



XT 111122

Rev.004

TREE CHEESE



INSTALLATION MANUAL USE AND MAINTENANCE



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THE COMPANY

Our company, making use of a wide experience in the sector and a technologically advanced production, is able to offer safe and rational solutions for every storage problem. Our modular structures meet the most stringent load requirements, while offering maximum ease of assembly and extraordinary functional agility. ROSSS was the first Italian company to have obtained the certification of its Quality System according to the UNI EN ISO 9001 standard in design and production of metal shelving and then in 2002 achieved, first in Italy, the prestigious environmental certification ISO 14001, followed by EMAS and SA800. Objectives that imply an efficient business organization, absolute scrupulousness in all phases of its activity (design, acquisition of raw materials, production, installation, after-sales service), respect for the environment and its employees, to the full benefit and guarantee of the customer. For several years we have been part of the "A.C.A.I." (Italian Steel Manufacturers Association) Industrial Shelving Section, in which a self-qualification program has been developed; we are one of the companies to have passed these tests, obtaining the brand "CISI Qualità Sicurezza", established by A.C.A.I. in order to guarantee to the final customer the quality and safety of the product in all the phases of its realization, starting from the planning up to the after-sales assistance.

National and international reference standards

Italian legislation and legislation on product design, use and safety:

- Legge n. 64 del 2/2/1974 - Provvedimenti per le costruzioni con particolari prescrizioni per le zone sismiche.
- Legge n. 1086 del 5/11/1971 - Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica.
- Decreto Ministeriale del 14/01/2008 – Norme Tecniche per le costruzioni (NTC2008)
- Circolare n.617 del 02/02/2009 – Istruzioni per l'applicazione delle "Nuove Norme Tecniche per le Costruzioni" di cui al D.M. de 14 /01/2008.
- EC3 parte 1-1 "Regole generali – Regole generali e regole per gli edifici".
- EC3 parte 1-3 "Regole Generali – Regole supplementari per l'impiego dei profilati e delle lamiere sottili piegati a freddo".

CUSTOMER

INSTALLATION N° **YEAR OF BUILDING**

(ORDER N° /DATE)

LIMITS OF SHELVING USE

In the normal use of the shelving, neither horizontal nor dynamic vertical and/or horizontal loads are allowed.

It is not allowed to bump or lean on the shelving with trolleys or any other means.

The use of shelving other than that described in this manual is not permitted.

The shelving is designed for a specific use. Any alterations to the geometry can be made only with the permission of our technical office.

WARNINGS

The instructions contained in this description are for some indicative details.

These indications are to be considered exhaustive for the purposes proposed in this booklet:

correct assembly, use and maintenance.

The precise dimensional characteristics can be deduced from the accompanying documentation.

The drawings contained in this volume are presented for commercial didactic purposes only.

**If the assembly is carried out by the Customer,
Rosss declines all responsibility for damage to property or
persons caused by such activity.**

PREPARING THE ASSEMBLY

- 1) Check the levelling of the floor surface.
- 2) Check for possible interference of the shelving with pre-existing structures.
- 3) Ensure that the available space is adequate for safe assembly.
- 4) The flooring and lighting of the environment should be designed in such a way as to enable staff to work in optimum conditions.

ASSEMBLY TOOLS



- Spanners set
- Screwdriver
- Gum-hammer
- Pliers
- Screwdriver
- Percussion drill with drills suitable for this shelv.
- Torque wrench
- Level
- Crowbar
- Plumb line
- Optical Level
- Safety belts
- Ropes

WARNINGS

The installation Team must be equipped with each personal accident prevention devices necessary in relation to the specific assembly operations (helmet, gloves, safety shoes, safety belts, etc.).

HANDLING

For the handling of the columns and bases during assembly it is recommended to use only suitable mechanical means, such as small cranes, winches or other.

For columns with less significant lengths, handling can be carried out manually with an adequate number of employees.

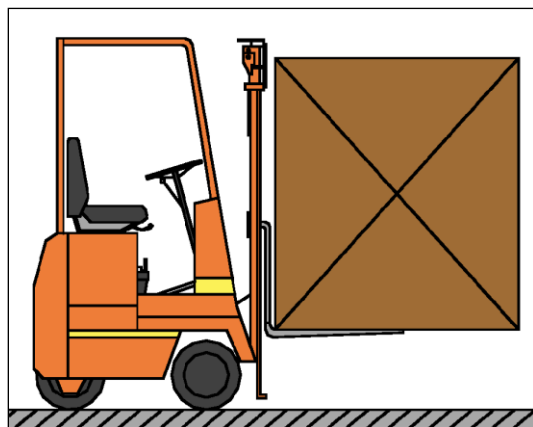
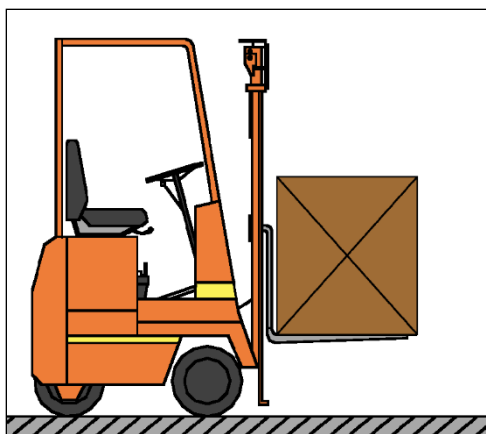
For all the heights of the shelving it is necessary to use for moving the materials a forklift of adequate lifting capacity and height, for mounting the structure a platform of adequate lifting capacity and height.

It is however possible to use, only for heights up to 6000 mm, a pallet truck of adequate capacity for moving materials and a wheel bridge of adequate capacity and stability for mounting the structure.



HANDLING

A forklift of adequate capacity shall be used for material handling. The forks of the trolley must have a width **SUITABLE** for the length of the packages and a length such as to lift the package completely safely.

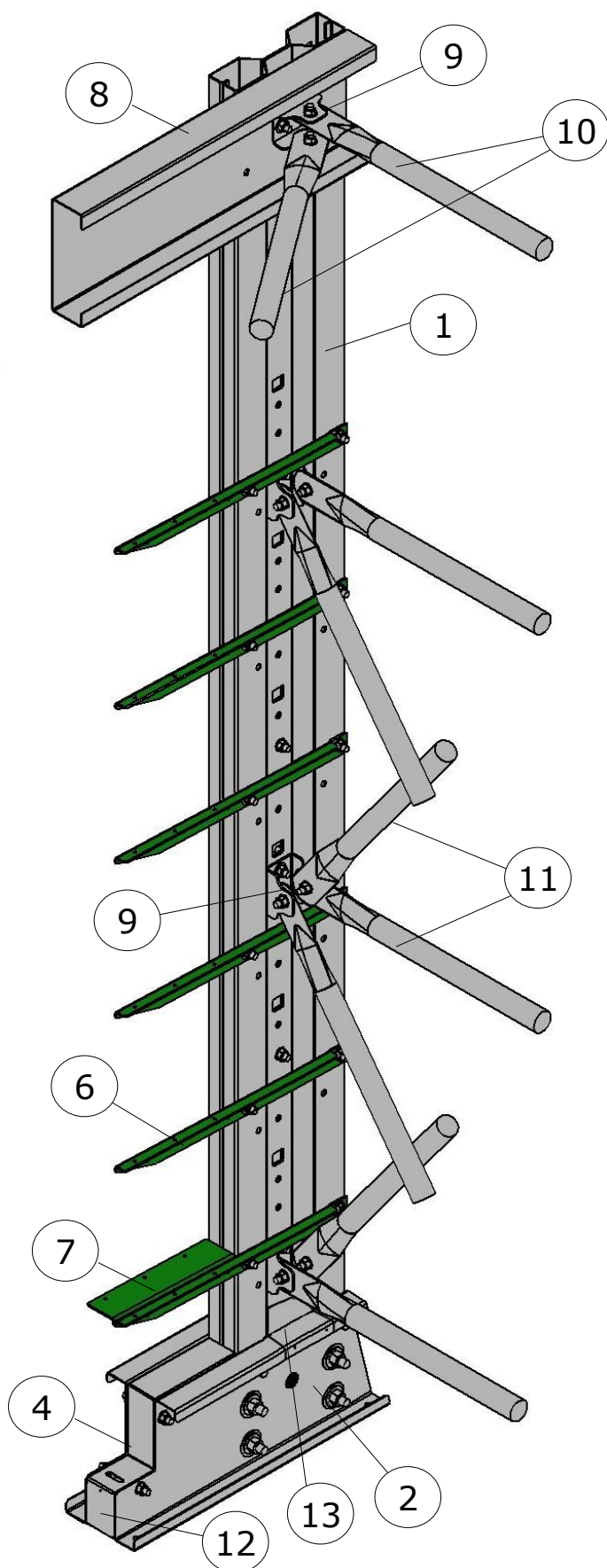


If required, in relation to the specific operation, take technical and arrangements to eliminate the risk of injury related to cargo handling.

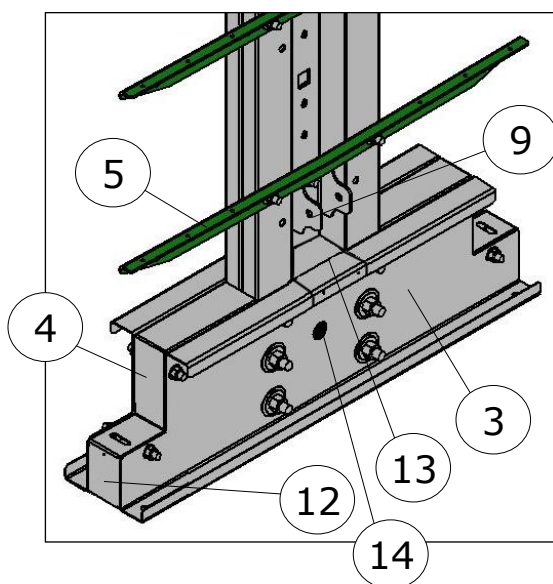
In the case of prolonged storage, place the components of the shelving on a flat support surface and avoid overloading them with weights such as to damage them.

Shelving components must never be stored outdoor.

