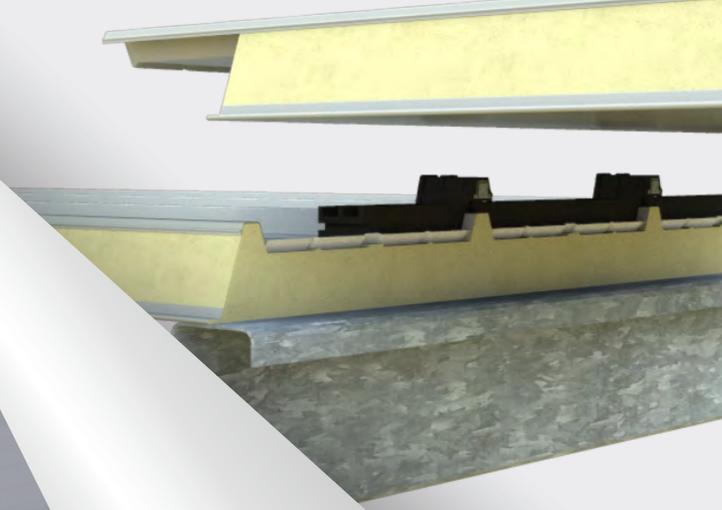


# securelap®

End-Lap Solution for Insulated Panel Roofing



## The New Standard for Commercial Roof Laps

SecureLap® provides a solution to the troublesome “sheet to sheet endlap” and offers a real alternative to the more expensive “expansion joint” system which requires extra purlins and purlin cleat modifications.

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## Overview

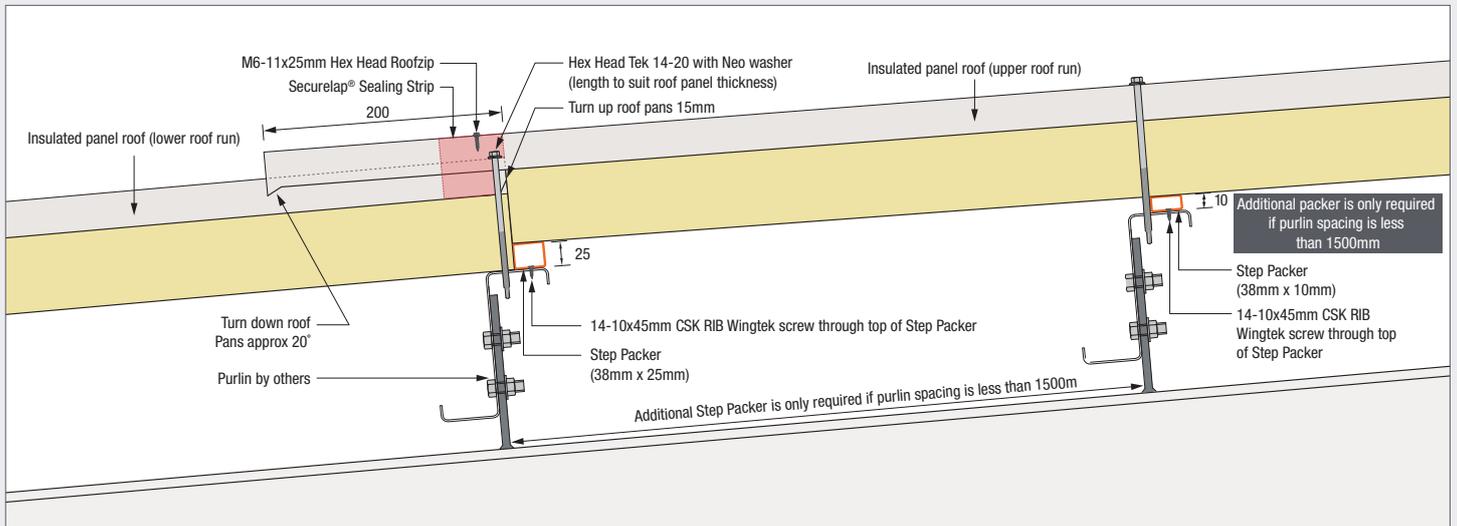
SecureLap® is a unique roof lap jointing system developed specifically for insulated panel roofing. SecureLap® changes the way long run panel roof runs are designed and installed. SecureLap provides a solution to the troublesome “sheet to sheet endlap” and offers a real alternative to the more expensive “expansion joint” system which requires extra purlins and purlin cleat modifications.

