

Guidebook

# Forklift safety

Edition 2

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# Foreword

## Who should use this guidance?

This guidance is primarily for employers and self-employed people. It may also benefit forklift operators and those with responsibilities for managing hazards and risks in the workplace.

## Scope

The guidance provides practical advice on the selection, safe use and maintenance of forklifts. It includes principles and requirements for using a forklift in a range of workplaces and industries.

The *Occupational Health and Safety Regulations 2017* (OHS Regulations) are a set of laws. They build on the *Occupational Health and Safety Act 2004* (OHS Act). Consider both the OHS Act and the OHS Regulations when controlling hazards and risks from forklifts.

Part 3.6 of the OHS Regulations covers high-risk work, including forklift operation. For Part 3.6, a forklift means a powered industrial truck equipped with:

- a mast, and
- elevating load carriage to which a pair of fork arms or other load-holding attachment is attached.

This guidance is for powered industrial trucks that fit this definition. To reflect common use, the guidance refers to these powered industrial trucks as forklifts.

A forklift for Part 3.6 does not include:

- a pedestrian-operated industrial truck
- a pallet truck that is unable, by design, to raise its fork arms 900 mm or more above the ground
- an order-picking forklift truck
- a tractor fitted with a pair of fork arms or other load-holding attachment.

# Foreword

A forklift is an item of plant. Plant is a broad term. Under the OHS Act, plant generally includes any machinery, equipment, appliance, implement and tool. It also includes any part of that machinery, equipment, appliance, implement or tool and anything fitted, connected or related to any of those things.

The OHS Regulations also cover plant. Part 3.5 of the OHS Regulations apply to:

- pressure equipment
- tractors
- earthmoving machinery
- lasers
- scaffolds
- temporary access equipment
- explosive-powered tools
- turbines
- amusement structures

Unless the plant relies exclusively on manual power or is designed to be primarily supported by hand, Part 3.5 of the OHS Regulations also applies to:

- plant that processes material by way of a mechanical action that does any of the following, including where the action is not the plant's main purpose:
  - cuts, drills, punches or grinds
  - presses, forms, hammers, joins or moulds
  - combines, mixes, sorts, packages, assembles, knits or weaves
- plant that lifts or moves materials or people, other than ship, boat, aircraft or vehicle designed for use primarily as a means of transport on a public road or rail.

While primarily for forklifts, the safety principles in this guidance can be applied to other powered mobile plant. These principles may help eliminate or reduce risks to operators of powered mobile plant and to pedestrians. The content is based on industry expectations, practices and systems at the time of publication.

# Foreword

This guidance does not prevent the use of other approaches, practices and systems. However, those methods should achieve an equivalent or improved level of safety.

This guidance does not provide detailed information about the duties of forklift designers and manufacturers. WorkSafe's Plant compliance code has information about duties relating to plant design, manufacture and supply. The compliance code is available on the WorkSafe website.

The information presented in this guidebook is intended for general use only. It should not be viewed as a definitive guide to the law and should be read in conjunction with the *Occupational Health and Safety Act 2004* and the *Occupational Health and Safety Regulations 2017*.



# Part 1 – Those with duties

The OHS Act and OHS Regulations place duties on various people to protect the health and safety of employees and others. Those with duties include employers, self-employed people, people with management and control of a workplace and employees.

For information about what reasonably practicable means, see the WorkSafe position *How WorkSafe applies the law in relation to reasonably practicable*. It is available on the WorkSafe website.

## Employers

Employers have a range of duties. They include the following:

- As an employer, you must provide and maintain a working environment for your employees that is safe and without risks to health. You must do this so far as is reasonably practicable.
- You must ensure your work does not put people other than your employees at risk. For example, members of the public. You must do this so far as is reasonably practicable.
- You must not allow an employee to perform high-risk work unless the employee holds an appropriate high-risk work licence (HRWL). This includes using a forklift.

## Consultation

As an employer you have a duty to consult with your employees. You must consult with employees who are directly affected by any of the matters listed in the OHS Act. You must also consult with employees who are likely to be directly affected by those matters.

As well, you must consult with independent contractors and their employees and with labour hire workers. There are also consultation obligations between employers and labour hire providers who share occupational health and safety duties to labour hire workers.

# Part 1 – Those with duties



Figure 1: Employers must consult with employees.

Your employees might have health and safety representatives (HSRs). Consultation must involve HSRs, either with or without employees' direct involvement.

You must consult so far as is reasonably practicable.

You must consult your employees when doing any of the following:

- Identifying or assessing hazards or risks.
- Making decisions on how to control risks.
- Making decisions about employee welfare facilities. For example, the adequacy of dining facilities, change rooms, toilets or first aid.
- Deciding on procedures to:
  - resolve health and safety issues
  - consult with employees on health and safety
  - monitor employees' health and workplace conditions
  - provide information and training.
- Deciding the membership of any health and safety committee in the workplace.



# Part 1 – Those with duties

- Proposing changes to the following that may affect employees' health or safety:
  - workplace
  - plant, substances or other things used in the workplace
  - conduct of work done at the workplace.
- Doing anything else set by the OHS Regulations.

As an employer, you must provide employees with the opportunity to express their views. You must also take employees' views into account.

WorkSafe has more information about duties relating to consultation. See the guidance, *Consultation: A guide for Victorian workplaces*.

You will also find more information about employers' duties on the WorkSafe website.

## Self-employed people

Self-employed people must ensure their work does not expose people to health and safety risks. They must do this so far as is reasonably practicable.

## People with management or control of workplaces

A person who has management or control has a general duty to ensure that the workplace and the means of entering and leaving it are safe and without risks to health. The person must do this so far as reasonably practicable. This duty only applies in relation to matters over which the person has management or control.

# Part 1 – Those with duties

## Employees

Employees must, while at work:

- take reasonable care for their own health and safety
- take reasonable care for the health and safety of others who may be affected by their acts or omissions in the workplace
- not intentionally or recklessly interfere with or misuse anything provided in the interest of health and safety.

As an employee, you must also cooperate with your employer's actions to make the workplace safe. For example, by following policies, procedures, information, instruction or training.

WorkSafe has more guidance on its website about employees' duties.

## Plant-related duties of employers and self-employed people

Under the OHS Regulations, employers and self-employed people have specific duties in relation to plant. This includes forklifts.

As an employer or self-employed person, you must, so far as is reasonably practicable:

- identify all hazards associated with the installation, erection, commissioning, decommissioning, dismantling and use of plant at the workplace
- eliminate any risk associated with plant.

Where a risk cannot be eliminated, you must reduce the risk so far as is reasonably practicable by:

- substituting the plant with plant that has a lower level or risk
- isolating the plant from people
- using engineering controls
- combining any of these risk control measures.

# Part 1 – Those with duties

If a risk from plant remains after complying with the listed controls, you must further reduce the risk with administrative controls. You must do this so far as reasonably practicable.

If a risk from plant still remains, you must further reduce the risk by providing personal protective equipment (PPE). Again, you must do this so far as is reasonably practicable.

This process of controlling risks is known as the hierarchy of control. Find more information about the hierarchy of control in Part 5 of this guidebook, 'Risk controls', and on the WorkSafe website.

As an employer or self-employed person, you must also ensure that plant is inspected. Plant must be inspected so far as is necessary to ensure any risk associated with its use is monitored.

As well, you must take steps to prevent alterations to the plant that have not been permitted. You must also take steps to prevent interference with the plant.

## Plant used to lift or suspend loads

Employers and self-employed people have duties relating to plant used to lift or suspend loads. This includes forklifts. You must ensure the plant used to lift or suspend loads is specifically designed to lift or suspend the load. You must do this so far as is reasonably practicable. As well, you must ensure that:

- the plant is fitted with lifting attachments that are appropriate to the load to be lifted or suspended
- the load is within the safe working limits of the plant
- the load is not suspended over or travel over a person
- the load remains under control when lifted or suspended
- no load is lifted simultaneously by more than one piece of plant.

