

Introduction



Alan Wells – Technical and Standards Director
Certsure LLP – trading as NICEIC



Who are Certsure?



Where do we come from?

1923 - A National Register created

1956 - NICEIC established as a Charity to protect consumers from unsafe and unsound electrical installations

2006 - Renamed as Electrical Safety Council and NICEIC continued as its commercial arm

1901 -The Electrical Contractors' Association (ECA) was founded

What do we do?



We serve the Building Engineering Services Sector with industry leading UKAS EN45011(ISO 17065) and 17024 accredited certification, including:

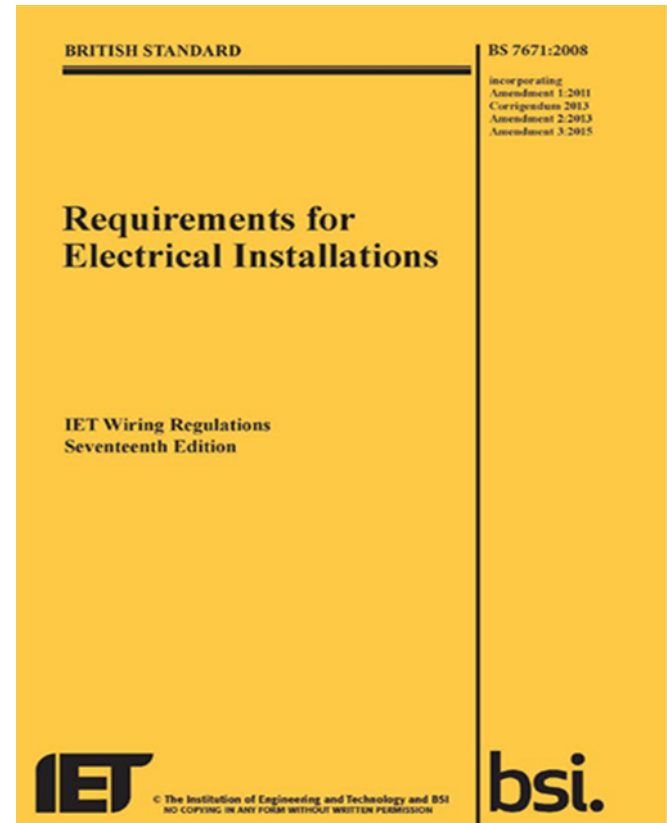
- NICEIC Approved Contractor Scheme
- SBSO Certifier of Construction (Electrical Installations to BS7671)
- DCLG approved Competent Persons Schemes – NICEIC
- BAFE Third Party Certification of those organisations involved in fire detection and fire alarm systems
- Micro-Generation Certification Scheme (MCS)
- Green Deal - installer and assessor
- We operate nationwide serving in excess 35,000 customers
- ISO / IEC 17024: 2012 - Certification of persons – Gas Safe



BS7671:2008 3rd Amendment



The changes have been finalised, and the third amendment will contain a significant number of changes affecting a wide variety of electrical installation work.



BS7671:2008 3rd Amendment

First edition – 21 July 1882

WOLFE AND BROTHERS, Ltd.
Society of Telegraph Engineers and of Electricians.

RULES AND REGULATIONS FOR THE PREVENTION OF FIRE RISKS ARISING FROM ELECTRIC LIGHTING.

Recommended by the Council in accordance with the Report of the Com-
missioners appointed by Her Majesty's High Commission for the subject.

MEMBERS OF THE COMMITTEE.

Professor W. G. Adams, F.R.S., F.R.S.E., President.	Professor J. G. Hughes, F.R.S., F.R.S.E., Vice-President.
Mr Charles F. Smith.	Mr H. Perry, F.R.S., Past President.
F. Knoll Thompson.	Alexander Thomson.
H. E. Creighton.	Mr G. Spanglow, Vice-President.
Mr Charles F.R.S.E.	James E. Buchanan.
Mr Wm De la Rue, F.R.S., F.R.S.E., President.	Alexander Newell.
Professor W. G. Preece, F.R.S., Past President.	Mr William Thomson, F.R.S., Past President.
Edward Cross.	Lord Kelvin and Sir C. Walker, B.Sc., F.R.S.E., President.
Mr R. H. Gordon.	
Dr J. Stephenson, F.R.S.	

