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H & S Guidance - Electrical Equipment

(See also: other pages)

INTRODUCTION

Regulation 4(2) of the Electricity at Work Regulations 1989 requires 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". This requirement covers all items of electrical equipment including fixed, portable and transportable equipment. Portable and transportable equipment is that which connects to a fixed installation or generator by means of a flexible cable and either a plug and socket or a spur box, or similar means. The term includes associated extension leads, plugs & sockets etc. The term portable will be used subsequently to denote both portable and transportable. Portable electrical equipment includes items such as electric drills, portable hand lamps, portable grinders, pressure water cleaners, floor cleaners, kettles etc.

Nearly a quarter of all reportable electrical accidents involve portable equipment.

CONTROLLING THE RISK

The likelihood of accidents occurring and their severity will vary, depending on the type of electrical equipment, the way in which it is used and maintained and the environment in which it is used. A system to control the risk from electrical equipment should involve:

- Assessment of risks
- Establishment of an appropriate maintenance system
- Provision of information, instruction and training for employees

Assessment of risks

Portable equipment is likely to be subjected to, and more vulnerable to, physical damage and wear or harsh treatment when in use. Hand held equipment presents an even greater degree of risk in view of the near certainty of electric shock following a dangerous fault.



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Factors that could be taken into account when assessing the risks include:

- type of equipment and whether hand-held or not
- manufacturer's recommendations / advice
- initial integrity and soundness of equipment
- age of the equipment
- working environment or likelihood of mechanical damage
- frequency of use & duty cycle of the equipment
- foreseeable abuse of the equipment
- effects of repairs or modifications
- previous maintenance record

Measures taken should be appropriate to the risk. Procedures will need to be carried out more frequently where the risk is high and less frequently where the risk is lower.

Establishing a maintenance system

Maintenance is a general term that in practice can include visual inspection, testing, repair and replacement. Maintenance will determine whether the equipment is either fully serviceable or in need of remedial action. It is suggested that a combination of actions at three levels where necessary can achieve cost-effective maintenance:

User Checks (visual) for - damage to the sheath or plug; inadequate jointing; ineffective cable clamping; inappropriate environment or use of equipment; damaged casing etc. to equipment; evidence of overheating.

Formal Visual Inspections - carried out routinely by a competent person; more formal and systematic than User Checks; may include plug cover removal to check fuse, effectiveness of cord grip, cable terminations, internal damage; does not include taking the equipment apart. The competent person can usually be an employee with sufficient information, knowledge and training but aware of the limits of their competency. Simple written guidance could be produced for the inspections, which should be carried out at regular and appropriate intervals.



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Combined Inspection and Tests (This requires a wider degree of competence)

These will reveal most potentially dangerous faults, including, for example, loss of earth integrity due to a deterioration in insulation. Testing is likely to be justified:

- when there is reason to suppose the equipment may be defective
- after repair or modification
- at periods appropriate to the equipment, the manner and frequency of use and the environment.

Inspection should include checks on polarity, fusing, cable/core terminations and general suitability. **Testing** involves two levels of competency, the first being a person, not skilled in electrical work, trained to routinely use a simple 'pass/fail' type of portable appliance tester (PAT) where no interpretation of readings is necessary. The higher level of competency involves a person with electrical skills using a more sophisticated instrument that gives readings that require interpretation.

Although there is no requirement in the regulations to keep **maintenance logs**, there are obvious benefits from so doing. For example, the effectiveness of the maintenance scheme can be reviewed and an inventory of equipment established. Labeling equipment that has been inspected/tested satisfactorily could also be considered.

Guidance has been published on suggested intervals for various maintenance activities (see References/Further Details). This should help you considerably in establishing your own maintenance programme.

Information, instruction and training

- Straightforward training and information should be provided to all users of electrical equipment concerning 'user checks'.
- Members of staff who carry out formal visual inspection should be trained in what to look for and procedures to be followed. Brief written guidance could be given.
- You should ensure that any person carrying out combined inspection and tests has sufficient knowledge, training and experience to do so competently.



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CHECKLIST - ELECTRICAL EQUIPMENT

Have you identified portable electrical equipment that needs to be maintained? YES/NO

Have you established systems for:

(i) formal visual inspections YES/NO

(ii) combined inspection and tests (where necessary) YES/NO

Have you established, within (ii) above, appropriate frequencies for maintenance activities? YES/NO

Do you keep maintenance records for electrical equipment?
YES/NO

If so, do you use these records to improve the cost-effectiveness of your maintenance system, as part of a monitoring/review process? YES/NO

Have you provided or ensured an appropriate degree of information, instruction and training for:

users of electrical equipment YES/NO

persons who will carry out formal visual inspections YES/NO

persons who will carry out inspection and tests YES/NO

REFERENCES/FURTHER DETAILS

Booklet HS(G)107: Maintaining Portable and Transportable Electrical Equipment. HSE ISBN 0 7176 0715 1

Leaflet IND(G) 236 Maintaining Portable Electrical Equipment in Offices and Other Low Risk Environments. (HSE) ISBN 0 7176 1272 4. www.hse.gov.uk/pubns/indg236.pdf

Leaflet IND(G) 237 - Maintaining Portable Electrical Equipment in Hotels and Tourist Accommodation.
HSE. www.hse.gov.uk/pubns/indg237.pdf



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Guidance Note PM29 Electrical Hazards From Steam/Water Pressure Cleaners etc. HSE. ISBN 0 7176 0813 1.

Leaflet IND(G)68L(Rev) 'Do you use a steam/water pressure cleaner? You could be in for a shock!'

HSE. www.hse.gov.uk/pubns/indg68.pdf

Guidance Note PM38 The Selection and Use of Electric Hand Lamps. HSE. ISBN 0 11 886 360 6.

Electricity at Work Safe Working Practices.

HSE ISBN 0 7176 2164 2