IFE 010724

ROSSS®

INGEGNO ITALIANO

Pallet-Racking

IRON FIST

Assembly instructions, Use and maintenance

GENERAL INDEX

ROSSS

ASSEMBLY

PALLET-RACKING DESCRIPTION

Our company, making use of a vast experience in the sector and a technologically advanced production, it is able to offer safe and rational solutions to every storage problem. Our modular structures meet the most rigid load requirements, while offering maximum ease of assembly and extraordinary functional agility. ROSSS is the first Italian Company to have obtained the certification of its own Quality System according to UNI EN ISO 9001 in design and production of metal shelving then in 2002 obtained , the first one in Italy, the prestigious Certification of Environmental ISO 14001, successively the EMAS and SA800 certifications. 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 program of self-qualification has been developed; we are one of the companies to have passed these tests, obtaining the brand "CISI Quality Safety", established by A.C.A.I. in order to guarantee to the final customer the quality and safety of the product in all phases of its construction, from design to after-sales service
We are also the only Italian company to have passed the tests at the official laboratories in Germany, strict tests on our facilities, obtaining the approval of the German static.

IRON FIST pallet racking is obtained by assembling only two basic elements, frames and beams, by simple interlocking and without using bolts, joints or other components. The frames are the vertical elements of the structure and are formed by uprights, diagonals and horizontals/cross bars; the beams are the horizontal elements and constitute the support of the pallets. The system includes five types of frames: 70/150, 90/150, 90/200, 110/200, 130/200, 130/250 with a load capacity of almost 30,000 kg per frames and various types of beams, with a range of capacities that extends from 390 kg to 4500 kg per pair of beams. Special solutions can be supplied for requirements of greater loads over 30,000 kg. per frames.
All the uprights are made of steel certified 3.1.B. UNI EN 10204 of high-strength type.
All structural elements are dimensioned assuming a safety factor of 1.5 compared to the yield strength.
The frames are supplied disassembled and made of galvanized material, except in cases otherwise agreed with the company on the contract supply.

PLANT N°_____ YEAR OF MANUFACTURE _____
(Report invoice n°/year)

ITALIAN AND INTERNATIONAL REFERENCE STANDARDS

Legislation regarding product design, use and safety::

NTC	D.M. 17 Gennaio 2018	Norme tecniche per le costruzioni
	CIRC. 11 febbraio 2019 , n. 7	Istruzioni per l'applicazione dell'«Aggiornamento delle "Norme tecniche per le costruzioni"» di cui al decreto ministeriale 17 gennaio 2018
NORME DI PROGETTAZIONE	UNI EN 15512: 2021	Sistemi di stoccaggio statici di acciaio. Scaffalature porta-pallet. Principi per la progettazione strutturale
	UNI EN 15620: 2021	Sistemi di stoccaggio statici di acciaio. Scaffalature porta-pallet. Tolleranze, deformazioni e interspazi
	UNI EN 15629: 2009	Sistemi di stoccaggio statici di acciaio. Specifiche dell'attrezzatura di immagazzinaggio
	UNI EN 15635: 2009	Sistemi di stoccaggio statici di acciaio. Utilizzo e manutenzione dell'attrezzatura di immagazzinaggio
	EN 1993-1-1 : 2014	Eurocodice 3 - Progettazione delle strutture di acciaio - Parte 1-1: Regole generali e regole per gli edifici
	EN 1993-1-3:2006	Eurocodice 3 - Progettazione delle strutture di acciaio - Parte 1-3: Regole
	FEM 10.2.02	The Design of Static Steel Pallets Racking
NORME TECNICHE DI FORNITURA	D. Lgs. 9 aprile 2008 n. 81	Testo Unico Sulla Sicurezza
	D. Lgs. 21 maggio 2004 n. 172.	Sicurezza generale dei prodotti
	UNI EN 10051:2011	Lamiere e nastri laminati a caldo in continuo, non rivestiti, di acciai legati e non legati - Tolleranze dimensionali e di forma
	UNI EN 10149-1:2013	Prodotti piani laminati a caldo di acciai ad alto limite snervamento per formatura a freddo - Parte 1: Condizioni tecniche di fornitura generali
	UNI EN 10025:2019	Prodotti laminati a caldo di acciai non legati per impieghi strutturali - Condizioni tecniche di fornitura
	UNI EN 10143:2006	Lamiere sottili e nastri di acciaio con rivestimento metallico applicato per immersione a caldo in continuo - Tolleranze dimensionali e di forma
	UNI EN 10346:2015	Prodotti di acciaio rivestiti per immersione a caldo in continuo. Tecniche di
	UNI EN 10219-1:2006	Profilati cavi formati a freddo di acciai non legati e a grano fine per strutture saldate. Condizioni tecniche di fornitura -Tolleranze, dimensioni e
	UNI EN 10204: 2005	Prodotti metallici. Tipi di documenti di controllo
PROG. SISMICA	D.M. 17 Gennaio 2018	Norme tecniche per le costruzioni
	CIRC. 11 febbraio 2019 , n. 7	Istruzioni per l'applicazione dell'«Aggiornamento delle "Norme tecniche per le costruzioni"» di cui al decreto ministeriale 17 gennaio 2018
	UNI EN 16681:2016	Sistemi di stoccaggio statici di acciaio - Scaffalature porta-pallet - Principi per la progettazione sismica
	UNI EN 1998:2013	Eurocode 8 - Regole generali, azioni sismiche e regole per gli edifici

RACKING USE LIMITS

Horizontal forces and dynamic vertical and/or horizontal loads shall not be applied to the racking.

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 geometries can be made only if permitted by our technical office.

NOTICE

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

The instructions are to be considered exhaustive for the purposes proposed in this manual:

Correct assembly, use and maintenance

The exact 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 people caused by such activity.

CHARGE CAPACITY INFORMATION

For each plant it will be provided a load capacity charts to be applied to the shelving . In addition to the number of load levels and their height between levels, the chart shows the maximum weight and dimensions of the loading unit.

For the safety of operators, as for the optimal operation of the plant, **it is necessary to comply with the indications in the LOAD CAPACITY CHARTS**

.

HOW TO GET READY FOR THE ASSEMBLY

1) Check any interference of the shelving with pre-existing structures.

2) Check that the available space is adequate for safe installation.

3) The flooring and lighting of the environment should be designed in such a way as to enable staff to work in optimum conditions.

TOOLS FOR ASSEMBLY

Spanners set
Screwdriver
Gum-hammer
Level
Crowbar
Pliers
Drill

Plumb line
Torque wrench
Safety belts
Optical level

N.B. Assembly team must be properly trained and equipped with the personal accident prevention devices necessary for the specific assembly operations (helmet, gloves, safety shoes, safety belts, etc.).

HANDLING

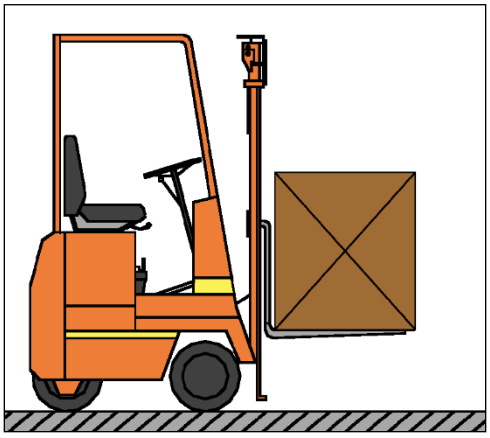
For material handling during assembly it is advisable to use suitable mechanical means, such as small cranes, winches or other.

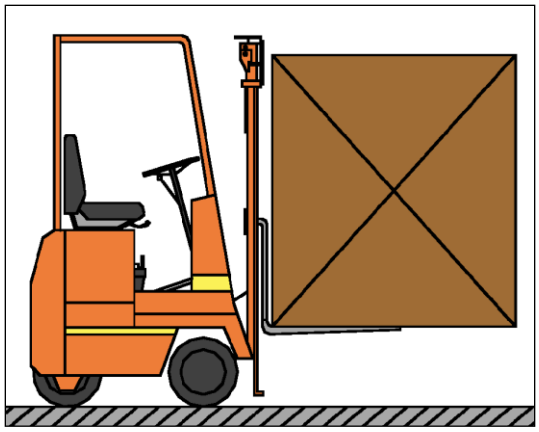
For frames and uprights of limited length the handling can be done manually with an adequate number of employees.

For all shelving heights, a forklift or crane of appropriate lifting capacity and height (suitable tool) shall be used for moving and lifting materials, for the assembly of the structure, a platform of adequate lifting capacity and height have to be used.

Only for heights up to 6000 mm is required a pallet truck of adequate capacity for moving materials, and a bridge on wheels of adequate capacity and stability for mounting the structure.

A forklift of adequate capacity shall be used for material handling. The forks of the cart must have a width SUITABLE for the length of the packages and a proper length to lift the package safely.



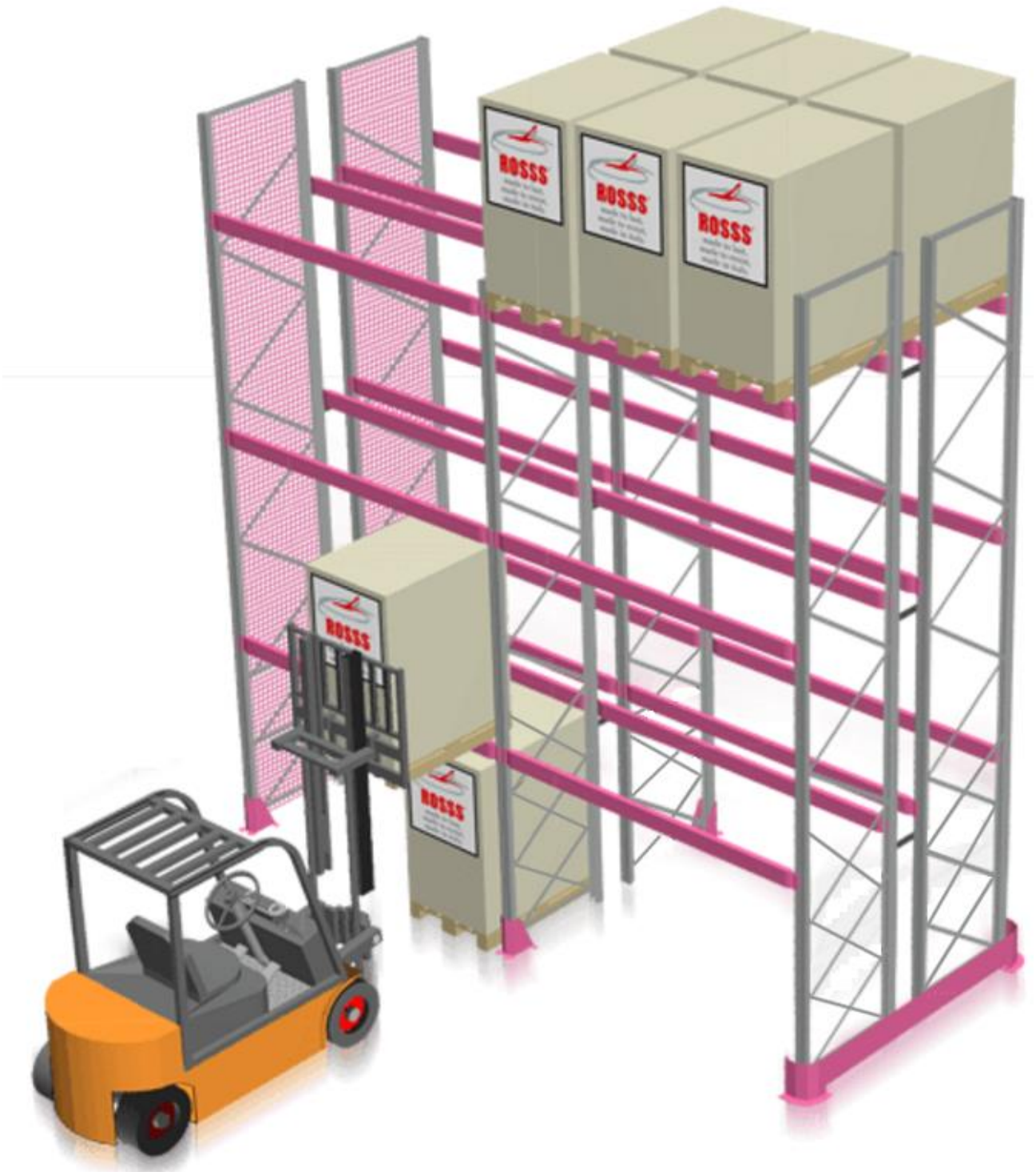


Where necessary, in relation to the specific operation, take technical and management measures to avoid the risk of injury related to cargo handling.

In 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 outdoors.

OVERAL PATTERN



PALLET-RACKING

IRON FIST ROSSS®

WE RECOMMEND TO READ THIS MANUAL BEFORE STARTING THE ASSEMBLY OF THE STRUCTURE

The pallet-racking components are :

- **frames** : vertical elements that support the load levels;
- **beams** : horizontal elements where to place the pallets;
- **anchorages** : elements to fix the racking on the floor.

The shelving must be assembled following scrupulously the above mentioned manual and in any ROSSS project.

1. Assembly of the frames as described

2. Raise and hold the first frame of each row of shelving, raise the frame in front and connect it with 2 beams at the planned height of the project (block the beams with the relevant safety pins). Anchor the first frames on the floor and repeat the operation until the shelf face is completed. Complete the assembly of the beams provided for each span or load light using suitable means to work at height. Proceed with the anchoring on the floor of all the frames after checking the levelling and perpendicularity of the shelving using the appropriate thicknesses and dowels.

3. Once the shelving is raised, it is possible to proceed to the assembly of accessories (spacers, vertical and horizontal braces, protections, bumpers, etc.)

4. Apply on the starting racking , in a clear position to the operator, the load charts, filled with the project data.

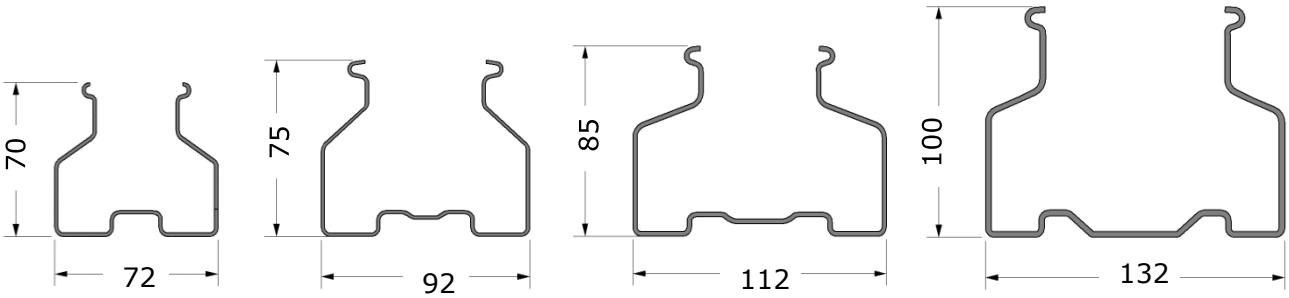
Only at the end of this sequence the shelving can be use

ROSSS

FRAME COMPONENTS QUANTITY

Altezza	n° montanti	piedino zincato	SERIE 70					SERIE 90-110					SERIE 130				
			bullone per piedino (cod. 93912 + 93913 + 93914)	n° traversini Serie 70	n° diagonali Serie 70	Vite M8x50+D+R con blocchetto (cod.97491)	Vite M8x50+D+R (cod.97490)	bullone per piedino (cod. 93912 + 93913 + 93914)	n° traversini S. 90 – 110	n° diagonali S. 90 – 110	Vite M8x70+D+R con blocchetto (cod.97493)	Vite M8x70+D+R (cod.97492)	bullone per piedino (cod. 93917 + 93918 + 93919)	n° traversini Serie 130	n° diagonali Serie 130	Vite M10x100+D+R con blocchetto (cod.97678)	Vite M10x100+D+R (cod.97676)
1800	2	2	4	1	4	6	2	4	1	4	6	2	4	1	4	6	2
2100	2	2	4	1	6	2	6	4	1	6	2	6	4	1	6	6	4
2400	2	2	4	1	6	6	4	4	1	6	6	4	4	1	6	6	4
2700	2	2	4	1	7	4	6	4	1	7	4	6	4	1	7	4	6
3000	2	2	4	1	7	6	5	4	1	7	6	5	4	1	7	6	5
3300	2	2	4	1	8	4	7	4	1	8	4	7	4	1	8	4	7
3600	2	2	4	1	8	6	6	4	1	8	6	6	4	1	8	6	6
3900	2	2	4	1	9	4	8	4	1	9	4	8	4	1	9	4	8
4200	2	2	4	1	9	6	7	4	1	9	6	7	4	1	9	6	7
4500	2	2	4	1	10	4	9	4	1	10	4	9	4	1	10	4	9
4800	2	2	4	1	10	6	8	4	1	10	6	8	4	1	10	6	8
5100	2	2	4	1	11	4	10	4	1	11	4	10	4	1	11	4	10
5400	2	2	4	1	11	6	9	4	1	11	6	9	4	1	11	6	9
5700	2	2	4	1	12	4	11	4	1	12	4	11	4	1	12	4	11
6000	2	2	4	1	12	6	10	4	1	12	6	10	4	1	12	6	10
6300	2	2	4	1	13	4	12	4	1	13	4	12	4	1	13	4	12
6600	2	2	4	1	13	6	11	4	1	13	6	11	4	1	13	6	11
6900	2	2	4	1	14	4	13	4	1	14	4	13	4	1	14	4	13
7200	2	2	4	1	14	6	12	4	1	14	6	12	4	1	14	6	12
7500	2	2	4	1	15	4	14	4	1	15	4	14	4	1	15	4	14
7800	2	2	4	1	15	6	13	4	1	15	6	13	4	1	15	6	13
8100	2	2	4	1	16	4	15	4	1	16	4	15	4	1	16	4	15
8400	2	2	4	1	16	6	14	4	1	16	6	14	4	1	16	6	14
8700	2	2	4	1	17	4	16	4	1	17	4	16	4	1	17	4	16
9000	2	2	4	1	17	6	15	4	1	17	6	15	4	1	17	6	15
9300	2	2	4	1	18	4	17	4	1	18	4	17	4	1	18	4	17
9600	2	2	4	1	18	6	16	4	1	18	6	16	4	1	18	6	16
9900	2	2	4	1	19	4	18	4	1	19	4	18	4	1	19	4	18
10200	2	2	4	1	19	6	17	4	1	19	6	17	4	1	19	6	17
10500	2	2	4	1	20	4	19	4	1	20	4	19	4	1	20	4	19
10800	2	2	4	1	20	6	18	4	1	20	6	18	4	1	20	6	18
11100	2	2	4	1	21	4	20	4	1	21	4	20	4	1	21	4	20
11400	2	2	4	1	21	6	19	4	1	21	6	19	4	1	21	6	19
11700	2	2	4	1	22	4	21	4	1	22	4	21	4	1	22	4	21
12000	2	2	4	1	22	6	20	4	1	22	6	20	4	1	22	6	20

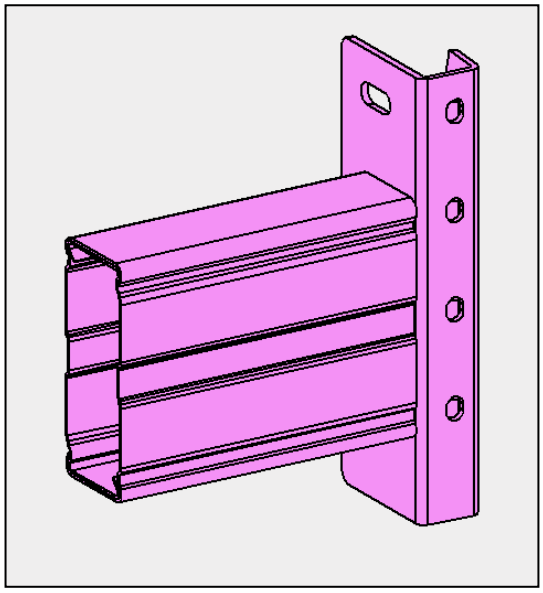
TYPE OF UPRIGHTS



TYPE 70 | **TYPE 90** | **TYPE 110** | **TYPE 130**

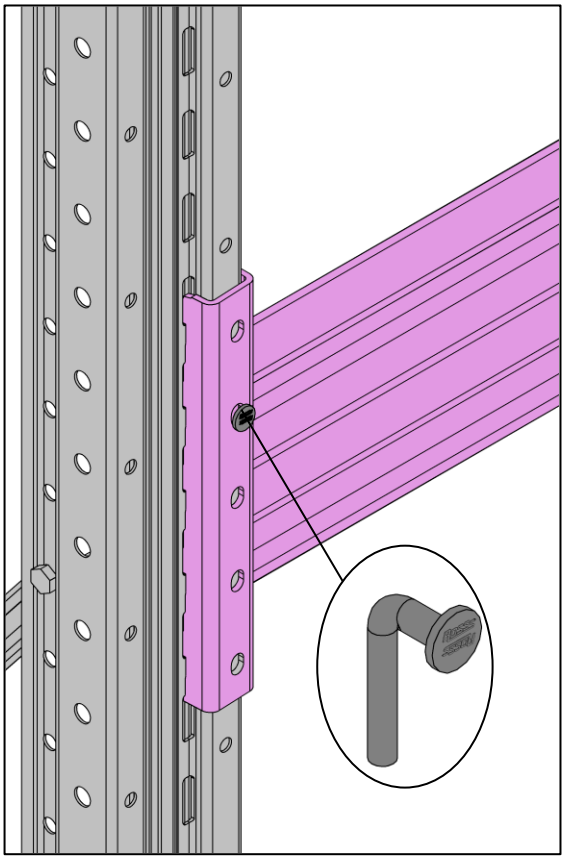
BEAMS

The beam is obtained by a welded bracket to a coupled profile. They can be of different sections, with bracket with 4, 5 and 6 teeth.



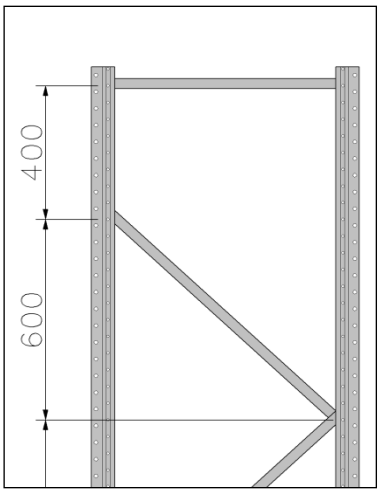
The beams must be assembled with two safety pins (one on each side); these should be inserted in the first useful hole on the respective brackets.