# Part 1 – Those with duties

## Powered mobile plant

Employers and self-employed people have duties relating to powered mobile plant. This includes forklifts. In line with these duties, you must, so far as is reasonably practicable, eliminate the risks of:

- powered mobile plant overturning
- objects falling on the operator of the powered mobile plant
- the operator being ejected from the powered mobile plant
- powered mobile plant colliding with pedestrians or other powered mobile plant.

If it is not reasonably practicable to eliminate the risks, you must reduce the risks. You must reduce the risks so far as is reasonably practicable.

## Protective devices

The OHS Regulations place other mobile plant duties on employers and self-employed people. This includes duties relating to devices that protect operators. In line with these duties, you must:

- provide an appropriate combination of operator protective devices
- ensure the devices are maintained
- ensure the devices are used
- do all these things so far as is reasonably practicable.

## Duties relating to forklifts

Employers and self-employed persons have duties in the OHS Regulations that relate specifically to the use of industrial lift trucks, including forklifts.

In fulfilling these duties, you must ensure forklifts are equipped with lifting attachments appropriate for the load to be lifted or moved.

So far as is reasonably practicable, you must also ensure forklifts are used in a manner that eliminates risks from:

- systems of work
- the environment in which the forklift is used.

# Part 1 – Those with duties

If it is not reasonably practicable to eliminate the risks, you must reduce the risks. You must reduce the risks so far as is reasonably practicable.

Forklifts must be fitted with warning devices. The devices must effectively warn people who may be at risk from the forklift's movement.

## Seats

As an employer or self-employed person, you must ensure any person who rides on a forklift with a seat is seated in the seat. The seat must be:

- specifically designed for carrying a passenger
- fitted with appropriate seat restraints
- located within the zone of protection provided by the required operator protective device.

Other duties apply in relation to the use of forklifts and other plant. For more information, see the Plant compliance code. The compliance code is available on the WorkSafe website.

**Note:** The word 'must' indicates a legal requirement that has to be complied with. The words 'need to' and 'needs to' indicate a recommended course of action in line with duties and obligations under Victoria's health and safety legislation. The word 'should' indicates a recommended optional course of action.



# Part 2 – Forklift selection and planning

Tasks that involve moving awkward, bulky and heavy loads need to be assessed. Assessment will help determine the correct and safest method to lift and move loads. An assessment should occur during the task planning phase.

Your assessment may reveal that a forklift should not be used because of risks with the task. Instead, other forms of load-shifting plant should be used, such as, for example, a mobile crane.

Alternatively, your assessment may confirm that using a forklift is the safest way to perform the task. In this case, it is important to identify the most appropriate type of forklift to do the work safely.

When selecting a forklift to use in the workplace, ensure it is suitable for:

- the loads to be lifted and moved
- the site conditions
- the operator's knowledge, skills and abilities
- controlling the identified hazards and risks.

Do not base a decision to use a specific forklift solely on the availability of a particular forklift. Review information from the forklift manufacturer and supplier. Reviewing information will help ensure you understand the forklift's capabilities and limitations. It will help ensure the forklift is appropriate for the task. The review should occur before buying, hiring or leasing a forklift. The same review process applies when buying a second-hand forklift.

**Note:** As an employer, you must consult with employees and any HSRs before changing the workplace, work practices or plant used at the workplace. Plant includes forklifts. You must consult so far as is reasonably practicable.

# Part 2 – Forklift selection and planning

## Forklift selection factors

Following is a list of common factors to consider during the forklift selection process. This is not an exhaustive list. It should be read together with the information in this guidance.

Factors to consider when selecting a forklift include:

- combustion or electric engine
  - combustion engines produce exhaust emissions, so it might be necessary to consider ventilation of the fumes from enclosed areas
- where the forklift will be used, such as indoors or outdoors
- weight of loads
- type of load, for example, height, width, liquid
- lifting heights
- loading or unloading from trailers
- accessories, such as scales
- attachments you intend to use
- extreme temperatures
- safety enhancement features, such as person-sensing devices and sequential interlocking seatbelts
- load centre distance.

## Worksite considerations

Consider the following information and apply it to your workplace.

### Pedestrian safety

Are systems in place to physically separate pedestrians from forklifts?

Consider, for example, the following:

- How will pedestrians and forklifts be physically separated? For example, will there be physical barriers?
- Does access to facilities require pedestrians to cross forklift travel routes?
- Can changes in the way work is done eliminate the need for forklifts?
- Is it possible to design a hazard out of the workplace?

# Part 2 – Forklift selection and planning

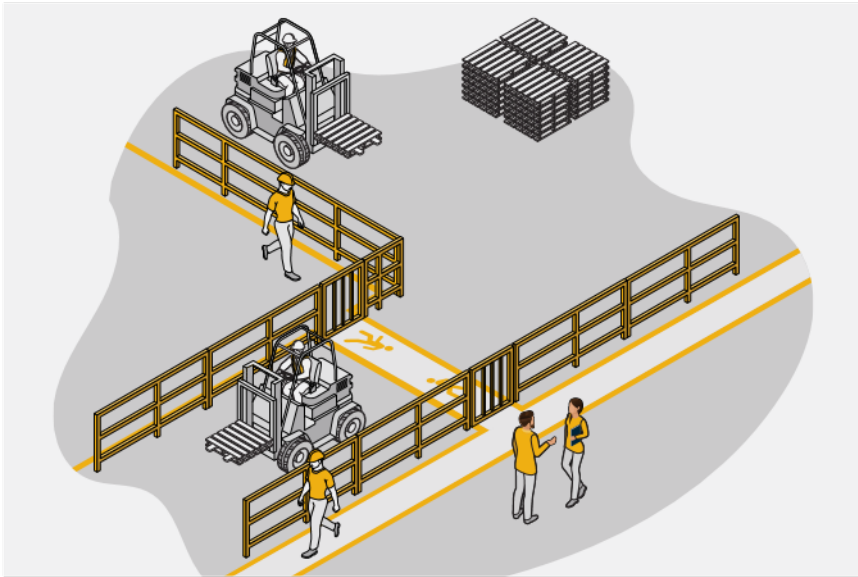


Figure 2: Example of a workplace layout with pedestrians physically separated and protected from forklift movements.

## Overhead obstructions

Are there overhead obstructions the forklift mast could hit? Consider the height of the forklift with a raised load. Is it possible to eliminate the risk of the forklift hitting overhead obstructions? If the risk cannot be eliminated, can it be reduced?

Overhead obstructions include:

- emergency sprinkler systems
- powerlines
- doorways and roller doors
- racking
- building structures
- roof trusses
- containers.



# Part 2 – Forklift selection and planning

## Aisle and racking

Are the aisles and racking appropriate for use with a forklift?  
Consider the following, for example:

- Is the aisle wide enough if one or more forklifts need to operate in it?
- Are safe load limit signs clearly displayed on racking?
- Is the racking capacity suitable for the load?
- Is there impact protection around the racking base to protect it from forklift impact? For example, protective barriers.
- Are palletised goods secured to the pallets they are on? For example, with the use of strapping or shrink wrap.
- Do racking bays have mesh backings to prevent loads being pushed into the next aisle?
- Is the racking height appropriate for the loads being stored? Does the racking height need to be lowered or raised?

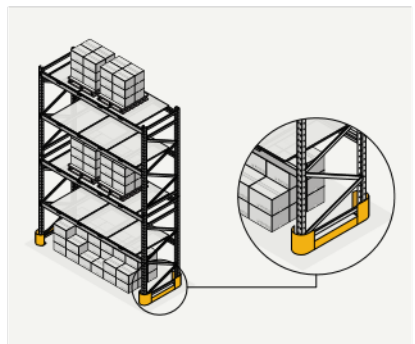
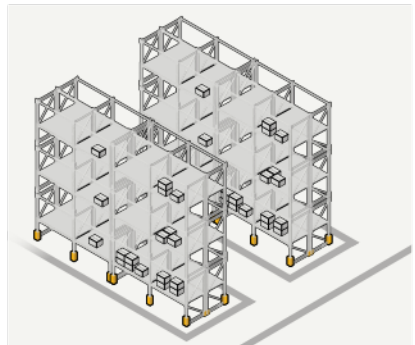
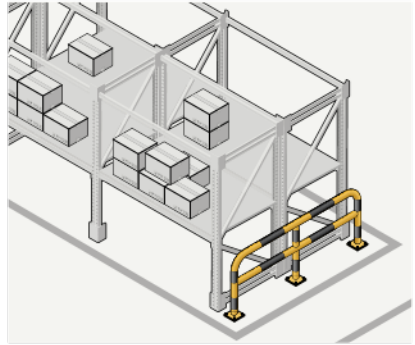


Figure 3: Three examples of racking with protective barriers around the bases.

