



# d

decking

installation  
manual







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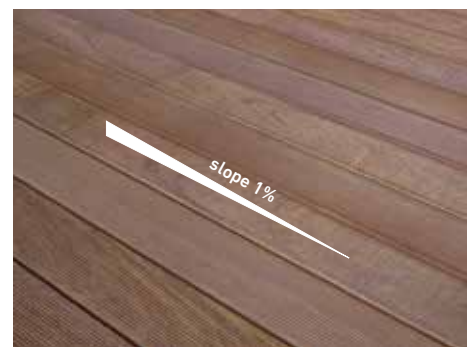
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## general norms

- **The respect of the here below indications guarantees a professional installation and the warranty of the producer: please, read closely before beginning the installation.**
- Ravaioli provides the materials and the installation system, not the project. This one has to be developed in compliance with what is being established by the Italian norm UNI 11538-1 on the decking for outdoor floorings. Structural calculations, projects and testing are at the expenses of the customer/architect.
- It is always important to respect the standards of security while working, both during the assembly phase and during possible inspections. Use adequate tools in compliance with the norms in force.

## verifying of the project

- Based on the project to be realized, please verify:
  - Heights and squaring based on flatness and linearity of the area;
  - Points of outflow of rainwater where possible obstacles may have been created by the substructure, based on the orientation of Deck Boards, Modules and Deck Tiles.
- In compliance with the norms in building materials and based on the executive project you have, **it is advisable to install the flooring with a 1% slope** (pic. A) in order to aid the outflow of the water and avoid stagnation, humidity and mold which may compromise the durability of the flooring.



picture A

## material storage

- The goods are delivery by Ravaioli in pallets packed with metal straps and stretchable plastic wrap around it. The pallets have to be stocked in an area sheltered from adverse weather conditions, sunlight and high temperatures until the installation. Once the pallets are opened, in case the material is not immediately used, it has to be stocked in a sheltered area as above described or closed once again with metal straps.
- Before the installation, it is compulsory to wash the deck boards, unless they are been previously pre-oiled, in order to prevent colorations due to the tannin of the wood (although rare in the Ravaioli woods) and to eliminate dirt residues due to the manufacturing.

## maintenance

- After the installation it is advisable to wash the flooring and, if it is a wooden flooring, to oil it once it is dry (after around 72 hours) with two coats of a specific Ravaioli oil for exterior decking (pic. B). Ravaioli can also provide pre-oiled deck boards (recommended choice).
- Color changes and the graying process are natural effects on wood when it is exposed to atmospheric agents: in order to avoid this, a regular maintenance with specific products is recommended (see pg. 56).



picture B



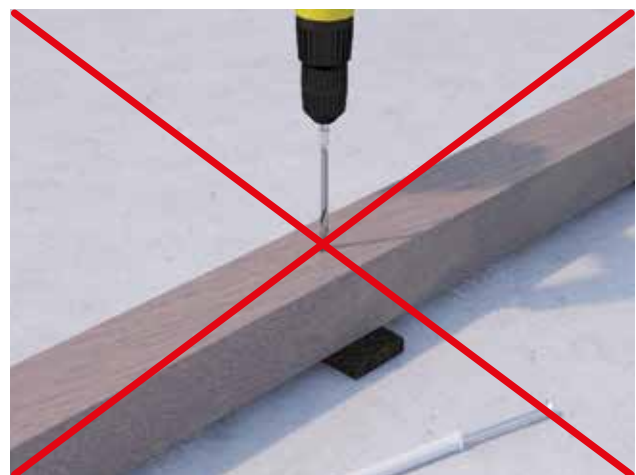


substructure installation

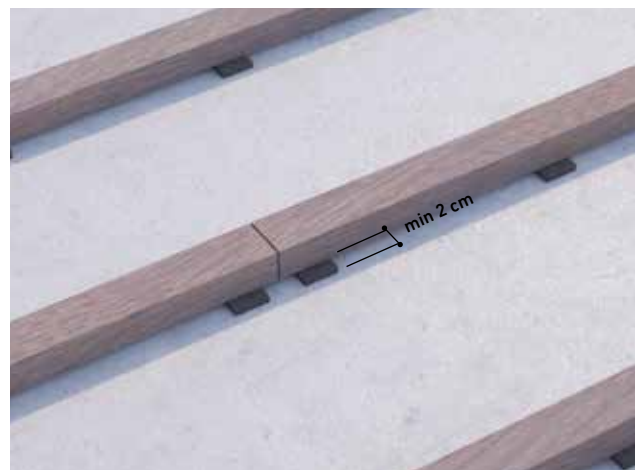


## evaluation and preparation of the substratum

- Verify that the surface is solid, stable, smooth and free of surface irregularities.
- Clean the surface carefully.
- Verify the drainage point of rainwater based on any possible obstacle created by the substructure.
- Verify carefully slopes, levels and possible deviations from perpendicularity which may invalidate the flatness of the area.
- In case of installation upon screed, please consider carefully the kind of surface: **in case of waterproof screed, YOU SHOULD NEVER DRILL, but use glue for fixing** (pic. A).
- To avoid a possible rotting of the wood, **do not put the wood in contact with the ground** and guarantee the necessary ventilation and the rainwater outflow. To do so, use the specific rubber spacers (see the Ravaioli decking pricelist), which have to stick out at least 2 cm from the joist upon it (pic. B)
- In case of high slopes of the ground and of the necessity of creating a flat surface, please make sure to position the spacers first in the area with the lower slope and to continue towards the highest slope.
- In case of installation upon unstable ground (soil, sand, gravel, etc.), please have a look at its dedicated section at pg. 10, after reading the chapters *Spacing and Lifting supports* (see pg. 6) and *Substructure installation* (see pgs. 7 and following).



picture A

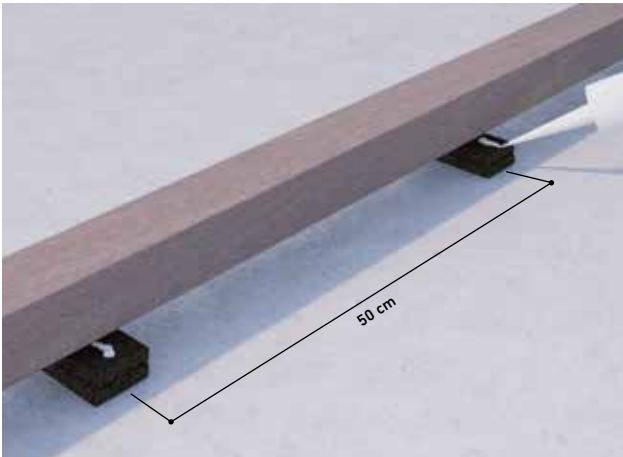


picture B

## spacing and lifting supports

### Rubber spacers

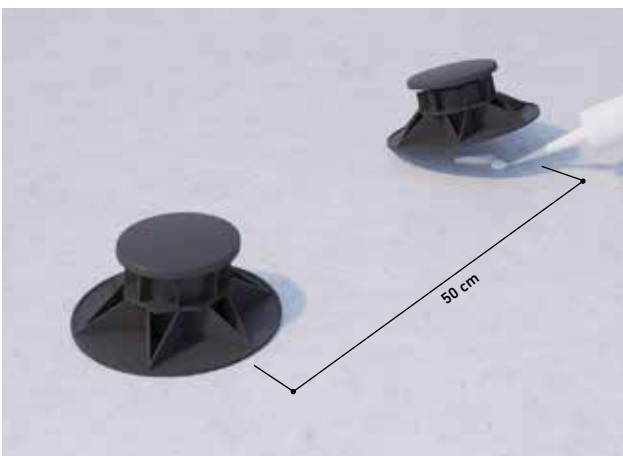
In order to avoid to put the wood and the below ground in contact and to cause rotting by guaranteeing the ventilation of the substructure, use the specific rubber spacers (see Ravaioli decking pricelist).



- Calculate the right positioning of the rubber spacers (it is advisable to keep them 50 cm apart).
- If necessary, glue together two spacers in order to increase the total height.
- Glue the spacers to the substructure joist (compulsory).
- Glue the spacers to the ground (recommended).

### Lifting supports (jack-supports)

In order to create structures with a height over 10/12 cm, use the appropriate lifting supports (also called jack-supports - see Ravaioli decking pricelist), available in different heights.



#### Fixing of the lifting supports to the ground

- Calculate the right positioning of the lifting supports (it is advisable to keep them 50 cm apart).
- Position the lifting supports and anchor them to the ground by using some glue.
- Position the substructure joists in the middle of the headpiece of the lifting support.

#### Fixing of the substructure joist to lifting supports

- If necessary, regulate the height of the headpieces by using its nut.
- Fix the joist by using glue or a screw. As an alternative to the flat headpieces, it is also possible to use the adjustable headpiece with 2 wings or 1 wing (see Ravaioli decking pricelist).



## substructure installation upon screed

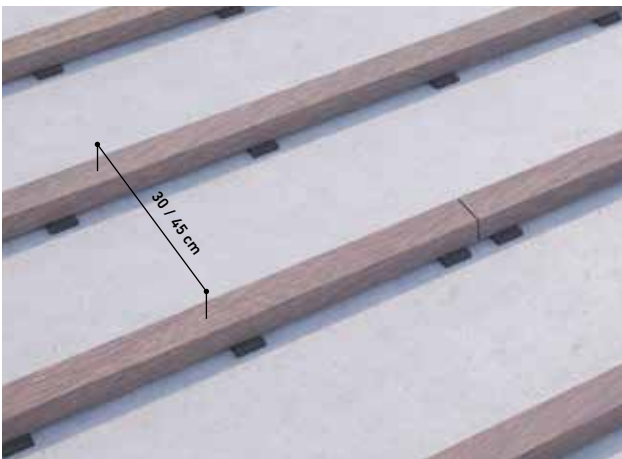
### Preliminary evaluations

In case of installation upon screed, verify if the ground is waterproof or if it is possible to drill the substratum. Following this, define the final height of the flooring with respect to the height of the ground:

- **if the screed can be drilled** and the flooring height is up to 8/10 cm: follow the instructions of **CASE A**;
- **if the screed CANNOT be drilled** and the flooring height is up to 10/12 cm: follow the instructions of **CASE B**;
- **if the screed can or CANNOT be drilled** and the flooring is over 12 cm: follow the instructions of **CASES C**.

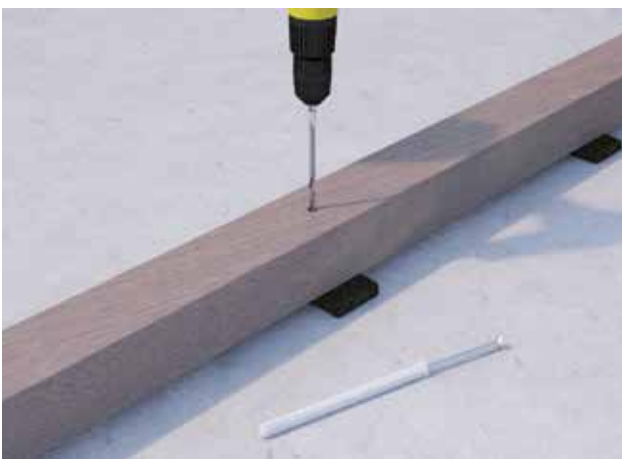
### CASE A: single frame upon spacers

It applies if the final height of the foot traffic surface is not higher than 8/10 cm, only if the screed can be drilled, in order to properly anchor the whole substructure to the ground.



#### Single frame upon spacers

- Align the substructure joists with their relative spacers at the correct distance (see pg. 6).
- Recommended distance between the joists:
  - 45 cm (for installation with visible screws).
  - 30 cm (for installation with clips).

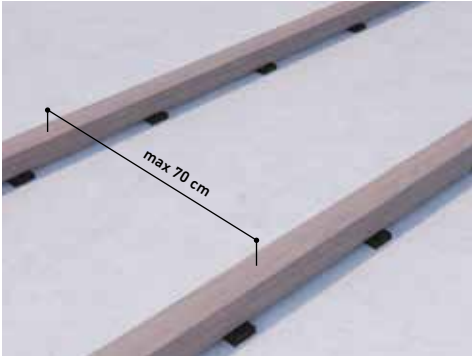


#### Anchoring to the ground

- Pre-drill the substructure joists.
- Anchor the substructure joist to the ground by using plugs (at least one every 75 cm), if possible where the spacers are positioned.

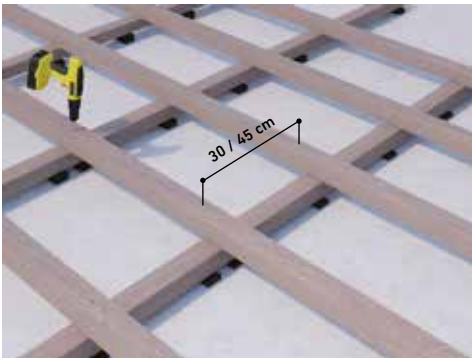
## CASE B: two-fold framing upon spacers

It applies if the final height of the foot traffic surface is not higher than 10/12 cm, if the screed is waterproof and, therefore, it CANNOT be drilled.



### Realization of the first frame

- Align the substructure joists with their relative spacers at the correct distance (see pg. 6) with a distance between the joists of maximum 70 cm.
- Verify the flatness of the structure by using straightedges and flattens.
- Anchor the rubber spacers to the ground by using some glue (see pg. 6).

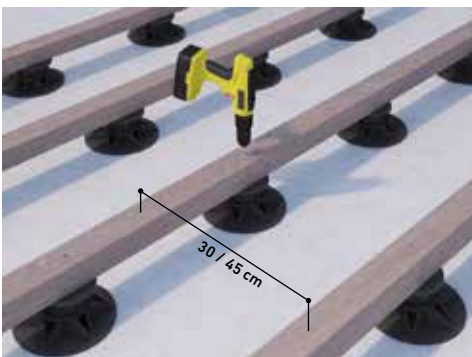


### Realization of the second frame

- Screw the joists of the second frame to those of the first one perpendicularly.
- Recommended distance between the joists:
  - 45 cm (for installation with visible screws).
  - 30 cm (for installation with clips).
- Pre-drill the substructure joists.

## CASE C1: single frame upon lifting supports

It is recommended for the realization of foot traffic surfaces with a height over 10/12 cm and for installation with visible screws.

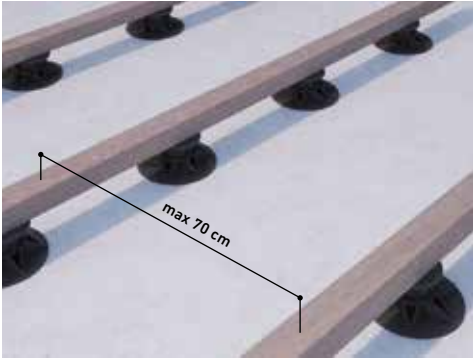


### Single frame upon lifting supports

- Align the supports in rows at the correct distance (max. 50cm) and position over them the substructure joists (see pg. 6).
- Recommended distance between the joists:
  - 45 cm (for installation with visible screws).
  - 30 cm (for installation with clips).
- Anchor properly the lifting supports to the ground and the substructure joists to the lifting supports (see pg. 6).
- Pre-drill the substructure joists.