These rules and regulations are drawn up not only for the guidance and instruction of those who have electric lighting apparatus installed on their premises, but for the authority to a Commission of those rules of law which are inherent in every system of artificial illumination.

The chief danger of every new application of electricity may safely be assumed and recognized on the part of those who supply and set up the apparatus.

The difficulties that beset the electrical engineer are clearly assumed and avoided, and they can only be effectively guarded against by "looking" or "proving" with electric currents. They depend chiefly on leakage, hidden resistance in the conductors, and bad joints, which lead to waste of energy and the production of heat. These defects can only be detected by measuring, by means of special apparatus, the currents that are either ordinarily or

RULES AND REGULATIONS FOR THE PREVENTION OF

the progress of heating, passed through the conductors. These or re-
ferred conductors should always be taken special protection, when
the technical faulting is so, as the description placing of other
conducting bodies upon such conductors might lead to "short
circuiting" or the sudden generation of heat due to a possible
current of electricity in conductors so small as wires.

It is essential to be guarded against that except the chief remains
to be guarded against, are the presence of moisture and the use of
"earth" as part of the circuit. (Electric leads to line of conductors,
and by the destruction of the conductors by electric shocks,
and the injudicious use of "earth" as a part of the circuit leads to
inability every other source of electricity and danger.

The aim of all work in the employment of it shall and
experience's attention to supervising the work.

R. THE DYNAMO MACHINE.

1. The dynamo machine shall be fixed in a dry place.
2. It shall not be exposed to dust or fly-bags.
3. It shall be kept perfectly clean and its bearings well oiled.
4. The metal parts of its axle and conductors shall be perfect.
5. It shall have, when practicable, its air-cooled fan running.
6. All conductors in the dynamo shall be firmly supported, well insulated, and arranged for inspection, and
marked as seen below.

II. THE WIRES.

2. Every aerial or overhead wire for carrying the current as
an off-shoot, by construction in this when it is meant and left to
stand should be made of steel, aluminium, or some other known
ductile substance.

3. They should be in connection with the main circuit a safety
fuse connected of such a grade which would be melted if the
current exceeds any value permitted, and would thus cause the
circuit to be broken.

4. Every part of the circuit should be so constructed, that the
weight of wire to be used is properly proportional to the current
it will carry in safety, and changes of current from a large to a
small conductor, shall be sufficiently protected as to enable

THE RULES APPLICABLE TO THE PREVENTION OF

wire from so that no portion of the conductors should ever be
allowed to touch a neighbouring conductor, &c.

5. These rules are of the very nature of safety. They
should always be observed in immediate cases. Even if wires
become improperly warmed by the ordinary current, it is a proof
that they are too small for the work they have to do, and that they
ought to be replaced by larger wires.

6. Every ordinary communication complete suitable circuits
should be made, and the employment of gas or other pipes as
conductors for the purpose of completing the circuit, shall be so
far as allowed.

7. Where two wires put of different sizes are being supported
it should be covered with insulating material, such as India-rubber
tape or silk, for at least ten feet on each side of the support.

8. Wires when passing over the tops of houses should never be
less than six or ten feet of any part of the roof, and they should
generally be high enough, when crossing thoroughfares, to allow
free passage to pass under them.

9. It is most essential that the wires should be electrically
and mechanically perfect. One of the best joints in this class is
the standard screw joint. The joint is slipped around with small
nuts, and the whole encased in a mass of solder.



10. The position of wires when underground should be well
clearly indicated, and they should be laid down so as to be easily
inspected and repaired.

11. All wires used for indoor purposes should be effectively
insulated.

12. No less than three feet (three rods, four, rods, or four
feet) of wire should be used in any place to touch metallic masses,
like iron pipes or pipes, they should be thoroughly insulated
from electrical earth, or with the suitable means, by
insulating sufficient covering, and where they are liable to be touched

RULES FOR THE PREVENTION OF

from any cause, or to the deposition of dirt or water, they should
be effectively exposed to some kind material.

13. Where wires are put out of sight, as in a chimney, they
shall be thoroughly protected from mechanical injury, and these
provisions should be observed.

14. The wires of incandescent lamps for use should be free
completely exposed. It is an operation, which is not to be neglected
and applied. The escape of electricity must be detected by the
means of special apparatus, but it may be detected by apparatus for
more certain and definite. Leakage is not only injurious, but
in the presence of acid gas it forms into a part of the resistance
and the resulting covering, by which it is done.

