



NewTechWood

Decking Installation Guide

v20161128



NewTechWood UltraShield®

IMPORTANT: Read all sections before you start

For the most up to date information please visit our website @ www.newtechwood.com

Prior to installing any composite decking it is recommended that you check with local building codes for any special requirements or restrictions. The diagrams and instructions outlined in this guide are for illustration purposes only and are not meant or implied to replace a licensed professional. Any construction or use of NewTechWood must be in accordance with all local zoning and/or building codes. The consumer assumes all risks and liability associated with the construction and use of this product.

Safety

When dealing with any type of construction project it is necessary to wear appropriate safety equipment to avoid any risk of injuries. NewTechWood recommends but is not limited to the following safety equipment when handling, cutting, and installing NewTechWood: gloves, a respiratory protection, long sleeves, pants, and safety glasses.

Tools

Standard woodworking tools may be used. It is recommended that all blades have a carbide tip. Standard stainless steel or acceptable coated deck screws and nails are recommended.

Environment

A clean, smooth, flat, and strong surface is needed to install NewTechWood's products correctly. Please check with local building codes before ever installing any type of decking. If installation does not occur immediately NewTechWood's products need to be put on a flat surface at all times. Never ever should it be put on a surface that isn't flat.

Planning

Plan a layout for your decking before starting it to ensure the best possible looking decking for your project. Building codes and zoning ordinances generally apply to permanent structures, meaning anything that is anchored to the ground or attached to the house. So nearly every kind of decking requires permits and inspections from a local building department. We recommend drawing out a site plan of your proposed project that you intend to do to minimize errors and make your perfect decking.

Construction

NewTechWood UltraShield is NOT intended for use as columns, support posts, beams, joist stringers or other primary load-bearing members. NewTechWood must be supported by a code-compliant substructure. While NewTechWood products are great for retrofits NewTechWood's products CANNOT be installed on existing decking boards.

Static

Static build-up is a natural occurring phenomenon that can occur with many plastic products. Dry and windy environments may make this even more apparent, this all varies depending on the climate and age of the decking.

Ventilation

NewTechWood products **CANNOT** be directly installed onto a flat surface. It must be installed onto a substructure, so there is adequate and unobstructed air flow under the decking to prevent excessive water absorption. A minimum of 100 mm (4 inches) of continuous net free area under the decking surface is required for adequate ventilation on all decking so air can circulate between adjacent members to promote drainage and drying.

Heat and Fire

Excessive heat on the surface of NewTechWood products from external sources such as but not limited to fire or reflection of sunlight from energy efficient window products. Low-emissivity (Low-E) glass can potentially harm NewTechWood products. Low-E glass is designed to prevent passive heat gain within a structure and can cause unusual heat build-up on exterior surfaces. This extreme elevation of surface temperatures, which exceeds that of normal exposure, can possibly cause NewTechWood products to melt, sag, warp, discolor, increase expansion/contraction, and accelerate weathering.

Current or potential NewTechWood customers that have concerns about possible damage by Low-E glass should contact the manufacturer of the product which contains Low-E glass for a solution to reduce or eliminate the effects of reflected sunlight.

Fasteners

When fastening NewTechWood's products all screws that are face fastened should always be driven in at a 90 degree angle to the decking surface. **Toe nailing/screwing should never be done to the products.** An extra joist should be added if a 90 degree angle cannot be driven into the board.

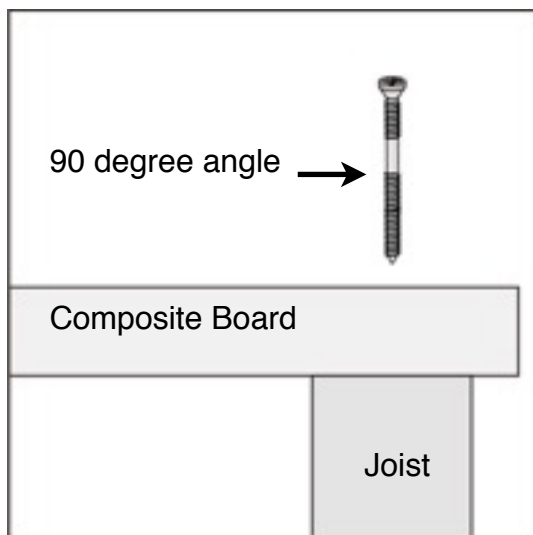


Diagram 1

All fasteners should be on their own independent joists, when two boards ends meet each other there must be a sister joist. The end of each board must sit on its own joist.

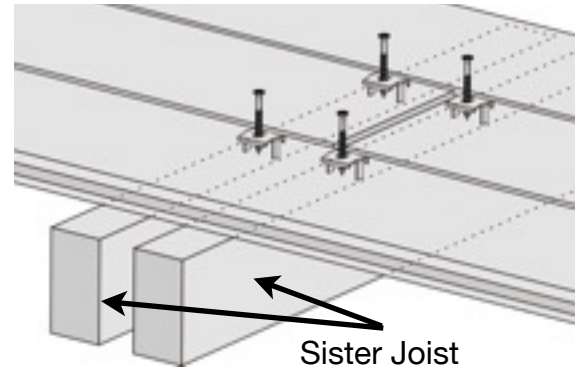


Diagram 2

Use white chalk, straight boards, or string lines as templates for straight lines. **NEVER USE COLORED CHALK.** Colored chalk will permanently stain NewTechWood's products and are highly not recommended.

All nails/screws that are face fixed should always be stainless steel. When face fixing always go in at least from the ends and width of the board by 1"1/2 (25.4 mm) as shown in Diagram 3.

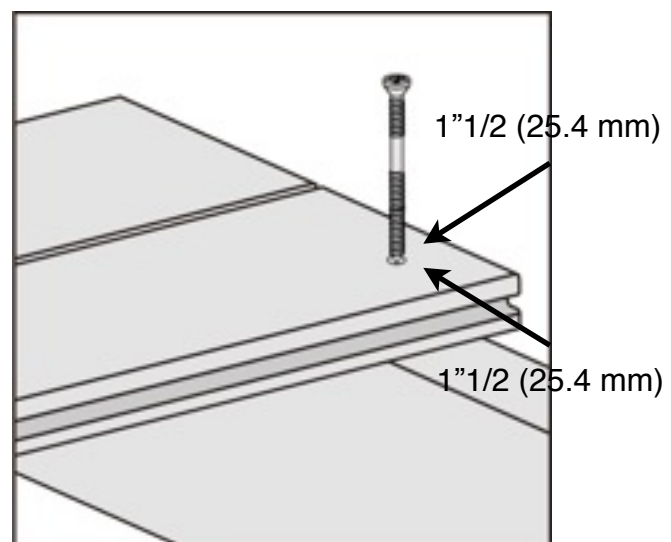


Diagram 3

Fasteners Continued

Always use screws designated for use with composite decking material. Always test the screws on a scrap piece of board to ensure the screws do not cause the surface of the decking to mushroom or bulge around the head of the screw. If it does cause this issue, change to a different brand of screw.

When choosing which screws/nails to use always check first with your local home centers and hardware stores to see if they have screws that are engineered specifically for composite wood. These screws/nails will always work and give NewTechWood's products the best looking outcome, using other screws/nails that are not recommended for composite could potentially damage/harm the decking. If you are unsure which screw/nail to use contact your manufacturer for more information.

Recommend screws from other manufacturers:

Cap-tor xd screws by Starborn Industries

Acclimate

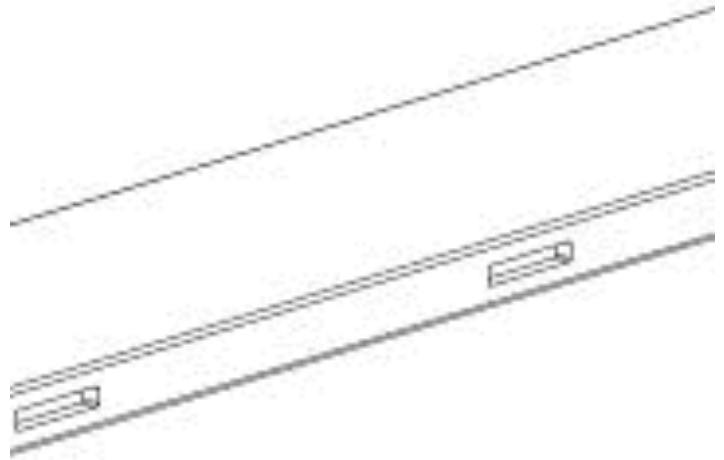
Acclimating at least 2 days prior to installation is recommended

Acclimating the boards will get rid of any unwanted shrinkage issues seen during and after installation.

Note: Always remember when allowing the boards to acclimate at the job site it is important to put it on a flat and even surface. If put on an uneven surface there is a possibility that the boards could warp to the shape of the terrain.

Routing

Solid boards can be routed for hidden fasteners to be placed in them as shown below.

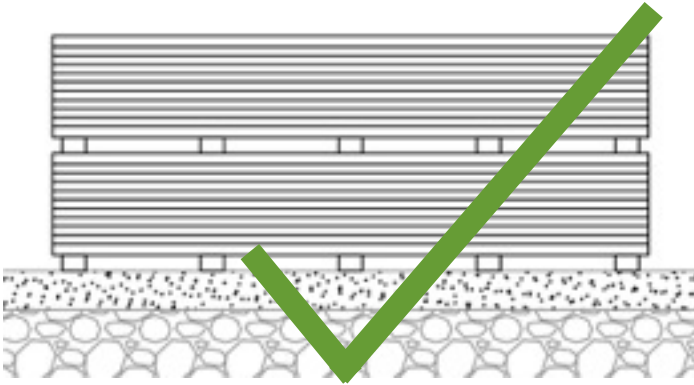


Note: Boards should never be routed the entire length.