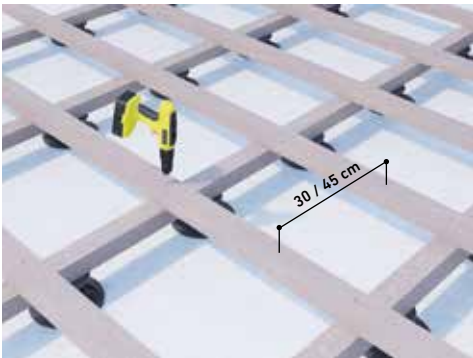
## CASE C2: two-fold framing upon lifting supports

It increases the flooring stability when it is necessary to lift the flooring (final height of the foot traffic surface over 10/12 cm). It is necessary to realize a two-fold framing (advisable for installation with clips) upon the lifting supports.



### Realization of the first frame

- Align the lifting supports 50 cm apart (see pg. 6), in rows no more than 70 cm apart, and position over them the substructure joists.
- Verify the flatness of the structure by using straightedges and flattens.
- Anchor the lifting supports to the ground by using some glue (see pg. 6).
- Anchor the substructure joists to the lifting supports by using screws, until the first frame is completed.

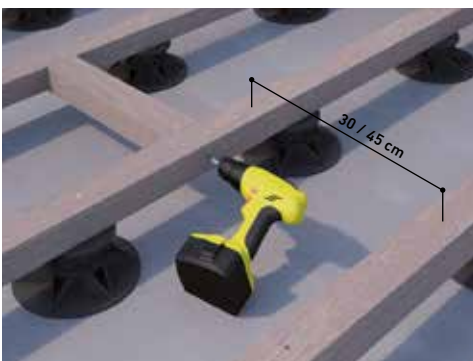


### Realization of the second frame

- Screw the joists of the second frame to those of the first one perpendicularly.
- Recommended distance between the joists:
  - 45 cm (for installation with visible screws).
  - 30 cm (for installation with clips).
- Pre-drill the substructure joists.

## CASE C3: bracing upon lifting supports

It is possible to realize over lifting supports a bracing structure as an alternative to the two-fold framing presented in the previous paragraph.



### Realization of the bracing

- Align the lifting supports at the correct distance (max. 50 cm) and position over them the substructure joists (see pg. 6).
- Recommended distance between the joists:
  - 45 cm (for installation with visible screws).
  - 30 cm (for installation with clips).
- Anchor the lifting supports to the ground and the substructure joists to the lifting supports (see pg. 6).
- Cut some cross beams of the same dimension of the distance between the substructure joists.
- Anchor the cross beams as illustrated in the picture by pre-drilling the substructure joists and the cross beams.



### Finishing of the bracing

- Continue like that until the substructure is completed, misaligning the cross beams in order to simplify their fixing.

## substructure installation upon unstable ground

### Installation upon soil: preliminary evaluations

In case of installation upon soil, verify the final height of the flooring with respect to the height of the ground:

- if the height of the finished foot traffic surface is not over 15/17 cm: follow the instructions of **CASE A**;
- if the height of the finished foot traffic surface is over 15/17 cm: follow the instructions of **CASE B**.

### CASE A: two-fold framing upon structural elements

For the realization of foot traffic surfaces which are not higher than 15/17cm.



#### Preparation of the ground

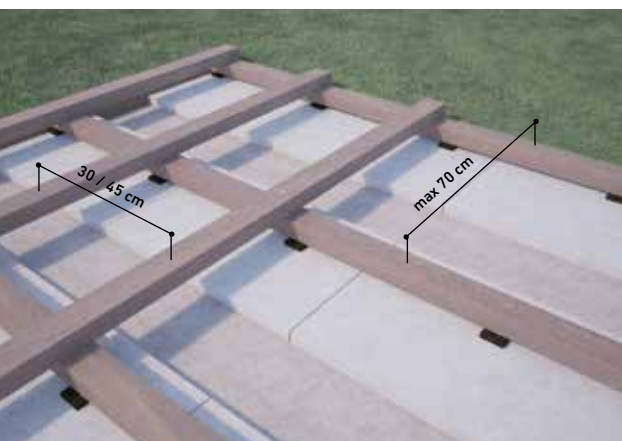
- Eliminate ground until reaching the correct height with respect to the desired height of the flooring.
- Position over the soil nonwoven fabric to prevent the grass for re-growing.
- Position the structural supports (concrete tiles or slabs) as many as necessary for the desired structural weight.

**Please note that: the structural calculations are on charge of the customer, to be defined with the architect/designer.**



#### Realization of the first frame

- Align the substructure joist with a distance no higher than 70 cm.
- Verify the flatness of the structure by using straightedges and flattens.
- Calculate the distance between the joists and position the rubber spacing by using glue at a recommended distance of 50 cm (see pg. 6).
- Pre-drill the substructure joists every 75 cm and anchor them to the structural supports by using plugs.



#### Finishing of the two-fold framing

- Finish the first frame.
- Screw the joists of the second frame to those of the first one perpendicularly.
- Recommended distance between the joists:
  - 45 cm (for installation with visible screws).
  - 30 cm (for installation with clips).
- Pre-drill the substructure joists.



## CASE B: two-fold framing upon beams

For the realization of foot traffic surfaces higher than 15/17 cm. It is not advisable for installation with clips.

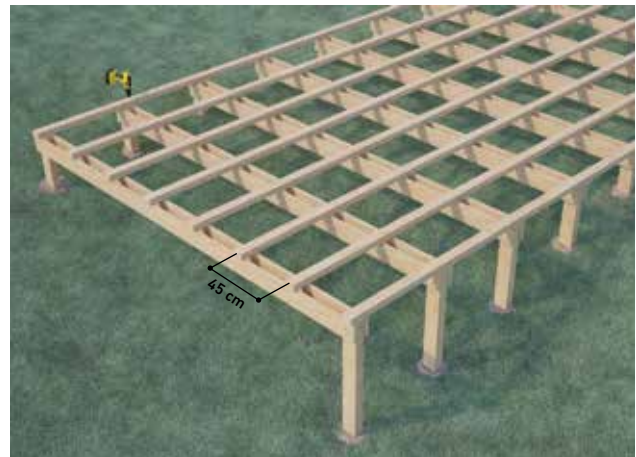
### Anchoring of the beams

- Position the wooden beams on the ground with a distance between the beams based on the structural load of the project and at a height based on the desired foot traffic height.
- Anchor to them a lateral double beam with twin effect.



### Realization of the substructure

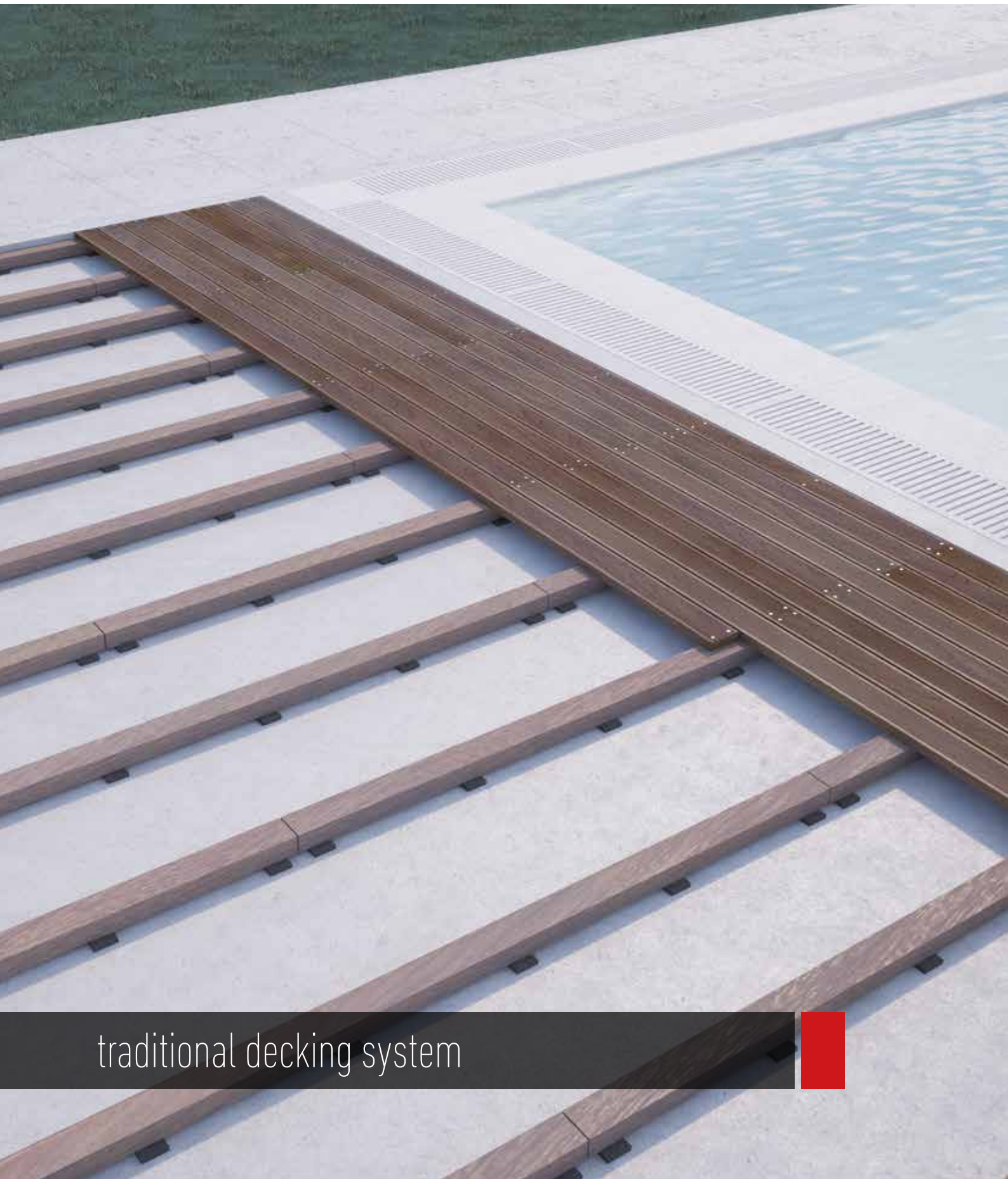
- Finish the support structure.
- Anchor to it, by using screws, the substructure joists at a recommended distance of 45 cm (for installation with visible screws).
- Pre-drill the substructure joists.



## Installation upon sand or gravel

The installation upon sand or gravel is like the one on soil, except for some precautions:

- wet abundantly the sand;
- press it until the ground is perfectly compact and flat;
- position the structural supports;
- it is compulsory to consider also a framing profile in order to avoid that the wind, by removing the sand, may cause the falling of the structure.



traditional decking system

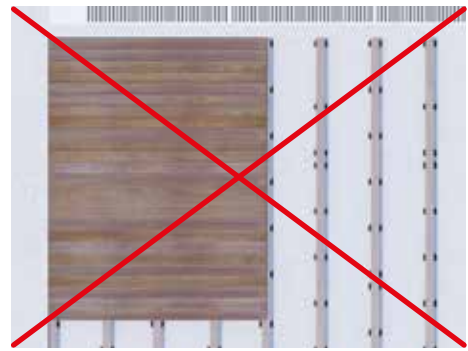


## information and warnings

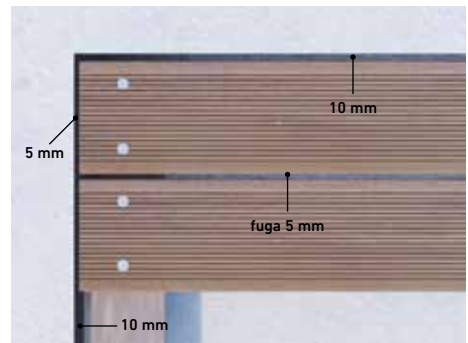
- Before proceeding with decking installation, please carefully read the introductory chapter “General norms” (pg. 3) and the chapter “Substructure installation” (pg. 5-11).
- The correct decking installation is made by proceeding on rows (pict. A) and not on columns (pict. B). This is to avoid structural problems and aesthetical defects. It is advisable to install the deck boards in a staggered fashion.
- Every 4 or 5 rows of deck boards verify that the distance between the first and the last deck board is perpendicularly constant. **If the distance is not regular, in order to avoid deviations from perpendicularity and differences in the gap, it is necessary to recheck if the deck boards are parallel before continuing the installation.**
- The distance between the substructure joists depends on the kind of structure, on the wood species and on the kind of installation. Always respect the following maximum distances:
  - substructure joist of the first frame max 70 cm
  - substructure joist for installation with visible screws max 60 cm
  - substructure joist for installation with clips max 45 cm
- Always respect the following minimum distances from the fixed building elements (walls, slabs, structures, etc. - pic. C):
  - between deck board butt joints and fixed elements min 5 mm
  - between deck board sides and fixed elements min 10 mm
  - between substructure joist butt joints and fixed elements min 5 mm
  - between substructure joist sides and fixed elements min 10 mm
- It is advisable to leave a minimal lateral distance between the deck boards (gap) of 5 mm (pic. C), in order to avoid problems due to the natural dilatation of wood. The dimensional tolerances Ravaioli refers to are established by the new Italian norm UNI 11538-1 concerning decking.
- The deck board doesn't have to stick out from the substructure joist more than 3 cm.
- For a correct installation, the butt joints of the deck board have to end on a substructure joist and be screwed in it.
- Normally, the thickness of the substructure joist should double that of the deck boards. Please, take this into consideration during the design phase.
- It is strongly recommended to pre-drill the deck boards, especially in case of exotic woods or thick deck boards, in order to ease the insertion of screws, to avoid tensions which may cause ruptures and breaks into the wood and to better respect the lateral distances here above indicated.
- Deck boards are usually provided with no cut on heads. In this case, the joint milling, compulsory, has to be done by the installer on the construction site. As an alternative, Ravaioli Legnami can also provide a joint milling service (advisable) which already includes the application of a protective product on the butt joints.
- On every cut done on the construction site it is compulsory to apply a protective product (Pic. D).



picture A - correct installation: the installation is made along rows, with a staggered fashion.



picture B - wrong installation: the installation is made along columns.



picture C



picture D

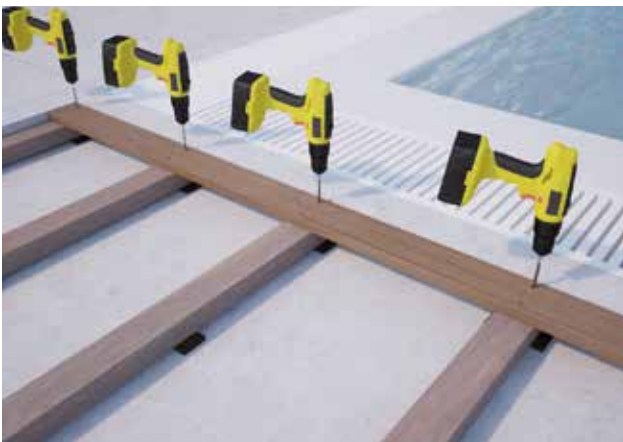


## installation of the deck boards with visible screws

Advantages of the flooring with installation with visible screws:

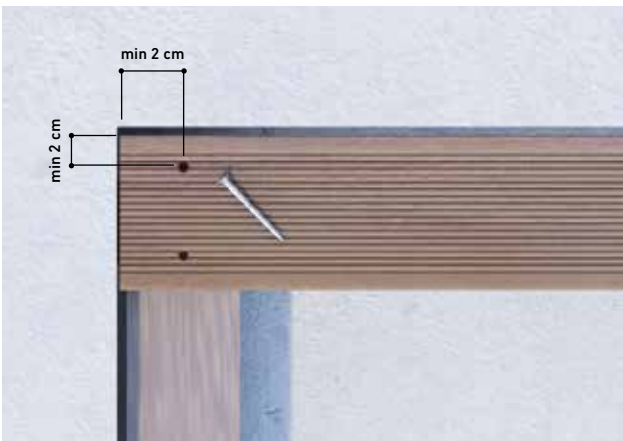
- optimal fixing of the flooring to the substructure, limiting the possible movements of the deck boards;
- easier inspection of the underneath area;
- if necessary, easy substitution of the deck boards.

