

GUIDANCE NOTE WORKING SAFELY WITH FORKLIFTS

**commission
for occupational
safety and health**

Foreword

This guidance note is issued by the Commission for Occupational Safety and Health (the Commission) under the provisions of the *Occupational Safety and Health Act 1984* (the OSH Act).

The introduction of the OSH Act enabled the establishment of the tripartite Commission, which comprises representatives of employers, unions and government, as well as experts. It has the function of developing the occupational safety and health legislation and supporting guidance material, and making recommendations to the Minister for Employment Protection for their implementation. To fulfil its functions, the Commission is empowered to establish advisory committees, hold public inquiries, and publish and disseminate information.

The Commission's objective is to promote comprehensive and practical preventive strategies that improve the working environment of Western Australians. This guidance note has been developed through a tripartite consultative process and the views of employers and unions, along with those of government and experts, have been considered.

Scope and application of this guidance note

This guidance note provides guidance to assist employers, employees, contractors, self-employed people, labour hire organisations and people having control of or control of access to workplaces to maintain the standards of occupational safety and health required by the OSH Act and the Occupational Safety and Health Regulations 1996 (OSH regulations) as they relate to the use of forklifts at workplaces.

It is not possible to deal with every situation that may be found at workplaces. The practical guidance in this document should be considered in conjunction with the general duties in the OSH Act as well as specific requirements in the OSH regulations.

Legislative framework for occupational safety and health

Occupational Safety and Health Act 1984

The OSH Act provides for the promotion, co-ordination, administration and enforcement of occupational safety and health in Western Australia. It applies to all industries with the exception of mining and petroleum.

With the objective of preventing occupational injuries and diseases, the OSH Act places certain duties on employers, workers, self-employed people, manufacturers, designers, importers and suppliers.

The broad duties established by the OSH Act are supported by a further tier of statute, commonly referred to as regulations, together with non-statutory codes of practice and guidance notes.

Occupational Safety and Health Regulations 1996

The OSH regulations have the effect of spelling out specific requirements of the legislation. They may prescribe minimum standards and have a general application, or define specific requirements related to a particular hazard or type of work. They may also allow licensing or granting of approvals and certificates etc.

Guidance notes

A guidance note is an explanatory document providing detailed information on the requirements of legislation, regulations, standards, codes of practice or matters relating to occupational safety and health, as approved by the Commission.

Disclaimer

Information in this publication is provided to assist people in meeting occupational safety and health obligations. While information is correct at the time of publication, readers should check and verify any legislation referenced in this publication to ensure it is current at the time of use.

Changes in law after this document is published may impact on the accuracy of information. The Commission provides this information as a service to the community. It is made available in good faith and is derived from sources believed to be reliable and accurate at the time of publication.

Definitions

In the OSH regulations the following are defined:

- **'forklift truck'** means a powered industrial truck equipped with lifting media made up of a mast and an elevating load carriage to which is attached a pair of forkarms; and
- **'order-picking forklift truck'** means a forklift truck where the operator's controls are incorporated with the lifting media and elevate with the lifting media.

For the purpose of this guidance note, where 'forklift' is used, it is to be taken as if it were either of the above designs.

This guidance note relates principally, but is not restricted to, counterbalanced forklifts.

Other definitions

'ASCC' means the Australian Safety and Compensation Council.

'Commission' means Commission for Occupational Safety and Health established under the OSH Act.

'competent person', in relation to any work task, means a person who through training, qualification or experience, or a combination of these things, has acquired the knowledge and skills required to do that task competently.

'certificate of competency' means a certificate issued in accordance with the national standard, and includes evidence of a satisfactory assessment.

'employee' means:

- a) a person by whom work is done under a contract of employment; or
- b) an apprentice or trainee.

'employer' means:

- a) a person that employs an employee under a contract of employment;
- b) in relation to an apprentice or trainee, the person that employs the apprentice or trainee under an apprenticeship or traineeship scheme or training agreement; and
- c) contractors, self-employed people, labour hire organisations and people having control of or control of access to a workplace.

'FOPS' means falling object protective structure.

'LF' is a licence to perform high risk work classification for a forklift truck.

'licence to perform high risk work' means high risk work licence as defined in Part 6 of the OSH regulations.

'LO' is a licence to perform high risk work classification for an order-picking forklift truck.

'must' indicates there is a legal requirement to comply, supported by legislation.

'NOHSC' means the National Occupational Health and Safety Commission.

'OSH Act' means *Occupational Safety and Health Act 1984*.

'OSH regulations' means Occupational Safety and Health Regulations 1996.

'ROPS' means roll-over protective structure.

'should' means recommended.

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Introduction

This guidance note explains the occupational safety and health laws that apply to the operation of forklifts in Western Australia. It covers the general requirements in the OSH Act and specific requirements in the OSH regulations that apply to forklifts.

There have been a number of deaths involving forklifts in WA.

The most common types of injuries are 'sprains and strains', crushing, fractures, open wounds (including punctures and cuts to the skin) and bruising.

The OSH Act requires employers to provide, as far as is practicable:

- a workplace where workers are not exposed to hazards;
- safe systems of work; and
- workers with information, instruction, training and supervision to allow them to work in a safe manner.

The OSH Act requires workers to:

- take reasonable care for their own safety and health and that of others affected by their work.

The OSH Act also requires all plant, so far as is practicable, to be safe to use.

Where practicable, it is good practice for designers, manufacturers, suppliers, safety and health representatives, workers, operators and users to be involved in developing safe systems of work.

New licence to perform high risk work

In 2007, important changes occurred to the requirements for forklift operation in Western Australia. The National Standard for Licensing Persons Performing High Risk Work (National Licensing Standard) came into effect and required operators of forklifts to hold a licence to perform high risk work, with the appropriate LF or LO endorsement.

The National Licensing Standard replaces the National Certificate of Competency arrangements and allows forklift operators to work anywhere in Australia.

Provisions have been made for people operating forklifts in accordance with previous requirements to continue working, consistent with the conversion timetable (see below). This timetable identifies the dates when forklift operators are required to have converted their existing certificates or approved qualifications to a licence to perform high risk work with the appropriate LF or LO endorsement. This conversion may be subject to application and assessment requirements.

People operating forklifts for the first time, ie new operators, need to obtain a licence to perform high risk work with the required LF or LO endorsement.

