

Forklift trucks

In order to understand the safety requirements for forklifts and your obligations for safety you must consider and understand relevant legislation and codes of practice.

What law applies

Legal obligations, legislation, code of practice

What are forklift trucks?

What forklift trucks are, types of forklift trucks

Using forklift trucks safely

Before you hire, rent or buy forklifts, safety procedures, operating forklifts, working in confined spaces, flammable atmospheres and materials, pedestrian operated forklifts

Maintenance

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What law applies

In order to understand the workplace health and safety requirements for forklift trucks, and your obligations under the law you must consider and understand relevant legislation and codes of practice.

General health and safety obligations

To understand your obligations and safety requirements you must be familiar with the:

Workplace Health and Safety Act 1995 which imposes obligations on people at workplaces to ensure workplace health and safety. The *Workplace Health and Safety Act 1995* also helps you to meet your workplace health and safety obligations through:

- The *Workplace Health and Safety Regulation 2008* which describes what must be done to prevent or control certain hazards which cause injury, illness or death
- codes of practice, which are designed to give practical advice about ways to manage exposure to common risks. In particular, the *Risk Management Code of Practice 2007* should be read in conjunction with information on PPE.

Every Queensland employer must have **workers' compensation** insurance. Most employers insure with WorkCover Queensland, while a small number of large organisations have their own insurance. This insurance coverage ensures that employees injured at work receive financial support.

What you must do

It is a requirement of the *Workplace Health and Safety Act 1995* that risks must be assessed and control measures then implemented and reviewed to prevent or minimise exposure to the risks.

If the *Workplace Health and Safety Regulation 2008* describes how to prevent or minimise a risk at your workplace you **must** do what the regulation says. If there is a code of practice that describes how to prevent or minimise a risk at your workplace you **must** do what the code says or adopt and follow another way that gives the same level of protection against the risk.

If there is no regulation or code of practice about a risk at your workplace you **must** choose an appropriate way to manage exposure to the risk. People must, where there is no regulation or code of practice about a risk, take reasonable precautions and exercise proper diligence against the risk.

See the *Risk Management Code of Practice 2007* for further information.

What are forklift trucks?

The term 'forklift truck' refers to an industrial lift truck equipped with a vertically elevating load carriage frame. Horizontal load forks (or a similar lifting mechanism) project from the front of the frame. Forklift trucks can be powered by electric motors or internal combustion engines running on petrol, diesel or LPG fuels.

Forklift trucks are controlled by an onboard operator who must hold a certificate. Trainee operators must work under the supervision of an employer-appointed competent, certified forklift operator.

Pedestrian Operated Forklifts (POFs) are not controlled by an onboard operator. There are some hazards specifically associated with the use of POFs. For more information, read the section on pedestrian operated forklifts.

Using forklift trucks safely

Before you hire, rent or buy

What to look for, data plates, meeting standards, controls, attachments, guards

Safety procedures

Devise and implement procedures, train staff, inspect forklifts, safe work areas

Operation

Authorised and certified operators, safe operating tips

Working in confined spaces

Dangers of exhaust fumes and carbon monoxide poisoning

Electrical safety

Overhead electrical hazards

Flammable atmospheres and materials

Flammable atmospheres, fuelling, charging batteries, avoiding hazardous areas

Pedestrian operated forklifts

What Pedestrian Operated Forklifts (POFs) are, safe parking tips

Before you hire, rent or buy

Before you hire, rent or purchase a forklift truck, check:

- The design and manufacture of the forklift truck and its associated features meet Australian Standards (AS 2359.1 - 1995 - *Powered industrial trucks*), and a manufacturer's data plate is attached.
- The data plate states the forklift truck's make, model number, serial number, rated load capacity, mast tilt, maximum lift height, tyre pressure, and gross vehicle weight and steer axle load (or drive axle and steer axle loads).
- The seating is adjustable, the controls are within easy reach and the operating position is designed to reduce the chance of incurring injury.
- There are adequate operating controls, warning devices, facilities to minimise noise and vibration, emission control systems and sufficient visibility for safe operation.
- Attachments such as crane jibs, clamps, work platforms, etc have instructions for use, and these have additional data plates that specify limitations of operation while using the attachment.
- Guards are fitted which comply with the relevant safety standards.
- The gross mass of the fully laden forklift truck is less than the rated load capacity of the workplace bridgeplate or dockboard.