The SecureLap® roof jointing system is designed for pierced fixed panel roofing. It allows for the installation of lapped panels on standard purlin framing and provides a combination of a strong joint and a weather-resisting seal between lapped sheets.

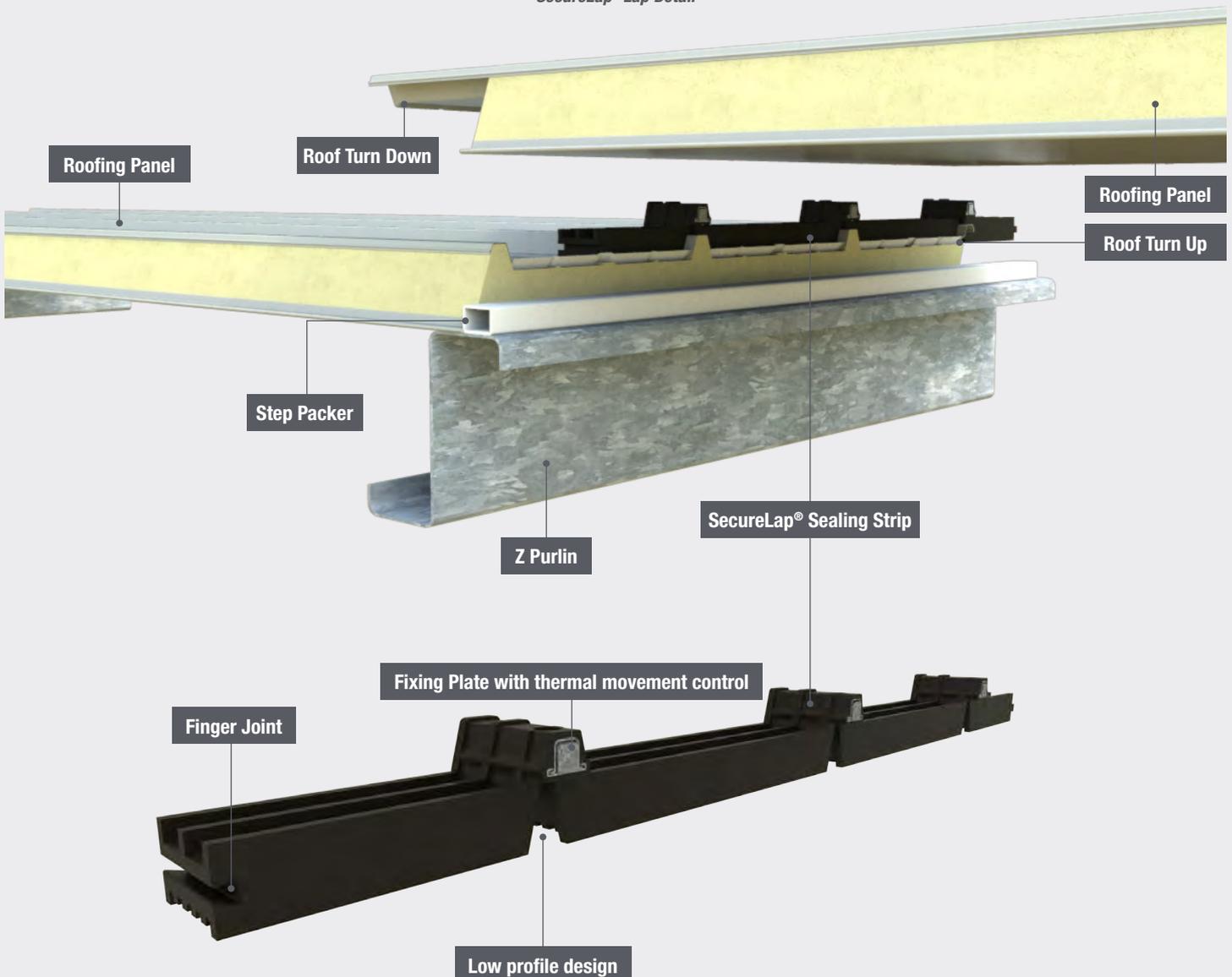
SecureLap® is significantly easier to install than current lapping alternatives. After the lower level panel is secured to the bottom half of the jointing purlin, the SecureLap sealing strip is fitted. The upper level sheet packer is then fitted to the top half of the jointing purlin before the upper level panel is fitted. (See more details in the installation process). Patented, cutting edge technology provides strength and water ingress security while preserving the integrity of the existing roof warranty.

