

CHANGES TO REQUIREMENTS FOR RCD PROTECTION OF SOCKET-OUTLETS

Editor's note: references to the 'current' version of BS 7671 relate to BS 7671:2008(2011), i.e. the 'green cover' Regulations. This version is current until 30 June 2015. On 1 July 2015, BS 7671:2008+A3:2015 comes into effect.

A new, revised version of Regulation 411.3.3, relating to RCD protection of socket-outlets, forms part of BS 7671:2008+A3:2015 (IET Wiring Regulations Seventeenth Edition), which was published in January 2015 and comes into effect on 1 July. The current and new versions of the regulation are shown side by side below. By comparing the two versions, it can be seen that the new version:

- a. requires RCD protection to be provided for all socket-outlets rated at not more than 20 A, not just those that are for general use by ordinary persons (see indent (i));
- b. continues to require RCD protection to be provided for mobile equipment rated at not more than 32 A (see indent (ii));
- c. no longer permits the omission of RCD protection for socket-outlets that are for use under the supervision of skilled or instructed persons (see indent (a) in the current version);
- d. permits the omission of RCD protection for socket-outlets other than in an installation in a dwelling, if a documented risk assessment determines that the RCD protection is not necessary (see indent (a));
- e. includes a new note that refers the reader to Appendix 2, item 10 in respect of risk assessment (see NOTE 3 and the information given later in this article); and
- f. continues to permit the omission of RCD protection for a specifically labelled or otherwise suitably identified socket-outlet that has been provided for a connection of a particular item of equipment (see indent (b)).

The RCD protection required by the regulation is additional protection in accordance with Regulation 415.1 (i.e. by RCDs having a rated residual operating current ($I_{\Delta n}$) not exceeding 30 mA and an operating time not exceeding 40 ms at a residual current of 5 $I_{\Delta n}$).

Current version

New version

Current version	New version
<p>411.3.3 Additional protection</p> <p>In a.c. systems, additional protection by means of an RCD in accordance with Regulation 415.1 shall be provided for:</p> <p>(i) socket-outlets with a rated current not exceeding 20 A that are for use by ordinary persons and are intended for general use, and</p> <p>(ii) mobile equipment with a current rating not exceeding 32 A for use outdoors.</p>	<p>411.3.3 Additional protection</p> <p>In a.c. systems, additional protection by means of an RCD in accordance with Regulation 415.1 shall be provided for:</p> <p>(i) socket-outlets with a rated current not exceeding 20 A, and</p> <p>(ii) mobile equipment with a current rating not exceeding 32 A for use outdoors.</p> <p>An exception to (i) is permitted:</p>

<p>An exception to (i) is permitted for:</p> <p>(a) socket-outlets for use under the supervision of skilled or instructed persons, or</p> <p>(b) a specific labelled or otherwise suitably identified socket-outlet provided for connection of a particular item of equipment.</p> <p>NOTE 1: See also Regulations 314.1(iv) and 531.2.4 concerning the avoidance of unwanted tripping.</p> <p>NOTE 2: The requirements of Regulation 411.3.3 do not apply to FELV systems according to Regulation 411.7 or reduced low voltage systems according to Regulation 411.8.</p>	<p>(a) where, other than for an installation in a dwelling, a documented risk assessment determines that the RCD protection is not necessary, or</p> <p>(b) for a specific labelled or otherwise suitably identified socket-outlet provided for connection of a particular item of equipment.</p> <p>NOTE 1: See also Regulations 314.1(iv) and 531.2.4 concerning the avoidance of unwanted tripping.</p> <p>NOTE 2: The requirements of Regulation 411.3.3 do not apply to FELV systems according to Regulation 411.7 or reduced low voltage systems according to Regulation 411.8.</p> <p>NOTE 3: See Appendix 2, item 10 in respect of risk assessment.</p>
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Removal of the exception for socket-outlets for use under the supervision of skilled or instructed persons

Unlike the current version of Regulation 411.3.3, the new version does not permit the omission of RCD protection to a socket-outlet just because the socket-outlet is for use under the supervision of skilled or instructed persons.

The exception for socket-outlets for use under the supervision of skilled or instructed persons was removed because:

- a. it was no longer seen as having any relevance, given the development in the application of RCDs to the general requirements of BS 7671 over recent years; and
- b. there had been reports of the exception being abused, such as RCD protection to socket-outlets at a school being omitted on the basis that they were to be used under the supervision of a person instructed by the head teacher.

Documented risk assessment

Omitting RCD protection for any socket-outlet on the basis of a risk assessment is a serious matter and must never be done lightly. Such omission is not permitted for an installation in a dwelling; it is permitted only for an installation in some other type of location (see indent (a) of the new version of Regulation 411.3.3).

The risk assessment would have to be carried out in accordance with The Management of Health and Safety at Work Regulations 1999 (SI 1999 No 3242) (MHSW), which applies in England and Wales, or the corresponding Statutory Regulations in other parts of the United

Kingdom. The MHSW is referred to in NOTE 3 of the new version of Regulation 411.3.3 by means of its reference to item 10 of Appendix 2 of BS 7671.

MHSW puts the responsibility for carrying out risk assessments onto (as applicable) every employer and every self-employed person. The risk assessment relates to the health and safety of employees and self-employed persons while at work, and the health and safety of other persons arising out of, or in connection with, the conduct by the employer/self-employed person or his undertaking (MHSW regulation 3 refers).

In order for the omission of RCD protection to any socket-outlet on the basis of risk assessment to be permitted by Regulation 411.3.3, the risk assessment must determine that the RCD protection is not necessary. The risk assessment must be documented and a copy of it must be attached to the Electrical Installation Certificate or (where applicable) Minor Electrical Installation Works Certificate covering the installation of the socket-outlet.

The person who prepared the risk must be prepared to justify his or her conclusion that RCD protection was not necessary, possibly in a court of law, especially if someone was killed or injured as a result of the RCD protection being omitted.

The electrical installation designer must equally be prepared to justify his or her own decision to accept the finding of the risk assessment and omit the RCD protection to the socket-outlet(s) from his or her design.

Specifically labelled or otherwise suitably identified socket-outlet

The exception in indent (b), relating to the omission of RCD protection for specific socket-outlets, is included in both the current and new versions of the regulation.

It is stressed that the exception may only be applied for a socket-outlet that has been provided for the connection of a particular item of equipment. The socket-outlet must be labelled or otherwise suitably identified so that users will be clearly informed that the socket-outlet is intended only for plugging in that particular item of equipment and for no other purpose. Unless the electrical installation designer is convinced that the socket-outlet cannot reasonably be expected to be used for other purposes, RCD protection for that socket-outlet should not be omitted.

In the vast majority of cases, it should not be necessary to omit RCD protection for a socket-outlet. For compliance with Regulation 531.2.4, a socket-outlet should be connected to an RCD that serves a sufficiently small number of other socket-outlets or items of equipment, so that any protective conductor current that may be expected in normal service will be unlikely to cause unwanted tripping of the RCD.