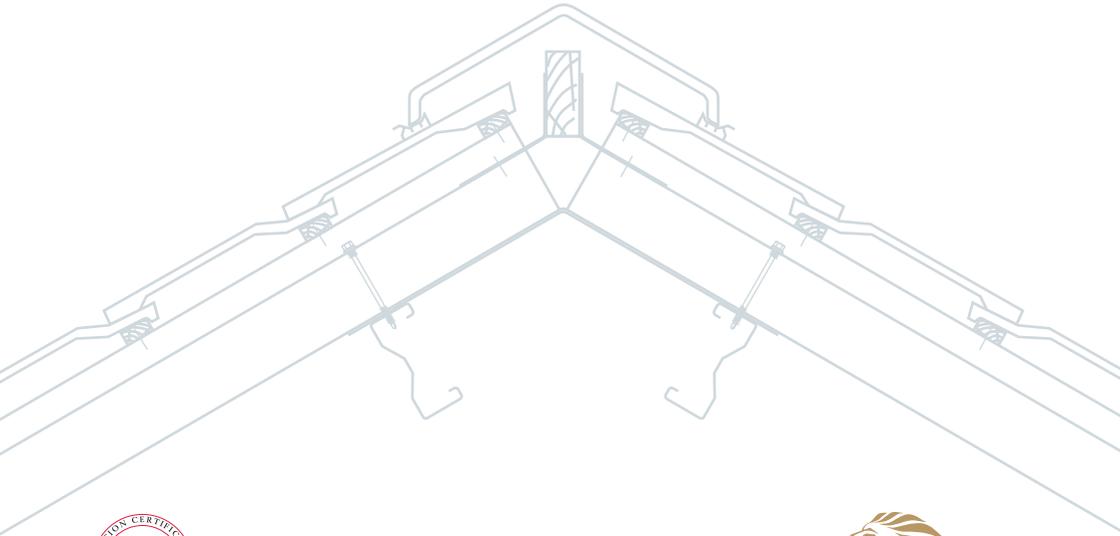


INSULATED **ROOF** SYSTEMS



Tile Support

Insulated Slate and Tile Support System Installation Guide



Approved to LPS 1181
Certificate No. 186a & 260a



Introduction

This document describes in full the installation procedures and good practice which should be adhered to when installing the Kingspan KS1000 TS Insulated Slate and Tile Support system.

This installation guide should be read in conjunction with the 'project specific' design drawings and method statements.

Care should be taken to ensure that this guide is read and understood in its entirety prior to any site work commencement.

Should any procedure not be understood, or, if the works being undertaken are not covered by this guide, please consult **Kingspan envirocare® Technical Services on 0800 5870090.**

This guide is to supplement the training course offered to all installers by Kingspan, which is recommended prior to any product installation.

Installation details given in this document are 'current' recommendations for Part L2 Building Regulations (England & Wales) and Section 6 (Scotland) compliance effective from April 2006 and those required for compliance with LPCB certified systems.

It is the responsibility of the fixing contractor to ensure that 'project specific' details are compliant to Part L2 Building Regulations (England & Wales) and Section 6 (Scotland), prior to any site installation.

Safety Issues

The installation of roof and wall panels on any building must be planned carefully to ensure the work can proceed in safety.

The roofing and cladding contractor must carry out the necessary 'Risk Assessments' and prepare the 'Method Statements' to suit each particular project for their client taking into account the detailed fixing recommendations of this installation guide. This method statement should indicate who is responsible for safety, and particularly what safety equipment will be used for each stage of the work and the sequence of work from delivery to installation to ensure compliance with 'current' CDM, health and safety issues/requirements for the safety of site operatives.



Although this 'installation guide' is deemed to be correct at the time of publication, Kingspan Limited will accept no responsibility for any errors, omissions or misinterpretation of the information within. We reserve the right to amend the information at any time in the future.

For further guidance on the above, we refer you to the following 'current' publications and information sheets available from the H.S.E. – Health & Safety Executive.

Contact – The H.S.E. Infoline on 0845 3450055

Web: www.hse.gov.uk.

- Construction Design & Management Regs 2007
- The Working at Height Regulations 2005
- Height Safe – Essential Health & Safety Information for People Who Work at Height 2003
- Management of Health & Safety at Work 1999
- Lift Operators and Lift Equipment Regs 1998
- Manual Handling Regulations 1992
- Health & Safety at Work Act 1974

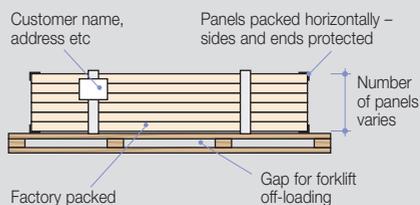
Receiving Deliveries

Kingspan panels are factory-packed according to panel dimensions to ensure arrival on site in pristine condition.

- Panels packed horizontally.
- Pack size varies according to panel thickness and panel length.
- All packs labelled clearly identifying product type and pack weight.
- Whole pack protected with various materials
 - Fluted cardboard at bottom/top
 - Plastic hoods at both ends
 - Polystyrene blocks on one side of pack
 - Plastic or steel (corners) edge protectors on one side of pack
 - Pack shrink wrapped in plastic film, secured with sticky tape.

Note: In addition during winter period, cardboard sheets or foil wrapping are used on both ends and both sides of pack.

- Packs delivered on timber pallets with gaps for off-loading using forklift, crane forks or lifting beam with slings.
- Fully timbered crates are available on request at an extra cost, please contact our sales office.



Notes:-

- KS1000 TS insulated roof panels are stacked with the weathering face of panels interleaved.
- KS1000 TS insulated roof panels may have a protective film applied to the weathering face (depending on the type of coating) which needs to be removed prior to installation.

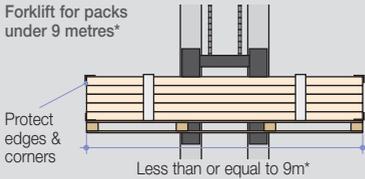
Site Handling & Storage

Delivery and Off-loading

Transportation of panel packs to site is by road transport. It is the customer's responsibility to check the site for restrictions (i.e. entrance to site, power lines etc.) and agree a storage area to be used, also to identify the correct type/method of off-loading/hoisting facilities to be used i.e. crane, crane forks, lifting beam with slings, forklift or specialist lifting equipment.

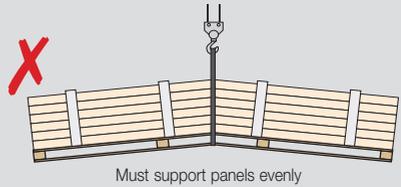
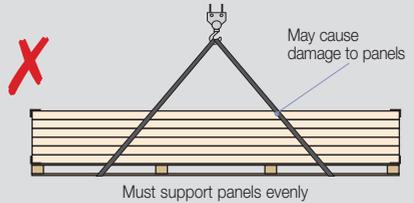
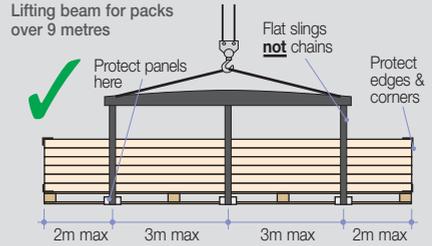
Always check the 'current' certification of the crane, crane forks, lifting beam, slings, forklift or specialist lifting equipment prior to carrying out off-loading/hoisting operation (i.e. with correct 'current' SWL Certification).

Forklift for packs under 9 metres*



*Packs of panels up to 9 metres can be safely off-loaded with front loaders with the following provisions:

1. Minimum number of panels in a pack is 3.
2. Ground to be level and reasonably firm.
3. Speed of truck to be 5mph maximum – Extreme care to be taken.

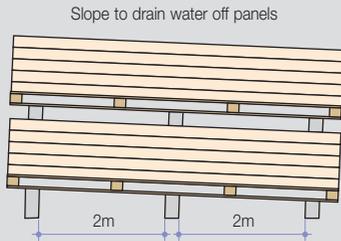


Safe Storage

To ensure panels remain in prime condition while stored onsite, the following precautions should be taken:

At ground level:-

- Allocate safe, clean, trade-free area.
- Prevent personnel from walking over packs.
- Store panels on a slight slope ensuring any penetrating rainwater drains off.
- Inspect packs regularly.
- Where panels are to be stored for more than 3 months, call the **Kingspan envirocare® Technical Services on 0800 5870090**.



