

**Electricity Policy
Edition 1
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Authorized by

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Managing Director

ISSUE CONTROL

This Policy is a controlled document and amendments to this document are affected by the re-issue of complete pages

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1.0 Compliance Requirements**Legal**

- Health and Safety at Work, etc Act 1974 (HSWA)
- Electricity at Work Regulations 1989
- Provision and Use of Work Equipment Regulations 1998 (PUWER)
- Management of Health and Safety at Work Regulations 1999

Standards

- BS 7671:2008 Requirements for Electrical Installations (IEE Wiring Regulations – Seventeenth Edition) – for fixed electrical installations up to 1000 volts

2.0 Introduction

Electrical systems (installations, equipment and appliances) are constructed and maintained at all times to prevent the following dangers initiated or caused by electricity:

- Electric shock
- Electric burn
- Arcing
- Fire
- Explosion

All reasonable steps are taken to ensure the safety of persons installing, operating and maintaining electrical systems, including:

- Electrical installation is completed in accordance with BS 7671:2008 - IEE Wiring Regulations
- Inspection and electrical testing of portable electrical appliances at regular intervals
- Inspection and electrical testing of fixed installations every five years
- The use of trained and competent persons installing, operating and maintaining electrical systems and equipment
- The provision of suitable tools, equipment and personal protective equipment for employees performing electrical work

Risk assessments are carried out on to identify the hazards caused by electricity and the precautions needed to reduce the risks identified as far as is reasonably practicable.

3.0 Electrical Hazards and Risk Assessment

3.1 Identifying Hazards

All aspects of work activities are assessed to identify hazards associated with the activity which have the potential to cause harm.

The activity, hazards identified and persons at risk are recorded onto the Risk Assessment Record – Form HS001 in accordance with health and safety policy HS10 - Risk Assessment.

Typical hazards identified during the assessment may include:

- Contact with live parts causing shock and burns
- Faults which could cause fires
- Fire or explosion where electricity could be the source of ignition in a potentially flammable or explosive atmosphere

The risk of injury from electricity is related to where and how it is used and the risk are greatest in harsh conditions, e.g.:

- In wet surroundings
 - unsuitable equipment may become live and may make its surroundings live
- Out of doors
 - equipment may become wet and may be at greater risk of damage
- In cramped spaces with significant earthed metalwork
 - difficult to avoid a shock if electrical fault present

3.1 Identifying Hazards (Continued)

Hazards may be present due to the following common faults associated with electrical equipment:

- Damaged equipment
- Unserved, poorly maintained and defective equipment
- Lack of earthing in installations and equipment
- Overloaded sockets & circuits
- Damaged extension leads and flexible cables
- Use of inappropriate electrical supply
- Use of incorrect fuse in electrical equipment
- Use of inappropriate equipment in certain environments

3.2 Evaluating Risk

Once a hazard has been identified, its risk is evaluated to consider the likelihood of hazardous events occurring and the severity of the consequences.

Existing control measures are identified and evaluated to determine whether they are adequate or further action is required to reduce the risks.

The risk evaluation and control measures are recorded onto the Risk Assessment Record – Form HS001 in accordance with Health and Safety Policy HS10 - Risk Assessment.

3.3 Reducing Risk

Control measures are implemented to reduce the risks identified. Control measures include:

- Eliminating the use of electricity
where possible air, hydraulic or hand-powered tools are used in preference to electrical tools
- Reducing the voltage
Where possible the supply voltage is limited to the lowest needed through use of the following:
 - i) battery operated power tools
 - ii) temporary lighting using lower voltages
- Using RCD safety devices
When operating electrical equipment at 230 volts or higher, an RCD (residual current device) may be used to provide additional safety

To permanently protect the supply cable RCD's may incorporated into the main switchboard or the socket-outlet.

Where this is not possible a plug incorporating an RCD, or plug-in RCD adaptor, may be used to provide additional safety

- Provision of PPE
Where it is not possible to employ the aforementioned control measures to reduce the risk, suitable personal protective equipment may be provided as a last resort.

