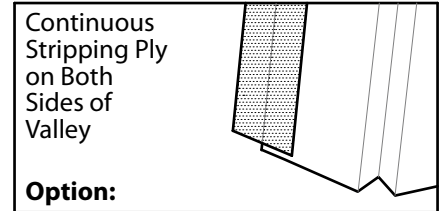
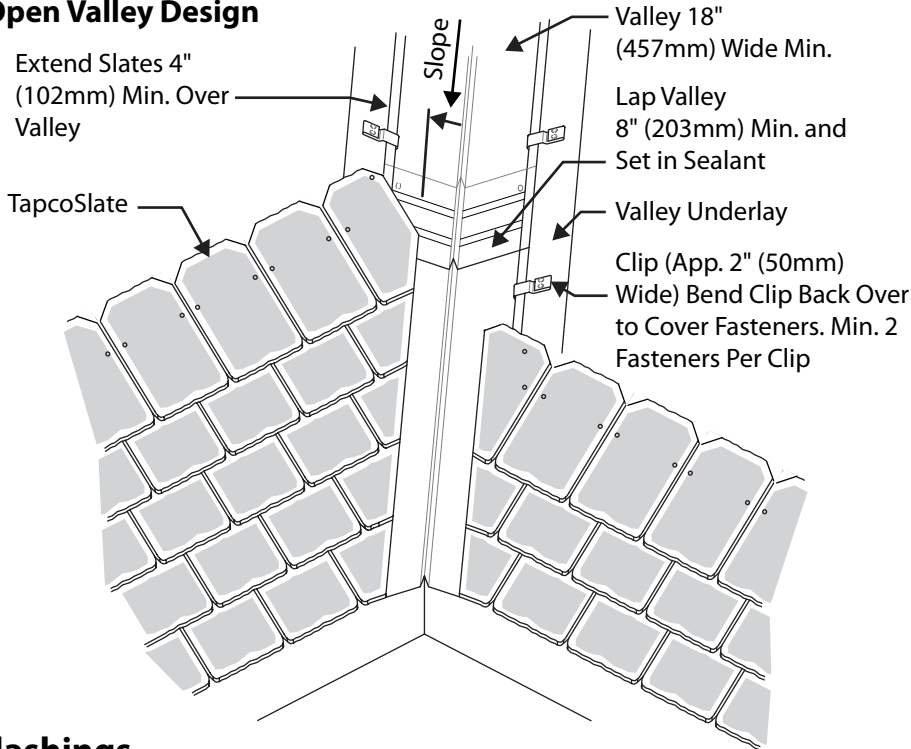
Closed Valley Design



Open Valley Design

1. Install minimum 18" (457mm) wide "W" valley or "I" seam valley.
2. Fasten the valley every 2' (0.6m) using metal cleats.
3. Slate over valley by covering flashing by a minimum of 4" (102mm). Make sure not to drive fasteners from slate into the valley flashing.

Open Valley Design



Flashings

Flashings should be used around all roof penetrations such as walls, chimneys, dormers, parapets, vent pipes, skylights, etc.

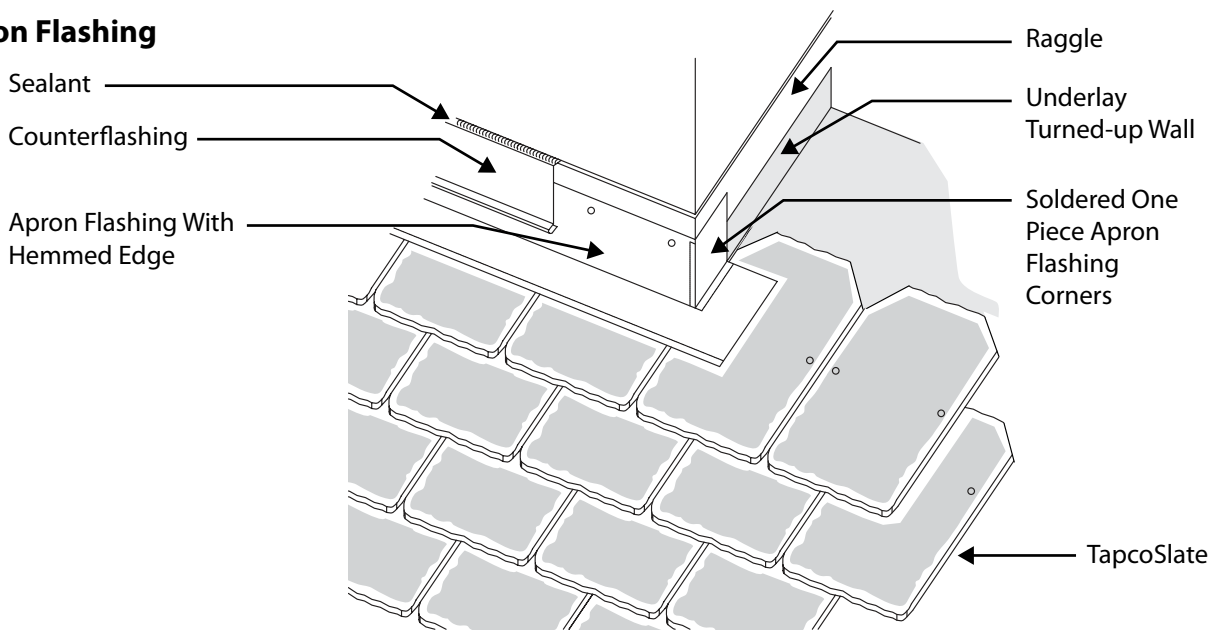
NOTE: When dissimilar metals are placed in contact with one another, galvanic corrosion will result which can cause electropositive metals to deteriorate. One way this can be avoided is by placing strips of sheet lead between the two metals.

When using lead insure that a coat of patination oil is applied. Tapco does not warrant metal components and accessories.

Apron (Roof to Wall) Flashing

Apron flashing is used when a roof terminates to a wall causing a course to be cut and face nailed. It is installed over the slates and behind siding or counter/cap flashing or dressed into brickwork/stonework, etc.

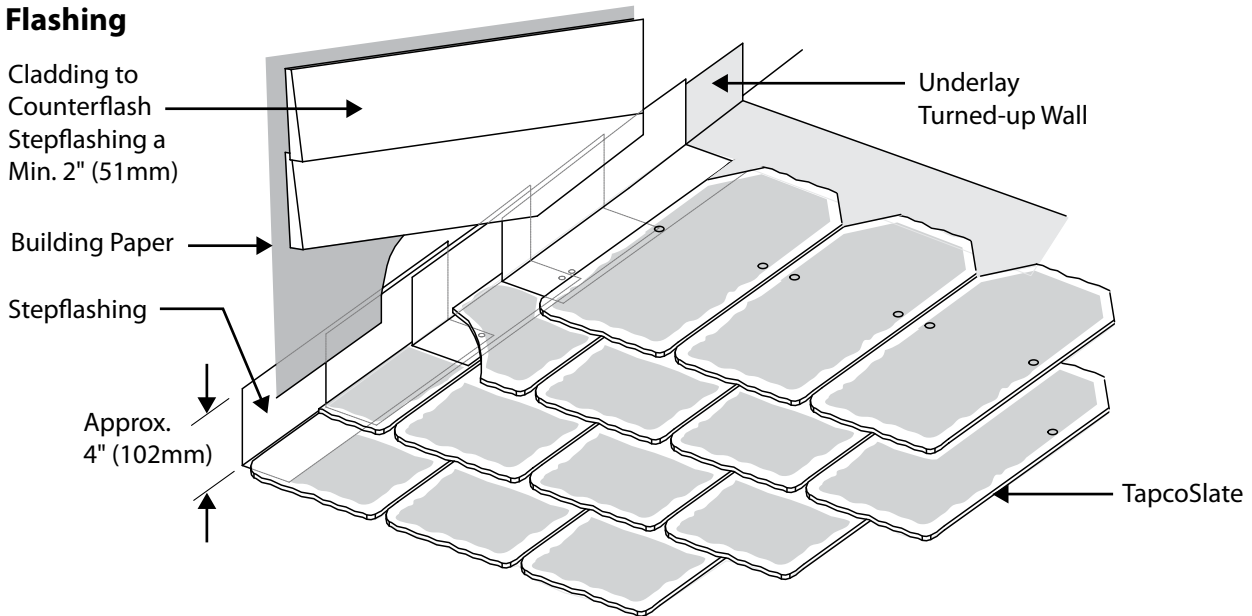
Apron Flashing



Step Flashings

Step flashings are used over or under the roof coverings and are turned up on the vertical surface. Step flashings should extend under the uppermost row of the roof slate the full depth of the roof slate or at least 4" (102mm) over the roof slate immediately below the flashing. The vertical leg of the flashing should be turned up a minimum of 4" (102mm) and extend 4" (102mm) on the roof slate with a 3/4" (19mm) hem. Flashings should have a minimum length of 9" (229mm) and must overlap a minimum of 2" (51mm).

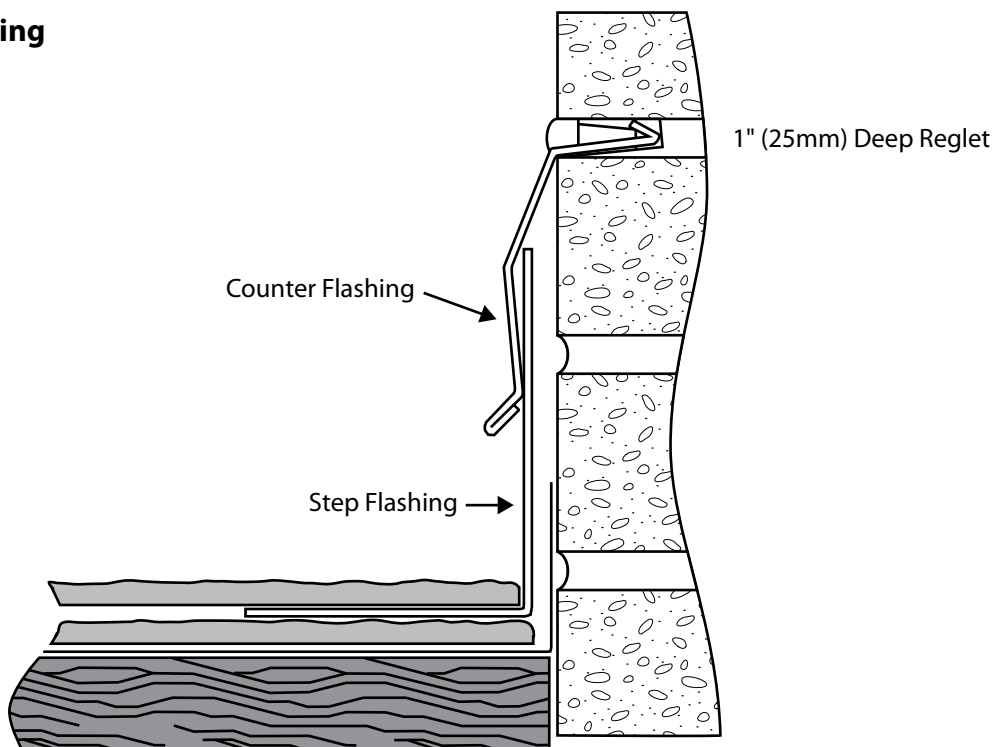
Step Flashing



Counter Flashing

1. Cut a minimum 1" (25mm) deep reglet into the masonry material.
2. Custom bend the counter flashing to fit into the reglet.
3. Start by installing lowest piece first and work upwards for proper water runoff.
4. Fasten the counter using either expandable anchors or masonry screws.