MAIN COMPONENTS FOR TREECHEESE RACKING

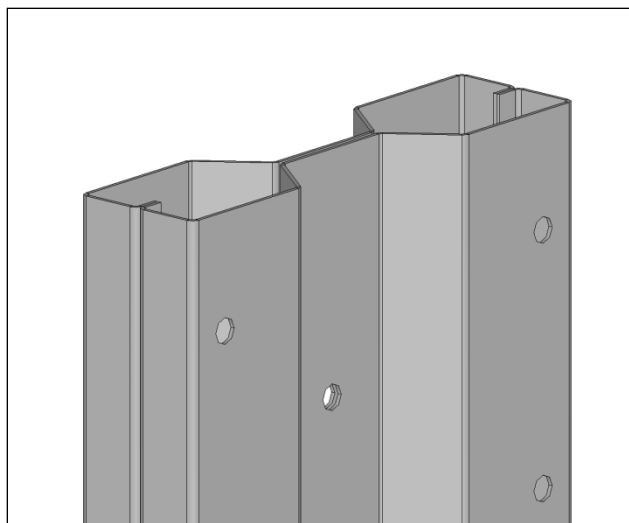
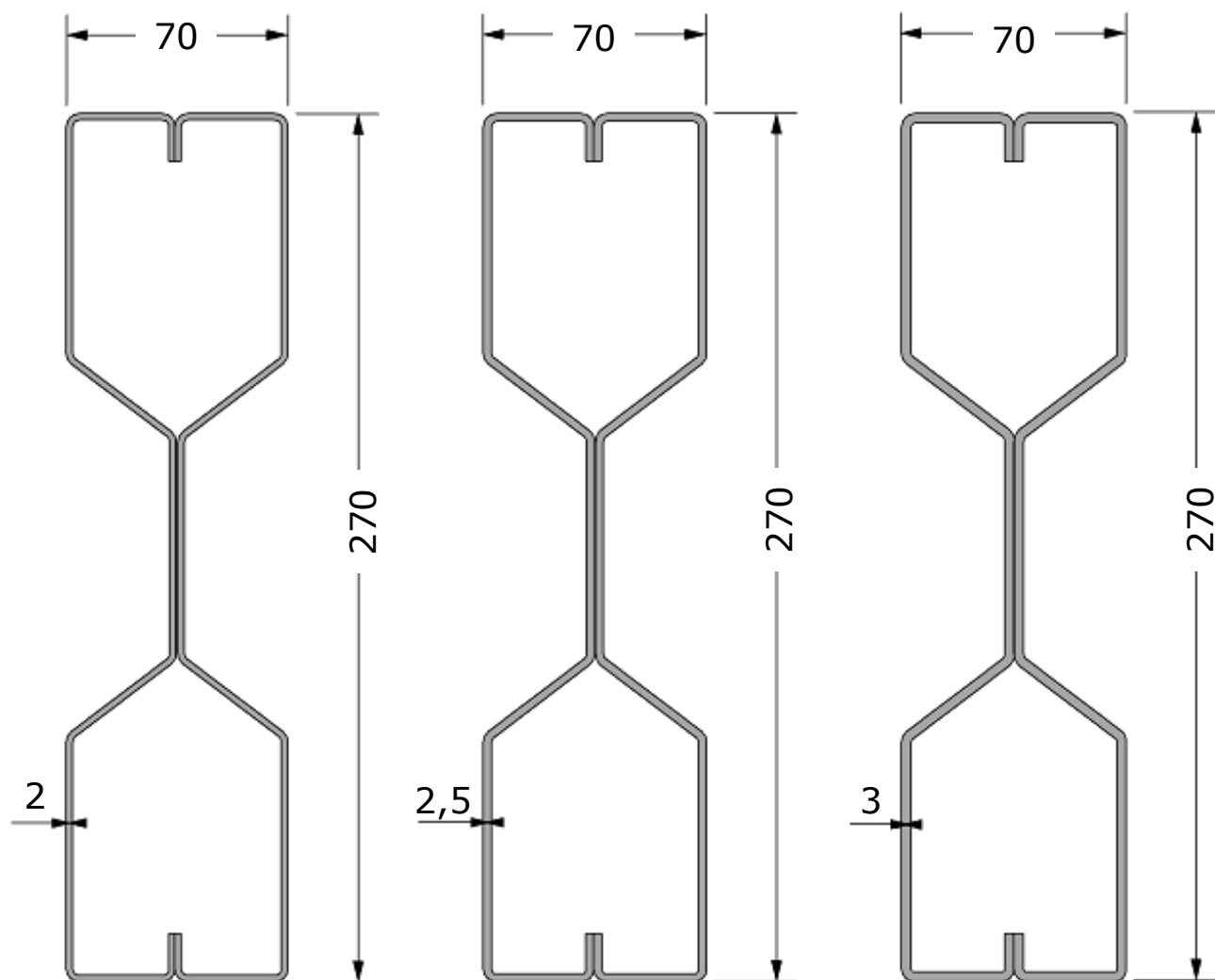


N.B. TREE CHEESE racking is supplied completely disassembled



1. UPRIGHT
2. SINGLE SIDE BASE
3. DOUBLE SIDE BASE
4. FRONT BASE
5. DOUBLE SIDE ARM
6. SINGLE SIDE ARM
7. BRACKET FOR WOODEN JOINT
8. UPPER JOINT BEAM
9. DIAGONAL JOINT TO COLUMN
10. TOP DIAGONALS AND STRUTS
11. VERTICAL DIAGONALS AND STRUTS
12. BASE CAP CLOSURE
13. COLUMN CAP CLOSURE
14. BASE HOLE CAP CLOSURE

TYPE OF UPRIGHTS AND RELATIVE SECTIONS



The pitch height of the arms can be 330 or 340 mm.

N.B. The uprights are composed of two equal profiles, which are coupled with M12 screws that support the arms and diagonal connections. In addition, other M12 bolts are mounted to join the two profiles (see following pages).

ASSEMBLY SEQUENCE

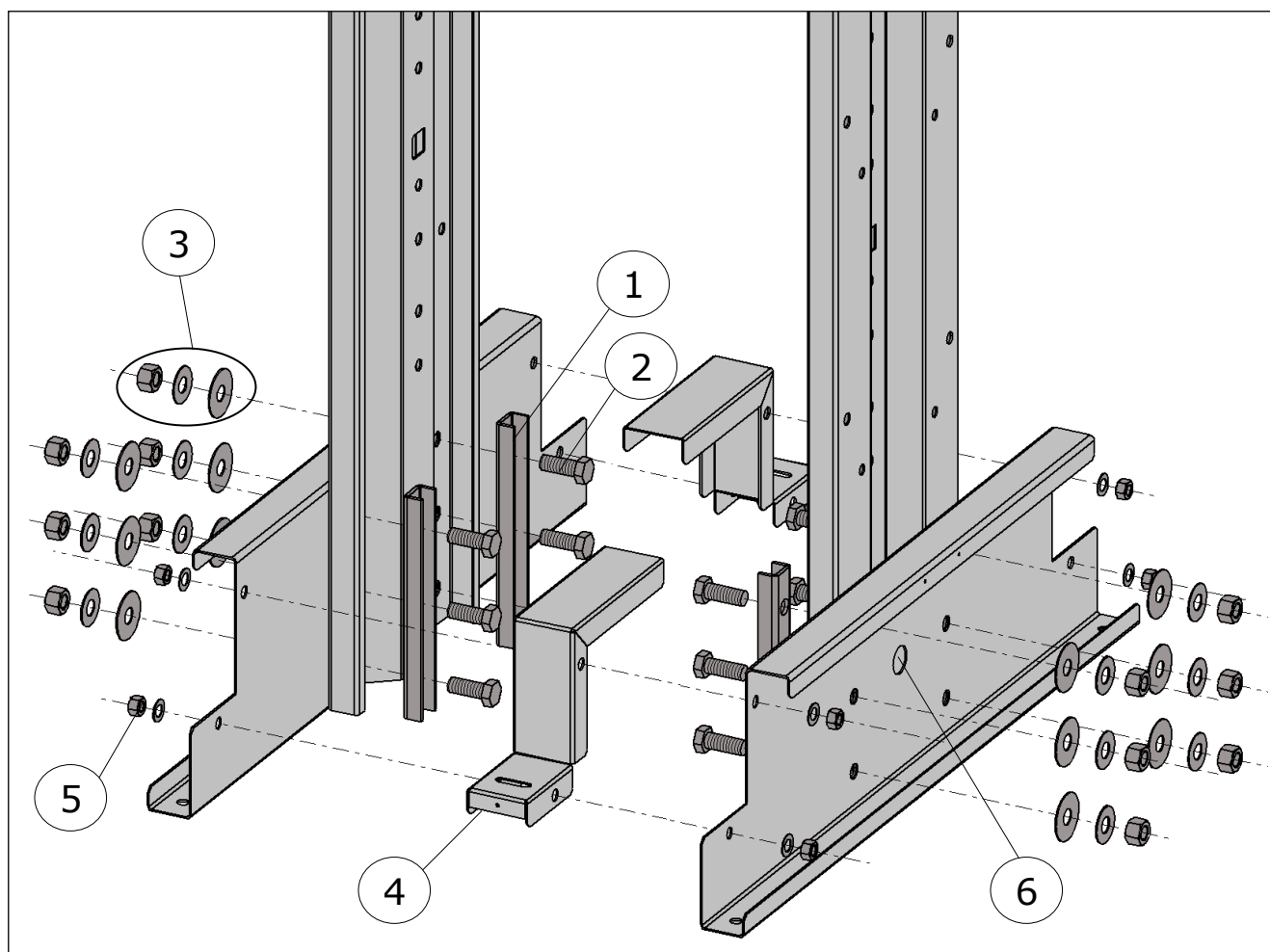
RACKING FOR CHEESE FORMS
TREE CHEESE ROSSS®**ASSEMBLY SEQUENCE**

**IT IS RECOMMENDED TO READ THIS BOOKLET BEFORE STARTING
THE ASSEMBLY OF THE STRUCTURE**

- Assemble all columns on the floor, assembling the single half columns with the bases; then couple the two half columns
- Insert the arms, the junction for the wooden board (if any) and the front closure by fixing it to the base profile.
- Fix the brackets for cross bracing and add M12 bolts on the columns, following the diagram shown in the warehouse drawing lay-out
- Fix the base closure and the column closure.
- Raise the first two complete base columns and fix the diagonals and horizontals that form the package of braces.
- Raise the two adjacent columns as above and secure the upper links with their cross bracing sets.
- Raise the next columns and fix the bracings repeating the operation for the next columns.
- Assemble the cheese form stop profile.
- Check for each column the levelling and perpendicularity, include thickness shims where necessary.
- Lock the structure to the ground with self-tapping plugs.
- Place the wooden boards fixing them with the relative screws to the arms. Then assemble the stainless steel strips for finishing the boards.
- Finally fix the cheese boards capacity.

**Only at the end of these sequences the shelving
may be used**

ASSEMBLY COLUMN



1. FIXING PROFILE BASE-COLUMN
2. SQUARE HEAD SCREW M16X42
3. WASHER D64, WASHER D48 + SELF-LOCKING NUT M16.
4. FRONT CLOSURE FOR BASE
5. SCREW M12X25, WASHER + SELF-LOCKING NUT
6. SCREW M12X25, WASHER + SELF-LOCKING NUT

Assemble the two half-columns, coupling the base and column profiles; use for each half-column 2 base-column fixing profiles (1), 6 square head screws M16x42 (2), oversized washers D64 and D48 and self-locking nuts M16(3).

Then couple the two half columns by assembling the front for the base (4) with screws M12x25 + washer + self-locking nut, placing the head of the screw inside the front element.

Finally insert a screw M12x25 + washer + self-locking nut between the two half columns in the center of the base (6).

N.B. Tighten the M12 screws completely only after assembling the arms and diagonal connections.

