

Kingspan

Installation guide

Walls & ceiling



WORK SAFETY

Work safety shall always be prioritized and be followed according to national regulations and building site rules.

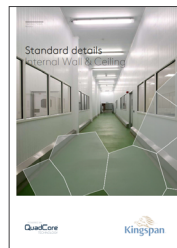
In regards to installation of sandwich panels, Kingspan remind of the following pre-cautions.

- Wear protective clothing and equipment when handling the panels to protect from sharp corners and edges, dust from sawing, etc.
- No personell should stand below when lifting panels and bundles.
- Guidelines from lifting equipment should be followed
- Panel installation during strong wind or in general bad weather should always be considered by management on the building site. The panels can easily be caught by wind and can result in risk of accidents.
- Quality check of the panels should be done before installing to avoid any extra unnecessary actions that can cause accidents.

PREPARATION

DETAILS AND ACCESSORIES

In the preparation phase please study the relevant details for the installation. This is to ensure the quality and functionality of the application, and also to be able to order the needed accessories before installation is meant to start.



Make sure to select panel fixings for correct purpose. The fixings should meet the requirement for material, environment, and thickness of panel on the project. Regarding the environment, Kingspan recommend fixings of stainless steel for external walls, cold store and other applications with higher humidity. In environments with high acidity, fixings of acid resistant steel should be considered. In addition to correct type of fixings it's highly important to use the correct amount of fixings per panel to meet the project loads. As part of the delivery Kingspan can calculate the number of panel fixings needed when providing the accessories for the project.

INSTALLATION PLANNING

To ensure efficient installation it's recommended to create a plan before panel delivery. Depending on the project size and complexity it's recommended early in the ordering phase to specify which panels and accessories is first needed to the building site. Kingspan can of course support on this matter in combination of optimizing transport for cost and environmental impact. On request Kingspan can also provide lists of bundles to help with planning where to place the bundles on the building site.

YOU WILL NEED

- ✓ Drilling machine and screw driver with depth limiter and 8 mm socket (0-2000 rpm, torsion moment 1900 Ncm)
- ✓ Metal nibbler, jigsaw, bayonette saw and/or circular saw with hard-metal blade for steel sheets.
- ✓ Plate cutter, folding tongs and pop rivet tongs
- ✓ Installation drawing and panel package list
- ✓ Levelling tools, builder's level, plumb line and measuring tape
- ✓ Sealant gun for joint compound
- ✓ Electrical supply
- ✓ Crane or forklift (Up to 2 tonnes) for unloading, and lifting crane, telescope forklift, scissor lift or forklift for installation depending on the lifting method. The fork width is min. 800 mm and max 1400 mm.
- ✓ Protective cover for open panel package

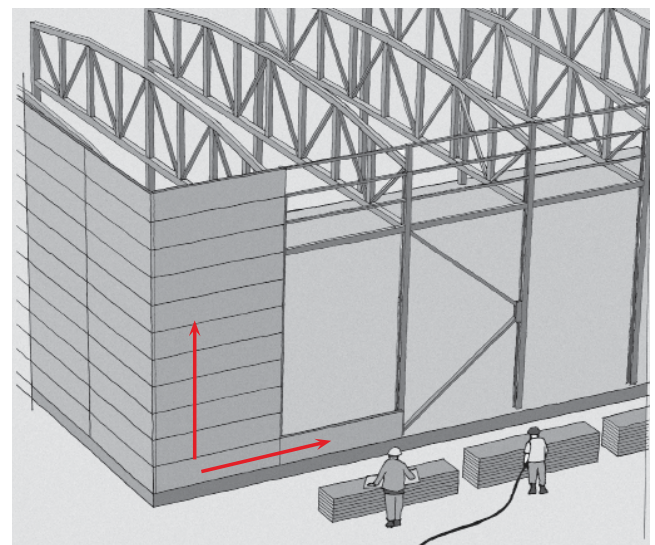
CHECK LIST

Before installation:

- ✓ Sufficient storage space for bundles available
- ✓ Sufficient working space around the framework
- ✓ Framework ready, support widths adequate, and tolerances acceptable
- ✓ Local safety instructions to be observed
- ✓ Quality check of panels, if not satisfying contact Kingspan