PPE is provided and maintained in accordance with Health and Safety Policy HS13 – Personal Protective Equipment.

4.0 Electrical Installations

Electrical installations are constructed and maintained to ensure the safety of persons installing, operating and maintaining installations.

A mains voltage 240v AC single phase electrical supply system is installed and is used throughout workplace to energise fixed electrical equipment, electrical lighting circuits, portable electrical equipment, power tools and testing equipment

The following measures are taken to ensure installations are safe:

4.1 New Installations

New installations are installed to a suitable standard in accordance with BS 7671:2008 - IEE Wiring Regulations

Electrical equipment is selected and maintained to ensure the safety of persons installing, operating and maintaining equipment.

The following measures are taken to ensure electrical equipment is safe:

- Selecting equipment that is suitable for its working environment
- Ensuring equipment is safe when supplied
- Protecting lighting and other equipment that could be damaged in use to prevent risk of electric shock.
- Selecting equipment used in flammable/explosive atmospheres that is designed to prevent it from causing ignition

4.2 Socket-outlets

Sufficient electrical socket-outlets are provided to prevent overloading of sockets with adaptors, extension leads, etc.

4.3 Excess Current Protection

Installations are protected by fuses or circuit breakers to prevent possible harm from excess currents caused by the effects of short circuits and overloads.

4.4 Preventive Maintenance

Preventive maintenance of existing installations is performed to ensure they are properly maintained in a safe condition in accordance with section 6.1.

4.5 Cutting off the Electrical Supply

Equipment is provided to enable the electrical supply to any piece of electrical equipment to be cut off.

Installations are provided with cut-offs that enable the electrical supply in the circuit to be cut off in the event of an emergency either by direct manually operated switches or by indirect operation via 'stop' buttons or circuit breakers

Where cut offs are provided they are:

- a) in a suitable location with regard to the nature of the risks, the availability of persons to operate the cut off and the speed at which operation may be necessary. Access to switches, etc shall be kept clear and unobstructed.
- b) Clearly identified to show its relationship to the equipment it controls (unless obvious)

5.0 Portable Electrical Equipment

The two common definitions of portable electrical equipments are:

- Equipment with a plug on it
- Equipment that is capable of being readily disconnected from and reconnected to the electrical system, including extension leads and connection cables.

Portable Electrical equipment is selected and maintained to ensure the safety of persons installing, operating and maintaining equipment.

The following measures are taken to ensure electrical equipment is safe:

- Selecting equipment that is suitable for its working environment
- Ensuring equipment is safe when supplied
- Ensuring equipment is maintained in a safe condition in accordance with section 6.2.

Portable electrical equipment users are protected from electrical shock by insulation and earthing methods. These are used to prevent the user coming into contact with a live electrical part.

There are two levels of protection leading to two classes of portable electrical equipments:

Class 1 – Earthed appliance (uses earthing + insulation)

Class 2 – Double Insulated (uses insulation + insulation)

Extension leads and connection cables are particularly liable to damage to their plugs and sockets, to their electrical connections, and to the cable itself. Other flexible leads, particularly those connected to equipment which is moved a great deal, can suffer from similar problems

The use of long extension leads is avoided wherever possible. If their use is unavoidable, the leads manufactured in accordance with appropriate standards (e.g. CE marked).

6.0 Preventive Maintenance

Scheduled and planned maintenance is performed on fixed electrical installations and portable equipment to ensure it operates safely and prevents danger to users.

The type of maintenance required depends on the type of equipment, the nature of its use and the environment in which it is used and includes visual inspection and, where necessary, testing.

Inspection and testing is performed only by authorized competent and adequately trained persons.

Equipment users must report any damage or defects found during its use.

6.1 Electrical Installations

Fixed installations are maintained in a safe condition by performing inspection and testing in accordance with BS 7671:2008 Requirements for Electrical Installations (IEE Wiring Regulations).

Installations are inspected and tested at least every 5 years by a competent person

A database of all installations requiring safety checks is maintained on Electrical Installations Register or equivalent document.

A record of safety checks is maintained on Electrical Installations Inspection and Test Record - Form HS015 or equivalent document.

