



# Kingspan **TEK**® Building System

CONSTRUCTION MANUAL FOR 172 MM STRUCTURAL  
INSULATED PANELS



Fibre-free  
 Core

  
**Kingspan**®

*Low Energy –  
Low Carbon Buildings*

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# The Kingspan TEK® Building System Construction Manual

## 1 Introduction

- 1.1** This construction manual is designed to provide approved installers with the information required to safely erect the *Kingspan TEK® Building System*. The document provides best practice methods for installing the *Kingspan TEK® Building System*, however Kingspan Insulation acknowledges that there may be other installation methods that can be used. Please contact the Kingspan Insulation Technical Service Department (see rear cover) to discuss installations that may differ from what follows in the rest of this document. Some guidelines on finishing the System are also presented, but most finishing details are left to the discretion of the builder and specifier.
- 1.2** This construction manual should be used as a reference for *Kingspan TEK® Building System* approved installers. It assumes that the reader has a basic understanding of sound construction practices, including job site safety and the proper use of power tools.

The *Kingspan TEK® Building System* provides a complete wall and roof shell.

The overall design and construction of the *Kingspan TEK® Building System* is illustrated in Figure 1.

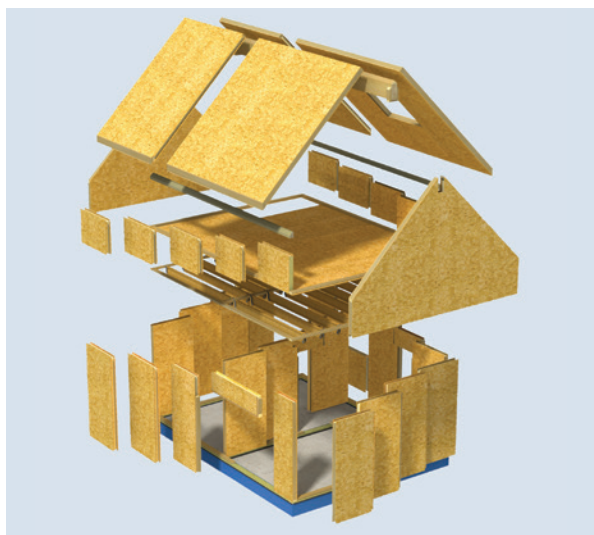


Figure 1 *Kingspan TEK® Building System*

## 2 Important Information

### 2.1 Information and Training

All relevant site personnel shall receive all necessary safety instruction before commencing work on site.

All documentation, including structural analysis, design details, drawings and technical literature, should be available and familiar to site personal personnel prior to commencement of construction.

Approved installers shall have been properly trained and have significant relevant experience in timber based construction.

### 2.2 Key Benefits

The *Kingspan TEK® Building System* features high insulating properties, low thermal bridging and superb air-tightness resulting in a System that is highly energy efficient. Air-tightness is critically dependant on erection quality, therefore every joint must be sealed in accordance guidelines detailed in this construction manual.

### 2.3 Handling of Components

All unloading shall be done in a safe manner using only recommended or approved lifting equipment / attachments (See Appendix D). All loose materials are to be built into bundles, provided with a lifting hook or other suitable lifting facility and strapped to assist unloading.

### 2.4 Storage of Components

*Kingspan TEK® Building System* panels should be kept at least 150 mm off the ground on supports, and protected from the elements until used. Supports should be supplied at maximum 1200 mm centres ensuring the ground is flat, to prevent them from twisting. Ideally they should be stored under cover.

### 2.5 Foundation Construction

*Kingspan TEK® Building System* construction depends on the foundation being square and level within very tight tolerances. If the foundation is out of square or not level, panel installation will be much more difficult. Refer to section 4 of this document for foundation tolerances.

### 2.6 Fixing Specifications

Table 1 on page 4 provides a reference for nail and screw specifications with the most common applications. Information on nail and screw specifications for less common applications is provided throughout this construction manual.

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## 2.7 Fixing Specifications

Application	Fastener Type	Spacing
Fixing soleplate or combined soleplate and bottomplate	Specification should be in accordance with project structural engineers' recommendations based upon geography and project foundation substructure	As per project structural engineers' recommendations
Panel straps to secure panels to substructure / foundations	Specifications should be in accordance with project structural engineers' recommendations based upon geography and project foundation substructure	As per project structural engineers' recommendations
Fixing 40 mm x 140 mm bottomplates to soleplates / headplates / rimboards	3.1 mm x 90 mm galvanized ring-shank nails	200 mm centres in two staggered rows
Fixing 80 mm x 140 mm insulated splines into <i>Kingspan TEK®</i> Building System panels	2.8 mm x 63 mm galvanized ring-shank nails	100 mm centres both sides of the panel
Fixing 40 mm x 140 mm bottomplates, headplates, end timbers, edge timbers into <i>Kingspan TEK®</i> Building System panels	2.8 mm x 63 mm galvanized ring-shank nails	50 mm centres both sides of the panel
Fixing 80 mm x 140 mm timber posts into <i>Kingspan TEK®</i> Building System panels	2.8 mm x 63 mm galvanized ring-shank nails	50 mm centres both sides of the panel
Fixing 110 mm x 150 mm bevelled headplate to <i>Kingspan TEK®</i> Building System panels	2.8 mm x 63 mm galvanized ring-shank nails	50 mm centres both sides of the panel
Fixing <i>Kingspan TEK®</i> Building System wall panels at corner joints	4.8 mm x 225 mm FastenMaster HeadLOK	Typically 300 mm centres for nail (4.0 mm dia. pre-drilled holes required) Typically 350 mm centres for FastenMaster HeadLOK screws
Fixing <i>Kingspan TEK®</i> Building System roof sections at wall / floor junctions, ridge beams, intermediate purlins and gable walls	4.8 mm x 225 mm FastenMaster HeadLOK	Typically 300 mm centres for nail (4.0 mm dia. pre-drilled holes required) Typically 350 mm centres for FastenMaster HeadLOK screws
Fixing joist hangers to headplate or laminated beams (fixings may vary depending on specification of joist hanger – please refer to manufacturers' instructions floor system)	3.75 mm x 32 mm square twist shank nails or Simpson N10 nails	Into side and top of headplate in locations marked out
Fixing I-beams / joist to joist hanger (fasteners may vary depending on specification of joist hanger – please refer to manufacturers' instructions floor system)	3.75 mm x 32 mm square twist shank nails or Simpson N10 nails	In pre-drilled holes for bottom flange
<b>First floor deck installation. Joint installation option 1 - joist hangers on headplate</b>		
Fixing OSB/3 / P5 floor decking to joists / headplate or header joist	2.8 mm x 63 mm galvanized ring-shank nails	Maximum 200 mm centres
<b>First floor deck installation. Joint installation option 2 - joists bearing directly on headplate with rimboard</b>		
Fixing rim board to headplate	3.75 mm x 75 mm	Maximum 150 mm
Fixing OSB/3 / P5 floor decking to joists / rimboard	3.35 mm x 65 mm	Maximum 200 mm
Fixing brickwork cavity wall ties to <i>Kingspan TEK®</i> Building System wall panels	BTS 50 SCR tie / screw kits (Simpson Strong-Tie BTS 50 (SWT) & ABC Spax 30 mm x 4.0 mm stainless steel flange head)	Varies with the geographical location of the building. Follow wall tie manufacturer's recommendations
Fixing treated timber counter battens to <i>Kingspan TEK®</i> Building System wall / roof panels for ventilation	ABC Spax 5 mm x 60 mm or EJOT M5 70 mm stainless steel screws or equivalent (to penetrate through 15 mm OSB/3 face)	Typically 300 mm centres. For further guidance follow project structural engineers' recommendations

NB. Contact *Kingspan TEK®* Technical Services Department for further information. Heads of nail fixings should be flush with the surface of the OSB/3 / P5 facing.

Table 1 Fixing Specifications

### 3 Foundation Assessment

It is extremely important that you provide an accurate, level and square platform on which to erect the *Kingspan TEK®* Building System.

It is extremely important that the soleplate of the building exactly matches the dimensions of the *Kingspan TEK®* Building System, and that all corners are square.

Foundation width and length should be within 5 mm of the dimensions called for in the foundation plans. Check the diagonals as shown in Figure 2. Pairs of diagonal measurements should be within 5 mm.

The top level of the slab shall also not vary from the design by more than  $\pm 5$  mm. Slight variations in foundation dimensions can be dealt with when setting the soleplate, but variations outside of these tolerances will make panel erection significantly more difficult. If the diagonals do not match exactly, some adjustment can be made when setting the soleplates. If the diagonal measurements are not given on the foundation or first floor plan, they can be calculated by using the formula  $c = \sqrt{a^2 + b^2}$  as shown in Figure 2.

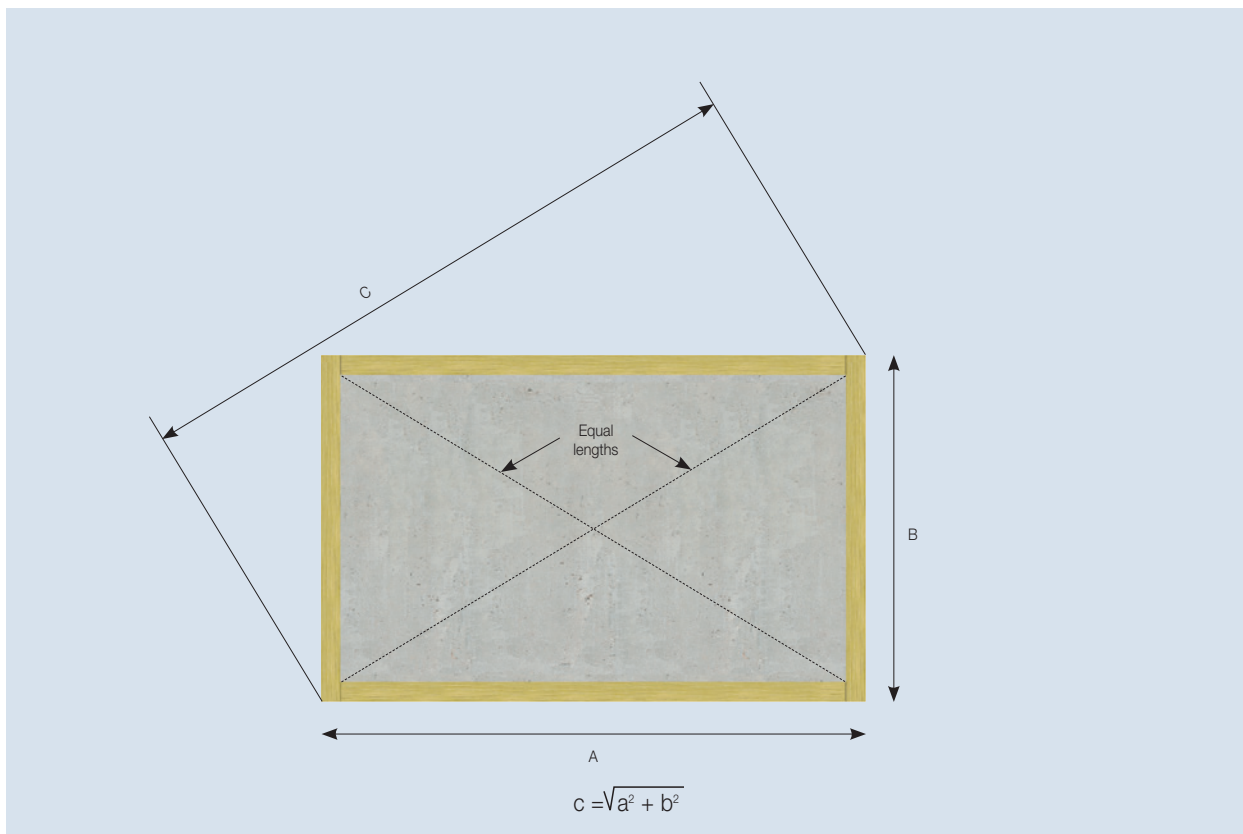


Figure 2 Checking Foundation is Square

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## 4 Combination Soleplate Installation

### 4.1 Preparation of the Base

The base or foundation should be swept and cleaned of all material and debris before starting erection of the *Kingspan TEK®* Building System.

### 4.2 Preparation of Combination Soleplate

The combination soleplate (see Figure 3a) comprises a damp proof course (DPC) below a 40 mm x minimum width 172 mm treated timber soleplate, below a 40 mm x 140 mm timber bottomplate.

**Caution:** Where treated timber soleplates are not supplied by Kingspan Insulation Ltd. they should be cut from treated softwood (C24).