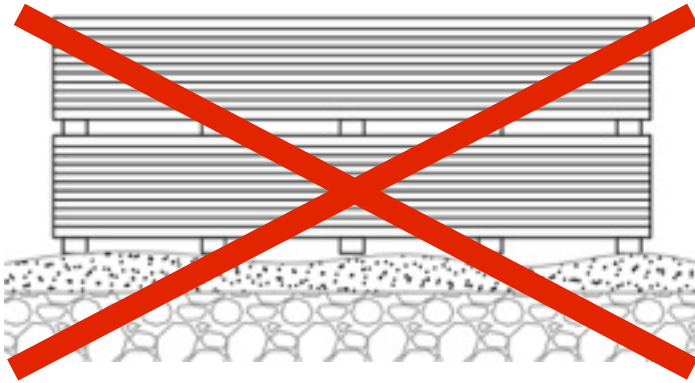
Fascia boards can also be routed to allow for expansion and contraction.

Storage

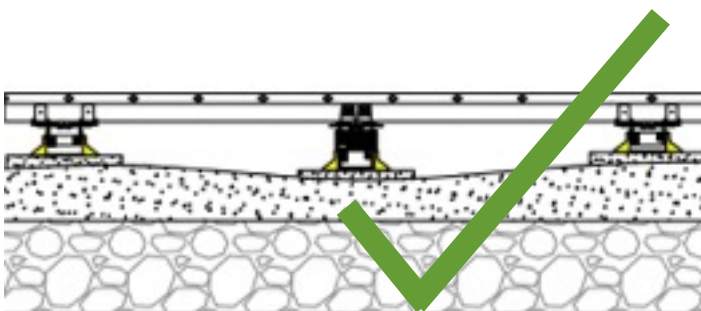
NewTechWood's products always need to be stored on flat solid surfaces. Surfaces such as dirt and grass are not sufficient as they can move over time.



NewTechWood products shown above put on a flat surface on joists, this is the correct way for storage.



NewTechWood products shown above on an uneven surface which will make the products prone to warping and distortion.



NewTechWood products shown above can be on pedestals or jacks if the surface is uneven. Consult with the pedestal or jack manufacturer before using the product to ensure its compatibility with NewTechWood's products

Framing

First, determine the decking span, that is , how far apart your joists will be.

The frame needs to be completely level before installing any boards.

Note: Adequate spacing in the joists is required to keep the deck boards from bending. Please review the chart on page 9 of this installation guide to see what spacing is required for your profile.

Maximum Decking Spans on Center-to-Center				
Region	Profile	Dimensions	Residential Span	Commercial Span
North America South America South Africa Europe South Korea	US07, Solid Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	US01, Grooved Solid Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	US02, Grooved Channeled Solid Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	UH02, Grooved Circle Hollow Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	UH07, Grooved Channeled Hollow Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	UH01, Grooved Channeled Square Hollow Board	138 x 22.5 mm (5.5 x 0.9 inches)	300 mm (12 inches)	Only to be used for residential

Joist Spanning on Center-to-Center with Angled Decking Installations		
Degree of Angle	Dimensions	Spacing
90	138 x 22.5 mm 5.5 x 0.9 inches	Refer to the above tables
60	138 x 22.5 mm 5.5 x 0.9 inches	50 mm (2 inches) less than the stated above tables
45	138 x 22.5 mm 5.5 x 0.9 inches	100 mm (4 inches) less than the stated above tables
30	138 x 22.5 mm 5.5 x 0.9 inches	1/2 the distance stated in the above tables

Maximum Decking Spans on Center-to-Center

Region	Profile	Dimensions	Residential Span	Commercial Span
Middle East Asia (excluding South Korea)	US07, Solid Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	US01, Grooved Solid Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	US02, Grooved Channeled Solid Board	138 x 22.5 mm (5.5 x 0.9 inches)	400 mm (16 inches)	300
	UH02, Grooved Circle Hollow Board	138 x 22.5 mm (5.5 x 0.9 inches)	350 mm (14 inches)	250
	UH07, Grooved Channeled Hollow Board	138 x 22.5 mm (5.5 x 0.9 inches)	350 mm (14 inches)	250
	UH01, Grooved Channeled Square Hollow Board	138 x 22.5 mm (5.5 x 0.9 inches)	300 mm (12 inches)	Only to be used for residential

Expansion and Contraction Values

NewTechWood deck boards will experience expansion and contraction with changes in temperature. Expansion and contraction are most significant where extreme temperature changes occur. Fastening the deck planks according to the gapping requirements noted in the following table accommodates for this movement.

Expansion and Contraction table of values for Europe, Russia, Northern Asia (between 40 N and 20 N in latitude)

Length (Meters) \ Installation Temperature (°C)	Length (Meters)									
	1	2.44	2.8	3	3.66	3.9	4	4.88	5.4	
-10	2.4	5.9	6.7	7.2	8.8	9.4	9.6	11.7	13.0	Gap
-5	2.2	5.4	6.2	6.6	8.1	8.6	8.8	10.7	11.9	
0	2.0	4.9	5.6	6.0	7.3	7.8	8.0	9.8	10.8	
5	1.8	4.4	5.0	5.4	6.6	7.0	7.2	8.8	9.7	
10	1.6	3.9	4.5	4.8	5.9	6.2	6.4	7.8	8.6	
15	1.4	3.4	3.9	4.2	5.1	5.5	5.6	6.8	7.6	
20	1.2	2.9	3.4	3.6	4.4	4.7	4.8	5.9	6.5	
25	1.0	2.4	2.8	3.0	3.7	3.9	4.0	4.9	5.4	
30	0.8	2.0	2.2	2.4	2.9	3.1	3.2	3.9	4.3	
35	0.6	1.5	1.7	1.8	2.2	2.3	2.4	2.9	3.2	
40	0.4	1.0	1.1	1.2	1.5	1.6	1.6	2.0	2.2	

Diagram 4

Expansion and Contraction table of values for North America, Canada, Australia and Asia (between 20 N and 20 S in latitude)

Length (Meters) \ Installation Temperature (°C)	Length (Meters)									
	1	2.44	2.8	3	3.66	3.9	4	4.88	5.4	
0	1.4	3.4	3.9	4.2	5.1	5.5	5.6	6.8	7.6	Gap
5	1.2	2.9	3.4	3.6	4.4	4.7	4.8	5.9	6.5	
10	1	2.4	2.8	3	3.7	3.9	4	4.9	5.4	
15	0.8	2	2.2	2.4	2.9	3.1	3.2	3.9	4.3	
20	0.6	1.5	1.7	1.8	2.2	2.3	2.4	2.9	3.2	
25	0.4	1	1.1	1.2	1.5	1.6	1.6	2	2.2	
30	0.2	0.5	0.6	0.6	0.7	0.8	0.8	1	1.1	

Diagram 5

Expansion and Contraction Values Continued

Expansion and Contraction table of values for Africa, Middle East, GCC, South America, and Latin America

Length (Meters) Installation Temperature (°C)	1	2.44	2.8	3	3.66	3.9	4	4.88	5.4	Gap
	10	1.2	3.9	4.5	4.8	5.9	6.2	6.4	7.8	
15	1.4	3.4	3.9	4.2	5.1	5.5	5.6	6.8	7.6	
20	1.2	2.9	3.4	3.6	4.4	4.7	4.8	5.9	6.5	
25	1	2.4	2.8	3	3.7	3.9	4	4.9	5.4	
30	0.8	2	2.2	2.4	2.9	3.1	3.2	3.9	4.3	
35	0.6	1.5	1.7	1.8	2.2	2.3	2.4	2.9	3.2	
40	0.4	1	1.1	1.2	1.5	1.6	1.6	2	2.2	
45	0.2	0.5	0.6	0.6	0.7	0.8	0.8	1	1.1	

Diagram 6

If the country you are installing for cannot be found in the above tables a manual calculation can be done:

What you will need to know:

- Coefficient of Linear Expansion (CLE): 0.04 mm/m (°C) / 20.2 x 10E-6 inch/inch/ (°F)
- Installation Temperature (°C or °F)
- Max or Minimum Temperature in your region (°C or °F)

- a. When installing at a low temperature always use the maximum temperature in your region to calculate
- b. When installing at a high temperature always use the minimum temperature in your region to calculate

-Length of the Board (mm / inches)

Gapping = Coefficient of Linear Expansion (CLE, °C or °F) x Length of the Board (mm / inches) x (Max. or Min. Temp. in your region - Installation Temp., °C or °F)

Note: If you are still unsure of what gapping to use contact the manufacturer and they will give you the correct gapping requirements based on your environment and area.

Expansion and Contraction Values Continued

When installing boards one full length across the deck we recommended locking the board in the middle to allow for even expansion and contraction to take place on both ends as shown in Diagram 7.

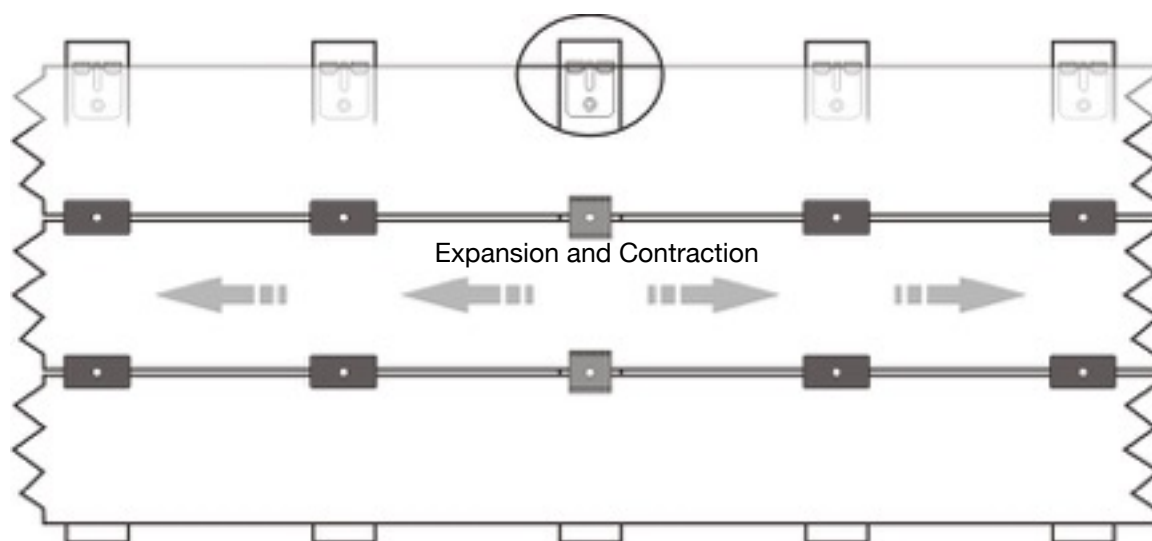


Diagram 7

Expansion and Contraction Values Continued

When installing boards two boards are installed across the deck locking clips are recommended to be used at the butt joints to ensure proper gapping during expansion and contraction as shown in Diagram 8.

