STEELSPAN
STORAGE SYSTEMS

ASSEMBLY INSTRUCTIONS

Powder Coated Full Bay

Powder Coated Add On Bay

Hot Dip Galvanised Full Bay

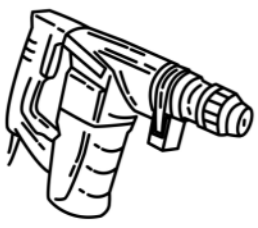
Hot Dip Galvanised Add On Bay

PALLET RACKING

Full Bays and Add On Bays | Powder Coated and Galvanised

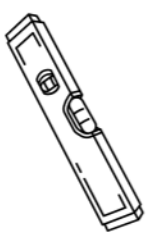
USING FULL BAY AS AN EXAMPLE

YOU'LL NEED



Hammer Drill

Impact Driver



Level

Hammer

Mallet

DISCLAIMER

This document is supplemental to AS 4084-2012. This document must be read in conjunction with AS 4084-2012. It is the responsibility of the installer to install the racking in compliance with AS 4084-2012. Steelspan does not take any liability or responsibility for the installer not complying with the provisions of AS 4084-2012 as they apply to an installation of the relevant racking.

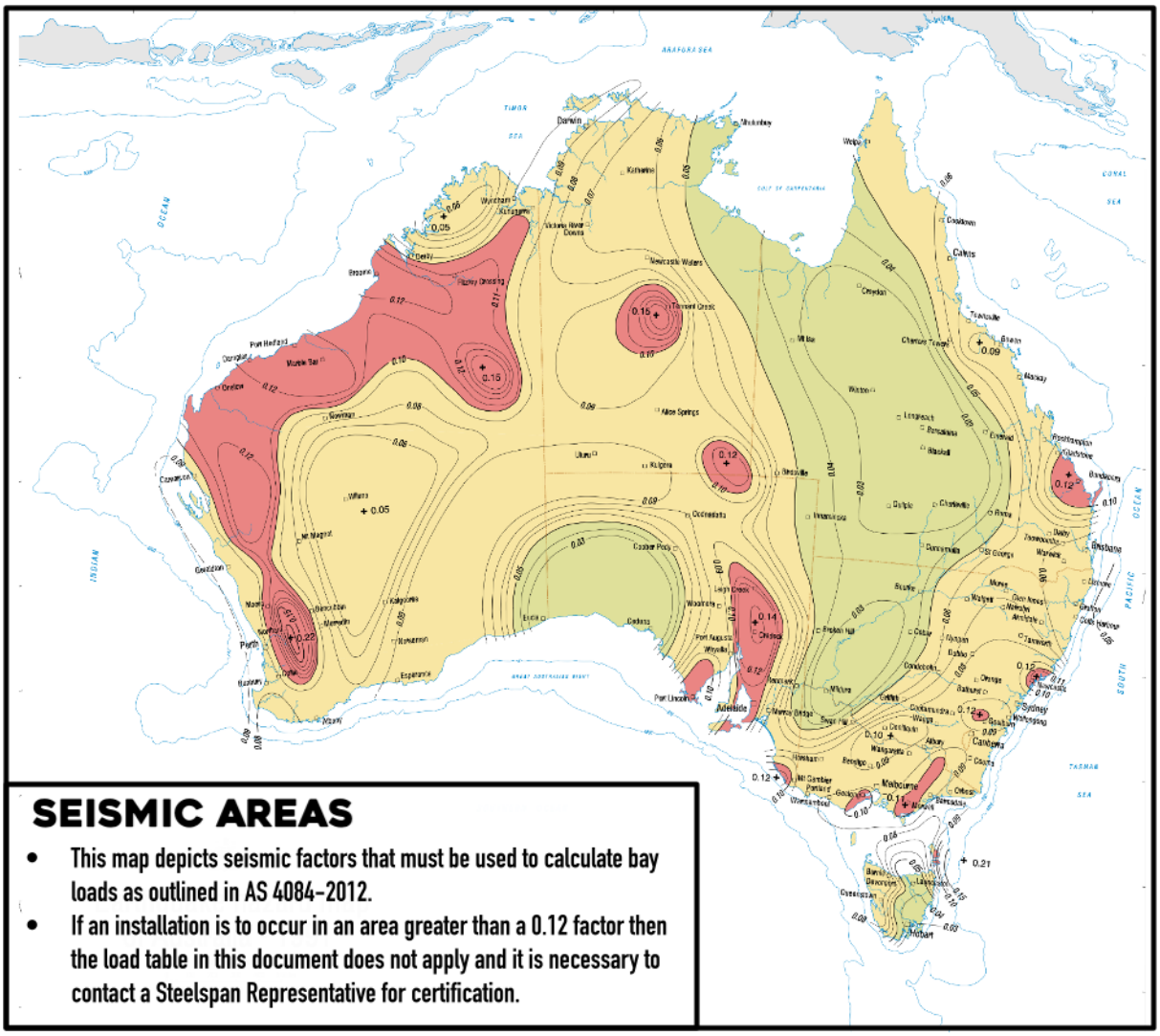
RESPONSIBILITIES OF INSTALLER

- Install the Pallet Racking System in accordance with AS 4084-2012.
- Ensure that the Pallet Racking System design has been reviewed and approved by a Steelspan representative.