## Features/Benefits

- Cutting edge insulated panel end-lapping system for long monoslope roof
- Uniform purlin height requires no step in supporting structure or the need for structural modification. No additional purlins are required
- Suits profiles for roof slopes as low as 2°
- No Sealant or butyl tape required allowing easy panel alignment during installation
- Allows roof turn up for added security against water ingress
- Low profile seal provides improved visual roof continuity
- Independently weather tested by the CSIRO
- BlueScope Steel endorsed
- Significant savings on installation labour
- Conforms to Australian Standards AS 4046.9
- Mechanical connection and roof turn-up provides water tight confidence
- Sealed lap providing a reduction in air leakage
- Lower transport and handling costs
- Allows thermal expansion and contraction
- Preserves the existing warranty of the roof



*SecureLap® Lap Detail*



## Selection and Specification

### Applications

SecureLap® addresses all the major concerns associated with current end-lapping techniques for insulated panel roofing while still allowing connection over one purlin. It is suitable for single or multiple insulated roof panel laps on long roof runs, subject to pitch and water carrying capacity (see example for MetecnoSpan® below). The SecureLap® system comprises of three main components, the polyurethane packer strip, the rubber sealing strip which houses the third component, the sliding fixing plate.

MetecnoSpan® Panel - Maximum Roof Length			
Slope in degrees	Slope in percentage	Flow in litres per second	Maximum Roof Length in metres
2	3.49	4.09	221
2.5	4.37	4.58	247
3	5.24	5.02	271
3.5	6.12	5.42	293
4	6.99	5.79	313
4.5	7.87	6.15	332
5	8.75	6.48	350
5.5	9.63	6.8	367
6	10.51	7.1	383
6.5	11.39	7.4	400
7	12.28	7.68	415
7.5	13.17	7.95	429
8	14.05	8.21	443
8.5	14.94	8.47	457
9	15.84	8.72	471
9.5	16.73	8.96	484
10	17.63	9.2	497
Rainfall Intensity 200mm per hour			
Flow depth of 22.2mm (60% height of underlap) and a base width of 293mm			

### Thermal Expansion

The patented SecureLap assembly provides a flexible 75 mm wide sealing strip, moulded to suit the roofing profile. It includes the steel rib fixing assembly within the moulding. This fixing assembly allows both the primary and overlapping sheet connection to slide to facilitate minor thermal movement common in this type of connection.

### Testing

Current sheet to sheet lapping systems rely on silicone sealant or multiple runs of butyl tape. This sealant or tape can become compromised during roof panel alignment. Tested to 2°, SecureLap allows the underlap sheet to be turned up (weathered) providing a mechanical barrier to water ingress while the compressive closed cell sealing system stops wind driven rain entering the lap connection. No sealant or butyl strips are required and SecureLap is Weather Tested, conducted by CSIRO (Figure A1), to Australian Standards AS 4046.9-2002 (R2015), confirming suitability for Australia's harsh conditions.



Figure A1

### Architectural Specification

SecureLap® roof lap jointing system should be installed to all panel roof laps in accordance with manufacturers' instructions. For panel roofing, ensure you specify the right SecureLap® profile to match the roof profile selected.

