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Code of Practice for Electrical Safety in Beer Dispense in Licensed Premises 2011 – Guidance for Landlords

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Preface

This fourth Edition of the "Code of Practice for the Electrical Safety in Beer Dispense in Licensed Premises" was first published during April 2011, and supersedes previous issues immediately on publication.

The purpose of this Code is to give guidance to all stakeholders involved in the design, manufacture, purchase, import, supply, installation and the maintenance of electrical equipment used for the storage and dispensing of draught beer in licensed premises, with the objective of ensuring electrical safety. The Code also provides a basic reference for brewers, retailers and licensees.

The Code is not intended to apply to any other electrical installation or equipment (whether or not employing electrical energy from any source) used for any other purpose within licensed premises, or to the method or standard of installation.

It is a companion to, and may be used in conjunction with, the document entitled "Code of Practice for the Dispense of Beer by Pressure Systems in Licensed Premises", which specifically addresses the safety of pressure systems in beer dispensing. It is important that, in using this Code, no adjustments, alterations, modifications, or the like, should be made to any beer dispense equipment which could jeopardise the safe working practices advocated in the Pressure Code of Practice.

This Code is based on the best current practices that are employed by many organisations, both within and outside, the brewing industry. It is recognised that procedures differing from those specifically defined in the Code may result from advances in technology. It is not the intention of this Code to prohibit the use of new techniques or technology where they present equal, or improved safety, of any of the aspects of the equipment.

From time-to-time, it is the intention of British Beer and Pub Association to update this Code to reflect such changes in practice and/or developments in statutory requirements. The Association requests that anyone responsible for the introduction of new technology, which appears to present significant departures from the provisions of this edition of this Code, communicates sufficient detail of the development to allow future editions to fully encompass the changes introduced.

Current legislation in the field of electrical safety is embodied in "The Electricity at Work Regulations 1989", Statutory Instrument 1989 No. 635. They impose duties on both employers (and self-employed persons) and employees.

Since the previous edition of the Code was issued, many of the British Standards quoted have been updated, and therefore some of the numbers have changed. The numbers presented in the text are for the current versions.

The Health & Safety Executive has been consulted during the drafting of this Code and has contributed towards its development. The members of the Working Party who drafted this document wish to thank them for their invaluable advice and assistance given during the preparation of the original document in 1974/5 and the later revisions in 1990 and 1995.

The British Beer and Pub Association has taken professional advice and exercised all reasonable

care in the preparation of this Code of Practice. With the rapid developments in technology and legislation, readers should not assume that the advice contained herein remains current, without taking professional advice on statutory requirements and good practice. While great care has been taken to check the contents of the Code, no responsibility can be accepted for inaccuracies or omissions in any of the information, advice or opinion presented.

1. Introduction

1.1 General

1.1.1 This Code of Practice is concerned with electrical equipment used within the beer dispense industry.

1.1.2 Electrically operated or controlled equipment used for the delivery of beer into, or the dispense of beer, within licensed premises, may present a hazard to anyone not fully conversant with the dangers associated with these electrical systems. The purpose of this Code of Practice is to inform the reader of the procedures and standards established by the British Beer and Pub Association, which will, when adopted, eradicate or minimise such hazards.

1.1.3 Electrical equipment used for, or associated with, beer dispensing is usually, although not always, owned or leased from the supplier of the equipment (predominantly the beer supplying brewery), who usually undertakes responsibility for the installation, maintenance and service of the equipment through their own or a contracted organisation.

1.1.4 Because of the nature of the beer supply market, frequently more than one supplying brewery is involved, each taking responsibility for their own equipment. The licensed premises where the equipment is installed may be owned, or operated, by one of a number of types of organisation. It is clear that the responsibilities imposed, under the various legislation, may fall upon a number of duty holders. From the outset, each duty holder should establish the extent of his duties.

1.2 General Duties under health and safety legislation

Current health and safety legislation, in the form of the Health and Safety at Work etc. Act 1974, places a number of general duties on stakeholders.

1.2.1 Any person who designs, manufactures, imports or supplies articles for use at work is to:

- ensure that the article is designed and constructed to be safe and without risk to health at all times when it is being set, used, cleaned or maintained.

- carry out testing and examination, as necessary, to ensure that the article is designed and constructed to be safe and without risk to health at all times when it is being set, used, cleaned or maintained.

- take such steps, as are necessary, to ensure that the person they have supplied the article to, is provided with adequate information about the use for which the article is designed, or has been tested and about any conditions necessary to ensure that it will be safe, and without risks, to health at all such times.

1.2.2 Any person who installs articles for use at work, in premises where the article is to be used, is to:

- ensure that the way the article is installed will make sure it is safe and without risk to health at all times when it is being set, used, cleaned or maintained by a person at work.

- carry out testing and examination, as necessary, to ensure that the article installed is safe and without risk to health at all times when it is being set, used, cleaned or maintained by a person at work.

- take such steps, as are necessary, to ensure that the person they have supplied the article to, is provided with adequate information about the use for which the article is designed, or has been tested, and about any conditions necessary to ensure that it will be safe, and without risks to health, at all such times.

1.2.3 Any person who manufactures, imports or supplies any substance for use at work is to:

- ensure that the substance will be safe and without risk to health, at all times when it is being used, handled, processed, stored or transported by a person at work.

- take such steps as are necessary to ensure that the person they have supplied the substance to is provided with adequate information about the use, the control measures necessary to ensure that it will be safe and without risks to health, at all such times, and provide relevant first aid information.

1.3 Specific duties under health and safety legislation

Current health and safety legislation, in the form of The Electricity at Work Regulations 1989, The Low Voltage Electrical Equipment (Safety) Regulations 1989, the 17th Edition of the Institution of Electrical Engineering Regulations and The Electrical Equipment (Safety) Regulations 1994, place a number of specific duties on stakeholders.

1.3.1 Employers and self-employed persons have a duty to ensure that precautions are taken, in areas under their control, against the risk of death or personal injury, from electricity in work activities.

1.3.2 Manufacturers and installers of equipment have a duty to ensure that their electrical equipment is safe, constructed / installed in accordance with principles generally accepted as good engineering practice and confirm with the principal elements of the safety objectives contained in The Electrical Equipment (Safety) Regulations 1994.

1.4 Other legislative considerations

Manufacturers and installers of equipment using electrical energy should acquaint themselves with legislative requirements other than those mentioned, which deals only with the safety aspects. Other subjects may include, for example, radio interference, the electronic environment, regulations made under the EMC Directive, Local Authority Regulations, fire precautions etc. Rules, requirements and / or procedures specified in British Standards should be followed, where deemed appropriate.

1.5 Safety considerations

1.5.1 The Health & Safety Executive have published a number of documents offering advice and guidance on aspects of compliance with the Electricity at Work Regulations and, more importantly, on the aspects of electrical hazards. Attention is drawn particularly to HSDE Guidance leaflet indg231 - "Electrical safety and you".

See Appendix C and D for a full list of references.

1.5.2 It is recommended that appropriate personnel be trained in those aspects of First Aid, which may become necessary in cases of electric hazard.

2. Scope

2.1 This Code of Practice is applicable to the design, manufacture, testing, installation, use and maintenance of electrical equipment used for, or in connection with, the storage and dispensing of draught beer, cider and wine in licensed premises, and intended to be connected to a rated supply voltage, not exceeding 250 V alternating current (when measured phase-to-neutral), and a rated frequency not exceeding 50 Hz, with an individually rated installed power not exceeding 24 kW.

