



Government  
of South Australia

SafeWork SA

## ELECTRICAL SAFETY



**safe**worksa

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### DISCLAIMER

This publication contains information regarding occupational health and safety. It includes some of your obligations under the Occupational Health and Safety legislation that SafeWork SA administers. To ensure you comply with your legal obligations you must refer to the appropriate Acts and Regulations.

This publication may refer to legislation that has been amended or repealed. When reading this publication always refer to the latest laws.

**This booklet addresses**  
**Division 2.5 of the OHSW**  
**Regulations**  
**Regulation 2.5.1**

- (a) to ensure that persons at work are, as far as is reasonably practicable, safe from the risks of injury caused by electricity; and
- (b) to minimise the risk of injury, electrical shock or fire at a workplace through the use of, or on account of, any electrical installation or electrical plant; and
- (c) to ensure any electrical work performed on any electrical installation or electrical plant is carried out by a competent person.

**Provision of R.C.D.s**

**Regulation 2.5.8** (1) Subject to complying with any requirement of a preceding regulation under this Division, any risk associated with the supply of electricity through a socket outlet must be minimised so far as is reasonably practicable by the use of an R.C.D.

(2) If the supply of electricity in any situation in a workplace is through a socket outlet not exceeding 20 amps to –

- (a) hand held electrical plant; or
  - (b) electrical plant that is moved while in operation; or
  - (c) electrical plant that is moved between operations in circumstances where damage to the electrical plant or to a flexible supply cord could reasonably occur; or
  - (d) electrical plant where electrical safety could be affected by the operating environment, the electrical plant must be protected by an R.C.D. with a tripping current not greater than 30 milliamps.
- (3) An R.C.D. under subregulation (1) or (2) must be –
- (a) for a new electrical installation – a non-portable R.C.D.;
  - (b) for a new or modified circuit on an existing electrical installation – a non-portable R.C.D.;

## INTRODUCTION

This booklet was developed as a guide to help you achieve electrical safety in the workplace.

It provides information on how to comply with the most relevant aspects of the *Occupational Health, Safety and Welfare Regulations 1995 (OHSW Regulations)* – Division 2.5 Electrical, as well as giving an overview of the following:

- the use and testing of Residual Current Devices
- appliance testing (testing and ‘tagging’).

Although electricians and engineers may use this booklet, it is not intended to cover technical and complex electrical safety issues.

Throughout this booklet the term ‘electrical installation’ is used to describe any wiring or equipment that uses electricity, including all electrical wiring, accessories, fittings, consuming devices, controls or protective gear, or other equipment associated with wiring, situated at a workplace.

## RESIDUAL CURRENT DEVICES

The majority of electrical fatalities in South Australia could have been prevented by the use of a properly installed Residual Current Device (RCD) commonly referred to as a ‘safety switch’.

An RCD works by detecting a current leakage (often called an ‘earth leakage’). When the RCD detects this current leakage, it turns the power off almost immediately. While you may still receive an electric shock, the duration will be very short, reducing the risk of serious injury.

Where electricity is supplied through a socket outlet, the risk associated with that supply must be minimised by the use of an RCD.

The type of electrical installation will determine what type of RCD protection is required:

- New installations - non-portable RCD protection
- Existing installations - portable or non-portable RCD protection
- Modifications to existing installations - non-portable RCD protection
- Construction and demolition sites require compliance with Australian Standard AS/NZS 3012 *Electrical installations - Construction and demolition sites*. This standard requires all final sub-circuits to be protected at the switchboard by an RCD, providing protection for all socket outlets.

Note: **Domestic installations** are not addressed specifically in the *OHSW Regulations*; however, *AS/NZS 3000* requires RCDs to be installed in new domestic installations.



From left: portable RCD fitted directly to an appliance cable, RCD protected power board and 2 non-portable RCDs for installation in switchboards

## WHAT EQUIPMENT NEEDS RCD PROTECTION?

Depending on the type of installation, RCD protection may be provided by either a portable or fixed (non-portable) RCD. Examples of equipment that needs RCD protection:

### HAND HELD ELECTRICAL PLANT

- power tools, such as drills and saws
- hair dryers, curling wands, electric knives

### ELECTRICAL PLANT WHICH IS MOVED DURING OPERATION

- jackhammers, electric lawn mowers
- vacuum cleaners and floor polishers
- extension cords

### PLANT WHICH IS MOVED BETWEEN OPERATION WHERE DAMAGE TO PLANT OR THE SUPPLY CORD COULD REASONABLY OCCUR

- electric welders, electric cement mixers, portable bench saws
- extension cords

### WHERE ELECTRICAL SAFETY COULD BE AFFECTED BY THE OPERATING ENVIRONMENT

- appliances used in wet areas such as kettles, jugs, frying pans, portable urns, food mixers/blenders
- extension cords.

