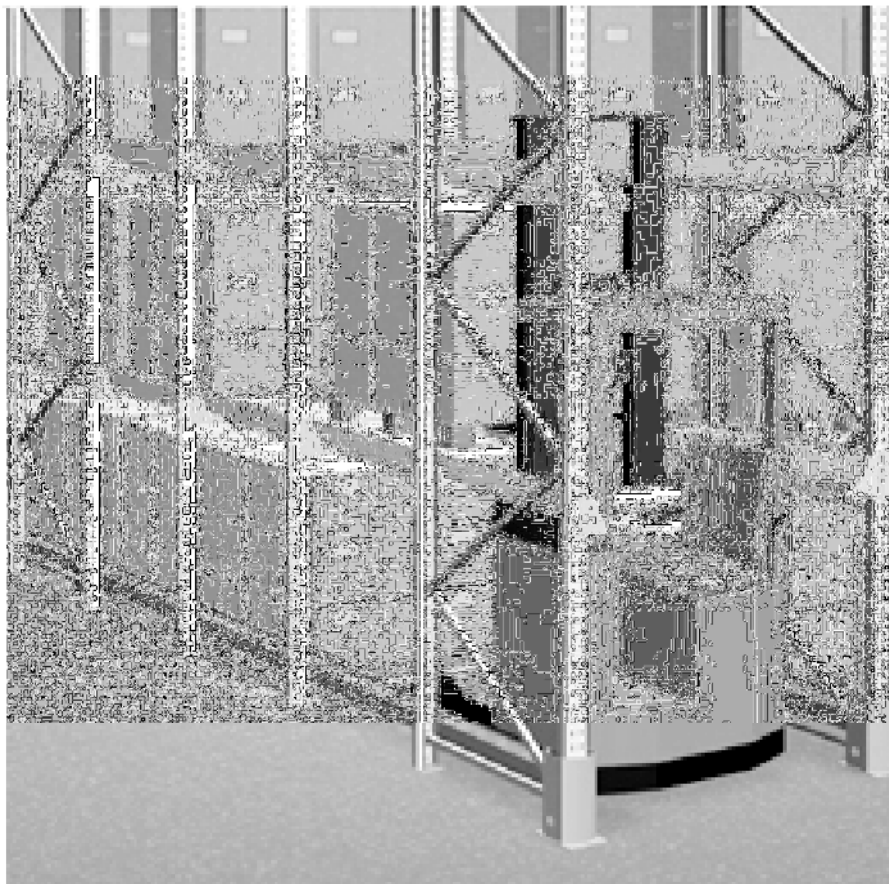


DEXION[®]
CONSTRUCTOR

DEEPSTOR P90
USER GUIDELINES



DEEPSTOR P90 USER GUIDELINES

Deepstor P90 is the product name for the Companies drive-in pallet racking system.

The system comprises parallel rows of frames and individual uprights, interconnected in the left to right direction with top ties, and in the front to back direction with pallet support rails. Top bracing, back bracing, and frame bracing provide the structure with overall stability.

The system is devised so that a fork lift truck may enter a storage lane, between adjacent rows of frames, to deposit and retrieve pallets.

The information contained within this guide relates solely to the **Deepstor P90** product, it doesn't necessarily relate to other similar systems available from alternative sources and should not be used as the basis for operating these alternatives.

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INTRODUCTION

The system has been designed to handle timber pallets, and comprises a number of storage lanes, made up of pallet rails, supported on arms which are connected to the rack uprights.

The fork lift truck enters the rack to deposit a pallet at the rear of the storage lane. Subsequent pallets are then stored sequentially above and in front of the original pallet, thus providing good density of storage within a given area. Pallets are retrieved sequentially in reverse order with the truck entering the rack to access the pallets at the rear of the installation.

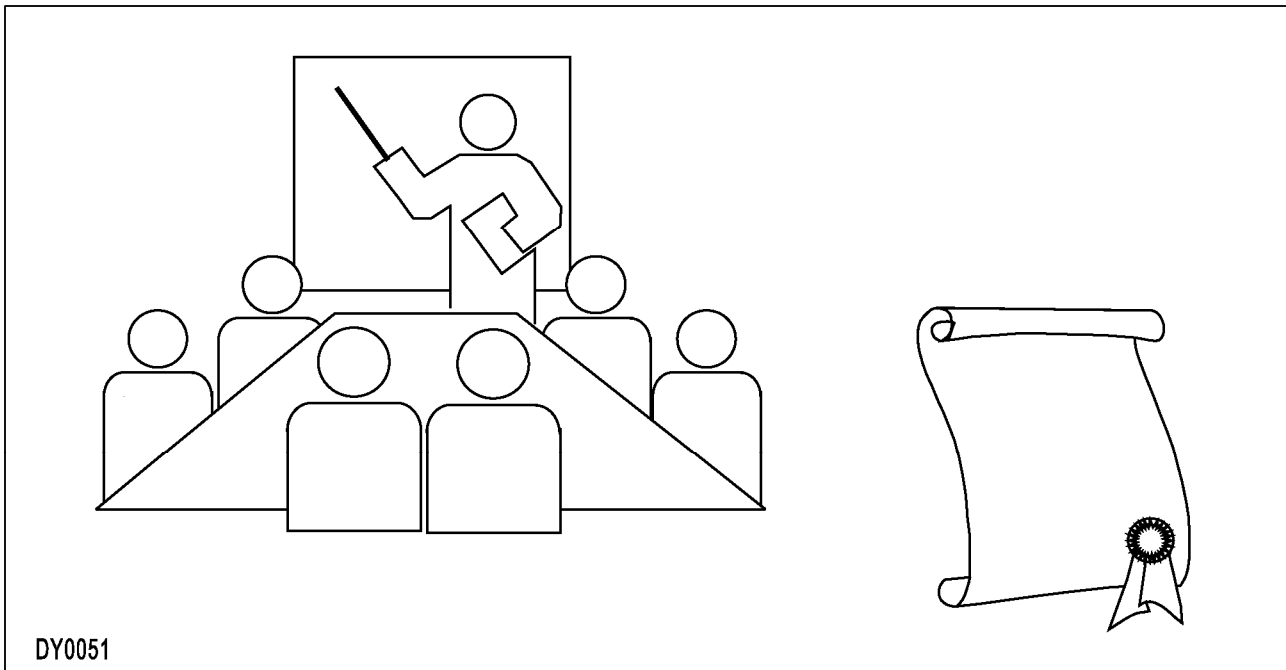
This is a “Last In, First Out” storage system. **(LIFO)**