At roof level:-

- When storing panel packs at roof level, depending on roof pitch, check that the sub-structure is sufficient and capable of supporting the weight of the packs.
- Prior to installation panel packs must be securely tied to the roof structure to prevent movement.

Removal of Packaging and Disposal

- Preferably at ground level in a designated area/safe working environment.
or
Alternatively at roof level, depending on roof pitch, in a designated area/safe working environment with correct method of access.
- Using a suitable knife/blade carefully cut the pack open and remove plastic film/hoods, cardboard, polystyrene, timber etc. and dispose in the 'correct' allocated waste disposal skip.

Note: Some sites will operate a recycling scheme for waste materials.

- Exercise caution when opening packs stored at an angle. There is a danger of panels sliding to the side and in the direction of slope.
- Individual panels will have low tack adhesive tabs in between and some may have protective film applied (depending on the type of coating) which needs to be removed prior to installation.
- Packs of panels that have had the packaging removed at ground level and need to be lifted to the roof level, will require 'banding'. A proprietary band/sling system should be used, taking care not to damage the panels.

Movement and Lifting of Panels

- The weight of individual panels for lifting can be determined from the information on page 6 or in our Design and Construction Guide. We recommend the use of mechanical handling systems for the movement and lifting of panels into position.
- Individual panels should always be handled carefully. They should be lifted from a pack and not dragged/slid over one another. Roof panels should not be lifted by the end lap.

Product Data

Application

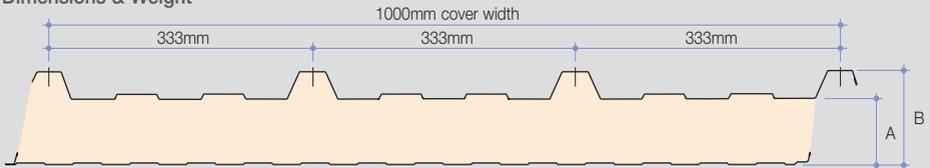
The KS1000 TS Insulated Slate and Tile Support roof system is suitable for all building applications and is used in conjunction with Slates and Tiles. For minimum roof pitch consult Slate/Tile manufacturer.

Product Reference	Application Description
KS1000 TS*  Approved to LPS 1181 RW Certificate No. 186a & 260a	Slate/tile roof panel with Loss Prevention Certification Board (LPCB) approval for roof applications.

*providing slate/tile weight is less than 54kg/m²

FIREsafe **ECOsafE**

Dimensions & Weight



A - Core Thickness (mm)	40	50	60	80*	100*
B - Overall Dimension (mm)	75	85	95	115	135
Weight kg/m ² 0.5/0.4 steel	9.9	10.3	10.7	11.5	12.3

*These panel thicknesses are recommended for Part L2 (England & Wales) and Section 6 (Scotland) based on the minimum U-value requirement

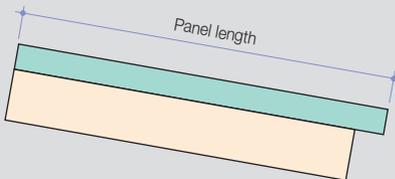
Product Tolerance

Cut to Length	-0.05%	+0.1%
Liner Sheet Length	-0.1%	+0.1%
Cover Width	-0mm	+3mm
Thickness	-2mm	+2mm
End Square	-3mm	+3mm

Available Lengths

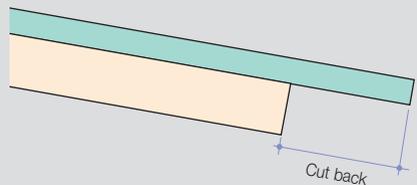
Standard lengths 1.8 to 12 metres. 12 to 29 metres can be supplied but may be subject to a transport surcharge.

Note: Panels less than 1.8m long which require a cut back can be provided, but will be charged at full 1.8m price, plus cutting cost.



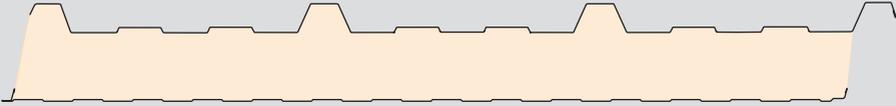
Panel End Cut Back

All panels are normally produced with a minimum cut back of 10mm. Cut backs up to 175mm can also be manufactured. If flush ended panels (no cut back) are required they can be manufactured with one end flush and a 10mm cut back on the opposite end, based on panels exceeding 1.8m in length. The recommended cut back for panel end lapping is 150mm. Panels less than 1.8m long which require a cut back can be provided, but will be charged at full 1.8m price, plus cutting cost.

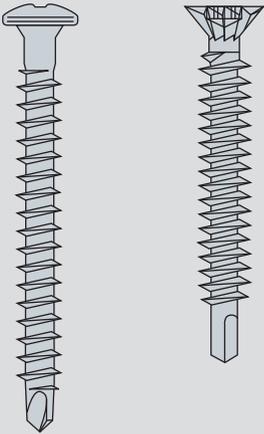


Components

KS1000 TS Insulated Roof Panel



Recommended Batten Fasteners



Primary/Main Fastener



Secondary/Stitching Screws



Ridge Batten Support
Flashing



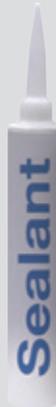
Ridge Batten



Butyl Rubber Tape
Sealants



Gun-Grade Sealant



Fire Rated Canister
Insulation



Tile/Slate Batten



Batten Support
Flashing



One Panel Eaves to Ridge

Safety Recommendations

- 1 Good practice recommends a fully boarded scaffold around the perimeter of the building with loading platforms for panels, triple hand rail's and toe boards or propriety hand rail type system, as well as walkway stagings and safety nets, to ensure compliance with 'current' CDM, health & safety issues/requirements.
- 2 We advise caution when loading packs of panels onto purlins (Kingspan Multibeam), especially if the roof pitch exceeds 8°. Panels must be securely tied to the roof structure to prevent movement.
- 3 We recommend the use of mechanical handling systems for the movement and lifting of panels into position. Always check the 'current' certification of the crane, crane forks, lifting beam, slings, forklift or specialist lifting equipment prior to carrying out off-loading/hoisting operation (i.e. with correct 'current' SWL Certification).
- 4 Personal protective equipment and clothing should be worn including gloves to avoid cuts and abrasions to operatives.
- 5 We recommend that any panel cutting done on site is preferably carried out at ground level or alternatively at roof level depending on roof pitch in a designated area/safe working environment.

Before Installing Panels

- 1 **Before starting any project it is important that the project specific contract drawings are available on site, giving the details at the various interfaces on the project. (i.e. eaves, ridge, verge etc.), including the panel fastener requirement diagram giving the exact fixing type, quantity and location.**
 - 2 Prior to commencing any installation the configuration and dimensional accuracy of the supporting structure should be compared with the approved plan drawings.
 - 3 Check roof pitch is a minimum to suit type of slate/tile system being used.
 - 4 Steel (or timber) must be lined and levelled in accordance with the requirements of the contract document. Check the roof steelwork visually for any damage or distortion, paying particular attention to lines of purlin that will support panel ends. Where these are bowed or distorted so that they do not give a straight bearing surface of 50mm min width, flange extension plates will be required.
- Valley and boundary wall gutters must be securely fixed in position where applicable.



5 As work progresses across the roof, areas to be regularly walked over or where materials are to temporarily stored should be identified and protected. Traffic should use walkways to avoid damaging the finish on the panels.

At all times during the fitting of the roof, the painted panel surface must be kept clean and clear of debris and small objects that may present a scratching or abrasion hazard. Care must be taken at all times not to drop objects on the roof or slide panels etc. across the surface of the roof, as this is likely to result in damage to the paint.

Air/Vapour Sealing Building Perimeter

See Typical Construction Details on pages 24 to 26.