2.2 This Code of Practice relates only to equipment and electrical systems falling within its scope. In licensed premises there will be other equipment and the remainder of the electrical system not covered by this Code. Equipment and electrical systems in the premises, not subject to this Code of Practice, (except for the licensee's private quarters) will still need to comply with the Regulations.

2.3 This Code is not intended to cover, or make provisions for, other equipment which may be used on licensed premises, nor for the remaining electrical installation. Where recommendations within this Code of Practice appear to be applicable to any other equipment, or electrical installation, it is by way of coincidence and not of design. This Code cannot be taken to be the only advice required for the safe or legal operation of any equipment, or installation, not within its scope. Specifically excluded, therefore, is any apparatus used for the dispense of any beverage other than beer, cider or wine.

2.4 Cellar services personnel responsible for installation and maintenance of dispense equipment may not be qualified electricians. All equipment connected directly to fixed wiring should be installed by a skilled person. To avoid direct connection of equipment to fixed wiring, it is recommended that flexible cables with plugs and sockets should be used. Where mixed voltages are employed, it is important that plugs and sockets of different configurations, made to an appropriate British Standard, should be used for each voltage.

3. Definitions

3.1 Beer

Beer is a generic term and includes ales, lagers and stouts and the low alcohol, and alcohol free, forms of these beverages. Wherever the word is encountered, it is also

taken to include, where the context so admits, ciders and the low alcohol, and alcohol free, forms of these beverages.

3.2 Dispense equipment

3.2.1 Automatic change-over unit

A device, which may be electrically operated and is normally used in conjunction with kegs, casks or tanks to facilitate automatic change-over from an empty to a full cask, keg or tank.

3.2.2 Beer meter

Apparatus designed to deliver a prescribed volume of beer into a glass, or other drinking vessel, at each operation.

3.2.3 Beer dispense pump

A pump driven by an electric motor usually operating at 240 or 110 volts and used to pump beer from a cask, keg or tank to the point of dispense.

3.2.4 Beer cellar

A room or store, whether temperature controlled or not, situated at any level within licensed premises in which beer is stored and dispensed.

3.2.5 Cowl

A display unit normally associated with the dispense of draught beverages, often illuminated, and usually fitted on the bar counter adjacent, or attached to, the beverage dispense point.

3.2.6 Fob detector

A unit, installed in the beer pipe between a cask, keg or tank and a dispense point, which is designed to generate a signal when a deficiency of liquid is detected, the signal generally being used to prevent further operation of the dispense system, and thereby preventing the complete exhaustion of the dispense system.

3.2.7 In-line cooler

A device installed in the beer supply pipe between the beer cask, keg or tank and the dispense point for the purpose of controlling the beer temperature.

3.2.8 Line cooler

A device for cooling a secondary coolant, which is circulated through tracer pipes, installed and insulated with the beer pipes and which keeps the beer lines cool within the insulation.

3.3 Transformers

3.3.1 Transformer

A transformer includes the windings, core/s, terminals, any safety devices, wiring,

switches and/or any other components mounted within the enclosure of the transformer, including the enclosure.

3.3.2 Isolating transformer

A transformer, the input and output windings of which are electrically separated by double or reinforced insulation to limit, in the circuit supplied by the output windings, hazards due to accidental simultaneous contact with the earth and with live parts or parts of the body, which may become live in the event of an insulation fault.

3.3.3 Associated transformer

A transformer designed to supply specific appliances or equipment and either incorporated in, or not incorporated in, but specially designed to be used only with the specific appliance/s or equipment.

3.3.4 Incorporated transformer

An associated transformer, which is designed to be built into a specific appliance, or piece of equipment, with the enclosure providing the protection against electric shock.

3.3.5 Transformer for specific use

An associated transformer which, without being incorporated in an appliance or equipment, is fixed to, or delivered with, the appliance or equipment.

3.3.6 Fail-safe transformer

A transformer, which after abnormal use, fails to function but presents no danger to the user or surroundings.

3.4 Other electrical equipment

3.4.1 Distribution board

An assembly containing switching or protective devices (e.g. fuses or circuit breakers) associated with one or more outgoing circuits, fed from one or more incoming circuits, together with terminals for the neutral and protective circuit conductors. It may also include signalling and other control devices. Means of isolation may be included in the board or may be provided separately.

3.4.2 Earthing conductor

A protective conductor connecting the main earthing terminal of an installation to an earth electrode, or to other means of earthing.

3.4.3 Protective conductor

A conductor used for some measure of protection against electric shock and intended for connecting together any of the following parts:

- exposed-conductive-parts
- extraneous-conductive-parts
- the main earthing terminal

- earth electrode/s
- the earthed point of the source, or an artificial neutral.

3.4.4 Electrically operated CO_2 or mixing gas regulating system

A device for electrically sensing and controlling the CO_2 or mixed gas supply, to beer casks, kegs or tanks.

3.4.5 Insulated and sheathed cable

Cable which, in addition to the basic insulation, has a further overall sheath of material for mechanical protection.

3.4.6 Junction (Joint) box

A box forming part of a wiring installation, provided to contain joints in the conductors of the cable of the installation.

3.4.7 Bar valve switch

A manually operated electrical switch usually fitted to, or adjacent to, the beer dispense point for the control of the beer dispense meter or pump.

3.4.8 Socket outlet

A device, provided with female contacts, which is intended to be installed with the fixed wiring, and intended to receive a plug. A luminaire track system is not regarded as a socket outlet.

3.4.9 Connector

The part of a cable coupler, or of an appliance coupler, which is provided with female contacts and is intended to be attached to the end of the flexible cable remote from the supply.

3.4.10 Plug

A device, provided with contact pins, which is intended to be attached to a flexible cable, and which can be engaged with a socket-outlet or with a connector.

3.4.11 Residual current device

A mechanical switching device or association of devices intending to cause the opening of the contacts, when the residual current attains a given value under specified conditions.

3.4.12 Fuse

A device, that by the fusing of one or more of its specially designed and proportioned components, opens the circuit in which it is inserted, by breaking the current when this exceeds a given value, for a sufficient time. The fuse comprises all the parts that form the complete device.

3.4.13 Fuse element

A part of a fuse designed to melt when the fuse operates.

3.4.14 Fuse link

A part of a fuse, including the fuse elements, which requires replacement by a new, or renewable fuse link, after the fuse has operated *and* before the fuse is put back into service.

3.5 Voltage

3.5.1 Voltage, nominal

Voltage by which an installation (or part of an installation) is designated. The following ranges of nominal voltage (r.m.s. values for a.c.) are defined:

Extra Low
Normally not exceeding 50 volts a.c, or 120 volts ripple free d.c. whether between conductors or to Earth.

Low
Normally exceeding extra low voltage but not exceeding 1000 volts a.c. or 1500 volts d.c. between conductors, or 600 volts a.c. or 900 volts d.c. between conductors and Earth.

The actual voltage of the installation may differ from the nominal value by a quantity within normal tolerances.

3.5.2 Reduced low voltage system

A system in which the nominal phase to phase voltage does not exceed 110 volts and the nominal phase to earth voltage does not exceed 63.5 volts.

3.5.3 SELV (safety extra-low voltage)

An Extra-low voltage system, which is electrically separated from Earth and from other systems in such a way that a single fault cannot give rise to the risk of electric shock.

