



# castle

COMPOSITES

## Aluminium decking installation guide

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## Before you start—Think safety first

Cutting, drilling and handling aluminium sections can be hazardous, please ensure that you wear the correct personal protective equipment (PPE), and ensure that anyone in the work area is aware of the risks. Children and pets must not be allowed in or near the work area.

### The following items are mandatory



Drilling and cutting aluminium results in hot swarf which can easily lead to extensive eye damage and even permanent loss of vision, always wear a face shield or goggles when cutting and drilling



Drilling and cutting aluminium results causes a significant noise which can easily lead to extensive hearing damage, always wear suitable hearing protection when cutting and drilling



Drilling and cutting aluminium results causes dust which can cause damage to the respiratory system, always wear a suitable mask when cutting and drilling

**Safety is your responsibility**



## Before you start—Think safety first



Cutting, drilling and handling aluminium sections can be hazardous, please ensure that you wear the correct personal protective equipment, and ensure that anyone in the work area is aware of the risks. Children and pets must not be allowed in or near the work area.

The following items are recommended, however these and others may be mandatory on some sites. Please check with the site foreman before starting any work.



Some of the sections may weight in excess of 20 kg, and some edges may be sharp. It is recommended that suitable safety boots are worn to protect your feet



Drilling and cutting aluminium may result in sharp edges, it is recommended that gloves are worn at all times



Hard hats are recommended in all instances where you may bump your head or there is a risk from falling objects

Safety is your responsibility

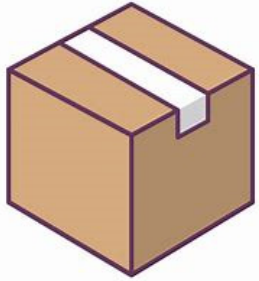


## Consider the environment

Please consider the environment when installing your new decking, a small amount of effort can have a big impact .



Our decking products are produced from readily recyclable materials, please recycle any off-cuts properly rather than throwing them in with regular waste. Most scrap metal merchants will accept off-cuts free of charge.



The cardboard and paper waste we use for packaging our fixings and decking boards is also readily recyclable, please ensure this is also recycled correctly.



We work really hard to keep the non-recyclable content of our packaging to an absolute minimum, please ensure that this and any swarf are put in the bin to minimize the impact on nature and your local environment.

**The environment is your responsibility**



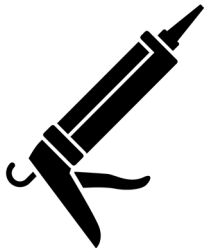
## Before you start—Get the right tools



Hammer (16oz / 0.5 kg)



Rubber mallet (12-16oz / 0.4- - 0.5kg)



Sealant gun and coloured sealant to match decking colour



A couple of clamps (G-clamp or other) with 60mm throat



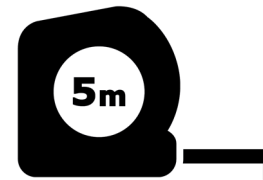
X20—Torx driver (Decking end caps)

X25— Torx driver (must be 5mm or less shaft diameter)

X40—Torx driver (Base structure), consider using a Torx Alen key as an alternative



13mm Spanner



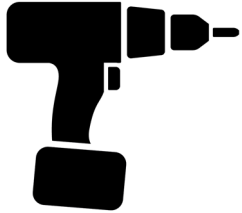
Measuring tape, minimum 5m length



Level



## Before you start—Get the right tools



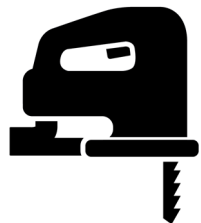
Electric drill with 8.5mm HSS diameter drill bit (suitable for metal)

A 3.5 mm drill bit will also be required for pilot holes in 20 and 70 mm beams if the corner plate is used



Electric Compound mitre saw with blade suitable for cutting aluminium, 80-100 teeth on a 305mm diameter is the minimum requirement. The blade must be suitable for fine cutting of aluminium

A bench saw or circular saw is not suitable

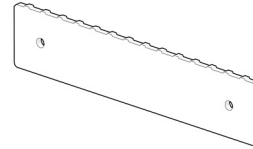


Electric jigsaw with 10-12 TPI blade (suitable for cutting aluminium) up to 3mm thick

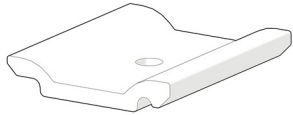
## Decking components and their use—Fixings



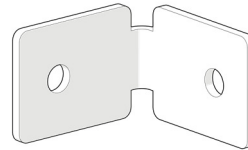
No. 10 Pan head screw for use with decking clip, starter clip and anchor clip



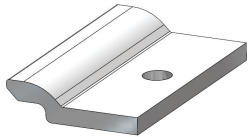
Decking end cap, used to close off visible end of the decking board



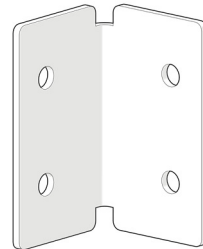
Stainless decking clip, for spacing and retaining the deck boards onto the joists



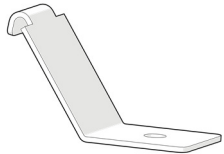
70mm Joist cleat, used in corners or joist junctions on 70mm joist



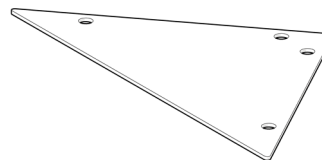
Starter clip, used at the beginning and end of a deck run to retain the edge of the first and last board



120mm Joist cleat, used in corners or joist junctions on 120mm joist



Anchor clip, used to anchor the 70 and 120mm joists



Board jointing plate, used to join two decking boards

20 / 70mm joist corner brace, used to create a 90° join between two joists



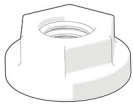
## Decking components and their use—Fixings cont.



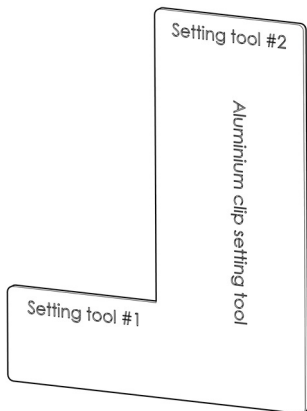
No. 7 Countersunk screw for use with decking end cap (supplied with decking end cap)



Black M8 button head machine screw, for use with joist brackets. Supplied in joist bracket kit

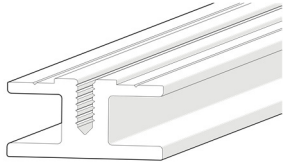


M8 flanged nut, for use with the joist brackets, supplied in the joist bracket kit

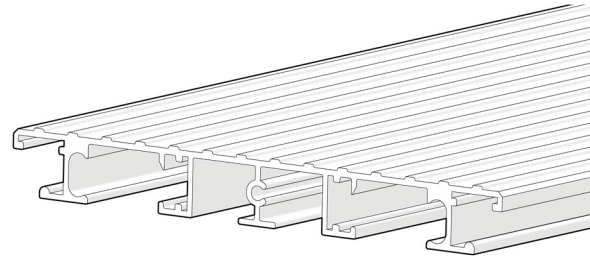


Clip setting tool, used to assist in locating the first and last decking clips.

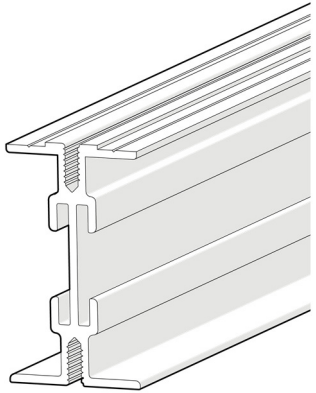
## Decking components and their use—Sections



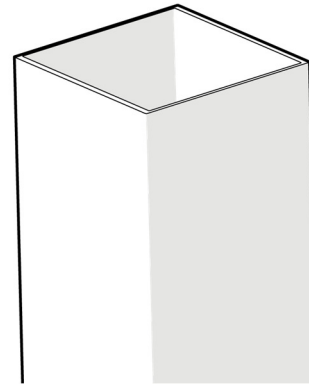
20mm Joist, used where very low profile base is required



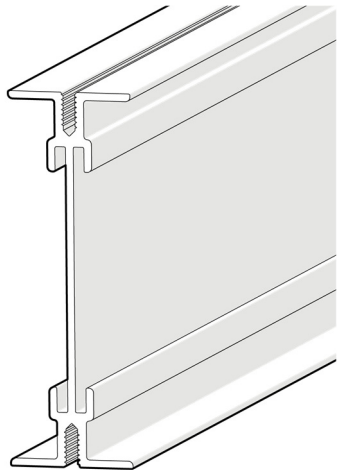
18 mm high load decking board



70mm joist, used in medium duty applications or where a low buildup is required



Post section, used for anchoring decking into the ground



120mm joist, used where high loads or greater spans are required



Height adjustable pedestal

# Understanding your requirements

The installation of the decking system will depend on the exact nature of your site. Consequently, there are some decisions to be made prior calculating the material requirements.

## Base options

### **Option 1—Solid base**

Laying decking structure over existing firm base, such as existing patio, or concrete slab or flat roof

Please see page 12

### **Option 2 - Fresh ground, with no solid base**

Decking is being installed over loose ground, soil etc. The ground have no load bearing capacity and/or is not flat

Please see page 16

### **Option 3—Existing substructure**

An existing structure is in place, and has been judged to be solid and flat enough to provide a solid base for the new decking.

