ENVIROBUILD

Installation & Maintenance Guide

HYPERION®
ALUMINIUM

Guide for Strong-Span Aluminium Decking

STRONG-SPAN

info@envirobuild.com +44 (0) 203 959 1220

Need Help?

EnviroBuild has a large variety of resources and expert help at hand, ready to answer any questions you may have.

Resource Centre

In our online Resource Centre you can find How-to Videos, Technical Downloads, Case Studies and more. Our Resource Centre is a handy place where you can find everything you'll need for your project. Construction methods may change, refer to the Resource Centre for the latest Installation Guide versions.

https://www.envirobuild.com/pages/resource-centre

Contact Us

Our expert team is more than happy to assist you in realising your project, from concept to completion. We can help you with any questions on installation and put you in touch with one of EnviroBuild's trusted installers. If we can help, please don't hesitate to get in touch.

We're available:
Monday to Friday, 8:30am to 6:00pm
Saturday, 9:00am to 3:00pm

Phone:
UK, +44 (0) 203 959 1220
IRE, +353 1 447 0406

Email:
UK, info@envirobuild.com
IRE, ie-info@envirobuild.com

Location:
305-308 Metal Box Factory,
30 Great Guildford St,
London SE1 0HS

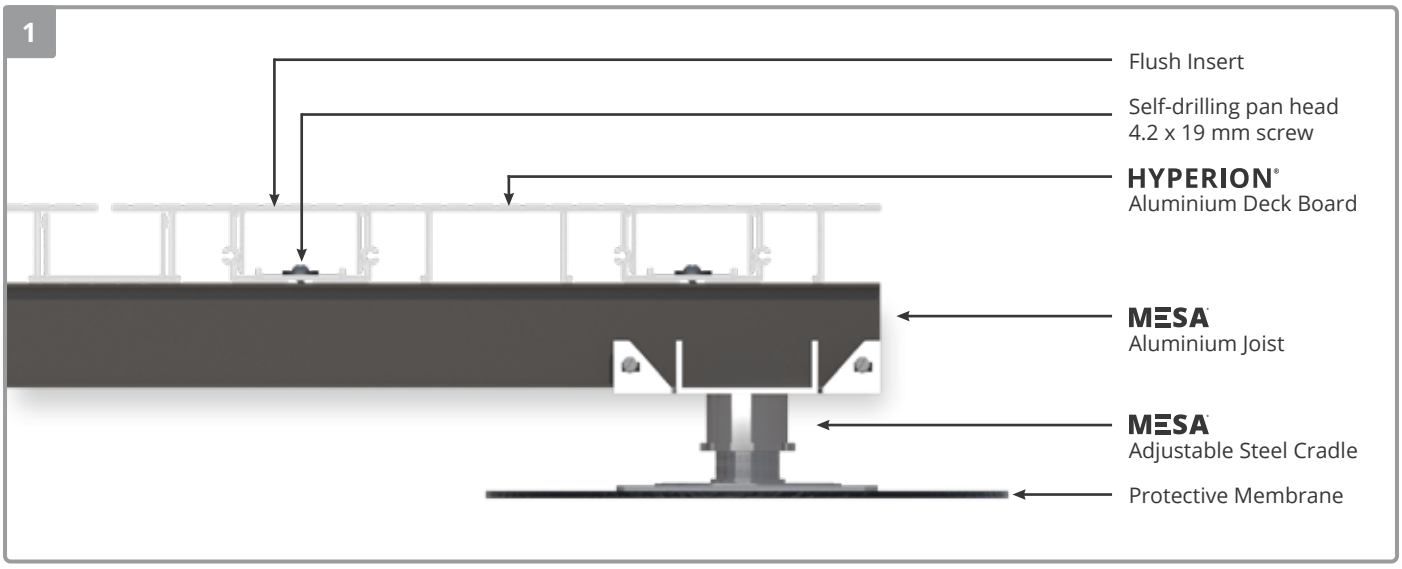
https://www.envirobuild.com/pages/get-in-touch

Please Note

It is the customer's responsibility to determine the suitability of Hyperion® Aluminium Decking for their particular private or commercial installation. It is solely the customer's responsibility to consult with their local building control to determine fire classification project requirements.

Cont. This symbol indicates the section continues onto the following page.

Contents



Installation Overview

With solid flat foundations and flat roof areas, a simple system using MESA adjustable steel cradles can be used *(fig. 1)*. These pedestal support centres can be placed straight onto the ground with a protective rubber membrane and their heights adjusted by rotating the pedestal top.

- **Hyperion® Aluminium Deck Board**
  Beautifully engineered fire-resistant deck boards.
  They are very simply 'hooked' into place and screwed to joists along their channel.
- **Flush Insert/Gap Insert**
  Flush inserts provide a continuous decking appearance, whereas gap inserts will give an appearance of 150 mm wide decking. Both inserts hide screws from view and protect them from weathering. An insert can be flipped upside down and placed between two boards, creating a 6 mm drainage gap.
- **MESA® Adjustable Steel Cradle**
  Twist to adjust levels on uneven or sloping surfaces with minimal effort for fast and effective installation.
- **MESA® Aluminium Joist**
  These low-profile joists can be very easily screwed into the cradle of the steel pedestal.
- **Protective Rubber Membrane**
  A supportive base used in roofing solutions to prevent damage to roof membranes by steel pedestals.

Recommended Tools

- Power drill
- Cutting saw; with blade suitable for aluminium, preferably a mitre saw *(see 'Frequently Asked Questions', page 14)*
- Countersunk and pan head screws
- Spirit level
- Safety boots (steel toe caps and pierce resistant soles)
- Safety gloves
- Eye protection
- Safety helmet

Continue to 'Flat Roof Subframe Installation'

Substructure Spacing

The height dimension of the aluminium joist will determine how often it must be supported. Ensure that the distances between support centres beneath your joists are no greater than below.

