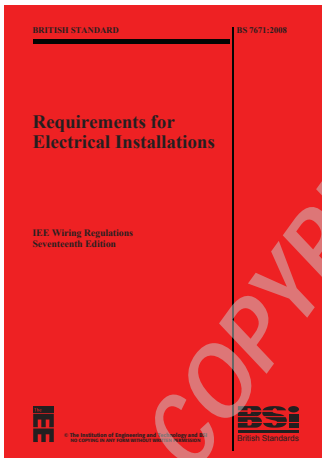


## BS 7671: 2008 – Introduction and Overview

### A 1

#### Introduction to BS 7671: 2008

BS 7671: 2008 was published during January 2008 as a significant new Edition of this fundamental Standard.



Although the document is a British Standard, it is also known as (and jointly labelled as) the *IEE Wiring Regulations 17th Edition*; this is for copyright reasons. In spite of the fact that the IEE changed to the IET in 2006, the IET has maintained the brand of IEE, mainly for use in its Wiring Regulations documents and products. Indeed, the IEE logo appears on the front cover and the IET logo inside the front cover.

Throughout this book, BS 7671: 2008 is referred to as BS 7671: 2008, or variously as BS 7671, the Wiring Regulations, the Regulations, the 17th edition or the Standard, depending upon the particular context.

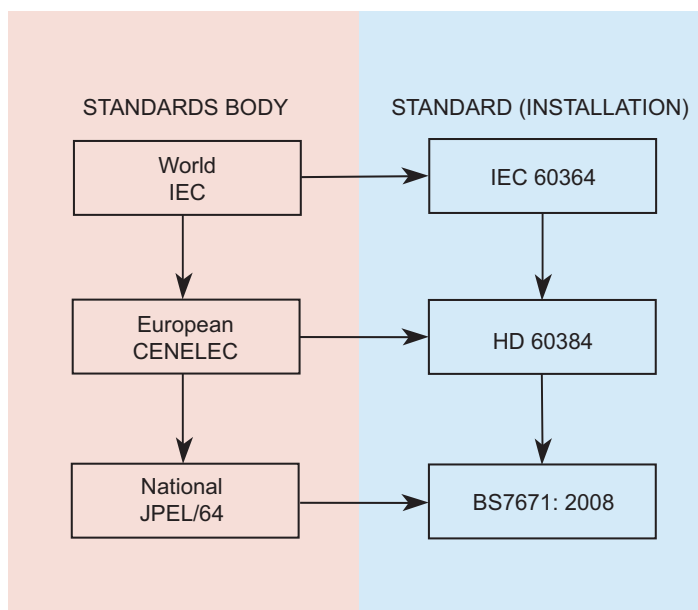
In essence, BS 7671: 2008 is virtually a European document. In fact, two parent documents as parts of the corresponding IEC standard have been used or adapted.

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*Guide to the Wiring Regulations: 17th Edition IEE Wiring Regulations (BS 7671: 2008)*

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**Figure A 1.1** Installation standards at world, European and national levels.

Both IEC and CENELEC have ‘wiring regulation’ standards or rules for electrical installations. The general structure of IEC, CENELEC and BS 7671 is illustrated in Figure A 1.1.

Many parts of the document originate in CENELEC in a ‘harmonized document’ (HD). The parent document is known as HD 60384 and comprises virtually all parts of the installation standard.

Within BS 7671: 2008 there are now only a few regulations that are truly ‘UK only’, although some of the CENELEC parts of HD 60384 have been modified, cut or expanded for BS 7671. Some of the appendices of BS 7671 are home-grown.

The Wiring Regulations committee has also used certain parts of the corresponding IEC document (IEC 60364) modified or virtually unmodified.

A list of the parts of the corresponding CENELEC parts of HD 60384 used in BS 7671: 2008 is shown in Table A 1.1.