Please see page 17

## Option 1—Solid Base

You have an existing base, which is at least as large as the proposed new deck and you are confident that the existing base is strong enough to support the load of the new deck and anything which will go on the deck (including people)

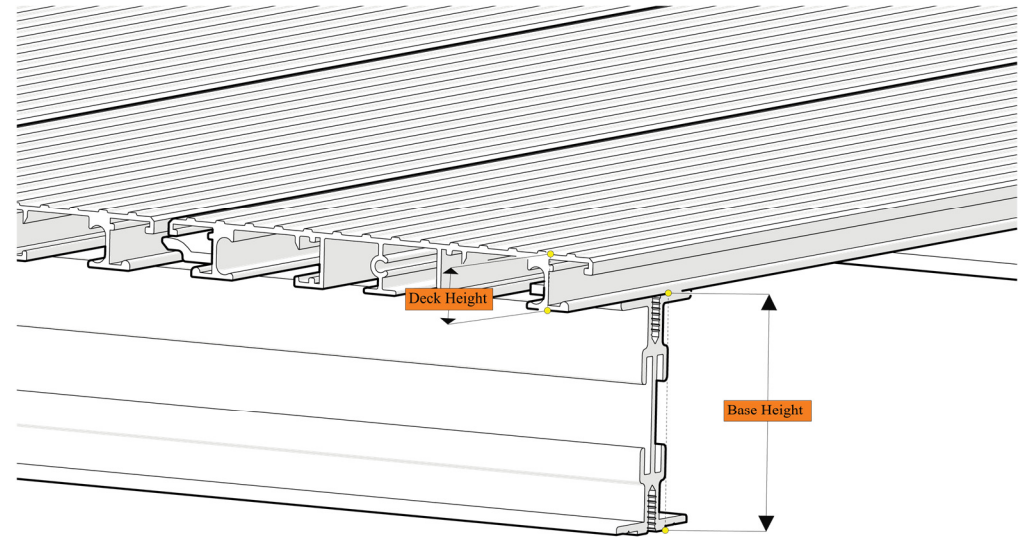
If the existing base is flat and level, you will need to decide on the desired height of the new deck above the existing base (the build-up height). The standard base structure heights are 20, 70 and 120mm, to this you need to add the height of the deck board (18mm).

This arrangement gives the following height options:

20mm base + 18mm board = 38mm build-up height

70mm base + 18mm board = 88mm build-up height

120mm base + 18mm board = 138mm build-up height

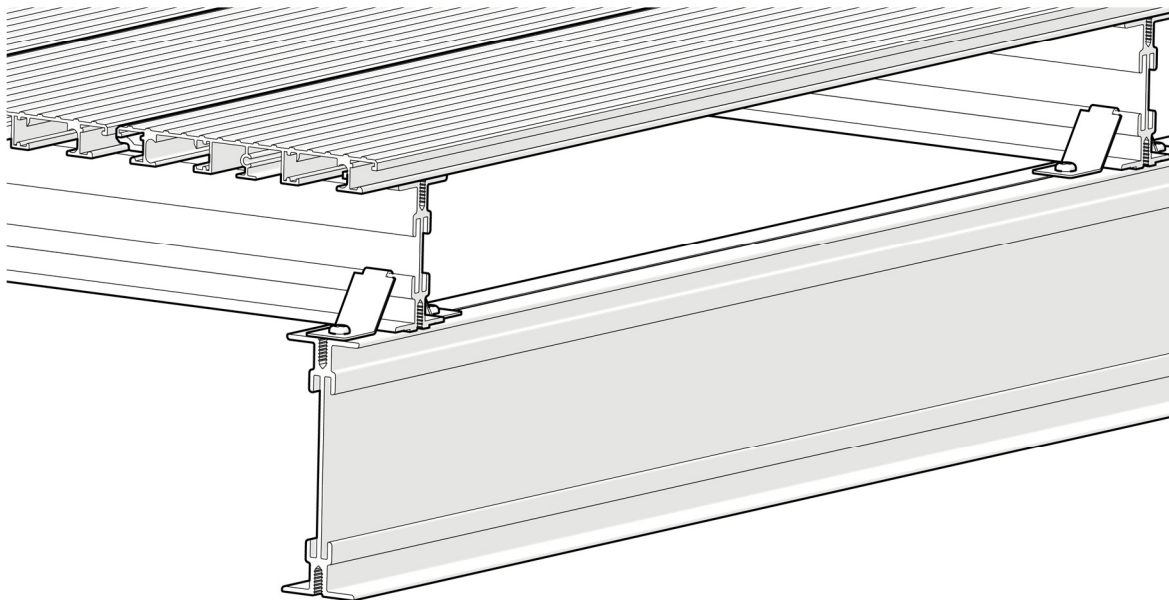


Single base build-up

In scenarios where a single base does not provide sufficient height, it is possible to 'stack' the base sections to achieve greater build-up.

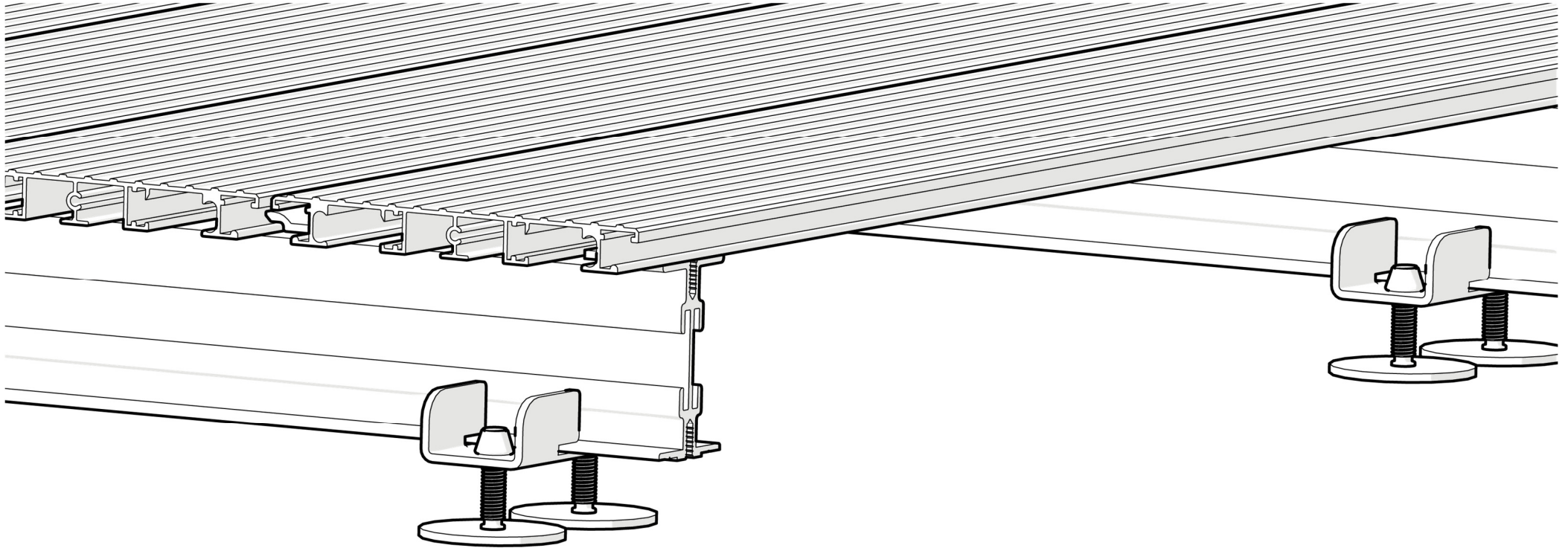
In a double base arrangement it is possible to reach 258mm, using a combination of 2 x 120mm base sections and 18mm board.

Once the desired height has been chosen it is possible to calculate the required base section components.



Double base build-up

## Option 1—Solid Base (cont.)



In instances where the existing base is solid but not level (i.e on a slope or step), It is possible to correct this using the adjustable pedestals.

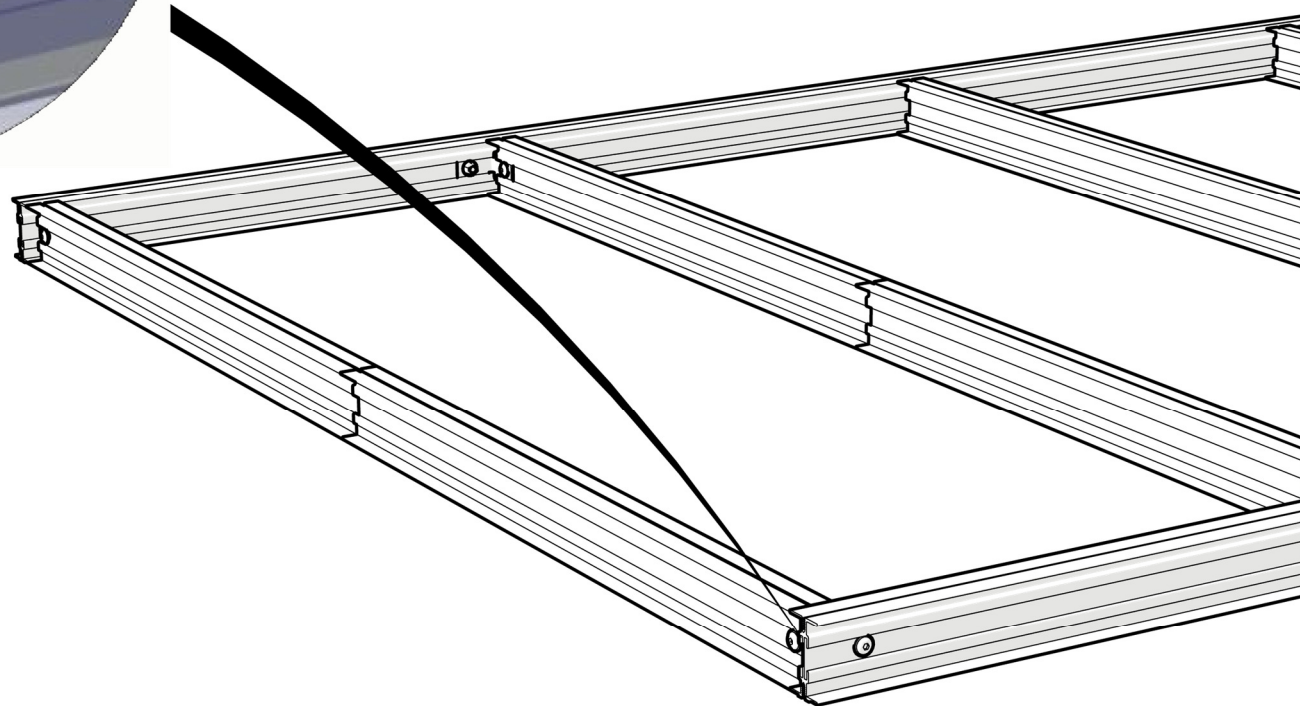
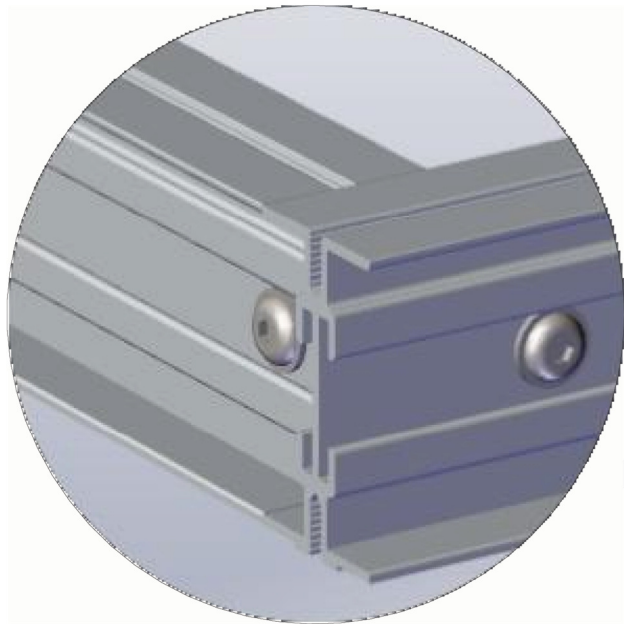
Two pedestal options are available:

