Requirements for Electrical Installations

BS 7671:2008(2011)

The IET Wiring Regulations

17th Edition
Presenter:

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Topics:

- the history the Regulations
- an Overview of BS 7671:2008(2011)
- statutory requirements
- planned Amendments
- guidance publications and where they sit
- Q&A
History of BS 7671
The history of BS 7671

The Wiring Regulations were first issued in 1882 by the Society of Telegraph Engineers and of Electricians, consisting of four pages and 21 Regulations:

1. FIRE RISKS ARISING FROM ELECTRIC LIGHTING.

From any cause, or to the dependations of water or rain, they should be efficiently screened in some hard material. Any wire not so screened shall be protected from rain and wet by proper covering, such as lead, brass, or copper, or some other insulating substance.

2. RULES AND REGULATIONS FOR THE PREVENTION OF THE EXPLOSION OF GASES ARISING FROM ELECTRIC LIGHTING.

The use of explosive gas mixture of oil and water shall be prohibited, and all gas lines shall be kept in good repair, without any leakage or defect, and the gas shall be conducted through metal pipes, either lead or iron, or some other insulating substance.

3. RULES AND REGULATIONS FOR THE PREVENTION OF THE EXPLOSION OF GASES ARISING FROM ELECTRIC LIGHTING.

The gas plants shall be kept in good repair, and all gas lines shall be kept in good repair, without any leakage or defect, and the gas shall be conducted through metal pipes, either lead or iron, or some other insulating substance.

4. RULES AND REGULATIONS FOR THE PREVENTION OF THE EXPLOSION OF GASES ARISING FROM ELECTRIC LIGHTING.

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The First Edition of The Regulations had requirements for:

**Isolation – Regulation 7:**

7. Every switch or commutator used for turning the current on or off should be constructed so that when it is moved and left to itself it cannot permit of a permanent arc or of heating, and its stand should be made of slate, stoneware, or some other incombustible substance.

**Mechanical protection and labelling – Regulation 17:**

17. Where wires are put out of sight, as beneath flooring, they should be thoroughly protected from mechanical injury, and their position should be indicated.

**Periodic Inspection and Testing:**

N.B.—The value of frequently testing the wires cannot be too strongly urged. It is an operation, skill in which is easily acquired and applied. The escape of electricity cannot be detected by the sense of smell, as can gas, but it can be detected by apparatus far more certain and delicate. Leakage not only means waste, but in the presence of moisture it means destruction of the conductor and its insulating covering, by electric action.
16th Edition

In 1991, the Sixteenth Edition of the IEE Wiring Regulations was issued.


The final issue of the Sixteenth Edition was BS 7671:2001(2004).
17th Edition


Consisting of 389 pages and 1108 Regulations

In 2011 the First Amendment to BS 7671:2008 is published.

Consisting of 463 pages and 1274 Regulations
Standardisation

The UK National Committee responsible for BS 7671 is JPEL/64

J Joint IET/BSI Committee
P Power
EL Electrical
64 IEC designation for Committees dealing with low voltage electrical installations

This is a joint committee between BSI and the IET.

The constitution of JPEL/64 is shown on page 8 of the Regulations.

Joint IET/BSI Technical Committee JPEL/64
CONSTITUTION
as at June 2011
Standardisation

Due to the treaty of Rome, the UK are obliged to incorporate the technical intent of Standards developed at the European CENELEC level, i.e. HD – Harmonized Documents.

BS 7671 is largely based on the requirements of the CENELEC HD 60364 series of standards.

HD 60364 is available as a series of standards.

www.cenelec.org
Standardisation

To keep track of future changes:

**CENELEC**
www.cenelec.eu
Search HD 60364

**IEC**
www.iec.ch
Search IEC 60364
Overview of BS 7671:2008(2011)
# Structure of the standard

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Appendices 1-16
Structure of the standard - Appendices

1. British Standards to which reference is made in the Regulations
2. Statutory regulations and associated memoranda
3. Time/current characteristics of overcurrent protective devices
4. Current carrying capacity and voltage drop for cables and flexible cords
5. Classification of external influences
6. Model forms for certification and reporting
7. Harmonized cable core colours
8. Current-carrying capacity and voltage drop for busbar trunking and powertrack systems
9. Definitions – multiple source, d.c. and other systems
10. Protection of conductors in parallel against overcurrent
11. Harmonic currents in three phase systems
12. Voltage drop in consumers’ installations
13. Methods for measuring insulation resistance of floors and walls
14. Measurement of fault loop impedance: increase of resistance of conductors with temperature
15. Radial and ring circuit arrangements
16. Devices for protection against overvoltage NEW
Plan of the 17th Edition

Part 1 - Scope, Object and Fundamental Principles

- Part 3: Assessment of General Characteristics
- Part 4: Protection for Safety
- Part 5: Selection and Erection of Equipment
- Part 6: Inspection and Testing
- Part 7: Special Installations or Locations

Part 2 - Definitions
The definitions used in Part 2 are extracted from the IEC International Electrotechnical Vocabulary (IEV), Part 826 – IEC 60050.

