WORKSAFE

HSWA

QUICK GUIDE

March 2018

RCDs, PSOAs, leads, cords, plugs and battery-operated equipment

This quick guide is for a person conducting a business or undertaking (PCBU) who manages or controls a small construction site. The guide is part of our *Electrical Safety on Small Construction Sites* series.

Residual current devices (RCDs)

All hand-held appliances, light sources and other electrical equipment used on a construction site must have protection against electric shock. One way to provide protection against electric shock is to ensure that all electrical equipment is supplied with electricity through an RCD.

An RCD constantly monitors the electric current flowing along a circuit. If an RCD detects a fault, it quickly disconnects the electricity supply in many situations where someone would otherwise receive a fatal electric shock.

An RCD provides a high level of personal protection. While RCD protection minimises the risk of serious electric shock, it **does not** eliminate that risk.

Types of RCDs

There are three types of RCD.

1. **Fixed at the switchboard**
   - A switchboard RCD is the best option in most situations. It protects all the electrical wiring and appliances supplied from that circuit.
   - A licensed electrician or electrical inspector must install a switchboard RCD.

2. **Built into the power point**
   - A socket-outlet RCD is built into a standard power point to provide protection to equipment plugged into that power point and, if required, downstream protection of other power points.
   - A licensed electrician must install a socket-outlet RCD.

3. **Portable**
   - A portable RCD can be moved from power point to power point as needed. There are several different types of portable RCD:
     - Some plug directly into a power point. An appliance or extension lead then plugs into the portable RCD.
     - Some are built into extension leads or individual appliance leads.
     - Some are built into PSOAs.
   - No electrician is needed – you can buy a portable RCD at a hardware shop or electrical equipment supplier.

Both portable and non-portable RCDs should be tested every day.

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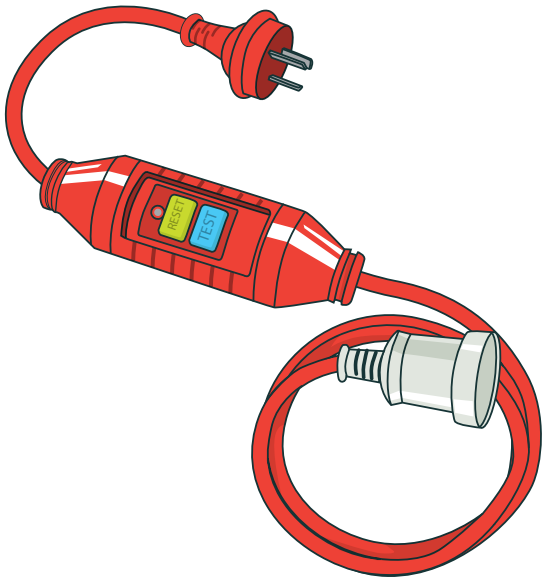

FIGURE 1: Portable RCD

Portable socket-outlet assemblies (PSOAs)

A PSOA is a special type of multi-board that includes:

- an RCD
- an overload circuit breaker
- one or more power points.

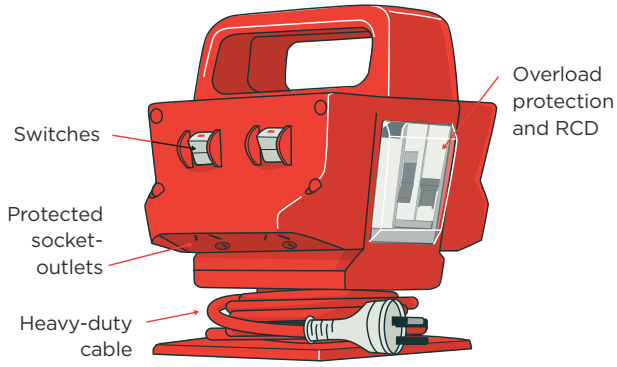

FIGURE 2: PSOA designed for harsh conditions

Requirements

You do not need an electrician to install a PSOA – anyone can use one.

A PSOA must be marked as compliant with AS/NZS 3012 when you buy it.

The flexible cord feeding the PSOA must be:

- the heavy-duty sheathed type
- no longer than 2 metres.

Testing

Every day, test the RCD on a PSOA (using the test button) before use.

Get PSOAs tested by an electrician regularly – at least every three months.

Use PSOAs cooperatively to manage risks

One good way for contractors to work co-operatively is by coordinating with each other about PSOA use on site. For example, PSOAs could be provided by a contractor to provide protection for their own equipment.

Multi-boards

Domestic multi-boards should never be used on a construction site.