# Part 2 – Forklift selection and planning

## Forklift operation areas

Safety improvements may be necessary to control risks in areas where forklifts operate. Consider, for example:

- ventilation and whether it is appropriate for the forklift being used
- where forklifts will unload and load, for example, shipping containers, trailers, delivery vehicles
- staging areas, warehouses
- manufacturing and order picking areas
- physically separate warehousing from manufacturing
- delivery of loads to and from production areas
- eliminating blind corners, particularly around stacked stock
- creating designated truck driver safety zones and pedestrian-only zones
- dedicated refuelling and recharging facilities, including fuel storage areas
- the ground or structure the forklift will operate on and whether it can bear the imposed loads
- the surfaces the forklift will operate on, for example, condition, terrain, ramps, sloped surfaces
- the height of overhead obstructions
- weight restrictions, for example, on suspended floors.

# Part 2 – Forklift selection and planning

## Buying, hiring or leasing a forklift

When buying, hiring or leasing a forklift, ensure it comes with all required safety features. These include, for example, sequential interlocking seatbelts, visibility assistance and pedestrian detection. When a specific forklift is out of service, seek a temporary like-for-like replacement. If the replacement forklift is a different model, do a full risk assessment before using it. Provide operators with the necessary information, instruction, training and supervision to operate the forklift safely. See Part 3, 'Training and competency'.

## Second-hand forklifts

Before buying a second-hand forklift, review the forklift's maintenance, inspection and use history. The forklift should be inspected and serviced before it is used. This is to ensure the forklift is safe to operate and functions in line with the manufacturer's specifications.

There can be additional costs to bring a second-hand forklift into a serviceable condition. They include, for example, the cost of:

- replacing damaged seats and seat belts
- replacing information plates
- adding and updating safety features
- repairing electrical problems
- repairing mechanical defects
- repairing structural defects, such as fatigue cracking.

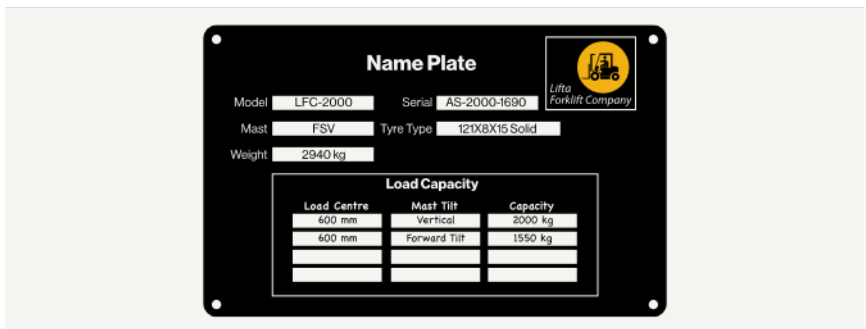


Figure 4: A forklift capacity plate.



# Part 3 – Training and competency

Employers have duties to provide employees with information, instruction, training or supervision.

As an employer, you must meet a standard when fulfilling these duties. You must provide what is necessary to keep employees safe and healthy. This includes employees involved in the operation of forklifts. Employees require information, instruction and training before they operate a forklift or perform a task.

You must also provide employees with information, instruction and training if:

- a hazard from plant is identified, and
- risk controls are used.


As an employer it is important to be aware of any language and cultural barriers in your workforce that may affect communication. You should take steps to address the barriers.

# Part 3 – Training and competency

## Training and licensing

The following table sets out the training requirements for people involved in the safe operation of a forklift.

*Table 1: The table shows the types of training for forklifts and the level of training or competency required.*

Type of training	Training or competency required
Evidence of operator competency or training.	<p>Class LF forklift HRWL</p>  <p>Figure 5: An example of a high-risk work licence.</p>
Forklift familiarisation training.	<p>For all forklift operators.</p> <p>The forklift model may be different from the model that operators used during training and assessment for the HRWL. In this case, operators will need training to familiarise them with the forklift they will be operating.</p> <p>Forklift designs can differ between manufacturers and even models by the same manufacturer.</p> <p>Training should include:</p> <ul style="list-style-type: none"><li>• safe operation of the forklift and any safety features</li><li>• capacity and load limits</li><li>• how to understand the forklift information plate</li><li>• pre-start inspection requirements.</li></ul>

# Part 3 – Training and competency

Type of training	Training or competency required
Familiarisation training on the use of attachments.	Familiarisation training should be provided for any attachments used with the forklift.
Operator training specific to the task and work environment.	All forklift operators should receive information, instruction and training on: <ul style="list-style-type: none"><li>• the traffic management plan, pedestrian safety, exclusion zones</li><li>• task procedures where a forklift is used</li><li>• reporting procedures in the case of, for example, breakdowns, collisions, damage</li><li>• refuelling and recharging processes</li><li>• the type of loads to be moved</li><li>• steps to take when a defect or fault is identified.</li></ul>

## Supervision

Sufficient supervision must be in place to ensure forklift operators follow safe operation practices. Additional supervision may be required to support vulnerable workers. Vulnerable workers include labour hire, young and culturally and linguistically diverse employees.

Direct supervision is required for a trainee who is unlicensed and working towards obtaining an HRWL. The supervisor must have an HRWL for the type of forklift being operated. The supervisor should have direct line of sight and verbal control of the unlicensed person using the forklift.



# Part 4 – Hazards

Incidents, injuries and fatalities can occur when workplace hazards are not identified or when risks are not controlled. The following information describes common hazards and their causes.

## Collision with pedestrians

Forklifts can cause serious injuries and fatalities when they hit or crush pedestrians. These incidents usually occur when there is no physical separation between forklifts and pedestrians.

Common hazards include:

- forklifts operating in areas where pedestrians are present
- not having permanently fixed physical barriers
- blind spots
- corners with limited visibility
- speed
- forklifts operating in areas with low lighting.



*Figure 6: Forklifts can cause serious injuries and fatalities to pedestrians.*

# Part 4 – Hazards

## Collision with powered mobile plant

Forklifts colliding with other powered mobile plant can cause serious injuries to operators and others in the vicinity. Collisions can also damage plant. Common causes of collision include:

- traffic management plans not being adequately developed or followed
- forklifts and pedestrians sharing the same areas
- travelling with loads raised, or loads obstructing the operator's view
- protective devices such as audible and visible alarms not being installed or used to warn of other mobile plant
- forklifts and other mobile plant operating in areas with restricted space
- visual and audible communication systems not installed or used.

## Forklift instability and overturning

Instability can cause a forklift to roll sideways, tip forwards or tip backwards. Instability increases when a forklift travels:

- around corners
- at speed
- up or down slopes or ramps or on a gradient outside the forklift manufacturer's recommendations
- on uneven surfaces
- with a raised load
- with a load tilted
- with an unstable load, such as:
  - liquid loads
  - loads suspended from chains or slings from a jib attachment, where the load can swing, fall or move.



