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## Foreword

This British Standard is published under the direction of the British Electrotechnical Committee (BEC) and The Institution of Engineering and Technology (IET).

Following a full review, this Standard replaced the 16th Edition of the IEE Wiring Regulations BS 7671:2001 as amended. Copyright is held jointly by The IET and BSI.

Technical authority for this Standard is vested in the Joint IET/BSI Technical Committee JPEL/64. This Joint Technical Committee, which is responsible for the work previously undertaken by the IEE Wiring Regulations Committee and the BSI Technical Committee PEL/64, meets the constitutional and operational requirements of both parent bodies. JPEL/64 has the responsibility for the content of this British Standard under the joint authority of the IET and the BSI Standards Board.

All references in this text to the Wiring Regulations or the Regulation(s), where not otherwise specifically identified, shall be taken to refer to BS 7671:2008 Requirements for Electrical Installations.

## Introduction to BS 7671:2008

BS 7671:2008 Requirements for Electrical Installations was issued on 1<sup>st</sup> January 2008 and is intended to come into effect on 1<sup>st</sup> July 2008. Installations designed after 30<sup>th</sup> June 2008 are to comply with BS 7671:2008.

The Regulations apply to the design, erection and verification of electrical installations, also additions and alterations to existing installations. Existing installations that have been installed in accordance with earlier editions of the Regulations may not comply with this edition in every respect. This does not necessarily mean that they are unsafe for continued use or require upgrading.

BS 7671:2008 includes changes necessary to maintain technical alignment with CENELEC harmonization documents. A summary of the main changes is given below.

**NOTE 1:** This is not an exhaustive list.

**NOTE 2:** Particular attention is drawn to Section 701. This section now allows socket-outlets (other than SELV and shaver supply units to BS EN 61558-2-5) to be installed in locations containing a bath or shower 3m horizontally beyond the boundary of zone 1.

**Regulation 131.6** adds requirements to protect against voltage disturbances and implement measures against electromagnetic influences. In doing so, the design shall take into consideration the anticipated electromagnetic emissions, generated by the installation or the installed equipment, which shall be suitable for the current-using equipment used with, or connected to, the installation.

**Regulation 132.13** requires that documentation for the electrical installation, including that required by Chapter 51, Part 6 and Part 7, is provided for every electrical installation.

**Chapter 35** Safety services, recognises the need for safety services as they are frequently regulated by statutory authorities whose requirements have to be observed, e.g. emergency escape lighting, fire alarm systems, installations for fire pumps, fire rescue service lifts, smoke and heat extraction equipment.

**Chapter 36** Continuity of service, requires that an assessment be made for each circuit of any need for continuity of service considered necessary during the intended life of the installation.

**Chapter 41** Protection against electric shock, now refers to basic protection, which is protection under normal conditions (previously referred to as protection against direct contact), and fault protection, which is protection under fault conditions (previously referred to as protection against indirect contact). Chapter 41 now includes those requirements previously given in Section 471 of BS 7671:2001.

Chapter 41 now requires that for the protective measure of automatic disconnection of supply for an a.c. system, additional protection by means of an RCD with 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  $I_{\Delta n}$  be provided for socket-outlets with a rated current not exceeding 20 A that are for use by ordinary persons and are intended for general use, and for mobile equipment with a current rating not exceeding 32 A for use outdoors. This additional protection is now to be provided in the event of failure of the provision for basic protection and/or the provision for fault protection or carelessness by users of the installation. Note that certain exceptions are permitted – refer to Regulation 411.3.3.

Chapter 41 includes Tables 41.2, 41.3 and 41.4 for earth fault loop impedances (replacing Tables 41B1, 41B2 and 41D). These new tables are based on a nominal voltage of 230 V (not 240 V), hence the values are

slightly reduced. It has been clarified that where an RCBO is referred to in these Tables, the overcurrent characteristic of the device is being considered.

Chapter 41 includes a new Table 41.5 giving maximum values of earth fault loop impedance for RCDs to BS EN 61008-1 and BS EN 61009-1.

FELV is recognised as a protective measure and the new requirements are detailed in Regulation 411.7.

Chapter 41 includes the UK reduced low voltage system. Requirements are given in Regulation 411.8.

**Chapter 42** Protection against thermal effects, includes requirements in Section 422 Precautions where particular risks of fire exist (These requirements were previously stated in Section 482 of BS 7671:2001).

**Chapter 43** Protection against overcurrent, includes those requirements previously given in Section 473 of BS 7671:2001. Information on the overcurrent protection of conductors in parallel is given in Appendix 10.

**Chapter 44** Protection against voltage disturbances, includes a new Section 442, Protection of low voltage installations against temporary overvoltages due to earth faults in the high voltage system and due to faults in the low voltage system. This new section provides for the safety of the low voltage system under fault conditions including faults in the high voltage system, loss of the supply neutral in the low voltage system and short-circuit between a line conductor and neutral in the low voltage installation.

**Section 443** Protection against overvoltages of atmospheric origin or due to switching, retains the existing text from BS 7671 and adds regulations enabling designers to use a risk assessment approach when designing installations which may be susceptible to overvoltages of atmospheric origin.

**Chapter 52** Selection and erection of wiring systems, now includes busbar trunking systems and powertrack systems.

It is now required to protect cables concealed in a wall or partition (at a depth of less than 50 mm) by a 30 mA RCD where the installation is not intended to be under the supervision of a skilled or instructed person, if the normal methods of protection including use of cables with an earthed metallic covering, mechanical protection (including use of cables with an earthed metallic covering, or mechanical protection) cannot be employed. This applies to a cable in a partition where the construction includes metallic parts other than fixings irrespective of the depth of the cable.