First, connect the soleplate to the bottomplate in accordance with the fixing specification in Table 1, ensuring that two beads of silicone sealant are applied between the two elements prior to fixing.

The centreline of the bottomplate should be coincident with the centreline of the soleplate such that the soleplate overhangs the bottomplate by 15 mm on each side.

**Hint:** Use a scrap of 15 mm OSB/3 as a gauge when you position the bottomplates.

Then, apply two beads of silicone sealant to the top side of the DPC to create a seal between it and the treated timber soleplate. The DPC should then be fixed to the underside of the treated timber soleplate, flush to the inside edge, using two rows of staples at 100 mm centres (rows should be staggered).

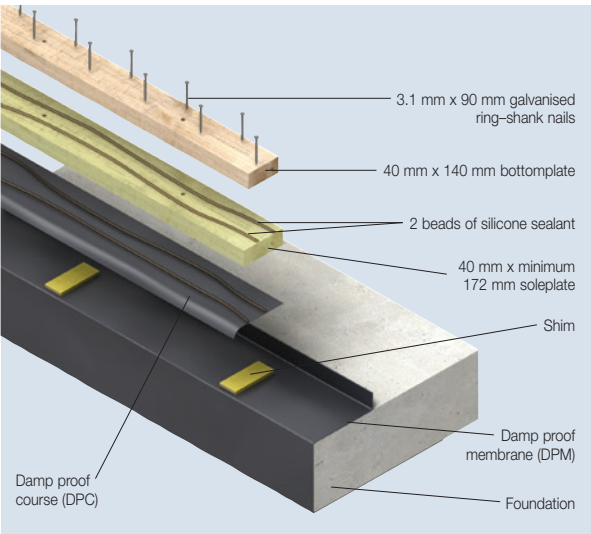


Figure 3a Preparation of Combination Soleplate

### 4.3 Positioning and Fixing Combination Soleplate

A damp proof membrane (DPM) should be installed round the edge of the foundation slab as shown in Figure 3a.

Accurately mark out all internal and external wall positions using a tape and chalk line. Using a surveyors level or laser, proceed to level the soleplate by taking levels at 1 m intervals along the lines of the walls in order to find the highest point. Using the level of the highest point as a datum, raise the treated timber soleplate at all other locations using shims to match this level. All points should be shimmed to within  $\pm 1$  mm. Colour coded shimming strips are available in various sizes from 2 mm to 6 mm as detailed in Table 2.

Shim Thickness	Shim Colour
2	Purple
3	Green
4	Yellow
5	Blue
6	Black

Table 2 Shim Thicknesses and Colours

Position and fix the combination soleplate over the shims (DPC facing down) in accordance with the structural calculations and appropriate *Kingspan TEK®* Building System standard details\*. Where posts or columns bear directly onto the slab these should be located using steel shims only (not plastic).

**Caution:** Using site plans as a guide, mark out wall panel joints on the base. Ensure butt joints in the bottomplate are a minimum of 300 mm away from *Kingspan TEK®* Building System wall panel joints.

\* Specification for fixing the treated timber soleplate will be given by Kingspan Insulation Ltd.

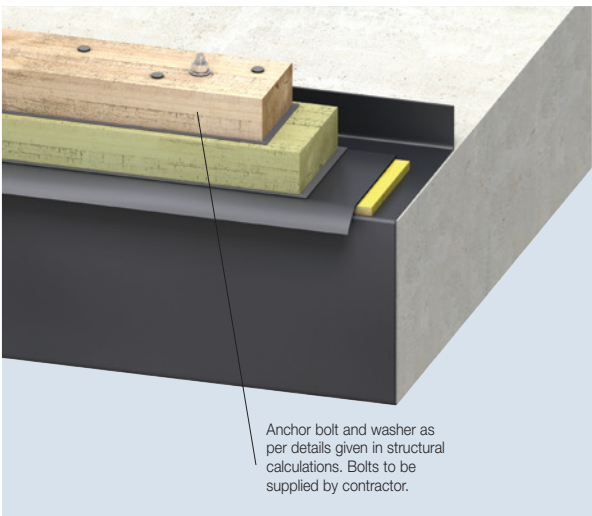


Figure 3b Fixing of Combination Soleplate

At corners, overlap the soleplate and bottomplate and leave a 15 mm gap in the bottom plate to accommodate the OSB/3 facer on the overlapping panel, as shown in Figure 4a.

*Hint: Use a scrap of 15 mm OSB/3 as a gauge when you position the bottomplates.*

To seal against air infiltration under the soleplate, point the gap between the DPC and the DPM with a non-shrink cementitious mortar as shown in Figure 4b

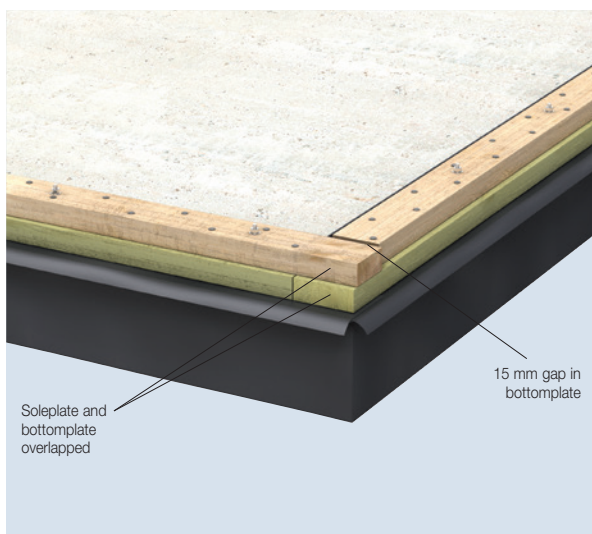


Figure 4a Combination Soleplates Ready to Receive Wall Panel.

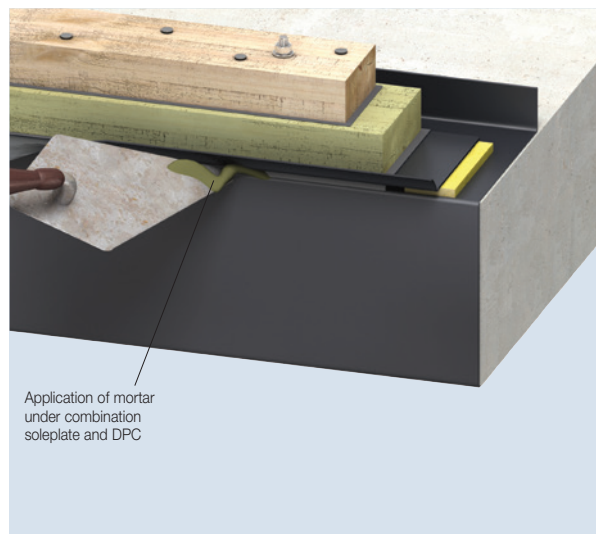


Figure 4b Application of Mortar Under Combination Soleplate

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## 5 Wall Assembly - Panel By Panel

### 5.1 General

It is assumed that the *Kingspan TEK® Building System* approved installer has made sufficient provision for all temporary works necessary to assemble the project safely and that they have prepared method statements to address different stages of work as appropriate. It is similarly assumed that scaffolding and safe working platforms will be constructed as the project proceeds to ensure a safe working environment at all times. For a list of standard risks and hazards that are inherent to the System please refer to Appendix C.

The following table gives the necessary allowable tolerances for the fabrication and erection of the *Kingspan TEK® Building System*. Care should be taken to ensure that any deviations are not outside of these standards.

Description	Tolerance
Plumb of storey height from vertical	± 10 mm (no more than 10 mm over entire building height)
Alignment with soleplate	± 3 mm in line with soleplate
Level between tops of two adjacent	3 mm difference between panels heads
Deviation from vertical of erected timber components	6 mm over 2.4 m height, pro-rata for other heights up to a maximum of 12 mm

Table 3

### 5.2 Handling Panels

*Kingspan TEK® Building System* wall panels should be lifted and manoeuvred in accordance with the contractor's method statement, preferably using appropriate mechanical lifting equipment.

### 5.3 Sorting of Wall Components

The first wall should be started at the external corner furthest away from the main stack of *Kingspan TEK® Building System* wall panels. The first wall panel to be erected should be the overlapping corner panel. This is illustrated in Figures 5a and 5b. Identify the required components for the first wall and place them near to the wall being erected. All insulated splines, timber posts and end timbers should be cut to the required length such that the full depth of routed out channels in the top and bottom of the wall panel are unobstructed.

### 5.4 Preparation of The First Panel

All routs should be brushed clean of any debris and checked for proper forming and depth. End timbers must be fixed into the panel, in accordance with the fixing specification in Table 1, before the panel is erected, ensuring that the end timbers are not intruding into the 40 mm x 142 mm routed channel at the top and bottom of the wall panels.

### 5.5 Erection of The First Wall Panel

*Hint: Using site plans as a guide, mark out wall panel joints on the combination soleplate before erecting the first wall panel. If wall panels joints are not in line with the markings on the combination soleplate, corrective action should be taken immediately.*

Apply a bead of expanding urethane sealant onto the bottomplate to ensure that an airtight joint is achieved. Manoeuvre the *Kingspan TEK® Building System* wall panel into position. Push it right down so that it is in full contact with the top face of the soleplate. The end timber within the wall panel must be perfectly flush with the outer edges of the corner. This is illustrated in Figure 5b.

*Hint: Do not nail any Kingspan TEK® Building System wall panels into the bottomplate until the roof is on the house, this will allow the walls to settle onto the soleplate giving the panel a more even load distribution.*

Check that the wall panel is both level and vertical prior to installing a diagonal brace that will temporarily secure the wall panel in its correct position. This can be done using 50 mm x 100 mm timbers or proprietary wall braces.

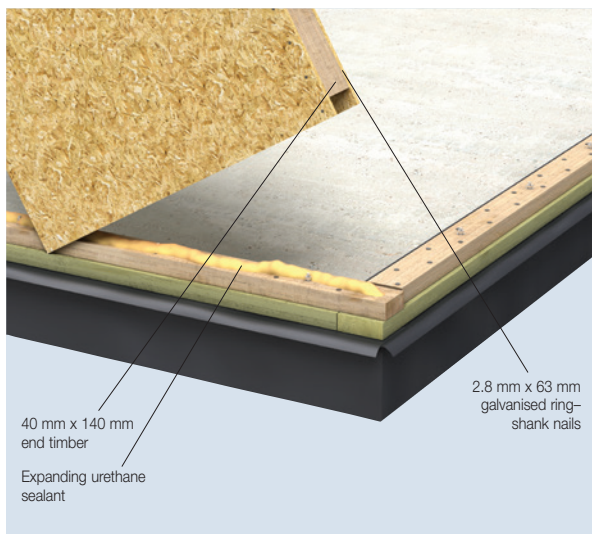


Figure 5a Erection of First Wall Panel

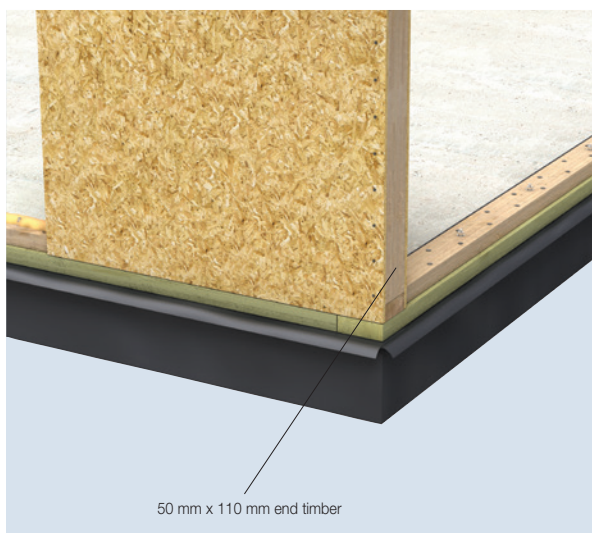


Figure 5b First Wall Panel in Position

### 5.6 Erecting Subsequent Wall Panels Along the First Wall

Prepare subsequent **Kingspan TEK®** Building System wall panels by fixing insulated splines, timber posts or end timbers as before. Apply expanding urethane sealant into the vertical rout of the panel before fixing the insulated splines or end timbers. Also apply expanding urethane sealant onto the bottomplate and into the vertical rebate of the previously erected panel to ensure an airtight seal is achieved. Ensure that the end timbers are not intruding into the 40 mm x 142 mm routed channel at the top and bottom of the wall panels.