3.5.4 Function extra-low voltage

Any Extra-low voltage system in which not all of the protective measures required for SELV have been applied.

3.6 Terms used in legislation

3.6.1 As low as is reasonably practicable (ALARP)

For a risk to be ALARP it must be possible to demonstrate that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained. The ALARP principle arises from the fact that infinite time, effort and money could be spent on the attempt of reducing a risk to zero. It should not be understood as simply a quantitive measure of benefit against detriment. It is more a best common practice of judgement of the balance of risk and societal benefit.

3.6.2 Injury

Means death or injury to persons from:

- electric shock
- electric burn
- fires of electrical origin
- electric arcing or
- explosions initiated or caused by electricity

It does not include secondary injuries caused as a result of an electrical injury, for example, injuries received by falling from a ladder as a result of an electric shock.

3.6.3 Must

"Must" implies an imperative in order to comply with Statutory Regulations.

3.6.4 Shall

"Shall" implies a strong recommendation to adopt the suggested method in meeting the requirement, although there may be acceptable alternatives, particularly given technological progress.

3.6.5 Should

"Should" is used to signify that the particular subject needs careful consideration and that a certain amount of discretion may be exercised in meeting the requirement.

3.6.6 So far as is reasonably practicable (SFAIRP)

This means the same as ALARP and SFAIRP and ALARP are interchangeable.

3.7 Miscellaneous

3.7.1 Apparatus

Things collectively necessary for the performance of some activity of function.

3.7.2 Make dead (Electrically)

Cut-off, or isolated, from all its sources of electrical energy.

3.7.2 Electrical equipment

Any item for such purposes as generation, conversion, transmission, distribution or utilisation of electrical energy, such as machines, transformers, apparatus, measuring instruments, protective devices, wiring materials, appliances and luminaires.

3.7.3 Fixed equipment

Equipment fastened to a support or otherwise secured in a specific location.

3.7.4 Instructed person

A person adequately advised or supervised by skilled persons to enable him to avoid dangers which electricity may create.

3.7.5 Isolation

Disconnection and separation from the source of electrical energy in such a way that the disconnection and separation remains secure.

3.7.6 Portable equipment

Electrical equipment which is moved while in operation or which can easily be moved from one place to another while connected to the supply.

3.7.7 Skilled person

A person with technical knowledge or sufficient experience to enable him to avoid dangers which electricity may create.

3.7.8 Stationary equipment

Electrical equipment which is either fixed, or equipment which is designed to be stationary after installation, which will be operated only whilst stationary, but which may be equipped with any convenient carrying means as deemed necessary to facilitate transport, installation and removal from the site where it is to be operated

4. Legislation

4.1 Introduction

4.1.1 The Health and Safety at Work etc. Act 1974, imposes on individuals at work, various general duties of care to others. The individuals are employers, self-employed, employees and others. The Act also empowers the Secretary of State to introduce regulations to further the aims of the Act.

4.1.2 The Electricity at Work Regulations, 1989, (the "Regulations") were made under the Health & Safety at Work Act, 1974, and came into force on 1st April, 1990.

4.1.3 The Consumer Protection Act 1987 (the Act) transfers into UK law the European Community's Product Liability Directive. The Act makes producers liable for loss or damages caused to consumers by defective products. Producers have an obligation to ensure that their products are safe and free from defects. The Act places liability on producers, importers and own-branders. The Act also empowers the Secretary of State to introduce safety regulations.

4.1.4 The Electrical Equipment (Safety) Regulations 1994, broadly apply to most consumer, commercial and industrial electrical equipment designed for use within the voltage ranges 50 V ac to 1000 V ac and 75 V dc to 1500 V dc. These regulations apply to both domestic and workplace electrical equipment placed on the market, on or after 1st January 2007. Their purpose is to remove technical barriers to trade and establish a European Union single market and provide a high level of protection for consumers.

Products covered by this legislation are required to carry the CE Marking.

4.1.5 Certain components of electrical equipment may, in themselves, be considered to be electrical equipment. In such cases steps should be taken to ensure that they satisfy the requirements of the Electrical Equipment (Safety) Regulations 1994, if it is intended that they are to be supplied as separate items. In the beer dispense industry such components would include the major assemblies making up the various electrical equipment (chillers, coolers etc.) and would, for example, include electrically operated pumps. In these situations the manufacturers will need to ensure that these components meet the requirements of the Electrical Equipment (Safety) Regulations 1994 and may, under the Regulations, affix CE marking to the packaging, instruction booklet or guarantee certificate of such components.

4.1.6 The general duty of care required of individuals (the "duty holders") under the Health & Safety at Work Act, is, under the Regulations, interpreted specifically in relation to work on or near electrical systems, conductors and electrical equipment. This does not modify, reduce or replace the general duty of care in any other work activities.

4.1.7 There is a statutory duty on the employer and self-employed "to comply with the Regulations in so far as they relate to matters which are within his control".

4.1.8 Employees have a statutory duty, whilst at work, to co-operate with their employer in relation to matters affecting health and safety.

4.1.9 The duty imposed on duty holders is either absolute, i.e. the regulation must be complied with absolutely, regardless of cost or any other consideration, or is qualified, in some regulations, by the words "so far as is reasonably practicable". In this latter case the duty holder must assess the risks pertaining to a particular situation and the costs (in terms of the physical difficulty, time, trouble and expense) involved in eliminating those risks.

4.1.10 The Health & Safety Executive (HSE) publication "Memorandum of guidance on the Electricity at Work Regulations 1989" provides detailed guidance on the Regulations and it is recommended that it should be read generally by all personnel involved with work on, or near, electrical systems, and particularly by duty holders.

4.1.11 Various European Directives have supplemented the existing Regulations regarding the manufacture and distribution of products within the European Union (EU). These Directives place duties on manufacturers and suppliers of new work equipment and aim to achieve the free movement of products in the EU by removing different national controls and harmonising essential health and safety requirements. Article 100A Directives set out essential health and safety requirements, which must be satisfied before products can be sold in the EU.

4.1.12 Products which comply with the Directives must be given free circulation within the EU. Suppliers must ensure that their products comply with the legal requirements of the applicable Directives. In the beer and dispense industry the common directives are:

- Low Voltage Directive (2006/95/EC)

- EMC Directive (2004/108/EC)

4.2 Modified and refurbished electrical equipment

4.2.1 Modified and refurbished equipment is included within the scope of the Electrical Equipment (Safety) Regulations 1994. Where equipment is refurbished to its original specification it will be treated as second-hand equipment. However, if the refurbishment uses different types of components, then it will be considered as modified electrical equipment.

4.2.2 Modified equipment will need to be assessed by the person carrying out the modifications to determine whether the modification may have introduced hazards or risks which were not covered by the original design solution. If this assessment determines that the original manufacturers design has been modified, to such an extent that the original risk assessment no longer covers the equipment, then it is likely that the equipment would be considered as new equipment rather than second-hand equipment. This will require the person carrying out the modification to carry out all of those exercises required of an original manufacturer, for example preparation of a technical file, drawing up a declaration of conformity and placing the CE marking on the product.

4.3 Second-hand electrical equipment

4.3.1 The safety of second hand equipment, that is supplied in the course of business, is controlled by the Electrical Equipment (Safety) Regulations 1994. Second hand electrical equipment need not satisfy the CE marking requirement, and needs neither the EC Declaration of Conformity, nor the Technical Documentation. Equipment is classed as second hand if it has previously been supplied to an end user in the European Economic Area (EEA). An end user means the consumer and includes commercial and industrial consumers.