OSH regulations implementing the National Licensing Standard require operators of the following types of forklifts to hold a licence to perform high risk work, with the appropriate LF or LO endorsement:

- forklift truck – this includes, in particular, the operation of a powered industrial truck equipped with a mast and an elevating load carriage to which is attached a pair of fork arms or other attachment. This type of forklift is generally referred to as a counterbalance forklift; and
- order-picking forklift truck – this includes, in particular, the operation of a powered industrial truck of a type where the operator's control arrangement is incorporated with the load carriage/lifting media, and elevates with it.

The following table specifies the dates when holders of O.H.S. Certification Australia Cards and people holding NOHSC: 7019 (1992) documentation to evidence competency will be required to convert to a national licence to perform high risk work, with the appropriate LF or LO endorsement.

Conversion table

Date of issue of the O.H.S. Certification Australia Card or date endorsed on NOHSC: 7019 (1992) documentary evidence	Latest date by which a licence is required (subject to meeting reassessment requirements if applicable)
O.H.S. Certification Australia Cards and NOHSC: 7019 (1992) documentary evidence issued prior to 31 December 1995	30 September 2008
Between 1 January 1996 – 31 December 1998	30 June 2009
Between 1 January 1999 – 31 December 2001	30 June 2010
Between 1 January 2002 – 31 December 2004	30 June 2011
Between 1 January 2005 – 30 September 2007	30 June 2012

Parts 6 and 7 of the OSH regulations implement the National Licensing Standard. These OSH regulations can be accessed from the State Law Publisher (see Appendix one, part 5).

The National Licensing Standard can be accessed and downloaded from the Australian Safety and Compensation Council (ASCC) website at www.ascc.gov.au

For further information about the National Licensing Standard and attaining a licence to perform high risk work contact WorkSafe or visit the website (see Appendix one, part 5).

1. General

1.1 Injury causes

According to statistics collected by WorkCover WA, the most frequently reported injuries involving forklifts are from:

- co-workers/pedestrians being hit by moving forklifts or moving parts of a forklift;
- co-workers/pedestrians being trapped or caught between a moving forklift/moving parts of a forklift and stationary object;
- operators suffering muscular stress due to a combination of inappropriate seating, vibration and manual handling;
- operators falling while getting into or out of forklifts;
- collisions between forklifts and other vehicles or stationary objects; and
- forklift operators and others being hit by falling objects.

In addition, there is anecdotal evidence to suggest the following also cause injuries in the workplace:

- the operator's body protruding from the cab and hitting an object; and
- forklifts tipping over.

1.2 Risk management

See section 6 for more information on risk management.

Employers must, where practicable, consult with safety and health representatives and other workers regarding occupational safety and health at the workplace. Employers must provide and maintain safe systems of work to reduce injury risks from forklifts. Safe systems of work can be developed through a risk management process that involves:

- identifying, on a continuous basis, the hazards associated with forklifts at the workplace;
- assessing the risks associated with those hazards;
- controlling identified risks; and
- reviewing the control measures from time to time to ensure they remain effective.

1.3 Safe work procedures

Employers, in consultation with workers and safety and health representatives, where they exist, need to:

- develop safe work procedures for forklifts taking into account issues in this guidance note and particular hazards in their workplace;
- prepare safe procedures or job instructions for particular tasks;
- distribute and explain safe procedures to all relevant workers; and
- review and audit safe procedures regularly, to ensure they are achieving safe and healthy outcomes.

Instruction and training based on the procedures developed needs to be provided to people who operate, inspect, maintain, store or transport forklifts, or who work in the vicinity of forklifts.

1.4 What the law says

The OSH Act places certain duties on employers, workers, self-employed people, designers, manufacturers, importers, suppliers, contractors, labour hire organisations, and people in control of, or control of access to workplaces.

Employers must, as far as practicable, provide and maintain a working environment in which workers are not exposed to safety and health hazards. Workers must take reasonable care of their own safety and health and that of others.

The OSH regulations place specific duties in relation to plant on employers, main contractors and self-employed persons, as well as on designers, manufacturers, importers, suppliers, erectors and installers of plant.

Regulation 4.44 describes the duties of employers, main contractors, self-employed people, and people having control of, or control of access to the workplace concerning the provision of operator protective devices on powered mobile plant, which includes forklifts. Operator protective devices include roll-over protective structures (ROPS), falling object protective structures (FOPS), operator restraining devices and seat belts.

Sections 19, 20 and 21 of the OSH Act and regulation 4.44 require workers, employers and self-employed people (operators) to use the operator protective devices provided.

Sections 22 and 23 of the OSH Act outline the requirements and duties of people who have control of workplaces, and the duties of manufacturers.

Regulation 4.35 outlines the duties of hire or lease suppliers. Regulation 4.53 sets out the requirements of plant that lifts, suspends or lowers people, equipment or materials.

2. Design, manufacture and modification

2.1 Introduction

See Appendix 1 part 4.

The design and manufacture of the forklift, attachments, guards and other features should meet established standards.

See Section 23 of the OSH Act and OSH regulations 4.23 and 4.24.

A person who designs, manufactures or modifies a forklift for use at a workplace (even if their usual business is not designing, manufacturing or modifying forklifts) has obligations under the OSH Act to:

- design, manufacture or modify the forklift so that it is, as far as practicable, without risk to safety and health when used properly;
- carry out appropriate tests and examinations of the forklift to ensure it is as safe as was intended by the designer; and
- provide adequate information about:
 - the use for which the forklift has been designed, tested and examined;
 - test results; and
 - any conditions necessary to ensure that, when put to correct use, it will be without risks to safety and health.

See Section 23 of the OSH Act.

See Section 23 of the OSH Act.

See Appendix 1 part 4.

Forklifts need to be designed, manufactured, or modified in accordance with relevant standards and repairs to fork arms should be carried out to the manufacturer's specifications and the relevant Australian/New Zealand Standard.

Any person intending to modify a forklift or its attachments in any way which affects operation or performance is advised to seek advice from the manufacturer or supplier. Where the rated load capacity is changed as a result of modifications to the forklift or its attachments, the load chart (see section 2.2) needs to be revised before use to take account of the modifications.

Modifications to a ROPS or FOPS, such as drilling holes or welding, may destroy the integrity of the structure. This practice must not be undertaken.

2.2 Data plates

Every forklift needs to have attached, in clear view, a manufacturer's data plate clearly stating the following, in the English language:

- make, model number and serial number;
- mast tilt (degrees), forward and rear;
- maximum lift height (metres);
- tyre pressures (Pa), if pneumatic; and
- gross vehicle mass (kgs) and steer axle load (kgs) (unloaded, mast vertical), or drive axle loads (kgs).

See OSH regulation 4.53(6)(h) &(i).

