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Forklift Truck

TLILIC0003 - Licence to operate a forklift truck



Student Workbook

Modskills⁺



TALENTED TRAINING RTO 45144

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What this Workbook is about

This workbook is about the skills and knowledge required to operate a forklift, including checking forklift condition, driving the forklift to fulfil operational requirements, monitoring site conditions, and monitoring and maintaining forklift performance.

Persons achieving competence in this unit will need to fulfil all of the relevant state/territory WHS regulatory requirements concerning the safe operation of forklifts.

Successful completion of this course leads to a licence being issued.

The skills and knowledge covered in this Workbook are listed below.

- Plan work
- Conduct routine checks
- Shift load
- Shut down and secure forklift truck

This Workbook provides general information and advice on the safe operation of a forklift truck. Always read the driver's manual to understand the limitations of the forklift and equipment you are using.

Talented Training 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.

If you wish you may access additional resources for the purposes of further development or studying for the Licensing Assessment. It is your responsibility as the student to practice and study as required to ensure that your level of competence in both the theory and practical components is satisfactory prior to any form of testing.

Workbook Tasks

Throughout this workbook, you will be required to perform certain tasks relating to the area of study and used to re-enforce your learning. These points will be highlighted by the following icons:



Discussion Points

These tasks will help you to understand the underpinning knowledge and will help you to think for yourself and discuss viewpoints with other students as well as your trainer.



Activities

At the end of each element, you will be able to review the content by completing these tasks. The activities help to determine if you understand the information covered and can be completed by yourself or as a group.

Introduction to high risk work licensing

The objectives of this National Standard are:

- to ensure that persons have the skills and knowledge to perform high risk work in a safe manner; and
- to facilitate the operation of a nationally uniform and efficient licensing system for persons engaged in high risk work.

Licenses issued in accordance with this National Standard will be recognised in Australian States and Territories to promote the portability of skills and the free movement of labour across State and Territory borders.

This National Standard provides a national policy approach for authorising the performance of high risk work and promoting safety standards relating to high risk work.

Training and Assessment Requirements

Training and assessment for this course must be delivered under the supervision of, or in partnership with, an RTO. Training and assessment must show evidence of:

- structured training
- practical training experience, and
- an assessment of the student's¹ competency

Before being booked into a WHSQ Licensing Assessment, students must demonstrate to the RTO Trainer/Assessor that they have achieved the required competencies to have their skills and knowledge assessed against the relevant unit(s) of competency.

Recognition of a student's prior learning may exempt a person from undertaking all or part of the training but must demonstrate that the person's equivalent qualifications and prior learning are relevant to the competency.

Part of a person's learning may include on the job training and experience. This should be demonstrated through the completion of a Training Logbook which is used to keep track of workplace training.

A person is not allowed to perform HRW if they are not competent to do so (whether you hold a HRW license or not). If a person does not have a HRW license however, they must have been formally assessed by an RTO and operate under the direct supervision by a qualified license holder, for training purposes only.

¹ Under WHS Regulations, a 'student' is a person who is receiving formal training and informal learning in a class of HRW. This word means the same as 'student' for the purposes of this course.

WHS and High Risk Work Licensing

Under Workplace Health and Safety law, an employer must provide a workplace that is safe and without risk to health. They must provide instruction, training and supervision for their employees to work safely and must do so in a way that is easy for employees to understand.

An employer must never allow a person to perform HRW if they know that person is not competent to do so. Otherwise, they will also be responsible for putting others at risk and can be severely penalised.

Application Requirements

A person must not operate a forklift truck unless the person holds a LF Class HRW licence, unless:

- 1) A person operates the forklift during a formal training course under a Registered Training Organisation (RTO); or
- 2) After receiving formal training, under the supervision of a person who is licensed to carry out the high risk work (informal training),

In order to obtain an LF Class forklift licence, an individual needs to enrol in a formal course of study with a Registered Training Organisation (RTO). Once enrolled in a formal course of training and whilst undergoing either formal or informal learning, the individual is considered a **'student'** under WHS law.

All course participants MUST:

1. Be able to speak and/or understand the English language; and
2. Accept the requirements of the course and assessment process.

Training Requirements

Persons wishing to apply for a LF Class HRW licence must be assessed by an accredited WHSQ assessor in affiliation with a Registered Training Organisation (RTO). Before the licence assessment can take place, applicants MUST:

1. Be at least 18 years old;
2. Be a resident of Australia;
3. Provide at least 100 points of identification;
4. Not currently hold an equivalent licence;
5. Provide evidence of engagement in a recognised course of training; and
6. Provide evidence that they have achieved the required competencies.

An assessment for an HRW licence involves both a knowledge and practical assessment and an assignment (or calculations assessment) conducted by the accredited WHSQ assessor.

National Assessment Instrument

This assessment requires applicants to undertake a theory exam, a calculations exam, demonstrate an equipment/site inspection and carry out practical tasks as requested by the HRW accredited assessor.

If an applicant has yet to achieve competency in all assessment areas and/or does not complete the full assessment on the day, they are able to apply for re-assessment after **48 hours**.

The re-assessment will only consist of the areas where the applicant was assessed as not yet competent or failed to complete in full.

On successful completion of the course you will be given the appropriate paperwork and sent a Statement of Attainment so that you can apply for a high risk work (HRW) licence or add a new licence class on an existing HRW licence, through your State WHS regulator (in Tasmania, it is through any Service Tasmania outlet).

You will need to renew your HRW licence every **five (5) years**.

Responsibilities

It is the responsibility of a HRW licence holder to follow safe operating procedures at all times and to ensure the safety of others in the workplace.

Failure to do so can result in the persons HRW licence being cancelled, suspended or being refused to have it renewed.



Discussion Points

Why might your employer need evidence of competency before you evidence of competency before you can do high risk work?



Activity 1

WHS and High Risk Work Licensing

Complete the questions in Activity 1 of the Student Activity Book

Identify workplace hazards

A hazard is anything that can hurt you or others while you work. You need to know (identify) workplace hazards before you start work. Look for hazards. Look above you, look around you, and check the ground below you.

Risk/Hazard Identification

HAZARDS CREATE RISK. CHECK FOR HAZARDS.

A **RISK** is the chance of a hazard hurting you or somebody else or causing some damage.

A **HAZARD** is the thing or situation that causes injury, harm or damage.

If you can remove or at least control a **HAZARD** you can reduce the **RISK** involved.

Identify potential workplace hazards

What is required for forklift safety?

The most important aspect of forklift driving is safety. As a forklift driver you must be aware that there are always people working around you and if there was an accident they may be injured. It would be a terrible burden to have on your conscience that your workmate was injured by an accident that you could have prevented.

Forklift safety has a very high profile in Australia. These accidents can be prevented only if companies and individuals realise the implications of these accidents and take steps to prevent them from happening.

Each workplace has its own specific workplace hazards. It is important to be aware of these hazards and what workplace policies and/or site specific procedures have been implemented to control them. The best way for an individual to be made aware of these hazards is to consult with appropriate personnel.

How can you identify workplace hazards?

The first and most important step in reducing the likelihood of an accident is hazard identification. This means identifying all workplace situations or events that could cause injury or illness. There are many methods which are useful for identifying hazards, including consultation with the following:

- Safety officers
- Supervisors
- Colleagues
- Managers
- Health and Safety Representatives
- WHS Committee members

What are some causes of forklift accidents?

There are many types of accidents that can happen to a forklift driver or workmate. The more common causes of accidents are:

- Being hit by a moving forklift, including feet being run over;
- Driver being hit by a falling object;
- Other employees being hit by a falling object;
- Forklift tipping over;
- Collision with other vehicles or objects; or

Parts of the driver's body protruding outside of the cab and striking an object. There are also many safety rules that need to be observed while driving a forklift.

What is a "Hazard"?

A hazard is anything that presents a risk of harm or damage to people or property. As a forklift driver it is important to inspect the workplace and identify any hazards before starting work. The following are some of the most common hazards in relation to operating forklifts:

Plant and equipment

Other forklifts, pallet jacks, vehicles etc. may be operating in the area.

Obstructions

Loose stock, bollards, building supports, rubbish or anything that's in the way

Dangerous materials

Flammable, explosive, poisonous or corrosive materials stored, used or present in the area.

Pedestrians and personnel

May include other personnel (employees) or the public or both.

Overhead service lines

Lights, fire sprinkler systems, air con ducts, gas pipes, water pipes, sewerage pipes, cable trays, etc.

Rear End Swing

The rapid sideways movement at the rear of the forklift truck creates a hazard for pedestrians and other workers.

Surrounding Structures and Buildings

Site sheds, separate warehouses or other businesses operating in the area.

Electrical Power lines

May include domestic or transmission lines.

Railway lines

It is not uncommon to find railway lines running through a workplace.

Bridges

Low overhead clearance may become an issue.

Wind, bad weather conditions

Hazardous weather may include rain, strong winds, lightning storms etc.

Constant/loud noise

Often due to other machinery being used in the area.

Confined Space/Restricted Area

Confined spaces (or restricted areas) often have poor ventilation. People in confined spaces can be overcome by dangerous gases.

Lighting /illumination

When working at night or in darkened areas, you **MUST** have adequate lighting across the entire working area so that the forklift can safely conduct its operations.



Discussion Points

What workplace hazards have you identified?



Activity 2

Identifying potential workplace hazards

Complete the questions in Activity 2 of the Student Activity Book

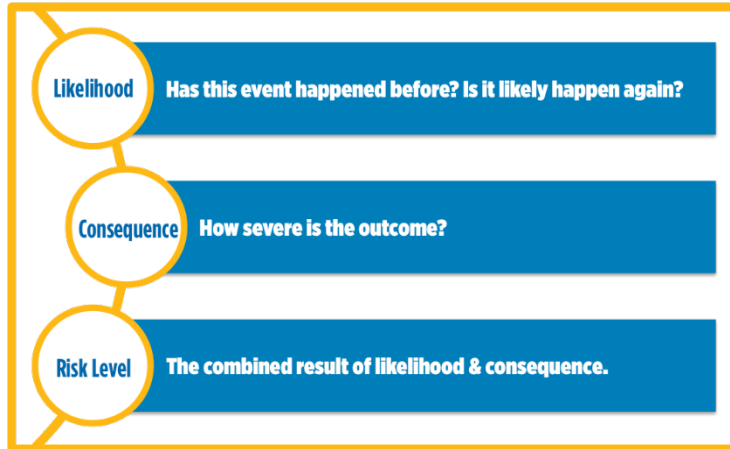
Risk Assessment

A Risk Assessment involves completing a Risk Analysis and a Risk Evaluation.

