

Workplace Health and Safety Regulation 2008

On 1 September 2008, the *Workplace Health and Safety Regulation 1997* was repealed and replaced by the *Workplace Health and Safety Regulation 2008*. The new Regulation:

- remakes provisions of the old Regulation
- removes the [rural industry exemption](#) from existing regulatory requirements (except in relation to operator licensing for earthmoving equipment and particular cranes) over the next two years
- changes the numbering.

Workplace Health and Safety Queensland will be undertaking a process to review and update all forms and documents on the departmental website to ensure consistency with the new regulation. Until this process is complete, all forms and documents must be read in conjunction with the information provided in the [comparison table](#) (PDF, 255 KB). The comparison table has been provided to assist with the practical application of the *Workplace Health and Safety Regulation 2008*. It is not intended to provide a determination or comment on compliance or to provide legal interpretation. It is intended as a guide only and is provided as an information source only.

Workplace Health and Safety Amendment of Codes of Practice Amendment Notice (No. 1) 2008

A number of workplace health and safety codes of practice have been amended to bring them into line with the *Workplace Health and Safety Regulation 2008*. Current codes of practice need to be read in conjunction with the information provided in the [Workplace Health and Safety Amendment of Codes of Practice Amendment Notice \(No. 1\) 2008](#) (PDF, 322 KB). However, this document does not include amendments to the following codes of practice:

- Compressed Air Recreational Diving and Snorkelling
- Recreational Technical Diving
- Scaffolding
- Safe Design and Operation of Tractors

Important information about the Safe Design and Operation of Tractors Code of Practice 2005

This code:

1. The code replaced supplement No.3 the *Safe Design and Operation of Tractors*, of the *Plant Advisory Standard 2000*.
2. The code was made on 29 March 2005.
3. The code commenced on 1 April 2005.
4. The code was amended on 28 April 2006.
5. The code expires 10 years after it commenced.

What is this code about?

The purpose of the *Safe Design and Operation of Tractors Code of Practice* is to give practical advice about ways to manage exposure to risks identified as typical when designing and operating tractors.

Workplace health and safety obligations

The Workplace Health and Safety Act 1995 places obligations on people at workplaces to ensure workplace health and safety. Workplace health and safety is ensured when people are free from risk of death, injury or illness created by workplaces, relevant workplace areas, work activities, or plant or substances for use at a workplace. Ensuring workplace health and safety involves identifying and managing exposure to the risks at your workplace.

Obligation holders

In regards to tractors the following persons may have obligations under the *Workplace Health and Safety Act 1995*:

- (a) persons who conduct a business or undertaking, whether as employers, self-employed persons or otherwise;
- (b) persons in control of workplaces;
- (c) principal contractors;
- (d) designers of plant;
- (e) manufacturers of plant;
- (f) suppliers of plant;
- (g) erectors and installers of plant;
- (h) manufacturers of substances for use at-workplaces;
- (i) suppliers of substances for use at-workplaces;
- (j) designer of building or other structure used as a workplace;
- (k) person in control of relevant workplace-area;
- (l) persons in control of fixtures, fittings or plant included in relevant workplace area;-and
- (m) owners of plant.

Obligations for these persons in relation to tractors are outlined in the *Plant Code of Practice*.

Obligations of a person who conducts a business or undertaking (a 'relevant person')

The *Workplace Health and Safety Act 1995* places obligations on a person who conducts a business or undertaking. The Act refers to a person who conducts a business or undertaking as a 'relevant person'. The obligations apply whether or not –

- the relevant person conducts the business or undertaking as an employer, self-employed person or otherwise; and
- the business or undertaking is conducted for gain or reward; and
- a person works on a voluntary basis.

Relevant persons' have an obligation to ensure –

- the workplace health and safety of their workers and any other persons is not affected by the conduct of the relevant person's business or undertaking; and
- their own workplace health and safety.

The term 'relevant person' is also used in the *Workplace Health and Safety Regulation 1997*.

Where this code of practice provides advice to employers and self-employed persons on managing exposure to risks, other persons who conduct a business or undertaking may also find this advice applicable depending on their circumstances.

How can I meet my obligations?

Under the Act, there are three types of instruments to help you meet your workplace health and safety obligations – regulations, ministerial notices and codes of practice.

If there is a regulation or ministerial notice about a risk, you **MUST** do what the regulation or notice says.

If there is a code of practice about a risk, you **MUST** either –

- (a) do what the code says; or
- (b) do all of the following –
 - adopt and follow another way that gives the same level of protection against the risk;
 - take reasonable precautions; and
 - exercise proper diligence.

If there is no regulation, ministerial notice or code of practice about a risk, you must choose an appropriate way to manage exposure to the risk and take reasonable precautions and exercise proper diligence to ensure that your obligations are met.