Steelspan does not take any responsibilities for issues that may arise due to an incorrect installation, or a failure to have the racking system checked for suitability or safety. The maximum capacities are dependant on the racking design configuration. Always consult with the manufacturer before determining signage load capacities. Steelspan Storage Systems will not warrant or accept liability for racking designed and installed without its consultation and certification.

RESPONSIBILITIES OF END USER

- Ensure that regular inspections and maintenance are performed as per AS 4084-2012 by a competent person.
- Ensure the correct use of the racking system and to seek training if necessary.
- Any alterations to the configuration or variation of stored loads will require re-assessment of the design to determine suitability.
- Load signs must be displayed with permitted weight limits noted as Uniform Distributed Load (UDL). These loads are not to be exceeded. The signs must also detail the heights of the first and second beam levels which are not to be altered in any way.
- Rack Protection installed at the intersection of any gangway and aisle.
- Row ties where back to back runs are installed.
- Safety Beam Clips in every Beam Connector.
- Each Base Plate fixed to suitable ground with two pieces of M12x75mm stud anchors and/or have a shared minimum tensile load of 5kN and a shear load of 8kN. The anchor must have a final embedment depth to achieve the required tensile and shear load.

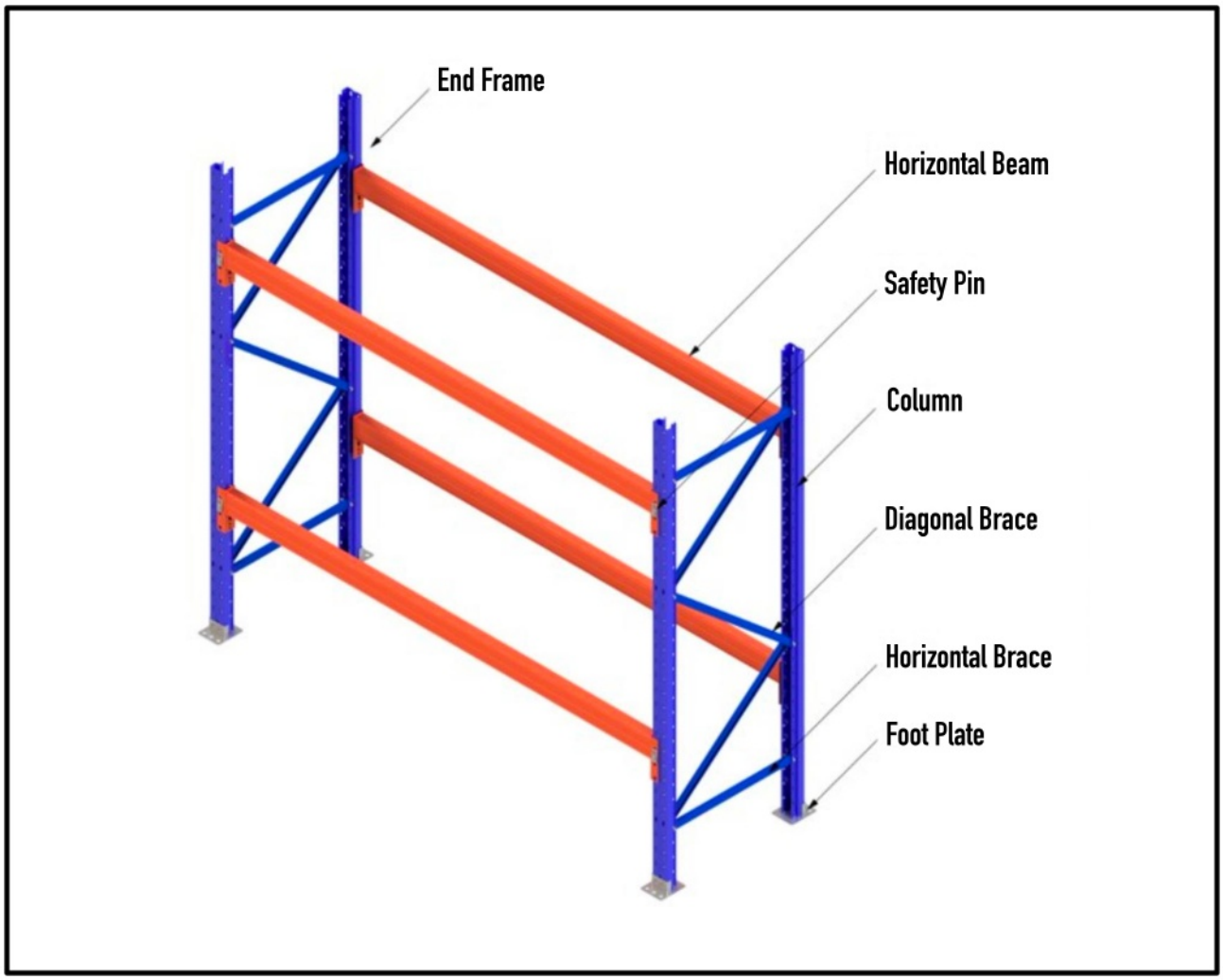


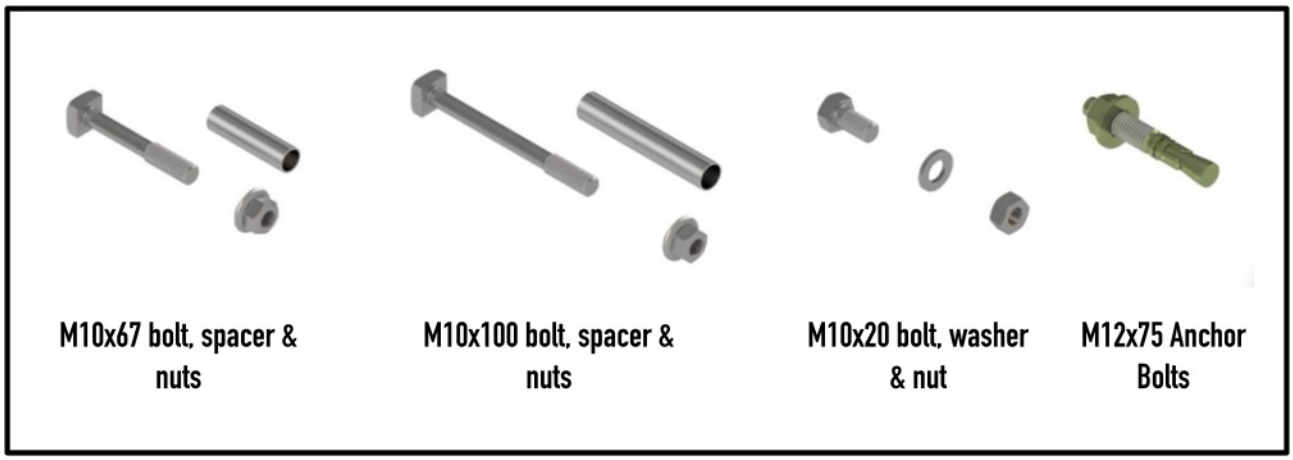
SEISMIC AREAS

- This map depicts seismic factors that must be used to calculate bay loads as outlined in AS 4084-2012.
- If an installation is to occur in an area greater than a 0.12 factor then the load table in this document does not apply and it is necessary to contact a Steelspan Representative for certification.

COMPONENTS

Before commencing assembly check that all components are present. Full Bays will have two End Frames and subsequent Add On Bays will only have one.





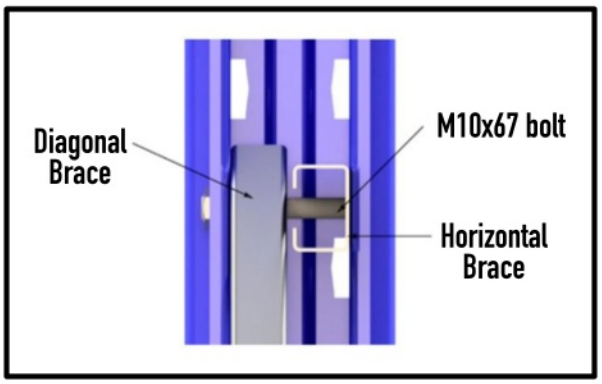
M10x67 bolt, spacer & nuts

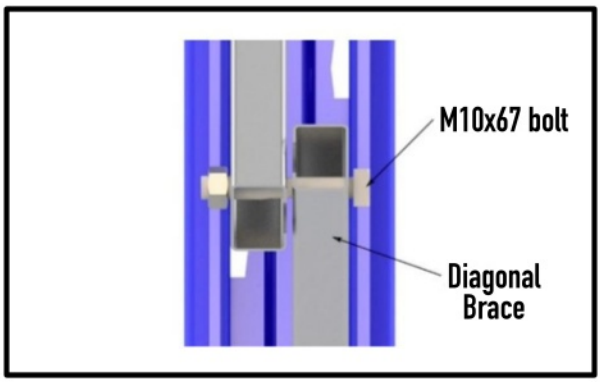
M10x100 bolt, spacer & nuts

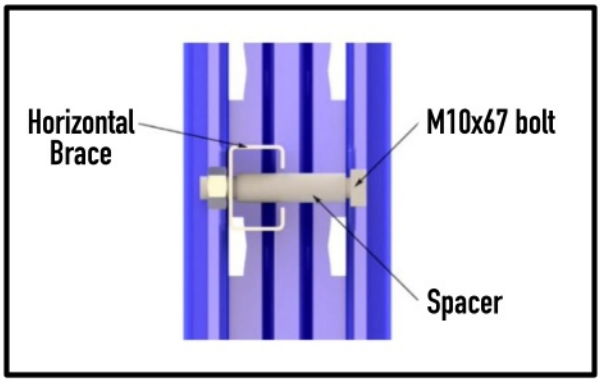
M10x20 bolt, washer & nut

M12x75 Anchor Bolts

ASSEMBLE THE END FRAMES







1. Lay two Columns parallel on the ground and arrange the Horizontal Braces and Diagonal Braces as per the diagram relevant to your height of Pallet Racking below. There should be a 304.8mm gap (4 holes) from the top and bottom of the End Frame except for the 914H on which there is a gap of 152.4mm (2 holes).

2. Make sure the distance along the column between a Horizontal and Diagonal Brace is 609.2mm (8 holes) and distance along the column between Diagonal Braces is 1219.2mm (16 holes).