III. LAMPS.

15. Gas lamps should always be guarded by proper screens to
prevent danger from falling incandescent pieces of glass, and
from escaping sparks. These glasses should be protected with
non-conducting material.

16. The burners, and all parts which are to be laid out, should
be insulated from the current.

IV. DANGER TO PERSONS.

17. To prevent persons from danger inside buildings, it is
essential to be arranged the conductors and fittings, that no wire
be exposed to the danger of becoming current-carrying at all, and
that there should never be a difference of potential of more
than 200 volts between any two parts in the same room.

18. If the difference of potential is within any limits, such
as 100 volts, whether the source of electricity be overhead or below,
the lamps should be protected with a "safety" covering, so arranged
that the supply of electricity can be at once cut off.

By Order of the Council.

P. H. WELLS, Secretary.

Office of the Society,
4, The Brompton, Westminster,
June 26, 1882.



BS7671:2008 3rd Amendment

- The 3rd Amendment of BS 7671 will be published on **1st January 2015** and is intended to come into effect on the **1st July 2015**.
- Installations designed after the **30th June 2015** are to comply with BS 7671:2008 incorporating Amendment 3, 2015.
- Installations started after **1st January** but before **30th June** can be to either amendment – contract specification.

BS7671:2008 3rd Amendment



New Numbering system:

- Regulations with a 100 numbers represent **CENELEC harmonized** document reference numbers and;
- 200 numbers represent **UK only regulations**, e.g. 421.1.200 (a new regulation we will see again later).

BS7671:2008 3rd Amendment



Part 2 Definitions:

The definition of competent persons will be removed, to be replaced by:

Instructed person (electrically)

- Person adequately advised or supervised by a skilled person (as defined) to enable that person to perceive risks and to avoid hazards which electricity can create.

Ordinary person

- Person who is neither a skilled person nor an instructed person.

Skilled person (electrically)

- Person who possesses, as appropriate to the nature of the electrical work to be undertaken, adequate education, training or practical skills, and who is able to perceive risks and avoid hazards which electricity can create.



BS7671:2008 3rd Amendment

Chapter 41- Protection against electric shock

- There will be a requirement for RCD protection for socket-outlets up to 20 A, and for mobile equipment with a rated current not exceeding 32A for outdoors.
- An exception exists for:
 - where, other than for an installation **in a dwelling**, a documented risk assessment determines that the RCD protection is not necessary.
 - For a specific labelled or otherwise suitably identified socket-outlet provided for connection of a particular item of equipment.

BS7671:2008 3rd Amendment

Chapter 41- Protection against electric shock

- Maximum earth fault loop impedances given in tables 41.2, 41.3, 41.4 and 41.6 have been revised to take account of the **C_{min} factor**.
- **C_{min}** is the minimum voltage factor to take account of voltage variations which naturally occur in a supply.

BS7671:2008 3rd Amendment

Chapter 42 - Protection against thermal effects

New regulation - Regulation 421.1.200

- Within domestic (household) premises, consumer units and similar switchgear assemblies shall comply with BS EN 61439 3 and shall:
 - (i) have their enclosure manufactured from non-combustible material, or
 - (ii) be enclosed in a cabinet or enclosure constructed of non-combustible material and complying with Regulation 132.12.

NOTE : ferrous metal e.g. steel is deemed to be an example of a non-combustible material

BS7671:2008 3rd Amendment

Chapter 51 – Common rules, compliance with standards

Regulation 511.2

The addition of this regulation requires every item of equipment to be suitable for the nominal voltage and where necessary take into account the highest and/or lowest voltage likely to occur in normal service.