When fixed (non-portable) RCDs are installed, all the socket outlets are usually protected automatically. When modifications have been made to an old or existing installation, it is possible that only the modified circuits will be protected by the RCD. To overcome the risks of working with partially protected installations and ensure maximum protection, consider providing RCD protection to the entire installation.

### OTHER EQUIPMENT

Not all equipment requires RCD protection; however, to maximise workplace safety it is recommended that RCDs be fitted wherever possible.

Equipment generally not considered to require RCD protection includes equipment that is 'plugged in' to a socket outlet but is not intended to be:

- moved while in operation
- frequently moved from place to place
- used in a 'heavy use' environment.

(c) for an existing electrical installation where paragraph (b) does not apply – either a non-portable R.C.D. or a portable R.C.D., where a portable R.C.D. is connected at the socket outlet supplying electricity to any electrical plant.

(4) An R.C.D. must be provided for any final sub-circuit on a construction or demolition site within the scope and application of AS/NZS 3012 *Electrical installations – Construction and demolition sites*.

(5) The requirement for an R.C.D. does not apply where –

(a) the supply of electricity is to an extra low voltage system that is electrically separated from earth and from other systems in such a way that a single fault cannot give rise to the risk of electric shock; or

(b) the supply of electricity is to electrical plant and is –

(i) direct current (DC); or

(ii) provided through an isolating transformer that complies with AS/NZS 3108 *Approval and test specification – Particular requirements for isolating transformers and safety isolating transformers*; or

(iii) provided from a portable generator that complies with AS 2790 *Electricity generating sets – Transportable (up to 25 kW)*.

Examples of this type of equipment include:

- desk-top equipment such as computers, printers, monitors, clocks, desk lamps
- photocopiers
- refrigerators
- wall mounted air-conditioners
- specialised scientific equipment where the use of an RCD may compromise the operation of the equipment or the safety of a patient. (However, steps should be taken to ensure a high level of safety is maintained such as a more frequent and extensive testing program.)
- 'fixed' machinery that is connected via a flexible lead and plug in order to facilitate maintenance. (It may be moved during maintenance but is otherwise fixed. The supply lead must be installed and connected so that it is protected from any possible damage.)
- extra low voltage equipment (less than 50 V AC), direct current systems, equipment operated from an unearthed generator, and equipment supplied from an isolator transformer.

Where it is not obvious whether RCD protection is required, a risk assessment should be conducted.

The requirement for an RCD is not determined by the type of equipment alone, but is dependent also on the environment and location in which the equipment is to be used.

For example:

- equipment on construction sites is subject to heavy use and therefore must be RCD protected
- equipment in wet areas (such as kitchens) has a higher risk of causing electric shock and therefore should be RCD protected.

## **RISK ASSESSMENT EXAMPLES**

The examples below are some of the issues to consider when determining where RCD protection is required.

### **ELECTRIC HEATERS**

Consider:

- whether it is fixed to a wall or moved around the workplace
- whether it is likely to be damaged by other equipment that is moved about in the workplace.

### **PORTABLE COMPUTERS**

The use of an RCD provides protection for the battery charger/eliminator. It is not necessary to consider the extra low voltage cord supplying power from the charger to the computer.

Consider:

- how often the charger is moved and the risk of damage to the charger and supply cord.

### **ELECTRONIC WHITE BOARDS AND OVERHEAD PROJECTORS**

Consider:

- whether it is a fixed or moveable type
- how often it is moved and the environment it is used in
- the likelihood of damage to the equipment and supply cord.

RCD protection for this equipment may not be required in the office environment.

### **AUDIOVISUAL EQUIPMENT**

Consider:

- how often it is moved
- what is the risk of the equipment and cord being damaged
- the environment it is used in.