PED20 for 20mm Joist 8—20mm (adjustment range 12mm)

PED20XR for 20mm Joist 18—40mm (adjustment range 22mm)

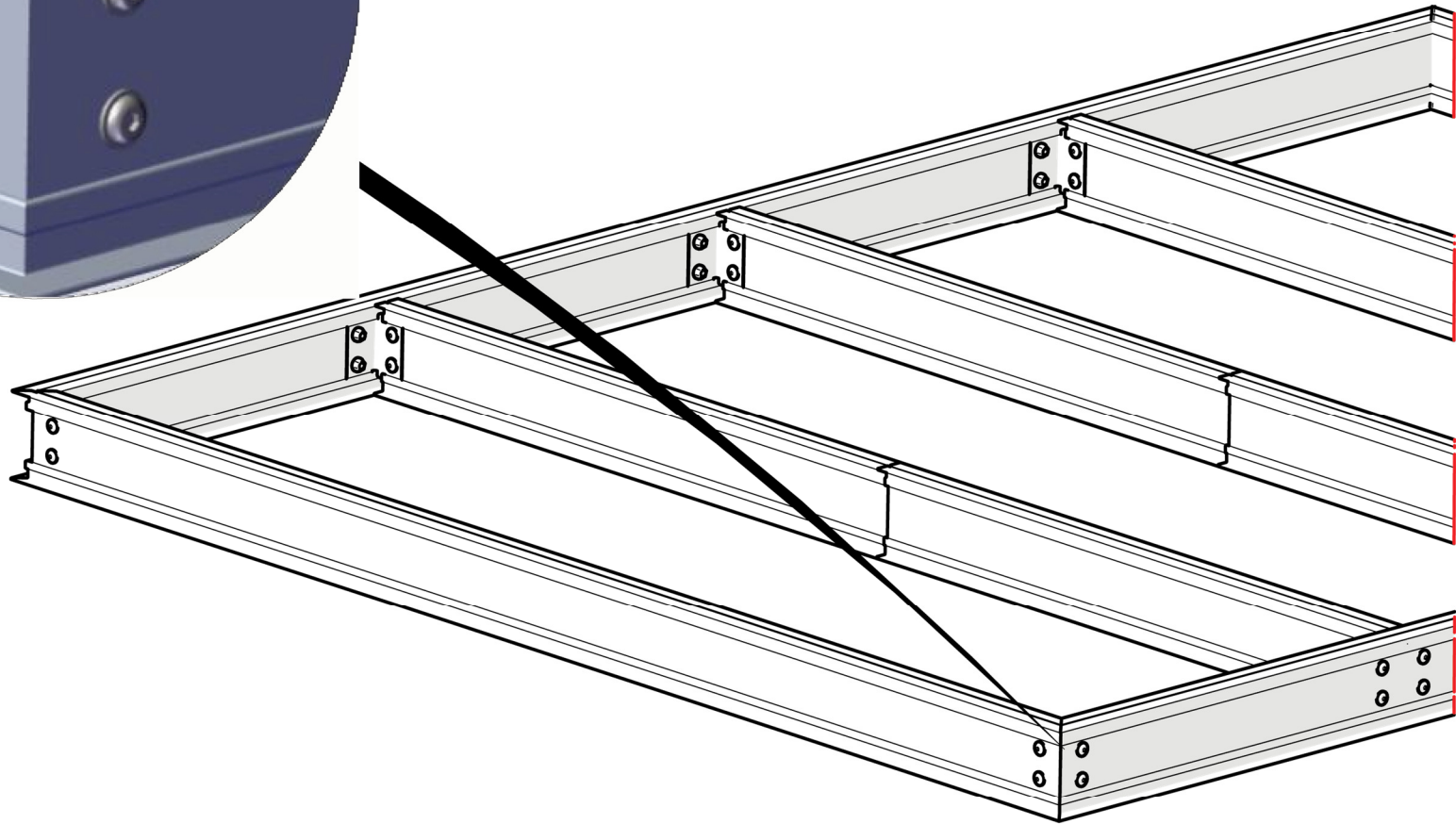
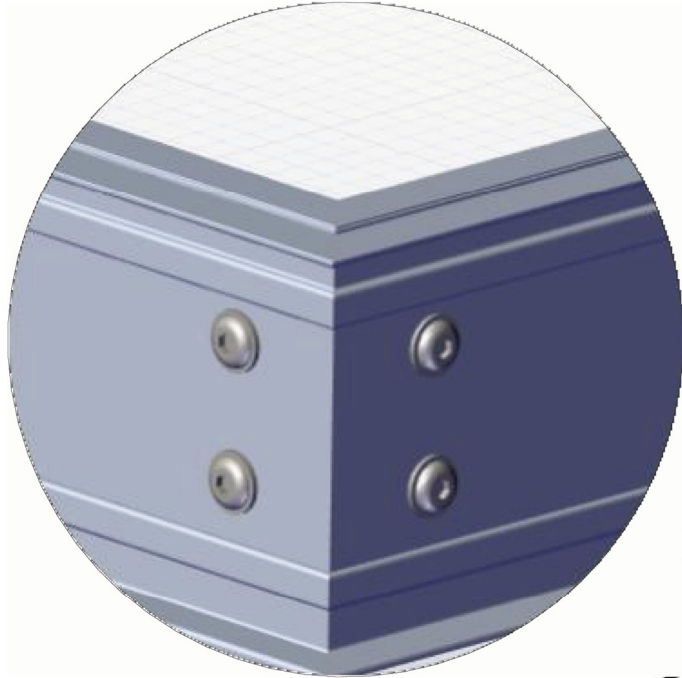
PED50 for all other joists 8—43mm (adjustment range 35mm)

## Non-mitred base



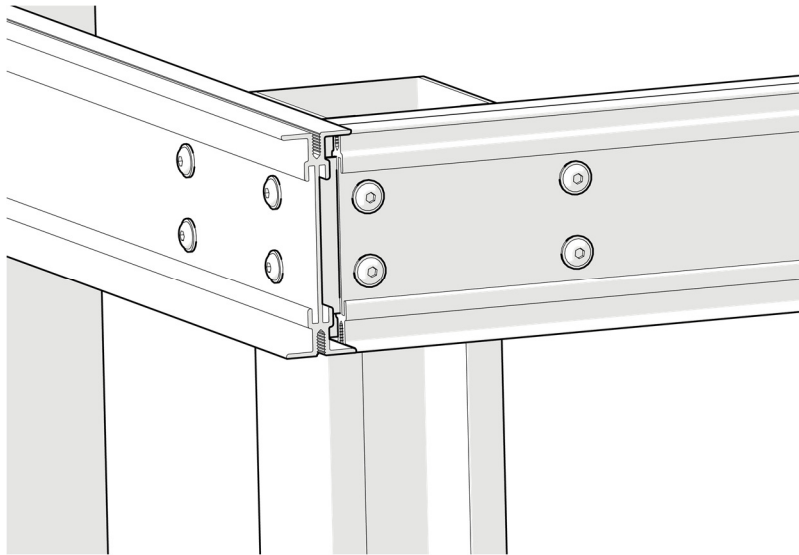
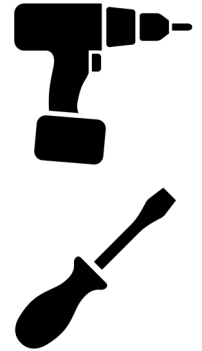
Non-mitred base is easier to create as all the joists are the same length, and there are no mitred cuts on the perimeter section, but it does leave small gaps in the four corners.

## Mitred base



Mitred base is harder to create as all 4 perimeter sections need a mitre cut on either end. Any inaccuracy in the cut angle or the section length will be immediately obvious.

