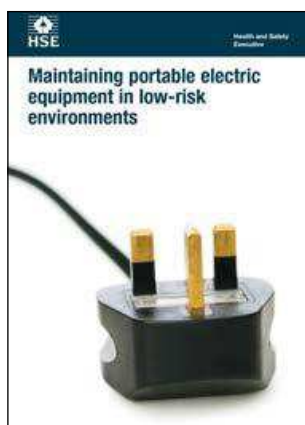


# Maintaining portable electric equipment in low-risk environments



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## Introduction

This leaflet explains the simple and sensible precautions that need to be taken to prevent danger from portable or movable electrical equipment in low-risk environments, such as offices, shops, some parts of hotels and residential care homes.

It also provides examples of this sort of equipment to help you decide what you need to do to maintain portable appliances in your workplace.

## What does the law say?

You must maintain electrical equipment if it can cause danger, but the law\* does not say how you must do this or how often. You should decide the level of maintenance needed according to the risk of an item becoming faulty, and how the equipment is constructed. You should consider:

- the increased risk if the equipment isn't used correctly, isn't suitable for the job, or is used in a harsh environment; and
- if the item is not double insulated, for example some kettles are earthed but some pieces of hand-held equipment, such as hairdryers, are usually double insulated. See page 4 for more information on earthed equipment and double insulated equipment.

This includes any electrical equipment your employees use at work, whether it is their own or supplied by you. You have a joint responsibility to maintain any equipment used by your employees that is either leased (eg a photocopier) or provided by a contractor (but not equipment both provided and used by a contractor).

You will need to check periodically if any work needs doing. How you do this depends on the type of equipment.

### **Not every electrical item needs a portable appliance test (PAT)**

In some cases, a simple user check and visual inspection is enough, eg checking for loose cables or signs of fire damage and, if possible, checking inside the plug for internal damage, bare wires and the correct fuse.

Other equipment, eg a floor cleaner or kettle, may need a portable appliance test, but not necessarily every year.

\* *Electricity at Work Regulations 1989*

## How do I ensure the safety of electrical equipment?

- Encourage employees to look at the supply cable to the electrical equipment before they use it (user check).
- Encourage employees to look at electrical equipment before they use it (user check).
- Make sure that all portable equipment is visually inspected at initial intervals which could be between six months and four years, depending on the type of equipment. See the last bullet point on this list and Table 1 at the end of this leaflet for more information.
- Arrange for equipment that is not double insulated to have a portable appliance test (including leads) at initial intervals which could be between one and five years, depending on the type of equipment.
- Ensure that damaged or faulty equipment is recognised, removed from use without delay and either:
  - repaired by someone competent (ie with suitable training, skills and knowledge for the task to prevent injury to themselves or others); or
  - disposed of to prevent its further use – consult your local authority about arrangements for disposing of electrical equipment.
- Review your maintenance system to determine whether you could decrease or increase your inspection and/or testing intervals. You may find it useful to keep records of all inspections and tests, and to label equipment with the result and date of the test, but there is no legal requirement to do either of these things.

Table 1 at the end of this leaflet gives an initial indication of where a visual inspection should be sufficient and where testing may be needed in order to comply with the law. It also suggests initial intervals for the different types of checks.

## User checks, visual inspection and portable appliance tests

### ***User checks***

These should be carried out before most electrical equipment is used, with the equipment disconnected. Employees should look for:

- damage to the lead including fraying, cuts or heavy scuffing, eg from floor box covers;
- damage to the plug, eg to the cover or bent pins;
- tape applied to the lead to join leads together;
- coloured wires visible where the lead joins the plug (the cable is not being gripped where it enters the plug);
- damage to the outer cover of the equipment itself, including loose parts or screws;
- signs of overheating, such as burn marks or staining on the plug, lead or piece of equipment;
- equipment that has been used or stored in unsuitable conditions, such as wet or dusty environments or where water spills are possible; and
- cables trapped under furniture or in floor boxes.

### ***Visual inspections***

To carry out a visual inspection you don't need to be an electrician, but you do need to know what to look for and you must also have sufficient knowledge to avoid danger to yourself and others.

Simple training can equip you (or a member of staff) with some basic electrical knowledge to enable you to carry out a visual inspection competently.

