

## User Checks and Formal Visual Inspection

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### INTRODUCTION

This Guidance expands on the information given in *Advice Sheet 9: Electricity at Work*, in which a regime of User Checks, Formal Visual Inspection, and Test and Examination is outlined.

Further information is given below on carrying out User Checks and Formal Visual Inspection as well as documentation and reporting.

With regard to Test and Examination of the Installation and Appliances, you should consult a competent electrician to advise on frequency and necessity.

### DOCUMENTATION AND REPORTING

The results of the inspections should be formally recorded for each piece of equipment, which should be uniquely identified, in addition to the following items as a minimum standard:

1. The location of the equipment
2. The Environment in which the equipment is used and tested
3. The date of the inspection/test
4. Any maintenance carried out
5. The name of the competent person who conducted the inspection/tests
6. The items inspected/tested and the condition
7. Next inspection date

An *Inspection Log* sheet has been provided for this purpose.

The appropriate manager or supervisor should be advised promptly of any safety deficiencies revealed during the inspections (and tests if carried out). It is the **manager's responsibility** to ensure that equipment cannot be energised or used whilst in a potentially hazardous condition. In the absence of the manager the equipment should be taken out of operation until repaired/made safe.

### FREQUENCY OF CHECKS AND INSPECTIONS

The time between inspections needs to be adjusted to suit the conditions of use and the likelihood of damage that may cause a hazard, e.g. earthed equipment (kettles, some floor cleaners, etc) should be inspected every 6 months to 1 year; Hand held double insulated equipment (some floor cleaners, hair dryers) every 6 months to 1 year; Computers, photocopiers, double insulated fans, table lamps, etc every 2 to 4 years. Leads and plugs to the above, and mains extension leads should be inspected every 6 months to 4 years depending on the type of equipment it is connected to.

Staff should be aware of the need for good housekeeping and supervisors should arrange that this is checked frequently to encourage good practice. Equipment should be inspected immediately following any movement to a new location and if the inspection indicates any possibility of damage the equipment should be tested.

Equipment is a harsher environment, or where the supply cord is exposed to strain or damage, or where the equipment is moved may require more frequent inspection and possibly testing. In some cases constant vigilance is required, e.g. for calculators, laptop computers and associated battery eliminators that are much more likely to be damaged owing to frequent transportation, connection and disconnection.

## **1. DAILY USER CHECKS**

Check that the equipment is installed and operated in accordance with the manufacturer's instructions. Notwithstanding the manufacturer's instructions, the following are examples of items that should be checked:

- Cables are not located where they may be trodden on or snagged;
- Means of disconnection/isolation from the mains supply are readily accessible;
- Space around the equipment is adequate for ventilation and cooling and equipment ventilation openings are not blocked by documents, media etc;
- Liquids and dust/solids are not placed where they may spill into the equipment;
- Equipment is not positioned so close to walls and partitions that the cord is forced into a tight bend as it exits the equipment (this may also indicate inadequate spacing ventilation and cooling);
- equipment is operated with covers in place and enclosure doors closed.

## **2. FORMAL VISUAL INSPECTION**

The inspection of the equipment should be preceded by a User Check – see section 1.

### **Pluggable Equipment**

Pluggable equipment should be disconnected to enable a safe and thorough inspection of the equipment and power cords. The following procedure should be observed.

1. Ensure that the equipment can be taken out of service without causing disruption;
2. Power down the equipment in accordance with the manufacturer's instructions and any local operating instructions;
3. Unplug external signal connections
4. Unplug the mains supply, or if the equipment is supplied via an uninterruptable power supply (UPS), unplug the equipment from the UPS.

## Permanently connected equipment

Where the equipment is permanently connected to the mains supply (i.e. not via a plug) there are two possible situations:

1. The equipment is stationary and there is no flexible mains cable subject to movement, stress or damage and the mains terminals are not subject to vibration: in this case it will not usually be necessary to disconnect the equipment prior to inspection, but isolation is advised.
2. For other permanently connected equipment the manufacturer's guidance should be sought.

See diagram

Inspection procedure

1. With all covers in place the exterior of the equipment should be inspected for:

- Physical damage
- Signs of overheating
- Signs of ingress of liquid or foreign materials

Particular attention should be paid to possible physical damage to accessible mains components such as switches, fuses and equipment couplers.

2. All mains power cords, including interconnecting cords, should be checked for physical damage and if necessary repaired or replaced by a competent service engineer/electrician.
3. Where rewirable plugs or equipment couplers are used their covers should be removed and: (See Fig.1)
  - The termination and cord grips should be checked for tightness and alignment (the outer sheath of a cable should be seen at both sides of a cord grip and the insulation should be present up to each termination).
  - The terminations should be checked for correct polarity;
  - The conductors should be checked for damaged or loose strands.
4. Operator-accessible fuses on the outside of the equipment should be checked for the correct type and rating. If the equipment manufacturer has specified a particular rating for the plug fuse, this should also be checked. If the manufacturer has not specified a particular rating for the plug, the preferred fuse size, related to the cross-sectional area of the cord conductors, is given in Table 1.

**Table 1: Cord conductors and plug fuses**

Conductor size	0.5mm	0.75mm	1.0mm	1.25mm or 1.5mm
Recommended fuse (BS 1363 Part 3)	3 amp	5 amp	10 amp	13 amp

1) Optical fibre interconnections Some equipment use optical fibre interconnections. The sources driving these vary in power and some can cause eye damage. From the outside there is nothing to distinguish a fibre optic cable from an electrical cable. Equipment employing certain classes of laser is required to be labelled. However, the equipment manufacturer's advice should be followed at all times. Do not disconnect fibre optic cables unless this required by the manufacturers instructions. Finally, under no circumstances look directly into the end of a fibre optic cable or connector; the radiation used is often not visible but this does not mean it cannot cause eye damage.

(2) Uninterruptable power supplies (UPS) These recommendations are not intended to apply to uninterruptable power supplies (UPS). Remember that a UPS will maintain mains voltage at its output after it has been disconnected from the mains supply. Before checking or testing a UPS advice should be sought from its manufacturer.