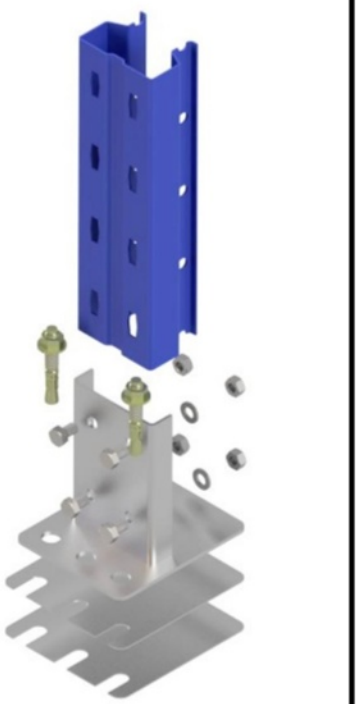
3. Fasten the Braces to the Columns with M10x67 bolts, using a spacer for Horizontal Braces where they don't meet a diagonal as per diagrams to the left.

4. Assemble the other End Frames in the same configuration.

ATTACH THE FOOT PLATES

1. Fasten the Foot Plates to the base of each Column of each End Frame using four M10x20 bolts, washers and nuts per Foot Plate as shown in the diagram. The Levelling Plates and Anchor Bolts will be used in a later step when securing racking to the floor.

1



SECURE THE HORIZONTAL BEAMS

2. The Horizontal Beams come with the Safety Pins pre-installed and these should automatically lock into place when the Horizontal Beam hooks are fitted correctly into the End Frames.

3. Secure the lowest two Horizontal Beams to two End Frames, ensuring the Safety Pin locks into place. Continue by securing the topmost Horizontal Beams so that the structure may stand freely.

4. Secure the remaining levels of Horizontal Beams ensuring they are level with one another and that the Safety Pins lock into place.

NOTE: Make sure each bay of Pallet Racking is in the desired install location as it is being constructed.

2

3

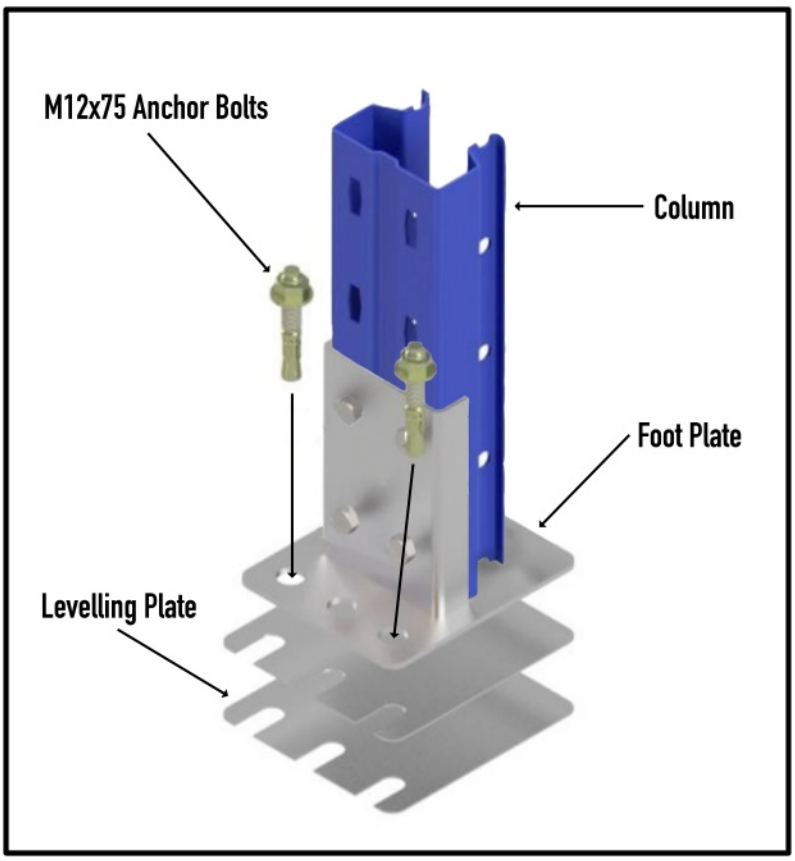
SECURE THE RACKING STRUCTURE TO THE FLOOR

1. Ensure that the Pallet Racking structure is in place and level each End Frame of the with Levelling Plates. If more than 25mm of Levelling Plates are required then consult with a Steelspan representative.

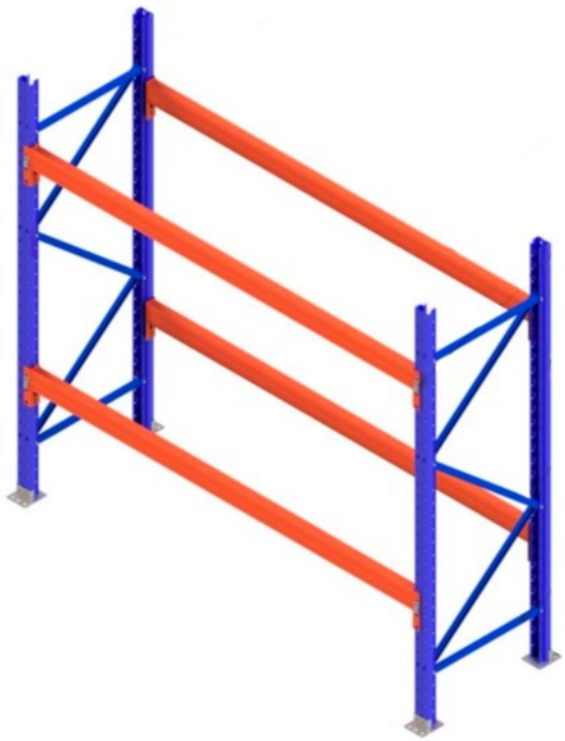
2. Using a 12mm drill bit, drill holes through the two outermost holes in the Foot Plate at least 75mm deep. Foot Plates should only be anchored to a concrete floor slab.