A load chart is a notice fitted to the forklift, as supplied by the manufacturer, specifying the rated load capacity (kgs) at nominated load centre distance (mms) and at maximum lift height (metres) (mast vertical). The load chart must be attached to the forklift as either a separate plate or as part of the data plate.

2.3 Attachments

Crane jibs, clamps, work platforms/cages and other attachments can alter the characteristics of a forklift. When an attachment is fitted to a forklift:

- correct instructions for its use need to be supplied;
- an additional data plate needs to be fitted, specifying limitations of the forklift when operating with the attachment; and
- such attachment needs to be designed and manufactured by a competent person.

2.4 Guards

Guards should comply with Australian Standard AS 4024.1 – 2006 (*series*), *Safety of machinery*. However, the types of loads to be handled may warrant a reduction of aperture size of overhead and other guards.

2.5 Safe design – considerations

To make sure the design of forklifts provides for their safe use at a workplace, consider the following:

- where there is any risk of injury or harm to the operator, eg the forklift could overturn, then, subject to a risk assessment, the forklift must have operator protective devices such as a seat belt, or operator restraint, and a FOPS and/or ROPS (depending on the hazards in the workplace);
- all forklifts must have adequately marked operating controls, such as start and stop switches, braking controls, steering controls, horn controls and hydraulic controls;
- appropriate warning devices should be fitted, particularly where there is a risk of collision with people or any other plant or object. Warning devices may include horns, flashing overhead lights or reversing alarms;
- noise and vibration should be minimised;
- if there is any likelihood the unit will be working in a poorly ventilated area, emission control systems need to be fitted;
- do not use forklifts in a confined space when powered by petrol, diesel or LPG even when fitted with a catalytic converter. Catalytic converters generate large quantities of carbon dioxide which could asphyxiate people working in the space;
- it is important to ensure adequate visibility in all directions. Rear vision mirrors need to be adjustable and of sufficient size to enable the operator to reverse safely without the need to twist around in the seat, as twisting can cause back injuries;
- provide a load back-rest extension high enough to prevent the load, or part of the load, falling back onto the operator;
- provide a sprung adjustable seat to minimise vibration and jarring for operator comfort;
- large forklifts need to have adequate steps and handholds so that the operator can enter and leave safely;
- holes must not be drilled or cut through the fork arms as this destroys the integrity of the fork arms; and
- if it is intended the forklift will be working in or near areas containing flammable or combustible atmospheres, the forklift needs to be flame and static proof.

See OSH regulation 4.44(1) and (5).

2.6 Purchasing, hiring or leasing forklifts

Employers have a responsibility to provide plant such that, so far as is practicable, workers are not exposed to hazards.

Prior to purchasing, leasing or hiring a forklift, employers must, as far as practicable, consult workers and safety and health representatives, where they exist. Employers should satisfy themselves that the design and construction of the unit under consideration is suitable for the task and without risk to the safety and health of those who are to operate it or work around it.

Regulation 4.35 outlines the duties of hire or lease suppliers.

3. Safe systems of work

3.1 General

Employers must, where practicable, consult with safety and health representatives and other workers in developing safe systems of work including safe work practices. Matters to be considered when developing a safe system of work include:

- operator competence;
- operator protective devices (including FOPs and ROPs) and personal protective equipment; and
- operator supervision.

Further information on each of these issues is provided below.

3.2 Operator competence

See section 5.

Employers must ensure that operators of forklifts have either a valid certificate of competency or a licence to perform high risk work which has the required LF or LO endorsement. In addition employers must ensure that the operators are also provided with additional training, instruction and information on the equipment operation, hazards, risks and control measures relevant to the workplace.

3.3 Operator protective devices and personal protective equipment

Where operator protective devices such as seat belts (or operator restraints) and appropriate personal protective equipment (PPE) are provided, workers must use them. Employers must ensure workers are trained and supervised, as is necessary, in the correct use of operator protective devices and the correct selection, fitting, storage and maintenance of PPE.

3.4 Operator procedures and supervision

See OSH regulation 4.44(1) and (5) re section 3.3.

Employers must provide sufficient supervision to ensure forklifts are operated in accordance with established procedures.

Once safe work procedures for forklifts are established, these procedures need to be passed on to operators through educational material and training programs. In addition, practices to be prohibited need to be identified. An employer should ensure safe procedures, which include:

- pre-start safety checks;
- safe operation;
- loads, and methods (or devices) for determining load mass and dimensions;
- driving;
- ramps and loading docks;
- fuel handling and storage;
- battery charging and changing; and
- safe work areas.

The following sections provide more detail on safe procedures.

3.4.1 Pre-start safety check

Before operating a forklift, operators need to check the forklift they have been allocated (and any attachment) and familiarise themselves with the controls.

Operators need to conduct a pre-start safety check every time they use a different forklift and at the beginning of each shift.

Pre-start safety checks or procedures carried out by the operator or a competent person should include the following:

- lift and tilt systems including the load engaging means, hydraulics lines (for oil leaks), chains, cables and limits;
- steering, brakes (including park brakes), controls and lights;
- each tyre for wear, damage, and inflation (pneumatic types);
- all warning devices;
- fork arms and attachments (for deformation, damage or wear);
- liquid levels, eg hydraulic oil, brake fluid and water;
- gas cylinder, where relevant, and its securing system; and
- seat belts to ensure they work reliably and are free of sand and foreign objects.

3.4.2 Safe operation

All forklifts must be operated in a safe and responsible manner.

They must only be used for the purposes for which they are designed unless an alternative use has been assessed by a competent person as not increasing the risk of injury or harm occurring.

Forklifts should be operated within the manufacturer's design parameters and only in areas for which they have been designed. For instance, it is not safe to use a forklift in an area with a potentially explosive atmosphere unless it has been specifically designed or modified for such use.

Selection of a forklift for use in a poorly ventilated area such as a cool store or confined space needs to include consideration of the exhaust emissions, the time that the forklift will be required to operate and whether people are working in the area. Battery powered forklifts should be used wherever possible in these situations and in cases where they are not used, appropriate controls put in place to prevent any risk to operators or other people.

Whenever the work environment is to change, workers must, as far as practicable, be consulted, through safety and health representatives, where they exist. When the scope of changes to be made is known, ie installation of new equipment or fixtures, the procedures on the use of the forklifts should be reviewed to ascertain whether changes are required to accommodate the new work environment.

3.4.3 Work platform (cages)/personnel carrying devices

Some forklifts are specifically designed to lift personnel. For example, an 'order-picking forklift truck' has an elevating platform from which the operator can load shelves as well as control platform elevation and steer the forklift. Where work platforms/cages are used on forklifts that are not specifically designed to lift personnel, the following safety precautions apply.

