

# RCDs

## A Switch to Safety

**BEING SAFE WITH ELECTRICITY**



It's working **WORKPLACE SAFE**



Electricity Standards  
and Safety

## **DISCLAIMER**

The information in this guide is for guidance only and is not to be taken as an expression of the law. It should be read in conjunction with the *Workplace Health And Safety Act 1995*, the *Workplace Health And Safety Regulations 1998*, the *Electricity Industry Safety and Administrative Act 1997* and any other relevant legislation. Copies of the legislation can be purchased from the Printing Authority of Tasmania Bookshop, 2 Salamanca Place Hobart, or call (03) 6233 3289 or freecall 1800 030 940. It is also available on the Internet at [www.thelaw.tas.gov.au](http://www.thelaw.tas.gov.au)

# **RCDs**

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## INTRODUCTION

This guide to RCDs — *A Switch to Safety* explains:

- what residual current devices (RCDs) are and how they protect you
- how RCDs should be installed in the workplace; how risk management can be used to remove or reduce the risk of electrical hazards in the *workplace*; and the legal requirements that are in place
- how RCDs can be used to protect you in the *home*.

## ELECTRICITY: THE HAZARD

### ELECTRIC SHOCK AND ELECTROCUTION

Coming into contact with electricity can cause:

- electric shock (which may include experiencing burns and internal injuries)

or

- electrocution (death).

Electric shock and electrocution occur when someone makes contact with:

- faulty electrical equipment that has become live
- exposed live parts
- worn and damaged wiring and switches.

Amateur electrical work or home handiwork can lead to these dangerous situations.

There are many different causes of electric shock and electrocution, but all have one thing in common: they can be prevented.

Fitting RCDs in your workplace or in your home can help you avoid electric shock and electrocution.

**NEVER pick up a damaged cord or any damaged electrical equipment until you make sure it is switched off and unplugged from the power point — even if you feel sure it is protected by an RCD.**

## WHAT ARE RCDs?

Residual current devices (or RCDs) are electrical safety devices designed to isolate the electrical circuits connected to them in the event of flow to earth of an electrical current.

There are two types of RCDs available:

- permanently-connected RCDs
- portable RCDs.



Portable RCD



Permanently-connected RCD

RCDs are also known by other names:

- earth leakage circuit breakers (ELCB)
- safety switches.

The term 'safety switch' is more commonly used in the domestic market.



## **WHAT ABOUT FUSES OR CIRCUIT BREAKERS?**

Fuses or circuit breakers do *not* offer the same level of personal protection that RCDs do.

Fuses or circuit breakers protect the wiring and appliances within a house or a workplace.

However, fuses or circuit breakers will not ‘trip’ or ‘blow’ until they detect a high level of current flowing to earth — a level too high for personal safety. Fuses or circuit breakers do not respond fast enough to prevent electrocution.

RCDs on the other hand cut the power in a fraction of a second and at a very low level of current flowing to earth — before you even know you’re in danger — therefore providing earlier and better protection.

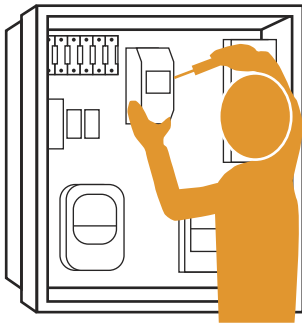
## IN THE WORKPLACE

### PERMANENTLY-CONNECTED RCDs

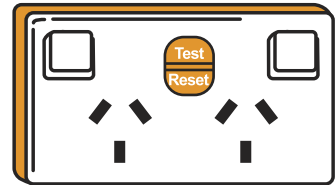
#### Two types of permanently-connected RCDs

A licensed electrical contractor can install permanently-connected RCDs at either:

- the switchboard
- or
- a fixed socket outlet (powerpoint).



At the switchboard



At the powerpoint

When installed at the *switchboard*, all the wiring and appliances plugged into the circuit will be protected. You can choose to protect all the circuits on the switchboard, or select only certain ones to be protected (cost and convenience may be deciding factors in choosing complete or selected protection).

When installed at a *powerpoint*, the RCD provides single outlet or single circuit protection. This type of RCD may be installed at selected locations, instead of centrally at the switchboard. This option is not allowed in domestic or residential type installations.

#### Things to consider

To decide which type of RCD you should install, consider:

- the size of the building (or site)
- its use
- any plans to refurbish, refit or rewire the building.

You should think about having permanently-connected RCDs installed if you are either setting up a new workplace or if you are installing new electrical circuits. Taking into account your future likely use as you design your workplace circuits will help reduce the cost of installing RCDs.

## PROTECTING HAND-HELD AND PORTABLE EQUIPMENT

### Definitions

*Portable electrical equipment* is electrical equipment that is carried or moved while connected to an electrical supply. It is usually operated from a socket outlet. It includes cord extension leads.

*Hand-held electrical equipment* is portable electrical equipment that is held in the hand during normal use. The motor (where fitted) forms an integral part of the appliance. Examples include electric drills, sanders and saws.

### Options for protection

Both hand-held and portable electrical equipment should be protected by an RCD. You can either:

- install permanently-connected RCDs
- or
- connect portable RCDs directly to the output side of a socket outlet (see illustration below).



Examples of portable RCDs

### WHO IS RESPONSIBLE?

The person managing or controlling the workplace (or managing a building or site on behalf of the owner) should organise for a licensed electrical contractor to install permanently-connected RCDs.