Aluminium Joist Profile	Maximum Support Span
20 x 50 mm	550 mm
40 x 50 mm	1000 mm
80 x 50 mm	1750 mm

- This span table is for 2.5 kN/m² with aluminium joists placed at no more than 400, 600, or 1200 mm centres.
- For more detail on joist support spacing visit page 15
- A safety factor of 1.5 is included in spacings

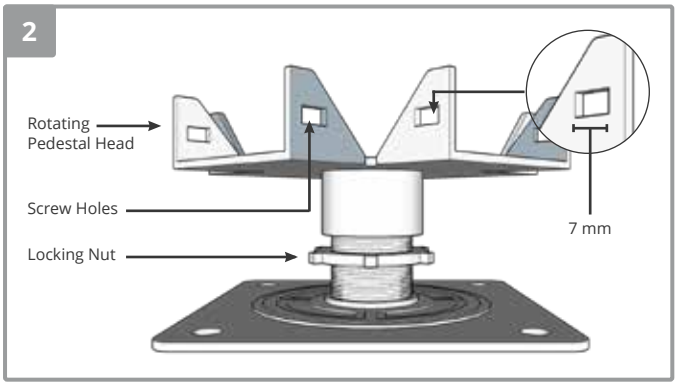
Preparing the Area

- Ensure the roofing membrane is 100% water-tight and free from debris.
- Check that the installation area has a drainage slope that complies with building regulations.
- It is recommended to install a gutter or scupper to allow the draining of excess water.

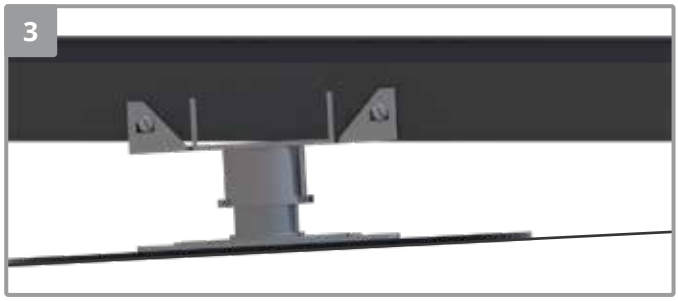
Laying the Pedestals

1. Starting from the edge of the decking area, lay out your pedestals. The height of the steel pedestals can be adjusted by rotating the pedestal head and then locked into position using the locking nut *(fig. 2)*. Refer to the Substructure Spacing section above for information on pedestal support spans.
2. Beneath each steel pedestal, lay a rubber membrane (or other sacrificial membrane) to protect the roof.

2

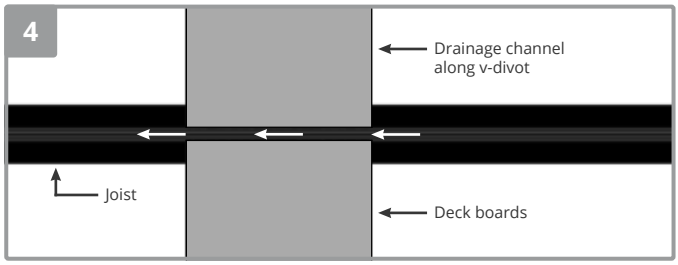


3



3. Check the slope of the pedestals are around 1:100 using a plum line or spirit level.
4. To adjust for differing gradients in the decking area, steel pedestals can be fixed to the joists at an angle *(fig. 3)*.

4



Laying the Joists

5. Place your aluminium joists on top of your steel cradles. Aluminium joists can be laid end to end, supported by a pedestal. Make sure to leave a 10 mm expansion gap between the ends of the joists.
6. Two boards can be butted over a single joist at butt joints, using the v-divot on the joist as a drainage channel *(fig. 4)*.
7. Alternatively, a full joist width can be used to support each deck board end at a butt joint. In this case you will need to double up on joists at butt joints. A 6 mm spacing is recommended between joists at butt joints.
8. Using Tek screws, the joists can be fixed to the steel pedestals via the screw holes in the pedestal head *(fig. 2)*.

Continue to 'Flat Roof Decking Installation'

A 6 mm thermal expansion gap should be left between lengths of board and a 10-12 mm gap should be allowed around the perimeter to enable water to readily drain away.

Installing Decking Boards (Using Only Full-Length Boards)

With your subframe installed and stable, you can now start installing your deck boards. The orientation of the first board should have the 'lip' of the board at the very beginning of the deck, leaving the 'hook' free for the next deck board to be installed *(fig. 7, page 7)*.

- These steps can create a continuous surface using flush inserts, or 150 mm wide deck boards if using a gap insert.
- If boards must be ripped to fit an area, see the Installing Decking Boards (When Using Ripped Boards) section.

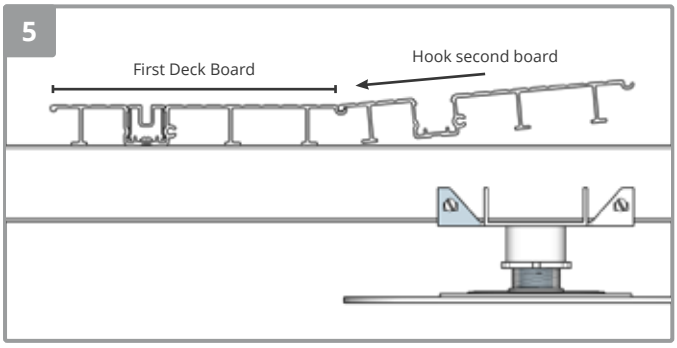
If no ripping is necessary, the following steps can be used:

1. Start by installing the first deck board. The orientation should have the 'lip' of the board at the very beginning of the deck and the 'hook' edge facing toward where the next deck board will be placed *(fig. 7)*.

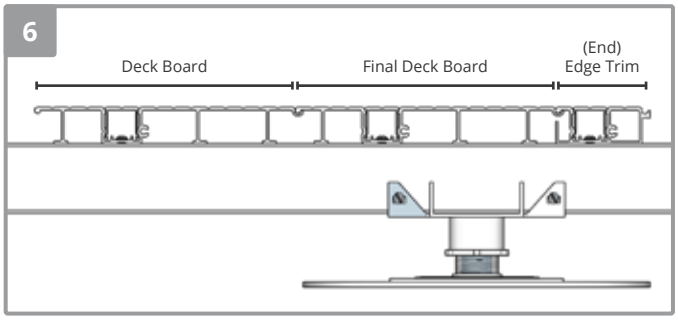
- Align your deck board along the first joist.
- Self-drilling screws can be provided, removing the need for pre-drilling aluminium.
- The deck board should be fixed to the joists below by drilling screws along the channel *(fig. 7)*. Note: if installing boards to steel beams, always pre-drill *(see page 8)*.

2. A flush or gap insert can now be pushed into the channel of the deck board, depending on the finish you want to achieve.
3. The next deck board can now be hooked onto the first board *(fig. 5)*, before being fixed to the joists with screws along its channel.
4. For a continuous decking appearance, fit a flush insert into the deck board channel. To give the appearance of 150 mm wide decking boards, use a gap insert.