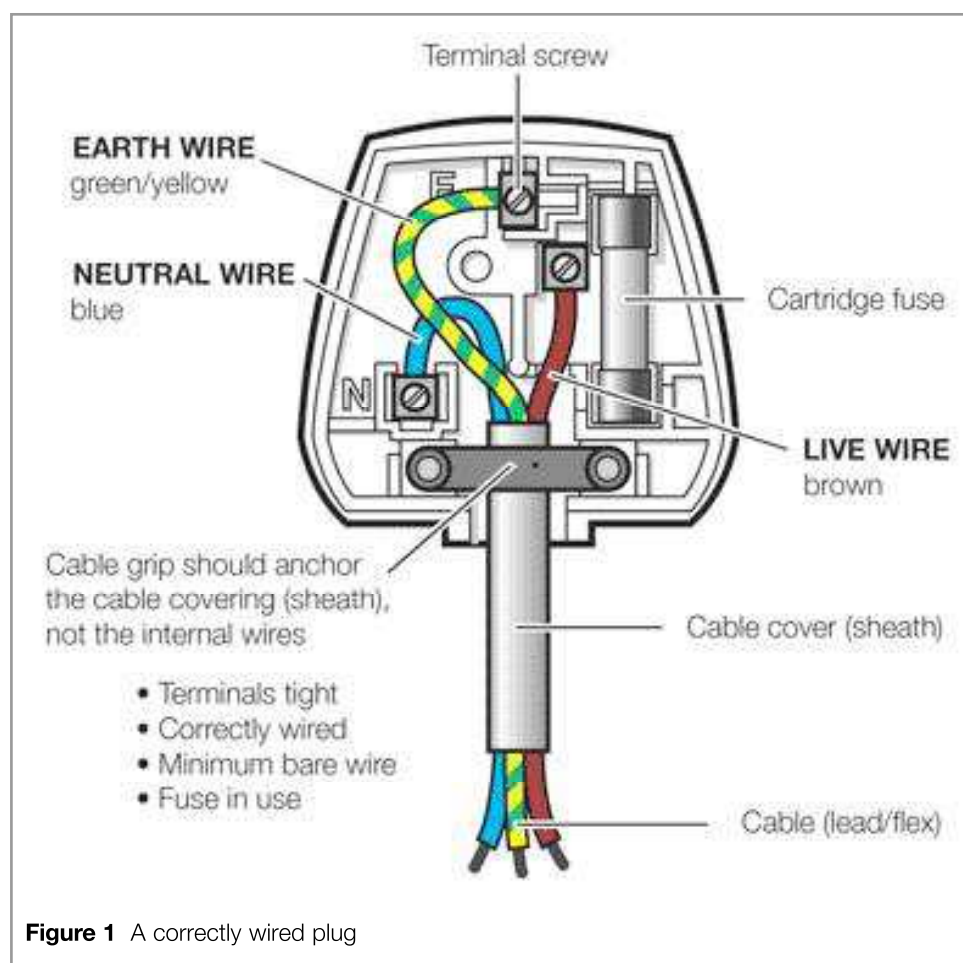
As part of the visual inspection, you should consider whether:

- the electrical equipment is being used in accordance with the manufacturer's instructions;
- the equipment is suitable for the job;
- there has been any change of circumstances; and
- the user has reported any issues.

The visual inspection should include the checks carried out by the user and, where possible, will include removing the plug cover and checking internally that:

- there are no signs of internal damage, overheating or water damage to the plug;
- the correct fuse is in use and it's a proper fuse, not a piece of wire, nail etc;
- the wires including the earth, where fitted, are attached to the correct terminal (see Figure 1);
- the terminal screws are tight;
- the cord grip is holding the outer part (sheath) of the cable tightly; and
- no bare wire is visible other than at the terminals.

For equipment/cables fitted with moulded plugs only the fuse can be checked.



### **Portable appliance test (PAT)**

A portable appliance test does not need to be carried out by an electrician, but greater knowledge and experience is needed than for inspection alone, and the person performing the test must have the right equipment for the task. They should know how to use the test equipment and how to interpret the results.

It is important to continue to carry out user checks on electrical equipment that has been tested. This is because portable appliance testing can only give an indication of the safety of an appliance at the time of the test and does not imply that the item will be safe for a further period of time.

The person carrying out the test should not assess when the next test will be due as this decision should be made by you on a risk assessment basis.

## **Portable and movable equipment**

A portable or movable electric appliance is any item that can be moved, either connected or disconnected from an electrical supply. Portable or movable items generally have a lead (cable) and a plug.