By assessing the likelihood and consequence of the risk you are able to understand the situation better and respond in an appropriate way.

Risk Analysis

Risk analysis involves considering what are the causes and sources of risks and comprises 3 factors:



Using a table similar to the one shown here you can analyse how high the risk level is.

LIKELIHOOD	CONSEQUENCE				
	Insignificant	Minor First Aid Required	Moderate Medical Attention and Time Off Work	Major Long Term Illness or Serious Injury	Severe Kill or Cause Permanent Disability or Illness
Almost Certain	M	H	H	VH	VH
Likely	M	M	H	H	VH
Possible	L	M	H	H	VH
Unlikely	L	L	M	M	H
Rare	L	L	M	M	M

Risk Evaluation

Risk evaluation is based upon the outcomes and results of the risk analysis.

Risk evaluation involves making decisions about which risks need to be treated and the order in which they should be treated.

It should take into consideration the context of the risks in relation to:



Using a table similar to the one shown you can evaluate how soon you should act to remove or control the hazard to achieve an acceptable level of risk.

RISK LEVEL	ACTION
VERY HIGH	<p><u>Act immediately:</u> The proposed task or process activity must not proceed. Steps must be taken to lower the risk level to as low as reasonably practicable using the hierarchy of risk controls.</p>
HIGH	<p><u>Act today:</u> The proposed activity can only proceed, provided that:</p> <ol style="list-style-type: none"> 1. The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls. 2. The risk controls must include those identified in legislation, Australian Standards, Codes of Practice etc. 3. The risk assessment has been reviewed and approved by the Supervisor. 4. A Safe Working Procedure or Safe Work Method has been prepared. 5. The supervisor must review and document the effectiveness of the implemented risk controls.
MEDIUM	<p><u>Act this week:</u> The proposed task or process can proceed, provided that:</p> <ol style="list-style-type: none"> 1. The risk level has been reduced to as low as reasonably practicable using the hierarchy of risk controls. 2. The risk assessment has been reviewed and approved by the Supervisor. 3. A Safe Working Procedure or Safe Work Method has been prepared.
LOW	<p><u>Act this month:</u> Managed by local documented routine procedures, which must include application of the hierarchy of controls.</p>

Any task with a Very High risk level is absolutely unacceptable to carry out. Steps must be taken to reduce the risk level.

Risk/HAZARD Treatment

Once risks have been identified, analysed and evaluated, risk treatment options need to be considered and applied most likely using the Hierarchy of Hazard Control.

The WHS Regulations require duty holders to work through this hierarchy to choose the control that most effectively eliminates or minimises the risk in the circumstances. This may involve a single control measure or a combination of two or more different controls.

Hazard control measures are actions you take to control or prevent a danger that can injure (hurt) you or others. Set up hazard controls before you start a task. The hierarchy of controls tells you the steps to take in order to reduce the danger from hazards. A risk is the chance of a hazard injuring a person.

Identifying hazard control measures

The correct course of action once a hazard is identified is to use control measures. These generally fall into three categories. You can

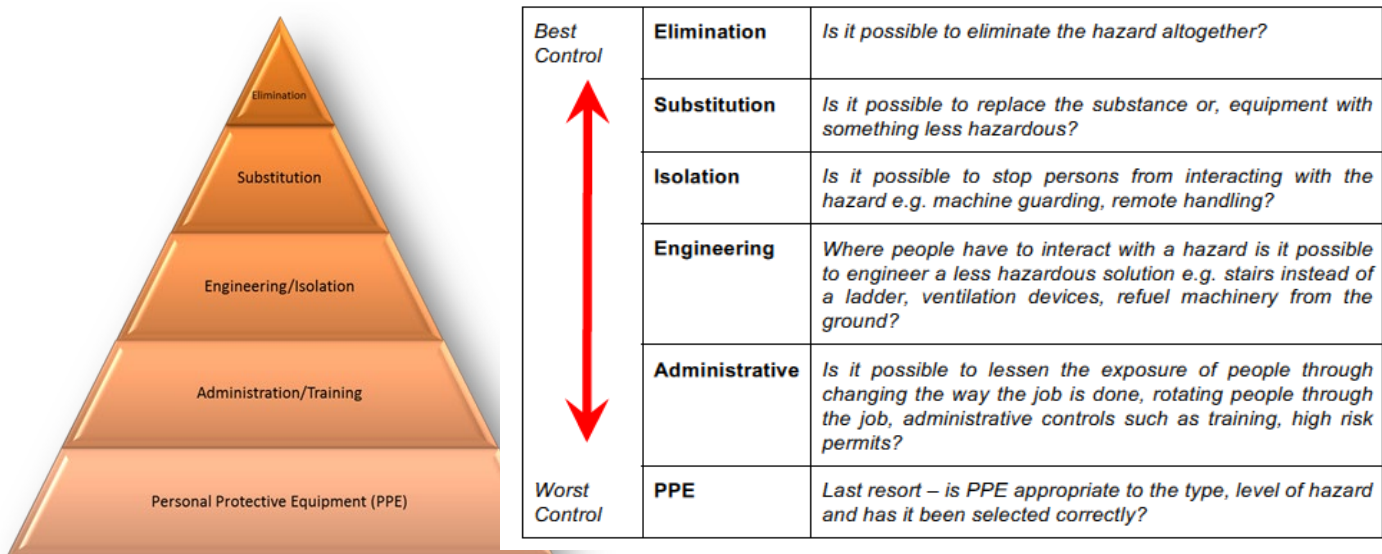
- eliminate the hazard
- minimise the risk
- use 'back-up' controls when all other options in the previous categories have been exhausted

The best way to control a hazard is to eliminate it. The elimination of a hazard is the first choice in a system called the 'hierarchy of controls'.

Hierarchy of Control

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

The following order is recommended:



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 measures 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 treatments.

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.

Control measures

There are dangers and risk of injury to any individual in the vicinity of an operating forklift truck, including pedestrians or site personnel. Control measures should be applied before commencing any task and as soon as a hazard has been identified.

A forklift truck driver must ensure that individuals are made aware of these hazards and appropriate control measures implemented prior to conducting any work. These may include, but are not limited to the following:

- **Warning signs and barricades**
These relate to the use of any warning signs which alert pedestrians and site personnel of hazards associated with the use of a forklift truck and physical barriers which are used to segregate pedestrians and site personnel from the working area.
- **Flag person**
This is an individual who is responsible guiding the flow of traffic to minimise the risk of forklifts colliding with other forklifts, pedestrians and other vehicles.
- **Traffic control measures**
This relates to directing the flow of traffic and assigning designated areas and the segregation of pedestrians and site personnel from the working area.
- **Flashing hazard lights**
These are usually visual warning devices on the forklift truck which alert pedestrians and site personnel of potential of the forklift trucks presents.

The above list of control measures can also be applied to the use of vehicles and mobile plant when a forklift truck is being operated.

Personal Protective Equipment

Personal Protective Equipment (PPE) is designed to provide protection and limit damage for individual workers. It is important that you are aware that PPE is not designed to prevent injury, it simple helps to avoid damage.

PPE must be supplied by your employer and you must be trained to fit and use it correctly.

The types of PPE required will be determined during the **planning** stage of the task.

All PPE must be inspected for serviceability prior to use.

Safety Precautions

Forklift Operations should take additional precautions under extreme conditions such as bad weather conditions, heavy wind etc. For example, if you are operating in bad weather conditions, the surface is wet or slippery, you should reduce your speed and proceed with caution.

You should always travel at a speed which suits the conditions.

Never refuel your forklift truck with the engine running as the fuel may ignite.

Safety Devices

There are many safety devices within the workplace to protect people's safety. There are also a number of specific devices which are fitted to a forklift truck to protect the driver. These are:

1. Foot guard

The foot guard provides protection the driver from crushed toes and on-the-job foot injuries.

2. Load backrest

The load back rest is a rack-like extension that is either bolted or welded to the mast and protects the mast and prevent loads from falling on to the driver.

3. Overhead guard

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

4. Reversing Beeper

A reversing Beeper is used to gain the attention of pedestrians and other drivers and therefore has the ability to make the work area safer.

5. Seat Belts

Seat Belts are designed to keep the driver in the seat in case of a rollover. They are only ever a lap sash type belt so they don't restrict the drivers from turning their shoulders to look backwards.. Most new sit down type (counter balanced) forklifts come fitted with a seat belt. It is mandatory for seatbelts to be worn on forklifts that have them fitted.

6. Strobe Light

A strobe light sometimes referred to as a beacon light or a flashing light is visible to pedestrians and other drivers and therefore has the ability to make the work area safer by gaining their much needed attention.

It is not a requirement that a forklift be fitted with reversing beepers or lights, but if they are fitted they must be properly maintained. If a risk assessment at the workplace identifies that reversing forklifts are a potential risk, the appropriate control measure may be to fit lights and reversing beepers. It is, however, important to look in the direction of travel at all times.

If seatbelts are supplied as part of the safety equipment they must be worn. Wearing seat belts may reduce the risk of injury.



Discussion Points

What are hazard control measures?

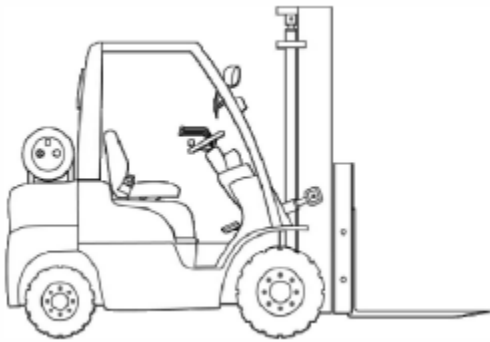
Select the right forklift truck

There are many different types of forklift trucks. Depending on the job and the work area you may need to use a certain type of forklift truck. It is very important to use the correct type of forklift truck.

Types of Forklift Trucks

The forklift is a materials handling vehicle that is widely used in the transport industry. It is invaluable for its ability to move a large amount of material in a very short time using a minimum of labour.

There are many different types of forklifts each designed to suit different purposes or conditions; therefore it is essential that the driver is able to assess the forklift, load and workplace conditions to ensure that the correct equipment is being used. To establish the capacity and limitations of the forklift and equipment to be used refer to the data plate and other manufacturer's information.