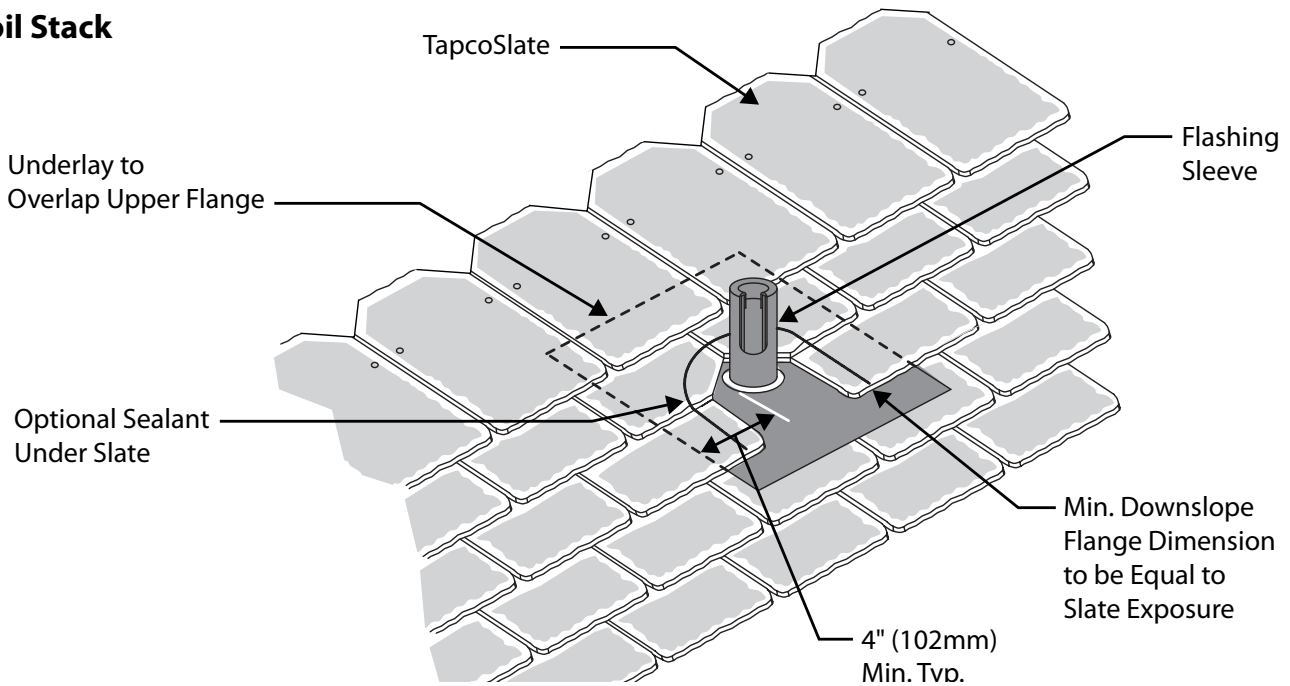
Counter Flashing



Vent Flashings

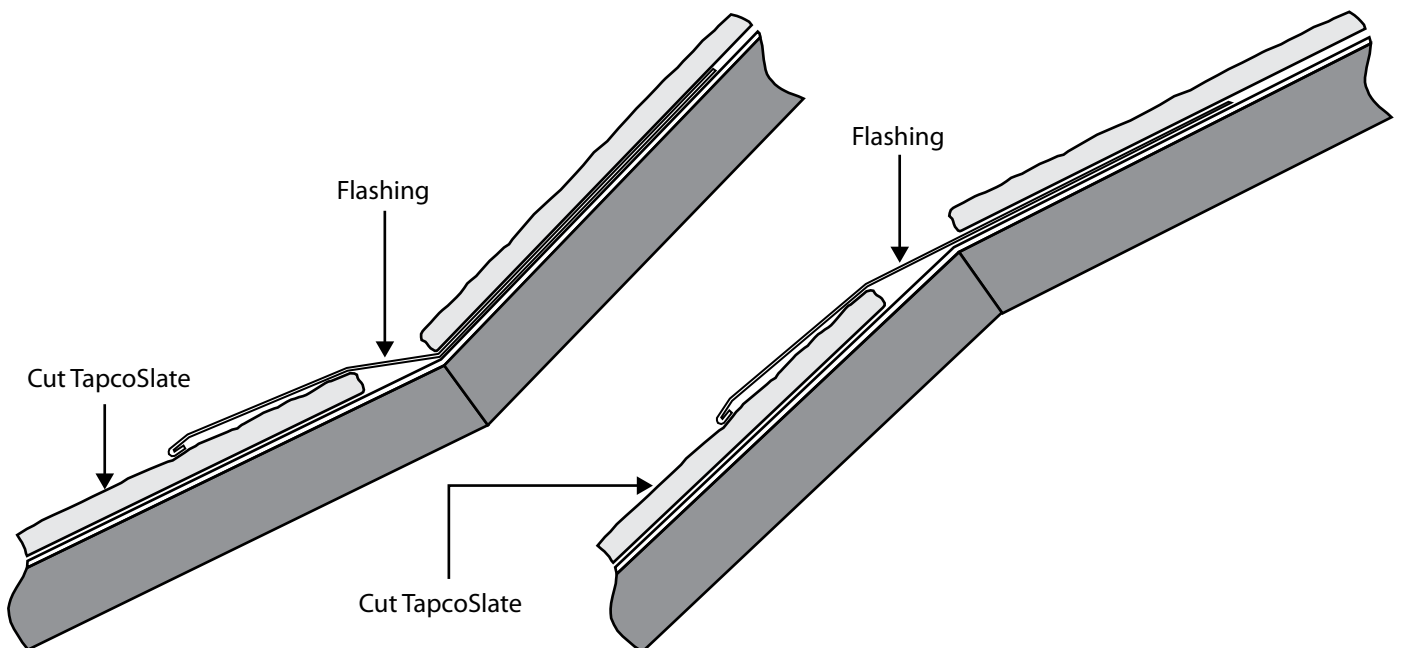
Normal type of roof vents or flashings can be used. Extended-life materials should always be used.

Soil Stack



Pitch changes

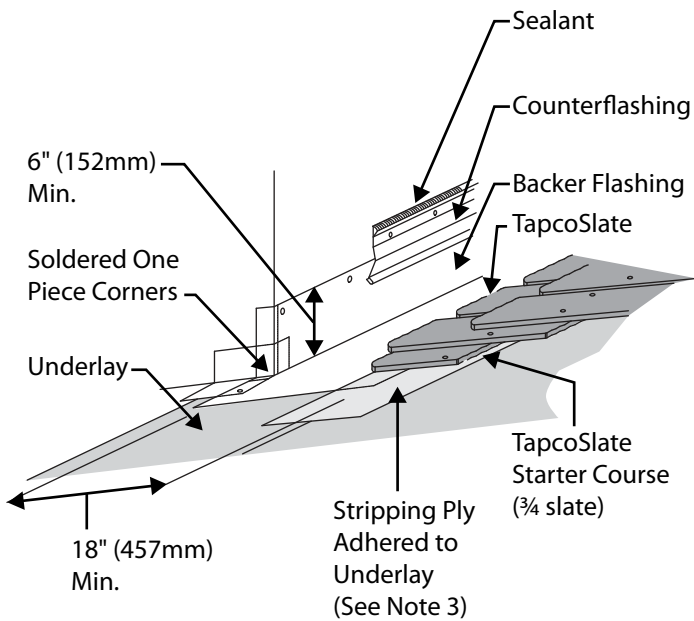
TapcoSlates can be installed onto rolling roofs with a gradual pitch change. Some roof designs, however, have drastic pitch changes where the use of flashing is necessary.



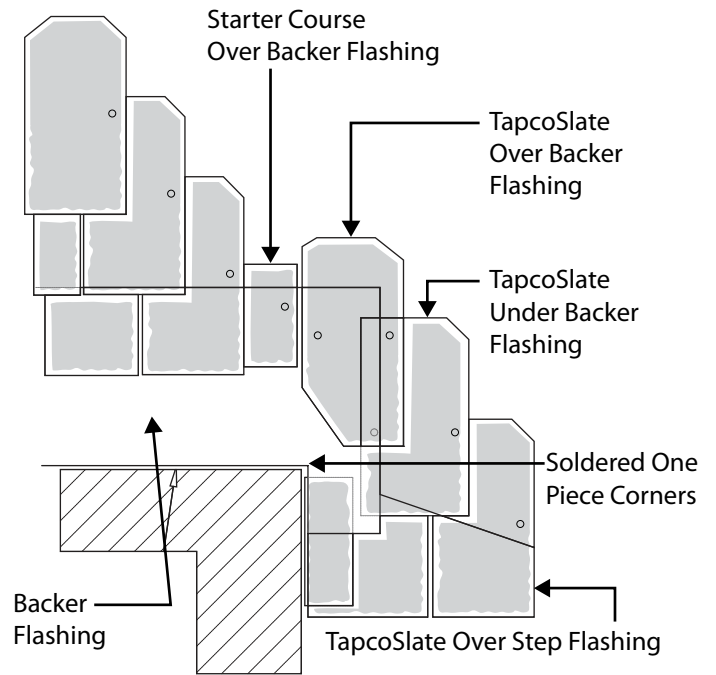
Chimney Saddles

With chimneys more than 2' (0.6m) wide it is recommended that a saddle be installed to divert water from the back of the chimney. With chimneys less than 2' (0.6m) may only require a simple pan flashing.

Pan Flashing View 1



Pan Flashing View 2

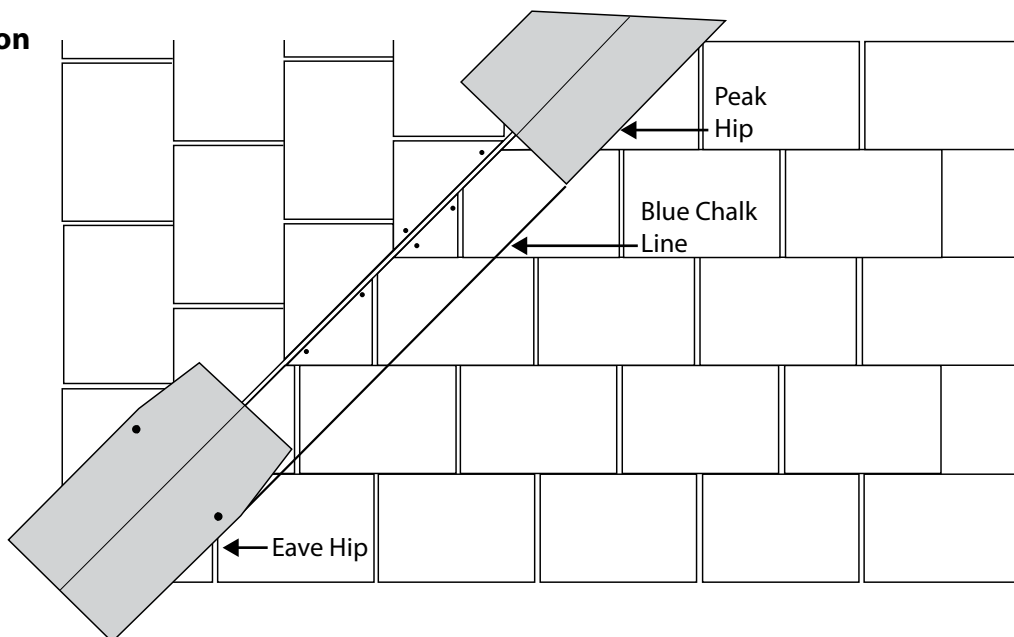


Hip & Ridge Detail on a Boarded Roof

When pre-formed hip & ridge slates are used, place nail at fastener guide targets. Fasten hip slates with 2 nails (one on each side). Maintain a 6" (152mm) exposure.

1. Hip & Ridge Slate installation requires the slate to be nailed or screwed in place.
 - a) Chalk a straight line by placing one piece of hip at the eave and one near the peak, hold the chalk line at the edge of the slate on the top and bottom pieces. This will help keep the hip straight in the event of a crooked hip.
 - b) Cover heads of fasteners with an adhesive sealant compatible with the roof slate in any case of exposure.
 - c) Preformed Ridge Slates require 6" (152mm) exposure and require 2" (51mm) length fasteners (3" (76mm) when using vent ridge).
 - d) Fastener deck penetration must be a minimum of 3/4" (19mm).
 - e) Ridge end closure can be effected by cutting a triangular section from a slate and nailing to the ridge batten, or in the case of a boarded roof, to a timber fillet.

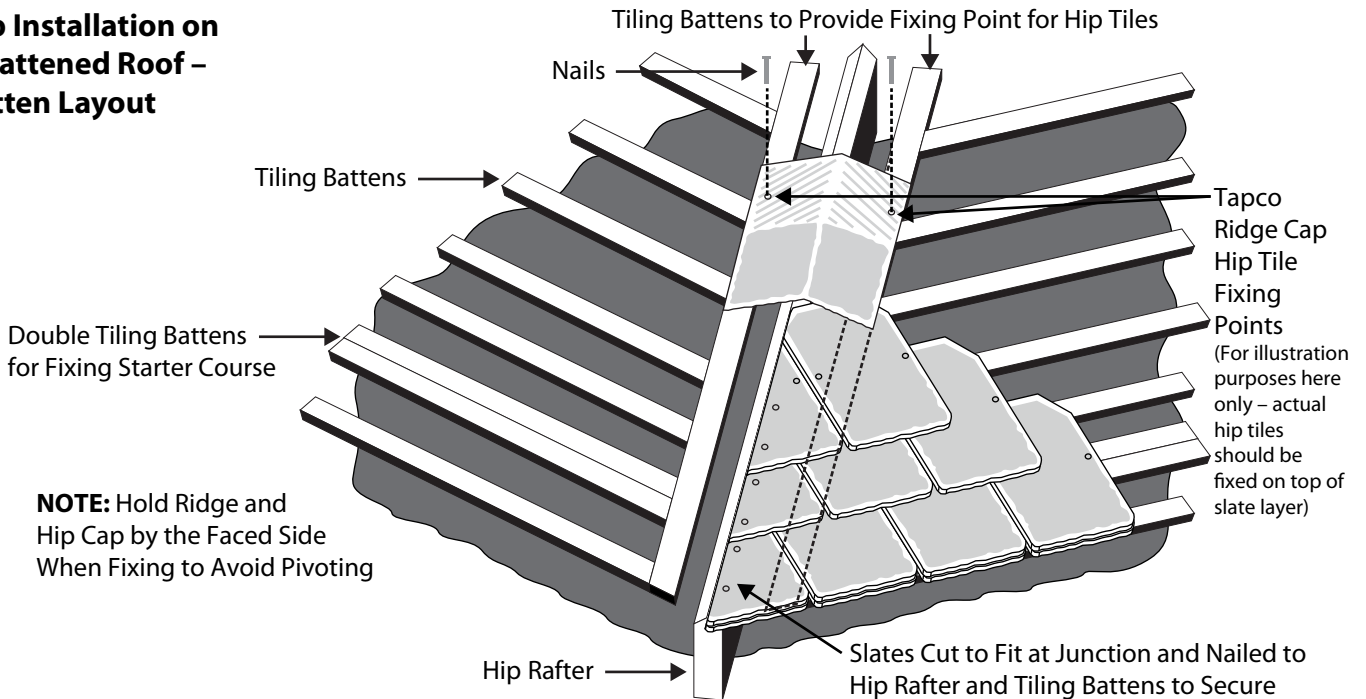
Hip Installation on a Boarded Roof



Hip & Ridge Detail on a Felt & Batten Roof

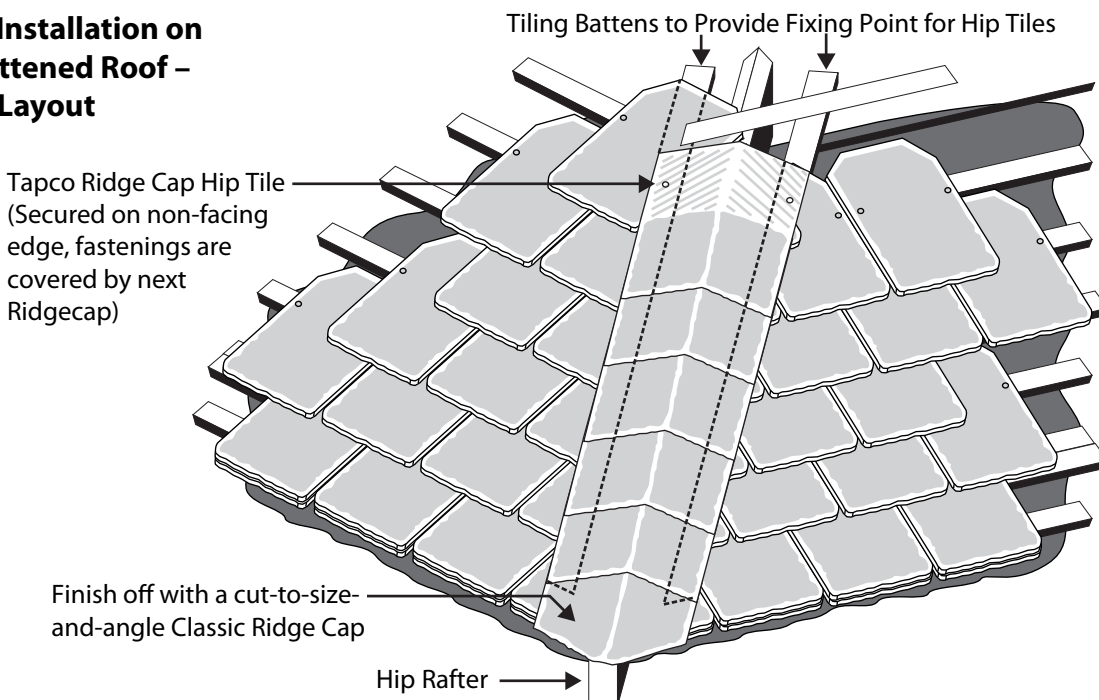
Felt & batten roofs need the addition of extra tiling battens to secure the hip tiles.