3.Secure the Foot Plate with two M12x75 Anchor Bolts.

4. Secure the remaining Foot Plates in the same way.



RACKING COMPLETE



ENJOY YOUR NEW STORAGE SYSTEM!

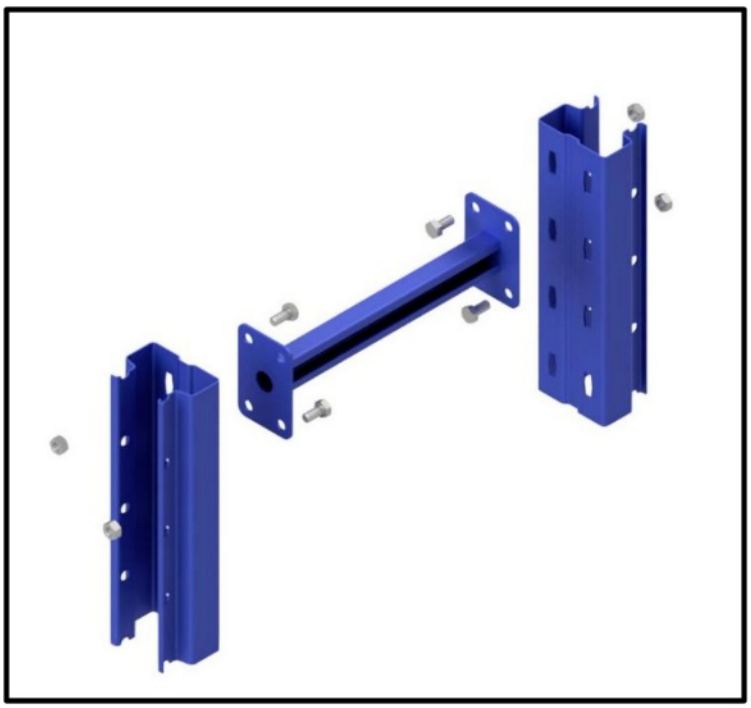
OPTIONAL ACCESSORY INSTRUCTIONS ON NEXT PAGE.

FRAME SPACERS (OPTIONAL)

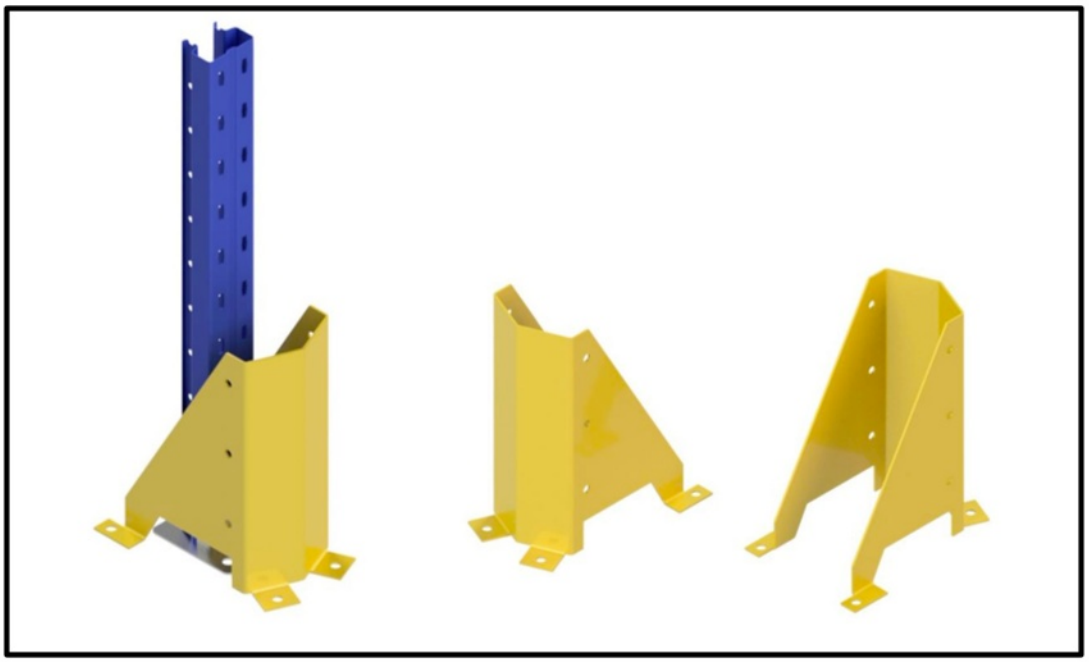
1. In double entry Pallet Racking, at least two Frame Spacers are required between each adjacent pair of End Frames.