- i. Forklifts are equipped with velocity fuses or similar, ie valves in the hydraulic lines to prevent free fall in the event of a hose failure.
- ii. A trial lift is conducted prior to use, to ensure there will be no contact with overhead power lines or other overhead obstructions. Before a trial lift, a visual and theoretical assessment should be made in an attempt to confirm that the trial lift can be carried out safely. The assessment might include measuring the height of overhead obstructions such as trusses and pipelines.
- iii. The use of work platforms/cages is limited to special tasks of short duration where it is not possible to use a scaffold or specially designed device. The platform should not be used for order picking, production activities or for transporting people between work sites.
- iv. The forklift is suitably stabilised at all times while lifting a person or people, and preferably only used on a hard, even and nominally level surface.
- v. Travel controls are in neutral position with the parking brake engaged.
- vi. The mast, if adjustable, is set at vertical.
- vii. The fork arms are set horizontal.
- viii. The work platform/cage is securely (mechanically) attached to the forklift. This should be checked by both the operator and people to be elevated.
- ix. The operator is seated at the forklift controls at all times while a person is in the work platform/cage.
- x. The operator keeps hands and feet clear of controls other than those in use.
- xi. The operator lifts and lowers the work platform/cage slowly and smoothly.
- xii. Personnel stand on the work platform/cage floor at all times when elevated, and do not stand on the mid-rail or hand rail to gain additional height.
- xiii. Ladders or other means are not used in the work platform/cage to gain additional height.
- xiv. The work platform/cage incorporates purpose designed points for attaching fall arrest harnesses, unless the work platform/cage is fully enclosed.
- xv. Forklifts are operated in accordance with the manufacturer's specifications relating to:
 - a) design conditions;
 - b) design pressures, eg tyres (pneumatic tyres only) and hydraulics; and
 - c) control capabilities.
- xvi. Forklifts are not loaded in excess of the manufacturer's recommendations. Consult the load chart attached to the forklift.

3.4.4 Tandem lifting

See OSH regulations 4.53(3) and (4).

The simultaneous use of two forklifts to handle a common load is a dangerous operation requiring special precautions. It is only permitted when it is impracticable to lift the load with a single item of plant.

Where two forklifts are used in tandem to handle a common load, each forklift should be operated by an experienced operator and the whole operation should be co-ordinated by a third person who is experienced and allocated the responsibility for supervising the lift.

The tandem lift needs to be planned and discussed with the operators prior to the actual lift, and methods of signalling and other communications between those involved must be agreed and used. A system of radio communication is not sufficient unless it is kept free of interference from any other radio system and enables clear communication at all times.

The recommended practice is that forklifts used in a tandem lift are identical.

The load applied to each forklift in a tandem lift should not exceed 75 per cent of the load capacity of the forklift after taking into account stability, load centre distance and inertia effects. The distance a load is carried in a tandem lift should be the minimum necessary to load, unload or place the load.

3.4.5 Shut down

When leaving a forklift the operator should ensure:

- the fork arms are fully lowered, tilted slightly forward so the tips of the fork arms touch the ground;
- the controls are in neutral;
- power is shut off;
- park brakes are applied; and
- unless otherwise instructed, the ignition key or starter switch key is removed to prevent unauthorised people from using the machine.

3.4.6 Attachments

Many specialised attachments are available for forklifts. Fitting an attachment is likely to alter the characteristics of the forklift and necessitate a reduction in its lifting capacity. Some attachments mount on the fork arms, while others mount directly on the carriage. All attachments need to be securely fastened to the forklift. The supplier of the attachment should, in conjunction with the manufacturer of the forklift, determine the lifting capacity of the forklift with the attachment fitted. Instructions for use of the attachment, provided by the supplier, should be followed at all times.

Some attachments, such as rotators, self-dumping hoppers and crane jibs, introduce dynamic forces to the forklift when activated.

The use of a crane jib attachment, in particular, can affect the stability of the forklift as a result of sudden stops, starts or turns. The freely suspended load can swing and create a hazard for the operator and others in the vicinity. A suspended load swinging from side to side can overturn a forklift.

When handling a suspended load the operator needs to secure the load across both fork arms (for balance), not exceed the de-rated capacity of the forklift or the rated capacity of the attachment and should:

- only lift the load vertically, ie no dragging or off-vertical lifts;
- manoeuvre slowly and cautiously when the load is elevated; and
- travel with the load and the jib attachment as low as practicable.

3.4.7 Electricity

Employers must ensure a forklift, any attachments and/or work platform/cage does not enter the 'danger zone' of an overhead power line.

In the event of a forklift contacting a power line the operator should:

- if practicable, stay in the cab, and keep others away;
- wait until the power is shut off before leaving the forklift; and
- if safe and practicable, move the forklift off the power line.

See OSH
regulation 3.64
for definition.

3.4.8 Loads

It is important to limit the load to the rated load capacity of the forklift or attachment as shown on the load chart.

Employers must ensure operators are competent to calculate whether loads of varying shapes and masses can be lifted by their forklifts to ensure the capacity of the machine allocated to a given task is not exceeded. This will involve an understanding of how forklifts are rated (typically at 600mm from the face of the fork arms), and how forklifts act on the fulcrum and lever principle, similar to a see-saw.

Always operate forklifts with the load firmly against the carriage or back-rest with the mast tilted back sufficiently to safeguard against the load slipping, falling or rolling off the fork arms. All loads that have the potential to slip, fall or roll off the fork arms or pallet must be appropriately restrained with straps or similar. Loads should always be carried as near to the ground as practicable.

Loads must not be suspended over or travel over a person.

3.4.9 Suspended loads

If bulkier bags or similar loads are suspended from the forks of a forklift or from a jib attachment, Australian Standard 2359 (series) recommends the lifting capacity be reduced by 20 per cent to provide for the dynamic forces introduced as a result of sudden stops, starts or turns causing the load to swing.

The suspended load must:

- be carried using the appropriate attachment;
- be secured if there is a possibility that it could slide off the forks, ie during heavy braking; and
- provide an even weight load to both fork arms.

3.4.10 Driving

The operator must wear a seat belt at all times. Employers must ensure that, where seat belt attachment points are incorporated into the original design, a seat belt is provided. Passengers must only ride on a forklift if a passenger's seat is available and fitted with a seat belt. The employer should provide sufficient supervision to check this is happening.

There may be some limited situations where it is not safe or practicable to wear seat belts, eg where the work is adjacent to water, such as on a wharf without guardrails or other edge protection. In these cases a risk assessment must be carried out.