To avoid to see the screws on the surface, it is possible to hide them by using caps realized in the same wood of the deck boards (see Ravaoli decking pricelist).



### Installation of the first row

- Finish the substructure (see previous sections).
- Select a number of perfectly straight deck boards, in a sufficient number to complete the installation of the first row.
- Respect the minimal distances from the fixed structural elements (see pg. 13)
- Pre-drill the deck boards.



### Pre-drilling

- During the pre-drilling, respect the 2 cm minimum distance from the lateral side and the butt joint of the deck board.



### Deck boards butt joints with visible screws

- It is fundamental to make sure that the butt joints of the deck boards end on a substructure joist.
- In case of butt joints on the same substructure, do not leave have any gap and double the number of screws.



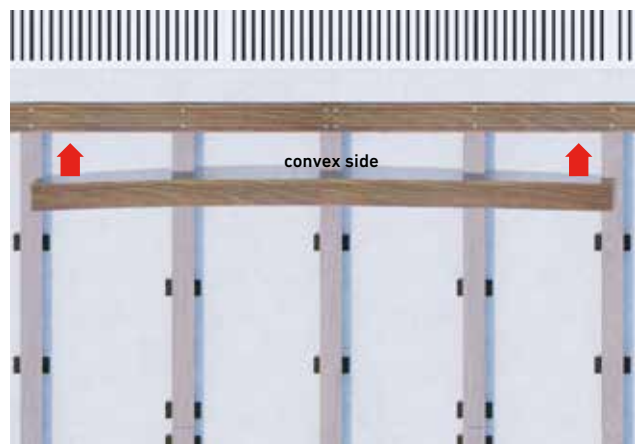
## Fixing of the deck boards of the first row

- Screw the deck boards to the substructure joists by using the already pre-drilled holes.



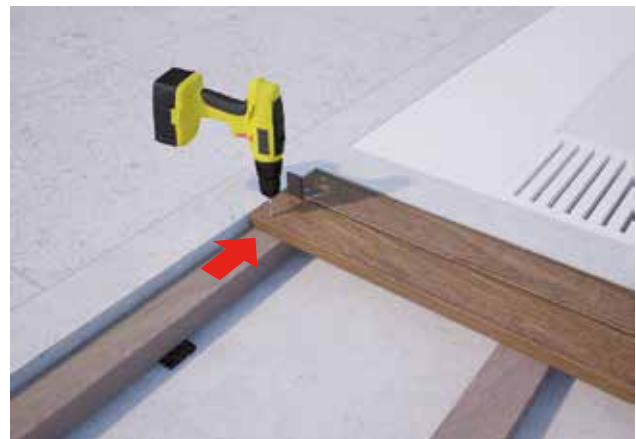
## Installation of the remaining rows

- It is possible that some deck boards may be curved due to the nature of solid wood, with a tolerance until what the Italian norm UNI 11538-1 establishes.
- In case of a curved deck board, install the deck boards of the first row with the convex curvature against the row previously positioned.
- It is advisable to install the deck boards in a staggered fashion.



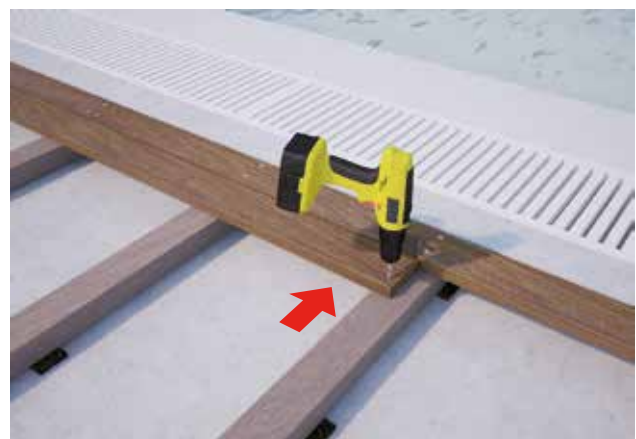
## Fixing of the first butt joint

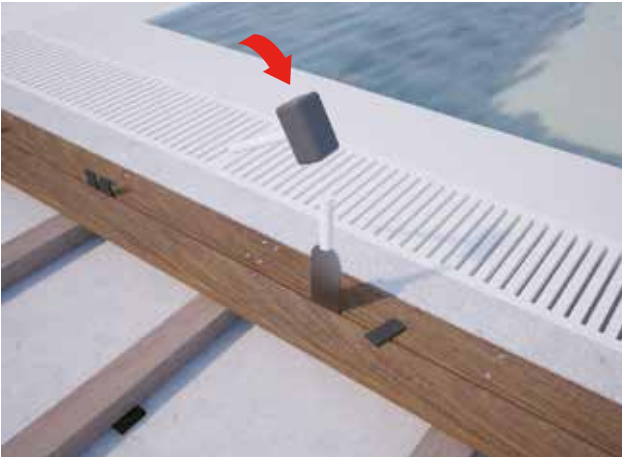
- First, fix the deck boards, only and exclusively at the butt joints, by using a spacer with the same thickness of the desired gap (advisable 5 mm).
- Pre-drill the deck boards.



## Fixing of the second butt joint

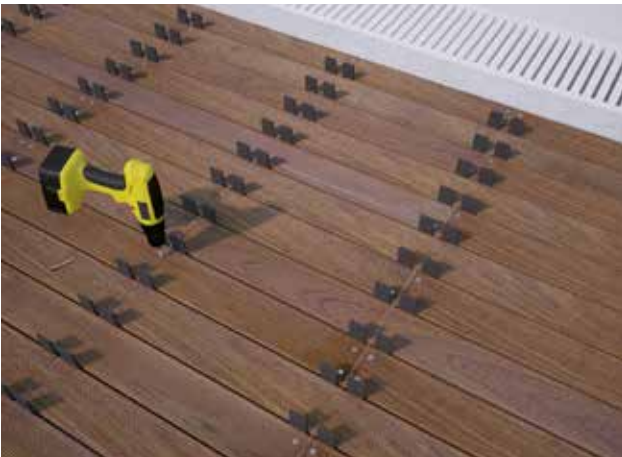
- If the deck board is curved, it will be necessary to push the butt joint which has not been fixed yet towards the spacer placed against the previous row.
- Pre-drill the deck boards.





## Repositioning of the deck board

- Reposition with a lever the curved deck boards in order to even out the gap between the deck boards. Keep the curved deck board in position by using a spacer.
- Repeat both processes (fixing of the butt joints and reposition of the deck boards) until the entire flooring has been completed.
- Every 4 or 5 rows of deck boards verify that the distance between the first and the last deck board is perpendicularly constant. **If the distance is not regular, in order to avoid deviations from perpendicularity and differences in the gap, it is necessary to recheck if the deck boards are parallel before continuing the installation.**



## Fixing of the deck boards

- Once finished, use a chalk liner to mark the lines necessary for fixing straight the screws in correspondence with the substructure joists.
- Screw the deck boards to the substructure joists by using the line previously marked.
- Remove the spacers.



## Framing finishing profile

- It is possible to complete the flooring with its appropriate nosing profile.
- Fix the nosing profile to the structure with screws, both on the foot traffic surface and on the side, making sure to screw them in correspondence to the substructure joists.

## installation of the deck boards with stainless steel clips

The installation with clips guarantees excellent aesthetic results. In order to avoid deformations and bending of the deck boards and to guarantee an adequate result, Ravaoli recommends to use clips only with woods with a well-established stability (see the comparison table about the installation compatibility of the several wood species on Ravaoli decking pricelist).

### Installation of the first row

- Finish the substructure (see previous sections).
- Select a number of perfectly straight deck boards, in a sufficient number to complete the installation of the first row.
- Respect the minimal distances from the fixed structural elements (see pg. 13).
- Pre-drill the deck boards only on the external side.
- Fix with screws the deck boards to the substructure by using the already pre-drilled holes.



### Deck boards butt joints with clips

- It is fundamental to make sure that the butt joints of the deck boards end on a substructure joist.
- In case of butt joints on the same substructure, the same clip has to block both deck boards.
- It is possible to hide the screws of the first row by using caps in the same wood of the deck boards (see Ravaoli decking pricelist).

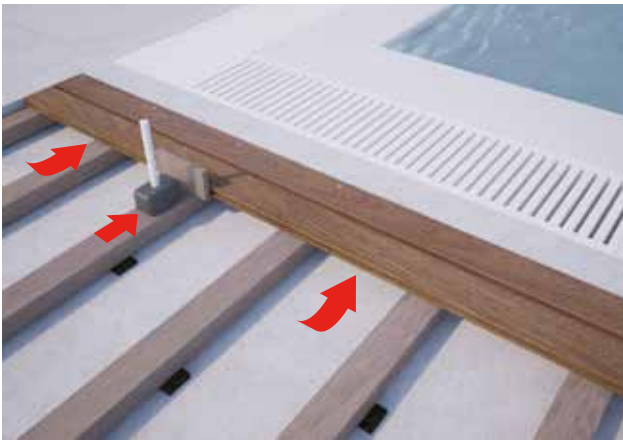


### Installation of the remaining deck boards

- Where the deck board is positioned over the substructure joist, insert the clip all the way into the lateral milling on the side which remains free, eventually by using a hammer.
- Fix each clips to the substructure joist with two screws.







## Installation of the remaining rows

- Install the remaining deck boards so that the chosen lateral milling (see Ravaoli decking pricelist) enters completely into the clip until touching it.

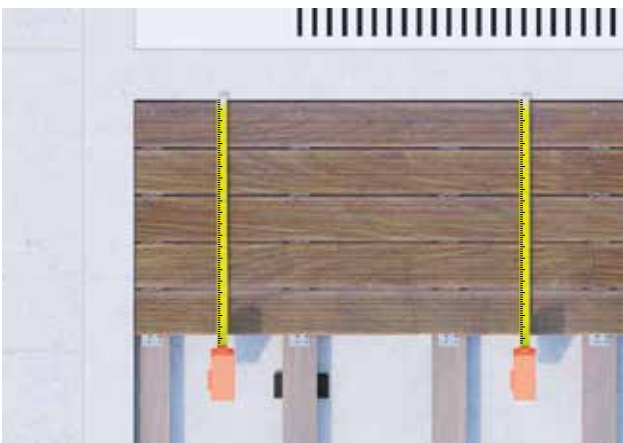
**Please note that: it is important to remember to always position, if present, the convex curvature of the deck boards against the row previously installed (see pg. 15 for the installation with visible screws).**

- If necessary, use a hammer and a piece of off-cuts in order not to ruin the deck board.



- Where the deck board is positioned over the substructure joist, insert the clip all the way into the lateral milling on the side which remains free, eventually by using a hammer.

- Fix each clips to the substructure joist with two screws.



## Checking up

- Every 4 or 5 rows of deck boards verify that the distance between the first and the last deck board is perpendicularly constant.

**Please note that: if the distance is not regular, in order to avoid deviations from perpendicularity and differences in the gap, it is necessary to recheck if the deck boards are parallel before continuing the installation.**



## Framing finishing profile

- Continue as above described until completing the flooring with its appropriate nosing profile.

- Fix the nosing profile to the structure with screws, both on the foot traffic surface and on the finishing side, making sure to screw them in correspondence with the substructure joists.



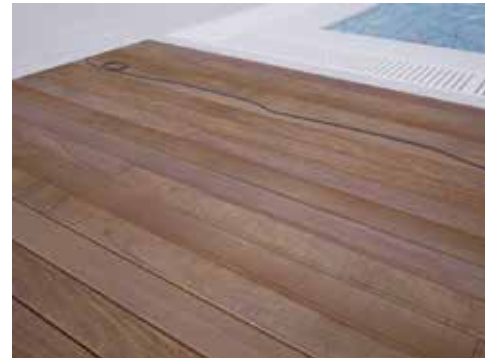
## additional finishing

### Installation of the gasket for "Navy effect"

The black interlocking gasket for "Navy effect" is ideal for floorings with visible screws or clips. It has to be used only with Teak or Thermo Bamboo.

#### Measurement of the gasket

- Measure the gasket by leaning it from one end to the other of the gap.
- Cut it and leave an extra quantity.



#### Fixing of the butt joints

- Fix one end of the gasket with some glue at the beginning and inside the gap which has to be covered.



