

# **TCP** TRAINING

## **Licence to Operate a Forklift Truck TLILIC2001 PARTICIPANT MANUAL**



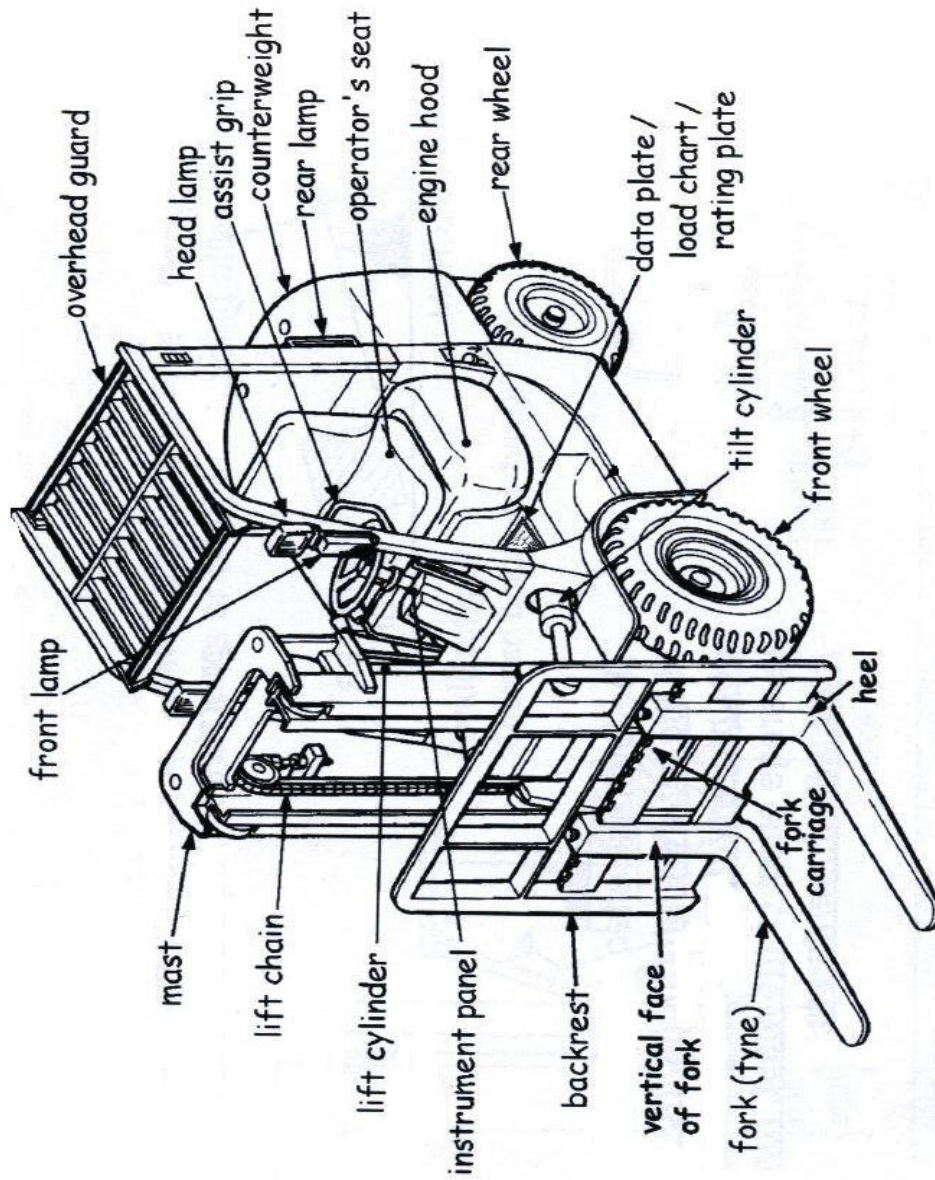
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## An example of a Forklift Truck



## Introduction

This training course is based on the National High Risk Licence Unit of Competency TLILIC2001A: Licence to Operate a Forklift Truck.

TCP Training and The National Standard recognises the importance of quality training as an underpinning principle in providing skilled workers, and that the most effective form of training is a combination of informal and formal training methods, it requires training and assessment to be undertaken by a Registered Training Organisation (RTO).

TCP Training and its staff ensure this training is accessible to everyone.

A Registered Training Organisation (RTO) must assess your training, skills and knowledge using the relevant 'assessment instrument' under realistic workplace conditions before you can apply for a national licence to perform high risk work to operate the types of forklifts listed below.

High risk work licences are recognised in all Australian States and Territories.

A person performing high risk work must hold a relevant licence unless they are undergoing training.

### ***Eligibility for a High Risk Work (HRW) Licence***

You are eligible to obtain a licence if you:

- are at least 18 years of age
- undertake a recognised course of training
- can use English at a level that enables the safe performance of high risk work
- have the necessary knowledge and ability to safely perform the high risk work
- have been assessed as competent by an assessor working for the RTO using the relevant assessment instrument under realistic workplace conditions
- apply to WorkCover NSW for a high risk

### ***HRW Licence Class (LF) - Forklift truck***

The HRW licence covers the operation of a powered industrial truck equipped with a mast and an elevating load carriage to which is attached a pair of fork arms or other attachment.

## The Forklift Truck

### *What is a Forklift Truck?*

A **forklift truck** (also called a **lift truck**, a **fork truck**, or a **forklift**) is a powered industrial truck used to lift and transport materials. The modern forklift was developed in the 1960s by various companies including the transmission manufacturing company Clark and the hoist company Yale and Towne Manufacturing. The forklift has since become an indispensable piece of equipment in manufacturing and warehousing operations.

Forklift trucks transport and stack materials

Forklifts are a short wheel based truck with a vertical mast; and there are two main types; counterbalanced and non-counterbalanced.

### **Counterbalanced Forklift Trucks**

A **counterbalanced lift truck** is an industrial truck that is weighted at the rear of the truck to prevent (counter) any forward tipping of the truck that could occur when lifting a load. Counterbalanced trucks can be either sit down or stand up varieties. Conventional counter balanced fork lift trucks carry a pallet (or other attachments) straight out in front of the machine on permanently aligned forks. Forklifts require wide aisles for manoeuvring and substantial floor capacity to support the forklift and loads. They are available with both battery electric and internal combustion power. Internal combustion engines include diesel, petrol and LPG and are best used in open work areas  
Counterbalanced forklift trucks use the front wheel axle in the same way as the fulcrum of a lever. The load is on one end, counterbalanced by the weight of the machine at the other end.



## Non-Counterbalanced Forklift Trucks

In non-counterbalanced forklift trucks, the centre of the load is behind the fulcrum point. They are known as 'reach' trucks or 'straddle' trucks. These units are usually battery-electric driven.

This type of forklift truck reaches out to deposit or pickup the load or straddles the stack for depositing the load. They are used for particular load stacking functions and are less versatile than the counterbalanced type. They are best used in small areas when aisle space is very tight, due to their tight cornering ability.



## Rough Terrain Vehicles

A counterbalanced forklift truck specially designed to have high clearance and still low centre of gravity.