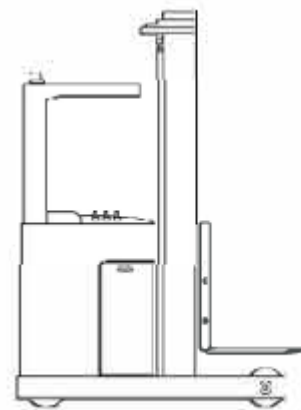


Counterbalanced

A counterbalanced forklift is generally the type of machine most people think of when the word "forklift" is mentioned as it is generally the most common. Used indoors and out, generally capable of travelling on ramps and sloping surfaces if require

Non-counterbalanced/Reach Trucks

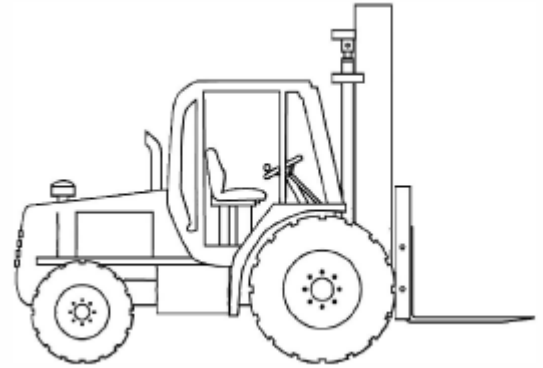
Commonly found in warehouses with narrow aisles or tight areas due to greater maneuverability. This type of machine is non-counterbalanced as it carries the centre of the load behind the fulcrum/ forward point of balance. Reach trucks should always be used on hard, level surfaces as they are less stable than counterbalanced machines.



All-Terrain Forklift (FWD)

Also referred to as Rough-terrain forklifts they are generally used on construction sites and unstable operating surfaces such as dirt or softer ground. These machines are often four-wheel-drive and may be either counterbalanced or reach type trucks.

Each of these forklift trucks are used for different purposes in the workplace. They can however be used for a variety of tasks.



What are the power sources for forklifts?

Power sources or modes of propulsion for forklifts can be divided into two main types. They are:

- internal combustion (fuels)
- electric (battery)

The internal combustion motor in forklift trucks are similar to that used in motor vehicles and are designed to operate on a variety of fuels such as:

- petrol
- diesel
- LPG (Liquid Petroleum Gas)
- Natural gas

Internal combustion motors create toxic gases which may be harmful to individuals in certain environments (such as confined spaces/restricted areas). Electric forklifts however are powered by a battery. Electric powered forklifts are becoming more and more popular within industry but electric powered forklifts also have some disadvantages.

Batteries should be charged in a well-ventilated area because when they are under charge they give off gases which may explode.

Forklift Refuelling Safety

Refuelling may be seen as a simple task, but if not done properly has life threatening consequences². When you are in a rush to get forklifts refuelled and back on the job, safety may not be the number one priority on your mind even though it should be.



Pre-Refuelling Safety

Before refuelling any forklift, the operator should observe and carry out the following safety precautions:

- Never refuel while the engine is running (the engine has the potential to ignite the fuel)
- Ensure you are following safe parking procedures
- Open flame, smoke and any potential source of ignition are prohibited within 10 meters of any truck being refuelled or recharged

Refuelling

1. Liquid Propane Gas (LPG)

- Cylinders permanently mounted on trucks should be fitted or exchanged only at locations designated for that purpose (well ventilated and isolated from all sources of ignition)
- Only trained and authorised personnel can recharge or exchange LP gas cylinders
- Ensure that the engine has stopped and the fuel-isolating valve is shut off before attempting to disconnect the cylinder
- Handle all cylinders and associated plumbing with extreme care. Damage from dropping or abuse could result in a serious fire
- Ensure that the cylinder is correctly positioned, so that the safety relief valve is facing upwards
- Chains should not be used to replace straps in the cylinder-clamping device

² *Adaptalift Group*

- It is advised that leather gloves be worn when changing cylinders to prevent potential injury
- Flexible hoses on LPG trucks should not protrude beyond the extremities of the truck and are to be protected from abrasion or sharp edges
- If the fuel system has a leak, report it immediately. Action should be taken to prevent the truck from being used until the leak has been corrected

Note: LPG trucks should not be refuelled or parked in close proximity to open pits, as there could be a 'build up' of vapours in these confined areas.

2. Diesel or Petrol refuelling

- Smoking, naked lights or other sources of ignition are prohibited in the designated refuelling area.
- Care should be exercised to avoid spilling petrol or overflowing the tank during refuelling. Replace the cap securely, flush down any spilled fuel and allow sufficient time for that fuel to completely evaporate, before restarting the truck.

Determining the overall height of a forklift

Extended Height



Extended Height is the distance from the ground to the top of the Load Backrest when the mast is fully raised.

Collapsed Height



Collapsed Height is the distance from the ground to the top of the mast when the fork arms are at the lowest position.

Developing a forklift traffic management plan

Appropriate path of movement

You should always observe the work area before starting a job and plan the path that you will take. This will lower the chance of injury and damage to equipment and property.

A traffic management plan which separates forklifts from pedestrians can reduce the risk of forklift-related deaths and injuries in the workplace. Information on this page helps employers and self-employed people develop forklift traffic management plans³.

Forklifts cause more workplace deaths and injuries than any other piece of equipment, and more than half of forklift-related fatalities have involved pedestrians. Even a slow-moving forklift can crush, injure, or kill a pedestrian.

How to develop a forklift traffic management plan

Employers and self-employed persons have a duty to identify hazards in the workplace and to assess and control risks in the workplace. To develop an adequate forklift traffic management plan, employers and self-employed people must:

³ Worksafe Victoria

1. Identify all hazards associated with using a forklift at the workplace.
2. Assess the risks to people's health and safety and make sure the traffic management plan includes ways to control those risks that will ensure people's safety.

Employers need to consult with employees, including contractors, and health and safety representatives (HSRs) when identifying hazards and assessing risks.

Controlling the risks

Employers and self-employed persons must eliminate risks arising from the use of forklifts, so far as is reasonably practicable. If it is not reasonably practicable to eliminate the risk, employers and self-employed persons must control the risk so far as is reasonably practicable.

The Occupational Health and Safety Regulations 2017 (OHS Regulations) explain how to reduce risks by using one or more of the following risk controls:

- introducing systems to eliminate the risk, so far as is reasonably practicable
- substituting the plant with plant that has a lower level of risk
- isolating plant from people
- using engineering controls.

If a risk still remains, employers and self-employed persons must reduce the risk by using administrative controls such as training, supervision and instruction, or providing appropriate personal protective equipment.

Risk controls to consider in a forklift traffic management plan

Employers and self-employed persons need to consider risk controls in a forklift traffic management plan. Risk controls should include but are not limited to:

- substituting a forklift with other suitable load-shifting equipment which has a lower level of risk
- identifying the safest routes of travel
- assessing and identifying traffic flows. For example, creating one-way routes and eliminating the need to reverse
- reducing how often forklifts work near pedestrians
- pedestrian exclusion zones
- forklift exclusion zones
- speed-limiting devices
- forklift-approach warning lights
- safety zones for truck drivers
- the means for truck drivers to safely transit from the truck to the safety zone
- safety barriers
- containment fences
- speed limit signs
- traffic lights
- reversing cameras and alarms
- sufficient workplace lighting

- fixed mirrors
- floor markings
- pedestrian crossings with barrier gates on forklift routes
- personal protective equipment.

Consult and review

When developing a forklift traffic management plan, HSRs, forklift operators and other employees should be consulted and involved. The plan should also be reviewed regularly to make sure the risk controls continue to be adequate and revised whenever there is a change in forklift or pedestrian work practice.

Advise everybody at the workplace

Employers and self-employed persons must advise all people at the workplace, including employees, contractors, and visitors, about the workplace's forklift traffic management plan. Appropriate training and instruction about the forklift traffic management plan should be provided. The workplace induction should also include the forklift traffic management plan.

All employees need to be aware of and be trained in the forklift traffic management plan.

Should a contractor or visitor who has not been trained in the forklift traffic management plan need to either cross a forklift route or encroach into the working area of a forklift, they must be accompanied at all times by someone who has undertaken this training.



Activity 3

Identifying hazard control measures

Complete the questions in Activity 3 of the Student Activity Book

Inspecting the work area

Forklift drivers must make judgment calls from the beginning to the end of each job. Some things which must be considered include the weight of the load and the forklift capacity, the stability of the load, the height at which a load must be lifted, and obstacles both in the path and overhead where the forklift driver is operating, blind-spots and individuals who might be sharing the work space with the forklift driver and vertical incline.

It is important to determine an appropriate travel plan/movement path before travelling with a load because every worksite has its own specific hazards which may need to be dealt with.

When determining the path of movement for the forklift and/or the load a driver should consider all hazards and controls (Refer to page 9, 'What is a "Hazard"?').

When you are planning a task such as moving a load there are certain things, other than site hazards, that you should consider.

These things include:

Characteristics of the load

The size, shape, weight and contents of the load is relevant to how it should be moved.

Capacity of the forklift

The weight of the load must be within the capacity of the forklift truck being used.

Location of task

Where is load to be moved? Are there people working in the area? Is there sufficient space? Is it safe to be moved there?

Specifics of task

Does the load contain dangerous good which should be segregated? What is the size and shape of the load? Can it be moved safely?

Equipment required for the task

Is the type of equipment to be used suitable for the task? Is there any special training required before it can be used?

Availability of equipment

Is permission needed before the equipment can be used? Does someone else need to use the equipment or will they need it before the task is completed?

Permits required for the task

Sometimes only personnel that are issued with a valid work permit may carry out certain work or tasks.

Communications (safe and adequate)

Appropriate methods that can be used to communicate with other site personnel

Access and egress

Is the rate or means of entry or exit to a work place. It includes footpaths, corridors, doorways, gates, steps etc.

Blind corners

A corner that you cannot see around prior to travelling. Commonly the most accident-prone areas within the workplace.

Doorways

People and other traffic may enter the area through doorways at any time. Low overhead clearance may become an issue.

Lighting /illumination

Is there adequate lighting available across the entire working area⁴.

What is work near overhead power lines?

Work 'near' overhead power lines means a situation where there is a reasonable possibility of a person, either directly or through any conducting medium, coming closer than the approach distances.

Overhead power line contact is one of the largest single causes of fatalities associated with mobile plant and equipment. Contact with live overhead power lines is a serious risk because any voltage that causes sufficient current to pass through the heart is potentially injurious or even fatal.

You don't have to have a direct contact with a high voltage overhead power line to receive a fatal electric shock. Simply being too close can kill.

How close can I go to overhead power lines?

Without appropriate technical knowledge and experience of electricity distribution networks and associated electrical apparatus, untrained personnel working or operating cranes or plant near overhead power lines will not be able to identify the operating voltage concerned, and will therefore not be able to recognise and avoid the inherent dangers of live overhead power lines.

