Code of Practice for In-service Inspection and Testing of Electrical Equipment

4th Edition
## Part 1  Administration of Inspection and Testing

### 1  Scope

1. **Users of electrical equipment, persons managing a maintenance scheme, persons performing inspections and tests, and other duty-holders**
   - 1.1.1 Users of electrical equipment
   - 1.1.2 Persons managing a maintenance scheme (duty-holders)
   - 1.1.3 Persons undertaking the practical inspection and testing of electrical equipment
   - 1.1.4 Other duty-holders such as landlords, company directors, managers and building services managers etc.

1.2 **Equipment**
   - 1.2.1 Medical electrical equipment

1.3 **Premises**

1.4 **Voltages and phases**

1.5 **Summary of the objectives of this Code of Practice**

### 2  Definitions

### 3  The law

3.1 **The legislation**
   - 3.1.1 The Health and Safety at Work etc. Act 1974
   - 3.1.2 The Management of Health and Safety at Work Regulations 1999
   - 3.1.3 The Provision and Use of Work Equipment Regulations 1998
   - 3.1.4 The Electricity at Work Regulations 1989
   - 3.1.5 Workplace (Health, Safety and Welfare) Regulations 1992
   - 3.1.6 The Housing Act 2004 (England and Wales)
   - 3.1.7 The Housing (Scotland) Act 2006
   - 3.1.8 The Electrical Equipment (Safety) Regulations 1994
   - 3.1.9 Waste Electronic and Electrical Equipment Regulations 2006 (WEEE directive)

3.2 **Scope of the legislation**
4 Fixed electrical installation
4.1 Means of earthing
4.2 RCD protection
4.3 Sufficient socket-outlets should be provided
4.4 Damaged accessories
4.5 Specialized installations

5 Types of electrical equipment
5.1 Portable appliances or equipment
5.2 Movable appliances or equipment (sometimes called transportable)
5.3 Hand-held appliances or equipment
5.4 Stationary appliances or equipment
5.5 Fixed equipment or appliances
5.5.1 Inspection and testing of fixed equipment or appliances
5.6 Appliances or equipment for building-in
5.7 Information technology equipment
5.8 Extension leads and RCD extension leads
5.9 Multiway adaptors and RCD adaptors
5.10 Surge protective devices

6 The electrical tests
6.1 Testing throughout the life of equipment
6.2 Manufacturer’s type testing
6.3 Manufacturer’s production testing
6.4 In-service inspection and testing
6.5 Testing after repair

7 In-service inspection and testing
7.1 Inspection
7.1.1 Risk-based assessments
7.2 Categories of inspection and testing
7.3 Frequency of inspection and testing through risk-based assessments
7.4 Review of frequency of inspection and testing

8 Procedures for in-service inspection and testing
8.1 The basic requirement
8.2 Test equipment
8.3 Documentation
8.4 Labelling
8.5 Damaged or faulty equipment
8.6 User responsibilities
8.7 Availability of records
9 Training

9.1 Requirements and responsibilities
9.2 The user
9.3 The duty-holder or manager
9.4 The inspector
9.5 The test operative
  9.5.1 Training
  9.5.2 Experience
9.6 The person repairing faulty equipment

10 Test instruments

10.1 Safety of test equipment
  10.1.1 Test instruments
  10.1.2 Test probes and leads
  10.1.3 Test probes and leads for use in conjunction with a voltmeter, multimeter, electrician’s test lamp or voltage indicator
10.2 Portable appliance test instruments
  10.2.1 Three-phase equipment
10.3 Low resistance ohmmeters (for earth continuity testing)
10.4 Insulation resistance ohmmeters (applied voltage method)
10.5 Instrument accuracy

Part 2 Inspection and Testing (including user checks)

11 Equipment construction types

11.1 Class I
  11.1.1 Class I typical construction showing basic insulation and earthed metal
  11.1.2 Class I construction showing the use of air as a basic insulation medium
  11.1.3 Class I construction incorporating unearthed metal separated from live parts by basic and supplementary insulation
  11.1.4 Class I construction incorporating unearthed metal separated from live parts by basic insulation and earthed metal
11.2 Class II
  11.2.1 Class II equipment with a substantial enclosure of insulating material comprising basic and supplementary insulation
  11.2.2 Class II equipment with a substantial enclosure of reinforced insulating material
  11.2.3 Class II equipment with a substantial enclosure of insulating material – the insulation construction includes air
  11.2.4 Class II equipment with unearthed metal in the enclosure, separated from live parts by basic and supplementary insulation
  11.2.5 Class II equipment with unearthed metal separated from live parts by reinforced insulation
  11.2.6 Class II equipment with unearthed metal separated from live parts by basic and supplementary insulation including air gaps
  11.2.7 Metal-encased Class II equipment
11.3 Class III
11.4 Class 0 and 0I
  11.4.1 Class 0 equipment
  11.4.2 Class 0I equipment