SAFETY PINS

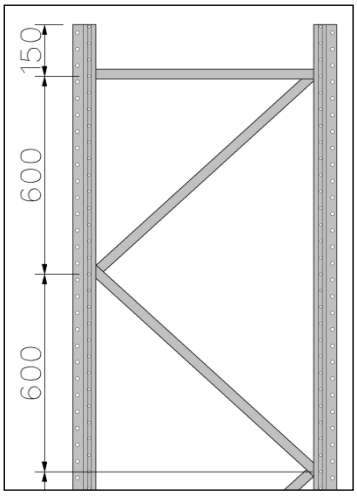


ROSSS

FRAME CONFIGURATION



Configuration A

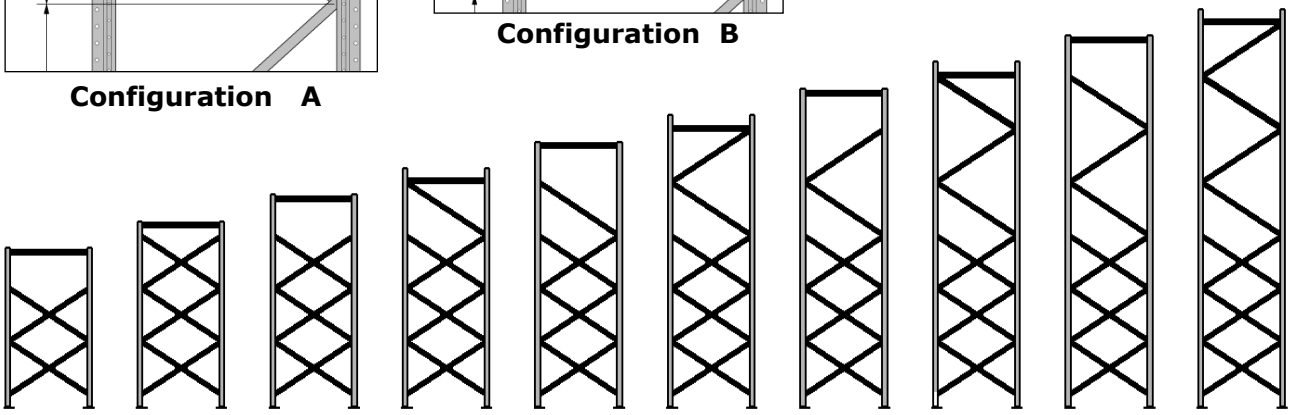


Configuration B

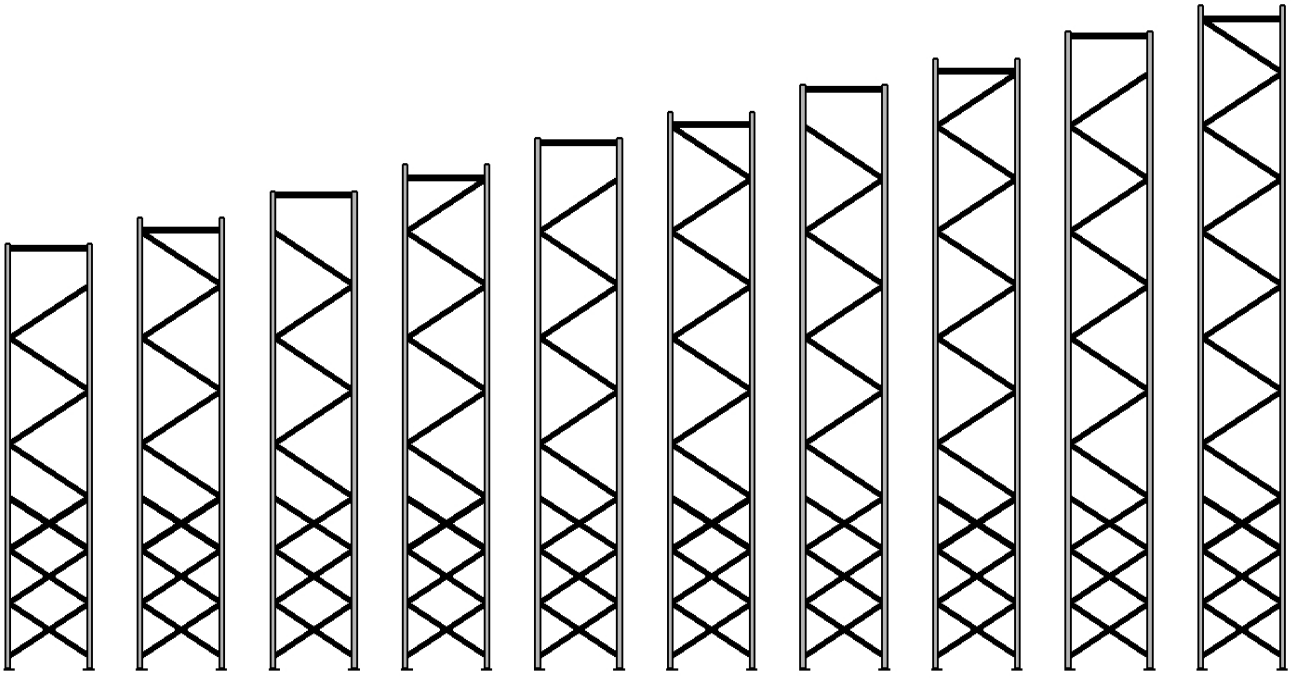
The distance in height of the diagonals is always 600 mm. In case of a single final crossbar, this must be positioned at 400 mm from the last diagonal.

The height of the first diagonal from the ground is specified on the following pages.

For frame heights other than those indicated below, refer to the project plan.



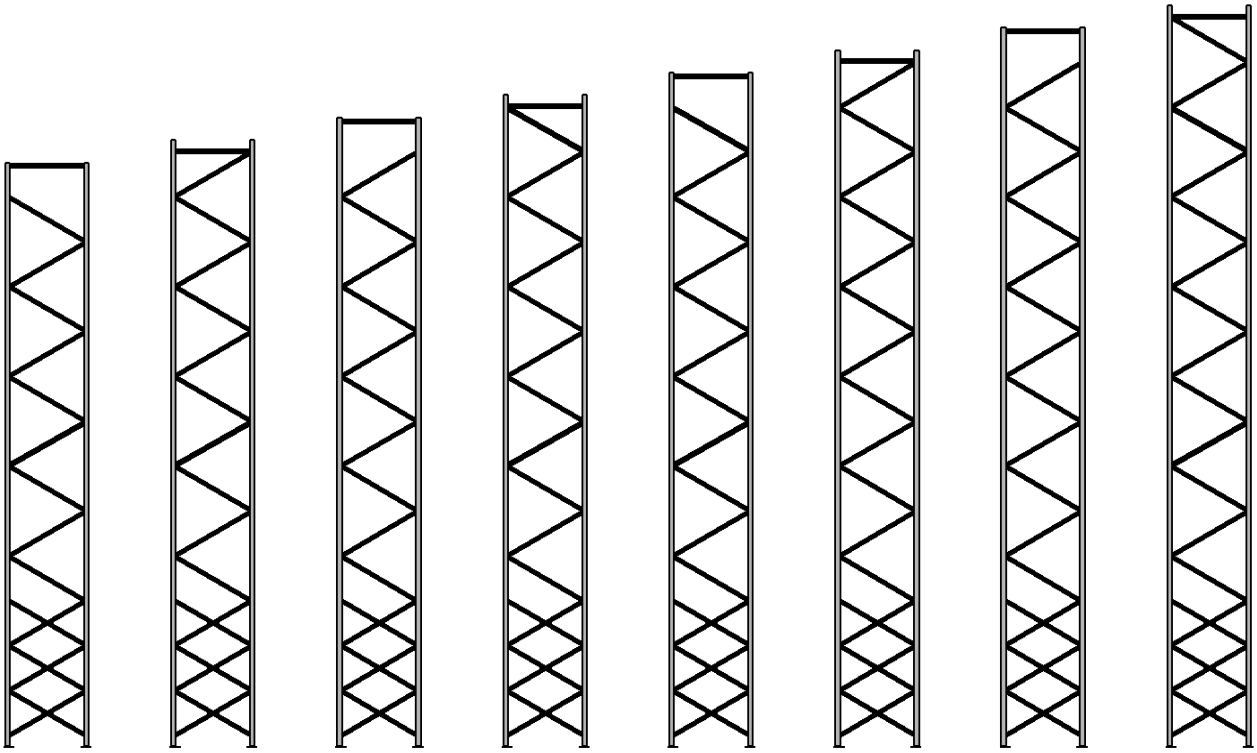
1800 (A)	2100 (A)	2400 (A)	2700 (B)	3000 (A)	3300 (B)	3600 (A)	3900 (B)	4200 (A)	4500 (B)



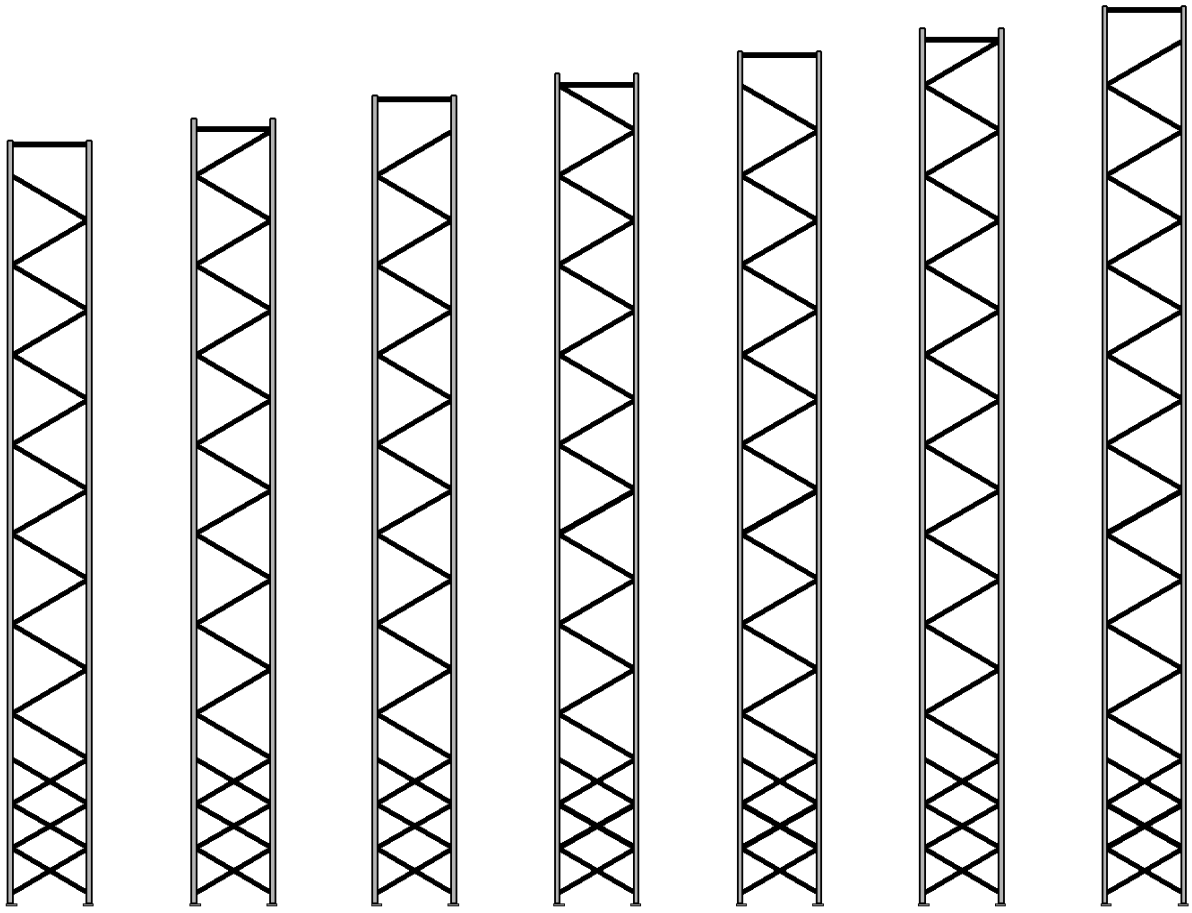
4800 (A)	5100 (B)	5400 (A)	5700 (B)	6000 (A)	6300 (B)	6600 (A)	6900 (B)	7200 (A)	7500 (B)

ROSSS

FRAME CONFIGURATION



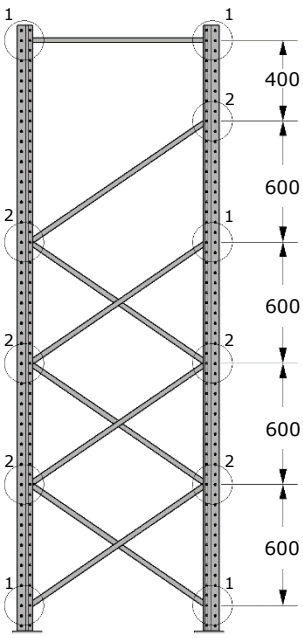
7800 (A) | 8100 (B) | 8400 (A) | 8700 (B) | 9000 (A) | 9300 (B) | 9600 (A) | 9900 (B)



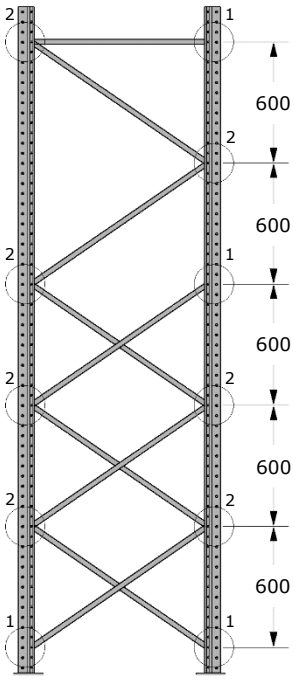
10200 (A) | 10500 (B) | 10800 (A) | 11100 (B) | 11400 (A) | 11700 (B) | 12000 (A)

ROSSS

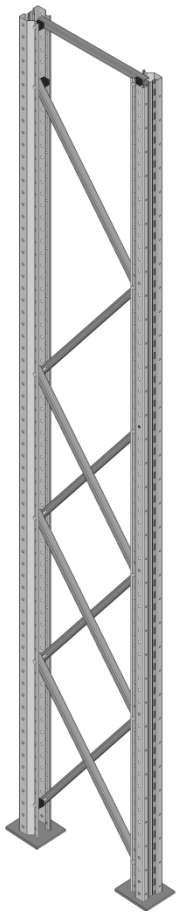
ASSEMBLY FRAME TYPE S.70 – 90 – 110

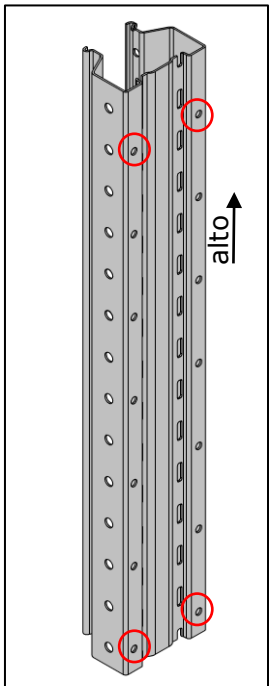


Config. A



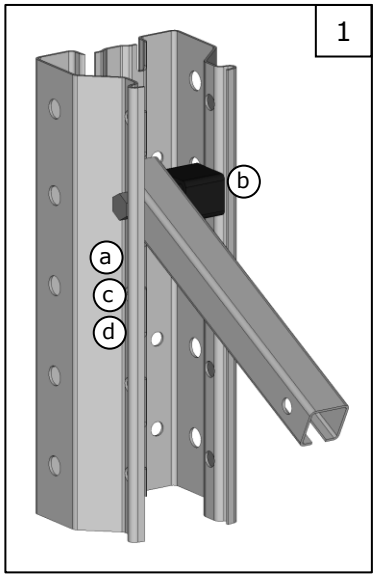
Config. B

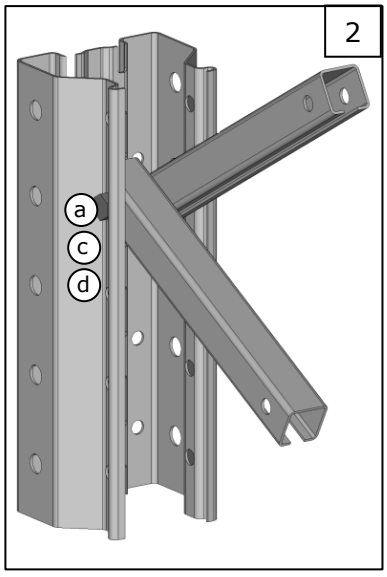


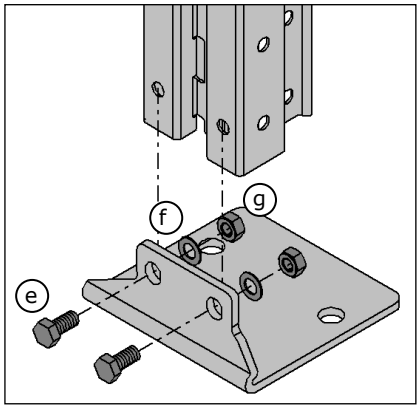


To get the correct direction of the upright: start from the holes of the pins closest to the end. **N.B.** valid for static and seismic frames

The first diagonal must be fixed to the 3rd hole from the ground (about 150 mm). The diagonals holes are distanced always every 600 mm. In the «A» configuration, the last crossbar must be positioned 400 mm from the last diagonal.







The hole on the floor for fixing must be 10 mm diameter.

TYPE 70

a – screw M8x50
b – pvc shims pvc 16mm
c – square washer
d – nut M8 self-locking
e – screw M8x16
f – washer D8
g – nut M8

TYPE 90

a – screw M8x70
b – pvc shims 25 mm
c – square washer
d – nut M8 self-locking
e – screw M8x16
f – washer D8
g – nut M8

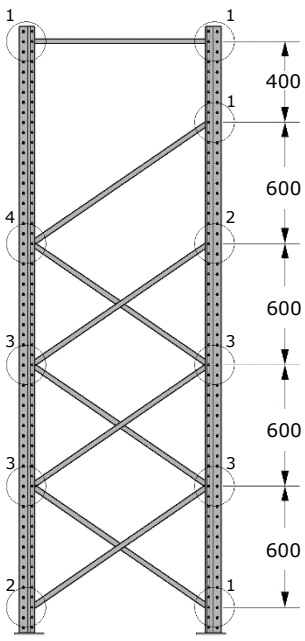
TYPE 110

a – screw M8x70
b – shims pvc 25mm
c – square washers
d – nut M8 self-locking
e – screw M8x16
f – washer D8
g –nut M8

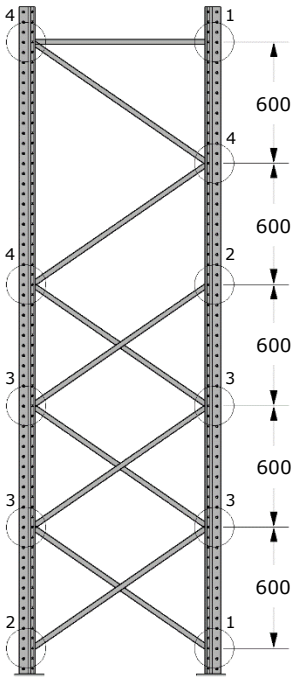
The bolting must necessarily be of class 8.8.

ROSSS

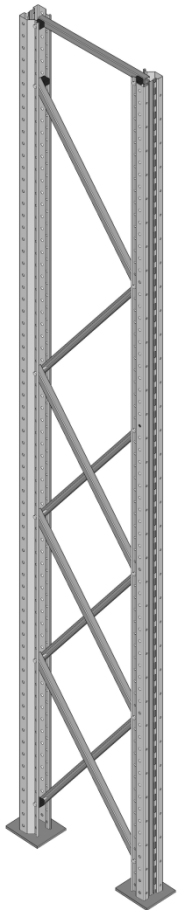
ASSEMBLY FRAME S.130

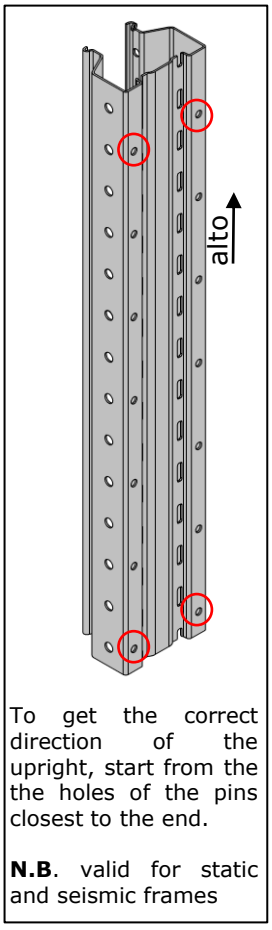


Config. A



Config. B

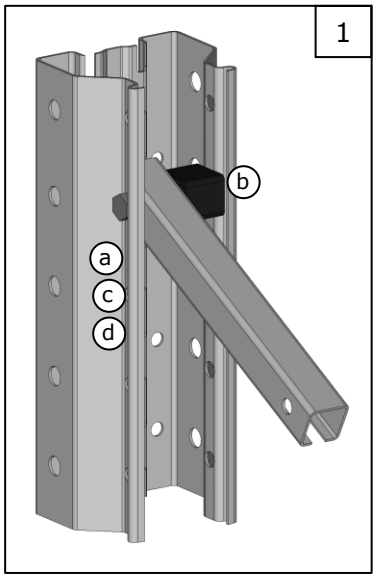


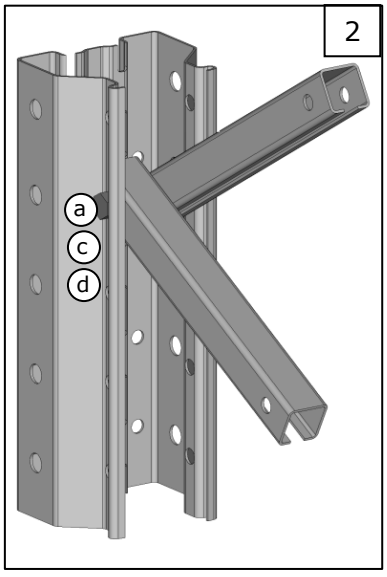


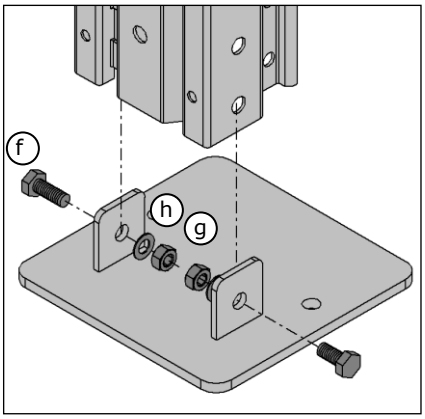
To get the correct direction of the upright, start from the the holes of the pins closest to the end.

N.B. valid for static and seismic frames

The first diagonal must be fixed to the 2nd hole from the ground (at about 130 mm). The diagonals have always 600 mm pitch. In the «A» configuration, the last crossbar must be positioned at 400 mm from the last diagonal.







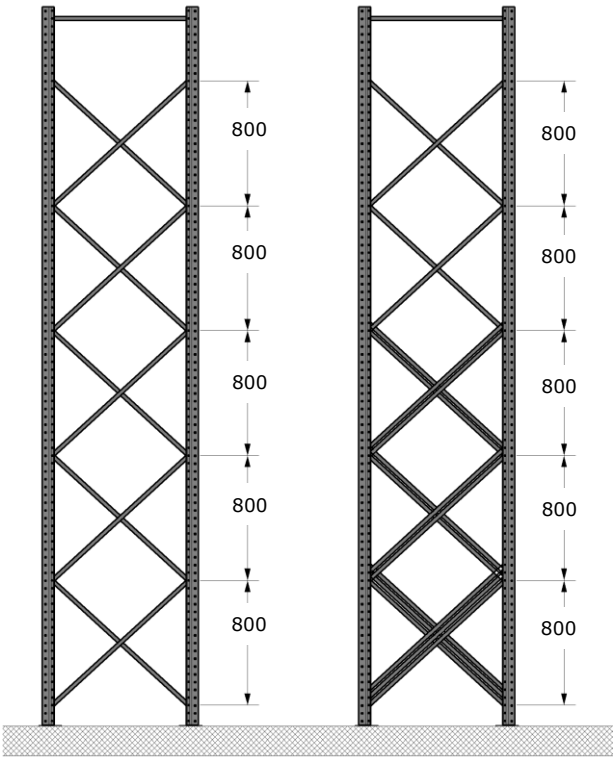
The fixing hole on the ground must be of diameter Ø 10 mm.

TYPE 130

a – screw M10x100
b – pvc shims 40 mm
c - washer D10
d – nut M10 self-locking.
f – screw M12x35
g – nut M12
h – washer D12

The bolting must necessarily be of class 8.8.