#### Insertion of the gasket into the gap

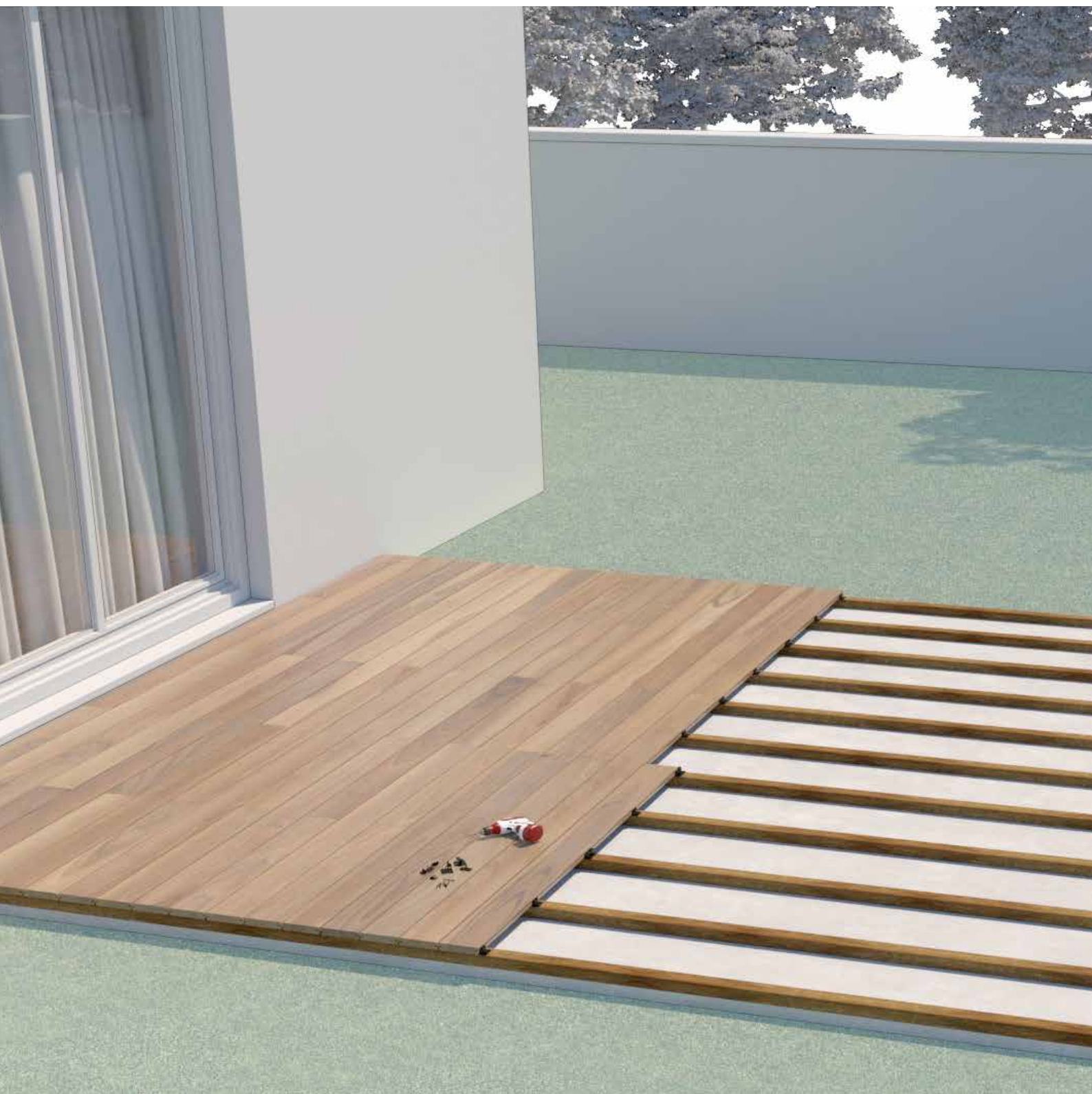
- Block the gasket already inserted by pressing it, in order to prevent it from exiting from the gap.
- Stretch smoothly the gasket and, always by pressing on it, insert it into the gap.



#### Finishing

- After inserting all the gasket into the gap, the extra quantity will be left outside.
- DO NOT CUT it immediately because the gasket may shrink for a few cm. (The waiting may last a few days, based on the length of the gap).
- When cutting the extra part, use some glue.





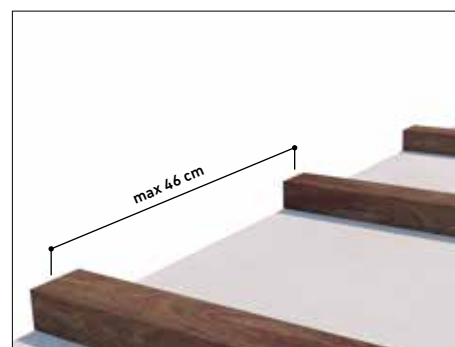
installation with RemoClip<sup>®</sup>: wooden deck boards



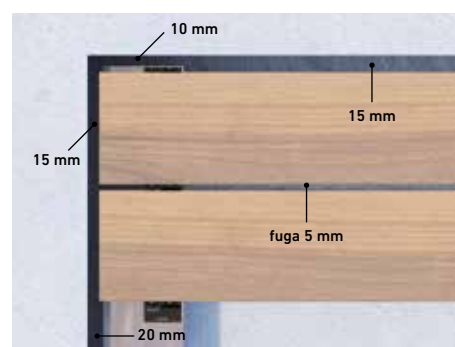
## RemoClip® information and warnings



- Before proceeding with decking installation, please carefully read the introductory chapter “General norms” (pg. 3) and the chapter “Substructure installation” (pg. 5-11).
- Correct decking installation is carried out by proceeding in rows and not in columns, to avoid structural problems and aesthetic defects. Offset ship-deck installation is recommended.
- Every 4 or 5 rows of deck boards laid, check that the distance between the first and last board is perpendicularly constant. If it is not, to avoid out-of-square or lack of continuity in gaps, check the parallelisms again between the deck boards already laid before proceeding.
- The centre distances between the substructure joists depends on the type of structure and the wood species. Always observe a maximum centre distance of 46 cm (pic. A).
- Always observe the following minimum distances from fixed construction elements (walls, curbs, structures, etc. - pic. B):
  - Between the heads of the deck boards and the fixed elements min 15 mm
  - Between the sides of the deck boards and the fixed elements min 15 mm
  - Between the substructure joists and the fixed elements min 10 mm
  - Between the sides of the substructure joists and the fixed elements min 20 mm
- A minimum lateral distance (gap) of 5 mm between deck boards (pic. B) is recommended, so that there are no forcing during natural expansion of the wood. The dimensional tolerances that Ravaioli complies with are indicated in the new UNI 11538-1 standard on decking.
- The protrusion of the deck board with respect to the substructure joist must not exceed 3 cm.
- The heads of each deck board must fall onto a substructure joist and be fixed to it in order to ensure professional installation.
- As a rule, the substructure joist must be twice as thick as the deck boards. This must also be taken into account during the design phase.
- As a rule, the deck boards are not supplied butted. In this case, butting, which is mandatory, shall be the responsibility of the installer on-site. Alternatively, Ravaioli Legnami provides a 90° or Tongue and Groove butting service, including application of protective product on the head cuts.
- The 90° deck board butting (to be laid on substructure joists with a minimum width of 60 mm) allows for the removal of single boards. Tongue and Groove butting of deck boards (to be laid on substructure joists with a min. width of 40 mm) instead allows for the removal of an entire row of boards.
- The specific protective product must be applied to each cut made on-site (pic. C).



picture A



picture B



picture C

## the new fixing system for wooden deck boards

### how RemoClip® works

**RemoClip®** is the new and innovative **Ravaioli fixing** system for decking, suitable for all types of boards with symmetrical milling. This product is a **joinable clip with removable wings**. Resistant, **patented** and made with top **high quality** materials: the clip components are in PA6, while screws undergo Kerapplus treatment.

### RemoClip® system elements for wooden deck boards

The **RemoClip®** fixing system for the installation of **wooden deck boards** consists of **2 bases**, **2 wings** and **3 screws** which, in combination, create 12 different fixing kits.



#### bases

- One large base for normal fixing clips
- One small base for **start or end clips** and for **doubling the clips on the head joints** of the deck boards



#### wings

- For thin wooden deck boards (18/21 mm)
- For thick wooden deck boards (25 mm and larger)



#### black screws with Kerapplus treatment

- 3.5x27 mm for substructure joists in **aluminium**
- 4.28x28 mm per substructure joists in **wood** with thickness 18/29 mm
- 4.28x40 mm for substructure joists in **wood** with thickness 30 mm and larger

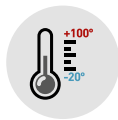
### the advantages of RemoClip®



long-lasting



can be fitted on both **flooring start boards** and **end boards**



withstands temperatures from **-20°** to **+100°**



**better fastening:** the fixing screw operates directly on the wing that blocks the boards



allows **fast, easy removal of single boards** without needing to intervene on the whole flooring



**improves aeration of the substructure,** thanks to the space between boards and joists



prevents the clip from being raised, thanks to the **chip housing**



**improves the stability of boards** in the heat (WPC) and cold (wood) thanks to the ribbed edge on the wings



lets you manage **different thicknesses** with a single clip



complies with the requirements of the **Italian regulation** on decking installation



## clip assembly

### preliminary assessments

The RemoClip® system clips are composed of 3 elements: base, removable wing and fixing screw.

Select the components required to assemble the clips according to the parameters indicated on the previous page: intended use of the clip for the choice of the base, thickness of the wooden deck boards for the choice of the wing, thickness and material of the substructure joists for the choice of the screw.

### clip assembly

- Take a large base and 2 wings suitable for the thickness of the deck boards to be laid.
- Insert the 2 wings, facing in opposite directions, in the 4 pins protruding from the base.

**Note: instructions about the correct direction of wing insertion are printed directly on the base.**



### adjusting the distance between the base and the wings

- The type of interlocking allows the wings to slide into the pins.
- This allows the clip to adapt to the thickness of the boards, favouring insertion of the wings inside their lateral milling.



### inserting screws

- In the centre of each wing is a hole for screw insertion. This hole coincides with another hole on the base.
- When installing the boards, the screws must be inserted through the 2 matching holes and fixed to the substructure joist.
- During fixing, the pressure exerted by the screw will pull the wing downwards, pressing the lower profile of the board against the base of the clip and allowing it to be locked.

**Note: it is important to be careful and tighten as much as necessary so that the board is firmly anchored to the substructure without deforming the clip wing.**



### start and end clips

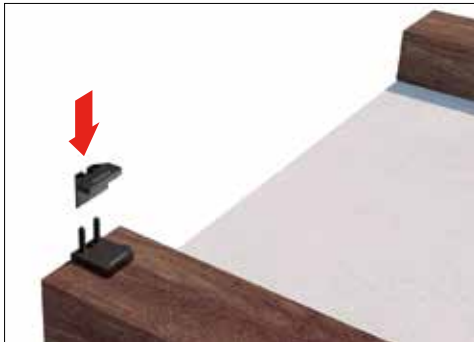
- Take a small base and break it along the groove that runs through it. The part with the 2 protruding pins will serve as the base for the start clip.
- The same procedure should be used to create the flooring end clips.
- You can also repeat the same process with large bases, for creating special start or end clips.



## installation with RemoClip®: wooden deck boards

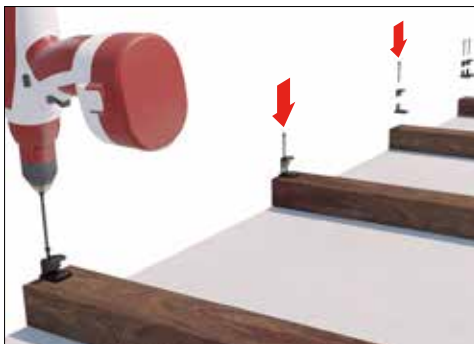
### installation with wooden deck boards - removal of single boards (90° deck board butting)

**Note:** the following images, related to installation of wooden deck boards with RemoClip®, **do not show the rubber spacers**. This has been done for schematic simplification of the illustrations. Nevertheless, please note that **the use of rubber spacers is MANDATORY to separate the substructure joists from the bottom and from direct contact with water and moisture, and thus preserve the stability and durability of the flooring.**

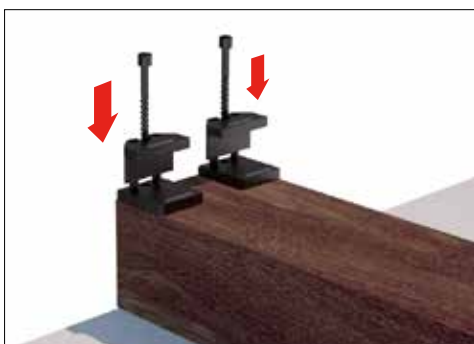


#### end clip positioning

- Finish the substructure, following the instructions in the relevant chapter (see page 4 and following).
- Position the clip near the head of the first substructure joist and insert the appropriate wing for the thickness of the wooden boards to be laid.
- Leave a few millimetres between the base of the clip and the head of the substructure joist.

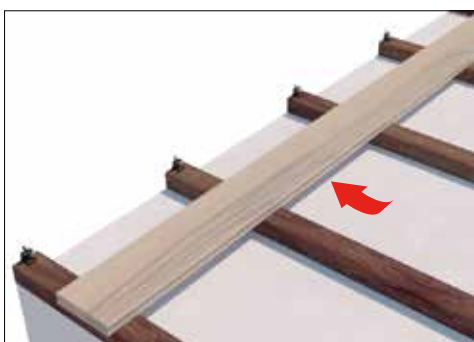


- Pre-drill the substructure joist, if the density of the wood species requires pre-drilling.
- **Insert the screw partially, without forcing it all the way in** so that the start clip is secured to the substructure joist.
- Repeat these operations with all the other start clips of the flooring.



#### doubling the start clips

- It is essential to ensure that each head of the boards falls on a substructure joist.
- In the case of butt joints between the deck boards on the substructure joists, each board must be blocked by a single clip.
- Then assess where the butt joints of the first row of deck boards will fall and attach 2 start clips to the substructure joists, so that each of them can block the head of a different board.

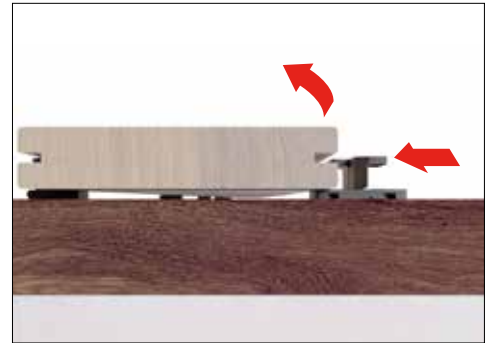


#### installing the first row of deck boards

- Carefully insert the deck boards of the first row into the start clips, without any gap between their heads.
- The clip wings must go deep into the groove of the side milling of the deck board.

## inserting subsequent clips

- Lift the side of the deck board that rests on the substructure joist slightly to allow deep insertion of a second clip.
- Unlike the start ones, this clip will necessarily have a large base.

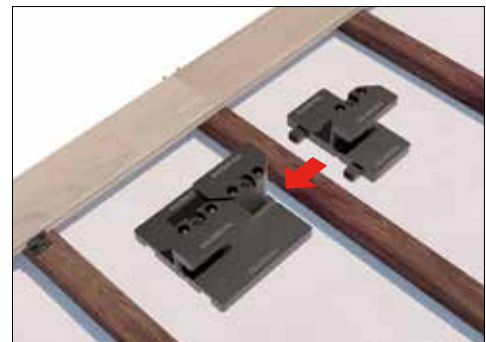


- Insert a new clip with a large base at each intersection between the wooden deck board and the substructure joist, without momentarily fastening the screws.

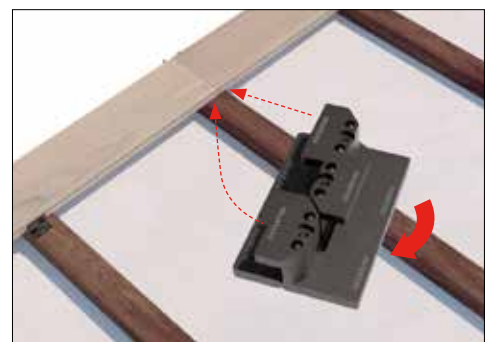


## doubling the clips on the butt joints

- Double clips must be inserted at the points where the butt joints between 2 wooden boards are located.
- Take a clip with a large base and a clip with a small base and join them together.
- The union is facilitated by the presence of tabs on the small base, fitted to be inserted into the corresponding slots on the large base.