OPERATOR TRAINING

Constructor Dexion recommends that **ALL** personnel operating within a warehouse environment are trained in safe working practises.

Part of the training given to fork lift truck drivers should include the correct use of the **Deepstor P90** installation. This should include the recognition of pallet types, checks on suitability, and the correct method of loading and unloading the racking.

These guidelines describe how to use the system safely and should form part of your training. A copy of this document should be made available to all drivers.



INSTALLATION DATA SHEET

Your installation has been designed around a pallet with the following characteristics.

<i>Client:</i>	<input type="text"/>	
<i>Date of Installation:</i>	<input type="text"/>	
<i>Reference:</i>	<input type="text"/>	
<i>Block Ref. or Rack Area:</i>	<input type="text"/>	
<i>Pallet Type:</i>	<input type="text"/>	
<i>Pallet size:</i>	x	<i>mm.</i>
<i>Pallet handled on the:</i>	<input type="text"/>	<i>mm face.</i>
<i>Load size (left to right)</i>	<input type="text"/>	<i>mm.</i>
<i>Load size (front to back)</i>	<input type="text"/>	<i>mm.</i>
<i>Any load overhang must be even on both sides.</i>		
<i>Pallet + Load Height:</i>	<input type="text"/>	<i>mm.</i>
<i>Pallet Load:</i>	<input type="text"/>	<i>Kg maximum.</i>

GLOSSARY OF DEEPSTOR P90 TERMINOLOGY

The following terms are referred to within this guide.

Rack/Block:	The complete structure, in length, depth and height, consisting all lanes and levels from the front of the rack to the back.
Lane:	A proportion of the rack separated by support frames, includes all levels in the height.
Level:	An individual storage level within a lane. Could be either at floor level or a raised level where the pallets are stored on pallet rails.
Pallet Rails:	Horizontal supports either side of a lane to support pallets at raised levels.
Support Arms:	Cantilever brackets that attach to the rack uprights to support the beam rail.
Bracing:	Fitted within selected lanes at the top, rear and lane sides to provide the structure with necessary stability.
Stop the truck:	The expression “stop the truck” means that the drive is neutralised and the brake is applied.
Drive slowly:	The expression “drive slowly” means travelling at a speed not exceeding 2.5km/h.

THE PALLET

The following gives general information about the pallet.

Pallet Type and Size

Your **Deepstor P90** rack will have been designed around a specific pallet style and dimensions, this will be detailed within **"The Installation Data Sheet"** on page 4.

Typically this could be one of the following pallet styles which are in common use around Europe. These are illustrated on the following page to aid identification.

EUR 800 x 1200mm, handled on the long 1200mm face.

IND (Fin-pallet) 1000 x 1200mm, handled on the long 1200mm face.

(The UK) GKN Chep pallet 1000 x 1200mm, handled on the long 1200mm face.

The orientation of the pallet is important.

Note: **Which ever pallet your installation has been designed for it is important that only the correct pallet be entered into the installation. It is dangerous to mix or enter any other pallet style or size other than those the system has been design for.**

Load on the Pallet

The stability of the load on the pallet is important. Ideally loads will be shrink-wrapped or banded in preference to loose stacking. There should not be any loose wrapping or banding on the bottom of the pallet. Interlocking of individual items is better than an un-structured placement.

Any load overhang (if permitted) should be even on both sides of the pallet.

Ideally loads should be perpendicular and not lean, however this is rarely practical and the following deviation is acceptable:

Pallet height up to 2000mm: Max. 1% of the pallet height.

Pallet height between 2000 and 3000mm: Max. 20mm.

Pallet Weight

The pallet weight is the combination of the 'self weight' of the timber pallet + 'load'.

Do not enter pallets with weights that exceed the permitted limit.

Pallet Condition

Pallets must be in good condition, and free from damage. Pallets with loose or broken boards, or protrusions should NOT be entered into the system.