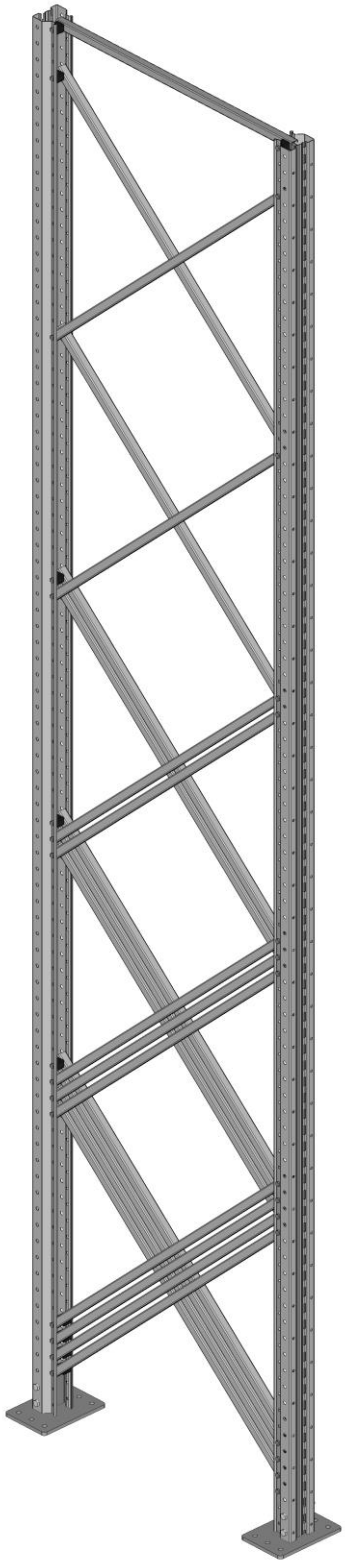
ASSEMBLY FRAME TYPE S. 90 – 110 SEISMIC



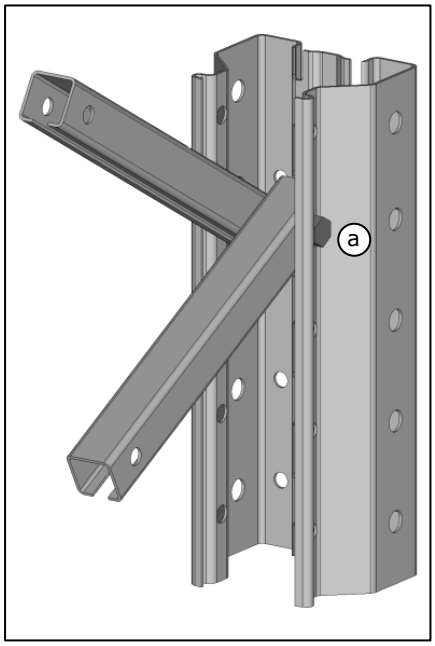
Diagonals have always 800 mm pitch. The frames' configuration (4x-3X-2X-X) may vary depending on the project.

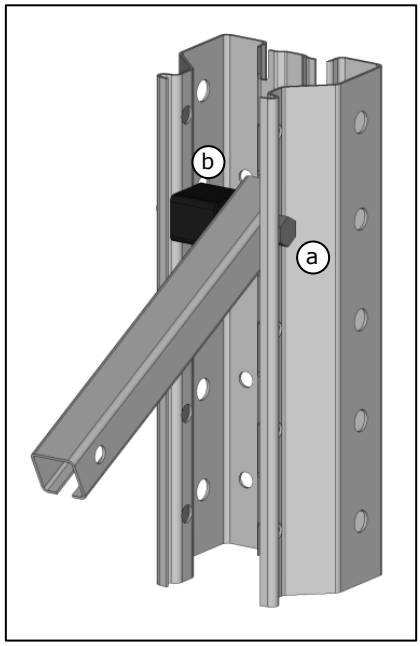
Additional cross-bracing must be assembled at a distance of 50 mm from the standard truss.

For assembly details see project drawing



Type S.90-110 – the 1° diagonal must be fixed to the 3° hole from the floor (at about 150 mm).





TYPE S. 90

a – screw M8x70
– square washer
– nut M8 self-locking.
b – pvc shims 25 mm

TYPE S. 110

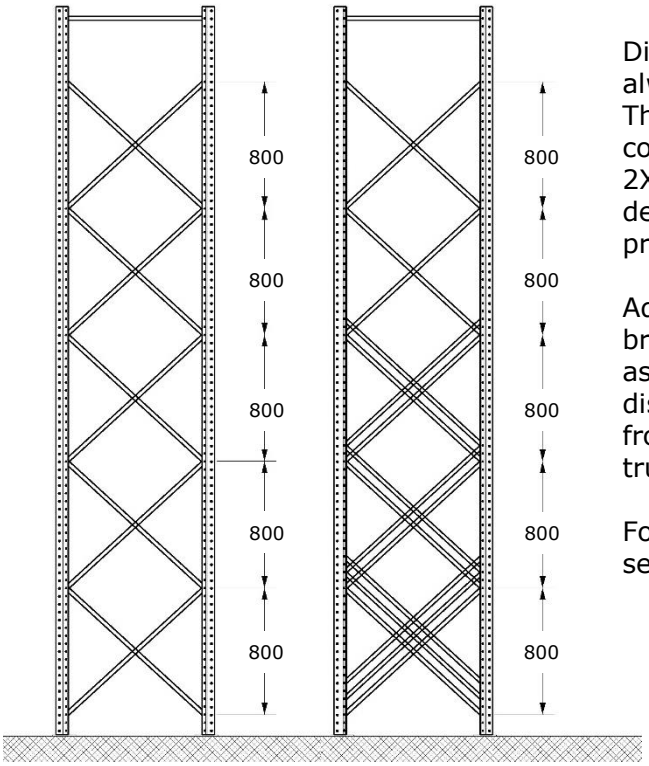
a – screw M8x70
– sqaure washer
– nut M8 self-locking.
b – pvc shims 25mm

The bolting must necessarily be of class 8.8

To check the correct direction of the upright, see seismic frames

ROSSS

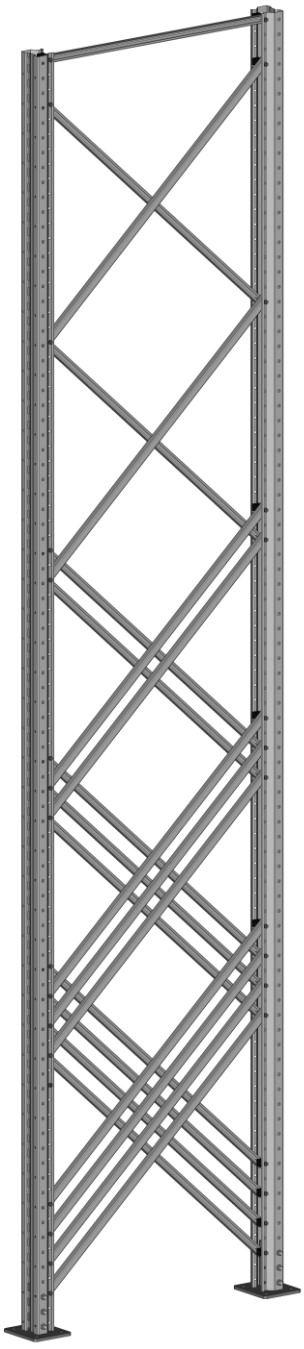
ASSEMBLY FRAME TYPE S.130 SEISMIC



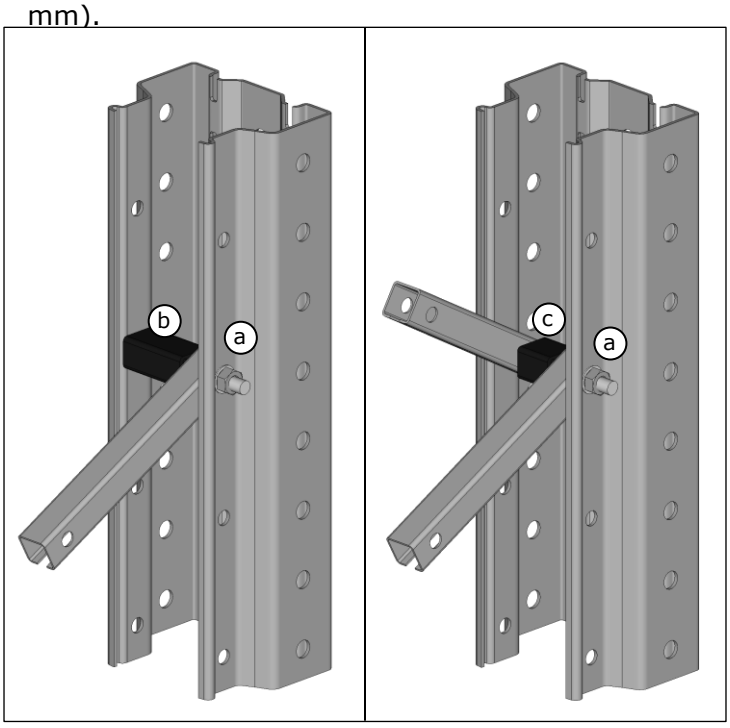
Diagonals have always 800 mm pitch. The frames' configuration (4x-3X-2X-X) may vary depending on the project.

Additional cross-bracing must be assembled at a distance of 100 mm from the standard truss.

For assembly details see project drawing.



TYPE S. 130 – the 1st diagonal must be fixed to the 2° hole from the ground (at about 130 mm).



TYPE S. 130

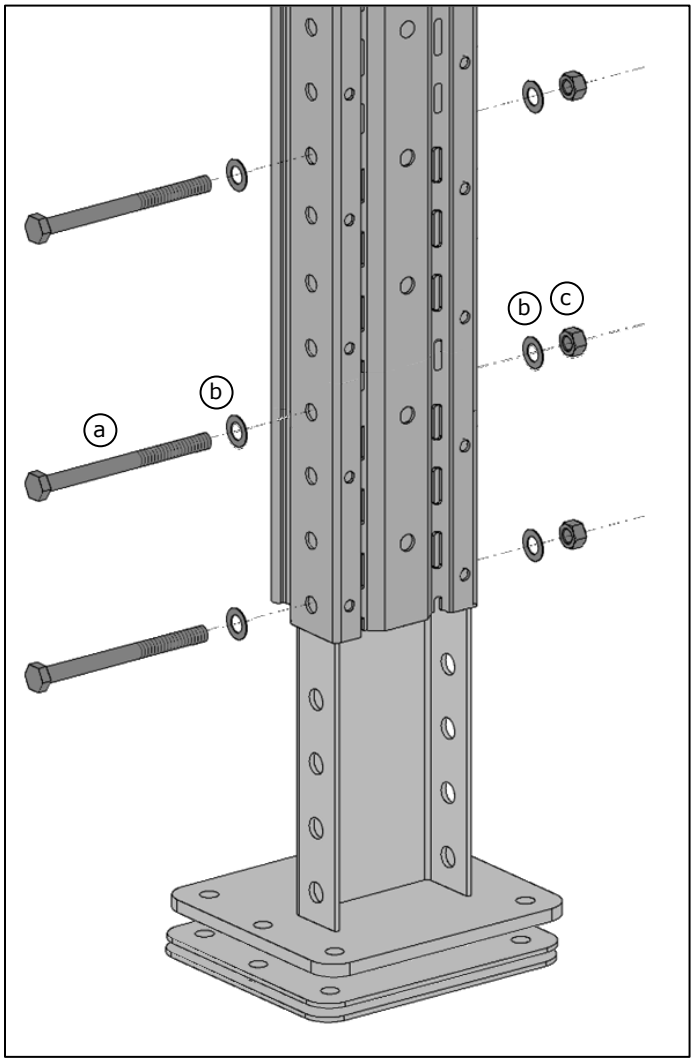
a – screw M10x100
- washer D10
– nut M10 self-locking
b – pvc shims 55 mm
c – pvc shims 30 mm

The bolting must necessarily be of class 8.8

To check the correct direction of the upright, see seismic frames

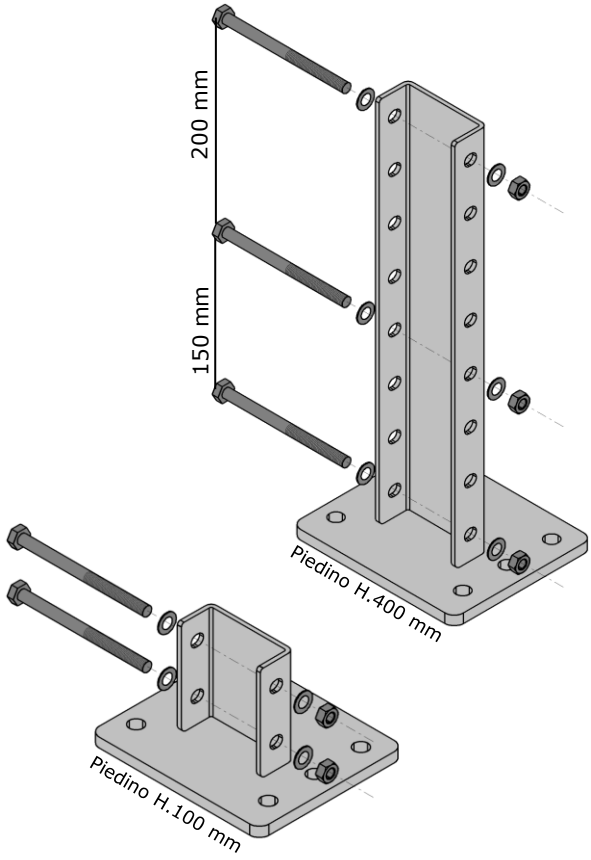
ROSSS

ASSEMBLY SEISMIC FOOTPLATES



The seismic feet can be fixed to the ground with dowels or threaded rods, variable in size and number.
For the quantity and type of ground fixing, see project details.

The thickness shims must be placed before the ground fixing.



TYPE S. 90

a – screw M10x110
b – washer D10
c – nut M10 self-locking

TYPE S. 110

a – screw M10x130
b – washer D10
c – nut M10 self-locking

TYPE S. 130

a – screw M12x150
b – washer D12
c - nut M12 self-locking

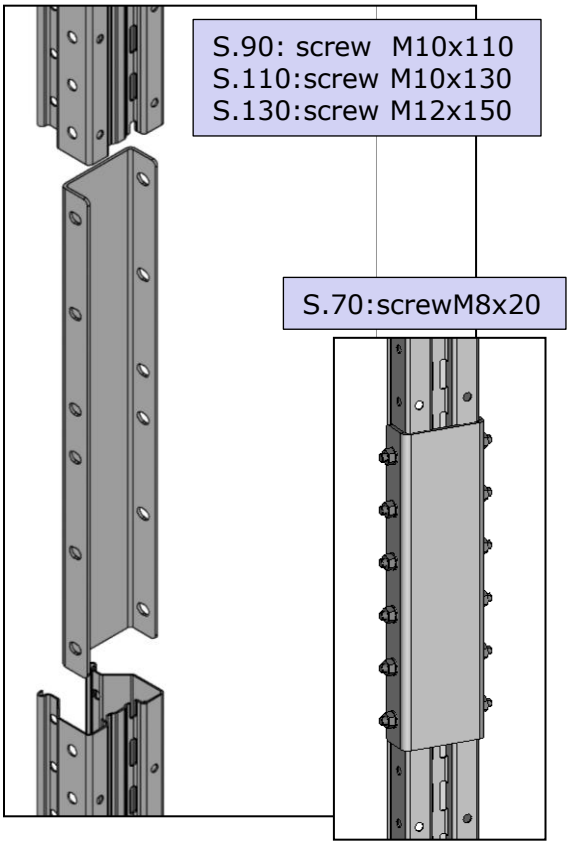
If there are footplates higher than 400 mm, the distance between the next fixings must be at every 200 mm, except in case of presence of beams and/or accessories, visible in the project table

Concerning the holes to be made into the flooring, the drills depend on the type and size of the anchor: refer to the following table.

Type of anchoring			
Mechanic Dowel		Chemical Anchor	
M10	**Ø 10 mm**	M12	**Ø 14 mm**
M14	**Ø 14 mm**	M16	**Ø 18 mm**

ROSSS

JOINT FOR FRAME - SPACERS



S.70: insert the outer joint to the first upright, then fix it with 6 screws. Then insert the second upright and fix it with 6 screws.

S.90-110-130: insert the joint into the first upright then fix it with 3 screws. Then insert the second upright with 3 screws.

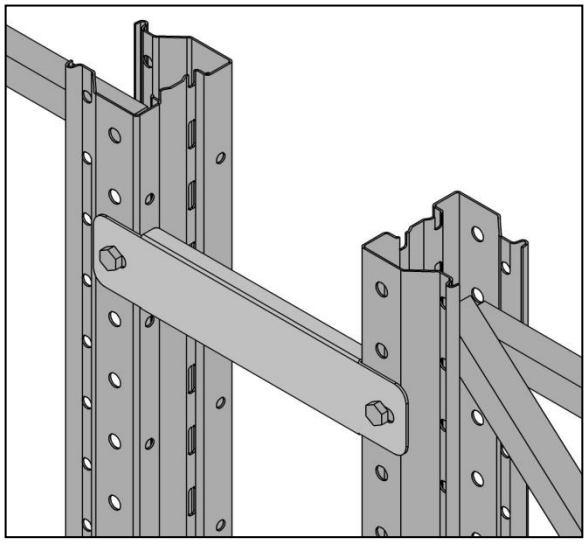
This spacers must be assembled with 1800 mm centre distance, with a minimum of 2 spacers in height.

They must always be mounted coupled on the 2 sides of the upright.

The spacer must be fixed to the upright with four screws, with the nut and the washer inside the upright.

S.70: screw M8x20
S.90: screw M10x20
S.110: screw M10x20
S.130: screw M12x20

UP TO 700 mm

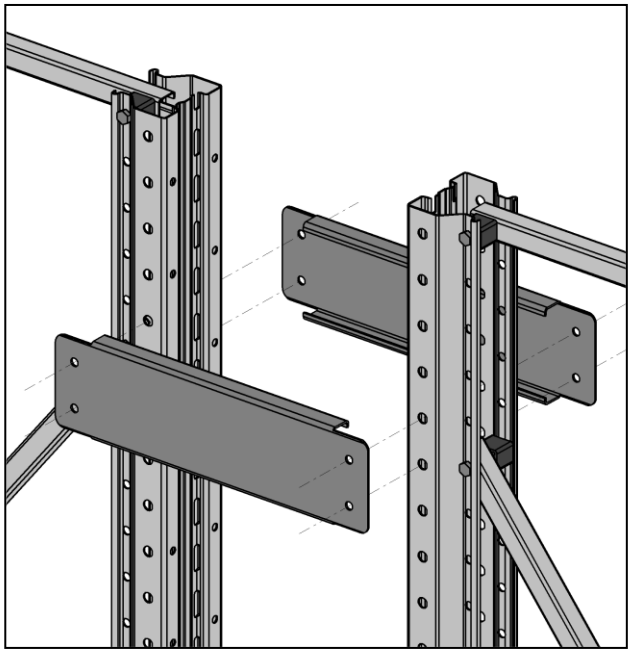


The central spacers must be assembled with 1800 mm centre distance, with a minimum of 2 spacers in height.

The spacer must be fixed to the upright with two screws, with the nut and the washer inside the upright.

For type **S. 70 - 90 - 110** use 2 screws M8x20, nut and washer.
For type **S. 130** use 2 screws M10x20, nut and washer.

FROM 750 TO 1400 mm

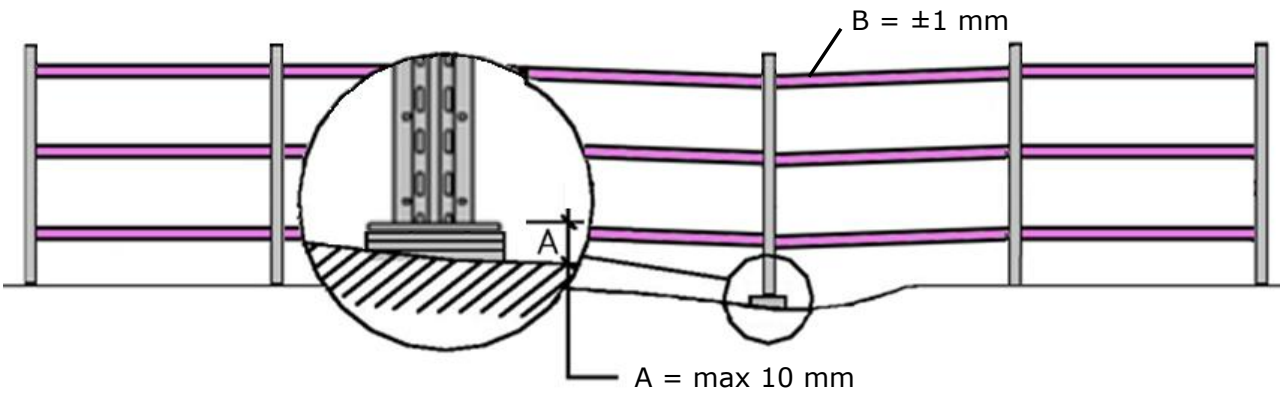


If a Rosss technical drawing is available , assemble accordingly.

ASSEMBLY TOLERANCES

LEVELLING

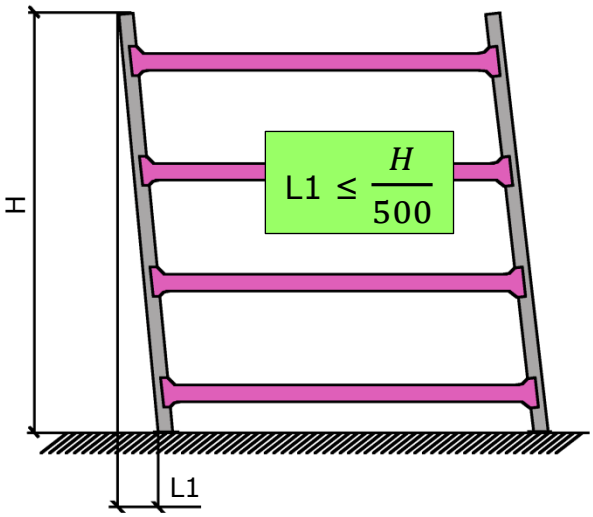
FEM 10.3.01

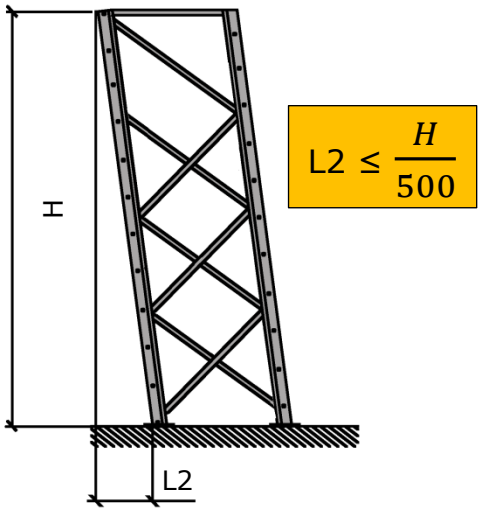


A = thickness (max 10 mm) levelling with standard shims (upon request). In case of request for levelling over 10mm shims, contact our ROSSS Technical Department.
B= Acceptable tolerance

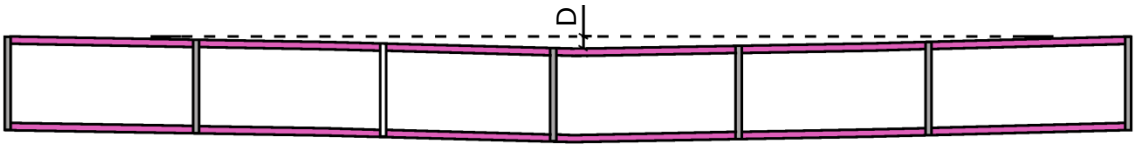
VERTICALITY

UNI EN 15620





ALIGNMENT

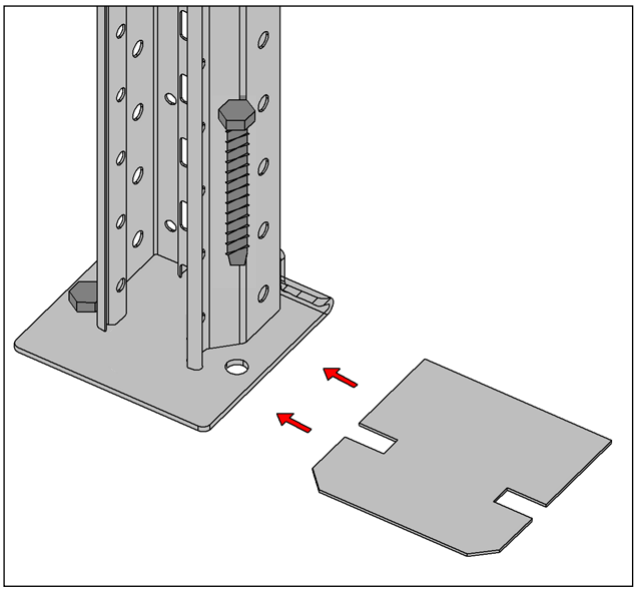


D Max ≤ 10 mm

UNI EN 15620

Before finally fixing the frames to the ground it is necessary to check the levelling, the verticality and the alignment of the structure. Where necessary, thickness shims must be placed under the footplates.