Note:

There may be additional risks at your workplace, which have not been specifically addressed in this code. You are required under the Act to identify and assess these risks and ensure that control measures are implemented and reviewed to prevent or minimise exposure to these risks.

This code should be read in conjunction with the Plant Code of Practice, as well as the Workplace Health and Safety Act 1995, the relevant Australian Standards, and the relevant Equipment Manufacturer's instructions, all of which assist in the discharge of legal workplace health and safety obligations.

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Section 1 – Controlling risks from tractors

1.1 Tractors Tractor risk management

Tractors are an integral item of plant for agricultural, green keeping, gardening, landscaping and other activities. Being versatile in nature, tractors can have numerous functions not only on the farm but throughout industry.

Tractors are usually quite safe when operated properly, however they become dangerous if incorrectly used. Tractors are heavy and powerful machines that can lead to a serious injury or death through only a minor mistake. The tractor has been involved in more accidents which have resulted in death or injury than any other piece of rural machinery.

The number and type of potential tractor incidents are numerous. Incidents can be associated with:

- (a) rollovers;
- (b) power take offs;
- (c) falls from tractors;
- (d) hitching equipment;
- (e) tractor operation; and
- (f) towing.

There are many parties with obligations towards the control of tractor risks. Many tractor hazards can be eliminated or controlled at the design stage. Under the *Workplace Health and Safety Act 1995* designers have specific obligations to ensure that tractors are designed to be safe when used properly. The *Plant Code of Practice* provides practical advice for designers of plant, which includes tractors. It is recommended that designers consult this document for further information.

Manufacturers of tractors should always manufacture to the designer's specifications. Information for manufacturers can also be found in the *Plant Code of Practice*. All tractors should be designed and manufactured to comply with the relevant Australian Standards (See Appendix 1) or equivalent design criteria.

Employers and other obligation holders at a workplace should consider each type of tractor hazard and associated risk. Control measures should be chosen, implemented and regularly reviewed to ensure the health and safety of all tractor operators. Adequate training should also be provided to all tractor operators. Information on managing risk is provided in the *Risk Management Code of Practice*.

While it is recognised that few tractors are designed or manufactured in Australia, an importer or supplier of a new tractor should be able to recognise the basic safety features of a tractor. Safety features should be considered by all persons associated with tractors including designers, manufacturers, purchasers and operators of tractors.

The following sections of this code of practice outline the safety features a tractor should have and the safe operation practices necessary to eliminate or reduce tractor-injuries.

1.2 Provision of information

Information about the way a tractor is to be used, to ensure health and safety, must be provided by:

- (a) the designer of the tractor, when giving the design to another entity that is to give effect to the design;
- (b) manufacturers' of tractors, when supplying a tractor to another person;
- (c) suppliers of new tractors;
- (d) suppliers of used tractors, if the information is available; and
- (e) hirers of tractors, at the point of hire.

Information should be provided by the designer and/or manufacturer and distributed by the supplier on the recommended application for which the tractor has been designed. This should include any precautions necessary to ensure the safe operation of the tractor. Such information may be made available to employers and operators in the operators' manuals, information guides and training programs and should cover:

- (a) tractor specifications: power, output, and load carrying capacity and ability to pull loads;
- (b) tractor operational data: power take-off procedures, implement specifications, manufacturers instructions for use; and
- (c) tractor servicing and maintenance: correct maintenance scheduling and maintenance of logbooks.

Section 2 – Safety features

Safety features which need to be addressed at the design, manufacture and operation stage include:

- (a) roll-over protective structures (ROPS);
- (b) falling object protective structures (FOPS);
- (c) guards;
- (d) protection from noise and ultraviolet radiation exposure; and
- (e) other measures for operator health and safety, e.g. seat belts.

2.1 Roll-over protective structures (ROPS)

Part 16 – Roll-over Protective Structures for Wheeled Tractors, of the *Workplace Health and Safety Regulation 1997*, contains regulatory provisions that must be complied with. These requirements are outlined under section 2.2.

2.1.1 A roll-over protective structure

A roll-over protective structure is a structure designed and constructed to prevent or minimise the risk of death or injury to the operator of a tractor as a result of the tractor rolling over in any direction.

Certain tractors may not require a ROPS to be fitted because the risk of rollover and/or injury from rollover is minimal.

The *Workplace Health and Safety Regulation 1997* section 147 describes certain tractors that are exempt from the requirement to have a ROPS fitted. An exempt tractor is a tractor that:

- (a) weighs less than 560 kg, or more than 15-000 kg, measured with a full fuel tank, coolant and lubricating oil; or
- (b) is being used in, or driven to or from, an orchard that would impede the operation of the tractor if a roll-over protective structure were to be fitted to the tractor; -or
- (c) is being used in or near a building or other structure that would impede the operation of the tractor if a roll-over protective structure were to be fitted to the tractor; or
- (d) is being used in a stationary position; or
- (e) is being driven to or from a place where the tractor is to be used, or has been used, in a stationary position; or
- (f) is being maintained, modified, serviced or repaired if it is necessary to remove the tractor's roll-over protective structure to do the maintenance, modification, service or repair; or
- (g) is being used for a historical activity.

