BUSINESS FIRE SAFETY

Portable electric equipment

CORNWALL
FIRE & RESCUE SERVICE
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Index

Portable appliance testing

Additional fire safety advice

1. Introduction

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

Electricity is a source of heat and a frequent cause of fires; some contributing factors are the misuse of electrical equipment and poor maintenance. With the increasing number of electrical appliances we use, consideration of the need for additional sockets or upgrading of electrical circuits may be necessary. Inspection of electrical equipment should reveal whether:

- It is installed and maintained correctly
- Sockets and extension cables are overloaded
- The correct fuses are used

2. What does the law say?

The Regulatory reform (fire Safety) Order 2005 Article 8 places a duty to take general fire precautions that will ensure, so far as is reasonably practicable, the safety of all employees, and all relevant persons who are not employees, and that the premises is safe from fire.

You must maintain electrical equipment if it can cause danger, but the law (Electricity at Work Regulations 1989) 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 6 for more information on earthed equipment and double insulated equipment.

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

Note: Not every electrical item needs a portable appliance test (PAT). In some cases, a simple user check and visual inspection is enough, e.g. 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, e.g. a floor cleaner or kettle, may need a portable appliance test, but not necessarily every year.

3. Inspection and testing frequency

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 (Class I)

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)

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 the symbol 

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 HSE Suggested initial intervals for checking portable electrical equipment.

Equipment	User check	Formal visual inspection	Combined inspection and testing
Battery-operated (less than 40V)	No	No	No
Extra low voltage (less than 50VAC) Telephones, 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, e.g. fans, table lamps	No	Yes 2–4 years	No
Double insulated (Class II) equipment: ⧈ Hand-held, e.g. some floor cleaners, some kitchen equipment	Yes	Yes 6-12 months	No

Continued…

Equipment	User check	Formal visual inspection	Combined inspection and testing
Earthed equipment (Class I): Electric kettles, some floor cleaners, some kitchen equipment and irons	Yes	Yes 6-12 months	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

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.

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.

4. User checks

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.

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.

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, e.g. from floor box covers
- Damage to the plug, e.g. 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

5. Formal visual inspection

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.

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
- 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.

6. Combined inspection and PAT testing

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.

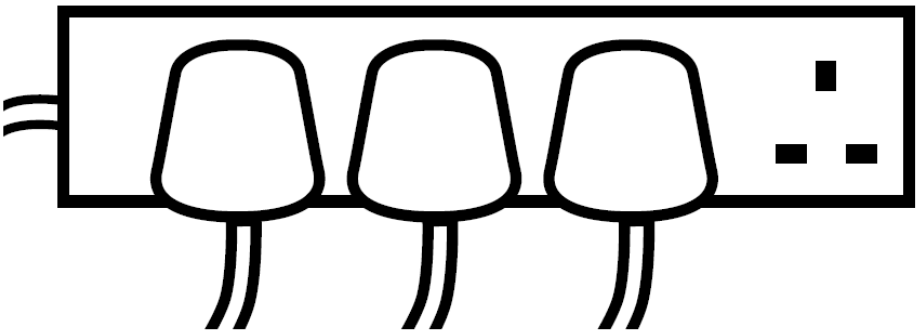
7. Overloading plugs and sockets

Always check that you use the right fuse to prevent overheating. Fuses in plugs are made in standard ratings. The most common are 3A, 5A and 13A. The fuse should be rated at a slightly larger current than needed for the device.

- If the device works at 3A, use a 5A fuse
- If the device works at 10A, use a 13A fuse

Don't overload and know the limit!

5 amps + 5 amps + 3 amps = 13 amps



Signs of overloading:

- Hot plugs and sockets
- Fuses that blow frequently
- Flickering lights
- Scorch marks on sockets or plugs

8. Self-heating fires and tumble driers

Self-heating fires have occurred when linen that has been soiled with oils such as linseed oil, tung oil, soybean oil, cottonseed oil, corn oil and peanut oil (this is not an exhaustive list) or other organic fluids have been washed and dried using a tumble trier. This is due to a significant amount of oil residual remaining on the linen after washing (bleach had no effect on the amount of oil removed), and heat building-up caused by oxidation.

This can be caused by taking laundered items directly from a tumble dryer while warm and storing them in a warm environment where heat can build up.

Recommendations

- Always follow the manufactures instructions on the use of the appliance
- Allow the dryer to finish the cycle and run through the 'cool-down' cycle before removing linen
- Open linen out fully, shake larger items to cool and expose them to the surrounding air
- Hot or slightly damp linen should be hung-up and allowed to cool before folding
- Ensure lint filters are cleaned regularly (blocked lint filters will prevent the drier from regulating the internal temperature of the drier allowing self-heating to develop)

Note: Rags used to wipe down hot cooking griddles with various oils and then thrown into waste (or laundry) bins while still hot can also self-heat to ignition.

9. Fire safety advice for E-Cigarettes

Charging E-Cigarettes

There have been a number of fires reported nationally that involve E-cigarettes and have been attributed to:

- Using none-standard chargers overloading the device
- Charging using a cable from another device e.g. laptop
- Leaving e-cigarettes on charge for long periods

E-Cigarettes and Oxygen Therapy

Potential fire and explosion risk from e-cigarettes while in use or charging in oxygen enriched atmospheres.

1. They should not be recharged in NHS and local authority premises or care homes with local authority funded residents
2. Should not be used in an oxygen rich environment
3. Safety advice should be given to patients receiving therapies at home
4. Oxygen therapy. Advice from the European Industrial Gases Association recommends:
    a. Electronic cigarettes should not be used whilst a patient is undergoing oxygen therapy
    b. Batteries of electronic cigarettes should not be charged in the vicinity of a patient undergoing oxygen therapy or the oxygen source itself

For more details go to www.cornwall.gov.uk/firesafetynotices

10. Generic fire safety tips

- If using a cable drum extension lead, it should be completely unwound to avoid overheating
- 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 (see Table 1 on page 7-8)
- 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 (e.g. 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

11. Further information

Useful links

Cornwall Fire and Rescue Service (business fire safety)
www.cornwall.gov.uk/businessfiresafety

Health and Safety Executive website (FAQ appliance testing)
www.hse.gov.uk/electricity/faq-portable-appliance-testing.htm

Electrical safety first (product recall)
www.esc.org.uk/recall

Contact us

Email: protection@fire.cornwall.gov.uk

St Austell Community Fire Station
Tel: **01726 223620** (9am - 5pm)

24hr Fire Safety Advice
Tel: **0800 3581 999** (24hr)