For safety reasons, minimum safe distances from powerlines, including clearances for forklift trucks, are prescribed by the Code of Practice. These prescribed distances apply from the closest part of the machinery, including its load, to the closest conductor of the powerlines, at all times.

⁴ A driver must ensure that there is sufficient light available to allow the forklift driver to safely conduct its operations.

Distances are different depending on the state or territory you are working in and the voltage of the power lines.

You should contact the local electrical authority/provider or state regulator for information and advice to find out the voltage of power lines in your area and state.

Western Australia

In Western Australia this falls under Regulation 3.64 from the OSH Regulations and states the following as the minimum distances:

Electric/Power Line Type	Distance
Up to 1kV (insulated)	0.5m
Up to 1kV (uninsulated)	1.0m
Above 1kV and up to 33kV	3.0m
Above 33kV	6.0m

Northern Territory

In the Northern Territory equipment must not be closer than the following distances to electric/power lines:

Electric/Power Line Type	Distance
Up to and including 132kV (distribution lines)	6.4m (or 3m with a spotter)
Greater than 132kV (transmission lines)	10m (or 8m with a spotter)

Queensland

The Queensland Electrical Safety Regulation breaks down the distances in detail. Exclusion zones are broken down not only by size of electric/power line but also by the competency level of the operator. This means that the requirements should be clarified with the electrical authority before work commences even if the distance appears to be outside the zones.

The following minimum distances are provided as guidance:

Electric/Power Line Type	Distance
Up to 132kV	3.0m
132kV up to 330kV	6.0m
330kV and above	8.0m

Tasmania

In Tasmania equipment must not be closer than the following distances to uninsulated power lines:

Electric/Power Line Type	Distance
Up to and including <u>133,000 Volts (poles) or LV</u>	<u>6.4m</u> (or 3m with a safety observer)
Greater than <u>133,000 Volts (towers) or HV</u>	<u>10m</u> (or 8m with a safety observer)

New South Wales

In New South Wales, for anyone who is not accredited, equipment operation may not be any closer than the following distances to electric/power lines:

Electric/Power Line Type	Distance
Up to and including 132kV	3.0m
Above 132kV up to and including 330kV	6.0m
Above 330kV	8.0m

To work closer than these distances requires authority from the relevant electrical authority and adherence to cl.64(2)(e) of the regulations.

Australian Capital Territory

In the ACT mobile plant operators and persons erecting or working from scaffolding must maintain a safe minimum distance to power lines as outlined in the table below:

Electric/Power Line Type	Distance
Less than 33kV	4.0m
33kV or more (transmission lines)	5.0m

Victoria

In Victoria the Framework for Undertaking Work Near Overhead and Underground Assets states that equipment must not be closer than the following distances to electric/power lines:

Electric/Power Line Type	Distance
Distribution lines up to and including 66kV (power poles)	6.4m (or 3.0m with a qualified spotter)
Transmission lines greater than 66kV (towers)	10m (or 8m with a qualified spotter)

Working within the minimum safe distance

The clearance distances prescribed are absolute clearances that must be breached at any time. Any breach of the prescribed clearances puts you, and all those on your site in immediate danger of electric shock. If you are required to work closer than the minimum distances you must ensure the safety of all those on your site by:

- Shutting off the power, or
- Insulating the power lines, or
- Seeking an exemption from the relevant authority

Site specific practices must also be considered and adhered to.



Discussion Points

Overhead powerlines.

Warning Devices

When working near overhead powerlines it is recommended that you have 'Tiger Tails' installed on the low voltage powerlines. These 'Tiger Tails' are a warning device only and do not reduce the prescribed safe working clearances.

Know your workplace

Each workplace has conditions that can contribute to dangerous situations. Drivers should inspect the workplace for any potential hazards and make sure they are eliminated or minimised before operating the forklift truck.

Be aware of:

- the direction of traffic flow
- blind corners or alley ways with cross traffic
- stability of load
- ceiling clearances, including low pipes etc
- doorway clearances
- types of load - flammable, fragile or unstable
- excessive heat especially where LP gas is used
- the road surface
- the fumes produced by the forklift truck
- electric overhead wires



Remember, when operating a forklift truck on a wet or slippery surface, to always reduce your speed and proceed with caution. The same rules for the road apply to your forklift truck in regards to stopping distances and control of equipment which are affected by weather conditions.



Activity 4

Inspecting the work area

Complete the questions for Activity 4 of the Student Activity Book

Communication methods

It is important to communicate with your workmates when you are on a worksite. There are many methods of communication. You may need to read things like Material Safety Data Sheets (MSDS), Job Safety Analysis worksheets, work permits and written instructions.

Identifying appropriate communication methods

Communication is a major factor in creating and maintaining a safe and efficient workplace. Different forms of communication are used throughout various workplaces e.g. verbal, written instructions, listening, signage, hand signals, appropriate work permits, etc ...

If you are not sure about a signal one of your fellow workers have given you, STOP all movement on the forklift and ask them to repeat it or clarify.

To ensure your workplace is safe and healthy, employers, employees, managers, contractors and visitors must communicate with each other and work together. However, it is not possible to deal directly with every situation that may be found at the workplace.

There are some tasks that must be controlled in order to avoid a hazard and cannot be conducted by just anyone in the workplace. Work Permits are used as an extra safety precaution. They inform a worker what they can (and cannot) do and helps worker to understand what their obligations are and what is expected of them.

It is important to maintain communications in an emergency situation:

- Either ring 000 direct or let supervisor know (dependent upon workplace procedures).
- Need to let them know the location and type of emergency as well as if any people are injured.
- Personnel may need to be alerted of dangers, including the nature of the emergency (what the situation is).
- You should always warn others and explain the situation.

All workers need to have access to emergency procedures. These are commonly found within your immediate work area, centralised filling systems, signage on walls and direct from your Fire Warden or Health and Safety Representative etc.

To avoid most emergency situations however, appropriate communication methods should be used to inform all relevant personnel about any unsafe hazards to begin with.



Before you operate a new or unfamiliar forklift, your employer must make sure you receive information, training, instruction and supervision.

You **MUST** always obey safety signs in the workplace. An example of some commonly used signs within the workplace are listed below:



Fire Sign



Danger Sign



Emergency Information Sign



Regulatory Sign - Mandatory.



Regulatory Sign - Restriction

If an unsafe incident does occur, it is important to ensure that the right personnel are made aware so that they can control the situation or work to prevent it in the future (i.e. Safety Officer, Supervisor, Managers and/or HSR - Health Safety Representatives).



Activity 5

Identifying appropriate communication methods

Complete the questions for Activity 5 of the Student Activity Book.

Visual checks

You should always do a visual check of a forklift truck before using it to ensure there are not any problems. A faulty forklift truck can cause injury to yourself and others if you have an accident.

Visually checking the forklift for any damage or defects

Before using any forklift, it is essential that you conduct a pre-operation safety check. This check is to ensure all equipment is safe to use.

Note that in relation to any safety check on the forklift:

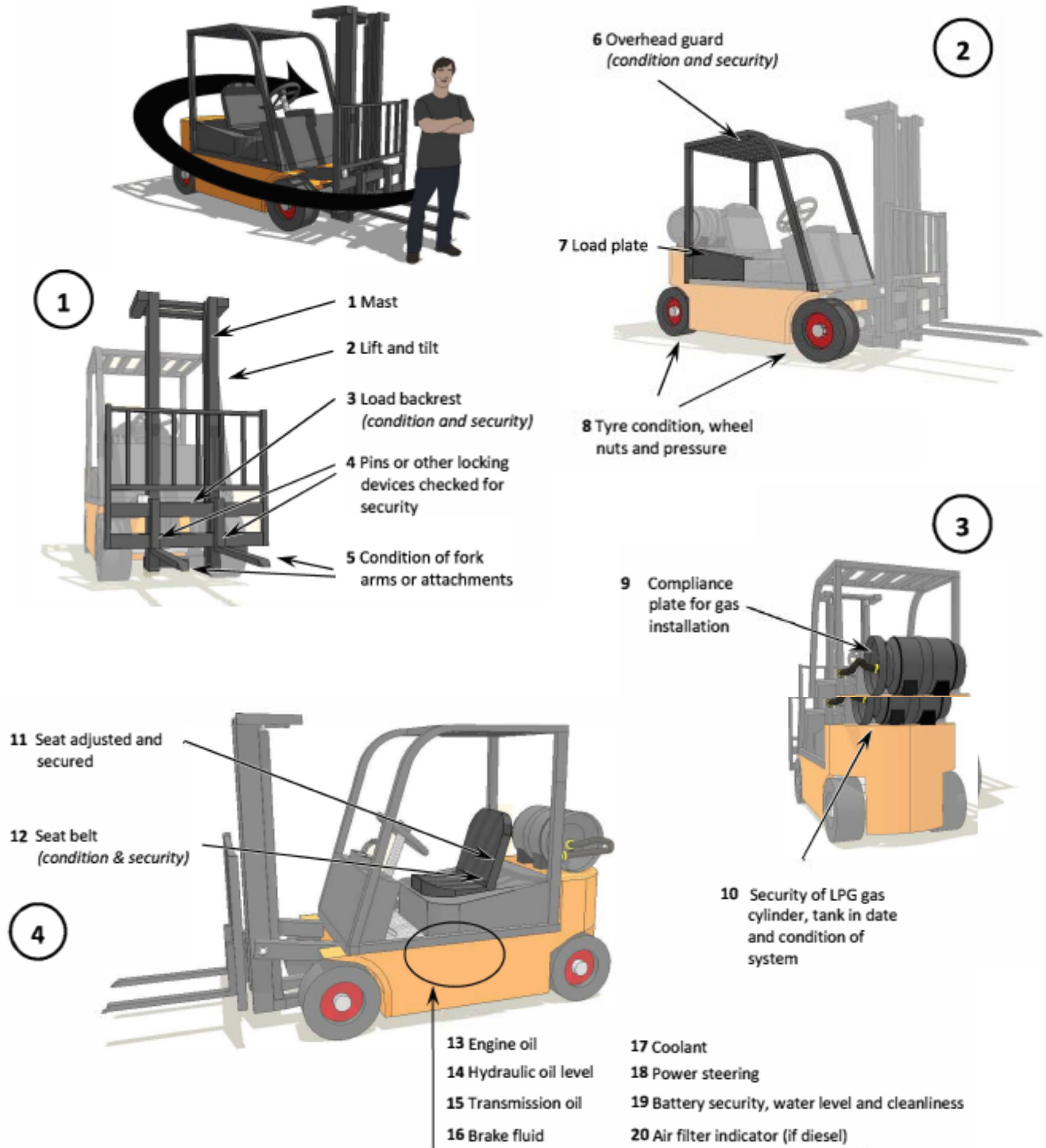
- the extent of the safety check will be determined by company requirements and any OHS regulations
- there may be the need to complete a checklist to fulfil workplace policies and regulations before using the equipment
- the check is to ensure that there are no faults or damage to the forklift which make it unsafe to operate. If the forklift truck is unsafe, it should be tagged out of service and reported to an appropriate person.