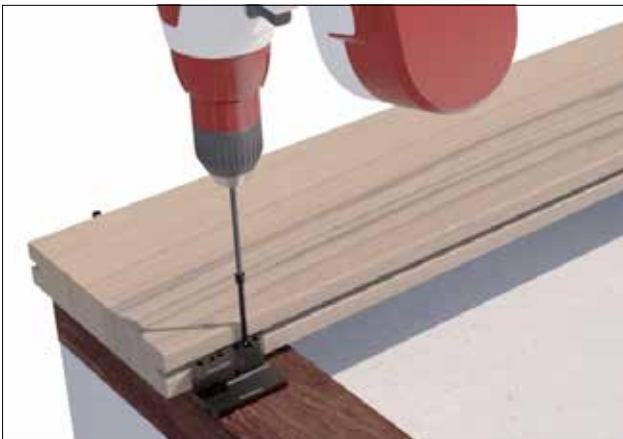


- Pay attention to the direction of insertion of the double clip inside the lateral slots of the 2 boards: the correct side to insert is the one with the 2 tabs, each of which will block the head of a board.



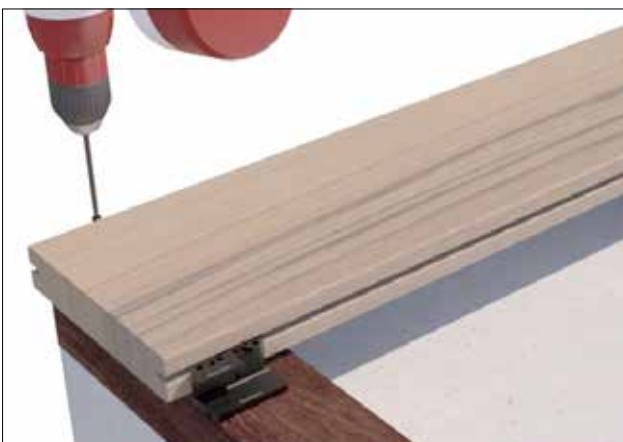
- Carefully push the double clip into the side milling slots of the boards.





## installing the first row of deck boards

- Now proceed with fixing the clips to the substructure joist: insert a screw into the wing inside the board and fasten it **without tightening it completely**.
- Repeat this for the entire row.
- Leave the wings facing the opposite side of the substructure joist free (without screws).

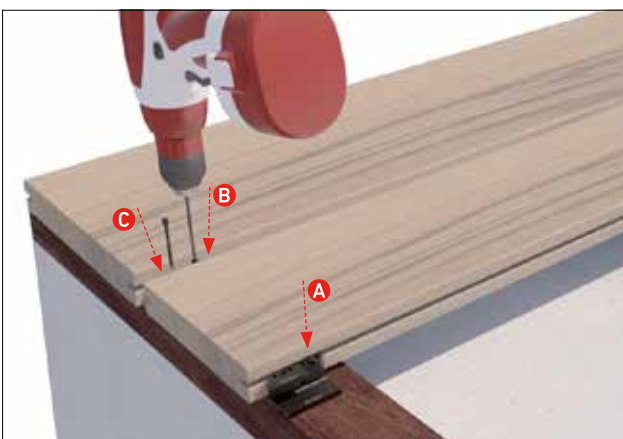


- After you have finished blocking the clips, with the screwdriver still in your hand, **tighten the screws of the start clips, taking care not to tighten too much so as not to deform the wing**.



## installing the subsequent rows of deck boards

- Lay the boards in the next row, making sure that the previously released wing enters the depth of the board milling.
- Proceed by inserting the clips in the next row, **blocking them without tightening them completely** (point A image below), as described above for the previous row.

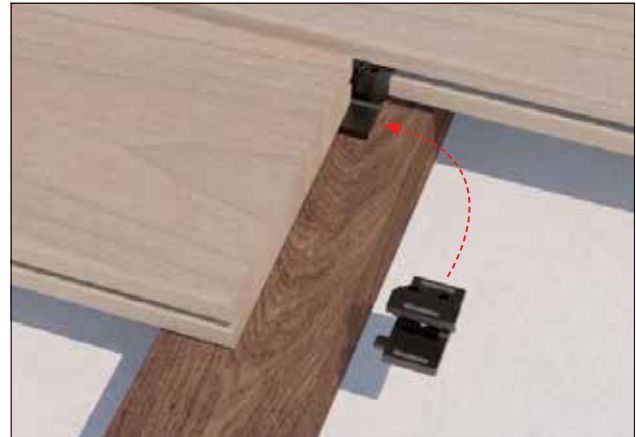


- After you have finished blocking the clips, with the screwdriver still in your hand, **work on locking the clips of the previous gap**:
  - **Finish tightening the screws of the previous row, the ones already locked (be careful not to tighten too much so as not to deform the wing - point B).**
  - **Insert the screws, tightening them completely, in the wings that are still free**, again in the previous row (point C).
- **Be careful in case of butt joints** - see next point.
- The clip will also act as a spacer, automatically creating a 5mm gap between the boards.



## doubling the clips on the butt joints

- Always double the inserted clips on the substructure joists on which the butt joints of the boards fall.
- Take a clip with a small base and join it with the clip with a large base, already placed on the board.

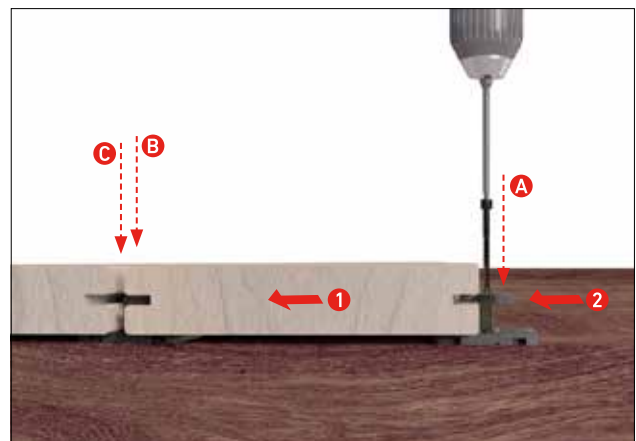


- The union is facilitated by the presence of tabs on the small base, to be inserted into the corresponding slots on the large base.



## installing the subsequent rows of deck boards

- Continue laying the boards for subsequent rows.
- Always measure and check that the row of boards just installed is perfectly aligned with the previous ones. Only then proceed with installation of the next row.
- Observe the correct sequence of board installation and clip fixing as shown on the previous page:
  - **Insert the boards into the free wings of the clip row** (point 1).
  - **Insert the next row of clips** (point 2), **blocking the wings inside the board without tightening them completely** (point A).
  - **Work on blocking the clips of the previous gap.** Tighten the wings that were only partially blocked (point B) and insert the screws and tighten them completely in the wings that are still free (point C).



## finishing flooring

- Repeat this operation until all the flooring is completed.
- Fix the last row of boards using the end clip created with the small base.



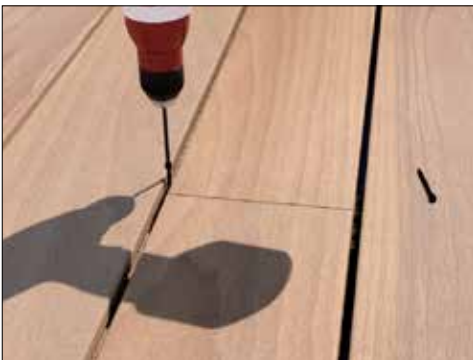
## removing a single board

Sometimes it may be necessary to remove a board from flooring, for replacement or inspection needs. This is often problematic, especially in the case of flooring fixed with metal clips.

One of the main advantages of the RemoClip® system is that it allows **easy and fast removal of individual boards** without having to intervene on the whole flooring.



identifying boards for replacement



removing screws

- Insert the tip of the screwdriver inside the gap between the boards and remove the screws of the wings blocking the board to be removed.



- Remove all screws locking in the board.



removing the board

- With the aid of levers or other suitable tools, gently lift the board and remove it from its seat.
- To put it back into position or replace it with a new one, repeat the operation in reverse:
  - Insert the wings into the side milling slots of the board.
  - Insert the board in the space left free by the previous one.
  - Reposition the wings in the corresponding base pins.
  - Fix the bases and wings to the substructure joists with screws.

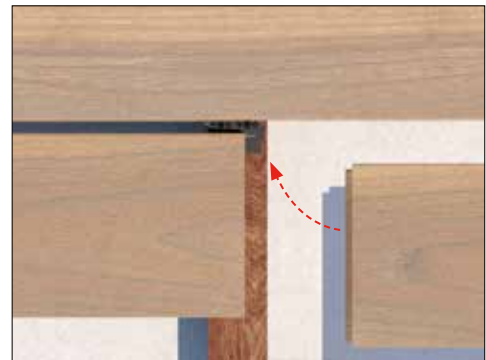
## installation with RemoClip®: wooden deck boards

### installing wooden deck boards - row removal (Tongue and Groove deck board butting)

The procedure for mounting wooden deck boards with Tongue and Groove butting is the same as shown on the previous pages, except from some situations illustrated below.

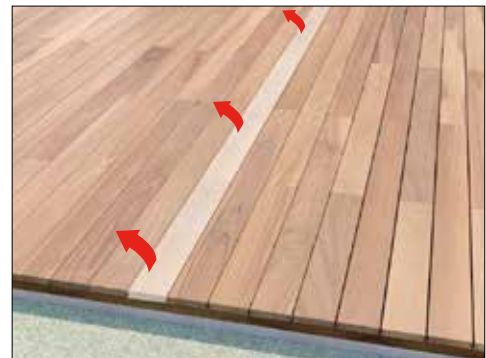
#### clips for butt joints

- It is no longer necessary to double the clips on the butt joints between boards, because the Tongue and Groove interlocking creates a stiffening of the joint and limits the movement of the 2 boards.
- This allows for the use of narrower substructure joists with a width no less however than the width of the large base (40 mm).
- In correspondence of a butt joint between the Tongue and Groove interlocking, one board will be fixed with a wing in the previous clip row while the other board will be fixed with the wing in the next clip row. The Tongue and Groove interlocking and the boards fixed in this way will allow the heads to be anchored to the substructure joist.



#### removing an entire row instead of a single board

- Another important difference with respect to the laying of planks with 90° butting is that single board removal will no longer be possible.
- If necessary, the entire row, or in any case a sufficient number of boards to allow the one to be removed to be take out of its position, must be removed.







installation with RemoClip®: WPC deck boards





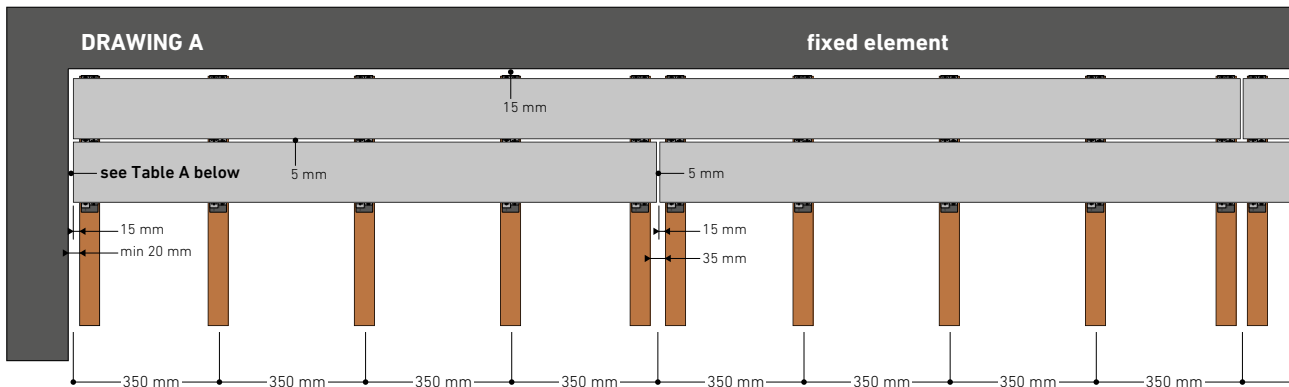
## RemoClip® information and warnings



- ➔ **Before proceeding with decking installation, please carefully read the introductory chapter “General norms” (pg. 3) and the chapter “Substructure installation” (pg. 5-11).**
- ➔ **Correct decking installation is carried out by proceeding in rows and not in columns**, to avoid structural problems and aesthetic defects. Offset ship-deck installation is recommended.
- ➔ Every 4 or 5 rows of deck boards laid, **check that the distance between the first and last board is perpendicularly constant. If it is not, to avoid out-of-square or lack of continuity in gaps, check the parallelisms again between the deck boards already laid before proceeding.**
- ➔ **Always observe the following minimum distances from fixed construction elements (walls, curbs, structures, etc. - see drawing A):**

between the heads of the deck boards and the fixed elements	see table A
between the sides of the deck boards and the fixed elements	min 15 mm
between the substructure deck boards and the fixed elements	min 15 mm
between the sides of the substructure deck boards and the fixed elements	min 20 mm

- ➔ **Always leave at least 5 mm between the butt joints of the boards.**
- ➔ The protrusion of the deck board with respect to the substructure joist must not exceed 3 cm.
- ➔ To ensure professional installation, it is mandatory to double the substructure joists at the points where the butt joints of the boards are located.
- ➔ Never place 2 butt joints between consecutive rows of boards close together. Ravaoli Legnami recommends **regular formwork installation**.
- ➔ The centre distances between the substructure deck boards depends on the type of WPC board and its length. **Always leave a centre distance of 350 mm with 2800 mm WPC Ravaoli boards.** At the points of doubling of the structural joists at the butt joints of the boards, calculate the 350 mm centre distance between the substructure joists, as in drawing A.



**TABLE A**

flooring length (expressed in metres)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
peripheral flooring expansion (in mm)	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45

## the new fixing system for WPC deck boards

### how RemoClip® works

**RemoClip®** is the new and innovative **Ravaioli fixing** system for decking, suitable for all types of boards with symmetrical milling. It is a **joinable clip with removable wings**, that is resistant, **patented** and made with extremely **high quality** materials: the clip components are in PA6, while screws undergo Kerapulus treatment.

### RemoClip® system elements for WPC deck boards

The **RemoClip®** fixing system for the installation of **WPC deck boards** consists of **one base, one wing** and **3 screws** which, in combination, create 3 different fixing kits.



base

- Large base for normal fixing clips, also serves for the construction of the **start or end** flooring clips



wing

- **Specific wing for WPC**, for thin boards (18/22 mm)



black screws with Kerapulus treatment

- 3.5x27 mm for substructure boards in **aluminium**
- 4.28x28 mm per substructure boards in **wood** with thickness 18/29 mm
- 4.28x40 mm for substructure boards in **wood** with thickness 30 mm and larger

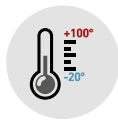
### the advantages of RemoClip®



long-lasting



can be fitted on both **flooring start boards** and **end boards**



withstands temperatures from **-20°** to **+100°**



**improves anchoring:** the fixing screw acts directly on the wing stopping the boards



allows **fast, easy removal of boards** without needing to intervene on the whole flooring



**improves aeration of the substructure,** thanks to the space between boards and joists



prevents the clip from being raised, thanks to the **chip housing**



**improves the stability of boards** in the heat (WPC) and cold (wood) thanks to the ribbed edge on the wings



lets you manage **different thicknesses** with a single clip



complies with the requirements of the **Italian regulation** on decking installation

## clip assembly

### preliminary assessments

The RemoClip® system clips are composed of 3 elements: base, removable wing and fixing screw.