Special tyres are fitted, similar to tractor tyres.

A rough terrain forklift is a specialised forklift truck that is specifically built to deal with areas/surfaces that are not level or even, where the road surface is not constant.



## High Risk Work and WHS Legislation

Under the WHS Regulations a trainee is defined as: **A person who is enrolled in a course of HRW training and/or being supervised at a workplace by a person with a current HRW licence for the work.**

As a trainee you are learning (either on the job or in a simulated classroom environment) everything you need to know to ensure that you are going to be working safely and efficiently.

Once you have completed your training and have been assessed by an Accredited Assessor and deemed competent, you will be able to make your application for a high risk work licence at an Australia Post outlet. Once deemed competent, the assessor will issue a Notice of Satisfactory Assessment (NSA) and give you an application form. **The notice of assessment is it valid for? 60 Days**

Under what circumstances may an employer allow a person to conduct high risk work if they are not competent to do so. **Unless you are enrolled in a HRW course and are supervised by someone with a HRW licence.**



## High Risk Work Licences

If a holder of a high risk work licence is no longer competent to carry out the work for which they hold a licence, they must stop doing the work and either:

1. **Retrain to be fully competent,**

OR

2. **Return the HRW licence to the WHS regulator.**

The holder of a HRW licence is responsible for taking **reasonable care and not harmfully affect the health and safety of other persons while performing the high risk work.**

HRW Licences need to be renewed every 5 years, if a holder of a high risk work licence fails to renew their licence within 12 months what happens?

1. **They need to redo their HRW licence at an RTO.**

Failing to work safely when performing high risk work can lead to the licence holder being penalised under WHS regulations. Penalties include:

1. **Their licence being suspended**
2. **cancelled,**
3. **The regulator may refuse to renew the licence (if the matter is raised at the time of renewal).**

## Consultation and Communication with Others

Consulting and communication with others is an important part of the risk management process and should take place at all stages **before and when they arise during the job.**

Identifying risks and hazards and coming up with ways of controlling them includes talking to people with knowledge of the situation, or who are directly affected by any action you may take.

Controlling a hazard can be a team effort and it's important that everybody knows what they need to do and how/if they need to change their work process to suit.

Make sure you talk to the right people. This can include:

- **Supervisors**
- **Safety officers**
- **Workplace Personnel**
- **Site engineers (where applicable)**
- **Manages who are authorized to take responsibility for the workplace or operations**

It is important to communication with workplace personnel and safety officers before starting on a worksite to ensure that you know all **workplace policies and/ site-specific procedures.**



## Hazard Checks and Site Checks

A hazard is any 'thing' (including the basic property of a thing) or 'situation' with potential to cause injury or harm. **In other words, a hazard is anything that can hurt you.**

The following must be checked in the surrounding areas to ensure the health and safety of all personnel in the work area:

- **Electric Lines**
- **Underground Services** - water, gas, telecommunications, etc
- **Pedestrians and personnel**
- **Ground bearing pressure**
- **Variable operating surfaces/routes** e.g. slopes, ramps etc
- **Plant and equipment** - other forklifts, machinery, etc
- **Obstructions** - may impede the safe progress of the forklift
- **Potential non-weight bearing surfaces, soft ground**
- **Wind, bad weather conditions**
- **Lighting** - sufficient for working within the area
- **Overhead service lines (inside & outside)** - contact could result in electrocution
- **Bridges** - must be high enough for the forklift to pass under
- **Surrounding structures including buildings and bridges**
- **Dangerous materials** - can cause fire/explosion/chemical fumes resulting from collision with forklift
- **Vehicle traffic**

Immovable obstructions, equipment and other dangerous items are usually cordoned off with barriers and signage used to alert workers to the potential hazards. Signage is also used to notify personnel of the danger of overhead power & service lines and for low-hanging bridges.

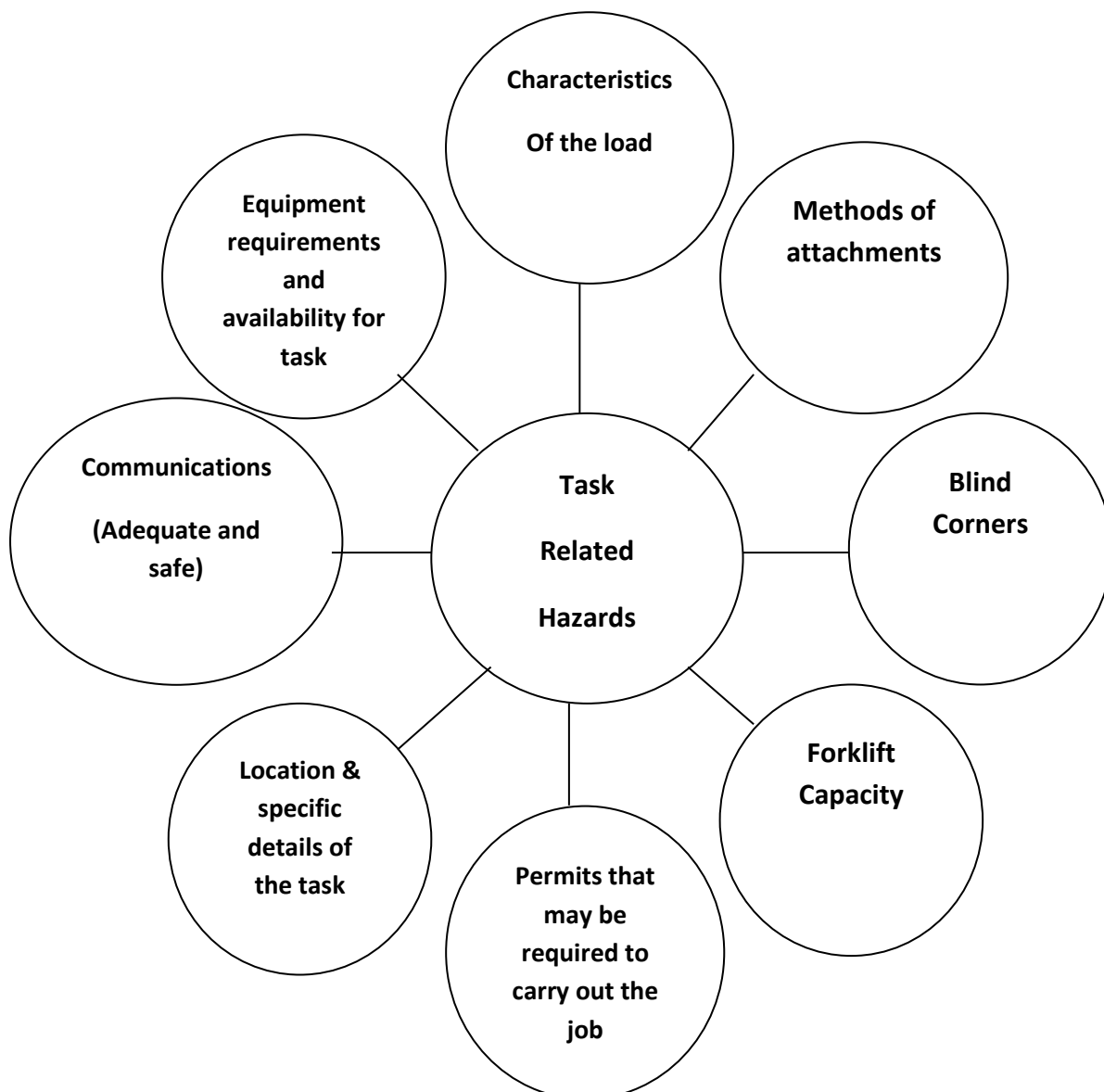
Part of your job is to look around to see if you can find any hazards before you start using the forklift.