If you design, manufacture or modify a forklift truck, check:

- The forklift truck is designed, manufactured or modified by competent persons in accordance with the relevant standard.
- When correctly used, the forklift truck does not pose a risk to health and safety.
- Documentation of tests and examinations conducted throughout design, manufacture or modification processes.
- Adequate information is provided about the conditions for safe use of the forklift truck.
- Where rated load capacity was modified, load charts were revised accordingly.

Safety procedures

It is necessary that a set of safety operating procedures is implemented for every workplace device. These procedures should be regularly updated and made available to all staff via training sessions.

Ways to control hazards

- Provide training and information for operators on all aspects of forklift truck operation and maintenance. Records of training sessions attended should be kept for each operator throughout their term of employment.
- Wear appropriate personal protective equipment (PPE) where required for such activities as changing or charging batteries.
- Before starting each shift, conduct a thorough inspection of the forklift truck and attachments such as lift and tilt systems, steering, brakes, controls, tyres, warning devices, load arms, brake fluid, hydraulic oil, etc.
- Establish safety procedures for fuel handling and storage, and battery changing and charging.
- Establish a method for determining the weights of loads being handled.
- Make work areas safe for the use of forklift trucks. Fit raised edges on loading docks, install warning signs or barricades, impose speed limits, provide adequate lighting and, if necessary fit secure ramps to access work areas.

Operation

A forklift truck operator must be an authorised trainee, or hold a certificate of competency. A certificate is not required to operate a pedestrian operated forklift.

Ways to control hazards

- Use the forklift truck only for the purpose for which it was designed.
- Do not operate a forklift truck if you are fatigued.
- Wear a seatbelt where one is provided. The only exception is if a risk assessment advises otherwise, for example when operating a forklift truck on a wharf.

- Operate the forklift truck strictly in accordance with manufacturer's specifications.
- Ensure that loads are within the rated load capacity of the forklift truck. Carry loads as close to the ground as possible.
- Operate the forklift truck with the load placed fully against the truck carriage or back rest. The mast should be tilted sufficiently backward to safeguard the load.
- Use a forklift truck to raise a person **only** if the truck is designed for this purpose or there is an approved work platform attached.
- When driving, give way to pedestrians. Maintain a clear view ahead and behind (via a correctly adjusted rear view mirror) and give clear indication of your intentions. Maintain a safe distance from other vehicles.
- Observe speed limits and ensure you can make a safe stop at any time. Avoid rapid acceleration, deceleration and quick turns.
- Drive carefully on wet or slippery surfaces or when pedestrians are near.
- Reduce speed when making a turn. Take care that the tip of the fork (or load) or the rear side of the forklift truck does not touch a nearby person or object.
- Drive in reverse if vision is obscured by a bulky load.
- Ensure that the load leads when driving up gradients. On gradients, tilt the mast back sufficiently to safeguard the load and raise the forks so they clear the ground.
- When travelling on an incline with no load, place the forks on the downhill side of the forklift truck.
- Before driving a forklift truck onto a truck, trailer or rail wagon, check that the brakes of the receiving vehicle are set and the wheels are chocked.
- Remove the ignition/starter switch key when you leave the forklift truck. Ensure the controls are in neutral, the power is shut off, the park brakes are applied and the forks fully lowered.
- Never park or leave the forklift in any doorway, entrance, emergency exit or in front of fire extinguishing equipment.

Working in confined spaces

Exhaust emissions from forklift trucks operating in confined spaces can lead to carbon monoxide poisoning.

Carbon monoxide is an odourless, colourless and poisonous gas. Precautions must be taken when forklift trucks are used in confined spaces such as cold rooms and freezers to ensure exposure to toxic levels are kept as low as possible.

Ways to control hazards

- Use electric forklift trucks instead of fuel or LP gas-powered types.
- Fit a catalytic converter to fuel or LP gas powered type to catalytically oxidise carbon monoxide to the less toxic gas carbon dioxide.
- Fit fuel control devices, to maintain an acceptable fuel-air ratio, and check them daily. Monitor fuel usage rates to detect variations in the fuel-air ratio.
- Use exhaust gas analysers as an aid during regular engine tuning.

- Monitor and record carbon monoxide levels around workers. Personal or area monitoring can be undertaken.