Operation of forklifts may be hazardous if maintenance is neglected or repairs, rebuilds or adjustments are not performed in accordance with the manufacturer's design criteria. Therefore, only a competent person who is authorised by the employer can attempt to make any kind of repairs to a forklift truck.

Before starting the motor check that:

- the two safety guards are fitted:
 - the overhead guard
 - the load backrest
- there is an approved load plate displaying all conditions of lifting air-filled tyres are correctly pressurised in order to maintain stability
- solid rubber tyres are not worn, do not have large pieces of rubber missing and the wear is even. the forks are evenly spaced and without defects and the fork locking pins are in place the lifting chains are an even length
- the counterweight is secure
- there are no oil leaks from the hoses to the rams
- the transmission, engine oil and the radiator water level in the storage tank is correct the fuel level or the LPG gas pressure is correct
- the hydraulic oil and brake fluid level in the storage tank is correct the windscreen is clean
- the seat is in good condition and is properly adjusted
- if fitted, the mirrors are adjusted properly

Conduct Routine Checks on Forklift



Logbooks

“Forklift maintenance should be a no-brainer”

Poor maintenance is another major source of forklift accidents. Unlike some of the other causes that often rely on situational judgment and are dependent on many factors; maintenance should be a no-brainer. Yet, it is not always fully performed. One way to ensure that you never skip a maintenance check is to use a logbook to track everything.

Recording everything is absolutely essential and for that purpose keeping a logbook is the key.

Maintaining Forklift Logs

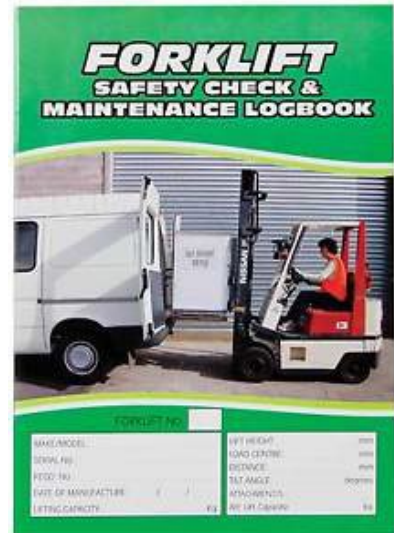
Forklifts need to be inspected prior to every shift. It’s not just a good idea, it’s also the law. Forklift operators must consistently inspect their vehicles prior to every shift for damage, repair issues, and other problems.

Forklift logbooks contain pre-made checklists that include everything you need to be in compliance with the law. They include easy-to-use safety checklists that drivers can fill out quickly and completely with minimum time away from their job.

Forklift Repairs

Your workplace should have a Forklift Repair Request Form, if there is not one already contained within your logbook, that can be filled out by operators on the spot to notify management of mechanical problems with their vehicles.

This helps improve communication between shifts about problems with specific forklifts, as well as creating a permanent record about when and where problems were first spotted.



It would be necessary to tag out and report a forklift if:

- mechanical problems require immediate repair
- it is damaged or broken
- it is undergoing servicing or maintenance to stop it re-energizing

If the mechanical problems require immediate repair, there are also lockout tags that should be used to tag out the vehicle for safety.

Lockout tags let other operators know that damaged or broken vehicles cannot be safely used until repairs are made, improving workplace safety and protecting the forklifts from further damage.

Activity 6

Visually checking the forklift for any damage or defects

Complete the questions for Activity 6 of the Student Activity Book.



Checking data plates and signs

Forklift trucks are required to display plates and signs. These may include a data plate, compliance plate, manufacturer's plate and warning decals. You must be able to identify all signs and labels.

Ensuring all signage and labels are visible and legible

Most forklift trucks have two safe workloads (SWL) stamped on the load rating plate. They are:

- **Mast Vertical Capacity SWL**
- **Mast Forward Capacity SWL**

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 and it's '**Rated Capacity**'.

	MAST VERTICAL CAPACITY	MAST FORWARD CAPACITY	MAX HEIGHT OF LIFT	LOAD CENTRE DISTANCE
FORK ARMS	2250 kg	1650 kg	3500 mm	600 mm

Other limitations and important information about the forklift and equipment can be found in the operators manual and manufacturers documents.

The Rated Capacity of the forklift truck is measured by the **Maximum Load** that a forklift truck is designed to carry at a specified **Load Height** at a specific **Load Centre Distance**.

Drivers must be able to understand the load plate and the conditions of loading at all times. The **Load Centre Distance** is taken from the vertical face of the forks to the load centre of gravity.

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.

If the data plate was missing or unreadable, the forklift truck should be tagged out of service and reported to an appropriate person.



Discussion Points

What information is on a data plate?



Activity 7

Ensuring all signage and labels are visible and legible

Complete the questions in Activity 7 of the Student Activity Book

Setting up the forklift

This section relates to the following:

Controls

Learning what all of the controls do will help you to operate the forklift truck safely.

Pre-operational checks

Before operating the forklift truck you should always do a number of pre-operational checks. These checks must be done properly before starting the forklift truck.

Starting the forklift correctly

You should also read the owner's manual and make sure the forklift is safe to start. Listen for strange noises and unusual shaking after you start the forklift.

Post-start operational checks

You should always do post-start checks after you start the forklift truck to ensure the forklift truck is still safe to use.

Testing the forklift

You should test all functions of a forklift truck before commencing work. This should include all pedals and controls, brakes and parking brake, lights, horns and reversing beeper as well as any other visible damage or defects.

Recording and reporting results

It is very important to record and report any faults you identify during your checks. Equipment may get damaged or someone injured if you do not.

Forklifts must be in good working order and properly maintained.

Completing a forklift safety checklist should be part of every forklift operator's daily routine. Before starting a shift, all operators should check their forklift is in safe working order, ready to be used and capable of completing the tasks required of it.

Many companies have been fined for not being able to prove to a WHSQ inspector that regular checks are being conducted. Although it is advisable to conduct forklift checks before use, it is up to the employer to evaluate how often these checks are carried out, as well as who's responsible for conducting them. Most large companies with multiple forklifts make their drivers perform a routine check on their forklift before starting each shift.

A checklist is kept either on the forklift itself, or in a designated area. This checklist is signed, dated and kept as evidence of the company ensuring each machine is adequately maintained. Companies with one

or two forklifts and very few operators may get away with a weekly or monthly check, depending on how much use their forklifts get.

Some of the benefits of having regular checks performed on each machine are:

- Easy to find faults and repair them while they are still minor.
- More reliable machines and less chance of down time due to breakage.
- Easier to identify bad drivers and staff causing damage.
- Protection against WHSQ fines and insurance problems when an accident occurs.

If any items require maintenance, they must be reported to your supervisor. Only qualified persons can carry out maintenance and repairs on forklift trucks.

Setting up the forklift

Carrying out safety checks

Once a pre-start operational check is complete and the forklift started according to procedures, a driver should conduct a post-start operational check to ensure that the plant is safe to use.

Make sure you;

- get on the forklift making sure you use 3 points of contact.
- adjust your seat to a comfortable driving position
- fasten your seat belt
- start the forklift correctly

- **Check Warning devices**

The driver should ensure that all of the following warning devices are working correctly:

- Horn
- Reverse Beeper

- **Check Lights**

The driver should ensure that all of the following are working correctly: lights

- Reverse light
- Strobe light

- **Check all gauges**

- **Check Brakes**

The driver should start moving slowly then check all brakes - including the hand brake

- **Check Steering**

The driver should ensure that the steering system is working properly.

- **Check the forklift to the full extent of its movement ability (unloaded)**

The driver should ensure that all parts of the forklift can move to the full extent of their movement including checking the mast and tilt controls.

It is not permissible to carry passengers on a forklift truck unless an appropriate seat and guards are fitted and the forklift has been designed by the manufacturer to do so.



Adding Attachments

When determining what lifting attachment to use for the job required, consider the following:

- the attachment must suit the truck you are fitting it to,
- the attachment must be suitable for the type of load you are lifting;
- the attachment must be properly attached to the forklift with a suitable locking device; and
- the data plate on the truck must allow for the use of the attachment.

The best way to secure an attachment to your forklift, refer to manufacturer's operations manual.

Remember - When you add an attachment to a forklift truck:

-  the load capacity will be reduced, and
-  the load centre distance could increase.



Discussion Points

What are the controls of a forklift truck?



Activity 8

Setting up the forklift

Complete the questions in Activity 8 of the Student Activity Book

Checking the load

You should always assess the weight of a load before moving it. Check the data plate to ensure that the forklift can support the load to be moved. Trying to lift a load that is too heavy can result in the forklift losing balance and can damage the fork (tines).

Assessing the weight of the load

What information is included on the manufacturer's data plate?

By law, every forklift is required to have a manufacturer's data plate which has information about attachment details (if one can be fitted). This data plate also includes the following information:

- maximum safe working load
- load centre distance
- maximum lift height
- make, model and serial number
- mast tilt (in degrees)

- tyre type and recommended pressure
- gross vehicle weight
- attachment details (if one is fitted)

It is important to check the weight of the load before trying to lift it in order to stop overloading and prevent accidents.

It is critical that you know the information on the manufacturer's data plate so that you choose the appropriate forklift and attachments needed for safe operation, and the forklift is driven and used within the safe operating capacity.

Assessing the load

Is the pallet that is supporting the load in a safe condition?

If the pallet is badly damaged (e.g. broken or missing locking boards) then restack the load onto an undamaged pallet before attempting to lift it.

Is the load stacked safely and evenly?

An unevenly stacked load may be lifted if the heavy end is against the backrest. However if the load is unevenly stacked to one side then it should be restacked to ensure stability is maintained. Check that the load is appropriately secured.