## Task Related Hazards

There are many other factors that you need to consider when planning out the task that are not necessarily site hazards, but hazards relating to the way the task is carried out.

When planning out the task, some things you may consider are:



## Controlling Workplace Hazards

Workplace hazards can be controlled in a variety of ways depending on the internal policy of the company.

All work places should have comprehensive WHS policies and procedures in place. Workers are usually inducted into the site on their first day. It is during this induction that workers are educated about the site's safety policies and reporting procedures. Inductions are usually carried out by the site supervisor.

### *Hierarchy of Controls*

Once risks have been identified, analysed and evaluated, risk treatment options need to be considered and applied.

Risk treatment involves selecting one or more options to modify a risk and then implementing the selected option/s.

Risk treatments should be recorded in a risk treatment plan.

Once an option has been implemented it may be referred to as a risk control.

The Hierarchy of Hazard Control is the name given to a range of control methods used to control hazards and risks in the workplace. The Hierarchy has 6 levels

- **Elimination**
- **Substitution**
- **Isolation**
- **Engineering Controls**
- **Administrative Controls**
- **Personal Protective Equipment (PPE)**

<b>Elimination</b>	This is the best the <b>FIRST</b> option of hazard control. Complete remove the hazard.
<b>Substitution</b>	This is the <b>SECOND</b> option for hazard control. Swap a dangerous work method or situation for one that is less dangerous.
<b>Isolation</b>	This is the <b>THIRD</b> option for hazard control. Isolate or restrict access to the hazard such as a pothole. This may be in the form of barriers, hand rails, etc
<b>Engineering Control Measures</b>	This is the <b>FOURTH</b> option for hazard control use equipment to lower the risk level. Most expensive usually.
<b>Administrative Control Measures</b>	This is the <b>FIFTH</b> option for hazard control. Site rules and policies attempt to control a hazard. This may be in the form of signage or memos.
<b>Personal Protective Equipment (PPE)</b>	The least effective and <b>LAST</b> option for hazard control. This includes such items as ear muffs, safety glasses, and high visibility vests, safety shoes, etc.

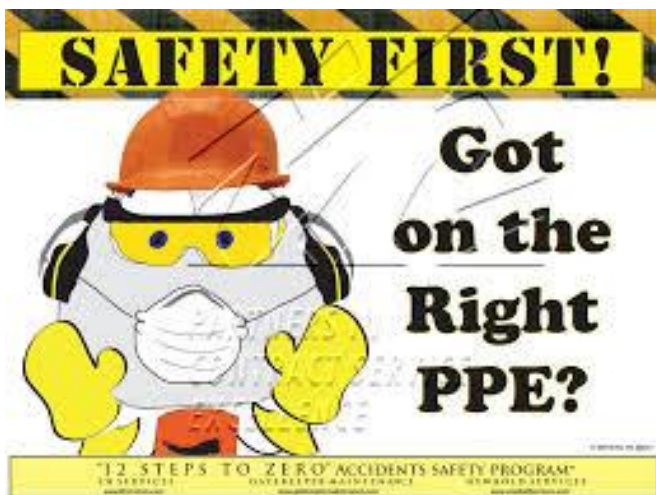
All hazard controls should be applied **before commencing the task** and as soon as a hazard is identified during the operation.

Safety equipment including PPE should be **selected at the planning stage of your work**. PPE must also be **checked prior to commencing the task**.

It is important to consider all of the options available when deciding on the best course of action.

Not all options are feasible or possible under some circumstances. You may need to use a number of control strategies in conjunction to reduce the risk level to an acceptable level. The risk treatment plan should clearly identify the order in which to implement the individual risk.

## PPE Signage



## Types of PPE



## Working Near Electric Power Lines

Operating the forklift near electric power lines can be extremely dangerous.

It is very important that you are aware of the safe operating distances for different types of electric lines and the steps you must take if the task requires you to work closer than these prescribed distances.

In NSW, equipment operation may not be any closer than the following distances to power lines:

Power Line Type	Distance
<b>Up to 132kv</b>	<b>3.0m</b>
<b>132kv up to 330kv</b>	<b>6.0m</b>
<b>More than 330kv</b>	<b>8.0m</b>

Generally if you are required to work closer than the prescribed safe work distance you must:

- **Have the power lines shut off (or insulated if this is not possible).**
- **Use a spotter (depending on local regulations)**
- **Seek exemption from relevant authority.**

Distances vary depending on the voltage of the power lines. You should refer to the local power authority for information and advice to determine the voltage of power lines in your work area.



## *Forklift Trucks & Contact with Electric Power Lines*

If contact with electric power lines does occur there are some steps you should follow:

- **Try and break contact with power lines** but only if you can do this without bringing down the lines. Breaking contact might involve reversing or lowering the forklift attachments.
- **Keep all other people away from the forklift** and don't let them touch the forklift.
- **Stay on the forklift** if safe to do so **and wait for help to arrive (ensure power is turned**
- If you have to get off the forklift **JUMP CLEAR** without touching the forklift and the Ground at the same time and keeping your feet together shuffle away at least 8 metres **DO NOT WALK**
- Keep an **8m exclusion zone** around the forklift.
- Follow site incident reporting procedure.
- Do not use the forklift until it has been checked.

## *Tiger Tails*

**Tiger tails are used as a visual aid to identify the location of overhead electric lines.** They are usually located where the electric lines meets the power pole or in low hanging electric lines above driveway entrances to alert truck drivers. Tiger tails are black and orange in colour. Approximately 1.2 metres in length.

It is important to note that Tiger Tails DO NOT insulate the power lines therefore exclusion zones and safe operating distances must still be maintained, even when Tiger Tails are present.



## Route Planning - Hazard & Control Inspections

Before starting work, you should plan your route. Inspecting the work site and finding out who else will be working in & around the area is a good start.