5



6



5. Repeat steps 3 & 4, adding deck boards until you reach the final deck board.
6. For the final piece, install an edge trim in the same way as you would install a deck board. The edge trim has a 'lip' which can fit onto the 'hook' of the final deck board *(fig. 6)*.

Installing Decking Boards (Using Ripped Boards)

If ripping boards is necessary in order to fit a particular area, the following steps can be used. If it's not desirable to rip deck boards, follow the next section *(see 'Installing Decking Boards (Using Trims Instead of Ripping)', page 7)*

- These steps can create a continuous surface using flush inserts, or 150 mm wide deck boards if using a gap insert.
- This method works by cutting decking boards along any of their grooves, which are spaced so that the blade cannot hit any of the supports beneath the board (*see 'Frequently Asked Questions', page 14)*.
- This method can span any width to the nearest 10 mm.

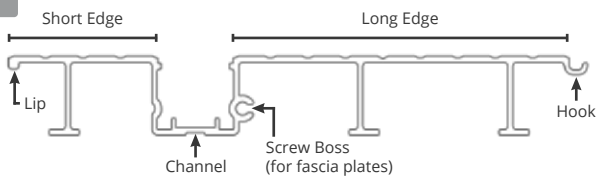
You will need to refer to the 150 Aqua-Channel finishing guide *(pages 11–12)*, which details how the final deck board should be ripped and installed for every multiple of 10 mm.

1. Start by installing the first deck board. The orientation should have the 'lip' of the board at the very beginning of the deck and the 'hook' edge facing toward where the next deck board will be placed *(fig. 7)*.

- Align your deck board along the first joist.
- Self-drilling screws can be provided, removing the need for pre-drilling aluminium.

Cont.

7



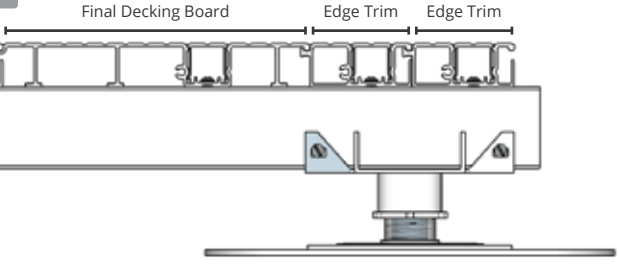
- The deck board should be fixed to the joists below by drilling screws along the channel *(fig. 7)*. Note: if installing boards to steel beams, always pre-drill *(see page 8)*.

2. A flush or gap insert can now be pushed into the channel of the deck board, depending on the finish you want to achieve.
3. The next deck board can now be hooked onto the first board *(fig. 5)*, before being fixed to the joists with screws along its channel.
4. For a continuous decking appearance, fit a flush insert into the deck board channel. To give the appearance of 150 mm wide decking boards, use a gap insert.
5. Repeat steps 3 & 4, adding deck boards until you reach the final deck board.
6. How you install the final deck board depends on the span of the final section and the width of deck needed to fit it. Refer to the 150 Aqua-Channel finishing guide *(see pages 11–12)* for information on how to finish a deck area for any span of decking to the nearest 10 mm.
7. The orientation of the edge trim also depends on the span of the final section. In some instances the edge trim must be 'flipped'. In other instances an edge trim may not be necessary at all. Refer to the 150 Aqua-Channel finishing guide *(see pages 11–12)* for information on how the edge trim should be installed for each final span to the nearest 10 mm.

Installing Decking Boards (Using Trims Instead of Ripping)

If cutting deck boards is not desirable, edge trims can be installed consecutively to add another 50 mm to the final span *(fig. 8)*. This method can create either a continuous surface using flush inserts, or 150 mm wide deck boards if using a gap insert.

8

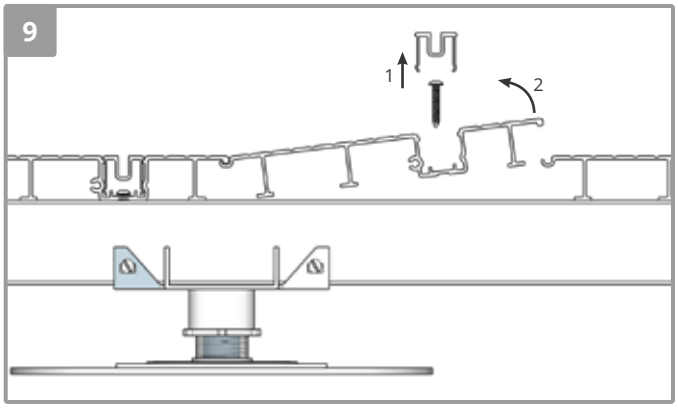


Removing a Single Board From an Assembled Deck

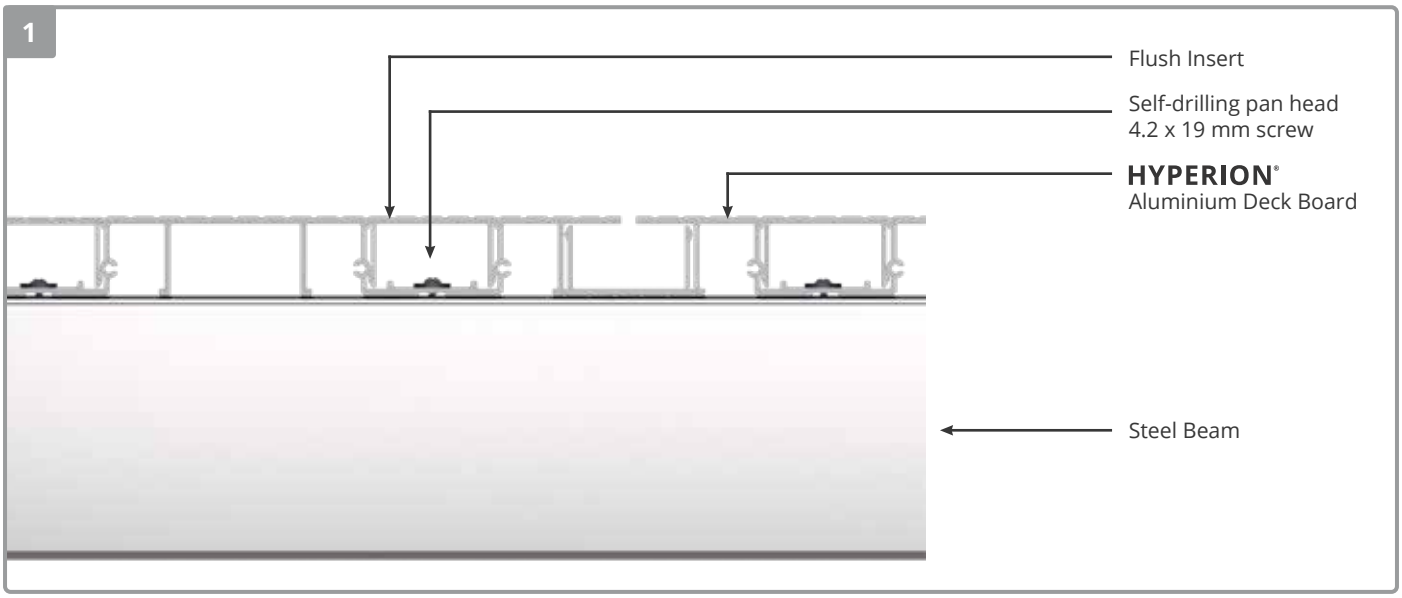
Any single decking board can be removed from the system for craning balconies, removing damaged boards or other.