Hip Installation on a Battened Roof – Batten Layout



1. Cover the length of the hip with 24" (600mm) underlay from eave to ridge, overlapping the standard underlay on either side of the hip.
2. Position a hip tile in situ and mark the nailing points at the top and bottom of the hip.
3. Using these marks, secure a length of tiling batten either side of the hip to provide a fixing point for the hip tiles.
4. The slating battens should be fitted flush to these hip battens.
5. Cut slates to fit at junction.
6. Affix hip tiles using a minimum of 2" (51mm) nails or screws.
7. Finish at the eaves with a cut-to-size-and-shape TapcoSlate Classic hip tile.

Hip Installation on a Battened Roof – Tile Layout

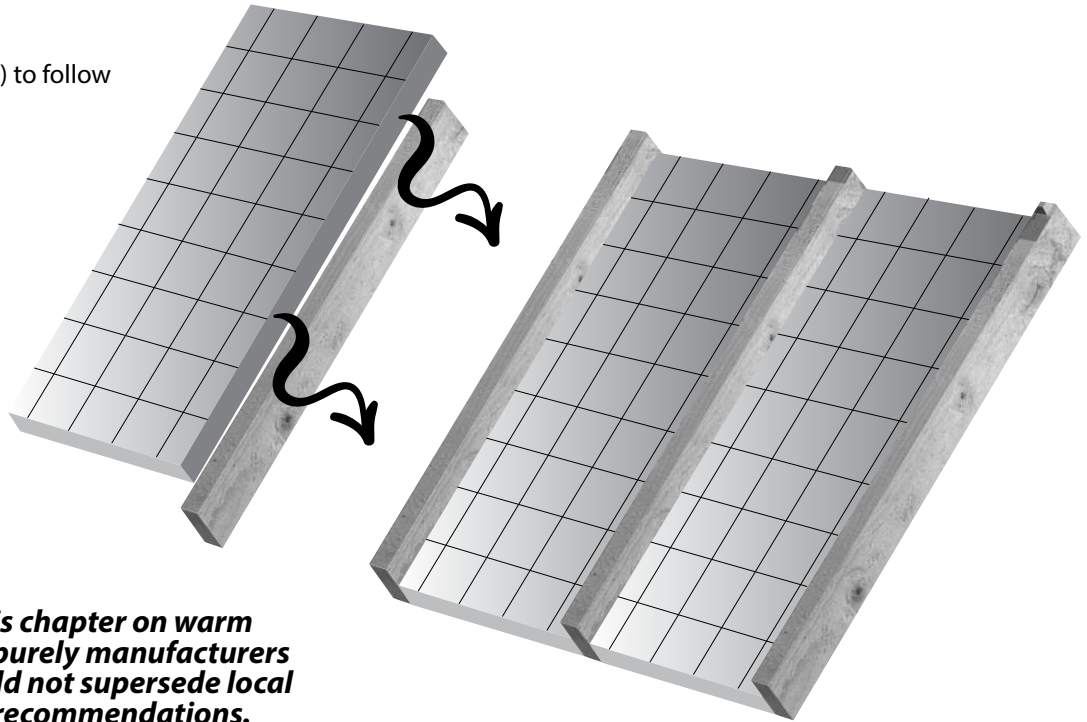


– Warm & Cold Roof Structures –

Warm Roof Installation

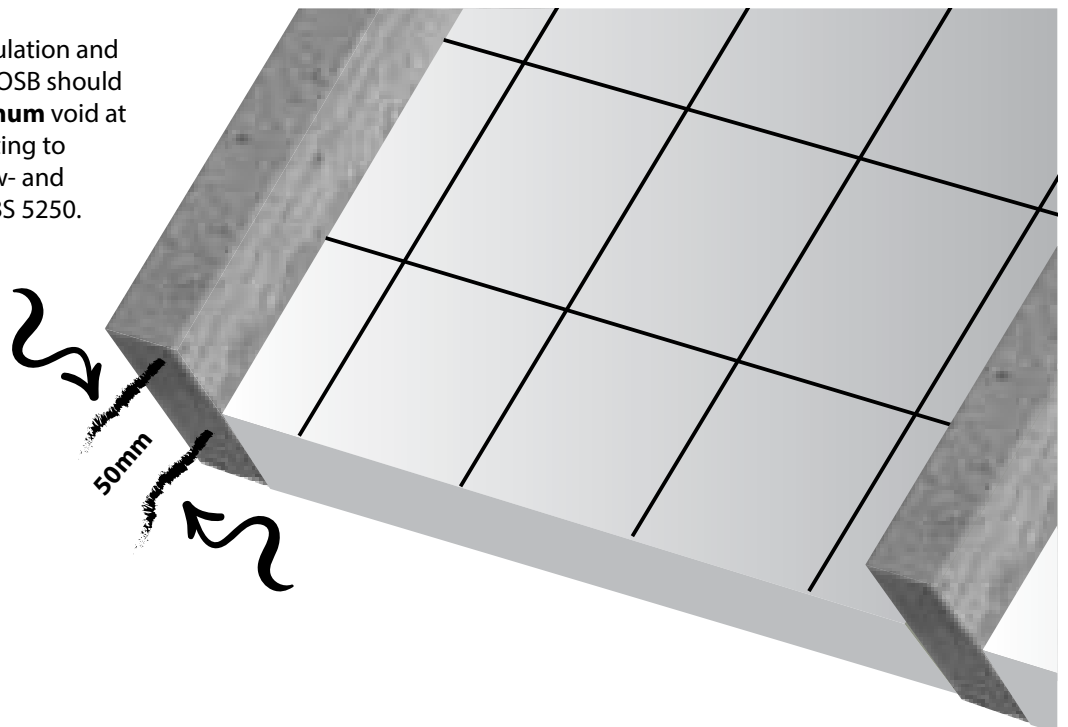
When installing TapcoSlate Classic onto either battens or directly onto OSB a **vapour impermeable (type HR)** roof membrane/underlay should be used. Insulation should follow the line of rafters, with a 50mm deep void between the top of the insulation and the underside of the underlay/OSB. This void to be ventilated in accordance with BS 5250. An air and vapour control barrier membrane to the warm side of the insulation must also be installed, we recommend the *Protect VC Foil Ultra* – low emissivity air and vapour control layer product.

Insulation (usually PIR) to follow the line of the rafters.



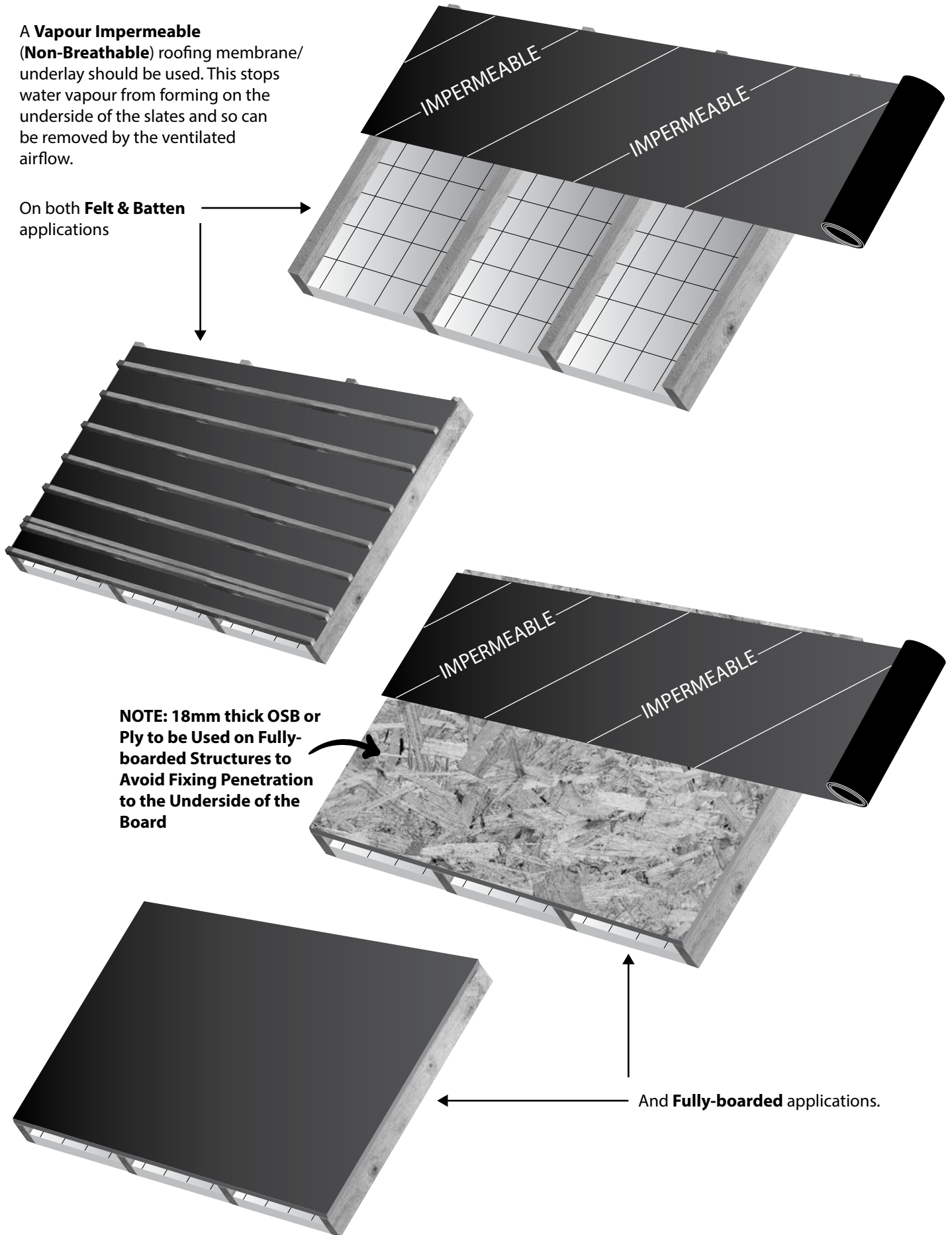
Please note that this chapter on warm roof installation is purely manufacturers guidance and should not supersede local building authority recommendations.

A **50mm** void between the insulation and the underside of the underlay/OSB should be maintained (a **25mm minimum** void at the **drape** of the underlay if fitting to felt & battens), ventilated at low- and high-level in accordance with BS 5250.



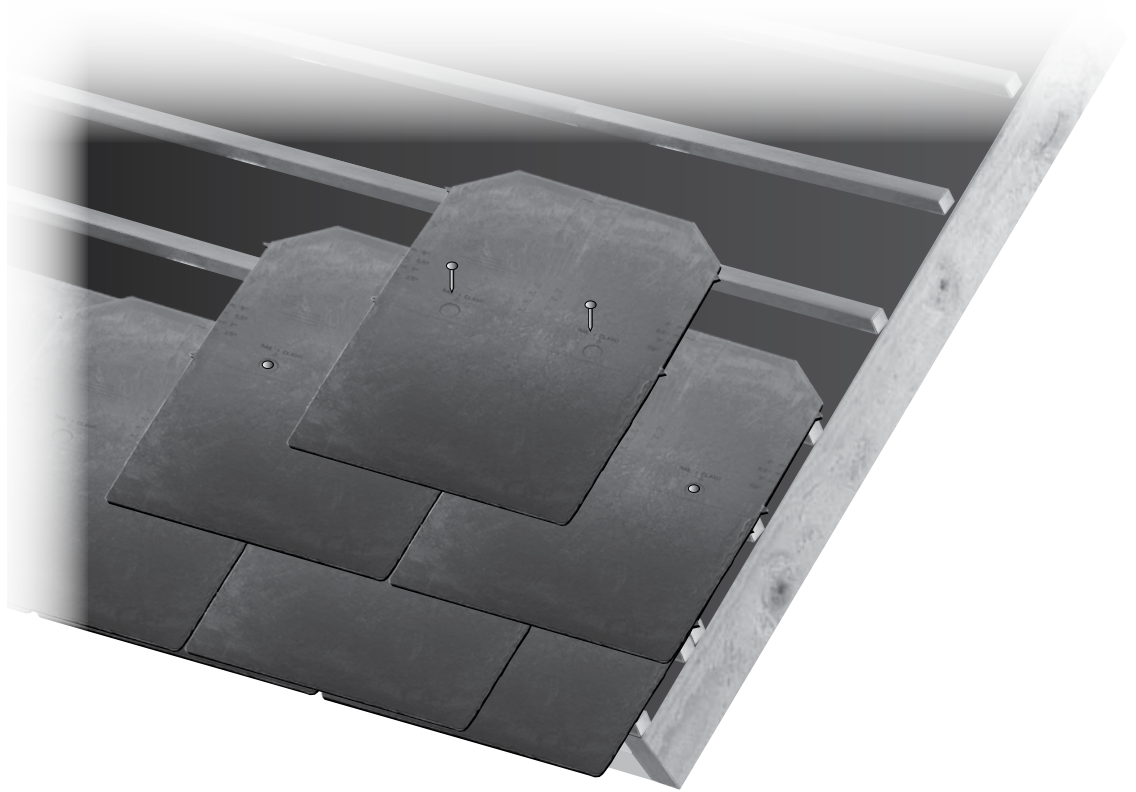
A **Vapour Impermeable (Non-Breathable)** roofing membrane/ underlay should be used. This stops water vapour from forming on the underside of the slates and so can be removed by the ventilated airflow.

