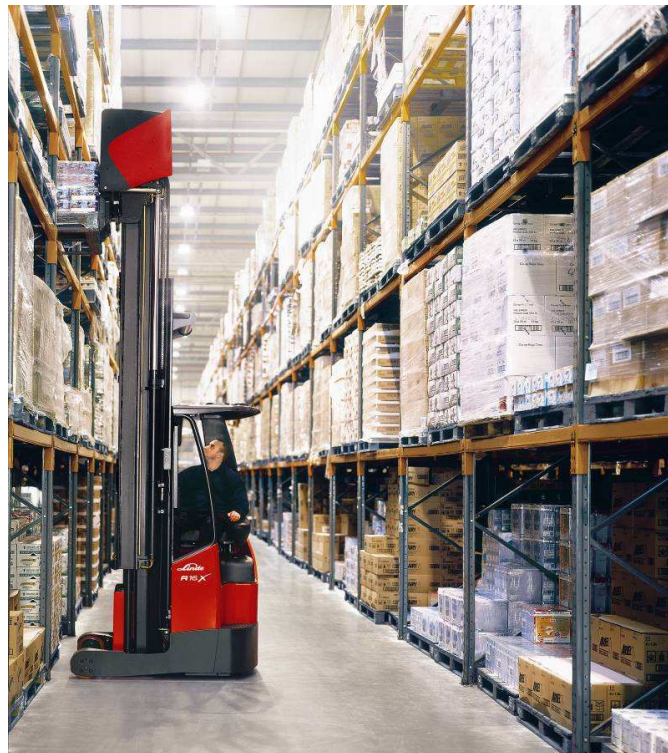




**Stodec Products Limited**  
**Guide to Pallet Handling Equipment**



In association with  **DEXION**<sup>®</sup>

Stodec Products Ltd, 8 James Way, Denbigh West, Bletchley, Milton Keynes, Bucks MK1 1SU

**Tel: 01908 270011**

**[www.stodec.com](http://www.stodec.com)**

# INTRODUCTION

**“The best handling solutions involve the least handling. Handling adds to the cost but not to the value of the product”.**

Pallets are platforms on which bulk goods can be stored & transported. Once the goods have been stored upon the pallet, the resultant load is usually far too heavy to be moved or lifted. Therefore some form of mechanical assistance is required – hence the introduction of the Fork Lift Truck. The range of different styles, types & lifts capacity of these trucks is vast, with many manufacturers offering both multi-purpose & specialist equipment. The choice of the right equipment or system to optimise material flow is broadly a definition of MATERIALS HANDLING

This guide is intended to provide a very general outline view of the main types of fork lift trucks (FLT) associated with palletised storage and the Dexion P90 racking system.

Please note images & technical specifications of hand pallet, reach, counterbalance, stackers & turret trucks courtesy of Linde Material Handling.

## **The Application**

It is essential to consider all aspects of an application in order to ensure that the most suitable equipment is specified & the best handling solution selected. Important factors are:

### **The Load & Pallet type**

#### **a) Pallet Details**

Length; width; depth; type, i.e. any base boards; pallet under hang under forks; are the base boards chamfered? Two or four-way access?

#### **b) Load Details**

Weight; length when stacked on pallet; width when stacked on pallet; overall height of load & pallet; type of load: cartons, bags & sacks etc; is the load shrink wrapped?

### **90 Degree Stacking Aisle**

This is the name given to the gangway or aisle required for the truck to turn & face the rack in order to deposit or retrieve a pallet. It is important to ensure that the quoted figures are realistic and relate to load face to face dimensions.

# ANATOMY OF A FORK LIFT TRUCK



# TRUCK TYPES

## Hand Pallet Trucks

The hand pallet truck is the simplest device for moving pallets. Comprising of a pair of forks mounted on wheels, it is used to manually transport goods around at ground level only. A hand operated, pump action handle slightly raises or lowers the forks to facilitate movement.

|                |               |
|----------------|---------------|
| Lift Capacity: | 1.6 – 3.0t    |
| Lift Height:   | N/A           |
| Working aisle: | 1900 – 2500mm |



## Powered Pallet Trucks

Powered pallet transporter is a battery operated device for transporting pallets around at ground level only. Comprising of a pair of forks mounted on wheels, it is a powered version of the hand pallet truck.