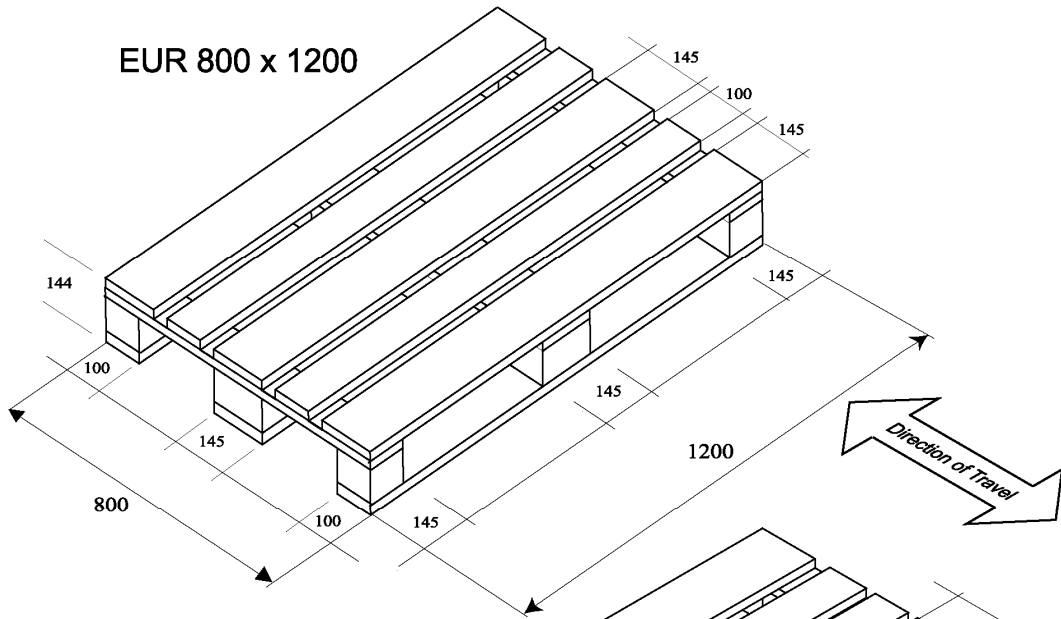
It is important that the pallet can safely support itself (with load) when spanning between the beam rails.

If the strength of the pallet is in doubt, a simple test can be conducted to check its suitability.

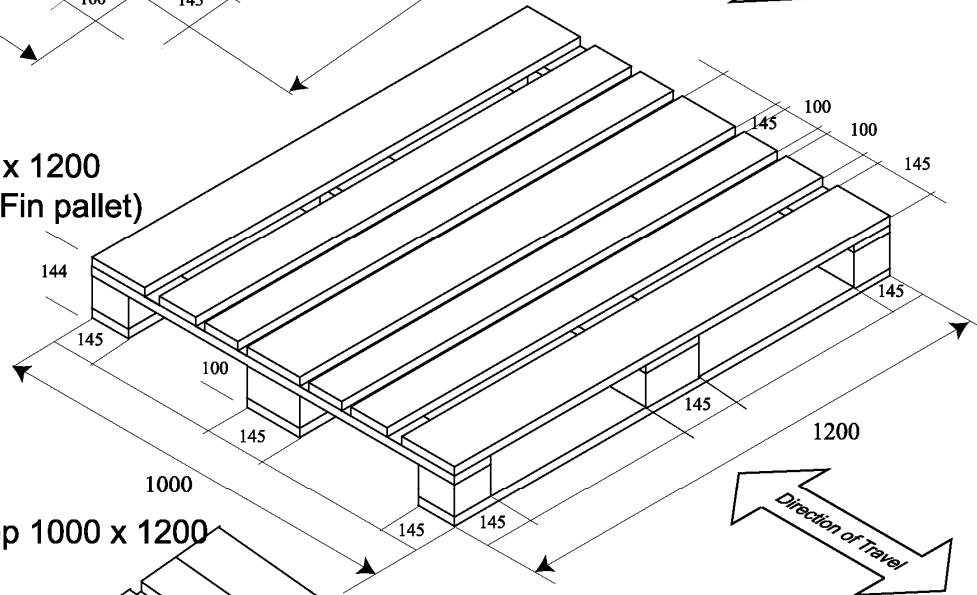
Support the pallet a little off the ground using timber battens along its edges (as the **Deepstor P90** beam rails do). Overload the pallet by 25% and leave for 24hours. If the pallet has suffered no harmful distortions after this time it can be considered suitable.

Note for the test the load should NOT be banded or shrink wrapped, and consist of small items with suitable gaps in between to avoid any bridging affect.