### Warranty

Current sheet to sheet end-lapping techniques often allow the upper and lower level sheets to be in physical contact. During the wet/dry cycle, the protective coating on the steel sacrifices itself to protect the lap cut edge. When the protective zinc coating around the cut edge is exhausted, the cut edge, seeking further protection, attacks the over-lapping sheet (Figure A2). This can ultimately lead to premature failure. In some long run applications thermal movement can shear end-lap fixings and compromise sealant barriers resulting in water ingress.

The BlueScope Steel Warranty excludes corrosion failures associated with 'sheet-to-sheet' end-lapping (refer to BlueScope Technical Bulletin CTB 8 Building Applications). The SecureLap® system addresses both the contact corrosion and expansion issues and has been endorsed by BlueScope Steel as a suitable solution for insulated roof panel end lapping.



Figure A2 - Sheet to sheet end lap corrosion failure

## Design

### Spans / Pressures (non-cyclonic)

When roof panel is used with the SecureLap® roof lap joint system, the non-cyclonic spans and pressures remain unchanged.

#### Example of MetecnoSpan® Span Tables

##### NON-CYCLONIC REGION A&B (ROOF APPLICATIONS ONLY)

PIR Core / 0.42mm Hi-tensile External / 0.5mm Internal Steel Skins.

Maximum uniformly distributed ultimate wind load (kPa) for the given span:

Span (mm)	Multi-span, wind pressure acting outwards			
	Panel Thickness (mm)			
	40	60	80	100
1500	4.01	5.57	6.87	7.31
2700	2.27	3.14	3.86	4.11
3900	1.48	2.20	2.70	2.88
5100	-	1.40	1.83	2.20
6300	-	-	1.23	1.48

*(Refer Bondor/Metecno for other profiles)*

Where the end span adjacent to the joint on the upper level of sheeting is less than 1500mm, a 10mm durable packer should be placed on the purlin below the roofing panel. This reduces the ramping effect caused by the panel step at the lapping purlin and ensures adequate surface water velocity is maintained.

To maintain correct engagement with the supporting purlin a longer fixing screw is required where a packers are used.

### Support Structure

Lap joints using the SecureLap® system do not require the purlins to be stepped or raised. The supporting structural steel can be tailored and detailed so that all the roof purlins are in one plane. Cleats must be arranged to suit purlin spacings consistent with any required change in panel spacing arising from the Spans/Pressures clause above.

### Penetrations and Obstructions

Obstructions to water flow should not be placed across the SecureLap® joint, nor should the joint be crushed by any load. All roof penetrations should be at least 1500mm away from the SecureLap® joint. Check the weight of the penetration & consider the panels ability to support the load in that specific location. Allowances should be made for any diverted water from penetrations to be diverted adequately across adjacent trays so as not to flood any single tray.

### Integration of Skylights

Where required, translucent sheeting must be specified to be lapped at the SecureLap® joint. Translucent sheeting for the lower run should be fixed before laying decking on an upper run. Check with your local translucent sheeting supplier for installation and flashing details.

## Procurement

### Ordering

When ordering roof panels for a SecureLap® joint, details must be provided for the 200mm over-lapping panel "cut back".

Sheets must be measured accurately to ensure the SecureLap® joint is installed over a supporting purlin.

While the SecureLap® components are available ex stock, subject to availability, roof panels require a short lead time.

### Packaging

SecureLap® roof lap joint units are supplied pre-packaged in recyclable cardboard boxes with 50 individual units (for 50m of roof joint width).

25mm Packers are supplied in 4000mm lengths to suit project requirements. If additional 10mm Packers are required, contact us for further information.

Please Note: The preferred arrangement for translucent sheeting when used with the SecureLap® roof lap joint system requires the sheet lap to be at the same position and connected using the joint system for translucent sheeting.

