

**Guide to testing and tagging
portable electrical equipment
and residual current devices
at workplaces**

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Resources Safety



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Acknowledgement

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Objective

The *Occupational Safety and Health Act 1984* (OSH Act) and *Mines Safety and Inspection Act 1994* require electrical equipment at workplaces to be safe and not expose workers to hazards.

As prescribed by the Occupational Safety and Health Regulations 1996 and Mines Safety and Inspection Regulations 1995, the person having control of a workplace or access to that workplace, i.e. employer, self-employed person, main contractor, must ensure that all portable plug-in electrical equipment and residual current devices (RCDs) at the workplace are safe and appropriately inspected, tested and maintained by a competent person.

This document will assist with regulatory compliance by providing guidance on who can inspect and/or 'test and tag' such portable equipment and devices.

(OSH regulations; regulations 3.59 to 3.63, 4.37 and 4.38)

(MSI regulations; regulation 5.27),

Definitions

The term *electrical equipment* is used here to describe electrical articles that are not part of a fixed electrical installation but are intended to be connected to an electricity supply (either fixed installation or generator) by a flexible cord or connecting device. Typical examples are portable, hand-operated and moveable plug-in electrical appliances, flexible extension cords and power outlet devices.

The term *residual current device* means a device intended to isolate supply to protected circuits, socket-outlets or electrical equipment in the event of a current flow to earth that exceeds a predetermined value.

What legislation applies?

Construction and demolition sites

Regulation 3.60 of the OSH regulations requires that all RCDs be kept in a safe working condition and tested regularly.

Regulation 3.61 of the OSH regulations requires the employer, self-employed person or main contractor at a workplace to ensure compliance with Australian Standard AS/NZS 3012:2003 *Electrical installations – Construction and demolition sites*.

This standard sets out minimum requirements for the design, construction and testing of electrical installations that supply electricity to appliances and equipment on construction and demolition sites. It also sets out minimum requirements for the in-service testing of RCDs and portable, relocatable and fixed electrical equipment used on construction and demolition sites.

Regulation 3.62 of the OSH regulations requires the testing and tagging of portable electrical equipment or a portable RCD on any construction or demolition site to be carried out by a competent person. The tester's name must appear on the tag, along with the test or re-test date, as specified in AS/NZS 3012:2003. If the tester is a licensed electrician, the tester's licence number must also be included on the tag.

Regulation 3.63 of the OSH regulations, states that any worker bringing a portable item of electrical equipment or RCD to a construction or demolition site that is required to be tested under AS/NZS 3012:2003, **must**, before the item is used:

- provide the main contractor with a record of the relevant testing data; and
- ensure the tag bears the name of the competent person who conducted the test.

Mining operations

Regulation 5.27 of the MSI regulations prescribes that each responsible person at a mine site must ensure that a maintenance system is in place at the mine so that electrical equipment and installations are maintained in a safe working order.

The maintenance system must include quarterly testing and tagging of any portable appliances normally used in heavy operating environments, such as workshops, mining areas, processing areas and construction sites.

All other workplaces

Regulation 3.60 of the OSH regulations requires that all RCDs be kept in a safe working condition and tested regularly.

Regulation 4.37 of the OSH regulations deals with the duties as to the use of any electrical equipment or RCD at workplaces other than construction and demolition sites, and mining operations. Under this regulation, an employer, self-employed person, main contractor, person having control of a workplace or person having control of access to a workplace must ensure that electrical equipment and RCDs at the workplace are subject to the appropriate checks, tests and inspections necessary to reduce the risk of injury or harm occurring to a person at that workplace.

Who may test electrical equipment?

A **competent person** must undertake the testing of electrical equipment. This is a person who has acquired, through training, qualification or experience, or a combination of these, the knowledge and skills required to test electrical equipment competently.

The testing of electrical equipment requires specific expertise and interpretation of results and, therefore, can only be carried out by appropriately qualified or trained people who are able to recognise electrical hazards or potentially unsafe conditions.

The person carrying out the tests must know what to:

- look at;
- look for; and
- do.

The two levels of competency associated with this type of work are summarised below.

- The first is where a licensed electrician with electrical qualifications and skills uses electrical test instruments that give actual readings requiring technical interpretation (eg. licensed electrician using an insulation resistance meter and ohmmeter).

- The second is where a person not qualified in electrical work uses a pass–fail type of electrical test instrument known as a portable appliance tester (PAT), which automatically tests electrical equipment plugged into it. The result requires no technical interpretation. In this case, the person would need to have been trained and have satisfactorily completed a competency-assessed training course on testing and tagging using a PAT.