## Option 2—Post installation



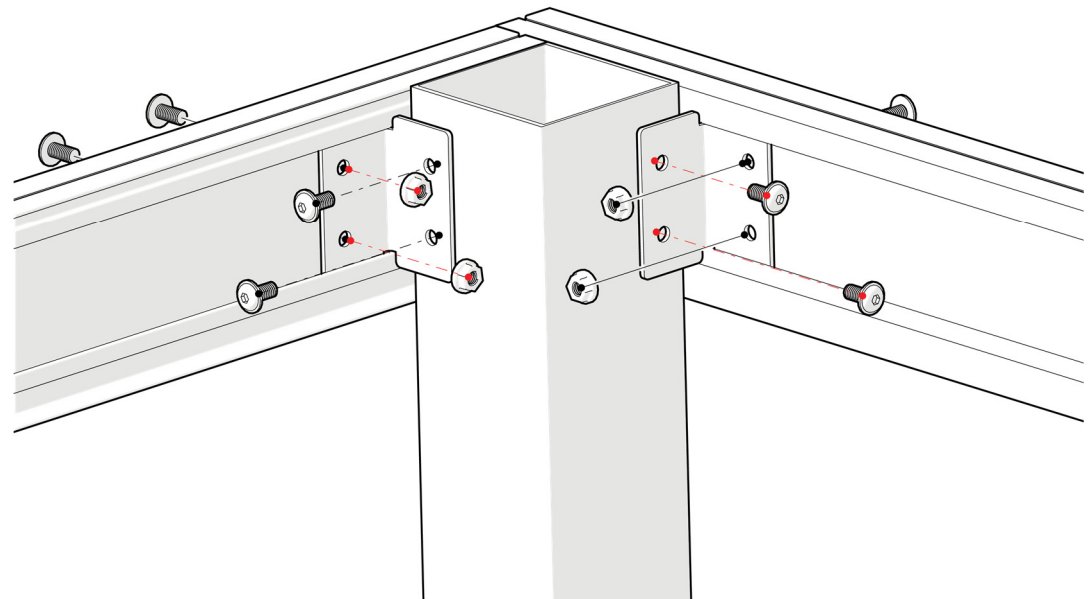
The post is attached to the deck using the joist cleat (suitable for the joist being used). The post is not compatible with the 20mm joist.

To fit the cleats drill the joist and the post using the 8.5mm drill and fix using the torx bolts and nuts. It is essential that everything is tight before proceeding to the decking stage.

You don't have any existing base in place and instead you are installing you deck over fresh ground. In this instance you will need the decking posts, which will need to be concreted into the ground to a sufficient depth to ensure the base is stable and capable of carrying the load you are planning on, with a suitable safety factor.

The posts will need to be installed at regular intervals, the loading table on the datasheets should be consulted.

It is recommended that the posts are concreted once the frame has been assembled to ensure that everything is straight and level.





## Option 3—Existing substructure

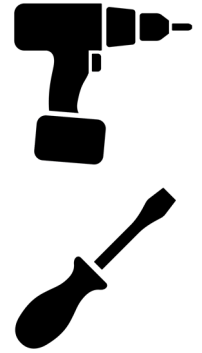
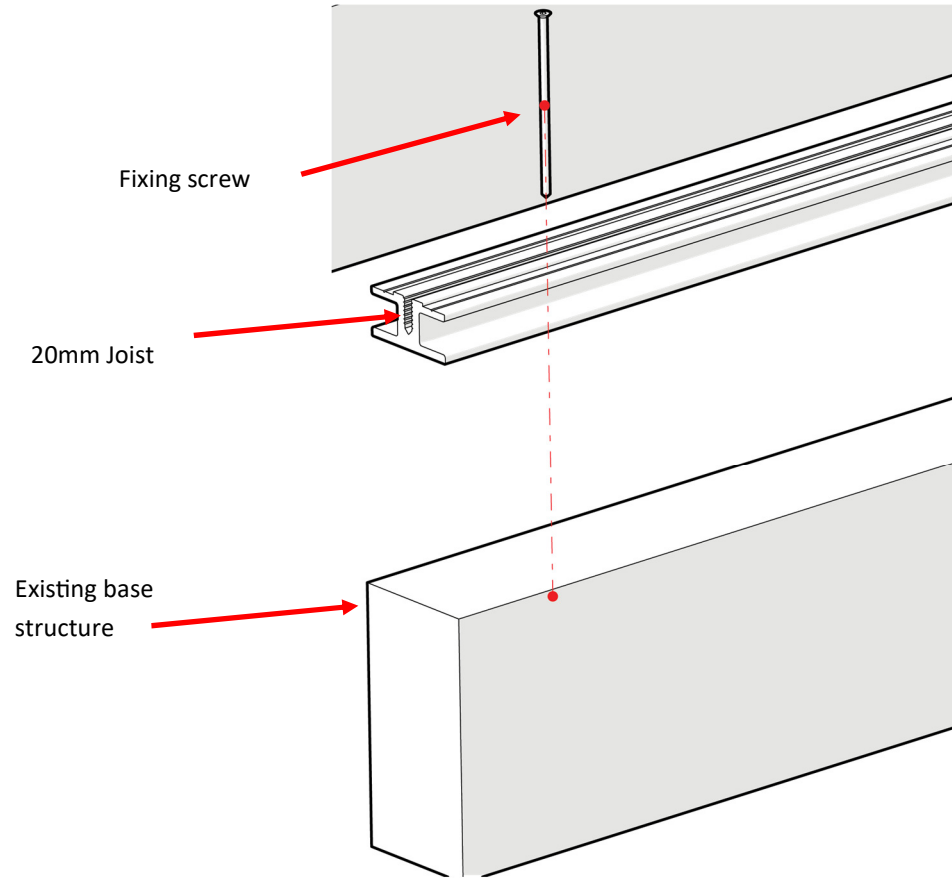
You have an existing timber base, which is at least as large as the proposed new deck and you are confident that the existing structure is flat, level and is strong enough to support the load of the new deck and anything which will go on the deck (including people).

The 20mm joists can be cut to length using a mitre saw.

If more than one length of the joist is required to cover the desired length, it is not necessary to 'join' the 20mm joists lengthways as the substructure will keep everything in line, so they can simply be butted together.

Screw the 20mm base profiles onto the top of the existing beams perpendicular to the planned direction of the decking boards. The 20mm base will need to be drilled to provide a clearance hole for the fixings. It is essential that the heads of the fixings do not stick above the top surface of the base section.

The ends of the 20mm joists need to be in line.



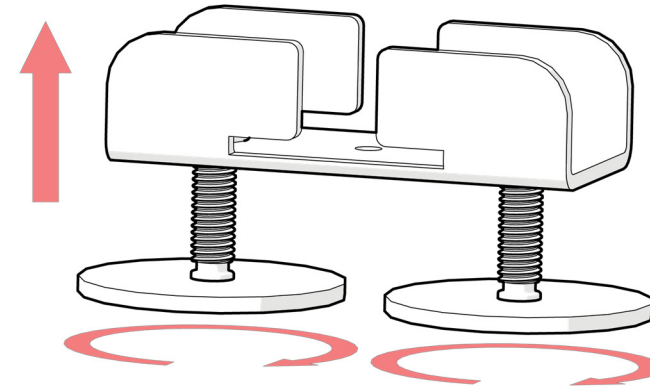
## Pedestal installation

The adjustable pedestals are designed make height corrections where the ground is not level.

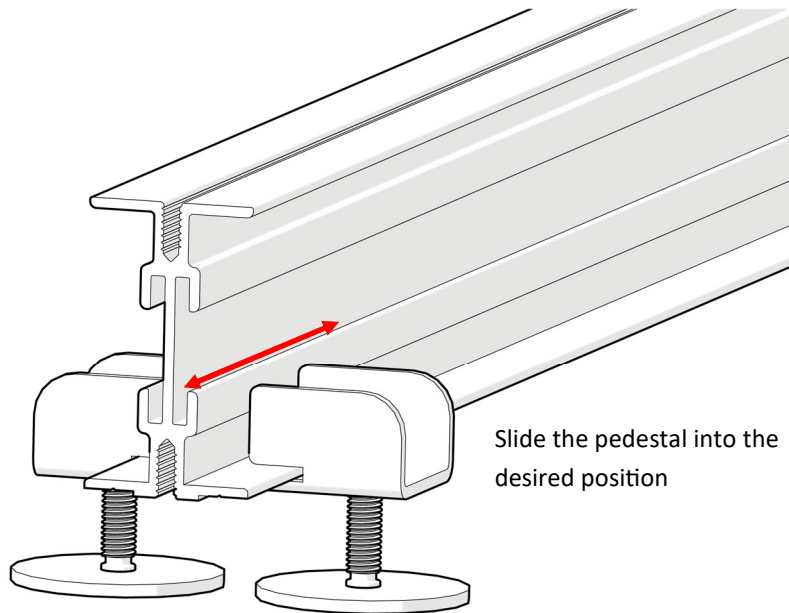
There are 2 pedestal options available for the 20mm joist and 1 available for the 70 and 120mm joist. The PED20 pedestal gives 12mm of adjustment, and a minimum height of 8mm to the underside of the joist. The PED20XR gives 22mm of adjustment and a minimum of 18mm to the underside of the joist. The PED50 is designed to work with all other joists (except the 20mm) and gives an adjustment range of 35mm and a minimum height of 8mm to the underside of the joist.

The mounting and operation of all these pedestals is identical. All pedestals are slid along the joist until in the desired position and the height is adjusted by rotating the feet. Both feet must be in contact with the ground.

Once the correct height has been achieved the lock nut can be tightened to prevent any unwanted movement of the feet.