## Part 4 – Hazards

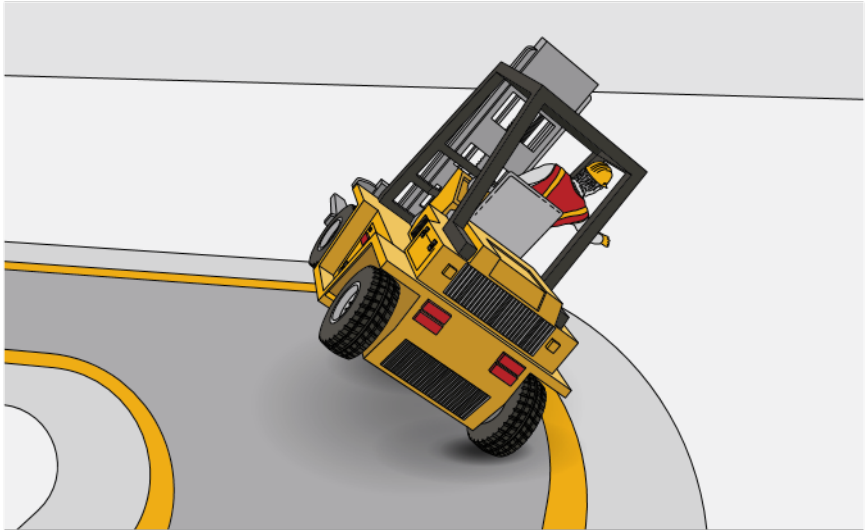


Figure 7: Instability can cause a forklift to overturn.

Other causes of instability include, for example, when:

- an inappropriate attachment is used to suspend or lift a load
- the load exceeds the safe working load limit capacity of the forklift and attachments
- the load exceeds the load centre distance
- the forklift mast hits overhead structures or equipment, such as cross-bridge racking, door lintels, lighting and sprinklers
- carrying wide or long loads
- towing, pushing or pulling loads.

Injuries and fatalities from tipping forklifts have resulted in prosecutions, including conviction under Victoria's workplace manslaughter laws. More information is available in WorkSafe's *Prosecution Result Summaries and Enforceable Undertakings* directory. The directory is on the WorkSafe website.

# Part 4 – Hazards

## Forklift operator ejection

Forklift operators are at risk of being ejected from the forklift. Common causes of ejection include:

- the operator's seat not being designed to prevent the operator from being ejected
- restraints such as seat belts not being fitted, maintained or used
- protective devices not being fitted or maintained to prevent the operator from being ejected.

## Falling object hazards

Palletised stock stored at heights and not secured is a hazard. It can become a falling object if the racking or stock is hit by the forklift or the fork arms. Stock stored at heights should be secured to the pallet. Securing stock will help to prevent objects from falling. Stock can be secured to pallets by wrapping or strapping.

## Environmental hazards

The environment where forklifts operate can create additional hazards.

Many environmental hazards occur when petrol, diesel or gas forklifts operate indoors, causing a build-up of fumes such as carbon monoxide. Areas where this can occur include, for example, loading docks, shipping containers and cold stores.

Where forklifts operate outdoors, hazards include, for example, changes in surface condition and visibility because of rain, strong wind and other weather conditions.

Assess the risks in the environment where forklifts operate. Use appropriate controls to manage hazards and risks.



# Part 5 – Risk controls

Once hazards have been identified, risks associated with those hazards must be controlled. As an employer or self-employed person, you must control hazards and risks so far as is reasonably practicable. Controlling any risk associated with the use of a forklift in the workplace includes following the hierarchy of control.

## Hierarchy of control

The hierarchy of control is a step-by-step approach to eliminating or reducing risks. It ranks risk controls from the highest level of protection and reliability through to the lowest and least reliable. The following guidance explains the steps of the hierarchy of control. You must comply with the hierarchy of control, so far as is reasonably practicable.

### Steps of the hierarchy of control

#### Level 1. Eliminate hazards and risks

Eliminating the hazard and the risk it creates is the most effective control measure.

#### Level 2. Reduce the risk

Reduce the risk with one or more of the following controls:

- **Substitution**  
Substitute the risks with lesser risks.
- **Isolation**  
Isolate people from the risks.
- **Engineering**  
Reduce the risks through engineering changes or changes to systems of work.

#### Level 3. Administrative controls

This is a low level of protection and less reliable control. Use administrative actions to minimise exposure to hazards and to reduce the level of harm.

#### Level 4. Personal protective equipment

This is the lowest level of protection and least reliable control. Use PPE to protect people from harm.

# Part 5 – Risk controls

## Work through the hierarchy of control

To fulfil your duties as an employer or self-employed person, you must eliminate any risk associated with forklifts. You must do this so far as is reasonably practicable. Where a risk cannot be eliminated, you must reduce the risk. You must reduce the risk so far as is reasonably practicable.

All employers and self-employed persons must work through the hierarchy of control to control the risks from using forklifts. Consider various control options and choose the controls that most effectively eliminate the hazard. If elimination is not reasonably practicable, you must choose controls that most effectively minimise the risks. Reducing the risk may involve a single control measure or a combination of different controls that work together to provide the highest level of reasonably practicable protection.

The following table provides examples of risk controls based on the hierarchy of control. More information about the hierarchy of control is available on the WorkSafe website.

# Part 5 – Risk controls

Table 2: The hierarchy of control to manage risks from forklifts.

Hierarchy level	Examples of risk controls
<b>Level 1</b> <b>Eliminate the risk</b>	Remove forklifts from the workplace.
<b>Level 2</b> <b>Reduce the risk using:</b> <ul style="list-style-type: none"> <li>• <b>substitution</b></li> <li>• <b>isolation</b></li> <li>• <b>engineering controls.</b></li> </ul> <p>It may be necessary to use a combination of the three options to control risks.</p>	<p>Use other suitable load-shifting equipment with a lower level of risk. For example, overhead cranes, hand stackers or conveyors.</p> <p>Other Level 2 controls to reduce risks include:</p> <ul style="list-style-type: none"> <li>• raised walkways</li> <li>• pedestrian or forklift-exclusion zones</li> <li>• high-impact fixed guard rails, barriers, fences</li> <li>• inward-opening self-closing gates</li> <li>• driver safety zones with fixed railings for transport drivers</li> <li>• perimeter zone warning lights</li> <li>• pedestrian detection systems</li> <li>• traffic lights</li> <li>• speed humps</li> <li>• forklift speed limiters</li> <li>• sequential interlocking seatbelts.</li> </ul>
<b>Level 3</b> <b>Reduce the risk using administrative controls.</b>	<p>Administrative controls to reduce risks include:</p> <ul style="list-style-type: none"> <li>• safe operating procedures and training</li> <li>• floor and road markings</li> <li>• blind spot mirrors, for example, convex mirrors</li> <li>• signs</li> <li>• scheduling of forklift movements.</li> </ul>
<b>Level 4</b> <b>Reduce the risk using PPE</b>	<p>PPE to reduce risks includes:</p> <ul style="list-style-type: none"> <li>• high-visibility clothing</li> <li>• safety footwear.</li> </ul>

# Part 5 – Risk controls

## Traffic management plan

A traffic management plan is a system to protect people at the workplace from powered mobile plant.

A traffic management plan for forklifts should do the following:

- Identify movement of forklifts within the workplace.
- Identify hazards for forklifts in the workplace. Hazards include, for example, ground conditions, pathways, structures, no-go zones, plant-free zones, pedestrians and movement of other plant.
- Identify how all pedestrians, including transport drivers, are protected from forklift movements.
- Include illustrations of the layout of barriers, walkways, signs and general arrangements. The illustrations should warn and guide traffic around, past or through a worksite or temporary hazard.
- Show how short-term work, mobile work and complex traffic situations will be managed.

A traffic management plan should include a diagram. The diagram should be displayed prominently at the site. The diagram should show:

- forklift operating areas, travel paths, exclusion zones
- pedestrian travel paths, including travel paths to facilities
- pedestrian-only zones
- driver safety zones
- electrical and overhead structure no-go zones.