Where an operator may have to drive more than one forklift the employer must ensure the operator holds either a valid certificate of competency or a licence to perform high risk work with the required LF or LO endorsement and can demonstrate a satisfactory level of competency of the different control systems.

Operators should always:

- check the adjustment of rear view mirrors before moving off; and then
- check in the mirrors and, when clear, move off making sure they continue to check that other vehicles or pedestrians are not put at risk by the movement of the forklift.

Operators need to be sufficiently skilled to reverse using only the mirrors, to avoid the need for twisting in the seat. However, before relying on rear view mirrors, operators need to ensure there are no blind spots in the mirrors. Forklifts should travel in the forward mode when moving long distances.

Wherever possible, the work environment should be set up so that forklifts and pedestrians are separated and their paths don't cross. In situations where there is the possibility of a pedestrian being hit by a forklift, the forklift operator should be trained to give way to the pedestrian. However, employers should ensure that pedestrians in their workplace know and understand they must never assume they will automatically receive right of way, as in many cases forklift operators have restricted vision and may not see them.

See OSH regulations 4.53(1) and (5).

See OSH regulations 4.53(5).

See OSH regulation 4.44(1) and (5) re seat belt and (7) re passengers.

Operators should:

- look in the direction of travel and keep a clear view of the way ahead;
- if vision is obscured, by the load for instance, seek the assistance of others to direct operations, or drive in reverse;
- where no traffic signs or signals exist to control forklift operation, give clear indications of their intentions to others, eg sound the horn to alert other vehicles and pedestrians;
- when approaching crossings in aisles or gangways, slow down, sound the horn and, if vision is obstructed, keep well over to the correct side of the aisle;
- cross railway lines at an angle rather than at right angles; and
- cross intersections with care.

People directing forklift operations should never place themselves in a position where they could be injured by the forklift or its load.

Operators need to drive at a safe speed consistent with site speed restrictions, the load and the existing weather and road conditions. They should:

- drive slowly and without sudden changes in direction on wet or slippery or loose surfaces, because in these conditions forklifts can slide and/or overturn even at low speeds;
- drive slowly and carefully when pedestrians are near;
- whether with or without a load, drive with the fork arms as close to the ground as practicable, with the tips of the fork arms tilted slightly upwards, away from the ground;
- take into account the operating surface, weather conditions, physical layout of the operating area and any other hazards that may exist, such as water;
- stop before doorways, sound the horn and proceed slowly only if clear to do so;
- refrain from rapid acceleration or deceleration and quick turns, whether with or without a load, that could shift the load and overturn the forklift;
- ensure they can bring the forklift to a safe stop at any time, particularly on wet, slippery or loose surfaces; and
- drive slowly if there is a need to reverse.

Rapid tail swing can result in tip over of the forklift and serious injury or harm to the operator and/or pedestrians. The speed of rear end swing will be approximately three times that of the forklift's forward speed. To avoid rapid tail swing, operators should always reduce speed when making a turn and take care that the tip of the fork, load or rear side of the machine does not touch or bump against any person or object, such as shelving supports.

Operators should drive slowly in reverse if a load obscures forward vision. However, it is good practice for the load to lead when the forklift is travelling up gradients. Driving in reverse should be kept to the practicable minimum unless the forklift has controls that can be turned through 180 degrees (or dual controls), as long periods of driving in reverse can cause neck problems for operators.

Any loss of lateral stability means the forklift will tip sideways, often with very serious consequences for the operator and/or pedestrians. To avoid overturning, operators should:

- ensure loads are centred, ie have their centre of gravity on the forklift's longitudinal centre line. This is particularly important for loads heavier at one end than the other, eg connecting rods for large engines. In such cases, the heavy end should be nearer the centre line than the light end; or alternatively,
 - if multiple units are to be carried, ensure the units are located on the pallet so that every second unit is reversed ie first unit heavy end to the right, second unit heavy end to the left and so on, so that the full load is balanced;

- secure the load in an appropriate manner;
- carry loads as close to the ground, or other supporting surface as practicable;
- ensure tyres (where applicable) are correctly inflated; and
- exercise extreme care when driving across a sloping or wet surface.

3.4.11 Ramps and loading docks

Before using a forklift on an incline, the operator should:

- ensure the brakes on the trailer or rail wagon being unloaded are set and the wheels chocked when entering a trailer or rail wagon;
- check semi-trailers have fixed jacks to prevent them up-ending while being loaded or unloaded by a forklift, and when the trailer is disconnected from the prime mover;
- inspect the trailer or rail wagon floor for defects and to assess whether the floor will support the mass of the forklift and its load;
- always place the load on the uphill side when travelling up or down an incline;
- when travelling with a load, ensure the mast is tilted back sufficiently so that the load does not slide or roll off and in the process overturn the forklift; and
- when travelling up or down an incline without a load, ensure the forks are always on the downhill side ie reverse up, drive down.

Raised edges or buffers should be fitted on loading docks where there is a risk a wheel may be driven over an edge.

3.4.12 Fuel handling and storage

If a forklift is to operate in a flammable gas atmosphere or combustible dust atmosphere, it should comply with the relevant standard, including the requirements for use in hazardous areas.

Liquid fuel should be handled and stored in accordance with the relevant standard for the handling and storage of flammable and combustible liquids.

Liquefied Petroleum Gas (LPG) needs to be handled and stored in accordance with the relevant standards.

Forklifts powered by an LPG engine should be refuelled, parked and stored:

- in well-ventilated areas; and
- a safe distance from combustible material, sources of heat, sources of ignition or open pits, unless the pits are adequately ventilated.

Only people who have received relevant training should remove empty LPG cylinders from forklifts and install full LPG cylinders. Removal and replacement should be in accordance with the relevant standards.

Cylinders should be positioned so that the safety relief valve is in direct communication with the vapour space of the cylinder at all times, so that if the relief valve operates it will release vapour and not liquid.

The cylinder valve should be turned off when the forklift is not in use.

See Appendix 1 for further references to more detailed information on fuel handling and storage.

3.4.13 Battery charging and changing

Only people who have received relevant training should be permitted to charge and change batteries on forklifts. Appropriate personal protective equipment such as face shields, aprons and rubber gloves must be used, to prevent eye or skin injury from battery acid.

The forklift should be parked in a safe position and the parking brake applied before battery-charging operations begin. Operators should ensure the vent caps in the batteries are functioning correctly and remain in place during charging to prevent electrolyte spraying.

Any cover over the battery should be held open while the battery is on charge to allow generated gases to escape into the atmosphere. Potentially explosive hydrogen gas is freely generated during the charging process.