A tractor that is exempt from having a ROPS fitted should not be used at a workplace unless all the proposed activities have been assessed for the risks to health and safety and the owner has taken all reasonable action to either prevent or control these risks.

Approved ROPS may be available for early model tractors, even as far back as 1945. If these are unavailable from the manufacturer, a ROPS testing centre may supply an approved frame, or test a home designed frame. A list of ROPS testing centres is included in Appendix 2.

An approved fold-down ROPS with a locking device may be more practical to use where a tractor is operating inside or close to buildings, or near trees.

Tractor with a fold-down ROPS fitted, note the locking pins (see arrow)



When an owner, self-employed person, person in control of a workplace or person in control of a relevant workplace area has chosen not to have a ROPS fitted or a ROPS cannot be fitted, special attention is needed to ensure that the tractor is withdrawn from service or operated with care. There are no circumstances of operation in which a tractor is safe from overturning.

Circumstances where tractors have overturned include:

- (a) level ground;
- (b) uneven ground;
- (c) slight and steep slopes;

- (d) edges of depressions;
- (e) contour banks or water courses; and
- (f) towing/pulling of light, heavy, stable and unstable loads.

ROPS fitted to tractors should comply with the standards outlined in –

- (a) AS 1636: *Tractors – Roll-Over Protective Structures, Criteria and Tests*, or
- (b) AS 2294: *Earth-moving machinery – Protective structures*, or
- (c) Any of the following international standards:
 - ISO 3471 *Earthmoving machinery; roll over protective structures; laboratory tests and performance requirements*
 - SAE J1040 *Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines (Cancelled May 2003)*
 - ISO 3463 *Wheeled tractors for agriculture and forestry – Protective structures – Dynamic test method and acceptance conditions; Amendment 1*
 - ISO 5700 *Wheeled tractors for agriculture and forestry – Protective structures – Static test method and acceptance conditions; Amendment 1*
 - SAE J1194 *Rollover Protective Structures (ROPS) for Wheeled Agricultural Tractors*
 - SAE J2194 *Roll-Over Protective Structures (ROPS) for Wheeled Agricultural Tractors; or*
- (d) Other appropriate international standards.

An approved ROPS in service has an indefinite lifespan. Any sign of physical deterioration e.g. dents, rust or cracks may indicate problems. Cracks and fatigue often affect the mountings or brackets and these should be regularly inspected for any signs of deterioration. A damaged ROPS, whose structural integrity may have been adversely affected, indicated for example by deformation or cracking of the structure, should be replaced.

2.1.2 Designers and manufacturers of tractors

Designers and manufacturers of tractors should ensure that tractors capable of rollover are either designed for a rollover protective structure to be fitted or are fitted with a rollover protective structure.

The design and construction of a ROPS is a skilled operation. The safety of a ROPS is dependent upon the frame yielding and absorbing energy to reduce the load transmitted to the mounting bolts and tractor body.

This type of design reduces the likelihood of continuous rollover while at the same time protecting the operator. A rigid frame while being strong enough to withstand the rollover may break the mounting bolts on the tractor, or may suddenly fracture rather than yield. The performance of a ROPS under stress can only be determined by conducting a test to the relevant Australian Standard or equivalent overseas standard.

A rollover protective structure is usually tested by a ROPS testing centre. To be approved, a structure should be tested according to the procedures outlined in those standards listed in section 2.1.1 for fitment of-ROPS.

This ROPS is being tested by destructive methods at an approved testing centre.



A manufacturer should ensure that every ROPS approved under AS 1636 or AS 2294 is legibly and permanently marked with the following information:

- (a) the name and address of the manufacturer of the ROPS;
- (b) ROPS identification number;
- (c) make, model or serial number of the tractor(s) the structure is designed to fit;-and
- (d) the relevant Australian Standard or other acceptable standard with which the structure complies.

2.2 Wheeled agricultural tractors

Under the *Workplace Health and Safety Regulation 1997* wheeled agricultural tractors have specific requirements, regardless of the industry in which they are used. These requirements must be followed and it is recommended that employers, self-employed persons and other persons who may have an obligation consult these regulations. The information below is a summary of these requirements.

A number of specific terms are defined and used in the regulation. These terms are listed in Appendix 3.