On both **Felt & Batten** applications

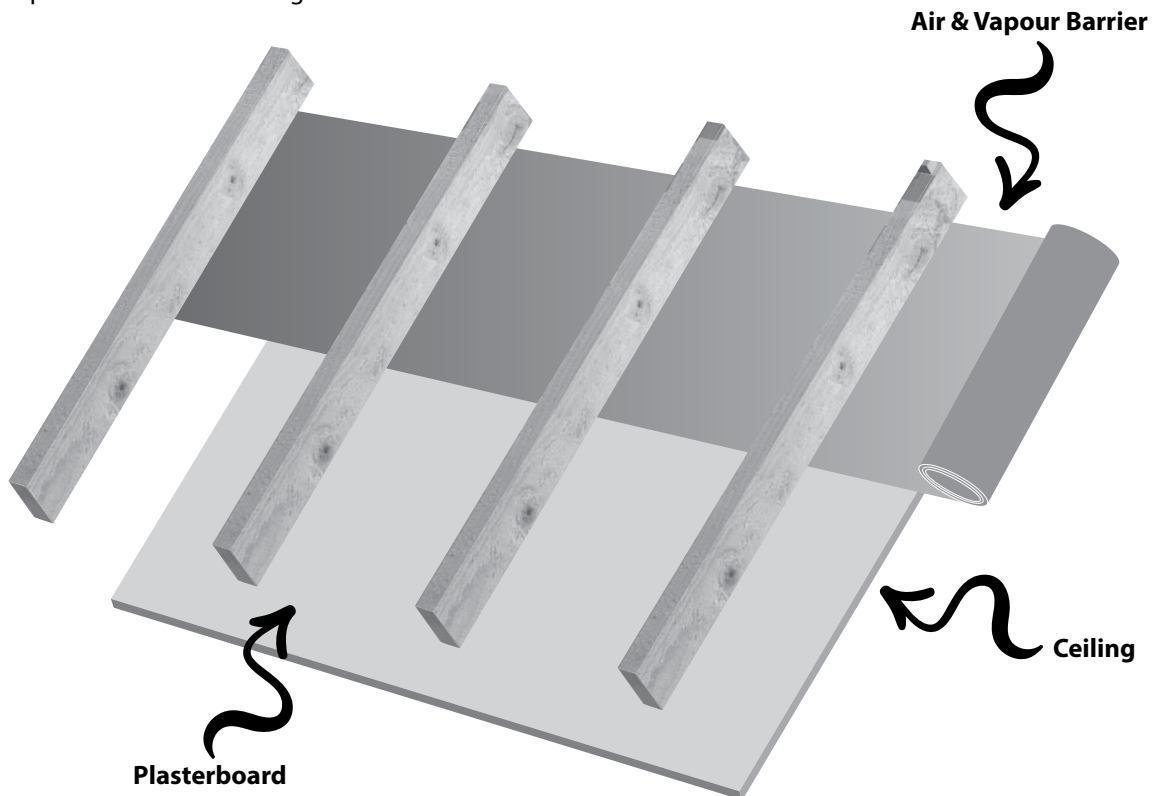


TapcoSlate Classic can then be fitted **directly** to board or battens if using an **impermeable** roofing membrane.

Use the pre-formed fixing holes, spacers at each side of the slates and slate exposure guides for layout in broken-bond. Remember to use a starter or eaves course to begin slate courses.



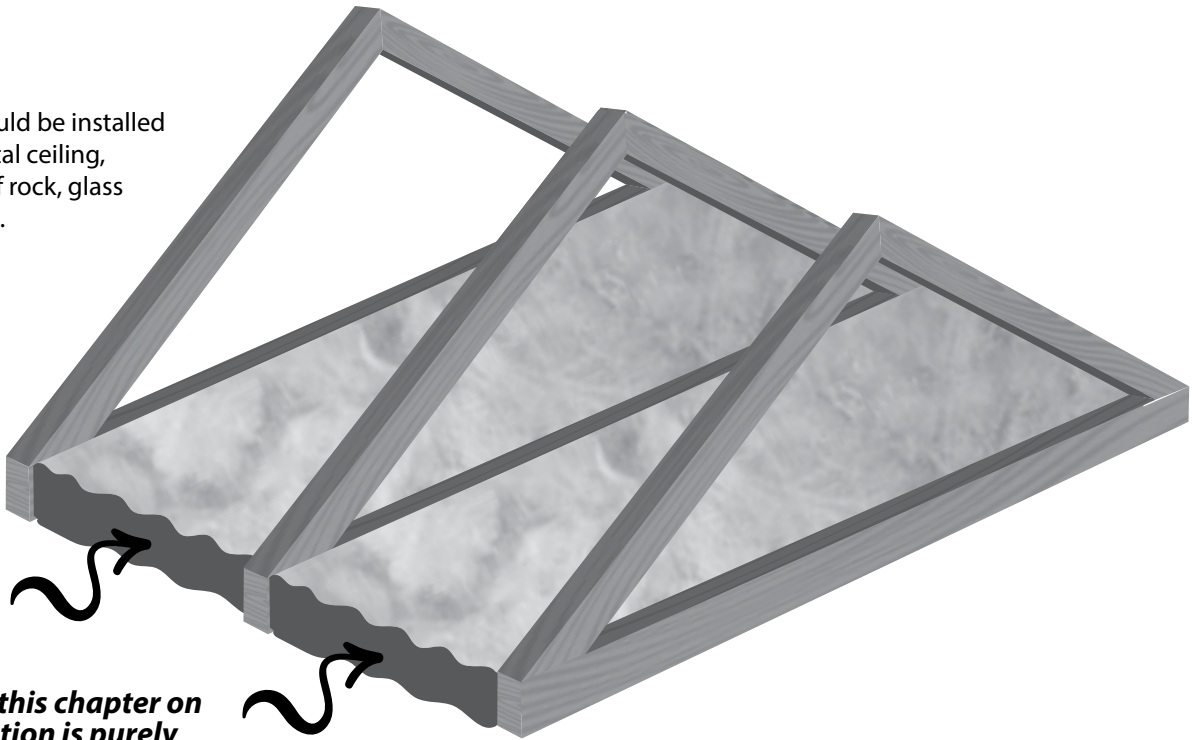
An **Air & Vapour Control Barrier** membrane to the warm side of the insulation (underneath the ceiling plasterboard) **must** be installed. This helps to prevent water vapour from even reaching the roof structure.



Cold Roof Installation

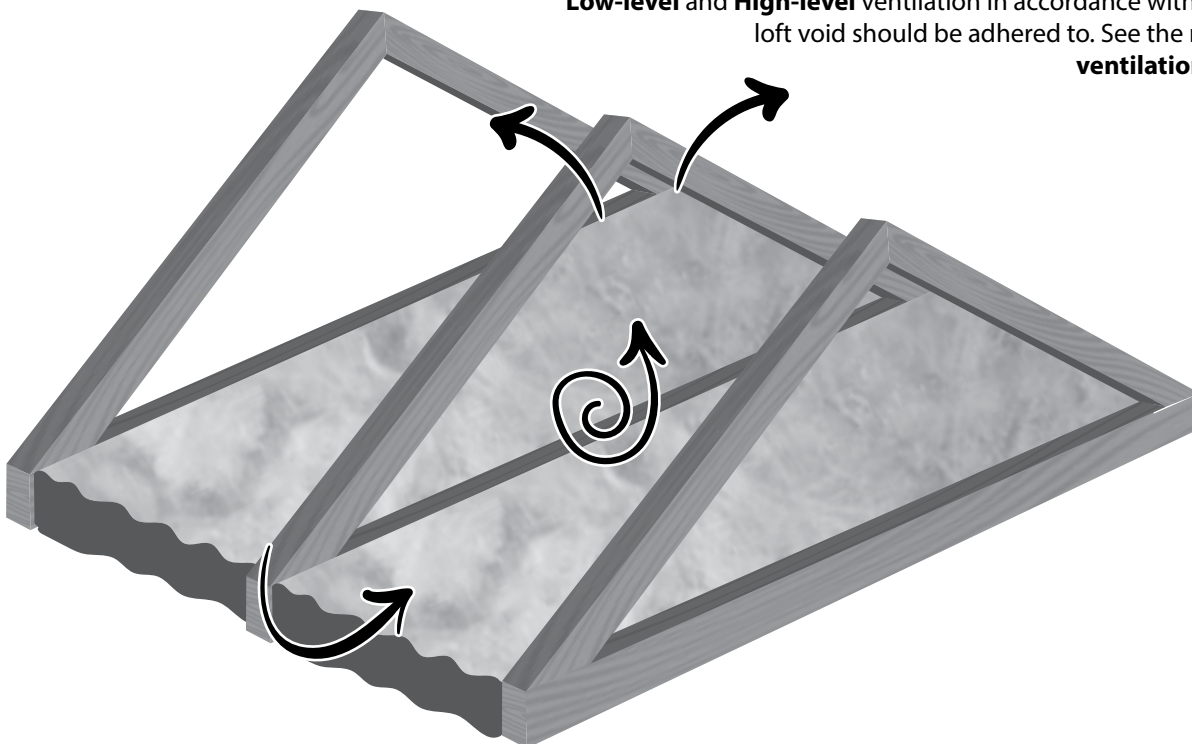
When installing TapcoSlate Classic onto either battens or OSB a **vapour impermeable (type HR)** roof membrane/underlay should be used. When installing directly onto OSB, ventilation in accordance with BS 5250 to the loft void should be adhered to. Insulation should be installed on the horizontal ceiling below. To further enhance this construction, improving thermal performance of all insulation by reducing convection flow and help to avoid interstitial condensation risk within insulation in accordance with BS 5250, we would recommend installing an air barrier on the warm side of the insulation, a suitable product would be *Protect BarriAir* – an air barrier membrane with some vapour control properties.

Insulation should be installed on the horizontal ceiling, typically rolls of rock, glass or mineral fibre.



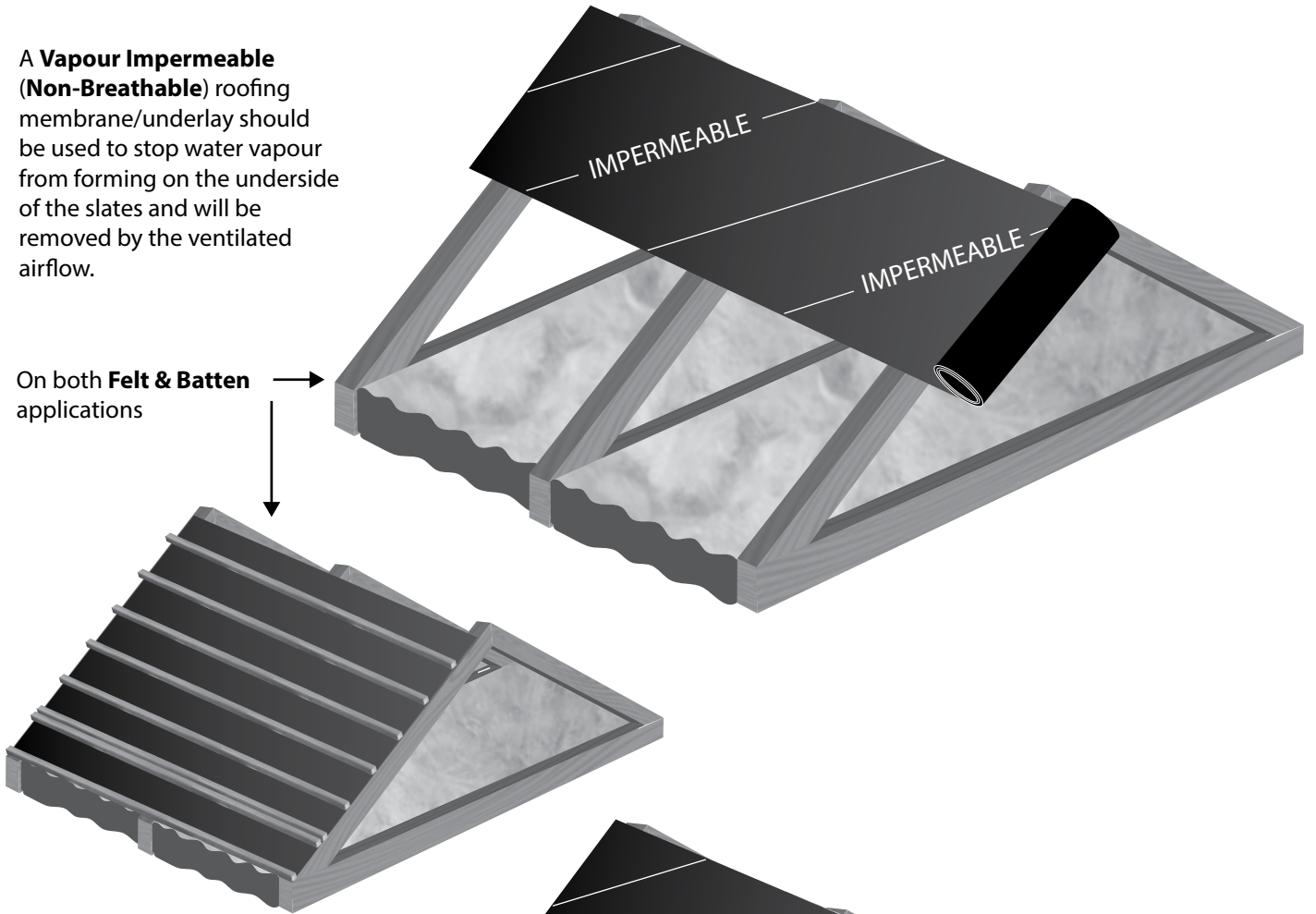
Please note that this chapter on cold roof installation is purely manufacturers guidance and should not supersede local building authority recommendations.