All people involved in a battery charging operation should observe the following safety precautions:

- no smoking;
- no open flames;
- no use of mobile phones or any other such electronic device;
- no use of metal objects that might strike a spark near battery cells;
- proper tools provided and used;
- eyes protected; and
- rings and bracelets removed.

In areas where batteries are charged or changed, it is important that washing (including eye washing) and cleaning-up facilities for removing acid spills or splashes are provided. If acid is spilled it should be diluted with large quantities of water. If workers are splashed with battery acid they should quickly remove contaminated clothing and flush skin with large quantities of water.

Adequate fire extinguishers must be provided.

In addition, adequate ventilation is necessary to ensure gases generated during battery charging are dispersed, to prevent an explosive mixture developing. In areas where the hydrogen concentration could exceed one per cent, the ventilation system needs to be spark free.

The charging and changing of batteries at battery charging installations should be done in accordance with the relevant standard for the operation of forklifts.

The Building Code of Australia contains some mandatory requirements in respect of buildings in which battery charging is to be carried out.

3.4.14 Safe work areas

Work areas must be as safe as is practicable for workers. The preferred practice is to have a traffic management plan that separates vehicle traffic and pedestrians. (See the Commission's guidance note, *Safe movement of vehicles at workplaces*).

Other means of providing a safe work area are as follows.

- i. Warning signs and devices – provide adequate signposting and safety symbols.
- ii. Barricades – provide pedestrian and traffic areas which are separated and barricaded, or clearly designated; and where possible, prohibit pedestrians from areas in which forklifts are working.
- iii. Safe access for pedestrians – provide road marking, barriers and guard rails and erect convex mirrors, especially in areas where there are identified risks; and paint the edges of openings such as vehicle inspection pits with black and yellow diagonal stripes.

See Appendix 1

- iv. Operating areas – make as free from obstructions as possible. Protect any unavoidable obstructions using impact barriers painted with black and yellow diagonal stripes.
- v. Forklift operating areas – should also be as free as possible of potholes, soak wells, drains and the like that could cause the forklift to become unstable.
- vi. Work areas – if people are working near forklifts, barricade and clearly designate their work area, where possible.
- vii. Bollards, guard rails and doorways – it is good practice to install bollards and/or guard rails inside and outside on both sides of doorways used by forklifts to minimise the risk of forklifts colliding with other forklifts, pedestrians, other vehicles or the wall. Paint bollards and guard rails with black and yellow diagonal stripes. Provide doors that are wherever practicable flexible, translucent or made of transparent material to assist visibility and reduce the risk of collision.
- viii. Speed limits – where appropriate, establish speed limits in work areas. As many forklifts do not have a speedometer, employers should establish an empirical measure such as ‘fast walking pace’. Road humps are unsuitable for controlling the speed of forklifts. Where they are installed to control other vehicles, provision should be made for forklifts to by-pass the humps.
- ix. Design aisles and other access ways in accordance with relevant standards relating to forklift operation (see Appendix 1, part 4).
- x. Adequate lighting – must be provided in work areas where a forklift operates. The area immediately inside a building where forklifts enter needs to be well lit to avoid vision problems when passing from bright sunlight into a poorly lit area. Operators need to be made aware of the hazards that may be presented by the wearing of photo-chromatic glasses when travelling in and out of covered areas. (Photo-chromatic glasses darken as light intensity increases.)
- xi. Atmospheric pollution – provide adequate ventilation where forklifts powered by LPG, petrol and diesel fuel are used to avoid the concentration of exhaust gas contaminants discharged into the breathing zone of any person exceeding ASCC exposure standards. If it is necessary to use a non-electric forklift in a poorly ventilated area (other than a confined space where battery powered forklifts need to be used) it is preferable to use a diesel powered unit because diesel engines produce less carbon monoxide than petrol or LPG powered units.
- xii. Ramps – should be level, secure and robust, and are required at all points where a forklift needs to be driven from one level to another. Ensure the ramp has adequate edge protection where practicable.
- xiii. Loading docks – provide adequate edge protection or put in place a clearly defined system to minimise the risk of a forklift falling or being driven over the edge of a loading dock. The system could include clear delineation of operating areas by line marking at least two metres from an exposed edge with the area between the line and the edge declared a ‘no go’ zone.
- xiv. Edge protection – needs to be designed with consideration given to issues such as the diameter of the tyres of all forklifts used, whether the tyres are solid or pneumatic, the speed forklifts are permitted to operate at and the potential angle of approach of the forklift to the edge protection.

3.5 Practices to be prohibited

Forklift operators must be aware of the manufacturer’s operational instructions or those developed by a competent person at the workplace. Inexperienced operators should be supervised by a competent person.

In addition, employers need to consider and prohibit specific unsafe forklift practices. Employers must provide information, training and supervision to prevent prohibited practices occurring. Supervisors may need training so they can recognise prohibited activities. This may include gaining a licence to perform high risk work with the required forklift (LF or LO) endorsement, well before the expiration of their certificate of competency.

See ‘New licence to perform high risk work’ at the front of this guidance note.

The following are examples of unsafe work practices employers may need to specifically prohibit.

Behavioural

- i. Drinking alcohol or using illicit drugs at work.
- ii. Operating a forklift while affected by alcohol or other drugs.
- iii. Placing arms, hands or legs between the uprights of the mast.
- iv. Placing any part of the body outside the cab, except when hand-signalling a manoeuvre.
- v. Using hand held mobile phones while operating.
- vi. Passengers on forklifts not wearing a seat belt.
- vii. Passengers riding on a forklift other than in a seat specifically designed for a passenger.

Practices that may result in a tip-over

- i. Using a forklift as a towing device (the securing points are for transport purposes).
- ii. Pushing a load with the point of one or both fork arms.
- iii. Attaching a tow rope to the mast to pull or tow loads.
- iv. Moving a load that appears unsuitable to move.
- v. Adding counterweights to the forklift to increase its rated load capacity without the manufacturer's agreement.
- vi. Fixing fork extensions (slippers) not approved by the manufacturer.
- vii. Running over loose objects. The forklift operator should remove the object and report the matter to a supervisor.
- viii. Crossing railway lines that are not recessed below the ground or floor surface.
- ix. Driving over a bridge plate unless the operator is sure it is securely fixed and will take the forklift's mass.
- x. Driving too fast over bridge plates.
- xi. Sliding a load off the end of the forks.
- xii. Operating a forklift along or close to an unprotected edge.
- xiii. Carrying an unrestrained load that could roll or slide off the forks in an emergency braking situation.
- xiv. Carrying a load exceeding the manufacturers recommended limits. Consult the load chart attached to the forklift.
- xv. Carrying an unbalanced load, eg suspended drum on one fork arm.
- xvi. Operating on pot-holed or otherwise uneven surfaces.