### Serviceability Statement

While walking on panel roofing systems is quite solid under foot, we recommend caution be taken when walking adjacent to any lapped roof area. Do not walk on the overlapping section of the panels. Flat, rubber soled shoes as well as appropriate PPE and fall restraint systems, should be worn when walking on panel roofing. Place feet in the pans of the sheet where possible and avoid walking in the pans adjacent to the rib overlaps, particularly mid-span.

### Good Practice

Bondor/Metecno recommends that good trade practice be followed when using this product, as described in the Australian Standards Handbook HB39. Check with your local translucent sheeting supplier for installation and flashing details.

### Cutting

SecureLap® roof lap joint units can be easily cut across the foam section using a suitable sharp cutting implement. Please dispose of any off-cuts considerately.

## SecureLap Installation Procedure

### Safety

- General Personal Protective Equipment (PPE) including: cut resistant gloves, safety glasses and ear muffs
- Working at heights requirements

### General Tools

- 2 or 3 padded trestles
- Turn-up/Turn-down Tool
- SecureLap® Fixing Locator
- Cold Cut Saw (48TH blade) or Bondor® Panel Saw
- Tungsten Carbide Hole cutter
- Level & Straight Edge
- Electric Drill/Driver & Screw Gun
- Collated Screw Gun for trim fasteners
- Portable Vacuum

### Components

- SecureLap® Sealing Strip to suit roof profile
- 14-20 Hex Head Tek with Neo washer (length to suit roof panel thickness)
- 14-10x45mm CSK RIB Wingtek screw
- M6 – 11x25mm Hex Head Roofzip with Neo washers
- Step Packer (38mm x 25mm)

### Step 1 - Prepping

Where possible panel preparation is normally performed on the ground prior to hoisting. This includes tray turn-ups (figure 1a) for the lower level sheets and turn-downs (figure 1b) for the upper level sheets. A tray turn up of 15mm is required. A turn-up tool is available from Bondor/Metecno.



Figure 1a



Figure 1b

### Step 2 - Install lower roof run

The entire lower panel roof run should be carefully aligned and laid first. As with all lapping connections over one purlin, positioning of the panel to the centre of the lapping purlin is critical. Tack the panel into place at the overlapping rib to multiple purlins before moving onto the SecureLap® connection .



Figure 2

### Step 3 - Install SecureLap sealing strip

Align the SecureLap sealing strip to the bottom edge of the 15mm tray turn-up (performed earlier). Secure the primary fixing screw through the large hole in the top of the fixing plate to the lapping purlin. While the SecureLap sealing strip is quite stable, you should ensure the “finger joint” joining the assemblies, are firmly locked together.

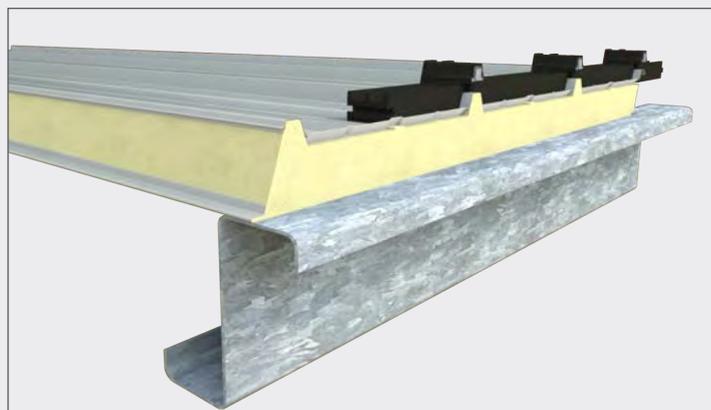


Figure 3



Figure 4

## Step 4 - Step Packer

Fit the Step Packer to the remaining surface of the lapping purlin with Wingtek fasteners that will pass through the upper wall of the packer strip and secure the packer to the purlin via the lower packer wall.