During installation:

- ✓ Female joints are clean and open
- ✓ Panel sealant is in order
- ✓ Panel cores are tightly pressed together
- ✓ Screws are not tightened before the following panel is in place
- ✓ Required support width is maintained during installation, min. 40 mm



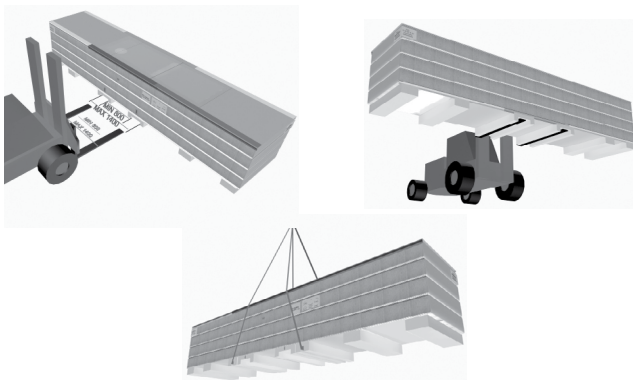
AT THE BUILDING SITE

ACCEPTANCE CONTROL

1. After the truck(s) arrive at the building site you should control that the driver is delivering to the correct building site to avoid any extra work with off- and unloading at a later stage.
2. Do a visual check of the bundles at the truck before unloading. If there are any visible damages you should take pictures and documentate before unloading.
3. If some damages only appear after unloading this should also be documentated in same way as nr. 2. Remember to put a note to the freight papers and get a copy.

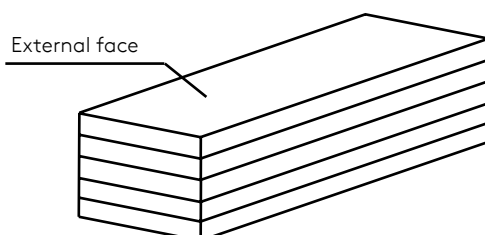
UNLOADING

1. Kingspan inserts a detailed instruction on how to unload and store the panels in each bundle. Read the instruction carefully to avoid unnecessary damages.
2. The bundles have to be lifted carefully to avoid any damages. When unloading with a forklift only one bundle should be lifted at a time. When unloading with crane, bundles longer than 6 meters shall be unloaded with lifting beam and textile strips, with maximum 4 meters between the straps.
3. Place the bundles on even ground and avoid stacking more than one in the height. If the bundles have to be loaded on top of each other, make sure to check that the EPS support feet are free from stone and other sharp-edged objects to avoid any scratches or other damages. During winter time bundles should not be placed on top of each other in risk of it gliding off due to heavy winds or other impact.



PANEL IDENTIFICATION

On the bundles there is placed a document with information about the content, such as order number, panel specification, panel lengths and panel codes. Standard way of packing is external side of the panel facing up. On request the panels can be stacked with interior side up. If both facings are of the same colour, but different coatings, it can be identified by looking at the bundle label to understand which faces up based on what comes first in the product specification.



The panels are delivered with protective film on either the external face or in some cases both sides. This film is to avoid light scratches to the surface during handling and transport. If the protective film stays on for too long there is a risk for glue residues. In order to avoid this the protective film shall be peeled off during or right after installation and must be removed within 60 days from production date. The production date can be found on the bundle label. Removal of protective film must only happen in the range of -25° to 60°C to avoid the risk of glue residues. When stored outdoors the panels shall be protected from direct UV radiation, as this makes the plastic foil porous, which later can make removal difficult. When stored outdoors in the cold months, the protective film becomes stiff. If glue remains on the panels, please contact Kingspan for cleaning instructions.

Claim must be made to Kingspan within 60 days from panels production date. Situations outside our recommendations do not constitute for claim.

PANEL CUTTING AND OPENINGS

Cutting of panels might be required on site. When cutting panels use a circular saw, jigsaw or eventually a metal nibbler to cut the steel sheet. It's important to use suited blades for cutting in metal. A bayonet saw can be used to cut the foam after the steel has been cut.