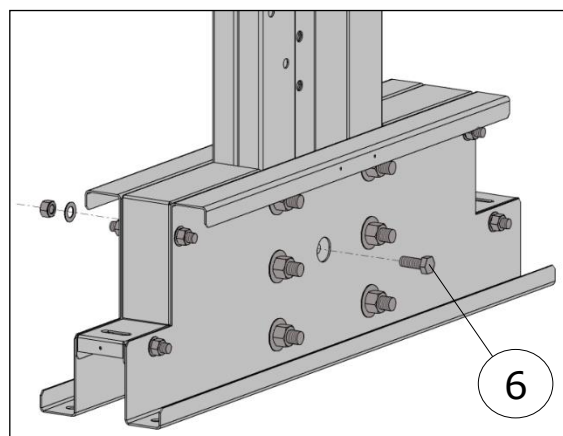
GENERAL FIXING PAIRS

Bolts. **M16** = from 140 to 210 Nm

Bolts. **M12 Bracci** = from 25 to 35 Nm

Bolts. **M12** = from 55 to 80 Nm

Bolts **M10** = from 30 to 50 Nm



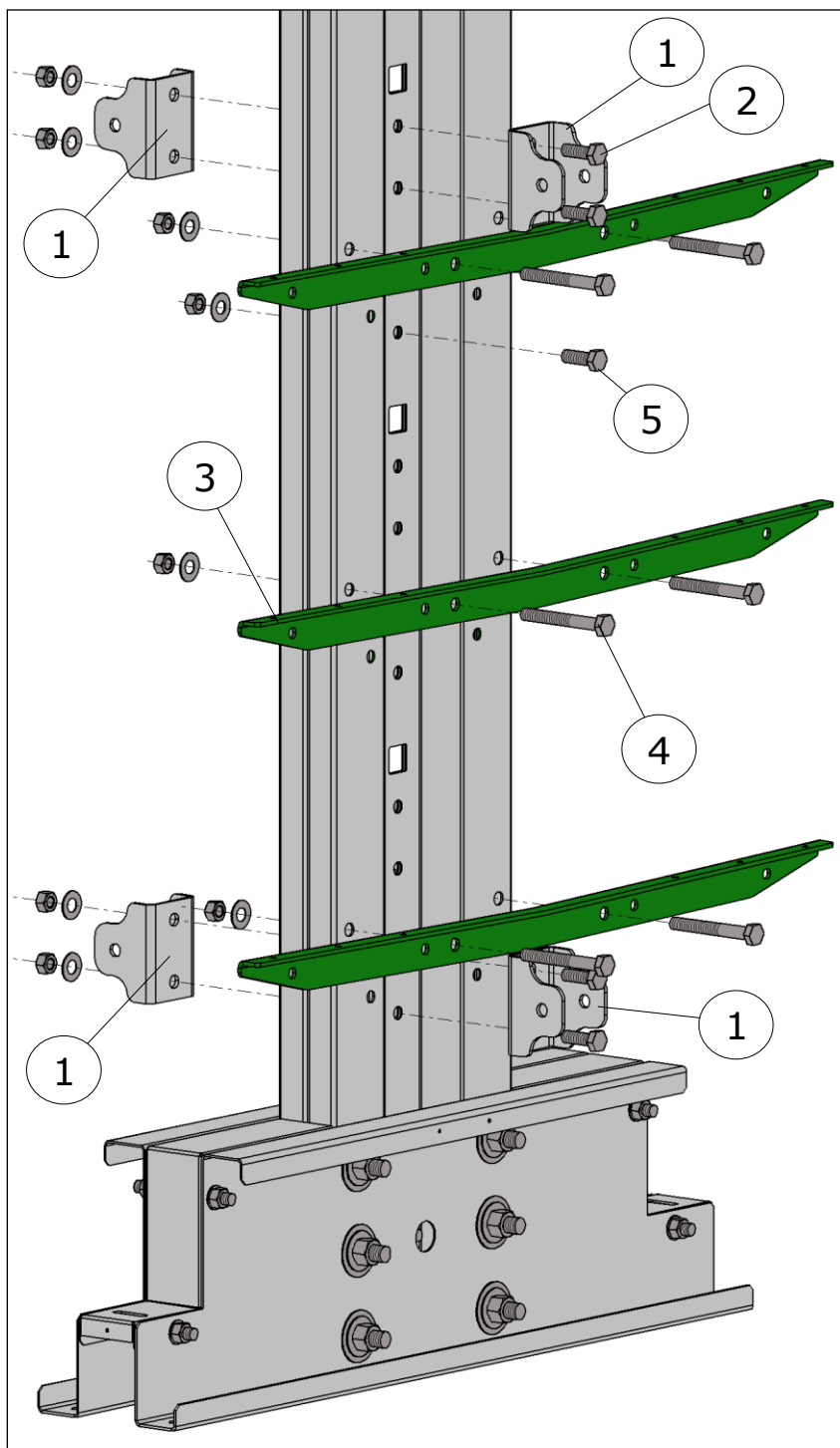
ASSEMBLY COLUMN

Assemble the arms (3) using 2 M12x95 screws +enlarged washer + self-locking nut (4). The bolt head should be positioned on the side of the arm (both single-side and double side); the larger washer and the self-locking nut on the opposite side.

Then fix the diagonal connections (1) on the column using 2 screws M12x35 + washer + self-locking nut (2). The bindings are present on both sides of the upright.

Finally mount additional M12 bolts (5)

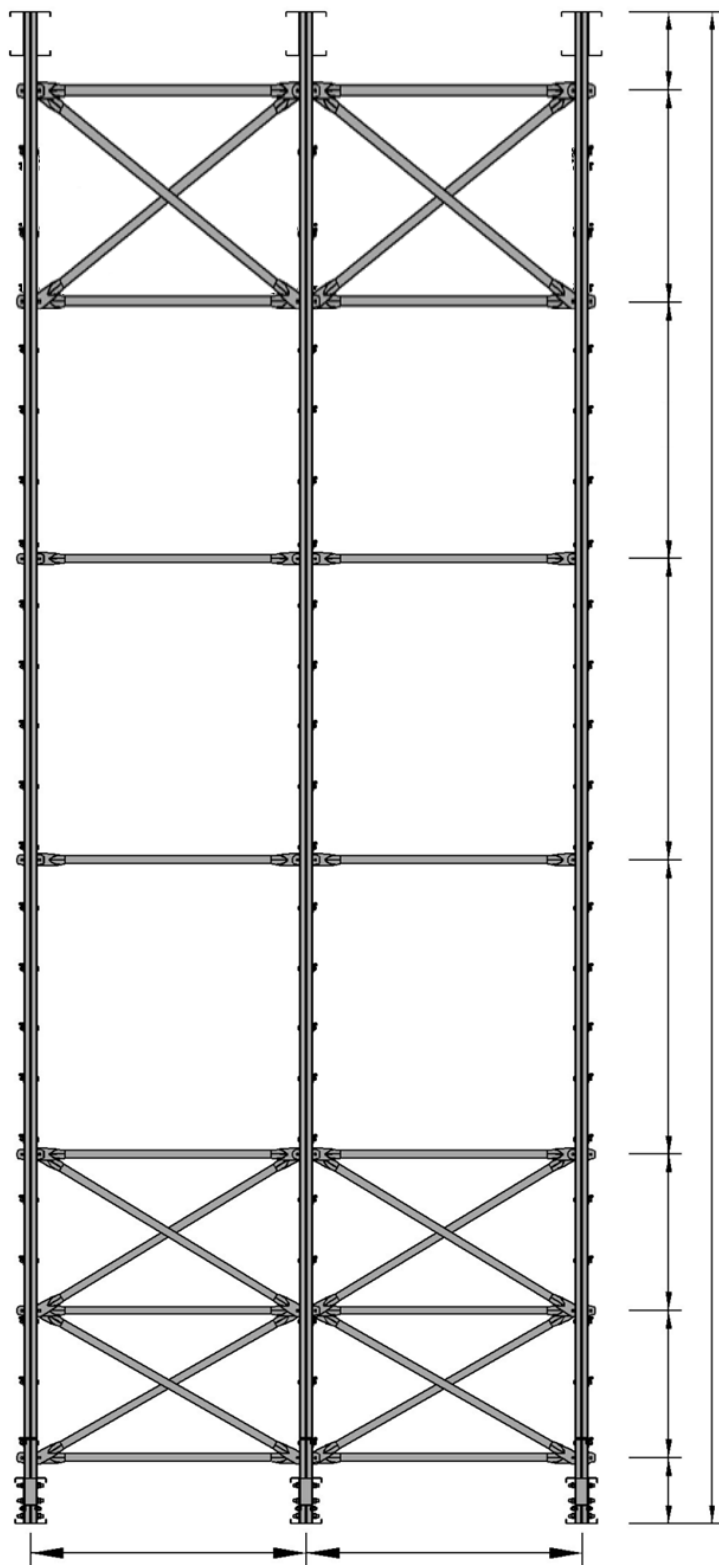
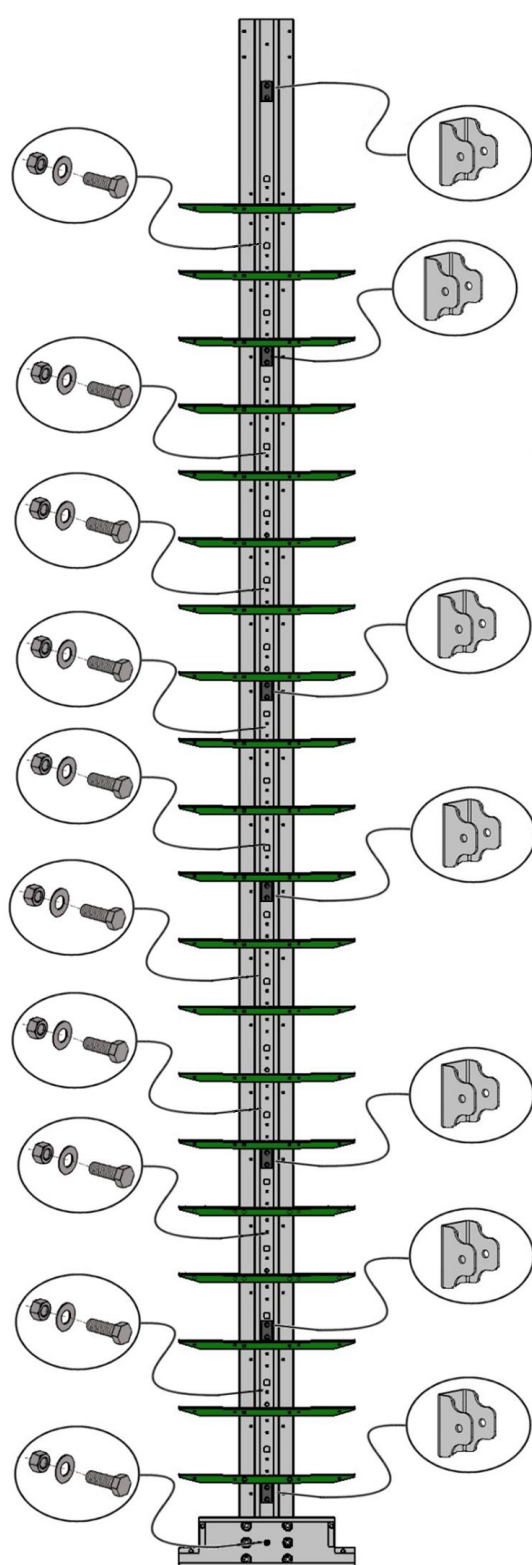
N.B. The quantity and positioning of the diagonal connections, arms and M12 bolts, which vary according to the column, will be specified in the project executive tables, supplied together with the disassembled material (see diagram page below).