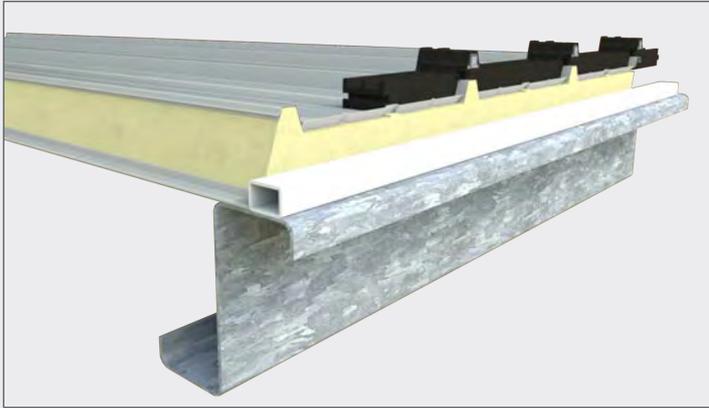


Figure 5

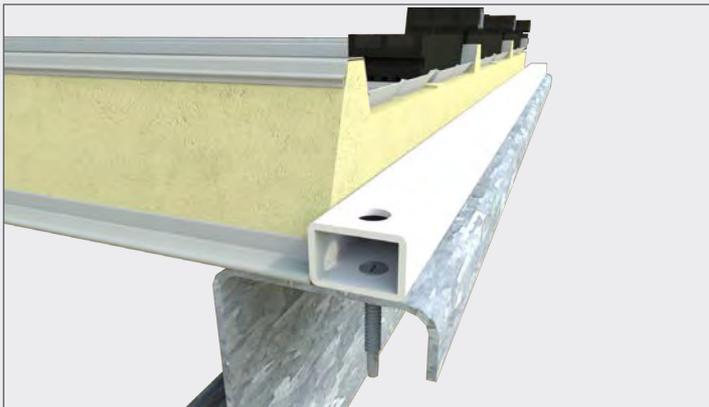


Figure 6

Where the end span adjacent to the joint on the upper level of sheeting is less than 1500mm, a 10mm durable packer should be placed on the purlin below the panel. This reduces the ramping effect caused by the panel step at the lapping purlin and ensures adequate surface water velocity is maintained

## Step 5 - Install upper roof run

The upper level roof panel should be ordered with the 200mm panel cut-back already prepared. Fit the upper level roof panels, aligning ribs and trays to match the lower level roof panels. The bottom surface of the panel now rests on the 25mm Step Packer and should be firmly butted against the end of lower panel. The cut-back of the upper level roof panel will overhang the lapping purlin by the nominated 200mm. Tack the upper level roof panels in place through the over-lapping rib on multiple purlins before moving to the SecureLap® connection.