## ELECTRICAL EQUIPMENT IN HOSPITALS, AGED CARE HOMES, ETC

Electrical equipment in hospitals, aged care homes etc, supplied by the employer should be provided with RCD protection. However, electrical equipment brought in by patients or residents needs additional consideration to determine the associated risks.

Consider:

- whether inspecting and testing equipment prior to its use will control the risks
- whether the risk may be satisfactorily controlled by RCD protection
- the condition of the equipment
- the possibility of damage occurring to the cord or the equipment
- who will come into contact with the equipment.

## ELECTRICAL EQUIPMENT AND THE GENERAL PUBLIC

Where there is potential for the public to come into contact with electrical equipment within a workplace, the same level of protection afforded to an employee should be provided to the public.

**Irrespective of the outcome of any risk assessment undertaken, RCDs are still highly recommended.**

## RCD TESTING

An RCD must be tested and maintained after taking into account the designer or manufacturer's specifications and any hazard identification and risk assessment process required.

Two types of tests are required under the *OHSW Regulations*:



Demonstration of RCD push-button test

### PUSH-BUTTON TEST

This is a simple test that can be performed by the user to determine that the RCD's tripping mechanism is working.

### OPERATING TIME TEST

Usually performed by an electrician, this test measures how long the RCD takes to trip, indicating whether it is fast enough to be effective.

Tests need to be performed at the intervals specified in the *OHSW Regulations* and *AS/NZS 3760 In-service safety inspection and testing of electrical equipment*. A summary of these test times is provided in the section 'Testing Intervals'.

A record of the results of all RCD tests other than the daily push button test must be kept for a period of five years. The *Electrical Safety Hazard Checklist and Test Record* pro-forma at the back of this book can assist you with recording the results of the RCD tests.

### Testing and maintenance of R.C.D.s

**Regulation 2.5.9** (1) An R.C.D. must be tested and maintained after taking into account the designer's or manufacturer's specifications and any hazard identification and risk assessment process required by these regulations, but in any event an R.C.D. must be tested as follows:

- (a) in the case of a non-portable R.C.D. or an R.C.D. that is operated in a fixed position –
    - (i) a push-button test that is sufficient to ensure that the tripping mechanism does not fail must be undertaken at least once every 12 months; and
    - (ii) an operating time-test in accordance with AS/NZS 3760 *In-service safety inspection and testing of electrical equipment* must be undertaken at least once every three years;
  - (b) in the case of a portable R.C.D. that is moved from place to place –
    - (i) push-button tests must be carried out in accordance with AS/NZS 3760 *In-service safety inspection and testing of electrical equipment*; and
    - (ii) operating time-tests must be carried out in accordance with AS/NZS 3760 *In-service safety inspection and testing of electrical equipment*;
  - (c) in the case of an R.C.D. located at a workplace within the scope and application of AS/NZS 3012 *Electrical installations – Construction and demolition sites* – tests must be carried out in accordance with the requirements of that standard.
- (2) If an R.C.D. fails to meet the requirements of a test under subregulation (1), it must be repaired or replaced.
- (3) A record of the results of a test carried out under this regulation, other than a daily test required under AS/NZS 3760, must be kept by the owner of the R.C.D. for a period of at least five years from the date of the test.

### Inspection and testing of electrical plant

- Regulation 2.5.7** (1) Regular inspection and testing must be performed on electrical plant in the workplace if the supply of electricity is through a socket outlet to –
- (a) hand held electrical plant; or
  - (b) electrical plant that is moved while in operation; or
  - (c) electrical plant that is moved between operations in circumstances where damage to the electrical plant or to a flexible supply cord could reasonably occur; or
  - (d) electrical plant where electrical safety could be affected by the operating environment.
- (2) If electrical plant is fixed, it must be inspected and tested after taking into account –
- (a) information provided by the designer or manufacturer of the electrical plant; and
  - (b) any hazard identification and risk assessment process that is relevant to the use of the electrical plant in its intended work environment.

## TESTING AND 'TAGGING' OF ELECTRICAL EQUIPMENT

It is necessary to conduct routine maintenance and testing to ensure the continued safety of electrical equipment in the workplace.

One of the best methods to achieve the required level of safety is by following the Australian Standard AS/NZS 3760 *In-service safety inspection and testing of electrical equipment*.