2.2.1 ROPS requirements

Tractors used by the following persons must be fitted with a ROPS, in accordance with the table below:

- (a) relevant persons;
- (b) workers; and
- (c) persons who perform a work activity for a business or undertaking.

Purchase Date	Purchased new / second-hand	ROPS requirement
Prior to 1 July 2003	New	ROPS required to be fitted by 1 July 2007
	Second-hand	ROPS required to be fitted by 1 July 2007
Between 1 July 2003 and 1 July 2004	New	ROPS required to be fitted immediately
	Second-hand	ROPS required to be fitted by 1 July 2007
On or after 1 July 2004	New	ROPS required to be fitted immediately
	Second-hand	ROPS required to be fitted immediately

Summary of ROPS requirements for tractors

These requirements do not apply to:

- (a) an exempt tractor; or
- (b) for tractors used by employers and self-employed persons only – a tractor manufactured before 1 January 1981.

If the roll-over protective structure was first fitted to the tractor after 1 July 2003 it must comply with AS 1636.

2.2.2 Tractors that are hired, leased or borrowed

A relevant person must ensure that a tractor, other than an exempt tractor, is fitted with a ROPS if the tractor:

- (a) is being hired, leased or borrowed; and
- (b) is used in the business or undertaking.

2.2.3 Obligations of prospective suppliers

Prospective suppliers have obligations to meet certain requirements when supplying tractors. These requirements apply to a wheeled tractor that:

- (a) weighs at least 560 kg, but not more than 15,000 kg, measured with a full fuel tank, coolant and lubricating oil; and
- (b) is not fitted with a roll-over protective structure complying with AS 1636.

A prospective supplier must not supply a tractor (new or second hand) or expose it for supply, unless a ROPS has been fitted that complies with AS 1636.

Exceptions to this requirement are situations where the person to whom the tractor is supplied or exposed for supply tells the prospective supplier that the person intends to use the tractor only in one or more of the following ways:

- (a) in a stationary position;
- (b) in an orchard in which the operation of the tractor would be impeded if a roll-over protective structure were to be fitted to the tractor;
- (c) in or near a building or other structure at which location the operation of the tractor would be impeded if a roll-over protective structure were to be fitted to the tractor;-or
- (d) for historical activities.

This requirement does not apply if the prospective supplier knows or suspects that the person intends to use the tractor in a way other than the stated way.

2.3 FOPS

If a tractor is capable of being used for tree felling or in other situations which create a risk to the operator of falling objects, then the tractor should be designed for a falling object protective structure (FOPS) to be fitted. FOPS is a system of structural members and mesh sheeting attached to a tractor to provide the operator with protection from falling objects e.g. branches, rocks and bales.

An approved FOPS should have been tested according to the procedures outlined in *AS 2294: Earth-moving machinery, Protective structures*.

A manufacturer should mark every FOPS legibly and permanently with the following information:

- (a) the name and address of the manufacturer of the FOPS;
- (b) FOPS identification number;
- (c) make, model or serial number of the tractor(s) the structure is designed to fit;
- (d) the relevant Australian Standard or other acceptable standard with which the structure complies;
- (e) any other information deemed appropriate by the manufacturer, e.g. installation, repair or replacement information.

2.4 Guards

A designer should ensure that the need for guarding is minimised in the design of the tractor. A manufacturer should manufacture guards to the designer's specifications. A supplier should ensure that a tractor is sold with the guards that were designed for it fitted so that the designer's and manufacturer's requirements are met at the point of sale. The guarding design requirements of *AS/NZS 2153: Tractors and machinery for agriculture and forestry – Technical means for ensuring safety* or other equivalent standard should be applied by a designer and manufacturer of the tractor.

Guards should protect the operator or any other person from parts of the tractor which are potentially hazardous either when the tractor is in normal operation or undergoing routine maintenance. An owner of a tractor who modifies or alters guards has the same obligations as a designer and manufacturer.

2.5 Noise and ultraviolet radiation

A well designed ROPS will incorporate protection from ultraviolet radiation



A tractor should be designed to minimise noise from engines, exhausts and vibrating tractor parts. Sound should be deflected upwards and away from the operator. Employers and self-employed persons need to ensure that they are not exposed to excessive noise and that their workers or other persons at the workplace are also not exposed. Part 10 Noise of the *Workplace Health and Safety Regulation 1997* prescribes requirements for the control of excessive noise.

The use of canopies with ROPS and/or FOPS should be considered to minimise the operator's exposure to direct sunlight and ultraviolet radiation exposure.

Section 3 – Tractor operation

In rural industry, tractors are involved in injuring or killing more people than any other piece of farm equipment. Injuries involving tractors usually occur from rollover, various falling objects and people being pulled into unguarded power take-offs. Run-overs are primarily linked to these practices:

- (a) starting a tractor from the ground;
- (b) carrying passengers on tractors (usually children); and
- (c) attempting to get on or off a moving tractor.