# Part 5 – Risk controls

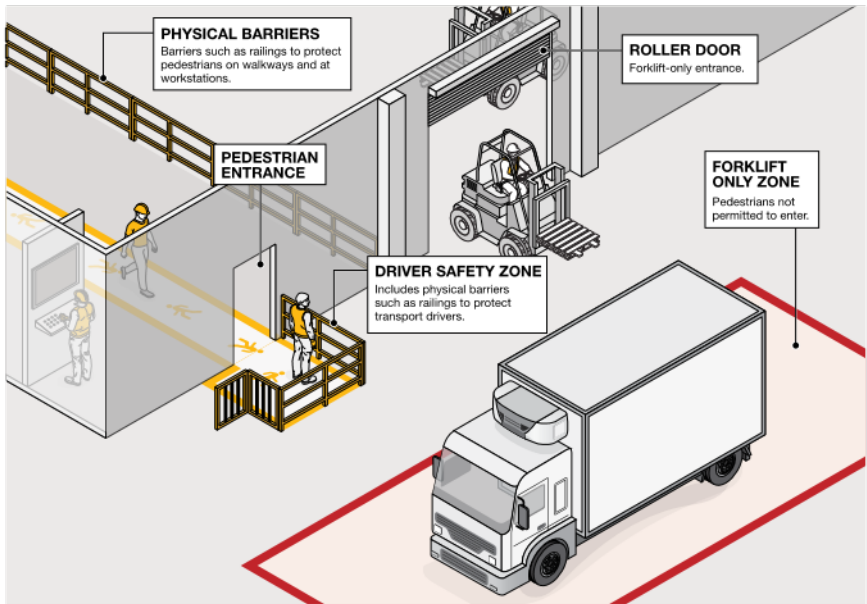


Figure 8: An example of a diagram from a traffic management plan. The diagram shows a truck parking area, forklift-only zones, driver safety zone, a forklift-only entrance, pedestrian entrance and physical barriers to protect pedestrians.

## Review and revise the plan

Traffic plans require review and revision. Review and, if necessary, revise the traffic management plan when there is:

- an incident involving a forklift
- a change to tasks that involve forklifts
- a change to how pedestrians are kept safe
- a change to tasks involving other powered mobile plant in the workplace
- a change in the workplace layout
- a change to the traffic management plan
- when requested to do so by an HSR.

# Part 5 – Risk controls

## Consult with employees

As an employer you must consult about certain matters that affect employees or are likely to directly affect them. This means you must consult employees when reviewing or revising traffic management plans. You must also consult with independent contractors, labour hire workers and any HSRs. There are also consultation obligations between employers and labour hire providers who share occupational health and safety duties to labour hire workers.

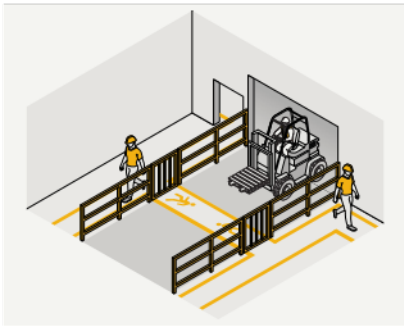


Figure 9: A pedestrian and forklift separation system using fixed barriers and gates.

## Traffic management plan examples

- Use exclusion zones with physical barriers to prevent forklifts from operating near:
  - amenities and dining facilities
  - entrances and exits
  - office areas
  - time clocks.
- Use exclusion zones with physical barriers to restrict forklifts or people from entering the zones. Barriers need to be fixed, as shown in Figure 9.
- Use coloured zones and floor markings to show areas where powered mobile plant operates.

As well as physically separating people and forklifts, also consider:

- speed limiting devices
- pedestrian-sensing equipment
- signs
- audio and visual warnings
- eliminating blind corners from the workplace
- high-visibility clothing on employees and site visitors.

Inform employees and visitors about the traffic management plan. Visitors may need to be accompanied when walking through the workplace.



# Part 5 – Risk controls

## Driver safety zones

Ensure truck drivers are a safe distance from trucks and forklifts during loading and unloading. Provide driver safety zones with fixed physical barriers where truck drivers can wait. Examples of physical barriers include high-impact barriers, bollards or steel railings. Locate the driver safety zones so drivers can see their trucks being loaded or unloaded.

The WorkSafe website has more information on traffic management plans. It also has information on improving safety through workplace layout and design.

## Loading and unloading areas

Ensure the operating procedures for loading and unloading areas keep pedestrians out of the areas. Ensure forklift operators are trained in safe operating procedures. The traffic management plan and safe operating procedures need to include pedestrian and transport driver safety, travel paths and visibility.

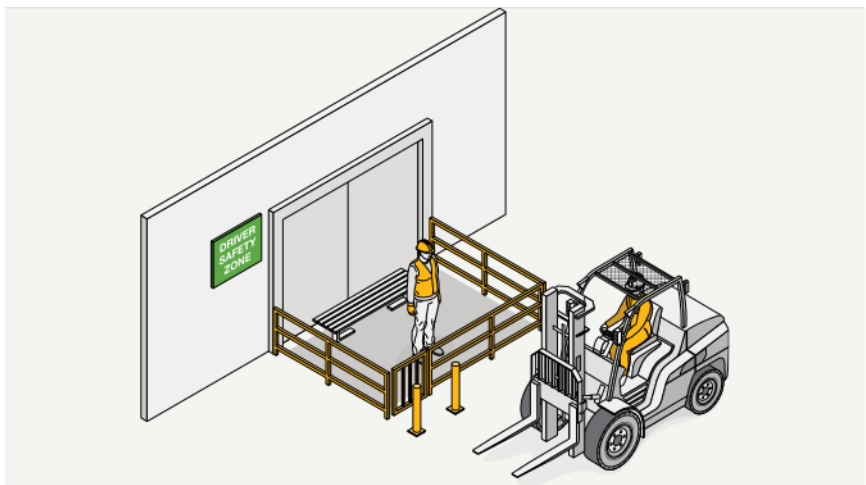


Figure 10: An example of a driver safety zone where truck drivers can wait during loading and unloading.

# Part 5 – Risk controls

## Speed limits

- Review and set the maximum travel speed for forklifts. Take other powered plant and pedestrians into consideration.
- Consider fitting speed-limiting devices. Where practicable, limit the speed of forklifts so they cannot exceed the speed limits in the traffic management plan.
- Display maximum speed limits. Enforce speed limits and ensure operators observe limits.
- Review the placement of speed limit signs. Ensure forklift operators can easily see the signs.
- If forklifts are operated in areas where pedestrians may be present, limit forklift speed to walking pace, 5–7 km/h.

Performance incentives are common in warehouses. However, they may encourage speeding and other unsafe behaviour when using forklifts. Avoid performance incentives that may encourage speeding.

# Part 5 – Risk controls

## Driving on public roads

Where a forklift needs to operate on a public road:

- the forklift must be registered with the relevant road authority and have number plates
- the operator must have an HRWL as well as a current car licence to drive on the road
- ensure workplace procedures set out the safe work procedures for operating a forklift on public roads
- identify hazards such as overhead powerlines and pedestrians walking on footpaths, designated smoking areas and the travel paths of mobile plant and trucks.

## Seatbelts in forklifts

Employers must eliminate the risk of an operator being ejected from powered mobile plant. This includes forklifts. As an employer, you must eliminate the risk so far as is reasonably practicable. If you cannot eliminate the risk, you must reduce it so far as is reasonably practicable.

To control the risk of an operator being ejected you must provide appropriate protective devices. Again, you must do this so far as is reasonably practicable. Operator protective devices include seatbelts.

As an employer, you must also ensure operators use protective devices. This includes seat belts. You must do this so far as is reasonably practicable. To help you fulfil your duties, instruct supervisors and team leaders to monitor forklift operators to ensure they wear seatbelts.

# Part 5 – Risk controls

## Sequential interlocking seatbelts

Australian Standards have required sequential interlocking seatbelts in new forklifts since 2013. Sequential interlocking seatbelts prevent forklifts from starting or moving unless the operator is first seated and then buckled in, in that order. If the two steps are not completed or are done out of order, the forklift will not start. Sequential interlocking seatbelts are readily available and can be retrofitted to an existing forklift.

### Remain seated

If a forklift overturns, the operator should remain seated in the forklift, with arms and legs inside the cage. An operator jumping from an overturning forklift is at risk of being crushed.



Figure 11: An example of a label on a forklift to show the procedure for using a sequential interlocking seatbelt.