6 Check cleader angle is installed to verge with air seal vapour flex sealant applied at joints. Apply 8mm Ø butyl rubber sealant to the top face (6mm Ø to the gable cladding face in due course) or gun applied non-curing sealant.

7 Highline gutter – apply vapour flex sealant between Kingspan Eaves Beam joints – apply 8mm Ø butyl rubber sealant to the top face of Kingspan Eaves Beam (6mm Ø to front face in due course) or gun applied non-curing sealant.

8 Boundary wall gutter – install gutter and apply 8mm Ø butyl rubber sealant to gutter wing or gun applied non-curing sealant.

9 Check internal ridge flashing is installed with 150mm overlap, sealed with vapour flex or gun-grade sealant and apply air seal – 8mm Ø butyl rubber sealant or gun applied non-curing sealant.



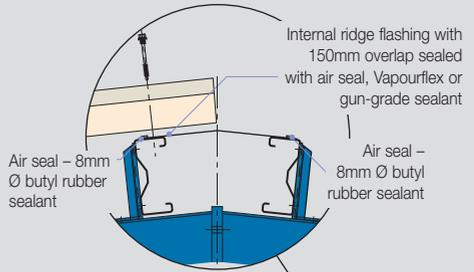
One Panel Eaves to Ridge

Installing the First Panel

- 1 Lay the first panel (**P1**) at the edge of the roof area to be clad, ensuring it is correctly aligned, levelled and the right way round for lapping.

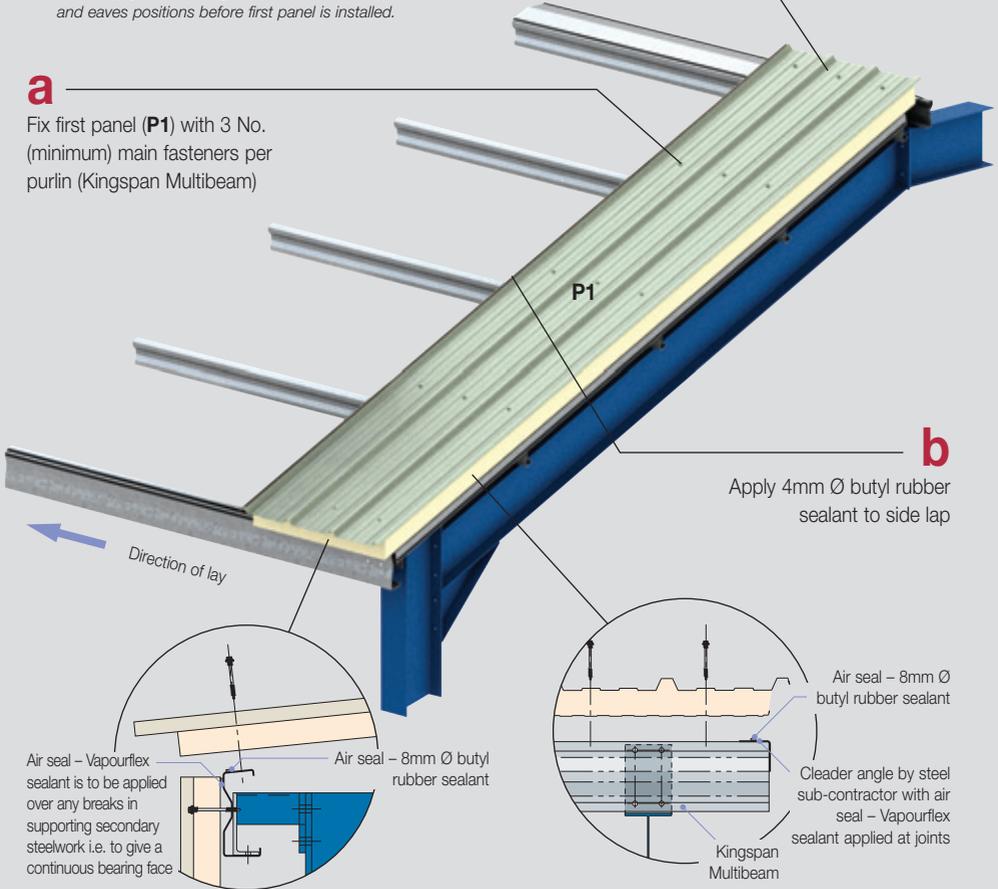
Panels are handed and should be ordered according to the required direction of lay.

Note: Apply 8mm Ø butyl rubber air seal to ridge, verge and eaves positions before first panel is installed.

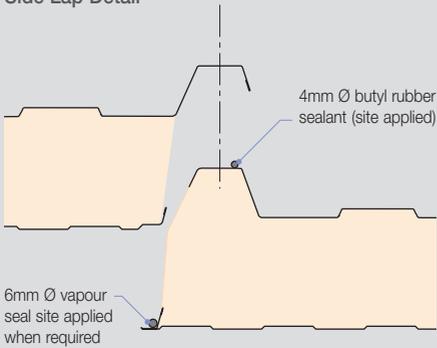


a

Fix first panel (**P1**) with 3 No. (minimum) main fasteners per purlin (Kingspan Multibeam)



Side Lap Detail



Note: There may also be a requirement for applying a 6mm Ø butyl rubber sealant/gun-grade vapour seal at the base of the side joint, dependant on project specification (see detail).

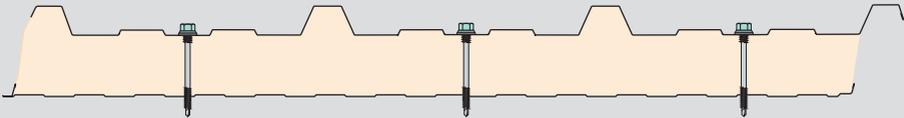
- 2 Install the recommended main fasteners by through fixing the panel at each purlin location to the standard fastener layout position.

Note: The number of fasteners will vary dependant on the wind suction load. Quantities should be calculated by the Roofing and Cladding Sub-Contractors with the assistance of the Project Structural Engineer/LPCB Specification Requirement.

Number of fasteners will vary, minimum 3 no., when fixing to cold rolled purlins. Do not over-tighten fastener – refer to the fastener suppliers recommendations for settings. Any drilling swarf must be removed from the panel to prevent damage to the coating/corrosion.

- 3 When the panel is fully fixed ensure that the external panel surface down the length of the side lap is clean and dry and apply the 4mm Ø butyl rubber sealant to side lap in line with the weathering face, removing the backing paper.

Fastener Locations



Main Fixing Every Valley – Min. 3 No. when fixing to cold rolled purlins (Kingspan Multibeam)