To reduce some of the potential risks from tractor operation and maintenance, safety precautions are recommended.

If any of the information in this section is in conflict with manufacturer's guidelines for a particular tractor in a particular use, the manufacturer's instructions should be followed.

3.1 Before you buy a tractor

When you are considering the purchase of a tractor, you should consider any risks the tractor may introduce at your workplace. After considering these risks you should ensure that the health and safety design features of the chosen tractor control these-risks.

As a guide, tractor buyers should seek a tractor incorporating the following health and safety features:

- (a) roll-over protective structures (ROPS) and/or falling-object protective structures (FOPS) factory fitted;
- (b) factory designed and fitted safeguards;
- (c) adequate ventilation if a cabin has been fitted;
- (d) non-slip surfaces for access and exit;
- (e) easy access to and exit from the tractor;
- (f) the positioning of the exhaust outlet to direct gases away from the operator;
- (g) adequate for task and terrain for which purchased;
- (h) adequate noise control. Where noise cannot be reduced sufficiently at source, hearing protection equipment should be supplied to the operator;
- (i) the location of switches and levers within easy reach of the operator to avoid repetitive injury risks and to reduce the risk of the wrong lever or control being used;
- (j) a well-sprung, adjustable seat and seat belt; and
- (k) control of ultraviolet radiation exposure, e.g. by provision of shade.

A safe means for access and exit has been fitted to this tractor.



3.2 Before you start a tractor

Read and follow the manufacturer's operating instructions. They contain a wealth of information and are specifically written about your tractor.

Familiarise yourself with the layout of the land before you start working and watch for ditches, embankments and depressions, especially when the ground is unstable or slippery conditions prevail.

Tractor owners should maintain tractors in a safe operating condition by making regular inspections and following the manufacturer's recommended servicing and maintenance procedures. Logbooks should be maintained and records made of scheduled maintenance and repairs performed.

3.3 Hitching implements

When hitching an implement you should:

- (a) Only attach implements to the drawbar, three-point linkage or other specified hitch points specifically designed for that purpose. Never hitch to points forward of, or higher than the drawbar as this could be extremely dangerous.
- (b) Ensure that the weight applied to the three-point linkage by lifting jibs or other attached equipment does not exceed the manufacturer's specifications or adversely affect stability or steering. In addition, seek expert technical advice before fixing counter weights or wheel weights (front or rear) to increase tractor stability.
- (c) Seek advice from the operating manual or supplier about the recommended weight of a trailer or implement that the tractor can safely tow before towing it.

3.4 Starting a tractor

When starting a tractor, the following precautions should be taken:

- (a) Only start and use the tractor according to the manufacturer's instructions.
- (b) Operate the self-starter only from the driving position and do not start the machine while standing on the ground.
- (c) Before starting a tractor engine, check that the handbrake is on and the vehicle is not in gear.
- (d) Engage the appropriate gear for the work being undertaken.

3.5 Operator health and safety

Switches and levers should be designed to be within easy reach of the majority of potential operators and placed to reduce the risk of the wrong switch or lever being used.

Switches should be easy to identify. The operator's seat should be fully adjustable and well sprung to reduce vibration. The backrest should support the lower part of the spine to minimise postural stress to the-spine.

Exhaust pipes and cab ventilation systems should be designed and constructed to ensure the operator does not inhale exhaust fumes.

Operator access to and exit from a tractor should be designed to allow a person to get on and off the tractor without undue stretching. All access surfaces should be non-slip and designed to prevent the build-up of dirt and mud.

Where a cabin is fitted, adequate ventilation facilities should be provided for the operator. Windscreens and glass fitted should be safety glass complying with *AS/NZS 2080 – Safety glass for land vehicles*. Alternatively, where any glazing material other than glass is fitted, it should be a clear material of a kind that does not shatter.

A seat belt should be fitted to all seating positions on new tractors in accordance with *AS 2664 – Earthmoving machinery – Seat belts and seat belt anchorages*. Seat belts should comply with *AS/NZS 2596:1995 – Seat belt assemblies for motor vehicles* or with *SAEJ 386*.

Where the tractor is fitted with a seatbelt and a ROPS is present, it should be worn by the operator if the tractor is moving. This will provide additional protection in the event of a tractor rolling over by keeping the driver within the protective zone offered by the ROPS.

Tractor design should include features which improve operational safety, such as:

- (a) Warning signs attached to the tractor. Warning signs should include information about the normal operating speed of the power take-off. Where a conversion assembly is available for changing tractor or implement speeds, an instruction placard specifying power take-off speed and corresponding draw bar adjustments should also be provided. The warning signs should conform to *AS 1319 – Safety signs for the occupational environment*, be written in English and permanently attached to a conspicuous part of the-tractor.
- (b) Providing the tractor with self-starting equipment. Starting the engine should be by operation of a rotary or pullout switch, which is preferably key-operated to lessen the risk of accidental starting.
- (c) Interlocking the tractor engine starting mechanism with the transmission or clutch to prevent the engine starting up when left in gear.