Manoeuvre the wall panel into position so that the timber post or insulated spline is ready to engage the previously erected wall panel as illustrated in Figure 6 below. Firmly push the wall panel into place ensuring that all edges are tightly abutted. Where joints need tightening to ensure edges are tightly abutted use ratchet straps and a ratchet tool (e.g. a rucki zucki nick nack).

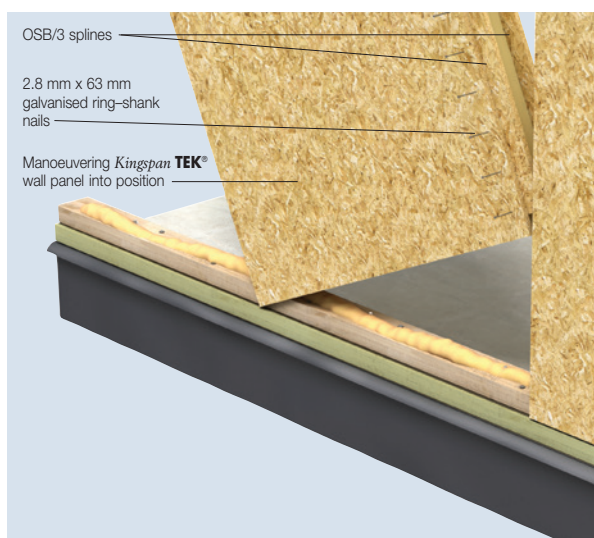


Figure 6 Erection of Subsequent Wall Panels

With the wall panel in position, fix the joints in accordance with the fixing specification in Table 1.

Insulated spline and timber post joints are illustrated in Figures 7 and 8.

The final wall panel within the wall should be fitted with an end timber, which should be fixed in accordance with the fixing specification in Table 1, to allow correct corner assembly.

The final wall panel is always an overlapping panel, and the end timber within the wall panel must be perfectly flush with the outer edges of the corner. This is illustrated in Figure 5b.

**HINT:** A temporary raking wall brace should always be placed within 200 mm of junctions between interior wall and exterior walls to ensure that this load bearing connection can be properly formed.

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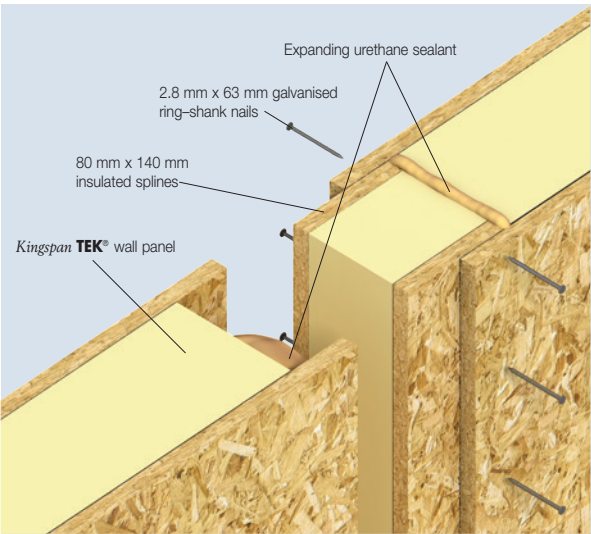


Figure 7a Insulated Spline Joint

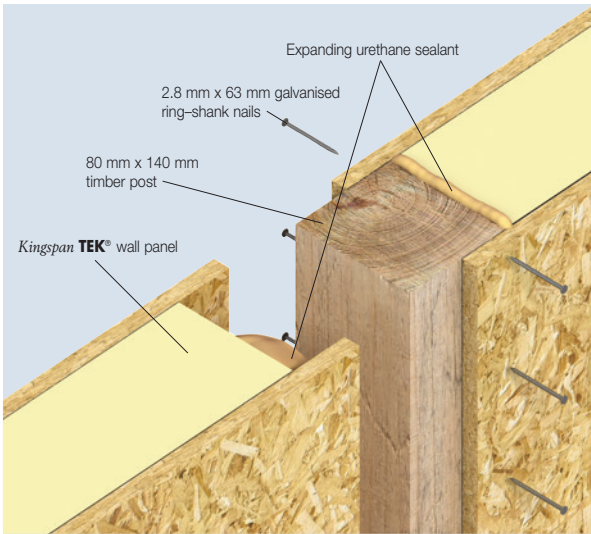


Figure 8a Timber Post Joint

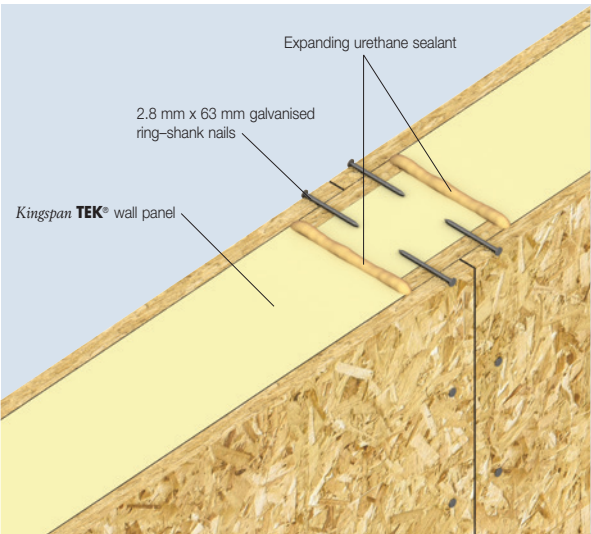


Figure 7b Fixed Insulated Spline Joint

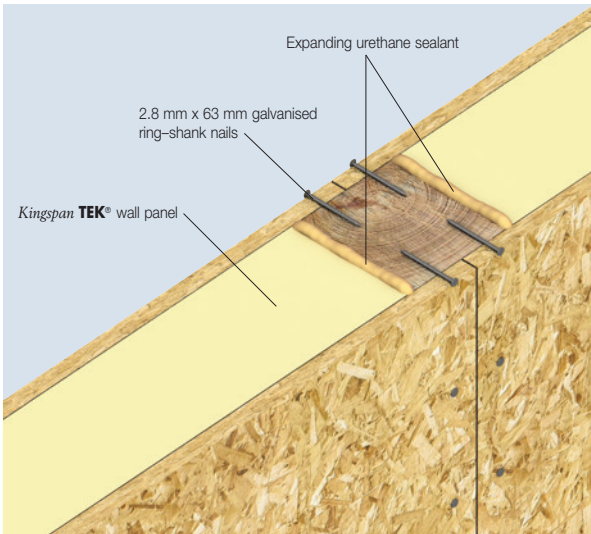


Figure 8b Fixed Timber Post Joint

## 5.7 Erecting Subsequent Walls

Two beads of silicone sealant should be applied to the in-situ panel at the corner, in the zone where it will be abutted by the panel that is about to be installed.

Prepare the panel that is to be installed by applying expanding urethane sealant into the factory routed channel intended for the end timber, and fix the end timber into the panel, in accordance with the fixing specification in Table 1, before the panel is erected, ensuring that the end timber is not intruding into the 40 mm x 142 mm routed channel at the top and bottom of the wall panels.

Manoeuvre the panel that is to be installed into position, and firmly push the wall panel into place ensuring that it is tightly abutted. Where the joint needs tightening to ensure edges are tightly abutted, use ratchet straps and a ratchet tool (e.g. a rucki zucki nick nack). Fasteners should be fixed through the corners into the end timbers, through predrilled 4 mm dia. holes, in accordance with the fixing specification in Table 1. This detail is illustrated in Figures 9a and 9b.

The rest of the walls should be erected in a similar manner to that described for the first wall, with any non-overlapping corner panels having expanding urethane sealant applied into the factory routed channel intended for the end timber. When all exterior and interior walls have been erected and headplates have been installed, through predrilled 4 mm dia. holes, a horizontal line should be pulled between pairs of building corners to finally check that wall panels are correctly located. Additional raking braces should be used (or adjusted) to make any necessary wall panel realignment.

Where the **Kingspan TEK® Building System** wall panels are used as internal walls, they need to be plumbed and levelled with the top of the external walls, braced as before and fixed in the same way as an external wall (see Table 1).

As with external walls, use adjustable wall braces where necessary to ensure internal walls are in their correct position.

***Hint:** Ensure that sufficient wall braces are used to stabilise the wall construction during the erection of the final storey and that these remain in place until the roof has been completed.*

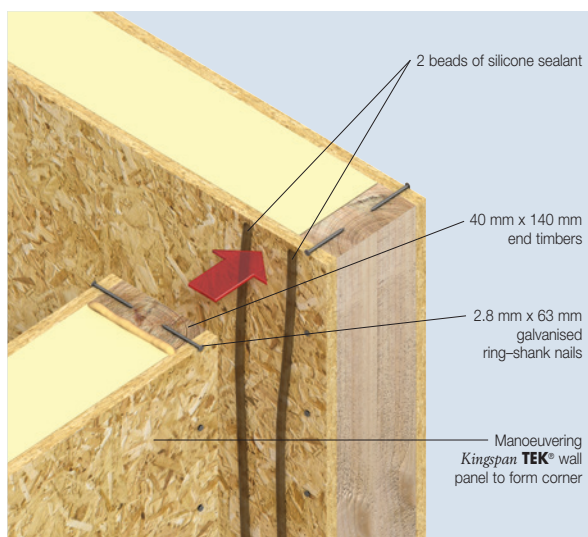


Figure 9a Creation of Corner Joint

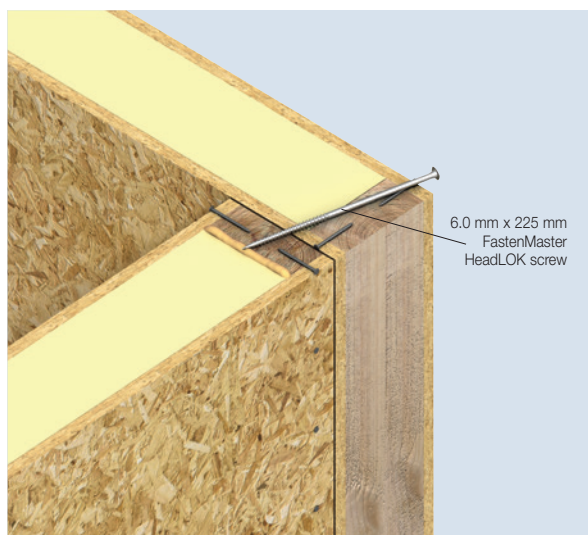


Figure 9b Fixing of Corner Joint

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## 5.8 Installing Headplates

Apply expanding urethane sealant into the factory routed channel at the top of the *Kingspan TEK® Building System* wall panels. The headplates should then be located within the rout and fastened in accordance with the fixing specification in Table 1. This is illustrated in Figure 10 below. Headplate joints should be staggered so that they offset vertical joints between *Kingspan TEK® Building System* wall panels by a minimum of 300 mm.

The installation of the headplate should be undertaken immediately after the erection of the wall to prevent excessive amounts of water standing in the rout. Headplates tie the wall panels together and provide a continuous solid surface to support the first floor deck.

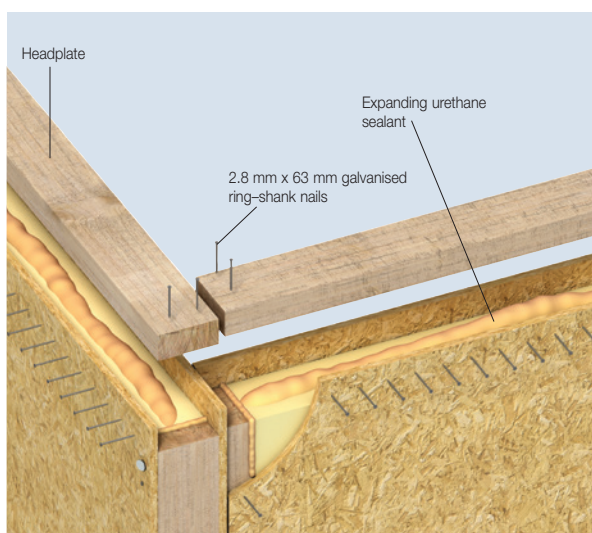


Figure 10 Installation of Headplates

## 5.9 Standard Door and Window Openings

*Kingspan TEK® Building System* wall panels will arrive (unless specified otherwise) from the factory pre-cut and routed for window and door openings. The routed grooves will (unless specified otherwise) be 40 mm deep so that the 40 mm x 140 mm or 80 x 140 mm timbers can be fully inset around the whole window or door perimeter as illustrated in Figure 12a and b. Apply expanding urethane sealant into the routed grooves before installing the timbers. The timbers need installing as soon as the wall panels have been erected to prevent excessive amounts of water standing in the rout.