Only a licensed electrical contractor is to install permanently-connected RCDs. Be sure they are licensed before they start work: ask to see their licence card, or call the State Electrical Licensing Administrator on 6233 7831.

A licensed electrical contractor can check the safety of your electrical installation and advise you on installing and maintaining RCDs.

Workers using hand-held and portable equipment must be able to tell if and where permanently-connected RCDs are installed. If they aren't installed, the employer should provide a portable RCD and workers must use this.

## TESTING RCDs

RCDs must be kept in good working condition. A competent person must regularly test your RCDs to ensure their continued effective operation.

To perform some of these tests, all RCDs are fitted with a test button.

The Australian Standard AS/NZS 3760 *In-service safety inspection and testing of electrical equipment* specifies the procedures for inspecting and testing portable electrical equipment, including portable and fixed RCDs (always check the most recent issue of this standard. Call Standards Australia on 1300 65 46 46 or go to [www.standards.com.au](http://www.standards.com.au)).

You should keep a record of these tests, the date, the person performing the tests, the location and type of RCD tested, the condition they are found in, and any action required.

## LEGAL REQUIREMENTS

### Managing risks

In Tasmania, all businesses and organisations are legally required to have a system in place to manage risk in the workplace. Managing risks is an important part of improving workplace health and safety. Everyone in the workplace has the right to know about the hazards they work with, and what effect these can have on their health and safety.

There are four SAFE steps of risk management:

- S**pot the Hazard
- A**ssess the risk
- F**ix the problem
- E**valuate results.

For more information about risk management and conducting risk assessments in your workplace, call the Workplace Standards Helpline on 1300 366 322 or go to [www.workplacesafe.tas.gov.au](http://www.workplacesafe.tas.gov.au) for a free copy of GBo81 *Hazard Management: Play it SAFE*.

### *Spot the hazard*

A hazard is anything that has the potential to cause injury, illness or damage to your health. You need to identify the hazards associated with all electrical power cords, fittings, machinery, tools and equipment.

### *Assess the risk*

Next, assess the risk of each hazard: that is, the likelihood and severity of possible injury or harm (that is, electric shock or electrocution).

### *Fix the problem*

Develop safe work procedures to reduce or remove the risk. If your risk assessment shows electric shock is likely, you should install an RCD.

However, you should first explore:

- eliminating the hazard by removing it completely from your workplace. If this is not possible, then try
- substituting the hazard with a safer alternative. If this is not possible, then try
- isolating the hazard as much as possible away from workers and others (this may be until it is repaired or discarded).

### *Evaluate the results*

Risk management is not a one-off event — it's an ongoing process. You need to review the solutions you have put into place to see if they have removed or reduced the risk.

For more information about your legal obligations under the Act and the Regulations to ensure workplace health and safety, call the Workplace Standards Helpline on 1300 366 322 or go to [www.workplacesafe.tas.gov.au](http://www.workplacesafe.tas.gov.au) for a free copy of GB133 *A Guide to Workplace Health and Safety Legislation*.

## IN THE HOME

### ARE YOU PROTECTED BY AN RCD?

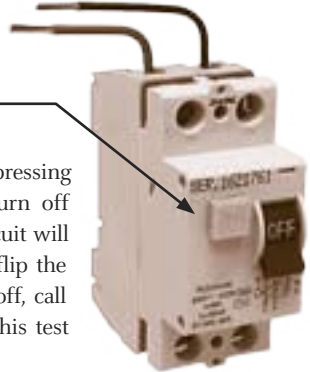
It's easy to tell if you have an RCD installed.

Look at your switchboard (usually where the meter is) and look for a switch with a **test** button next to it (similar to the one shown here).

If you do have one, check that it works properly by pressing this test button — the adjacent switch should turn off (remember, that when testing, anything on that circuit will be turned off and then back on). To reset, simply flip the switch back to the **on** position. If it doesn't turn off, call your licensed electrical contractor. You should do this test regularly.

Since 1992, power outlets in all new homes have been protected with RCDs.

**If you don't know or aren't sure, ask your licensed electrical contractor.**



### AVOID GETTING INTO TROUBLE WITH ELECTRICITY

- Do not attempt your own electrical work: it's illegal. Call in a licensed electrical contractor. Be sure they are licensed before they start work: ask to see their licence card, or call the State Electrical Licensing Administrator on 6233 7831.
- Take care doing home handiwork — do you really know what's behind the wall you're about to drill into?
- Install child-proof safety plugs on the power points around your home if you have small children.
- Protect yourself when using hand-held or portable electrical equipment — such as gardening or power tools — by installing permanently-connected RCDs.
- Consider using RCDs on electrical equipment that operates near water, such as washing machines, kettles, frypans, jugs and ice-making machines. The presence of moisture increases the risk associated with using this electrical equipment. Otherwise, keep electrical appliances away from water. Water with electricity is often fatal.
- Safety switches are not a substitute for maintenance. If you have a suspect appliance or extension lead, have it repaired by a licensed electrical contractor or dispose of it — it's not worth the risk.

If your home does not have an RCD installed, then consider it as a kind of insurance policy and have one (or more) installed *today*.

## FURTHER INFORMATION

Electricity Standards *and* Safety  
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Rosny Park, Tasmania 7018  
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Workplace Standards Tasmania acknowledges that this information is based substantially on material from the Department of Consumer and Employment Protection, Western Australia, and the State Government of Western Australia. For more information, go to [www.docep.wa.gov.au](http://www.docep.wa.gov.au)





[www.workplacesafe.tas.gov.au](http://www.workplacesafe.tas.gov.au) / **1300 366 322**

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