**Table A 1.1** Corresponding parts of CENELEC HD 60384 used in BS 7671: 2008.

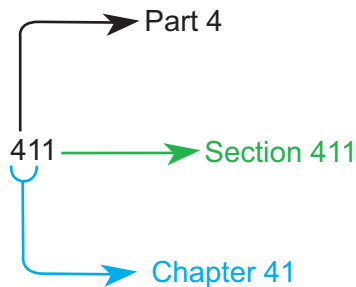
CENELEC part	Issue date	Title	BS 7671 reference
prHD 60364-1	2007	Fundamental principles, assessment of general characteristics, definitions	Part 1, Part 2 (in part), Part 3
HD 384.4.41 S2/A1	2002	Protection against electric shock	Chapter 41
HD 384.4.42 S1 A2	1994	Protection against thermal effects	Chapter 42
HD 384.4.482 S1	1997	Protection against fire where particular risks or danger exist	Chapter 42
HD 384.4.43 S2	2001	Protection against overcurrent	Chapter 43
HD 384.4.473 A1	1980	Application of measures for protection against overcurrent	Chapter 43
HD 384.4.443 S1	2000	Protection against overvoltages	Section 443
prHD 60364-5-51	2003	Selection and erection of equipment – common rules	Chapter 51
HD 384.4.43 S2	2001	Protection against overcurrent	Chapter 53
prHD 60364-5-54	2004	Earthing arrangements, protective conductors and protective bonding conductors	Chapter 54
HD 384.7.714 S1	2000	Outdoor lighting installations	Section 559
HD 60364-7-715	2005	Extra-low voltage lighting installations	Section 559
HD 384.6.61 S2	2003	Initial verification	Part 6, Appendix 14
HD 60364-7-701	2007	Locations containing a bath or shower	Section 701
HD 384.7.702 S2	2002	Swimming pools and other basins	Section 702
HD 384.7.703	2005	Rooms and cabins containing sauna heaters	Section 703
HD 60364-7-704	2007	Construction and demolition site installations	Section 704
HD 60364-7-705	2007	Agricultural and horticultural premises	Section 705
HD 60364-7-706	2007	Conducting locations with restricted movement	Section 706
HD 384.7.708	2005	Caravan parks, camping parks and similar locations	Section 708
prHD 60364-7-709	2007	Marinas and similar locations	Section 709
HD 384.7.711	2003	Exhibitions, shows and stands	Section 711
HD 60364-7-712	2005	Solar photovoltaic (PV) power supply systems	Section 712
HD 60364-7-715	2005	Extra-low voltage lighting installations	Section 559
HD 60364-7-717	2004	Mobile or transportable units	Section 717
prHD 60364-7-721	200X	Electrical installations in caravans and motor caravans	Section 721
prHD 60364-7-740	2006	Temporary electrical installations for structures, amusement devices and booths at fairgrounds, amusement parks and circuses	Section 740

**A 2**

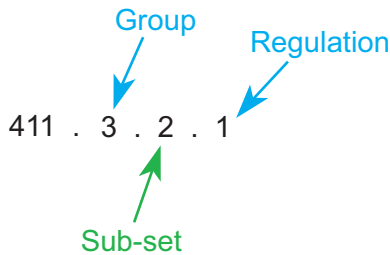
**Plan and layout of BS 7671: 2008**

Most users will not need to concern themselves with the correct terminology for groups of regulations and chapters etc., but an explanation of this has been added for completeness.

Let us look at a single Regulation 411.3.2.1 and provide a diagram of the structure. Taking the first three digits, these relate as follows:



The remaining numbers make up the group, sub-set and regulation, but really only the group is of any significance:



There are seven parts to BS 7671: 2008 as follows:

Part	Contents
1	Scope, Object and Fundamental Principles
2	Definitions
3	Assessment of General Characteristics
4	Protection for Safety
5	Selection and Erection of Equipment
6	Inspection and Testing
7	Special Installation or Locations

## A 3

## Overview of major changes

There is not much of the document which remains unchanged compared with the 16th Edition; many changes were due to formal incorporation of CENELEC drafts required to achieve harmonization.

This section gives an overview of technical changes that will manifest a change in practice or will be something that you should be aware of. As stated in the preface the subject of BS 7671 can be heavy going and this part of the book has been kept as short as possible. Readers may wish to skip this part of the book and start with the two key chapters, C and D.

The following overview notes have been included, and are listed in what is considered to be an ‘order of significance’.