**The site must be inspected for all hazards and controls** including:

- Bridges?
- Doorway
- Obstructions
- Blind corners
- Vehicle traffic
- Access and egress
- Plant and equipment.
- Dangerous materials
- Lighting/illumination
- Underground services
- Electrical power lines
- Characteristics of load
- Overhead service lines
- Capacity of the forklift
- Ground bearing pressure
- Availability of equipment
- Pedestrians and personnel
- Permits required for the tasks
- Wind, bad weather conditions
- Location and Specifics of tasks
- Equipment required for the task
- Communications (safe and adequate)
- Potential non-weight bearing surfaces
- Surrounding structures (including buildings and bridges)

## Control Strategies for Traffic

If the work area is going to be shared with pedestrians, site personnel/workers, vehicles or mobile plant, you will need to make sure you have selected appropriate control measures. These may include:

- **Warning signs**
- **barriers**
- Setting up flashing hazard lights.
- Using a **flag person or traffic control** to control traffic.
- **Pedestrian exclusion zones for pedestrians.**
- Organising hoardings, gantries or scaffolding.
- **Vehicle exclusion zones for vehicles and plant.**

If forklift operations are being carried out at night or in darkened areas, **adequate lighting** needs to be provided across the entire work area to allow the forklift to safely conduct operations.



## Harmful and Explosive Gases

Internal combustion engines produce odourless but poisonous gas, carbon monoxide. A person working in a confined space where carbon monoxide is present could become seriously ill. **Carbon monoxide builds up in the body and can kill in 20 minutes.** Make sure that there is adequate ventilation where forklift trucks with internal combustion engines are operating.

Internal combustion engines include diesel, petrol and LPG and are best used in open work areas.

**A battery powered forklift (electric) is the most suitable to shift loads within a confined space.**



Batteries generate explosive gases during vehicle operation and when charging separately. Flames, sparks, lit cigarettes or other ignition sources must be kept away at all times. **Batteries must be charged in a well ventilated area to reduce the risk of explosions.**



## Wet and Slippery Surfaces

When operating on wet slippery surfaces, **reduce speed and proceed with caution. Avoid using ramps or other inclined pathways.**



## Rear End Swing

Many accidents occur with forklifts because operators do not understand rear end swing is dangerous.



Rear end swing is the rapid sideways movement at the rear of the forklift truck. Forklift trucks steer from the rear axle and pivot on the front wheels, the rear end (counterweight) **swings wide and fast when turning. This creates a risk of collision with persons, structures or plant.**

With the rear end steering, operators need to keep to the inside of every turn to allow enough room for the rear of the forklift to swing around. Ensure that the rear end swings clear of materials, racks, stacks, equipment and pedestrians when rounding corners or manoeuvring in aisles and tight areas.

Rear end swing is particularly hazardous for nearby pedestrians and other workers. As soon as forklift operators become careless about watching the rear end swing, damage starts to occur. Most damage to stock, racking and machinery is caused by the rear of the forklift hitting them.

## Refuelling the Forklift

Do not refuel an internal combustion forklift truck unless the motor is stopped and the ignition is turned off. There is a major risk of the **fuel igniting or exploding if the motor is running**. Before refuelling or recharging the forklift truck, the operator shall observe and carry out the following Safety Precautions.

- Lower forks to the ground; apply the hand brake, place gear lever in neutral and switch off the engine or power supply. **NORMAL PARKING PROCEDURES**.
- Open flame and smoking are prohibited within 10 metres of any forklift being refuelled or recharged.



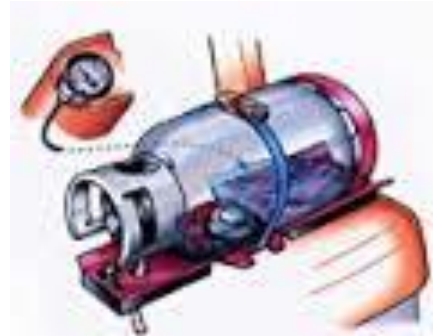
## ***Changing LPG Bottles***

LP gas is a highly volatile explosive. Change gas bottles in a well-ventilated area well clear of a naked flame or source of ignition.

LPG gas bottles must be changed only by those trained and authorised to do so. Beware of burns from escaping gas. Always wear gloves, safety glasses or face shield and do not smoke while changing LPG gas bottles:

Switch off engine

- Turn off cylinder valve
- Disconnect takeoff hose
- Remove safety strap
- Change the bottle
- Connect the safety strap
- Reconnect takeoff hose
- Turn on the cylinder valve
- Check for leaks: look, listen and smell



LPG gas bottles should be inspected and stamped by a competent person every 10 years. All LPG gas forklift tracks must have an installer compliance plate.

## ***Diesel or Petrol Forklifts***

- No smoking, naked flames or other sources of ignition will be permitted in the designated refuelling area.
- Care should be exercised to avoid spilling any fuel or overflowing the tank during refuelling, (keep spill kit handy). Replace the cap securely.

## Communications

As a forklift driver you need to be able to communicate with those around you while you work, and you need to be able to understand the instructions to use the forklift safely.

Workplace communications may take the form of the below methods:

- **Signage**
- **Listening**
- **Hand signals**
- **Written instructions**
- **Verbal and non-verbal language**
- **Two-ways**
- Questioning to confirm understanding, and appropriate worksite protocol

## Emergency Situations

In case of an emergency situation, you must:

- |                           | <u>WHO?</u>               |           | <u>WHAT?</u>                    |
|---------------------------|---------------------------|-----------|---------------------------------|
| • <b>Inform</b>           | <b>personnel</b>          | of        | <b>unsafe areas.</b>            |
| • <b>Alert</b>            | <b>personnel</b>          | of the    | <b>emergency situation.</b>     |
| • <b>Communicate with</b> | <b>supervisor/others</b>  | the       | <b>nature of the emergency.</b> |
| • <b>Provide the</b>      | <b>Emergency Services</b> | with info | <b>about the emergency.</b>     |

## Determining Load Weights

Forklift operators must ensure the forklift you are using is capable of moving the load by checking the weight before trying to lift it. There are several ways to find out the weight of a load, including

- **Consignment note**
- **Weighbridge certificate**
- **Estimated by calculation**
- **Weigh the load using scales**
- **If weight is marked on load and/or load packaging**



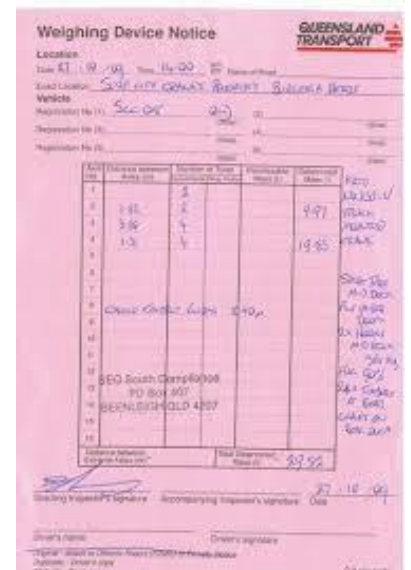
## Consignment Notes

Document prepared by a consignor and countersigned by the carrier as a proof of receipt of consignment for delivery at the destination. Used as an alternative to bill of lading (specially in inland transport), it is generally neither a contract of carriage nor a negotiable instrument.