12 Types of inspection and testing

13 The user check

14 The formal visual inspection
  14.1 Manufacturer’s instructions
  14.2 Suitability of the equipment for the environment
  14.3 Switching of equipment
    14.3.1 Functional switching
    14.3.2 Isolation and switching off for mechanical maintenance
    14.3.3 Emergency switching
  14.4 User feedback
  14.5 The equipment
  14.6 Equipment failing the formal visual inspection
  14.7 Recording the formal visual inspection

15 Combined inspection and testing
  15.1 Preliminary inspection
  15.2 Test procedures
  15.3 In-service tests
  15.4 The earth continuity test
  15.5 The insulation resistance test
  15.6 Protective conductor/touch current measurement
  15.7 Functional checks
  15.8 Damaged or faulty equipment
  15.9 Appliance lead sets
  15.10 Extension leads, multiway adaptors and RCD adaptors
    15.10.1 Extension leads
    15.10.2 RCD extension leads
    15.10.3 Multiway adaptors and RCD adaptors
  15.11 High protective conductor currents
  15.12 Replacement of appliance flexes
  15.13 Plug fuses
  15.14 Equipment that cannot be located

16 New and third party equipment
  16.1 New equipment and appliances
  16.2 Second-hand equipment and appliances
  16.3 Hired equipment
## British Standards

### I. Legal references and notes

<table>
<thead>
<tr>
<th>Part</th>
<th>Section</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>II.1</td>
<td>Health and Safety at Work etc. Act 1974</td>
<td>110</td>
</tr>
<tr>
<td>II.2</td>
<td>The Electricity at Work Regulations 1989</td>
<td>110</td>
</tr>
<tr>
<td>II.3</td>
<td>Management of Health and Safety at Work Regulations 1999</td>
<td>111</td>
</tr>
<tr>
<td>II.4</td>
<td>Provision and Use of Work Equipment Regulations 1998</td>
<td>112</td>
</tr>
<tr>
<td>II.4.1</td>
<td>General</td>
<td>112</td>
</tr>
<tr>
<td>II.4.2</td>
<td>Maintenance</td>
<td>112</td>
</tr>
<tr>
<td>II.4.3</td>
<td>Inspection of work equipment that poses electrical risks</td>
<td>112</td>
</tr>
<tr>
<td>II.4.4</td>
<td>Specific risks</td>
<td>113</td>
</tr>
<tr>
<td>II.4.5</td>
<td>Information and instructions</td>
<td>113</td>
</tr>
<tr>
<td>II.4.6</td>
<td>Training</td>
<td>113</td>
</tr>
<tr>
<td>II.4.7</td>
<td>Isolation from sources of energy</td>
<td>113</td>
</tr>
<tr>
<td>II.4.8</td>
<td>Maintenance operations</td>
<td>113</td>
</tr>
</tbody>
</table>

### III. The Electricity at Work Regulations

<table>
<thead>
<tr>
<th>Part</th>
<th>Section</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>III.1</td>
<td>Regulation 4: Systems, work activities and protective equipment</td>
<td>115</td>
</tr>
<tr>
<td>III.1.1</td>
<td>Regulation 4(2)</td>
<td>115</td>
</tr>
<tr>
<td>III.1.2</td>
<td>Regulation 4(3)</td>
<td>116</td>
</tr>
<tr>
<td>III.2</td>
<td>Regulation 5: Strength and capability of electrical equipment</td>
<td>116</td>
</tr>
<tr>
<td>III.3</td>
<td>Regulation 6: Adverse or hazardous environments</td>
<td>116</td>
</tr>
<tr>
<td>III.4</td>
<td>Regulation 7: Insulation, protection and placing of conductors</td>
<td>117</td>
</tr>
<tr>
<td>III.5</td>
<td>Regulation 8: Earthing or other suitable precautions</td>
<td>117</td>
</tr>
<tr>
<td>III.6</td>
<td>Regulation 10: Connections</td>
<td>117</td>
</tr>
<tr>
<td>III.7</td>
<td>Regulation 12: Means of cutting off the supply and for isolation</td>
<td>118</td>
</tr>
<tr>
<td>III.8</td>
<td>Regulation 13: Precautions for work on equipment made dead</td>
<td>118</td>
</tr>
<tr>
<td>III.9</td>
<td>Regulation 14: Work on or near live conductors</td>
<td>119</td>
</tr>
<tr>
<td>III.10</td>
<td>Regulation 15: Working space, access and lighting</td>
<td>119</td>
</tr>
<tr>
<td>III.11</td>
<td>Regulation 16: Persons to be competent to prevent danger and injury</td>
<td>119</td>
</tr>
<tr>
<td>III.11.1</td>
<td>“… prevent danger or, where appropriate, injury …”</td>
<td>119</td>
</tr>
<tr>
<td>III.11.2</td>
<td>Technical knowledge or experience</td>
<td>120</td>
</tr>
<tr>
<td>III.11.3</td>
<td>Allocation of responsibilities</td>
<td>120</td>
</tr>
<tr>
<td>III.11.4</td>
<td>Supervision</td>
<td>120</td>
</tr>
</tbody>
</table>