### Chapter 41 Protection against electric shock

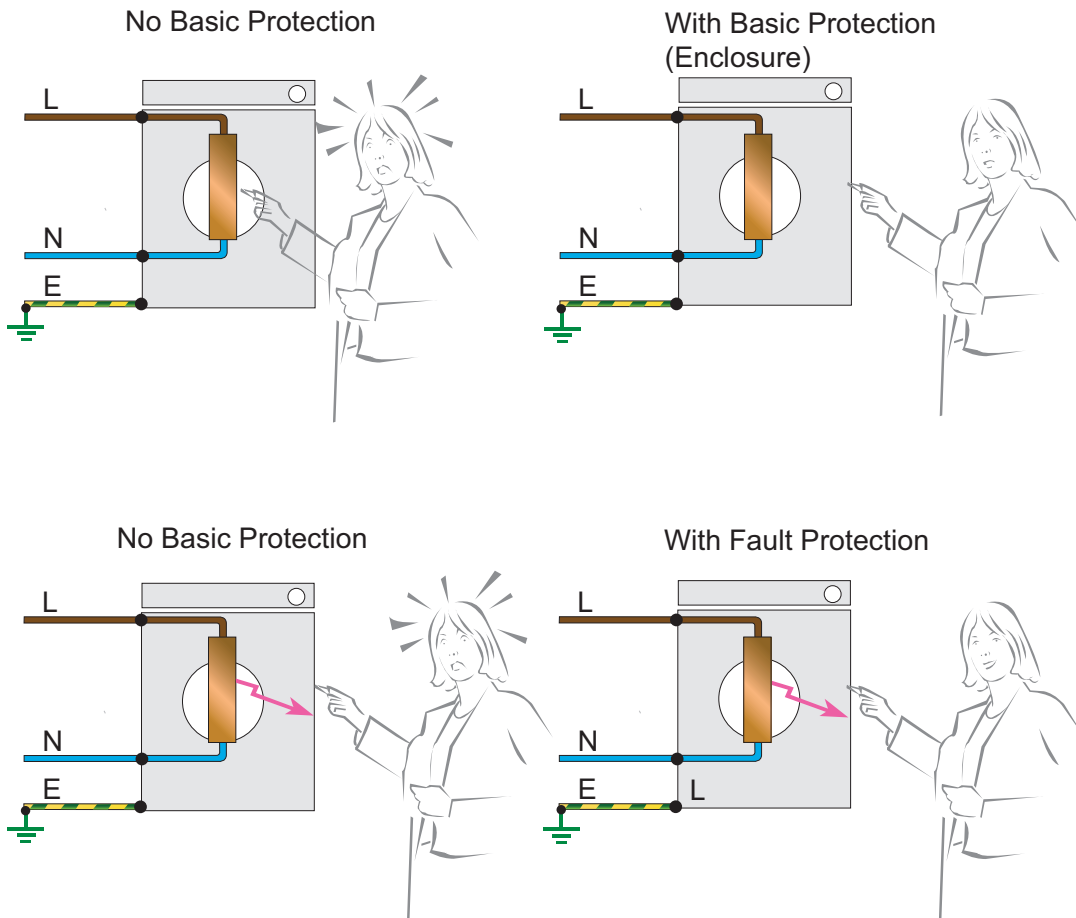
Revision of Chapter 41 is probably the most significant revision made for the 17th Edition.

The whole structure of the chapter has been modified. The familiar terms used in the 16th Edition of ‘direct contact’ and ‘indirect contact’ have been replaced with ‘basic protection’ and ‘fault protection’ respectively. This terminology change by itself had ramifications in many other parts of the Regulations and these brought about logistical modifications. The various measures are termed ‘protective measures’.

The structure of Chapter 41 was accordingly modified. Basic protection (insulation and enclosures) was considered something that designers and installers did not actually ‘consider’ and was shunted towards the rear of the chapter. The extremely rare measures of ‘placing out of reach’, ‘obstacles’, ‘non-conducting location’, ‘earth-free local equipotential bonding’ and ‘electrical separation’ were shunted further to the rear of the chapter. Thus, the main reading in the front end of Chapter 41 is about automatic disconnection.

There have been changes to disconnection times. There are no ‘mixed’ disconnection times and disconnection times have been introduced for TT installations. As protection in TT installations will virtually always require an RCD, the reduced disconnection times in the 17th Edition are easily achieved (0.2 s for final circuits).