Low-level and High-level ventilation in accordance with **BS 5250** to the loft void should be adhered to. See the next Section on **ventilation** for guidelines.

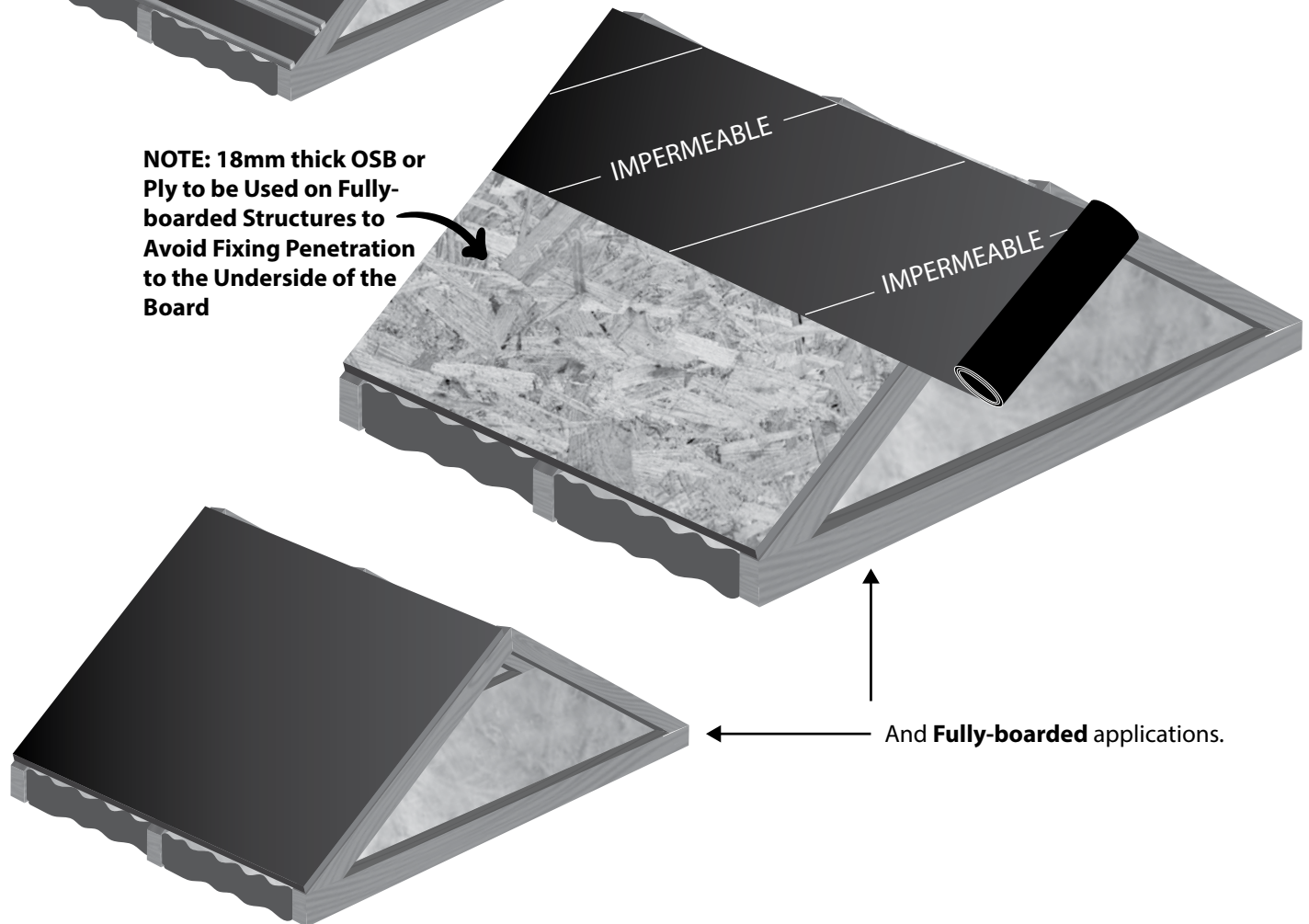


A **Vapour Impermeable (Non-Breathable)** roofing membrane/underlay should be used to stop water vapour from forming on the underside of the slates and will be removed by the ventilated airflow.

On both **Felt & Batten** applications



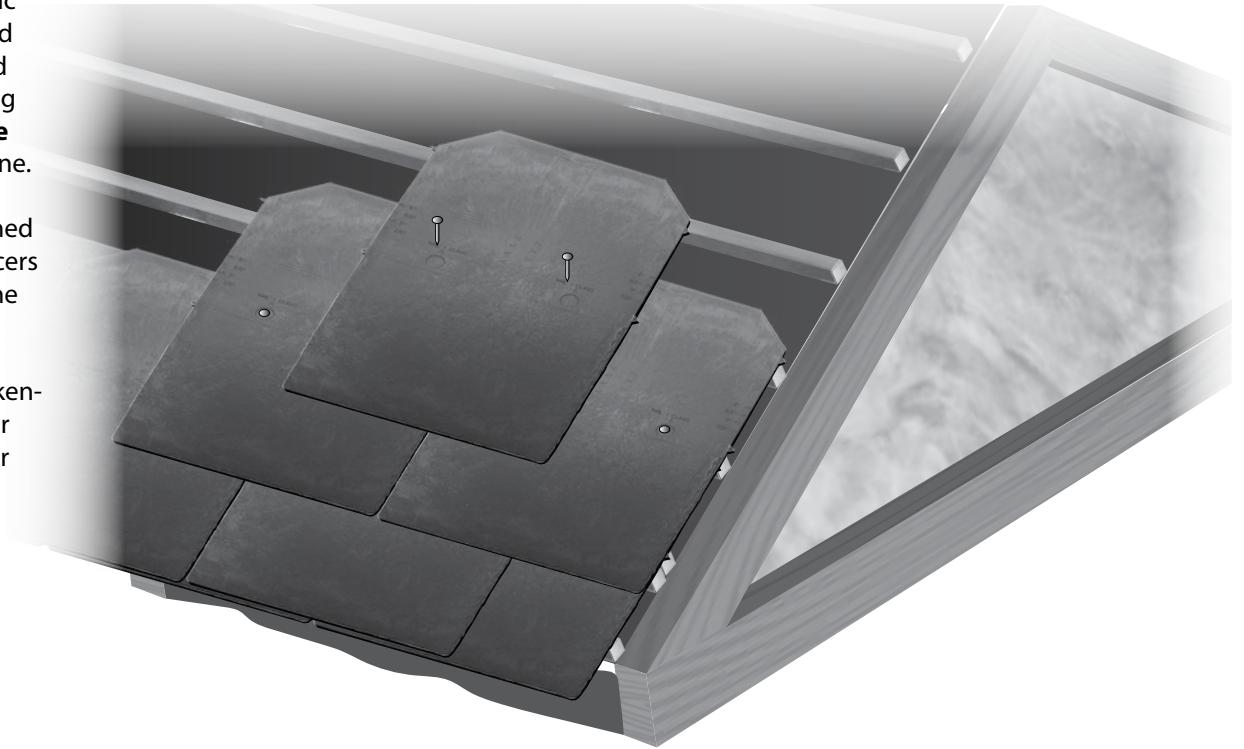
NOTE: 18mm thick OSB or Ply to be Used on Fully-boarded Structures to Avoid Fixing Penetration to the Underside of the Board



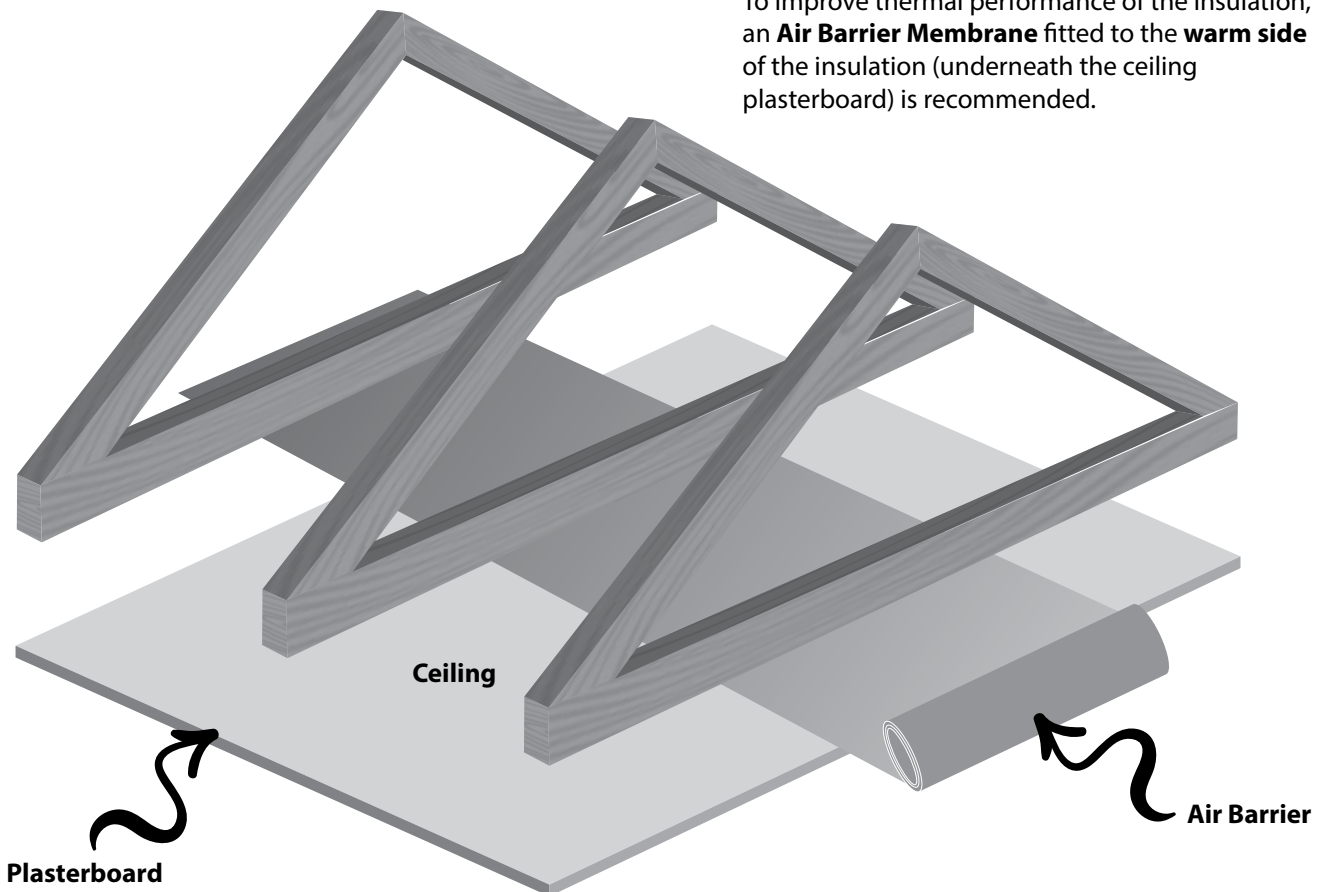
And **Fully-boarded** applications.

TapcoSlate Classic can then be fitted **directly** to board or battens if using an **impermeable** roofing membrane.

Use the pre-formed fixing holes, spacers at each side of the slates and slate exposure guides for layout in broken-bond. Remember to use a starter or eaves course to begin slate courses.



To improve thermal performance of the insulation, an **Air Barrier Membrane** fitted to the **warm side** of the insulation (underneath the ceiling plasterboard) is recommended.

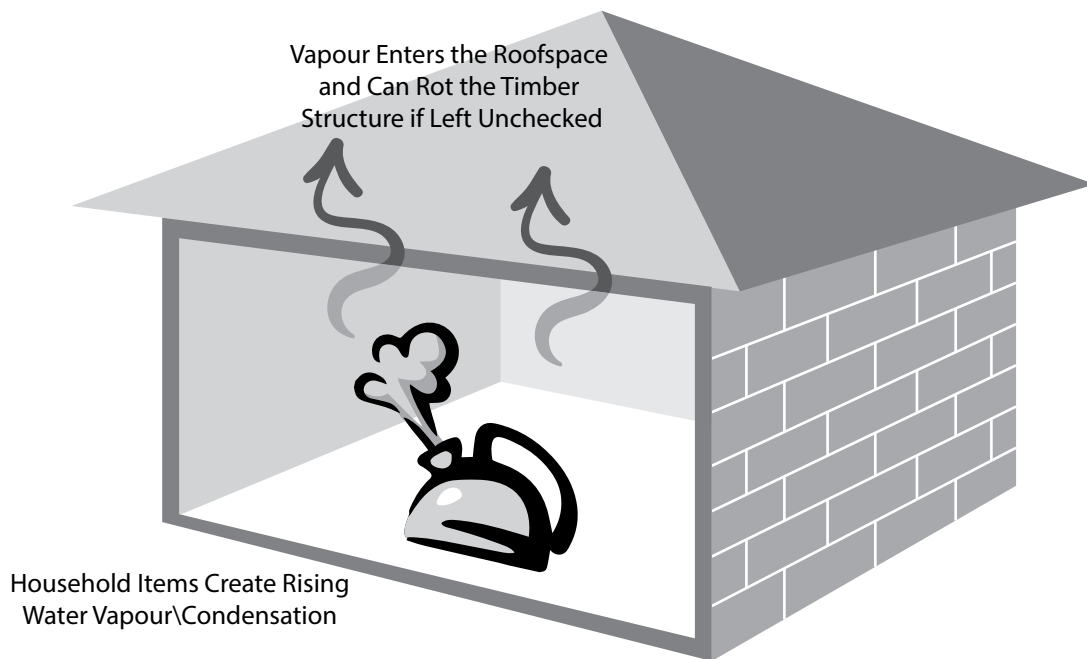


- Ventilation -

British Standard (BS) 5250

BS 5250 stipulates guidelines with regards roofing ventilation and condensation. Its primary concern is to eradicate condensation, which is mainly generated from within the home, from reaching and destroying the roof structure timber. Even when timber is not used in the roof construction, the vapour still needs to be properly extracted to prevent it from affecting other parts of the dwelling place.