The course needs to have been conducted by a registered training organisation accredited to deliver the training under the vocational education and training (VET) system.

Note: People carrying out the testing should ensure they remain competent to use the appropriate testing equipment.

Who may inspect electrical equipment?

The inspection of electrical equipment does not require tagging unless the electrical equipment is being used on a construction or demolition site or mining operation.

Inspections of electrical equipment not on construction or demolition sites or mining operation may range from the users of equipment regularly inspecting the equipment and reporting damage or potential damage to the employer, to a more formal inspection program for high risk equipment.

Who may inspect electrical equipment will depend upon the risk associated with the equipment and the level of knowledge required to assess whether the equipment is damaged. A further consideration is whether the person carrying out the inspection will be required to remove the equipment from use and refer it for further assessment by a competent person, or is competent to fully assess the condition of the electrical equipment at the time of inspection.

Who may test residual current devices?

The test for the operating time of an RCD requires specific technical expertise and interpretation of results and, therefore, can only be carried out by an appropriately qualified or trained person. This means a licensed electrician or a person who has successfully completed a competency-assessed training course in the use of an RCD tester.

The course needs to have been conducted by a registered training organisation accredited to deliver the training under the vocational education and training (VET) system.

Note: People carrying out the testing should ensure they remain competent to use the appropriate testing equipment.

Construction and demolition sites

The tests on RCDs must be carried out by a competent person in accordance with the requirements of AS/NZS 3012:2003 and each test result must be recorded.

Mining operations

Where a portable RCD is used at a mine, the employer must ensure that it is kept in a safe working condition and tested on a regular basis by a competent person; and

Where a non-portable RCD device is installed at the mine, the employer must ensure that each device is kept in a safe working condition and tested on a regular basis by a licensed electrician.

All other workplaces

Where a portable RCD is used at a workplace, the employer or self-employed person must ensure that it is kept in a safe working condition and tested regularly by a competent person.

Where a non-portable RCD device is installed at a workplace, the person with control of the workplace must ensure that it is kept in a safe working condition and tested regularly by a competent person.

What key competencies are required?

The key competencies required by a competent person who carries out testing and tagging are listed below. These apply to both competent persons using a PAT and licensed electricians.

- Being able to distinguish between electrical equipment that is double insulated and electrical equipment that is protectively earthed, and identify the appropriate test for each type.
- Understanding the limitations of his or her training and not attempting to test electrical equipment he or she has not been trained to do.
- Understanding how the OSH or MSI regulations and relevant guidance material apply to electrical equipment used at the workplace.
- Knowing how to use the relevant testing instruments properly, interpret and record results for compliance with the OSH or MSI regulations.
- In accordance with AS3012:2003
 - knowing about, and being able to carry out, a visual examination of electrical equipment
 - being able to carry out the earthing continuity tests on electrical equipment
 - being able to carry out the insulation resistance or earth leakage tests on electrical equipment

Using a portable appliance tester

A competent person, who does not have an electrical qualification, using a PAT to test and tag electrical equipment should be able to demonstrate to the employer, main contractor or owner of the electrical equipment that he or she:

- has successfully completed a nationally accredited training course, run by an registered training organisation, on the use of a PAT for in-service safety inspection and testing of electrical equipment;
- has been issued with a statement of attainment or certificate from the registered training organisation that indicates the registration number of the registered training organisation;
- has the appropriate PAT and is competent in its safe and effective use;
- uses a PAT that has been regularly checked and verified as per the manufacturer's instructions;
- has carried out both visual inspections and electrical tests on electrical equipment in accordance with the requirements of AS/NZS 3012:2003;
- has kept, in a logbook, proof of competency and records of testing activity carried out;
- can make the logbook available for audit purposes within 24 hours of request; and
- has used and understood the tagging system, where required.

What are the tagging requirements?

Construction and demolition sites, and mining operations

After inspecting or testing portable electrical equipment or an RCD used on a construction or demolition site or mining operation, the item must be tagged. Tagging should also be undertaken following the inspection or testing of a non-portable RCD.

The tagging must be done by a competent person and in accordance with AS/NZS 3012:2003. The name of the competent person who performed the test must be clearly and legibly marked on the tag.

Workers who bring portable electrical equipment or an RCD to a construction or demolition site or mining operation must ensure the attached tag is current and bears the name of the competent person who conducted the test, and the test or re-test date.

