



Agricultural safety and health Power take off guarding

Hands, hair and clothing can be caught by unguarded power take-off shafts. These types of accidents can be prevented by ensuring the power take-off shaft is properly guarded

Each year people are seriously injured in incidents involving tractor power-take off (PTOs) shafts and couplings. This happens when clothing, hair, jewellery, hands or limbs are caught and become wrapped around an unguarded PTO shaft or coupling.

Incidents in Western Australia include:

- An employee of a turf farm received severe arm injuries (severed just below the shoulder and almost requiring amputation) when he was caught in a rotating power-take off shaft, near the power input coupling. The PTO shaft connected a tractor to a boom spraying implement.

As the employee moved between the tractor and the implement to operate the controls, his arm was caught in the rotating PTO shaft. Although the PTO shaft was guarded, the guard did not extend over the input coupling at the implement end.

- An employee engaged in broadacre seeding activities was fortunate not to receive serious injuries when his clothing became entangled in the revolving PTO of the air seeder he was operating.

He was making an adjustment to the hydraulic hoses located at the rear of the tractor when his clothing became entangled in the unguarded PTO shaft. All his clothing was stripped from his body.

- A young vineyard employee was clearing grass build up from a slasher when the lower portion of her trousers became entangled in the rotating PTO shaft, near the power input coupling.

She suffered serious injury to her ankle. Investigation of the incident found that a power input coupling (PIC) guard was not fitted.

These three incidents are among many that have been reported to and investigated by WorkSafe. They provide an insight, firstly to the pain and suffering of those injured, and secondly to the importance of PTO guarding.

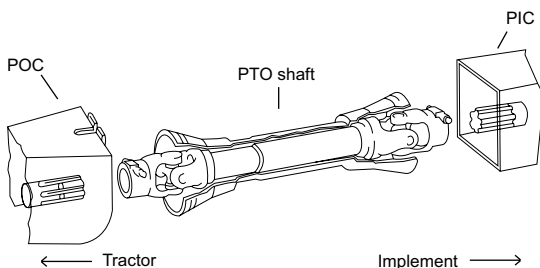
PTO shafts must be guarded, injuries happen in the blink of an eye

Requirements for PTO guarding

The power output coupling (POC) guard is generally known as the master guard. The guard must be permanently attached to the tractor. It may be movable, but capable of being returned and held securely in position when the tractor is in use.

The implement power input coupling (PIC) guard must be permanently attached to the implement. It may be movable, but capable of being returned and held securely in position when in use. There must be no 'nipping point' where body parts or clothing can be caught.

The power take off shaft guard must extend into the tractor POC guard area and the implement PIC guard area for the maximum practical distance. The guard may be of a rotating or non-rotating type. For non-rotating type guards a means of restraining the guard must be provided.



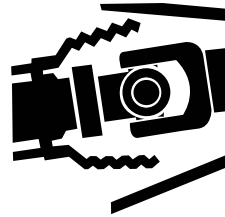
Choosing and fitting a guard

- When buying a guard, check with your supplier that it has been made and tested to the appropriate Australian Standard.
- Make sure that the guard is the correct size and length for the drive shaft. If in doubt consult the guard supplier. Remember to take into account the shaft's vertical and lateral movements during work.

Important - always refer to the manufacturer's fitting, operating and maintenance instructions.

When working with PTO equipment always:

- disengage the power drive;
- stop the tractor engine;
- ensure that controls are in neutral and the hand brake is applied;
- remove the engine key; and
- wait for all movement to cease before attempting to clear any blockage and use a tool to clear the blockage.



For all guards

- Check all guards regularly, e.g. daily when in use, for wear and damage. Damaged guards must be replaced before use.
- Where it is necessary to have some form of protection in the PTO drive line, torque limiters, free wheels or clutches should be located at the power input connection (implement end) of the PTO drive shaft.
- The restraining devices used to prevent the rotation of the shaft guard should not be used as a means of supporting the PTO drive shaft/guard when the machine is uncoupled.
- When the machine is not in use, support the drive shaft and guard on the cradle provided. If there is no cradle, support the shaft and guards by other means to give equivalent protection against damage.

Did you know that PTO shafts travel the length of an arm in half a second?

What the law says

All parties at the workplace have responsibilities for safety and health, this includes the adequate guarding of machinery.

Section 19 of the *Occupational Safety and Health Act 1984* says employers must, as far as is practicable, provide a working environment in which employees are not exposed to hazards. An unguarded PTO is a hazard.

Regulation 3.1 requires that employers, main contractors, the self employed and people in control of workplaces, this includes managers, must, as far as practicable identify each hazard to which a person could be exposed, assess the risk of injury or harm to health resulting from each hazard and consider the means of reducing the risk.

Regulation 4.37 requires all dangerous parts of plant to be guarded and the guarding to be maintained and kept in position when in use.

Further information

- For the supply of PTO guarding: Your machinery dealer should be the first point of call and will be in a position to supply PTO guarding parts as necessary. If the dealer cannot assist you directly they will be able to provide information to help you.
- For information on the legal requirements for PTO guarding, WorkSafe and agricultural industry associations, can provide the information required.
- The *Agricultural safety and health workbook and checklist* is a further source of information on the guarding of farm machinery and the PTO, as well as general farm safety and health information. The workbook and checklist are available at www.worksafe.wa.gov.au
- *Code of practice: Safeguarding of machinery and plant.*
- Commission for occupational safety and health *guidance note: Isolation of plant.*
- WorkSafe bulletin *Machine guarding.*
- Safety and health alerts.