BS7671:2008 3rd Amendment

Chapter 51 – Common rules, compliance with standards

Regulation 512.1.5 Compatibility

- The designer of the fixed installation shall ensure that the installed fixed equipment, where relevant, is designed and manufactured in accordance with the EMC Directive and, upon request, the relevant documentation shall be made available.
 - As required by EMC Directive 2004/108

BS7671:2008 3rd Amendment



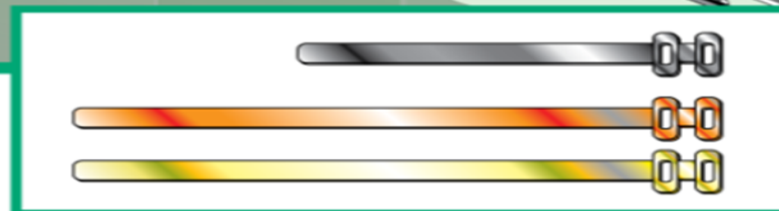
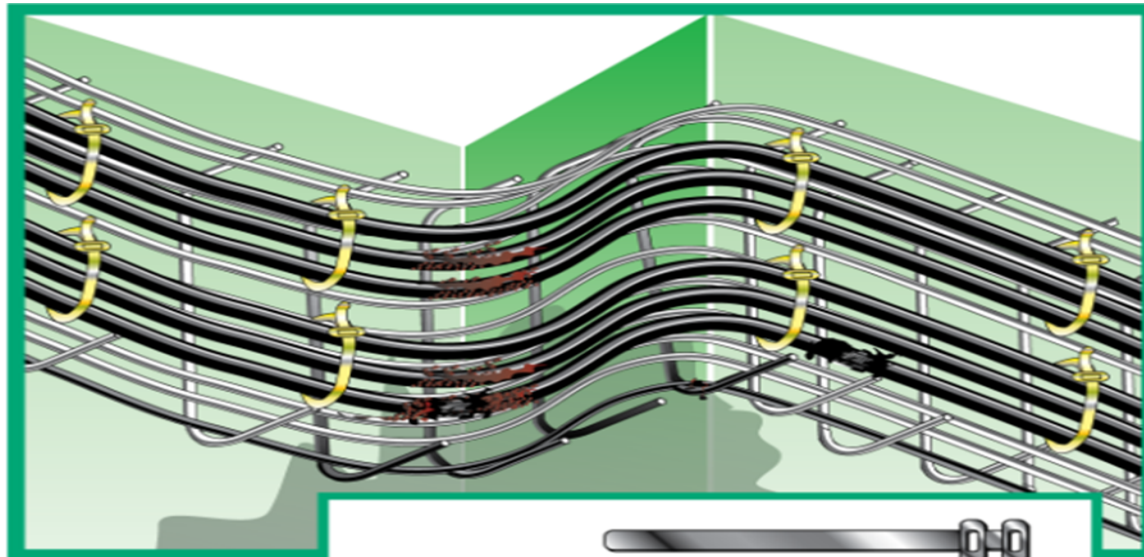
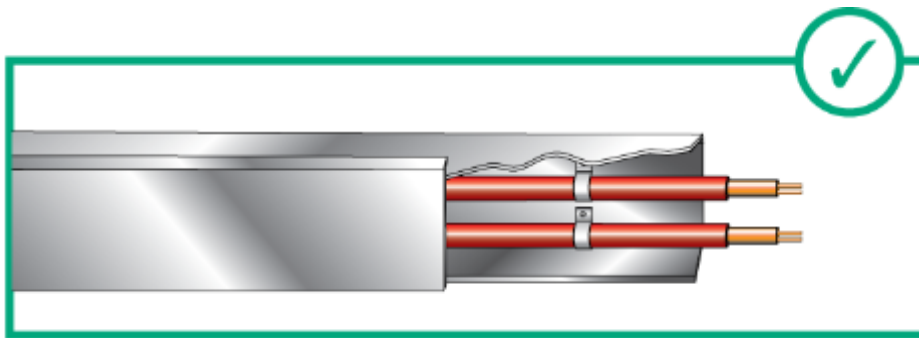
Chapter 52 – Selection and erection of wiring systems

- In the light of the very real dangers to fire-fighters, a new regulation **521.11.200** (UK only) has been included giving requirements for the methods of support of wiring systems in escape routes
- Wiring systems in escape routes shall be supported such that they will not be liable to premature collapse in the event of a fire

BS7671:2008 3rd Amendment



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Chapter 52 – Selection and erection of wiring systems

- The regulations concerning selection and erection of wiring systems have been re-drafted and the reference to **“under the supervision of a skilled or instructed person”** has been removed

BS7671:2008 3rd Amendment



Chapter 52 – Selection and erection of wiring systems

It will be a requirement that cables that are concealed in a wall or partition (at a depth of less than 50 mm) are protected by a **30 mA RCD** for all installations if other methods of protection are not employed.