Although, it is not necessary for an electrician to carry out testing under this standard, it must be conducted by a 'competent person'. A competent person is someone considered to be qualified either through experience, or training or both.

Testing requires:

- visual inspection for damage especially to the insulation
- checking that the electrical insulation is typically above 1 M ohm
- ensuring that the resistance of the earth is below 1 ohm (where appropriate).

The polarity of the wiring (in items such as extension cords) should also be checked to ensure that the active and neutral wires have not been transposed.

In construction and demolition environments, equipment that passes the test must be suitably tagged, identifying the name of the person or company that performed the test and the due date of the next test under AS 3012 (gazetted Code of Practice).



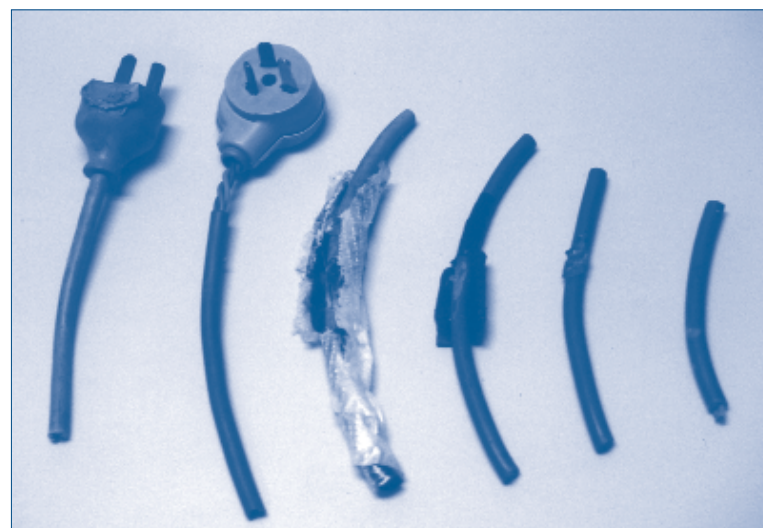
Tags should be non-metallic and non-reusable and may be colour coded to assist in identifying equipment that is due for inspection.

Colour coding is often used in the construction industry where testing is required every three months.

Equipment identified as being faulty during testing should be withdrawn from service and clearly marked as faulty until repairs are completed.

It is recommended that an electrician or a 'competent person' conduct any repair work.

Examples of suitably tagged electrical leads



Examples of defective cables and plugs – mechanical damage to outer sheath.

## TESTING INTERVALS

### Recommended testing intervals for electrical equipment (regulatory testing requirements marked with >)

#### In factories, workshops, and places of work or repair, manufacturing, assembly, maintenance or fabrication test:

- protectively earthed equipment including extension cords and power boards every 6 months
- double insulated equipment at least every 12 months (refer to section on 'Protectively Earthed and Double Insulated Equipment')

- > portable RCDs
  - push button test before use each day
  - operating time test every 12 months
- > fixed (non-portable) RCDs
  - push button test at least every 12 months
  - operating time test at least every 3 years.

#### For commercial cleaning equipment test:

- protectively earthed equipment every 6 months
- double insulated equipment (including extension cords) every 12 months (refer to section on 'Protectively Earthed and Double Insulated Equipment')

- > portable RCDs
  - push button test every 3 months
  - operating time test every 12 months.

#### In areas where the equipment or supply cord is subject to flexing in normal use, is open to abuse, or is in a hostile environment test:

- all equipment at least every 12 months

- > portable RCDs
  - push button test every 3 months
  - operating time test every 12 months
- > fixed (non-portable) RCDs
  - push button test at least every 12 months
  - operating time test at least every 3 years.

#### In residential type areas – including hotels, boarding houses, hospitals, accommodation houses, motels and hostels test:

- all equipment at least every 2 years

- > portable RCDs
  - push button test every 6 months
  - operating time test every 2 years
- > fixed (non-portable) RCDs
  - push button test at least every 12 months
  - operating time test at least every 3 years.

#### In areas where the equipment or supply cord is not subject to flexing in normal use and is not open to abuse or located in a hostile environment test:

- all equipment every 5 years

*Note: In an office environment where the equipment is subject to 'heavy use', testing is required every 12 months.*



- > portable RCDs
  - push button test every 3 months
  - operating time test every 2 years
- > fixed (non-portable) RCDs
  - push button test at least every 12 months
  - operating time test at least every 3 years.