1. JOINT DIAGONALS AND HORIZONTALS
2. SCREW M12X35, WASHER + SELF-LOCKING NUT
3. ARM (double side)
4. SCREW M12X95, ENLARGED WASHER+SELF-LOCKING NUT
5. SCREW M12X25, WASHER + SELF-LOCKING NUT

After assembling M12 bases, diagonal connections, arms and bolts, tighten all screws, with the tightening torques indicated above.

ASSEMBLY COLUMN

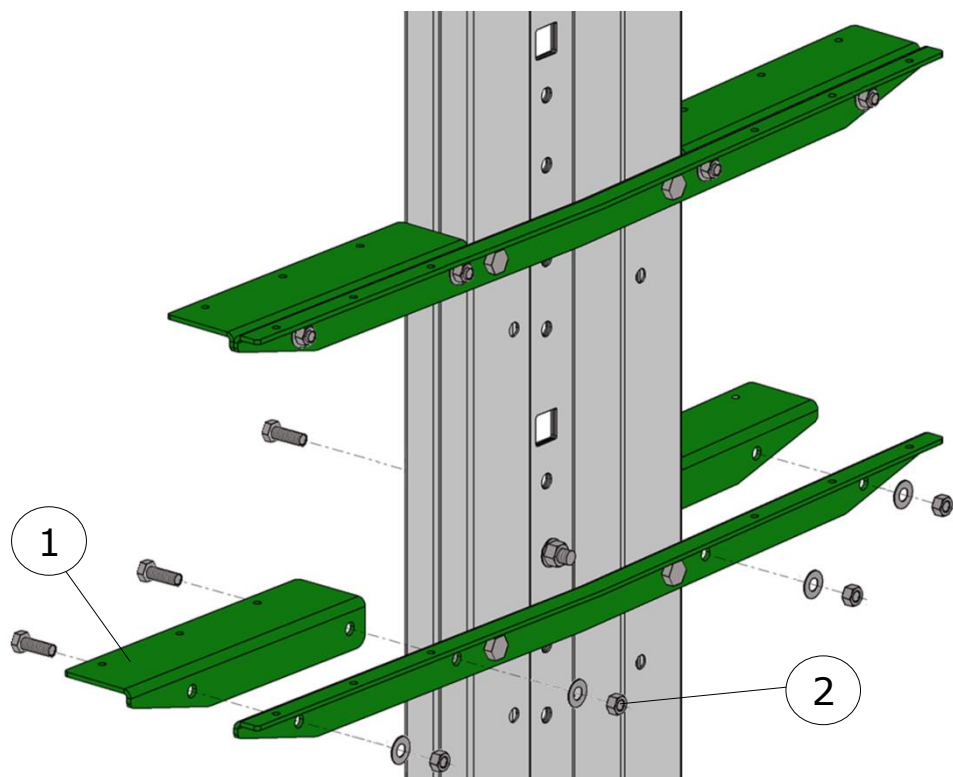


Note:

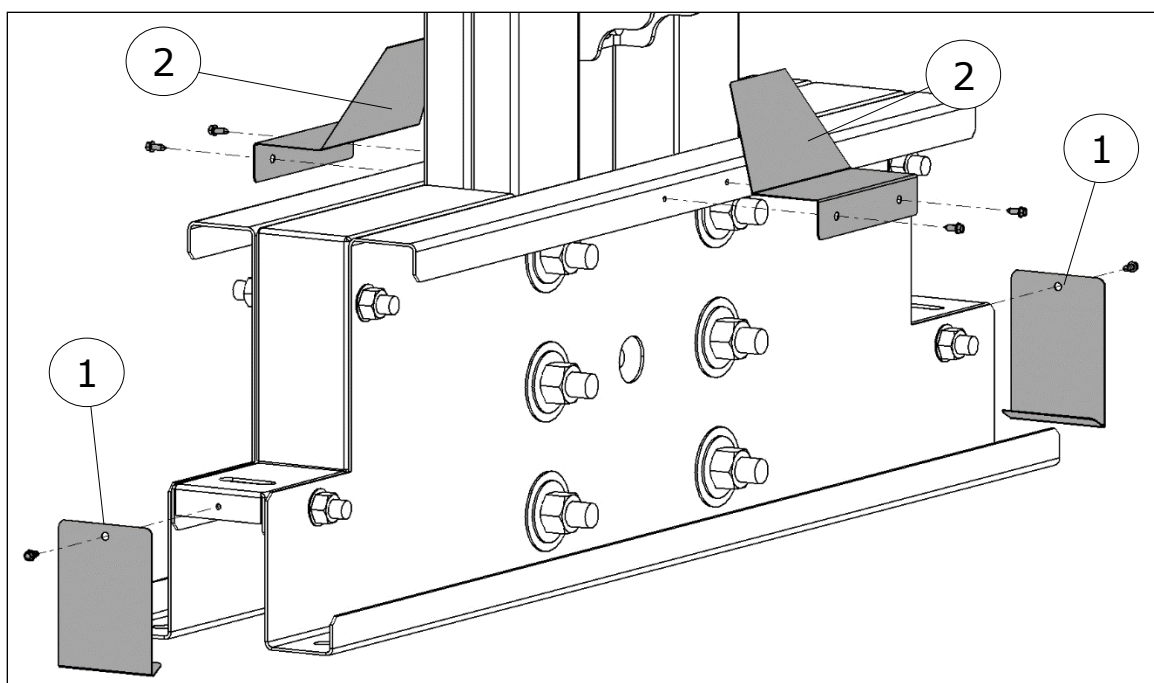
The positioning, and sometimes the number, of the vertical cross bracing can change depending on the height of the column, the pitch in height of the arms, etc. Consequently, the position and quantity of the diagonal connections and the M12 bolts vary from plant to plant.

Therefore, for the assembly of these components, reference should be made to the project execution tables, which are supplied together with the material.

ASSEMBLY ACCESSORIES FOR COLUMN



Assemble the wooden support to the arm (1) using 2 screws M10x25 + washer + self-locking nut (2).

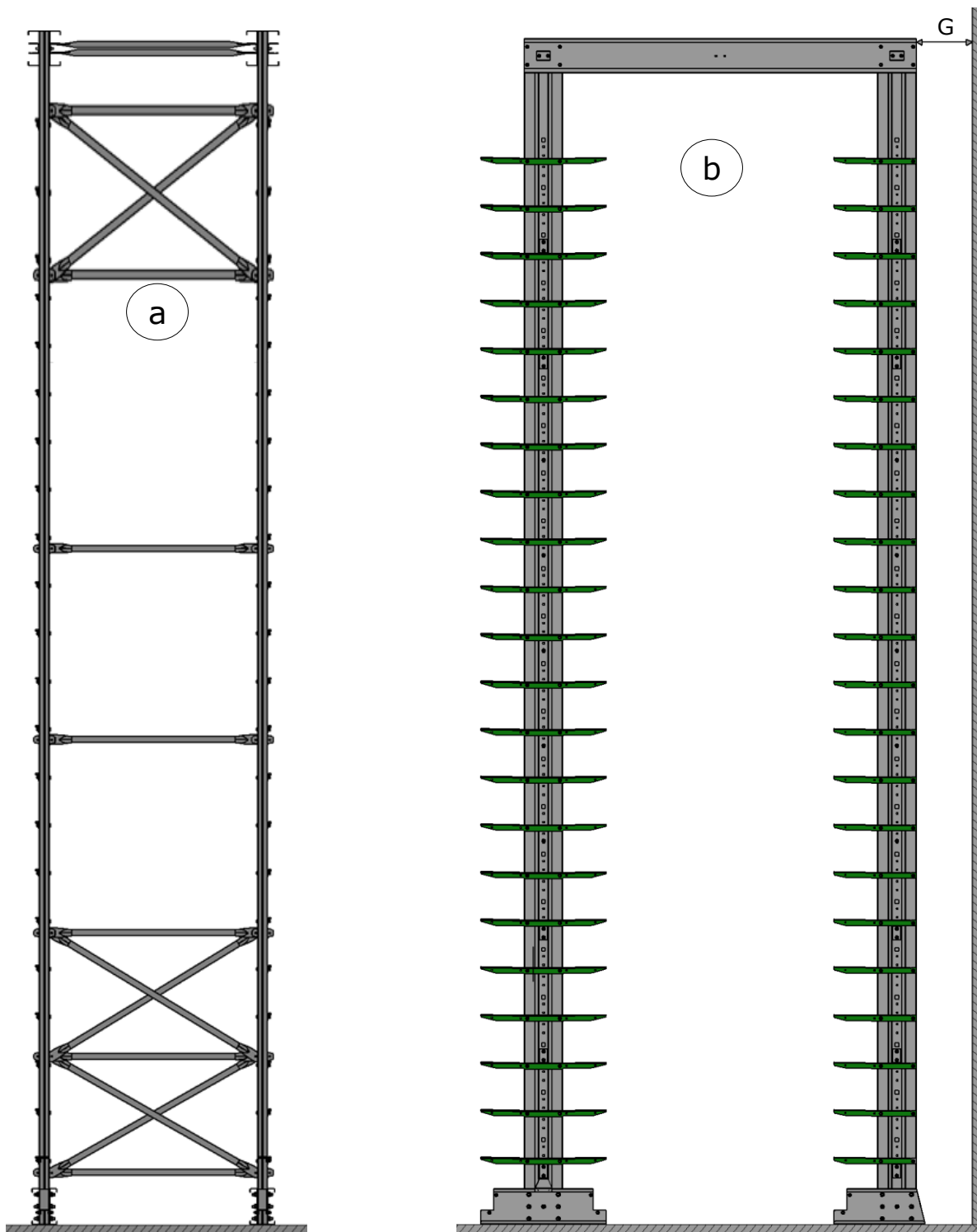


Assemble the cap closure base (1) and the column closure caps (2) using M4,2x16 self-threading screws.