Where UK only terms are used in BS 7671, the definitions have been developed by JPEL/64.

223 terms are defined in the 17th Edition, whilst 151 were defined in the 16th!
New Section

Section 534 deals with the installation of surge protective devices (SPD) where required by:

- **Section 443 of BS 7671**

Section 534 applies to a.c. power circuits only.

This Section does not cover surge protective components incorporated in appliances.
A surge protective device (SPD) is a device that is intended to limit transient overvoltages and divert surge currents.

**Two types of overvoltage – transient and temporary**

**Transient overvoltage**

- caused by: lightning strikes, distribution network HV switching, switching of inductive loads
- duration: short - µs
- size: \(\leq 6000 \text{ V}\)
Part 5
Section 534
Coordination
Section 710 applies to:

- hospitals
- private clinics
- medical and dental practices
- healthcare centres
- dedicated medical rooms in the work place
- veterinary clinics
Includes requirements for:

- gives examples of positioning doors in long closed restricted access areas
EICR is divided into two areas:

- domestic and similar installations up to 100A
- larger installations > 100A
New codes and definitions have been developed with the intention of being clearer –

“If it's recorded, it's an issue that should be dealt with”

The new codes are:

C2. Potentially dangerous - urgent remedial action required.
C3. Improvement recommended.

The recording of either a C1 or C2 observation would result in an unsatisfactory outcome.
Overview of the planned Amendments
BS 7671:2008(2011)
BS 7671:2008 – Amendment No.2 2013

One Section only:

Section 722 – Supplies to Electric Vehicles

Likely to be issued – July 2013

Stand alone document – not consolidated
BS 7671:2008 – Amendment No.3 2015

Many changes expected due to changes at IEC and CENELEC level

Likely to be issued – January 2015
Possible areas of change:

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

Section 444 - Measures against electromagnetic disturbances

Chapter 51 - Selection and erection of electrical equipment - Common rules

Section 557 - Auxiliary circuits

Section 559 - Luminaires

Chapter 56 - Selection and erection of electrical equipment - Safety services

Section 708 - Caravan parks
Statutory requirements
Statutory requirements

The primary piece of legislation is the Electricity at Work Regulations 1989
Statutory requirements

Memorandum of guidance on the Electricity at Work Regulations 1989. Guidance on Regulations

- Date of publication: 2007
- ISBN: 9780717662289
- Series code: hsr25
- Price: £11.95

Buy or download free
Part P of the Building Regulations of England

Why of England?

Scotland has its own requirements

Northern Ireland is yet to implement electrical requirements

Wales decided to develop its own Building Regulations from 1 Jan 2012 but will continue to use the Building Regulations of England until it develops its own Building Regulations.
Part P of the Building Regulations of England

What does Part P require?

Part P requires that:

“Reasonable provision shall be made in the design and installation of electrical installations in order to protect persons operating, maintaining or altering the installations from fire or injury.”

Part P applies to dwellings (flats, houses) or whole buildings where the electrical supply is shared (e.g. flat above a shop).
Part P of the Building Regulations of England

How does this affect the electrical installer?

The electrical installer is required to notify Building Control of any electrical installation work in the following areas:

- complete rewire
- replacement of consumer unit
- new circuits from the consumer unit
- kitchen
- bathroom
- external to the property
- special locations, e.g. swimming pool.
Part P of the Building Regulations of England

How does the installer notify the work?

The installer must either be:

- registered on a Competent Persons Scheme, e.g. NICEIC, ELECSA, NAPIT, or

- inform Building Control of their intention before starting work and a Building Control inspector will need to see the work “first fix” stage, at completion when an Electrical Installation Certificate must be provided.
Part P of the Building Regulations of England

What are the planned changes to Part P?

Change to notifiable work:

• the installation of a new circuit
• work to, or replacement of, the consumer unit
• alteration work in a special location.
Who can do the work?

Building Control will recognise work done by the following categories:

- self-certification by a registered competent person
- third-party certification by a registered third-party certifier
- certification by a building control body.
IET Guidance

Guidance Notes Suite

http://electrical.theiet.org/books/index.cfm
IET Guidance

Guidance publications

http://electrical.theiet.org/books/index.cfm
IET Guidance

Wiring Regulations Digital

http://electrical.theiet.org/wiring-regulations/digital/index.cfm
Thank you for listening

Any questions?