Electrical safety

Exclusion zones apply when working close to overhead electrical powerlines. Requirements for exclusion zones vary with voltage, and are listed in Appendix B of the *Code of Practice for Working Near Exposed Live Parts*. The Electrical supply authority should be contacted whenever a forklift truck or any part of its load has to be close to overhead electrical power lines. Safeguards and precautions required by the Authority should be observed.

In the event of a forklift truck contacting a powerline the operator should:

- if practicable, stay where they are and keep others away;
- wait until the powerline power is shut off before leaving the vehicle; and
- if practicable, move the vehicles off the powerline.

More information on electrical safety and exclusion zones can be found at the Electrical Safety Office web site.

Flammable atmospheres and materials

Great care must be taken when operating a forklift truck in flammable atmospheres or when they are used to handle flammable materials.

Safe work practices are also vital when fuelling forklift trucks or charging batteries.

Potential ignition sources include:

- flames or sparks from an exhaust
- heat generated by the engine or exhaust
- flashback produced by vapours being drawn into the engine
- over-revving the engine
- excess speeding
- sparks and heat generated by brake components
- static electricity discharged by tyres rubbing up against something
- an arc from a starter motor or electrical equipment

Using unprotected forklift trucks where flammable dangerous goods are stored or handled without precautions can create an immediate and severe risk of fire or explosion.

Do not allow unprotected forklift trucks into an area where mixing, transferring or decanting of fuels and other flammable materials is carried out

Hazardous areas

Where flammable dangerous goods are stored or handled the occupier should:

- Review MSDS and package labelling to identify the hazardous properties of each flammable dangerous goods.
- Areas where flammable liquids, gases or solids are stored or handled should be classified as **hazardous areas** according to Australian Standard AS 2430 series *“Classification of hazardous areas”*
- Identify each hazardous area with markings, warning lights and warning signs.
- Separate ignition sources from hazardous areas by an appropriate distance or physical barriers.
- Provide training and supervision to workers about the risk of ignition sources and how to prevent fire or explosion.
- **Never** use a spark ignition, including petrol and LP gas powered forklift trucks in any hazardous area.
- Do not use any forklift trucks in any areas where flammable atmospheres exist continually (zone 0 area). These areas should be made free of any sources contributing to the flammable atmosphere, prior to forklift entry.
- Adhere to hot work permits at all times.
- Hot work permits should include strategies to:
 - monitor flammable vapour and gas using calibrated flammable atmosphere devices
 - inspect the area and forklift before entry
 - ensure adequate ventilation
 - remove and shut down processes or materials that may give rise to a flammable atmosphere
- Where flammable atmospheres may be present during normal operation (zone 1 area) use a forklift truck that is either compliant with Australian Standard AS 2359.12 *“Powered industrial trucks – part 12: hazardous areas”* or non “spark ignition engine”. Ensure an appropriate hot work permit system is effectively implemented.
- Where a flammable atmosphere may occur for short periods of time (zone 2 area) use either a powered forklift truck that has been modified for use in a zone 2 area; or is not a spark ignition engine forklift and is operated with an effective hot work permit system.

Ways to control hazards

- When working in explosive or flammable areas, use only forklift trucks specifically designed for use in these areas, and ensure that they comply with the relevant Australian Standards
- All employees **must** attend training how to eliminate the risks involved in handling flammable atmospheres and materials and potential ignition sources.
- Ensure there is a **strictly enforced** no smoking policy in refuelling areas or battery charging areas.
- Naked flames are **not** be used when checking levels of battery cells.

- Handle and store liquid fuel and LP gas in accordance with the relevant Australian Standards.
- Ensure adequate ventilation in workplaces where using forklift trucks powered by LP gas, petrol or diesel fuel.
- Refuel, park and store LP gas-powered forklift trucks in well ventilated areas that are safely away from combustible material and sources of heat or ignition. Ensure that the LP gas cylinder is turned off at the valve when the forklift truck is not in use.
- Removing and replacing LP gas cylinders should only be carried out by correctly trained employees. Procedures must comply with relevant Australian Standards.
- The re-charging and changing of batteries should only be carried out by correctly trained employees and in strict accordance with the relevant standard. Before changing or re-charging batteries, ensure the park brake is applied and the vent caps are functioning correctly.
- To prevent the build-up of flammable gasses, hold the battery cover open while the battery is on charge.
- When changing or charging batteries, use the correct tools and keep metal objects away from battery cells.
- Do not use liquids with a flashpoint of less than 61EC for cleaning forklift trucks.