Adjusting the pedestal

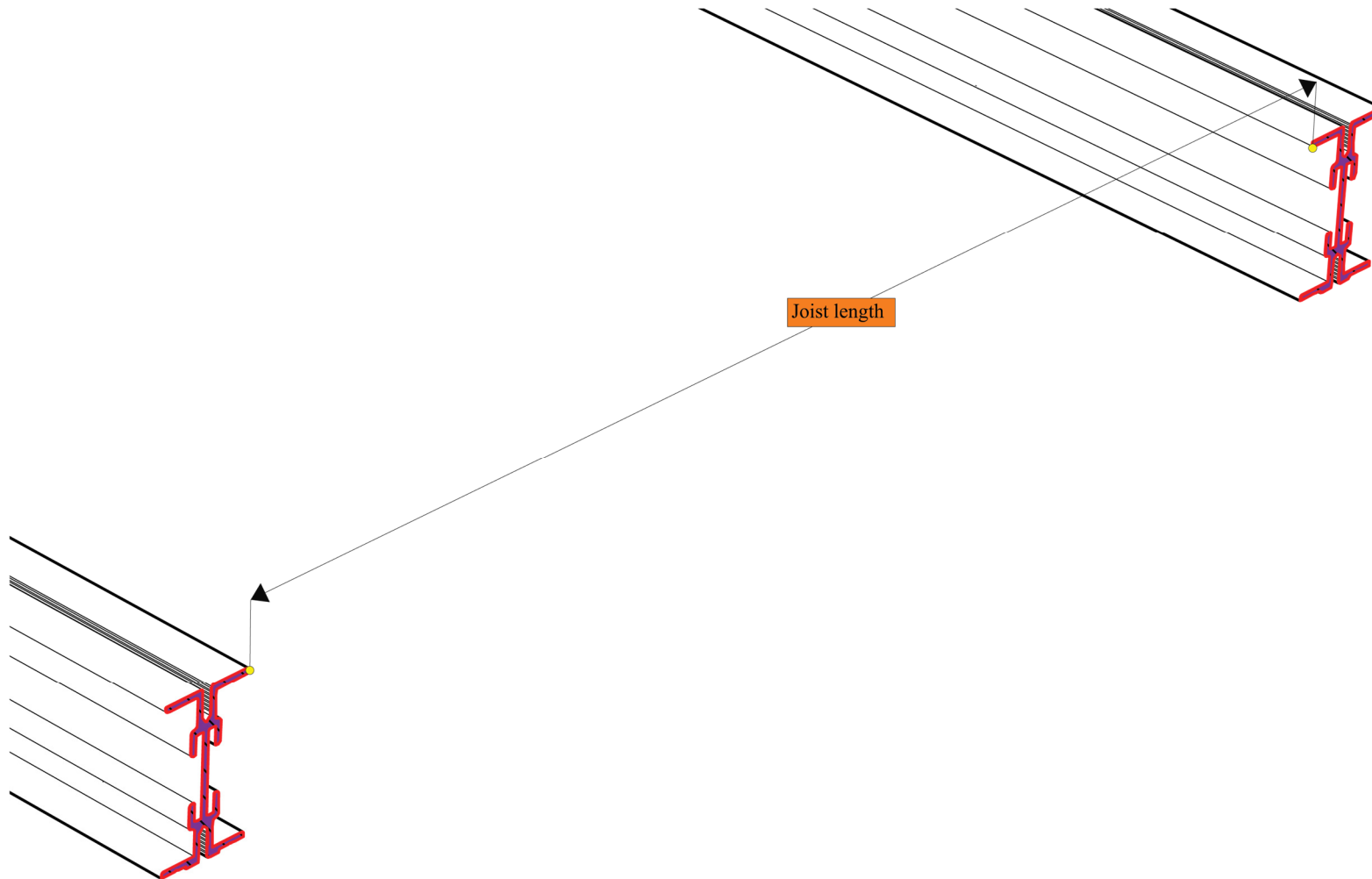
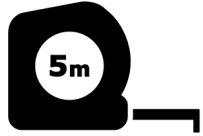


Slide the pedestal into the desired position

Locating the beam in the pedestal

The beam height is then adjusted but turning the feet of the pedestal clockwise to lower the beam and anticlockwise to raise the beam. Each threaded foot is provided with a locking nut to secure the foot once the desired height is achieved.

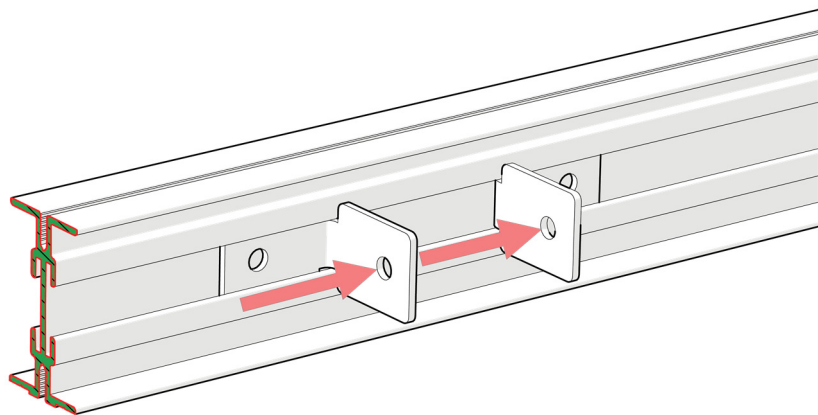
## Joist installation



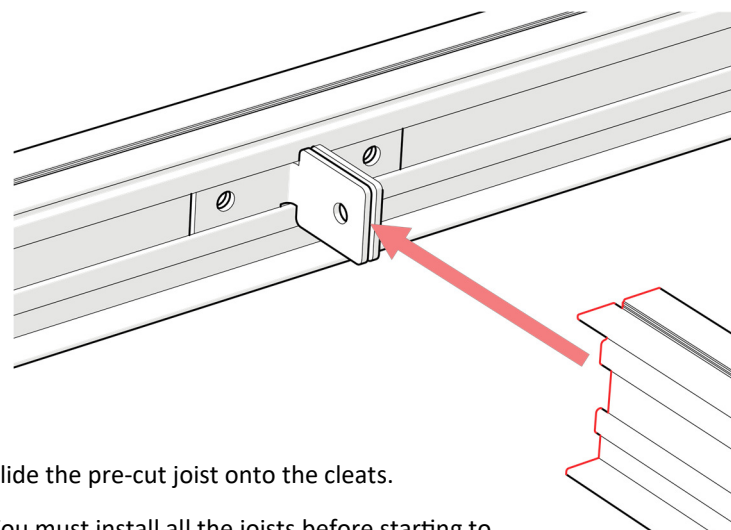
Carefully measure the internal distance from one main beam to the other, where you plan to install the joists. If the two main beams are parallel, the beams should all be the same length.

Once you are confident you have the correct dimension, cut the joists to the correct length using the compound mitre saw.

## Joist installation

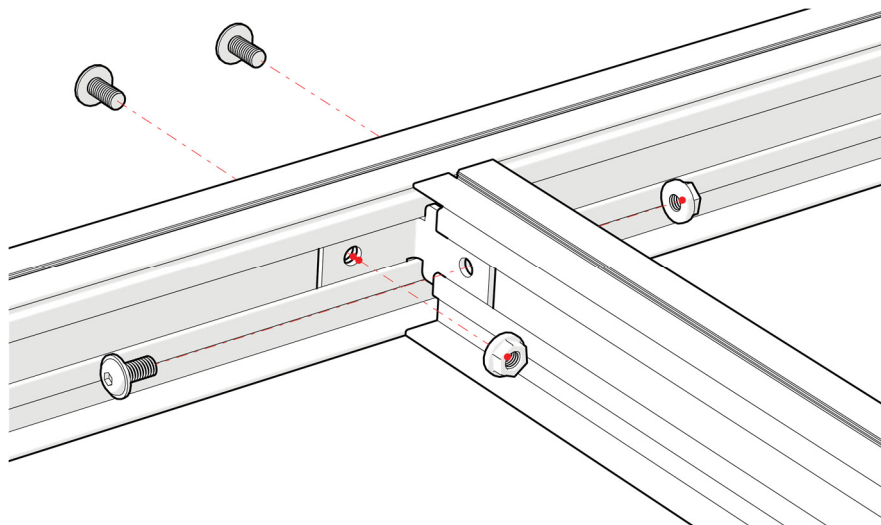


Slide the joist cleats along the main beam, ensure you use 2 cleats per joist and ensure they are handed as pairs (see image)

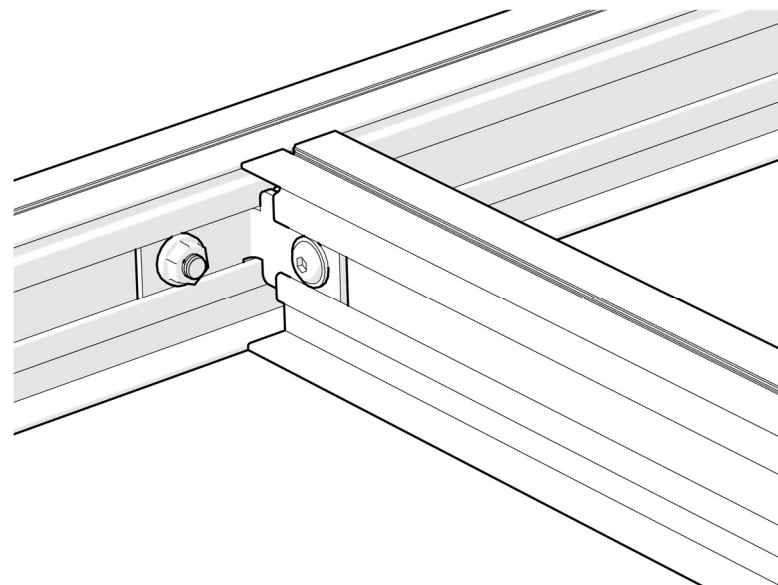


Slide the pre-cut joist onto the cleats.