Prepare the components required to assemble the clips or select the type of screw based on the parameters indicated on the previous page, as material and thickness of the substructure joists used.

### clip assembly

- Take a large base and 2 wings for WPC.
- Insert the 2 wings, facing in opposite directions, in the 4 pins protruding from the base.

**Note: instructions about the correct direction of wing insertion are printed directly on the base.**



### adjusting the distance between the base and the wings

- The type of interlocking allows the wings to slide into the pins.
- This allows the clip to adapt to the design of the side milling of the boards, favouring wing insertion.



### inserting screws

- In the centre of each wing is a hole for screw insertion. This hole coincides with another hole on the base.
- When installing the boards, the screws must be inserted through the 2 matching holes and fixed to the substructure joist.
- During fixing, the pressure exerted by the screw will pull the wing downwards, pressing the lower profile of the board against the base of the clip and allowing it to be locked.

**Note: it is important to be careful and tighten as much as necessary so that the board is firmly anchored to the substructure without deforming the clip wing.**



### start and end clips

- Take a large base and break it along the groove that runs through it. The part with the 4 protruding pins will serve as the base for the start clip.
- The same procedure should be used to create the flooring end clips.



## installation with RemoClip®: WPC deck boards

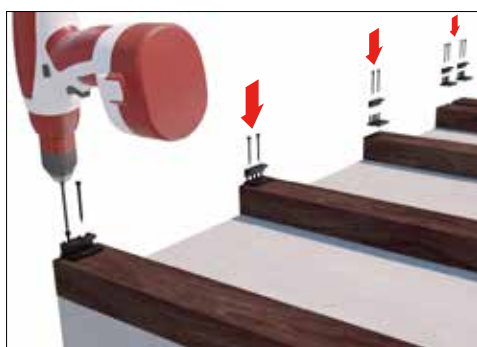
### WPC deck boards

**Note:** the following images, related to installation of WPC deck boards with RemoClip®, **do not show the rubber spacers**. This has been done for schematic simplification of the illustrations. Nevertheless, please note that **the use of rubber spacers is MANDATORY to separate the substructure joists from the bottom and from direct contact with water and moisture, and thus preserve the stability and durability of the flooring.**



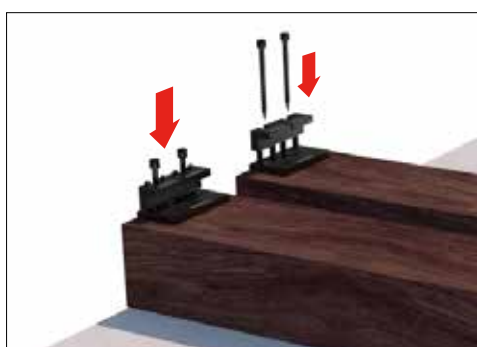
#### end clip positioning

- Finish the substructure, following the instructions in the relevant chapter (see page 4 and following).
- Position the clip near the head of the first substructure joist and insert the 2 wings. In this specific case, both wings must be turned in the same direction.
- Leave a few millimetres between the base of the clip and the head of the substructure joist.



#### end clip positioning

- Pre-drill the substructure joist, if the density of the wood species requires pre-drilling.
- **Insert the screw partially, without forcing it all the way in** so that the start clip is secured to the substructure joist.
- Repeat these operations with all the other start clips of the flooring.



#### doubling the substructure joists

- It is essential to ensure that each head of the WPC deck boards falls on a different substructure joist.
- To ensure professional installation, it is therefore mandatory to double the substructure joists at the points where the butt joints of the boards can fall.



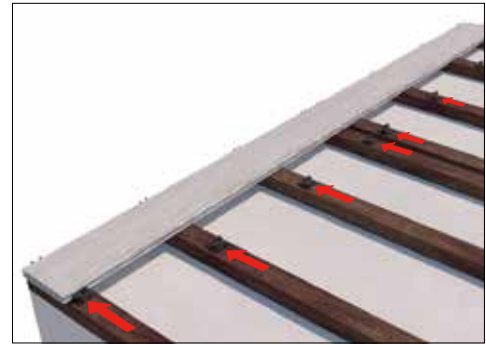
#### installing the first row of deck boards

- Carefully insert the deck boards of the first row into the start, **leaving a gap of 5 mm between their heads.**
- The clip wings must go deep into the groove of the side milling of the board.



## inserting subsequent clips

- Lift the side of the board that rests on the substructure joist slightly to allow deep insertion of a second clip.
- Insert a new clip at each intersection between the WPC deck board and the substructure joist, without momentarily fastening the screws.

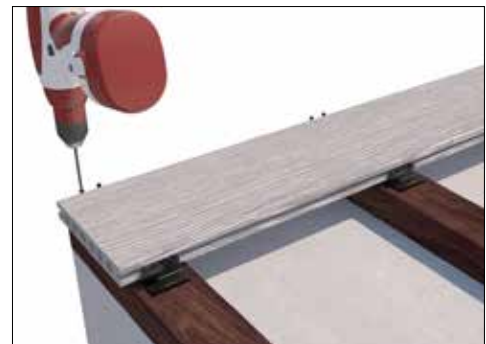


## fixing the first row of deck clips

- Now proceed with fixing the clips to the substructure joist: insert a screw into the wing inside the board and fasten it **without tightening it completely**.
- Repeat this for the entire row.
- Leave the wings facing the opposite side of the substructure joist free (without screws).

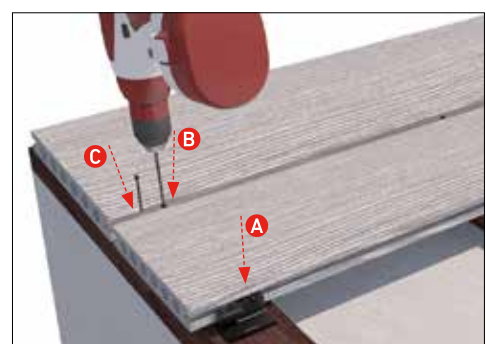
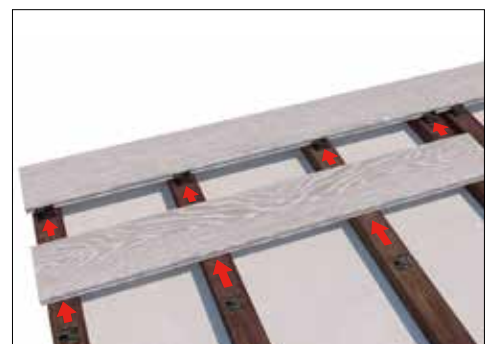


- After you have finished blocking the clips, with the screwdriver still in your hand, **tighten the screws of the start clips, taking care not to tighten too much so as not to deform the wing**.



## installing the subsequent rows of deck boards

- Lay the boards in the next row, making sure that the previously released wing enters the depth of the board milling.
- Proceed by inserting the clips in the next row, **blocking them without tightening them completely** (point A image below), as described above for the previous row
- After you have finished blocking the clips, with the screwdriver still in your hand, **work on blocking the clips of the previous gap**:
  - **Finish tightening the screws of the previous row, the ones already locked (be careful not to tighten too much so as not to deform the wing - point B).**
  - **Insert the screws, tightening them completely, in the wings that are still free, again in the previous row (point C).**
- **Be careful in case of butt joints** - see next page.
- The clip will also act as a spacer, automatically creating a 5mm gap between the boards.

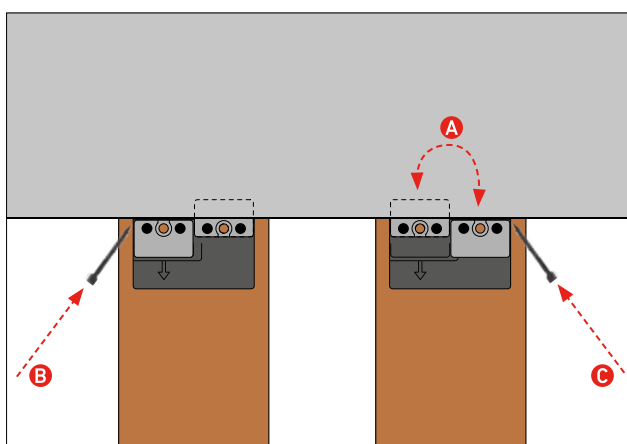




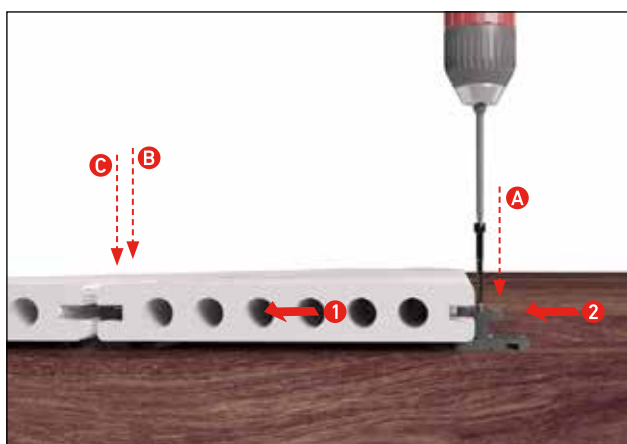
## installing the subsequent row of deck boards

- To ensure professional installation, it is mandatory that the substructure joists be doubled at the points where the butt joints of the boards fall.
- On each of the 2 substructure joists, a clip must be inserted and fixed, which will lock the head of the corresponding board.
- **Always leave at least 5 mm between the butt joints of the boards.**

## blocking the board



- **To anchor the WPC boards to the substructure and limit their lateral movements** (due to the WPC expansion and compression cycle), it is advisable to proceed as follows:
  - Find the point, **in the middle of the board**, where there are 2 doubled substructure joists.
  - Here, reverse the position of the wings on the right clip so that the free wings of the 2 clips will both face outwards (point A).
  - Insert 2 screws inside the milling of the board, positioning them outside these 2 wings (points B and C) and in contact with them. The heads of the 2 screws will block the movement of the board.



## installing the subsequent rows of deck boards

- Continue laying the boards for subsequent rows.
- Always measure and check that the row of boards just installed is perfectly aligned with the previous ones. Only then proceed with installation of the next row.
- Observe the correct sequence of board installation and clip fixing as shown on the previous page:
  - **Insert the boards into the free wings of the clip row** (point 1).
  - **Insert the next row of clips** (point 2), **blocking the wings inside the board without tightening them completely** (point A).
  - **Work on blocking the clips of the previous gap.** Tighten the wings that were only partially blocked (point B) and insert the screws and tighten them completely in the wings that are still free (point C).



## finishing flooring

- Repeat this operation until all the flooring is completed.
- Fix the last row of boards using the end clip created with the small base.

## removing a single board

Sometimes it may be necessary to remove a board from flooring, for replacement or inspection needs. This is often problematic, especially in the case of flooring fixed with metal clips.

One of the main advantages of the RemoClip® system is that it allows **easy and fast removal of individual boards** without having to intervene on the whole flooring.



identifying boards for replacement



removing screws

- Insert the tip of the screwdriver inside the gap between the boards and remove the screws of the wings blocking the board to be removed.



removing screws

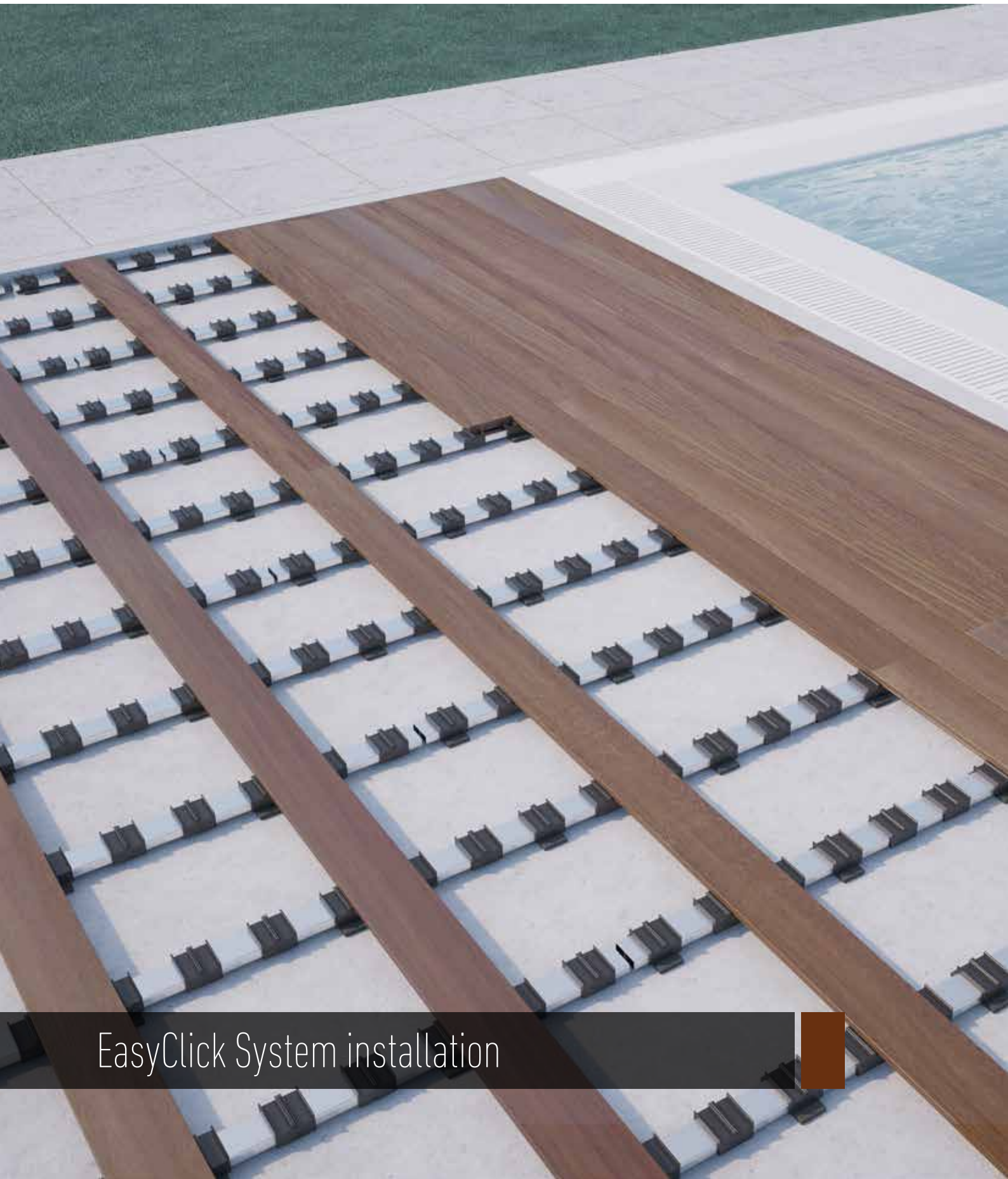
- Remove all screws blocking in the board.



removing the board

- With the aid of levers or other suitable tools, gently lift the board and remove it from its seat.
- To put it back into position or replace it with a new one, repeat the operation in reverse:
  - Insert the wings into the side milling slots of the board.
  - Insert the board in the space left free by the previous one.
  - Reposition the wings in the corresponding base pins.
  - Fix the bases and wings to the substructure joists with screws.





