

Code of Practice
Portable Electrical Equipment

Final Version: October 2002
Source: Facilities Resource Unit
Authorised: Health & Safety Committee

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1 Introduction

- 1.1 The **Health and Safety at Work etc Act 1974** places a general duty on employers to ensure, as far as is reasonably practicable, the health, safety and welfare of all its employees, including the maintenance of equipment and plant. The **Provision and Use of Work Equipment Regulations 1998** also place duties on employers, listing minimum requirements for work equipment to deal with hazards. These include ensuring the equipment is suitable for the use that it will be put to and maintaining the equipment in efficient working order and good repair.
- 1.2 Under the **Electricity at Work Regulations 1989 (EAWR)** employers are legally obliged to ensure that any electrical equipment used at work is properly maintained. Portable electrical equipment may be classed as any equipment that has a lead and a plug, and can be easily moved around the workplace – including items such as kettles, fans, photocopiers, personal computers, multi-socket extension leads, etc.
- 1.3 As we all know electricity can be very dangerous. Each year about 30 people die from electric shock or electric burns at work and about the same number die from electrical accidents in the home. Most of these electrical accidents are preventable, particularly those in offices or other lower risk environments.
- 1.4 Many of us will have experienced an electric shock at some time or another without lasting injury. This does not demonstrate immunity, but merely the unpredictable nature of electrical risk. Slightly different circumstances could have resulted in death. Those who survive electric shock usually recover very quickly; unless there are other consequential injuries, such as burns, muscle injury or injuries from, say, falling as a result of the shock.
- 1.5 Electric shock is not the only hazard. Others include arcing, overheating and, in some cases, electrical leakage currents. These can cause fire or explosion by igniting flammable materials and can lead to death, injury and/or damage to property.
- 1.6 To assist the management of electrical risk this Code of Practice has been developed under the Agency's Health and Safety Policy, and has the same authority as that policy. The responsibilities and rules within this Code of Practice also apply to all temporary staff and contractors.

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2. Aims

- 2.1 To minimise the risks from electricity through development of a proactive approach to the management of portable electrical equipment.
- 2.2 To ensure compliance with legislative requirements.
- 2.3 To establish and maintain a risk assessment process with documented records, where appropriate.

3. Definitions

3.1 Portable Electrical Equipment

Portable equipment is not part of a fixed installation but when used is connected to a fixed installation (or a generator), by means of a flexible cable, plug and socket. It includes equipment that is hand held or hand operated while connected to the supply. It also includes extension leads, plugs and sockets, and cord sets that supply portable equipment and are not part of the fixed installation, since they operate in the same environment and are subject to similar use as the equipment they serve.

3.2 Competence

- **Appointed Person** – A person who has been suitably trained by a technically competent person (such as an electrician or electrical engineer) to be able to carry out a formal basic safety inspection of portable electrical equipment (including the inside of the plug and fuse) using safe working practices.
- **PAT Tester Competent Person** – A person who is suitably trained to use a basic PAT tester (demonstrated by a certificate of competence) with the ability to interpret its findings and record the information it presents. (*Note: Where a complex PAT tester is used interpretation of findings would normally require the competence of a qualified electrician*)
- **Qualified Electrician** – Somebody with the correct skills, knowledge and experience to carry out electrical work, including *City and Guilds IEE Wiring Regulations latest Edition* qualifications (should have certificate(s) as proof).

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4. Responsibilities

[Notwithstanding the health and safety responsibilities outlined within Section 2 of the Agency's Health and Safety Policy the following specific responsibilities apply.]

4.1 Managers/Supervisors

- 4.1.1 Become familiar with the content of this Code, and actively inform staff.
- 4.1.2 Monitor performance of maintenance, repair, replacement and disposal against the standards outlined within this Code, and in liaison with the Local Safety Officer (regions) or AMEC (HQ).
- 4.1.3 Ensure that no personal items of AC connected portable electrical equipment are used in the workplace.
- 4.1.4 Ensure that staff receive appropriate levels of information, instruction, training as required prior to using any portable electrical equipment, including communicating any safe systems of work in place for specific items of equipment.
- 4.1.5 Ensure that any item of portable electrical equipment for which there are safety concerns, or that has an out-of-date test record (label), has been disconnected from the power source and withdrawn from service until a competent person confirms its safety.
- 4.1.7 Inform Local Safety Officers (regions) or the AMEC Helpdesk (HQ) if any new portable electrical equipment is purchased for use; or any existing equipment withdrawn from service due to safety concerns or obsolescence.

