

COMPETENT PERSON FOR TESTING AND TAGGING ELECTRICAL EQUIPMENT

GUIDE 2007

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What is this Guide about?

This guide will help you comply with the legislative requirements in clause 64 and 65 of the *Occupational Health and Safety Regulation 2001* (OHS Regulation) by providing guidance on who can 'test and tag' plug-in electrical equipment at a place of work. As an employer or self employed person, you are responsible for ensuring the portable plug-in electrical equipment in your workplace is safe and where required by the OHS Regulation, regularly inspected, tested and maintained by a competent person.

Throughout this guide the term 'electrical equipment' is used to describe electrical articles that are not part of a fixed electrical installation, but are intended to be connected to a fixed installation or generator, by means of a flexible cord and/or connecting device. Typical examples are portable, hand operated and moveable plug-in electrical appliances, flexible extension cords, power outlet devices and similar plug-in electrical equipment used at a workplace.

1. Who can test and tag?

A competent person as defined in the OHS Regulation must do the testing of your plug-in electrical equipment. This is a person who has acquired through training, qualification or experience, or a combination of them, the knowledge and skills enabling that person to correctly perform a task. For the testing of plug-in electrical equipment this means a person who can safely and correctly carry out the inspections and tests described in the relevant Australian Standard, *AS/NZS 3760 In-service safety inspection and testing of electrical equipment*. The person carrying out the inspections and tests must know what to look at, what to look for and what to do.

The testing of electrical equipment requires a level of expertise and interpretation of results and, therefore, can only be carried out by appropriately qualified **or** trained personnel who are able to recognise electrical hazards or potentially unsafe conditions. Basically, there are two levels of competency associated with this type of work:

- The first level is where an electrician with electrical qualifications and skills uses electrical test instruments that give actual readings that requires technical interpretation, for example, an electrician using an insulation resistance meter and ohmmeter.
- The second level 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). A PAT is an electronic instrument that automatically tests electrical equipment plugged into it. The result it indicates requires no technical interpretation. In this case the person would need to have been trained and satisfactorily completed a VETAB competency assessed training course on testing and tagging using a PAT.

Note: VETAB approved training courses on how to use a PAT are available from the NSW Department of Technical and Further Education (TAFE) and some other registered training organisations (eg Safety Testing Electrical Appliances – 6033), which is available from TAFE.

2. Authorisation of personnel doing testing and tagging

Irrespective of who does the work, the personnel must be authorised by the employer. The person authorising the work must be satisfied the inspection and testing program is appropriate and adequate for the needs of the workplace and the personnel carrying out the testing and tagging are competent to do the work, ie an electrician or a competent person trained in the use of a PAT (refer to section 4 for the obligations of competent persons who use a PAT).

Note: A competent person trained in the use of a PAT must produce their statement of attainment or certificate on request to an employer, inspector, principal contractor, contractor, elected OHS representative or authorised representative.

3. What are the requirements in NSW?

Clause 64 of the OHS Regulation requires that inspection, testing and maintenance of electrical equipment be carried out by a 'competent person'.

For construction work (as defined in Clause 3 of the OHS Regulation) the testing and tagging requirements are described in the *Code of Practice: Electrical practices for construction work*.

For electrical equipment that is used in a hostile operating environment (as defined in Clause 64 of the OHS Regulation) the testing and tagging requirements are described in the Australian Standard AS/NZS 3760 In-service safety inspection and testing of electrical equipment (AS/NZS 3760).

Both sets of requirements require the person doing the testing and tagging to use electrical judgement therefore the work can only be carried out by an electrician or a competent person trained in the use of a PAT.

4. Obligations of competent persons who use a Portable Appliance Tester (PAT)

A non-electrically qualified competent person who uses a PAT to carry out testing and tagging of electrical equipment should be able to demonstrate the following competencies to the employer or owner of the electrical equipment:

- Completed a VETAB approved training course or equivalent State regulator's approved training course on the use of a portable appliance tester for in-service safety inspection and testing of plug-in electrical equipment that has been conducted by a registered training organisation (RTO). Refer to Appendix 1, Model Course Framework – Testing and Tagging Electrical Equipment using a PAT
- Been issued with a statement of attainment or certificate from the RTO that has an identifying number particular to the holder of the qualification, which also indicates the number of the RTO
- Have the appropriate PAT tester and be competent in its safe and effective use
- Use a PAT tester that has been regularly checked and verified as per the manufacturer's instructions
- Carry out both visual inspection and electrical tests on electrical equipment in accordance with the requirements of the Standard, AS/NZS 3760
- Keep in a logbook proof of competency and records of testing activity carried out
- Have the logbook available for audit purposes within 24 hours of request
- Use a tag that identifies the person who carried out the test.

Note: The printed name and license/certificate number of the person who performed the tests must be shown on the tag and be legible.