You must install all the joists before starting to bolt them in place



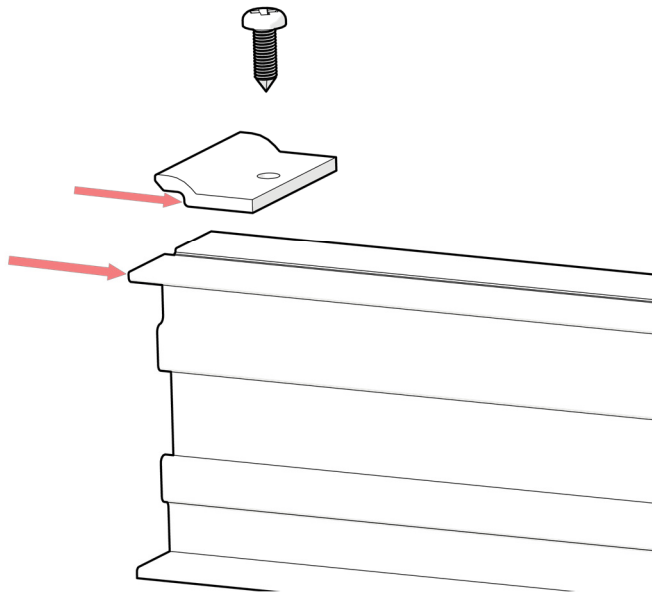
Once the joist is correctly located, clamp the arrangement and drill the joist and main beam, through the holes in the cleat using an 8mm drill bit



Once drilled, install and tighten the joist fixings. The fixings should be tightened to 16 Nm



## Starter Clip Installation



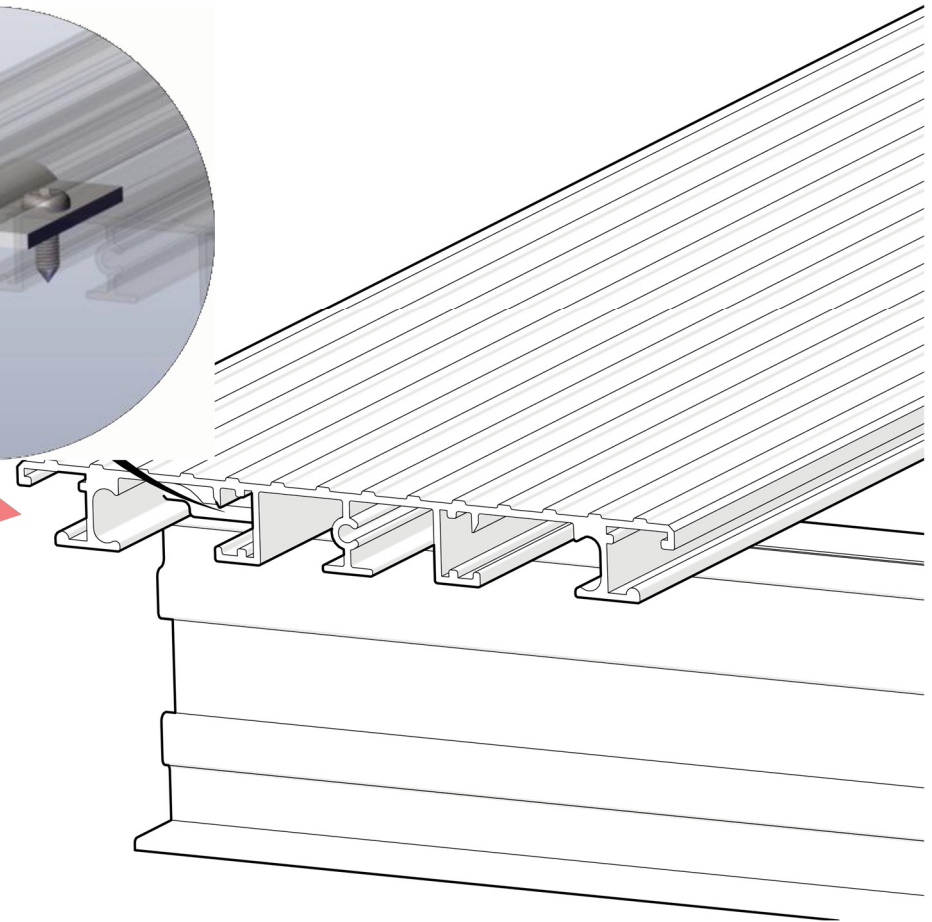
Once the base structure is assembled first job is to install the starter clips. The starter clips create a datum for the rest of the decking installation. It is essential that the starter clips are in line.

Using the setting tool, position the starter clip 23.5mm from the edge of the decking frame. This will result in the decking board being flush with the edge of the base structure.

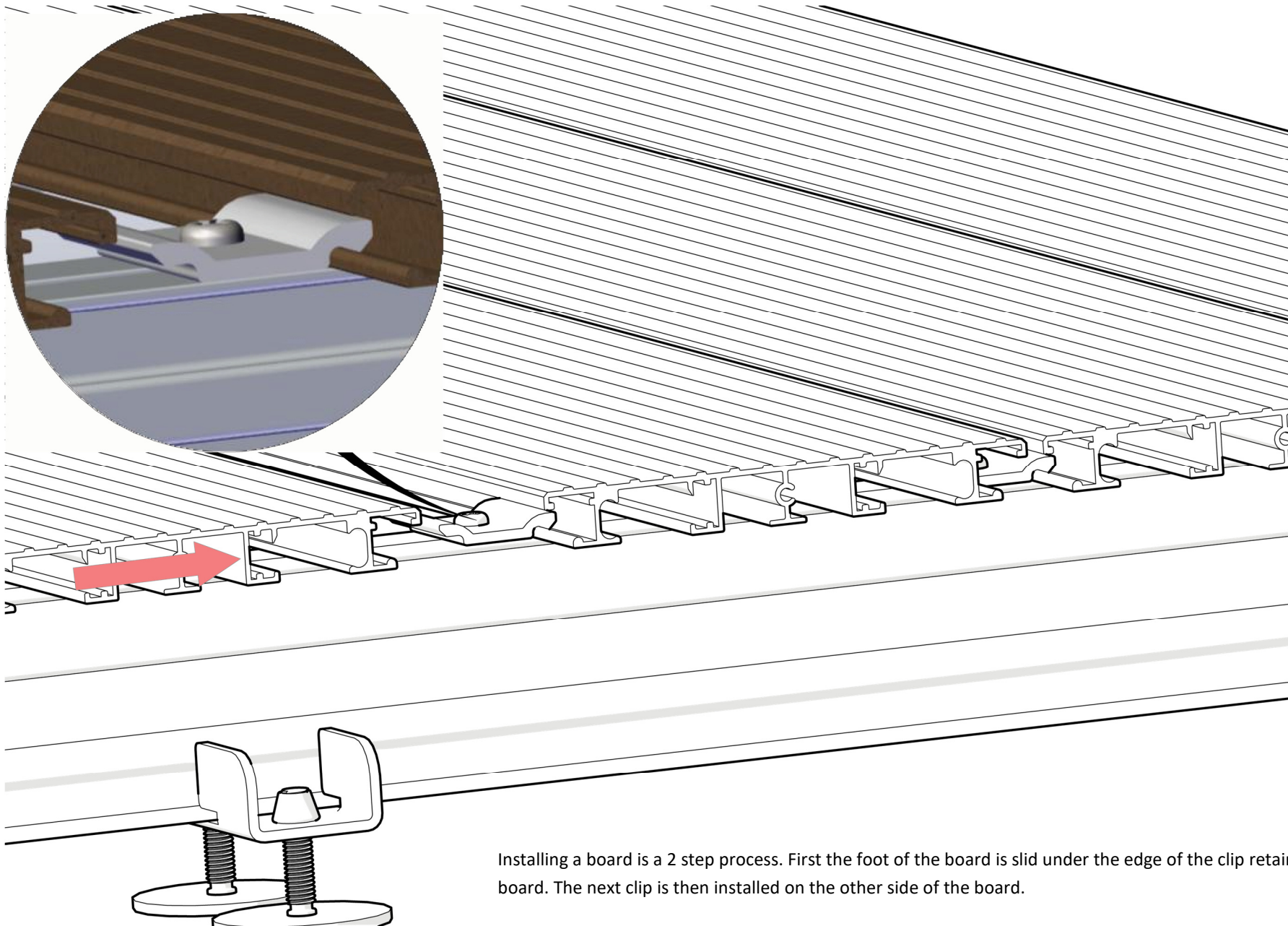
The starter clips are secured with the same fixings as the main clips.



Once the starter clips are installed, the process of installing the boards can begin. The first board hooks under the starter clip and the other side of the board is retained using the standard board clip.