ASSEMBLY STRUCTURE

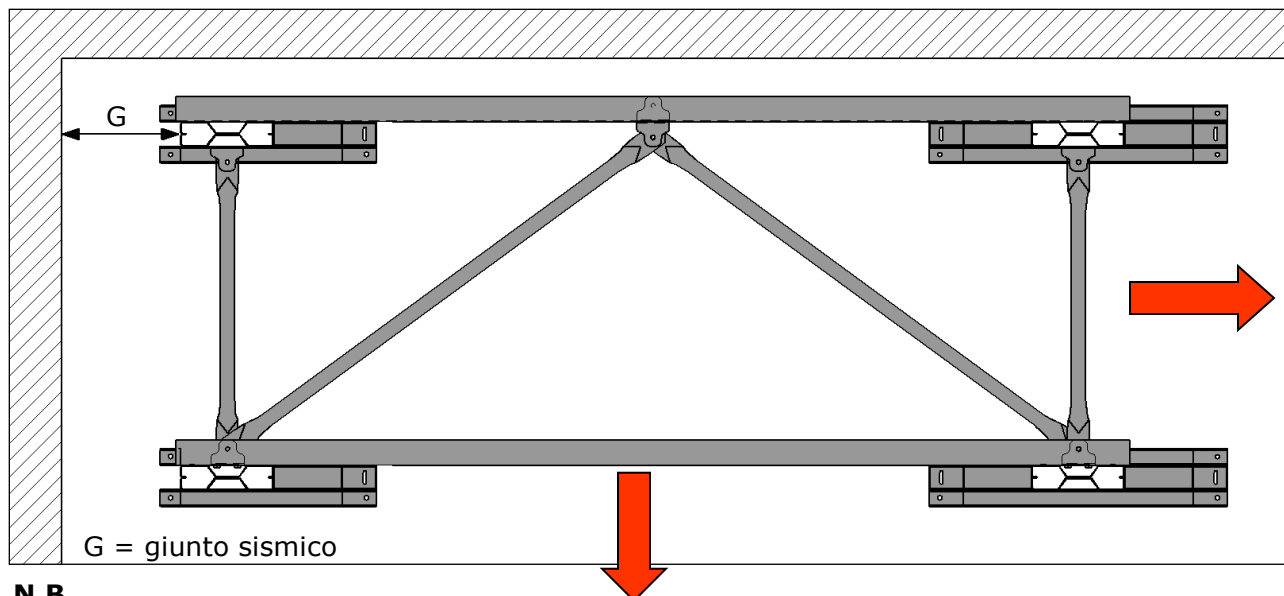
Once the installation is marked with the construction rope, the installation starts from one of the corners, taking particular care to verify the positioning of the column; it is in fact essential to verify that the seismic joint (G) is respected according to the project specifications.

Raise and connect the first two pairs columns with the diagonals and the vertical struts (a), then connect the two pairs to each other with the top profile and the diagonals and horizontal struts (b).



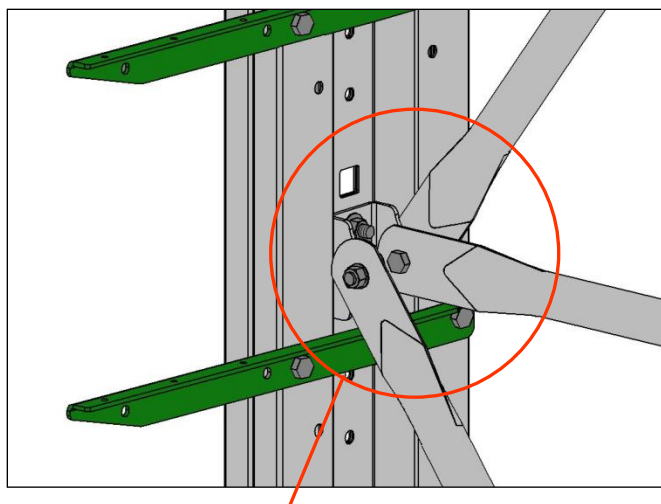
STRUCTURE ASSEMBLY

After obtaining a stable quadrilateral of columns you can proceed in both directions.



N.B.

Also the scheme of the top diagonals is defined in the executive tables of the project



N.B. In vertical cross bracings, the strut must always be assembled on the inside of the connectors, while the diagonals must always be assembled outside.

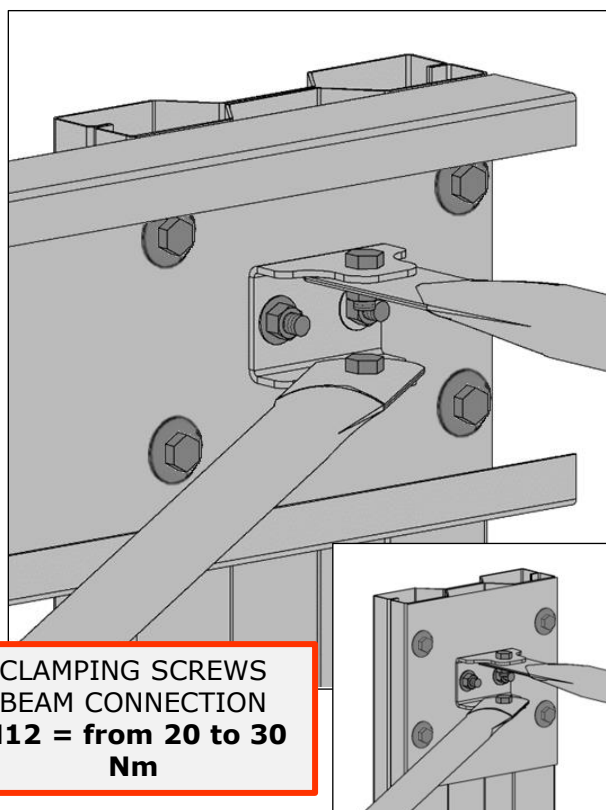
FIXING UPPER CONNECTING BEAM

Fix the connections to the beam, or to the plate, with 2 screws M12x35 + washer + self-locking nut.

Then the upper connection beam (or plate) must be fixed on each column with 4 screws M12x95 + 2 enlarged washers + self-locking nut.

FIXING DIAGONALS-STRUTS

Diagonals and struts, both horizontal and vertical, are fixed to the connections with screws M12x30 + washer + self-locking nut.

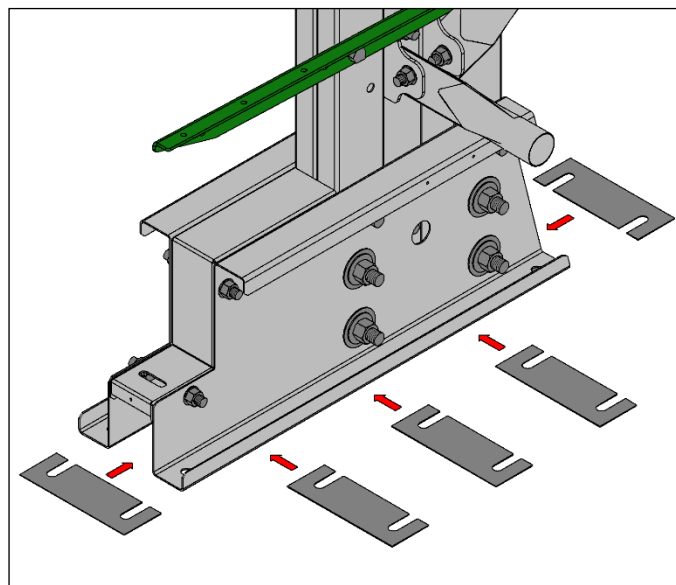
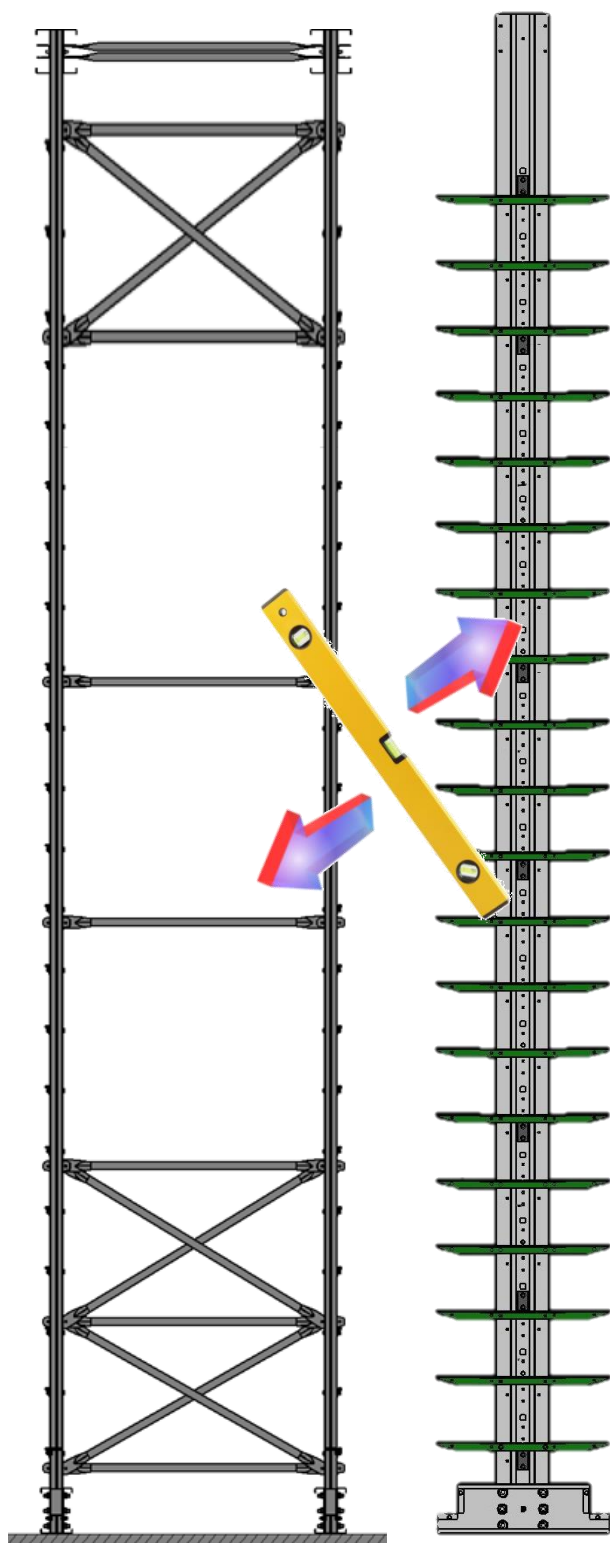


CLAMPING SCREWS
BEAM CONNECTION
**M12 = from 20 to 30
Nm**

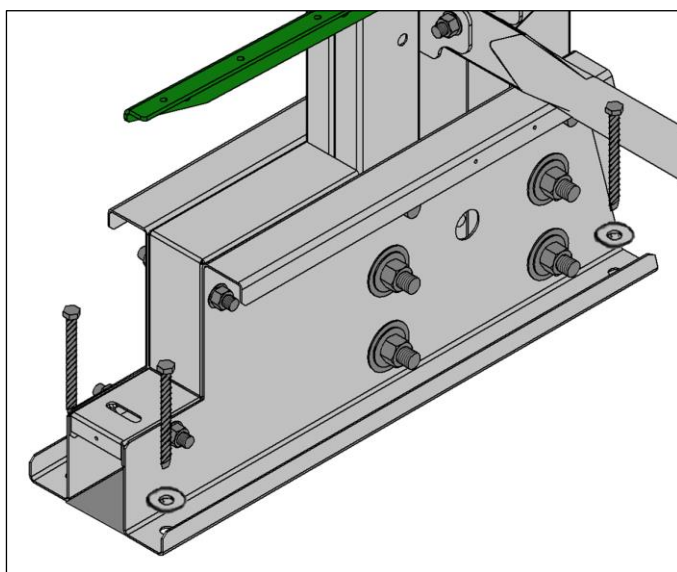
LEVELLING – FLOOR FIXING

Check that each column is perpendicular to the floor, both longitudinally and transversely.