[Note: this excludes IT equipment supplied by RSI]

4.2 Employees (inc. temporary staff & contractors)

- 4.2.1 Use portable electrical equipment only for the purpose it has been provided and in accordance with any information, instruction or training received.
- 4.2.2 Carry out occasional user visual checks of portable electrical equipment (including when issued new equipment) as outlined in the schedule attached at **Appendix A**.
- 4.2.3 Immediately report to their line manager/supervisor any fault or defect to portable electrical equipment or if they notice that a test record (label) is out-of-date.

[Note: If there are safety concerns cease use and immediately disconnect the equipment from the power source.]

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4.3 Local Safety Officers (Regions) & AMEC (HQ)

- 4.3.1 Maintain an electronic register of all portable electrical appliances in use in the areas for which they are responsible (example of a register at **Appendix B**).
- 4.3.2 Carry out an assessment to determine a suitable inspection and testing regime for each piece of equipment, based on the schedule given at **Appendix C**.
- 4.3.3 Ensure that the appropriate formal inspection and testing takes place by competent persons and is suitably recorded.
- 4.3.4 Review the risk assessment and register on an annual basis to ensure inspections and tests are appropriate.
- 4.3.5 Ensure implementation of maintenance, repair, replacement or disposal of portable electrical equipment, as necessary.

4.4 Agency Health & Safety Officer and RA3 Health & Safety Co-ordinator

- 4.4.1 The Agency Health & Safety Officer and RA3 Health & Safety Co-ordinator have responsibilities to monitor and review the measures in place for managing the safety of portable electrical equipment. This process will be covered in relevant inspection, review and audit procedures.

5. Arrangements

- 5.1 All portable electrical equipment shall be of safe construction conforming to UK and/or EC product safety standards. Manufacturers of new electrical equipment have an obligation to ensure their equipment is safe for proper use. Any special operating instructions should be included and adhered to. Wherever possible equipment shall be double insulated (Class II type – 2 wires) to ensure it is constructed with high integrity insulation without need for an earth connection. Any Class I type equipment (3 wires) shall be effectively earthed.

[Note: Double insulated equipment is marked by the 'double square' symbol, i.e.  or similar.]



- 5.2 Portable electrical equipment shall only be used for the purpose for which it was intended and in the environments for which it was designed and constructed.

[Note: It is unlikely that maintenance will remedy any situation where equipment is not being used for its intended purpose or in an environment for which it was not designed.]

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5.3 All portable electrical equipment shall be adequately maintained to determine whether it is fully serviceable or in need of any remedial action. Such maintenance may include:

- Occasional user checks (visual)
- Formal visual inspection by appointed competent persons (recorded)
- Combined inspection and testing (by competent persons/contractor)
- Repair
- Replacement

5.4 User checks and formal visual inspections shall be carried out in accordance with the guidance given at **Appendix A**.

5.5 All portable electrical equipment shall be included on a suitable register, including its location and use, and maintenance and test records. An example of such a register is shown as **Appendix B**. This register shall be reviewed at least annually and be kept up-to-date. Equipment shall be suitably marked so that it can be easily identified and cross-referenced with the register.

5.6 Items of portable electrical equipment shall be assessed to determine a suitable maintenance regime for each piece of equipment, based on the schedule given at **Appendix C**.

Occasions when testing is likely to be considered justified are :

- Whenever there is reason to suppose the equipment may be defective;
- After any repair, modification or similar work;
- At periods appropriate to the equipment, the manner and frequency of use and the environment in which it is used.

5.7 Formally tested portable electrical equipment shall be suitably labelled including an indication as to who carried out the test, whether it 'passed' or 'failed' the test, a date by which 'passed' equipment must next be tested and the initials of the tester. 'Failed' equipment, or equipment carrying an out of date test label, shall be immediately taken out of use and shall not be returned to use until suitable actions are taken and it passes a test carried out by a competent person.