### IV. Summary of legislation and guidance

<table>
<thead>
<tr>
<th>Part</th>
<th>Section</th>
<th>Reference</th>
</tr>
</thead>
</table>

### V. Model forms for in-service inspection and testing

<table>
<thead>
<tr>
<th>Form</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V.1</td>
<td>Equipment register</td>
</tr>
<tr>
<td>V.2</td>
<td>Equipment formal visual and combined inspection and test record</td>
</tr>
<tr>
<td>V.3</td>
<td>Equipment labels</td>
</tr>
<tr>
<td>V.4</td>
<td>Repair register</td>
</tr>
<tr>
<td>V.5</td>
<td>Faulty equipment register</td>
</tr>
<tr>
<td>V.6</td>
<td>Test instrument record</td>
</tr>
</tbody>
</table>
The Institution of Engineering and Technology wishes to acknowledge the contribution made by the following representatives of organizations in the preparation of this Code of Practice.

**Cooperating organizations**

**Association for Professional Appliance Testing**  
T.J. Dyster

**Association of Manufacturers of Domestic Appliances (AMDEA)**  
S. MacConnacher

**BEAMA Installation Ltd**  
M. Mullins  
P. Sayer IEng MIET GCGI

**British Cables Association (BCA)**  
C.K. Reed IEng MIET

**City & Guilds**  
Mr P. Tanner MIET LCGI

**Electrical Contractors’ Association (ECA)**  
G. Digilio IEng FIET

**Electrical Safety Council**  
S. Curtler IEng MIET GCGI

**GAMBICA Association Ltd**  
J. Wallace MPhil BSc  
M.D. Moore

**Health and Safety Executive (HSE)**  
K. Morton BSc CEng FIET

**Institution of Engineering and Technology (IET)**  
M. Coles BEng(Hons) MIET

**NAPIT**  
B. Allan BEng (Hons) CEng MIET

**SELECT (Electrical Contractors’ Association of Scotland)**  
D. Millar IEng MIET  
B. Cairney IEng MIET

**Revising author, compilation and editing**  
R. Townsend CMS MIET
Acknowledgements

References to British Standards are made with the kind permission of BSI.
Complete copies can be obtained from:

BSI Customer Services
389 Chiswick High Road
London W4 4AL
Tel: +44 (0)20 8996 9001
Fax: +44 (0)20 8996 7001
Email: orders@bsi-global.com

References to HSE publications are made with the kind permission of the HSE.
Copies of publications can be obtained from:

HSE Books
PO Box 1999
Sudbury
Suffolk CO10 2WA
Tel: +44 (0)1787 881165
Fax: +44 (0)1787 313995
Email: hsebooks@prolog.uk.com
Web: http://books.hse.gov.uk

Further information is available from the HSE website (www.hse.gov.uk).
The objective of this Code of Practice is to give advice on in-service inspection and testing to determine whether electrical equipment is fit for continued service or if maintenance or replacement is necessary.

The main changes in this edition of the Code of Practice include clarification of which equipment is covered, the inclusion of hired and second-hand equipment and a change in the scope. In addition, there is an explanation of the risk assessment required to determine frequencies between inspection and testing, if it is required.

Information on microwave leakage testing is not within the remit of this Code of Practice, because it does not directly relate to ‘electrical safety’. For this reason microwave in-service leakage testing has been removed.

Production testing, previously included in this Code of Practice, has been removed as it is not relevant to in-service inspection and testing.

Changes have been made to the initial frequencies in Table 7.1, to reflect information made available from equipment manufacturers, which is based on historic test results.

This Code of Practice does not cover in-house inspection and testing of equipment or appliances that are used for commercial gain hire purposes. Equipment hire companies should refer to the Hire Association of Europe (HAE) (www.hae.org.uk) and Event Hire Association (EHA) (www.eha.org.uk), whose document HAEEST2012: ‘Guidance on Electrical Safety Testing in the Hire Industry’ gives information on in-service inspection, maintenance, return to service after repair and regimes for hire equipment prior to its release to customers/clients.
Why is it necessary to maintain electrical equipment?

Electric shock can kill or seriously injure. This is one of the hazards that electrical safety legislation is intended to protect against. Many serious shocks occur when the current flow is from hand to hand, because the route the current takes is through or near the heart.

The Electricity at Work Regulations requires, in Regulation 4(2), that:

As may be necessary to prevent danger, all systems shall be maintained so as to prevent, so far as is reasonably practicable, such danger.