- (d) Providing efficient service brakes able to stop a fully laden tractor fitted with the heaviest recommended implement. The service brake efficiency should be not less than 40 percent as measured on a 'Tapley' brake meter. The parking brake or the service brake should hold the tractor with the heaviest recommended implement on a slope of 15 degrees.

Points which should be considered in the operation of a tractor include:

- (a) Drive tractors at speeds slow enough to keep control over unexpected hazards; be cautious in wet conditions.
- (b) Reduce speed before turning or applying turning brakes. Where a differential lock and turning brakes are fitted, ensure that the differential lock is disengaged and the turning brakes are locked together before travelling from one work site to another.
- (c) Descend slopes cautiously with tractor in low gear. For example, on downward slopes it is possible, in extreme circumstances, for one wheel to reverse, causing the tractor to roll over. Extra care needs to be taken if towing trailers or implements down slopes, as often the trailers will not have brakes. Ascending steep slopes can cause a tractor to back flip in extreme circumstances or the front wheels to lift thus reducing or losing control of steering.
- (d) To increase stability when working on hillsides, set tractor wheels to the widest possible setting.
- (e) When a tractor is bogged in mud or in a ditch, drive out in reverse gear. Logs and planks should only be used behind the rear wheels to increase traction, as using logs and planks in front of the rear wheels increases the chance of back flipping.
- (f) Only climb onto or alight from a tractor that is stopped. Do not dismount from a tractor while the engine is running unless the transmission is in the neutral, or park position and the parking brake is effectively engaged.
- (g) When an attachment becomes blocked, the tractor should be stopped, the drive to the attachment disconnected and the moving parts of the implement stopped before the obstruction is cleared.
- (h) Seek expert technical advice before fixing counter weights or wheel weights (front or rear) to increase tractor stability.
- (i) When using the tractor as a source for stationary power take-off or belt work, apply and lock the parking brake and chock the wheels. Bond the tractor frame to earth according to manufacturer's instructions. This will remove the risk posed by static electricity when using-belts.
- (j) If using a tractor in an enclosed area like a shed, make sure it is well ventilated to avoid build-up of exhaust gases.
- (k) Exercise extreme caution when operating a tractor or any attached equipment when children or animals are in the area.
- (l) Use appropriate warning lights when operating on a declared road reserve on which the tractor may create a hazard.

If the tractor is to be operated on public roads it should be fitted with the following, so as to comply with the requirements of the traffic regulations:

- (a) horn;
- (b) brake;
- (c) head, tail, and turn signal lights;
- (d) reflectors; and
- (e) rear-view mirrors.

Where a tractor is operating in a confined area and other persons can not be excluded, it should be fitted with reversing beepers.

A seatbelt should be an essential design and manufacture feature for all new tractors. Seatbelts should be fitted to all seating positions on new tractors in accordance with *AS 2664 – Earthmoving machinery – Seat belts and seat belt anchorages*. Seatbelts should comply with *AS/NZS 2596:1995 – Seat belt assemblies for motor vehicles* or with *SAEJ 386 Operator Restraint System for Off-Road Work Machines*.

3.6 Stopping tractor operation

When ending tractor operations, the following precautions should be taken:

- (a) park on even ground;
- (b) shift the gear selector to neutral or park position;
- (c) disconnect power sources and secure implements;
- (d) lower blades, buckets or any other attachments to the ground and/or securely block these attachments;
- (e) lock the parking brake; and

- (f) stop the engine and remove the keys.

3.7 Passengers on tractors

An extra seat has been fitted to assist in the provision of training safely.



Generally, passengers SHOULD NOT be allowed to ride on tractors. Passengers can not be effectively protected by ROPS and safe, adequate passenger seating is generally not incorporated into the design of tractors. In only two situations might it be reasonable for passengers to be on a tractor.

The first is for reason of instruction and training and the second is in situations of extreme emergency e.g. transport to or from the scene of a serious accident. Where a tractor is routinely used for the purpose of instruction or training, a safe system of work should be maintained. This may involve instruction by –

- (a) two way radio, or
 - (b) the provision of a seat or platform with handrail which prevents the instructor slipping, falling or being thrown from the tractor.
- Most passenger injuries occur because the passenger is thrown from the tractor.

Section 4 – Maintenance and modification

4.1 Maintenance

Obligation holders should maintain tractors in a safe operating condition by making regular inspections and following the manufacturer's recommended servicing and maintenance procedures. Logbooks should be maintained which record scheduled maintenance and repairs performed and any modifications which might affect the safe operation of the tractor.