FOOTPLATE FIXING AND SHIMMING



Drill the floor where there are the foot's holes , that must be of **Ø10 mm**

Then remove the dust from the hole and partially insert the **self-tapping M10 concrete dowel** attached**.**

Carry out a check on the structure and, if necessary, raise the frame and insert the thickness shims to level it.

Finally insert the second dowel and lock the whole to the floor.

Use 4 dowels for each frames : 2 dowels for each footplate

N.B. In case the levelling will be required, don't fix the second dowel until the levelling has taken place.

FLOORING

The industrial flooring :where the shelving system will be installed must follow exact and precise technical/constructive characteristics

the flatness must be guaranteed in order to ensure the correct installation of the shelves; if necessary, the thickness shims give a specific value in the supply; It is important to note that an excessive difference of levelling on the floor may compromise the quality of the installation**;**

- **The charge capacity** must be such as to support the loads arising from the shelving structure, seismic loads, products stored and handling such as forklifts, commonly used in the warehouse, and any other insistent elements on the floor;

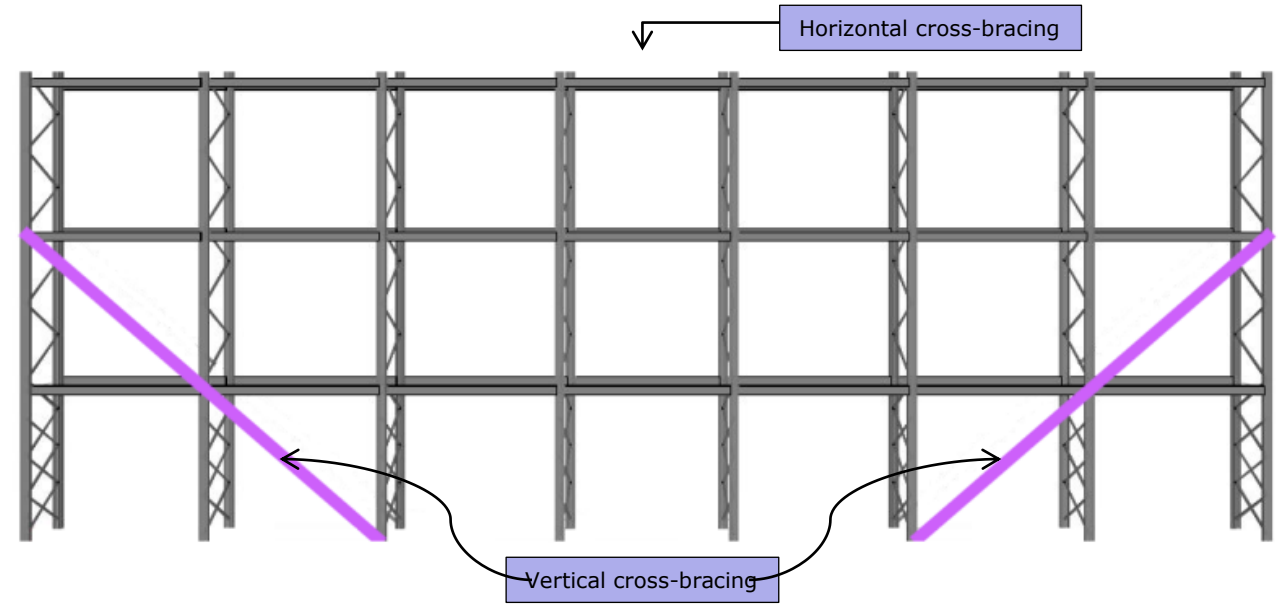
- **Thickness** audience of reinforced concret of at least 20 cm thick.

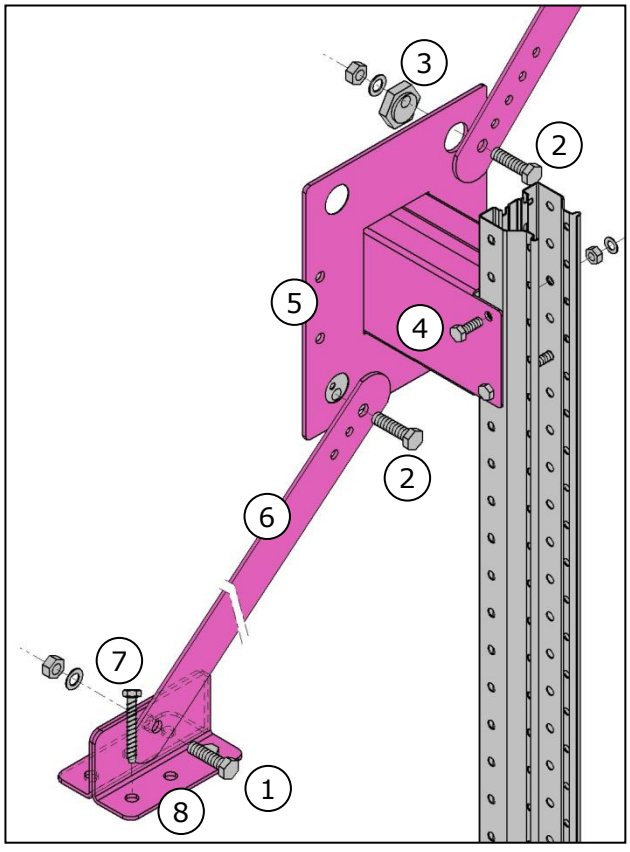
It is important that there are no installations under the floor (electrical, plumbing, heating, etc.) and in any case, if/where present, they must be reported in time so as to be duly considered at the design stage.

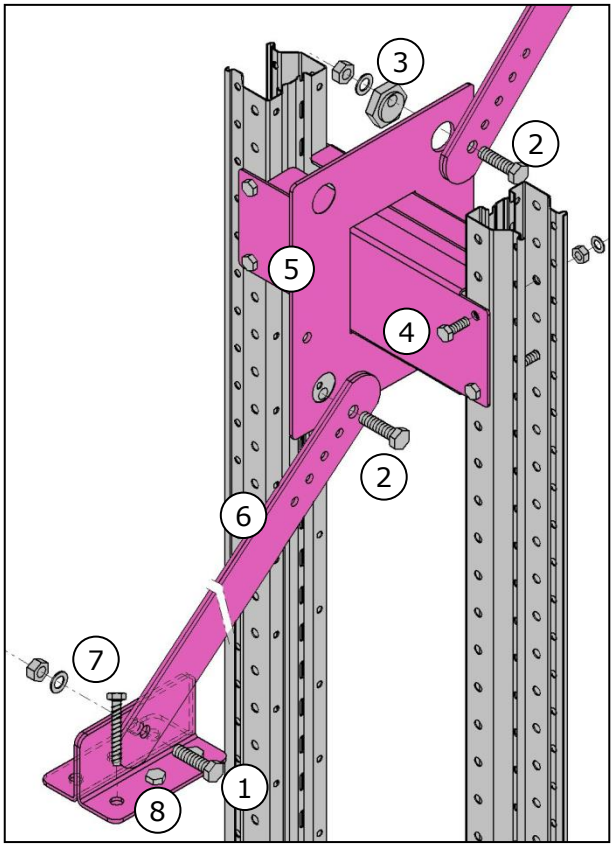
The Customer is responsible for the compliance of the flooring according to the above requirements.

Floor verification for technical characteristics and, more generally, any need for interventions by engineering experts can, if required, be entrusted to specialist studies affiliated with ROSSS SPA .

ASSEMBLY VERTICAL CROSS-BRACING







TYPE S. 90/110

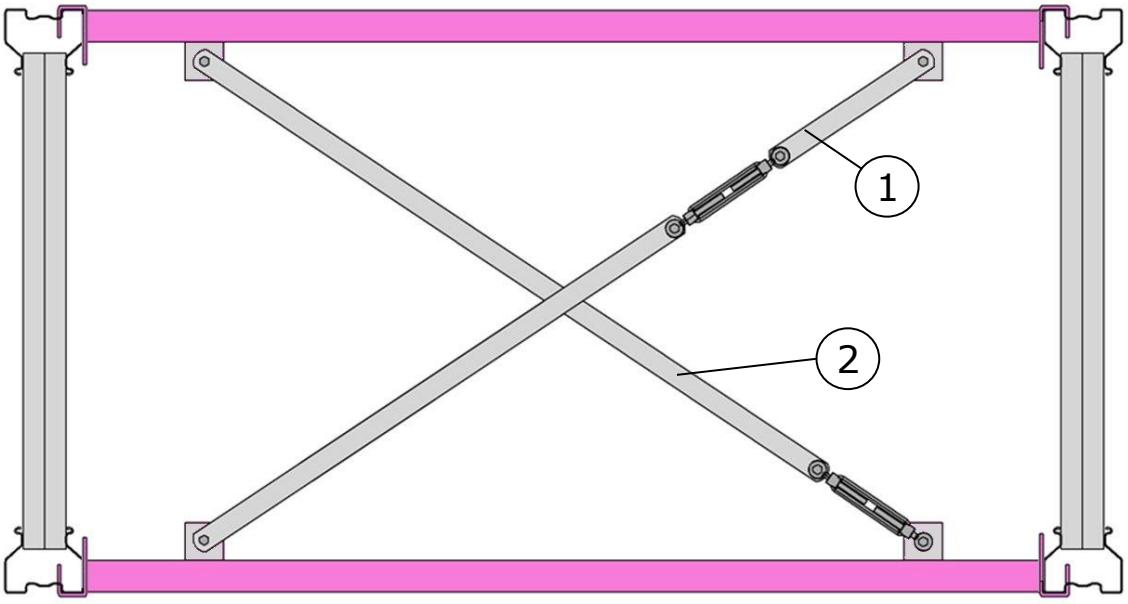
1 – screw M14x35
2 – screw M14x45
3 – hexagon
4 – screw M10x20
5 – block S.90/110
6 – diagonal 45x4
7 – dowel 12x90
8 – connection to the ground

TYPE S. 130

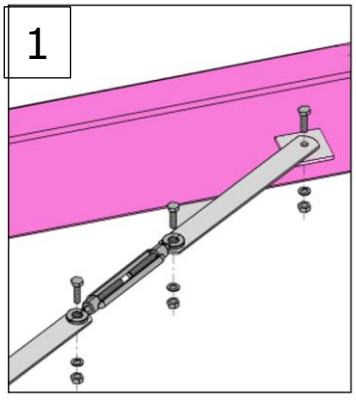
1 – screw M14x35
2 – screw M14x45
3 – hexagon
4 – screw M12x25
5 – block S.90/110
6 – diagonal 60x5
7 – dowel 12x90
8 – connection to the ground

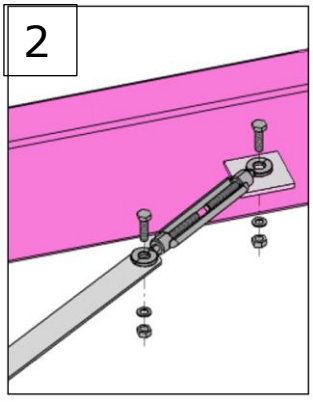
For the single side cross-bracing the connection to the floor (8) is fixed with 4 M12x90 dowels.
On the contrary, for the double side cross-bracing is fixed with 6 M12x90 dowels.
The diagonals (6) are single for single-side plants, double for the double side ones

ASSEMBLY HORIZONTAL CROSS-BRACING

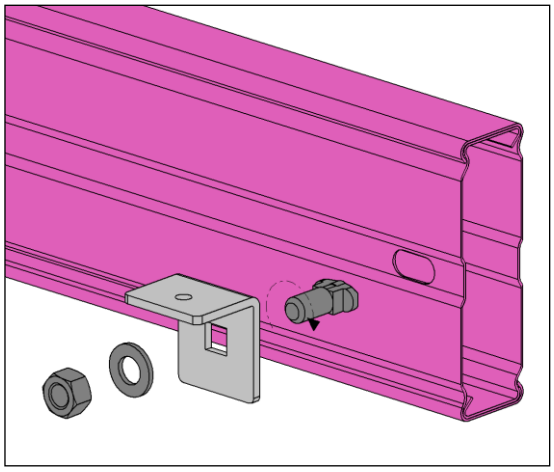


If the horizontal cross-bracing consists of a single element, the tensioner must be fixed to the cross bracing and to the plate of the beam (2).
If, on the other hand, the cross-bracing consists of two elements (1), the tensioner must be interposed between the two elements.





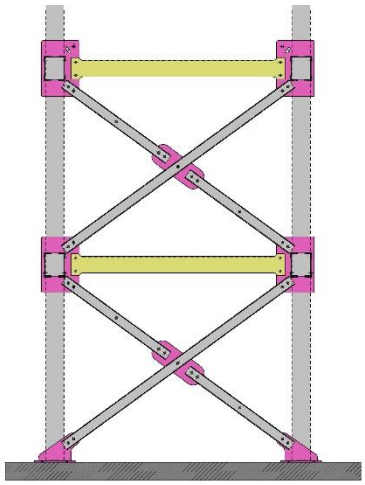
The tensioner M8 and the cross-bracing must be fixed to each other and to the plate of the beam with screw M6x16, washer and nut.

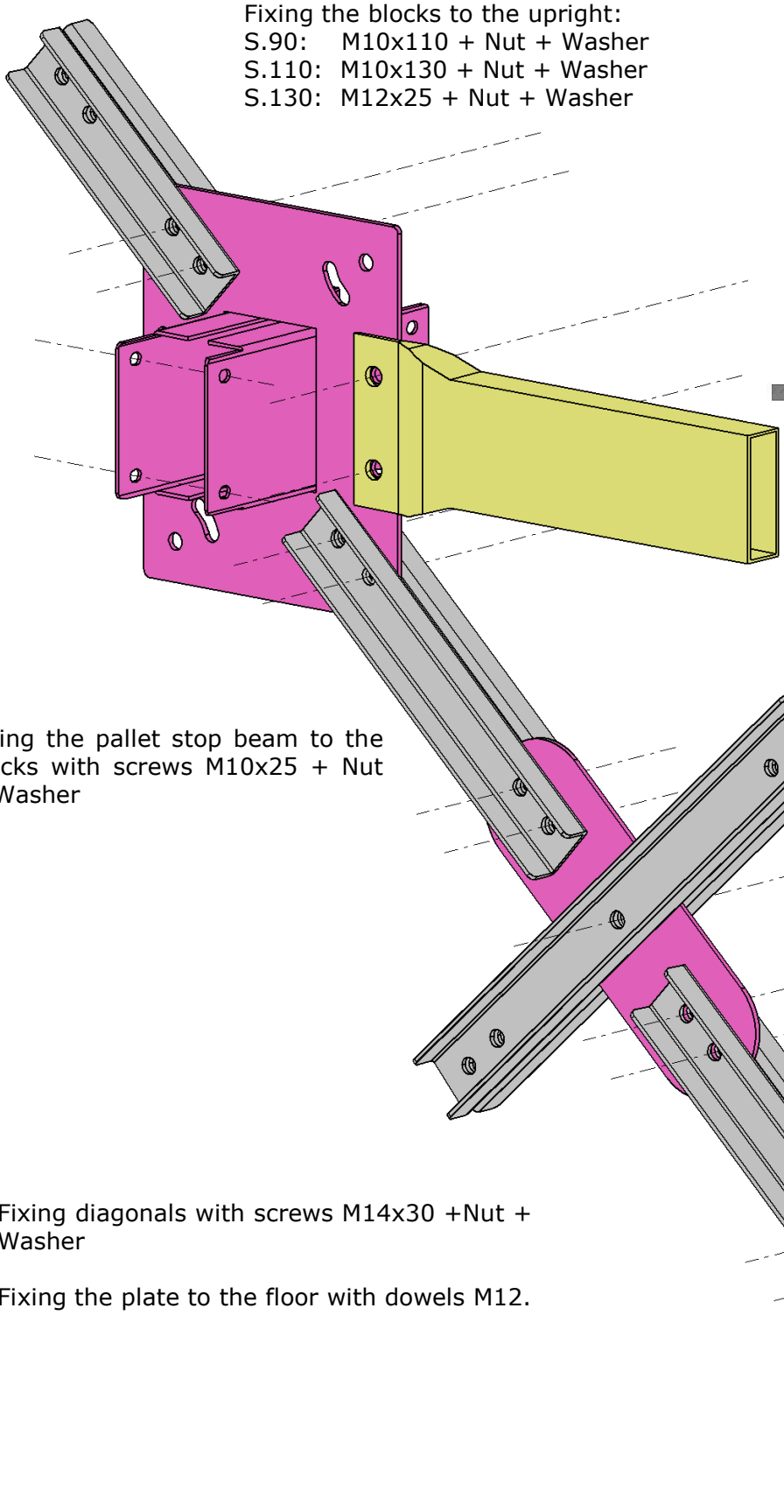


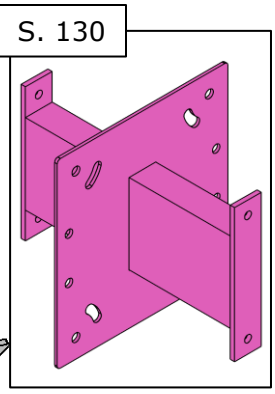
On the box beams, the bracket for the attachment of the horizontal diagonals is fixed with a hammer head screw M12x26 ; assemble the washer and nut then inserted into the hole of the columns; then rotate the head of the screw and tighten the bolt

VERTICAL SEISMIC CROSS-BRACING ASSEMBLY

Fixing the blocks to the upright:
S.90: M10x110 + Nut + Washer
S.110: M10x130 + Nut + Washer
S.130: M12x25 + Nut + Washer





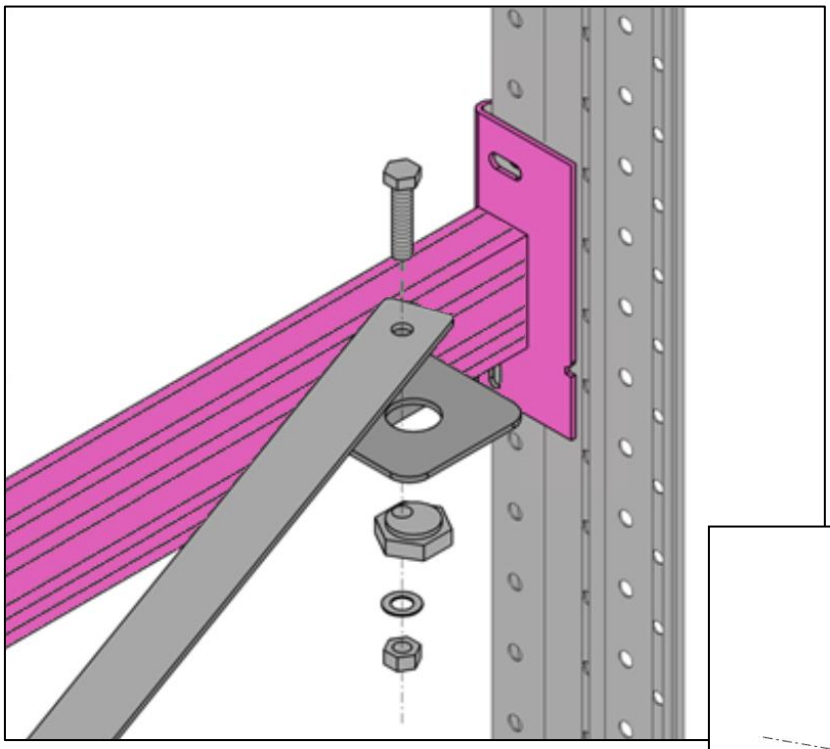


Fixing the pallet stop beam to the blocks with screws M10x25 + Nut + Washer

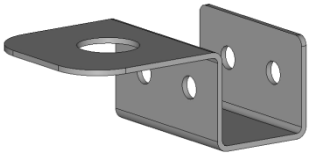
Fixing diagonals with screws M14x30 +Nut + Washer

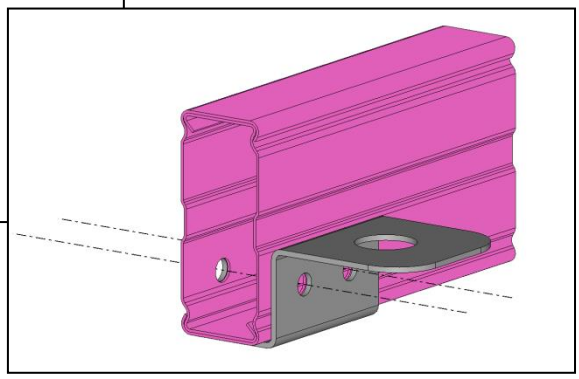
Fixing the plate to the floor with dowels M12.

HORIZONTAL SEISMIC CROSS-BRACING ASSEMBLY

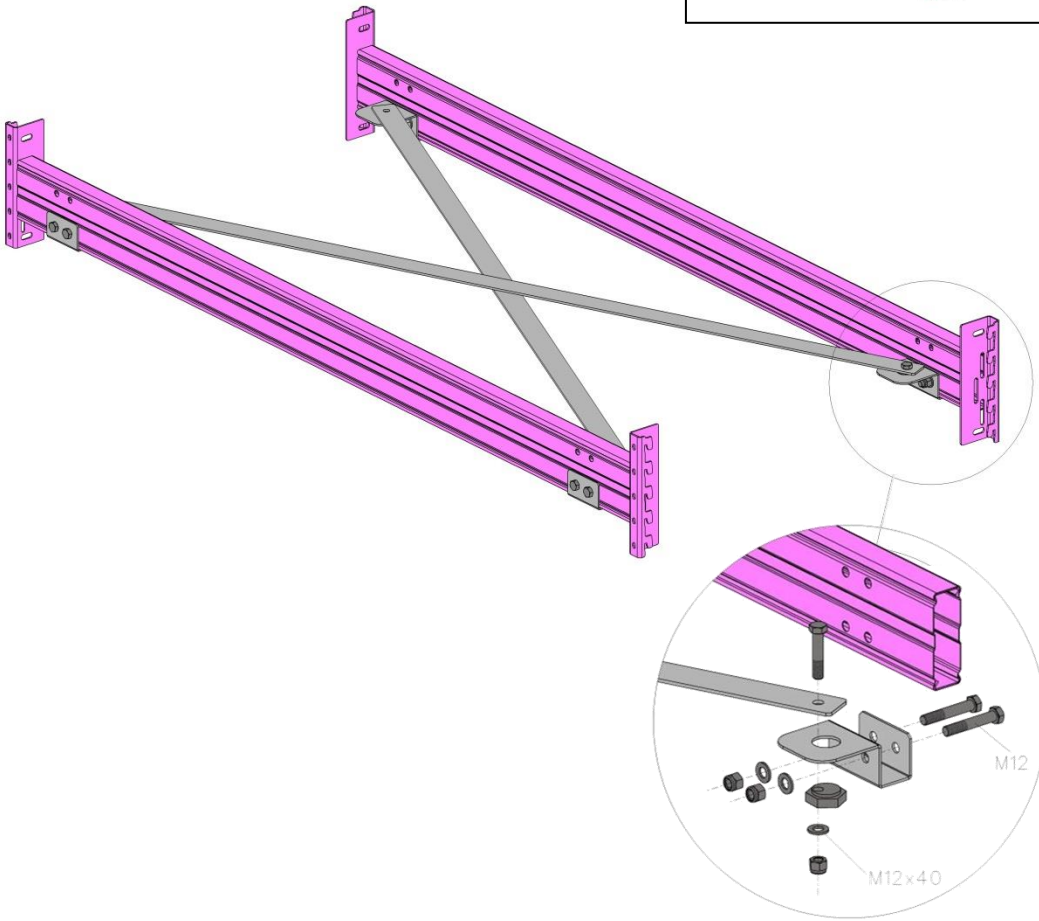


Fix the horizontal cross-bracing to the seismic beam plates with screws M12x40 and eccentric hexagons; the latter are used to tension the cross-bracing.