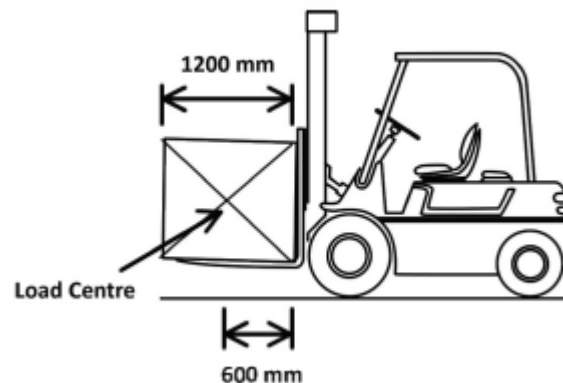
Have you made sure that the load is within the rated capacity of the forklift?

Check load markings, consignment notes, weighbridge certificates or calculate the weight of the load to ensure it complies with the forklift data plate specifications. Also consider the required lift height and what the load centre distance will be when lifted.

How does load centre distance effect forklift stability?

A standard pallet is square and has the dimensions 1200mm x 1200mm as per the diagram below.

As the majority of forklift loads are contained on pallets, forklift manufacturers designed the forklift with a 600mm load centre. This matches with the standard stacked pallet centre of gravity. For example, see diagram:



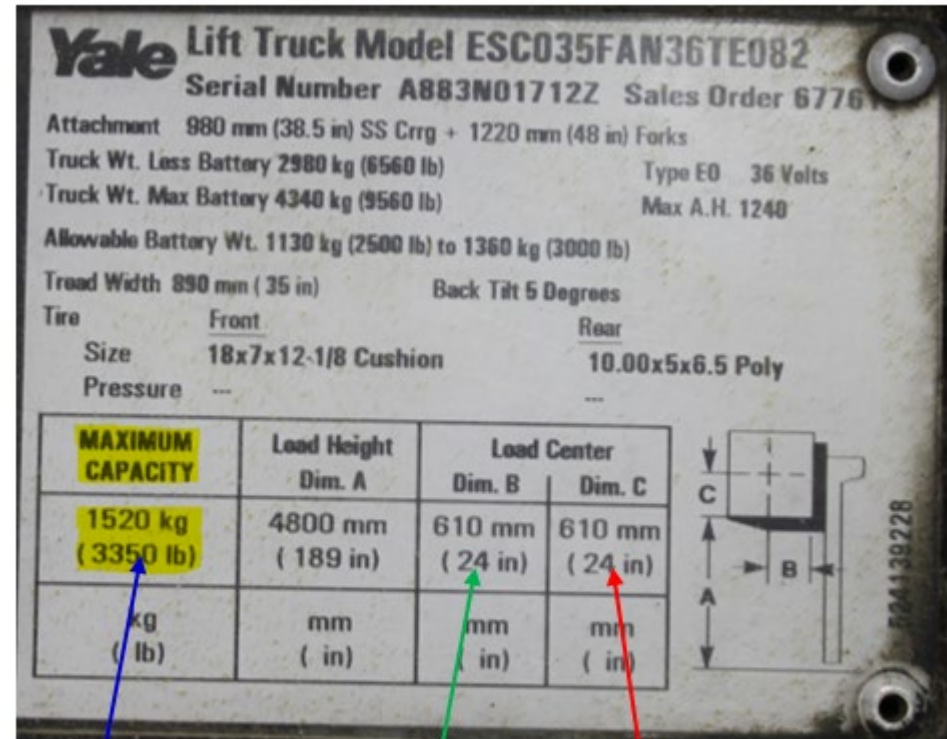
Should the load not be hard against the heel of the fork arms, the Load Centre Distance will be increased which will reduce the forklift truck's capacity and may reduce the stability.

Calculating load safety:

Steps:

- Calculate the total weight of your load:
(Load + Container or Pallet = Total Weight)
 Look up the **Maximum Capacity** on the load plate.
 Is it lower or higher than the total weight of the load?
- Divide the length of the load by 2 (i.e. halve it).
 Check **Load Centre B** on the load plate.
 Is it higher or lower than your calculation?
- Divide the height of the load by 2 (i.e. halve it).
 Check **Load Centre C** on the load plate.
 Is it higher or lower than your calculation?

- ✗ If **any** of the **Maximum Capacity**, **Load Centre B** or **Load Centre C** on the load plate is **LOWER** than your calculations, **THE LOAD IS NOT SAFE TO LIFT.**
- ✓ If **all** of the **Maximum Capacity**, **Load Centre B** or **Load Centre C** on the load plate is **HIGHER** than your calculations, **THE LOAD IS SAFE TO LIFT.**



Total weight capacity of the forklift

Length of the load

Height of the load

Referring to the capacity/load plate on the previous page:

For each load below, complete the required calculations and/or reasoning to determine whether the load is safe to lift. You must show your calculations and indicate your answer with a yes or no to the question with a tick (✓).

Note: **Tare weight** is the weight of an empty vehicle or container.

Remember: 1m = 1000mm

Load	Calculations/Reasons	Is this load safe to lift?
<p>Load A A pallet 1200mm length by 1200mm width with a height of 1650mm and a total weight of 1450kg.</p>	<p>Step 1: Total weight of load is 1450kg. This is less than the Maximum Capacity of 1520kg.</p> <p>Step 2: Load Centre of length is $1200\text{mm}/2 = 600\text{mm}$. Load Centre B is less than 610mm.</p> <p>Step 3: Load Centre of height is $1650\text{mm}/2 = 825\text{mm}$. This is more than the Load Centre C of 610mm. Overload.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>Load B A pallet 1200mm length by 1200mm width with a height of 1100mm and a total weight of 1450kg.</p>	<p>Step 1: Total weight of load is 1450kg which is less than the Maximum Capacity of 1520kg.</p> <p>Step 2: Load Centre of length is $1200\text{mm}/2 = 600\text{mm}$. Load Centre B is less than 610mm.</p> <p>Step 3: Load Centre of height is $1100\text{mm}/2 = 550\text{mm}$. This is less than the Load Centre C of 610mm.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>Load C A container containing a 2000kg load. Note: the tare weight of the container is 1000kg. The container size is 2.4m wide, 2.5m high and 2.4m long.</p>	<p>Step 1: 2000kg Load + 1000kg Container = 3000kg This is more than the Maximum capacity of 1520kg. Overload.</p> <p>OR</p> <p>Step 2: Load Centre of length is $2400\text{mm}/2 = 1200\text{mm}$. Load Centre B is more than 610mm. Overload</p> <p>OR</p> <p>Step 3: Load Centre of container height = $2500\text{mm}/2 = 1250\text{mm}$. This is more than Load Centre C of 610mm. Overload.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Load	Calculations/Reasons	Is this load safe to lift?
<p>Load D The empty container outlined in Load C.</p>	<p>Step 1: Total weight of empty container is 1000kg which is <i>less than</i> the Maximum Capacity of 1520kg.</p> <p>Step 2: Load Centre of length is $2400\text{mm}/2 = 1200\text{mm}$. Load Centre B is <i>more than</i> 610mm. Overload</p> <p>OR</p> <p>Step 3: Load Centre of container height = $2500\text{mm}/2 = 1250\text{mm}$. This is <i>more than</i> Load Centre C of 610mm. Overload.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>Load E A container containing a 800kg load. Note: the tare weight of the container is 500kg. The container size is 1.1m wide, 1.5m high and 1.1m long.</p>	<p>Step 1: 800kg Load + 500kg Container = 1300kg which is <i>less than</i> the Maximum Capacity of 1520kg.</p> <p>Step 2: Load Centre of length is $1100\text{mm}/2 = 550\text{mm}$. Load Centre B is <i>less than</i> 610mm.</p> <p>Step 3: Load Centre of height is $1050\text{mm}/2 = 525\text{mm}$. This is <i>less than</i> the Load Centre C of 610mm.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>



Activity 9

Assessing the weight of the load

Complete the questions in Activity 9 of the Student Activity Book

Setting up the forklift

Hazard prevention/control measures

You should always ensure that any required hazard control measures are in place before commencing work on a site. Talk with your supervisor, workmates or WHS representative to ensure that you are aware of any hazard controls.

Operating the forklift safely

Always operate a forklift in a safe manner by driving at a safe speed and by following safety procedures.

Load Stability

You should always place the load on the forklift in a way that allows the forklift to operate safely and keep stable. Move the load slowly and watch out for hazards such as pedestrians, other equipment etc.

Lifting attachments

You must ensure that the industrial lift truck is equipped with lifting attachments that are right for the load to be lifted or moved by the truck.

Hazard prevention/control measures

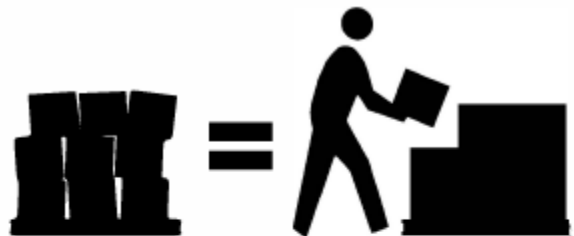
Pallet Construction and Loading

Pallets should be of sound construction and be of adequate strength for the loads and conditions under which they are used. The stability and structural strength of each pallet or unit load should be assured by bonding, taping, shrink wrapping or other means.

Knowing the distribution of the load helps to determine what the load centre distance will be when lifted. A load must always be lifted with the heavier end against the vertical face of the forks, this will ensure a shorter load centre distance.

If the load is unevenly distributed to the side, then it must be restacked in order to fix the stability of the load.

Bagged goods like potting mix, cement and sugar should be transported and stored on pallets, cross stacked (interlocking) and stepped into a pyramid if above 1.5 m.



Where pallet loads are stacked tier on tier, the lower pallets should be of suitable strength and in good condition and the unit loads must be able to support the weight above.

