

## THE 17TH EDITION AND RCDs

### INTRODUCTION

BS 7671:2008 - The 17th Edition imposes a far greater need for 30mA RCDs as **additional protection against electric shock**, formerly known as **supplementary protection against direct contact**. The most significant requirements are:

- Reg 411.3.3** Requires 30mA RCD protection to be provided for:
- (i) Socket outlets not exceeding 20A that are for use by 'ordinary' persons and are intended for general use.
  - (ii) Mobile equipment with a current rating not exceeding 32A for use outdoors.

#### EXEMPTIONS TO 411.3.3(I) ARE:

Socket outlets that are dedicated to equipment that is susceptible to leakage currents that may cause unwanted tripping of the RCD, such as refrigerators, freezers and IT equipment.

Socket outlet circuits that are under the supervision of 'skilled' or 'instructed' persons.

#### Section 522.6

Require 30mA RCD protection to be provided for:

#### 522.6.7

Cables concealed in walls at a depth less than 50mm where the installation is not under the supervision of a skilled or instructed person.

#### 522.6.8

Cables concealed in a wall structured with metal parts. Where the installation is not under the supervision of a skilled or instructed person.

These regulations generally apply to pvc insulated and sheath cables and soft skin fire resistant cables. The requirements for the cables to be installed in 'safe zones', Regulations 522.6.6(v) also apply.

#### EXEMPTIONS TO 522.6.7 & 522.6.8

- Reg 522.6.6 (i) - (v)** Cables with metallic sheaths such as, MICC, SWA, Earth Screened cables complying with BS 8436 and cables enclosed in earthed steel conduit.

### PART 7 - SPECIAL LOCATIONS

- Reg 701.411.3.3** Bath & Shower Rooms  
All circuits, other than SELV circuits, supplying electrical equipment, including lighting have to be protected with a 30 mA RCD.

A number of other special locations including swimming pools, caravan parks, marinas, also require 30mA RCD protection.

There are no exemptions to Part 7 regulations.

### UNWANTED TRIPPING

Contractors need to be aware that equipment, typically refrigerators, freezers, IT equipment and controls, and luminaires are likely to cause inconvenience and disruption by unwanted RCD tripping.

It is recommended that in order to minimise unwanted tripping, the sum total of standing leakage currents should not exceed 25% of the tripping current rating ( $I_{\Delta n}$ ) of the RCD protecting the circuit(s).

Modern fluorescent fittings with electronic ballasts can have 1mA leakage current for every tube.

IT equipment may have up to 3.5 mA leakage at each work station.

It can therefore be seen that a single 30 mA RCD is only suitable for a few items of equipment. If too many items are connected, unwanted tripping is bound to occur and when a problem occurs it is likely to bounce back to the contractor.

### SOCKET OUTLET CIRCUITS 411.3.3 AND CABLES CONCEALED IN WALLS 522.6.7 & 6.8

#### DOMESTIC INSTALLATIONS

The general intention is for these regulations to be applied to socket outlet circuits and concealed cables in domestic and similar installations, which means that RCDs are required for almost all circuits in these premises.

With regard to socket outlets, the installer has the option to omit the RCD by dedicating a socket outlet for a specific purpose. The socket will need to be labelled accordingly.

The RCD may be omitted where there are concealed cables if they are protected with an earthed metal screen or sheath that is suitable for use as a protective conductor e.g. MICC, armoured cable, steel conduit etc.

#### NON-DOMESTIC INSTALLATIONS

In Commercial and Industrial premises unwanted tripping of RCDs can cause considerable disruption and is therefore unacceptable. The omissions applicable to domestic premises also apply. In addition RCDs may be omitted if the installation is under the supervision of a skilled or instructed person.

### APPLICATION

The words, not under the supervision of a skilled or instructed person may seem to extend the requirement to include many commercial premises (offices, shops and warehouses) and industrial premises (factories, workshops and the like) and gives the impression that exemptions only apply to installations that are under the supervision of an electrical engineer. **This is not the case.**

#### BS 7671:2008 PART 2 DEFINITIONS:

**Skilled person.** A person with technical knowledge or sufficient experience to enable him/her to avoid dangers that electricity may create.

**Instructed person.** A person adequately advised or supervised by skilled persons to enable him/her to avoid dangers which electricity may create.

The workplace (Health & Safety at Work Regulations) 1992 require all electrical installations in places of work to be under the control of a responsible person. Such a person could satisfy the requirements for a skilled or instructed person. The person need not be an electrical engineer but could be a suitably trained nominee of the organisation using the installation.

Larger installations under the control of an employer such as supermarkets, multi-storey office buildings, hotels, large factories, warehouses and the like, that employ responsible facilities managers should have systems of control in place that prohibits 'ordinary persons' from using socket outlets other than those provided for general use.

Similarly these same premises should have policies that prohibit ordinary persons from drilling walls or inserting fixings in walls, where cables may be at risk.

#### RISK ASSESSMENT

Designers of electrical installations will need to ask the question of the client or specifier: *Is the installation going to be under the supervision of a 'skilled' or 'instructed' person ?* before deciding if 30mA RCD protection is required on some or all circuits.

In most premises there should be a nominated responsible person, either formally or by default. This person can be 'instructed' on the use of sockets outlets and where cables are concealed in walls. It is their responsibility to ensure that adequate precautions are taken by employees and contractors, to prevent danger.

The electrical installer may need to provide written instructions as part of the information that is required to be provided under Reg. 514.9.1. The instructions to cover:

**Socket outlets**

- (i) circuits or sockets that are for general use by ordinary persons and are 30 mA RCD protected e.g cleaners and kitchen sockets
- (ii) circuits or sockets that are for a specific use e.g. IT equipment and are not RCD protected.

**Concealed cables that are not protected by a metal sheath or enclosure**

- (i) switch drops
- (ii) vertical or horizontal cables to socket outlets or other equipment.

**This information should provided in:**

- (i) an O & M or Installation Record manual, and
- (ii) a durable notice fixed alongside the distribution board circuit schedule.

In some installations it may be prudent to mark sockets that may be used by ordinary persons or alternatively mark sockets that have a dedicated purpose.

#### DEFAULT POSITION

In situations where the designer is unable to ascertain whether or not the installation will be under effective supervision by skilled or instructed persons, such as spec built offices, shops, factories, warehouses etc. the default position is not to fit 30mA RCD protection to all socket outlet circuits and all circuits having cables concealed in walls, unless deemed necessary by the designers risk assessment or by the clients/developers specification requirements, as was the case with the 16th Edition.

### FURTHER INFORMATION

Contact: Electrical Contractors' Association Tel: 020 7313 4800 or visit the website [www.eca.co.uk](http://www.eca.co.uk)