When a worker or other person is undertaking servicing or maintenance, the following precautions should be taken. An employer, self-employed person, or person in control of a workplace, should also ensure the precautions are incorporated in an operator's training program:

- (a) Before inspecting or working underneath a tractor, ensure that the operator has alighted, the tractor cannot move and any movable attachments are lowered to the ground and/or safely blocked.
- (b) Stop all power sources to pulleys before removing or replacing belts.
- (c) If the wheel track is adjustable set the wheels as wide apart as practicable.
- (d) Stop all hazardous machinery and secure it before any work is undertaken.
- (e) Allow the engine to cool before removing the radiator cap, and be careful of escaping steam.
- (f) When jump-starting the tractor, connect the jumper leads as specified by the manufacturer, to avoid damage to the electrical system and the possibility of a battery explosion.
- (g) When removing and refitting tractor tyres, first remove the valve core to allow air to escape and make the tyres flexible. Maintain a good grip on the tyre lever and stand to the side of the tyre when removing the tube from the rim.
- (h) While inflating a tyre, continually check to ensure the locking ring is properly seated and locked. The tyre should be inflated to its correct pressure, according to the tyre manufacturer's load/inflation specifications. Always stand to the side when inflating a tyre. An inflation cage should be used when inflating large tyres.
- (i) The ballasting of tractor tyres should be done in accordance with manufacturer's recommendations.
- (j) Keep open flames, open lights, lighted cigarettes etc. away from the refuelling operation. During refuelling, maintain some form of contact between the metal outlet of the refuelling hose and the fuel tank opening to reduce the risk of an explosion or fire due to a discharge of static electricity. Always refuel in a well ventilated area.

4.2 Modifications

Obligation holders who modify tractors are considered manufacturers under the *Workplace Health and Safety Act 1995*. Any modifications undertaken need to comply with the specified design criteria for tractor construction or the end product should meet or exceed the design criteria.

Any modification to a ROPS or FOPS such as the welding of brackets to support a roof or the drilling of holes may affect its structural integrity and dramatically reduce its protective ability.

Section 5 – Training

5.1 Training

An obligation holder should ensure the safe operation of the tractor through instruction, training and constant supervision of the operator while the operator is gaining experience in tractor operation.

Note:

An owner, self-employed person, person in control of a workplace, or person in control of a relevant workplace area, may be the operator and therefore should be trained and supervised.

The training received should ensure the operator is familiar with:

- (a) information contained in the manufacturer's operating instruction handbook;
- (b) tractor controls and instruments, brakes, clutch and gears;
- (c) tractor safety features, e.g. guards, seat belts;
- (d) comfort controls, e.g. adjusting the seat to be in reach of all controls;
- (e) operating instructions including starting, moving off and how to stop the tractor;
- (f) regular service procedures required; and
- (g) proper attachment of implements.

As a guide, it may be useful to fix these instructions to the relevant parts of the tractor. Even when there is reason to believe that an operator is competent, based for example on stated work experience, it is wise to verify this by questioning or demonstration before allowing them to operate the tractor.

An obligation holder should ensure that operators hold the appropriate licences and certificates if required. Obligation holders should consult Section 2 – Safety Features and Section 3 – Tractor Operation when preparing and conducting training for an operator.

Tractor operators should also be informed of possible hazards, and know how to reduce the risk of accidents. High-risk situations require that utmost caution should be taken where:

- (a) there is a risk of the tractor overturning and ROPS and seatbelts have not been fitted;
- (b) it is necessary to carry passengers and protective frames and where seat belts are not provided;
- (c) the tractor is to be operated in an area where it is not practicable to totally separate the tractor operation from other workers or non-workers, e.g. children.

A tractor operator who requires more information about how to operate the tractor in a competent and safe manner should seek instruction from the employer.

Appendix 1 – Published technical Standards

The following Standards are relevant to the design and operation of tractors. Equivalent overseas standards have also been referred to.

Australian Standards

AS 1019 - 2000

Internal combustion engines – Spark emission control devices.

AS 1064 - 1987

Agricultural and light industrial equipment – Operator controls – Symbols.

AS 1121 - 1983

Guards for agricultural tractor PTO drives.

AS 1246 - 1972

Location and direction of motion of operator's controls for agricultural tractors and self-propelled agricultural machines.

AS 1319 - 1994

Safety signs for the occupational environment.

AS 1636.1 - 1996

Tractors – Rollover protective structures – Criteria and tests Conventional tractors (Also see ISO 3463:1989).

AS 1636.2 - 1996

Tractors – Rollover protective structures – Criteria and tests Rear-mounted for narrowtrack tractors.