Portable and movable equipment includes the following:

- electrical equipment that can be easily moved around, such as kettles, vacuum cleaners, floor polishers, portable heaters, fans, desk lamps, some TVs, radios, some small electric cookers, PC projectors, small appliances such as irons, hair dryers and kitchen equipment including food mixers, toasters etc;
- larger items that could be moved (but only rarely), eg water chillers, fridges, microwaves, photocopiers, vending machines, washing machines, electric cookers, fax machines, desktop computers, electric beds etc are considered to be movable items;
- hand-held items, such as hairdryers, that do not have a plug but have been wired in (or fixed) are still considered to be portable appliances, but large electrical items, such as water boilers that are wired in, are not portable appliances as they are not designed to be moved and would come under the scope of fixed installation maintenance;
- mobile phone and other battery-charging equipment that is plugged into the mains (but the phones themselves and any other battery-operated equipment would not be included); and
- extension leads, multi-way adaptors and connection leads.

## **Earthed equipment and double insulated equipment**

When deciding whether to test electrical equipment, you need to consider the type of construction of the equipment in use. There are two basic types of electrical equipment construction – Class I (earthed) and Class II (double insulated).


### ***Earthed equipment***

For safety reasons, Class I equipment has an earth connection. If there is a fault within the equipment there is a possibility that the outside of the equipment could cause an electric shock if the earth connection is not there. As a result, it is recommended that Class I equipment has a portable appliance test to ensure the earth connection is sound.



### ***Double insulated equipment***

Class II equipment is sometimes referred to as 'double insulated' equipment. This means that there is extra insulation within the construction of the equipment to prevent accidental contact with live parts, even if there is a fault.

Class II equipment does not need an earth connection to maintain safety. It will not need a portable appliance test, although you should ensure that user checks and visual inspections are carried out as the integrity of the equipment casing is a key safety feature.

Class II equipment is marked with a . If you cannot see this symbol, you should assume that the item is a Class I appliance and carry out a portable appliance test.

**Table 1 Suggested initial intervals for checking portable electrical equipment**

Equipment/environment	User checks	Formal visual inspection	Combined inspection and testing
Battery-operated: (less than 40 volts)	No	No	No
Extra low voltage: (less than 50 volts AC): Telephone equipment, low-voltage desk-lights	No	No	No
Desktop 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  (Class II) equipment: Not hand-held. Moved occasionally, eg fans, table lamps	No	Yes, 2–4 years	No
Double insulated  (Class II) equipment: Hand-held, eg some floor cleaners, some kitchen equipment	Yes	Yes, 6 months – 1 year	No
Earthed equipment (Class I): Electric kettles, some floor cleaners, some kitchen equipment and irons	Yes	Yes, 6 months – 1 year	Yes, 1–2 years
Cables (leads and plugs connected to the above) and mains voltage extension leads and battery-charging equipment	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

**Notes for Table 1**

- Cables, leads and plugs connected to Class II equipment should be maintained as part of that equipment. Cables, leads and plugs not dedicated to an item of equipment should be maintained as individual items as appropriate.
- Over time, when you look at the results of user checks, visual inspections and, where appropriate, portable appliance tests, you will notice trends. These may tell you that you need to look at or test electrical equipment less (or more) often, depending on the number of problems being found. Some examples of how to do this are shown on our website ([www.hse.gov.uk/electricity/faq-portable-appliance-testing.htm](http://www.hse.gov.uk/electricity/faq-portable-appliance-testing.htm)).
- If electrical equipment is grouped together for testing at the same time, you should use the shortest testing interval in the group rather than the longest. Alternatively, it may be appropriate to group your electrical equipment by testing interval.

## **Find out more**

*Maintaining portable electrical equipment* HSG107 (Third edition) HSE Books 2013  
ISBN 978 0 7176 7201 6  
[www.hse.gov.uk/pubns/books/hsg107.htm](http://www.hse.gov.uk/pubns/books/hsg107.htm)

*Memorandum of guidance on the Electricity at Work Regulations 1989. Guidance on Regulations* HSR25 (Second edition) HSE Books 2007 ISBN 978 0 7176 6228 9  
[www.hse.gov.uk/pubns/books/hsr25.htm](http://www.hse.gov.uk/pubns/books/hsr25.htm)

*Health and safety made simple: The basics for your business* Leaflet INDG449  
HSE Books 2011 [www.hse.gov.uk/pubns/indg449.htm](http://www.hse.gov.uk/pubns/indg449.htm)

HSE's 'Electrical safety at work' web pages: [www.hse.gov.uk/electricity](http://www.hse.gov.uk/electricity).  
These web pages include case studies:  
[www.hse.gov.uk/electricity/faq-portable-appliance-testing.htm](http://www.hse.gov.uk/electricity/faq-portable-appliance-testing.htm)

## **Further information**

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit [www.hse.gov.uk/](http://www.hse.gov.uk/). You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This leaflet is available at: [www.hse.gov.uk/pubns/indg236.htm](http://www.hse.gov.uk/pubns/indg236.htm).

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