4.3.2 Whilst there is no mandatory requirement for second-hand equipment to undergo any safety testing, a supplier is required to supply only equipment that is safe, so as to avoid the committing of an offence, under the Electrical Equipment (Safety) Regulations 1994.

4.3.3 The supply of electrical equipment, that is in need of reconditioning or repair, to someone who carries on a business of repairing and reconditioning electrical equipment is excluded from the Electrical Equipment (Safety) Regulations 1994 by virtue of the Consumer Protection Act 1987. Similarly the sale of articles as scrap is also excluded. However, if the electrical equipment is subsequently supplied to someone who does not carry on such a business, it is subject to the requirements of the Electrical Equipment (Safety) Regulations 1994. Suppliers should note that second-hand equipment is excluded from CE Marking requirements.

4.4 Hired and leased electrical equipment

4.4.1 The safety of electrical equipment that is supplied, by way of hiring it out in the course of business, is also controlled by the Electrical Equipment (Safety) Regulations 1994.

4.4.2 Suppliers of such equipment must ensure that it satisfies the safety requirements, however, there is no requirement to comply with General Condition 1(b) of the Safety Objectives provided for in the Electrical Equipment (Safety) Regulations 1994.

4.4.3. Hired / leased equipment is to be considered as new equipment, when it is supplied for the first time to an end-user in the European Economic Area (EEA), and as second-hand, when further supplied.

4.5 End users

4.5.1 An "end user" is the consumer and includes commercial and industrial consumers, therefore a business that hires equipment must ensure that it is safe. Although there is no mandatory requirement for the equipment to undergo any safety testing, a supplier may consider such testing advisable, as a means of satisfying themselves that the equipment is safe.

4.6 Furnished accommodation

4.6.1 The Electrical Equipment (Safety) Regulations 1994, apply to any person who supplies electrical equipment in the course of a business. Therefore, the safety of any electrical equipment, that is supplied as part of furnished accommodation, that is hired, or let, in the course of a business, is controlled by the Regulations.

4.6.2. Equipment which is supplied as part of a furnished accommodation is treated as hired / leased equipment in the course of business and it is considered as second-hand, provided that it has been previously supplied to an end user in the European Economic Area (EEA).

4.6.3 Estate agents, letting agents and anyone else who hires or lets furnished accommodation are strongly advised to seek their own independent legal advice as to whether they do so in the course of a business. This is particularly relevant to Pub Chains who frequently lease furnished premises.

4.6.4 Suppliers of electrical equipment, supplied in the above manner, must ensure that it satisfies the safety requirements of the Electrical Equipment (Safety) Regulations 1994. As with other second hand equipment, there is no mandatory requirement for the equipment to undergo any safety testing, but a supplier may wish to arrange for testing to check the safety of any equipment.

4.7 Provision of information

4.7.1 Any special instructions, or requirements, for the safe installation and/or operation of fixed or stationary equipment, must be given to installers and users (whether for the purpose of operating or maintaining the equipment). It is recommended that the information is supplied with the equipment, either in the form of a permanently attached rating plate or, if the equipment is of such a small size as to make this impractical, supplied with the packing for the equipment.

4.7.2 Manufacturers and/or suppliers of electrical equipment, designed and intended to be used as a component within a system, have a duty to provide such information as will enable the designer of the system to ensure that the system, as designed, will be safe to install, use and maintain. Manufacturers should issue a statement in writing, with the

equipment, confirming that it has been manufactured and tested in compliance with current statutory requirements.

4.8 Understanding the duty holders responsibilities

4.8.1 This Code of Practice is concerned with electrical equipment confined within its scope. Electrical equipment used for, or associated with, beer dispensing is usually, although not always, owned or leased by the supplier of the equipment (predominantly the beer supplying brewery), who also usually undertakes responsibility for the installation, maintenance and service of the equipment, through his own, or a contracted organisation.

4.8.2 Because of the nature of the beer supply market, frequently more than one supplying brewery is involved, each taking responsibility for its own equipment. The licensed premises, where the equipment is installed, may be owned, or operated by, one of a number of types of organisation. It is clear that the responsibilities imposed under the various Regulations may fall upon a number of duty holders. From the outset, each duty holder should establish the extent of his duties.

4.8.3 The Brewers' Society booklet gives the following advice:

- "A licensee who is a tenant or owner / occupier is an employer and is the main duty holder. Tenant licensees should check their tenancy agreement to establish the extent to which he or his landlord is responsible for the maintenance and repair of any of the electrical installations and equipment.
- Where any responsibility lies with the landlord under the agreement, the tenant still remains responsible under the Regulations for establishing that the electrical systems in the public house are safe.
- "A licensee who is an employee (e.g. a licensed house manager or club steward) should seek guidance from his employer to establish which duties he will be required to undertake."

4.9 IEE Regulations

4.9.1 In England and Wales, the Building Regulations (Approved Document: Part P) require that electrical installations are designed and installed according to the principles given in British Standard BS 7671.

4.9.2 The IEE Wiring Regulations BS 7671 are the national standard to which all industrial and domestic wiring must conform. The current (17^{th} edition) Regulations contain many major changes in order to align with European documents. The IEE Wiring Regulations are produced by the IET, fully known as the Institution of Engineering and Technology.

4.9.3 The Standard sets out the following technical requirements intended to ensure that electrical installations conform to the fundamental principles:

a. Assessment of general characteristics

b. Protection for safety

c. Selection and erection of equipment

d. Inspection and testing

e. Special installations or locations.

4.10 Overview of the Electricity at Work Regulations 1989

4.10.1 The purpose of the Electricity at Work Regulation 1989 (Regulations) is "to require precautions to be taken against the risk of death or personal injury from electricity in work activities".

4.10.2 The Electricity at Work Regulations 1989 impose the duty on employers (and self-employed persons) to comply with the provisions of the Regulations in matters within their control and require precautions to be taken against the risk of death or personal injury from electricity in work activities.

4.10.3 In addition, employees have the duty to comply with the Regulations and to co-operate with their employer to enable their employer to comply with the Regulations.

4.10.4 The duty imposed on is either absolute, i.e. the Regulation must be complied with regardless of cost or any other consideration, or is qualified, by the words "so far as is reasonably practicable". In this latter case the duty holder must assess the risks pertaining to a particular situation and the costs (in terms of the physical difficulty, time, trouble and expense) involved in eliminating those risks.

4.11 Application of the Electricity at Work Regulations 1989

4.11.1 The Regulations apply to all work on, or near, electricity and apply equally to all electrical installations and equipment at work, whether permanent or temporary, fixed or portable, mains or battery operated. Any work performed on, or near, electricity must be done by someone who is competent to do that particular class of work.

4.11.2 Apart from the requirements of Part III of the Regulations (which apply to mines only) all the Regulations apply to licensed premises. Employees have a statutory duty to take reasonable care for the health and safety of themselves and others who may be affected by their acts or omissions, and must not abuse any electrical equipment or system.

4.11.3 The training and instruction of all persons who install, repair or use electrical equipment is of paramount importance. Anyone using electrical equipment must be instructed in its safe operation, including how and where to switch off and isolate it, when required. Employees should be made aware of the dangers associated with electricity, and the actions to be taken should any incidents occur.