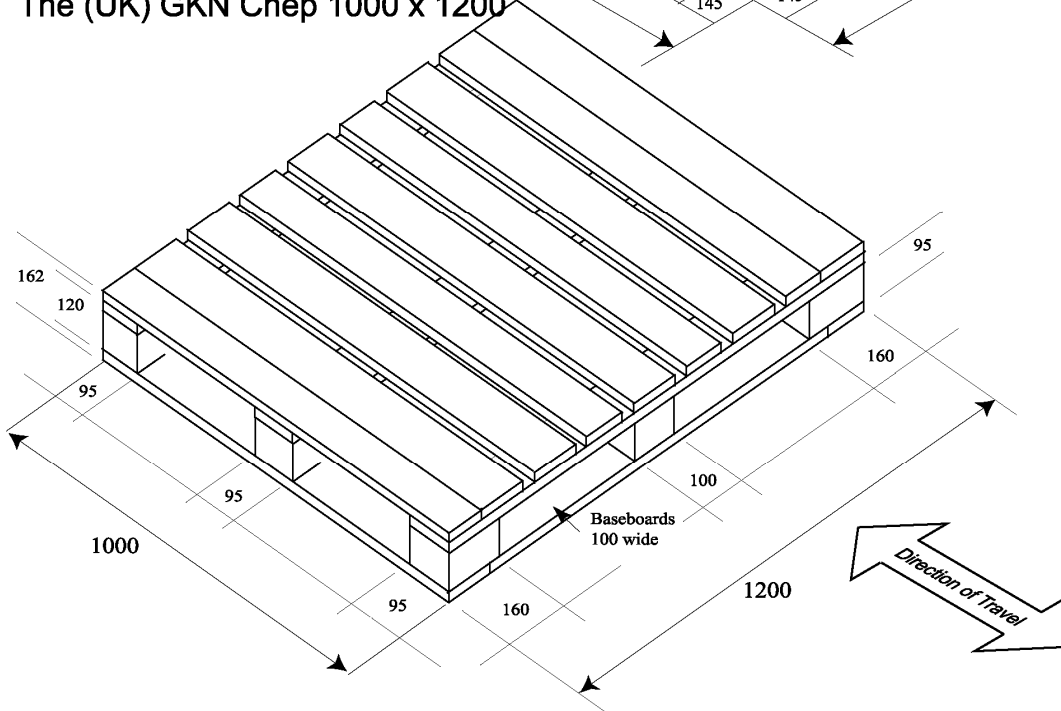
EUR 800 x 1200



IND 1000 x 1200
(Industrial/Fin pallet)



The (UK) GKN Chep 1000 x 1200



DY0101

THE FORK LIFT TRUCK

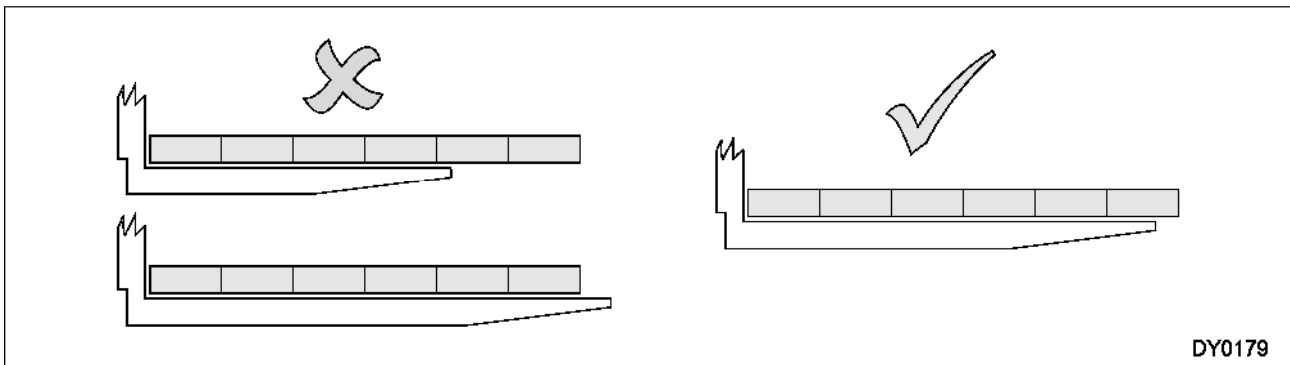
The fork lift truck must be of a suitable design and capacity, capable of lifting the loads to the heights required. If there are any doubts regarding its capacity reference should be made to the relevant manufacturer or supplier.

Lift Height

The truck must be capable of lifting the pallet clear of the top storage level by at least 100mm.

Correct Fork Length

The forks should be of sufficient length to support all the boards, but not extend beyond the pallet.



Driver Training

All fork truck drivers should be suitably trained and licensed in the operation of the handling equipment. Secondly they should be trained in the use of this type of storage system and have a copy of these guidelines available to them.