1. Remove the insert in the deck board channel. This can be done from the end of a board using a flat head screwdriver to lever the insert out.
2. Remove the screws along the channel.
3. Lever out the deck board and replace *(fig. 9)*.

9



Continue to 'Open Steel Decking Installation'



Installation Overview

Aluminium decking boards can be installed directly onto steel beams without the need for steel pedestals or aluminium joists *(fig. 10)*. The same steps (*see pages 6–7*) can be followed for installing aluminium decking to steel beams, with the exceptions:

- The maximum tolerance for the steel beams is ±2 mm. This is how high or low a beam can be from an adjacent beam.
- Always pre-drill a 3 mm hole into steel beams when using 4.2 x 19 mm self drilling pan head screws.
- A bespoke steel slope can be provided on request, which can sit between the decking boards and the steel beams in order to provide a drainage slope.
- Each deck board end should be supported by at least 35 mm on the steel beam.
- At least a 70 mm width is required on the steel beam to support two board ends at butt joints.

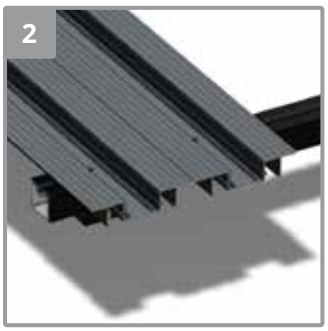
Other Recommendations

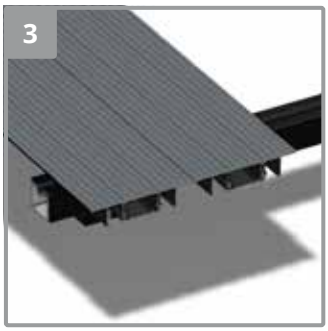
- For wall thicknesses above 2.5 mm, we recommend either a tapped hole and machine screw installation, or for MESA 20x50 mm joists to be laid on top of the steel with the decking placed onto a joist. Hyperion screws are tested for use in up to 2.5 mm thick mild steel.
- Strong-Span is compatible with fixings up to a 10 mm diameter head.

Continue to 'Drainage System Installation'

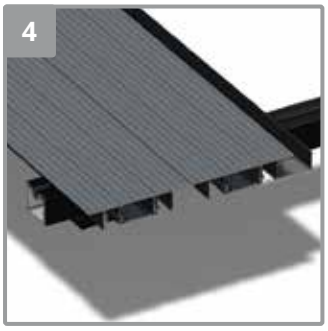
Installing the Boards

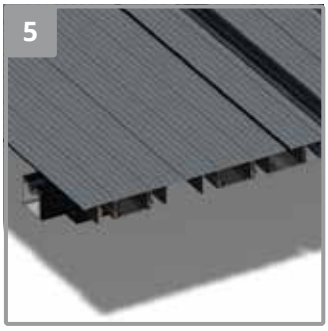
1. Layout first board perpendicular to the substructure, and screw into the substructure through the channels *(fig. 2)*.
2. Clip in the deck board inserts *(fig. 3)*.



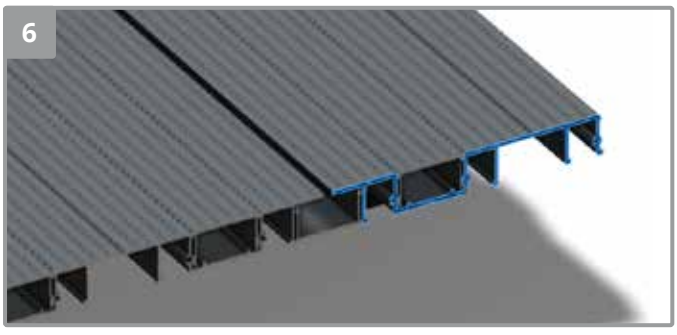


3. Slide a deck board insert into where the gap between two boards will be. As it is not structural, there is no need to screw this piece into place *(fig. 4)*.
4. Screw in the next board along, leaving the desired gap between it and the first board *(fig. 5)*.





5. Repeat steps 1–4 up to the end of the substructure.
6. Rip the last board along its length to fit into the working area, leaving at least one channel for screwing the board into the substructure. If there is too little space for a channel on the last board, either adjust the gap size between boards or rip the last two boards instead *(fig. 6)*.



Drainage System Introduction

150 Aqua-Channel boards create a continuous surface, with patented interlocking attachments and drainage channels which are designed to even mitigate the capillary effect. The boards are installed at a slope, forcing liquids down the continuous deck (with flush inserts) or down grooves (with gap inserts) where it can be collected by the drainage piece *(fig. 11)*, funnelling water to a specific corner.

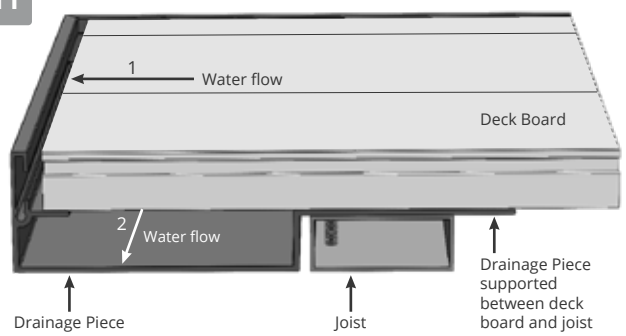
The drainage piece sits between the joist and the deck board, offering an unbroken channel for water to run. The channel size should drain up to 18 m^2 of decking area if drained to one end or 32 m^2 if drained from the middle outwards to two edges.