|                |               |
|----------------|---------------|
| Lift Capacity: | 1.6 – 3.0t    |
| Lift Height:   | 210mm         |
| Working aisle: | 1900 – 2500mm |



## Pallet Stacker

Based on a powered pallet truck & fitted with a mast to provide a cost effective combination of stacker & pallet transporter. It can't stack pallets which have base boards, such as the chep pallet commonly used in the UK.

|                |               |
|----------------|---------------|
| Lift Capacity: | 1.0 – 1.6t    |
| Lift Height:   | 1500 – 5000mm |
| Working aisle: | 2100 – 2500mm |



## Reach Truck

The reach truck is a free roaming vehicle based on the moving mast principle. When transporting, the pallet is contained within the wheel base of the truck. When loading or unloading, the mast and forks move forward / backward to deposit or retrieve the pallet. Requiring relatively narrow gangways, the reach trucks are commonly found in warehouses. In most instances reach trucks aren't suitable for outside use due to their solid tyre compound.



## Warehouse Environment

|                |                |
|----------------|----------------|
| Lift Capacity: | 1.0 – 2.5t     |
| Lift Height:   | 2800 - 12000mm |
| Working aisle: | 2650 – 3000mm  |

There is a small range of reach trucks with PPR tyres specifically designed for outside operation although their performance is significantly reduced.

## Outside

|                |        |
|----------------|--------|
| Lift Capacity: | 1.0t   |
| Lift Height:   | 5000mm |

Please note that when placing or retrieving a pallet, the forks have to be lifted over the reach truck legs. The first beam level therefore needs to be 300mm higher to allow for this.

## Counterbalance Truck

The counterbalance truck is regarded as a good, multi-purpose workhorse, capable of free roaming operation both indoors & outside. The weight of goods being lifted is counterbalanced by the weight of the truck itself, effectively pivoting around the front wheels. Can be electrically, gas or diesel powered. The main draw back of counterbalance trucks is that because of their bulky size they require a fairly large working aisle.

|                |               |
|----------------|---------------|
| Lift Capacity: | 1.0 – 50.0t   |
| Lift Height:   | 2900 - 6650mm |
| Working aisle: | 3500 – Plus   |



### Flexi/Bendi Trucks

The Bendi / Flexi truck offers the benefits of a traditional Counterbalance truck (work inside & outside), but due to its articulated design, can turn and operate in narrow gangways. It's become accepted as a multi-purpose fork lift truck that can replace the functions of both reach & counterbalance trucks. However prices for Bendi/ Flexi trucks will be more expensive than comparable counterbalance / reach trucks.

|                |                 |
|----------------|-----------------|
| Lift Capacity: | 1.0 – 2.0t      |
| Lift Height:   | 10000 - 11000mm |
| Working aisle: | 1900 – 3000mm   |



### Narrow Aisle Combi Trucks

The Narrow Aisle Combi Truck, as its name implies, operates in a very narrow gangway, being guided along the aisle by an electrically operated mechanism following a buried wire in the ground (wire guided) or by heavy duty angle guide rail mounted in front of the racking. The forks & mast face sideways, moving in and out to deposit or retrieve pallets. Depending upon the guide rail design, racks may need to be fitted with a bottom beam level just above the ground.



### Narrow Aisle Turret Truck

The Narrow Aisle Turret Truck operates in a very narrow aisle, being either wire guided or guided by floor mounted rails. The forks are mounted on a swivelling head such that they can be turned to face forward or to either side. This enables this type of narrow aisle truck to be far more flexible in operation. Depending upon the guide rail design, racks may need to be fitted with a bottom beam level just above the ground.



## Narrow Aisle Double Deep Stacker

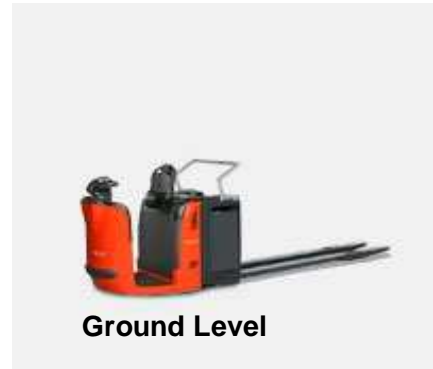
The double deep stacker is a variation on the standard narrow aisle machine. Extending or pantograph forks enable the truck to store two pallets deep, one behind the other. The double deep principle can be used with any type of fork lift truck, but when coupled with a narrow aisle system produces a very dense storage combination. Depending upon the guidance method, racks may need to be fitted with a bottom beam level just above the ground.