Risks to others

- i. Picking up a load if someone is standing next to it or on it.
- ii. Allowing anyone to stand or walk under the elevated forks, even when no load is being carried.
- iii. Allowing people to ride on the forks or load.
- iv. Allowing people to be lifted on the forks or load.
- v. Using a forklift to lift people unless in a work cage designed for that purpose and mechanically attached to the forklift.
- vi. Pedestrians approaching a working forklift without making eye contact with the operator and receiving an acknowledgement that it is safe to approach.

Fall hazards

- i. Removing a back-rest extension or operator protective devices such as FOPS unless specifically authorised by the employer.
- ii. Using damaged pallets, drums, bins or containers that might collapse during use.
- iii. Unsecured loads.

Collision hazards

- i. Leaving a forklift closer than two metres from a railway track.
- ii. Overtaking any vehicle at a crossing, an area of limited visibility or other dangerous position.

Gradient hazards

- i. Operating a forklift on gradients with the load elevated more than necessary.
- ii. Stacking or unstacking on an incline.
- iii. Leaving a forklift on an incline, except in an emergency.
- iv. Loading a forklift on a gradient.

Run-over hazards

- i. Running over cables or flexible pipes that are not suitably protected.

Fire and explosion hazards

- i. Using a naked flame to check levels in electrolyte cells.
- ii. Refuelling while the engine is still running.
- iii. Smoking or using a mobile phone in a refuelling or battery charging area.

Confined space hazards

- i. Allowing a fuel powered forklift to remain stationary in a confined space for a long time with the engine running. Fume and gas build-up could be fatal.

Tip-over hazard

- i. Removing operator protective devices such as ROPS unless specifically authorised by the employer.

4. Inspection, maintenance and repair

4.1 Inspection and maintenance program

Employers need to develop and implement a forklift inspection and maintenance program that aligns with the manufacturer's recommendations and includes the following:

- standards against which the forklift is to be inspected and maintained;
- frequency of inspections and maintenance;
- procedures to be followed when carrying out inspections and maintenance; and
- procedures for reporting and investigating dangerous occurrences or any variations from normal operation that have occurred since the last inspection and maintenance.

4.2 Maintenance and servicing

Forklifts must be inspected, serviced and maintained on a periodic basis. This and any repair work must be carried out having regard to the manufacturer's instructions.

People inspecting, maintaining or repairing a forklift should hold appropriate trade qualifications. Only licensed gas fitters are permitted to repair or replace gas piping on LPG powered forklifts.

4.3 Cleaning

Employers need to ensure forklifts are kept clean to facilitate detection of loose, worn or defective parts and to prevent fires.

Flammable solvents (those that have a flashpoint of less than 61°C) should not be used for cleaning. Liquids considered to be non-flammable, such as water, are preferred.

4.4 Inspection and maintenance records

Employers must keep records of any maintenance, inspection, commissioning, alteration or test carried out on each forklift for as long as it is at their workplace or otherwise under their control.

Records should include:

- information that identifies the forklift;
- date when inspected, serviced or repaired;
- where an hour meter is fitted, operating hours readings;
- detailed report of the work;
- name and qualification/competency of the person who carried out the work; and
- details of any alterations made to the forklift.

See OSH
regulation 4.34.

See OSH
regulation 4.38.

4.5 Unsafe forklifts

Employers must establish procedures in accordance with the Commission's guidance note, *Isolation of plant*, for dealing with unsafe forklifts, eg those in an unserviceable condition.

The procedures need to include:

- the method to be used to isolate and tag the forklift 'out-of-service'; and
- a requirement for the operator to report the matter to the appropriate person immediately the unserviceable condition is identified.

An unsafe forklift must not be operated until rendered safe by a competent person and the 'out-of-service' tag removed.

Where a forklift is damaged, a competent person must inspect and assess the damage and advise the employer of:

- the nature and cause of the damage;
- whether the forklift can be safely used in its damaged condition; and
- whether or not the forklift can be repaired and, if so, what repairs must be done to make it safe to operate.

A copy of this assessment needs to be included in the inspection and maintenance records.

5. Instruction and training

5.1 General

Employers must ensure that operators of forklifts:

- hold either a valid certificate of competency or a licence to perform high risk work with the required LO or LF endorsement;
- are trained in the operation of the type(s) of forklift(s) they are using; and
- are provided with additional training, instruction and information on the equipment operation, hazards, risks and control measures relevant to the workplace.

A licence to perform high risk work cannot be issued unless the applicant is 18 years of age or older and can demonstrate to the WorkSafe Western Australia Commissioner that they are competent to do high risk work in the relevant class, ie satisfactorily complete a forklift course with a Registered Training Organisation. However, if enrolled with a Registered Training Organisation to train as a forklift operator ('trainee') and supervised by a person who has both the relevant licence to perform high risk work and appropriate workplace experience, a trainee may operate a forklift.

Specifically, workers should receive the following instruction and training at the workplace for the forklift they are to operate.

- i. The use for which the forklift has been designed and tested.
- ii. Any conditions necessary for its safe operation, maintenance and inspection.
- iii. Basic information on the particular forklift, such as:
 - a) position, function and operating sequence of controls and instruments, including seat adjustment controls;
 - b) design features and centre of gravity;
 - c) attachments and components to be used;
 - d) how to estimate the load centre and mass of the item to be lifted;
 - e) capacity;
 - f) stability; and
 - g) limitations.
- iv. Safety features, such as safeguards and alarms.
- v. Risks associated with use and maintenance of the forklift.
- vi. Safe work practices, as previously described in section 3.
- vii. Operating conditions in all areas of operation, including special or hazardous conditions.
- viii. Procedures for reporting any fault, unsafe practice, damage to the forklift, accident, near miss or other dangerous occurrence when this is detected.
- ix. Servicing, maintenance and repair responsibilities.
- x. Determining load volume and mass to ensure the capacity of the machine is not exceeded.
- xi. Identification of hazards and assessment of risks associated with forklift operation.

Training must be undertaken with a Registered Training Organisation.

People supervising inexperienced forklift operators may require additional training.

Training needs to be reviewed and ongoing, and kept up to date, eg in respect to changes in industry practice and law.

See 'New licence to perform high risk work' at the front of this guidance note.

See OSH regulation 6.2(2) and 6.6(2).

