ELECTRICAL – Safety

General safety requirements >

Electrical Safety should be managed with the same systematic approach as all other Occupational Health and Safety issues in the workplace. This approach requires the identification, assessment and control of risks associated with electrical equipment, be it fixed, portable or temporary.

Legislation

Workplace Health and Safety Regulations outline the requirements in regard to electrical equipment and work practices. Regulation 62 requires all electrical installations, materials, equipment and apparatus at a work place to comply with AS:3000 and AS:3100. Note: there are additional requirements for construction 05.02.02 Safety inspection & testing of electrical equipment on construction sites.

Who is responsible

Every employer has a duty of care to ensure that their employees are safe from injury and risks to health while they are at work. For all electrical equipment and fixed wiring the employer must undertake hazard identification and risk assessment of these situations to eliminate risk of electrical hazards.

Identify the Hazard

All hazards associated with electrical equipment must be identified. This approach should be performed in consultation with the employer and workers.

Assess the risk

Risk is the likelihood that someone will be hurt, how they could be hurt, how much (severity), for how long and how often a person is exposed to the hazard. What could be the severity of the injury?

In the case of electrical hazards, death is frequently the result.

Control the Risk

Decide how the hazards/risks are going to be controlled. If elimination of the hazard is not possible, other controls should be implemented to reduce potential risks. These controls may include the use of residual current devices (RCDs) – safety switches, the implementation of a system for inspection of portable electrical equipment and extension cords to monitor risk controls associated with electrical faults, regular monitoring, record keeping and the testing of electrical equipment and fixed wiring, safe systems of work and personal protective equipment.

When should an RCD be used?

Where an electrical hazard exists in new or modified fixed wiring installations (other than lighting circuits) and the risk assessment identifies that the hazard can be controlled by the installation of an RCD, an RCD must be fitted.

Where electrical hazards are identified for existing wiring installations, a decision on the use of a non portable RCD is based on the practicality of the situation. Not all electrical equipment requires RCD protection. In some situations, equipment such as extension leads and desk top computers do not present a risk to their operations due to:

- The permanent nature of their location.
- How the equipment is used.
- The workplace/environment conditions in which the equipment is used.

Such equipment must however be periodically inspected and tested in accordance with the standard.

Your risk assessment should be used to determine the need for RCD protection.

Generally identifiable risks which do require RCD protection include:

- Hand held electrical equipment,
- Electrical equipment moved from place to place,
- Electrical equipment where damage to the electrical supply cord could occur,
- Electrical equipment that is used in an environment where damage to the appliance or to the electricity supply to that appliance could occur, such as wet and dusty conditions.

When SHOULD electrical equipment be inspected, tested and tagged?

All electrical equipment other than equipment situated in permanent locations or designed for extra low voltage, should be inspected, electrically tested, and tagged in accordance with Australian Standard AS 3760 In-service safety inspection and testing of electrical equipment. New equipment should be inspected and included on your electrical equipment register/maintenance schedule prior to being used. A visual inspection should be carried out each time electrical equipment is used to identify damaged leads, plugs etc.

Protection of extension leads

Flexible cords should be located in a position where they are not subject to mechanical or any other damage.

Frequency of testing

Generally the frequency of testing should be determined by the type of use and the environment in which the equipment is used, again, depending on your risk assessment. Remember though that in some cases, eg. wet areas this would be less than 12 months.

Competency required to test electrical equipment

The inspection, testing and tagging can be conducted by a person the employer has assessed as competent having the necessary skill, training or experience to conduct the tests, the competency table below identifies the level of competency required to perform certain tasks.

When electrical equipment is being hired out, inspection and testing must be carried out before each hire.

Task	Current Competency Level Required
Routine inspection of electrical equipment – checking for external damage, frayed or damaged cords etc.	Person who is familiar with the equipment, this could be the user of the equipment.
Protective earth testing of equipment	Person who is trained in the use of earth testing meters such as a continuity meter or ohmmeter.
Insulation resistance testing of equipment or isolation transformers	Person who has been trained in the use of insulation resistance testing meters, such as an insulation resistance meter or appliance tester.
Push button test of portable RCDs	Person who is using the RCD and has been instructed how to use the built in test button.
Performance test of portable RCDs – top measure the tripping time and tripping current	Person who is trained in the use of an RCD tester. This training could be by in-house personnel, qualified electrician, and trade school or by the supplier of the RCD tester.
Push button test on non portable RCDs	Person who is using the RCD and has been instructed how to use the built in test button.
Performance test of non portable RCDs – to measure tripping time and tripping current	Licensed electrician is required if it will be necessary to access the supply distribution board.

When should RCDs be tested?

Non-portable and portable RCDs in permanent positions need to be push button tested at least once a year to ensure that their tripping mechanism has not failed. Portable RCDs that are moved from place to place, need to be push button tested each day prior to their use.

It is also necessary to test the performance of the RCD. The test schedule for non-portable and portable RCDs in permanent positions is every three years, in accordance with the test procedure in the Australian Standard AS 3760.

For portable RCDs, the test schedule is every three months for construction and demolition sites, 12 months for industrial, two years for commercial and office environments and before each hire of hire equipment. For further clarification on specific workplaces refer to AS 3760.

Should the results of testing be retained?

Regulation 65 requires records to be kept of all tests. This information is useful to program future testing and tagging and will provide an inventory of electrical equipment. New electrical equipment into the workplace should also be added to this inventory.

Working with electrical hazards.

A risk assessment must be conducted when any person is required to work near exposed electrical cables or live electrical equipment. In these situations control strategies may include the disconnection of the electrical supply, installation of barriers, the development of safe systems of work and /or the use of appropriately skilled staff.

Other bulletins in this series include:

- 05.01.01 Residual Current Devices
- 05.01.02 Working Close to Overhead Powerlines
- 05.02.01 Electrical Safety Requirements for Construction Work
- 05.02.02 Safety Inspection and Testing of Electrical Equipment on Construction Sites

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