When tiering (stacking) loads on top of each other, the following must always be considered:

1. Loads should be stacked on a firm level surface
2. Need to decide whether the load above can be supported by the loads below
3. Heavy goods must be placed at the bottom
4. Stack should not be too high (as it will become unstable)

Operating the forklift safely

Raising and positioning the load

- **Insert the fork arms under the load cleanly.**
Do not scrape or bump into the load or pallet upon entry. Particularly when the load is on a rack or stack as the forks may push down on the cross beams or load below.
- **Make sure that the fork arms support the load evenly.**
Place the forks evenly to maintain stability when the load is lifted. Also ensure that the load is square on the forks. The driver must ensure that the load is NOT carried on only one fork arm of a forklift truck because the safety and stability of the forklift and the load will be affected.
- **Do not push or ram a load to make it square/even.**
The forks are designed to lift the load vertically; do not use the forks to push loads sideways (with the side of the fork) or forwards (with the vertical faces of the forks). Ramming the load can damage the lifting equipment of the forklift as well as the load.
- **"Shunt" or reposition the forklift if necessary.**
If you can't access the load properly on first attempt then "shunt" or reposition the forklift to ensure a safe lift.
- **Lean out for a clearer view.**
If you're having trouble positioning the fork arms, then lean out of the forklift to get a clearer view. Note: this is ok when maneuvering and positioning the fork arms or load however the driver must keep all parts of the body inside the forklift while travelling.
- **Ensure the safety of others**
Ensure that you do not raise or lower a load near or over other personnel because this is against safe working procedures and may cause injury or death. It is neither permissible to carry passengers on a forklift truck unless an appropriate seat and guards are fitted and the forklift has been designed by the manufacturer to do so.
- **Keep the mast vertical or on slight back tilt when lifting.**
Ensure that the mast is in the vertical position or slightly back tilted when lifting the load.
- **Lift correctly from a rack or stack.**
When raising the forks to access a load on a stack or racking system, stop a safe, minimal distance away and lift while the forklift is stationary (foot on brake). The same method should be used for lowering the forks and load. Use the park brake whenever lifting/lowering on a sloping surface.
- **Position the load and fork arms at a safe height for travel.**
The fork arms or the bottom of the load should be below the height of the front axle or just high enough to clear any obstacles while travelling. Check for clearance before moving off. It is unsafe to operate a forklift either in a straight line or turning corners with the load raised because the load at height can affect the stability of the forklift while travelling, braking or turning.

- **Smooth and correct controls.**

Until you are familiar with the controls of any machine, always check first to ensure you are about to activate the correct function as certain mistakes can be very dangerous (e.g. using the forward tilt instead of back tilt, which may cause the forklift to tip forward or lose the load). Operate the controls smoothly to help maintain stability and control of

Placing Loads

- **Approach the rack or stack appropriately.**

When raising a load to be placed on a stack or racking system, stop a safe, minimal distance away and lift the load while the forklift is stationary (foot on brake). Use the park brake whenever lifting/lowering on a sloping surface.

- **Position the load correctly before placing.**

If the load is on back tilt, return the mast to the vertical position; adjust the tilt level as necessary to maintain stability during placement of the load.

- **Place the load to ensure stability and security.**

On the ground: Choose a safe and stable location to place the load; do not place a load where it could become a hazard.

- **On top of a stack:** Line the load up so that it will sit squarely and evenly on top of the load below. Only stack on hard, level surfaces with the heavier loads at the bottom. The stack should not become unstable due to height.

- **Into a rack:** Always make sure the boards at each end of the pallet lock onto the supporting beams of the racking system which prevents the load sliding or falling off at any point. If unsure, check the weight capacity of a rack before placing the load.

Note: always confirm that the load has been placed correctly before moving off (reposition the load, if necessary, to ensure stability and security will be maintained).

- **Withdraw the forks cleanly.**

Do not scrape or bump into the load or pallet when removing the fork arms. Check that the forks are not tilted back as this can catch the load and drag it back with you (especially dangerous in a rack or on a stack).

Reversing

A large number of workplace incidents are caused by the driver not looking behind them when they reverse.

- **Shoulder check:** Before reversing a forklift truck a driver should always check behind using mirrors and/or looking over each shoulder to ensure that it is safe to reverse.

- **Warning devices:** It is the responsibility of the driver to ensure all warning devices are operational prior to commencing any work. These devices can also be used to warn others when a forklift truck is being reversed.

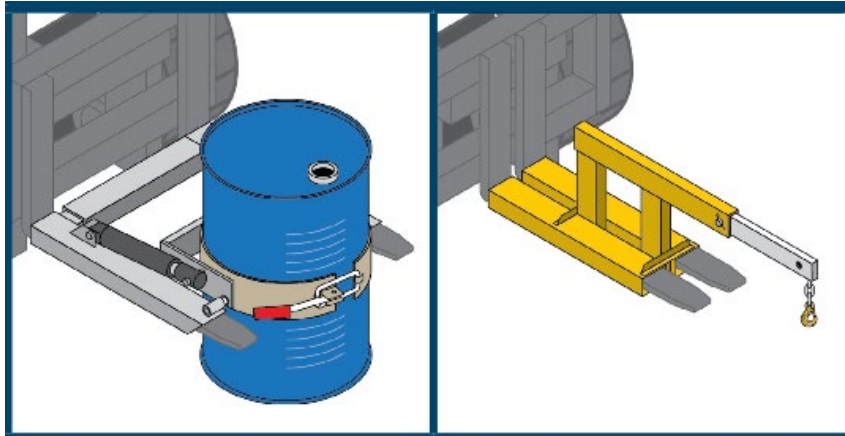
- **Travel slowly:** You should always travel slowly in order to maintain stability of the load and the safety of others when travelling in reverse or especially when moving a large load that you cannot see past.
- **Observer:** Sometimes, due to load size and position, a driver's vision may be obstructed. If this is the case, then an observer or another person should be used to direct the movement of the forklift and the load.

Lifting Attachments

The following risk control measures should be put in place when using work platforms or boxes⁵.

You must ensure that the industrial lift truck is equipped with lifting attachments that are right for the load to be lifted or moved by the truck.

The attachment should be securely connected to the industrial lift truck prior to operation to prevent it separating from the lifting media. Many specialised attachments are available for industrial lift trucks including slippers, bin lifters, carpet spikes, jibs, spreaders and drum handlers (see below).



**Drum
Handler**

Jib attachment

When choosing an attachment, check with the manufacturer or supplier of the industrial lift truck whether it can be used safely. If you fabricate an attachment, it must be designed by a competent person, for example an engineer, for the industrial lift truck it is to be used with.

Specific training and supervision in the use of an attachment should be provided as necessary.

When an attachment is fitted to an industrial lift truck the centre of gravity can change, making it necessary to de-rate the lift truck capacity and restrict some operating controls. The load rating for the combination of the industrial lift truck and the attachment depends on the rating of the attachment and capacity of the lift truck. This means the load chart should name the attachment and show the corresponding capacity of the lift truck when using the attachment.

The load chart can show ratings for using more than one attachment. Attachments like jibs have more than one lifting point and the load chart should show the lifting capacity for each point.

If an attachment is fitted to an industrial lift truck, ensure you have access to information on the de-rated capacity of the industrial lift truck. By using the industrial lift truck load chart and the information with the attachment, often found on the attachment's load rating plate, the de-rated capacity of the industrial lift truck can be calculated.

⁵ Safework Australia

Holes should not be drilled or cut through attachments or lifting media, for example fork arms, as this can weaken and destroy the integrity of the attachment. Changes should not be carried out unless they have been specified by a competent person, for example a mechanical engineer

Other attachments

Bale Clamps



Carpet Spike



Paper Roll Clamps



Personnel Work Platform



Rotators



Slippers



Activity 10

Operating the forklift safely

Complete the questions in Activity 10 of the Student Activity Book

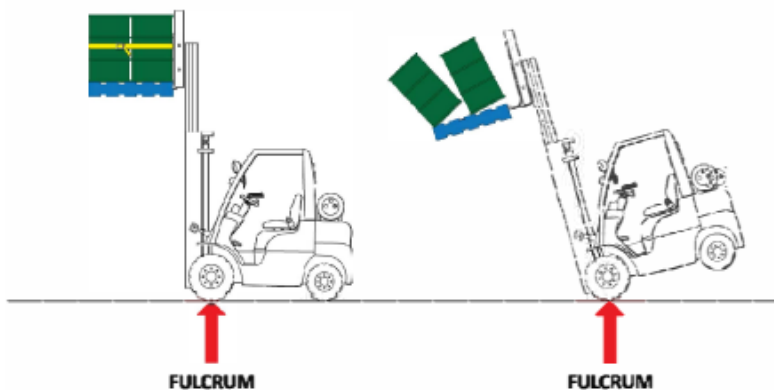
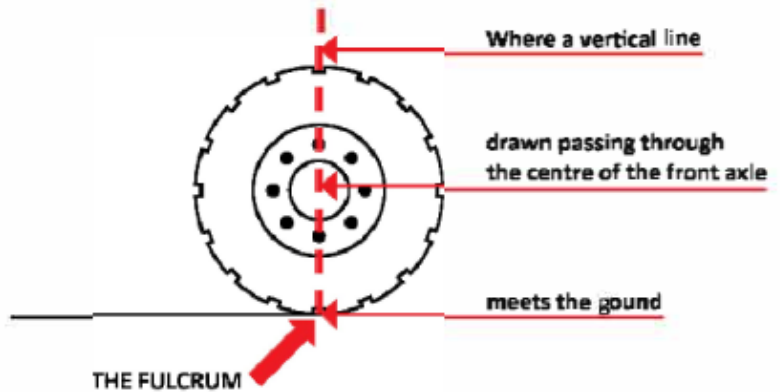
Moving the load

You should always place the load on the forklift in a way that allows the forklift to operate safely and keep stable. Move the load slowly and watch out for hazards such as pedestrians, other equipment etc.

Load stability

The Forward Point of Balance

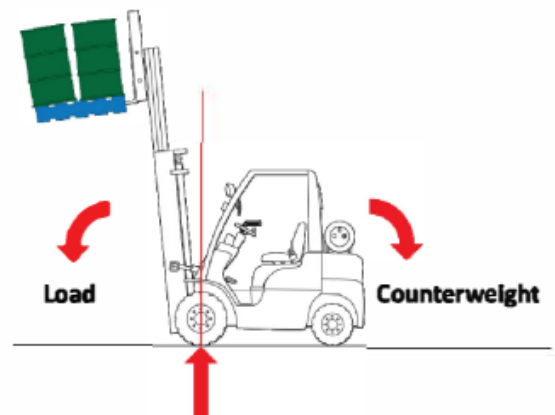
The forward point of balance also known as 'the fulcrum' is at the exact point where a line drawn vertically, passing through the centre of the front axle meets the ground.



This is the forward tipping point of the forklift, which means that if the forklift overbalances and tips in the forwards direction this point stays in the same position while the rest of the forklift tips around this point.

Everything that is behind the fulcrum acts like a counterweight (including the driver), while everything in front of the fulcrum acts like the load (including the mast assembly).