2. The lowest Frame Spacer should be positioned as close as practically possible to the first bracing node (where two Braces in the End Frame meet) above the floor. The highest Frame Spacer should be positioned as close to the topmost bracing node as practical.

3. Secure the Frame Spacers with four M10x20 bolts – two on each side diagonally as shown in the diagram to the left.



UPRIGHT PROTECTORS (OPTIONAL)



1. Pallet Racking Upright Protectors are used to protect the column from external impacts, such as mis-operation of forklifts. Position the Upright Protector as shown in the diagram above.

2. Drill holes through the four pre-drilled holes into the concrete slab floor with a 12mm drill bit at least 75mm deep.

3. Secure the Upright Protectors in place with four M12x75 Anchor Bolts.

PALLET RACKING - SAFE PRACTICES GUIDELINES

When using racking systems in the workplace, it is important to ensure that they are specifically designed to accommodate the size, shape, and weight of the stored products.

Background

This guidance applies to individuals or organisations conducting business or operations in a workplace, including those responsible for managing or controlling the workplace, as well as workers. This includes individuals overseeing racking, warehouse and maintenance operations, training organisations, forklift operators, store personnel, and health and safety representatives.

This fact sheet provides guidance specifically for Steelspan Selective Pallet Racking. Additional safety measures may be necessary for specialised types of racking such as cantilever, drive-in, double-deep, pallet-live, push-back, or others.

Racking Design and Layout

All racking used in the workplace should be designed to match the size, shape, and weight of the products being stored. It is crucial to set up and maintain the racking according to our instructions.

The layout of the racking should be compatible with the material handling equipment used in the workplace. For example, the aisle width should match the turning circle of the forklift used for picking and replenishment. The layout should also consider emergency access, adequate lighting, and any manual handling activities.

Rated Capacity

There are two critical rated capacities related to racking that should never be exceeded:

- Maximum unit load: This refers to the weight of an individual stored item, such as a pallet that can be placed or retrieved in one operation.
- Total rated capacity for each bay: The total weight of unit loads stored on a bay must not exceed the rated capacity of that bay.

It is essential to provide this information to individuals using the racks. One effective way is to clearly mark it in a visible location on the racking. Steelspan can provide Safe Work Load Signs for Pallet Racking on request.

Steelspan will provide the following information to display on the Safe Work Load Sign:

- Racking manufacturer's name, supplier's name, trademark, and installation date.
- Designer's name (company or individual).
- Working unit load limit.
- Total working unit load limit for each pallet beam level.
- Total working unit load limit for each bay.
- Maximum distance from the base plate level to the first beam level and the maximum distance between adjacent beam levels.

There should always be a method to determine the weight of each unit load placed into the racking. See figure 1 for an example of safe working loads.

Note: Any changes to the racking configuration can affect the safe working loads. Seek prior approval from Steelspan.

Note: The rated capacity in this case is based on a unit load of 1200kg on a standard pallet. For uneven loads where a large load is supported at only two or three points, consult Steelspan to determine if the racking can support that load.

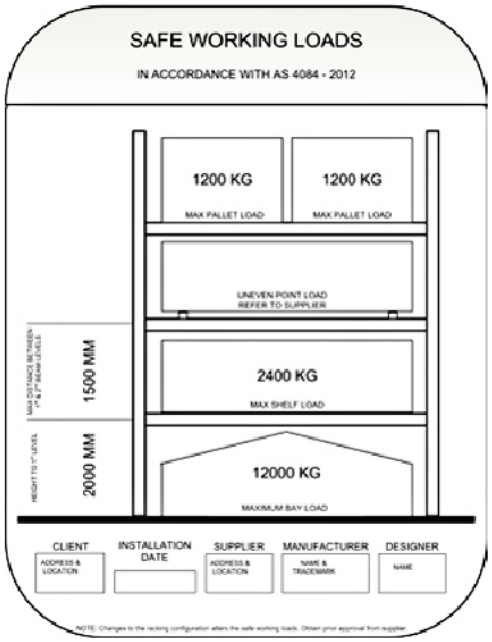


Figure 1: Example of a typical safe working load sign.

PALLET RACKING - SAFE PRACTICES GUIDELINES (CONTINUED)

Modifications to Racking Design or Components

Modifications to the racking should only be carried out by a competent person who has been provided with all the information from the supplier.

Any modifications to the racking should consider their impact on load limits and be approved by the manufacturer, supplier, or a qualified engineer with relevant experience. Operating procedures, signs, and drawings should be updated to include details of the modification.

Physical alterations to uprights, bracings, beams, or components should never be made without the approval of a competent person. This includes welding additional cleats or bearers.

If replacements are necessary for uprights, bracings, beams, clips, or other components, parts from the equipment manufacturer should be used. In cases where alternative parts must be used, an engineering report should confirm their compatibility with the racking being repaired.

Single Bay Racking

In situations where pedestrians have access to the back of the racking and single rows have been installed, rear protection should be fitted to prevent loads from falling out of the back of the racking.