Regulation 4(2) is concerned with the need for maintenance to be done in order to ensure safety of the system if danger would otherwise result. The quality and frequency of maintenance should be sufficient to prevent danger, so far as is reasonably practicable.

Regular inspection of equipment is an essential part of any preventive maintenance programme. Practical experience of the use of equipment and its environment may indicate an adjustment to the frequency with which preventive maintenance needs to be carried out. This is a matter for the judgement of the responsible person or duty-holder, who should seek all the information needed to make an informed decision including reference to the manufacturer’s guidance.

Although the Electricity at Work Regulations does not require records of maintenance to be kept, it is recommended that records of maintenance, including test results, should be kept throughout the working life of the electrical equipment to enable

- the condition of the equipment to be monitored,
- the effectiveness of the maintenance policies to be assessed,
- the demonstration that an effective maintenance system is in place, and
- the duty-holder responsible for the inspection and testing regime to assess the future frequency required between formal visual inspections and any combined inspections and tests.

What should be maintained?

All electrical systems and equipment should be maintained if danger would otherwise arise (see Figure 1).

Other than the fixed installation, which is considered to be the installation from the meter point to the socket-outlet, or fuse connection unit, all electrical equipment in an installation, whether permanently connected or connected by a plug and socket-outlet,
Figure 1  Examples of equipment covered by this Code of Practice
Items of heavy plant, including air handling units (AHUs), heating ventilation and air conditioning (HVAC) systems, and other items of integrated plant and their associated systems, are not covered by this Code of Practice. These types of systems should form part of a specialized maintenance and inspection routine. The connecting cables and junction boxes for integrated plant should be inspected and tested during the electrical installation’s periodic inspection regime and a report of its condition given in the Electrical Installation Condition Report.

**Note:** Self-contained or two-part air conditioners and climate control units, which are not AHU or HVAC systems, are within the scope of this Code of Practice.

The fixed installation should be periodically inspected and tested to ensure its satisfactory condition for continued use as required by BS 7671:2008 (2011) *Requirements for Electrical Installations, 17th Edition of the IET Wiring Regulations*. Guidance on the requirements of BS 7671, concerning inspection and testing of the fixed electrical installation, is given in the IET’s Guidance Note 3: *Inspection & Testing* (GN3).

### Who has responsibilities?

The following people have responsibility for electrical systems and equipment:

- users of electrical equipment (whose responsibilities include user checks)
- duty-holders with responsibility for electrical maintenance who may not necessarily have detailed technical knowledge
- the competent person carrying out the formal visual inspection and the inspections and tests
- other duty-holders such as company directors, managers or building services managers
- hirers and suppliers of hired equipment (additional advice can be found on the Trading Standards Institute website, www.tradingstandards.gov.uk)
- landlords and property management companies in control of Houses in Multiple Occupation (HMOs).

### What needs to be done to comply with the relevant requirements of the Electricity at Work Regulations?

The requirements of the Electricity at Work Regulations 1989 can be met by

1. performing in-service inspection and testing, which consist of three activities:
   - user checks
   - formal visual inspections (without tests)
   - combined inspections and tests (although the Electricity at Work Regulations do not require the keeping of records, up-to-date information can be a means of showing that a maintenance scheme exists)

2. performing maintenance or, if necessary, replacing the defective item of equipment (depending upon the results of the in-service inspection and testing), and

3. keeping up-to-date records that can be a means of showing compliance.
Information on the Electricity at Work Regulations can be found in the Health and Safety Executive (HSE) publication *Memorandum of Guidance on the Electricity at Work Regulations 1989* (see Figure 2). This publication is now available as a free download from www.hse.gov.uk.

**Background to the Code of Practice**

To encourage free trade within the European Union, existing national standards are being harmonized and converted to European standards. Compliance with harmonized European standards gives assurance to purchasers that appliances and equipment have been designed and constructed to a standard that ensures in normal use, as intended by the manufacturer, they function safely.

In order to check compliance, manufacturers have to perform a series of tests on the appliance and its components as required by the standard. The appliance is required to pass these tests if it is to be said that it complies with the standard. A list of some of the safety standards for electrical equipment is given in Appendix I. The tests detailed in these standards are generally not suitable for in-service testing.

This Code of Practice recommends in-service inspections and tests that can be applied generally to equipment and appliances in normal use. Routine manufacturers’ tests are not required for general in-service testing, but may be applied to appliances after repair.

**Layout of the Code of Practice**

**Part 1** provides guidance on what work should be done in order to comply with the applicable legislation, including the Electricity at Work Regulations, and whether this work can be carried out in-house. Advice is included on the law, procedures, documentation and training.

**Part 2** is written for those carrying out the practical work and explains the details of the inspections and tests.

**Part 3** comprises a series of appendices containing information and guidance and includes model forms that allow records to be kept in order to demonstrate that an effective system of maintenance is in place.
Index

Note: Entries refer to chapter and section numbers; Appx=Appendix; ‘n’ refers to the notes following a table.