4.11.4 The Regulations do not refer to "competent persons". There is a statutory obligation for persons "engaged in any work activity where technical knowledge or experience is necessary to prevent danger" to possess "such knowledge or experience, or is under such degree of supervision as may be appropriate having regard to the nature of the work". Persons competent to work on or near, electricity need not be trained electricians, but it is essential that they have adequate technical knowledge and experience, commensurate with the work activity they are undertaking, or are adequately supervised. The following are examples of what may constitute technical

knowledge and experience:

- adequate experience of electrical work
- adequate understanding of the system to be worked on and practical experience of that class of system
- understanding of the hazards which may arise during the work and the precautions which need to be taken
- ability to recognise at all times, whether it is safe for the work to continue.

Employers need to assess the class of electrical work to be undertaken, and to ensure that persons carrying out the required work are competent to do so.

4.12 Requirements of the Electricity at Work Regulations 1989

4.12.1 All electrical systems and equipment connected to the systems, are to be constructed and maintained, in such a way as to prevent danger.

4.12.2 Work activities, which include the operation, use and maintenance of electrical systems and equipment, must be carried out safely.

4.12.3 Equipment provided for the purpose of protecting persons working on, or near, electrical systems must be suitable for that use, and be properly maintained.

4.12.4 Equipment must be of sufficient strength and capability for its intended use without giving rise to danger. "Strength" includes electrical strength, as well as mechanical strength.

4.12.5 Where it is reasonably foreseeably that equipment may be subject to adverse or hazardous conditions, it must be of suitable construction, or be protected, as necessary to ensure its safe operation.

4.12.6 All conductors within a system must be either covered with insulating material and protected as necessary, or have suitable precautions taken, that will prevent danger.

4.12.7 Precautions must be taken, by earthing or other suitable means, to prevent danger when any conductor in a system becomes charged. The conductor may become charged as a result of normal operation, or due to a fault arising.

4.12.8 The integrity of earthing or other reference conductors, must be preserved. There must not be a way of breaking the conductor, or introducing high impedance into the conductor, if it can be expected to give rise to danger, unless suitable precautions are taken to prevent that danger.

4.12.9 To prevent danger, all connections and joints in a system must be mechanically and electrically suitable for their use.

4.12.10 To prevent danger every part of the system must be protected from being subject to excess current.

4.12.11 To prevent danger, equipment must be capable of being cut-off and isolated from its electrical supply. If any equipment is fed from more than one supply, then all supplies must be capable of being cut off and isolated, this requirement includes battery supplied electricity. Where the electrical equipment is itself a generator of electrical energy, precautions should be taken to prevent danger.

4.12.12 If equipment has been made dead to prevent danger whilst work is carried out on, or near, the equipment, precautions must be taken to prevent the equipment becoming electrically charged during the time that the work is carried out.

4.12.13 No-one must work on, or near, any live conductor (other than one which is suitably insulated to prevent danger) if danger may arise by such work activity, unless there is no suitable alternative and that suitable precautions are taken to prevent injury, including, where necessary, the provision of suitable protective equipment.

4.12.14 When working on, or near, electrical equipment, there must be adequate means of access, working space and lighting to allow the work to be carried out safely.

4.12.15 All personnel working on electrical systems and equipment must be adequately trained and competent, to ensure that the work is carried out safely, or supervised by such a person.

4.13 Electrical equipment

4.13.1 Manufacturers and/or suppliers of electrical equipment have a responsibility for ensuring that the equipment is designed and constructed to be fit for its purpose, and that the appropriate requirements of the Regulations are met. Any special instructions or requirements for the safe installation and/or operation of fixed or stationary equipment must be given to installers and users (whether for the purpose of operating or maintaining the equipment). It is recommended that the information given in Appendix E is supplied with the equipment, either in the form of a permanently attached rating plate or, if the equipment is of such a small size as to make this impractical, supplied with the packing for the equipment.

4.13.2 Manufacturers and/or suppliers of electrical equipment designed and intended to be used as a component within a system, have a duty to provide such information as will enable the designer of the system to ensure that the system, as designed, will be safe to install, use and maintain. Manufacturers should issue a statement in writing, with the equipment, confirming that it has been manufactured and tested in compliance with current statutory requirements.

4.13.3 The installer of the equipment must install the equipment in such a way as to prevent a risk of danger. This means that, in addition to installing the equipment in accordance with IEE Wiring Regulations and any statutory requirements (for example, local authority regulations), the installation must comply with any special instructions issued by the manufacturer. Where a piece of equipment is supplied as a number of separately identifiable components for "assembly" by interconnection during installation, only those items supplied by the manufacturer, or designer of the system should be used. No alternative unit should be substituted, unless the system designer

has deemed it safe to do so. Substitution of what appear to be identical components from different manufacturers (for some components, even, the same manufacturer) in a system at any stage after that system has been designed, can constitute a new design. "Mixing and matching" of apparently identical components can lead to overloading and, hence, danger.

4.13.4 During installation of equipment, care must be exercised so that any person working on or near the installation is not put at risk of injury. On completion of an installation, the installer should state, in writing, that the equipment is safe to use. Where equipment is supplied with electrical power from a fixed socket, care must be exercised to ensure that the supplying circuit is of such strength that it will not become overloaded by the installation of the equipment. Installation should include a functional test of the equipment.

4.13.5 Beer dispense equipment is normally owned by the (beer) supplying brewery, however this is not always the case; sometimes the equipment may be leased or rented. However the equipment is supplied, the responsibility for its maintenance should be clearly established.

4.13.6 Portable electrically powered tools and/or portable dispensing equipment may be taken onto licensed premises from time to time. Portable equipment must be safe to use, and the person responsible for the supply of such equipment may be required to provide evidence to the effect that the equipment is safe to use.

4.13.7 Suppliers of equipment who employ contractors for the installation, service, repair and/or maintenance should ascertain that the contractor is aware of their duties and obligations, and that the contractor is competent to carry out the specified work.

4.13.8 Care should be taken to ensure that only the correct rating and type of overcurrent protective device, such as a fuse or MCB, is installed in the equipment or the electrical supply to it. Where equipment is supplied through adjustable overload devices, such devices must be properly adjusted.

4.13.9 Where additions and/or alterations or modifications are carried out on existing installations, care must be exercised that the work is undertaken in such a way so as to not give rise, so far as is reasonably practical, to danger.

4.13.10 Equipment sent for overhaul and not provided with a rating plate giving the information, as appropriate, set out in Appendix E should be fitted with it at the time of the overhaul/refurbish. If access to the original design data is not possible, as much of the information as is available should be given.

4.13.11 Disused electrical equipment should be isolated from any source of electrical energy. Additionally, where disused equipment provided with a permanently attached cable and plug (and intended to be supplied by means of a plug and socket connection) is faulty, the plug should be removed to prevent accidental or casual reconnection to the supply.