5.8 Any calibration of equipment shall include appropriate safety testing.

5.9 A residual current device (RCD) shall be used to provide enhanced protection against the effects of electric shock where portable electrical equipment is used outdoors, or otherwise, and there is a risk of the equipment or cables becoming damaged, wet or cut (e.g. by vehicles)

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- 5.10 Any hired equipment shall carry up-to-date certification that it passed testing prior to issue to Agency staff. Appropriate information, instruction and training shall be received prior to Agency staff using hired equipment.
- 5.11 No portable electrical equipment shall be used for private use or loaned to non-Agency staff, unless otherwise permitted (e.g. laptops and PCs in some cases)
- 5.12 No personal AC connected portable electrical equipment shall be used on Agency premises or in the course of carrying out Agency work duties.
- 5.13 All persons carrying out visual checks and inspections shall be given a suitable level of information and instruction, and access to advice as necessary.
- 5.14 Persons carrying out testing of portable electrical equipment shall be deemed competent for the work they are to undertake. This may be a suitably trained member of Agency staff or a contractor.

[Note: A competent person must be adequately trained to use the portable appliance tester correctly. Where the tester is more sophisticated than a simple 'pass/fail' type it may involve some interpretation of readings - in these cases the competent person will need more technical knowledge, such as an electrician.]

- 5.15 Repairs to portable electrical equipment shall only be carried out by a qualified electrician.

6. Implementation

- 6.1 All existing employees will be advised about this Code through normal channels and the Code will be made available on the intranet.
- 6.2 A copy of the Code will be given to all business units managers, local safety officers, RSI management and AMEC at Wyndham House.
- 6.3 Health and safety awareness training will include input on portable electrical equipment safety.
- 6.4 Appropriate training will be given to staff who are to carry out user visual inspections and/or PAT testing.

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7. Sources of Information

7.1 For further help, advice and information you can contact the Agency Health & Safety Officer (Tel: 020 7211 0492) or refer to any of the following reference sources:

- Health and Safety Executive Infoline (Tel: 0541 5455500)
- Health and Safety Website at www.hse.gov.uk
- HSE leaflet '*Maintaining portable electrical equipment in offices and other low-risk environments*'. This may be downloaded from the HSE website.
- HSE Guidance Note '*Maintaining portable and transportable electrical equipment*' (HSG107). The Agency Health & Safety Officer holds a copy.
- HSE Approved Code of Practice on 'Safe use of work equipment' (L22). The Agency Health & Safety Officer holds a copy.
- IEE Wiring Regulations, 16th Edition

Visual Inspection Guidance

Visual inspections are usually the most important components of a portable electrical equipment maintenance regime. The majority of potentially dangerous faults can be picked up by such inspections, which are normally carried out by **users** themselves and/or periodically by an **appointed person**.

Any visual inspection should critically examine the equipment to check that it appears to be in sound condition and should include any extension leads and associated plugs and sockets. User visual inspections should not include taking any equipment apart. When carrying out a visual inspection ensure the electrical equipment is turned off and check for:

- Damage to plugs (e.g. cracked casing or bent pins)
- Damage to the external cover/casing of the equipment, loose parts or loose/missing screws
- Damage to outer coverings/insulation to leads, wires or cables (apart from light scuffing).
- Cable located where it might be subject to damage or forced into a tight bend as it exits equipment.
- Inadequate joints, including taped joints in the cable
- Burn marks, staining or discoloration that may suggest overheating
- Whether the equipment has been subjected to conditions for which it is not suitable, e.g. spillage of fluids or solids, overly dirty or dusty, or excessively contaminated in some other way. Ensure no containers (flowerpots, coffeepots, etc.) are located such that spillage could occur to equipment.
- The absence of inappropriate pieces of equipment or foreign objects on or inside the equipment
- That there are no trailing wires; if there are, tuck them out of the way, for example under a suitable protective cover or a desk/table to prevent accidents

The formal inspection by an **appointed person** (not the user) may also include checking the plug by removing the plug cover, particularly if there are any concerns (not applicable for moulded plugs, where only the fuse can be checked). This would only involve checking the correct fuse for the equipment is in use, the cord grip is effective, the cable terminations are secure and correct (including an earth where appropriate), and that there are no signs of internal damage, overheating or entry of liquid or foreign matter. Further guidance is given in the table and diagram below.