Note: When butt jointing boards sister joisting must be used so that each individual board is on its own joist to ensure that the board will not slide off the joist, failure to do so will void the warranty, as shown in Diagram 8.

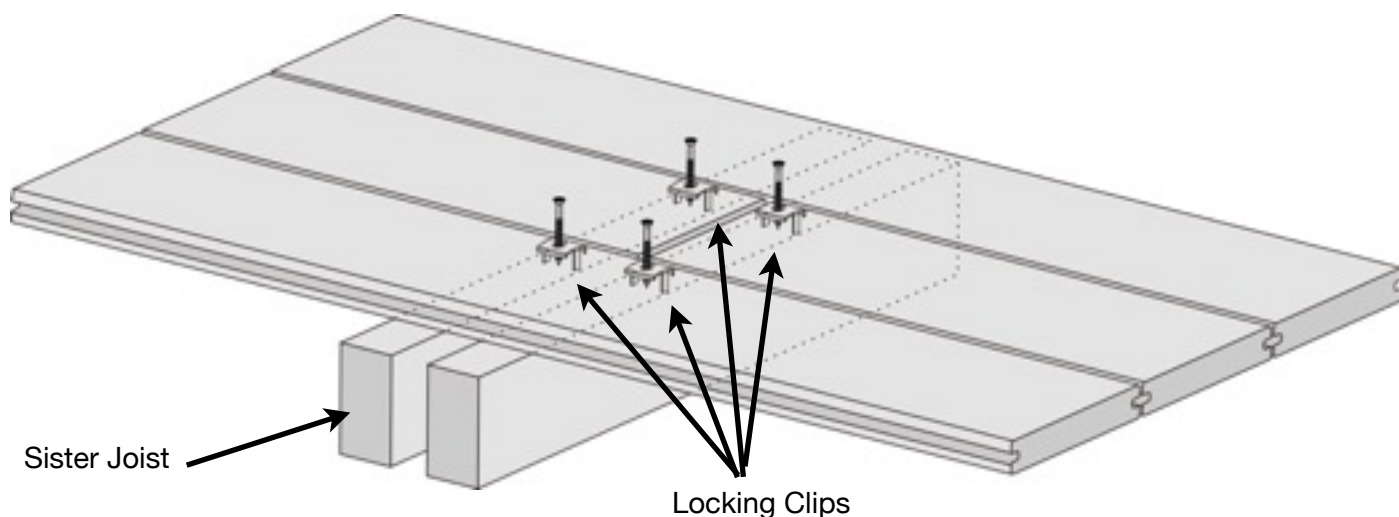


Diagram 8

We recommend where there is a length of more than two boards needed to make the deck, a breaker board should be introduced as shown in Diagram 9.

Breaker Board Installation

Diagram 9 and 10 below show how framework and installation of the breaker board respectively.

Diagram 9 framework uses a ladder joist installation where the user is building a frame perpendicular for the board that will be running down it.

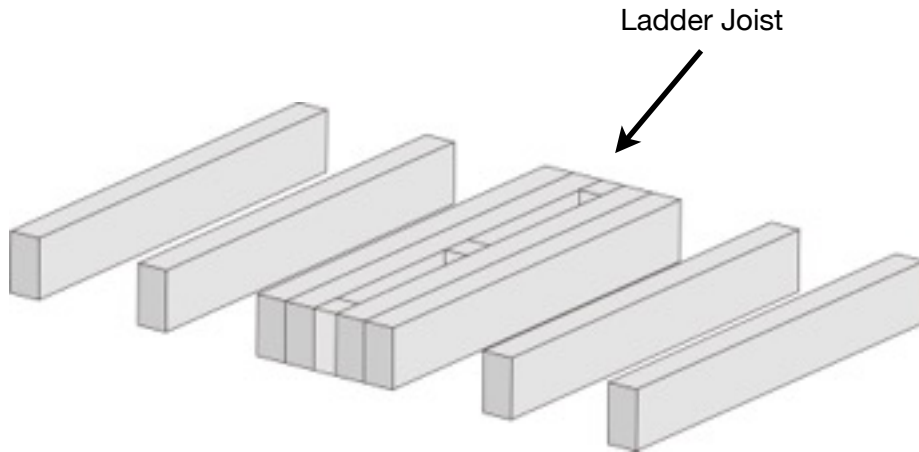


Diagram 9

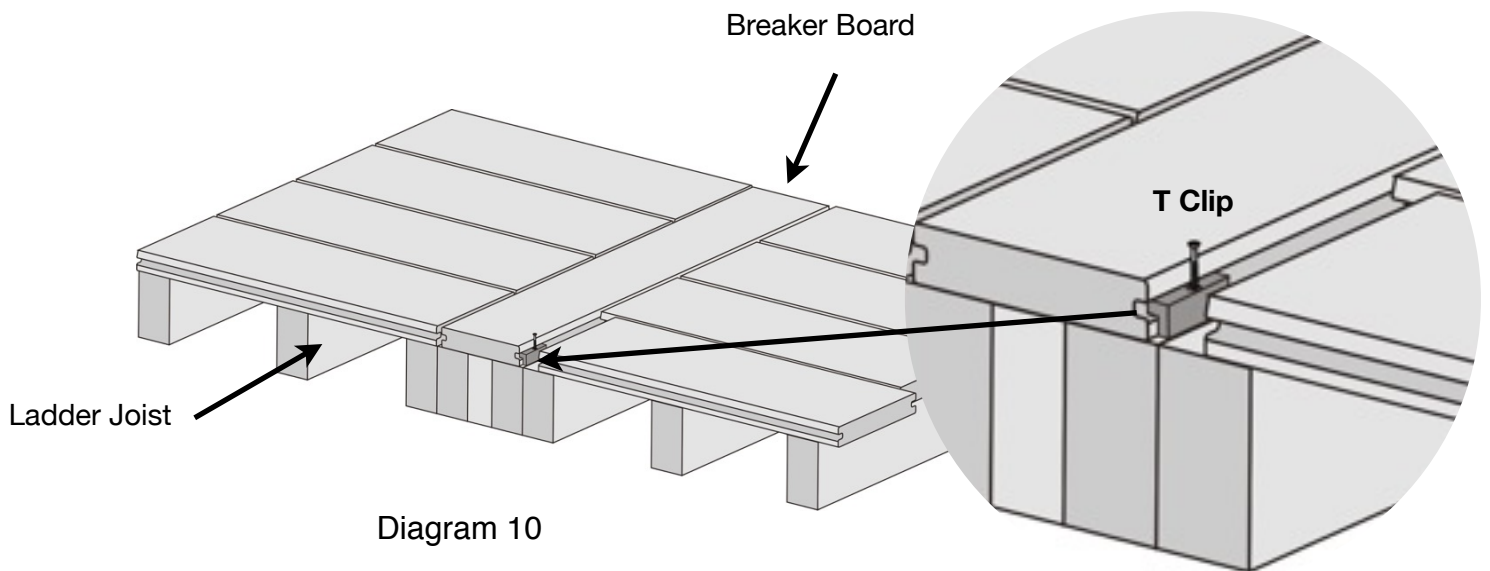


Diagram 10

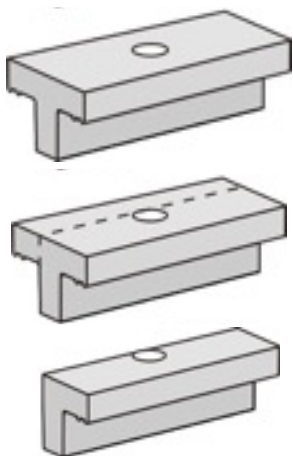
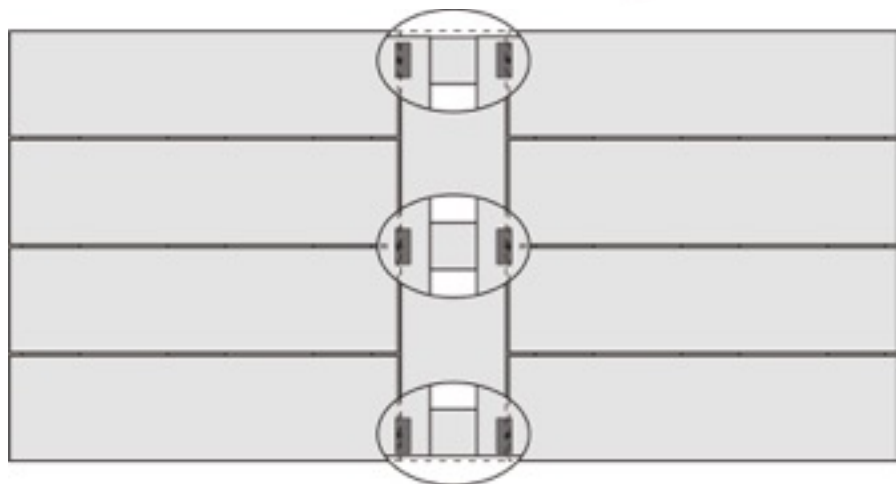


Diagram 11

Note: The T-Clip can be used as a breaker board clip by cutting it in half as shown in Diagram 11.