AS 1636.3 - 1996

Tractors – Rollover protective structures – Criteria and tests Mid-mounted for narrowtrack tractors.

AS 1657 - 1992

Fixed Platforms, walkways, stairways and ladders – Design, construction and installation.

AS 2012 - 1990

Acoustics – Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors – Stationary test conditions.

AS/NZS 2080 - 1995

Safety glass for land vehicles.

AS/NZS 2153 - 1997

Tractors and machinery for agriculture and forestry – Technical means for ensuring safety.

AS 2294 - 1997

Earth-moving machinery – Protective structures (Also see ISO 3471; 3449; and 3164).

AS/NZS 2596 - 1995

Seat belt assemblies for motor vehicles.

AS 2664 - 1983

Earthmoving machinery – Seat belts and seat belt anchorages.

AS 2951.3 - 1988

Earth-moving machinery – Nomenclature – Tractors. (Also see ISO6747:1982).

Appendix 2 – ROPS testing centres

Sherwood Pty. Ltd.

Phone: (02) 4883 6093

Fax: (02) 4883 6576

Address: PO Box 6

Bundanoon, NSW 2578

Casey Cab and Frame

Phone/fax: (03) 5995 1595

Address: 53 Cameron St

Cranbourne, VIC 3977

Email: info@caseycab.com.au

Catalogue available on www.caseycab.com.au

QMW Industries Pty. Ltd.

Tel: (07) 3275 2544

Fax: (07) 3275 2524

Email: sales@qmw.com.au

Address: 53 Success St

Acacia Ridge, QLD 4110

Appendix 3 – Meaning of some terms used in Part 16 of the *Workplace Health and Safety Regulation 1997* – Roll-over Protective Structures for Wheeled Tractors

'exempt tractor' means a tractor that:

- (a) weighs less than 560 kg, or more than 15,000 kg, measured with a full fuel tank, coolant and lubricating oil; or
- (b) is being used in, or driven to or from, an orchard in which the operation of the tractor would be impeded if a roll-over protective structure were to be fitted to the tractor; or
- (c) is being used in or near a building or other structure in which the operation of the tractor would be impeded if a roll-over protective structure were to be fitted to the tractor; or
- (d) is being used in a stationary position; or
- (e) is being driven to a place where the tractor is to be used in a stationary position; or
- (f) is being driven from a place where the tractor was used in a stationary position; or
- (g) is being maintained, modified, serviced or repaired if it is necessary to remove its roll-over protective structure to do the maintenance, modification, service or repair.

'roll-over protective structure' means a structure designed and constructed to prevent or minimise the risk of death or injury to the operator of a tractor as a result of the tractor rolling over in any direction.

'supply' includes sell, hire out, lease, auction, barter or supply.

'tractor' means a vehicle primarily designed to:

- (a) haul agricultural machinery or implements; or
- (b) provide power for agricultural machinery or implements by transmission shaft, belt or linkage system.

It does not matter whether the vehicle:

- (a) is used at an agricultural workplace; or
- (b) can be converted temporarily into earthmoving machinery.

However, a vehicle primarily designed as earthmoving machinery is not a tractor.

Appendix 4 – The dictionary

For the purpose of this code of practice the following definitions apply –

‘appropriate information’

means information which states the use for which the tractor has been designed and tested, and the conditions (if any) that must be observed if the tractor is to be used safely and without risk to health.

‘employer’

A person is an ‘employer’ if –

- (a) the person conducts a business or undertaking for gain or reward; and
- (b) in the conduct of the business or undertaking, the person engages someone else to do work, other than under a contract for services, for or at the direction of the person.

‘normal operation’

means operation of the machine within its recognisable limits, in accordance with the manufacturer’s instructions by persons familiar with its operations and controls. This definition includes the acts of inspecting the machine and entering and leaving the operator’s work area.

‘routine maintenance’

includes adjustment of functional settings, routine lubrication, machine cleaning, performance of minor repairs in the field and renewing consumable items.

‘self-employed person’

A person is a ‘self-employed person’ if –

- (a) the person conducts a business or undertaking for gain or reward; and
- (b) in the conduct of the business or undertaking, the person is not an employer or worker.

‘supply of a tractor’

includes but is not restricted to the sale, leasing or hiring of a tractor by the owner to any person including a dealer in tractors.

‘tractor’

means a motor vehicle whether wheel or track mounted, primarily designed to provide power to or motivation (movement) of any attached machine or implement by any transmission shaft, belt or linkage system.

Tractor does not include:

- (c) Earthmoving machinery, but does include earthmoving machinery designed and used primarily to perform work as a tractor, e.g. a wheeled industrial tractor; or
- (d) A vehicle primarily designed for the conveyance of passengers and goods, e.g. a four wheel drive vehicle which also has a power take-off attached.