### A
- accessible metal part, definition (Chap 2)
- accessories, definition (Chap 2)
- accuracy, test instruments (10.3; 10.5)
- adaptors, multiway (5.9; 15.10.3; Table 15.1)
- administrators’ responsibilities (11.2; 9.3)
- adverse environments: see hazardous locations (Chap 2)
- appliance, definition
- appliance lead sets: see lead sets
- ASTA mark (15.13; Appx VII.1)

### B
- basic insulation (Chap 2)
- basic protection (Chap 2)
- Batteries Directive 2006 (3.1.9)
- battery operated equipment (Table 7.1 n6)
- British Standards
  - BS 1362 (15.13; Appx VII.1)
  - BS 1363 (15.12; Appx VII.1)
  - BS 1363A (Appx VII.1)
  - BS 6360 (Appx VI.1)
  - BS 6500
  - BS 7071 (Table 15.5)
  - BS 7288 (Table 15.5)
  - BS 7671 (4.3; 11.3; 14.3.2; 15.10.1; 15.11)
  - BS EN 60309 (10.2.1; 15.10.1; 15.11)
  - BS EN 60335 (11.3)
  - BS EN 60742 (11.3)
  - BS EN 60950 (10.4; 15.11; Table 15.2 n3)
  - BS EN 61008 (15.10.2; Table 15.5)
  - BS EN 61009 (10.1.1; 10.1.2)
  - BS EN 61010 (10.3; 10.4)
  - BS EN 61557 (11.3)
  - BS EN 61558
- built-in equipment/appliances
- business equipment
  - isolation (14.3.2; 15.1)
  - see also IT equipment

### C
- cable reels (Appx VII.3)
- cables: see flexible cables (10.5)
- calibration, test instruments
- catering equipment
CE marking 16.2
children’s rides Table 7.1 n3
Christmas tree lights 11.4.1; 15.13
circuit protective conductor (cpc) Chap 2
Class 0 equipment Chap 2; 11.4.1
Class 0I equipment 11.2.7; 11.4.2
Class I equipment 11.1
definition Chap 2
earth continuity testing 15.4
frequency of inspection and testing Table 7.1
insulation resistance Table 15.2
protective conductor/touch current test 15.6; Table 15.3
Class II equipment 11.2
definition Chap 2
frequency of inspection and testing Table 7.1
insulation resistance Table 15.2
protective conductor/touch current test 15.6; Table 15.3
Class III equipment 11.3
definition Chap 2
insulation resistance Table 15.2
protective conductor/touch current test Table 15.3
clearance distance 11.1.2
combined inspection and testing Chap 15; 6.4; 7.2; Table 7.1
appliance flexes 15.12
appliance lead sets 15.9
damaged or faulty equipment 15.8
earth continuity testing 15.4
equipment with high protective conductor currents 15.11
extension leads 15.10.1
frequency of inspection and testing 7.4; Table 7.1
insulation resistance testing 15.5
multiway adaptors 15.10.3
plug fuses 15.13
preliminary inspection 15.1
RCD adaptors 15.10.3
requirements 15.3
safe working practices Chap 15
sequence of testing 15.3
unlocated equipment 15.14
combustible dust: see hazardous locations
commercial kitchens Table 7.1
competent person Chap 2
see also test operatives
crime equipment: see IT equipment
connections Appx III.6; Appx VII.1
construction sites Table 7.1
contact resistance 10.3
cooking appliances Table 15.2 n1
creepage path 11.1.2
crocodile clips 10.3
cross-sectional areas
appliance flexes Table 15.6
extension leads Table 15.4
current-using equipment Chap 2

cross-sectional areas
appliance flexes
extension leads
current-using equipment

D

4.4; 8.5; 15.8
7.3; 7.4
register  Appx V.5
user checks  Chap 13
danger, definition  Chap 2
dielectric strength testing  6.3; 15.3
direct contact  Chap 2
disconnection: see isolation of installation  
documentation
  equipment registers  Appx V; 8.3
  faulty equipment  8.3; Appx V.1
  model forms  Appx V
  repair register  8.3; Appx V.4
  responsibilities  9.3
  test instruments  10.5; Appx V.6
  test records  8.3; Appx V.2
double insulation  Chap 2
duty-holders  1.1.2; 1.1.4
  responsibilities  7.3; 8.3; 9.3
  risk-based assessments  7.1.1