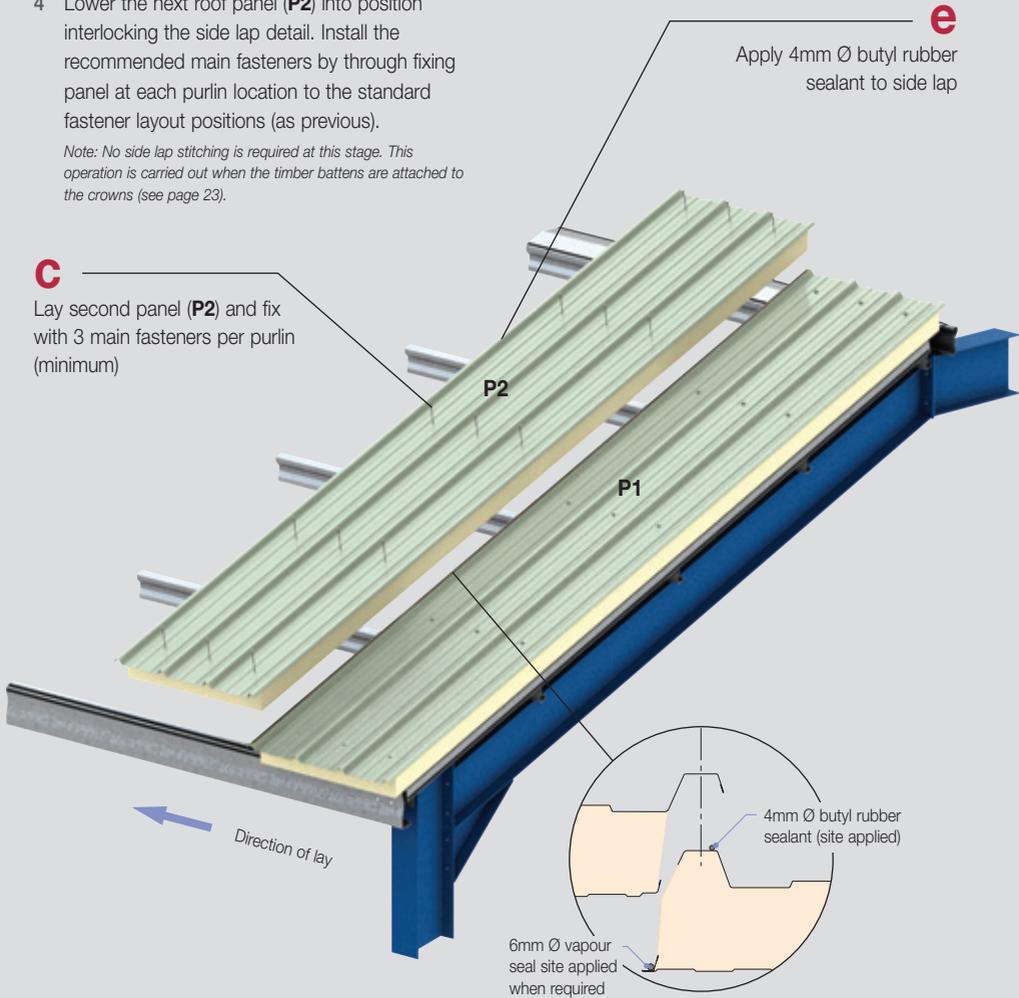
One Panel Eaves to Ridge

- 4 Lower the next roof panel (**P2**) into position interlocking the side lap detail. Install the recommended main fasteners by through fixing panel at each purlin location to the standard fastener layout positions (as previous).

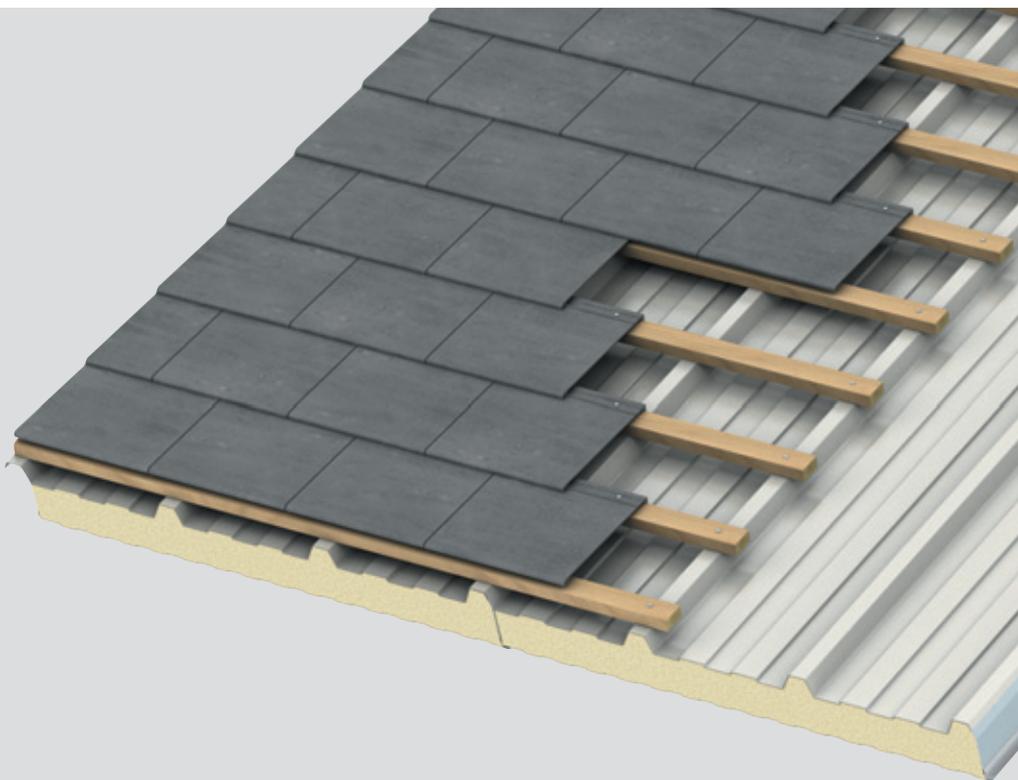
Note: No side lap stitching is required at this stage. This operation is carried out when the timber battens are attached to the crowns (see page 23).

- C** Lay second panel (**P2**) and fix with 3 main fasteners per purlin (minimum)

- e** Apply 4mm Ø butyl rubber sealant to side lap



Note: There may also be a requirement for applying a 6mm Ø butyl rubber sealant/gun-grade vapour seal at the base of the side joint, dependant on project specification (see detail).



- 5 Ensure that every fifth panel is checked from the original setting out point, to ensure that creep does not occur.
- 6 Continue to lay the panels to complete the roof enclosure. Repeat the process from 4 to 5.
- 7 If the panels have to be cut on site always use a reciprocating saw (jigsaw or similar) or evolution type circular saw (with tungsten tipped blade), do not use abrasive wheel cutters.

After cutting, remove swarf from the panel surface and any burrs from the cut edges. Treat any site cut edges that will be exposed with edge protection lacquer.

- 8 Install timber battens at centres to suit slate/tile system with special fasteners at all crown locations including side lap. See batten jointing options 1 & 2 on page 23.

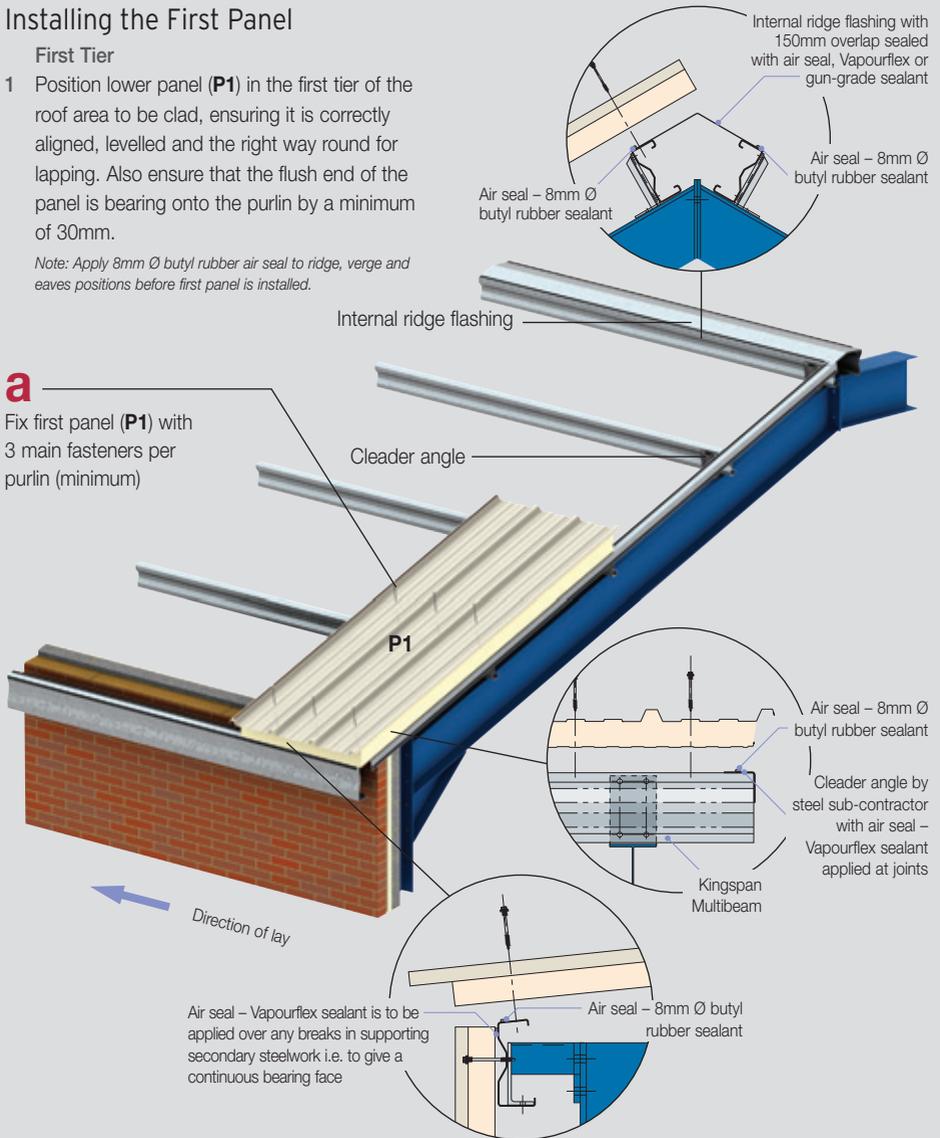
Multiple Panels Eaves to Ridge with End Lap

Installing the First Panel

First Tier

- 1 Position lower panel (**P1**) in the first tier of the roof area to be clad, ensuring it is correctly aligned, levelled and the right way round for lapping. Also ensure that the flush end of the panel is bearing onto the purlin by a minimum of 30mm.