When cutting openings, pre-drill holes in the corners of opening to be able to enter with a saw and follow the procedure above. Please note that large openings may weaken the panel strength and affect the fire resistance properties of the structure. Static calculation of the panel with openings should be checked to verify that the capacity is sufficient.

It's important to avoid any metal dust on the steel surfaces when cutting to prevent corrosion. To prevent this a metal nibbler is the preferred cutting tool.



HANDLING OF PANELS

The Kingspan panel is a sandwich structure where the core and steel facings act as a composite. If the steel facings are cut across the length of the panel or delaminated from the core, it will reduce some or all of its function. The panels are supplied with finished surfaces and therefore have to be handled with care. If welding or using an angle grinder near panels, the panel surfaces must be protected. Cover opened panel bundles when finishing work for the day.

GENERAL INSTALLATION INFORMATION

APPLICATIONS

The installation procedure and details in the next pages is suited to standard conditions for external and internal applications. Cold, hygienic or other special applications will need to be separately considered. Check webpages for details or contact Kingspan for advise. Handling, lifting and fixing of panels will still be relevant to most applications.

	EXTERNAL WALL	INTERNAL WALL & CEILING
STANDARD CONDITIONS	Int. temp. 10-25 °C	Temp. 10-25 °C
SPECIAL CONDITIONS	Int. temp. <10 °C High humidity Hygienic	Int. temp. <10 °C High humidity Hygienic

ORIENTATION OF PANELS

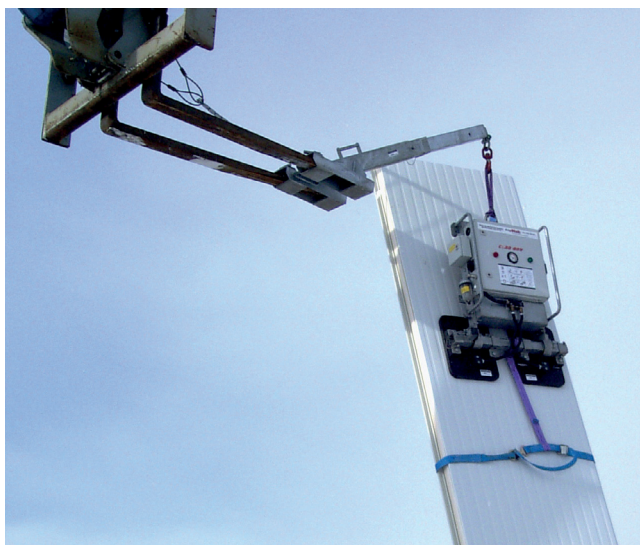
Wall panels can either be installed horizontally or vertically orientated. Horizontal installation are more forgiving due to nature of gravity supporting getting the panels tighter together. Vertical installation requires a higher level of installation work and focus on details in external walls to avoid risk of air and water leakage. For internal walls both orientations can be used to whatever suits the project the most.

LIFTING PANELS

Lift panels using lift aid equipment, such as vacuum lifter or lifting clamp. Remember to use an additional safety line while lifting.

When lifting panels, steer the panel using a line fixed to one edge with a clamp or similar to avoid any uncontrolled rotation. It's prohibited to penetrate the sides of the QuadCore/IPN panels to steer the panel. This action can cause a crack in the longitudinal direction of the panel.

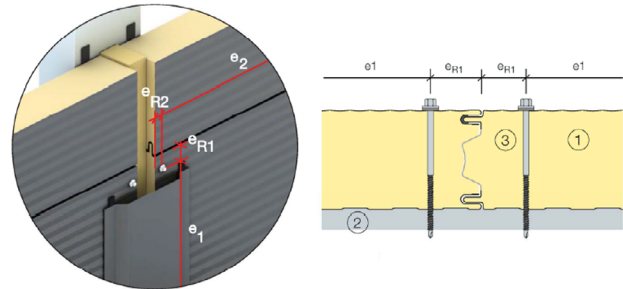
When installing lighter panels on ground level the panels can be lifted in place by truck or manual force.