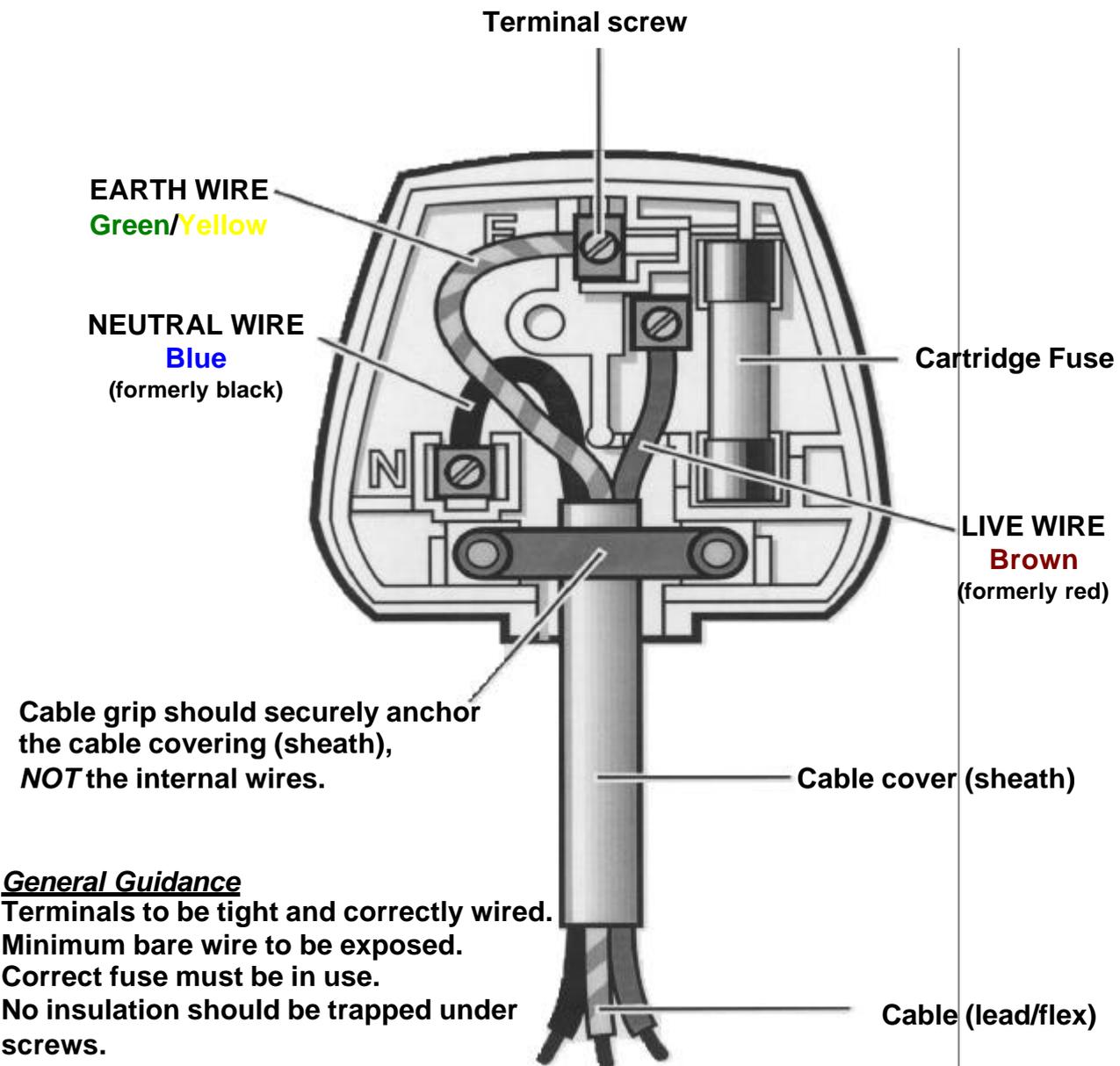
Should a visual inspection indicate equipment to be unsafe for use (or reveal the lack of a valid PAT test where required) it should be reported to management and immediately taken out of use (disconnect from the power source and, if necessary, label as faulty and/or disable by removing the plug). This action should be noted on the register and arrangements made for any necessary repair or replacement.

Which Fuse?

The fuse rating required will normally be marked on an electrical appliance. If this is not marked check the power rating (wattage) and fit a fuse according to the table below. If you are in any doubt consult a qualified electrician.