4.14 Maintenance and inspection

4.14.1 There is a requirement on duty holders to maintain electrical equipment so as to prevent, so far as is reasonably practicable, danger. To comply with this requirement there is a need to establish maintenance, inspection and service programmes. Because of the variety of equipment type, working conditions and frequency of use, the programmes will call for different inspection and maintenance routines for different equipment. Whoever is responsible for the maintenance of the equipment should be responsible for drawing-up these maintenance and inspection regimes. Many factors need to be taken into account, for example:

- the type of equipment (e.g. size, weight, function)
- use of equipment (e.g., fixed, stationary, portable)
- electrical protection (e.g., class of insulation, fusing arrangement, other protection devices, earthing)
- mechanical protection (e.g., resistant to shocks, protection of conductors)
- environmental factors (e.g., position of installation, dampness, temperature, dusty atmosphere, likely to be exposed to water, likely abuse)
- history (e.g., previous inspection record)

4.14.2 The frequency of inspection and/or maintenance visits need not be the same for all equipment. When installed in different locations, it is possible for identical equipment to have different inspection' requirements if one of the above factors becomes a controlling factor. For example, some equipment, if located on the beer cellar floor, may have trailing cables and be exposed to sprayed water. The same equipment, when installed on the cellar wall, has no trailing cable and may be protected from sprayed water. Although the equipment is the same, it would sensible to have an inspection regime to reflect the differing circumstances of these two situations.

4.14.3 Inspection and test results should be recorded in an inspection/test log book. Results from previous inspections may be used in considering inspection/maintenance frequency. All inspection/test regimes should be subject to regular formal review. The maintenance/test records for all the installations under the duty holder's control should be consolidated for the review.

4.14.4 Inspections and/or tests should be specified, including acceptance criteria. (see Appendix F)

4.14.5 All work on dispense equipment should be carried out with the equipment isolated from every electrical power source. This applies whether the work to be done is of an electrical nature or not. If the equipment is such that work may be undertaken on it remote from the means of isolating the equipment, the method of working must ensure that the equipment cannot be re-energised by re-connection of the isolating means during the time the work progresses.

4.14.6 Isolation of equipment which is subject to automatic operation should remove all power sources from the equipment before work commences. When the power is re-

connected, the equipment must be capable of safe starting without imposing any risk of danger to anyone.

4.14.7 The desirability of isolating equipment before work commences may, on occasions, render it almost impossible to locate and repair faults within the system. The Regulations recognise this and lay out the conditions which must prevail before it is reasonable to allow work on or near live conductors. Dispense equipment is often operated at extra low voltage. Some voltages are sufficiently low (maximum 24 volts ac/dc) to allow safe servicing of the equipment with the conductors live. Such servicing should not be done without sufficient training and/or knowledge of the equipment concerned. Suitable test equipment must be available and used. The practice of working on live conductors is permissible only providing that the conditions imposed by Regulation 14 are met. There must be a proper consideration of any risks which are likely to occur, before such work commences. The arrangement of the equipment should be such that a person exposed to the extra low voltage cannot thereby be exposed to any other higher voltage. It must be possible to ascertain that any exposed conductive parts or conductors have not become subject to any higher voltages before the work commences. The person assessing the risks involved should be qualified to make the assessment and must be other than the person conducting the service. Procedures which need to be followed before commencing the work should be specified as, and constitute, part of the work activity. In no other circumstances should service on live conductors be allowed on site, unless the person involved is a qualified electrician and/or has adequate experience and knowledge of electricity and the equipment being tested. The HSE booklet "Electricity at Work, Safe Working Practices" gives advice on the procedures which should be adopted.

5. CE Marking requirements

5.1 Introduction

5.1.1 CE marking is a visible declaration by the manufacturer or his authorised representative that the electrical equipment to which it relates satisfies all the provisions of the Regulations. Equipment bearing the mark will be taken as meeting the requirements and thereby entitled to free circulation throughout the European Economic Area (EEA) provided that the equipment satisfies those requirements.

5.1.2 The CE marking requirements consist of three parts, all of which must be satisfied and include:

- the affixing of the mark;
- the drawing up of an EC Declaration of Conformity;
- compiling and holding the Technical Documentation.

5.1.3. CE marking should be affixed to the electrical equipment or, where this is not possible, to the packaging, the instruction booklet, or the guarantee certificate. Manufacturers or authorised representatives may decide for practical reasons to affix it to both the product and its packaging.

5.1.4. The mark must be visible, particularly to the enforcement authorities, easily legible and in

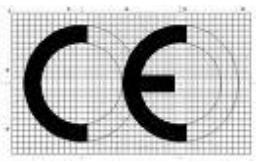
an indelible form. By affixing CE marking to the equipment, the manufacturer is making a statement that they have objective evidence that the equipment meets the requirements of all relevant Directives. It is for the manufacturer to decide which Directives are relevant to his equipment. These Directives are normally detailed on the Declaration of Conformity.

5.1.5. The presence of CE marking does not mean that the electrical equipment cannot be challenged by an enforcement authority if they have reasonable grounds for suspecting an infringement of the Regulations.

5.1.6. The Beer Dispense Industry and in particular those procuring electrical equipment should note that CE marking is not a European safety mark or quality symbol intended for "users" and should not be presented as such. Its purpose is to indicate to enforcement authorities that the electrical equipment to which it relates is intended for sale in the EEA and signifies a declaration, which is rebuttable, by the manufacturer or his authorised representative that the equipment satisfies the requirements and is entitled to access those markets.

5.1.7. It should also be noted that CE marking is specific only to a range of Directives. A list of these Directives is shown at "CE Marking Directives". It can only be applied to products covered by such Directives and under the conditions contained in them. While it is not an offence under the Regulations to affix CE marking to items which are not electrical equipment or covered by another Directive requiring CE marking, such an action could constitute an offence under section 1 of the Trade Descriptions Act 1968 and may result in prosecution and a subsequent fine. This can apply to any person in the supply chain.

5.2 Example of CE Mark



If the mark is reduced or enlarged the proportions given in the graduated drawing must be respected. The two letters of the CE marking must have substantially the same vertical dimension, which must not be less than 5mm. The grid does not form part of the mark and is for information only.

6 Residual Current Devices

6.1 General requirements

The following requirements RCD requirements apply to the fixed wiring within the licensed premises.

6.1.1 Licensed premises should have a residual current device (RCD) to safeguard personnel against contact with a live conductor, with permanently fixed devices being the preferred option.

6.1.2 The RCD may be portable, in which case strict rules should be applied to prevent its removal, damage or misuse.

6.1.3 RCDs are not to be used as the sole means of protection against direct contact with live conductors.

6.1.4 All electrical circuits in excess of 55 volts (110 volts CTE supplies) in the cellar supplying beer dispense and storage equipment should be protected by means of a residual current device (RCD).

6.1.5 The maximum tripping level for the RCD must be 30 milliamps with a maximum tripping time of 40 milliseconds at a residual current of 150mA.

6.1.6 The residual current device fitted shall have a test button. This test facility shall be operated at regular intervals to ensure the device is fully operational. This should be carried out by the licensee at monthly intervals and by members of maintenance staff immediately before carrying out any maintenance work in the cellar. An operational test as required by the IEE Wiring Regulations should be carried out regularly as well as the "pushbutton test".

6.1.7 The residual current device fitted should be manufactured to a recognised standard.

6.1.8 RCDs may not offer any protection against electric shock when the phase and neutral conductors are contacted simultaneously.

6.1.8 RCDs sited in the electricity supply to a transformer will offer no protection to electric shock in the output (reduced voltage) electricity supply.

7 Plug and Socket Outlets (200-250 volts ac)

7.1 General requirements

The following requirements apply to those socket outlets connected to the fixed wiring within the licensed premises.

7.1.1 All socket outlets should be located close to the site of the equipment or appliance they are intended to supply, so that the two metre flexible cord or cable attached to the equipment or appliance is well within reach of its socket without strain being imposed on the flexible cord or cable.