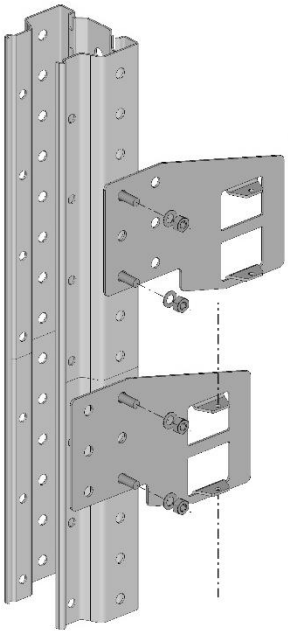




The plates must be screwed to the beams with screws M12x70/80/90, according to the section's depth.



BACK PALLET-STOP

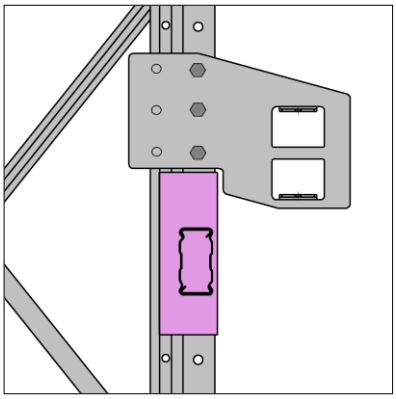


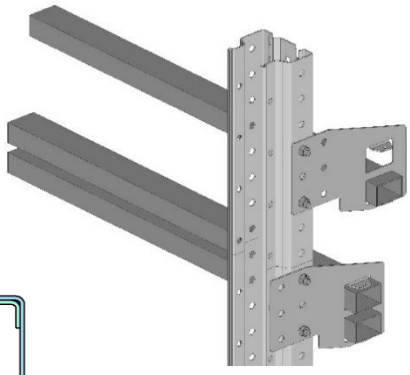
The brackets can be placed in two positions, thus allowing the pallet-stop to be positioned at 50 or 100 mm from the upright (central spacer 200 or 300mm).

The pallet-stop bracket must be placed immediately above the beam.

For fixing use 2 screws:
Type 70 : M8 X30 + N+W
Type 90 -110: M10x30+N+W
Type 130: M12X30+N+W

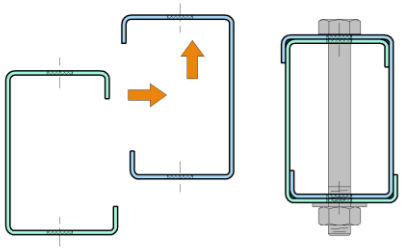
To fix the tubular on the bracket use self-drilling screws 6,3X25.



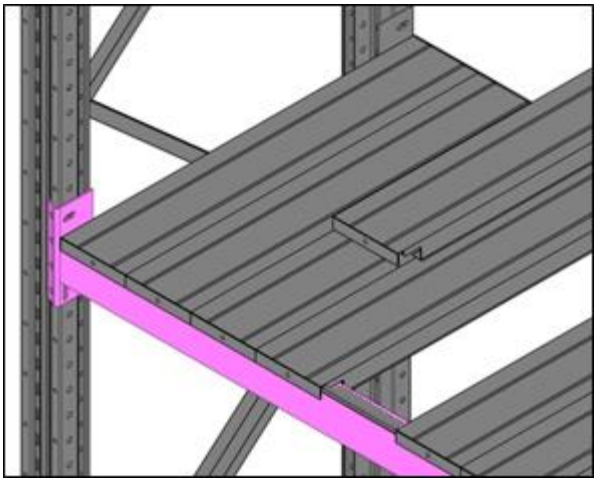


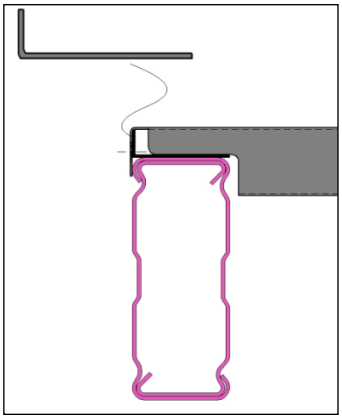
It is possible to assemble a single pallet-stop (always the lower one) or 2 tubes.
If the tubular bar includes 2 spans, 3 brackets will be required, and fix the tubular to each bracket.

The stop tube is made up of two equal profiles which must be coupled together: the M8x70 coupling screw must be mounted after inserting the tube into the brackets.



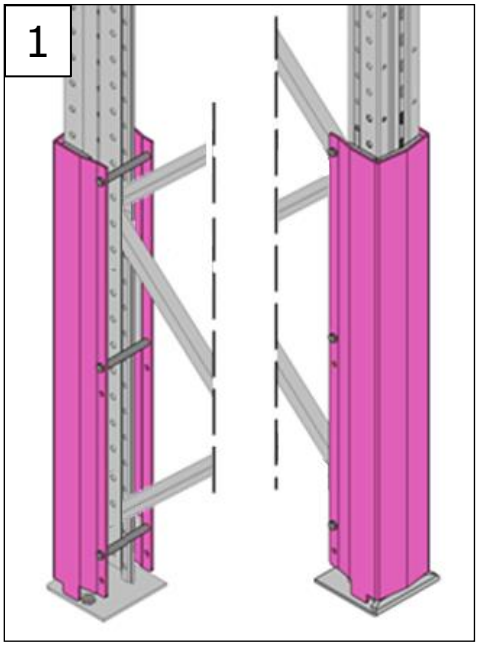
ASSEMBLY SHELVES 100 mm





The Shelves of 100 mm are placed above the beams, and can be equipped with the anti-crushing profile; in this case, then place a metal angular profile between the beams and the shelves.

PROTECTION

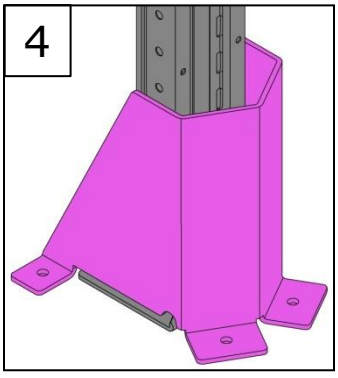


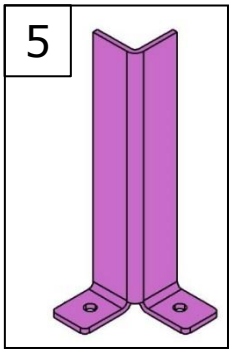
1 – Attach the neoprene strips to the upright; then insert the upright guard and secure it at the rear with M8x25 screws and the blocks.

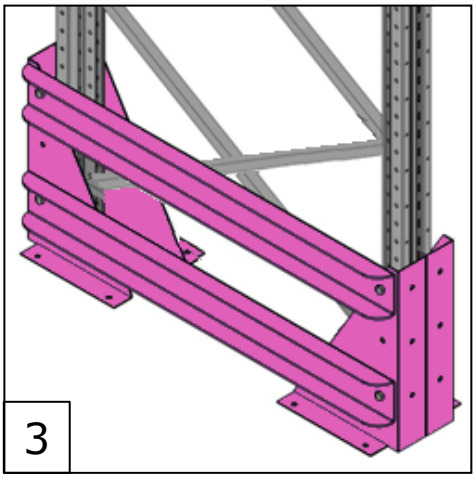
2 – Secure the columns to the floor, then secure the beam with screws M12x30. The beam can be assembled internally or externally.
For floor fixing, use dowels M12x90.

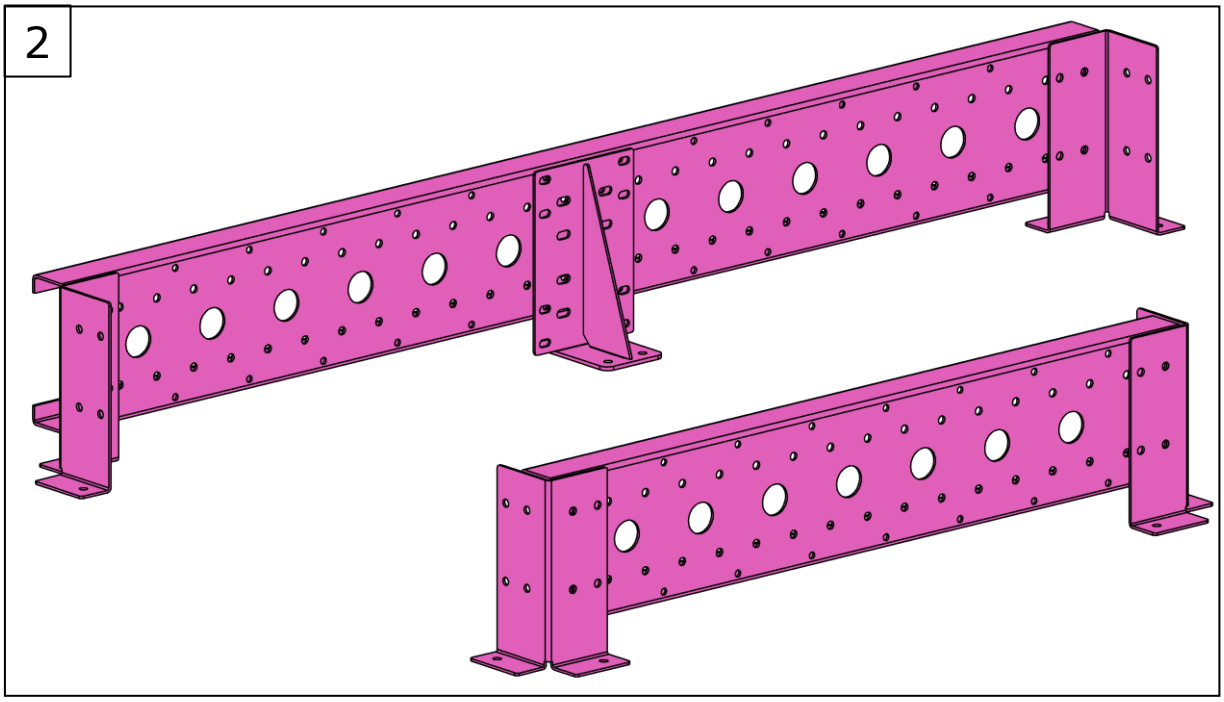
3 – Secure the protection to the floor, then secure the profiles with screws M10x25.
For floor fixing, use dowels M12x90.

4 / 5 – Fix to the floor with dowels M12x90



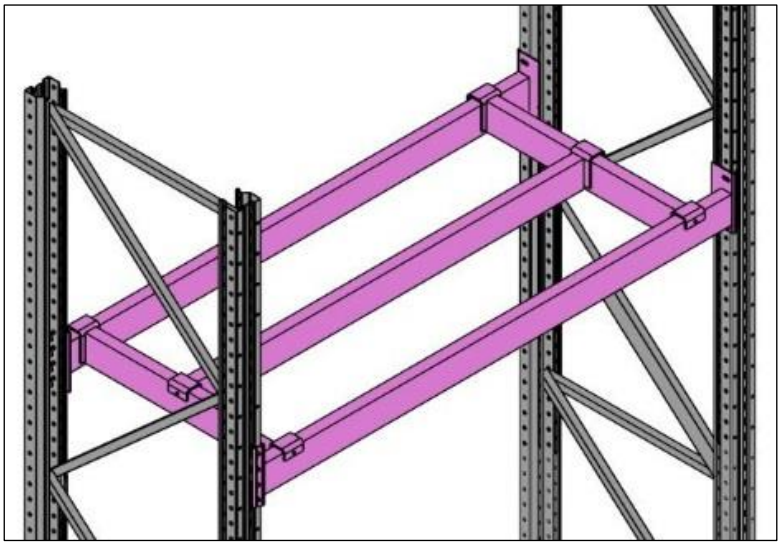




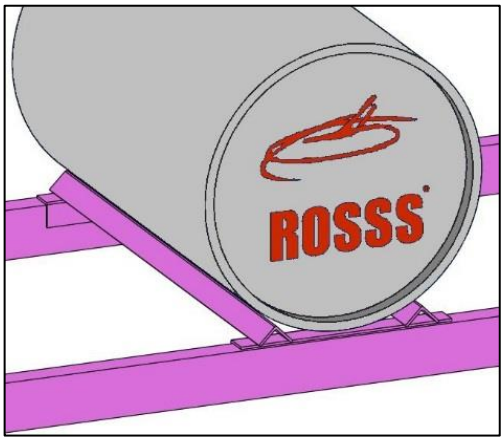


ROSSS

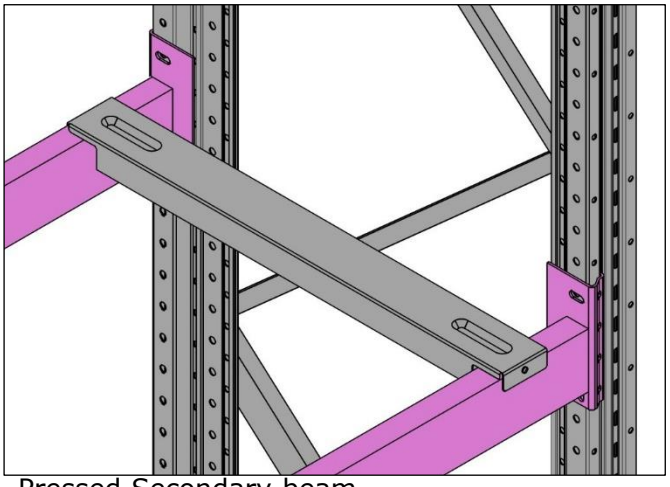
INTERLOCKING ACCESSORIES



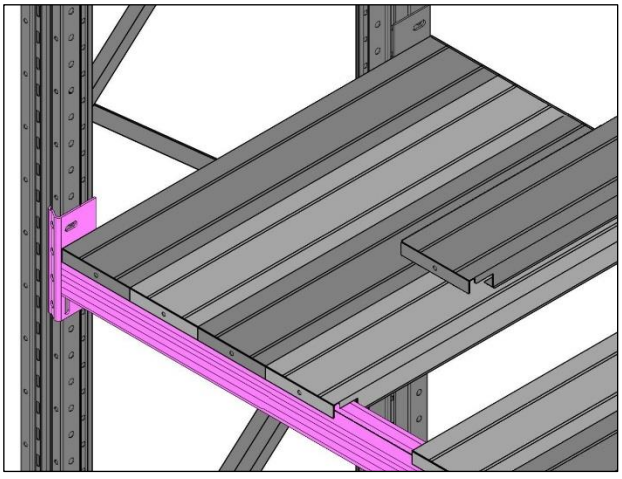
Cross-sectional and longitudinal secondary beam



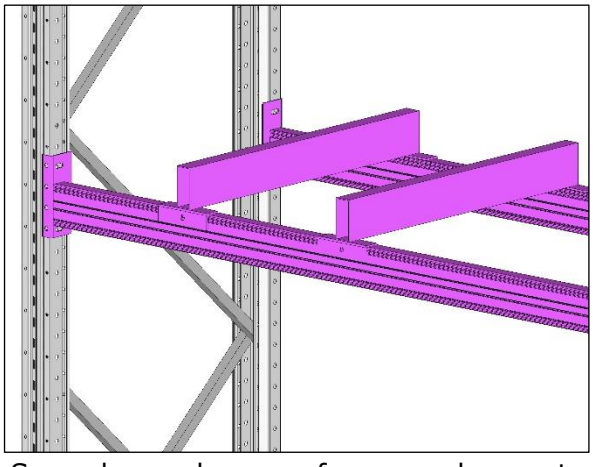
Barrel holder



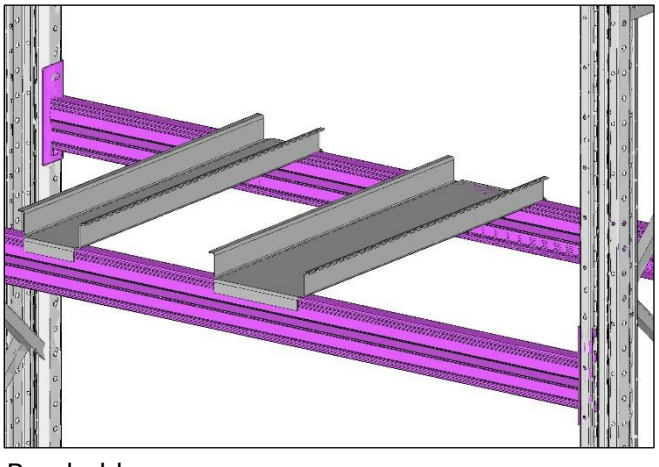
Pressed Secondary beam



Shelves 150/200



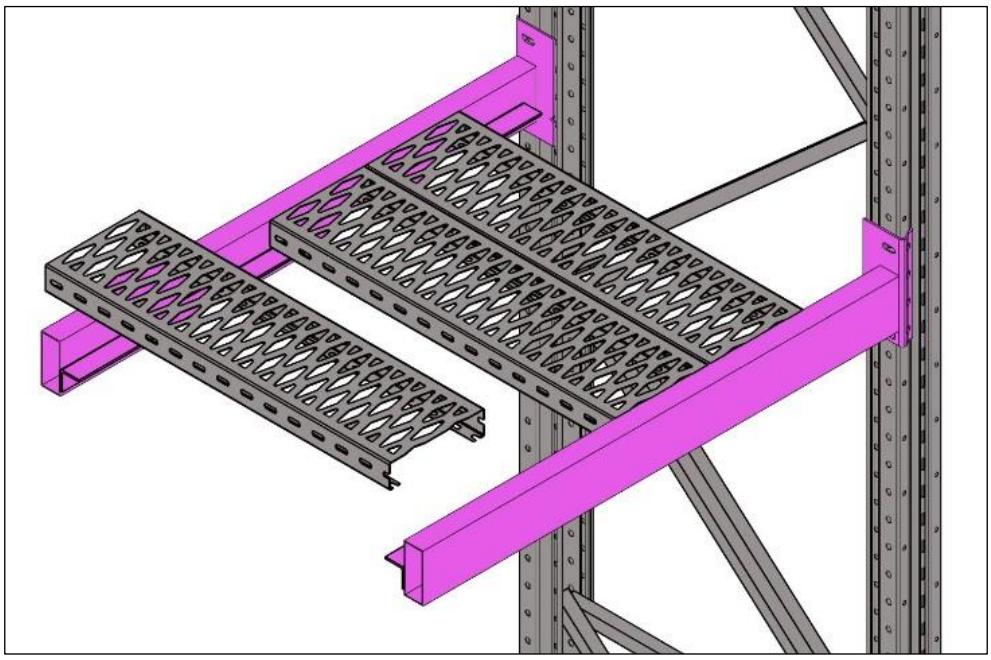
Secondary beam for goods not palletized.

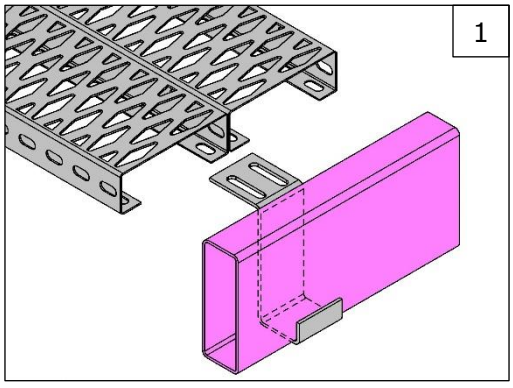


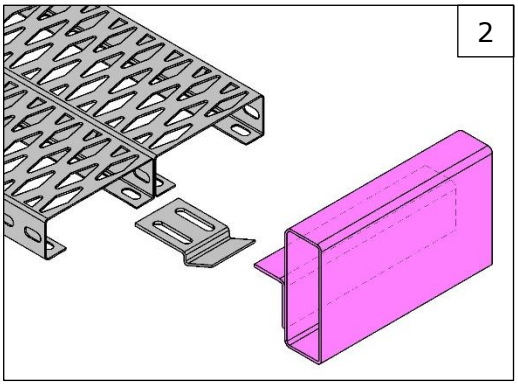
Box holder

If required use screws M6,3x25 to fix these accessories.

OPEN PLANK

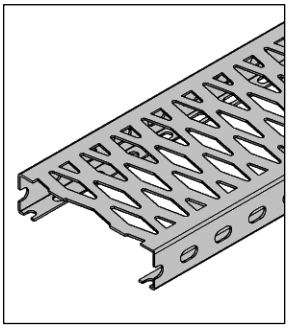




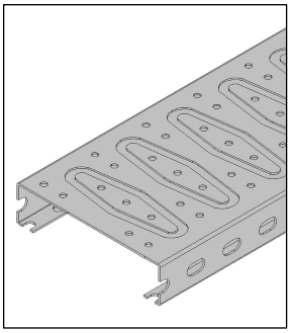


The open or closed open plank can be fixed:
- to the beams and/or secondary beam with beams locking brackets (1)
- to girder or angular, with clamping bracket (2)

In both cases use screws M8x20+N+W both for fixing the slats to the brackets, and for connecting the slats together , with a frequency of one screw per meter.