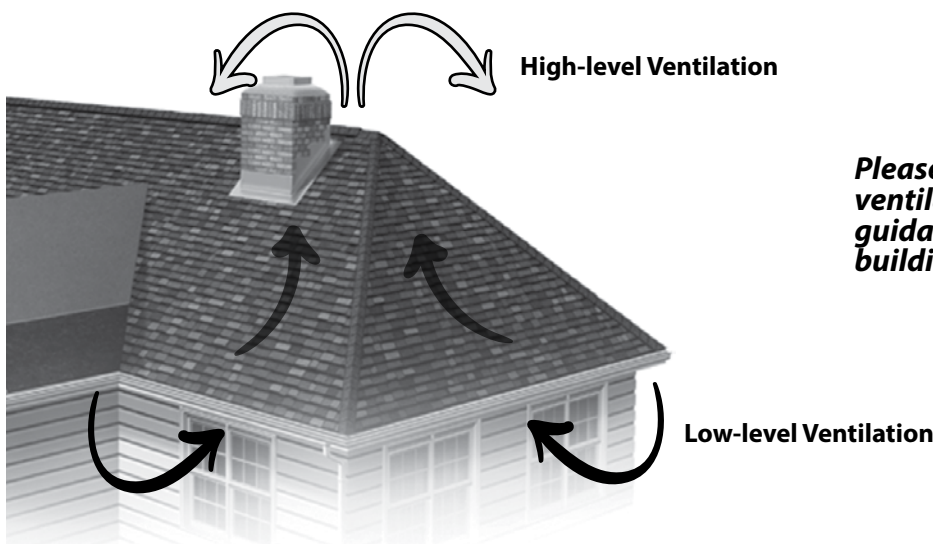
As with many other roof coverings, TapcoSlate Classic is classified as an **“Insufficiently Air Open”** product, meaning that water vapour cannot vent to atmosphere directly through the tiles, and so provision must be made to ventilate the roof space to move the water vapour from **inside** to **outside** the property. Proper ventilation is an **essential** part of modern-day roofing.



Standard Roof Ventilation

BS 5250 requires all roof structures to be **ventilated** at both **low-level** (air moving into the roof), which is typically at the eaves or soffit and at **high-level** (air moving out of the roof), which is typically at the ridge/hip, abutment, or with the use of fixed ventilation units.

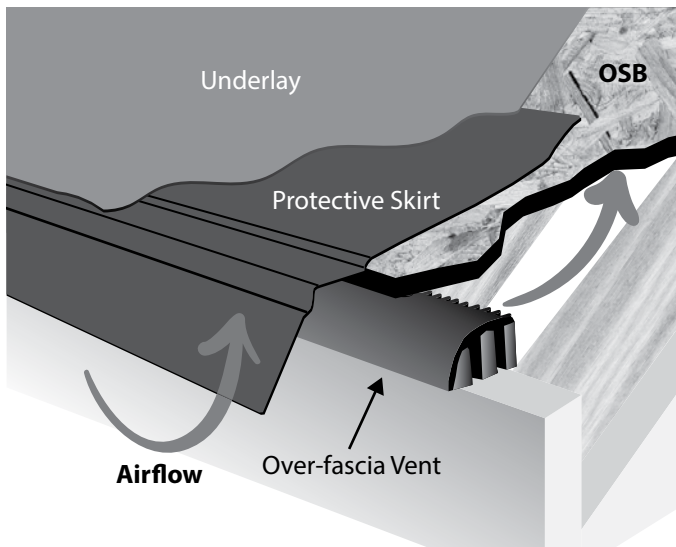
Obstructions such as dormers, valleys, roof windows, compartment walls, fire barriers and changes in pitch create **separate voids** below the roof slope. Ventilation openings should be provided to **each void** at high and low level.



Please note that this chapter on roof ventilation is purely manufacturers guidance and should not supersede local building authority recommendations.

Guidelines for Low-level Roof Ventilation

Tapco Eaves Ventilation Kits are recommended for low-level roof ventilation in both warm roof and cold roof construction. On a **warm roof** a 50mm void following the line of the rafters should be maintained and on a **cold roof** the loft space needs to be ventilated. These kits achieve this while keeping debris and insects from blocking the airflow. The **TEVK10** and **TEVK25** Eaves Ventilation Kits install continuously along the eaves and provide ventilation openings of **10,000mm²/m** (cold roof) and **25,000mm²/m** (warm roof) respectively. This kit consists of 10mm or 25mm over-fascia vents and eaves skirts in a 6-linear-metre pack. The **TEVK10** (10mm kit) also consists of a 300mm x 6m **Rafter Ventilation Roll** since most cold roof installations are felt & batten construction. Note that the **TEVK25** (25mm kit) does not include a Rafter Ventilation Roll, but this will be required to purchase separately if using felt & batten construction.

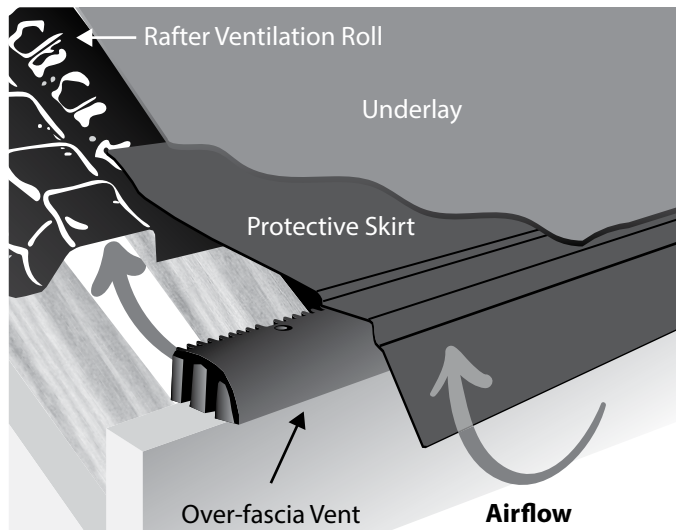


Fully-Boarded Roof

The **over-fascia vent** is fixed onto the fascia board and sits underneath the OSB or ply. The **protective skirt** covers the vent and roofing membrane is then laid on top of the skirt and the rest of the roof. Airflow comes in from the underneath of the vent and flows up the roof underneath the OSB/ply.



TVK25 Eaves Ventilation Kit
(Warm Roof Application)



Felt & Batten Roof

The **over-fascia vent** is fixed onto the fascia board and the **protective skirt** fits on top to protect the vent. For felt & batten installations we advise fitting a **Rafter Ventilation Roll** along the span. The roofing membrane sits on top and battens can then be fixed.



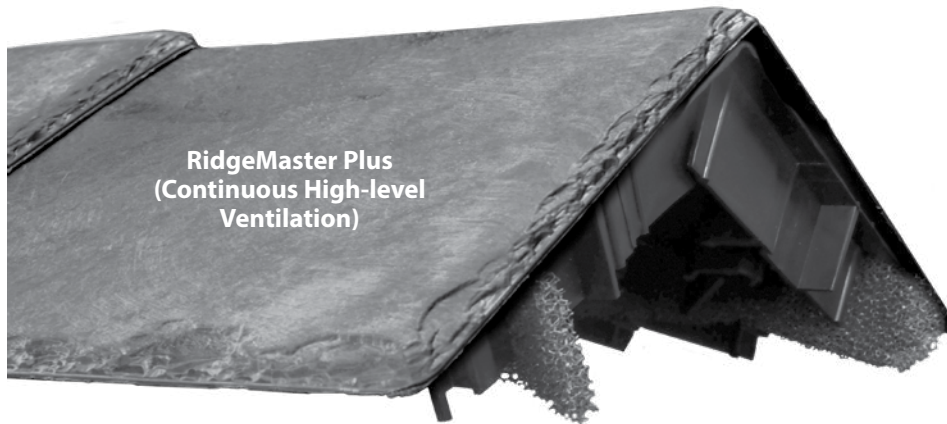
Rafter Ventilation Roll
(Felt & Batten Roof Construction)



TVK10 Eaves Ventilation Kit
(Cold Roof Application)

Guidelines for High-level Roof Ventilation

High-level ventilation is needed for the low-level airflow to exit and vent water vapour to atmosphere. Cross-flow ventilation (low-level to low-level) has been shown to be inadequate as standard air pressure is too low to adequately vent water vapour in this way. The use of the **RidgeMaster Plus** ridge ventilation system and/or **HipMaster** hip ventilation system is recommended in both warm roof and cold roof construction when installing TapcoSlate Classic. The **Tapco Abutment Ventilator** is again recommended in both scenarios for roofing abutments (such as lean-to roofs).



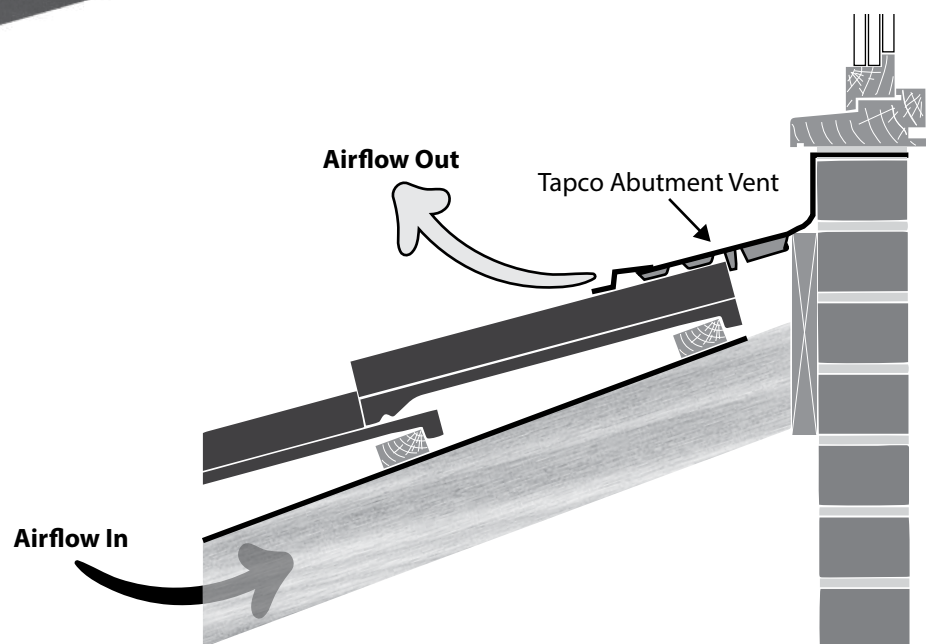
RidgeMaster Plus & HipMaster

The **RidgeMaster Plus** and **HipMaster** ventilation systems are manufactured specifically to fit underneath our **TapcoSlate Classic Ridge & Hip Caps** for continuous ridge and/or hip ventilation. These units provide **22,000mm²/m** high-level airflow and are easily fixed in place by nailing or screwing directly through the markers on our ridge & hip caps. Each unit covers 1.2 linear metres, is unobtrusive when fixed and contains baffles to prevent debris and insects.



Tapco Abutment Ventilator

The **Tapco Abutment Ventilator** provides unobtrusive **5000mm²/m** high-level ventilation in conjunction with lead roll details on slate roofs. It is particularly useful in top edge abutment details where there is limited vertical clearance. The ventilator provides full compliance with **BS 5250 Control of Condensation in Buildings**, the primary means to comply with **Building Regulations** in the UK as well as providing driving rain and large insect resistance.



Tapco Inline Ventilator

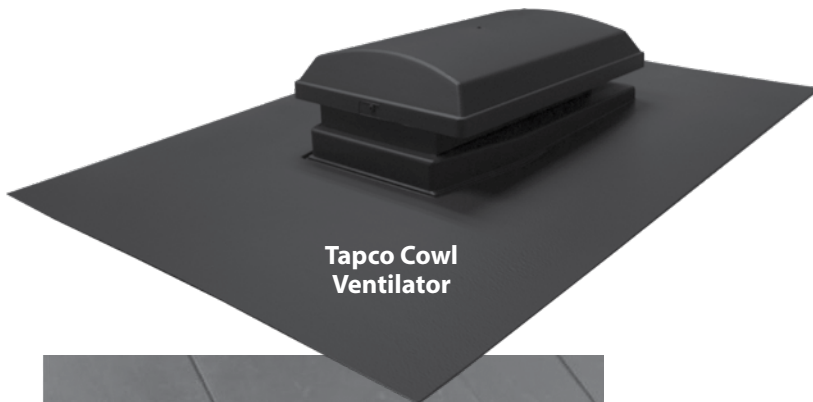
Tapco Inline Slate Ventilators have been designed to provide an aesthetic and unobtrusive solution to roof space ventilation. They can be used at low or high level where the roof construction does not allow eaves or ridge ventilators to be used, or where complex roof shapes do not allow effective cross ventilation. **Inline Slate Ventilators** are suitable for roof pitches from 20° to 90°, and provide **10,000mm²/m** airflow.

Warm Roof

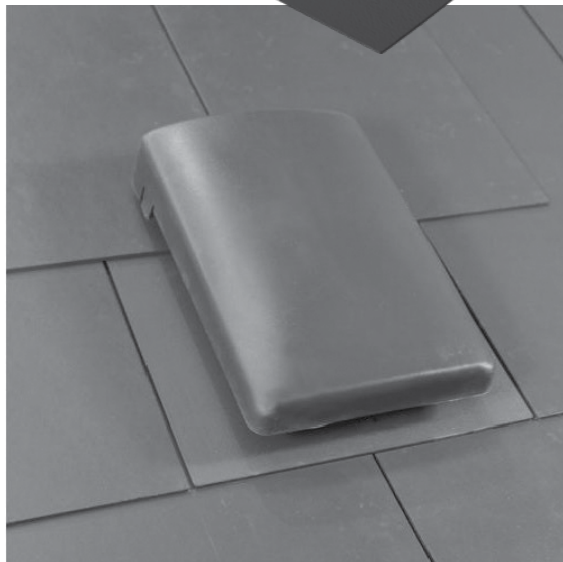
High-level ventilation to the equivalent of **5000mm²/m** is required for warm roof structures. This can be achieved by installing inline slate ventilators spaced at 2m centres. There must be provision for sideways movement of air in this scenario (the ventilation terminals may require additional finishing to ensure the airpath is not restricted by the insulation below).