Employers should ensure operators receive supervised practice on a forklift in simulated work situations before operating the forklift in a real work situation. Operators should have ready access to the manufacturer's instructions for safe operation of the forklift. These instructions should be carried on the forklift.

Once a forklift operator has been trained and gains a licence to perform high risk work with the required LF or LO endorsement, they should be provided with regular on-the-job supervision.

The training outcomes for trainee forklift operators should include the ability to:

- demonstrate skills in operating the forklift;
- demonstrate healthy and safe work practices in operating the forklift;
- demonstrate emergency procedures for forklift operations at the workplace; and
- understand the contents and requirements of the manufacturer's and supplier's manuals.

In relation to general safety training, the OSH Act requires that workers, including operators of forklifts, be trained [Section 19(1)(b)].

If there is a requirement to operate a forklift on a road, operators of forklifts are required to hold the class of licence needed to drive the forklift on a road as defined in the *Road Traffic Act 1974*.

5.2 Training records

Employers need to keep records of training provided to workers.

Registered Training Organisations must retain records relating to the training and assessment of a person.

Records of training should include:

- names of each worker who received training;
- a copy of each worker's valid certificate of competency or licence to perform high risk work with the required forklift (LF or LO) endorsement;
- if a valid certificate of competency;
 - sufficient information to show the tasks performed and outcomes achieved by the individual worker, or trainee forklift operator;
 - date and time for each occasion the worker used and operated a forklift in training;
 - names, qualifications (including any certificate of competency) and experience of people overseeing the training;
 - a signed statement by that person to the effect that he or she oversaw or supervised the worker or trainee forklift operator in the safe use and operation of the forklift; and
 - whether the training program is registered or accredited by any statutory body, government department, educational institution or other association or organisation.

See OSH
regulation 6.32.

6. Risk management

6.1 General

A risk management process is a systematic method for making forklifts and their operation as safe as possible.

Risk management involves following these steps.

- i. Step 1 – identify hazards (anything with the potential to cause injury or harm).
- ii. Step 2 – assess risk (this involves looking at the chance or likelihood of a hazard occurring and, if it does occur, the extent of any harm or injury – ie the consequences).
- iii. Step 3 – control risks through implementation of control measures to eliminate or reduce them.
- iv. Step 4 – monitor and review the control measures to ensure they are continuing to control exposure to hazards or hazardous work practices.

Depending on the particular circumstances, risk management can vary from a reasonably simple process to one where a complicated and structured procedure is followed. However, the basic steps outlined above remain the same.

6.2 Involvement of workers

Risk management should be conducted in consultation with workers and any safety and health representatives. This is an important part of effective risk management, as the people doing the work are usually best placed to identify the hazards, and their involvement ensures they understand and own any solutions.

6.3 Reporting of incidents

An easy to follow procedure for reporting all accidents and incidents in the workplace, including near misses, is an essential part of the process for identifying hazards and assessing risk. All workers should be trained in using the incident reporting procedure.

6.4 Risk management is ongoing

To ensure a safe working environment is not only put in place but also maintained, a risk management process needs to be repeated when:

- a new forklift is introduced into the workplace;
- new complaints are received about a hazard previously addressed; or
- when new potential hazards or risks associated with a forklift are identified.

Appendix 1: Other information

1. Occupational Safety and Health Act 1984 and Regulations

Copies of the *Occupational Safety and Health Act 1984* and the Occupational Safety and Health Regulations 1996 may be purchased through the State Law Publisher (see part 5 for details).

2. Commission for Occupational Safety and Health publications and other reference material

Publications endorsed and produced by the Commission can be either purchased from the WorkSafe Library or downloaded through the WorkSafe website.

The following Commission guidance publications provide further and relevant information on forklifts:

- *Plant design: Making it safe: A guide for designers, manufacturers, importers, suppliers and installers of plant;*
- *Plant in the workplace: Making it safe: A guide for employers, self-employed persons and workers;*
- *Powered mobile plant: Making it safe: A guide for employers, self-employed persons and workers;*
- *Prevention of carbon monoxide poisoning from petrol and gas powered equipment;*
- *General duty of care in Western Australian workplaces;*
- *Safe movement of vehicles at workplaces; and*
- *Isolation of plant.*

Also available from the WorkSafe Library is the video, *Working safely with forklifts: refresher training for forklift operators* and the WorkSafe produced bulletin, *New licence for high risk work*, which can be downloaded from the WorkSafe website. Both of these provide relevant information for forklift operators.

3. WorkSafe Website

www.worksafe.wa.gov.au provides information and links to other sources of information.

4. 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 2359 (series)	<i>Powered industrial trucks.</i>
AS 1940:2004 (series)	<i>The storage and handling of flammable and combustible liquids.</i>
AS/NZS 1425:2007	<i>LP Gas fuel systems for vehicle engines.</i>
AS/NZS 1596:2002	<i>The storage and handling of LP Gas.</i>
AS/NZS 1158 (series)	<i>Lighting for roads and public spaces.</i>
AS 1319:1994	<i>Safety signs for the occupational environment.</i>
AS/NZS 1680.0:1998	<i>Interior lighting – Safe movement.</i>
AS/NZS 1680.1:2006	<i>Interior and workplace lighting – General principles and recommendations.</i>
AS 1742.1:2003	<i>Manual of uniform traffic control devices – General introduction and index of signs.</i>
AS 1742.10:1990	<i>Manual of uniform traffic control devices – Pedestrian control and protection.</i>
AS 1742.4:1999	<i>Manual of uniform traffic control devices – Speed controls.</i>
AS 1763:1985	<i>Industrial trucks – Glossary of terms.</i>
AS 2402:2005 (series)	<i>Traction batteries – Lead-acid.</i>
AS/NZS 2430:2004 (series)	<i>Classification of hazardous areas – Examples of area classification.</i>
AS 2548.1:1998	<i>Battery chargers for lead-acid traction batteries – Battery chargers for vented cells.</i>
AS 3868:1991	<i>Earth-moving machinery – Design guide for access systems.</i>
AS 4024.1:2006 (series)	<i>Safety of machinery.</i>
AS 4973:2001	<i>Industrial trucks – Inspection and repair of fork arms in service on fork-lift trucks.</i>

5. Contacts for further information

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Website: www.worksafe.wa.gov.au
TTY: (08) 9327 8838
Please note: WorkSafe Library is also located at the same address.

State Law Publisher

Ground Floor
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Comprehensive work safety and health information, provided by the Department of Consumer and Employment Protection, can be found at:

www.worksafe.wa.gov.au

This document is available on request in other formats to assist people with special needs.

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