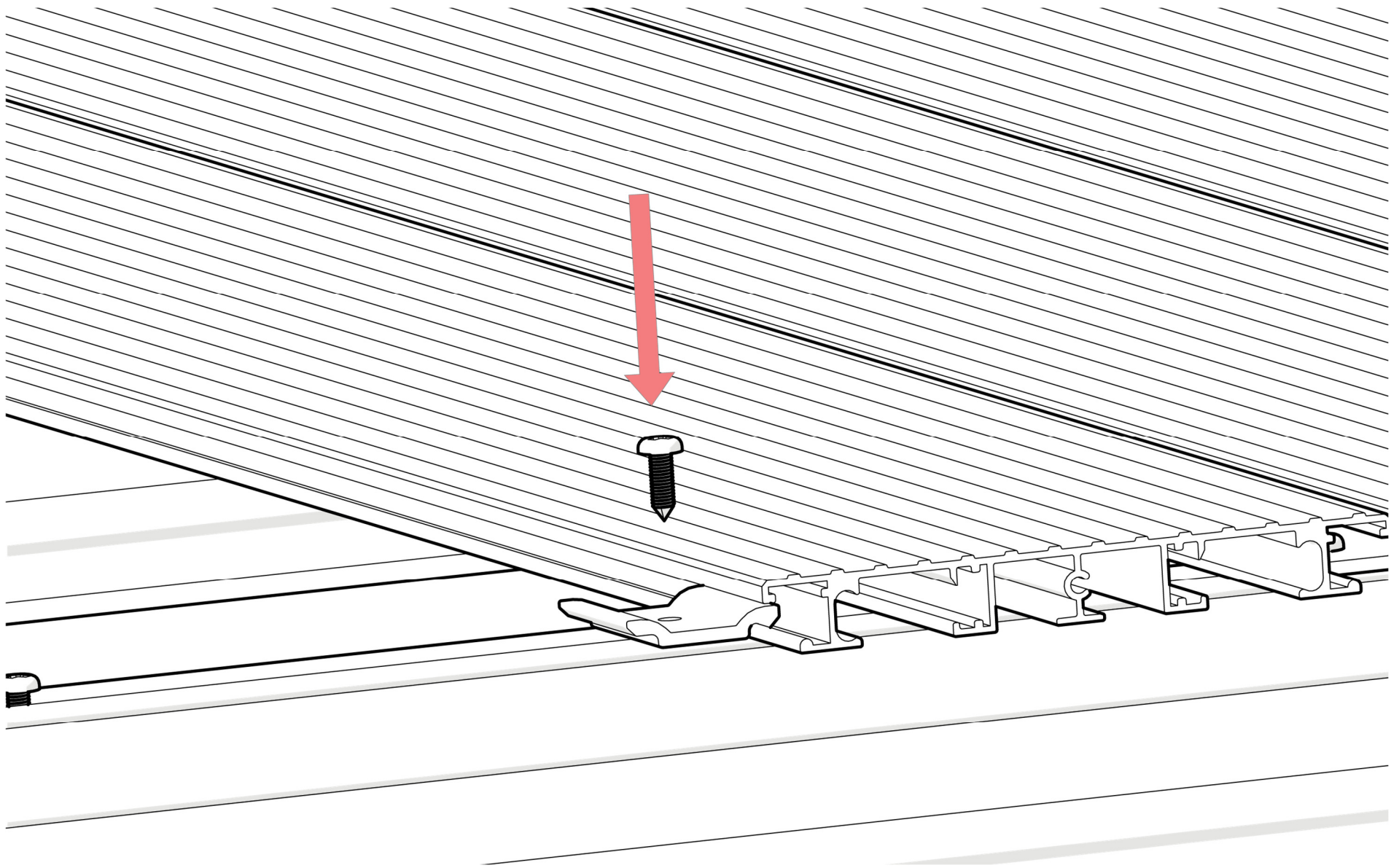


## Decking board installation—Step 1



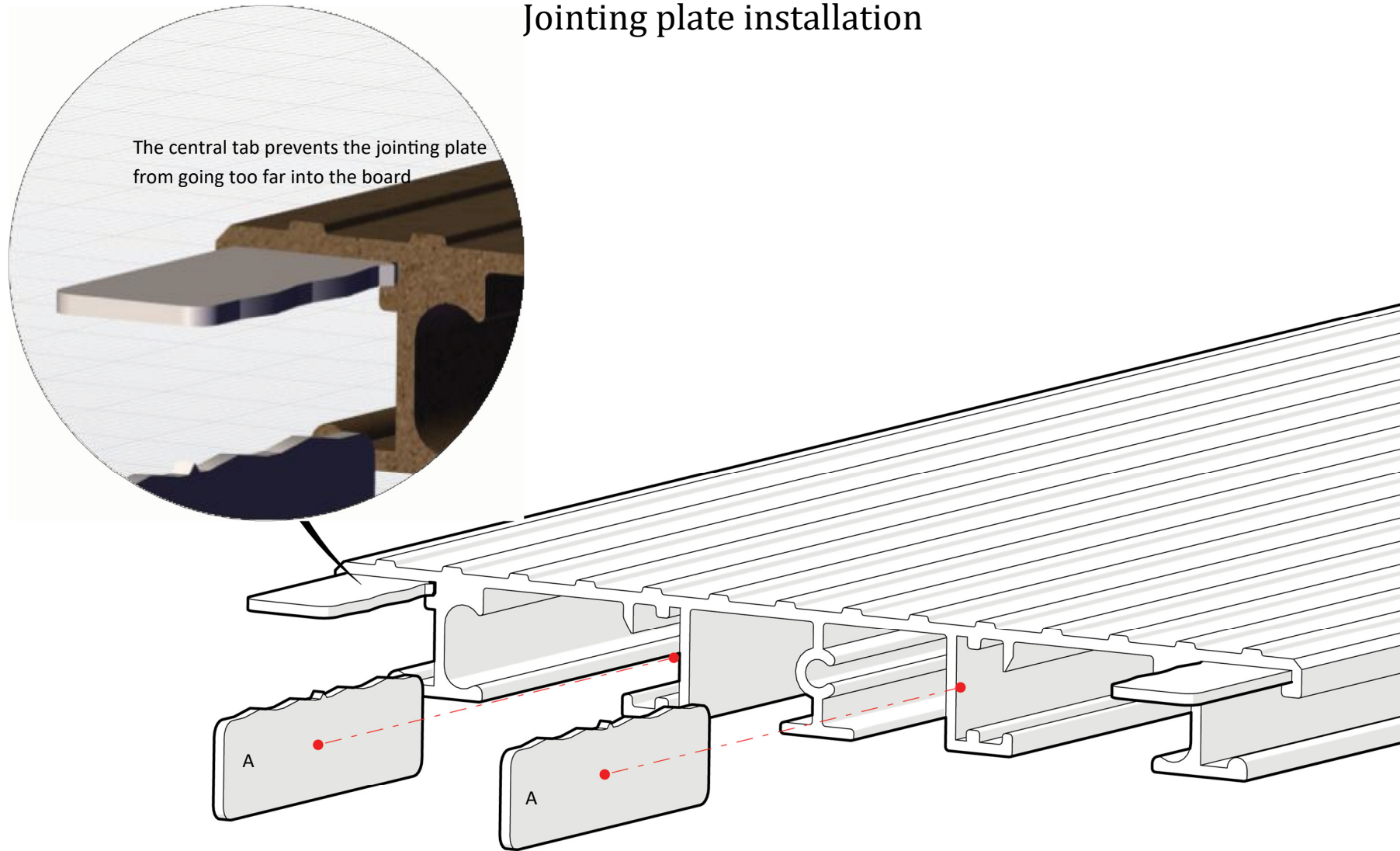
Installing a board is a 2 step process. First the foot of the board is slid under the edge of the clip retaining the previous board. The next clip is then installed on the other side of the board.

## Decking board installation—Step 2



Step 2, install the clips on the other side of the board to fully secure the board. Ensure the clip is orientated with the hook section over the foot of the board, and the flat side left open for the next board to slide under.

## Joining plate installation



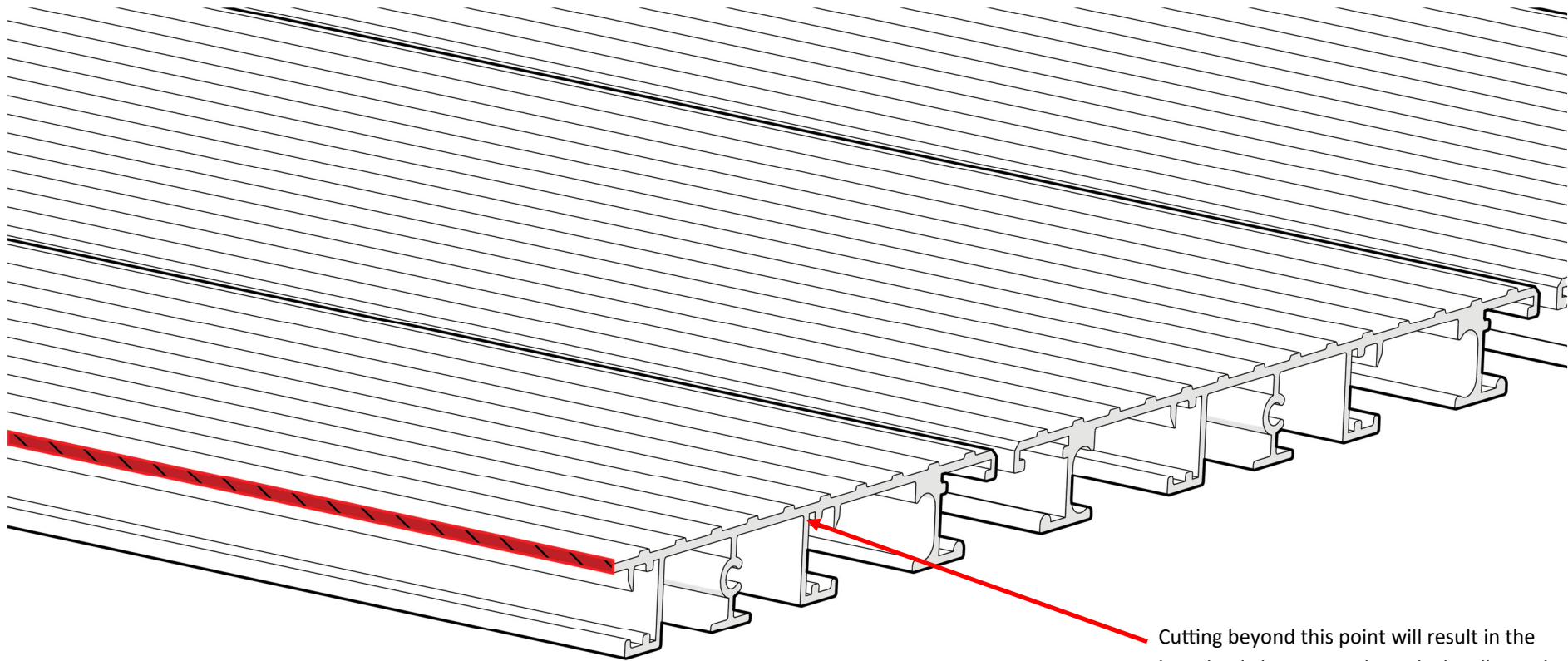
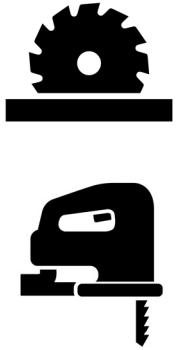
The joining plates are used for joining two decking boards together. 2 joining plates are required per joint (marked with A above), the other two may be used to enhance the finish of the joint, All joining plates should be installed as shown.

The plates are hammered into the end of one of the boards until the central tab on the plate reaches the cut edge of the board.

Once the plates are installed, the other board is located on the other end of the plates and tapped into place using a rubber mallet to avoid damage to the board.



## Cutting a board



Cutting beyond this point will result in the board only having one leg, which will greatly reduce its stability and is not advised

During installation it is necessary to cut the boards in length. This can easily be done with a compound mitre saw. This should result in a clean cut, which is easily covered using the end cap.