Edge timbers should be installed as previously described, both when the opening is enclosed within one *Kingspan TEK® Building System* wall panel and also when it extends into any adjoining wall panels. With all openings for windows and doors, the edge timbers should be cut and installed into the routed channels as illustrated in Figure 11a and b. All these timbers should be fixed in accordance with the fixing specification in Table 1.

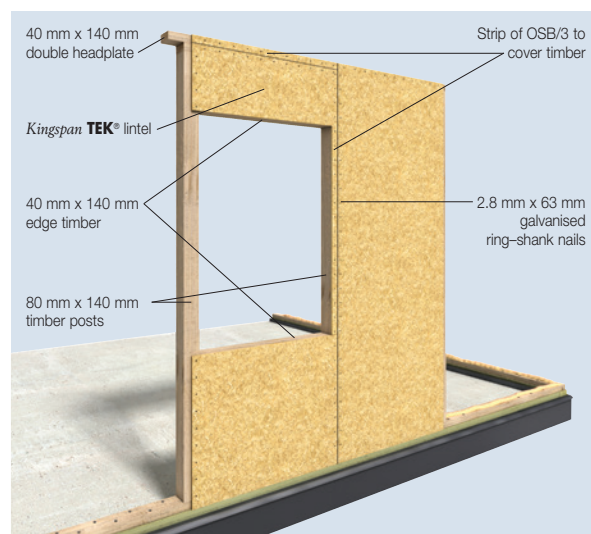


Figure 11a Opening for Window

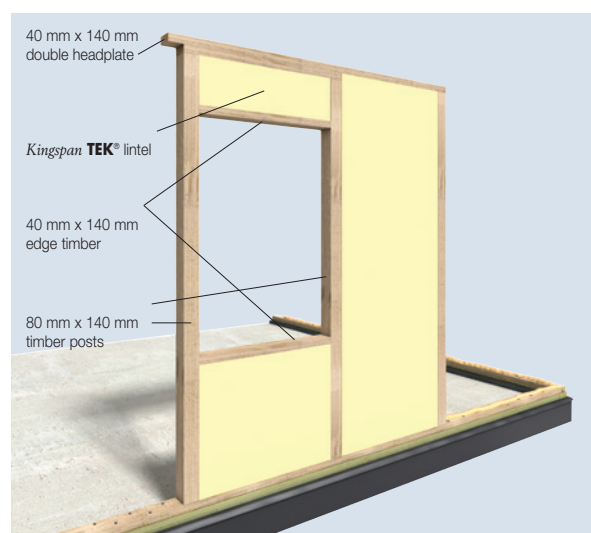


Figure 11b Opening for Window – Cross Section

## 5.10 Large Openings

Very wide windows and large doors often span more than a full *Kingspan TEK® Building System* wall panel. In this case, the plans may call for a more substantial beam or lintel that is inset into the panels.

## 5.11 Final Checks

When all exterior and interior walls have been erected and headplates have been installed a horizontal line should be pulled between pairs of building corners to finally check that wall panels are correctly located. Additional raking braces should be used (or adjusted) to make any necessary wall panel realignment.

## 6 Wall Assembly - Entire Wall Sections

### 6.1 Setting out Wall Panels Prior to Assembly

Organise the *Kingspan TEK*® Building System wall panels into their designated positions on a level surface, (e.g. if the wall panel is resting on a combination soleplate it will not be level and therefore cannot be pulled together as an entire wall section) external face up, to match the detailed construction drawings provided with each project, as illustrated in Figure 13. At this stage leave a gap between wall panels to facilitate installation of timber posts and splines.

*Hint: Prior to undertaking this method of Kingspan TEK® Building System wall panel erection it is extremely important to plan the sequence of panel assembly so that site or building constraints can be accommodated.*

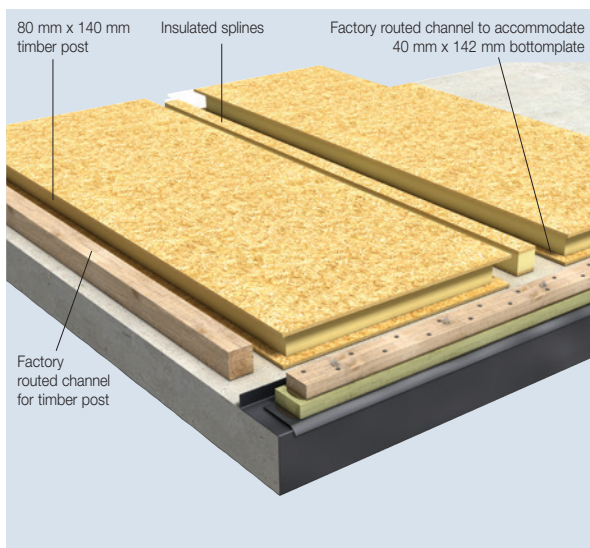


Figure 12 Ensure Wall Panels Are Laid Flat

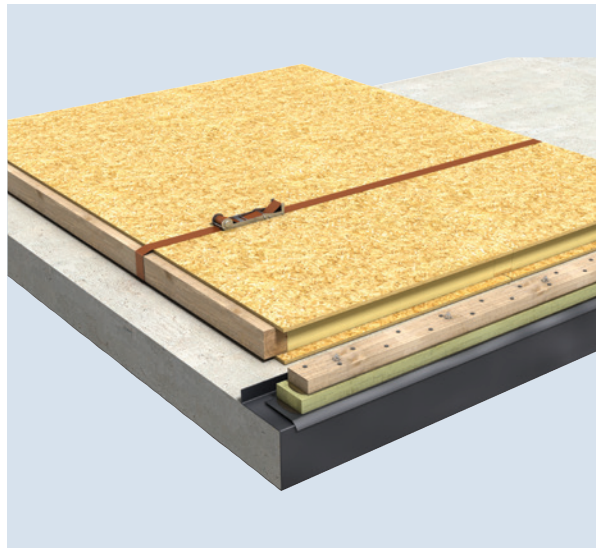


Figure 13 Bring Wall Panels Together Using Ratchet Straps

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## 6.2 Joining Panels

Apply expanding urethane sealant into the factory routed channels on either side of the joint. Insert the OSB/3 spline or timber post into one routed channel. Pull the wall panels together using a ratchet strap (see Figure 13), thus engaging the OSB/3 spline or timber post with the opposite routed channel. Make sure the OSB3 spline or timber post is not intruding into the 40 mm x 142 mm routed channel at the top and bottom of the wall panels. Fix the OSB/3 spline or timber post into place, in accordance with the fixing specification in Table 1, before the panel is erected.

When using ratchet straps to close joints, it is imperative that the **Kingspan TEK® Building System** wall panel edges are adequately reinforced or protected to prevent damage to the OSB/3 facings, as illustrated in Figure 13.

**Caution:** Do not attempt to lift large **Kingspan TEK®** Building System wall sections manually – use correct lifting procedures (see section 6.3).

## 6.3 Raising The Wall

Apply a bead of expanding urethane sealant onto the bottomplate. Tilt the **Kingspan TEK® Building System** wall section using either a crane or other appropriate mechanical lifting equipment and following the contractor's method statement for safe working. Attach temporary wall braces as required. To ensure the wall section is plumb and remains so, brace wall ends on the outside edge as illustrated in Figure 14. Attaching the wall braces to the outside edge allows room on the floor surface for assembly of further wall sections.

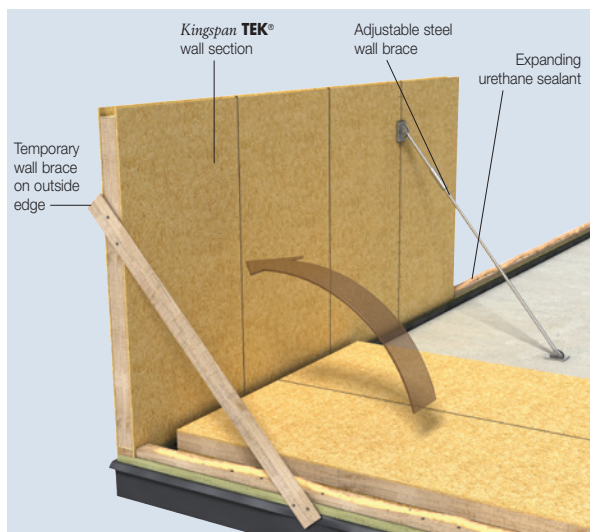


Figure 14 Bracing Wall Sections

## 6.4 Assembly, Nailing and Raising of Further Wall Sections

Further **Kingspan TEK® Building System** wall sections should be constructed and erected in the same manner as described in sections 6.1 to 6.3.

The instructions given in section 5.7 for fixing wall panels together at corners should be followed.

*Hint: Ensure **Kingspan TEK® Building System** wall sections are erected in the correct sequence so as to optimise the use of working space and resource.*

Particular care should be exercised when assembling the wall sections that include either window or door openings. In certain situations some additional temporary bracing members may be necessary, nailed across breaks in **Kingspan TEK® Building System** wall panel edges.

*Hint: Ensure that sufficient wall braces are used to stabilise the wall construction during the erection of the final storey and that these remain in place until the roof has been completed.*

## 6.5 Installing Headplates & Final Checks

The instructions given in sections 5.8 & 5.11 should be followed.

## 7 First Floor Deck Installation

### 7.1 Handling of Materials

All materials for floor construction shall be carefully lifted onto safe working platforms ready for installation using either a crane or other suitable mechanical lifting equipment. At all times refer to the contractors method statement for undertaking these types of procedures.

### 7.2 Joist Installation Option 1- Joist Hangers on Headplate

#### Positioning And Fixing Joist Hangers Onto The Walls And Beams

Mark out the location of all joists along the headplate of the ground floor wall panels and beams according to the design drawings. Fix joist hangers into the headplate and beams at the marked locations, as illustrated in Figure 15. At all times reference should be made to the joist hanger manufacturer's recommended installation instructions. In the absence of manufacturer's instructions, fix in accordance with the fixing specification in Table 1.

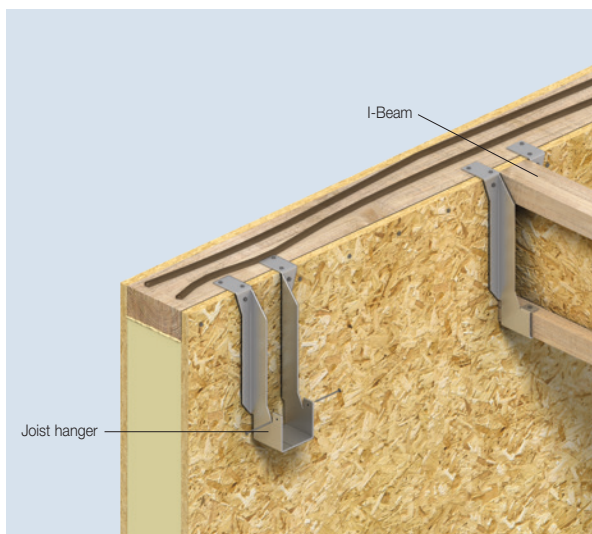


Figure 15 Locating and Fixing Joist Hangers For First Floor Deck

### Installing Floor Joists

Joists should be located into corresponding joist hangers and fixed in place in accordance with the manufacturer's instructions. In the absence of manufacturer's instructions, fix in accordance with the fixing specification in Table 1. The top of the installed joists should be at the same height as the top of the headplate. This is illustrated in Figure 15.

Where floor joists bear directly over an internal wall, the joist should be fixed in position using 2 No. 3.35 mm x 75 mm nails or as per joist manufacturers instructions.

For all other details and specifications refer to the appropriate manufacturers installation details and instructions.

### 7.3 Joist Installation Option 2 - Joists Bearing Directly on Headplate with Rimboard

Mark out the joist positions and fix the joists in place at these locations by fixing through the bottom flange into the headplate, ensuring that sufficient space is left for the rimboard (usually between 32 and 60 mm thick). Apply a continuous bead of silicone sealant on top of the headplate along the eventual centre-line of the rimboard that is to be installed. Attach the rimboard to the ends of the joists and fix through the rimboard into the headplate in accordance with the fixing specification in Table 1. This is illustrated in Figure 16.

For all other details and specifications refer to the joist manufacturer's installation details and instructions.

