



Questions and Answers - based on Electrical Safety

In this month's question and answer section, Mike Ellerby looks at some of the questions that are concerning employers about electricity in the workplace. Consideration needs to be given to what we plug into (the fixed electrical installation) as well as what we plug in (portable electrical equipment). In both cases, testing should be carried out by a competent person and in both cases there are recommended periods between inspections.

How often do I have to have my Fixed Electrical Installation tested and inspected by a Competent Person?

As with many aspects of health and safety, there is no specific legal requirement to have fixed wiring installations tested and inspected. However, in addition to the general requirements of Section 2 of the Health and Safety at Work Etc Act 1974, the Electricity at Work Regulations 1989 require that all electrical systems must be maintained to be safe at all times.

In practice, this means having the fixed wiring installation of a building and everything connected to it, tested on a regular basis to ensure that it is in a safe condition. Undertaking such inspection and testing is also a useful defence (under Regulation (29) of the Electricity at Work Regulations 1989) against prosecution if an accident occurs as a result of an electric shock.

The testing and inspection of the fixed electrical installation should be carried out by a competent person (such as one registered with the an an Electrical Contractors Association (ECA), National Inspection Council for Electrical Installation Contracting (NICEIC), or The Electrical Contractors' Association of Scotland (SELECT)) and should meet the requirements of BS7671 (the 17th edition of the IEE Wiring Regulations).

The interval between testing and inspection depends on the nature of the premises.

Type of installation	Maximum period between inspections
Domestic	10 years
Commercial	5 years
Industrial	3 years
Churches (over 5 years old)	1 year
Places of public entertainment	1 year
Petroleum stations	1 year
Emergency lighting & fire alarms	1 year

Increasingly, insurance companies are putting pressure on companies to get their fixed electrical installations tested and inspected and to provide a copy of the inspection and test certificate.

What is involved in the testing and inspection of Portable Appliance Testing (PAT)?

As a starting point, it is recommended that a list (or inventory) is created of all of the portable electrical appliances. This list should identify the equipment and its location. All individual items should be included, including extension cables, etc.

After (or during) the creation of the inventory, it is recommended that all items of portable electrical equipment are tested and inspected by a competent person. Any defective equipment should be removed from service and either repaired or disposed of. Defective electrical equipment should not be allowed to remain in use. Ideally, all tested and inspected electrical equipment should be "tagged" so that it is easily identified and so that the user can be sure that it has been tested and inspected



by a competent person. It is common for this tagging to include an identification number for the piece of equipment and a test and/or re-test date.

In many cases, the competent person for portable appliance testing will be a qualified electrician. However, for many organisations, it is cost effective to arrange for a suitable member of staff to receive suitable training (such as that provided by City and Guilds 2377-01 Portable Appliance Testing (PAT)) and be provided with suitable testing equipment (which may itself need to be inspected and calibrated on a regular basis). In all cases, the employer should satisfy themselves that the competent person is experienced in the type of equipment that the employer has.

How often do I need to do my Portable Appliance Testing (PAT) and what is involved?

There is no exact frequency of testing and inspection of portable electrical equipment. The frequency of test and inspection is determined by need, through a sort of risk assessment process. Low risk equipment in low risk environments may attract long intervals between testing and inspection, while high risk equipment in harsher environments may need testing after much shorter intervals.

The exact frequency for any piece of equipment should be arrived in agreement with the competent person. Examples of low risk equipment in a low risk environment would include normal office equipment (such as computers, printers, photocopiers, etc) in a normal office setting. In such cases, intervals between testing and inspection could be between two and four years.

At the other end of the scale we have portable equipment used in an outdoors construction environment. In such cases, the equipment and its cable are much more prone to damage from such factors as:

- exposure to the elements
- water
- being trodden on
- driven over, etc.

In such cases, inspection frequencies in the order of every three months would not be unreasonable. In deciding the frequency of inspections, give consideration to:

- Whether the equipment is moved or is static
- Whether the cable is moved or is static
- Whether the cable subject to mechanical trauma
- Experience of the workplace and historical damage to equipment
- Whether the equipment or cable is subject to the elements (sun, rain, etc.)

What are visual examinations and can employees carry these out?

Once safe electrical equipment has been provided for use in the workplace, visual examinations are an extremely useful and effective way of (actively) monitoring the condition of the equipment. The principle is that the condition of the plug, socket, lead and equipment is scrutinised by the user before the equipment is used. Such an inspection need take only a few seconds, but can detect many serious defects.



The users should be trained and instructed in the methods of visual examination and in the importance of such inspections. The user should:

- Switch off and unplug the equipment before starting any checks (checks are usually carried out before the equipment is plugged in for use).
- Check that the plug is correctly wired (if trained and competent to do so).
- Ensure the fuse is correctly rated by checking the equipment rating plate or instruction book (if trained and competent to do so).
- Check that the plug is not cracked or damaged and that the cable is properly secured with no internal wires visible.
- Check the plug for any discolouration or scorch marks.
- Check the cable for any signs of wear, abrasion, cuts, taping over of damage, etc.
- Check the general condition of the equipment, looking for any obvious damage that may give rise to electrical or mechanical hazards.
- Check for burn marks or staining that suggests the equipment is overheating.
- Check the general condition of the socket for damage and scorch marks.
- Position any trailing wires so that they are not a trip hazard and are less likely to get damaged.

The user should only use the equipment if they are satisfied that there are no visual defects. If there are any defects, the equipment should be removed from service until it has been repaired (or replaced).