# REQUIREMENTS FOR RESIDUAL CURRENT DEVICES (RCD)

**General**

There is a requirement to minimise the electrical risks associated with the supply of electricity to 'plug in' electrical equipment by the use of an appropriate RCD in certain higher-risk workplaces.
(WHS Regulations Section 164 and Code of Practice Managing electrical risks in the workplace 2020 (SA).

Subject to the exceptions outlined below, the requirement to use an appropriate RCD applies when electrical equipment is:

- ☐ used in an environment in which the normal use of electrical equipment exposes the equipment to operating conditions that are likely to result in damage to the equipment, or a reduction in its expected life span, including conditions that involve exposure to moisture, heat, vibration, mechanical damage, corrosive chemicals or dust
- ☐ moved between different locations in circumstances where damage to the equipment or to a flexible electricity supply cord is reasonably likely;
- ☐ frequently moved during its normal use;
- ☐ forms part of, or is used in connection with, an amusement device.

This does not apply if the supply of electricity to the electrical equipment:

- does not exceed 50 Volts alternating current (AC); or
- is direct current (DC); or
- is provided through an isolating transformer that provides at least an equivalent level of protection; or
- is provided from a non-earthed socket outlet supplied by an isolated winding portable generator that provides at least an equivalent level of protection.

**Types of RCD**

There are two main types available:

- Non-portable RCDs
  Non-portable (or fixed) RCDs are installed at either the switchboard or a fixed socket outlet.
  Non-portable RCDs installed at the main switchboard will protect all the wiring and electrical equipment plugged into the relevant circuit(s).
- Portable RCDs
  Protect the electrical equipment that is plugged into them.
  Portable plug-type RCDs can be plugged into a socket outlet to protect a single piece of equipment. They can be incorporated into a power cable or can be the RCD unit alone, without a cord.
  Portable stand-alone units are incorporated into a power board. They provide multiple protected socket outlets and can provide RCD protection to multiple items of electrical equipment from one power board.

The WHS Regulations do not prescribe whether RCDs must be non-portable or portable. The most appropriate RCD will depend on the workplace environment and should be included on the Risk Assessment as a control measure.
For additional guidance refer to the Code of Practice "Managing electrical risks in the workplace" Appendix B "Advantages and disadvantages of non-portable and portable RCDs).

**Electrical equipment that requires RCD protection**

If the supply of electricity in any situation in a workplace is through a socket outlet not exceeding 20 amps to:

- all hand-held electrical equipment (e.g. drills, saws).
- portable electrical equipment that is frequently moved during its normal use.
- electrical equipment that is moved between different locations in circumstances where damage to the electrical equipment or flexible supply cord is reasonably likely (e.g. electric welders, portable bench saws and extension cords).
- the normal use of the electrical equipment exposes the equipment to operating conditions that are likely to result in damage to the equipment or a reduction in its expected life span.

The electrical equipment must be protected by an RCD with a tripping current not greater than 30 milliamps.

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A RCD must be:

- for a new electrical installation – a non-portable RCD; and
- for a new or modified circuit on an existing electrical installation – a non-portable RCD; and
- for an existing electrical installation where where neither of the above apply – either a non-portable RCD or a portable RCD where a portable RCD is connected at the socket outlet supplying electricity to any electrical equipment.

The requirement for an RCD does not apply where:

- 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 risk to the risk of electric shock; or
- the supply of electricity is to electrical plant (see note below) and is –
  - direct current (DC); or
  - provided through an isolating transformer that complies with AS/NZS 61558 Safety of power transformers, power suplly units and similar; or
  - provided from a portable generator that complies with AS 2790 Electricity generating sets – Transportable (Up to 25 kW)

(Note: Electrical plant means plant which consumes, converts or generates electricity.)

**Inspection and testing**

RCDs used at the workplace, both portable and non-portable, must be tested regularly by a **competent person, for the purposes of carrying out inspection and testing of electrical equipment**, to ensure the devices are working effectively.

If an RCD is tested and found to be faulty it must be taken out of service and replaced as soon as possible.
For guidance on approval and test specifications, see AS/NZS 3190:2016 “Approval and test specification – Residual current devices”.

Testing new portable RCDs

A new portable RCD unit should be tested by pressing the “trip test” button to ensure the RCD is effective.

Portable RCDs must be tested before the device is used on any day by means of the built-in test facility. In addition, programmed testing must be conducted and recorded within the School/Branch in accordance with the Electrical Inspection and Testing: Decision Tool (Appendix B).
**Note:** day to day testing does not need to be recorded.

**Records**

Testing records are to be maintained by the School/Branch, to provide evidence that portable RCDs have been tested. Records must be kept in accordance with Faculty/Division/School/Branch/Area Records, (Appendix E).

**Tags**

Portable RCDs must be tagged to indicate the date of the next test and should be checked to monitor compliance with the Regulations.