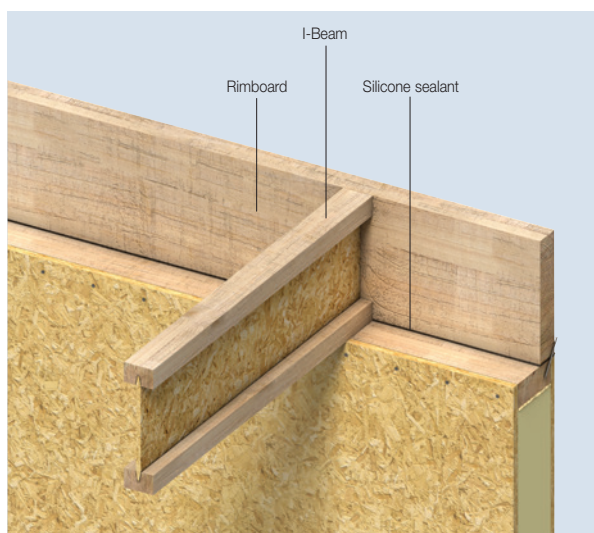


Figure 16 Locating and Fixing Rimboards for First Floor Deck

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## 7.4 Installing First Floor Deck

With the first floor joists in place, the 22 mm tongue and groove OSB/3 or P5 deck is then installed.

Lay the OSB/3 or P5 sheets in a staggered pattern, perpendicular to the joists and flush with the outside of the external OSB/3 or P5 facing / rimboard. Immediately prior to installing the OSB/3 or P5 sheets located around the perimeter of the building, silicone sealant should be applied to the top surface of the headplate (2 beads) / rimboard (1 bead) to provide an airtight seal. This is illustrated in Figures 17a and 17b.

Fix the OSB/3 or P5 sheets to the joists and headplate / rimboard in accordance with the fixing specification in Table 1. At all times this should be in accordance with the deck manufacturers installation instructions.

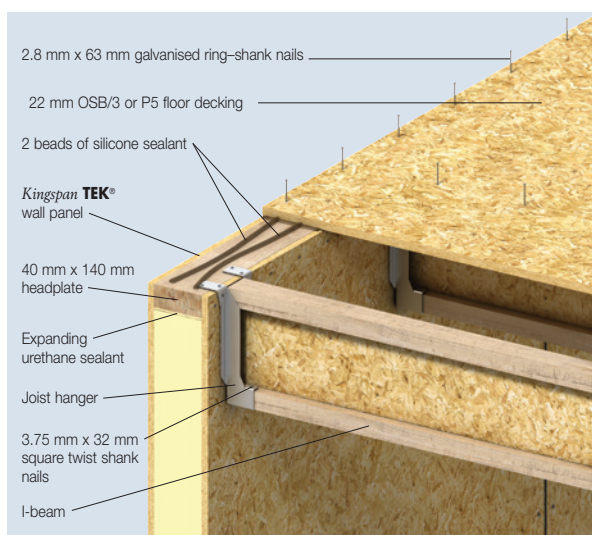


Figure 17a Installation of Floor Deck (Option 1 - Joist Hangers)

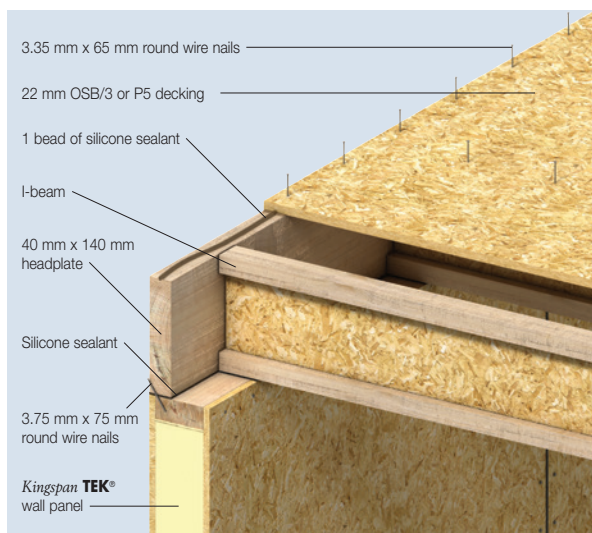


Figure 17b Installation of Floor Deck (Option 2 - Rimboard)

## 7.5 Fixing Bottomplates for Upper Storey Walls

Apply two continuous beads of silicone sealant on top of the OSB/3 or P5 deck either side of the eventual centre-line of the bottomplate that is to be installed. The bottomplates should be fixed through the OSB/3 or P5 deck into the headplate / rimboard in accordance with the fixing specification in Table 1.

The outer edge of the bottomplate should be inset 15 mm from the edge of the OSB/3 or P5 deck so that the external OSB/3 or P5 face of the upper storey **Kingspan TEK® Building System** wall panels will be flush. This is illustrated in Figures 18a and 18b.

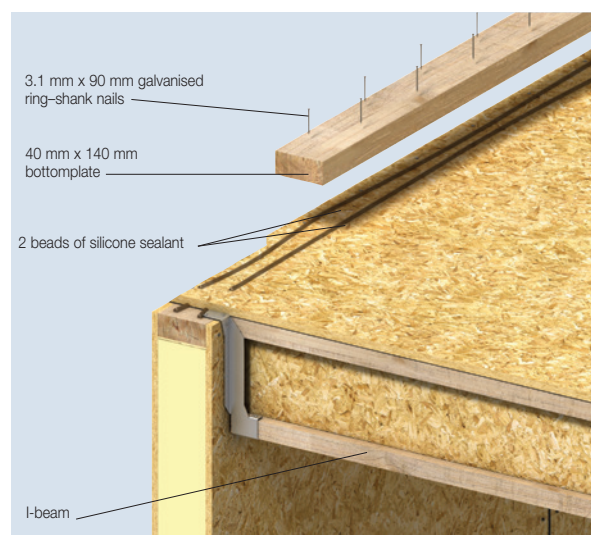


Figure 18a Installing Bottomplate over First Floor Deck (Option 1 - Joist Hangers)

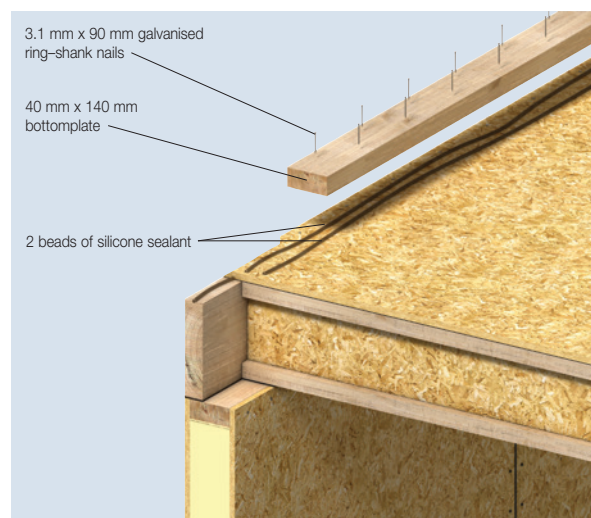


Figure 18b Installing Bottomplate over First Floor Deck (Option 2 - Rimboard)

**Caution:** Temporary handrails or guarding should be placed around all free edges and stairwells.

## 8 Installing Upper Storey Wall Panels, Attic Joists And Roof Beams / Purlins

### 8.1 Handling of Materials

All materials should be carefully lifted into position on safe working platforms ready for installation, using either a crane or other appropriate mechanical lifting equipment. At all times refer to the contractors method statement for undertaking these types of procedures.

### 8.2 Erection of Wall Panels

Using a similar process to that described for *Kingspan TEK® Building System* ground floor walls, additional storeys may be constructed.

*Hint: When erecting Kingspan TEK® Building System gable wall panels, always start from the centre (e.g. in line with the ridge beam) so when the ridge beam is installed it is straight.*

Ensure that all wall panels are fully assembled and permanently fixed in position (i.e. they should be fixed to the bottom plate, unlike ground floor all panels which are not fixed until the erection is completed) prior to moving onto the next stage of the erection. Once the first floor walls have been erected, the scaffolding can be completed to full height.

*Hint: Ensure that sufficient wall braces are used to stabilise the wall construction during the erection of the final storey and that these remain in place until the roof has been completed.*

### 8.3 Full Room-in-Roof Construction

Where a room in roof has its floor at the level of the eaves, the floor construction should be installed in the normal way ensuring that the deck is fully fixed to the perimeter headplate. A bevelled wallplate should then be fixed, in the same way in which a bottom plate would be fixed, in position as shown in the detail below to provide an attachment for the roof panels.

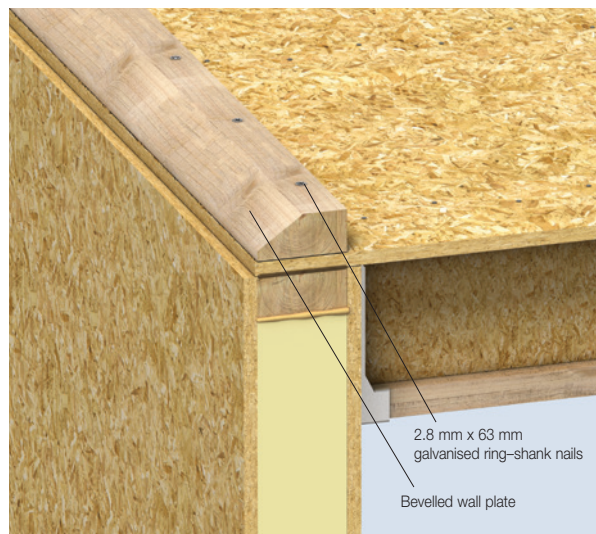


Figure 19 Full Room-in-Roof Wallplate Detail

### 8.4 Half Storey Room-in-Roof Construction

Where a room-in-roof has its floor at the level below the eaves, a special one-piece 140 x 150 mm bevelled headplate is installed in the factory cut rout, instead of the standard 140 x 40 mm headplate. The bevelled headplate is fastened in accordance with the fixing specification in Table 1.

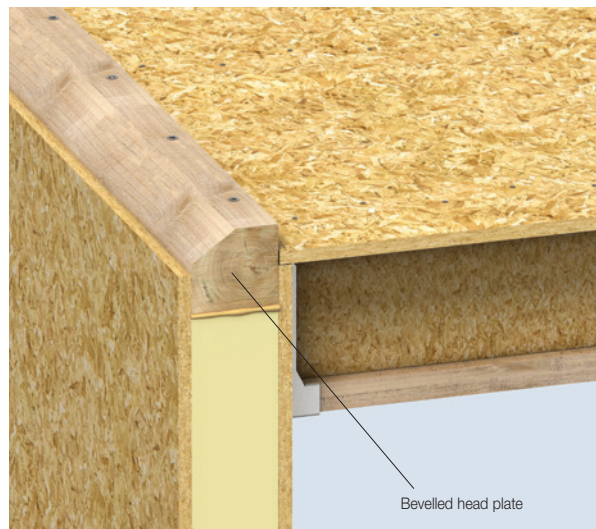


Figure 20 Half Storey Room-in-Roof Headplate Detail

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## 9 Installation of Principal Beams Within Roofs

### 9.1 General

Beams and purlins may be necessary to support roof constructions. They can be supported directly by the **Kingspan TEK® Building System** wall panel or in pockets with timber posts beneath.

### 9.2 Installing Purlins / Beams

Purlins / beams are located within pockets cut into the **Kingspan TEK® Building System** wall panels. A timber post below the pocket supports the purlin / beam. Timber posts and pockets are located on wall panel joints to facilitate routing and preparation of the beam pocket. Scabs are installed either side of the beam and should be fixed so they do not intrude on the routed channel of the wall panel. This is illustrated in Figures 21a and 21b.

All timber posts below pockets should be sealed in position using expanding urethane sealant and fixed in accordance with the fixing specification in Table 1.

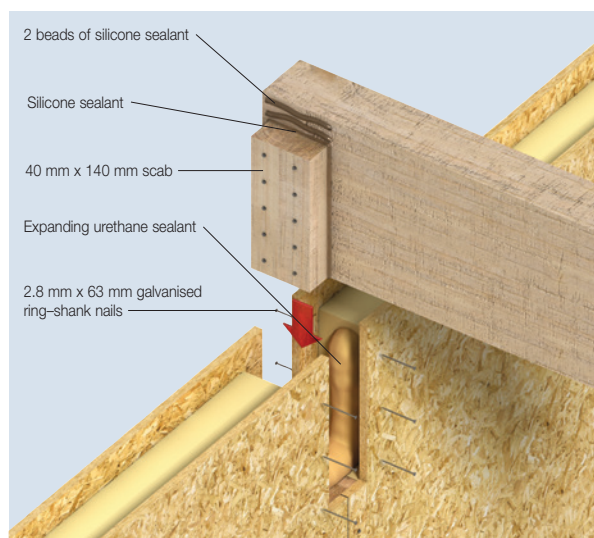


Figure 21a Installation of a Beam in a Wall



Figure 21b Cross Section Through Wall Showing Installed Beam

### 9.3 Installation of Purlins / Ridge Beams

Figure 23 below identifies common locations for principal beams and purlins.