# Part 5 – Risk controls

## Reach trucks

Reach truck operators usually stand or sit sideways at the rear of the reach truck. Seat belts are not normally fitted or used.

Although seat belts may not be required, you must still control risks from reach truck use. You must eliminate the risks so far as reasonably practicable. If you cannot eliminate the risks, you must reduce them so far as reasonably practicable.

## Forklifts without seats

Not all forklifts have seats. On some forklifts the operator has to stand on the forklift to operate it. Therefore, a seat belt is not required. However, as an employer you still have a duty to provide, maintain and use appropriate operator protective devices. You must do this so far as is reasonably practicable.

# Part 5 – Risk controls

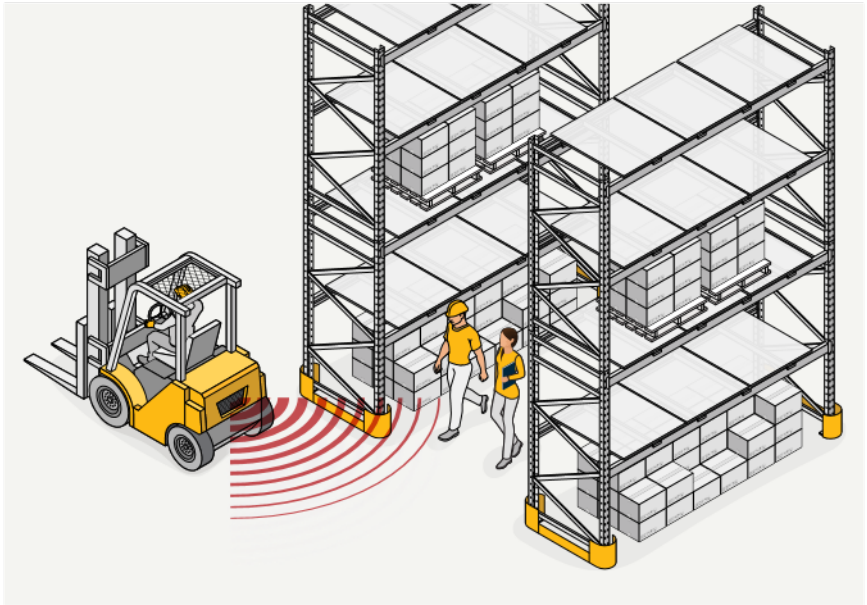
## Safety-enhancing features

Use controls to ensure safe operation of the forklift. Controls must protect both the operator and other people in the vicinity. They must do this so far as is reasonably practicable. There are many safety-enhancing features available for forklifts. If they are not fitted, consider retrofitting safety-enhancing features, where reasonably practicable. Be aware that retrofitting safety features could introduce new hazards and risks. Those hazards and risks must be controlled, so far as is reasonably practicable. Where possible, consult with the manufacturer or supplier when retrofitting safety features.

Safety-enhancing features include:

- sequential interlocking seatbelts, required by Australian Standards since 2013
- pedestrian detection systems and automatic braking
- visibility assistance, for example, mirrors and cameras that can monitor around the forklift and monitor the operator
- perimeter zone warning lights
- automatic speed reduction zones
- slowing electric forklifts when the mast is elevated
- dynamic stability control to improve the forklift's stability during braking and manoeuvring
- impact monitoring sensors
- labels and markings on the mast that indicate the point where capacity changes at a given lift height, as shown on the information plate
- mechanical or electronic limit switches or proximity sensors that stop the fork carriage at defined shelf heights
- weighing equipment to reduce overloading.

## Part 5 – Risk controls



*Figure 12: Pedestrian-detection systems and automatic braking are among safety-enhancing features available for forklifts.*

**Note:** Using the listed safety-enhancing features does not remove the safety responsibility of the operator.



# Part 6 – Work practices

Safe systems of work are necessary when using forklifts. Safe systems of work help ensure tasks are carried out safely. Changes in work practices may be necessary to control risks to employees, other people and equipment. Follow the hierarchy of control to control risks.

The following guidance describes common work practices to control risks.

## Work practices in forklift operating areas

Safe work practices are necessary wherever forklifts operate. Safe work practices will help ensure each task is done safely. If work practices change, the traffic management plan needs to be reviewed and revised. The plan also needs to be reviewed and revised if the workplace layout changes. Review and revise in consultation with employees, including independent contractors and labour hire workers, and any HSRs.

## Docks and dock levellers

Fit raised edges on loading docks where there is a risk of a forklift going over an edge. Where reasonably practicable, install physical barriers to prevent forklifts from driving off docks. See Figure 13. Introduce controls to prevent transport vehicles from leaving the dock area too soon. Ensure the base of the loading dock is flush with the floor. This will help prevent the fork arms or load from hitting the dock.

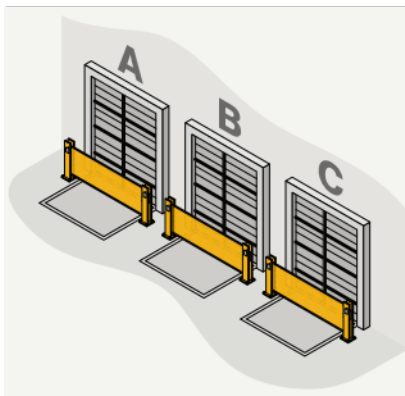


Figure 13: Loading docks with fixed barriers and gates for when the docks are not in use.



# Part 6 – Work practices

## Pushing, pulling or towing with a forklift

Using forklifts to push, pull or tow a load can exceed the capacity of the forklift's components.

Pushing, pulling or towing a load above the forklift's capacity can:

- damage the forklift
- lead to the malfunction or failure of parts
- put people in the vicinity at risk of being struck by uncontrolled loads or forklift parts.

Use purpose-designed attachments or equipment for pushing, pulling or towing. For example, a powered tug.

Purpose-designed forklift attachments need to:

- be assessed by the manufacturer or a suitably competent person, such as an engineer
- pass assessment to ensure the forklift can safely tow, pull or push the loads without damaging the forklift.

The forklift's information plate needs to provide details about attachments, including towing attachments. For example, maximum towed capacity, drawbar pull and downward force on drawbar.

## Multiple forklift use

As an employer or self-employed person, you have duties under the OHS Regulations. One of those duties is to ensure no load is lifted simultaneously by more than one piece of plant. This means you must ensure only one forklift at a time lifts a load. You must fulfil this duty so far as is reasonably practicable. If a load is not appropriate for just one forklift to lift, use purpose-designed equipment instead. For example, a mobile crane.

# Part 6 – Work practices

## Mezzanine floors

Upper-level floors need barriers to prevent falls. The barrier might have an opening to allow loading of palletised goods. In this case, the opening needs a self-acting gate to prevent a person from falling. For example, when the front section of a dual-gate system opens, the rear gate closes. See Figure 14.

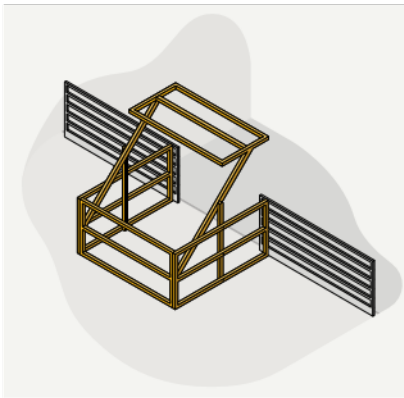


Figure 14: A mezzanine pallet-loading gate.

## Designated refuelling or recharging zones

Locate refuelling or recharging zones in a separate area. Ensure zones are away from pedestrians.

Basic requirements for refuelling and recharging zones include emergency equipment such as:

- emergency eyewash
- spill kits
- fire-fighting equipment.

Australian Standards AS 2402.1.2 and AS 2402.2.2 set out detailed guidelines for safe battery handling and charging.

Locate emergency equipment near the refuelling and recharging station in a well-ventilated area. Protect equipment such as battery chargers from forklift movements. For example, install high-impact barriers.

