

CHANGES TO THE ELECTRICAL INSTALLATION CERTIFICATE AND REPORT FORMS

by Jonathan Elliott

SCHEDULE OF INSPECTIONS	
<p>Methods of protection against electric shock</p> <p>Both basic and fault protection:</p> <input type="checkbox"/> (i) SELV <input type="checkbox"/> (ii) PELV <input type="checkbox"/> (iii) Double insulation <input type="checkbox"/> (iv) Reinforced insulation <p>Basic protection:</p> <input type="checkbox"/> (i) Insulation of live parts <input type="checkbox"/> (ii) Barriers or enclosures <input type="checkbox"/> (iii) Obstacles <input type="checkbox"/> (iv) Placing out of reach <p>Fault protection:</p> <p>(i) Automatic disconnection of supply:</p> <input type="checkbox"/> Presence of earthing conductor <input type="checkbox"/> Presence of circuit protective conductors <input type="checkbox"/> Presence of protective bonding conductors <input type="checkbox"/> Presence of supplementary bonding conductors <input type="checkbox"/> Presence of earthing arrangements for combined protective and functional purposes <input type="checkbox"/> Presence of adequate arrangements for alternative source(s), where applicable <input type="checkbox"/> FELV <input type="checkbox"/> Choice and setting of protective and monitoring devices (for fault and/or overcurrent protection) <p>(ii) Non-conducting location:</p> <input type="checkbox"/> Absence of protective conductors <p>(iii) Earth-free equipotential bonding:</p> <input type="checkbox"/> Presence of earth-free equipotential bonding <p>(iv) Electrical Separation:</p> <input type="checkbox"/> Provided for one item of current-using equipment <input type="checkbox"/> Provided for more than one item of current-using equipment <p>Additional protection:</p> <input type="checkbox"/> Presence of residual current device(s) <input type="checkbox"/> Presence of supplementary bonding conductors	<p>Prevention of mutual detrimental influence</p> <input type="checkbox"/> (a) Proximity of non-electrical services and other influences <input type="checkbox"/> (b) Segregation of Band I and Band II circuits or use of Band II insulation <input type="checkbox"/> (c) Segregation of safety circuits. <p>Identification</p> <input type="checkbox"/> (a) Presence of diagrams, instructions, circuit charts and similar information <input type="checkbox"/> (b) Presence of danger notices and other warning notices <input type="checkbox"/> (c) Labeling of protective devices, switches and terminals <input type="checkbox"/> (d) Identification of conductors <p>Cables and conductors</p> <input type="checkbox"/> Selection of conductors for current-carrying capacity and voltage drop <input type="checkbox"/> Erection methods <input type="checkbox"/> Routing of cables in prescribed zones <input type="checkbox"/> Cables incorporating earthed armour or sheath, or run within an earthed wiring system, or otherwise adequately protected against nails, screws and the like <input type="checkbox"/> Additional protection provided by 30 mA RCD for cables in concealed walls (where required in premises not under the supervision of a skilled or instructed person) <input type="checkbox"/> Connection of conductors <input type="checkbox"/> Presence of fire barriers, suitable seals and protection against thermal effects <p>General</p> <input type="checkbox"/> Presence and correct location of appropriate devices for isolation and switching <input type="checkbox"/> Adequacy of access to switchgear and other equipment <input type="checkbox"/> Particular protective measures for special installations and locations <input type="checkbox"/> Connection of single-pole devices for protection or switching in-line conductors only <input type="checkbox"/> Correct connection of accessories and equipment <input type="checkbox"/> Presence of undervoltage protective devices <input type="checkbox"/> Selection of equipment and protective measures appropriate to external influences <input type="checkbox"/> Selection of appropriate functional switching devices
Inspected by _____	Date _____
<p>NOTES:</p> <p>✓ to indicate an inspection has been carried out and the result is satisfactory</p> <p>✗ to indicate an inspection has been carried out and the result is not satisfactory (applicable for a periodic inspection only)</p> <p>N/A to indicate that the inspection is not applicable to a particular item</p> <p>LDI to indicate that, exceptionally, a limitation agreed with the person ordering the work prevented the inspection being carried out. (applicable for a periodic inspection only)</p>	

IN THE COURSE of producing the new edition of BS 7671 (the IEE Wiring Regulations 17th Edition) a number of changes have been made to the chapters covering initial verification; periodic inspection & testing; and certification & reporting and to Appendix 6 (Model forms for certification and reporting). This article explains the reasoning behind these changes and highlights the principal differences between the 16th and 17th Edition requirements.