**On construction and demolition sites test:**

- all portable equipment every 3 months
- all relocatable equipment such as large generators, switchboards and wiring associated with offices and other construction site facilities every 6 months

- > portable RCDs
  - push button test immediately after connection to a socket and before use each day
  - operating time test every 3 months
- > fixed (non-portable) RCDs
  - push button test every month
  - operating time test every 12 months.

Where an ‘island’ environment exists within another environment, for example an office within a manufacturing site, the appropriate testing interval needs to be applied to each area.

*Note: For further information on electrical safety at construction sites, refer to Industry Guideline – Electrical practices for construction and demolition sites booklet, available from SafeWork SA.*

**Hire equipment**

All equipment including RCDs should be inspected before hire and tested every 3 months.

**Repaired equipment**

Test equipment before re-introduction to service.

**Second-hand equipment**

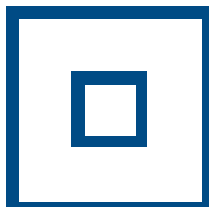
The safety of second-hand equipment often cannot be guaranteed. Test the equipment before its introduction to service at a workplace.

**A suitable pro-forma for recording RCD test results can be found at the back of this booklet.**

**PROTECTIVELY EARTHED AND DOUBLE INSULATED EQUIPMENT**

Protectively earthed equipment has the metal parts of the equipment connected, and bonded to the earth wire of the supply cable. All protectively earthed equipment must use a 3-pin plug.

Double insulated equipment does not have any connection to the earth wire. Instead it has a double layer of insulation or reinforced insulation and often has a 2-pin plug.



Double insulated equipment should be identified with the symbol of a small square inside a larger square (usually located on the back near the serial number) or be marked with the words ‘DOUBLE INSULATED’.

While a double insulated appliance (such as an electric drill) has a plastic body providing an additional layer of insulation there may still be exposed metal parts (such as the drill chuck).

*Symbol used to indicate that an electrical item is double insulated*

A double insulated design is such that any electrical fault should not 'connect' with exposed metal parts.

Most electrical items such as domestic sound and video equipment, hair dryers and power tools are double insulated. However, some may be protectively earthed. Look for the 2-pin plug and the 'square in the square' symbol to determine whether they are protectively earthed or double insulated.



Example of a double insulated appliance (video player) with a 2-pin plug, square in square symbol and tagged in accordance with AS/NZS 3760

## HAZARD IDENTIFICATION AND RISK ASSESSMENT

Employers must identify the hazards associated with the use of electricity, conduct a risk assessment and control the risks.

This process should be undertaken before:

- connection and supply of electricity to a new electrical installation at a workplace
- modification, maintenance or repair of an existing supply of electricity to or at a workplace, or of an existing electrical installation at a workplace
- any electrical plant is installed and/or operated
- introduction of a work practice or procedure associated with electrical plant that may present a risk to health and safety.



### Electrical installations – Hazard identification, risk assessment and control of risk

**Regulation 2.5.6** (1) An employer must ensure –

- (a) that hazards are identified and risks assessed in accordance with regulation 1.3.2 –
  - (i) before the connection and supply of electricity to a new electrical installation at a workplace; and
  - (ii) before the modification, maintenance or repair of an existing supply of electricity to or at a workplace, or of an existing electrical installation at a workplace; and
- (b) that any risks to health or safety arising out of a hazard identified under paragraph (a) are eliminated, or minimised and controlled, in accordance with regulation 1.3.3.

(2) All electrical installations within the scope of AS/NZS 3000 *Wiring Rules* must be designed, constructed, installed, protected, maintained and tested so as to comply with that standard on the basis that –

- (a) the standard as it exists at the time of installation of the electrical installation is the minimum standard that will apply; and
- (b) if the electrical installation is modified, it is the standard as it exists at the time of modification that will be the minimum standard that will then apply with respect to the modification.

### General requirement for hazard identification at the workplace

**Regulation 2.5.5** An employer must ensure –

- (a) that any electrical hazard at a workplace is identified and assessed in accordance with regulation 1.3.2; and
- (b) that any risks to health or safety arising out of an electrical hazard identified under paragraph (a) are eliminated, or minimised and controlled, in accordance with regulation 1.3.3.