Where the floor is uneven, add the thickness shims so as to obtain straight column. The thicknesses must be placed both at the ends and in the center of the base, so that it rests stably on the floor.



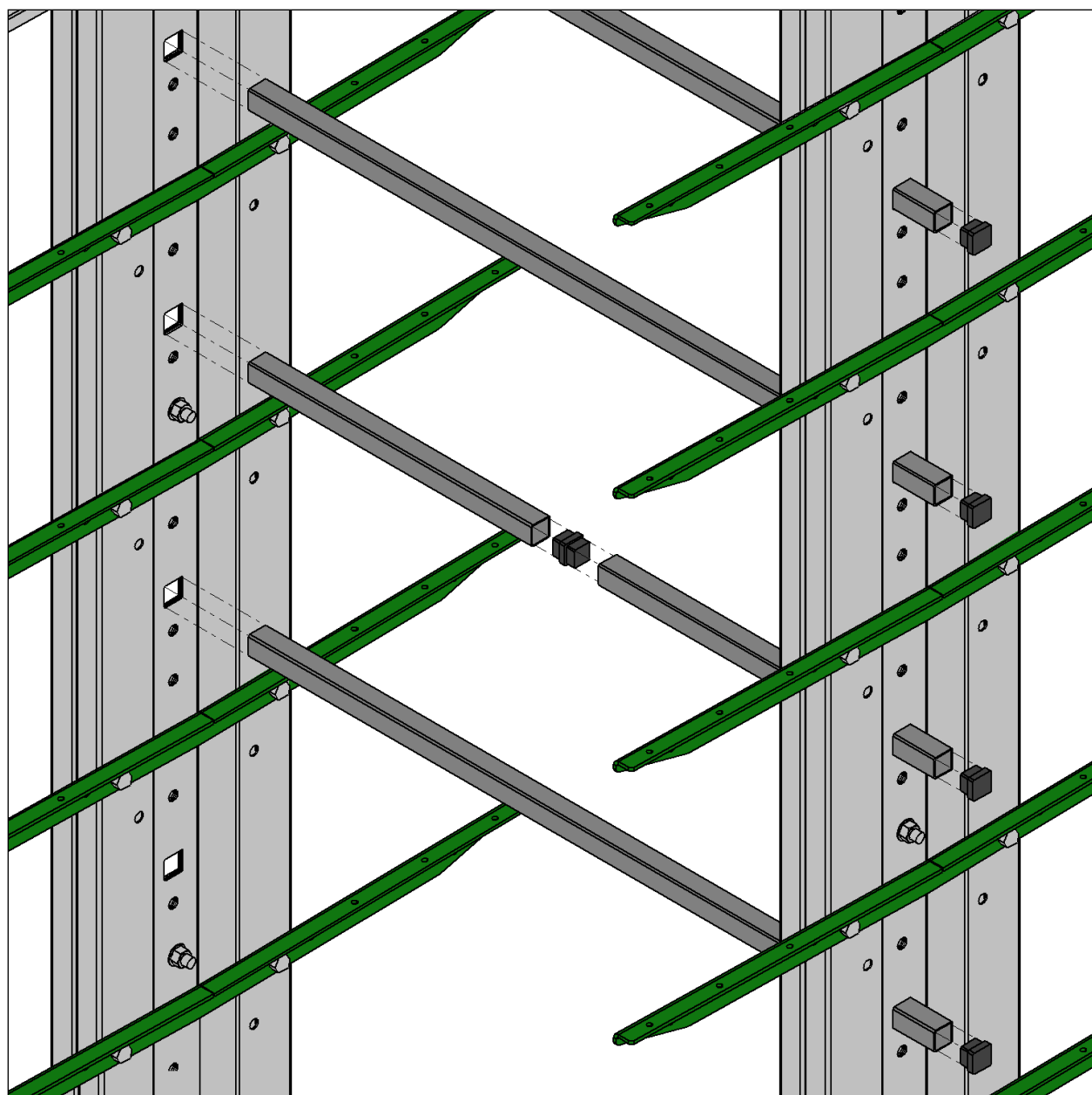
Only after adjusting all the columns of the plant proceed with the ground fixing, using 4 multi-monti dowels for each column, M12x120 in case of single-sided base, or M12x90 for double side base use a larger washer for each dowel.



VERTICALITY END OF ASSEMBLY
The maximum allowed lead-off is 15 mm

Full load displacement can increase height by 1/200 in addition to the initial out of plumb.

CHEESE FORM STOP PROFILE

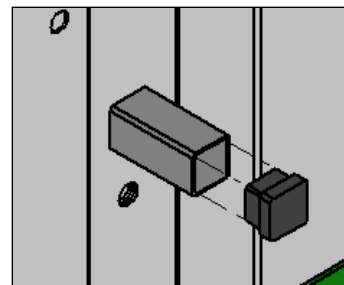
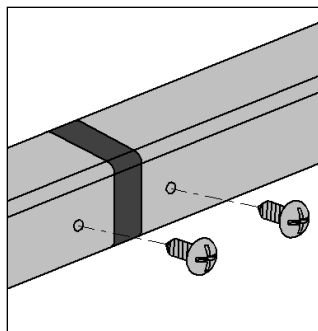


Insert the cheese form stop profile into the square column hole.

Join the tubes with the junction and 2 self-drilling screws M4,8x16.

Cut the tube if this is longer than necessary.

Finally insert the cap at the end of the tube.



WOODEN BOARDS

Procedures for the storage of wooden boards

The bundles of wooden boards, just arrived on site, should be stored indoors, in dry and possibly ventilated places.

As soon as stored, each package must be removed from the plastic packaging in order to avoid condensation and stagnation of moisture, thus preventing the formation of fungus and/or mould on the surface.

**THE WOODEN TABLES MUST HAVE THE FOLLOWING CHARACTERISTICS :**

- width cm. 30 (min. after processing cm. 29) thickness cm. 4 (min. after processing cm. 3.5). Selection of the boards on the starting side on the large corridor side
- planned at the bottom and flat on the top, rounded on the front.
- the knots present will be adherent on the top and on the rounded front of the board, while knots not adhering at the bottom are allowed.
- resin cracking is allowed up to a maximum of about 3-4 cm
- cracks shall be allowed up to a length equal to or less than the width of the board (30 cm) if not through (split of the board). The surface cracking of the board in no way affects the quality and performance of the board.
- a tolerance of +0/-1 on the thickness of the board is allowed.
- cracks on the coupling of the boards up to 4mm are allowed
- the tolerance on the straightness of the mounted boards shall be +/- 5mm
- must not be affected by fungus or mould on the surface

N.B. Before assembling the boards, they must be selected one by one in order to discard in the first step those that do not meet the characteristics described above.

These will be set aside, without tampering in any way, and stored indoors; then it will be agreed with Rosss ASSEMBLY DEPT. how to proceed with the non-compliant material.

Examples of tables to discard

Crack of the board

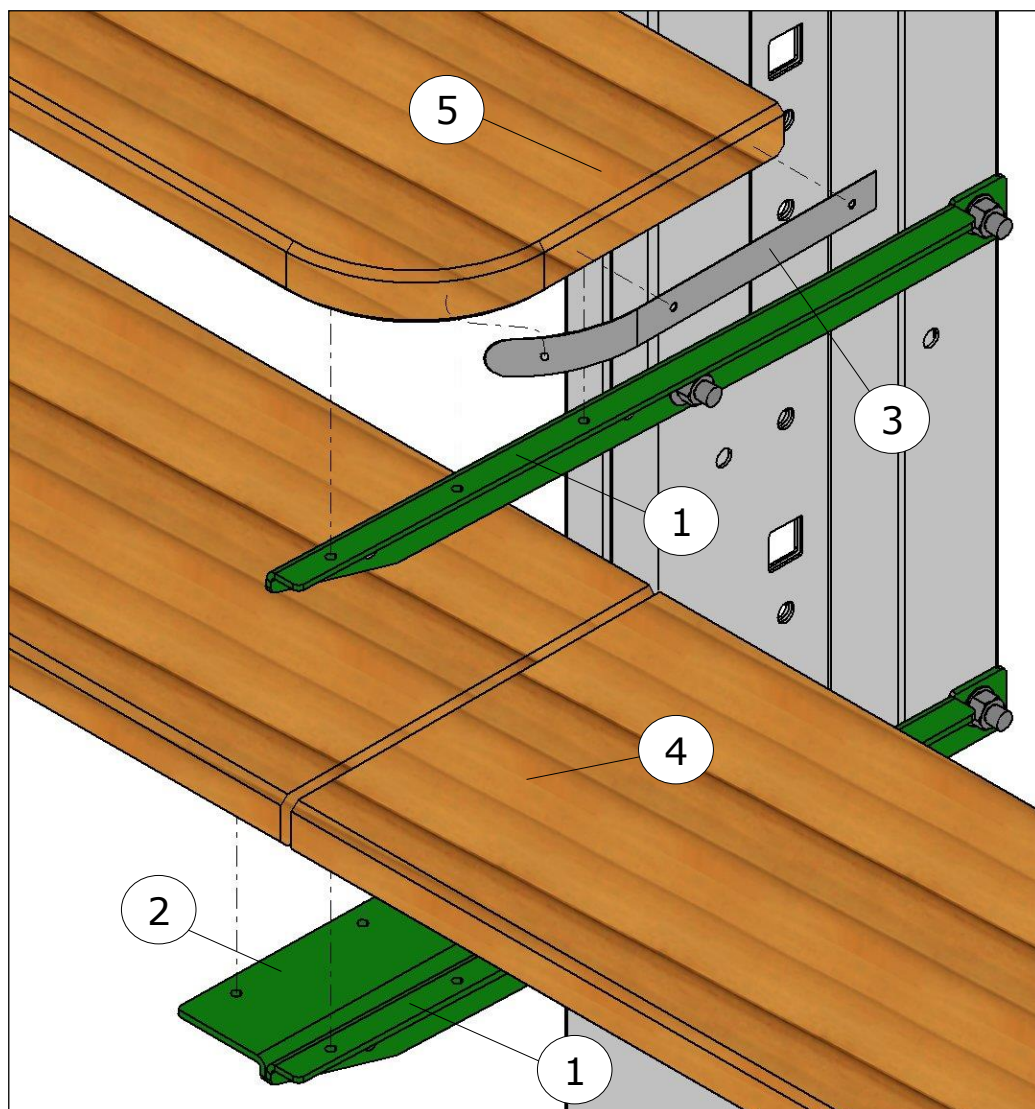


Knot



Resin flap

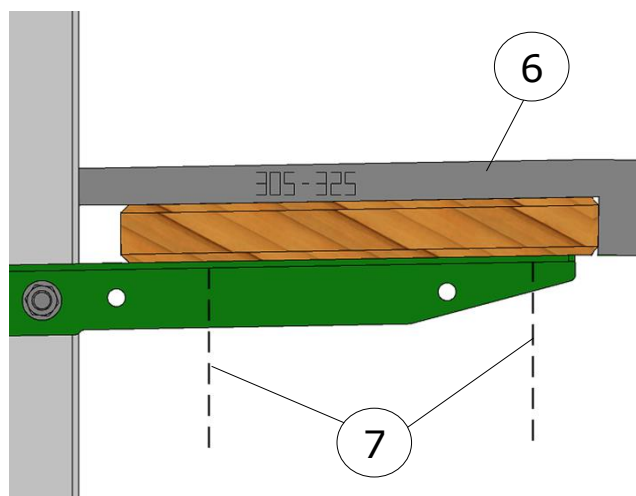
ASSEMBLY WOODEN BOARDS



The wooden boards (4) should be fixed on each arm (1) and on each shelf connecting wood (2) with 2 wooden screws M6x35 (7). For fixing the board use the two external holes on the shelf; you will use the central hole if it is not possible to use one of the two external holes (knot, small irregularity, etc.).