Note: Apply 8mm Ø butyl rubber air seal to ridge, verge and eaves positions before first panel is installed.



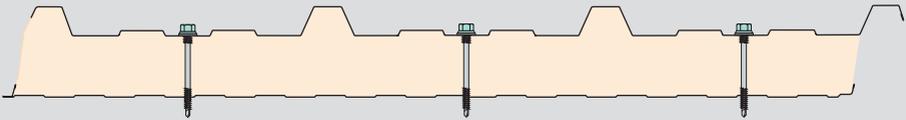
- 2 Install the recommended main fasteners by through fixing panel at each purlin location to the standard fastener layout position, except at the flush end.

End Lap and Side Lap Sealant Application

- 3 Ensure that the external panel surface across the whole panel profile is clean and dry for the first 150mm from the panel flush end, including the side lap. Apply 2 runs of 4mm Ø butyl rubber sealant across the panel width (as detailed) starting at the top of the side joint and

working the butyl across the full profile of the panel until the opposite side lap is reached. Ensure butyl seal is not stretched during installation, and is in continuous contact with the profile of the panel, removing the backing paper. First sealant run should be positioned so it's bottom edge is within 10mm of the external panel edge. Then apply the 4mm Ø butyl rubber sealant to side lap in line with weathering face, removing the backing paper.

Fastener Locations



Main Fixing Every Valley – Min. 3 No. when fixing to cold rolled purlins

Note: The number of fasteners will vary dependant on the wind suction load. Quantities should be calculated by the Roofing and Cladding Sub-Contractors with the assistance of the Project Structural Engineer/LPCB Specification Requirement.



Multiple Panels Eaves to Ridge with End Lap

End lap Details

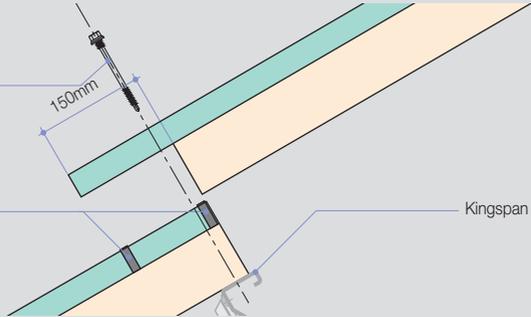
Steel Structure

Fixing screw

150mm

4mm Ø butyl rubber sealant (Site applied)

Kingspan Multibeam

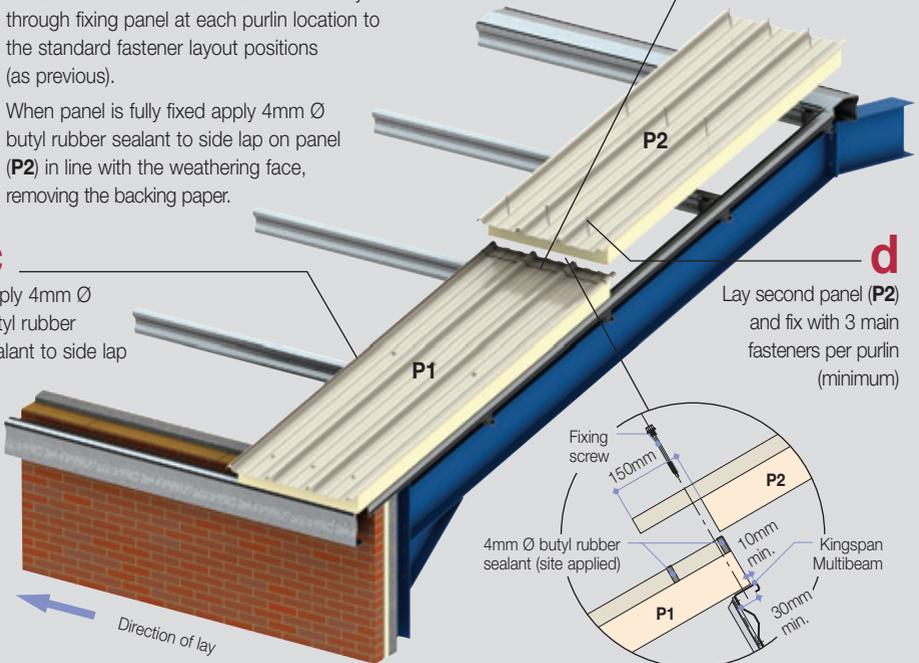


4 Ensure that the underside of the 150mm end lap on panel (P2) is clean/dry and position over the previously installed panel (P1) easing into position ensuring the profile aligns correctly. Install the recommended main fasteners by through fixing panel at each purlin location to the standard fastener layout positions (as previous).

5 When panel is fully fixed apply 4mm Ø butyl rubber sealant to side lap on panel (P2) in line with the weathering face, removing the backing paper.

C

Apply 4mm Ø butyl rubber sealant to side lap



b
Apply 2 strips of 4mm Ø butyl rubber sealant

P2

P1

d
Lay second panel (P2) and fix with 3 main fasteners per purlin (minimum)

Fixing screw

150mm

4mm Ø butyl rubber sealant (site applied)

Kingspan Multibeam

10mm min.

30mm min.

P2

P1

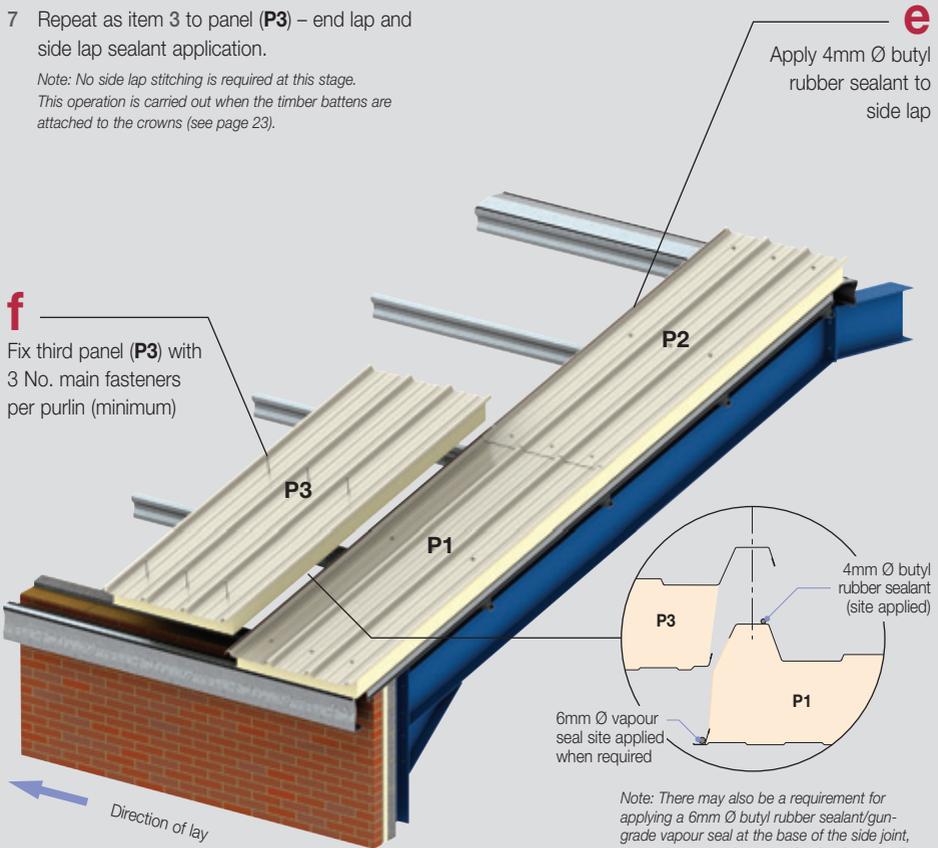
Direction of lay

Second Tier and Onward

- 6 Lower the next roof panel (**P3**) into position interlocking the side lap detail on panel (**P1**). Install the recommended main fasteners by through fixing panel at each purlin location to the standard fastener layout position, except at the flush end (as previous panel (**P1**) – **see detail f**).
- 7 Repeat as item 3 to panel (**P3**) – end lap and side lap sealant application.