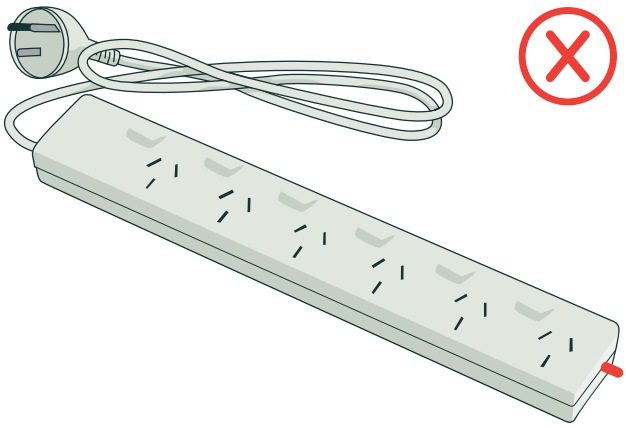

FIGURE 3: Domestic multi-board

Domestic multi-boards are only safe for low power loads, such as computers and printers. They have no protection to stop moisture or dust getting in. High power loads (such as circular saws and drills) can easily exceed the recommended current ratings.

Leads, cords and plugs

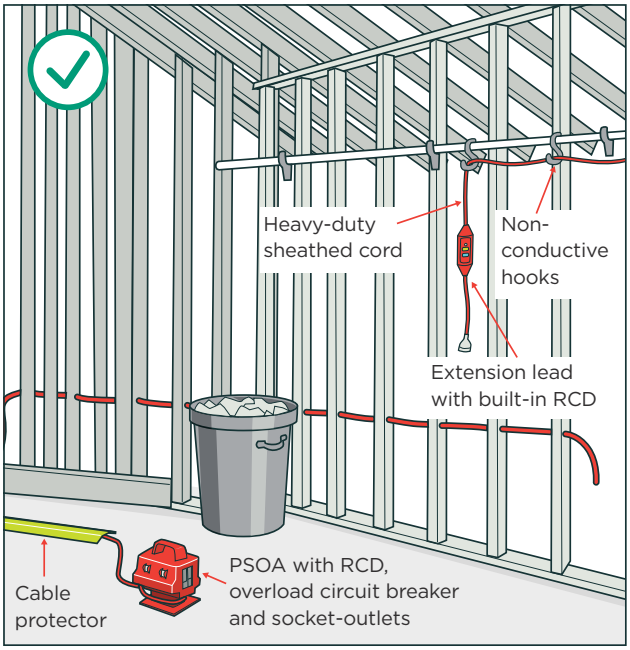

FIGURE 4: Arrange leads and cords to make sites safer

Leads and cords are easily damaged, particularly those connected to equipment which is often moved. Make sure leads and cords are suitably set up and protected:

- Protect leads and cords from damage. Protection may include drop-over cable protectors, cord covers, non-conductive lead hooks and cable ramps. Damage can be caused by:
  - sharp edges and sharp objects
  - shoes, boots or other footwear
  - doors
  - moving vehicles and mobile plant
  - other mechanical forces
  - water, oil and other liquids
  - grease
  - heat.
- Arrange leads and cords so that people won't trip on them.
- Avoid running leads across aisles or passages.
- Raise leads up rather than running them across the ground. Raised leads and plugs should be easy for workers to reach without a ladder.
- Remove strain on plugs by using insulated supports.

Extension leads

Extension leads are a temporary solution. You should not use them as a long-term or permanent electrical connection.

Flexible cords on extension leads must be the heavy-duty sheathed type.

Store extension leads away when you have finished with them.

Do not use an extension lead:

- if the protection around the cord socket or the insulation is damaged
- if you will exceed the manufacturer's current rating
- with a piggy-back plug
- that is coiled or rolled up – it could overheat.

Plugs

Hard plastic plugs are easily damaged. Rubber or flexible plastic plugs and sockets are a better option.

Double adaptors and piggy-back plugs are not safe. They should **never** be used on a construction site.

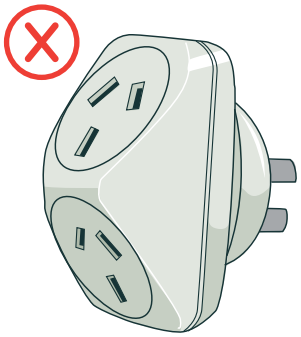

FIGURE 5:
Double adaptor

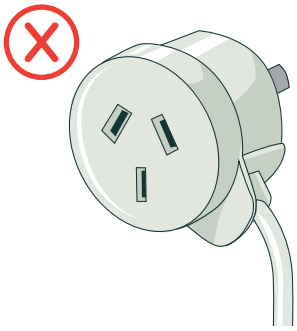

FIGURE 6:
Piggy-back plug

Battery-operated equipment

Using battery-operated equipment may minimise hazards associated with a mains electricity supply. These hazards include faulty leads, faulty RCDs and operation in wet conditions.

There is still a risk of electric shock from battery chargers that are plugged into the mains supply. Chargers are not weatherproof and they should only be used in a dry and dust-free environment.

For more information

For more information, visit our website: worksafe.govt.nz

See the *Electrical Safety on Small Construction Sites* series:

- *Electrical safety on small construction sites* quick guide
- *Checking your electrical equipment is safe* fact sheet
- *Electricity supply arrangements on a small construction site* fact sheet
- *Set-up and electrical safety on site* fact sheet.