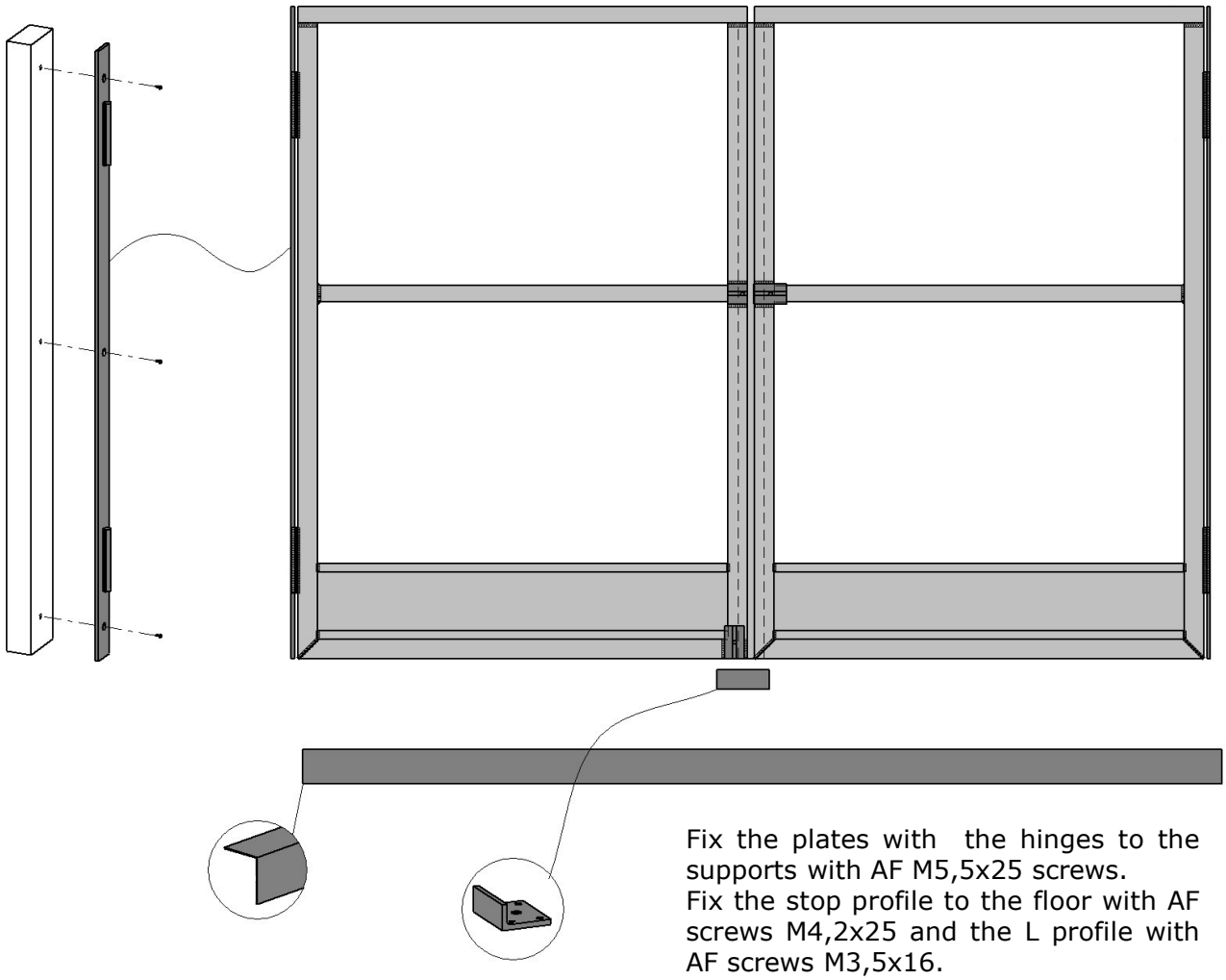


grigliato forato

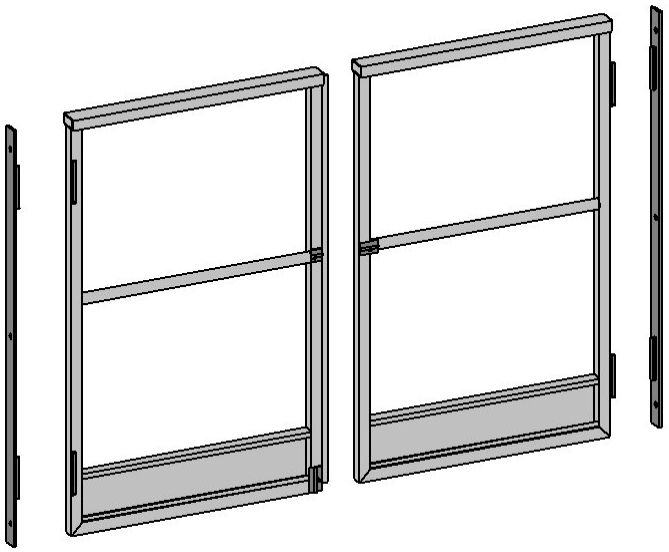


grigliato bugnato

SWING GATE

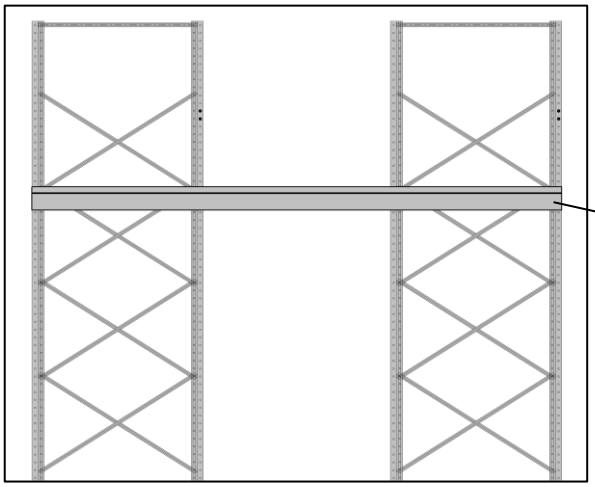


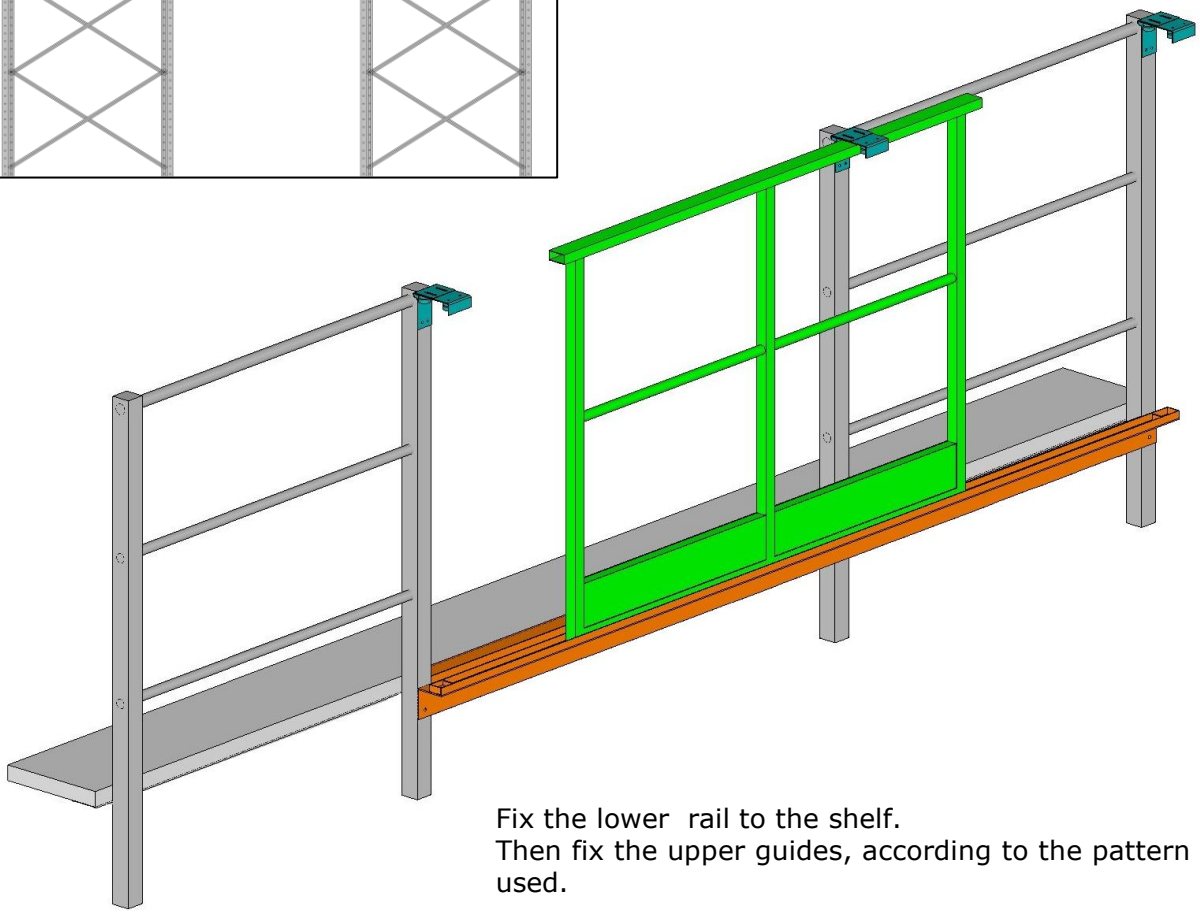
Fix the plates with the hinges to the supports with AF M5,5x25 screws.
Fix the stop profile to the floor with AF screws M4,2x25 and the L profile with AF screws M3,5x16.



ROSSS

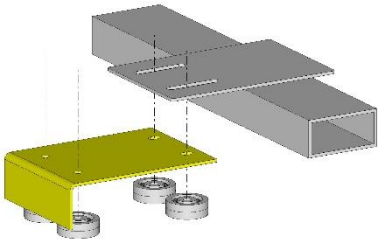
SLIDING GATE



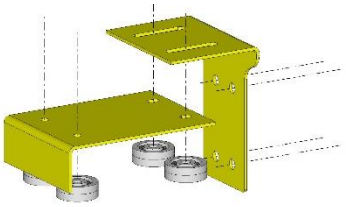


Fix the lower rail to the shelf.
Then fix the upper guides, according to the pattern used.
.

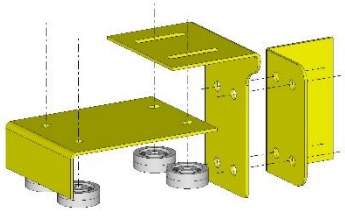
HANDRAIL ATTACHMENT



FRONT ATTACHMENT

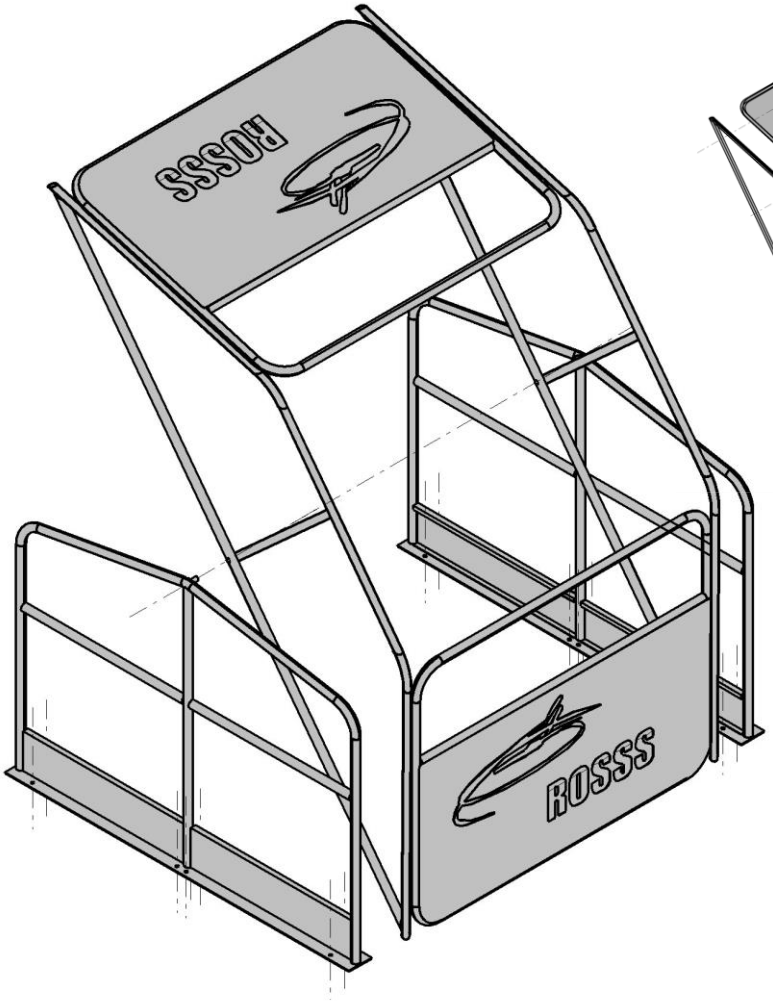


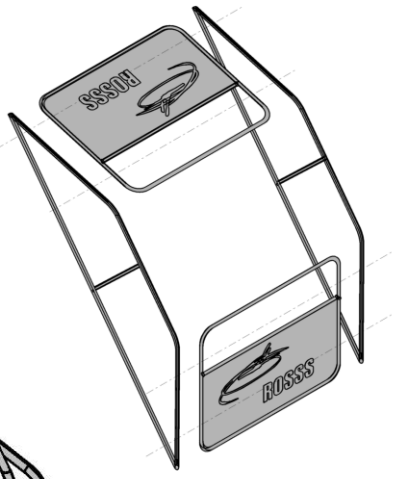
LATERAL ATTACHMENT



Kit for upper rail with possible solution

SWING GATE

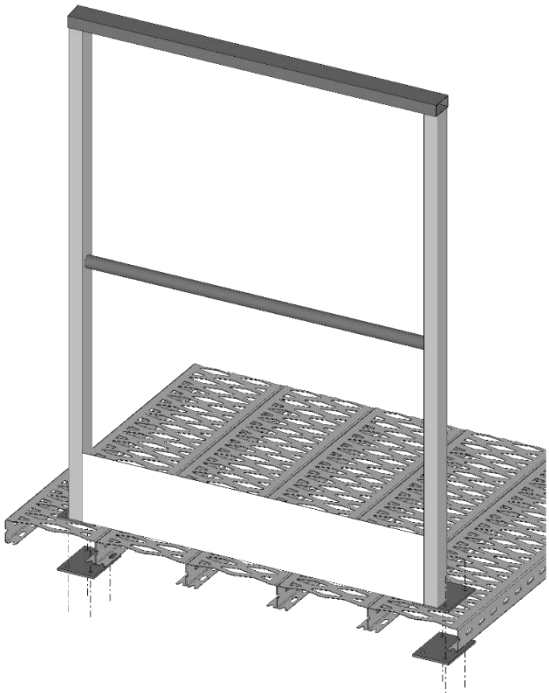




Connect the panels to the swinging elements with screws M8x80+N+W.
Then fix the SET sideways with screws M10x120+N+W.
Floor M10x80+N+W.

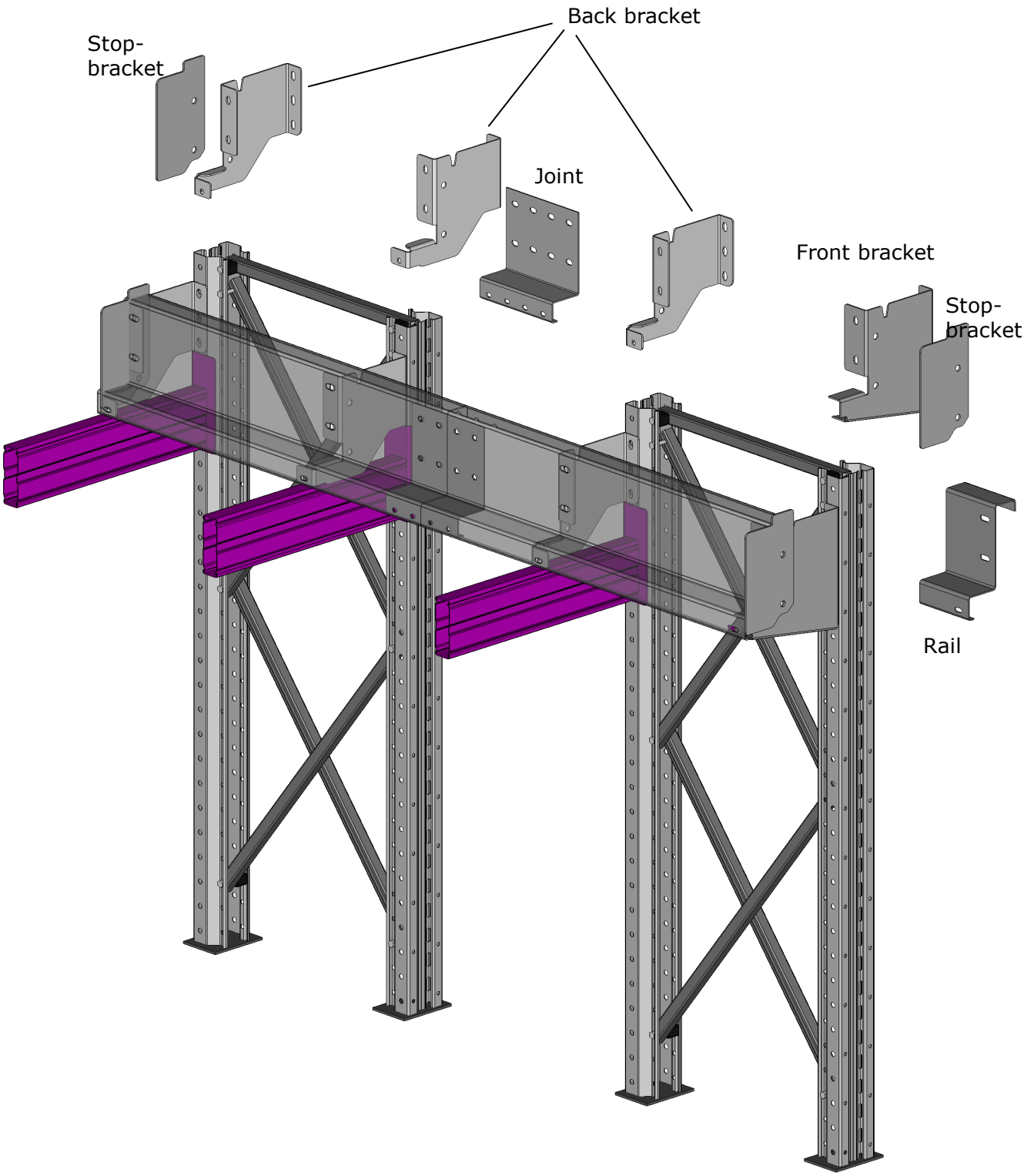
WELDED HANDRAIL

Connect the handrail to the back plates under the open plank with screws M8x35+N+W.



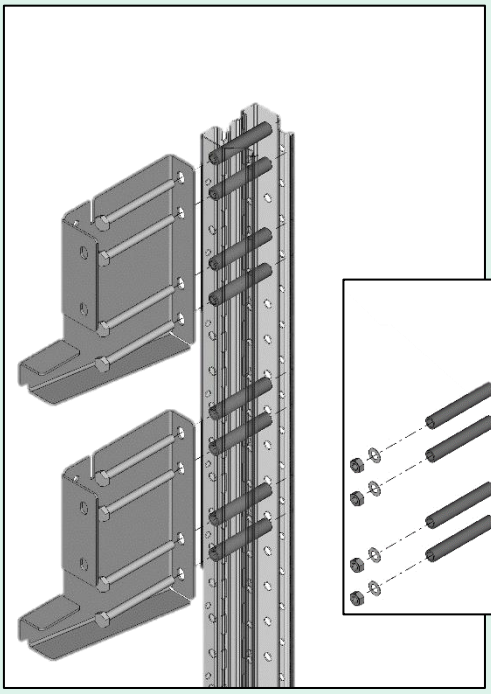
SHUTTLE

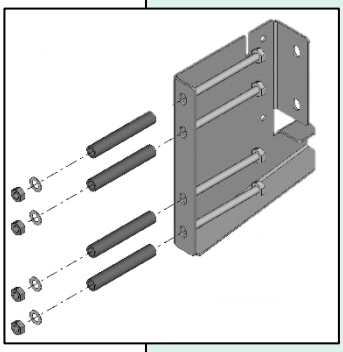
Fix the front and the rear brackets on the uprights, then secure the rails. Finally assemble the stop-brackets both at the beginning and at the end of the corridor.



ROSSS

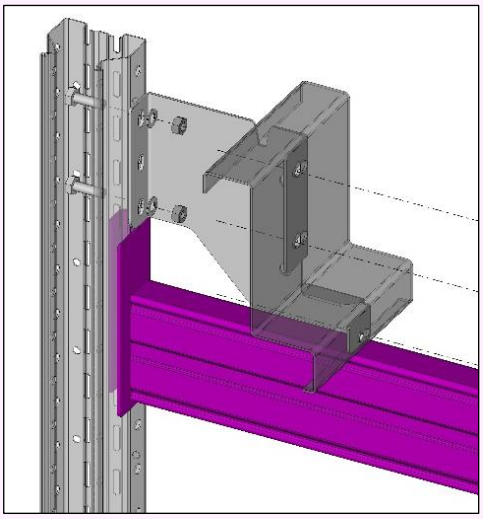
SHUTTLE





The front brackets must be fixed with screws and the shimming tube inside the upright, both in case of double bracket (central uprights) and single bracket (external uprights).

- Type 90 – M10x120+N+W+ 4 pivot 85 mm
- Type 110 – M10X140+N+W +4 pivot 105 mm
- Type 130 – M12X160+N+W+ 4 pivot 125 mm

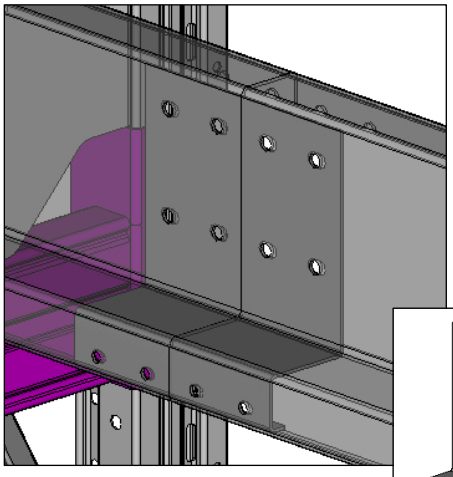


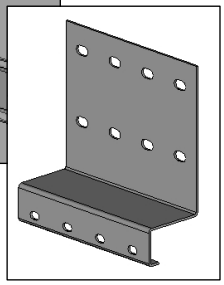
The back brackets must be placed leaned on the beam with 2 screws:

- Type 90 – M10x25+N+W
- Type 110 – M10x25+N+W
- Type 130 – M12X25+N+W

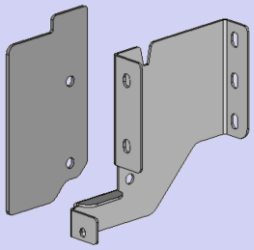
RAIL FIXING

To fix the rail to the racking you must use the screws with internal hexagonM10X20+N+Wfor the pair of upper holes and the screws M8X20+N+W for the lower hole.



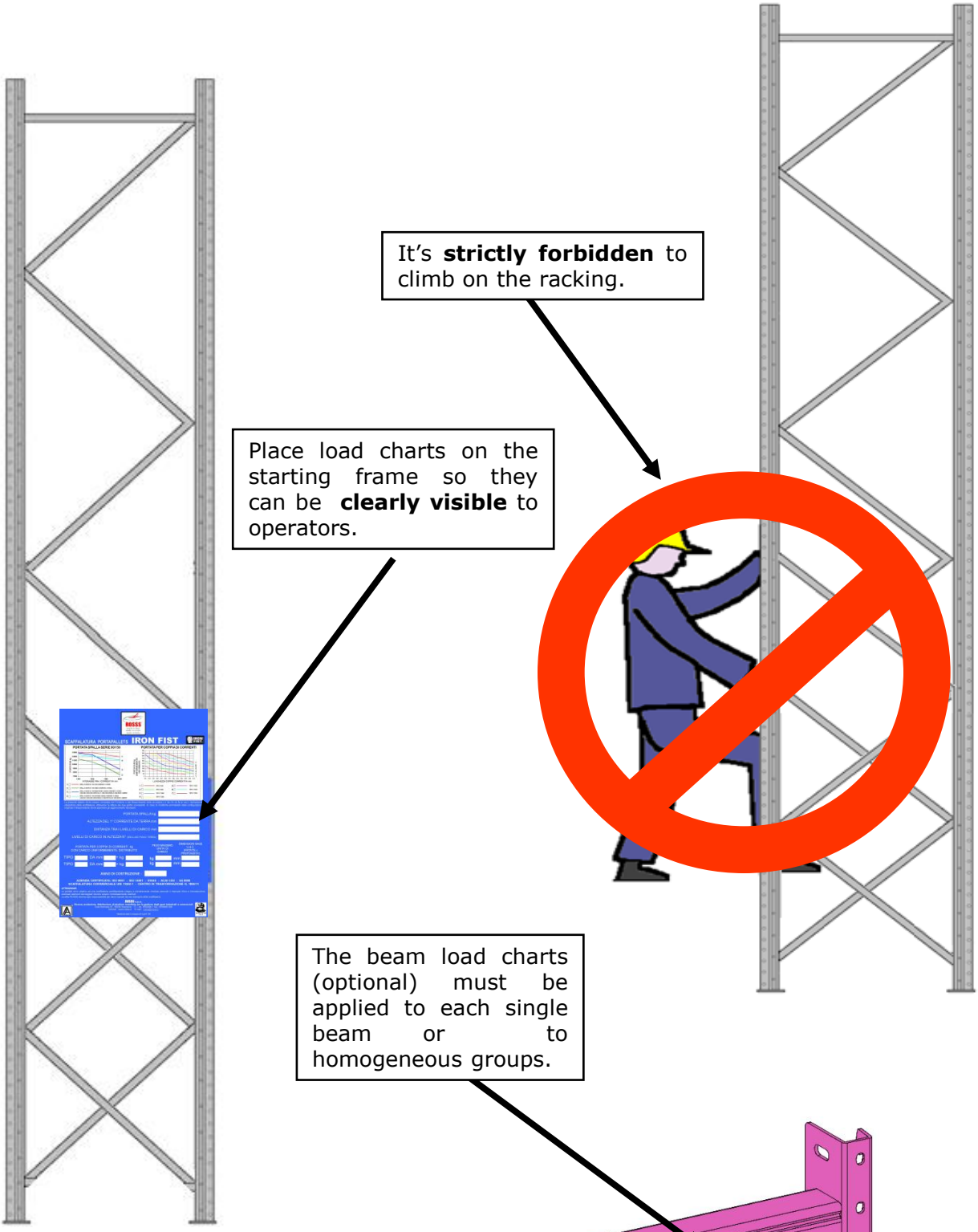


To fix the joint use round head screws with internal hexagon, M10X20+N+W in the pair of upper holes, and screws M8X20+N+W for the lower hole.



The stop-brackets must be fixed to the shelves with 2 screws M12x25+N+W, at the beginning and at the end of each rail.

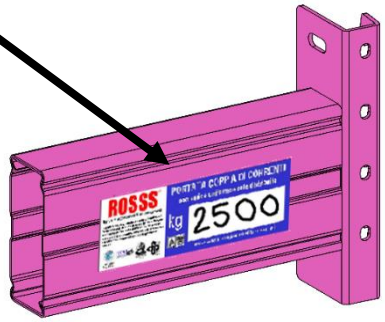
LOAD CHARTS/ PROHIBITION



It's **strictly forbidden** to climb on the racking.