Note: VETAB means the New South Wales Vocational Education and Training Accreditation Board.

5. What are the key competencies required for testing and tagging electrical equipment?

The key competencies that are required by a person who carries out testing and tagging are:

1. knowing about, and being able to carry out, a visual examination of electrical equipment in accordance with the Standard, AS/NZS 3760
2. being able to distinguish between electrical equipment that is double insulated and equipment that is protectively earthed and identify the appropriate test for each type
3. being able to carry out the earthing continuity tests on electrical equipment in accordance with the Standard, AS/NZS 3760

4. being able to carry out the insulation resistance or earth leakage tests on electrical equipment in accordance with the Standard, AS/NZS 3760
5. knowing how to use the relevant testing instruments properly, interpret and record results for compliance with the OHS Regulation and AS/NZS 3760
6. understanding the limitations of their training and not attempt to test electrical equipment they have not been trained to do
7. understanding how the *Occupational Health and Safety Regulation 2001*, the Standard AS/NZS 3760, Codes of Practice and other WorkCover NSW guidance applies to electrical equipment used at the workplace.

6. What electrical equipment needs to be regularly inspected and tested?

Not all workplace electrical equipment requires regular inspection and testing, however some equipment is used in a situation that does pose a risk to the user due to the nature of its location and type of use.

The OHS Regulation lists the following workplace environments, where electrical equipment **must** be regularly inspected, tested and maintained:

- electrical equipment used in construction work, and
- electrical equipment that could be affected by a hostile operating environment. This is an operating environment at a place of work where electrical equipment is, in its normal use, subjected to operating conditions that are likely to result in damage to the equipment. For example, workplaces where electrical equipment is likely to be damaged by moisture, heat, vibration or workplaces where corrosive chemicals are used or workplaces where electrical equipment could be subject to mechanical damage.

Electrical equipment not referred to in the above categories **does not** require regular testing. In this situation you must, in accordance with the risk management requirements of the OHS Regulation, carry out a risk assessment of your electrical equipment.

Following completion of the risk assessment you may determine that in addition to the above legislative requirements testing of other items of identified electrical equipment may be warranted.

Note: A risk assessment must also be carried out if there is a change in electrical equipment use / location or if an electrical incident occurs at the workplace involving electrical equipment to which a risk assessment relates.

7. How often should I 'test and tag' my electrical equipment?

The frequency of inspection and testing varies for different work situations. For construction work the inspection and testing intervals are described in the *Code of Practice: Electrical practices for construction work*.

For all other workplaces the inspection and testing intervals are described in the Standard, AS/NZS 3760 but **only** need be applied to electrical equipment that has been assessed as operating in a hostile operating environment as described in clause 64 of the OHS Regulation.

8. Testing of portable Residual Current Devices (RCDs)

The test for the operating time of an RCD requires a level of technical expertise and interpretation of results and, therefore, can only be carried out by appropriately qualified or trained personnel. For example, an electrician or a competent person who has been trained and assessed in the use of an RCD tester. The tests must be carried out in accordance with the requirements of the Standard, AS/NZS 3760 and the results recorded.

9. Non-compliant equipment

Competent persons who inspect and test electrical equipment have a responsibility to discover any defects affecting safety, record and label faulty equipment, which fails to comply with the criteria outlined in the Standard, AS/NZS 3760. The competent person must fit an appropriate label to the faulty equipment, record the results and inform the employer or the equipment owner of the defect, so that necessary remedial action can be taken. The choice of remedial action, disposal or other corrective action is to be determined by the employer or equipment owner.

10. Replacement of plugs and sockets

Plugs and extension sockets may be replaced by a non-electrically qualified person provided the person has been trained, assessed and found competent to fit plugs and sockets according to the manufacturer's instructions. On completion of this work the items have to be inspected, tested and tagged. When extension cord sockets are replaced they must be replaced with the shrouded type that offer improved electrical safety.

Note: Plugs and extension lead sockets used in construction work should be of the non-rewirable (moulded) type, or a transparent (clear) type. This requirement relates to equipment used in construction work and does not extend to electrical equipment used in other working environments – except the health industry sector, where the use of transparent plugs is required for new equipment, if rewirable (refer Australian Standard, AS/NZS 3200.1).

Although not mandatory for other working environments, transparent plugs and sockets make it easy to check internal connections at the time of inspection, consideration should be given to fitting such plugs/sockets to existing (ie older) equipment at the time of repair, or if replacing the plug or socket.

11. Repair of electrical equipment

A person must not repair electrical equipment unless the person has been trained and is technically competent to do so. The repair of most electrical equipment requires specialist knowledge and expertise if the faulty or damaged equipment is to be restored to its safe operating condition. It is often more cost effective to replace low cost items than to repair them.

12. What records must be kept?

Employers and self employed persons must keep a record of all inspections, tests and maintenance carried out on electrical equipment in accordance with the record keeping provisions of clause 65 of the OHS Regulation.