Note: Above view of completed breaker board with T-Clips cut in half.

Stair Tread Installation

Review Diagram 12 and the table below with the maximum spacing from center to center for stair tread installation.

Stair treads built with NewTechWood must meet requirements by the major national building codes. Consult your local municipality for specific requirements.

A minimum of four (4) stringers are required.

Overhang on a stair tread should not exceed more than 15 mm (5/8 inch).

Note: Stair treads should only be installed using solid profiles. Using any type of hollow board for stair treads will not be warrantied.

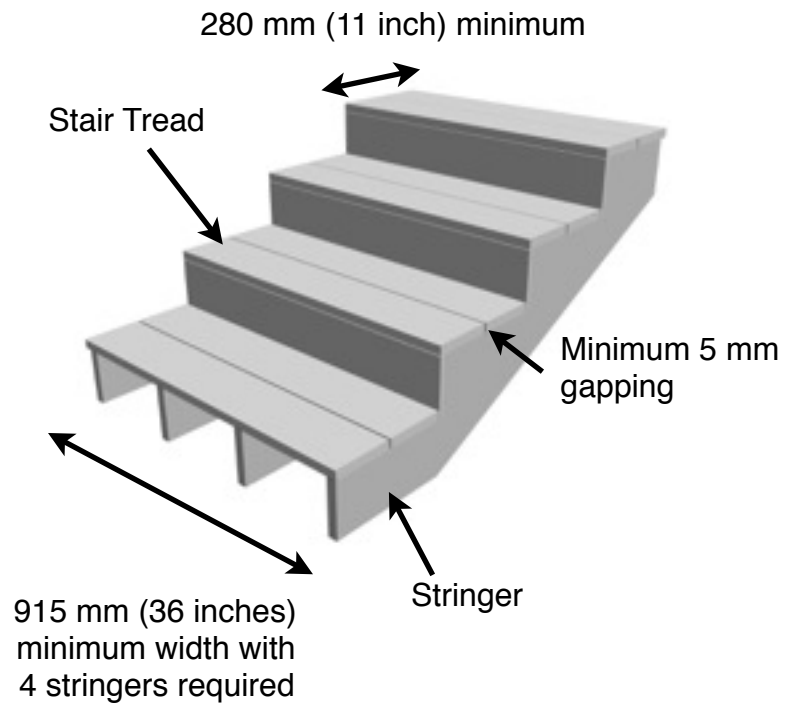


Diagram 12

Maximum Spacing Center-to-Center on Stair Stringers and Bullnose		
Profile	Dimensions	Spacing
US07 Solid Board	138 x 22.5 mm 5.5 x 0.9 inches	305 mm (12 inches)
US01 Solid with Grooves	138 x 22.5 mm 5.5 x 0.9 inches	305 mm (12 inches)
US33 Bullnose	138 x 22.5 mm 5.5 x 0.9 inches	305 mm (12 inches)

Bullnose Installation

Use the table on the previous page to determine the center to center spacing for the bullnose profile.

A minimum of four (4) stringers are required when installing the bullnose profile.

Overhang on a stair tread should not exceed more than 15 mm (5/8inch).

Starting Accessory Installation:

1. First determine how many boards your stair is going to take to finish (with clips) and then you can start to measure where the TC-5/MG-3 starting clip will go. Use a white chalk line (**NEVER USE COLORED CHALK**) to ensure that all TC-5/MG-3 starting clips are lined up on each joist.

Note: The bullnose profile can only cantilever 15 mm (5/8 inch). If the bullnose profile cantilevers more than this the warranty will be

Bullnose Installation:

1. Now take the bullnose profile and place it right over all the TC-5/MG-3 starting clips and push down as show in Diagram 14.

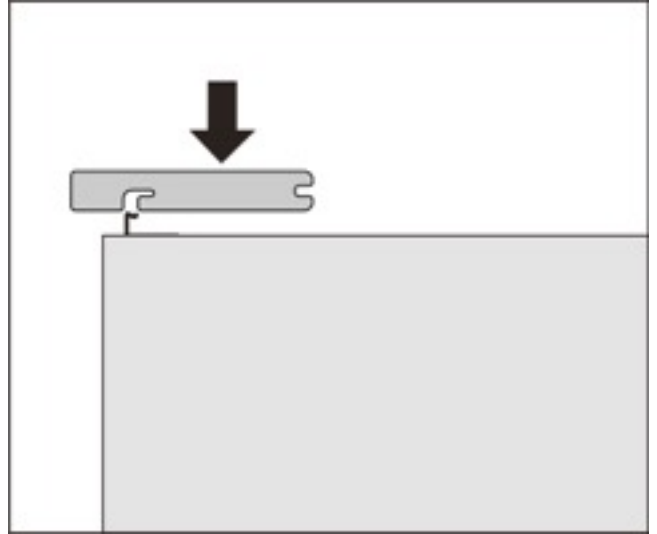


Diagram 14

2. Now that the TC-5/MG-3 starting clips are inside the underside of the bullnose, the final step is to push forward to ensure that it secured into place.

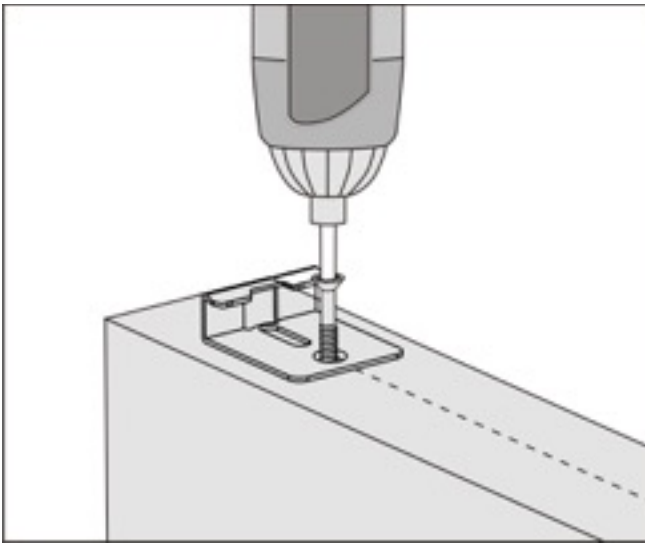


Diagram 13

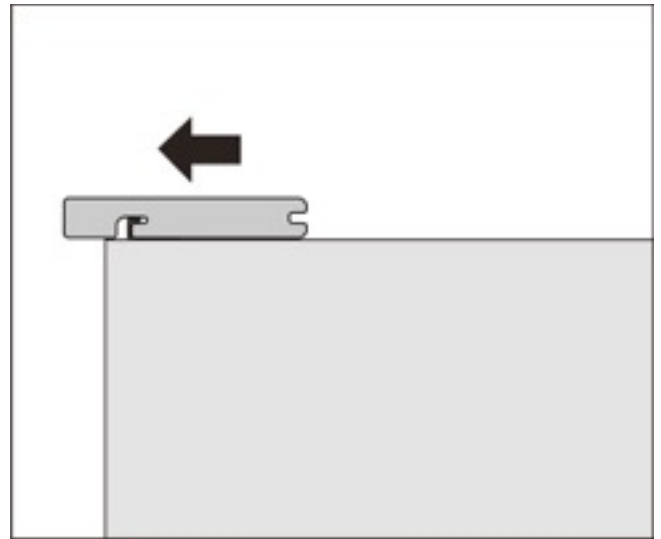


Diagram 15

Bullnose Installation Continued:

3. Now take the next board and have it situated behind the bullnose profile as shown in Diagram 16.

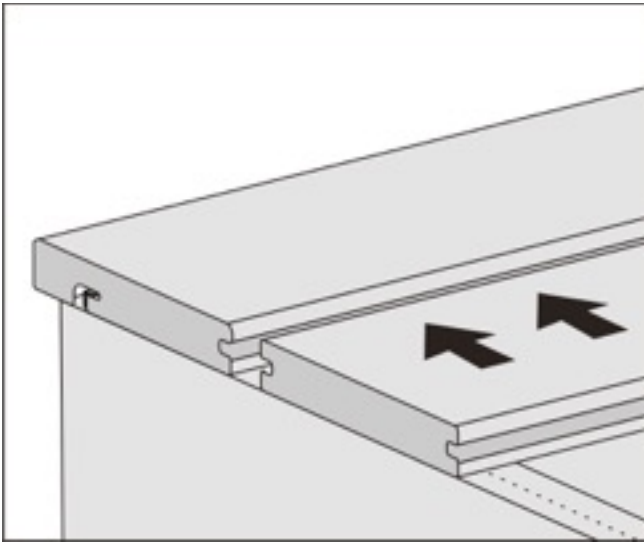


Diagram 16

4. Slide in the clips into the two grooves and glide them along until they are on their respective joists and then screwing down onto the joists as shown in Diagram 17 and 18.