If a butt joint is added it will break the drainage without having aluminium joists underneath. Therefore for longer balconies, either allow time to have bespoke boards built, or design a system that can drain in two directions.

Installing Drainage Pieces

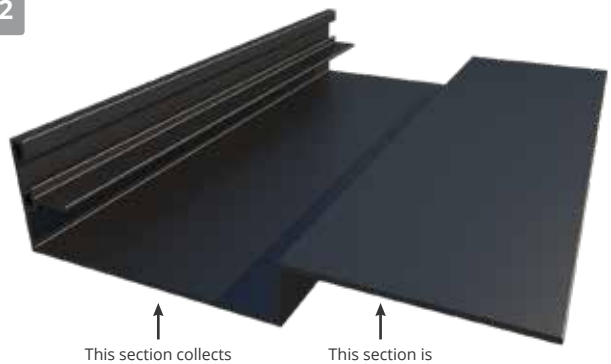
Installing drainage pieces must be done before the decking boards on the final joist are screwed down. The system works by sandwiching the drainage piece between the drainage piece between decking boards and the joist below *(fig. 12)*. This way, when the board is fixed to the joist, the channel is also secured. This method works when installing on pedestals, if decking is being laid directly to steels, there needs to be extra consideration on drainage slopes in the design stage.

11



The pedestal supporting the channel needs to be 2 mm lower to compensate for the channel thickness.

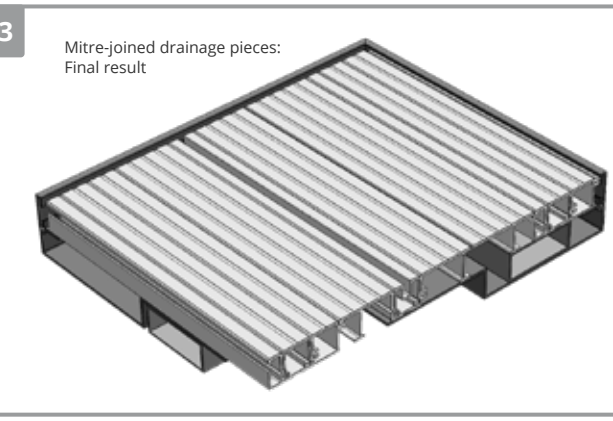
12



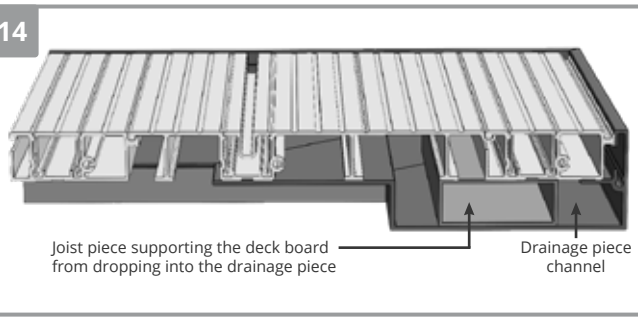
Installing Mitre-Joined Drainage Pieces

It is also possible to allow drainage to a specific corner rather than an edge by mitre-joining drainage pieces *(fig. 13)*. Mitre-joining drainage pieces also gives a picture-frame finish. When using this method, a section of decking at the perimeter will be laid above the channel of one of the drainage pieces. A section of aluminium joist should be used to support the deck boards in these areas *(fig. 14)*.

13



14

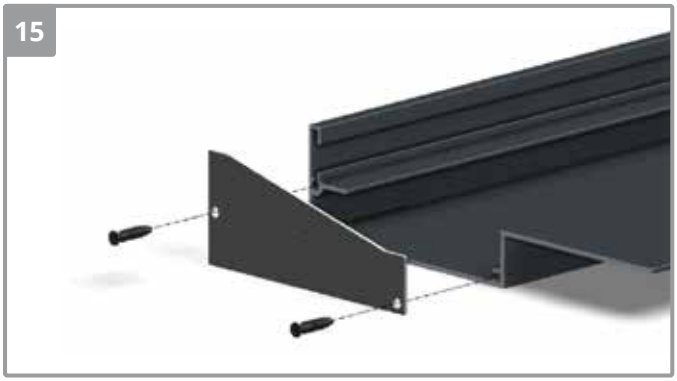


Cont.

End Piece

- The Drainage Trim End Plate should be screwed into the Drainage Trim *(fig. 15)* through the holes at the end, at any time during the installation process (unless the end becomes inaccessible at any point).
- Once installed, sealant should be used around the inside of the join between the Plate and Trim, or butyl tape should be used around the outside, to ensure the seal between the two parts is water tight.

15

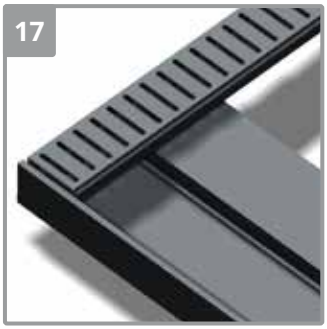


Threshold Drainage

- Install the substructure as normal.
- Drill some holes at either end of the Threshold Drain, so water can drain into the Drainage Channel along the sides *(fig. 16)*.
- Install the Threshold Drain along the edge of the decking, running along the wall, oriented so the lip is facing the decking.
- Use one hex head M5.5 screw at either end, screwing through the Drainage Channel and the substructure. Include a rubber washer to ensure the drain is as water tight as possible.