6.2 Portable Electrical Equipment

To prevent risk of injury to users portable electrical equipment is subject to regular inspection and/or testing that includes:

- user checking
- formal visual inspection by a competent appointed person or contractor
- combined inspection and testing by a competent person or contractor

Examples of recommended inspections and testing of various types of equipment are shown in Table 6.1.

In addition to the formal checks, equipment shall be visually inspected at least once a week by the user. When conducting a visual inspection of electrical equipment, anything that looks damaged, worn or defective represents a potential hazard.

Table 6.2 shows checks required and examples of typical faults.

Formal inspection and testing for Class 1 and Class 2 appliances differ to suit the type of protection and shall only be performed by competent persons in accordance with section 7.0.

Table 6.3 shows tests required.

A database of all portable electrical equipment requiring safety checks is maintained on Portable Electrical Equipment Register or equivalent document.

A record of safety checks is maintained on Portable Electrical Equipment Inspection and Test Record - Form HS016 or equivalent document.

7.0 Competency of Persons

Only competent persons with appropriate technical knowledge and experience are allowed to perform work associated with electrical installations or equipment, including:

- Selecting equipment that is suitable for its working environment
- Ensuring equipment is safe when supplied
- Installing, operating and maintaining equipment and installations in a safe condition

The scope of technical knowledge or experience may include:

- Adequate knowledge of electricity
- Adequate experience of electrical work
- Adequate understanding and practical experience of the system to be worked upon
- Understanding of the hazards which may arise during the work and precautions which need to be taken
- Ability to recognise at all times whether it is safe for work to continue

Where required, the company ensures that adequate information, instruction and training are provided to enable persons to carry out their duties without putting their health and safety at risk.

8.0 Tables

8.1 Table 1 – Recommended Inspection Intervals For Portable Electrical Equipment

RECOMMENDED INSPECTION INTERVALS FOR PORTABLE ELECTRICAL EQUIPMENT			
Equipment/environment	User Checks	Formal visual inspection	Combined inspection and testing
Battery operated (less than 20 volts)	No	No	No
Extra low voltage (less than 50 volts AC) e.g. telephones, low voltage desk lamps	No	No	No
Information Technology: e.g. personal computers, VDU screens	No	Yes 2-4 years	No if double insulated - otherwise up to 5 years
Photocopiers, fax machines: (NOT hand held) rarely moved	No	Yes 2-4 years	No if double insulated - otherwise up to 5 years
Double insulated equipment: (NOT hand held) occasionally moved e.g. lamps, projectors, fans	No	Yes 2-4 years	No
Double insulated equipment: (hand held) e.g. some floor cleaners	No	Yes 6 months-1 year	No
Earthed equipment (Class 1): e.g. electric kettles, some floor cleaners	Yes	Yes 6 months-1 year	Yes 1-4 years
Cables/leads and plugs connected to the above. Extension leads operating on mains voltage	Yes	Yes 6 months - 4 years depending on the type of equipment it is connected to	Yes 1 – 5 years depending on the type of equipment it is connected to

8.0 Tables (Continued)**8.2 Table 2 – Electrical Equipment – Visual Check and Tests****PORTABLE ELECTRICAL EQUIPMENT – VISUAL CHECKS**

Check for the following faults or damage:

- Damage to the cable e.g. cuts, abrasion (apart from light scuffing)
- Damage to the plug, e.g. the casing is cracked or the pins are bent
- Non-standard joints including taped joints in the cable
- The outer covering (sheath) of the cable not being gripped where it enters the plug or equipment e.g. coloured insulation of the internal wires is showing
- Equipment that has been used in conditions where it is not suitable, e.g. a wet or dusty environment
- Damage to the outer cover of the equipment or obvious loose parts or screws
- Evidence of overheating (burn marks or discolouration)

In addition, check the following:

- Correct fuse is fitted to the plug

PORTABLE ELECTRICAL EQUIPMENT – TESTS

Perform the following:

- Earth Bond Test (Class 1 only)
- Insulation Test
- Flash Test
- Operation Test
- Earth Leakage Test
- Fuse Continuity Test