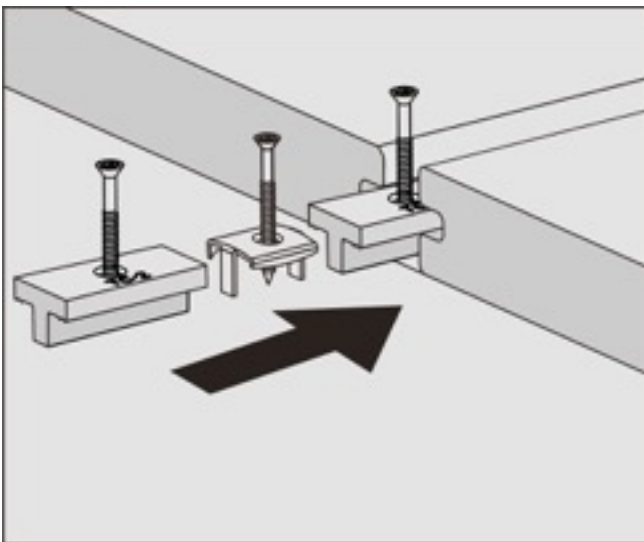


Diagram 17

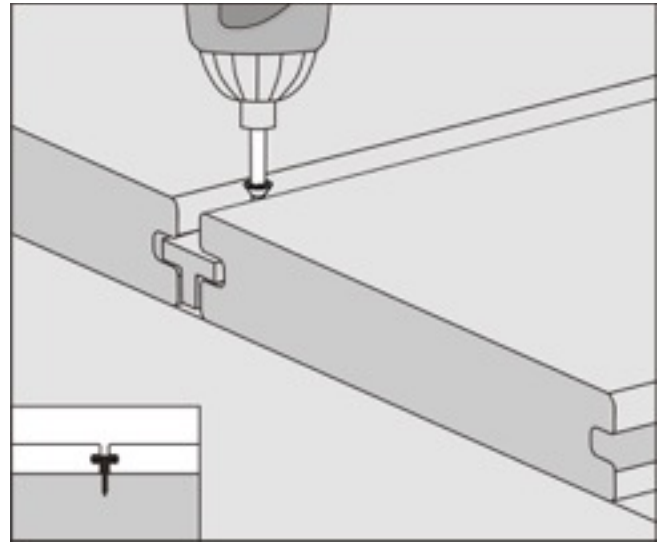


Diagram 18

5. Finally, finish your last board by face fixing into the board at every joist as shown in Diagram 19.

Note: Remember to pre-drill before face fixing into the board. Also face fixing must happen at a 90 degree angle and must be at least 1" 1/2 by 1" 1/2 (25.4 by 25.4 mm) from the ends and the width of the board.

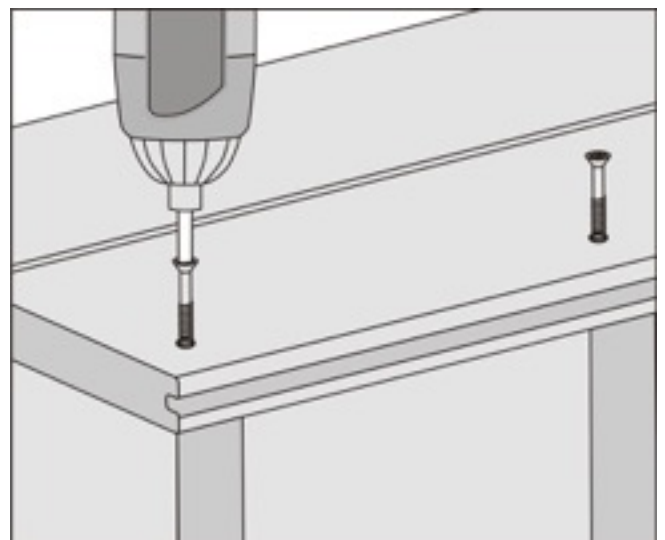


Diagram 19

Bullnose Installation Continued

Diagram 20 below shows a completed staircase from the side to get a better idea of how the final installation will look.

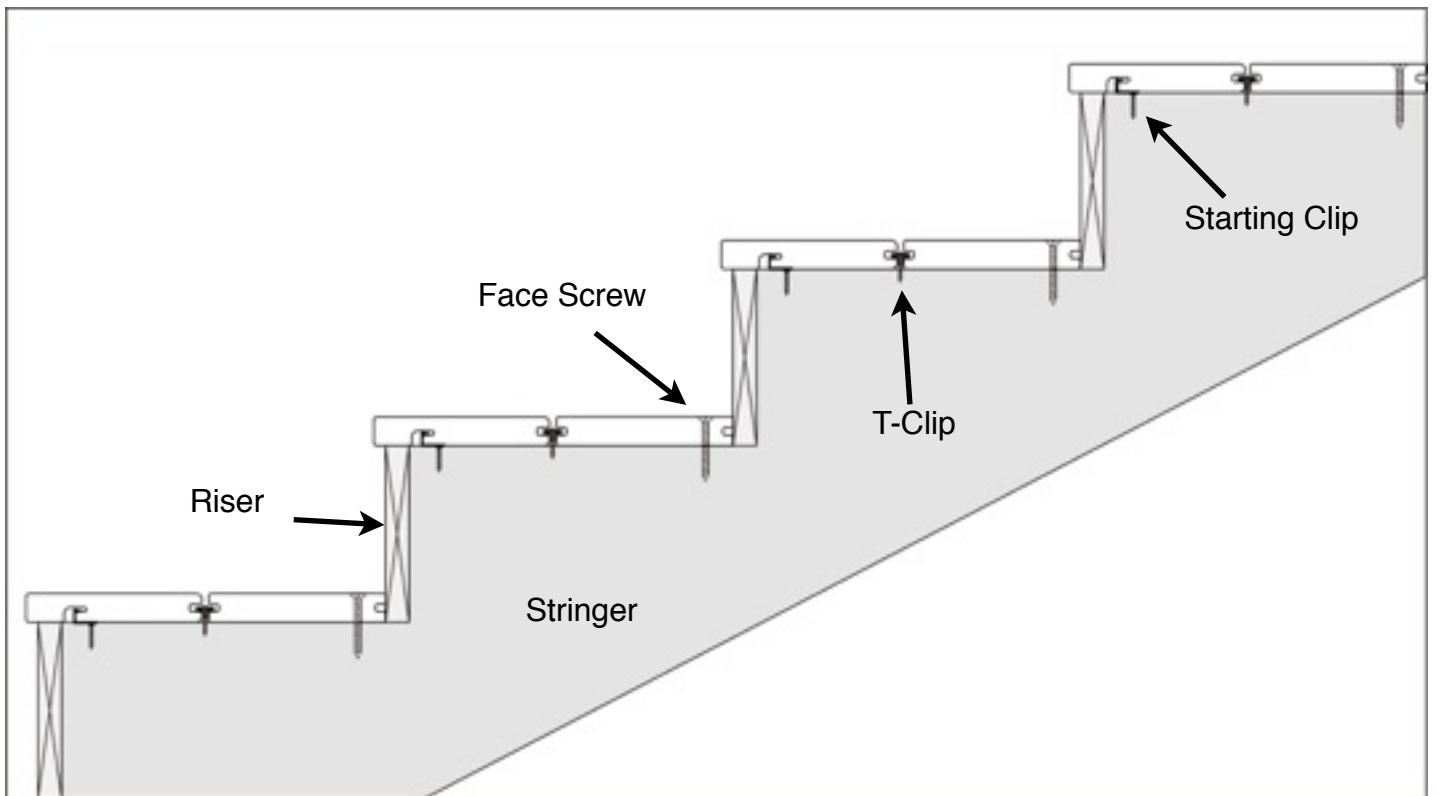


Diagram 20

Framing

First, determine the decking span, that is, how far apart your joists will be.

The frame needs to be completely level before installing any boards.

Note: Adequate spacing in the joists is required to keep the deck boards from bending. Please review the chart on page 5 of this installation guide to see what spacing is required for your profile.

Decking Installation

When installing the deck the first and last board of your project will need to use a starting accessory. Every other board will use the hidden fastener for its installation.

Starting Accessory Installation:

1. After calculating the decking span and making the frame of your deck the first board is ready to be installed.
2. First pre-drill into the joist then fix the starting accessory into the joist as shown in Diagram 21.

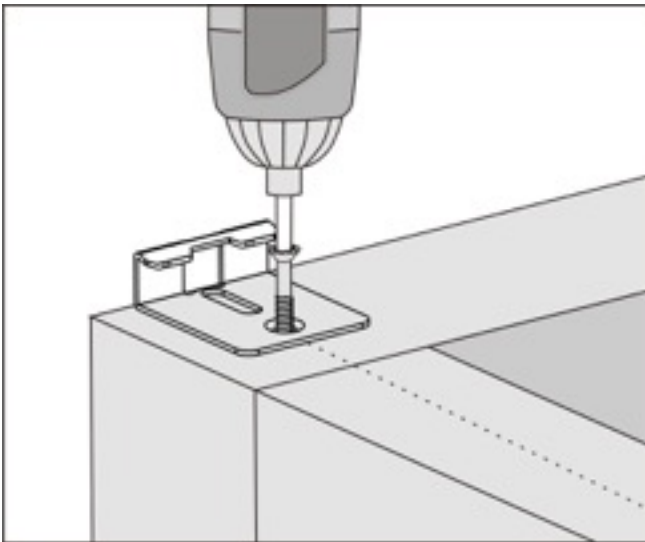


Diagram 21

Starting Accessory Installation Continued:

3. Then take your first board and push it into the starting accessory as shown in Diagram 22.

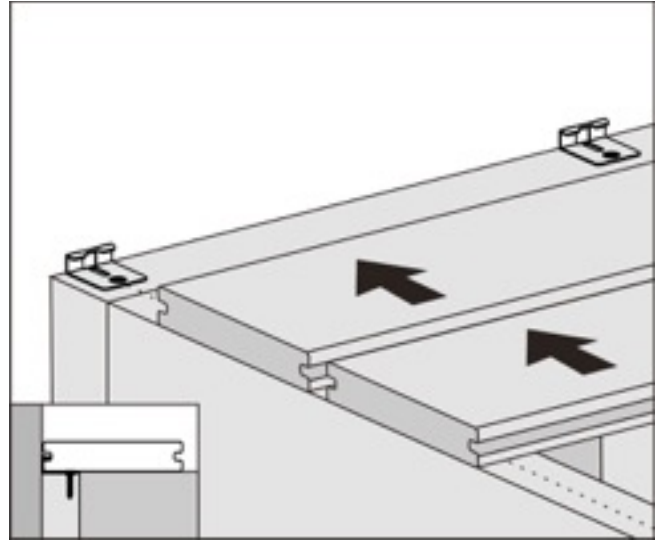


Diagram 22

Option 1: T-Clip and TC-1 Locking Clip Installation

1. First slide the TC-1 and TC-2 clips into the grooves of the boards with screws facing up as show in Diagram 23.



Locking Clip (TC-1)