## Hazard identification and risk assessment

**Regulation 1.3.2 (1)** An employer must, in relation to the implementation of these regulations, ensure that appropriate steps are taken to identify all reasonably foreseeable hazards arising from work which may affect the health or safety of employees or other persons at the workplace.

(2) If a hazard is identified under subregulation (1), an employer must ensure that an assessment is made of the risks associated with the hazard.

(3) In carrying out an assessment under subregulation (2), an employer must, as far as is reasonably practicable, determine a method of assessment that adequately addresses the hazards identified, and includes one, or a combination of two or more, of the following:

- (a) a visual inspection;
- (b) auditing;
- (c) testing;
- (d) technical or scientific evaluation;
- (e) an analysis of injury and near-miss data;
- (f) discussions with designers, manufacturers, suppliers, importers, employers, employees or other relevant parties;
- (g) a quantitative hazard analysis.

(4) Without limiting the operation of subregulations (1) and (2), the identification of hazards and the assessment of associated risks must be undertaken-

- (a) before the introduction of any plant or substance;
- (b) before the introduction of a work practice or procedure;
- (c) before changing the workplace, a work or work practice, or an activity or process, where to do so may give rise to a risk to health or safety.

Once the hazards have been identified, the risk should be assessed. This should include at least one of the following:

- visual inspection
- auditing
- testing
- technical or scientific evaluation
- an analysis of injury and near-miss data
- discussions with designers, manufacturers, suppliers, importers, employers, employees or other relevant parties
- quantitative hazard analysis.

## HIERARCHY OF CONTROL

Upon completion of hazard identification and risk assessment, ensure that the identified hazards are eliminated. If the hazard cannot be eliminated, implement the following controls in the order set out below to minimise the risk.

1. Engineering controls including substitution, isolation, modifications to design and guarding.

For example:

- substitution - replace electric tools with pneumatic tools in wet environments
- isolation - isolate the electric supply to overhead power lines before working near them
- modification to design - use underground power distribution to reduce the risk of contact with overhead power lines.

2. Where engineering controls cannot fully contain the safety risks, introduce administrative controls in work practices to reduce the risk and limit employee exposure. For example:

- banning the use of electrical tools in the rain, set minimum safe approach distances when working near overhead power lines.

3. If implementing the engineering and/or administrative controls does not minimise the risk, provide appropriate personal protective equipment and ensure its use.

For example:

- personal protective equipment - use protective clothing, insulating gloves, mats and insulated tools when working on or near 'live' equipment

Note: refer to the *Regulations* under the *Electricity Act 1996, subdivision 2*.

### Control of risk

1.3.3 (1) An employer must, on the basis of a risk assessment under regulation 1.3.2, ensure that any risks to health or safety arising out of work are eliminated or, where that is not reasonably practicable, minimised.

(2) An employer must, in the implementation of subregulation (1), ensure that the minimisation of any risk is achieved by the application of the following hierarchy of control measures:

- (a) firstly, the application, so far as is reasonably practicable, of engineering controls, including substitution, isolation, modifications to design and guarding and mechanical ventilation;
- (b) secondly, if steps taken under paragraph (a) do not minimise the risk, the application, so far as is reasonably practicable, of administrative controls, including safe work practices;
- (c) thirdly, if steps taken under paragraph (a) and (b) do not minimise the risk, the provision of appropriate personal protective equipment.

## ADDITIONAL REQUIREMENTS FOR AMUSEMENT STRUCTURES

### RCD REQUIREMENTS

Type II (30 mA) RCD protection is required for all amusement structures unless they are supplied from the unearthed output of a generator (built in accordance with AS 2790), supplied through an isolating transformer (built in accordance with AS/NZS 3108), or the supply is extra low voltage (less than 50 V AC).

*OHSW Regulations* require all new installations to have non-portable RCD protection.

### TAGGING AND TESTING

It is recommended that all electrical appliances connected by a flexible cord and plug including extension cords and 'power boards' should be tested and tagged in accordance with AS/NZS 3760. Protectively earthed equipment should be tested every 6 months and double insulated equipment every 12 months.

If the conditions under which the appliances are used are particularly demanding, testing may be required more frequently. In addition, portable RCDs should be 'push button' tested daily when the device is in use.