A very significant new Regulation (411.3.3) requires a 30 mA RCD for socket-outlet circuits that are intended for use by ordinary persons. With a few exceptions, this



**Figure A 3.1** Basic protection and fault protection.

means all domestic installations. Commercial installations will generally remain exempt, as in most such situations individuals will have received instruction.

Guidance on the structure, disconnection times and the use of RCDs is given in Chapter C of this book.

### **Bathrooms 701**

The 17th Edition goes the extra mile on harmonization with CENELEC for bathroom installations.

The 16th Edition introduced the concept of ‘Zones’ to the regulations for bathrooms but fell short of harmonization with Europe in one key area: socket outlets in bathrooms.

Section 701 now aligns with the European ethos; there is no Zone 3. Thus, outside Zone 2, which is 600mm from the bath or shower, only the ‘general rules’ of the regulations apply and any equipment is allowed, although socket outlets have a special distance specified and must be at least 3m from the boundary of Zone 1.

All bathroom circuits now require a 30mA RCD and a UK modification negates the need for supplementary bonding.

### **Tables and methods of cable current-carrying capacity (Appendix 4 of BS 7671)**

The whole of the front end of this appendix has been modified for the 17th Edition. The modifications include the following:

- Overhaul of the installation methods and reference installation methods.
- New installation methods for cables in domestic style insulated cavity floors and lofts.
- ‘Rating’ factors for cables buried in the ground.
- Extensive additional rating factors for cables in free air (called correction factors in the 16th Edition).

### **Swimming pools (702)**

For the 17th Edition, the scope of section 702 now includes the basins of fountains and areas in natural waters including the sea and lakes, where they are specifically designated as swimming areas.

### **Lighting and luminaires**

A completely new section for the 17th Edition is section 559 ‘Luminaires and Lighting Installations’, which totals six pages of text and some 44 new regulations.

The new section deals with interior and exterior lighting installations and also applies to highway power supplies and street furniture.

The section specifies such regulations as: ‘luminaire through wiring can only be used where the luminaire is specifically designed for this’, ‘heat specification of terminal wiring’, and others of a similar nature.

### **Inspection and testing**

Under this heading a new requirement is that the insulation resistance of conductors is tested to the cpc with the cpc connected to the earthing arrangement.

### **New appendix with current-carrying capacity of busbars**

A new appendix has been added giving information on current-carrying capacity and voltage drop of busbars and powertrack.

### **Chapter 56 Safety services**

This chapter has been modified and specifies 'break times' for standby systems. It sets regulations for such subjects as circuitry under fault conditions, parallel operation, and specifies the life of certain critical back-up batteries.

### **High earth leakage currents**

Correctly termed 'high protective conductor currents'. The former section 607 has been incorporated into Chapter 54 with some limited removal of ambiguous regulations.

### **High voltage to low voltage faults**

A new section for the 17th Edition, but this not particularly significant for installers or designers. The section is only relevant for 'private' HV-LV substations, and even then the corresponding HV standards will need to be followed. Read Chapter D for a fuller explanation.

### **Voltage drop**

Whilst in essence the basic requirements of the regulations on voltage drop have not changed, a new appendix suggests maximum voltage drops for both utility and private supplies. These voltage drops are separated into suggested limits for lighting and other circuits.

### **Atmospheric and switching overvoltages**

There are a few pages of regulations on this subject, but there is not much of significance unless you have overhead distribution cables within your installation.

### **Surge protective devices**

Although not required, there are regulations for installing surge protective devices (SPDs).

### **Insulation monitoring devices (IMDs) and residual current monitors (RCMs)**

Similarly, although optional, there are regulations for installing these devices.

RCMs in particular are becoming more widely specified, and there is guidance on this subject provided in Chapter D of this book.

### **Caravan and camping parks (708)**

The main modification for the 17th Edition is that pitch socket-outlets are to be individually protected by a 30 mA RCD.

### **New special installations or locations**

The following Special Installations sections are new to the 17th Edition:

- 709 Marinas
- 711 Exhibitions, shows and stands
- 712 Solar photovoltaic (PV) power supply systems
- 717 Mobile or transportable units
- 721 Electrical installations in caravans and motor caravans
- 740 Temporary electrical installations for structures, amusements and booths at fairgrounds
- 753 Floor and ceiling heating systems.