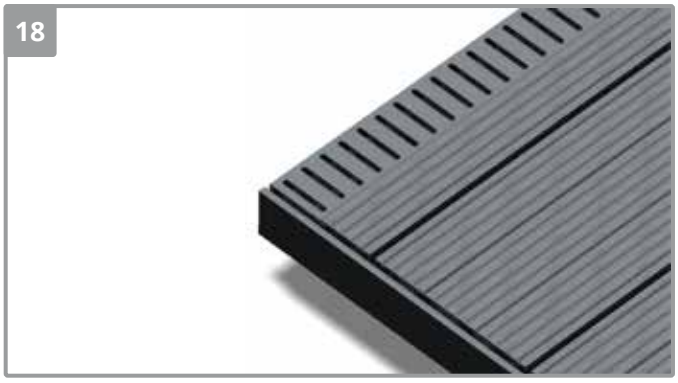
16

17



- Clip the Threshold Drainage Cover on top of the Threshold Drain *(fig. 17)*.
- Install the rest of the decking as normal *(fig. 18)*, hooking the first deck board onto the lip of the Threshold Drain.
- If the deck boards are perpendicular to the wall instead of parallel, install in the same way, just leave a 5 mm expansion gap between the end of the boards and the Threshold Drain. To make this gap water tight, use expanding foam tape.

18

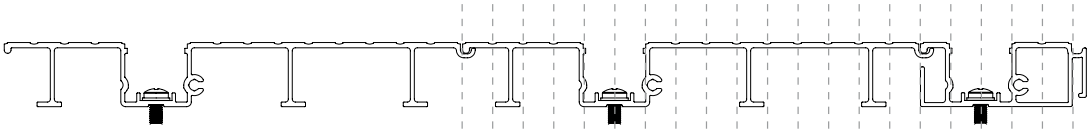


Continue to '150 Aqua-Channel Finishing Guide'

Span of Final Section

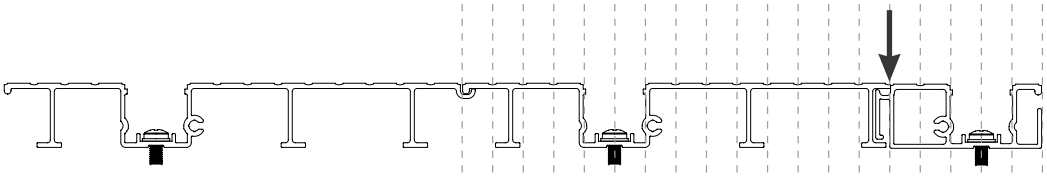
Arrow indicates cut line on boards.
'Long edge' and 'short edge' are as previously defined *(see page 7, fig. 7)*.

200 mm



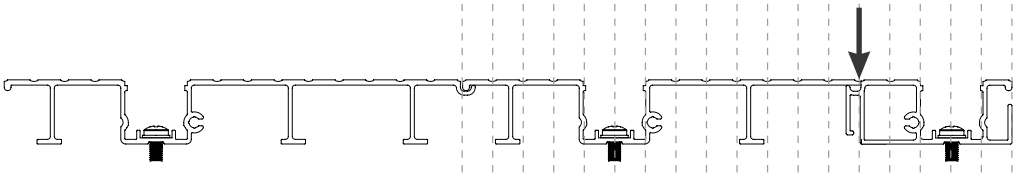
No cuts required.

190 mm



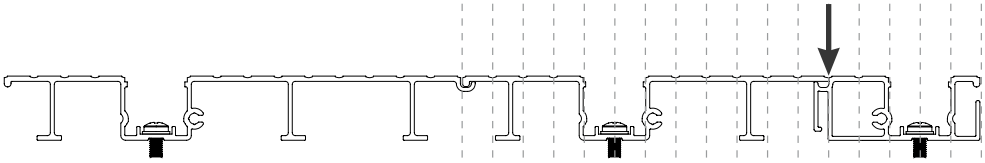
Cut 10 mm from deck board long edge.

180 mm



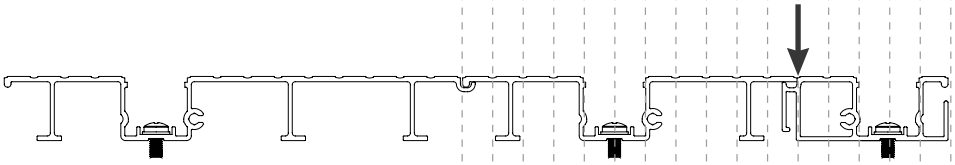
Cut 20 mm from deck board long edge.

170 mm



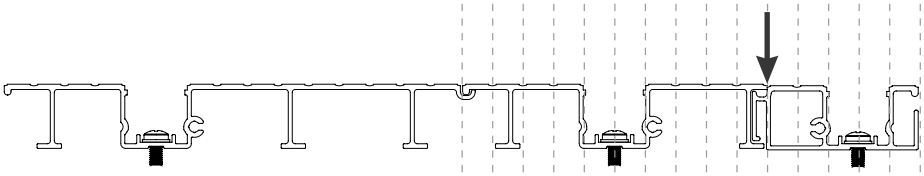
Cut 30 mm from deck board long edge.

160 mm



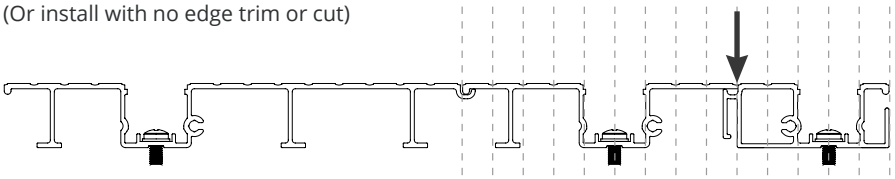
Cut 40 mm from deck board long edge.

150 mm



Cut 50 mm from deck board long edge.
(Or install with no edge trim or cut)

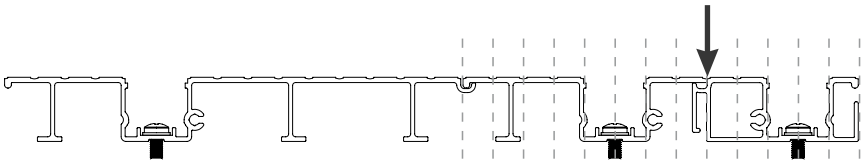
140 mm



Cut 60 mm from deck board long edge.

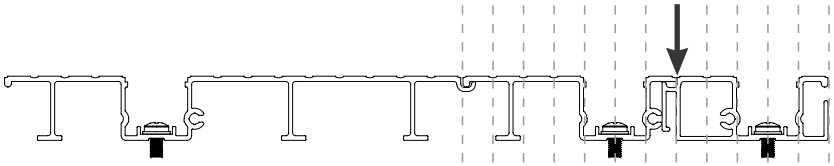
Cont.