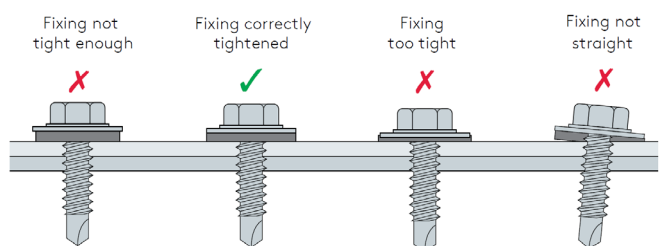
FIXING OF THROUGH-FIX PANEL

Through-fix panels shall be fixed to a substrate according to the information and illustration below:

- ≥ 50 mm from the panel joint (eR1)
- ≥ 20 mm from panel side (eR2)
- ≥ 100 mm between the fixings (e1).



Leave the fixing near the male joint slightly open until the next panel is installed. The screws shall at last be properly tightened according to the illustration below. If the fixings are overtightened it can cause bigger dents in the surface and risk of damaging the rubber washer.



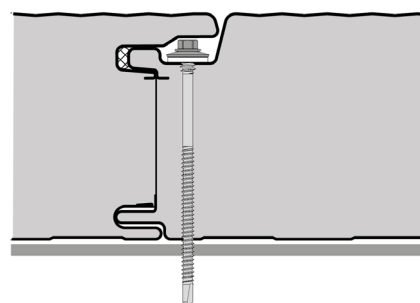
FIXING OF SECRET-FIX PANEL

Secret-fix panels are designed to have invisible fastening method. Following rules for fixings shall be followed:

- ≥ 40 mm from panel side/edge*
- ≥ 20 mm distance between fixings

Based on the information above there is necessary to design the substrate to meet the requirement of this fixing method. For the best solution such cases should be consulted with Kingspan at early stage in the project.

When secret-fix panels are installed vertically in external walls it can be used through-fix method at the base due to the detail with cover flashing. Please look at page 6 where this is illustrated.



*possible to place closer than 40 mm, but will be risk of a visual dent on the steel surface.

INSTALLATION OF EXTERNAL WALLS

HORIZONTAL ORIENTATION

1. The panels have to be installed horizontally aligned. Start with taking levels of the foundation in order to find the highest point. Mark this height on the external side of the frame and use the height marks when installing the panels.

2. Apply base sealant ①.

3. Install a perforated U-channel ② on the foundation 8 mm off the frame. Fix the U-channel at 800 mm distance.

4. Apply sealing tape ③ to columns and beams.

5. Install the drip flashing ④ with 100 mm overlap and apply sealant in the overlap. If the drip flashing is meant to be installed onto the panels it can wait until the panel has been installed.

6. Fill the U-channel with insulation ⑤.

- QuadCore/IPN panels: fill with canister based foam or mineral wool.
- K-Roc panels: fill with mineral wool.

7. Lift the panel onto the U-channel. Use a quick grip to hold the panel in place.

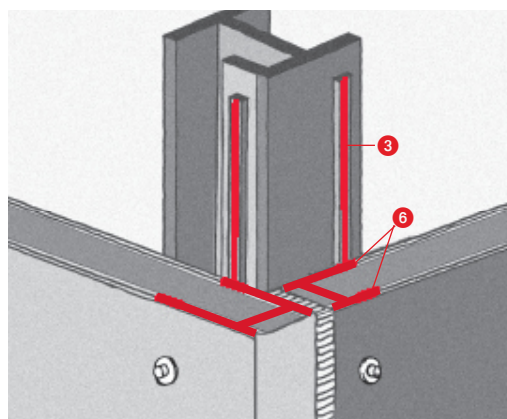
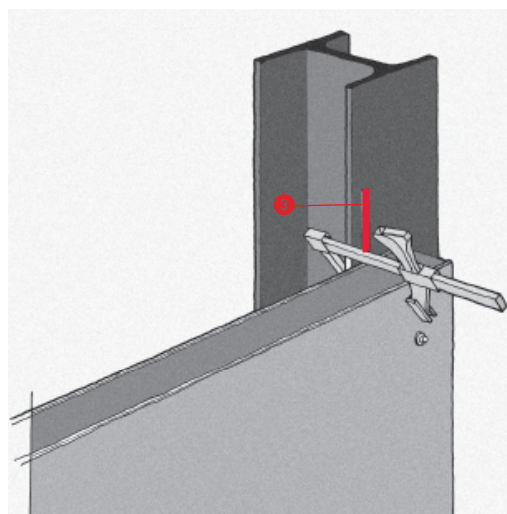
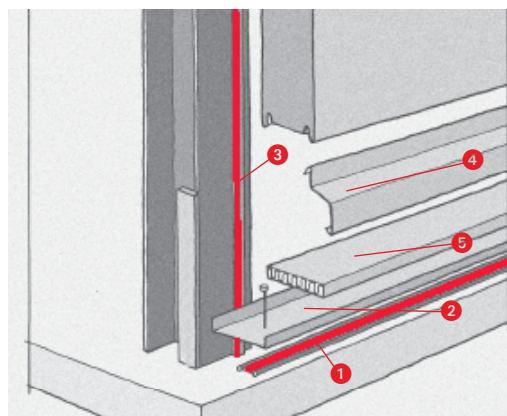
- Leave a 20 mm gap for vertical joints and in corners.
- If the panels need to be sealed on-site, apply sealant in the grooves of the joint right before lifting to place.