E
earth, definition  Chap 2
earth continuity testing  10.5; 15.4
earthing
  definition  Chap 2
  equipment with high protective conductor currents  15.11
  protective  11.1
  regulations  Appx III.5
Electrical Equipment (Safety) Regulations 1994  3.1.8
electrical equipment, definition  Chap 2
electrical installation, definition  Chap 2
electric blankets  15.13
electric drills  15.6
Electricity at Work Regulations 1989  Appx III; 3.1.4; Appx II.2
  frequency of inspection and testing  7.3
  maintenance of equipment  3.3; 8.1
  training  9.1
electric shock  Chap 2; 5.3
electric strength tests  see also insulation resistance testing
EMC filters  15.11; Table 15.2 n
emergency stopping  14.3.3
emergency switching  14.3.3
enclosure, definition  Chap 2
equipment labels  Appx V.3
equipment registers  8.3
  model form  Appx V.1; Appx V.5
test instruments  10.5; Appx V.6
equipment types  1.2
explosive atmospheres: see hazardous locations
exposed-conductive-part
extension leads  15.10.1
  cross-sectional areas  4.3; 5.8
  earth continuity resistance  Table 15.4
  maximum length  Table 15.1
  user checks  Appx VII.3; Table 15.4
  visual inspection  Table 13.1
extra-low voltage: see nominal voltage
**F**
- fault, definition  Chap 2
- fault protection  Chap 2
- faulty equipment  Chap 4; 8.5; 15.8
- register  Appx V.5
- fixed electrical installations  Chap 4
- fixed equipment  Chap 2
- fixed equipment/appliances  5.5
- flash testing: see dielectric strength testing  15.1

**Flexible cables**
- definition  Chap 2
- length  4.3
- resistances  Appx VI.1
- user checks  Table 13.1
- visual inspection  Appx VII.2
- see also lead sets  

**formal visual inspection**  Chap 14; 7.2; Table 7.1
- frequency  7.4; Table 7.1

**Forms:** see documentation  

**Frequency of inspection and testing**  Chap 4; 7.3; 7.4

**Functional checks**  15.7

**Functional switching**  14.3.1

**Fuses**
- definition  Chap 2
- plug  15.13
- ratings  14.1; 15.13
- user checks  14.5

**G**
- no entries

**H**
- hand-held appliances/equipment  Chap 2; 5.3
  - frequency of inspection and testing  7.3
  - protective conductor/touch current test  Table 15.3
- hazard, definition  Chap 2
- hazardous locations  4.5; 14.2; Appx III.3
- Health and Safety at Work etc. Act 1974  3.1.1; 3.3; Appx II.1
- Health and Safety Executive: see HSE publications  
- health and safety legislation  Appx II
- heating appliances  Table 15.2 n1; Table 15.3
- high protective conductor currents  15.11
- hi-pot testing: see dielectric strength testing  
- hired equipment  16.3; Table 7.1 n6
- hotels  Table 7.1; Table 7.1 n5,6
- houses in multiple occupation (HMO)
  - definition  Chap 2
- Housing (Scotland) Act 2006  3.1.7
- Housing Act 2004 (England and Wales)  3.1.6
- Housing Health and Safety Rating System (HHSRS)  3.1.6
- HSE publications  Appx IV.4
- GS38: Electrical test equipment for use by electricians  Chap 15; 10.1.3; Appx IV.3
- HSR25: Memorandum of Guidance on the Electricity at Work Regulations  8.3; Appx IV.1

**I**
- IET Guidance Notes  Appx VIII
  - 2: Isolation & Switching  

---

Code of Practice for in-service inspection and testing of electrical equipment  © The Institution of Engineering and Technology
### Index

#### 3: Inspection & Testing
- Indirect contact (Chap 2; Appx IV.3)
- Industrial equipment (Chap 2; Table 7.1)
- Ingress Protection (IP) code (Chap 2)
- Inspection frequency (Chap 4; 7.3)
- Inspections: see combined inspection and testing; formal visual inspection
- Inspectors: see test operatives (Chap 2)
- Instructed person (Chap 2)
- Insulation, definition (Chap 2)
- Insulation-encased Class II (11.2)
- Insulation resistance testing (10.2; 10.4; 15.3; 15.5)
- IT and similar equipment (15.5; Table 15.2 n3)
- IP (Ingress Protection) code (Chap 2)
- Isolating transformers (11.3)
- Isolation of installation (Chap 2; Appx VIII)
  - for maintenance (14.3.2)
  - regulations (Appx II.4.7; Appx III.7)
  - for testing (Chap 15)
- IT equipment (5.7)
  - disconnection for inspection (15.1)
  - earth continuity testing (15.4)
  - insulation resistance testing (15.5; Table 15.2 n3)
  - Protective conductor/touch current test (15.6)
  - Switching off for maintenance (14.3.2)