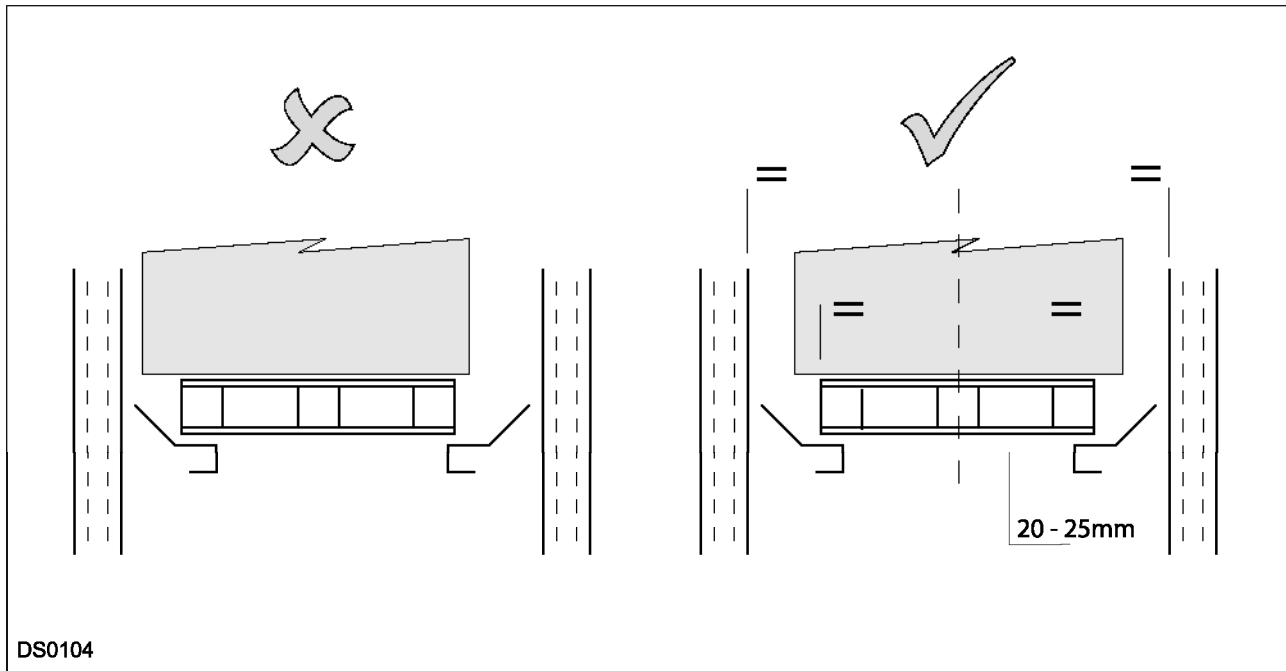
Care and Attention

The following sections of guidelines cover the use of the system, and how to load and unload the racking.

Following these recommendations and procedures, i.e. pallet inspection, correct pallet placement, and alignment will all help the efficiency and smooth operation of the system helping to prevent problems.

Adversely, harsh treatment or abuse will soon lead to damage, and a reduction in system reliability and performance, and in extreme cases render the structure unsafe.

For the benefit of the system "Prevention is better than cure".

OPERATIONAL CLEARANCES**Load on the pallet**

The load should be stacked centrally on the pallet, and if overhang has been permitted within the design, the overhang should be even on both sides of the pallet.

Load within the lane

The fork lift truck should deliver the pallet squarely and centrally within the storage lane.

Load bearing on the pallet rail

When the pallet has been lowered onto the pallet rails there must be a minimum of 20mm bearing between pallet and rail.

Delivery clearance

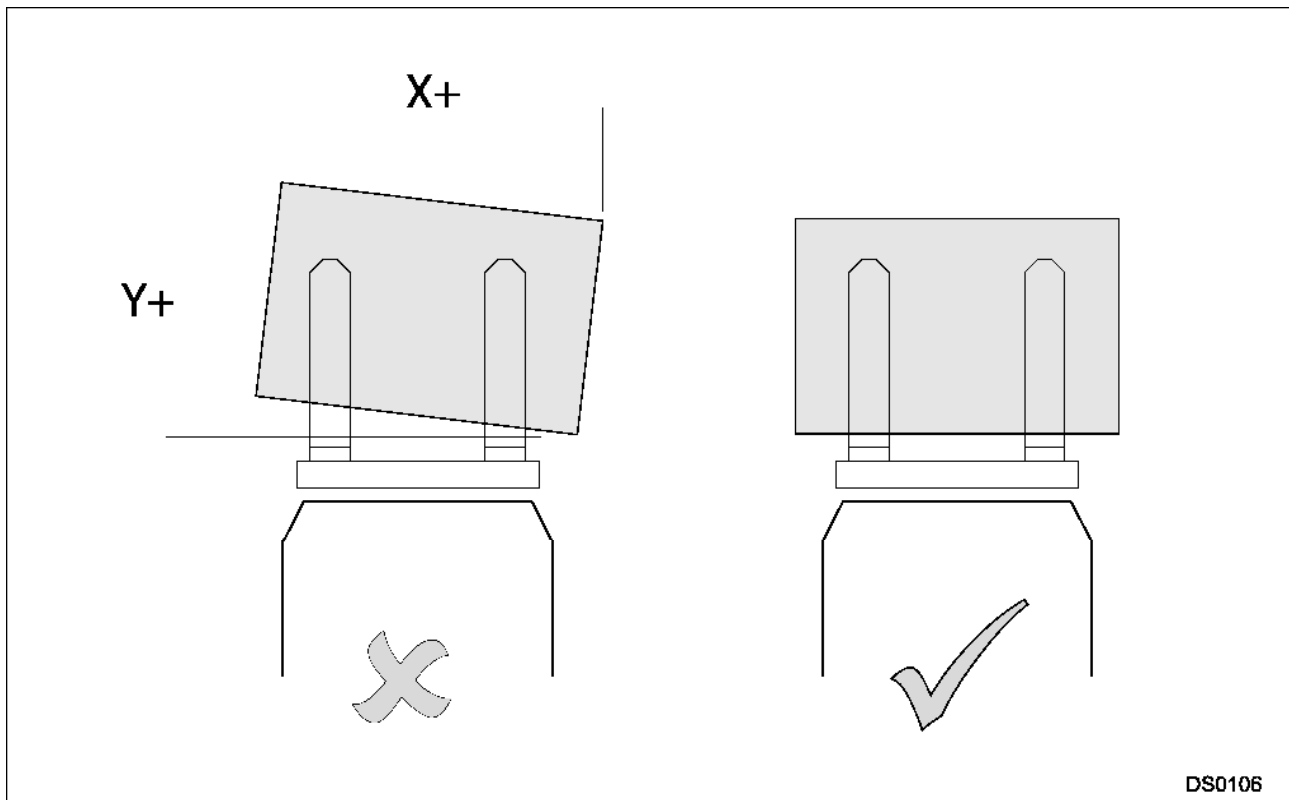
The fork lift truck should deliver the pallet clear of the pallet rail by approximately 20 – 25mm.

LOADING / UNLOADING THE SYSTEM

The warehouse should be adequately lit, to permit the safe use of fork lift trucks and the handling of pallets.

Picking up the Pallet

The pallet must be picked up square to the forks, any misalignment of the pallet on the forks can't be corrected during the placement sequence and results in badly placed pallets within the system. Misalignment also increases the effective size of the pallet leading to a reduction in operating clearances.