- This will apply to a cable, irrespective of the depth of that cable, in a partition where the construction of the partition includes metallic parts other than fixings.

BS7671:2008 3rd Amendment

Chapter 55 other Equipment

- A new section **557** covering **Auxiliary Circuits** is included for low voltage electrical installations.
- Auxiliary circuits are defined in Part 2 as circuits for the transmission of signals intended for the detection, supervision or control of the functional status of a main circuit.

BS7671:2008 3rd Amendment

Section 559 luminaires and lighting installation

Amendment 3 also introduces a number of changes to align the BS 7671 requirements with the both latest **IEC** and **CENELEC** standards.

Examples of these changes include:

- moving the requirements for outdoor lighting and extra-low voltage lighting installations from Section 559 to two new sections, Section 714 and Section 715.

BS7671:2008 3rd Amendment

Section 714 - Outdoor Lighting Installations

Amendment 3 will make only minor changes to outdoor lighting installations:

- One important change will be that individual circuits will be required to be isolated.
- Recommendations for additional protection by a 30 mA RCD for telephone kiosks, bus shelters, advertising panels and town plans.

BS7671:2008 3rd Amendment

Section 715 - Extra-low Voltage Lighting

The Amendment 3 changes in this section include:

- the types of wiring systems permitted
- voltage drop in consumer's installations
- requirements for isolation, switching and control

BS7671:2008 3rd Amendment

Part 7 Special Installations or Locations

- Section 701 locations containing a bath or shower
- Additional protection by the use of one or more RCDs having the characteristics specified in Regulation 415.1.1 shall be provided for:
 - low voltage circuits serving the location
 - low voltage circuits passing through zones 1 and 2 not serving the location

BS7671:2008 3rd Amendment

Section 717 Mobile and Transportable Units

Regulation 717.413 has been introduced, and is based on the latest CENELEC HD. The Regulation will require:

- An insulation monitoring device to be installed so that automatic disconnection of the supply is provided in the case of a first fault or an RCD.
- An earth electrode to be installed so that automatic disconnection is provided in the case of failure of the transformer to provide electrical separation.

BS7671:2008 3rd Amendment

Section 717 Mobile and Transportable Units

- New Regulation 717.551.6 prohibits the interconnection of units with different power supply systems. This reinforces the general rules in Parts 1 to 6 of BS 7671.
- New Regulation 717.551.7.2 gives additional requirements for installations where the generating set may operate in parallel with other sources. This also reinforces the general rules in Parts 1 to 6 of BS 7671.

BS7671:2008 3rd Amendment

Appendix 6 - model forms for certification and reporting

The schedule of inspections (for new work only) has been replaced by examples of items requiring inspection during initial verifications (which must be appended to the electrical installation certificate).

Amendment 3 also makes a small number of changes to the EICR and associated notes, including a requirement to carry out an inspection within an accessible roof space where electrical equipment is present in that roof space.

BS7671:2008 3rd Amendment

Appendix 6 - model forms for certification and reporting

ELECTRICAL INSTALLATION CONDITION REPORT

SECTION D. EXTENT AND LIMITATIONS OF INSPECTION AND TESTING

Extent of the electrical installation covered by this report

.....

.....

Agreed limitations including the reasons (see Regulation 634.2)

.....

Agreed with:

Operational limitations including the reasons (see page no.....)

.....

The inspection and testing detailed in this report and accompanying schedules have been carried out in accordance with BS 7671: 2008 (IET Wiring Regulations) as amended to

It should be noted that cables concealed within trunking and conduits, under floors, ~~in roof spaces~~, and generally within the fabric of the building or underground, have **not** been inspected unless specifically agreed between the client and inspector prior to the inspection. An inspection should be made within an accessible roof space where electrical equipment is present.

BS7671:2008 3rd Amendment



Appendix 6 - model forms for certification and reporting

ELECTRICAL INSTALLATION CERTIFICATE

(REQUIREMENTS FOR ELECTRICAL INSTALLATIONS - BS 7671 [IET WIRING REGULATIONS])

FOR DESIGN

I/We being the person(s) responsible for the design of the electrical installation (as indicated by my/our signatures below), particulars of which are described above, having exercised reasonable skill and care when carrying out the design hereby CERTIFY that the design work for which I/we have been responsible is to the best of my/our knowledge and belief in accordance with BS 7671:2008, amended to (date) except for the departures, if any, detailed as follows:

Details of departures from BS 7671 (Regulations 120.3 and 133.5):

Details of permitted exceptions (Regulation 411.3.3). Where applicable, a suitable risk assessment(s) must be attached to this Certificate.