EasyClick System installation





## information and warnings

→ Before proceeding with decking installation, please carefully read the introductory chapter “General norms” (pg. 3) and the chapter “Substructure installation” (pg. 5-11).

→ **EasyClick System** is the installation system made of an alluminium substructure and special pre-assembled clips in nylon which allows an interlocking installation of the deck boards by simply pressing with a foot.

→ If installing wooden deck boards, always respect the following minimum distances from the fixed building elements (walls, slabs, structures, etc. - pic. A):

- between deck board butt joints and fixed elements min 5 mm
- between deck board sides and fixed elements min 10 mm
- between substructure joist butt joints and fixed elements min 5 mm
- between substructure joist sides and fixed elements min 10 mm

→ If installing Duro Excellence deck boards, always respect the following minimum distances from the fixed building elements (walls, slabs, structures, etc. - pic. B):

- between deck board butt joints and fixed elements min 10 mm
- between deck board sides and fixed elements min 6 mm
- between substructure joist butt joints and fixed elements min 10 mm
- between substructure joist sides and fixed elements min 6 mm

→ If installing Duro Excellence deck boards, **always leave at least a 4 mm gap between the butt joints of the deck boards (pic. B).**

→ **Duro Excellence profiles may suffer thermal expansion till 1 mm/m.** It is advisable to install the deck boards when the temperatures are not too high. Before the installation it is also advisable to accurately measure the lengths of each deck board. They will have to be constantly rechecked during the installation process.

→ In order to calculate the necessary linear meters of substructure joist per sqm of flooring, please refer to the table here below:

distance between substructure joists	amount of linear meters per m <sup>2</sup>
30 cm	3.70 m
35 cm	3.50 m
40 cm	2.80 m
45 cm	2.50 m
50 cm	2.20 m

→ The deck board does not have to stick out of the substructure joist for more than 3 cm.

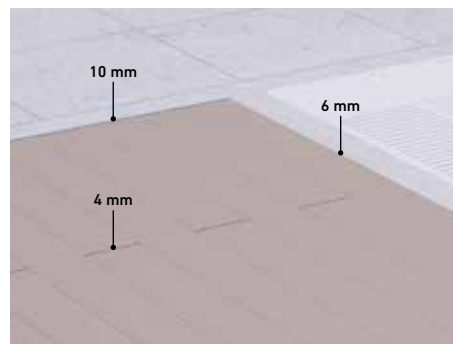
→ For a correct installation, the butt joints of the deck board have to end on a substructure joist and be fitted in it.

→ The wooden deck boards for the EasyClick System are already provided with a cut on heads. The application of a protective product for the butt joints is already included.

→ On every cut done on the construction site it is compulsory to apply the protective product specific for that kind of wood (pic. C).



picture A



picture B



picture C

## EasyClick System installation

EasyClick System is the installation system made of an aluminium substructure and special pre-assembled nylon clips which allows to install the deck boards only by pressing with a foot. The deck boards can be in wood or in the WPC composite (see the Ravaioli decking pricelist or its datasheets).

The WPC composite may suffer thermal expansion till 1 mm/m. It is advisable to install the WPC deck boards when the temperatures are not too high. Before the installation it is also advisable to accurately measure the lengths of each deck board. They will have to be constantly rechecked during the installation process.

### Preliminary evaluations

Verify the final height of the flooring with respect to the height of the ground:

- if the finished foot traffic surface is not higher than 6/7 cm: follow the instructions of **CASE A**;
- if the finished foot traffic surface is higher than 6/7 cm: follow the instructions of **CASE B**.

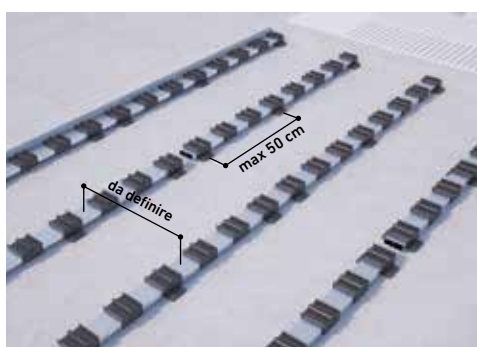
### CASE A: EasyClick System installation upon spacers

It applies if the final height of the foot traffic surface is not higher than 6/7 cm.



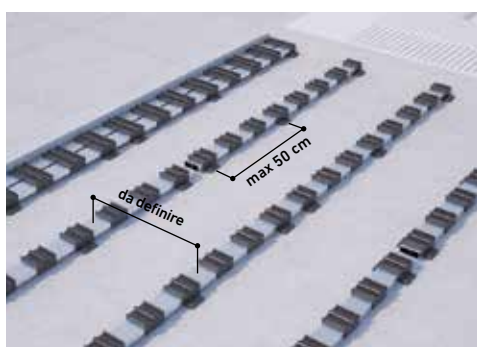
#### Rubber spacing

- Align the substructure joists on the ground with the appropriate Ravaioli rubber spacers (see Ravaioli decking pricelist) and fix the spacers to the joists with some glue (not to the ground).
- Recommended distance between the rubber spacers: max 50 cm.



#### Realization of the substructure

- Align the aluminum bars, already inclusive of the clips, at a defined distance, without fixing them to the ground. Also, make sure to interrupt them once in a while.
- If the bar starts or ends against a fixed architectural element, it is necessary to cut the external half of the first clip.

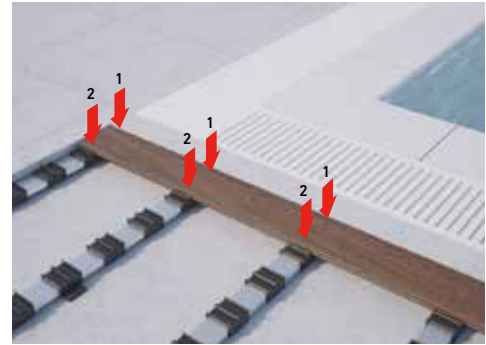


#### Doubling of the substructure joist

- Where it is not possible to anchor the substructure joist to the ground, it is necessary to double the substructure joists on the exterior sides.

## Installation of the first deck board

- Position the deck board making sure the milling and the interlocking clips coincide
- Apply a double pressure “tip (1) - toe (2)” to make the deck board and the clip interlock perfectly.
- Repeat the same process at each crossing between the substructure joists and the deck boards.

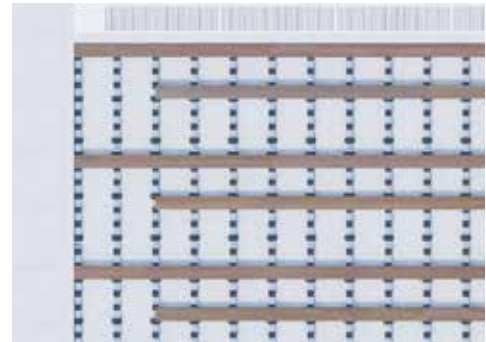


## Installation of the remaining deck boards

- Interlock other deck boards separated from the others in order to square the flooring. This allows for a perfect alignment of the substructure joists, which will be ready for the installation.

**Please note that: the position of the deck boards has to be calculated accurately, paying attention to the alternating of the butt joints between the joists.**

- For the installation of wide floorings, proceed for delimited areas, paying attention to progressively link one to the other.



## Regulation of the rubber spacers

- Once the substructure joist are perfectly perpendicular, verify the flatness of the structure by using straightedges and flattens.
- Add, if necessary, other spacers.
- Glue the added spacers to the substructure joist.



## Fixing of the substructure to the ground

- Anchor the bars to the ground with plugs.  
**Please note that: in case of tar sheathing, DO NOT DRILL but glue the joists to the ground.**



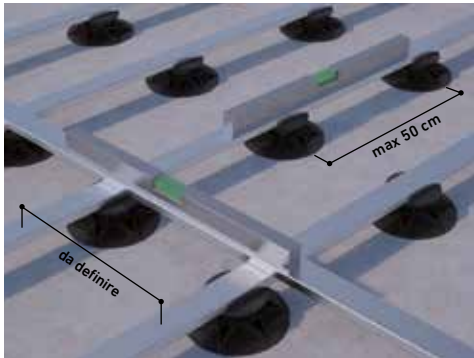
## Finishing of the flooring

- Complete the flooring by interlocking all deck boards.



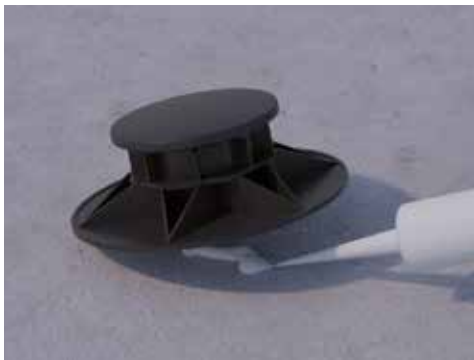
## CASE B: EasyClick System installation upon lifting supports (jack-supports)

It applies if the final height of the foot traffic surface is higher than 6/7 cm.



### Installation of the lifting supports

- Position the lifting supports max. 50 cm apart on row, with a distance between the rows equal to those at pg. 40.
- Verify that the lifting supports are all perfectly aligned and flat both vertically and horizontally by using straightedges and flat-tens. If necessary, regulate the height of the headpieces by using its nuts.



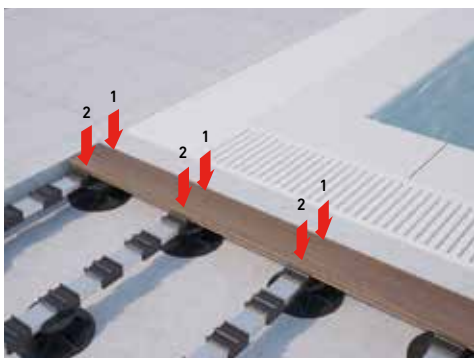
### Fixing of the lifting supports to the ground

- Lift the support on a side and put some glue to anchor it to the ground.
- Wait for the glue to dry to avoid the support to move.
- For the realization of wide floorings, proceed for delimited areas.



### Fixing of the substructure joist to the lifting support

- Position the substructure joist in the middle of the flat headpieces of the lifting supports.
- Lift the substructure joist on a side and put some glue below it to anchor it to the support.
- For the realization of wide floorings, proceed for delimited areas.
- If the substructure joist begins or stops against a fixed architectural element, it is necessary to cut the external half of the clip.



### Installation of the first deck board

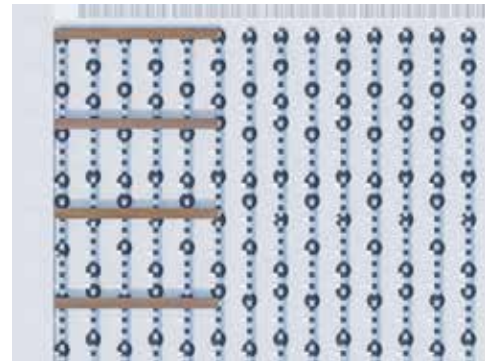
- Position the deck board making the milling and the interlocking clips coincide.
- Apply a double pressure "tip (1) - toe (2)" to make the deck board and the clip interlock perfectly.
- In case of height for which it is not advisable to press with a foot, use a rubber hammer.
- Repeat the same process at each crossing between the substructure joists and the deck board.



## Installation of the remaining deck boards

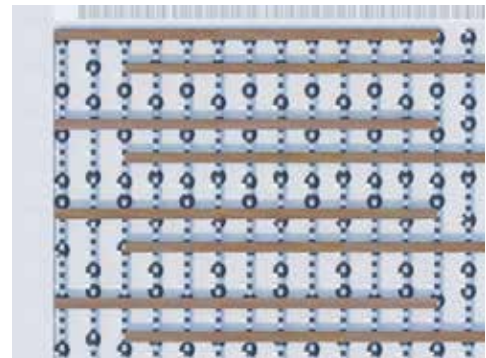
- Do not wait for the glue fixing the substructure joist to the lifting support to dry completely: this allows to have a certain elasticity which is necessary for the squaring of the entire substructure.
- Interlock some deck boards separated from the others in order to square the flooring. This allows for a perfect alignment of the substructure joists before the glue dries completely.

**Please note that: the position of the deck boards has to be calculated accurately, paying attention to the alternating of the butt joints between the joists.**



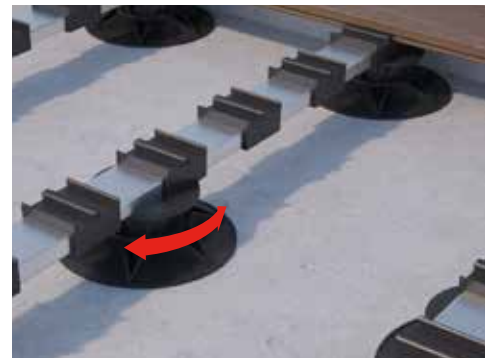
## Installation of the remaining deck boards

- For the installation of wide floorings, proceed for delimited areas, paying attention to progressively link one area to the other.



## Regulation of the lifting supports

- If necessary, regulate the height of the headpieces by using its nut.



## Finishing of the flooring

- Complete the flooring by interlocking all deck boards.



## Installation of the finishing framing profile

For the EasyClick System there is also available a finishing framing profile (nosing) which is easy and fast to install.



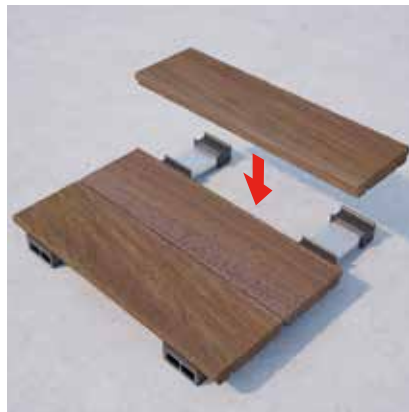
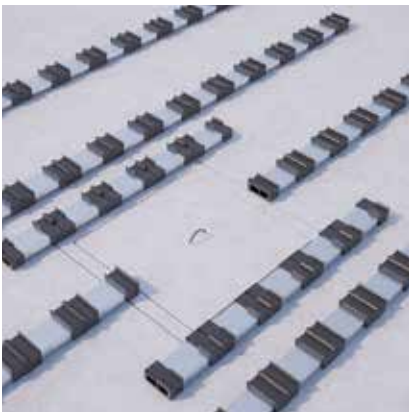
### Parallel installation to the direction of the deck boards

- During the installation of the substructure, please consider also the need to install the framing profile and leave all the exterior clips available for this purpose.
- Press on the profile in order to make it perfectly fit into the clip.

### Perpendicular installation to the direction of the deck boards

- During the installation of the substructure, please consider also the need to install the framing profile and insert in the right direction the first joist with type B clip.
- Press on the profile in order to make it perfectly fit into the clip.