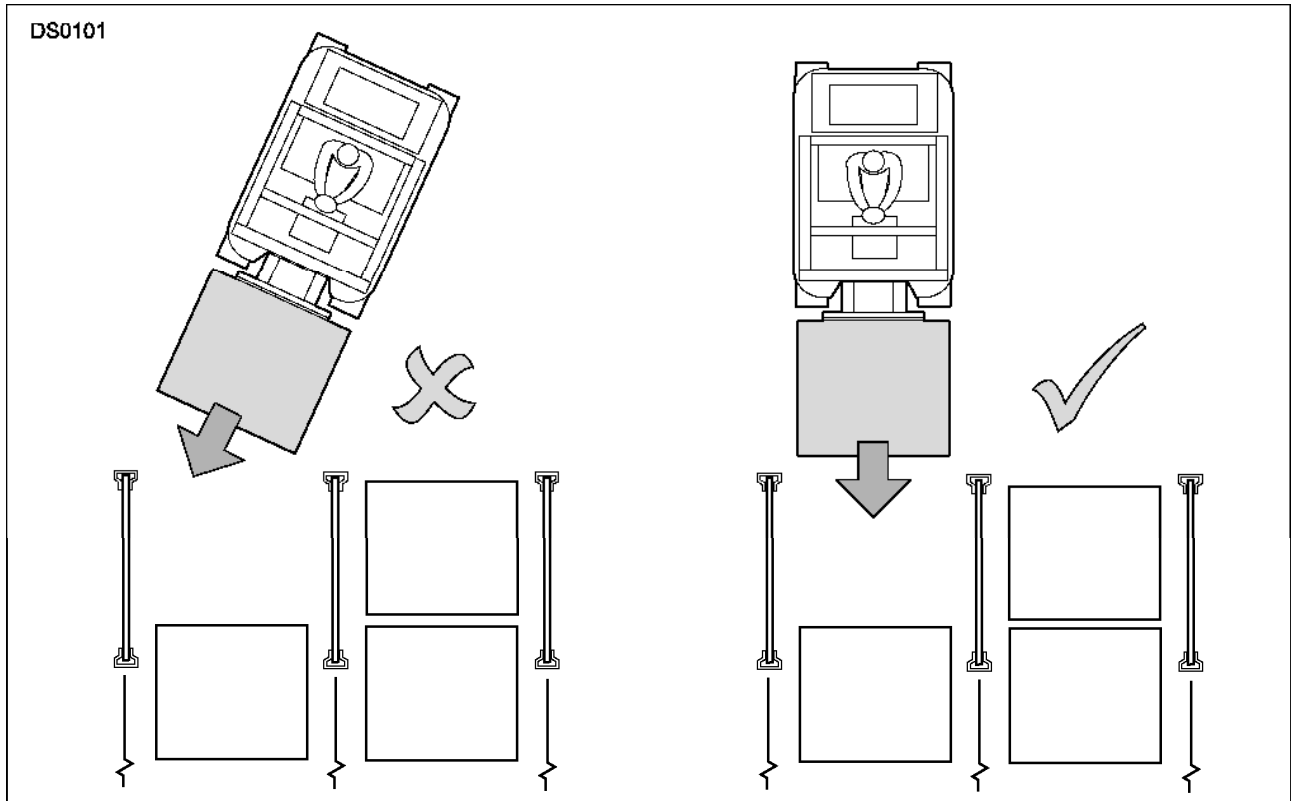
**Correct loading/unloading procedure/sequence**

The following pages detail the correct procedures for loading and unloading the racks and the safe sequence for delivering and retrieving loads.

Approaching and entering the rack

The fork lift truck should approach the rack squarely and not at an angle.

No attempt should be made to deposit/retrieve pallets or to enter a rack when the truck is NOT correctly aligned. It is not acceptable to attempt to re-align a truck after entry into the rack.

**Unacceptable pallet handling**

It is not acceptable practice to :

Nudge one pallet with another, in an attempt to move or re-align loads.

Drag or slide pallets on or against the pallet rails or structure.

Position or locate a pallet by nudging the one behind.

All of these are dangerous practices that impart additional loads in the rack structure, and could lead to damage and a reduction in safety.