T-Clip (TC-2)

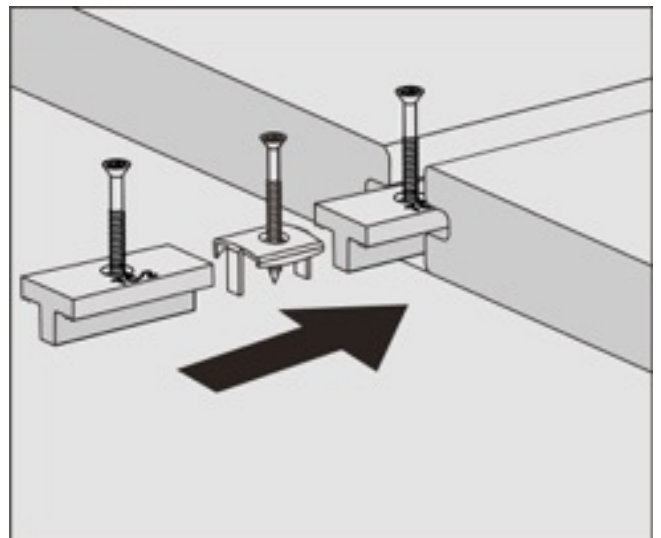


Diagram 23

T Clip and TC-1 Locking Clip Installation Continued:

2. After getting all the TC-1 and TC-2 clips into position above each respective joist, begin to fasten them from above as shown in Diagram 24 and 25.

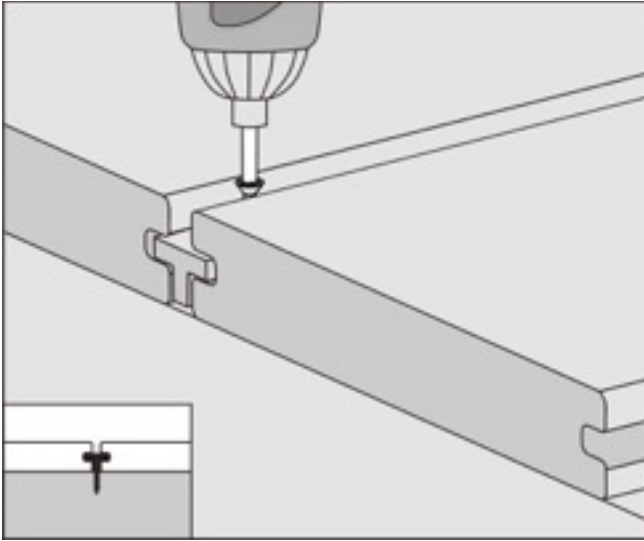


Diagram 24

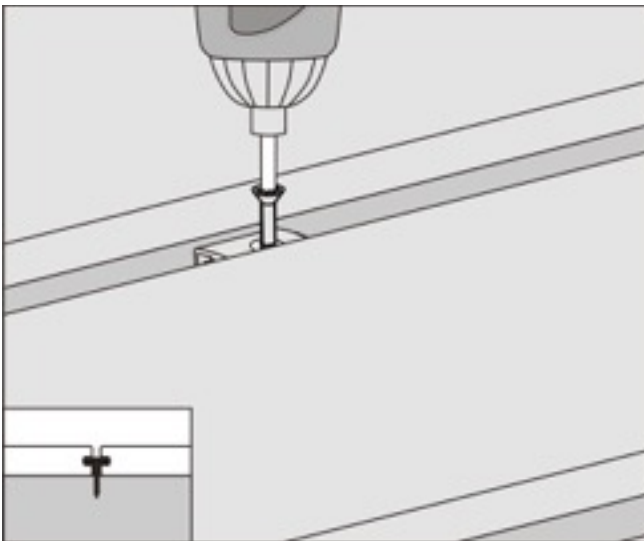


Diagram 25

Note: The fastest way of installation is by pushing all the boards together and then coming back and sliding the clips into the grooves from the side and then fixing from above.

3. The final installed clips should look like Diagram 26.

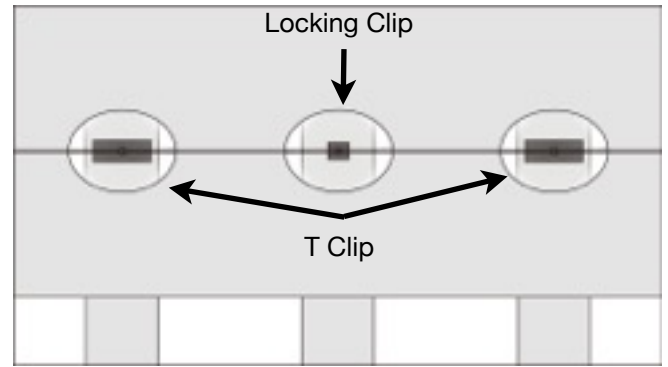


Diagram 26

Note: The locking clip is in the middle of Diagram 26 to show the expansion and contraction is happening in both directions. For more information on how to install the locking clips and their placement check page 10 of this installation guide.

Option 2: UltraLock System

1. First slide the UL-1 and UL-2 clips into the grooves of the boards at a 30-45 degree angle at their respective joists as shown in Diagram 27.

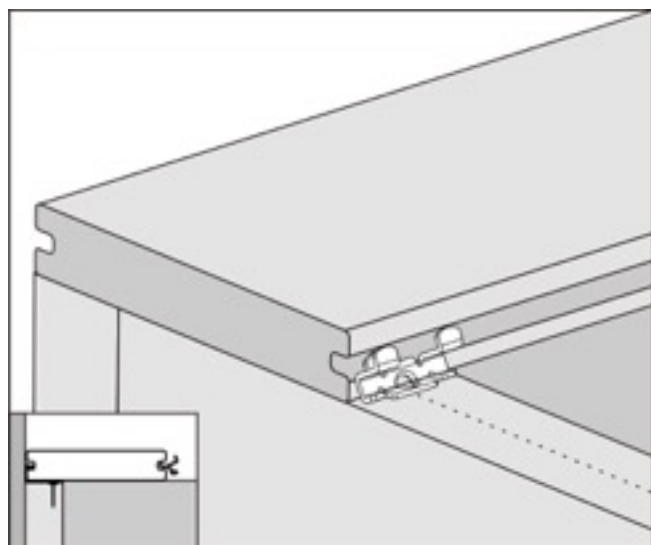


Diagram 27

2. Once the clip is in press down and the clip will be ready to install into the joists as shown in Diagram 27 & 28.

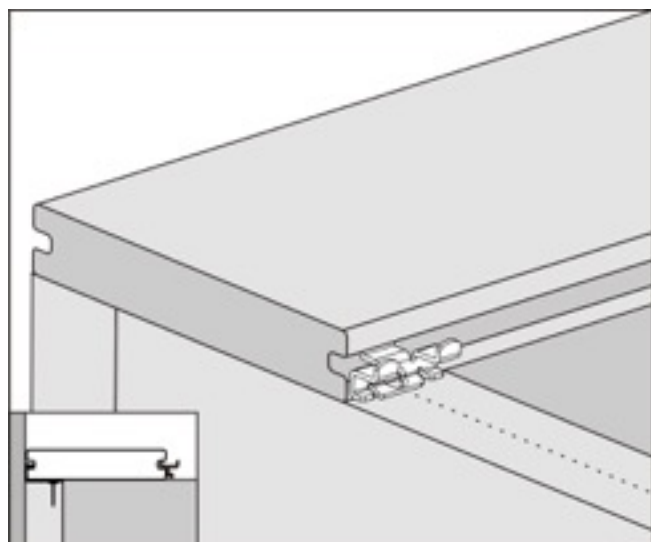


Diagram 28

3. Next, screw the clips into the joists using a 45 degree angle

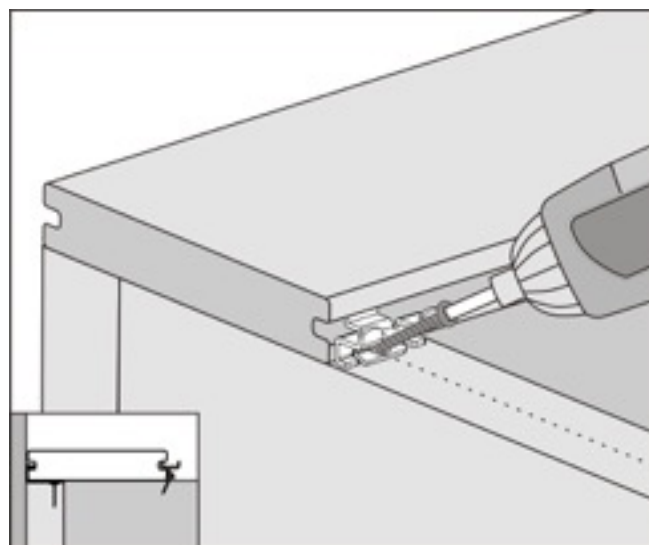


Diagram 29

4. Once all clips are screwed down the next board will come in at a 30-45 degree angle and then pushed down into place as shown in Diagram 30.

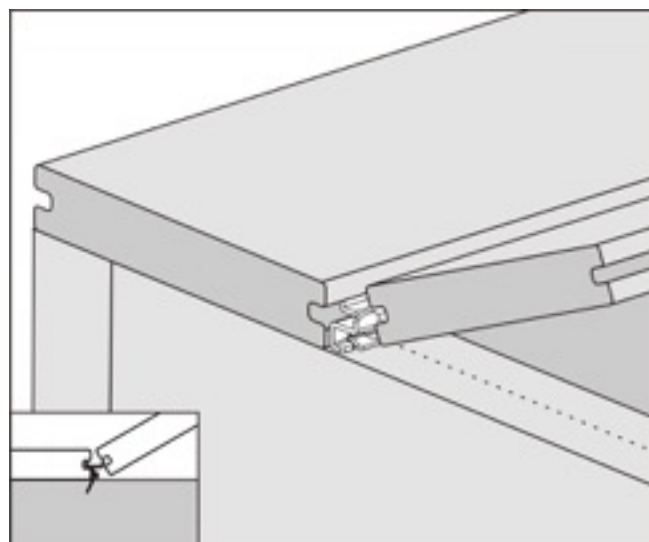


Diagram 30

Note: Using hidden fasteners that are not manufactured by NewTechWood nor recommended by NewTechWood are not warranted. Use these fasteners at your own risk.