## Weighbridge Certificates

Commercial scales have to be National Type Evaluation Program approved or certified. The certification is issued by National Conference on Weights and Measures for registration purpose. Since the weight of the vehicle carrying the goods is known (and can be ascertained quickly if it is not known by the simple expedient of weighing the empty vehicle) they are a quick and easy way to measure the flow of bulk goods in and out of different locations



## CALCULATION



4 drums

Weight of each drum = 200kg

Weight of pallet = 50kg



48 bags

Weight of each bag = 20kg

Weight of pallet = 50kg

**What is the total weight?**

Calculation answers must show all workings

$$4 \times 200\text{kgs} = 800\text{kgs}$$

$$800\text{kgs} + 50\text{kgs} = \mathbf{850\text{kgs}}$$

**What is the total weight?**

Calculation answers must show all workings

$$48 \times 20\text{kgs} = 960\text{kgs}$$

$$960\text{kgs} + 50\text{kgs} = \mathbf{1010\text{kgs}}$$



4 Layers of boxes  
6 boxes to a layer  
Weight of each box = 30kg  
Weight of pallet = 25kg



24 planks of wood  
Weight of each plank = 160kg

**What is the total weight?**

Calculation answers must show all workings

$$4 \times 6 = 24$$

$$24 \times 30\text{kgs} = \mathbf{720\text{kgs}}$$

**What is the total weight?**

Calculation answers must show all workings

$$24 \times 160\text{kgs} = \mathbf{38400\text{kgs}}$$

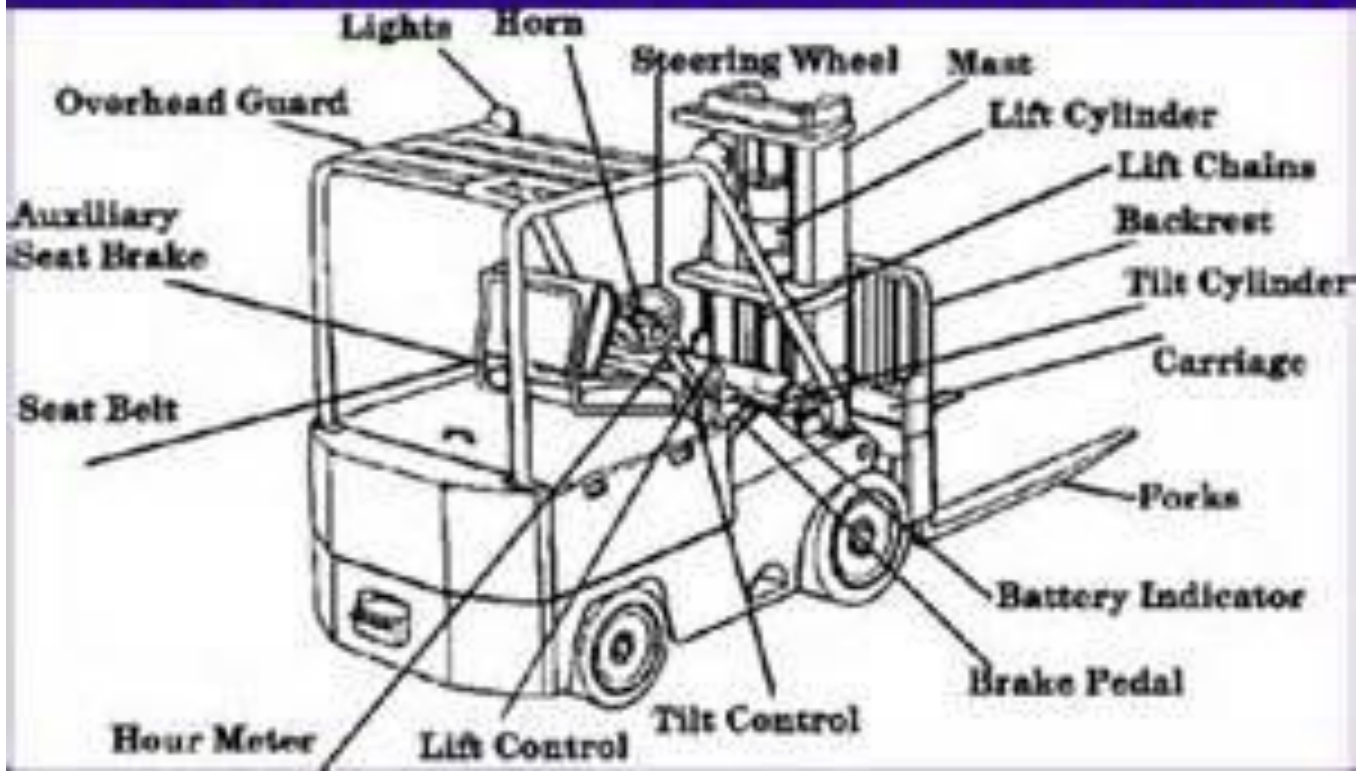
## Pre Operational Checks

Pre-operational checks must be carried out before you use the forklift. This ensures that the forklift is safe to use and helps identify all damage and defects.

Starting at the front of the forklift, the following visual checks for damage and defects must be made:

- **Fork Attachments or other attachments**
- **Locking Pins**
- **Load Guard**
- **Mast, Hydraulic hoses and Chains**
- **Warning Labels and Safety Signs**
- **Hydraulic Rams**
- **Front Tyres**
- **Foot Guard and Foot Pedals**
- **Steering Wheel and Controls**
- **Mirrors**
- **Front Light Lenses**
- **Overhead Guard**
- **Seat and Seatbelt**
- **Fluids**
- **Hydraulic oil level**
- **Transmission oil**
- **Battery security, water level and cleanliness**
- **Brake fluid**
- **Coolant**
- **Power steering**
- **Gas Compliance Plate**
- **Rear Light Lenses**
- **Counterweight**
- **Rear Tyres**

## Components of a Forklift Truck



## Out of Service Tags

If damage or faults are found, you must remove the key, place an OUT OF SERVICE tag on the forklift. Hanging the tag on the forklift warns people that it is unsafe, in need of repair and should not be used until the repairs have been carried out.

The site supervisor is usually responsible for ensuring that out of service tags are available.

### If any faults are found during any safety check:

- Do not operate
- Tag out of service and
- Report the matter to an appropriate person

### If the data plate is missing or unreadable:

- Do not operate
- Tag out of service and
- Report the matter to an appropriate person

### If any faults are found during pre operational or post start-up checks:

- Do not operate
- Tag out of service and
- Report the matter to an appropriate person

### If an abnormal noise is heard coming from the forklift:

- Do not operate
- Tag out of service and
- Report the matter to an appropriate person



## Data Plates

Every forklift truck should have attached in clear view a manufacturer's Data Plate, which should contain the following information:

- The make, model and serial number of the forklift truck.
- The Working Load Limit (WLL) at both mast vertical and forward tilt.
- Maximum lift height.
- Any attachments that are being used on the forklift e.g. drum grabs, work platforms, etc
- Whether using pneumatic or solid tyres. ,

**Note: Always inspect the Data Plate before operating the forklift truck.**

## Working Load Limits (WLL)

Most forklift trucks have two Working Load Limits stamped on the data plate. They are:

- Mast vertical WLL or SWL (Safe Working Load)
- Mast forward tilt WLL or SWL (Safe Working Load)