The results of all inspections, tests and maintenance must be recorded and a copy retained by the employer and also the person who carried out the work when not in the employment of the equipment owner. In particular, the following information must be recorded:

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

The employer should also keep a record of how competency for the person that carried out the testing and tagging was determined.

Records can range from logbooks, registers or a computerised database. They should be located conveniently so that managers, employees and employee representatives can access the information.

Note: WorkCover inspectors, OHS representatives, employees and authorised employee representatives have the right to examine the records of employers, which are required to be kept by clause 65 the OHS Regulation.

13. What guidance is available to help me?

WorkCover has produced the *Electrical Equipment Risk Assessment Checklist* that provides employers with a format for recording the outcome of an electrical equipment risk assessment and the results of any testing carried out on your electrical equipment. Further guidance on carrying out a risk assessment can be found in the *Code of Practice – Risk Assessment*.

Electrical practices on construction sites, which include inspection, testing and risk assessment of electrical equipment, are covered separately by the requirements of the *Code of Practice – Electrical practices for construction work* and the supporting guide, *Contractor's Checklist – Electrical practices for construction work*.

WorkCover has gazetted Australian Standard AS/NZS 3760, In-service safety inspection and testing of electrical equipment as an approved industry code of practice in the *Code of practice: Technical guidance*. The Standard provides employers and competent persons with practical guidance on inspection requirements and testing methods for electrical equipment used at the workplace.

Note: Persons who carry out testing should have access to the Standard to verify inspection and testing requirements for the various classes of electrical equipment.

In addition to the codes of practice and the electrical equipment risk assessment checklist, WorkCover has also produced a list of frequently asked questions (FAQs), on the subject of testing and tagging. To view this guidance material and the FAQs, visit WorkCover's website at www.workcover.nsw.gov.au

14. How can I access a copy of the OHS legislation?

The OHS Act 2000 and the OHS Regulation 2001 can be viewed at www.legislation.nsw.gov.au

15. Where can I get a copy of the Australian Standard AS/NZS 3760?

Australian Standards can be purchased from the Standards publisher - SAI Global by contacting the Customer Service Centre on **13 12 42** or over the net at www.saiglobal.com/shop

Further Information

For more information or assistance contact your local WorkCover NSW office listed in the telephone directory, go to the WorkCover website www.workcover.nsw.gov.au or contact the WorkCover Assistance Service on **13 10 50**.

APPENDIX 1

Model Course Framework – Testing and Tagging Electrical Equipment using a PAT

Introduction

This model course framework provides information for registered training organisations (RTOs) wanting to develop a recognised competency assessed training course for persons wanting to acquire the necessary knowledge and skills of a 'trained competent person' to enable them to safely and correctly undertake inspection, testing and tagging of single phase 230 volt electrical equipment to the requirements of the Standard, AS/NZS 3760 using a portable appliance tester.

The suggested structured learning time for new trainees is approximately 10 hours, which includes a two hour theory and practical assessment. Consideration should also be given to when the assessment is undertaken to ensure trainees understand and can apply critical aspects of learning and practice.

The subject areas listed below should be considered as the minimum training course requirements; RTOs may wish to develop additional topics as appropriate.

Persons successfully completing the training course are to be awarded a statement of attainment or certificate from the RTO that indicates the trainee's name and has an identifying number particular to the holder of the qualification. The name and contact details of the RTO should be displayed on the statement of attainment or certificate.

Unit 1 – Legislative framework

- OHS Act 2000 and the OHS Regulation 2001 as amended, including Clauses 64 and 65
- WorkCover Codes of Practice: *Technical Guidance* and *Electrical practices for construction work*
- Australian Standards: AS/NZS 3760 and AS/NZS 3012
- WorkCover's Electrical Equipment Risk Assessment Checklist
- understanding the risk assessment requirements relating to electrical equipment
- limitations of the training course.

Unit 2 – Basic electrical principles

- introduction to electricity, a.c. and d.c.
- electrical units, amps, ohms, volts
- electrical safety, electric shock
- circuit protection, fuses, circuit breakers, residual current devices (RCDs).

Unit 3 – Inspection and testing to AS/NZS 3760

- scope, definitions and test equipment limitations
- types of equipment
- types of insulation, Class 1 and Class 2
- how to safely use the test equipment
- visual inspection

- earthing continuity test
- insulation resistance test
- leakage current test
- interpretation of inspection and test results
- testing frequencies and electrical equipment risk assessments
- maintenance and re-calibration of a PAT.

Unit 4 – Record keeping and documentation

- OHS Regulation, clause 65 and AS/NZS 3760 requirements
- tagging requirements, hostile operating environments and construction sites
- maintenance of inspection, testing and electrical risk assessment records
- maintenance of competency logbook.

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