8. Fix the panel to the column following the procedure on page 4. The correct amount of fixings should be applied right away, or within reasonable time in case of high winds during the building period.

9. Add sealant ⑥ to relevant places before installing the next panel on top (the sealant in the external gap can be applied at a later stage).

10. Install the next panel on top and make sure the panels are tightly compressed together before fixing it to the column.

11. After or during installation, finish off all details of the building following our standard details.



INSTALLATION OF EXTERNAL WALLS

VERTICAL ORIENTATION

1. Apply base sealant ①.

2. Install a L-profile or beam ② on the foundation flush with the outside of the columns. Fix the eventual L-profile at 800 mm distance.

3. Apply sealing tape ③ to the L-profile and the beam(s).

4. Fill canister based foam or mineral wool ④ before installation. This can be also applied after panel has been installed. In such case leave a gap of 20 mm using distance blocks.

5. Lift the panel into place. Use a quick grip to hold the panel in place while fixing. Leave a 20 mm gap in corners. If the height of the building require two panels in the vertical direction, check our standard details.

6. Fix the panel to the L-profiles and beam(s) following the procedure on page 4. The correct amount of fixings should be applied right away, or within reasonable time in case of high winds during the building period.

7. As stated in **Orientation of panels** at page 4 it requires high level of installation work. As a minimum the panels should have sealing tape in the grooves of the joint ⑤ using  **AIR** option. To minimize any risk it would be highly recommended to use on-site applied sealant in grooves of the joint.

8. When installing the next panel it should be tightened using one of following tools:

- Strong force tool with suction pads on both sides of the joint.
- Lifting straps, make sure to protect corners when using this method.
- Rent vacuum aid from Kingspan.

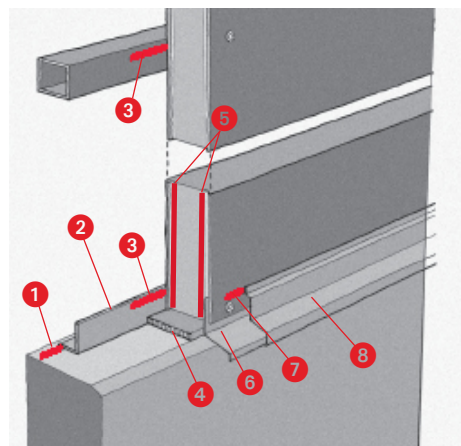
9. During installation make sure to check that the panel are still vertically aligned. Also control the gap between the panels to see if it has been tightened to satisfactory level.

10. Install safety flashing ⑥ below the panels. The safety flashing should start approximately 35 mm from the external side of the panel, surpassing the backside of the vertical joint. This is to collect the eventual water that runs along the joint.