Cold Roof

Inline or **Cowl Slate Ventilators**, providing **10,000mm²/m** free area and spaced at 1m centres, or alternatively **Cowl Vents** providing **20,000mm²/m** (20k) free area spaced at 2 metre centres, can be used as high-level ventilation. For roof pitches greater than 35 degrees or spans (wallplate-to-wallplate) greater than 10m, providing high-level ventilation to the equivalent of **5,000mm²/m** is required. This can be achieved by installing inline or cowl slate ventilators spaced at 2m centres.



Tapco Cowl Ventilator



Tapco Cowl Ventilator

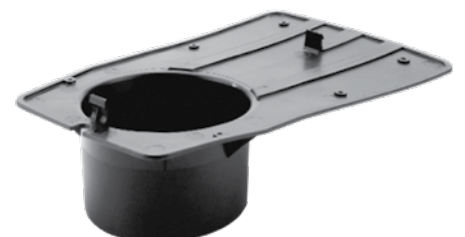
Tapco Cowl/Soaker-style Slate Ventilators are designed to ventilate through the roof slope and form an integral part of a slate or tile roof covering. They can be used at low or high level where the roof construction does not allow eaves or ridge ventilators to be used, or where complex roof shapes do not allow effective cross ventilation. **Cowl Slate Ventilators** are suitable for roof pitches from 15° to 90°. They are available in **10,000mm²/m** and **20,000mm²/m** airflow units.

Pipe Adapters

Pipe Adapters are also available to allow **Inline** or **Cowl Ventilators** to be used in conjunction with a standard round vent pipe. This converts the vent to a soil pipe fitting and/or mechanical extract terminal.



Inline Vent Pipe Adapter



Cowl Vent Pipe Adapter

- Special Instructions -

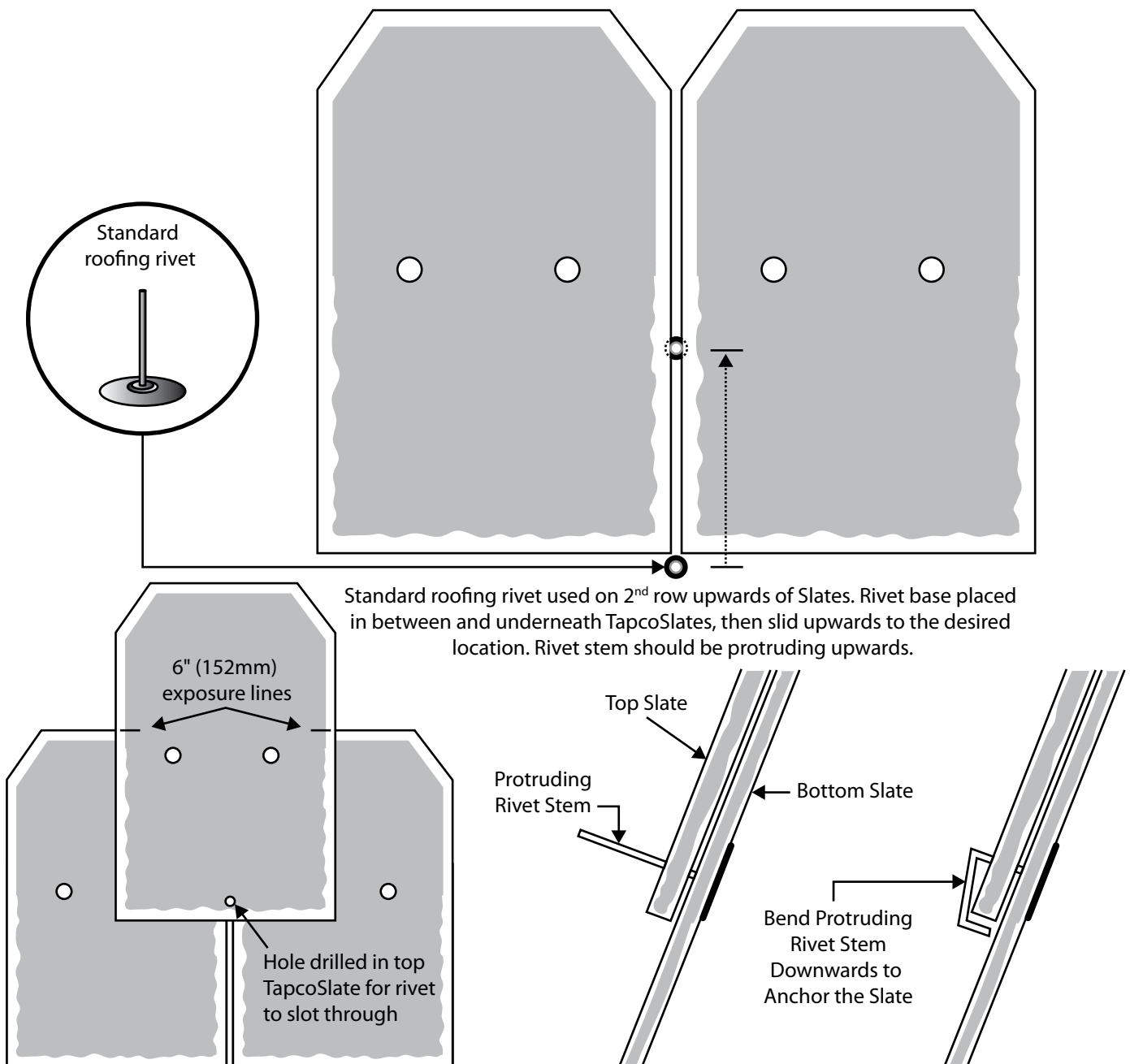
Installation in Exceptionally High Wind Areas

TapcoSlates are tested for resistance to wind driven rain/wind uplift, as follows:

- Miami Dade TAS-100: (110 mph wind-driven rain). No water infiltration through sheathing. No slate cracked, split or lifted.

There are certain areas, particularly on west-facing coasts and exposed islands, where wind speeds can exceed this level, and in order to reduce the risk of uplift, the following installation instructions should be followed:

1. TapcoSlates should be fixed directly to a solid substrate, such as sarking board, OSB or weather-grade ply.
2. The maximum overlap – slates set at the 6" (152mm) gauge – should be used.
3. Standard copper roofing rivets should be installed: a hole is drilled in the overlapping or top slate, and a rivet is slid up between the gap in the two bottom slates (see diagram below). The rivet should be put in a position where it can be inserted through the hole and bent over. After a length of time the rivets will naturally blend in with the slate.



Turret Installation

Turrets and cones need custom cut slates which change depending on the radius and pitch. They can be quite difficult to install; time and care must be taken during installation.

1. Determine the taper by chalking lines originating at the peak, extending to eave spaced 11.5" to 5/8" (292mm to 16mm) apart for Classic (the width of one slate).
2. Place the slate at the eave between the 2 lines, this will give you the proper taper for the first course.
3. Mark up from the top of your first slate your exposure. Repeat until you reach the top of the turret.
4. Each course will have a different taper as the pieces get smaller towards the top. You can now place a slate to each mark and determine the taper per course.
5. Be sure to pay attention to the size of the slates, If the slates get too small it may be necessary to use a larger slate and re-chalk lines at some point.
6. Make sure measurements are periodically taken from eave and peak to ensure straight courses.

Precautions

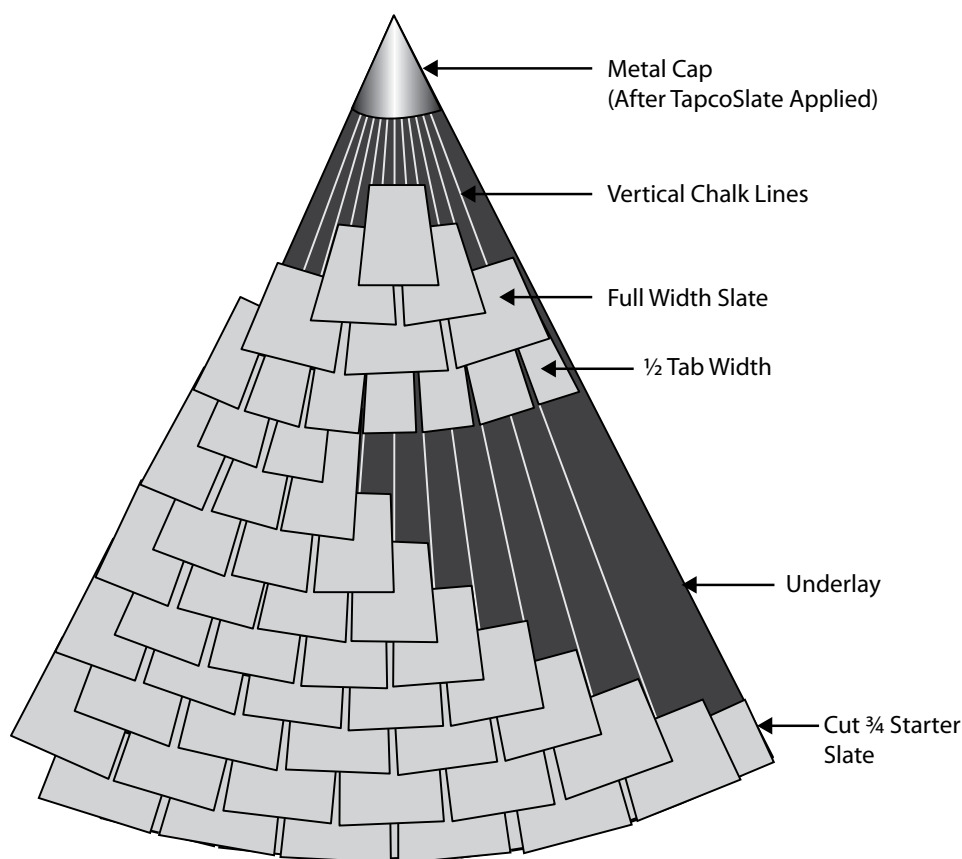
Roof slates may be slippery when wet or covered with frost. Fall protection equipment is required when working on a roof deck. The contractor may consider the use of toe boards. TapcoSlate roof slates should be stored in temperatures above 7°C and the ambient temperature of the product must be at a minimum of 7°C during installation in order to avoid webbing and/or cracking of the roof slates.

Do not leave debris under the roof slates while installing that will prevent the design of the roof slate from overlapping on the course below, thus allowing the potential for moisture build up from wind-driven rain and/or ice dams.

Use accessory products with a lifecycle as equally long-term as the roof slates.

Technical Bulletins should be reviewed and considered prior to the start of any project.

Turret Installation



Removing/Re-fitting TapcoSlates

The removal and re-installation of individual slates can be achieved quite easily when the slates have been nailed into place, but more difficult if screws have been used to install the product.

Removal/Re-fitting: Nailed Install

Tools

The correct tools should be used for the removal and re-installation of the slates, we recommend a Vaughan SuperBar and/or a Roof Snake, a hammer and nails and a block of wood.

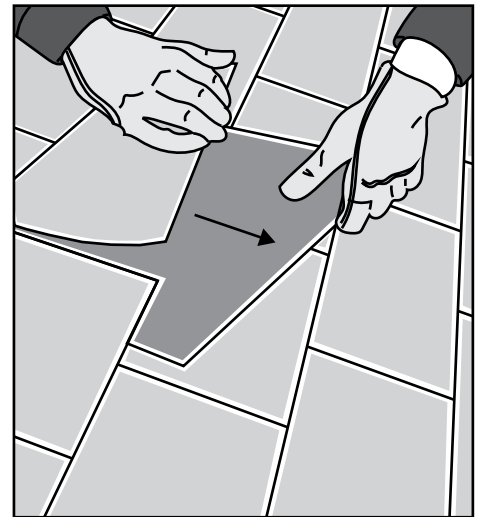
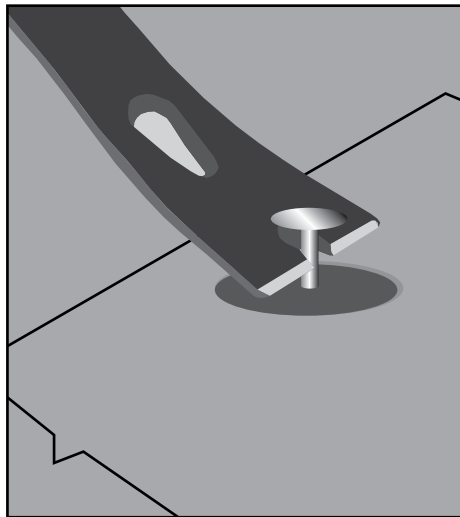
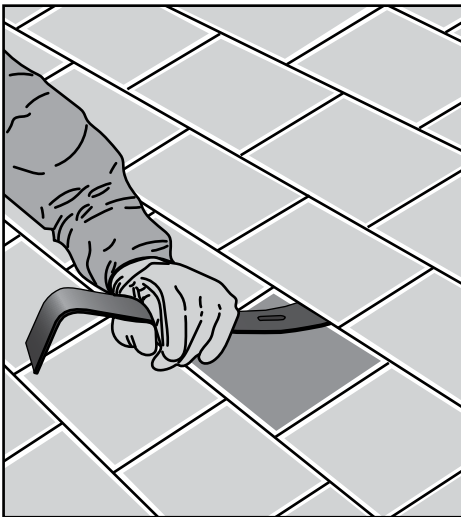