Operating Instructions

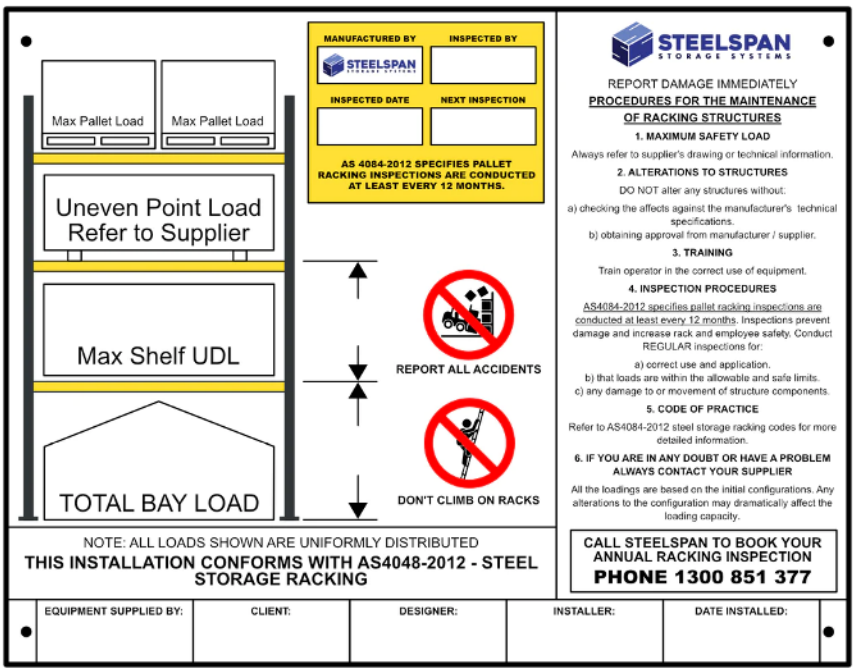


Figure 2: Example of Steelspan's Safe Work Load Sign that includes operating instructions.

Establish procedures to ensure that operations are conducted safely considering the racking design, load characteristics, and lifting equipment capabilities (see figure 2).

At a minimum, these procedures should include:

- Correct use of handling equipment.
- Knowledge of the rated capacities of the racking.
- Prohibitions on unauthorised alterations.
- A clear process for reporting any damage as soon as it occurs.

PALLET RACKING - SAFE PRACTICES GUIDELINES (CONTINUED)

Selection of Pallets and Goods on Pallets

When selecting pallets for use in the racking, it is important to consider the nature of the goods in the unit load. Any changes to the pallet design should be assessed by a competent person to prevent issues. For example:

- Switching from timber pallets to post pallets may result in concentrated loads on racking beams and the pallets may not securely fit into the beams.
- Using pallets larger than allowed by the racking design can cause overlapping with pallets behind or pushing them off their supports.
- Using pallets smaller than allowed by the racking can result in them dropping through.
- Using skid pallets in racking without timber decks can lead to them dropping through.

Potential problems that may require changes to the racking design include:

- Boxes, cartons, or other items overhanging the pallet they are stored on (unless the racking structure has the correct clearance).
- Falling items from boxes, cartons, or loose loads stored on upper levels (unless prevented by wrapping, strapping, or other means, such as end frame extensions and pallet safety backstop).

Collision Protection – Mobile Plant

According to work health and safety legislation, the person in control or management of mobile plant must manage the risks associated with collisions involving people, other mobile plant, or stationary items. It is important to develop a traffic and pedestrian plan.

The lower portions of frames that are susceptible to collisions by forklifts or other moving equipment should be fitted with upright protectors and end-of-rack protectors.

PALLET RACKING - SAFE PRACTICES GUIDELINES (CONTINUED)

Reporting Unsafe Situations and Damage

Any safety risks related to the operation or maintenance of the racking should be reported to management immediately. In certain circumstances, such as a major collapse of the racking exposing workers or others to serious health and safety risks, SafeWork must be notified immediately by calling 13 10 50.

Workers should report any damage to a supervisor immediately so that it can be inspected and assessed. The damage should be recorded, for example, by using coloured stick-on tags to indicate the location and level of damage (see figure 3).