11. Fill sealant in the module gap for each joint up to the height of the drip flashing.

12. Use sealant or flashing tape ⑦ before installing the drip flashing ⑧.

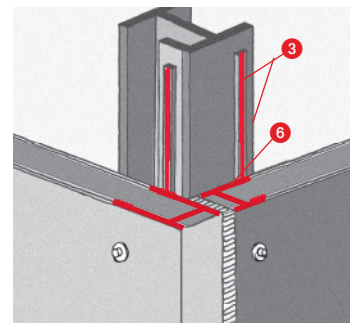
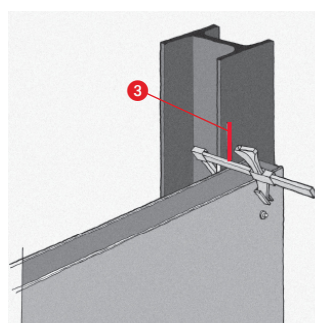
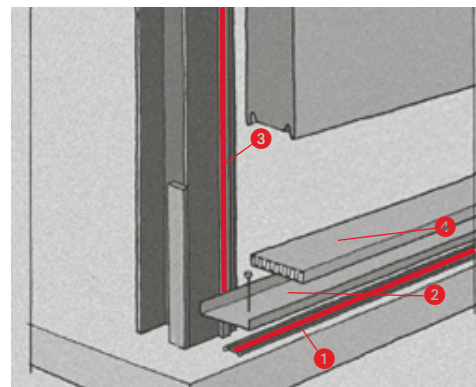
13. After or during installation, finish off all details of the building following our standard details. Remark that above openings, such as windows and doors, or where a roof meets the facade it should be used some drainage flashings to collect the water that runs along the joint.



INSTALLATION OF INTERNAL WALLS

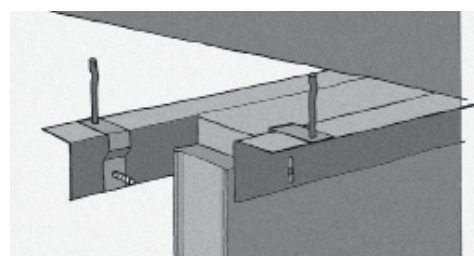
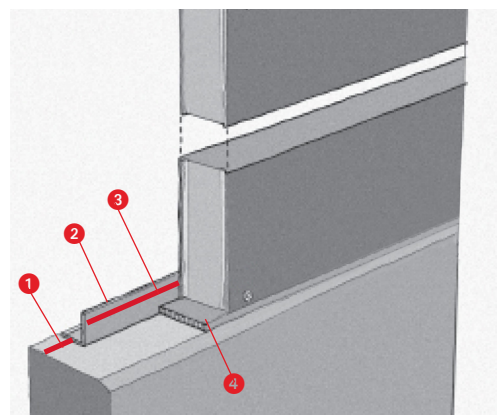
HORIZONTAL ORIENTATION

1. Apply base sealant ❶, if necessary in the project.
2. Install a U-channel ❷ to the floor. Fix the U-channel at 800 mm distance.
3. Apply sealing tape ❸ to columns and beams, if necessary in the project.
4. Fill the U-channel with insulation ❹.
 - QuadCore/IPN panels: fill with canister based foam or mineral wool.
 - K-Roc panels: fill with mineral wool.
5. Lift the panel onto the U-channel. Use a quick grip to hold the panel to hold the panel in place.
 - Leave a 20 mm gap for vertical joints and in corners.
 - If the panels need to be sealed on-site, apply sealant in the grooves of the joint right before lifting to place.
6. Fix the panel to the column following the procedure on page 4.
7. Add sealant ❻ to relevant places before installing the next panel on top, if necessary in the project.
8. Install the next panel on top and make sure the panels are tightly compressed together before fixing it to the column.
9. After or during installation, finish off all details of the building following our standard details.



VERTICAL ORIENTATION

1. Apply base sealant ❶, if necessary in the project.
2. Install a profile ❷ on the floor and in the top. Fix at 800 mm distance.
3. Apply sealing tape ❸ to the profile and the beam(s), if necessary in the project.
4. Apply insulation ❹ before the panel is lifted in place.
 - QuadCore/IPN panels: fill with canister based foam or mineral wool.
 - K-Roc panels: fill with mineral wool.
5. Lift the panel into place. Use a quick grip to hold the panel before fixing.
6. Fix the panel to the profiles.
7. When installing the next panel it should be tightened using one of following tools:
 - a. Force tool with suction pads on both sides of the joint.
 - b. Lifting straps, make sure to protect corners when using this method.
 - c. Rent vacuum aid from Kingspan.
8. After or during installation, finish off all details of the building following our standard details.