Place load charts on the starting frame so they can be **clearly visible** to operators.

The beam load charts (optional) must be applied to each single beam or to homogeneous groups.



SHELVING TESTING

The Testing shall be carried out by personnel with adequate preparation and experience in the field.

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

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

1) Lay-out of the plant as per Rosss drawing. (if any).

2) Check frames and beams integrity

3) Check verticality, alignment and levelling of the structure.

4) Verification of correct frame's floor fixing.

5) Correct installation of the supplied accessories.

6) Check the correct application of load charts.

ROSSS made to last, made to resist, made in italy.	**RAPPORTO DI FINE MONTAGGIO**	COPIA PER IL **CLIENTE** 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 _____

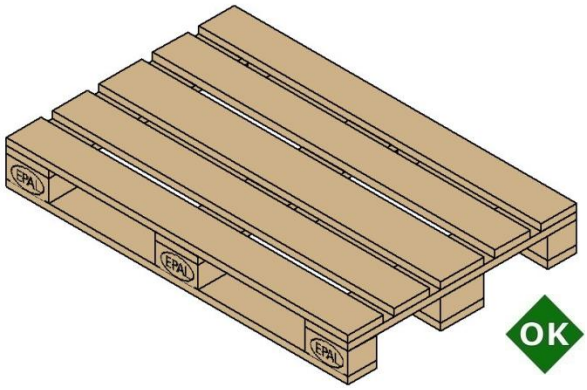
ROSSS S.P.A. - Viale Kennedy, 97 / 174 - 50038 SCARPERIA (FI) - Tel. **055 / 84001** - Fax **055 / 8400300**
Internet: **www.rosss.it** / E-mail: **rosss@rosss.it**

RFM-a

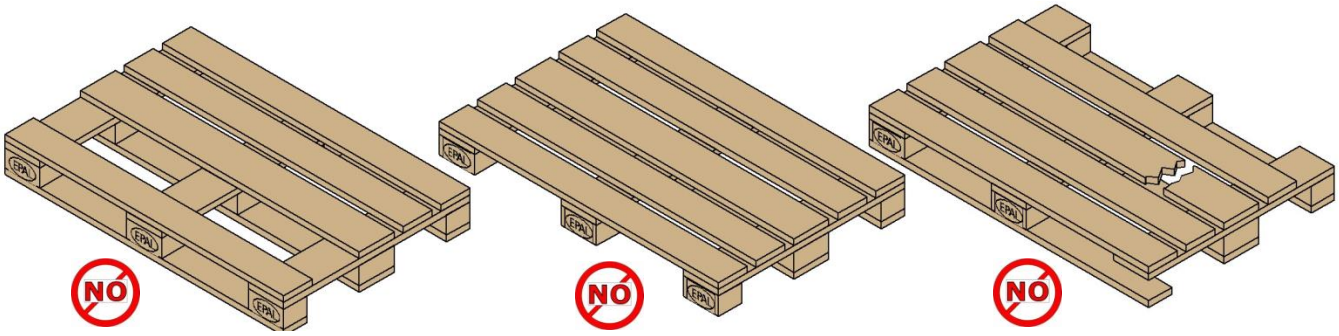
RACKING USE

PALLET

Use only EPAL-EUR pallets, or pallet with equivalent characteristics.

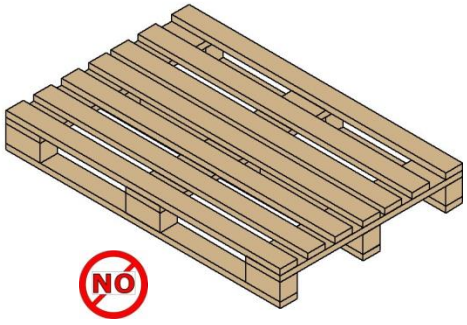


Do not use pallets in bad condition or damaged
(damage classification according to UNI EN 15635 Appendix C)



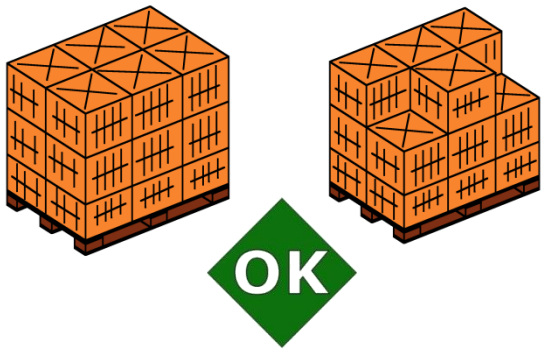
Do not use disposable pallets

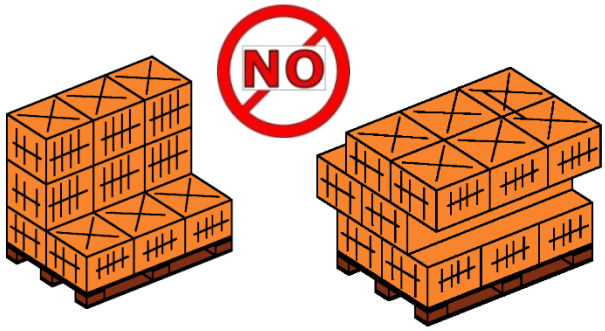
UNI EN 15635



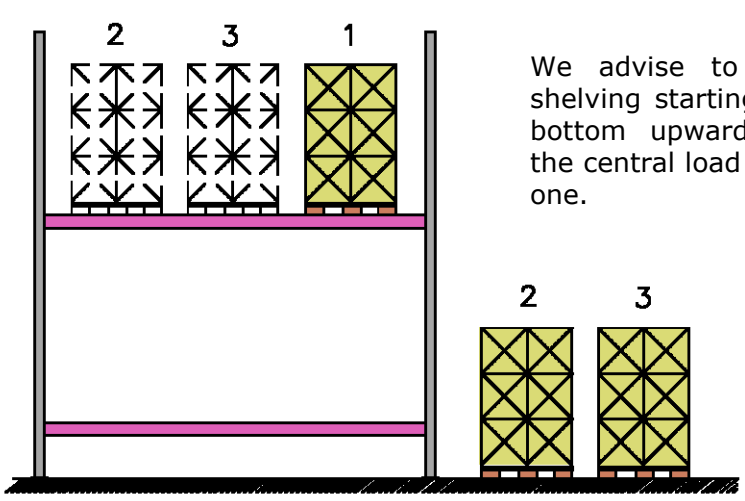
SHAPE AND POSTIONING OF THE LOAD ON THE PALLET

The pallet must have a regular shape. In addition, the load must be evenly distributed.

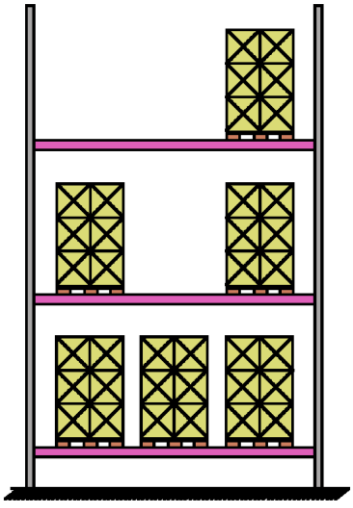




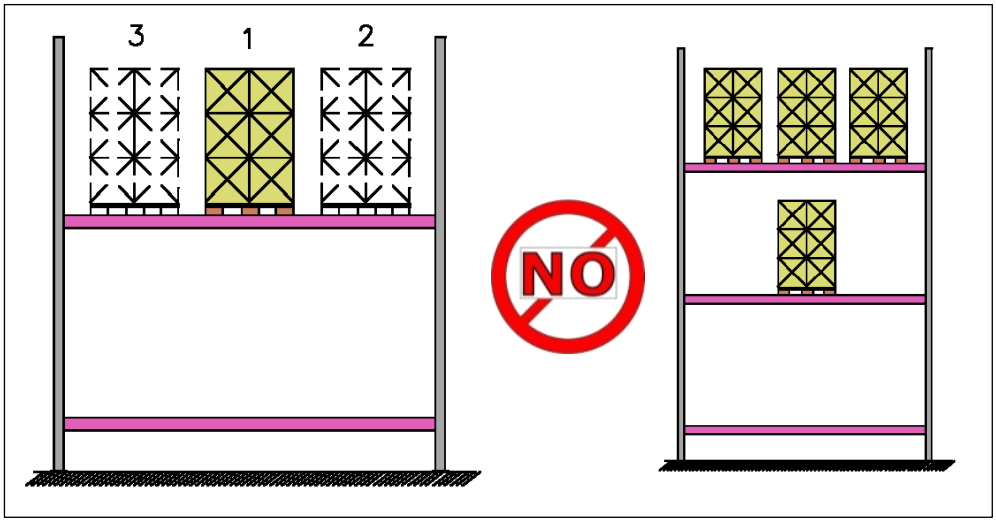
PALLET LOADING AND UNLOADING SYSTEM



We advise to load the shelving starting from the bottom upwards, placing the central load as the last one.

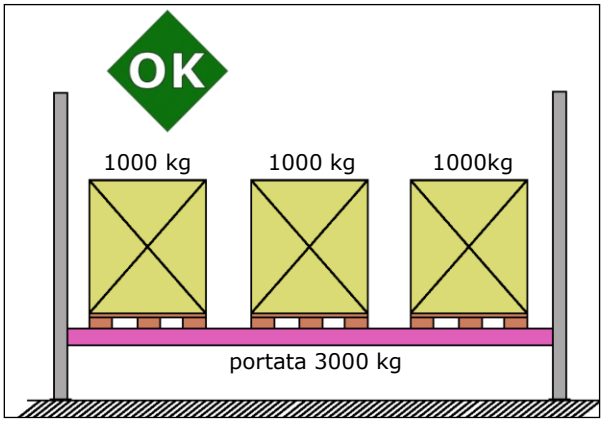


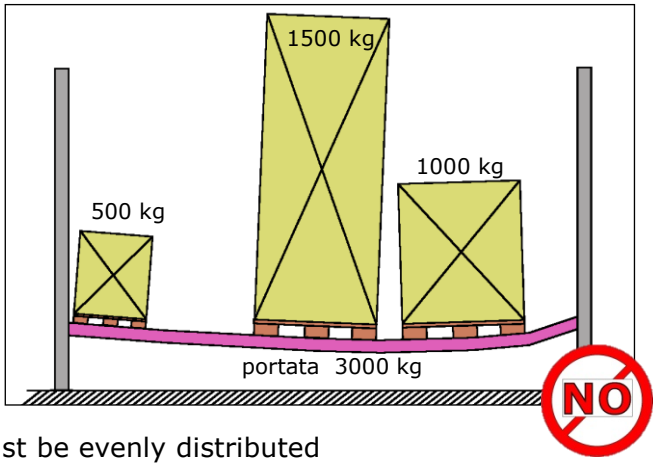
RECOMMENDED LOADING SEQUENCE



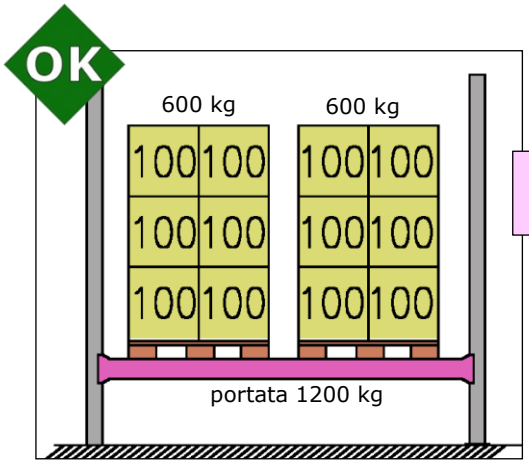
ROSSS

WEIGHTS - DEFLECTIONS - ALLOCATION

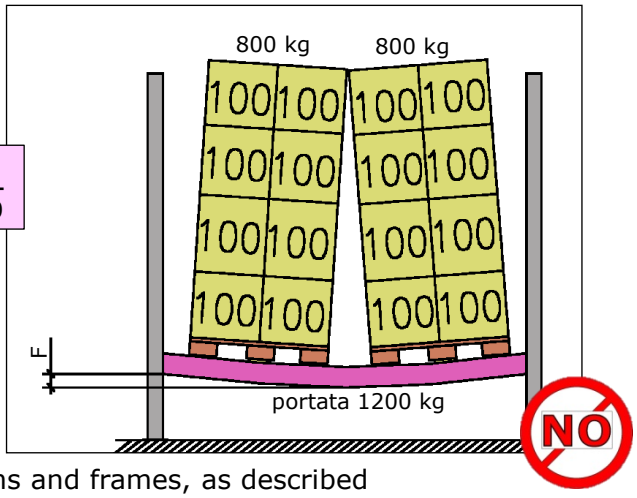




The maximum load must be evenly distributed



$$F \leq \frac{L}{200}$$

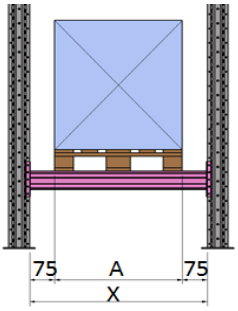


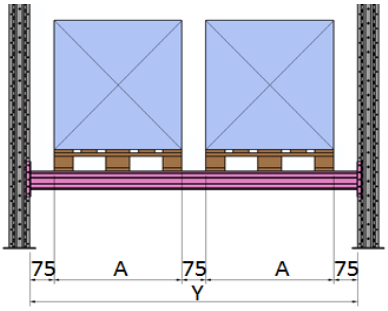
Do not exceed the maximum load of beams and frames, as described in the relevant load charts.

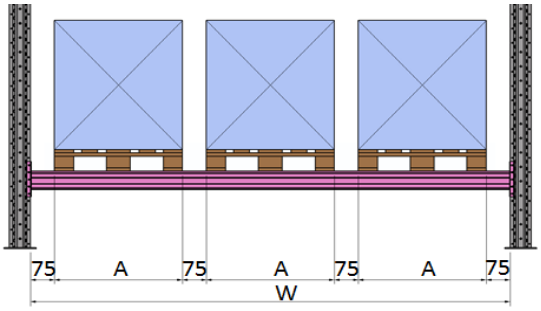
If the beam deflection exceeds 1/200 of the length, the load must be reduced.

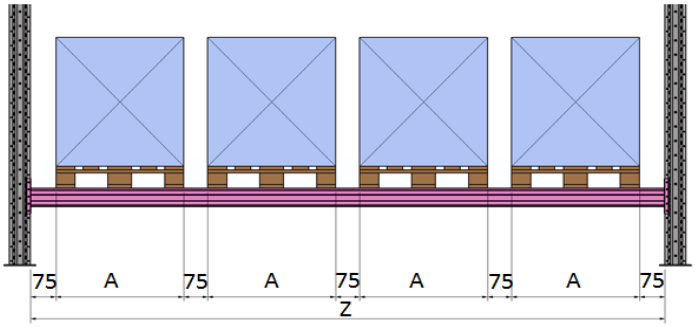
POSITIONING OF THE LOAD ON THE BEAMS

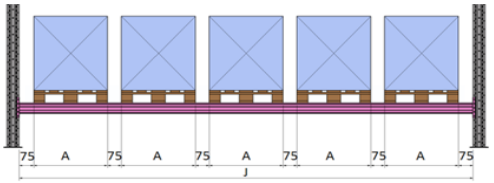
UNI EN 15620





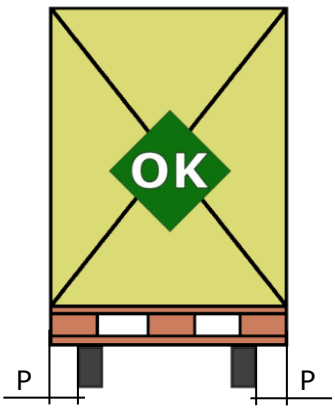


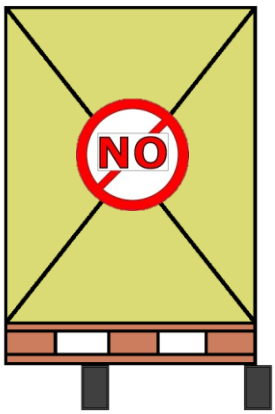


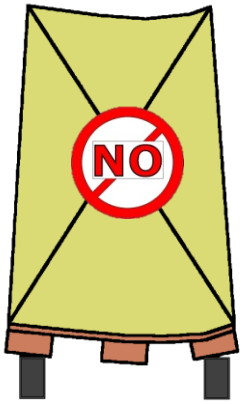


lato inforcamento	BEAM lenght				
A	X	Y	W	Z	J
Pallet	1 pallet	2 pallet	3 pallet	4 pallet	5 pallet
800	/	1825	2700	3575	4450
1000		2225	3300	4450	
1200	1350	2700	3900		

POSITIONING OF THE PALLETS ON THE BEAMS







P = 50

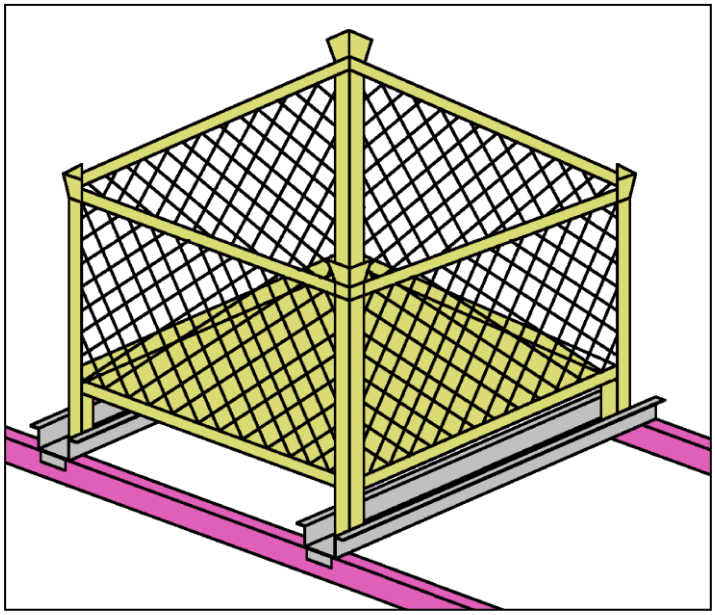
Arrange the pallets in a centered position between the two beams, with a projection for each side between 25 and 100mm.

Handle the pallet by the correct fork-lift side.

UNI EN 15620

STORAGE OF LOOSE LOADS

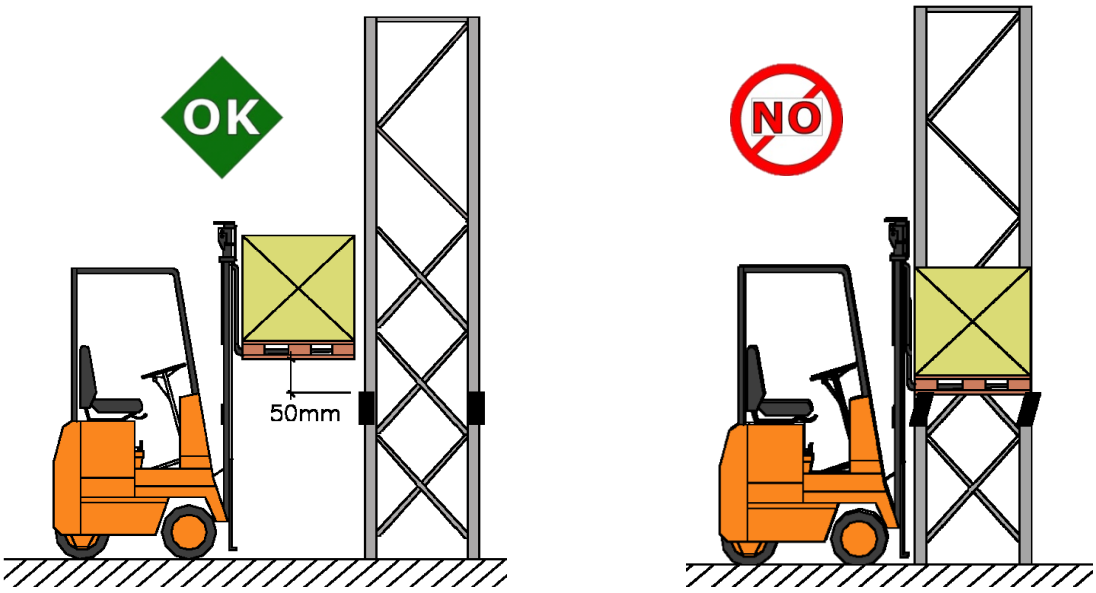
To storage loose loads use only containers with 4 side walls.
In case of loads with feet, use the specific accessories.



WARNINGS FOR FORKLIFT DRIVERS

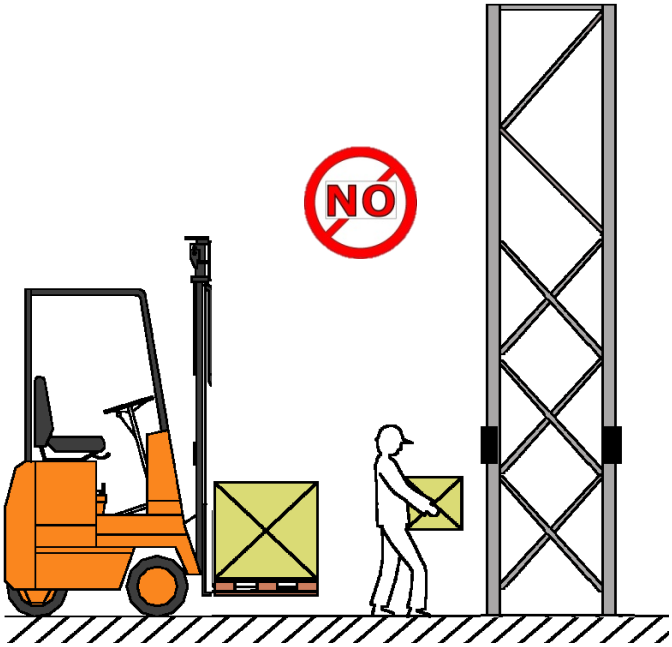
Forklift drivers must be properly trained and while driving use always the utmost caution.
At the end of the service, the driver must remove the truck ignition key.
Adjust the speed of the trolley according to the characteristics of the route, the nature of the load and the possibility of stopping the vehicle.
When operating the trolley, take the necessary measures to ensure the stability of the vehicle and its load.
Remember that it is forbidden and it is very dangerous to carry people on the forklift.
The pallets must be placed slowly on the rails to reduce the impact on the shelving following the instructions in this manual.
A trolley suitable for the type of loads and suitable for operation within the structure must be used.
The forks of the trolley must have a width SUITABLE for the length of the pallets and a length such as to lift the pallet completely safely.
It is also forbidden to move with the forks raised.

WARNINGS FOR FORKLIFT DRIVERS

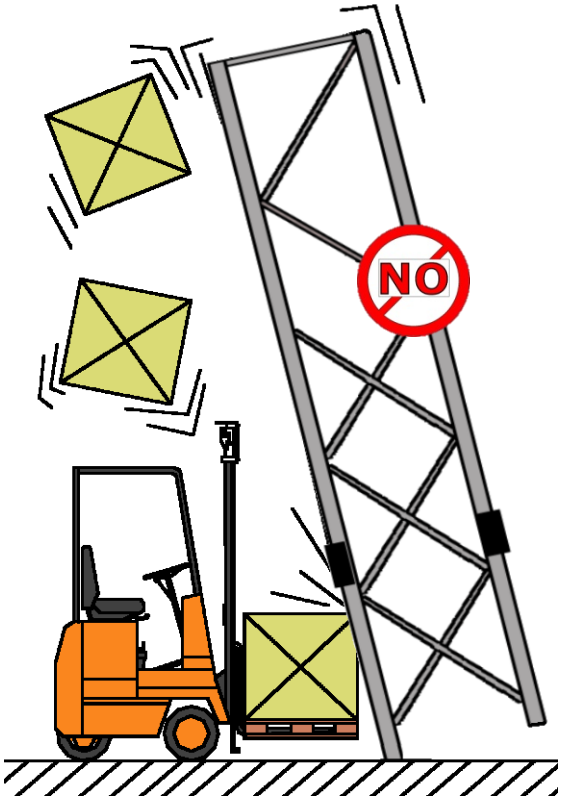


The pallet must enter the space raising for about 50 mm from the level of the beams do not creep the pallet on the beams

OBLIGATIONS AND PROHIBITIONS



The operators must not stand between the forklift and the structure.