All other workplaces

For workplaces other than construction or demolition sites or mining operations, portable electrical equipment and RCDs are not required to be tagged. However, there should be evidence that a maintenance program is in place.

What needs to be inspected, tested and tagged, and how often?

All portable electrical equipment and RCDs used in a workplace must be regularly inspected and tested in accordance with the OSH or MSI regulations, as appropriate.

The frequency of inspection and testing varies for different work situations:

- construction and demolition sites — the inspection and testing intervals must be in accordance with **AS/NZS 3012:2003**;
- mining operations — quarterly testing and tagging must be carried out on all portable appliances normally used in heavy operating environments such as workshops, mining areas, processing areas, construction sites and similar places; and
- all other workplaces — require a risk management approach to determine the type of inspection and if necessary any testing required.

Inspection needs to be done more frequently in an operating environment where electrical equipment is, during normal usage, subjected to adverse operating conditions likely to result in damage to the electrical equipment, eg. potential exposure to moisture, heat, vibration, corrosive chemicals or mechanical damage. The risk assessment should determine where more specific testing of electrical equipment is necessary and the frequency of such testing.

Who may authorise workers to ‘test and tag’?

Irrespective of who does the work, the worker must be authorised by the employer for the workplace. The person authorising the work must be satisfied that:

- the inspection and testing program is appropriate and adequate for the needs of the workplace; and
- the workers carrying out testing and tagging are competent to do the work (i.e. licensed electrician or appropriately trained competent person).

Note: Competent persons will need to produce their statement of attainment or certificate on request to an employer, WorkSafe or mines inspector as appropriate, main contractor, labour hire organisation, a person having control of or control of access to a workplace, or an elected occupational safety and health representative.

What happens with damaged or non-complying equipment?

People who inspect and test portable electrical equipment and RCDs have a responsibility to:

- identify any defects affecting safety; and
- record and label faulty equipment.

Where testing identifies equipment that is damaged or non-complying, it must be withdrawn from service immediately.

- When electrical equipment or an RCD at a workplace has been damaged such that the risk of injury or harm to a person is increased, the employer, main contractor, self-employed person, or person having control of or control of access to the workplace must ensure that the item is:
 - immediately tagged 'out of service' against further use; and
 - a competent person assesses the item or
 - the item is discarded

The competent person should assess the extent of the damage and advise the nature of the damage and whether the item can be repaired.

For electrical equipment, including cords and plugs, connected to a supply of electricity of up to 240 V, the competent person may undertake 'like-for-like' replacement of components.

However, any other or further repairs should only be performed by a licensed electrician, the equipment manufacturer or an authorised service agent.

After components have been replaced or other repairs completed, the electrical equipment must be inspected and tested by the competent person before returning it to service.

What records need to be kept?

Copies of the results of all inspections, tests and maintenance should be retained by the relevant duty holder and the competent person who carried out the work if not employed by the equipment owner. In particular, the following information should be kept:

- name of the person who made the inspection or carried out the test or maintenance;
- date on which, or dates over which, the inspection was made or the test or maintenance was carried out;
- result or outcome of the inspection, test or maintenance;
- date by which the next inspection and test should be carried out;
- if applicable, licence or certificate number of the competent person who carried out the electrical inspections and tests; and
- if applicable, plant number or inspection number of the item or items inspected.

Where required by regulation, the record may be a logbook, register or a computerised database, and should be located conveniently so that managers can access the information. The employer should also keep a record of how the competency for the person who carried out the testing and tagging was determined. WorkSafe and mines inspectors, as appropriate, have the right to examine the records kept by employers.

For construction and demolition sites, the following documentation *must* be kept for all electrical equipment and RCDs:

- register of all equipment;
- record of formal inspections and tests;
- repair register; and
- record of all faulty equipment showing details of services and corrective actions.

When a worker brings portable electrical equipment or an RCD to a construction or demolition site, he or she must, before usage, provide the main contractor with a record of the relevant testing data. This practice should be followed at other workplaces.

Information

EnergySafety has produced an information booklet on *Safety Guidelines for Electrical Workers*, which provides advice on how electrical safety can be achieved and maintained. The booklet is available at www.energysafety.wa.gov.au

Copies of the Acts and regulations are available from the State Law Publisher (phone 9321 7688; www.slp.wa.gov.au).

Australian Standards can be purchased from the standards publisher, SAI Global (phone 13 12 42; www.saiglobal.com/shop).

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