Pedestrian operated forklifts

Pedestrian operated forklifts (POFs) differ from forklift trucks because they are not intended to be controlled by an operator riding on the vehicle. While similar safe operating and maintenance procedures apply to all types of forklifts, the following control measures relate specifically to POFs.

A certificate is not required to operate POFs.

Ways to control hazards

- Only trained operators may operate a POF.
- Make pre-operational and post-operational safety checks.
- The POF must be suitable for the grades intended to be travelled.
- Wear appropriate personal protective equipment, such as high visibility vest and steel capped footwear.
- Do not operate a POF if hands or footwear are greasy.
- Check the work area for damaged flooring, overhead obstructions, ramps and docks. Do not work too close to the edges of ramps or docks.
- When travelling in reverse take care not to bump into objects, run over loose objects or trip over objects.
- Do not use a POF in an unauthorised area or explosive atmospheres.
- Keep arms, hands, legs and feet away from the lifting mechanism and wheels.
- Sound the horn when approaching intersecting aisles or blind corners.
- When operating a POF on grades, ramps or inclines, face the load uphill, do not make turns. If it is necessary to park the POF on an incline, make sure the wheels are securely chocked.

- Do not ride on the POF, or allow another person to ride on it.
- Do not exceed the safe lift limit of the POF when handling a load. These limits are specified on the data plate.
- Spread forks far enough apart to maintain a good balance (about 75% of the load width) and place the forks as far under the load as possible.
- Tilt the POF forward only when it is over a stack, rack or vehicle. Tilt the POF backwards only enough to stabilise the load.
- Secure attachments as per the manufacturer's instructions, and remember that attachments may affect the load centre of gravity.
- When parking:
 - use the handbrake
 - lower forks to the ground
 - tilt forward if possible
 - do not leave key in the ignition if unattended.

Maintenance

Forklift trucks must be inspected frequently and maintained according to standards and manufacturer's instructions.

Procedures should be in place for reporting and investigating dangerous occurrences or any variations from normal operation.

Ways to control hazards

- Only a trained, qualified person may inspect, maintain or repair forklift trucks. Only licensed gas fitters may repair and/or replace parts on LP gas-powered forklift trucks.
- Only qualified tyre fitters should remove and fit tyres. To prevent injury should the assembly fail, a safety cage should be used when inflating and/or fitting tyres on split rim wheel assemblies. The hose for the compressed air should be fitted with a clip-on chuck so the fitter does not have to be in front of the wheel rim while inflating the tyre.
- Keep forklift trucks clean so it is easier to detect worn or defective parts. Clean with water, not flammable liquids.
- Keep detailed records of every inspection, service, maintenance, repair and modification carried out on a forklift truck. Record dates, names of authorised people involved, meter readings etc.
- Establish a procedure for dealing with unsafe or damaged forklift trucks. The procedure should include isolating and tagging the vehicle, and reporting the problem to the appropriate person.
- Use only a qualified person to inspect and assess damage, and do not use an unsafe or damaged forklift truck until the qualified person has rendered it safe and removed the tags.
- Document full details of damage (eg. cause, nature, the repairs required, assessment of the vehicle's safety, etc). A copy of this should form part of the inspection and maintenance records.

Prohibited practices

Employers and trained forklift truck operators should be aware of prohibited practices. It is the responsibility of everyone in the workplace to ensure that these practices do not occur.

- A forklift truck must not be used as a towing or push device, unless appropriate attachments are fitted.
- A tow rope must never be attached to the mast to pull or drag loads.
- Unless of an authorised design, fork extensions should not be fitted.
- A person should not push on the point of one or both forks. Nor should a person stand or walk under the elevated forks, even when a load is not being carried.
- The back-rest extension and overhead guard of the forklift truck should not be removed, unless specifically authorised.
- A forklift truck should not be left stationary, with the engine running, in confined spaces.
- A forklift truck must not be parked or stacked on an incline, or operated on gradients with the load elevated more than necessary.
- A passenger must never be carried on the forks or load.
- An operator's arms, hands, legs and head must not leave the confines of the cab or be placed between the uprights of the mast.
- A forklift should not cross railway lines, unless the lines are recessed into the surface; or be driven over a bridge plate, unless it is securely fixed and can support the total weight.
- There must be a strictly enforced no smoking policy in a refuelling or battery charging area.
- Naked flames should not be used when checking the level of electrolyte in battery cells.