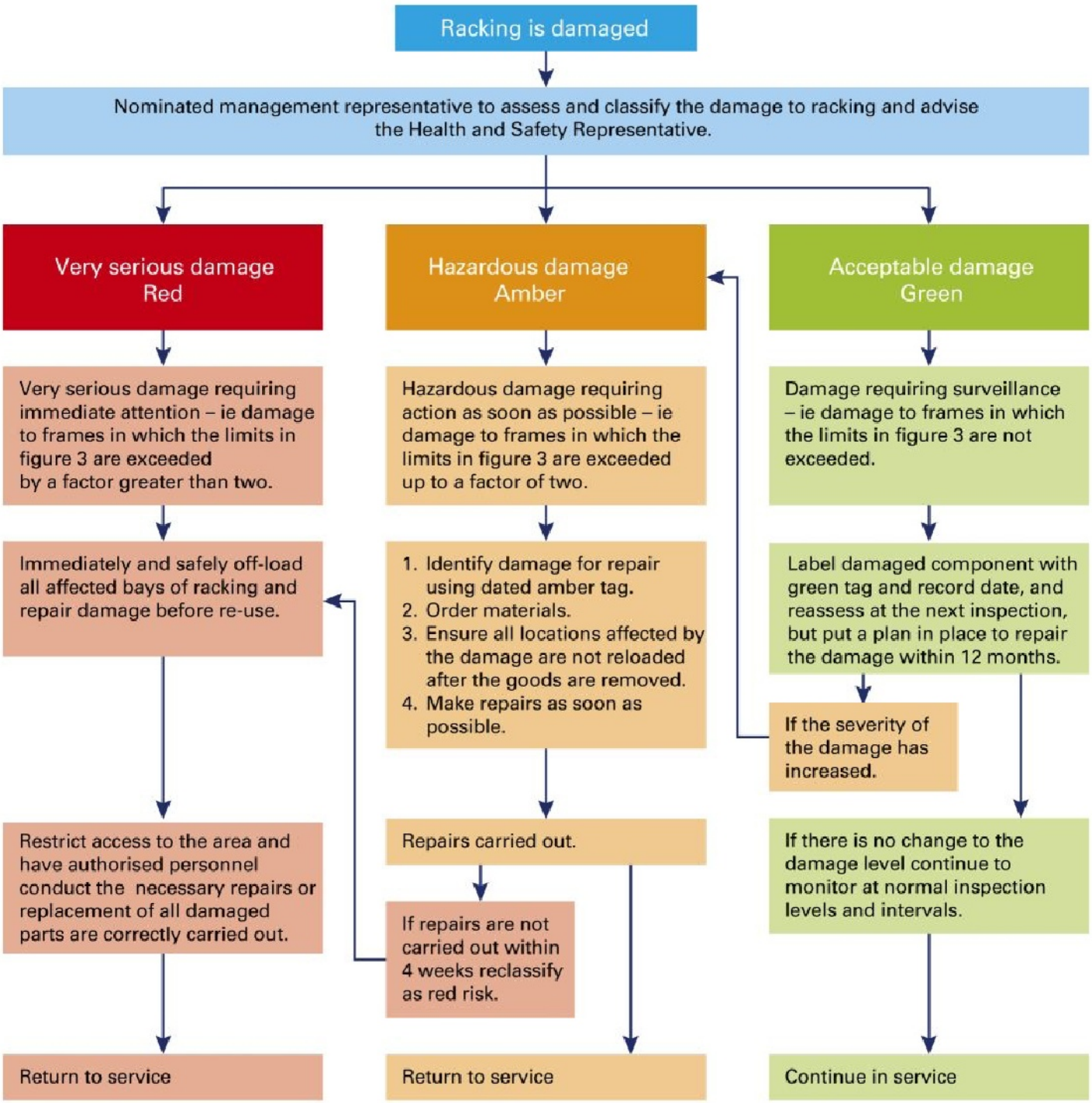


Figure 3: Damage action flowchart in accordance with section 8 AS4084.

PALLET RACKING - SAFE PRACTICES GUIDELINES (CONTINUED)

Inspections

According to work health and safety legislation, plant and structures, including racking, should be free from risks to health and safety. Regular inspections should be conducted to ensure the integrity of the racking. Steelspan recommends annual Pallet Racking inspections – contact us 1300 851 377 for more information. For guidance on inspections, refer to AS 4084: Steel storage racking.

During inspections, consider the following questions:

Beams

Are the beams overloaded? Deflection indicates overloading of the racking. Beam connectors should be parallel where two beams connect at an upright. If the racking has been or is overloaded, the beam connectors may be deformed (forming a 'V'). The amount of permanent deformation should not exceed the maximum allowed by the manufacturer. In such cases, the racking should be inspected by a competent person.

Are the beams or welds damaged? Check for visible signs of beams being hit by a pallet or forklift. Damaged beams should be replaced. If a beam has been hit and shows only minor damage, have the welds checked for cracks by a competent person.

Are beam connectors or safety clips missing? Inspect beams for damage and replace missing clips. The design of replacements must be approved by the racking manufacturer. If clips are frequently dislodged, contact the manufacturer or installer to determine the cause and take appropriate action.

Has a beam popped out of its upright? A popped-out beam means it is only supported on one end connector and could collapse.

Are the anchor bolts securing the racking to the ground loose? Regularly inspect anchor bolts to ensure they are appropriately tightened and adjust as needed.

Rated Capacity

Are the rack load signs legible? To ensure the legibility of load signs, check that the markings or signs displaying the rated capacities can be seen by workers and that the rack configurations have not been altered.

Uprights and Footplates

Are the uprights damaged? If an upright shows damage, is twisted, or contains splits or cracks, replace it or splice in a new section. Splices should be approved by the racking manufacturer. Replace any damaged uprights and footplates.

Are the splices in good condition? Check the condition of all splices. They should be above the first beam level, not below 1.5m, and no more than one splice should be between any two adjacent beam levels.

Is the racking vertical? Check if the racking is vertically aligned. Out-of-plumb racking is usually caused by incorrect installation but can also result from impact, overloading, or settling of the floor slab. Contact the manufacturer or installer if the racking is not vertical.

Braces

Are the racking braces damaged? Replace bent, horizontal, or diagonal braces. For bracing, the deviation of the member from a 1m long straight edge in either plane should not exceed 10mm.

PALLET RACKING - SAFE PRACTICES GUIDELINES (CONTINUED)

Floor Fixings

Are the floor fixings installed? Check that the floor fixings are installed and undamaged. If any damage is found, replace the damaged fixings and footplate. Each footplate requires at least two anchors.

By conducting regular inspections and addressing any issues promptly, the health and safety risks associated with the racking can be effectively managed.