Table 52.2 Cable surrounded by thermal insulation, gives slightly reduced derating factors, to take account of the availability of material with improved thermal insulation.

**Chapter 53** Protection, isolation, switching, control and monitoring. Simplification means that requirements previously in Chapter 46, Sections 476 and 537 of BS 7671:2001 are now in this single chapter. Chapter 53 also includes a new Section 532 Devices for protection against the risk of fire, and a new Section 538 Monitoring devices.

**Chapter 54** Earthing arrangements and protective conductors. The requirement that a metallic pipe of a water utility supply shall not be used as an earth electrode is retained in Regulation 542.2.4 which also states that other metallic water supply pipework shall not be used as an earth electrode unless precautions are taken against its removal and it has been considered for such a use. An example of other metallic water supply pipework could be a privately owned water supply network.

A note to Regulation 543.4.1 states that in Great Britain, regulation 8(4) of the Electricity Safety, Quality and Continuity Regulations 2002 prohibits the use of PEN conductors in consumers' installations. Regulation 543.7 has earthing requirements for the installation of equipment having high protective conductor currents, previously in Section 607 of BS 7671:2001.

**Chapter 55** Other equipment, includes new additional requirements in Regulation 551.7 to ensure the safe connection of low voltage generating sets including small-scale embedded generators (SSEGs).

**Section 559** Luminaires and lighting installations, is a new series of Regulations giving requirements for fixed lighting installations, outdoor lighting installations, extra-low voltage lighting installations, lighting for display stands and highway power supplies and street furniture (previously in Section 611 of BS 7671:2001).

**Chapter 56** Safety services, has been expanded in line with IEC standardization.

**Part 6** Inspection and testing, was Part 7 of BS 7671:2001. Changes have been made to the requirements for insulation resistance; when testing SELV and PELV circuits at 250 V, the minimum insulation resistance is raised to 0.5 M $\Omega$ ; for systems up to and including 500 V, including FELV, the minimum insulation resistance is raised to 1.0 M $\Omega$ .

**Part 7** Special installations or locations, was Part 6 of BS 7671:2001. The structure of Part 7 includes the following changes.

Section 607 in BS 7671:2001 relating to high protective conductor currents has been incorporated into Chapter 54.

Section 608 in BS 7671:2001 relating to caravans, motor caravans and caravan parks has been incorporated into Section 708: Electrical installations in caravan/camping parks and similar locations and Section 721: Electrical installations in caravans and motor caravans.

Section 611 in BS 7671:2001 relating to highway power supplies is now incorporated into Section 559.

**The following major changes are incorporated in Part 7:**

**Section 701** Locations containing a bath tub or shower basin.

Zone 3 is no longer defined.

Each circuit in the special location must have 30 mA RCD protection.

Supplementary bonding is no longer required providing the installation has main bonding in accordance with Chapter 41.

This section now allows socket-outlets (other than SELV and shaver supply units to BS EN 61558-2-5) to be installed in locations containing a bath or shower 3m horizontally beyond the boundary of zone 1.

**Section 702** Swimming pools and other basins. This special location now includes basins of fountains. Zones A, B and C in BS 7671:2001 are replaced by zones 0, 1 and 2.

**Section 703** Rooms and cabins containing sauna heaters. Zones A, B, C and D in BS 7671:2001 are replaced by zones 1, 2 and 3 (with changed dimensions).

**Section 704** Construction and demolition site installations. The reduced disconnection times (0.2 s) and the 25 V equation no longer appear.

**Section 705** Agricultural and horticultural premises. The reduced disconnection times (0.2 s) and the 25 V equation no longer appear. Additional requirements applicable to life support systems are included.

**Section 706** Conducting locations with restricted movement, was Section 606 in BS 7671:2001.

**Section 708** Electrical installations in caravan/camping parks and similar locations, now includes the requirement that each socket-outlet must be provided individually with overcurrent and RCD protection.

**The following new sections are now included in Part 7:**

**Section 709** Marinas and similar locations

**Section 711** Exhibitions, shows and stands

**Section 712** Solar photovoltaic (pv) power supply systems

**Section 717** Mobile or transportable units

**Section 721** Electrical installations in caravans and motor caravans – previously in Section 608 of BS 7671:2001

**Section 740** Temporary electrical installations for structures, amusement devices and booths at fairgrounds, amusement parks and circuses

**Section 753** Floor and ceiling heating systems.

Appropriate changes have been made to **Appendices 1 to 7**, in particular the methods and tables used in **Appendix 4**.

**The following new appendices are now included:**

**Appendix 8** Current-carrying capacity and voltage drop for busbar trunking and powertrack systems

**Appendix 9** Definitions – multiple source, d.c. and other systems

**Appendix 10** Protection of conductors in parallel against overcurrent

**Appendix 11** Effect of harmonic currents on balanced three-phase systems

**Appendix 12** Voltage drop in consumers' installations

**Appendix 13** Methods for measuring the insulation resistance/impedance of floors and walls to Earth or to the protective conductor system

**Appendix 14** Measurement of earth fault loop impedance:  
consideration of the increase of the resistance of conductors with increase of temperature

**Appendix 15** Ring and radial final circuit arrangements, Regulation 433.1