Wattage	Fuse Rating	Typical Examples
Up to 400 watts	2 amp	desk lamps; radios
400 – 600 watts	3 amp	some IT equipment
600 – 1,000 watts	5 amp	refrigerators; televisions; overhead projectors; some IT equipment
1 kw – 2 kw	10 amp	4-gang sockets
2kw – 3 kw	13 amp	kettles; cookers; electric fires/heaters; photocopiers; shredding machines; floor cleaners, fans

Correct Plug Wiring



General Guidance

Terminals to be tight and correctly wired.
 Minimum bare wire to be exposed.
 Correct fuse must be in use.
 No insulation should be trapped under screws.

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Maintenance Schedules

Deciding on the frequency of maintenance is a matter of judgement based on assessment of risk. To assist those responsible for assessing risk the table below aims to give general guidance on the need for the different levels of inspection and testing and the frequency that may be considered appropriate. The standards outlined in this guidance are specific to the Agency, but are based on good practice as recommended by the Health and Safety Executive.

If there is any doubt with regard to a specific piece of equipment it is advisable to seek the advice of a competent person who has the knowledge and experience to make the necessary judgement, i.e. a qualified electrician or engineer.

Additional factors to consider when making the assessment include the following:

- Type of equipment and whether it is hand held
- Manufacturer's recommendations
- Initial integrity and soundness of equipment
- Age of equipment
- Working environment in which the equipment is used (e.g. wet and dusty) or likelihood of mechanical damage
- Frequency of use and the expected lifespan/replacement cycle of the equipment
- Foreseeable abuse of the equipment
- Effects of modifications or repairs that may have been carried out on the equipment
- Analysis of previous performance and maintenance records

Experience of operating the maintenance system over a period of time, together with information on faults found, should be used to review the frequency of inspection.

It should also be used to review whether and how often equipment and associated leads and plugs should receive a combined inspection and test.

Table – Suggested Maintenance Schedules (*this list is non-exhaustive*)

Equipment description	Environment in which used	User checks required	Formal inspection required & suggested minimum frequency	Combined inspection and testing required & suggested min. frequency
Battery operated (less than 20 volts)	Various	No	No	No
Extra low voltage (less than 50 volts AC) <i>For example:</i> Telephone equipment Low voltage desk light	Various	No	No	No

Equipment description	Environment in which used	User checks required	Formal inspection required & suggested minimum frequency	Combined inspection and testing required & suggested min. frequency
Information technology – rarely moved <i>For example:</i> Desktop computer VDU screen Keyboard Printer	Office/indoors	No	Yes, as below: Every 2 years - if double insulated Every year - if not double insulated	Depends, as below: No - if double insulated Every 3 years - if not double insulated
Information technology – regularly moved <i>For example:</i> Laptop computers Laptop accessories	Various	Yes	Yes – every year	Depends, as below: No - if double insulated Every 3 years - if not double insulated
Non hand-held equipment that is rarely moved <i>For example:</i> Photocopiers Fax machines Paper shredding machines Kitchen equipment (e.g. refrigerator, cooker, dishwasher) Microwave oven Water cooling dispenser Television	Indoors	No	Yes, as below: Low use - every 4 years Regular use - every 3 years Constant use - every 2 years	Depends, as below: No - if double insulated Every 3 years - if not double insulated
Non hand-held double insulated equipment that is moved occasionally <i>For example:</i> Fans Table lamps/desk lights Slide Projectors/Proxima	Indoors	No	Yes – every 2 years	No
Hand-held double insulated equipment <i>For example:</i> Some floor cleaners	Indoors	Yes	Yes – every 6 months	No
Earthed equipment that is moved regularly (Class 1) <i>For example:</i> Electric kettles Some floor cleaners Some fans	Indoors	Yes	Yes – every year (mid-year between PAT tests, so in effect every 6 months)	Yes – every year

Equipment description	Environment in which used	User checks required	Formal inspection required & suggested minimum frequency	Combined inspection and testing required & suggested min. frequency
Mains powered radio testing equipment – regularly moved For example: Marconi 2945	Various	Yes	Yes – every year (mid- year between PAT tests, so in effect every 6 months)	Yes - every year (If calibrated the test should be included in the calibration)
Mains powered radio testing equipment – rarely moved	Indoors	Yes	Yes – every year	Yes – every 2 years
Cables (leads) and plugs connected to the above Extension leads/socket gangs (mains voltage) <i>[Note: Multi-socket adapters must not be used in any circumstances]</i>	Various	Yes	Yes – as per the equipment they are attached to Yes – as per the equipment they are attached to	Yes – every 3 years or more frequently as per the equipment they are attached to