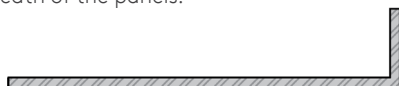


INSTALLATION OF CEILINGS

Install the panels in accordance with the installation drawings. Panels can be lifted using e.g. a scissor lift. Use soft material against the panel surface to avoid surface scratches.

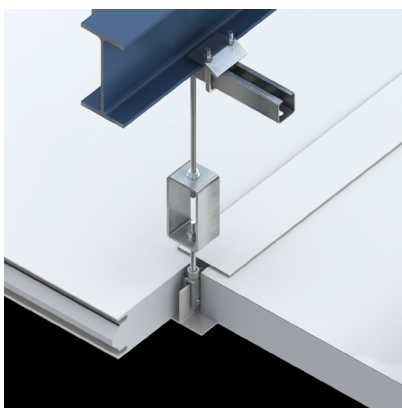
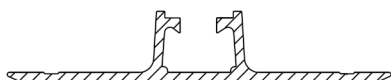
Ceiling panels are normally installed according to the following two methods:

- a. Panels fixed underneath of the beam system. Due to safety reasons it's recommended to fix through a continuous L-profile underneath of the panels.



During installation make sure to tighten the panels properly. Use a strong force tool with suction pads on both sides of the joint. After the panels have been installed the joints should be filled with canister based foam or mineral wool and at last finish off according to our standard details.

- b. Panels supported by a suspended ceiling system. Kingspan can provide omega profiles that are installed to threaded rods that are suspended from beams, floor or roof. The suspension system gives a nice flat surface underneath the panels. When installing the panels with the omega system it should be a gap of 40 mm between the panels.



During installation make sure to tighten the panels properly. Use a strong force tool with suction pads on both sides of the joint. Insert flashings screws in the pre-drilled holes of the profiles. After the panels have been installed fill the gap from the top side with canister based foam or mineral wool and finish of the detail. At last it's recommended to use a flat steel sheet to bind the top steel layers.

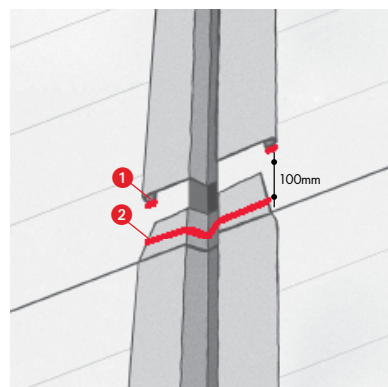
NOTE!

- Check with the designer for which loads the ceiling shall be dimensioned.
- Walkways have to be protected as follows:
 - Heavy foot traffic, such as ascending spots, doorways and installation location: load-distributing boards on top of 10–20 mm thick rigid mineral wool
 - Other walkways and installation places: a 15 mm thick plywood board.
- Permanent walkways: loads should be transferred to the bearing frame



INSTALLATION OF FLASHINGS

Flashings play a decisive part in the installation. Often the entire installation work is judged based on the flashings so the work has to be done with high standard. Flashing are delivered to site well packed, including a packing list showing types and quantities. If flashings are delivered with a protective film it has to be removed before installation.



In external walls it's recommended to use a flashing tape ① between the panel surface and flashing and between overlaps it should be applied sealant ②. The flashings shall only be fixed to the panels and not to each other. Use coated flashing screws or pop rivets of steel or aluminium min. Ø 4.8 mm at 300 mm distance.

Notes

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For applications not explicitly covered within this datasheet, consultation with our Technical Advisory Service is strongly advised to ensure the product meets your specific requirements. Users are responsible for verifying the product's suitability for their particular needs and for ensuring compliance with all applicable laws and regulations.

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