

# Cables concealed in walls or partitions – protection against penetration

Like BS 7671: 2001 (IEE Wiring Regulations 16th Edition), BS 7671: 2008 (IEE Wiring Regulations 17th Edition) contains requirements to protect against the danger of electric shock if a cable concealed in a wall or partition is penetrated by a nail or screw or the like

cables of insulated concentric construction are no longer listed.

**522.6.6** A cable concealed in a wall or partition at a depth of less than 50 mm from the surfaces of the wall or partition shall:

- (i) incorporate an earthed metallic covering which complies with the requirements of these Regulations for a protective conductor of the circuit concerned, the cable complying with BS 5467, BS 6346, BS 6724, BS 7846, BS EN 60702-1 or BS 8436, or
- (ii) be enclosed in earthed conduit complying with BS EN 61386 and satisfying the requirements of these Regulations for a protective conductor, or
- (iii) be enclosed in earthed trunking or ducting complying with BS EN 50085 and satisfying the requirements of these Regulations for a protective conductor, or
- (iv) be mechanically protected against damage sufficient to prevent penetration of the cable by nails, screws and the like, or
- (v) be installed in a zone within 150 mm from the top of the wall or partition or within 150 mm of an angle formed by two adjoining walls or partitions.

**I**n this article, we summarize the differences between the requirements of the 2001 and 2008 editions of BS 7671 relating to cables concealed in a wall or partition. We also give guidance on the requirements of the 2008 edition for the installation of such cables.

## Main differences between the old and new requirements

The main differences between the requirements of the 2001 and 2008 editions of BS 7671 relating to cables concealed in a wall or partition are as follows.

- Cables of insulated concentric construction may no longer be installed at a depth of less than 50 mm from the surfaces of a wall or partition, unless located in one of the 'safe' zones referred to in this article.
- Two new regulations have been added, requiring additional protection to be provided by an RCD in many cases where a cable is concealed in a wall or partition. The requirements of the two regulations are explained in a separate article on page 47 of this issue of *Connections*.

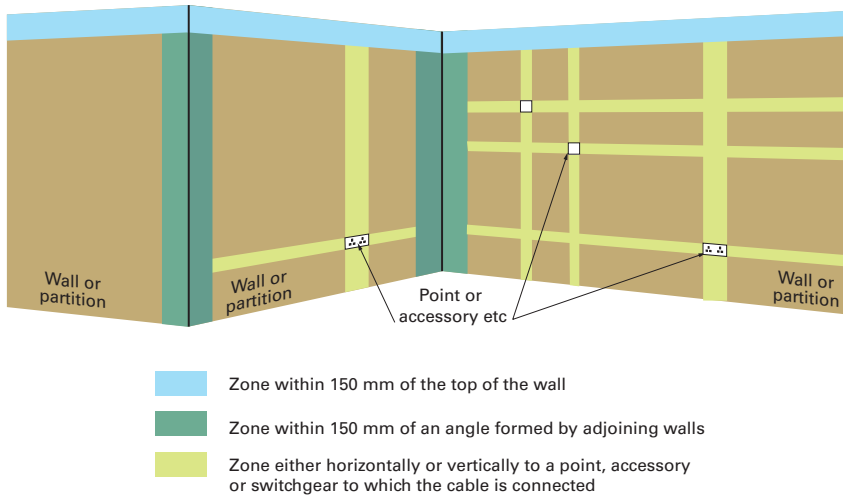
## The new requirements for type and positioning of cables

The requirements of BS 7671: 2008 for the type and positioning of cables concealed in a wall or partition at a depth of less than 50 mm are given in Regulation 522.6.6, reproduced below. The requirements are virtually the same as those of BS 7671: 2001, Regulation 522-06-06, except that

**Table 1: British Standards referred to in Regulation 522.6.6 indents (i), (ii) and (iii)**

British Standard	Title
BS 5467	Armoured cables having thermosetting insulation
BS 6346	Armoured cables having pvc insulation
BS 6724	Armoured cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire
BS 7846	Armoured fire-resistant cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire
BS EN 60702-1	Mineral insulated cables with a rated voltage not exceeding 750 V
BS 8436	300/500 V screened cables having low emission of smoke and corrosive gases when affected by fire, for use in thin partitions and building voids
BS EN 61386	Conduit systems for cable management
BS EN 50085	Cable trunking and cable ducting systems for electrical installations

**1 The 'safe' zones of a wall or partition**



Where the cable is connected to a point, accessory or switchgear on any surface of the wall or partition, the cable may be installed in a zone either horizontally or vertically, to the point, accessory or switchgear. Where the location of the accessory, point or switchgear can be determined from the reverse side, a zone formed on one side of a wall of 100 mm thickness or less or a partition of 100 mm thickness or less extends to the reverse side.

Some information on the requirements of indents (i) to (v) is given below.

**Use of cables with an earthed armouring or sheath, or an earthed enclosure (indents (i), (ii) and (iii))**

To help understand the requirements of indents (i), (ii) and (iii), Table 1 lists the titles of the British Standards referred to in those indents.

**Use of mechanical protection (indent (iv))**

Indent (iv) provides for a cable to be provided with mechanical protection sufficient to prevent penetration of the cable by nails, screws and the like. The mechanical protection is not required to be earthed.

A metal plate provided to prevent penetration by nails, screws and the like should be at least 3 mm thick.

However, where shot fired fixings might be used, even a 3 mm plate will not prevent penetration. In such circumstances, this method of protection cannot be considered to afford compliance with indent (iv) and is therefore unacceptable.

**Use of the safe zones (indent (v))**

The established practice of using 'safe' zones, as given in indent (v), is likely to be the most common way to comply with Regulation 522.6.6 in installations in domestic and similar premises. The zones are illustrated in Figure 1.

Generally, a zone created on one side of a wall or partition does not extend to the reverse side. However, an exception is made if the location of the accessory, point or switchgear can be determined from the reverse side. Where this is the case, a zone formed on one side of a wall or partition of 100 mm thickness or less extends to the reverse side. This is illustrated in Figure 2.

**2 An example of the condition where a zone extends to the reverse side**