*Note: No side lap stitching is required at this stage.
This operation is carried out when the timber battens are attached to the crowns (see page 23).*

- f**
- Fix third panel (**P3**) with 3 No. main fasteners per purlin (minimum)

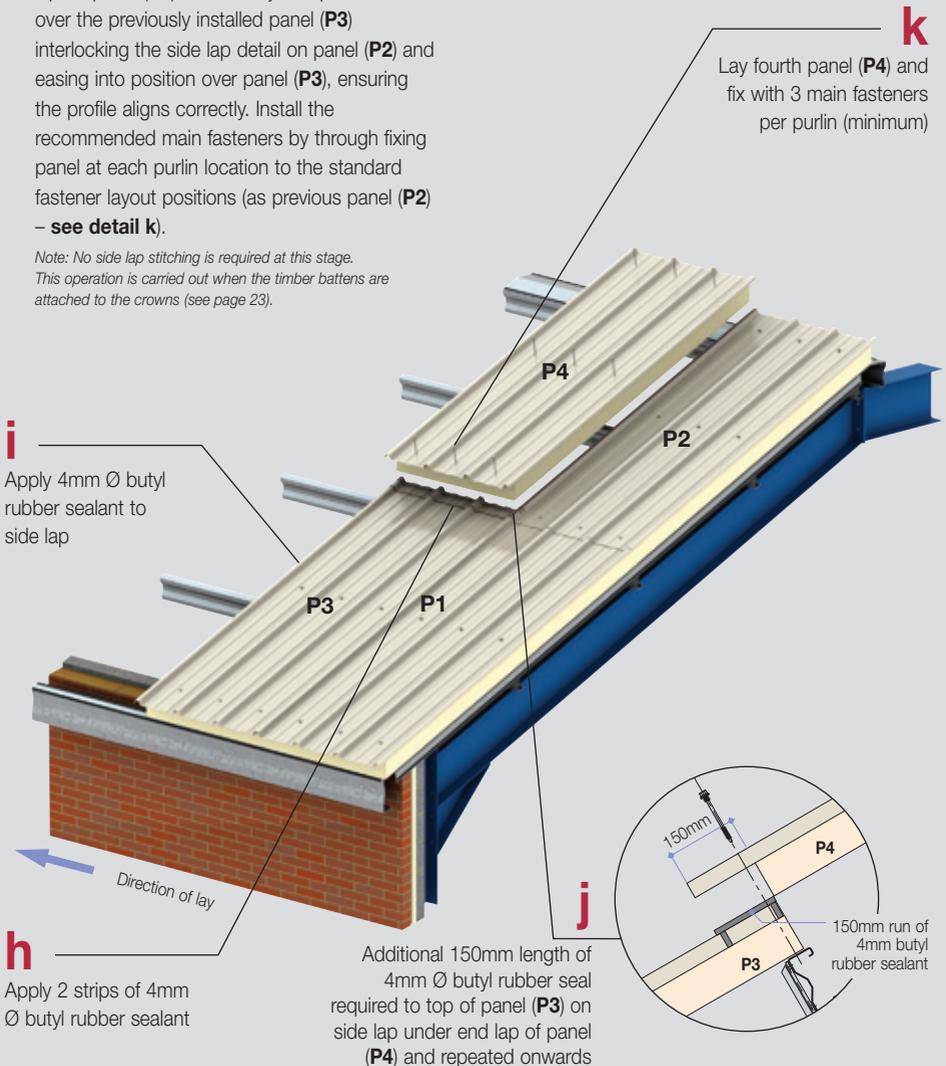


Note: There may also be a requirement for applying a 6mm Ø butyl rubber sealant/gun-grade vapour seal at the base of the side joint, dependant on project specification (see detail).

Multiple Panels Eaves to Ridge with End Lap

- 8 Ensure that the underside of the 150mm end lap on panel (P4) is clean/dry and position over the previously installed panel (P3) interlocking the side lap detail on panel (P2) and easing into position over panel (P3), ensuring the profile aligns correctly. Install the recommended main fasteners by through fixing panel at each purlin location to the standard fastener layout positions (as previous panel (P2) – see detail k).

Note: No side lap stitching is required at this stage. This operation is carried out when the timber battens are attached to the crowns (see page 23).

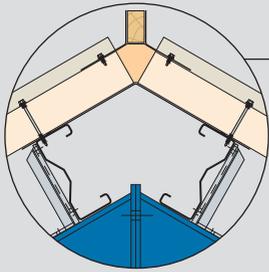


- 9 As laying proceeds – repeat processes 6 to 8.
- 10 Install timber battens at centres to suit slate/tile system with special fasteners at all crown locations including side lap. See batten jointing options 1 & 2 (as page 23).

Nu-Lok™ engineered ceramic slate roof in three easy steps with all the benefits of Kingspan insulated panel technology



Multiple Panels Eaves to Ridge with End Lap



Batten Jointing Option 1

0.63mm thick coated steel batten support flashing 20mm x 50mm x 360mm long positioned under batten joint

Timber batten

50mm

Batten joint

Batten fastener



Timber batten 50 x 25mm



Batten support flashing

Batten Jointing Option 2

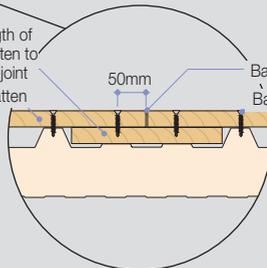
Short length of timber batten to lap under joint