Option 2: UltraLock System Continued:

5. Repeat steps 1-4 until the deck is complete.

6. The final installed clips should look like Diagram 31.

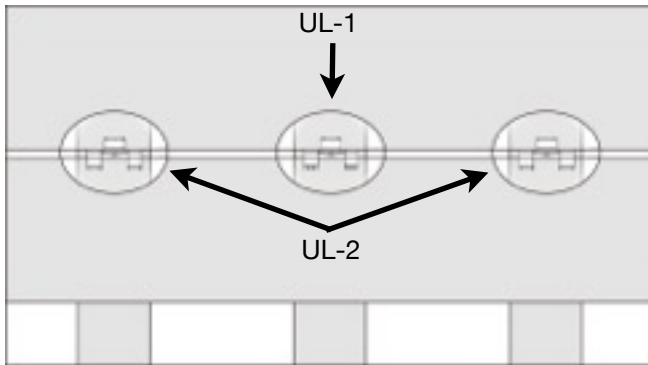


Diagram 31

Note: The locking clip is in the middle of Diagram 31 to show the expansion and contraction is happening in both directions. For more information on how to install the locking clips and their placement check page 10 of this installation guide.

Option 3: T-Clip and TC-10 Locking Clip Installation

Note: The following shows how to install the TC-10 and T-Clip. A starting accessory (MG-3/TC-5) still needs to be used to install the first board.

1. First slide the TC-10 and TC-2 clips into the grooves of the boards with screws facing up as show in Diagram 32.

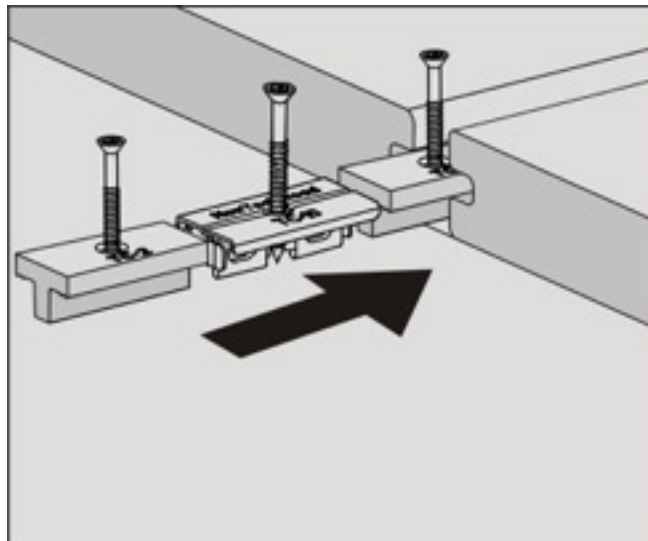
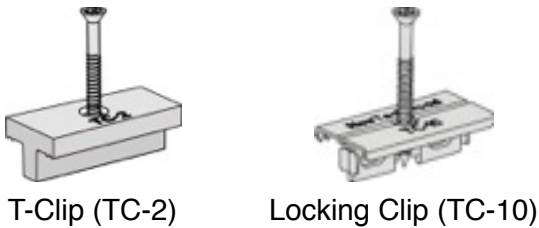


Diagram 32

2. After getting all the TC-10 and TC-2 clips into position above each respective joist, begin to fasten them from above as shown in Diagram 33.

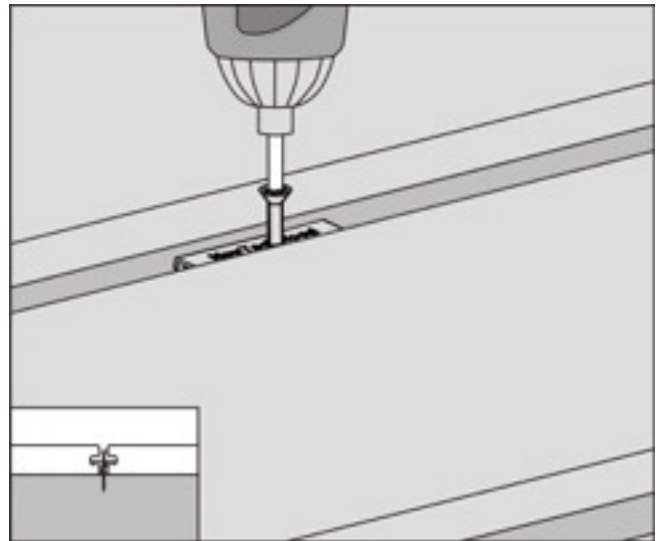


Diagram 33

3. The final installed clips should look like Diagram 34.

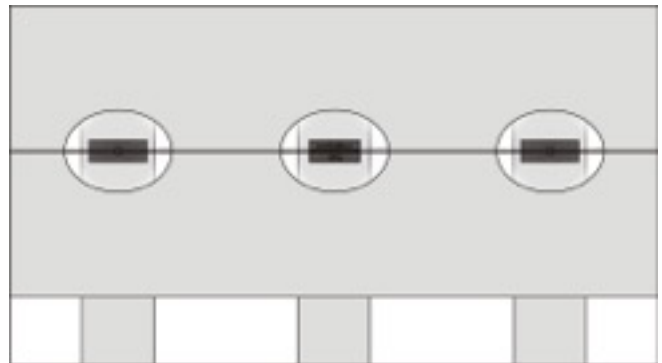


Diagram 34

Note: The locking clip is in the middle of Diagram X to show the expansion and contraction is happening in both directions. For more information on how to install the locking clips and their placement check page 10 of this installation guide.

Option 4: Mini Gap Clip Installation

Note: The following shows how to install the mini gap clip system. A starting accessory (MG-3/TC-5) still needs to be used to install the first board.

1. First slide the MG-1A and MG-2A clips into the grooves of the boards as shown in Diagram 35.



MG-1A

Locking Clip (MG-2A)

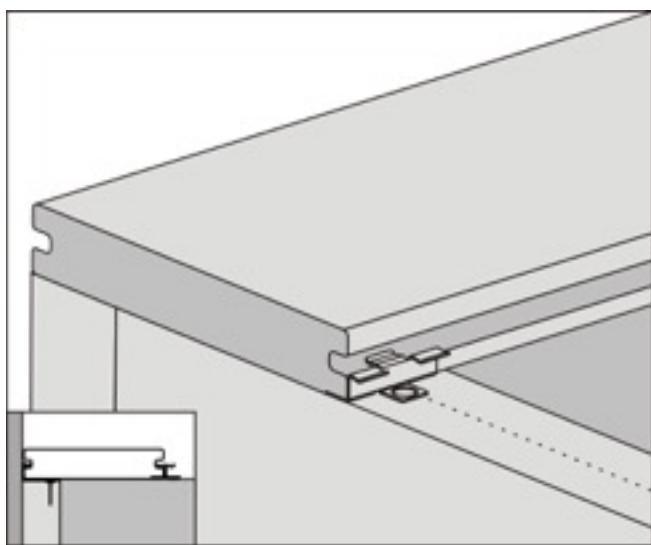
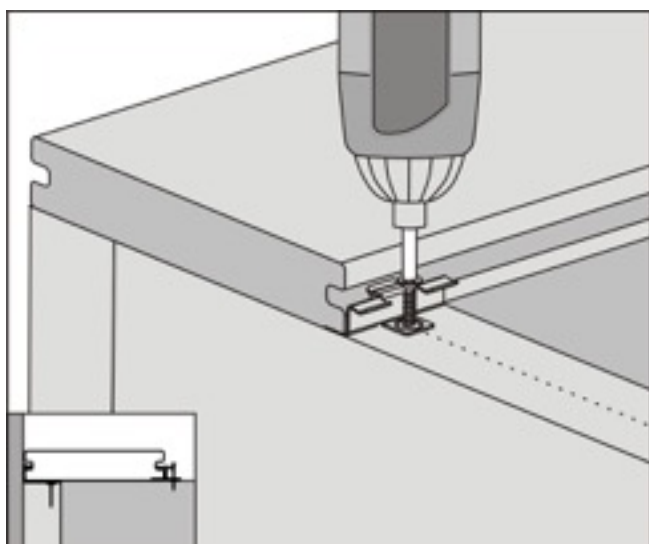