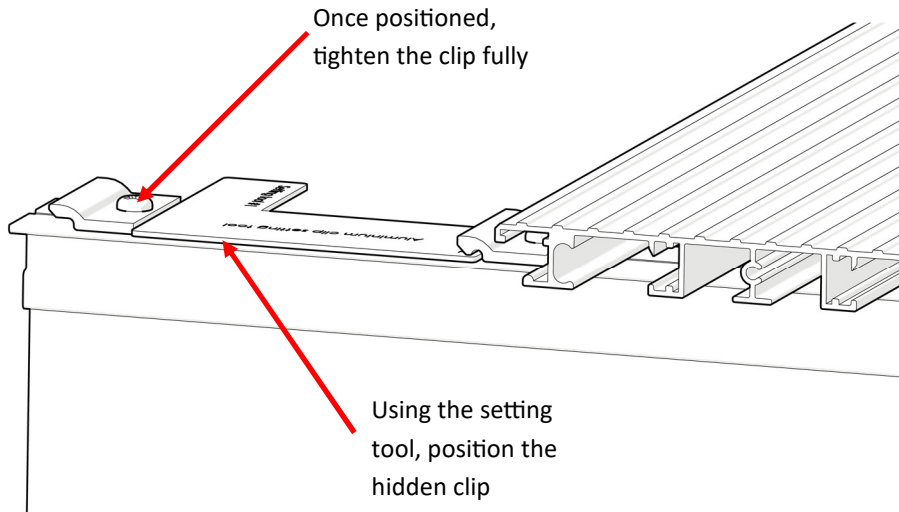
It may also be necessary to reduce the width of the last board within a deck, it is preferable to cut the board which is located against a wall or similar to mask the cut edge. The cut can be carried out using a jigsaw equipped with a metal cutting blade.

It is not recommended to cut beyond the second leg as this will result in a board with just one leg, which is not stable.

# Starter Clip Installation—Final Board



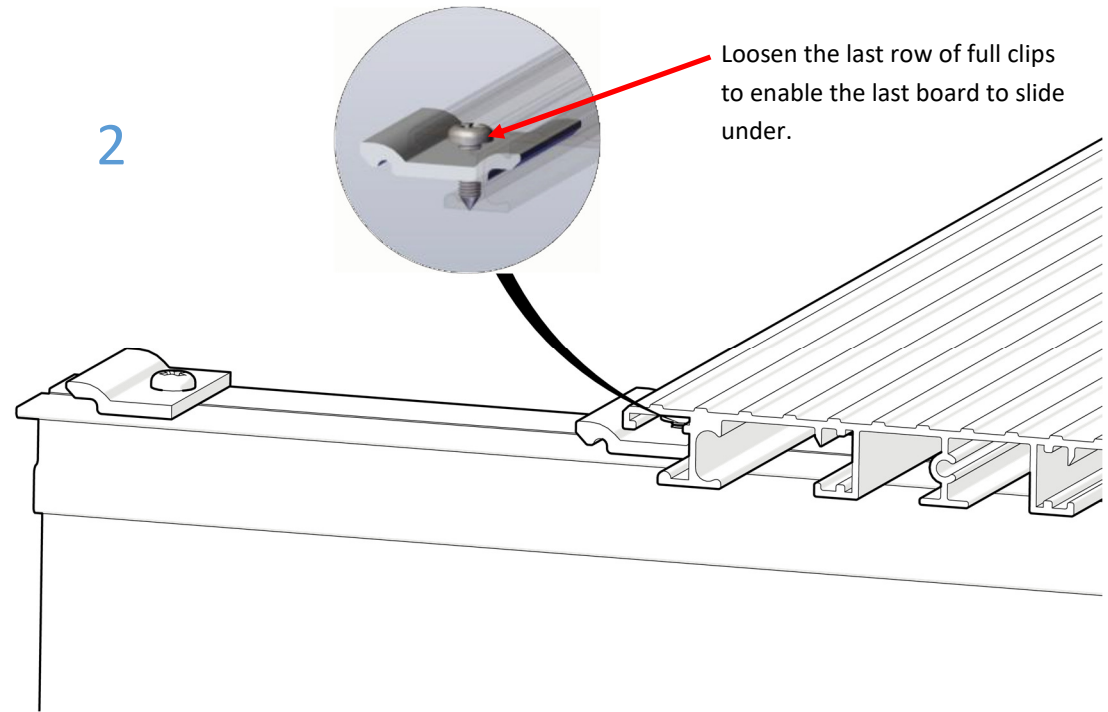
1



The final board is retained using a hidden clip.

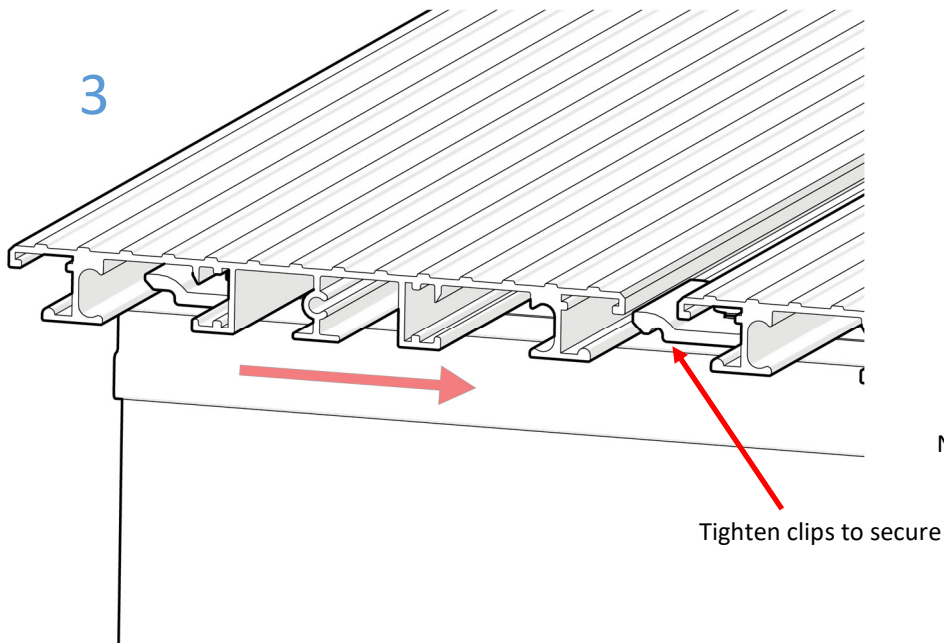
Once the penultimate board is secured. Use the setting tool to determine the location of the hidden clip.

2

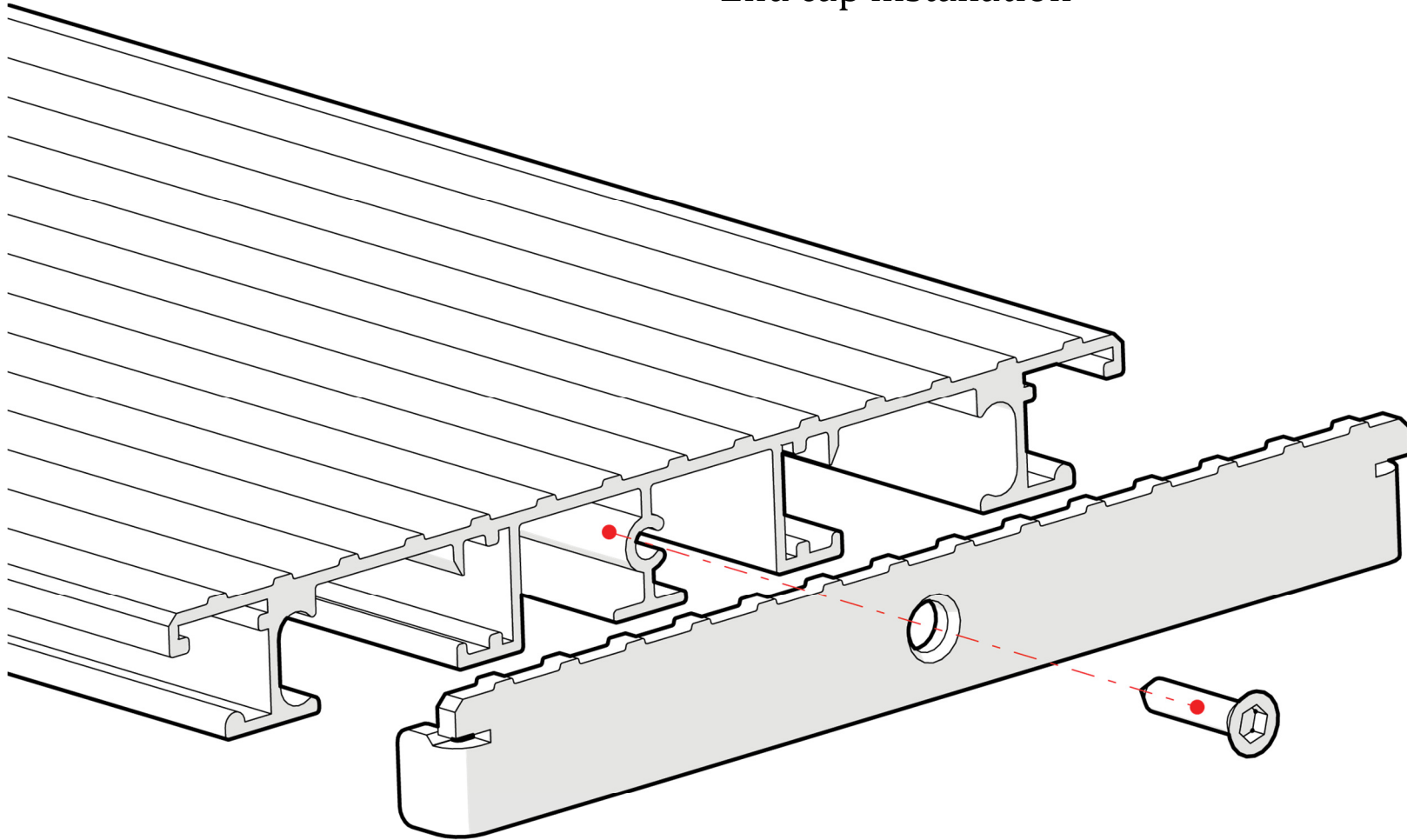


Now slide the last board into position and finally tighten the row of clips to secure.

3



## End cap installation



It is essential that the end of the board is cut cleanly and perpendicular to the board to ensure the end cap fits properly. Once the board is cut to length, the end cap can be installed.

The end cap has the same profile as the board on the upper edge. The cap is secured using 1 x No. 7 counter sunk fixing, which is supplied with the end cap. It is also recommended that a small amount of silicon sealant (same colour as the board) is added to the rear of the cap prior to installation to create a more professional finish.