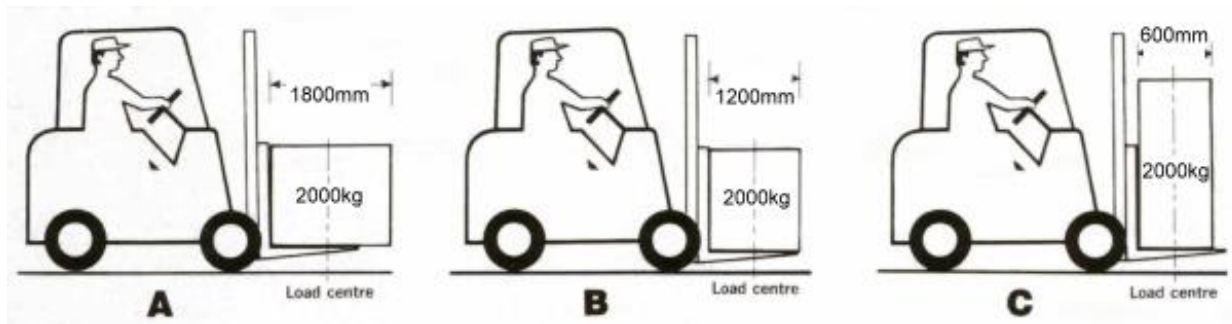
The load rating plate is usually found next to the driver's seat. If attachments are fitted a separate load rating notice needs to be displayed. To prevent accidents the weight of the load must be checked against the specifications of the forklift truck.

WLL's must not be exceeded. If the load weight is too great, the forklift truck can tip over. As the mast is tilted forward, the centre of gravity moves away from the fulcrum so that the WLL decreases.

Operators must be able to understand the load plate and the conditions of loading at all times. The load rating is taken from the front face of the load backrest to the centre of the load.

It is the responsibility of the owner to provide a load plate that displays the lifting capacity of the machine under all lifting conditions. Do not use a forklift truck that does not have a load plate.

The forklift trucks shown below are rated at 2000kg at 600mm load centre distance.



Of these forklifts, Forklift A is overloaded because its centre of gravity is greater than 600mm.

Forklift B and C have a load that is within the rated capacity of the forklift.



## Forklift Rated Capacity

The rated capacity is the maximum load the forklift truck is designed to carry at a load height and specific load centre distance as shown on the data plate.

By reading the data plate below we can see that the maximum WLL or SWL of the forklift when using forks with the mast tilted forward 3 degrees is 840kg.

We can also determine that the maximum WLL or SWL the forklift can lift with a load centre distance of 600mm and the mast in a vertical position, with forks is 1270kg.

The same weight load with a load centre distance of 700mm could not be lifted by this forklift, however a heavier load with a smaller load centre distance could.

This forklift has solid rubber tyres and has no attachments fitted.

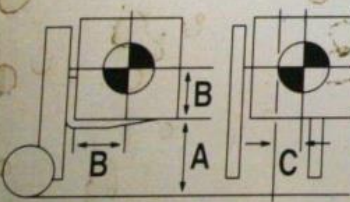
Special note must be taken when reading the data plate. Operators must ensure they read the warning labels on the data plate.

**TOYOTA FORKLIFT TRUCK**

MODEL	7FGCU25		SERIAL NO.	97847 2-06	
MAST TYPE	FSU	BACK TILT	5	ATTACH	FORKS
FRONT TREAD	35 in	TIRE FR SIZE	21x7x15/SOLID		
	885 mm	TIRE RR SIZE	16x5x10-1/2/SOLID		
TRUCK WT.	8370 lb				
ACCURACY±5%	3800 kg				

RATED CAPACITY WITH VERTICAL MAST EQUIPPED AT MAX. LIFT HEIGHT "A" AS SHOWN

	A	B	C	CAPACITY	
in	189	24	0	5000	lb
mm	4800	600	0	2200	kg
in	189	30	0	4350	lb
mm	4800	760	0	1900	kg



THIS FORKLIFT TRUCK MEETS OR EXCEEDS DESIGN SPECIFICATIONS OF ASME/ANSI B56.1 IN EFFECT ON THE DATE OF MANUFACTURE.

**WARNING** IMPROPER OPERATION OR MAINTENANCE COULD RESULT IN INJURY OR DEATH. TRAINED OPERATORS ONLY. READ OPERATOR'S MANUAL FIRST. 57846-U2172-7

## Forklift Tyres

### *Pneumatic*

Pneumatic tyres are structured similarly to a car tyre: made of treaded rubber and filled with compressed air. The word "pneumatic" is actually defined as. "containing or operated by air or gas under pressure." Pneumatic tyres are made with less rubber material and typically foam filled with liquid polyurethane material to provide more durability when driving over rough terrain.

Tyre pressure must be monitored to assist in maintaining the stability of the forklift.

### *Solid Tyres*

Solid tyres are non-pneumatic, meaning that they are not filled with air. These types of tyres are used primarily for industrial or light commercial applications. Light industrial and personal use vehicles like forklifts, lawn mowers, golf carts, wheelbarrows, and skateboards are some of the most common places to find solid tyres. They are either made of solid rubber, or moulded from plastic compounds.

Solid tyres are significantly more prone to roll-over than pneumatic tyres, which is why they are not recommended for fast vehicles. On the positive side, they are much more resistant to wear and tear than their air-filled counterparts. They can handle chunks being removed or other basic damage without needing replacement. Recycling centres and manufacturers who handle glass products are likely to use solid tyres, because of their resistance to puncture damage. They are also able to handle a significantly higher weight load than pneumatic tyres without the fear of blowouts, which makes them appealing for slow-moving industrial machines that require heavy lifting.

When using a forklift with solid tyres, the forklift operator must check the following:

- Wear is even.
- Tyres are not worn down.
- Any large pieces of rubber missing.
- Wear has not reached the wear limit line.



## Post start up checks

Post start-up checks must be carried out once the operator is at the controls of the forklift and before you use the forklift. This ensures that the forklift is safe to use and helps identify all damage and defects.

When mounting the forklift you must use 3 points of contact, adjust the seat and fasten seat belt. Once your seatbelt is fastened, start the forklift demonstrating the correct start up procedure.

The following checks for damage and defects must then be done prior to operating the forklift truck:

- Check gauges.
- Check warning lights.
- Check warning devices.
- Check controls (up/down, tilt forward/back, side shift left/right) to their full extent.
- Check clear for travel before moving.
- Check braking system (hand brake and foot brake) whilst moving.
- Check steering system whilst moving.
- Check underneath machine for any water or oil leaks by reversing the forklift.

It is extremely important to conduct pre operational and post start-up checks prior to using the forklift to ensure it is safe to use.

## Forklift Guards

Forklift operators are protected by 3 main guards.

### Foot Guard

The foot guard is fitted to protect the operator's feet from falling objects.

### Load Guard

This guard is used to support the load when it is tilted back, it stops the load from falling into the mast and most importantly it prevents the load from falling onto the operator.