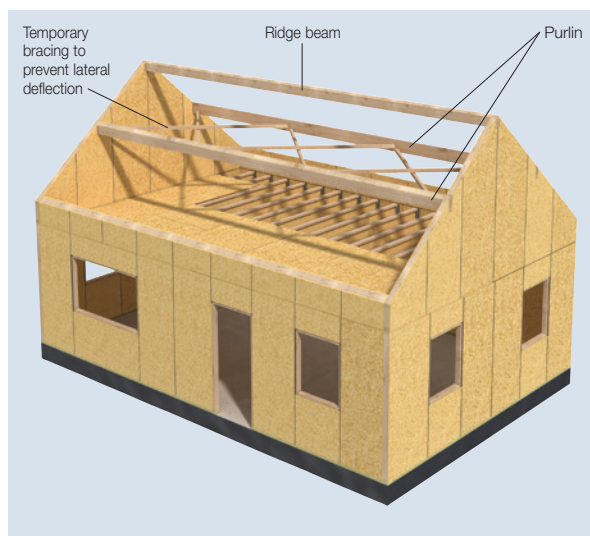


Figure 22 Typical Beam & Purlin Locations

**Kingspan TEK® Building System** gable wall panels often support purlins and / or a ridge beam. These purlins / beams are installed in exactly the same way as first floor beams (see section 7). Installation of purlins and ridge beams is illustrated in Figure 23.

For more complicated roof designs that incorporate hip or valley beams, reference should be made to the particular project specification. Care should be taken to ensure that all beams are connected together using the correct fixing or connector.

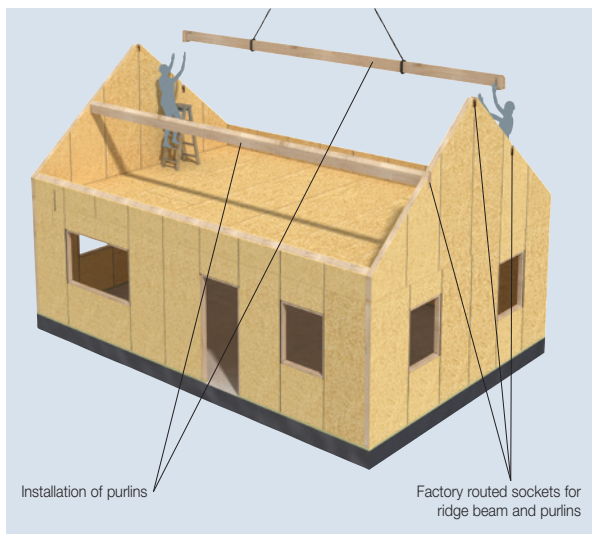


Figure 23 Installing Ridge Beams / Purlins

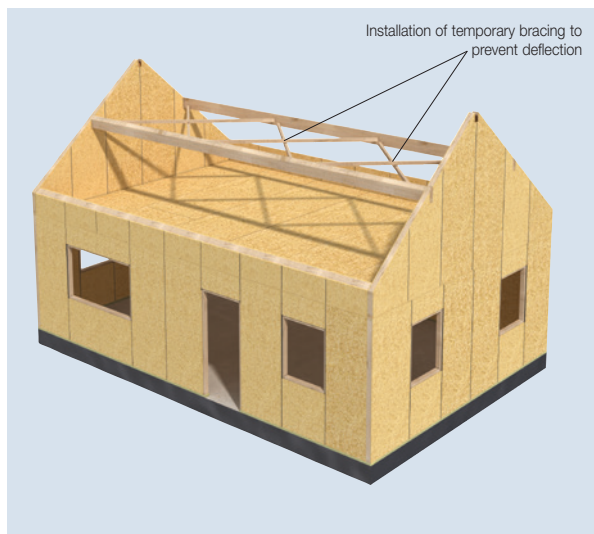


Figure 24 Temporary Bracing to Purlin and Ridge Beams

#### 9.4 Install Temporary Braces for Purlins and Ridge Beam

All purlins / roof beams should be held firmly in position using temporary bracing as illustrated in Figure 24 to prevent lateral deflection during the erection of the *Kingspan TEK*® Building System roof sections. Bracing should be spaced at no more than 3.0 m centres. This temporary bracing can be removed once all roof sections have been fixed in their final positions.

## 10 Prefabrication and Installation of Roof Sections

### 10.1 Lifting Roof Sections into Position

**Kingspan TEK® Building System** roofing panels are produced as square cut panels. However some **Kingspan TEK®** Delivery Partners may choose to cut raw panel, to produce a compound angle panel. The guidance in the following section should be adopted for both cuts of panel.

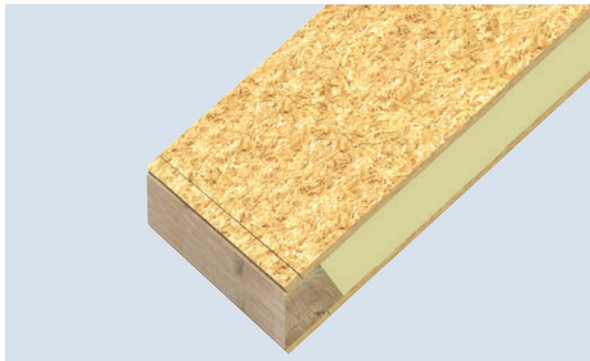


Figure 25a Square Cut Panel



Figure 25b Compound Angle Panel

**Kingspan TEK® Building System** roof sections should be lifted into position using a crane fitted with an adjustable chain as illustrated in Figures 26a and 26b.

**Kingspan TEK® Building System** roof panels can be lifted and installed individually, or as whole roof sections. Roof panels can be prefabricated using the same method as in section 5. The insulated splines or solid timbers should always be installed in the trailing edge of all panels.

Bevelled end timbers can be installed, in accordance with the fixing specification in Table 1, into the ends of the panels which will be facing towards the ground, either before or after fixing panels in place. The ridge beams should be pre-installed in the top of the **Kingspan TEK® Building System** panels in accordance with the fixing specification in Table 1.

The final outer roof panels should be fitted with an end timber, which should be fixed in accordance with the fixing specification in Table 1.

*Hint: Attach timber battens to the internal face of the **Kingspan TEK® Building System** roof sections immediately above the lines of support to act as locators when positioning the roof and to facilitate attachment to the walls / beams. This is illustrated in Figure 26b.*

**Caution: Manually lifting and positioning roof sections or panels onto the roof should not be attempted.**

To lift **Kingspan TEK® Building System** roof sections, drill four holes (25 – 40 mm diameter) through the roof section making sure that the holes will not end up over a supporting wall or purlin. Insert a lifting strap into each hole, as illustrated in Figure 26a. The straps should spread the load through the use of a 50 x 50 x 500 mm solid timber located beneath the roof section. The lifting strap holes should be filled with expanding foam once the lifting straps are removed.

**Caution: Under no circumstances should any site personnel stand underneath or in line with a roof section panel being hoisted onto a roof.**

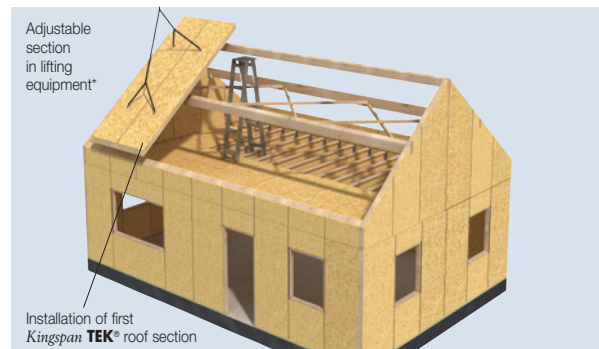


Figure 26a Lifting and Positioning Roof Sections onto the Roof With A Crane

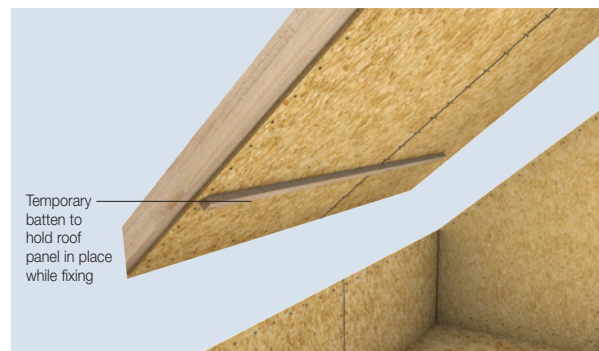


Figure 26b Timber Battens on Internal Face of Roof Section

*\* Set correct angle once. Following roof sections can be set without further adjustments unless change in roof pitch.*

## 10.2 Preparation of Roof Structure to Receive Roof Panels

Apply two beads of silicone sealant to all gable wall headplates, bevelled wallplates, bevelled headplates of dwarf walls and the bevelled faces of the ridge beam.

## 10.3 Installation of Roof Sections

*Hint: Silicone sealant should always be applied between surfaces that are to be joined rather than along the edges of joints once fixed.*

All Kingspan **TEK**® Building System roof sections should be accurately lifted into position (at the pitch of the roof) avoiding excessive sway, so that the end timber post or insulated spline is ready to engage the previously erected roof panel. Care should be taken when lowering the roof section into position to avoid wiping off the silicone sealant. Firmly knock the roof panels into place, ensuring that all edges are tightly abutted.

*Hint: Kingspan **TEK**® Building System roof section joint locations should be marked on the purlins, ridge beams, wallplates and bevelled headplates of dwarf walls, so that the roof sections can be quickly positioned and aligned.*

Roof sections should ideally be fixed in opposing pairs in order to control lateral loading and deflection as illustrated in Figures 27a and 27b, although practically this is not always possible.

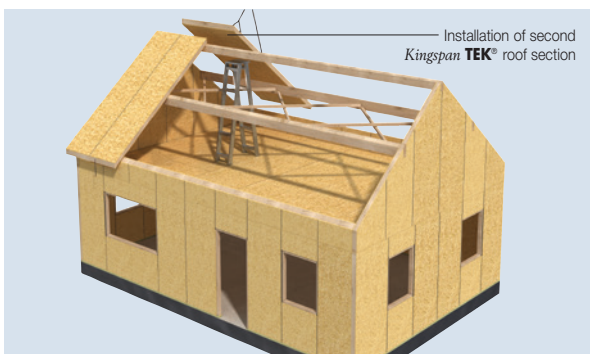


Figure 27a Installation of Roof Sections

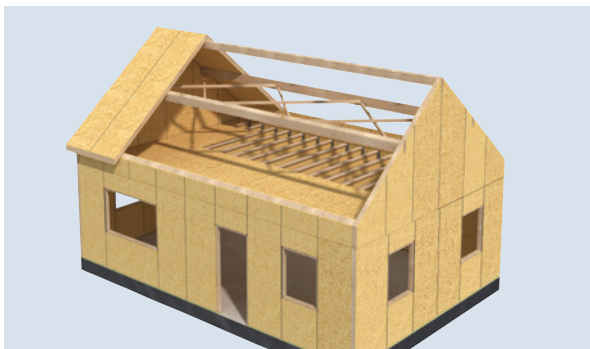


Figure 27b First Opposing Pair of Roof Sections Installed

Also, ensure you apply two beads of silicone along the ridge between the roof sections to ensure the joint is airtight.

## 10.4 Fixing the First Roof Section in Place

The roof section should be fixed along the gable headplate, bevelled wallplate, bevelled headplate in internal support walls and any intermediate / ridge beams or purlins in accordance with the fixing specification in Table 1\*. This fixing process is illustrated in Figures 28 - 32 below.

\* Refer to structural calculations for any variations in fixing centres.