130 mm



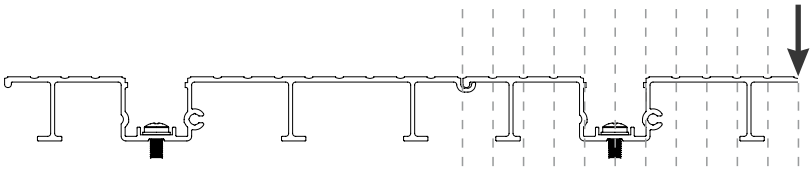
Cut 70 mm from deck board long edge.

120 mm



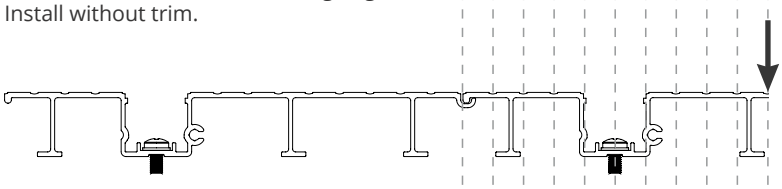
Cut 80 mm from deck board long edge.

110 mm



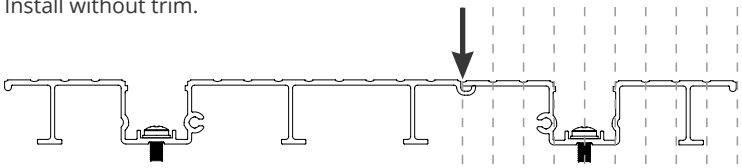
Cut 40 mm from deck board long edge.
Install without trim.

100 mm



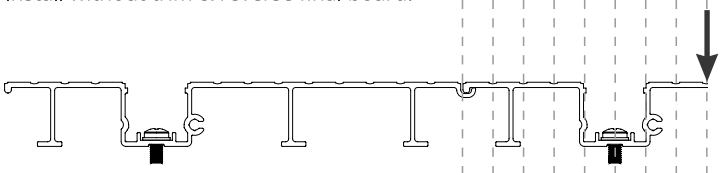
Cut 50 mm from deck board long edge.
Install without trim.

90 mm



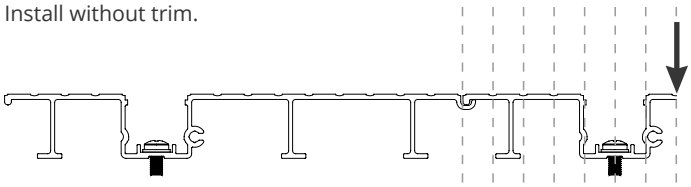
Cut 60 mm from deck board long edge.
Install without trim & reverse final board.

80 mm



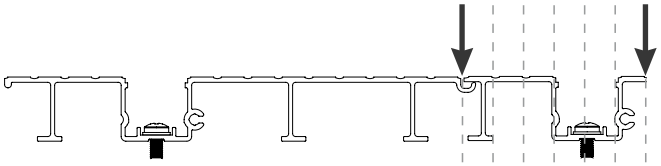
Cut 70 mm from deck board long edge.
Install without trim.

70 mm



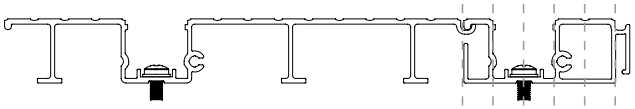
Cut 80 mm from deck board long edge
Install without trim.

60 mm



Cut 80 mm from deck board long edge &
10 mm from short edge. Install without trim.

50 mm



No cuts required.

Non-Combustible Systems

Introducing an entirely new range of non-combustible materials from EnviroBuild, with solutions for every project. The fire rated systems make no compromise on quality or sustainability and are supported by an on-hand expert team.

What Are Non-Combustible Fire Rated Systems?

Almost every component within a system has to be individually tested to EN13501-1, and achieve either A1 or A2, s1, d0 certification. The exception are specifically listed exempted items including, electricals, door frames, membranes, gaskets and fixings. There are no longer "system level" fire tests like BS8414 available.

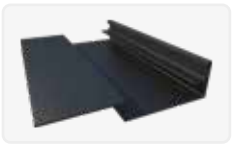
When Are Non-Combustible Systems Necessary?

All balconies on buildings started since February 2019 over 18 m where people sleep are included in the legislation.

Components

Aluminium Decking Board
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

Edge Trim
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1



Drainage Piece
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

Threshold Drainage Cover
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

Adjustable Steel Cradle
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1
(Class A1 available)

Butt Joint Insert
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

Flush Insert
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

Gap Insert
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

End Piece
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

Threshold Drainage Piece
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1

Protective Rubber Membrane
Membranes are exempt from legislation. Always check with building control.

Aluminium Joists
EN13501-1 tested
Class A2 - s1 d0
Class $A2_{fl}$ - s1 (Class A1 available)

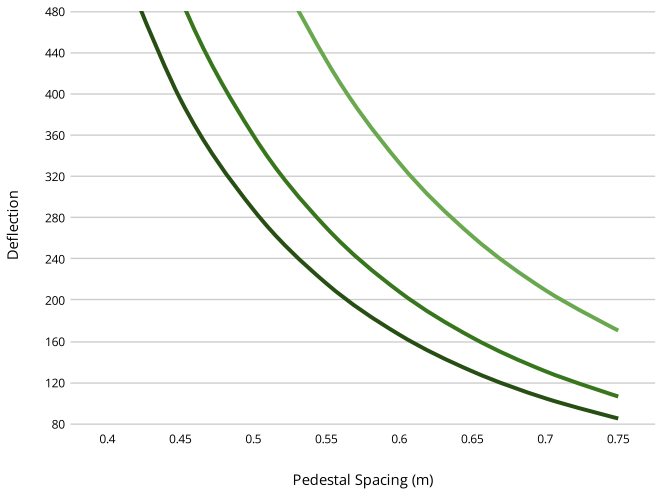
Maximum Pedestal Spacing

Pedestal spacings (m) required for desired board deflection ratio with 2.5, 4 and 5 kN/m² loading situations. All values given are for a minimum of 3 evenly spaced supports.