# Part 6 – Work practices

## Forklifts with LPG cylinders

For forklifts with LPG cylinders:

- Only fill, exchange or store LPG cylinders at locations set aside for that purpose.
- Ensure only trained and authorised persons recharge or exchange LPG cylinders.
- Provide gloves for people changing cylinders to control the risk of freeze burns.
- Do not store LPG cylinders upside down, even when empty.
- Ensure LPG cylinders fitted to forklifts are in the correct position with the safety valve at the top and the cylinder secured. An arrow or the word 'top' indicates the top of the cylinder.

## Electric forklifts

For electric forklifts:

- Ensure only trained and authorised persons charge and change batteries.
- Ensure charging and changing take place at locations designed for that purpose. It is best to use a charger that can charge the battery while it remains in the forklift.
- Provide the forklift-charging instructions and ensure they are followed. Some forklifts may require the battery vents to be opened. Forklifts may also have instructions on how to charge the batteries and the precautions to take.
- Prevent the risk of tripping and ensure power leads are not left on the floor.



# Part 7 – Forklift attachments

Using an attachment on a forklift will change the forklift's stability and operating characteristics. Ensure attachments comply with the relevant Australian Standards.

Only use attachments that meet the following conditions:

1. The forklift manufacturer has approved the use of the attachment.
2. The attachment has a rated capacity.
3. The attachment is listed on the forklift information plate or load capacity plate. The information should include the specific forklift and attachment's actual capacity when used together.

The information plate needs to indicate the rated capacity for the forklift when used with specific attachments. For example, jibs, grab or rotating attachments. Forklift operators must receive information, instruction, training or supervision for each attachment they use. See Part 3, 'Training and competency'.

Before fitting or using an attachment, always check the forklift's information plate. Ensure that the specific attachment to be used is listed on the plate. If it is not on the information plate, the attachment must not be used.

Forklifts in Australia with a rated load of more than one tonne are typically designed with a standard load centre distance of 600 mm. This load centre distance ensures forklifts can accommodate a standard hardwood pallet of 1200 mm by 1200 mm. The capacity of a forklift can be significantly reduced when attachments are fitted or fork arms are changed for a greater load centre.

Some forklifts are imported into Australia with 500 mm load centre fork arms. In most cases, the manufacturer's agent will alter the forklift to 600 mm load centres before sale. However, where direct imports occur by an individual or a company, forklifts with 500 mm load centre may be offered for sale. Buyer beware in these cases.

# Part 7 – Forklift attachments

When an attachment is fitted, the supplier will amend the information plate or provide a supplementary information plate for the forklift's rated capacity.

The operator manual supplied with the forklift includes information on how to read an information plate.

Before using an attachment, it is important to ensure the following:

- The attachment is inspected as part of the daily pre-operational inspection.

- Where an attachment needs to be secured to the forklift, it is adequately secured as required by the safe-use information supplied with the attachment. For example, by using pins or a chain.
- The operator is aware of the limitations of the forklift with the attachment.
- The operator is provided with information and instructions on how to use the attachment.

Ensure all lifting or suspending is done with attachments that are:

- appropriate to the load
- within the safe work limits of the plant.

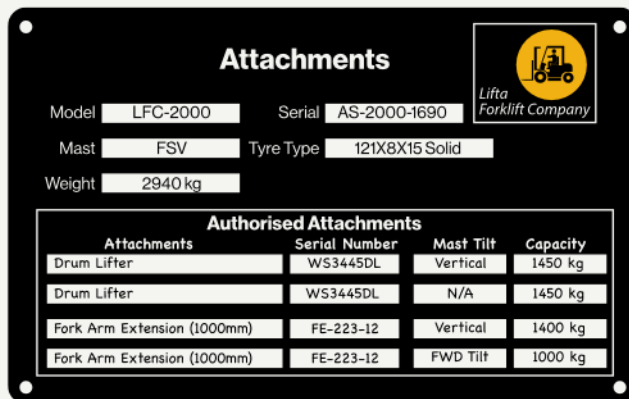


Figure 15: An example of a forklift information plate showing attachment capacities.

# Part 7 – Forklift attachments

## Attachments for suspended loads

### Forklift jibs

Forklift jibs allow the lifting of long, heavy or awkward loads. Jibs come in a range of options. They include telescopic, as shown in Figure 16, or fixed, as shown in Figure 17.

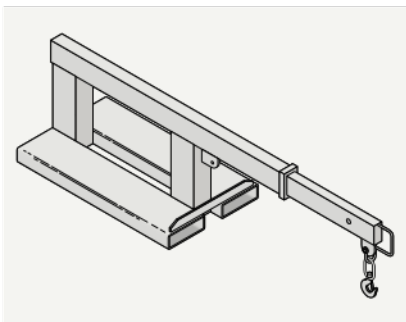


Figure 16: An example of a telescopic jib attachment.

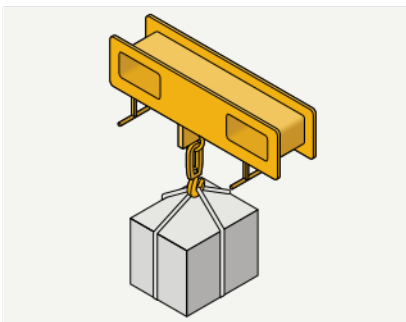


Figure 17: An example of a fixed jib attachment.

When using jibs, ensure the following:

- The forklift and jib's actual capacity is determined. This will take into account:
  - the weight of the attachment
  - the increase in load centre
  - the swing of the load.

**Note:** This information needs to be detailed on the forklift information plate.

- The forklift with jib is only operated on a hard, flat, level surface
- The operator is trained in the use of the jib attachment.

Consider whether it is possible to use alternative specifically designed load-shifting equipment. For example, use an overhead crane for regular shifting of large sheets of stone, steel or plant maintenance equipment.

# Part 7 – Forklift attachments

## Lifting bulka bags

Flexible intermediate bulk containers (FIBC) are commonly known as 'bulka bags'.

Bulka bag lifting attachments allow the movement of FIBCs.

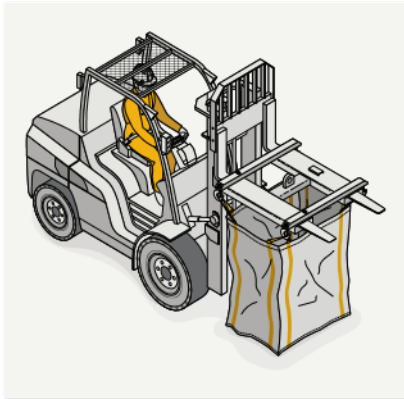


Figure 18: A bulka bag lifting attachment for forklifts.

Safety can be compromised in the following situations:

- The safe working load limit is exceeded.
- The bulka bag has become damaged by multiple use, incorrect use, chemicals or mechanical damage. Damage can cause the bag or contents to fall.
- The bulka bag lifting loops or sling are exposed to ultraviolet rays or are out of date.

- The load-bearing lifting loops are hooked directly onto a forklift's fork arms. This exposes the lifting loops to sharp edges and can cause the loops to fail under load.
- People place themselves underneath or near a suspended load.
- There is no frame to support the bag before releasing contents.

If a lifting loop fails, a suspended bag could swing or drop and strike people nearby.

Before using the bulka bag lifting attachment, consult with either:

- the manufacturer
- the forklift supplier
- a suitably competent person.

If a bulka bag is to be used, ensure its lifting loops are inspected before each use. Also ensure the lifting attachment is part of the daily inspection.

The manufacturer or a suitably competent person needs to review the capacity of the forklift and attachment combination.

# Part 7 – Forklift attachments

## Work platforms

Employers must ensure plant used to lift or suspend people, equipment or materials is specifically designed to lift or suspend the load. Employers must do this so far as reasonably practicable. Forklifts are not specifically designed to lift people. To lift people, use plant that is designed for this task. For example, use a mobile elevating work platform (MEWP), such as a knuckle boom or scissor lift.

MEWPs have risk controls that forklifts do not. These include:

- operator controls in the control of the person being lifted
- load management systems to prevent the MEWP from reaching a position where the platform could destabilise
- pothole protection
- speed limiting when in the raised position
- ramp down time
- in-built emergency retrieval controls that can be used in the event of failure of the plant's normal operation.