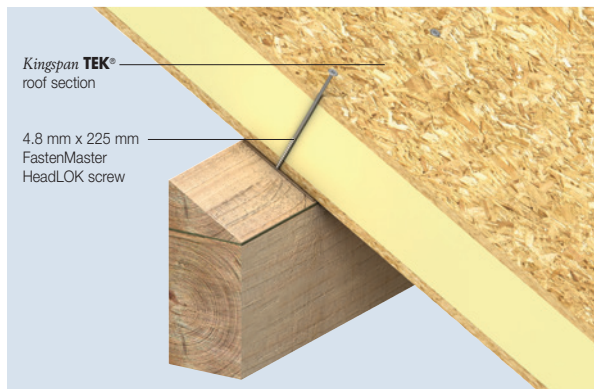


Figure 28 Fixing Roof Section into Purlin

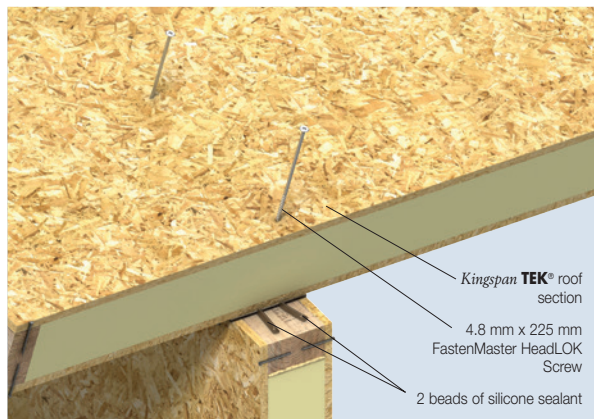


Figure 29a Fixing Roof Section into Gable Wall (Over Hang)

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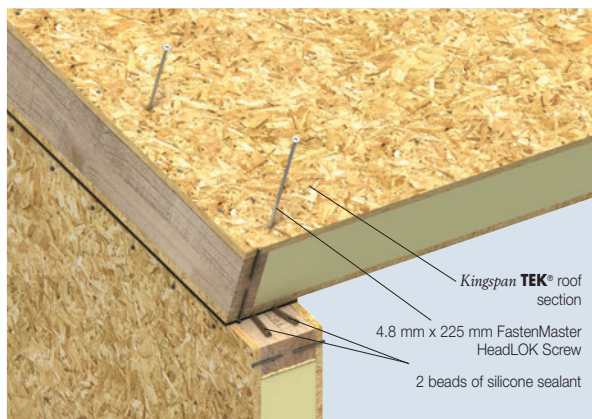


Figure 29b Fixing Roof Section into Gable Wall (No Over Hang)

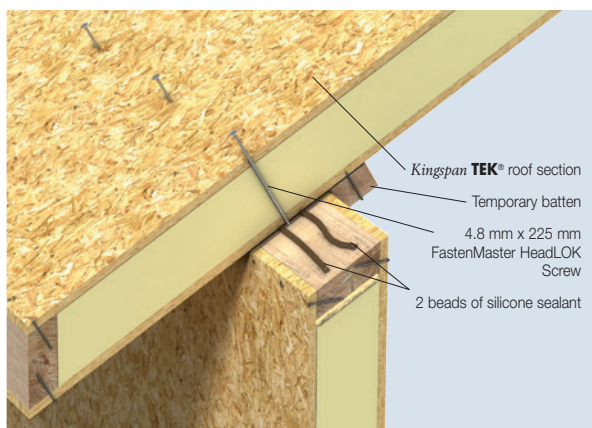


Figure 30a Wall / Roof Intersection Showing Bevelled Headplate Detail

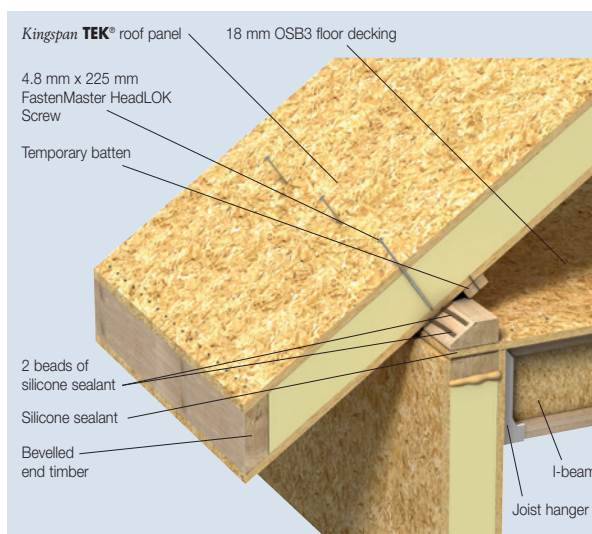


Figure 30b Wall / Roof Intersection Showing Bevelled Wallplate Detail

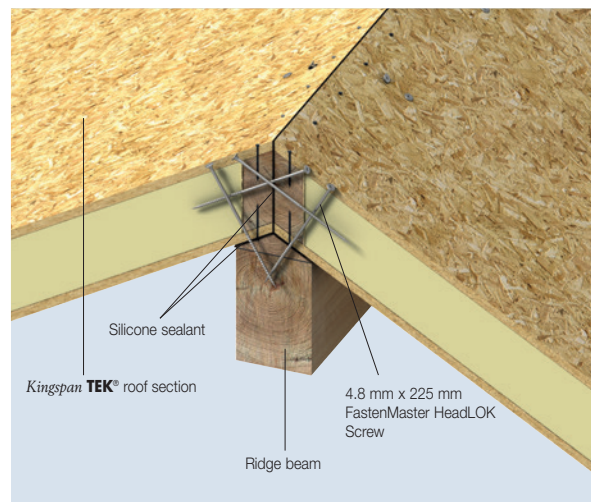


Figure 31 Fixing Roof Sections at The Ridge Beam

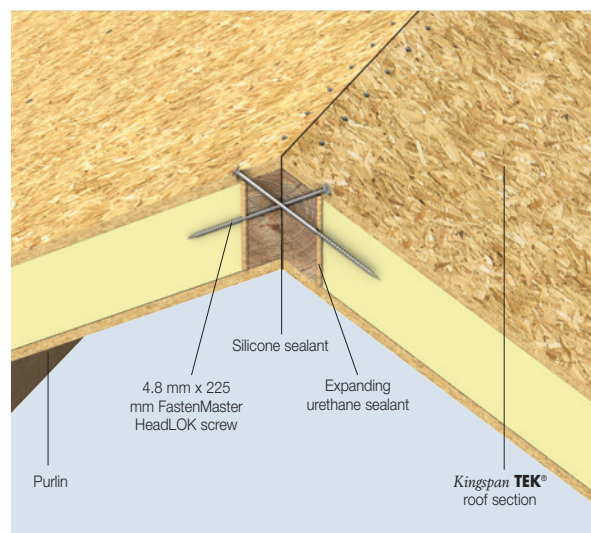


Figure 32 Fixing of Roof Sections at the Ridge with no Ridge Beam

## 10.5 Roof Openings

Openings for roof windows and rooflights in *Kingspan TEK® Building System* roof sections are preformed and incorporated into the panel layouts.

Openings are framed using 40 mm x 140 mm timbers or beams that have been fixed into suitable routs along the panel edges.

Penetrations for flues and vents are typically cut later, after the assembly of the *Kingspan TEK® Building System* has been completed. Flues and vents should be isolated from the structure by a fire resistant isolating sleeve.

Additional openings should not be cut into *Kingspan TEK® Building System* roof panels without first having sought approval from Kingspan Insulation Limited.

## 11 Attaching Breather Membrane to Walls

Once all walls have been completed a non-tenting breather membrane, e.g. **Kingspan nilvent®**, should be attached according to the guidance given in its manufacturer's installation instructions. Care should be taken to ensure that laps are correctly formed per its manufacturer's instructions and that the breather membrane is secure.

*Hint: At the completion of each day's work, or whenever work is interrupted for extended periods of time, a non-tenting breather membrane, e.g. **Kingspan nilvent®**, should be draped temporarily over the top of the **Kingspan TEK®** Building System wall panel to a depth of 150 mm. This enhances the weather tightness of the wall panel. This is illustrated in Figure 33. When returning to work, pull back the breather membrane and overlap onto the subsequent **Kingspan TEK®** Building System panel to be installed above. If the **Kingspan TEK®** Building System wall panel is below an opening, the breather membrane should be trimmed back.*

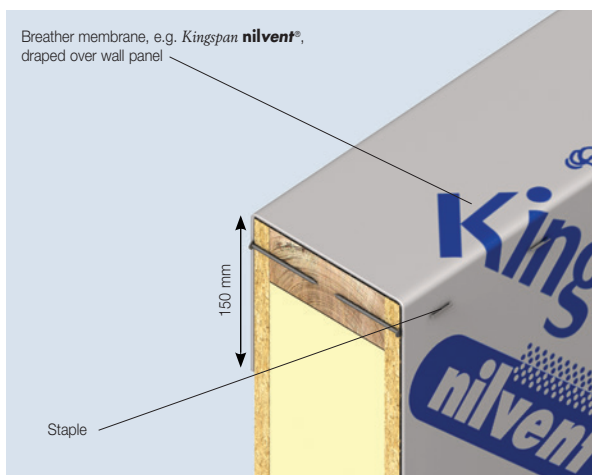


Figure 33 Temporarily Drape Breather Membrane over Wall Panel to Enhance Weather Tightness

## 12 Attaching Breather Membrane to, and Battening of, the Roof

All safety systems should remain in place until the non-tenting breather membrane, e.g. **Kingspan nilvent®**, and battening has been applied. The breather membrane should be applied starting from the eaves and moving upwards towards the ridge, according to the guidance given in its manufacturer's installation instructions. Care should be taken to ensure that laps are correctly formed and that the breather membrane is secure. Counter battens should then be fixed over the membrane in accordance with the project specification.

Slate or tile battens are then fixed over the counter battens at centres to suit the chosen tile / slate type and size.

The upper-most batten on each run of breather membrane should not be fixed until the subsequent run of membrane is laid. This is to facilitate the correct lapping of subsequent runs.

## 13 Fixing The **Kingspan TEK®** Building System To The Bottomplate

The entire structure can now be nailed to the bottomplate at ground floor level, in accordance with the fixing specification in Table 1. Soleplates at door openings can now be removed.

Temporary bracing can be removed once each floor level has been fully completed.



Figure 34 Fixing Ground Floor Wall Panels to Bottomplate

**Caution:** Check engineers drawings to ensure all additional holding down strips are fixed.

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## 14 Finishing

### 14.1 General

The application of roof and wall finishes should only be commenced once all surfaces, joints, edges, openings (especially rooflights) and connections have been fully inspected and found to be in accordance with the design specification. All finishes should be applied in full accordance with any manufacturers instructions and, if any cracks or gaps are found, they should be sealed with either expanding urethane sealant or silicon sealant as appropriate.

### 14.2 Water Ingress During Construction

*Kingspan TEK® Building System* wall and roof panels should be protected from the elements with a breather membrane, e.g. *Kingspan nilvent®*, as soon as possible once erected.

### 14.3 Fitting Window And Doors

Follow manufacturer's instructions when installing windows and doors ensuring careful sealing.

### 14.4 Internal Dry Lining

All *Kingspan Kingspan TEK® Building System* panels should be lined internally with plasterboard. The minimum plasterboard requirements may vary subject to statutory requirements for fire and acoustics. Please consult the Kingspan Insulation Technical Services Department for definitive guidance on your construction.

### 14.5 Plumbing

Plumbing can be installed in the same way as for any other building system.

The *Kingspan TEK® Building System* can use most common ground floor constructions. Therefore ground floor plumbing depends on the floor type. However, in all circumstances, the air-barrier should not be compromised.

At first floor level, engineered I-beams are supplied for use with the *Kingspan TEK® Building System*. The I-beams have pre-cut holes which can be punched out for services, meaning that pipes can be installed in the same way as any other system.

When pipes have to be run up a wall, where possible run them through internal stud partition walls or box them in, in the corner of the room.

When pipes have to be run up a *Kingspan TEK® Building System* wall panel, or appliances such as radiators have to be fixed to the *Kingspan TEK® Building System* wall panel, there are two options:

#### Option 1 – Single / Double Layer Plasterboard Fixed Directly to the Panel

Surface mounted pipework – pipe clips can be screw-fixed through the plasterboard and into the wall panel.

Surface mounted radiators – screw fix radiator support brackets through the plasterboard into the wall panel, varying quantity of fixings depending on size of radiator. Screws should be long enough to fully penetrate through the inner OSB face of the *Kingspan TEK® Building System* panel.

Fixing single layer plasterboard directly to the solid *Kingspan TEK® Building System* wall panel means there are no restrictions on where radiators can be situated. Also there is no extra labour involved, unlike timber frame where noggins have to be installed for fixing units such as radiators.

#### Option 2 – Single Layer Plasterboard on Timber Battens

Surface mounted pipework – pipe clips can be screw-fixed through the plasterboard and timber battens and into the *Kingspan TEK® Building System* wall panel. Where it is not possible to fix pipe clips through the timber battens, seek guidance on suitable fixings from the pipe clip manufacturer.

Surface mounted radiators – install noggins at locations where items are to be fixed. Noggins should be the same depth as the timber batten framework and should be fixed to the inner OSB face of the *Kingspan TEK® Building System* panel using appropriately sized screw fixings. Screws should be long enough to fully penetrate through the OSB. Radiators can be fixed through the plasterboard to the noggins using appropriately sized fixings.