The force of the counterweight must always be stronger than the force of the load in order to keep the forklift stable and the rear wheels on the ground



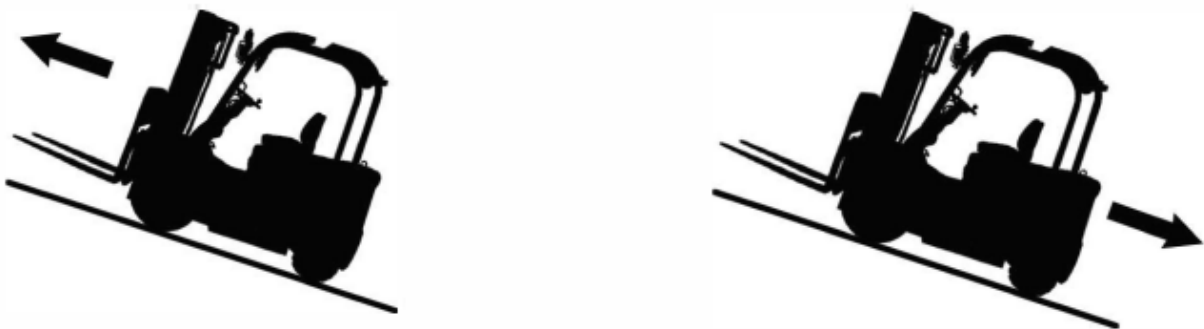
The further away from the fulcrum that the weight of the load is, the more likely it will be to cause the forklift to tip forwards. Therefore, increasing the load centre distance reduces the lifting capacity of the forklift.

Note: Never add any extra counterweights to the forklift as the existing counterweights have been designed for the maximum safe working load of the forklift (unless advised by the manufacturer). Only the manufacturer or a suitably qualified professional can (if possible) add an extra counterweight to a forklift after engineering calculations have been made

Operating on a sloping surface

- **Always ensure the load is facing uphill.**
When travelling up a ramp or incline the forklift must travel forwards to keep the load facing uphill; therefore, when travelling down a ramp the forklift must travel in reverse to keep the load facing uphill. This will prevent the load from falling off the fork arms and maintain stability of the forklift.
- **Never travel across/sideways on a ramp.**
The forklift may lose lateral stability (this can cause the forklift to tip over sideways) and the load may fall or slide off the fork arms.

Always face uphill if you are travelling up or down a ramp:



Loading Docks

When transferring loads between a truck and a loading dock there is usually a gap between the two. This gap can cause a serious accident. In this case, the driver must ensure that a secured dock plate or bridge plate is provided before shifting a load.

Using Side Shift

A side shift is a mechanism within a forklift truck which is controlled by the driver and allows the load being carried to be moved to the left and the right. It is particularly useful for when operating in tight environments, and for positioning loads on racking without having to move the truck itself.

Side shifts are either fitted by the manufacturer, integral to the mechanism of the forklift truck, or fitted as a supplementary component.

If the side shift attachment has been used, it must be centralised before travelling with a load in order to maintain stability of the forklift and the load.



Activity 11

Load stability

Complete the questions in Activity 11 of the Student Activity Book

Constant vigilance

Dangerous and unexpected events can still occur even though you have carried out all of the required checks.

You must always keep alert when moving a load and watch out for things that can go wrong.

Monitoring load movement

Forklift Stability

Forklift trucks are unstable by design, they have no strings and even four wheel counterweighted forklifts only have three point suspension.

The two rear wheels are attached in the centre of the main body of the machine allowing the rear to hinge sideways affecting the lateral (sideways) stability of the machine. All forklift trucks have a high centre of gravity and a narrow wheelbase which adds to their lateral instability.

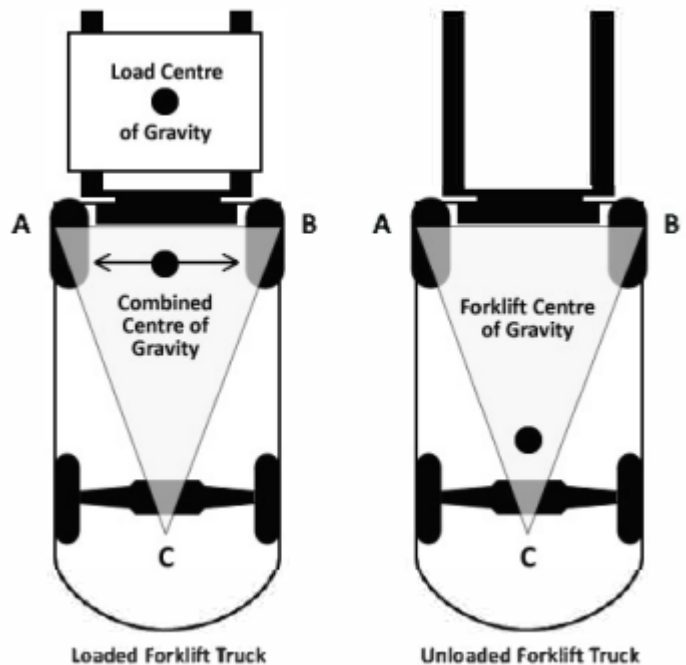
Forklift trucks have three point suspension formed from the front axle (a and b) and the steering axle point at the rear of the base (c).

Be aware of the factors listed below which can affect **lateral stability**:

- turning at speed
- braking too hard when turning
- driving over uneven surfaces
- side shift not centred
- an uneven distributed load
- lifting a load on one fork arm
- driving with a flat or under inflated tyre
- driving sideways across a slope
- driving too fast
- dragging (snigging) a load sideways with a jib attachment
- travelling with the load raised

The front wheels of forklift trucks act as a fulcrum with the forks on one side and the machine body on the other. If the weight of the fork ends is heavier than the counterweight it will cause longitudinal instability (the forklift will tip up)

Be aware of the factors listed below which can affect **longitudinal instability**:



- overloading
- lifting a load with a jib with the mast tilted forward
- severe braking
- incorrect use of the mast tilt (especially with the load carried at higher level)
- fitting slipper forks
- load not positioned against the heel of the fork arms
- driving with reach extended
- picking up an over-width load



Activity 12

Monitoring load movement

Complete the questions in Activity 12 of the Student Activity Book

Emergencies

You should always do everything you can to reduce damage or injury in the event of an emergency. There are certain procedures you will need to follow in an emergency.

Unplanned Situations and Emergency Procedures

Contacting power lines

If the forklift comes into contact with the lines take the most appropriate actions listed below:

- Warn others to stay away and not to touch the forklift
- Stay on the forklift until informed it is safe to exit the machine
- Try to break contact with the lines by moving the forklift away if safe to do so

Fire or other emergency

It is extremely important to have a list of warehouse fire safety procedures for staff to follow. Each staff member should review these frequently. You should hold monthly review meetings. The goal is for warehouse users to be confident about what to do in the event of a warehouse fire emergency. Planning, implementing and educating about warehouse fire safety procedures could save a life.

In the event of an emergency, operators may be required to:

- Alert personnel to the emergency,
- Communicate the nature of the emergency,
- Inform personnel of unsafe areas,
- Provide information to emergency services.

In the event of an emergency, you must give way to ALL emergency vehicles. It is important that as an employee, you are aware of the site evacuation plan, meeting point and any other information related to the emergency procedures.

Overtaking forklift

In the event of the forklift rolling over sideways, the operators best chance of minimising injury can be achieved by:

- Remaining in the forklift (do not jump out),
- Brace yourself and lean away until it is safe.



Activity 13

Responding to unplanned and/or unsafe situations

Complete the questions in Activity 13 of the Student Activity Book

Shut down and secure forklift truck

Section outline

Areas covered in this section are:

- Stopping and parking the forklift
- Securing the forklift

Parking the forklift truck

You should always park your forklift in a safe area so that it will not get in the way of anything else.

Stopping and parking the forklift

Many accidents can occur when the forklift is being brought to a halt. Forklifts should be brought to a halt gradually as wheel sliding and hard braking is dangerous, unnecessary and harmful to the forklift truck.

After you have brought the forklift to a halt, it needs to be parked correctly. The correct parking procedure is:

- **Tines down to the ground,**
Make sure that the tips of the forks are touching the ground by:
 - tilting the mast slightly forward
 - lowering the forks until the tips are touching the ground
- **Put the forklift in NEUTRAL,**
- **Apply the parking brake,**
- Adhere to the site specific safety procedures
This may include:
 - turning off the forklift and removing the key
 - turning off gas (if gas powered)

If a forklift must be parked on an inclined surface, the driver should chock the wheels of the forklift in addition to the above normal parking procedures.

Choosing a safe place to park

Ensure the forklift is parked clear of the following:

<p>Near doorways May cause injury or prevent access during an emergency.</p>	<p>Near first aid stations Do not block access as most injuries require swift attention.</p>
<p>On or near pedestrian walkways May cause injury or force pedestrians to walk into the line of danger.</p>	<p>Near firefighting appliances Emergency equipment must be easily accessible at all times, do not block access.</p>
<p>Blind corners Can create a hazard for drivers and pedestrians moving through the workplace.</p>	<p>Refuelling stations May be required by other drivers in the workplace, do not block access.</p>
<p>Emergency exits Specifically used for fast escape during an emergency. Never block access.</p>	<p>On sloping surfaces If it is necessary for the forklift to be parked on a sloping surface, then wheel chocks must be used.</p>



Activity 14

Stopping and parking the forklift

Complete the questions in Activity 14 of the Activity Book

Securing the forklift

This section relates to the following:

Shutting down the forklift truck

Always shut the forklift truck down properly after parking. You must be aware of the correct shut down procedures (read the owner's manual).

Post-operational checks

You should conduct post-operational checks after using a forklift truck. This is to ensure the forklift truck is ready for the next operator

Securing the forklift

After the forklift has been shut down, it should be secured so that no one else can use it without permission. Take the key out of the ignition. You may also be required to lock the key in a secure area.

Recording and reporting problems

You should always record and report any faults or problems with a forklift truck after you have used it.

Securing the forklift

The forklift should always be inspected before and after operation. During shutdown the driver must check the forklift for any damage or leaks, ensure it is safe for the next driver and make sure all systems are shutdown correctly.

If the driver detects any defects or faults, such as damage or leaks, the driver should remove the keys, place a warning notice on the forklift indicating the forklift must not be used and then report the fault to an authorised person.

Damage to the heel of fork arms must NEVER be repaired {they must always be replaced}

A forklift can be a very dangerous tool if the driver has not been trained to use it. Operation of a forklift should only be carried out by someone who is:

- a holder of a valid forklift licence
- a student under supervision of an authorised trainer
- conducting high risk work {HRW} under supervision of a suitably qualified person {with use of an RTO issued logbook}
- a student being assessed by an authorised assessor

To prevent unauthorised use of the forklift the key must be removed and returned to a secure location.



Activity 15

Securing the forklift

Complete the questions in Activity 15 of the Student Activity Book