Space Plus USA Selective Pallet Rack Installation Instructions

Space Plus USA recommends that this product be assembled only by qualified personnel, experienced in assembly of storage racks, and knowledgeable of all safety regulations and practices. These instructions are intended only for use by qualified individuals working with all proper safety equipment.

Storage racks are very heavy, and if not properly secured during installation and assembly could fall, causing injury or death as well as damage to equipment and property.

Atlas Mega Steel recommends that all users of its products should read and understand AMS Installation Instructions.

Space Plus USA's Racks must be assembled only by trained personnel, experienced in the correct assembly of racks, and should be familiar with the following instructions:

Our racks are intended to be installed indoors, do not install racks outdoors. Outdoor usage requires consideration of several factors like wind loads, snow loads, and many environmental conditions that are not normally considered in rack design.

Prior to the start of installation, the installer should:

1) Make sure all members of the installation crew are trained about the installation procedures and any safety procedures necessary to establish a safe working environment.
2) Check to make sure that all materials have been received. Materials should be checked against the delivery tickets and or Bill of Lading.
3) Notify the shipper immediately if any shortages exist with respect to the delivery ticket. Inspect the materials and make sure there are no damages, in case there are damages inform the shipper immediately of any product damage.
4) Organize all materials, so they can be quickly located.
5) Verify the proper location of the racks with the project manager, owner or site contact person.
6) Clear the area where the rack system will be located.
7) Check the area for all obstructions, such as lights, doorways, ducts, electrical panels, pipes, building columns etc. Any such obstructions should be flagged with tape and called to the attention of the site contact person, and plans should be made to avoid or remove the obstruction to insure a clear area is ready for the installation of the storage racks. If it becomes necessary to modify the configuration of the racks in any way, prior approval must be obtained from the authorized person, and the changes must comply to Space Plus USA guidelines.
8) Check the floor specs. Space Plus USA racks are to be installed on a concrete floor. Since concrete floors vary greatly in design and load carrying capacity, Space Plus USA cannot guarantee that any particular concrete slab is adequate to support a specific rack installation. The characteristics of

the slab should be obtained from the building engineer before the racks are specified, so that the rack supplier can design the rack to suit the slab. The floor slab must be thick enough to support the load from the columns after the racks are fully loaded and to accept the installation of the anchors. A six-inch thick slab is suggested for normal duty pallet racks, however, the customer's building engineer should verify that the floor is adequate. The floor should be level so that a plumb installation of the rack can be done.

9) Establish the rack lay out by determining the aisle dimensions and the rack position. Determine a starting line and snap chalk lines to layout the floor. Make sure adequate aisle widths are established. Down-aisle chalk lines should be made at the front face of the rack columns from the start line.

a) Installation of the Starter Bay.

Space Plus USA Teardrop Selective Pallet Rack is easily installed by following the procedures:

Erect the first rack bay making sure that the beam elevations are correct. Stand up two upright frames and separate by the length of the load beams.

Mark the desired height of the first load beam on the face of each upright frame.

Slide beam downward into tear drop holes until it completely seats and the safety clips engage.

Install second beam on the opposite side of upright frames, at the same height of first beam.

Move and align bay so that front edge of upright bases is on chalk line.

Install subsequent beam levels from the lowest to the highest level.

It is recommended to use a lift truck to stand and position frames.

Make sure that the bay is square and plumb in both the down-aisle and the cross-aisle directions before anchoring.

Since few floors are perfectly flat, shims may be needed to achieve cross-aisle plumbness. When shimming the racks, back-to back rows should not be allowed to lean towards the flue space (towards each other).

The rack should be installed plumb to within ¼" per 10 feet of height. Square the rack bay by comparing opposing diagonal dimensions of the level. Once the rack is plumb, all bolts should be tightened and all locking mechanisms checked.

For teardrop style racks, the installer must make sure that all the connector pins are properly engaged in the column and that the safety clips that prevent the beams from becoming dislodged are working well.

A 48"long carpenter's level is a good tool for checking level and plumb conditions on storage racks of average proportions. A vertical tolerance of 1/8" in 4 feet is generally acceptable.

Upright frames should be positioned so that the lowest diagonal bracing is pointed downward toward aisle side diagonal bracing aisle side chalk line.

b) Rack Anchoring

Each upright frame has 2 footplates, each with 2 anchor holes for floor anchoring, for standard pallet racks, Space Plus USA recommends the use of (1) anchor bolt per column and that the anchor be ½" diameter and 3-1/2" of embedment into the floor. Embedment is defined as the amount of the anchor that is beneath the surface of the floor after tightening. If the foot plate is a larger one, for example the 8" x 5" seismic footplate with four holes, at least (2) anchors per column should be used in opposite corners of the base plates whenever possible.