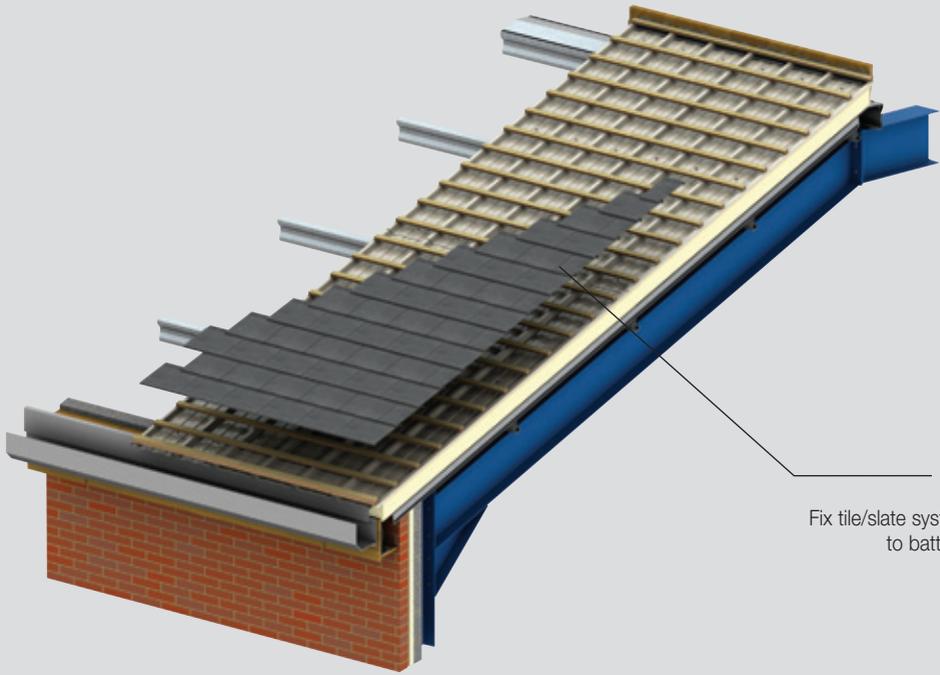
Timber batten

50mm

Batten joint

Batten fastener





p
Fix tile/slate system
to battens



Multiple Panels Eaves to Ridge with End Lap

Completed eaves to ridge assembly

Ventilated Ridge Detail

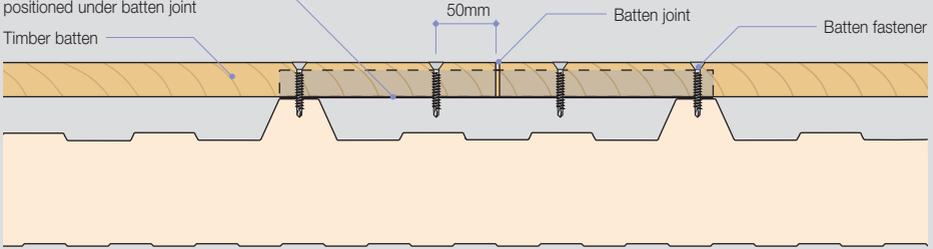


Batten Jointing

Important Note: Battens can only be jointed using option 1 or option 2

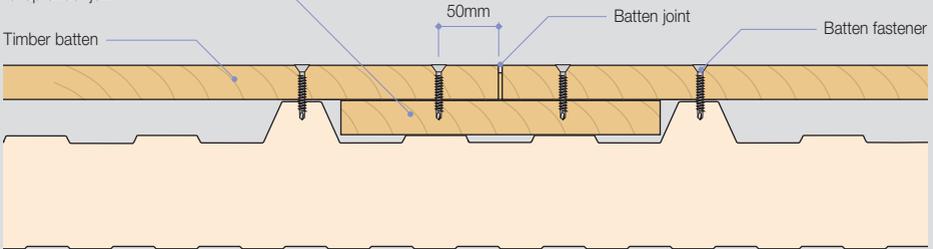
Option 1

0,63mm thick coated steel batten support flashing 20mm x 50mm x 360mm long positioned under batten joint



Option 2

Short length of timber batten to lap under joint



Recommendation SFS Intec or Similar

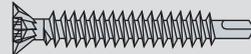
Slate/Tile Timber Batten to KS1000 TS Insulated Roof Panel



Batten Thickness mm
25



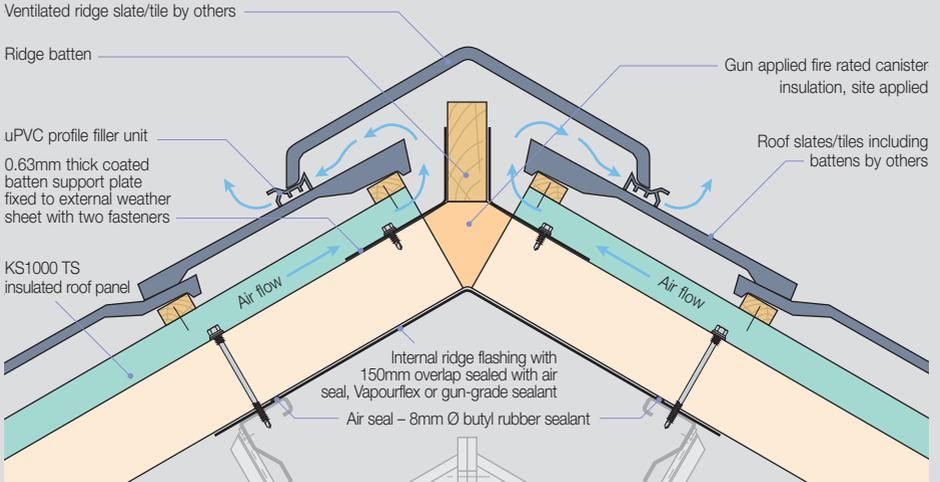
IF2-6.7 x 51 (PH3 Drive Bit)



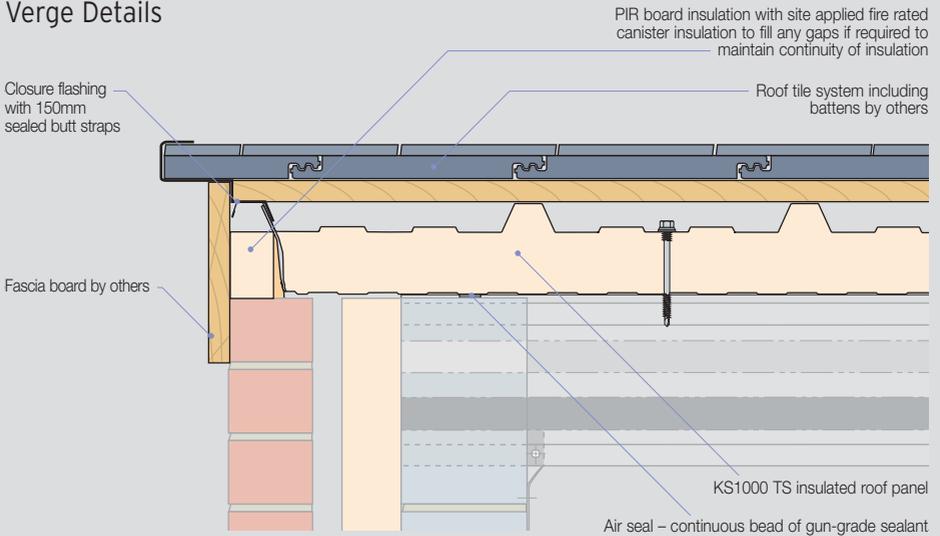
SD2-S-S10/T20-6 x 45 (Torx 20W Drive Bit)

Typical Construction Details

Ridge Details

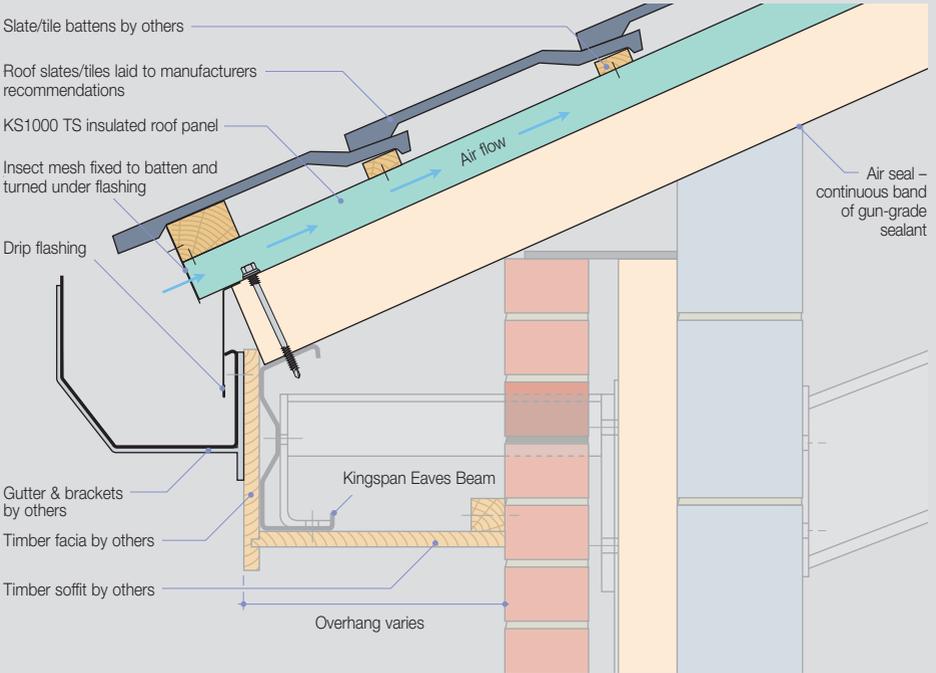


Verge Details



Note: Project specific construction details must be used. Please refer to the Kingspan Design and Construction Guide for further information.