### Overhead Guard

The overhead guard is a metal roof supported by posts at each corner of the cab that helps protect the operator from any falling objects. On some forklifts, the overhead guard is an integrated part of the frame assembly.

Do not make minor repairs, alterations or adjustments to any forklift, unless you are **competent** and **authorised** to do so.

## Reversing a Forklift Truck

Whenever reversing a forklift the follow procedure must be followed:

- Check behind using mirrors and/or looking over each shoulder to ensure that it is safe to reverse.
- Ensure warning devices are operational. (Flashing lights, strobe light, horn, beeper)
- If the operator's vision is obstructed, a guide is required,

Monitor load movement to ensure the safety of personnel, as well as load and structural stability.

## Travelling with a Load

The following "Safe Practices" have been compiled to help safeguard the operator and their fellow workers. They must be strictly observed in all forklift truck operations to minimize the potential for injury to personnel &/or damage to equipment & machinery.

- Do not use the forklift for any other purpose other than for which it was designed, eg towing, pushing, bumping, etc.
- Never travel with the load at vertical or forward tilt
- Take particular care when braking, accelerating or turning, as the force applied will alter the balance of your forklift.
- Ensure that all safety equipment, e.g. flashing lights, reversing beepers etc are maintained and in good working order.
- Safeguard pedestrians at all times. Pedestrians have right of way.
- Do not allow any persons to stand or pass under elevated forks or attachments, whether loaded or empty.
- Never reach through or around the uprights of the mast, keep whole body in confines of forklift while travelling.

# TCP TRAINING

- Always raise the load with the ***mast vertical or tilted slightly backward***.
- Only raise or lower loads while stationary.
- Always carry a load with the heavy end against the heel of the forks.
- When entering or exiting through doorways or around blind corners, or any other area where vision is obstructed, sound the horn.
- Be aware of any other plant or other forklifts working in your location.
- Avoid sudden starting or stopping as this can cause your load to shift and fall.
- Always check any ramps, or truck decks for width and security before proceeding onto them.
- When travelling with large loads that obscure your vision **have an observer to direct the movement of the forklift.**



Travel forward going up an inclined surface and in reverse going down to keep the load from falling off. Don't descend with the load in front of you. Always go up and down Inclines slowly



- Do not attempt to turn on a ramp or sloping surface as this can affect the lateral stability and cause the forklift to tip over sideways and your load may shift.
- Loads must not be lifted near or over people. This is extremely dangerous as loads could fall onto people and result in injuries or death.



- Forklifts are one person vehicles. You are only permitted carry passengers when the forklift is specifically designed and equipped to carry more than one person.

# TCP TRAINING

- Travelling with the forks or other attachments in an elevated position further increases the tendency to **tip over sideways or to lose a load.**



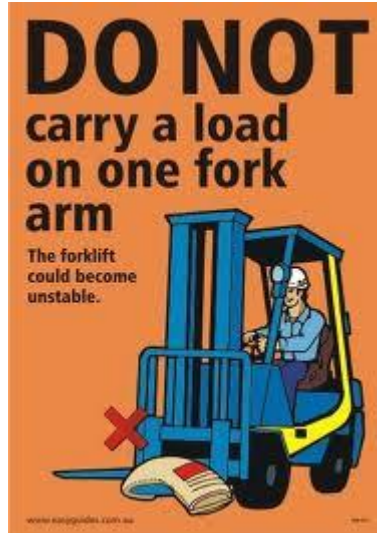
Safe travel height for a forklift with or without a load is below front axle height, or a reasonable minimum distance from the operating surface as practicable.



- Stay to the left in two way traffic aisles.



- Never lift with one fork arm as this creates lateral instability and can cause the forklift to tip over and could damage the fork arm.



## Forklift Instability

### *Lateral Instability*

The following situations can cause forklifts to tip over sideways:

- Turning at unsafe speed
- Side shift not centred
- Unevenly distributed load
- Turning with the load raised
- Driving over uneven surfaces
- Operating on a sloping surface
- Driving too fast (loaded or unloaded)
- Driving with a flat or under-inflated tyre
- Driving with a load in the elevated position

### *Longitudinal Instability*

The following situations can cause a forklift to tip forward or Backwards:

- It is overloaded
- Unevenly distributed load
- Driving over uneven surfaces
- The mast tilt is used incorrectly

- The operator brakes too severely
- Driving too fast (loaded or unloaded)
- Driving with the load facing downhill
- Driving with a load in the elevated position
- The load is not positioned against the heel of the fork arms

## ***Strategies of Tipping***

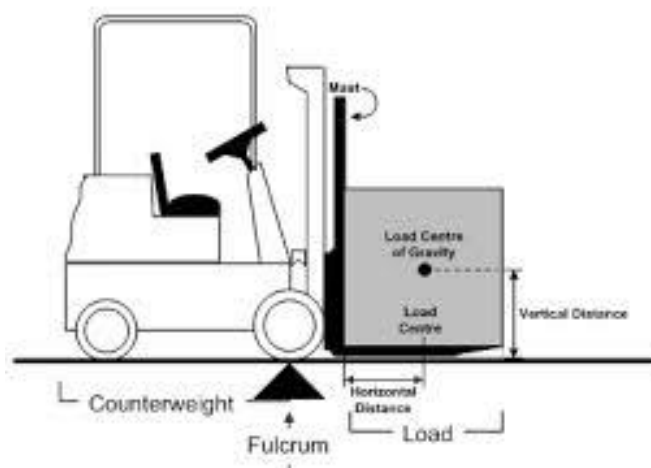
- Remain in the forklift until safe to exit
- Brace yourself until the forklift is stationary and is safe to exit

Jumping from a tipping forklift truck is dangerous because you could become trapped underneath.

Always be seated with seatbelt fastened when starting the forklift. The seatbelt prevents the operator being propelled into the forklift structure in a collision or out of the forklift in the event of a roll over

## ***Point of Balance (Fulcrum)***

The counterbalanced forklift truck operates on the see saw principle. The principle being that the weight to the right of the fulcrum counter balances the weight of the load.



The Point of Balance (Fulcrum) for a forklift truck is defined as a **line drawn perpendicular, passing through the centre of the front axle that meets the ground.**

All the weight behind the point of balance acts as a counterweight.

**You are NOT allowed to add additional counterweights to a forklift without referring to the forklift manufacturer instructions.**

## Picking Up and Placing Loads

- Do not allow more than a third of the top section of an unwrapped load to stand above the top of the load backrest extension. A load not backed by the load apron can fall back and tangle with the mast, or if the load is very high, can topple back onto the driver.
- Ensure side-shift attachment is centralised before travelling to maintain forklift and load stability.
- Do not raise the load with just one fork.
- When tilting the load raise the load clear of the stack before tilting the load backwards.
- Always travel with the load tilted backwards and low to the ground.
- When putting down, always bring the load over the stack before tilting forward.
- Deposit load with the mast vertical or slightly tilted forward.

## Loading, Carrying and Unloading

When loading or unloading with a forklift truck the following practices are to be observed.