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Old version

Schedule of inspections (for new work only)

Methods of protection against electric shock	Prevention of mutual detrimental influences
Both basic and fault protection:	<input type="checkbox"/> (a) Proximity to non-electrical services and other influences
<input type="checkbox"/> (i) SELV	<input type="checkbox"/> (b) Segregation of Band I and Band II circuits, or use of RANZC insulation
<input type="checkbox"/> (ii) PELV	<input type="checkbox"/> (c) Segregation of safety circuits
<input type="checkbox"/> (iii) DOUBLE INSULATION	
<input type="checkbox"/> (iv) REINFORCED INSULATION	Identification
Basic protection:	<input type="checkbox"/> (a) Presence of diagrams, instructions, circuit charts and similar information
<input type="checkbox"/> (i) Insulation of the parts	<input type="checkbox"/> (b) Presence of danger notices and other warning notices
<input type="checkbox"/> (ii) Barriers or enclosures	<input type="checkbox"/> (c) Labeling of protective devices, switches and terminals
<input type="checkbox"/> (iii) OBSTACLES	<input type="checkbox"/> (d) Identification of conductors
<input type="checkbox"/> (iv) Fixing out of reach	Cables and conductors
Fault protection:	<input type="checkbox"/> Section of conductors for current-carrying capacity and voltage drop
(i) Automatic disconnection of supply	<input type="checkbox"/> Fixing methods
<input type="checkbox"/> Presence of earthing conductors	<input type="checkbox"/> Fixing of cables in protected zones
<input type="checkbox"/> Presence of residual protective conductors	<input type="checkbox"/> Cables incorporating earthing armour or sheath, or run within an earthing system, or otherwise adequately protected against mice, snakes and the like
<input type="checkbox"/> Presence of protective bonding conductors	<input type="checkbox"/> Additional protection provided by an RCD for cables concealed in walls (where required in premises not under the supervision of a skilled or instructed person)
<input type="checkbox"/> Presence of supplementary bonding conductors	<input type="checkbox"/> Connection of conductors
<input type="checkbox"/> Presence of earthing arrangements for combined protective and functional purposes	<input type="checkbox"/> Presence of fire barriers, suitable seals and protection against thermal effects
<input type="checkbox"/> Presence of adequate arrangements for other circuits, where applicable	
<input type="checkbox"/> PELV	General
<input type="checkbox"/> Choice and setting of protective and monitoring devices (see Part 6 and assessment procedure)	<input type="checkbox"/> Presence and correct location of appropriate devices for isolation and switching
(ii) Non-conducting locations:	<input type="checkbox"/> Adequate clearance to switchgear and other equipment
<input type="checkbox"/> Presence of protective conductors	<input type="checkbox"/> Particular protective measures for special installations and locations
(iii) Earth-free local equipotential bonding:	<input type="checkbox"/> Connection of single-pole devices for protection or switching in the conductors only
<input type="checkbox"/> Presence of earth-free local equipotential bonding	<input type="checkbox"/> Correct connection of accessories and equipment
(iv) Electrical separation:	<input type="checkbox"/> Presence of undervoltage protective devices
<input type="checkbox"/> Provided for one item of current-using equipment	<input type="checkbox"/> Selection of equipment and protective measures appropriate to external influences
<input type="checkbox"/> Provided for more than one item of current-using equipment	<input type="checkbox"/> Selection of appropriate functional switching devices
Additional protection:	
<input type="checkbox"/> Presence of residual current device(s)	
<input type="checkbox"/> Presence of supplementary bonding conductors	
Inspected by: _____	Date: _____

NOTES

✓ To indicate an inspection has been carried out and the result is satisfactory
 N/A To indicate that the inspection is not applicable to a particular item
 An entry must be made in every box.

And finally

This presentation has not included all of the changes that are included in Amendment Number 3 to BS 7671, the 17th Edition of the IET Wiring Regulations.

Thank you