Vaughan SuperBar

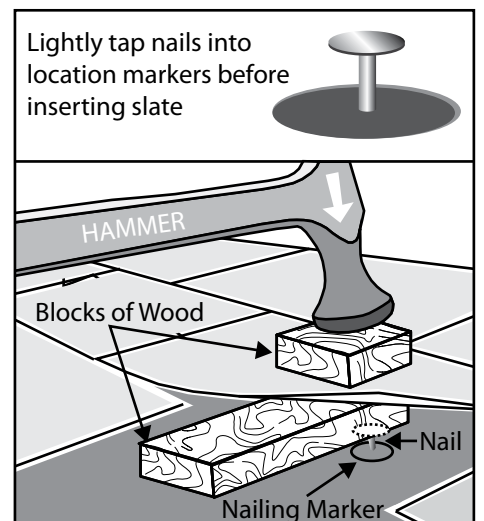
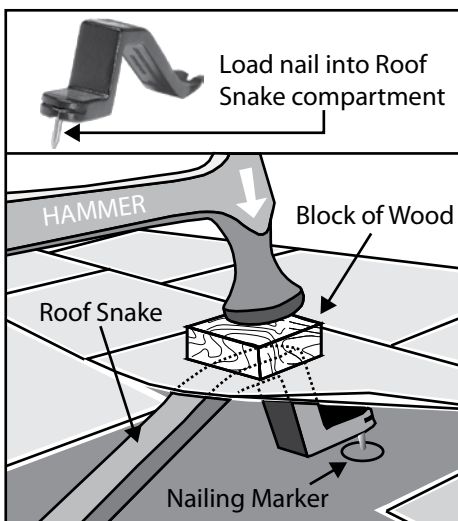
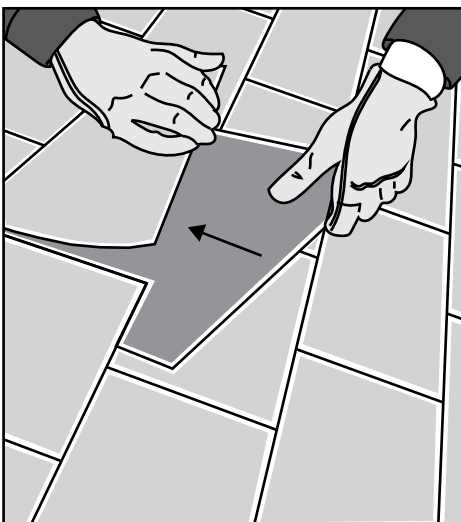


Roof Snake

On both the SuperBar and the Roof Snake, the forked end is used to slip under the tile above the one being removed to lift up the nail and remove – the SuperBar's eye hole can be used to better effect to accomplish the nail removal as it will keep the tile above as flat as possible and avoid any distortion.



To replace the slate, it is handy to use a Roof Snake as it allows the installer to insert a new nail into the tool and use a hammer on the tool neck or a block of wood (which helps protect the slate surface) to drive the nail home. Alternatively, if not using a Roof Snake a second block of wood can be used in a similar way.

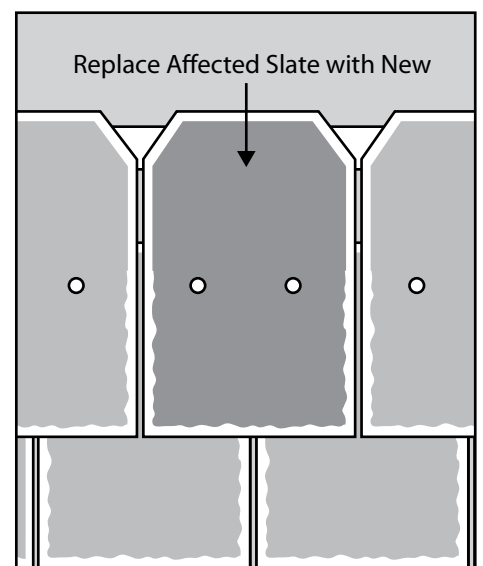
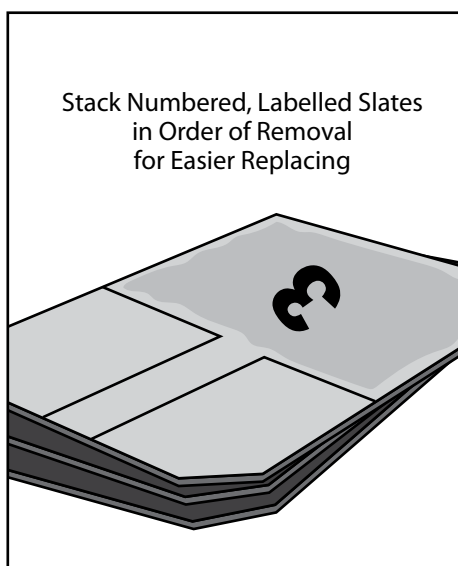
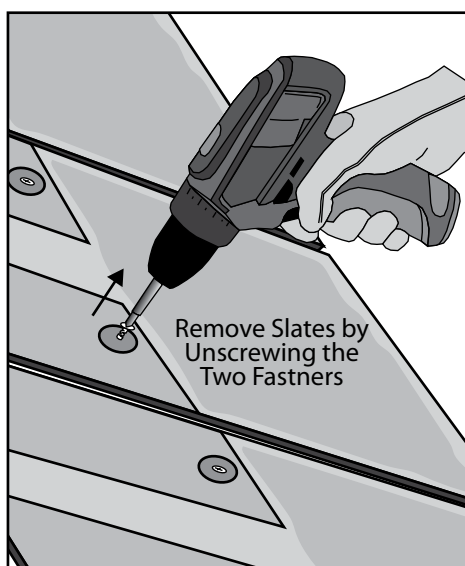
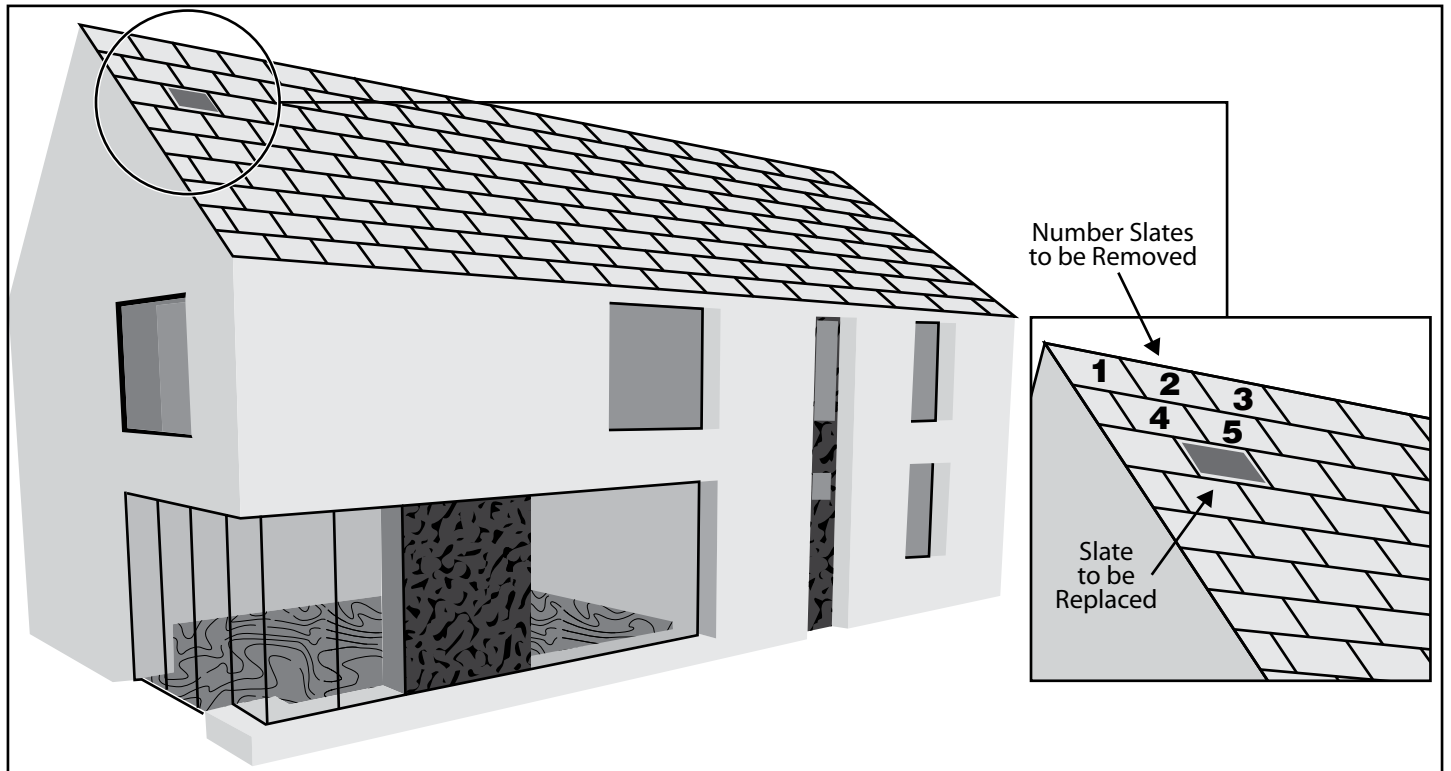


Removal/Re-fitting: Screwed Install

Tools

Hand screwdriver and/or powered screwdriver/drill.

To remove a TapcoSlate that has been fixed by screws, the only way to achieve this is to remove a certain amount of other slates by unscrewing from the top of the roof downwards to the affected slate that you wish to remove. This will also involve removing ridge caps in the affected area unless the slate screws are easily accessible by lifting the caps with a pry bar. Prior to removing the slates, it would be best to label/number them in order of removal using masking tape and a pen/pencil. Always carefully and systematically stack the slates in order of removal so that they can be placed back in the same place. Please note that over time there will be a certain amount of uniform weathering on the roof slates, and so a brand-new slate will never completely match the older ones at first until this too has weathered-in over a period of time.

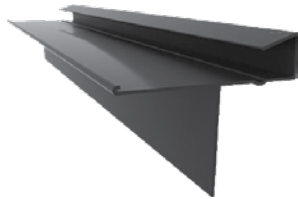


Replacement of the removed slates is the same process in reverse, replacing the carefully stacked and labelled slates in the order they were taken off, taking care not to over tighten the screws and replace any other slate tiles or ridge/hip that may have been damaged during the strip-down process.

COMPLEMENT YOUR TAPCOSLATE ROOF WITH THE FOLLOWING ACCESSORIES:



Classic Ridge & Hip Cap
Universal fit



Dry Verge (2m Lengths)
for Classic Slate



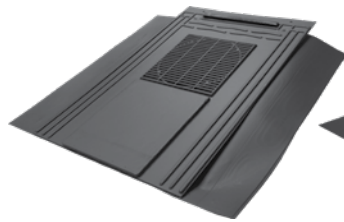
Dry Verge Joining Clips
for Classic Slate



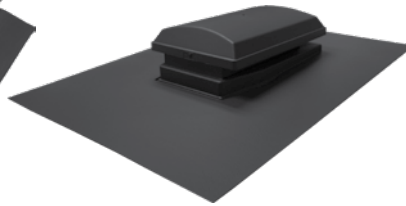
Classic Ridge-to-Hip Junction
14°-17°, 18°-24° & 24°-30° Pitches



Classic Ridge 90° End Cap
25°-29°, 30°-34° & 35°-40° Pitches



Inline Slate Vent
for Classic Slate



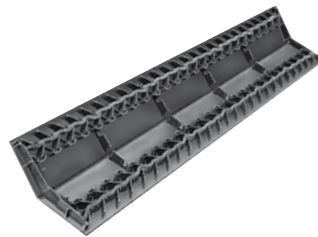
Cowl Vent
for Classic Slate



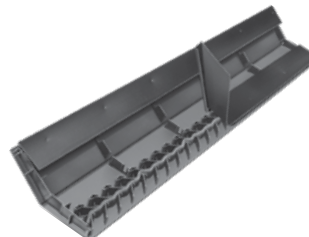
Pipe Adapter
for inline slate vents



Pipe Adapter
for cowl vents



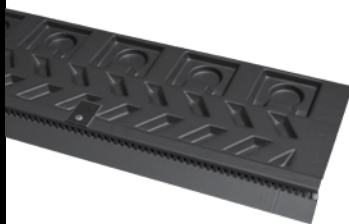
RidgeMaster Plus
Ridge ventilation system



HipMaster
Hip ventilation system



Eaves Ventilation Systems
Warm and cold roof



Abutment Ventilator
continuous ventilation system



Rafter Roll Ventilator
450mm rafter ventilation system



Protect VP300
Vapour permeable underlay



Protect Wunderlay
Vapour impermeable underlay

30mm (tile fitment)
50mm (ridge fitment)
80mm (RidgeMaster fitment)



Outdoor Rapier Screws

30mm (tile fitment)
50mm (ridge fitment)
75mm (RidgeMaster fitment)



Clout Nails

 **TAPCO ROOFING PRODUCTS**

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TIPS & TRICKS!

- Have the correct tools for the job in hand. e.g. For self- drilling screws use a combi drill at the correct speed/torque setting (let the screw do the work) & impact drivers for machine screws.
- For safe access use a scaffold tower & roof ladders – this will also speed up installation times.
- Familiarise yourself with the roof. Have all the location plans to hand -these can be taped to the windows.
- Check cross dimensions of the supporting window frames/walls with the roof.
- Before fixing the rafters together you can 'float' the eavesbeam on the supporting window frames/walls (fix all corner cleats & use a temporary clamp on the eavesbeam to hold in place).
- Arrange the panels into the relevant order starting with the base panels. Drop all panels into the structure first before fixing down, follow the same procedure for the top panels.
- Chase out the lead lines before the breathable membrane is applied.
- If the weather becomes wet you can apply the breathable membrane before the fascia & soffits.
- Make a jig/stop to help set up the first row of tiles. This can be made from two lengths of timber fixed together at 90 degrees and approximately 1 to 1.2m long.
- Always start fitting the tiles on the right hand side of the roof – cut tile sizes can be transferred to the opposite side of the roof (Georgian/Victorian designs).
- Keep your boots clean when gaining access to the tiled roof (it will make the final clean-up easier).

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