7.1.2 Socket outlets shall be of the 3-pin type, in good condition and comply with BS 1363 or BS EN 60309-1. The preferred option is for socket to comply with BS EN 60309-1: 2008.

7.1.3 All socket outlets shall be installed and tested by Skilled Personnel to the current IEE Wiring Regulations.

7.1.4 The supply cable to all socket outlets should be of such a type and size as to comply with the IEE Wiring Regulations.

7.1.5 All socket outlets either in the Cellar or Bar areas should be connected to the same phase of supply.

7.1.6 No individual beer dispensing equipment or system, or associated equipment, should be supplied from more than one socket outlet. There shall be no cross connections

between individual items of equipment unless they have been specifically designed to be so connected.

7.1.7 Where surface mounted socket outlets are installed, they should be of the metalclad type or in damp or corrosive areas be of robust non-metalclad construction.

7.1.8 The metal case of any metalclad socket outlet shall be suitably bonded to the incoming protective conductor as required by the IEE Wiring Regulations.

7.1.9 Multi-way adaptors shall not be used. Multi-way socket outlets, made to BS 196, or BS 1363 should be used where several separate supplies are required at one position.

7.1.10 If an appliance does not incorporate a fuse in the phase conductor a fused plug shall be used for connecting the appliance to the supply point. The fuse rating shall be appropriate to the rating of the appliance. The fuse should only be in the phase conductor of a single phase supply, or in each phase conductor in the case of a three-phase supply.

7.1.11 All plugs should be to BS 1363/A (the "A" signifying "rough handling" use) or BS 4343.

8 Cellar Equipment

8.1 Cellar electrical supply

8.1.1 All electrical equipment installed in the cellar area should be connected to a dedicated, labelled distribution board separated from the remainder of the electrical installation of the premises. The distribution board should be located in the cellar area, preferably outside the cellar entrance. This distribution board shall be provided with a load breaking isolator on the input side, either fitted locally or integrated into the distribution board. All sub-circuits shall be identified and the isolator clearly marked to indicate its duty.

8.1.2 All low voltage electrical circuits in excess of 110V shall be protected by a residual current device.

8.1.3 Cellar lighting, excluding cellar tank lighting, should be supplied from a distribution board separate from that used to supply the cellar installed equipment.

9 Legislation Applicable to Stakeholders

9.1 Owner Landlord

Legislation	Regulations				
Electricity at Work Regulations	4 Systems, work activities, and protective equipment	10 Connections	11 Means of Protecting from Excess of Current	12 Means for cutting off the supply and for isolation	16 Persons to be competent to prevent danger and injury
Provision and Use of Work Equipment Regulations	4 Suitability of Work Equipment	5 Maintenance	6 Installation	7 Specific Risk	8 Information and Instructions
	9 Training	11 Dangerous Parts of Machinery	12 Protection against specified hazards	19 Isolation from Sources of Energy	21 Lighting
	22 Maintenance Operations	23 Markings	24 Warnings		
Regulatory Reform Fire (Safety) order 2005	3 Responsible person	4 General Precautions	5 Duties under the RRF(S)O	8 General Fire Precautions	22 Co-operation and co-ordination
	29 Alterations notices				
Control of Asbestos Regulations 2006	4 Duty to Manage Asbestos	5 Identification	6 Assessment	10 Information, instruction & Training	11 Prevention or Reduction of Exposure
	12 Use of Control Measures	13 Maintenance of Control Measures	16 Duty to Prevent or Reduce the Spread of Asbestos		

APPENDICES

Appendix A – Inspection Procedures

Appendix B – Key changes since the 3rd Edition (1995)

Appendix A

Inspection Procedures

Typical routine

Electrical checks

1 Although a good initial level of safety can be achieved by correct selection and use of equipment and its connectors and cables, lasting safety can only be attained by ongoing and effective maintenance. Users should treat their equipment reasonably, including stopping it if defects occur and reporting them.

2 In many cases (eg Class I equipment), the safety of portable electrical equipment depends on the continued integrity of the earthing, and correct connections, of the fixed electrical installation up to and including the socket supplying the equipment. So you should also correctly select, use and maintain the fixed installation, although this is outside the scope of this book - see *Inspection and testing* (Guidance Note 3) from the Institution of Electrical Engineers (IEE)6 for guidance on inspection and testing of the fixed electrical installation.

3 Maintenance can include visual inspection, testing, repair and replacement. Maintenance will determine whether equipment is fully serviceable or remedial action is necessary. Routine inspection and appropriate testing, where necessary, are normally part of any overall strategy for ensuring that work equipment is maintained in a safe condition.

4 Cost-effective maintenance of portable electric equipment can be achieved by a combination of:

- Checks by the user
- Formal visual inspections by a person trained and appointed to carry them out
- Combined inspection and tests by an electrically competent person or by a contractor.

5 Management should follow up these procedures by monitoring the effectiveness of the system and taking action where faults are found, particularly when faults are frequent.

User checks (visual)

The person using the equipment should be encouraged to look at it critically and check for signs that it may not be in sound condition, for example:

- Damage (apart from light scuffing) to the cable sheath
- Damage to the plug, for example the casing is cracking or the pins are bent
- Inadequate joints, including taped joints in the cable
- The outer sheath of the cable is not effectively secured where it enters the plug or the equipment. Obvious evidence would be if the coloured insulation of the internal cable cores were showing
- The equipment has been subjected to conditions for which it is not suitable, eg it is wet or excessively contaminated
- Damage to the external casing of the equipment or there are some loose parts or screws;

- Evidence of overheating (burn marks or discoloration).

These checks also apply to extension leads and associated plugs and sockets. The user should make visual checks when the equipment is taken into use and during use. Any faults should be reported to management and the equipment taken out of use immediately. Management should take effective steps to ensure that the equipment is not used again until it is repaired by a person competent to carry out the task (eg the defective equipment could be labelled as 'faulty' and its associated plug removed).

Formal visual inspections

The most important component of a maintenance regime is usually the formal visual inspection, carried out routinely by a trained person. Such inspections can pick up most potentially dangerous faults and the maintenance regime should always include this component.

To control the risks and to monitor the user checks, a competent person should carry out regular inspections that include visual checks similar to those listed in the user checks, but undertaken in a more formal and systematic manner. Additional checks could include:

- Removing the plug cover and ensuring that a fuse is being used (eg it is a fuse not a piece of wire or a nail etc)
- Checking that the cord grip is effective
- Checking that the cable terminations are secure and correct, including an earth where appropriate, and there is no sign of internal damage, overheating or ingress of liquid or foreign matter.

The formal visual inspection should not include taking the equipment apart. This should be confined, where necessary, to the combined inspection and testing.

The trained person can normally be a member of staff who has sufficient information and knowledge of what to look for, and what is acceptable, and who has been given the task of carrying out the inspection. To avoid danger, trained people should know when the limit of their knowledge and experience has been reached. Simple, written guidance relating to the visual inspection can be produced that summarises what to look for and which procedures to follow when faults are found or when unauthorised equipment is found in use. This guidance can also help equipment users.

The formal visual inspections should be carried out at regular intervals. The period between inspections can vary considerably, depending on the type of equipment, the conditions of use and the environment. For example, equipment used on a construction site or in a heavy steel fabrication workshop will need much more frequent inspection than equipment such as floor cleaners in an office. In all cases, however, the period between inspections should be reviewed in the light of experience. Faulty equipment should be taken out of service and not used again until properly repaired. If necessary, it should be tested.