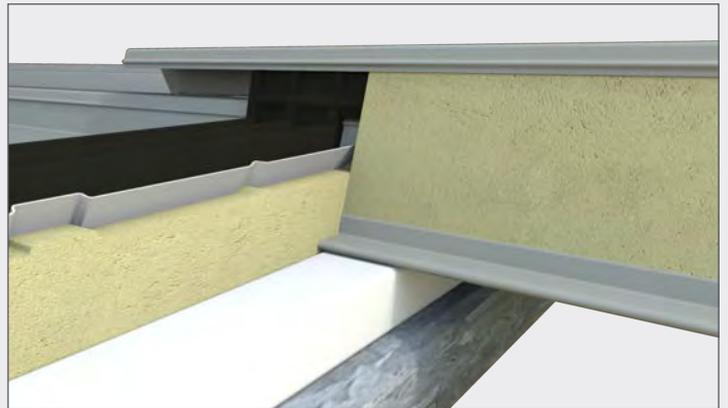


Figure 7

## Step 6 - Secure via SecureLap fixing plate

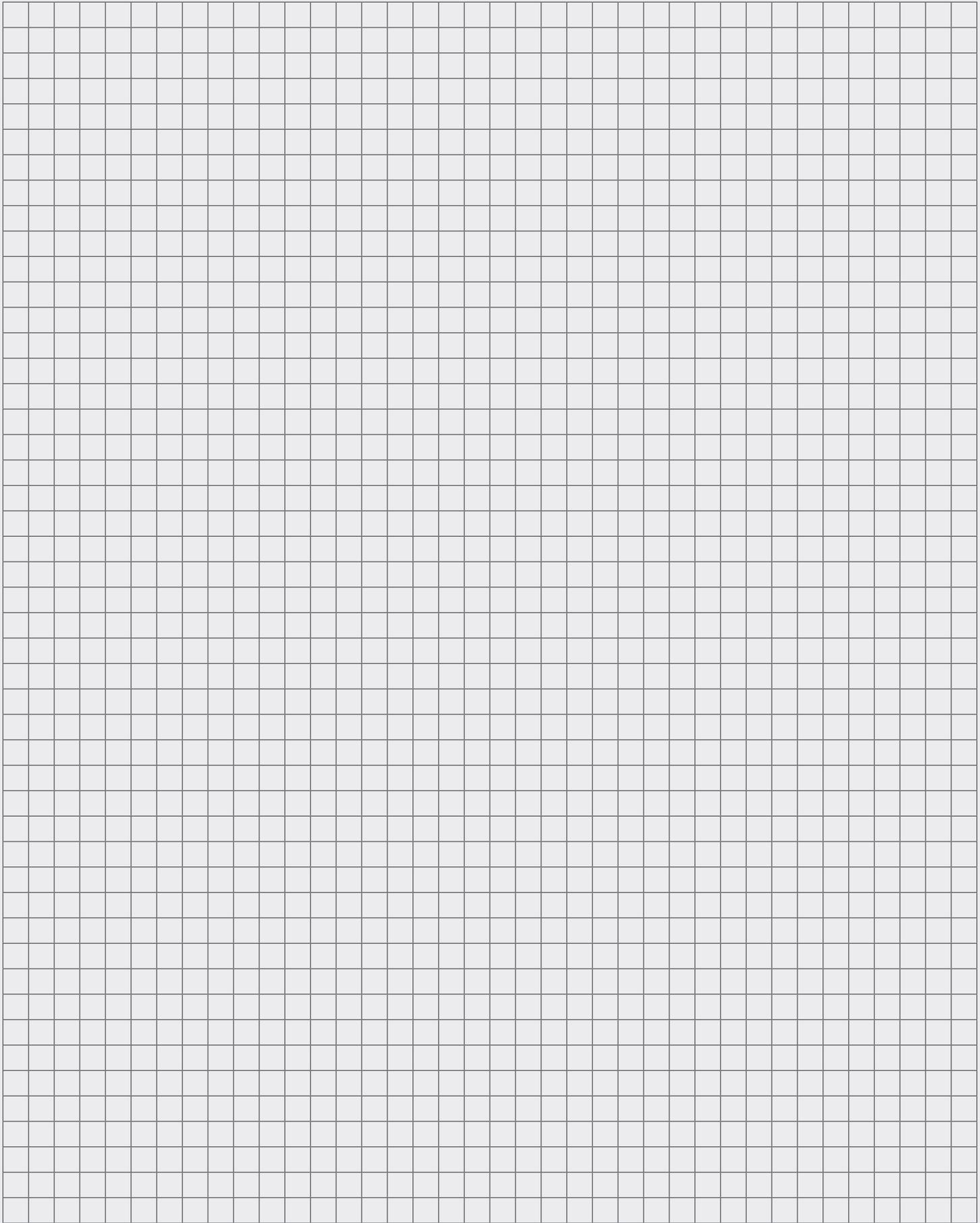
To identify the fixing position on the rib of the upper roof sheet into the concealed fixing plate, insert the SecureLap® Fixing Locator into the upper panel rib. Slide the Fixing Locator in until it comes to rest against the fixing plate. Secure the upper panel through the rib to the fixing plate using M6 – 11x25mm Hex Head Roofzip. This connection will compress the SecureLap® assembly against both metal surfaces forming the water tight barrier.



Figure 8

## Step 7 - Clean up

To prevent surface staining and damage, ensure all the metal swarf and debris is removed from the roof at the end of each day.



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