### ELECTRICAL DESIGN STANDARDS – AMUSEMENT STRUCTURES

All electrical work must comply with the requirements of AS/NZS 3000 *Electrical installations* (known as the 'Wiring Rules') and also with AS/NZS 3002, which is a requirement of AS/NZS 3000 for 'Shows and Carnivals'.

### FOR FURTHER INFORMATION:

- *OHSW Regulations* section 2.5.8 requires equipment supplied through a socket outlet to be regularly inspected, tested and provided with RCD protection. This includes equipment that is:
  - hand held; or
  - moved while in operation; or
  - moved between operations in circumstances where damage to the electrical plant or to a flexible supply cord could reasonably occur; or
  - where its safety could be affected by the operating environment.

In addition, all new installations require fixed (non-portable) RCD protection.

- AS 3533.2 *Amusement rides and devices* requires:
  - exposed lamps installed within arms reach of the public (usually defined as vertically 2500 mm from ground) to be RCD protected
  - RCDs and isolation transformers to be tested in accordance with AS/NZS 3760
  - an additional inspection and testing regime (see appendix K). To adopt this, compliance with AS/NZS 3760 would be required as well as some additional polarity tests for leads and socket outlets, general inspection and testing of wiring to ensure no live parts are exposed and earthing is satisfactory. That is, compliance with the general requirements of *OHSW Regulation 2.5.7* (refer to page 12, reference 2)
  - 'pendant' controls and 'electrified metallic grid' supplies be extra-low voltage.
- *Electricity Act and Electrical (General) Regulations* (refer to page 12, reference 3 and 4) and the *OHSW Act and OHSW Regulations* (refer to page 12, reference 1 and 2) requires compliance with AS/NZS 3000.
- AS/NZS 3000 *Electrical installations* (known as the 'Wiring Rules') requires RCD protection where there is an increased risk (e.g. carnival and amusement structures would probably be considered to represent an increased risk). Compliance with AS/NZS 3002 is also required.
- AS/NZS 3002 *Electrical installations – Shows and Carnivals* requires all plugs and sockets (including 3 phase) have RCD protection and that all fixed and portable electrical equipment be inspected and tested in accordance with AS/NZS 3760 (as modified by that standard).

## ELECTRICAL SAFETY AND LEGISLATION

The legislation covering electrical safety in the workplace in South Australia includes:

### **1. Occupational Health, Safety and Welfare Act 1986**

### **2. Occupational Health, Safety and Welfare Regulations 1995**

The *OHSW Act and OHSW Regulations* place a duty of care on employers and employees to ensure safety in the workplace. The Regulations use the principle of hazard identification, risk assessment and risk control to minimise the risk of injury in the workplace. The focus of this legislation is on the equipment that is plugged into power points. There are also specific requirements in the Regulations for the use and testing of RCDs in the workplace.

### **3. Electricity Act 1996**

### **4. Electricity (General) Regulations 1997**

The Office of the Technical Regulator administers the *Electricity Act and Electricity (General) Regulations*. This legislation focuses on the safe design of electrical installations and requires compliance with AS/NZS 3000. The electrician, at the completion of any new electrical work, must issue a Certificate of Compliance. For further information contact the Office of the Technical Regulator.

### **5. Plumbers, Gas Fitters and Electricians Act 1995**

### **6. Plumbers, Gas Fitters and Electricians Regulations 1995**

The Office of Consumer and Business Affairs within the Attorney-General's Department administers a system for the licensing of electrical contractors and the registering of electrical workers (Electrician's licence).

### **7. Electrical Products Act 2000**

### **8. Electrical Products Regulations 2001**

The Office of the Technical Regulator administers a 'registration' and 'approval' system for certain electrical products (proclaimed articles) such as common domestic appliances, which must be tested according to the relevant Australian Standard – Approval Test Specification (AS/NZS 3100, AS/NZS 3200 and AS 3300 series).

# ELECTRICAL SAFETY - HAZARD CHECKLIST AND TEST RECORD

## HAZARD CHECKLIST

This hazard checklist will help you to identify potential electrical hazards. It is not intended to cover the technical and complex safety issues experienced by electrical contractors and the like.

**Please note that the hazard checklist and test record can be photocopied as required.**

If you are unsure or undecided about an answer, then tick the shaded box.