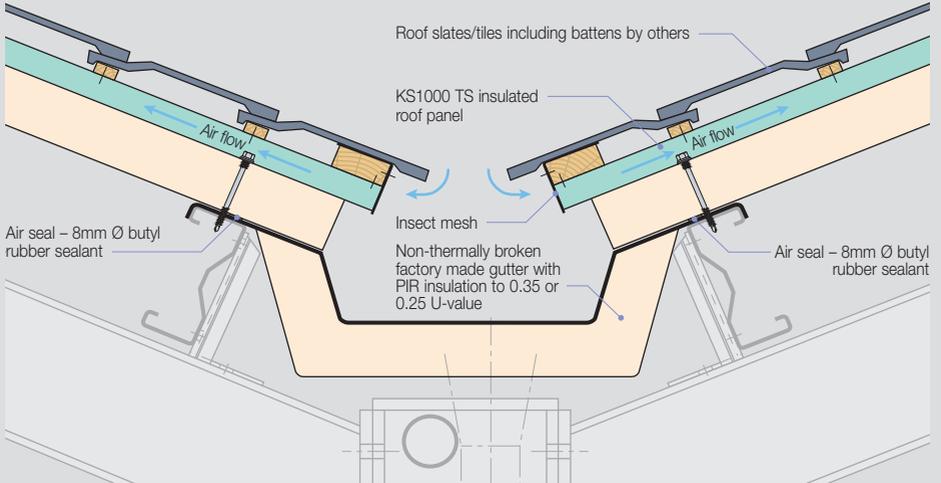
Eaves Details



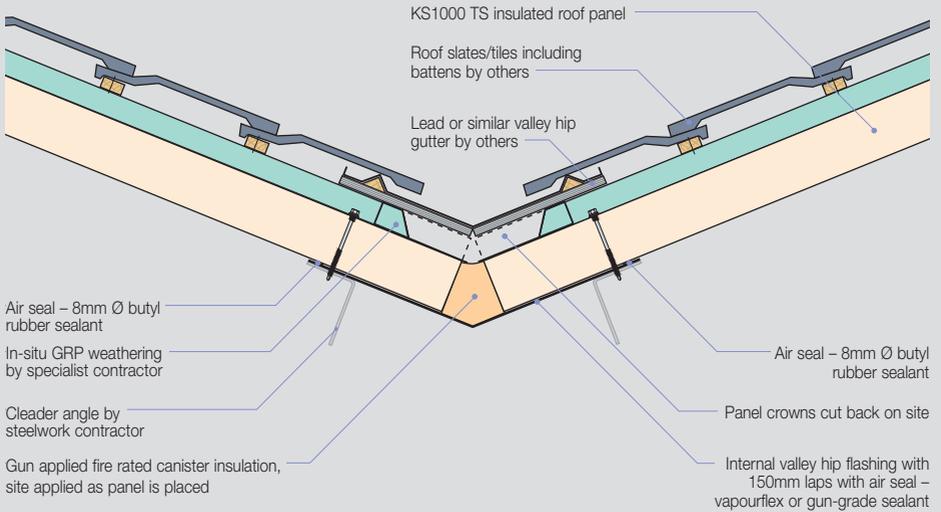
Note: Project specific construction details must be used. Please refer to the Kingspan Design and Construction Guide for further information.

Typical Construction Details

Valley Gutter Details



Hip Valley Details



Note: Project specific construction details must be used. Please refer to the Kingspan Design and Construction Guide for further information.

KS1000 TS Tile Support

Useful Contacts List

	Tel No:	Fax No:	Contact:
Fasteners			
SFS Intec	0113 2085500	0113 2085539	Peter Reilly
Mage Fasteners Ltd	01451 822777	01451 822771	Michael Rich
Ejot UK Ltd	01977 687040	01977 687041	Howard Jennings
QBM	01924 472251	01924 440237	Neil Sivyer
Industrial Roof Products	01454 299588	01454 294425	Richard Kendal
Sealants/Fillers			
Premier	01724 864100	01724 860116	Alan Thomas
ALFAS	0191 419 0505	0191 4192200	Martin Eades
Brett Martin Systems	020 83306522	020 83301402	Allan Ashling/Jean Julius
Gun Canister Applied Foam			
ALFAS	0191 4190505	0191 4192200	Martin Eades
Kincora	0161 8737713	0161 8480552	Malcolm Negus
GRP/PU Penetration Solutions			
Aperture	0161 7721750	0161 7721751	Michael Philbin
Jones & Woolman	01922 712111	01922 712539	Steve Smith
Touch Up Paints			
Turner Trade Paints	01543 577168	01543 506152	Bill Breakwell
Safety Systems			
Kingspan Saferidge	01352 716100	01352 710161	Alastair Gleave
Mechanical Handling Systems			
Clad-Boy	01900 85477	01900 85478	Ad Klabbers/Martyn Spence
Oktopus UK Ltd	01527 570111	01527 570222	Arran Gould
Blue Sky	07776 257858	01869 345267	Barry Jackson
The Platform Company	01628 559977	01628 666484	Andy Gilbert
Kera Ltd	01684 276606		Keith Bell
Speedy LGH	0151 3572906		Andrew Williams
GGR UNIC	0161 683 2508	0161 683 4444	Justin Boyce
Tele Handler			
Merlo (GT Plant Hire)	01903 753630	01903 533161	Graham Trundell
Crane Hire			
John Sutch Cranes	0151 2368880	0151 2368889	Mike Fitton
City Lifting Ltd	01708 805550	01708 805558	Bob Jones/Darren Miles
Oktopus UK Ltd	01527 570111	01527 570222	Arran Gould
Midland Cranes Ltd	0845 0031322		Jerry Wellford

Any queries on the above please contact Kingspan **envirocare**® Technical Services;

Tel: 0800 5870090 or your local Field Service Engineer:

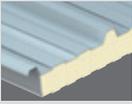
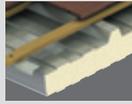
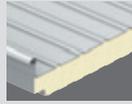
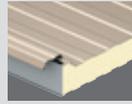
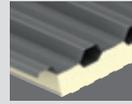
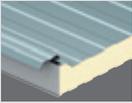
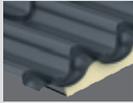
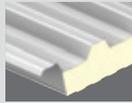
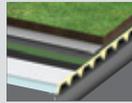
Northern Field Service Engineer – Steve Ball – 07775 633358 / Billy Delamere – 07747 007381 (North East)

Southern Field Service Engineer – Andy Veater – 07919 112507 (West) / Allan Kelly – 07796 610009 (East)

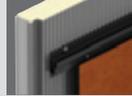
Head Office – Main Switchboard – 01352 716100

Kingspan Insulated Roof, Wall & Façade Systems

Roof Systems

KS1000 RW Trapezoidal	KS1000 SF Secret Fix	KS1000 TS Slate & Tile Support	KS500/1000 ZIP Kingzip® Standing Seam	KS1000 LP Lo-Pitch	Kingspan EnergiPanel™
					
KS1000 CR Curved Roof	Kingspan Roof Tile	KS1000 FC Box Profile	Kingspan Envirodek™	KS1000 Polycarb Rooflight	
					

Wall & Façade Systems

KS600, 900 & 1000 Optimo™	KS600, 900 & 1000 MR Micro-Rib	KS600, 900 & 1000 EB Euro-Box	KS600, 900 & 1000 FL Flat	KS600, 900 & 1000 FL-S Stucco	KS600, 900 & 1000 MM Mini-Micro
					
KS600, 900 & 1000 CX Convex	KS600, 900 & 1000 WV Wave	KS600, 900 & 1000 LS Longspan™	KS1000 RW Trapezoidal	KS1000 FC Box Profile	Kingspan EnergiPanel™
					
Kingspan Thermatile	Kingspan Thermbriick™	Kingspan Thermastone	Kingspan WoodTherm™	Kingspan Render Panel	Kingspan Wall-Lite
					

Ancillaries

Gutters, Tophats & Flashings



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