### Picking up a load

- Do not lift loads near or over people. Wait until they move or ask them to move until the load has been picked up or put down. If you do not then you are working against safe operating procedures.
- Ensure that the load is within the rated capacity of the forklift.
- Ensure that the load is not top heavy, unstable, projecting or unequally distributed.
- Check the condition of the load supports eg pallet, container, tonnage, etc. The sudden collapse of block stacking has often been caused by these items being damaged or deteriorated.



## Follow the recommended procedure:

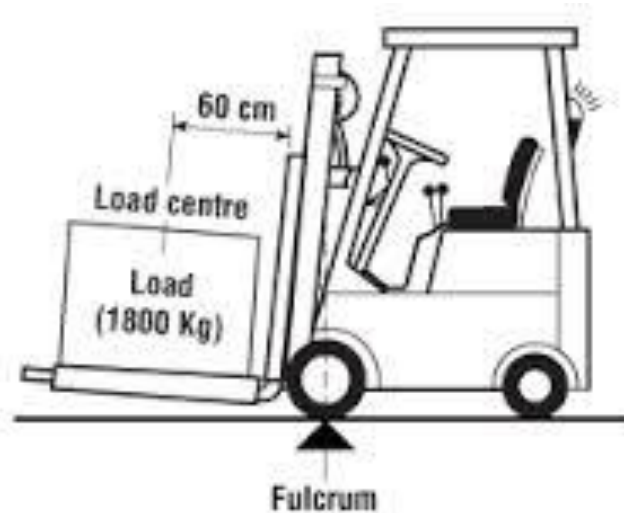
- Position the forklift truck square and central to the load, spread the forks apart sufficiently to ensure stability of the load, and ensure that there is ample clearance beneath the load to insert the forks.
- Approach the load with the mast vertical, making sure that the height of the forks are correct for entry. Insert the forks under the load keeping the load squarely on the forks. Then raise the load carefully, take the strain, elevate slightly and apply sufficient backward tilt to stabilize the load. Raise the forks to a position just clear enough from the ground to avoid level variations.
- When lifting from a stack, withdraw the load a sufficient distance only to clear the stack; and then lower the load to a safe travel height.

If the above procedures are not followed this can result in damage to the forklift truck, injuries to operators and other personnel and also damage to equipment due to collisions and/or the forklift tipping over.

## Loading the Forklift

- The most important safety consideration when operating a forklift is the stability of the forklift when it is loaded
- If the load on the forklift causes it to become unstable, it may tip forward or tip sideways.
- It is essential that the load on the pallet is stable and well stacked before it is lifted and move.
- The load should have a centre of gravity that is: low as possible in the load towards the back of the load Centred across the load
- Use strapping to secure the load if there is a chance of objects falling off.
- To make sure that the load is stable, heavy objects should be placed at the bottom of the stack.

- Load must be placed on a firm level site.
- Stacks must not become unstable due to height.
- Broken pallets should not be used. The load may need to be restacked if the pallet is broken or appears unsafely loaded.



## Raising the Load

When a load is raised, the forklift is less stable. Check that the overhead clearance is adequate before raising loads.

- Do not raise or lower the fork unless the forklift is stopped and braked.
- Lift loads straight up or tilt back slightly.
- Do not lift a load that extends above the load backrest, unless no part of the load can possibly slide back toward the operator.

## Loading or Unloading Trucks

- Do not operate forklifts inside vehicles for long period periods without ventilation.
- Secured Dock Plates or Bridging Plate must be used for any gaps between a truck and loading dock before shifting loads.
- Drive carefully and slowly over the plate. Do not spin wheels.

## Emergency Vehicles

Give right of way to ALL emergency vehicles.



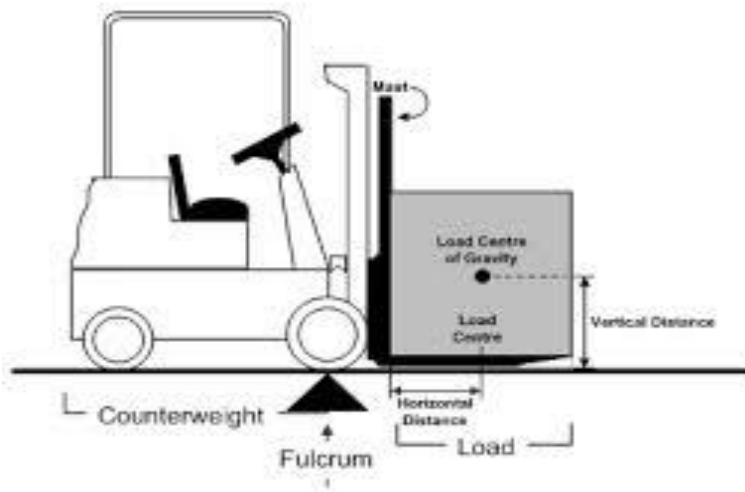
## Load Centre Distance

Load Centre Distance is defined as **the distance from the vertical face of the forks to the loads centre of gravity and from the top face of the fork blades vertically upwards.**

As load centre distance increases, the forklift's capacity decreases. The use of special attachments instead of forks will also decrease the regular capacity of the forklift truck.



If the load is not hard against the heel of the fork arms, the forklift truck's capacity is reduced and stability may also be affected.



## Parking

When parking an industrial forklift the following precautions should be observed.

- Never park or leave forklift in front of any **doorway, walkway, first aid station, emergency showers, sloping surfaces, fire fighting equipment, blind corner, emergency exit**, or in such a position that it obstructs items of equipment to persons may require access.
- If required to park near a railway line, ensure that no part of the forklift is any **closer than 2 metres to the nearest rail**.
- **Under overhead electric lines** where the clearance is insufficient to be safe.

## *Normal Parking Procedures*

Before leaving the forklift unattended, the operator must take the following precautions:

- Lower forks completely, and tilt them forward slightly, so that the tips are in contact with the ground.
- Place gear in neutral.
- Apply parking brake.
- Switch off engine or power supply and remove the key.
- Do a post-operational check of the forklift ready for the next operator.
- Site specific safety procedures must be adhered to.

## *Parking on Inclined Surfaces*

Unless it is unavoidable always park on flat level ground. If you are required to park and leave your forklift on a slope, **normal parking procedures then chock the wheels.**



## Post Operational Checks

Post operational checks are carried out to look for **damage and leaks**. At this time you are also ensuring that **all systems have been shut down**. In this way you are making certain that the forklift is safe for the next operator.

Leaks are found by looking underneath the forklift for visible drips or puddles. Damage can be checked for visually by walking around the forklift and looking at all the visible parts.

If a fault is found during the post operational check a danger tag must be placed on the forklift. The fault should then be recorded in the logbook or daily inspection checklist (this will depend on the company's internal reporting procedure). The fault is then also verbally reported to the site supervisor.

It is very important to always remove the key from a forklift after you have finished using it. **Removing the key prevents any unauthorised use**. Generally speaking, some companies might have site specific procedures in place to ensure the key is logged back in after use and secured.



**End of Training Manual**