The narrow aisle double deep stacker isn't a standard mechanical offering and as such is tailored for each bespoke special application!



## Order Picker

An order Picker can be a guided or free roaming machine which enables a person to reach & pick from palletised loads stored in racking. An empty pallet or cage is located onto the front forks. The operator then uses the rising cab to reach each unit in turn, pick the required goods & stack them onto the pallet. It is not used for storing / handling full pallet loads.



Ground Level

## Low Level Order picker

|                 |              |
|-----------------|--------------|
| Lift Capacity:  | 0.7 – 2.5t   |
| Picking Height: | Ground + one |
| Working aisle:  | N/A          |

## Medium & High Lift Order picker

|                 |                |
|-----------------|----------------|
| Lift Capacity:  | 1.0 – 1.2t     |
| Picking Height: | 3000 – 10500mm |
| Working aisle:  | 1100 – 1380mm  |



Multi Level

### Walkthrough Order Picker

The Walk Through Order Picker is usually a narrow aisle machine which enables the operator to reach & pick from bulk loads stored in racking. Because the operator can enter the 'cage' at the front, this type of machine is usually used for handling / storing full pallet loads. Order Pickers are battery operated, & utilise either wire or rail guidance.

|                 |               |
|-----------------|---------------|
| Lift Capacity:  | 0.5 – 1.2t    |
| Picking Height: | 11000mm       |
| Working aisle:  | 1400 - 2000mm |



### Lateral Stacker / Order Picker "Combi"

The "Combi" as it is usually referred to, is both an order picker & narrow aisle stacker rolled into one machine. It can be used for storing & retrieving full pallets loads, or from picking from ready stored goods via the rising operators cab. "Combi's are battery operated, & utilise either wire or rail guidance.

|                 |                |
|-----------------|----------------|
| Lift Capacity:  | 0.5 – 1.5t     |
| Picking Height: | 4300 – 16000mm |
| Working aisle:  | 1350mm         |



### Pallet Conveyor

Pallet conveyors, usually comprising of rollers and / or drive chains, are used to move palletised goods along fixed transportation paths. They can be used to link transportation & storage systems or manufacturing facilities. Using computerised controls, pallet conveyors can also be used for sortation , batching & accumulating lines of goods

|                 |     |
|-----------------|-----|
| Lift Capacity:  | N/A |
| Picking Height: | N/A |
| Working aisle:  | N/A |





## Automated Guided Vehicles (A,G,V's)

A,G,V's are used to transport palletised goods along fixed paths usually following guide wires buried in the ground. They can be used to link transportation and storage systems or manufacturing facilities.

|                 |     |
|-----------------|-----|
| Lift Capacity:  | N/A |
| Picking Height: | N/A |
| Working aisle:  | N/A |



## Narrow Aisle Stacker Cranes

Narrow Aisle Stacker Cranes come in a variety of shapes & sizes. They can be either operator controlled, or driverless & controlled automatically by computer. Unlike other narrow aisle machines, cranes run on precision laid rails & therefore don't need special floors. The main advantages of cranes is that they are very fast in operation. Stacker cranes can work in very tall buildings usually referred to as 'High Bay' warehouses.

|                 |               |
|-----------------|---------------|
| Lift Capacity:  | 1.000 – 3.0t  |
| Picking Height: | 45000mm       |
| Working aisle:  | 1500 – 2000mm |



## Accessories

**Crane Attachment** is fitted to the fork carriage in lieu of forks & converts the truck to a mobile crane.

**Boom (ram attachment)** allows loads with a central core (tyres, coils, etc) to be handled without a pallet.

**Drum Grip** is a non powered device; fitted either to the fork carriage or the forks that grip automatically the top rim of the drum. Clamping arms can also be used to handle drums.

**Double pallet handlers** (Hydraulic, in place of arms), allows two pallets to be handled side by side allowing fast movement of uniform loads.

**Load clamp** (Hydraulic, in place of arms), for handling bales, cases by clamping action. There are a variety of arms to suit the load including dual purpose arms such as pivotal forks for clamping bales or other loads.

**Load Stabiliser** is used to stabilise high loads. The load is carried on standard forks and the attachment has a top pad hydraulically powered to exert pressure on top of the load.