Alternatively, in the case of rooms with many fixing points, or rooms that may be remodelled, e.g. kitchens, 18 mm plywood may be fixed to the timber battens, using either drywall screws at 300 mm centres, or large headed galvanised clout nails at 150 mm centres, before the plasterboard is installed.

Consideration should be given to the location of wiring (see section 14.6 Option 2) prior to the installation of noggins to ensure they do not obstruct service voids up the face of the *Kingspan TEK® Building System* wall.

## 14.6 Wiring

Where possible run wiring through internal stud partition walls. However, if it is necessary to run wiring in *Kingspan TEK® Building System* walls or roofs there are two possible methods.

### Option 1 – Double Layer Plasterboard Fixed Directly to Panels

A double layer of 12.5 mm plasterboard should be used. The layer closest to the *Kingspan TEK® Building System* panel should be chased out to create a cavity for services. The second layer should be 12.5 mm vapour check plasterboard. Both layers should be fixed in accordance with manufacturer's instructions.

### Option 2 – Single Layer Plasterboard on Timber Battens

A single layer of min. 12.5 mm plasterboard on min. 25 mm deep by 50 mm wide vertical timber battens should be used. The plasterboard should be fixed in accordance with manufacturer's instructions.

Where services need to be fixed and there is an additional layer of insulation, e.g. *Kingspan Thermawall TW55*, fixed to the inside of the *Kingspan TEK® Building System* panels, a service cavity can be created by installing a single layer of min. 12.5 mm plasterboard on min. 25 mm deep by 50 mm wide vertical timber battens.

In all cases the need for electrical sheathing / conduit should be assessed in accordance with Building Regulations / Standards and BS 7671: 2000 (Requirements for Electrical Installations).

Where an electrical back box must be fixed to a *Kingspan TEK® Building System* wall or roof, the electrical back box can be either surface mounted, or the service cavity must be sufficiently wide to accommodate a flush fitting electrical back box. Under no circumstances should the OSB/3 facing and / or the insulation core of the *Kingspan TEK® Building System* panels, or any internal insulation, be 'chased' out to accommodate service fittings.

## 14.7 Internal / Partition Walls

Internal / partition walls are typically supplied as kiln dried timber stud components. Internal / partition walls can also be built from other components e.g. steel frame, *Kingspan TEK® Building System* panels.

Where cabled services are required, it is recommended that they be fixed into a timber or steel stud wall. However, where cabled services need to be fixed to an internal wall that is constructed from *Kingspan TEK® Building System* wall panels please follow the directions given in section 14.6

Where cabled services do not need to be fixed to the *Kingspan TEK® Building System* wall panel, a single layer of 12.5 mm plasterboard can be fixed direct to the wall panel.

## 14.8 Cabinet and Boiler Attachment

### 14.8.1 Cabinets

Cabinets can be fixed anywhere along the surface of *Kingspan TEK® Building System* wall panels using suitable screw fixings. For optimal strength, cabinets should be hung before the wall panels have been lined with plasterboard.

Where cabinets have to be screw fixed through either single or double layer plasterboard fixed directly to panels use fixings that will penetrate through the cabinet backs and fully penetrate the internal OSB/3 facing of the wall panel. Where a single layer plasterboard has been installed on battens, noggins should be installed in the correct position to accept fixings, prior to the installation of the plasterboard. Screw fixings should go through the battens / noggins into the wall panel.

### 14.8.2 Boilers

When an appliance is not suitable for direct mounting on a wall panel it should be separated from the wall structure by a 75 mm air gap or by 25 mm of non-combustible material. The latter is usually achieved by adding a 12.5 mm thick layer of non-combustible board to the plasterboard lining.

Wall mounted boilers should be fixed to the panel as per the boiler manufacturer's instructions using fully threaded screws.

In both instances, a pre-formed opening is to be framed out using 40 x 140 mm timber scabs nailed at 50 mm minimum centres to receive a flue leaving a 25 mm gap all round. When a twin walled flue is used, the minimum distance is measured from the outer face of the inner flue. The flue hole should always be lined with a non-combustible / fire-resistant collar.

**Caution: If in doubt about fixing to Kingspan TEK® Building System contact Kingspan Insulation Technical Services on 01544 387 382.**

## Appendix A: Cutting And Routing Panels

### A.1 General

The *Kingspan TEK®* Building System should arrive on site with all panels pre-cut and pre-routed for insulated splines, timbers, beams and purlins. In the event that on-site modifications are made to the plans, or if other cuts or routed grooves are required, instructions for that work are presented below.

**Caution:** Always contact your *Kingspan TEK®* Delivery Partner before making alterations to *Kingspan TEK®* Building System panels.

### A.2 Cutting

*Kingspan TEK®* Building System panels can be cut with large diameter circular saws. However, a handsaw may be required for finishing some mitre cuts, corner cuts around windows and doors if a second pass of the blade from the opposite side is not possible.

### A.3 Routing - General

All *Kingspan TEK®* Building System panels should arrive on site pre-routed. In the event that the panels need routing on site, it should be done in a clear area with plenty of room to manoeuvre using only the correct tools. Wear goggles and a dust mask for safety. Do not over rout the panels.

#### A.3.1 Routing – Solid Timber Spline Joints

A 80 mm x 140 mm timber post joint is made by making a full width rout 50 mm deep in both *Kingspan TEK®* Building System panels to be joined.

#### A.3.2 Routing – Fully Inset Timbers

For a fully inset 40 mm x 140 mm timber (around door and window openings, at wall corners, etc.), 50 mm of insulation core is routed out from the panel edge.

## Appendix B: *Kingspan* **TEK**® Building System Ancillaries List

Timbers	Specification
Soleplate	Min. 172 x 40 mm pre-treated C24 grade with preservative
End timber, headplate, bottomplate, edge timber	40 x 140 mm timber C16 grade
Timber post	80 x 140 mm timber C24 grade (unless stated otherwise)
Insulated Spline	80 x 140 mm OSB/3
Beams	Specification
I-beam	As specified by structural engineer
Floor beam	As specified by structural engineer
Purlin	As specified by structural engineer
Ridge beam	As specified by structural engineer
Panel Fasteners	Size
Galvanised ring shank nails (Paslode)	2.8 x 63 mm, 3.1 x 90 mm
Galvanised twist shank nails	3.75 x 32 mm
Round wire nails	3.35 x 65 mm, 3.75 x 75 mm
FastenMaster HeadLOK Screw	6.0 x 225 mm
Sealants	Pack size
Expanding urethane sealant	750 ml cans in boxes of 12
Silicone sealant	600 ml tubes
Other Ancillary Items	Specification
Joist hangers	As specified by structural engineer
Scabs	As specified by structural engineer
Rimboard	32 – 60 mm thick engineered timber beam
Shims	2 mm, 3 mm, 4 mm, 5 mm, 6 mm

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## Appendix C: Risk Assessment

Designer:		Project:				
Job No.		Kingspan TEK® Building System	Date:			
Ref. No.	Activity / Element	Potential Hazards	Risk Rating			Action taken at design stage
			L	S	R	
1	Site - general	Unauthorised access to site.	1	2	2	None
		Slips and trips	2	2	4	None
2	Working spaces and working platforms	Working at height - risk of falling	3	3	9	The System is designed to incorporate floor decking at the earliest possible time and is weather resistant.
		Collapse of temporary structures	2	3	6	None
3	Materials / substances	Manual handling / musculo-skeletal injuries	2	2	4	Design to allow mechanical handling wherever possible. Ensure unit weights and sizes of materials are reduced to acceptable levels where manual handling is unavoidable. Provide adequate information re weights etc.
		Carcinogenic materials	1	1	1	Cutting of components is undertaken in a controlled factory environment to minimise any risk from prolonged exposure to wood dust.
		Respiratory injuries	1	1	1	Cutting of components is undertaken in a controlled factory environment to minimise any risk from prolonged exposure to wood dust. Assembly of panels uses mechanical fasteners and adhesives only.
4	Erecting, constructing structures and wall / roof sections	Collapse - temporary instability	2	3	6	Minimise risk of temporary instability during construction. Agree erection sequences and the details of temporary support measures where critical.
		Collapse - temporary loadings during construction	2	3	6	Maximum construction loadings shown on drawings where appropriate.
		Falls from height	3	3	9	The System is designed to incorporate floor decking at the earliest possible time and is weather resistant.
		Handling major components	2	3	6	Consider access, storage, erection procedures and lifting details for large components.
5	Future maintenance, repair, alteration, dismantling and/or demolition	Unfamiliar construction	2	2	4	Provide adequate information regarding design parameters, construction details, design loadings and specific alteration and demolition hazards for inclusion in the health and safety file.
		Hazardous materials and substances	1	1	1	Provide adequate information regarding design parameters, construction details, design loadings and specific alteration and demolition hazards for inclusion in the health and safety file.
		Fire	1	3	3	Design to current Building Regulation requirements.

Key: L = Likelihood, S = Severity, R = Risk = L x S  
1 = Low, 2 = Medium, 3 = High

Common Operations	
Possible control Options (Contractor)	
Y	Fit hoarding to scaffold.
Y	Ensure all components are correctly stored and site is organised and tidy.
Y	Follow accepted practice for guarding against falling by protecting edges and openings in floors.
Y	Provide adequate bracing to ensure temporary stability structures of walls. Ensure working platforms and scaffold are properly designed and erected.
Y	Follow accepted practice for manoeuvring large objects in accordance with contractors standard method statements that cover craneage, personal protective equipment PPE and trained staff.
Y	Provide PPE as per COSHH assessment sheets where necessary.
Y	Provide PPE as per COSHH assessment sheets where necessary.
N	Contractor to write SPECIFIC method statement defining the erection sequence to minimise risk of instability. Use only experienced staff familiar with procedures.
Y	Contractor to familiarise himself with drawings and specifications contained in health and safety plan.
Y	Contractor should maximise the amount of pre-assembly of components in safe areas prior to lifting and assembly. Follow contractors standard method statement/recommendations for protecting against falling.
Y	Plan for manoeuvring large objects following guidance in contractors standard method statements that cover craneage, PPE and trained staff.
Y	Ensure all project information is compiled in health and safety file.
Y	Ensure all project information is compiled in health and safety file.
Y	Ensure all project information is compiled in health and safety file.

# The Kingspan TEK® Building System Construction Manual

## Appendix D: *Kingspan* **TEK**® Building System Essential Tool List

Item	Suitable Specification	Quantity per Scheme
Müba steel wall braces		Min. 20 pieces in size 1 Min. 5 pieces in size 2
Surveyors level and tripod		1
Measuring staff in mm		1
Air nailer	Bostitch Coil Nailer model N80 / N100 (coil nails) or Paslode Strip Nailer (strip nails)	2
Air compressor	400 lt per min. loading capacity	1
Rubber air hoses		50 m
Silicon dispenser for 750 ml foil tubes		2
Foam gun		2
Chain hoist		2
Lifting belts		50 per kit
1 ton lifting belts	1.8 m long	4 per scheme
Ratchet tool, e.g. a rucki zucki nick nack		3
Lorry straps	8 m long and 15 m long without hooks	2 of each
Hammer stapler	Bostitch model H2B Duofast	1
8-foot stepladder	Industrial grade	2
20-foot extension ladder	Industrial grade	2
Hotbox for expanding urethane sealant (permits maximum sealant yield, needed in cool to cold weather, also when foam has reached expiration date)		1

*NB. This equipment is required over and above a normal kit of standard carpentry handtools (manual and powered)*

## NOTES

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# Contact Details

## Customer Service

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## Technical Advice

Kingspan Insulation supports all of its products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors. This includes a computer-aided service designed to give fast, accurate technical advice. Simply phone the **Kingspan TEK®** Technical Service Department with your project specification. Calculations can be carried out to provide U-values, condensation / dew point risk, required insulation thicknesses etc... There after any number of permutations can be provided to help you achieve your desired targets.

The **Kingspan TEK®** Technical Service Department can also give general application advice and advice on design detailing and fixing etc... Site surveys are also undertaken as appropriate.

The **Kingspan TEK®** British Technical Service Department operates under a management system certified to the BBA Scheme for Assessing the Competency of Persons to Undertake U-value and Condensation Risk Calculations.



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## Literature & Samples

Kingspan Insulation produces a comprehensive range of technical literature for specifiers, contractors, stockists and end users. The literature contains clear 'user friendly' advice on typical design; design considerations; thermal properties; sitework and product data.

**Kingspan TEK®** technical literature is an essential specification tool. For copies please contact the **Kingspan TEK®** Marketing Department or visit the **Kingspan TEK®** website, using the details below:

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