Diagram 35

2. Next place a screw in the outside hole of the MG-1A and MG-2A as shown in Diagram 36.



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Diagram 36

3. Next fix the screw down into the joist as shown in Diagram 37.

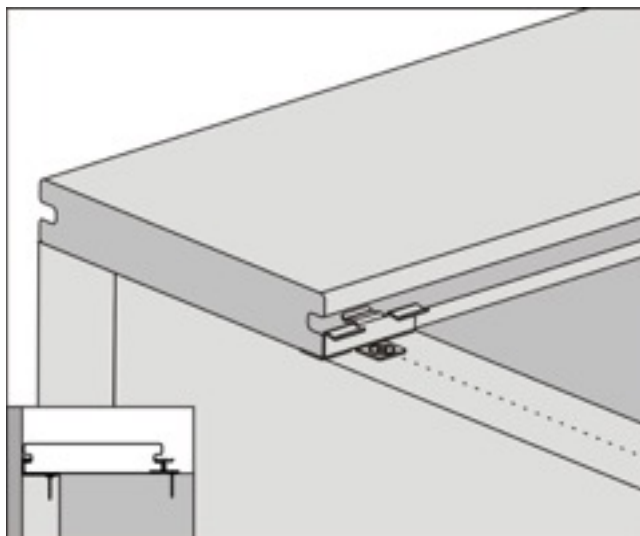


Diagram 37

4. After fixing all clips push the next board into the clips as shown in Diagram 38.

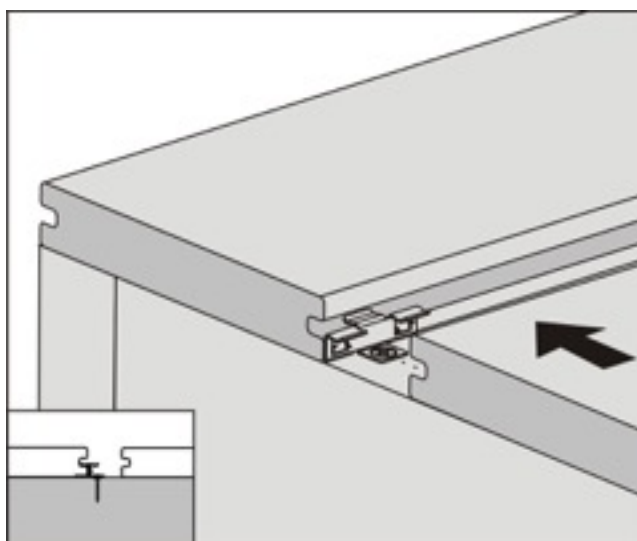


Diagram 38

Option 4: Mini Gap Clip Installation Continued

5. The final look should be like the below Diagram 39.

6. Repeat steps 1-4 until complete.

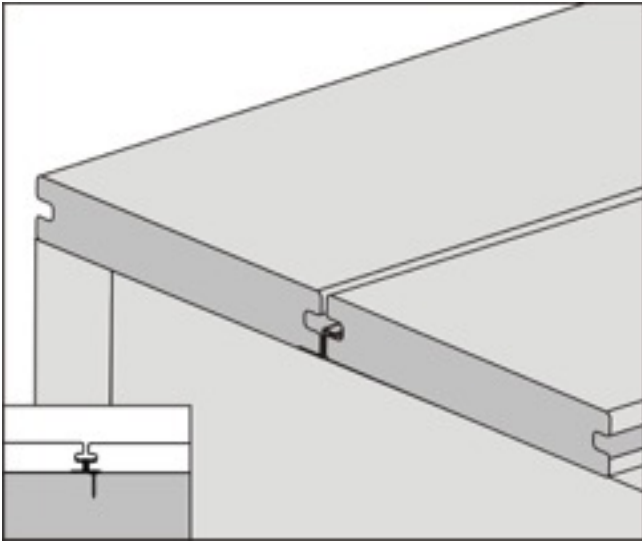


Diagram 39

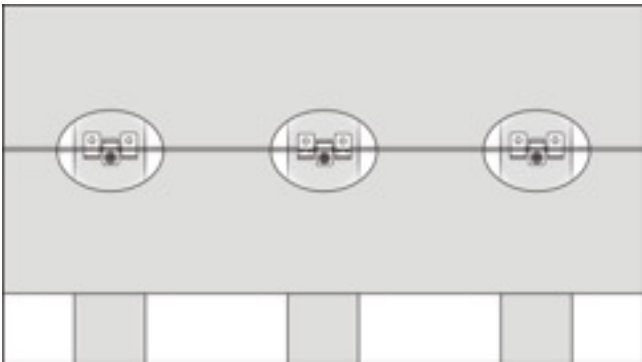


Diagram 40

Note: The locking clip is in the middle of Diagram 40 to show the expansion and contraction is happening in both directions. For more information on how to install the locking clips and their placement check page 10 of this installation guide.

Fascia Board Installation

Installing against the width and length of decking

1. The fascia should be installed on the rim board of the frame. The fascia should be installed as shown in Diagram 41. The distance between screws must be less than or equal to 300 mm (12 inches). Two screws must be used 1" 1/2 away from the ends

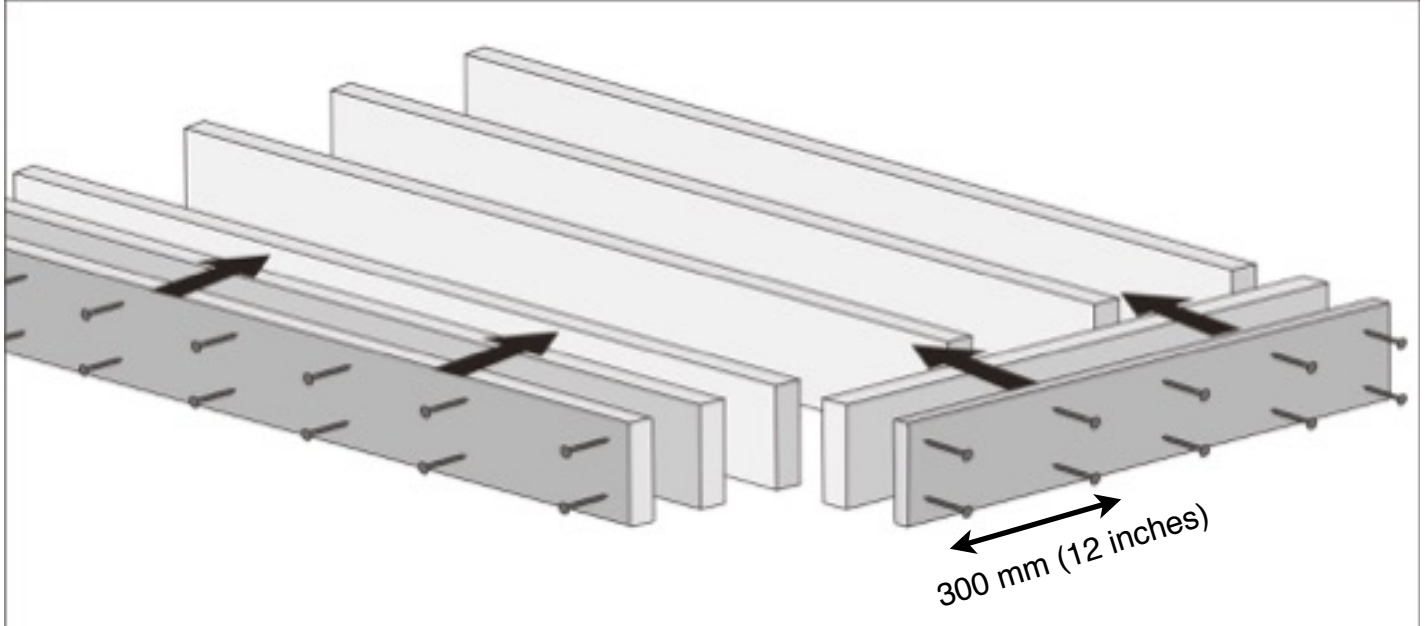


Diagram 41

2. First pre-drill the holes for the fascia board. The fascia board should be drilled with bigger holes or routed to allow for expansion and contraction and fixed either at either end or in the middle as shown in Diagram 41. When fixing the bigger holes it is recommended to use washers.
3. The fascia board will be installed into the the block wood and through the joist.

Note: NEVER install the fascia by drilling into the decking ALWAYS install the fascia into the joist and ALWAYS pre-drill the fascia board

End Cap Installation

Installing the end cap

1. Place the end cap in front of the hollow boards holes (UH02 or UH07) and push in as shown in Diagram 42.

Note: A mallet could be used as well to push in the end caps.

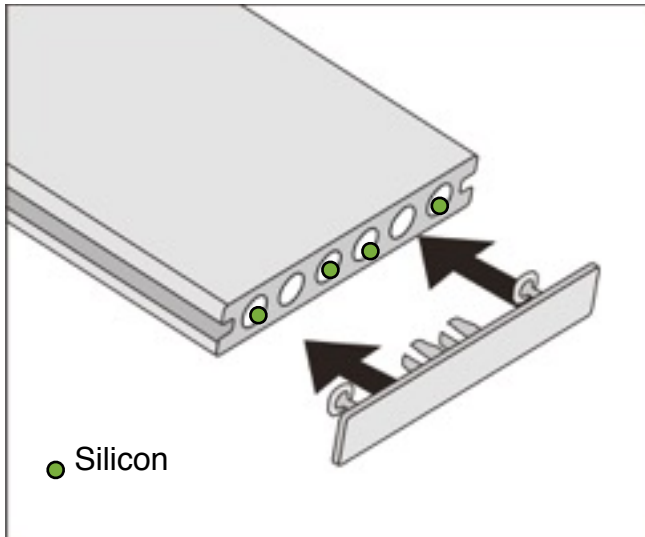


Diagram 42

2. The final finish should look like Diagram 43 below.

Note: A dab of silicon (shown in Diagram 42) can be used on the end cap or inside the holes of the board in order to secure the end caps better.

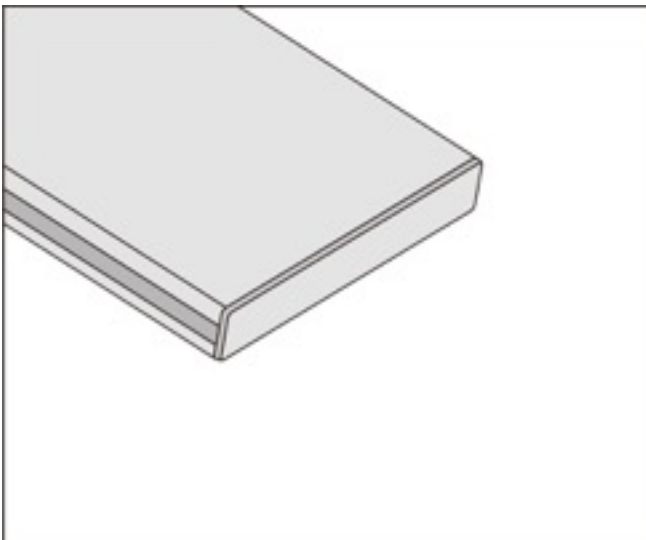


Diagram 43



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