When installing the anchor bolts, the installers should refer to the anchor bolt instructions from the anchor bolt manufacturer to obtain the torque values for the anchors. The anchor bolt torque is less because over-tightening the anchor bolt will fail the holding device and possibly pull the anchor out of the floor.

We always recommend anchoring, but some codes suggest that anchors may be omitted for 96" in ht. racks or less that are manually loaded and unloaded in low seismic areas.

c) Installation of the Remaining Bays

Follow the same procedure as described in point b (installation of the starter bay) using the uprights for each remaining bay. It is very important to make sure that the rows are straight on the chalk line and that subsequent frames remain plumb in both the down-aisle and the cross-aisle directions. The rest of the rack row can be set up before anchoring. All footplates of the remaining bays should be anchored as described in point b (Rack Anchoring). Do not attempt to pull a rack into plumb after fasteners have been tightened or use excessive force to plumb a rack. This may bend or otherwise damage the rack members. Periodically check plumb as the rack installation proceeds. It could be very difficult to plumb multiple bays of rack that have been installed out-of- plumb.

d) Accessories

Row spacers: Use a minimum of 1 row spacer every 120" high. Vertical placement of row spacers should be in line with upright column's horizontal braces, so they are at the same elevation as the frame horizontal brace.

The top row spacer should be installed near the horizontal brace that is just above the topmost diagonal. The bottom row spacer should be installed near the horizontal that is above the bottom diagonal. If more than two row spacers are needed, the remaining ones can be uniformly spaced, however, it is still a good idea to install them at or near a frame horizontal brace.

The installation of the post protectors should be considered before anchoring the racks because some post protectors styles share a common anchor bolt with the rack. Other types of post protectors can be installed independently after the rack installation has been completed.

Other accessories, such as crossbars (pallet supports) or wire decking, should be installed after the rack row frame and beam installation is complete, all the bolts are tightened and the rack has been anchored.

Any wire decks that are non waterfall must be tek-screwed in place so they cannot fall between the beams. Installers should not step on wire decks or crossbars.

Tighten all accessory nuts and bolts (row spacers) and double check anchor connections to complete the installation process.

Determining Space Plus USA Pallet Rack Capacity

To calculate the load capacity of your pallet racks:

1) Determine the maximum distances between beam levels.

2) Determine the distance from the floor to the first beam level.

3) Compare distances in Steps 1 and 2, use whichever figure is greater, refer to the capacity charts for uprights shown on the Space Plus USA catalog, depending on the type of upright used.

4) Capacities shown are based on interior usage.

5) Capacities are for selective rack only.

6) The capacities do not consider seismic loading.

7) Each column/post of each uprights should be anchored to an appropriate concrete floor.

8) Capacities are based upon installation in a plumb condition.

9) Beams' capacities are per pair of beams, and therefore should not be doubled per level.

10) Capacities are total per upright, assuming equal loads on both columns. The listed capacity is the maximum weight that may be stored per individual rack bay. Therefore, do not double the capacity of each uprights when calculating the capacity of a single bay.

11) When calculating the capacities, consider the weight of the rack system, that has to be reduced and deduct the weight of uprights, beams, decking, and accessories that are parts of the rack section.

12) Local building inspectors may require adherence to a specific code, which can reduce the listed capacity. Verify the applicable code and the capacity rating under that code with Space Plus USA.

13) If any of these conditions do not apply to your application, or if you are not sure if they apply, do not use the chart and consult Space Plus USA .

14) If you change the configuration, for example adjusting storage levels you will affect the load capacity, and with it, the structural integrity of the rack system you are intervening. Before adjusting the rack configuration, check the capacity chart or contact Space Plus USA.

These installation instructions are guidelines for the proper installation of Space Plus USA selective pallet racks. The procedures herein described are intended to assist in the installation of Space Plus USA selective pallet rack. The methods described have been developed over a period of time and have been proven to be reasonably successful. They do not imply that other methods better suited to field conditions might not be equally effective. Space Plus USA suggests strict adherence to all standard safety practices and further suggests all methods be tested and tried before being put into operation.

These installation instructions are only for Space Plus USA standard selective pallet racking.

The proper installation of the racks is the responsibility of the purchaser and is not covered by any warranty of Space Plus USA.

The purchaser should not substitute any components with those of another manufacturer. Space Plus USA has no responsibility or warranty obligations regarding materials not manufactured by it that are used in connection with Space Plus USA Steel racks.

Space Plus USA further explicitly disclaims any responsibility for damage or injuries resulting from field interpretation or use of these suggestions.