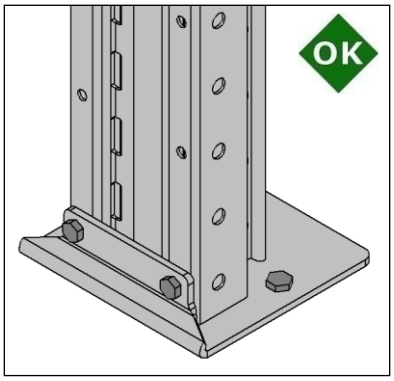
Don’t bump into the shelving

ROSSS

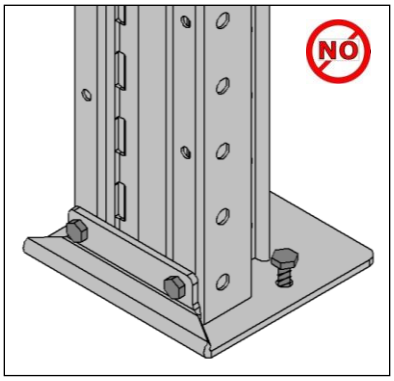
MAINTENANCE

FOOTPLATES

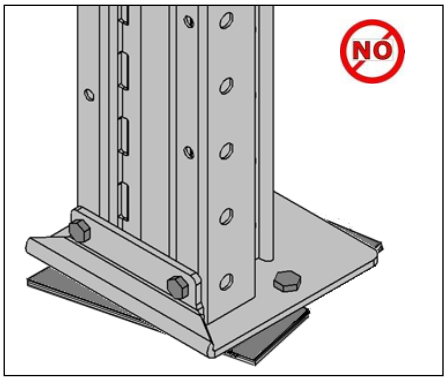
The footplates must be properly fixed to the floor, with the thickness shims well centered under the footplate.
If the footplate are not correctly fixed, you have to unload the structure and restore the conditions as described above.



Correct Assembly



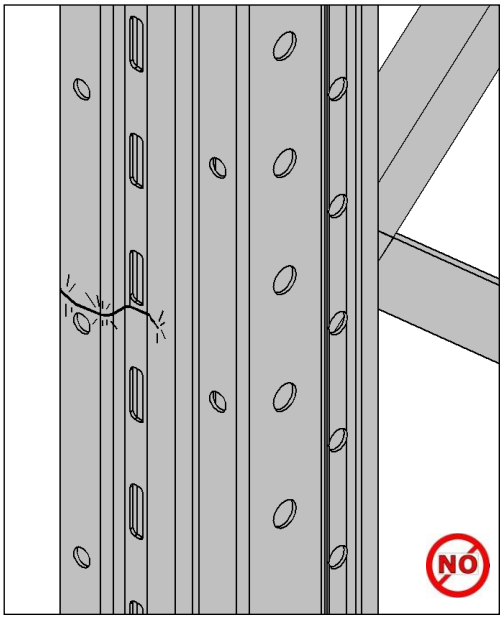
Dowel partially extracted



Thickness off-center

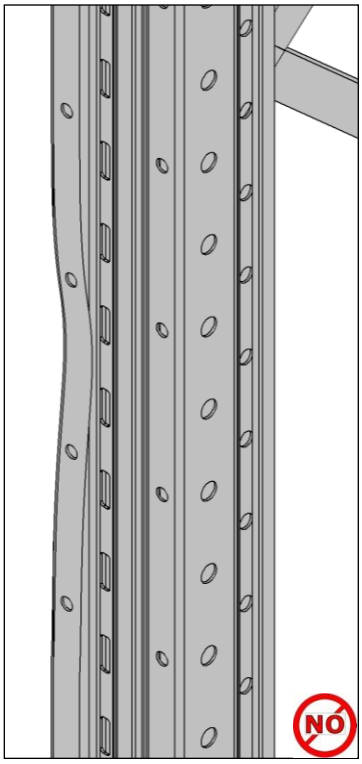
FRAMES

The frames must be intact in all their components.
If the uprights, cross-bars or diagonals show anomalies, it is necessary to unload the shelving and replace the damaged parts.



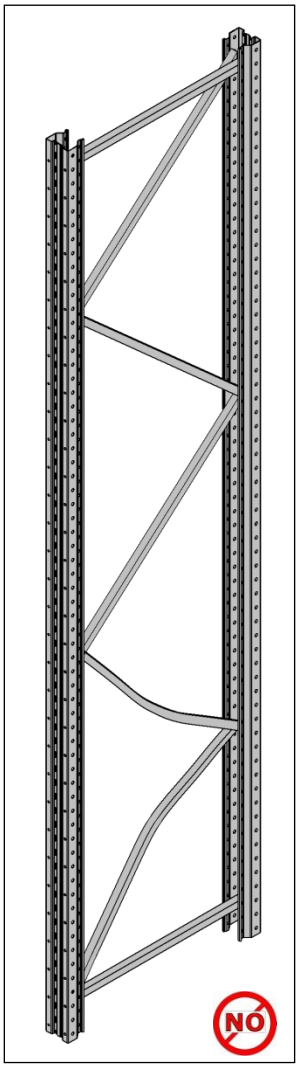
Broken upright

It is recommended the use of adequate protection for the upright at the starting side of the structure above all in the areas of the plant of greater risk of impact by trucks.



Bent upright

UNI EN 15635

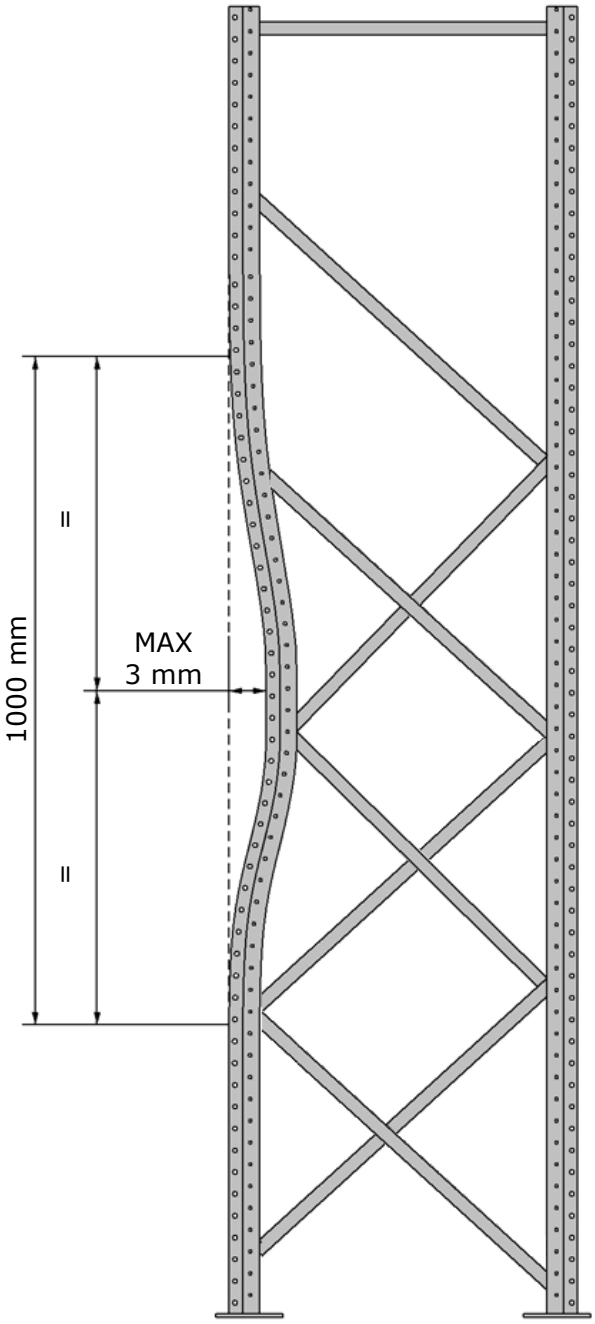


Bent diagonals

PERMANENT DEFORMATION

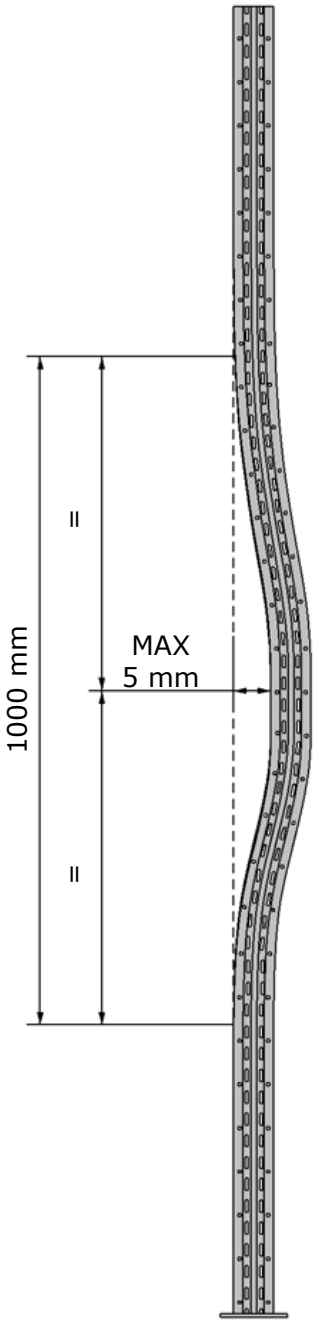
UNI EN 15635

The maximum permanent deformation allowed for one upright on the frame level is 3 mm.
The measurement refers to the maximum point of inflection, measured at the center of an interval of 1000 mm



Lateral view

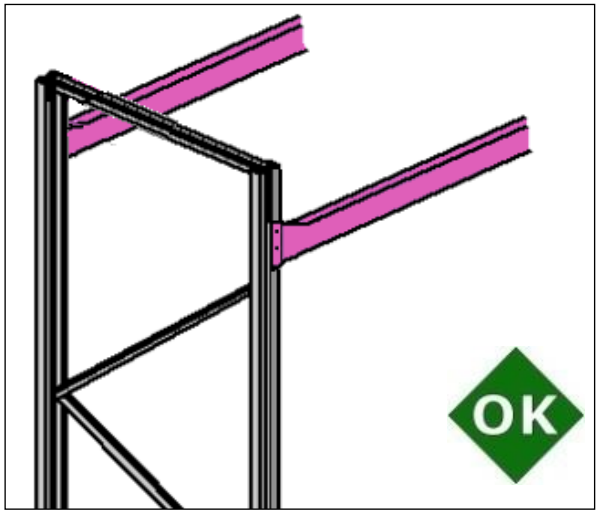
The maximum allowed permanent deformation for one upright in the corridor level is 5 mm.
The measurement refers to the maximum point of inflection, measured at the center of an interval of 1000 mm.



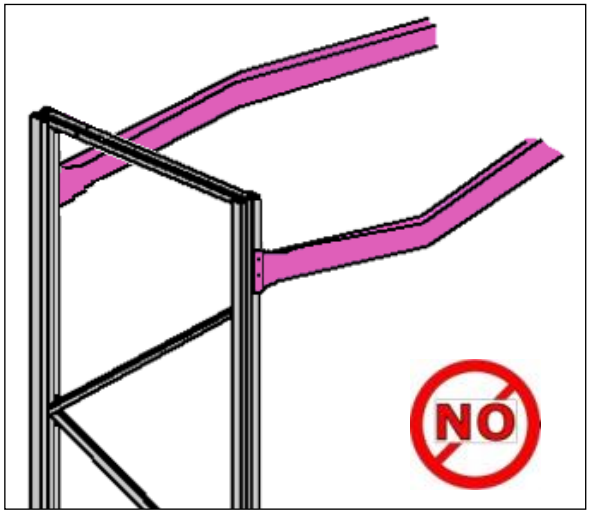
Front view

BEAMS CHECK

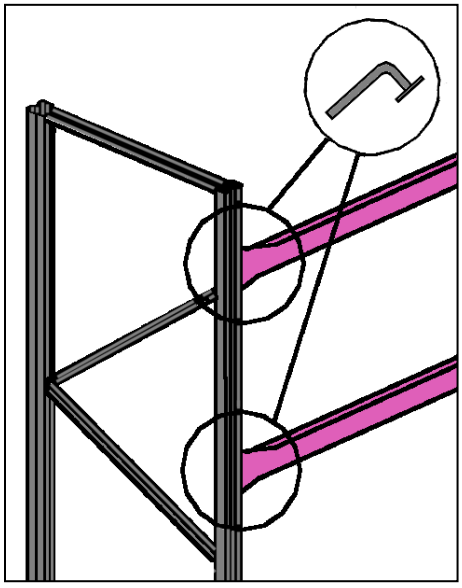
Check the integrity of the beams. In case of damage or deformation, the racking must be unloaded and the damaged parts replaced.



Beam in optimal condition



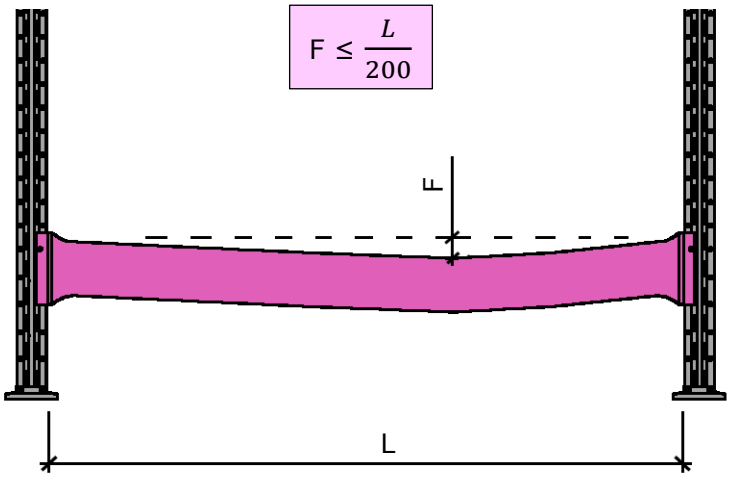
Damaged beam



Check the presence of safety pins on the beams and on the upper and rear connections; reinsert them where missing.

MAXIMUM PERMANENT DEFORMATION

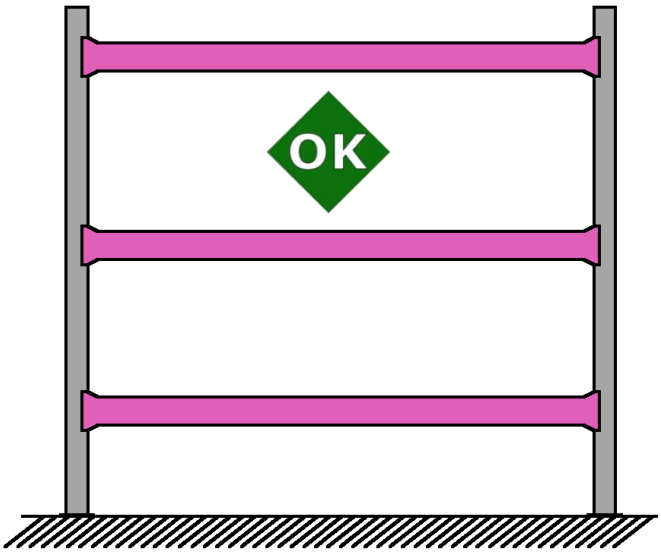
$$F \leq \frac{L}{200}$$

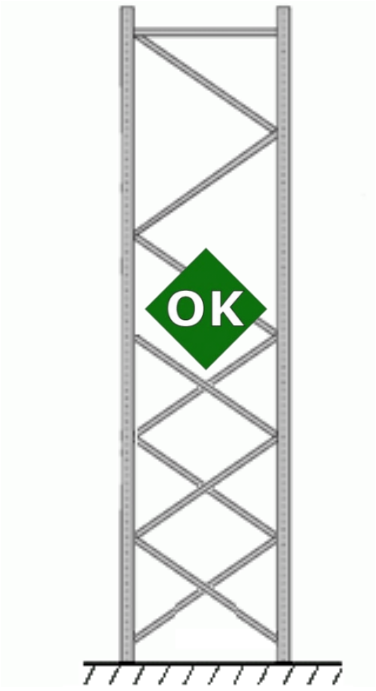


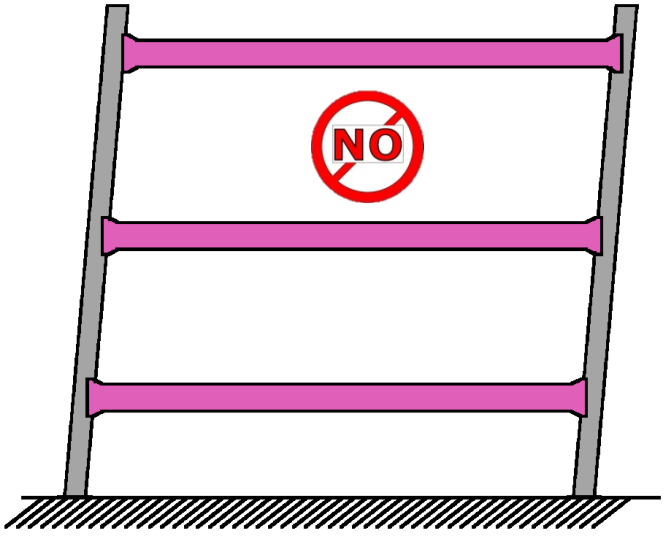
UNI EN 15635

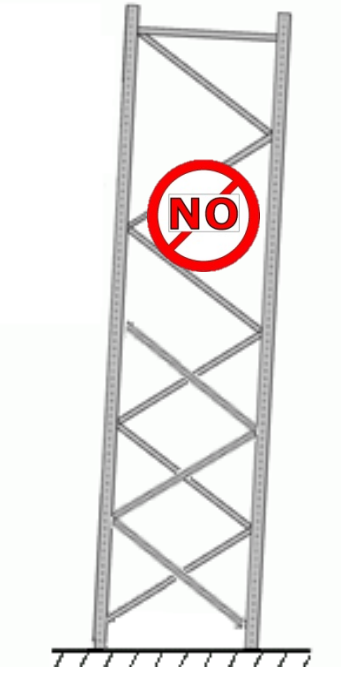
PERPENDICULARITY

In case of a perpendicularity out of tolerance with respect to the support surface, unload the shelving and restore the structure within the tolerance limits.









PERIODIC CHECKS AND MAINTENANCE

Inspections

Provide periodical inspections to check anomalies that may not be found during normal use of the facility.

By carrying out scheduled maintenance on the plant, it is possible to avoid dangerous situations that can cause accidents and injuries, and prevent interruptions of the activity by optimizing the use of shelving.

Scheduled inspections avoid:

1) Accidents to people

2) Damage to materials

3) Interruption of production

4) Loss of function and consequent economic losses

5) Criminal proceedings against the purchaser for failure to carry out proper maintenance.

METHODS OF MAINTENANCE AND MONITORING

Type of checking	Frequency
Conditions of the pallets	six-monthly
Frames' integrity and fixing	six-monthly
beams integrity and/or fastening	six-monthly
Integrity and fixing of rails	six-monthly
Integrity and fixing cross bracing	sis-monthly
Verification of rope tension	annual
Verticality and levelling of the structure	annual
Plant general lay-out	six-monthly
Weight, dimension and loads arrangement	six-monthly
Load charts	six-monthly
Painting	annual

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

When a situation of immediate danger is identified in the plant, it is advisable to unload the material from the shelving in order to avoid accidents to the people involved.

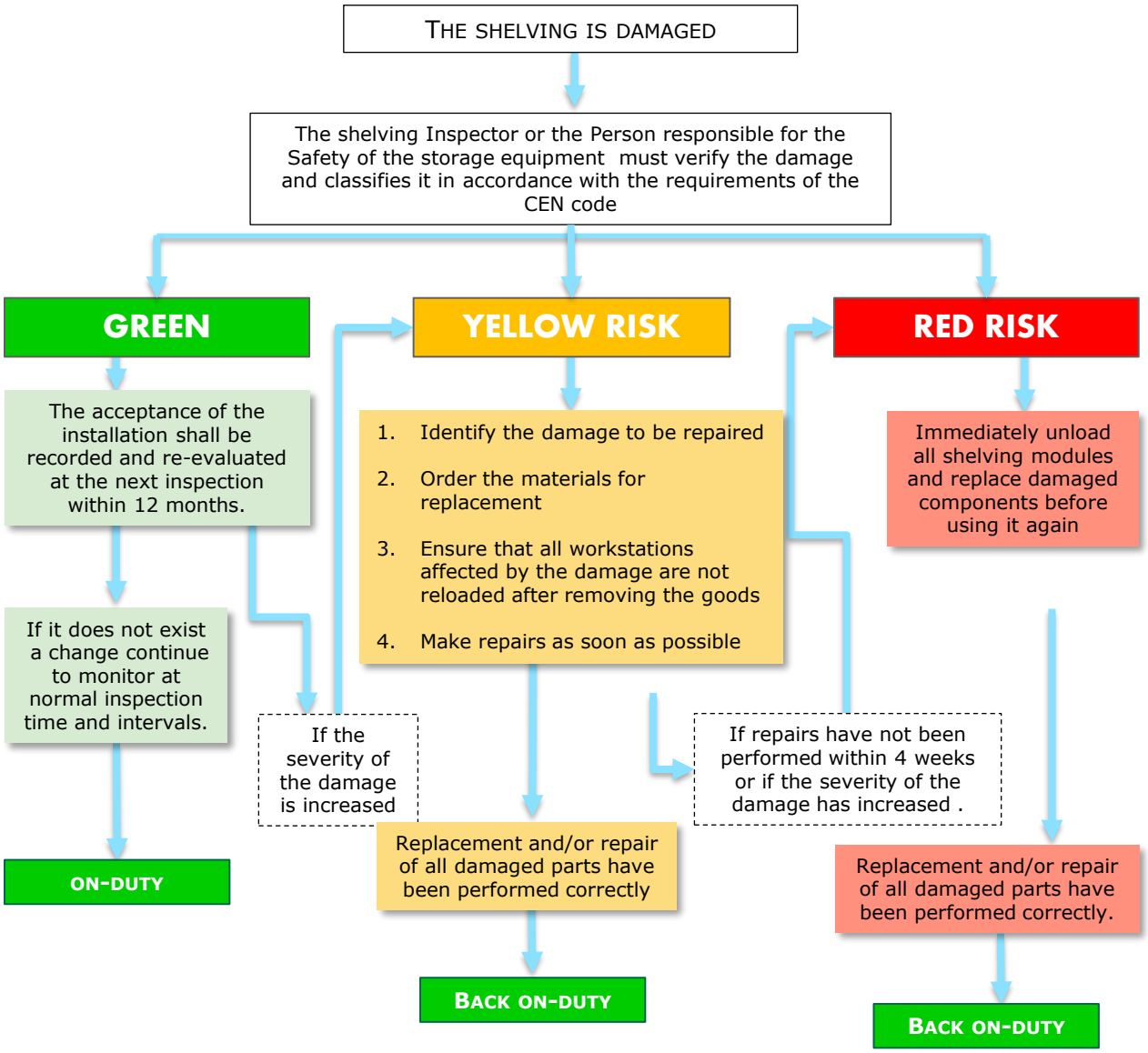
Upon request, ROSSS technicians will examine the problem, determining the corrective action to restore the plant as soon as possible and with the minimum interruption of the activity.

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

It is possible, if requested , to agree a maintenance contract so that the checks will be carried out by specialized team of ROSSS. This ensures maximum use of the warranty period and optimal use of the structure avoiding dangers due to occasional interventions performed by non-specialized personnel.

PROCEDURE FOR DAMAGE CLASSIFICATION

In case of damages take care to estimate them as soon as possible to assess the potential danger of collapse (see points 9.5 and 9.6). Appropriate action should be initiated using the following flow diagram as a guide.



Inspection procedure flowchart, Inspection, Evaluation, Intervention

ROSSS

MAINTENANCE AND CONTROL SHEET

REGISTER OF MAINTENANCE ACTIONS

N°	Date	Inner action	Action description	Action reports