The pattern of faults can help management decide what action to take, depending on whether the faults show:

- The wrong equipment is being selected for the job
- Further protection may be necessary in a harsh environment
- The equipment is being misused.

Combined inspection and tests

The checks and inspections outlined in the previous paragraphs will, if carried out properly, reveal most (but not all) potentially dangerous faults. However, some deterioration of the cable, its terminals and the equipment itself can be expected after significant use. Additionally, the equipment itself may be misused or abused to the extent that it can give rise to danger. Some of these faults, such as loss of earth integrity (eg broken earth wire within a flexible cable), or deterioration of insulation integrity, or contamination of internal and external surfaces, cannot be detected by visual inspection alone. Periodic combined inspection and testing is the only reliable way of detecting such faults, and should be carried out to back up the checks and inspection regime. Testing is likely to be justified:

- Whenever there is reason to suppose the equipment may be defective (but this cannot be confirmed by visual inspection)
- After any repair, modification or similar work
- At periods appropriate to the equipment, the manner and frequency of use and the environment.

The inspection carried out in conjunction with testing should usually include checking:

- The correct polarity of supply cables
- Correct fusing
- Effective termination of cables and cores
- That the equipment is suitable for its environment.

Such combined inspection and testing requires a greater degree of competence than that required for inspection alone, because the results of the tests may require interpretation and appropriate electrical knowledge will be needed. However, it can often be carried out by a competent employee.

People carrying out testing of portable electrical equipment should be appropriately trained for this work. It is the employer's duty to ensure that they are competent for the work they are to carry out. Basically, there are two levels of competency.

- The first level is where a person not skilled in electrical work routinely uses a simple 'pass/fail' type of portable appliance tester (PAT), where no interpretation of readings is necessary. The person would need to know how to use the PAT correctly. Providing the appropriate test procedures are rigorously followed and acceptance criteria are clearly defined, this routine can be straightforward
- The second level is where a person with appropriate electrical skills uses a more sophisticated instrument that gives actual readings requiring interpretation. Such a person would need to be competent through technical knowledge or experience related to the type of work.

Some combination of the actions should provide the most cost-effective way of ensuring, so far as is reasonably practicable, that equipment will be maintained in a safe condition wherever it is used. The actions are relatively simple. The more extensive inspection and testing can be carried out less frequently if the maintenance system includes formal visual inspections and monitoring of the user checks.

Maintenance and test records

Although there is no requirement in the EAW Regulations to keep maintenance logs for portable and transportable electrical equipment, the EAW Memorandum5 does refer to the benefits of recording maintenance, including test results. A suitable log is useful as a management tool for monitoring and reviewing the effectiveness of the maintenance scheme and also to demonstrate that a scheme exists. It can also be used as an inventory of equipment and a check on the use of unauthorised equipment (eg domestic kettles or electric heaters brought to work by employees).

The log can include faults found during inspection, which may be a useful indicator of places of use, or types of equipment, that are subject to a higher than average level of wear or damage. This will help monitor whether suitable equipment has been selected. Entries in a test log can also highlight any adverse trends in test readings that may affect the safety of the equipment, thus enabling remedial action to be taken. Be careful when interpreting trends where a subsequent test may be done with a different instrument to that used for an earlier test, as differences in the results may be due to difference in the instruments rather than deterioration in the equipment being tested.

Records do not necessarily have to be on a paper system. Test instruments are available that store the data electronically, which can then be downloaded directly onto a computer database. Duty holders with large amounts of equipment will find it useful to label equipment to indicate that the equipment has been tested satisfactorily, ie has been passed as safe, and when the date for the next test is due. Otherwise, individual items may be missed on consecutive occasions.

Frequency of inspection and combined inspection and testing

Deciding on the frequency of inspection and testing is a matter of judgement by the duty holder, and should be based on an assessment of risk. This can be undertaken as part of the assessment of risks under the Management of Health and Safety at Work Regulations 1999.

Factors to consider when making the assessment include the following:

- Type of equipment and whether it is hand-held or not
- Manufacturer's recommendations
- Initial integrity and soundness of equipment
- Age of the equipment
- Working environment in which the equipment is used (eg wet or dusty) or likelihood of mechanical damage
- Frequency of use and the duty cycle of the equipment
- Foreseeable abuse of the equipment
- Effects of any modifications or repairs to the equipment
- Analysis of previous records of maintenance, including both formal inspection and combined inspection and testing.

Table 1 sets out the suggested frequency of formal visual inspections and combined inspections and electrical tests for portable and transportable electrical equipment. It gives suggested starting intervals when implementing a maintenance programme. Where one figure is given, this is a guide for anticipated average use conditions; more demanding conditions of use will require more frequent formal visual inspections, and/or combined inspections and tests. Where a range is shown, the small interval is for more demanding conditions of use and the longer interval is for

less demanding ones. It is up to the duty holder, with appropriate advice where necessary, to assess the conditions affecting equipment, which may lead to potential damage and/or deterioration and should determine the maintenance regime.

Table 1 Suggested initial maintenance intervals

Type of business	User checks	Formal visual inspection	Combined inspection and test
Equipment hire	N/A	Before issue/after return	Before issue
Construction (For indication only. See *Electrical safety on construction sites*[3] for more detail)	110 V – Weekly 230 V mains – Daily/every shift	110 V – Monthly 230 V mains – Weekly	110 V – Before first use on site then 3-monthly 230 V mains – Before first use on site then monthly
Light industrial	Yes	Before initial use then 6-monthly	6 – 12 months
Heavy industrial/high risk of equipment damage	Daily	Weekly	6 – 12 months
Office information technology, eg desktop computers, photocopiers, fax machines	No	1 – 2 years	None if double-insulated, otherwise up to 5 years
Double-insulated equipment ***not*** hand-held, eg fans, table lamps	No	2 – 3 years	No
Hand-held, double-insulated (Class II) equipment, eg some floor cleaners, kitchen equipment and irons	Yes	6 months – 1 year	No
Earthed (Class I) equipment, eg electric kettles, some floor cleaners	Yes	6 months – 1 year	1 – 2 years
Equipment used by the public, eg in hotels	By member of staff	3 months	1 year
Cables and plugs, extension leads	Yes	1 year	2 years

Appendix B

Key changes affecting this document since the 3rd Edition (1995)

Sixteen years have passed since the last version of this document was launched and during that time there have been a number of changes both to the health and safety legislation and British Standards relating to the brewing Industry, which are incorporated into the new document.

New sections in the document

There have been a number of new sections added to the new document:

Section 1 Introduction, which has taken the information from the Scope of the old document, updated and added further information to make it easier to read for the user.

Section 5 CE Marking Requirements, CE Marking details were not in the old document and were only introduced in 1993 and are now a requirement contained in current legislation.

Changes to the sections in the document

Section 3 Definitions, "3.6 Terms used in legislation" has been added to ensure that the reader fully understands the meaning of terms used in the current legislation.

Section 4 Legislation, has been revised to include how to meet the requirements of the legislation when carrying out certain activities and where applicable updated the legislation and its requirements.

Section 6 Residual Current Devices, this section has been simplified.

Section 7 Plug and Socket Outlets (200-250 volts ac), there are not any significant changes to this section.

Section 8 Cellar Equipment, there are not any significant changes to this section.

Appendices, the appendices have been updated, Appendix A has inspection procedures.