

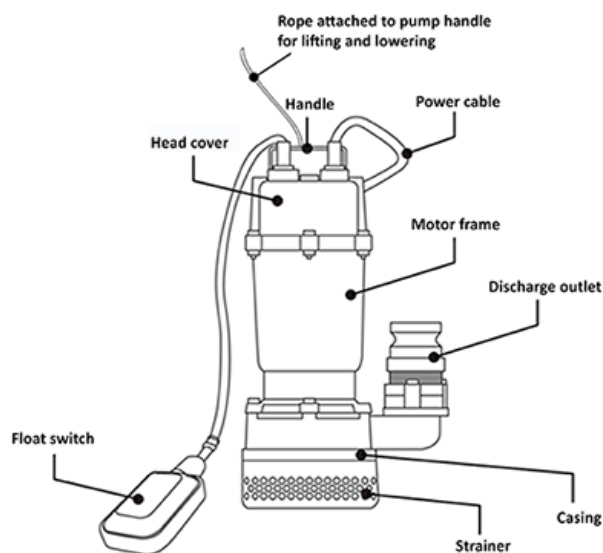
Working with submersible pumps on farms

February 2016

This alert highlights the risk of electric shock when using or accessing submersible pumps and provides information on how to reduce the risk of electric shock.

Background

Submersible pumps are designed to work while fully submerged in liquid and are regularly used to pump out pits, storage tanks, flooded trenches or excavations; they are also used in wells and dams.



Common type of submersible pump with power cord and float

Recently, a farm worker died from an electric shock when attending to a submersible pump in a drainage pit on a dairy farm.

The motor on a submersible pump is attached directly to the pump body and submerged in the liquid (see diagram). Many submersible pumps need to be fully submerged to prevent the pump motor from overheating and burning out. The power cable to submersible pumps is a waterproof rubberised flexible cord. These pumps are often fitted with a float switch which automatically turns the pump on and off to maintain the liquid between two pre-set levels. Submersible pumps at workplaces are usually 240 Volt but can be 3 phase 415 Volt. They can be constructed from a variety of materials including stainless steel, cast aluminium and plastic.

Risks

Persons handling submersible pumps may be exposed to electric shock risks due to:

- deterioration (due to age or reaction to the liquid) or mechanical damage to the flexible power cord fitted to the pump
- deterioration or damage to the plug-top fitted to the pump's power cord
- ingress of water into the electric components of the pump

- burning out of the pump's electric motor
- failure of part of the pump's earthing system
- unlicensed person undertaking electrical work.

Recommended control measures

Employers must provide and maintain a working environment that is safe and without risks to health for its employees, so far as reasonably practicable. Employers must also ensure, so far as reasonably practicable, their conduct does not expose other people to risks to their health or safety.

The risk of electric shock may be reduced by ensuring:

- Electrical safety controls are in place, such as:
 - the pump or the socket-outlet (powerpoint) the pump is plugged into should be protected by a fixed 30mA residual current device (RCD)
 - if plugged into a socket-outlet, the outlet is suitable for the location (such as a weatherproof type rated at IP56)
 - maintaining electrical equipment in a safe working condition, including regular inspection and maintenance
 - ensuring the pump can be lifted and lowered out of the liquid without using the pump's power cord
 - ensuring electrical work at the workplace is only undertaken by persons who have the appropriate electrical license eg an electrician.
- Safe systems of work are in place, such as:
 - providing information, instruction, and training
 - turning off or unplugging and locking-out the pump before touching the liquid or equipment, as the pump may be live and only switched off by the float switch
 - conducting a visual inspection of the lead and pump for damage prior to reinstalling or using the pump
 - not using damaged or suspect equipment
 - reporting any electric shocks, damage or incidents promptly to the person in management control so the installation and equipment can be checked by an electrician
 - supervising the work to the extent necessary to ensure workers are working safely and without risks to health.

Ensure the pump frequency and voltage specification are suitable for Victoria's supply by checking the labelling on the pump, with the supplier, or with an electrician.

For specific electrical safety advice about the electrical installation at your workplace, engage a licenced electrician or electrical inspector. To get RCDs fitted, contact a licenced electrician who must issue you a certificate of electrical safety specifying the work done.

Further information

worksafe.vic.gov.au

EnergySafe Victoria - esv.vic.gov.au, info@esv.vic.gov.au, 1800 800 158

Contact Details

Call us on: **1800 136 089**

Email us at: info@worksafe.vic.gov.au

For more information on occupational health and safety, go to WorkSafe's website: **worksafe.vic.gov.au**

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