Note: A safety factor of 1.5 is included in spacings

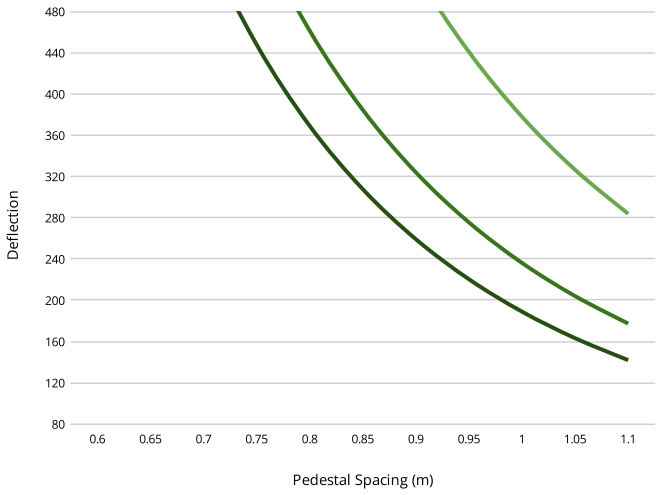
Hyperion 20x50 mm Aluminium Joist

	Deflection		
kN/m²	1/200	1/360	1/480
2.5	0.70 m	0.55 m	0.50 m
4	0.60 m	0.45 m	0.45 m
5	0.55 m	0.45 m	0.40 m



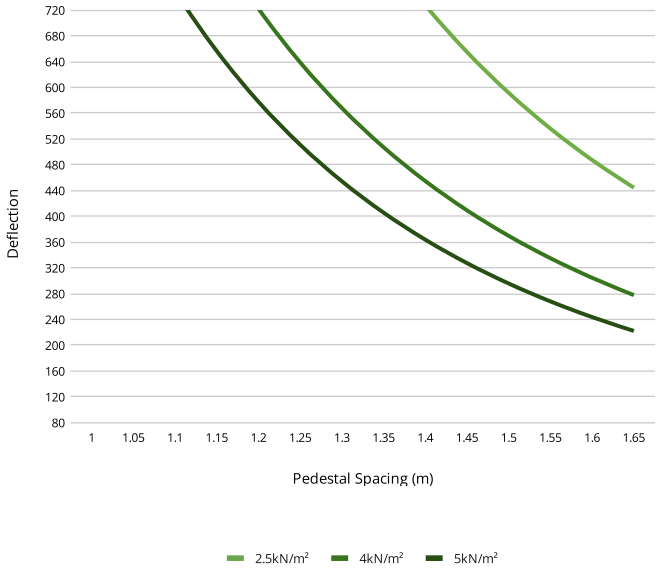
Hyperion 40x50 mm Aluminium Joist

	Deflection		
kN/m²	1/200	1/360	1/480
2.5	1.20 m	1.00 m	0.90 m
4	1.05 m	0.85 m	0.75 m
5	0.95 m	0.80 m	0.70 m



Hyperion 80x50 mm Aluminium Joist

	Deflection		
kN/m²	1/200	1/360	1/480
2.5	2.15 m	1.75 m	1.60 m
4	1.80 m	1.50 m	1.35 m
5	1.70 m	1.40 m	1.25 m



Strong-Span Span Table

Note: BS 8579 suggests a maximum deflection of 5 mm

Deflection Allowed: Full Board

	1/180	1/360	1/480	5 mm
2 kN/m²	2.10 m	1.50 m	0.30 m	1.60

Deflection Allowed: Cut to Half Width

	1/180	1/360	1/480	5 mm
2 kN/m²	1.50 m	1.05 m	0.90 m	1.25

Care & Maintenance

- **How should I prevent scratching deck boards?**
  Ensure that all furniture used on A-Class systems have soft felt pads under their legs.
- **How often should I clean my deck boards?**
  At regular intervals but at the very least they should be cleaned twice a year as excess dirt can cause damage.
- **How should aluminium deck boards be cleaned?**
  To clean the structure, a solution of warm soapy water and a lint-free cloth should be used. The structure should then be rinsed thoroughly with water. No form of abrasive should be used at any time. All concentrated cleaners should be diluted as per the manufacturer's instructions. Never use bleach, solvents, abrasive paste or cream cleaners as they could damage the surface of your decking.

  To maximise the life of the painted surface, it is highly recommended that no cleanser that contains chlorinated solvents, ketones or esters is used. These will cause the paint to soften.
- **Can a pressure washer or steam cleaner be used?**
  It is not advised to use pressure washers or steam cleaners to clean aluminium deck boards.
- **How can I fix light chips or scratches?**
  Light chips or scratches which leave exposed the base metal should be carefully covered by applying an appropriate zinc rich primer, followed by a topcoat finish in a matching acrylic based spray paint. Ensure all areas are cleaned with PW3 panel wipe to remove any grease prior to re-coating. It is strongly recommended that the surrounded area should be fully protected and masked off while spraying.
- **How can I fix larger areas of damage, coating breakdown or vandalism?**
  The area should be sanded so that the edges are smoothed to allow for feathering in using P320 grade fine sandpaper (to create a smoother transition from the old paint to the new). 'Paint pens' can be used to very simply cover the area. Otherwise, a zinc rich primer should be brushed or sprayed onto the area and a topcoat should then be applied in a similar manner.
- **How can I remove graffiti?**
  Graffiti should be removed by a specialist contract cleaner or by using a "T-Cutting" compound. It is not recommended to use any solvents, abrasive cleaners or other chemicals to clean the surface at any time.

Installation

- **How do I cut aluminium decking boards and joists?**
  A saw blade suitable for aluminium materials should be used. Preferably use one with a blade suited to non-ferrous materials and for profiles of a suitable thickness. Blades designed for cutting non-ferrous materials usually have a special grade of carbide for aluminium, a triple chip top grind and a zero or negative hook angle. There are ways to cut aluminium materials with blades designed to cut wood, however this is not recommended.

  A circular saw or table saw can be used however the preferred method is using a mitre saw. Ensure the aluminium material is sufficiently fixed with a clamp in order to prevent damage to the blade or the user. You will get better results and a longer blade life if you use a lubricant (a wax stick or WD-40 is easy to apply while the blade is spinning).
- **Does cutting aluminium leave burrs?**
  Any small burring which may occur can be removed simply by using sandpaper and a pair of safety gloves.
- **How can noise dampening be improved?**
  A layer of EPDM membrane could be used between the aluminium decking and the joist. This requires checking with building control.

ENVIROBUILD

Visit envirobuild.com
+44 (0) 203 959 1220
info@envirobuild.com

Find us on:
/envirobuildcom
@envirobuild

305-308 Metal Box Factory,
30 Great Guildford St,
London SE1 0HS