*Ticks in the shaded boxes indicate that action may be needed. Consult a qualified electrician for advice on the appropriate course of action and/or repair.*

## INSPECTION AND TESTING

Does your workplace have inspection, testing and maintenance procedures in place to ensure that electrical apparatus is safe to use? YES  NO

*TIP: Adopting the 'testing and tagging' Australian Standard AS/NZS 3760 In-service inspection and testing of electrical equipment, is one way to achieve the required level of safety for electrical equipment.*

Is there any evidence of damage to the 'permanent' wiring, cables or electrical enclosures in the workplace? YES  NO

Is there any evidence of damage to any electrical apparatus or equipment in the workplace? YES  NO

Are there any damaged or loose power points or switches? YES  NO

Is outer protective insulation or sheath of any cable damaged or 'pulled back' exposing the inner wires? YES  NO

Are exposed live wires or conductors accessible without the use of a tool or key? YES  NO

Are there any accessible 'bare' wires inside the switchboard? YES  NO

### RESIDUAL CURRENT DEVICES (RCDs)

Is RCD protection provided for all electrical equipment that is:

hand held, or	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
moved while in operation, or	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
moved from place to place, or	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
operated in a demanding environment?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
If the workplace is a new installation (built after 1996), is fixed (non-portable) RCD protection provided for all socket outlets?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Are the RCDs being tested as required? (refer to the section on Testing Intervals)	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
If you are on a construction site, is RCD protection provided for all of the socket outlets on the switchboards?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

### WORK PRACTICES

Are staff aware of the hazards and risks associated with the use of electricity in the workplace?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Are qualified electricians engaged to undertake electrical work as required?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Has the electrician issued a Certificate of Compliance on the completion of all electrical work?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Are extension cords left lying in walkways or other places where they can be damaged by passing traffic or cause a trip hazard?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Is portable electrical equipment operated in wet conditions or near water?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Are cranes, elevating work platforms, scaffolding or other equipment or materials operated within close proximity to overhead power lines?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>





# SAFework SA

## HELP AND EARLY INTERVENTION CENTRE

100 Waymouth Street, Adelaide

### HELP CENTRE

Telephone: **1300 365 255** or **(08) 8303 0400** for mobile and interstate callers

Email: [help@safework.sa.gov.au](mailto:help@safework.sa.gov.au)

To report all serious workplace accidents and incidents telephone **1800 777 209** (24 hour service)

### LIBRARY

Telephone: (08) 8204 8877

Facsimile: (08) 8204 8883

Email: [library@safework.sa.gov.au](mailto:library@safework.sa.gov.au)

### BOOKSHOP

Telephone: (08) 8204 8881 or (08) 8204 8882

Facsimile: (08) 8204 8883

Email: [bookshop@safework.sa.gov.au](mailto:bookshop@safework.sa.gov.au)

Opening hours from 8.30am - 5.30pm,

Monday to Friday (the Help Centre closes at 4.15pm on Wednesdays)

### HEAD OFFICE

Level 3, 1 Richmond Road, Keswick

GPO Box 465, Adelaide, SA 5001

DX 715, Adelaide

### COUNTRY OFFICES

#### BERRI

30 Kay Avenue, Berri

PO Box 346, Berri SA 5343

Telephone: **(08) 8595 2199**

#### MOUNT GAMBIER

Level 1, 11 Helen Street, Mount Gambier

PO Box 871, Mount Gambier SA 5290

Telephone: **(08) 8735 1199**

#### PORT LINCOLN

73-75 Tasman Terrace, Port Lincoln

PO Box 2862, Port Lincoln SA 5606

Telephone: **(08) 8688 3057**

#### PORT PIRIE

Level 1, 104 Florence Street, Port Pirie

PO Box 462, Port Pirie SA 5540

Telephone: **(08) 8638 4777**

#### WHYALLA

15-17 Horwood Street, Whyalla

PO Box 696, Whyalla SA 5600

Telephone: **(08) 8648 8733**

To speak to SafeWork SA in a language other than English, contact the Interpreting and Translating Centre on (08) 8226 1990 and ask them to contact SafeWork SA. This interpreting service is available at no cost to you.

[www.safework.sa.gov.au](http://www.safework.sa.gov.au)