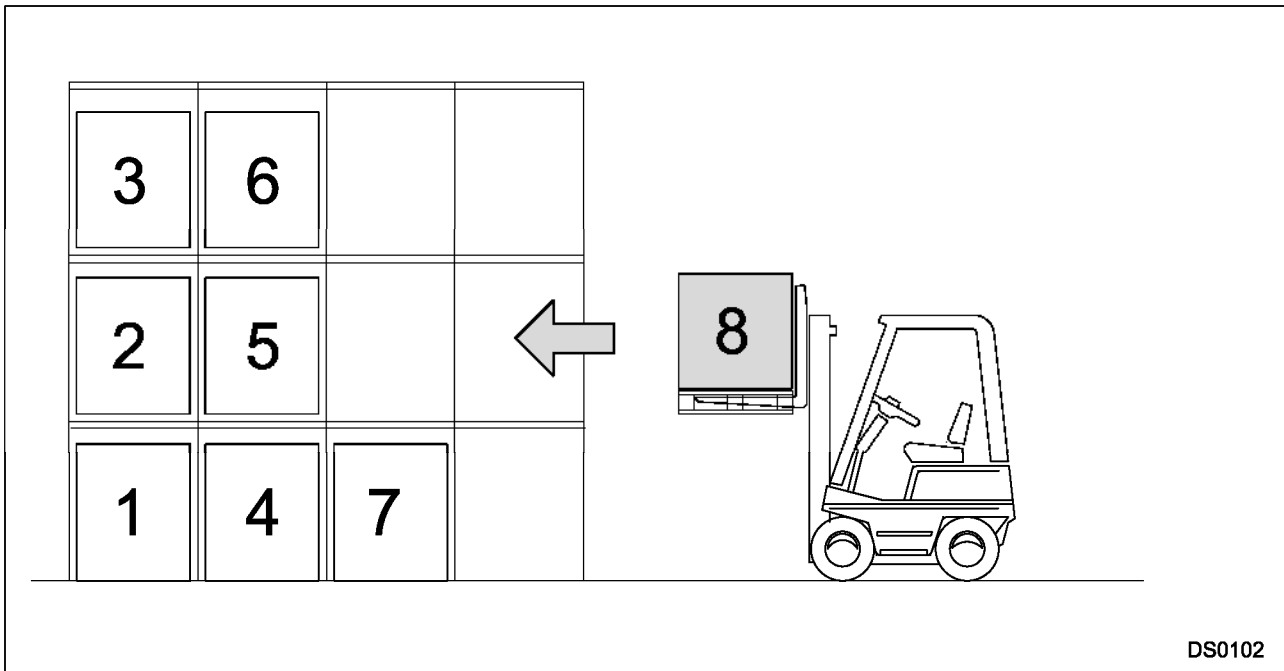
All are avoidable if the correct procedures are adopted.

Never work beneath stored pallets

It is not safe to either work or drive a truck beneath a pallet that is being stored above.

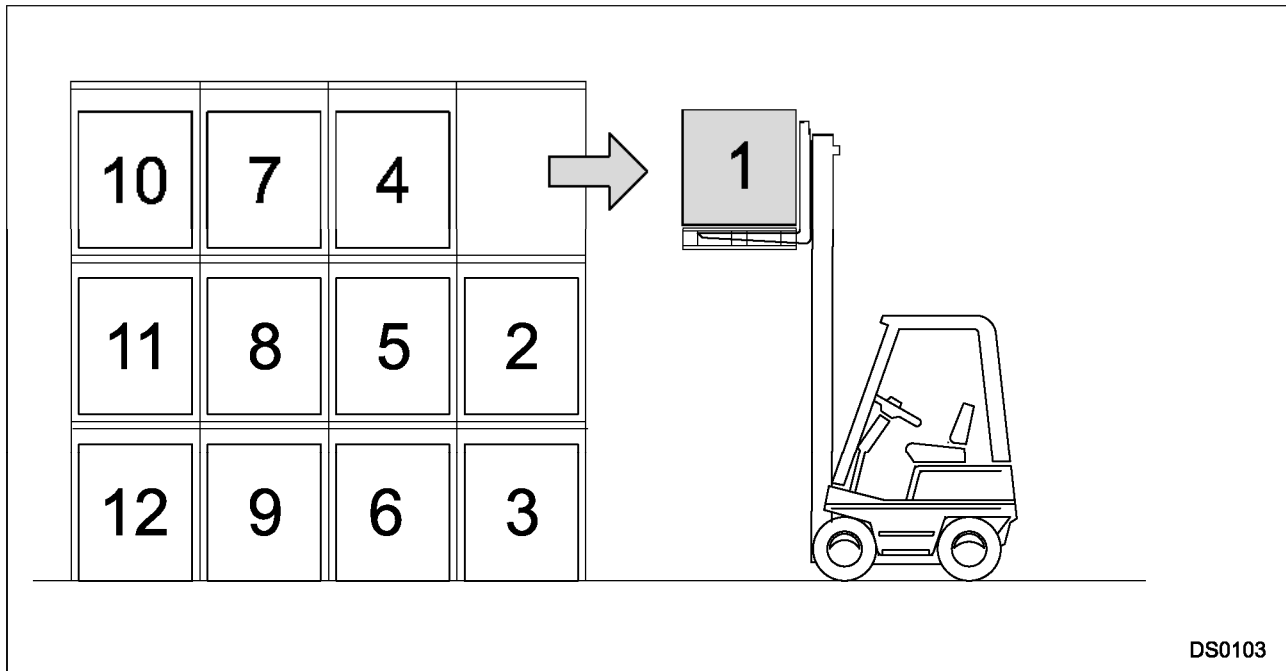
Adhering to the correct loading/unloading sequences will prevent these unsafe situations occurring.