Forklift work platforms should not be used for tasks such as order picking.



# Part 7 – Forklift attachments

If a work platform is to be used for a task, ensure the following:

- The forklift's nameplate lists the work platform and includes the work platform model and serial number.
  - The work platform is secured to the forklift by pins or a chain.
  - A risk assessment is carried out before using the work platform.
  - The work platform is included in the forklift pre-operational check.
  - A harness is used and attached to an anchor point in the work platform appropriate for the fall clearance should the harness deploy.
  - People using the work platform have received training for safe working at heights. This includes training in harness use.
  - Barriers and signs prevent interference from passing traffic.
  - The forklift forward tilt is locked out and the mast maintained in the vertical position.
- Ladders or other height equipment are not to be used to gain additional height from the work platform.
  - The forklift remains stationary while a person is within the work platform.
  - A person is not transported while standing within the work platform.
  - A person in the work platform does not exit the work platform while it is in a raised position.

This is not a complete list of requirements. Refer to Australian Standard AS2359.2 for more requirements.

WorkSafe has more information about the dangers of using forklifts to lift people. The information includes details of a fall from a steel stillage raised on a forklift. Find the information in the Safety Alerts section of the WorkSafe website. There are also other Safety Alerts relating to forklifts.

## Part 7 – Forklift attachments

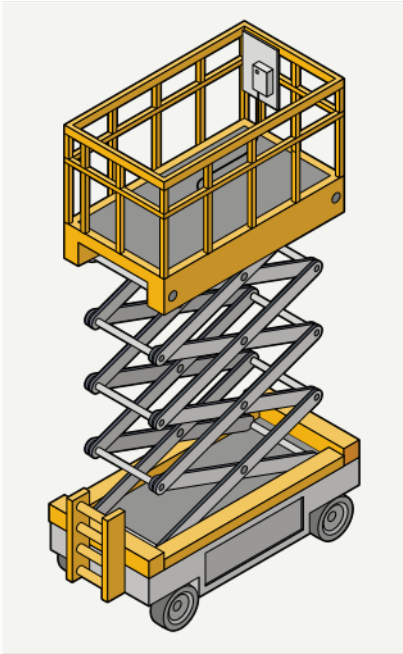


Figure 19: Scissor-type MEWP for operating on a flat or solid surface.

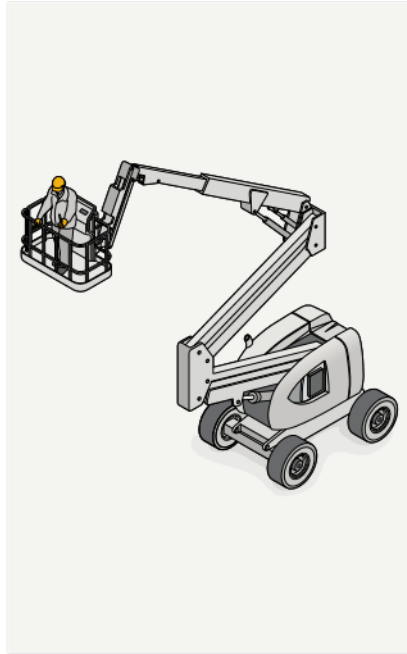


Figure 20: A knuckle boom.



# Part 8 – Maintenance and inspection

## Inspection and maintenance

Forklifts and any attachments must be regularly inspected and maintained to control risks associated with their use. A checklist can help with inspections and maintenance, see Figure 21.

A pre-operation inspection should be done in accordance with the manufacturer's recommendations:

- at the start of each shift
- before first daily use
- when there is a change of operator.

Defects need to be reported. Have a system in place to lock out the forklift or any attachment from service if a defect is identified that makes the forklift unsafe for use.

Engage a suitably competent forklift technician to maintain forklifts.

This will help ensure forklifts continue to operate in line with the manufacturer's recommendations.

Inspection and maintenance records should show:

- what requires inspection at given maintenance intervals.
- what has been inspected
- any maintenance that has been carried out
- any defects and rectification work.

The records should include any pending maintenance requiring sign-off or follow-up.

# Part 8 – Maintenance and inspection

## FORKLIFT SAFETY LET'S REDUCE THE RISK



If any of the below is deficient, **DO NOT OPERATE!**  
Tag and notify your supervisor.

### OPERATOR'S DAILY CHECKLIST

Operator ..... Forklift .....

S/No .....

If you notice any faults with any aspects of the forklift listed below do not use it.

Forklift operators must also look out for their own personal safety by wearing appropriate protective clothing, high visibility vests and enclosed shoes.

Before starting the forklift always check pedestrian exclusion zones are marked and that ground surfaces are even and clear. Then check the following is satisfactory:

- TYRES** check all tyres and look for any visual wear or damage
- FLUIDS** check oil, hydraulics, battery, fuel and coolant
- SEATING** check the condition and adjustment of seating
- WARNING DEVICES** check lights, horn and reversing beeper
- CAPACITY** check load-capacity plate is fitted, legible and correct
- MAST** check mast for any wear to lift chains and guides, inspect hydraulic cylinders, look for any leaks
- FORKS** inspect forks for any sign of damage
- SEATBELT** make sure your seatbelt is securely fastened

#### Once started, observe:

- CONTROLS** after start up, check all pedals and controls
- BRAKES** check brakes and parking brake for proper operation

\*This pre-operational check is an example and should not be used in place of a thorough risk assessment of all workplace operations. It does not include all hazards related to the use of your forklift.

Figure 21: An example of a forklift pre-operation checklist.



# Further information

## WorkSafe

### Compliance codes

[Compliance code: Plant](#)

### Guidelines

[How WorkSafe applies the law in relation to Reasonably Practicable](#)

### Guidance

[Consultation: A guide for Victorian workplaces](#)

[Developing a forklift traffic management plan](#)

[Information for employers  
Occupational Health and Safety  
Act 2004](#)

[Information for employees:  
Occupational Health and Safety  
Act 2004](#)

[The hierarchy of control](#)

## Safety Alerts

[Employee fatally injured after fall from steel stillage](#)

[Workers fatally injured by forklifts](#)

[Employee fatally crushed between forklift load and mast](#)

[Worker fatally injured by unstable forklift load](#)

## Prosecutions and Enforceable Undertakings

[WorkSafe Prosecution Result Summaries and Enforceable Undertakings](#)

# Further information

## Industry

Australian Forklift & Industrial Truck Association (AFITA)

## Standards

Australian and Australian/New Zealand standards

The following standards include information relevant to the use and operation of forklifts. If a standard has been superseded, refer to the updated document.

AS 1319:1994 – Safety signs for the occupational environment.

AS/NZS 1596:2014 – The storage and handling of LP Gas.

AS/NZS 1680 (series) – Interior and workplace lighting.

AS 1742 (series) – Manual of uniform traffic control devices.

AS 1763:1985 – Industrial trucks – Glossary of terms.

AS 1940:2017 (series) – The storage and handling of flammable and combustible liquids.

AS AS2359 (series) Industrial Trucks – including General Requirements, Operations and Safety Requirements.

AS 2402 (series) – Traction batteries – Lead-acid Requirements, Installation and Usage.

AS 2548.1:1998 – Battery chargers for lead-acid traction batteries – Battery chargers for vented cells.

AS 4024 (series) – Safety of machinery.

AS 4973:2001 – Industrial trucks – Inspection and repair of fork arms in service on fork-lift trucks.

AS 4983:2010 Gas fuel systems for forklifts and industrial engines.

AS/NZS 60079.10 (series) – Classification of hazardous areas – Examples of area classification.





## WorkSafe Agents

Agent contact details are all available at  
**[worksafe.vic.gov.au/agents](https://worksafe.vic.gov.au/agents)**

## Advisory Service

Toll-free 1800 136 089  
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## Information in your language

For information about WorkSafe in your own language, call our Translating and Interpreting Service (TIS National) on **131 450**.