Alignment with International and European conventions

The 17th Edition of the Wiring Regulations (BS 7671) is currently under production and is due to be released in January 2008 and will come into effect on 1st July 2008. The new version of BS 7671 has been produced including the changes necessary to maintain technical alignment with IEC (International) and CENELEC (European) harmonization documents. In the case of the requirements within Part 6 of the new edition relating to initial verification, periodic inspection & testing, and certification and reporting these have been based on Harmonization Document HD 384.6.61 S2; 2003 but with reference having been made to the more recent HD 60364-6 Part 6: 2007 - Verification and to Part 7 as it appeared in the 16th Edition of BS 7671.

The Chapter and numbering system

This brings us to the first difference between the 16th and 17th Editions. In the 16th Edition Part 7 covered the various aspects of inspection and testing. In the 17th Edition, inspection and testing is covered by Part 6, so aligning with the numbering in the European base standard - a practice that has been adopted throughout the rest of the 17th Edition wherever possible.

So, in the 17th Edition:

- for Initial verification refer to Chapter 61
 - for Periodic Inspection refer to Chapter 62
 - for Certification and reporting refer to Chapter 63
- The model forms for certification and reporting remain in Appendix 6.

The numbering of Parts, Chapters and Sections throughout the 17th Edition has been changed to fall in line with the systems employed by the International Electrotechnical Commission (IEC) and CENELEC as much as is practically possible. However, although different, the system should be sufficiently familiar to users of the wiring regulations to not present difficulties. By way of an example, in the 16th Edition, section 712 covered Inspection, with Regulation 712-01-03 being a summary of items to be checked during installation. In the 17th Edition the equivalent section is numbered 611 and Regulation is numbered 611.3.

611. Inspection - Goodbye Direct and Indirect contact. Hello Basic and Fault protection

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).

This change has had significant implications for those items required to be inspected in Regulation 611.3 and hence in the model form for the Schedule of Inspections given in Appendix 6. A summary of the differences are given in table 1.

612. Testing – Changes to minimum acceptable values of insulation resistance and requirement to check phase sequence.

In the most part the requirements for electrical tests remain unchanged from those of the 16th Edition. However, the minimum acceptable values for insulation resistance when measured at a distribution board or consumer unit with all final circuits connected but with current using equipment disconnected have been raised as shown in the comparison in table 2.

With reference to the table 2, it should be noted that in all cases the applied test voltages remain unchanged.

Also of interest is the inclusion of a note which advises that more stringent requirements for minimum insulation resistance are applicable to the wiring of fire alarm systems in buildings, referring to the reader to BS 5839 part 1 as a source of further information (see BS 5839-1: 2002, Clause 38 *Inspection and testing of wiring*).

In the 17th Edition, Regulation 612.12 makes a new requirement that verification of phase sequence is carried out in multiphase circuits. Although not specifically stated in the 16th Edition, it would have been necessary to carry out this verification where appropriate previously and as such this change will have no appreciable impact on persons carrying out the initial verification of installations.

16th Edition		17th Edition	
Measures providing protection against both direct and indirect contact	<ul style="list-style-type: none"> • SELV • Limitation of discharge of energy 	Measures providing both basic and fault protection	<ul style="list-style-type: none"> • SELV • PELV • Double insulation • Reinforced insulation
Measures providing protection against direct contact	<ul style="list-style-type: none"> • Insulation of live parts • Barriers or enclosures • Obstacles • Placing out of reach 	Measures providing basic protection	<ul style="list-style-type: none"> • Insulation of live parts • Barriers or enclosures • Obstacles • Placing out of reach
Protection against indirect contact	<ul style="list-style-type: none"> • EEBADS • Class II equipment or equivalent insulation • Non-conducting location • Earth-free local equipotential bonding • Electrical separation 	Measures providing fault protection	<ul style="list-style-type: none"> • Automatic disconnection of supply • Non-conducting location • Earth-free equipotential bonding • Electrical separation

Table 1

Circuit nominal voltage (V)	Minimum insulation resistance (M Ω)	
	16th Edition	17th Edition
SELV and PELV	0.25	≥ 0.5
Up to and including 500 V with the exception of SELV and PELV above	0.5	≥ 1.0
Above 500 V	1.0	≥ 1.0

Table 2

Voltage drop

Regulation 612.14 states that voltage drop may be evaluated by measurement of circuit impedance when necessary to verify compliance with the requirements of section 525 (voltage drop in consumer's installations).

Requirements for test instruments

There have been no changes made in relation to the specification for test instruments. If they were suitable for 16th Edition requirements, they remain suitable for use under 17th Edition requirements so long as they remain in a serviceable condition.

The new Model forms

As mentioned previously, it has been necessary to make a number of changes to the Model forms, in particular the Schedule of

Inspections. The new schedule of inspections is reproduced below for reference and to aid familiarisation. Those parts of the schedule that have been subject to significant change are highlighted.

Please note that PDF versions of the forms to accompany the 17th Edition will be available as a free download on the IET website www.theiet.org/technical from mid-January 2008 under *Forms for electrical contractors*. ■

The content of this article is based on the current Committee draft of BS 7671 and may be subject to change.