Loading the System



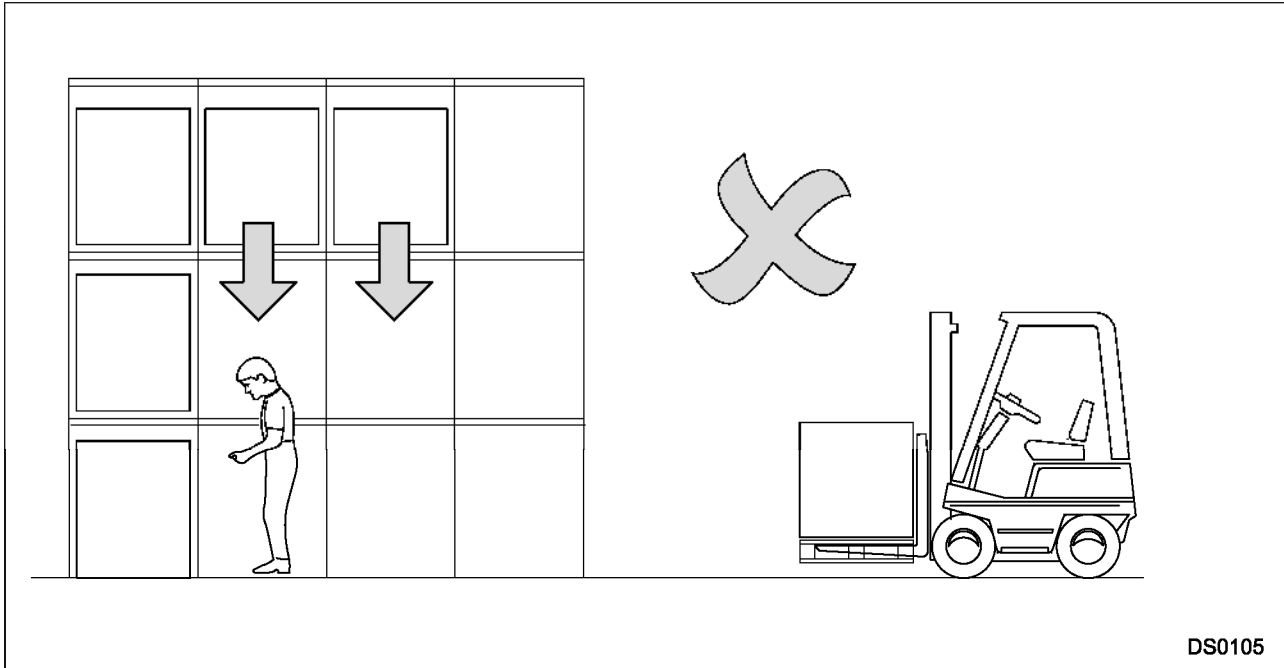
- Step 1 Check that the pallet is the correct style and size for the installation.
- Step 2 Check the underside of the pallet for loose, split or damaged boards. Damaged pallets should not be entered into the racking.
- Step 3 The fork lift truck driver inserts the forks into the pallet, and picks the pallet up ensuring that it is square and that the forks are evenly spaced within the pallet. Any skew in the pallet at this stage cannot be corrected and will remain when the pallet is placed in the rack.
- Step 4 The fork lift truck drives with the pallet, and approaches the rack squarely aligning itself centrally with the desired storage lane.
- Step 5 Slow down and stop the truck at the entrance to the lane. Reduce any tilt on the mast and raise the pallet to the required storage level ensuring the pallet is still central between the pallet rails.
- Step 6 Drive slowly into the storage lane towards the intended storage location, keeping the pallet and truck mast clear of contact with the pallet rails or any other part of the rack structure.
- Step 7 Stop the truck before making contact with previously positioned pallets.
- Step 8 Carefully lower the pallet onto the pallet rails, ensuring no contact with the sides of the pallet rail or the pallet behind. There should be a minimum 20mm bearing on the beam rail.
- Step 9 When the pallet is securely positioned lower the forks until they are free from the pallet and reverse the truck carefully out of the storage lane, checking the aisle is clear.
- Step 10 When clear of the rack lower the forks to just above ground level before driving off.

Follow the above stacking sequence to avoid potential access beneath stored pallets.

Unloading the System

- Step 1 The fork lift truck approaches the rack squarely and aligns itself centrally with the desired lane.
- Step 2 Slow down and stop the truck at the entrance to the lane. Reduce any tilt on the mast and raise the forks to the required storage level ensuring the truck is still central between the pallet rails.
- Step 3 Drive slowly into the lane up to the desired pallet location. Stop the truck just clear of the load and adjust the forks if required before entering the pallet.
- Step 4 Lift the pallet clear of the pallet rails, and slowly reverse the truck out of the storage lane ensuring the way is clear.
- Step 5 When clear of the rack lower the forks to the correct travelling position before moving off.

Follow the above retrieval sequence to avoid potential access beneath stored pallets.

SAFETY – NEVER WORK UNDER PALLETS

It is unsafe for operators and fork lift trucks to enter a rack beneath pallets that are stored on levels above. This is dangerous and MUST be avoided.

This situation could occur when the rack has either been loaded or unloaded out of sequence.

The correct sequences are detailed on the previous two pages. Adopting these sequences ensures the racks are loaded progressively in stacks starting with the bottom level at the back of the rack, and then unloaded progressively in stacks starting with the top level at the front of the rack.

Both sequences ensure that there will never be an occasion when a space is created directly beneath a pallet above.

CLEANING THE INSTALLATION

Should the rack need cleaning, either as part of a routine, or as a result of a spillage the following guidelines should be observed.

The clean should comprise of a wipe down with a damp cloth, using (if required) a mild detergent.

NEVER use a hose to spray the racking.

NEVER use abrasive or caustic cleaning agents.

ROUTINE INSPECTION / MAINTENANCE

The “**Deepstor P90**” system requires no maintenance, other than to repair possible damage through incorrect operation. The system should be regularly inspected.

Under NO circumstances should any attempt be made to alter the rack structure.

Daily Inspections

This applies to operator care of the system.

Damaged pallets must not be entered into the system and should be removed as they occur.

Any form of damage to the structure, should be reported.

Preventative Inspections

The installation should be inspected at regular intervals, to rectify any problems that may have occurred. The interval between inspections will be dependent on use, but it is recommended that these be no greater than three months apart.

The inspection would comprise a visual check of the structure, pallet rails, guards, bracing etc. and replacement of all damaged components.