#### J
- No entries

#### K
- Kettles (15.6)

#### L
- Labelling (8.4)
  - Damaged or faulty equipment (15.8; Appx V.3)
  - Equipment with high protective conductor currents (15.11)
- Laptop computer power supply units (PSUs) (15.4; 15.5)
- Lead sets (Chap 2; 15.9; 15.12)
  - Earth continuity testing (Table 15.1)
  - Visual inspection (Appx VII.2)
- Leakage current (Chap 2)
- Leakage test (10.2; 10.4)
- Leased equipment (16.3)
  - Legislation (Chap 3; Appx II; Appx IV)
- Live part (Chap 2)
- Live working (Chap 15; Appx III.9)
- Locations of increased risk: see hazardous locations (Chap 2; Table 13.1)
- Low voltage: see nominal voltage (Chap 2; Table 13.1)

#### M
- Maintenance (14.3.2)
  - Isolation and switching off (3.1.5; 3.4; Appx II.4.2; Appx II.4.8)
  - Management of Health and Safety at Work Regulations 1999 (3.1.2; Appx II.3)
  - Managers’ responsibilities (1.1.4; 9.3)
  - Manufacturer’s testing (6.2; 6.3)
  - Means of earthing (Chap 2; 4.1)
  - Medical electrical equipment (1.2.1)
<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>metal-encased Class II</td>
<td>11.2; 11.2.7</td>
</tr>
<tr>
<td>mixed use locations</td>
<td>7.3</td>
</tr>
<tr>
<td>movable appliances/equipment</td>
<td>5.2</td>
</tr>
<tr>
<td>movable equipment</td>
<td>Chap 2</td>
</tr>
<tr>
<td>see also portable appliances/equipment</td>
<td></td>
</tr>
<tr>
<td>multimeters</td>
<td>10.1.3</td>
</tr>
<tr>
<td>multiway adaptors</td>
<td>5.9; 15.10.3; Table 15.1</td>
</tr>
<tr>
<td>multiway extension leads</td>
<td>4.3; 15.10.1</td>
</tr>
<tr>
<td>N</td>
<td></td>
</tr>
<tr>
<td>new equipment/appliances</td>
<td>16.1</td>
</tr>
<tr>
<td>nominal voltage</td>
<td>Chap 2</td>
</tr>
<tr>
<td>non-flexible cables</td>
<td>Appx VII.2</td>
</tr>
<tr>
<td>O</td>
<td></td>
</tr>
<tr>
<td>offices</td>
<td>Table 7.1</td>
</tr>
<tr>
<td>ohmmeters</td>
<td>10.3</td>
</tr>
<tr>
<td>optical fibre systems</td>
<td>15.1</td>
</tr>
<tr>
<td>ordinary person, definition</td>
<td>Chap 2</td>
</tr>
<tr>
<td>outdoor equipment</td>
<td>4.2; 15.10.1</td>
</tr>
<tr>
<td>P</td>
<td></td>
</tr>
<tr>
<td>PAT (portable appliance test) instrument</td>
<td>Chap 2</td>
</tr>
<tr>
<td>personnel, responsibilities and training</td>
<td>Chap 9</td>
</tr>
<tr>
<td>petrol filling stations</td>
<td>4.5</td>
</tr>
<tr>
<td>phases</td>
<td>1.4</td>
</tr>
<tr>
<td>plug-in portable RCD devices</td>
<td>4.2</td>
</tr>
<tr>
<td>plugs</td>
<td></td>
</tr>
<tr>
<td>formal visual inspection</td>
<td>14.5</td>
</tr>
<tr>
<td>fuses</td>
<td>15.13; Appx VII.1</td>
</tr>
<tr>
<td>user checks</td>
<td>Table 13.1</td>
</tr>
<tr>
<td>visual inspection</td>
<td>Appx VII.1</td>
</tr>
<tr>
<td>portable appliances/equipment</td>
<td>Chap 2; 5.1</td>
</tr>
<tr>
<td>protective conductor/touch current test</td>
<td>Table 15.3</td>
</tr>
<tr>
<td>used outdoors</td>
<td>4.2; 15.10.1</td>
</tr>
<tr>
<td>see also hand-held appliances/equipment</td>
<td></td>
</tr>
<tr>
<td>portable appliance test (PAT) instruments</td>
<td>Chap 2; 10.2</td>
</tr>
<tr>
<td>portable RCD devices</td>
<td>4.2</td>
</tr>
<tr>
<td>premises</td>
<td>1.3</td>
</tr>
<tr>
<td>production testing (manufacturer’s)</td>
<td>6.3</td>
</tr>
<tr>
<td>protective conductor current</td>
<td>Chap 2</td>
</tr>
<tr>
<td>protective conductor current test</td>
<td>10.2; 10.4; 15.3; 15.6</td>
</tr>
<tr>
<td>protective conductors</td>
<td>Chap 2</td>
</tr>
<tr>
<td>nominal resistances</td>
<td>Appx VI</td>
</tr>
<tr>
<td>protective earthing</td>
<td>11.1</td>
</tr>
<tr>
<td>see also earth continuity testing</td>
<td></td>
</tr>
<tr>
<td>Provision and Use of Work Equipment Regulations (PUWER) 1998</td>
<td>3.1.3; 3.3; 3.4; Appx II.4</td>
</tr>
<tr>
<td>public used equipment</td>
<td>Table 7.1</td>
</tr>
<tr>
<td>children's rides</td>
<td>Table 7.1 n3</td>
</tr>
<tr>
<td>PUWER: see Provision and Use of Work Equipment Regulations (PUWER)</td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td></td>
</tr>
<tr>
<td>no entries</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
<tr>
<td>RCD (residual current device)</td>
<td>Chap 2</td>
</tr>
<tr>
<td>RCD adaptors</td>
<td>4.2; 5.9; 15.10.3</td>
</tr>
</tbody>
</table>
Index