## Realization of opening trapdoors



### Substructure disposition

- Interrupt the substructure where the trapdoor should be positioned.
- Insert two pieces of substructure joists where the trapdoor will be positioned in order to reinforce it.
- Realize a support surface for the trapdoor above the reinforcing joists by cutting part of the single clips.

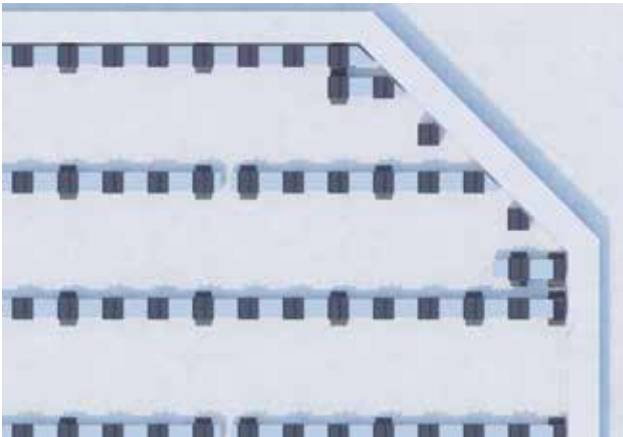
### Realization of the platform

- Continue the installation of the flooring and make sure to cut the deck boards to size where the trapdoor will be positioned.
- Do not cover the part of the reinforcing joists where the clips have been cut.
- Cut as many pieces of deck board and substructure joist as needed for the realization of a trapdoor as big as the surface that has to be covered.

### Finishing of the trapdoor

- Position the platform on the opening: the edges of the platform will have to fit over the support surfaces created by the reinforcing joists.

## Realization of oblique cuts



### Oblique cut

- Cut diagonally the final parts of the substructure joists, following the design of the desired angle.
- Add portions of the substructure joists, in between the main joists, on the areas where the deck boards cut diagonally would have no support at the ends.



### Finishing of the flooring

- Cut the deck boards to size and complete the surface.

**Please note that: if a deck board ends on a portion of substructure joist with no clip in it, it is advisable to put some glue to anchor it.**





Module system installation







## MODULE SYSTEM INSTALLATION

### Preliminary evaluations

Verify the final height of the flooring with respect to the height of the ground:

- if the finished foot traffic surface is not higher than 5/6 cm: follow the instructions of **CASE A**;
- if the finished foot traffic surface is higher than 5/6 cm: follow the instructions of **CASE B**.

### CASE A: installation directly on the ground



#### Preparation of the platforms

- Cut the protuberant parts of the substructure joists on the sides which end against the fixed structural elements.

**Please note that: it is important to always leave at least 10 mm from the fixed building elements (walls, slabs, structures, etc.)**

- Position the first Module at the starting point.



#### Spacing

- If there is the necessity of spacing, glue the rubber spacers directly to the ground.

**Please note that: while positioning the spacer, it is important for the rubber foot of also the other Module to be positioned directly on the spacer.**



#### Installation

- Continue the installation of the second Module by pushing it and making it leaning against the interlocking system of the first platform (if it is necessary, use a hammer).

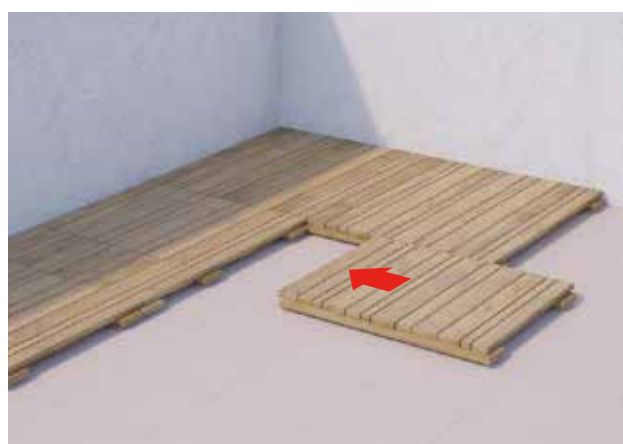
## Gluing of the Modules one to another

- Put some glue on the substructure joist of the first Module before placing the second one.
- Continue until completing the row.



## Installation

- Continue by positioning the second row, always paying attention to the interlocking system of the Modules.
- Always anchor one Module to the other with some glue.
- Continue until finishing the flooring.



## Framing finishing profile

- Fix the framing profile to the substructure joists sticking out of the Modules by using screws.



## Anchoring of the finishing profile to the ground

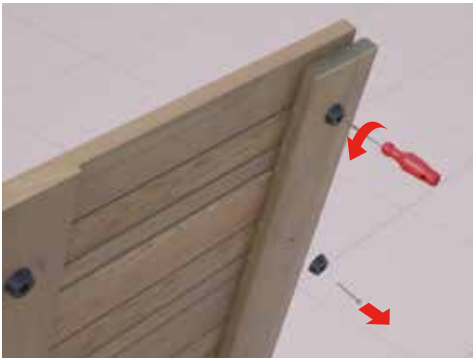
- It is advisable to anchor the framing profile to the ground by using plugs.

**Please note that: in case of tar sheathing, DO NOT DRILL but glue to the ground.**



## CASE B: installation upon lifting supports (jack-supports)

Follow the previous instructions about the case A (pgs. 48 and 49) except for the following differences.



### Removal of the rubber feet

- Before installing, remove with a screwdriver the rubber feet positioned on the back of the platforms.



### Gluing of the lifting supports to the ground

- After positioning the lifting supports (calculate at least 6 pcs per smq), lift them on a side and put as much glue as necessary to anchor them to the ground.



### Gluing of the Modules one to another

- Position the first Module to the lifting supports, without gluing it.
- Position a second Module on the substructure joist of the first Module and fix them together with some glue.
- If necessary, regulate the height of the lifting supports by using its nut.



### Finishing of the flooring

- Repeat this processing until the flooring is completed.





deck tile system installation

## information and warnings

- ➔ The indications listed here below only refers to Ravaioli deck tiles having dimensions 500x500x30mm.
- ➔ **Always respect a minimal distance of 10 mm from the fixed building elements (walls, slabs, structures, etc. - pic. on the side).**
- ➔ According to the correct installation of the wooden deck tiles, they should be alternatively placed in different directions (chessboard design).



## deck tile system installation

### Preliminary evaluations

Verify the final height of the flooring with respect to the height of the ground:

- if the finished foot traffic surface is not higher than 4/5 cm: follow the instructions of **CASE A**;
- if the finished foot traffic surface is higher than 6/7 cm: follow the instructions of **CASE B**.

### CASE A: installation upon 14mm support with non-adjustable height



#### Preparation of the supports

- Cut the support which will be positioned against the wall, in correspondence with the corners and the framing sides, along the pre-existing grooving. Create half circles or quarter circles.



#### Positioning of the supports

- Position the supports by using a deck tile.  
**Please note that: it is important to always respect the 10mm distance from the fixed building elements (walls, slabs, structures, etc.).**
- The wings are necessary to give the correct di-stance, creating the appropriate gap in between the deck tiles.
- Lift the supports on a side and glue them to the ground.



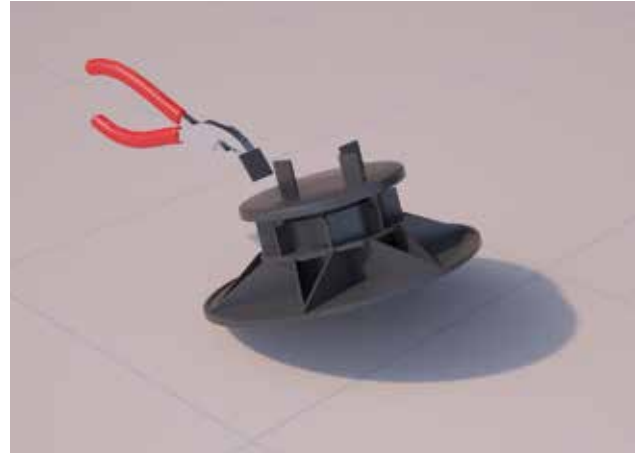
#### Installation of the deck tiles

- Position the first deck tile by starting from a corner.
- Proceed with the installation of the other deck tiles until completing the flooring.
- According to the correct installation of the wooden deck tiles, they should be alternatively placed in different directions (chessboard design).

## CASE B: installation upon lifting supports (jack-supports)

### Preparation of the lifting supports

- Remove the 4 wings of the headpiece from the lifting supports to be positioned on the corners of the flooring (in alternative, use lifting supports with flat headpiece).
- Remove 2 parallel wings of the headpiece from the lifting supports to be positioned on the perimeter. Position the supports so that the remaining wings are perpendicular to the exterior perimeter.



### Positioning of the lifting supports

- Position the supports by using a deck tile.  
**Please note that: it is important to always respect the 10mm distance from the fixed building elements (walls, slabs, structures, etc.).**
- The wings are necessary to give the correct distance, creating the appropriate gap in between the deck tiles.
- Lift the supports on a side and glue them to the ground.



### Installation of the deck tiles

- Position the first deck tile starting from a corner.
- Proceed with the installation of the other deck tiles until completing the flooring.
- According to the correct installation of the wooden deck tiles, they should be alternatively placed in different directions (chessboard design).





## Maintenance of Ravaioli Decking

When exposed to sunlight and adverse weather conditions, wood undergoes a natural tone and colour variation that tends to turn grey and to a general deterioration over time.

In the case of the wood offered by Ravaioli, deterioration only involves the aesthetics.

Decking maintenance, after having accurately cleaned the flooring, makes the wood greying process and the aesthetic deterioration caused by atmosphere factors slower.

The material is delivered by Ravaioli in pallets packed with metal straps and stretchable plastic wrap around it. The pallets have to be stocked in an area sheltered from adverse weather conditions, sunlight and high temperatures until installation. Once the pallets are opened, in case the material is not immediately used, it has to be stocked in a sheltered area or closed once again.

After the installation, it is advisable to wash and oil the floor once it is dry (after about 72 hours) using two coats of Ravaioli specific oil for outdoor uses.

Ravaioli also offer pre-oiled deck boards (recommended option that would presuppose applying a single coat).

### Oiling process

- Proceed with the treatment of the wood product, which has to be done using one of the products of **mydeck+ WOOD OIL** line (also available in the pigmented and light versions).

- The application of the products of **mydeck+ WOOD OIL** must be performed with a brush.
- The application with the brush favours the proper distribution of the product, by properly making it uniform also inside the potential ribbed antislip planning.
- Application temperature +10°C/+25°C.
- Avoid the application of the product during hottest hours.
- Application recommended during winter season.
- After 12/24 hours from the application of the first coat, apply a second coat of product without sanding.
- N.B.: the indicative yield is 10 m<sup>2</sup>/liter, but it is hard to provide a precise yield of the product considering it varies based on numerous factors such as:
  - type of wood
  - type of preparation
  - type of sanding
  - raw, oiled or reconditioned wood.
- All these factors affect wood absorption and, as a consequence, they affect the performance of every single product applied on the wood itself.
- Oil application allows the wood fiber to maintain elasticity in order to prevent potential splits or cracking caused by the sunlight.





## Periodical maintenance

Ravaioli also recommend a monthly maintenance with **mydeck+ SOAP** and a biannual maintenance with **mydeck+ GREY OFF** or whenever necessary, before proceeding with the oiling using a specific product.

It is also possible to restore the flooring preferably using sandpaper with a 120/150 grain.

## Biannual maintenance with mydeck+ GREY OFF

- Spray the specific product for greying removal keeping it at a distance of about 20-25 cm from the wood product to be treated.
- It is also possible to apply it by roller or brush.
- After waiting 20/30 minutes, energetically remove the superficial patina that created either with a not-excessively soft brush or a smooth trowel.
- In case the patina is removed using high pressure cleaner, it is possible to allow the product to react on the surface for a maximum of about 12 hours.
- In case of use at high temperatures, it is recommended to dampen the wood product with water before applying the product.
- Wait 24 hours for complete drying of the wood product before proceeding with oiling.

- After having cleaned and dried off the flooring, it is possible to proceed with the application of the maintenance oil (Ravaioli recommend **mydeck+ WOOD OIL** line)
- Apply a first coat of product by brush, along the wood vein. After 48/72 hours apply a second coat with the same procedure without sanding.

## Monthly maintenance with mydeck+ SOAP

- For a correct cleaning of the flooring use water and 1/5 **mydeck+ SOAP** cleaning product.
- Wash a first time effectively using a floor cloth or mop. When dry, wash a second time with the same procedure.
- Wait 24 hours for complete drying of the wood product before proceeding with the protective product.
- After having cleaned and dried off the flooring, it is possible to proceed with the application of the maintenance oil (Ravaioli recommend **mydeck+ WOOD OIL** line).

These recommendations are the result of our experience, gained over the years. Customers can feel free to intensify the frequency of the cleaning, protecting or maintenance interventions, based on the actual condition of the floor surface.

## maintenance products

When exposed to sunlight and adverse weather conditions, the wood undergoes a natural tone and colour alteration and, over time, it tends to turn grey. Accurate cleaning and regular maintenance, at least once or twice a year, can minimize this process, allowing it to keep its natural color longer.

From the consolidated experience of Ravaioli it has been created **mydeck+**, a new line of products for the maintenance and cleaning of decking, recommended for the protection of wood against the attack of insects and the graying process.



**mydeck+ WOOD OIL** - Pigmented impregnating oil to revitalize and protect.

Particularly resistant to the sun action, thanks to its staining agents it gives to the wood a pleasant, warm color, protecting it against the attack of both moulds and infesting organisms. Water-based or solvent-based.



**mydeck+ WOOD OIL light** - Neutral impregnating oil to revitalize and protect.

Due to the absence of pigmentation, it preserves the original color of the wood, protecting it against the attack of both moulds and infesting organisms. Water-based or solvent-based.



**mydeck+ ANTISLIP** - Pigmented impregnating and antislip oil, water-based.

Pigmented impregnating and antislip oil for wooden or WPC deck boards, anti-stain functionality on WPC Classic deck boards



**mydeck+ ANTISLIP light** - Neutral impregnating and antislip oil, water-based.

Neutral impregnating and antislip oil for wooden or WPC deck boards, anti-stain functionality on WPC Classic deck boards



**mydeck+ GREY OFF** - Product for the removal of grey oxidation.

Regenerating solution for wood that has become grey, ideal to restore the original color of the wooden objects that have been exposed to bad weather, all without damaging expansion joints and rubbers. Biodegradable.



**mydeck+ SOAP** - Detergent to protect exterior wood applications.

It cleans efficiently dirt, residual chlorine, saltiness and spots. It respects wood and doesn't leave any stain. Its constant use protract the times of maintenance of the treatment with **mydeck+ WOOD OIL**.



**mydeck+ BALSAM** - Revitalizing balsam for exterior wood applications.

It enhances the aspect and the brilliance of the decking exposed to unfavorable atmospheric conditions. It is ideal to regenerate the beauty and the natural properties of the wood. It is also ideal for a summary cleaning, thank to its cleaning characteristics.



**mydeck+ ANTISTATIC** - Antistatic and detergent product, water-based.

Antistatic and detergent product, ready to use, for composite materials





**SOLUZIONI  
IN LEGNO**

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