On the head table (5) the stainless steel strip for wood finish (3) is fixed with 3 wooden screws M4,5x25, starting from the central one. At man height the silkscreened strips have to be assembled with writing "ROSSS - TREE CHEESE".

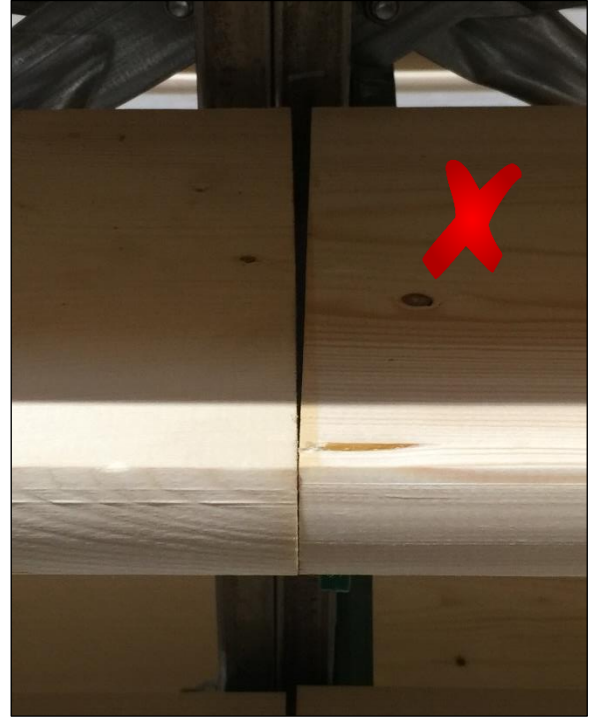
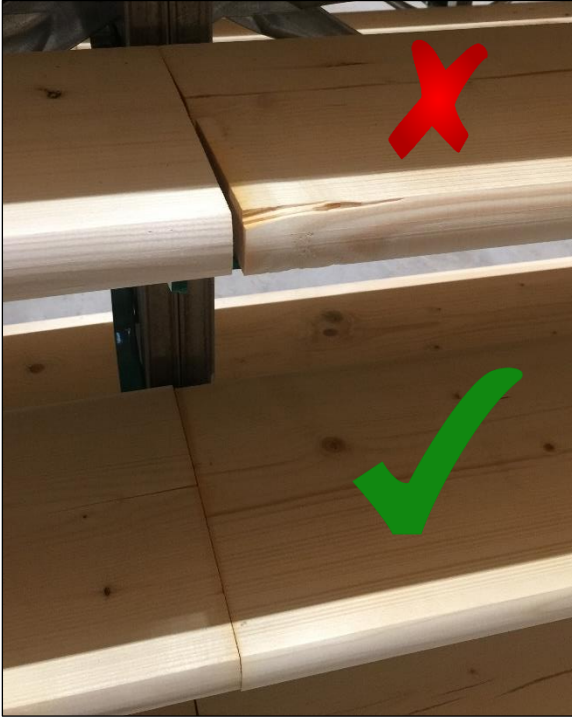
For the correct assembly of the boards a template (6) will be provided to place the boards at the right distance from the upright (305 to 325 mm - see project).



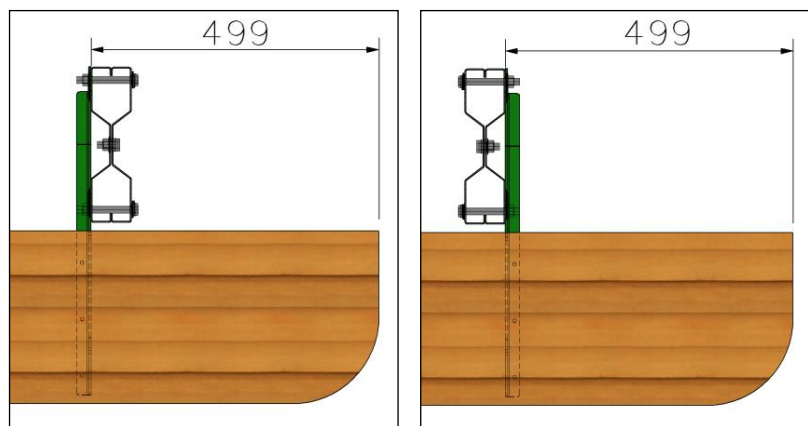
ASSEMBLY WOODEN TABLES

When there is a table break, the maximum allowed distance between the two cannot be more than 4 mm.

This distance must also be aligned on the entire section of the board, so that the two sides are parallel and the distance between them results homogeneous.

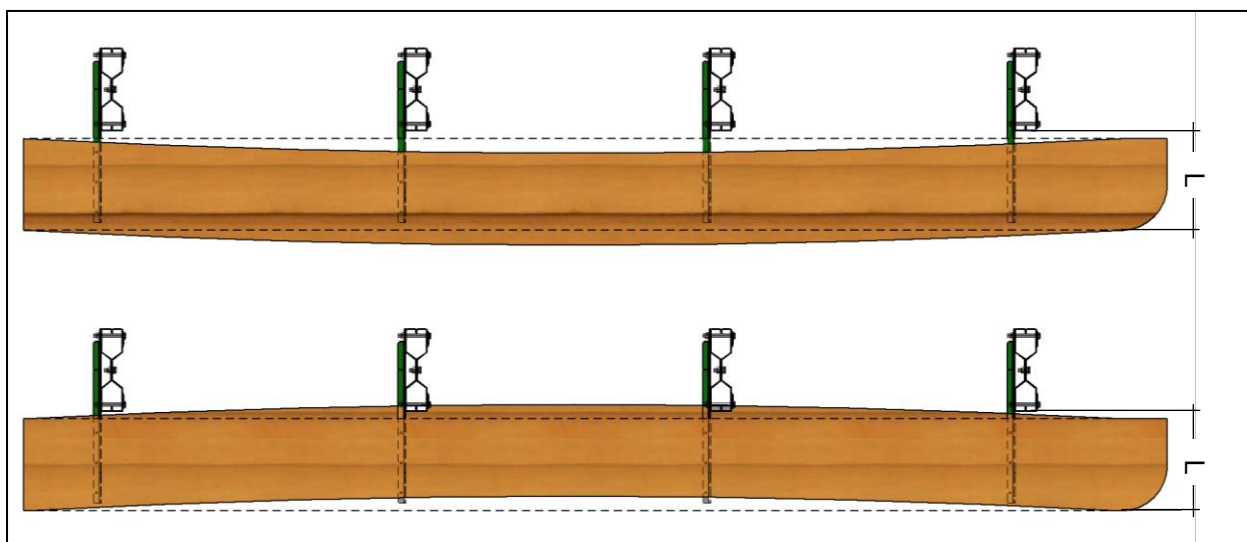


ASSEMBLY WOODEN BOARDS



The starting wooden board of the system must be positioned at 499 mm from the fixing side of the bracket; whether the bracket is positioned internally or externally.

If the boards are deformed in the longitudinal direction (mowing), both inwards and outwards, the following steps must be taken:
 place the beginning of the board at the project quota (L) with the appropriate template
 fix the board to the first arm
 with the help of clamps, wedges or dilators, bring the deformed board back to the design height
 Fix the board on all arms
 remove the clamps or dilators



N.B. Do not leave the boards on the arms without fixing.

Once the boards have been removed from the stored package, they should be fixed to the arms in order to prevent the natural deformation of the wood after seasoning.

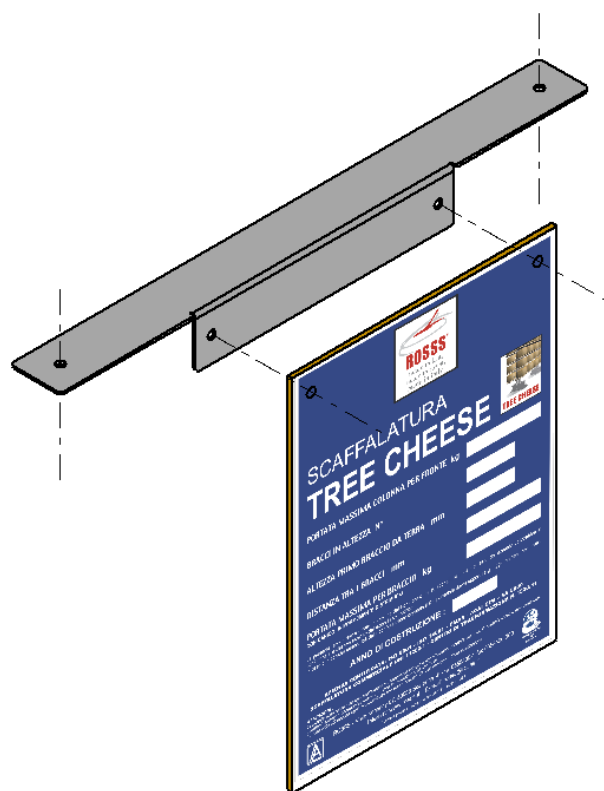
LOAD CHARTS



Place load charts on the rack starting unit at a height that is clearly visible to operators.

Fix the load charts support profile to the wooden boards with 2 wooden screws M6x35.

Then drill the charts at the holes of the support, and fix it to the latter with 2 screws M6x20 + washer + self-locking nut.



TESTING OF THE RACKING

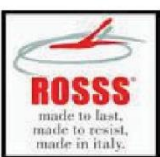
Testing shall be carried out by personnel with adequate preparation and skilled experience .

In case the test is performed by Rosss, the personnel employed will be instructed for the specific case.