earth continuity resistance
user checks
  Table 15.1
RCD extension leads
  5.8; 15.10.2
RCD-protected socket outlets
  Table 15.5
RCD protection
  4.2
record keeping: see documentation
recurring damage
  7.3; 7.4
register of equipment: see equipment registers
reinforced insulation
  Class I equipment
    Chap 2
  Class II equipment
    11.1
    11.2.2; 11.2.5; 11.2.7
repaired equipment, testing
  6.5
repairers, training and experience
  9.6
repair register
  8.3; Appx V.4
residual current device: see RCD (residual current device)
residual operating current
  4.2
resilient plugs
  Appx VII.1
resistances, protective conductors
  Appx VI
responsibilities
  for documentation
    3.3
  test supervisor's
    Appx III.11.4
  users
    1.1.1; 1.6; 9.2
risk, definition
  Chap 2
risk assessment
  Chap 2; 7.1.1; Appx II.3; Appx II.4.3
rotating/moving machines
  15.6

S
safety extra-low voltage: see SELV (separated extra-low voltage)
safe working practices
  Chap 15; Appx III.9–Appx III.11
  see also health and safety legislation
schools
  Table 7.1; Table 7.1 n4,6
second-hand equipment/appliances
  Chap 2; 16.1
separated extra-low voltage (SELV)
  Chap 2; 11.3
shops
  Table 7.1
skilled person
  Chap 2
SMPS (switched mode power supply)
  15.4; 15.5
socket-outlets
  definition
    Chap 2
  number
    4.3
  outdoors
    4.2
  RCD adaptors
    4.2; 5.9
  RCD-protected
    Table 15.5
  replacement
    4.4
  user checks
    Table 13.1
'soft' test
  10.2; 15.4; 15.6
soldering irons
  15.13
SPD (surge protective devices)
  Chap 2; 5.10; 15.5
standby power supplies
  14.3.3
stationary equipment/appliances
  Chap 2; 5.4
supervisor's responsibilities
  Appx III.11.4
supplementary insulation
  Chap 2
  Class I equipment
    11.1.3
  Class II equipment
    11.2.1; 11.2.4; 11.2.6
surge protective devices (SPD)
  Chap 2; 5.10; 15.5
switched mode power supply (SMPS)
  15.4; 15.5
switching of equipment
  14.3

see also isolation of installation
telecommunications equipment, isolation 14.3.2; 15.1

test equipment 8.2

testing categories 7.2

testing frequency Chap 4; 7.3

testing sequence 15.3

test instruments Chap 10

  accuracy 10.3; 10.5

  equipment registers 10.5; Appx V.6

test lamps 10.1.3

test lead resistance 10.3

test leads 10.1.3

test operatives Chap 15; 1.1.3

  training and experience 9.5; Appx III.11

test probes 10.1.3

test records: see documentation

test supervisor’s responsibilities 9.3; Appx III.11.4

thermocouple effects 10.3

three-phase equipment 1.4; 10.2.1; Table 15.2 n5

touch current Chap 2

touch current test 10.2; 10.4; 15.3; 15.6

training Chap 9; Appx II.4.6; Appx III.11

transformers: see isolating transformers

transient suppression devices Table 15.2 n6

transportable equipment: see movable equipment

unearthed metal Table 15.1 n5

  Class I equipment 11.1.3; 11.1.4

  Class II equipment 11.2.4; 11.2.5; 11.2.6; 11.2.7

uninterruptible power supplies 14.3.3

unlocated equipment 15.14

user checks Chap 13; 6.4; 7.2

user feedback 14.4

user responsibilities 1.1.1; 8.6; 9.2

user training 9.2; Appx II.4.6

visual inspection Chap 14; Appx VII; 6.4; 7.2

  frequency 7.4; Table 7.1

  see also user checks

voltage, nominal Chap 2

voltage indicators 10.1.3

voltages 1.4

voltmeters 10.1.3

Waste Electronic and Electrical Equipment Regulations 2006 (WEEE directive) 3.1.9

work equipment 3.1.3; Appx II.4.3

Workplace (Health, Safety and Welfare) Regulations 1992 3.1.5

no entries