For the purposes of testing and according to the instructions in this manual, the following points shall be checked:

- 1) Warehouse lay-out according to Rosss drawing.
- 2) Check integrity of columns, arms and wooden boards.
- 3) Check verticality, alignment and levelling of racks.
- 4) Check the correct positioning of the arms .
- 5) Check that the positioning of the horizontal and vertical bracings is correct.
- 6) Check the correct assembly of the columns.
- 7) Check the correct fixing of the columns to the floor.
- 8) Check the correct assembly of the fitted accessories.
- 9) Check the correct application and compilation of load charts

COLLAUDO DELLA SCAFFALATURA

	RAPPORTO DI FINE MONTAGGIO	COPIA
		ROSSS
		DATA DI FINE MONTAGGIO _____

Ragione sociale Cliente _____

Indirizzo _____

Località _____

In riferimento :

- documenti di trasporto n° _____ del _____
- conferma d'ordine n° _____ del _____
- progetto n° _____ del _____

DICHIARIAMO

- che i materiali da Voi consegnati sono rispondenti alle nostre richieste;
- che il montaggio è stato eseguito in conformità dei disegni del progetto n° _____;
- che l'intero impianto è completamente funzionale;
- che il lavoro è stato eseguito nel rispetto dei requisiti contrattuali stabiliti;
- che il montaggio è stato completato nei tempi concordati.

Note: _____

La mancata compilazione e firma da parte del cliente del presente rapporto di fine montaggio, in assenza di contestazioni, esclude dai diritti di garanzia.

Firmato dal Cliente in 3 copie e dato al montatore.

Timbro

Sig. _____

Mansione _____

Firma _____

COPIA
ROSSS

DATA DI FINE MONTAGGIO

Località _____

- documenti di trasporto n° _____ del _____
- conferma d'ordine n° _____ del _____
- progetto n° _____ del _____
- ordine di montaggio n° _____ del _____

- che il montaggio è stato eseguito in accordo al manuale di montaggio fornito dalla ditta ROSSS;
- che il montaggio è stato eseguito in conformità dei disegni del progetto n° _____;
- che sono state rispettate le tolleranze di montaggio previste dalle UNI EN 15620 in ns. possesso.

Note:

A horizontal timeline bar with a black line and vertical tick marks. The years 2016, 2017, 2018, 2019, and 2020 are labeled below the line.

Timbro

Firma _____

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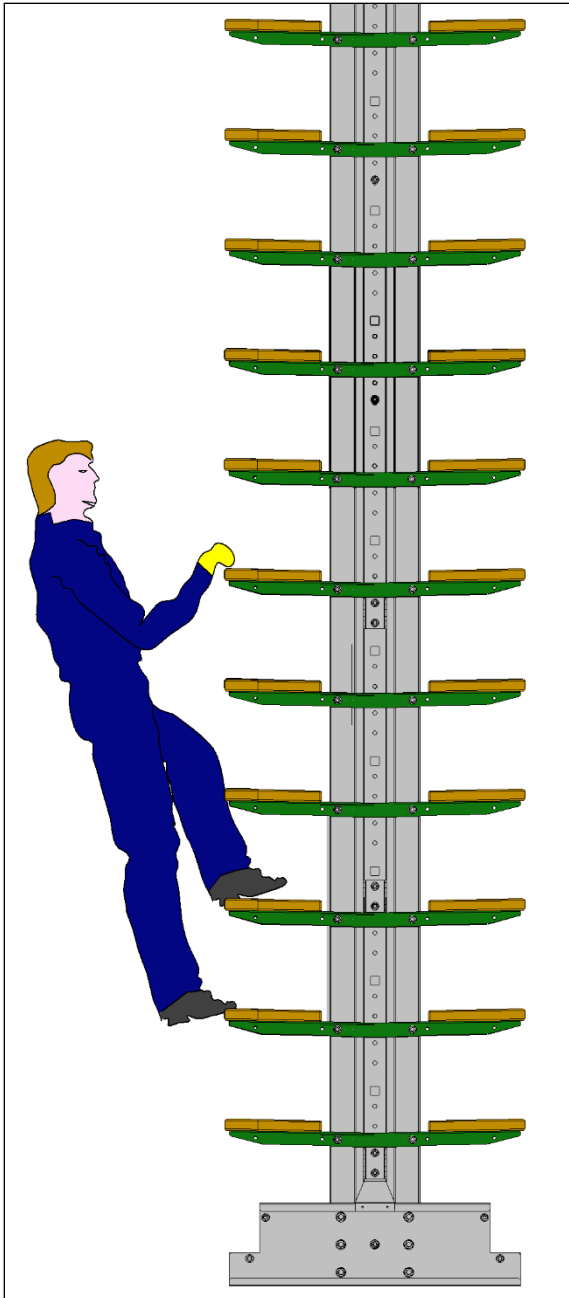
RFM-a

USE OF THE RACKING

GENERAL WARNING

It is recommended the use of adequate protection close to the uprights and next to the starting unit of the structure as this is a place of greater risk of impact by forklifts.

The metal shelves are ruled by the Legislative Decree 81/08 and S.M.I.



People must not climb on the racks

WARNINGS FOR FORKLIFTS DRIVERS

Near the racking, observe the following standards



Drive with the forks lowered



Don't drive with forks up



Don't drive with unstable loads

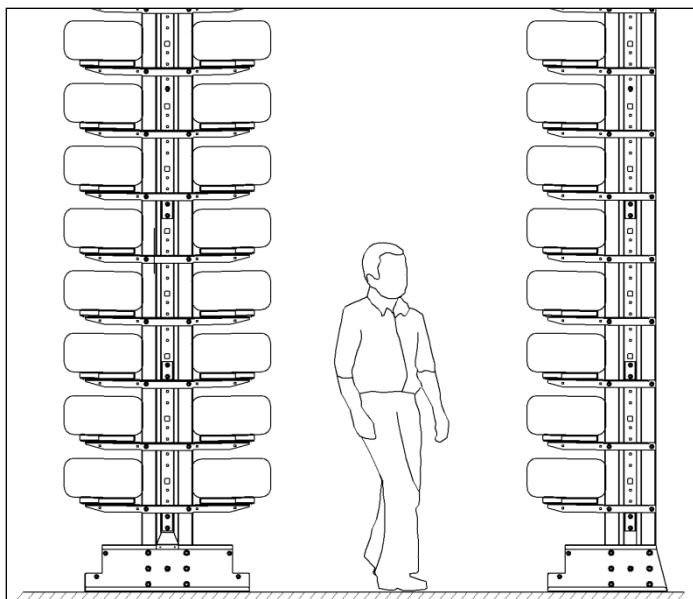
Inside the corridors of the Tree Cheese shelving system, only the specific machines for the treatment of cheese shapes and the benches for lifting people are allowed, although guided with the utmost caution.

N.B.

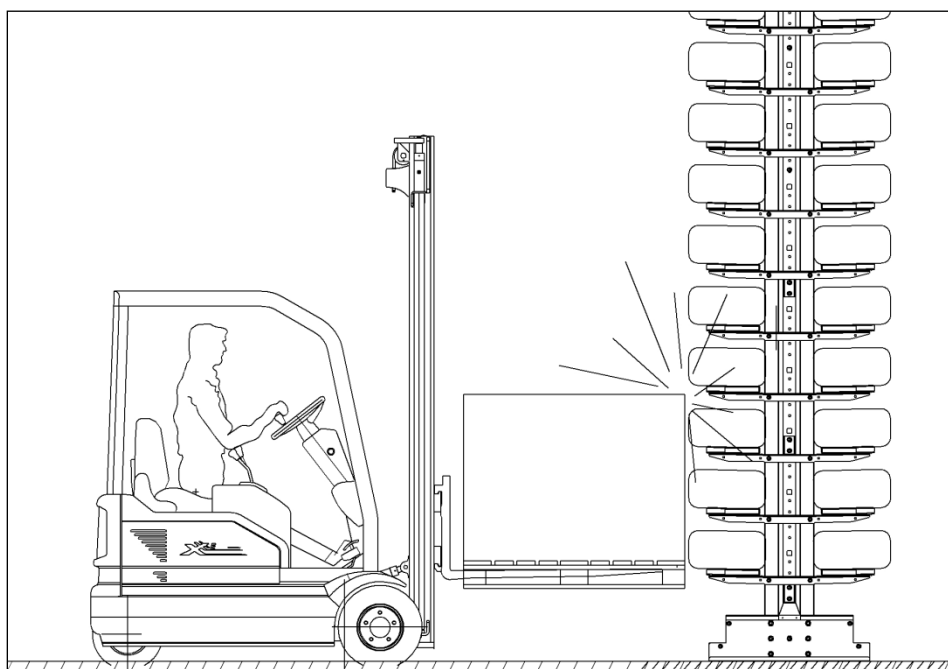
Extreme caution is recommended when passing through corridors with forklifts, electric transpallets or other forms handling equipment.

OBLIGATIONS AND PROHIBITIONS

People must keep safe distance during the loading and unloading of the racking



Do not stand in corridors while machinery is moving



Do not hit the racking

MAINTENANCE

PERIODIC INSPECTIONS AND MAINTENANCE

Inspections

The Legislative Decree 81/2008 requires that employers/ supervisors provide periodically check to all the equipment delivered in order to ensure perfect operation and appropriate maintenance, this is useful to reduce the risk of accidents at work. The checks on the warehouse shelving are according to UNI EN 15635 "Static Storage Systems in steel-Use and maintenance of storage equipment", in force since 2009. The standard rule provided for a regular check of the storage equipment so as to verify the safety conditions and in particular the presence of any damage, which could compromise the safety of the plant itself

Regular inspections shall avoid:

- 1) Accidents to people
- 2) Damage to materials
- 3) Interruption of production
- 4) Loss of function and consequent economic losses.
- 5) Legal proceedings against the purchaser for failure to carry out proper maintenance

MODE OF MAINTENANCE AND CONTROL

Type of control	Periodically
Integrity Column	Yearly
Integrity Bases	Yearly
Integrity Arms	Yearly
Structure Vertical Alignment	Yearly
Structure Horizontal Alignment	Yearly
Eccessive loads	Yearly
Corrosion Oxidation	Yearly
Bolts Tightening	Yearly

*this check shall be carried out on all bolted connections on a random basis. We suggest as a sample, a number of columns equal to 5% of the total has to be checked; on these columns check the correct tightening of the base connection, the upper connection and the longitudinal cross-bracing connections. The correct tightening of the screws of at least three arms must also be checked on these columns.

If these checks show any irregularities, the check on the whole structure must be extended following ROSSS Technical Dept. recommendations.

If these periodic checks reveal anomalies, it is necessary to restore the complete integrity of the shelving as soon as possible, by discharging excessive loads and/or replacing damaged parts.

In this way you will ensure a correct and efficient use of the shelving, as well as ensuring the safety to all the staff.

Upon request, ROSSS technicians will examine the problem, determining the corrective action to restore the installation as soon as possible in order to minimize the interruption of the activities.

Only original spare-parts must be used for maintenance and repair operations.

GUARATEE

The product warranty expires after the first year of use (unless otherwise agreed).

It is possible, if requested , to get a maintenance contract to have the checks carried out by ROSSS specialized personnel.

In this case, the structural guarantee of the product can be extended from year to year up to 10 years, in which the maximum exploitation of the product is ensured.

At the same time the optimal use of the structure is guaranteed, avoiding the dangers due to occasional interventions performed by non-specialist personnel.

Intervento	Anomalie Rilevate - Interventi Correttivi	Timbro e firma
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Data/...../..... Tecnico		
Data/...../..... Tecnico		

Intervento	Anomalie Rilevate - Interventi Correttivi	Timbro e firma
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