

Ref No 5058 (v8)

Maintaining Portable Electrical Equipment

Introduction

Electricity can be dangerous. Around 1000 major injury accidents caused by electricity are reported each year including around 25 fatalities. (Source HSE 2008).

Around 25% of all electrical injury accidents are caused by portable electrical equipment (PEE). Faulty leads to equipment cause around 2000 fires each year.

Hazards

A major cause of such accidents and fires is the failure to carry out inspections and maintenance of electrical equipment especially portable electrical equipment. The likelihood and severity of accidents involving PEE will depend on the type of equipment, the manner of use and the environment in which it is used.

PEE will be used in a wide range of workplaces ranging from low risk e.g. offices, shops, clubs, restaurants, and public houses to higher risk environments such as factories, garages or swimming pools.

Whatever the working environment if there has never been an inspection system, and/or maintenance has been neglected, there is an increased chance that some of the PEE could have become dangerous.

What is Portable Electrical Equipment?

In general terms PEE has a flexible cable with either a plug and socket or a spur box to connect it to the fixed electrical installation.

Typical examples of PEE include handheld power tools such as drills and sanders, office equipment such as photocopiers, fax machines, computers, kettles, refrigerators, microwave ovens and radios. Semi portable equipment such as a mitre saw is also regarded as portable equipment.

Extension leads are also regarded as PEE.

Legislation

The Electricity at Work Regulations 1989 set out the legal requirements relating to the use and maintenance of electrical equipment. They apply to all workplaces and are designed to prevent danger or the risk of injury.

The main thrust of the legislation is to secure that PEE is maintained. Inspection and testing are the means to achieve this aim.

Inspection and Testing

In order to maintain PEE adequately, procedures for inspection and/or testing are required. The inspection and testing of PEE is based on a three stage approach:

- User Checks - visual only
- Formal Visual Inspection
- Combined Inspection and Testing

Visual inspection will identify the majority of faults. Employees who use PEE should visually check for problems on a daily basis or prior to each use and report any obvious defects to their supervisors or managers.

Employees should be given clear guidance on the type of faults that they might be expected to find.

Typical defects include cuts in the outer insulation that expose the coloured cable, loose pins/prongs on plugs or cracked plugs.

To backup visual inspection by the user it is essential that formal visual inspections are carried out. These inspections are usually carried out by a supervisor or other appointed person. These inspections can take place less frequently, from every 6 months to every year or two, dependent on the nature of the equipment and its use. In addition to the user checks, formal inspections should include removal of the plug cover (where possible) to check

- Cord grips are secure
- Terminals are tight
- That the correct fuse is in use and/or
- the fuse has not been "replaced" e.g. with wire, a nail or tin foil

Since not all faults can be detected by visual inspection, PEE should be subjected to combined inspection and electrical test using Portable Appliance Test Equipment operated by a competent, electrically qualified person.

These need to be carried out routinely, say every few years. The precise frequency will be determined by risk assessment, involving a consideration of use, environment etc.

This does not mean that all PEE requires an electrical test by a qualified electrician. Most simple equipment will only require a visual inspection, which can be carried out by anyone who has been properly trained. But where there is reason to suspect that the PEE may be faulty, damaged or contaminated, then only competent electrically qualified persons should carry out testing, inspection or repairs.

If employees bring equipment to work and plug it into your system it becomes your responsibility and should be included in your inspection schedule. Typical examples include kettles and radios used in the canteen.

Faults to look for

The most important maintenance precaution is the regular visual inspection carried out by the user. Around 95% of faults or damage can be found by looking.

Some faults to look for include:

- Damage to the flexible cable. e.g. cuts, abrasions, cable trapped under furniture etc.
- Damage to the plug. e.g. cracked case or bent pins.
- Illegal joints in the cable. e.g. taped joint or 'chocolate block' connectors.
- Equipment being used in unsuitable conditions, e.g., wet or dusty.
- Signs of over heating e.g. burn marks or stains.

All employees should be made aware that they must stop using any equipment that is found to be faulty or defective and report faults/defects to their supervisor.

Key Action Steps

- Identify all PEE and create a list/register to ensure that items are not missed at the next inspection.
- Decide what to do about PEE brought in by employees (either ban its use or include on your list for inspections.)

- Provide information and training for all users to help them carry out user checks.
- Decide on appropriate frequency of formal visual inspections.
- Set up a formal visual inspection system and appoint and train competent persons to carry out such inspections.
- Appoint a competent, electrically qualified person to carry out Portable Appliance Testing and any required electrical repairs.
- Review records of test results and monitor to ensure that remedial repairs are carried out and review frequency of visual inspections.

References

- The Memorandum of Guidance on Electricity at Work Regulations 1989 (ACOP) Ref. HS(R) 25.
- Maintaining portable and transportable electrical equipment Ref. HSG107 HSE Books
- The safe use of portable electrical apparatus. Ref. HSE Guidance Note PM32, HSE Books 1990.

Free downloads from the HSE website.

Electrical Safety and you: INDG231
<http://www.hse.gov.uk/pubns/indg231.pdf>
Maintaining portable electrical equipment in offices and other low risk environments: IND(G)236L
<http://www.hse.gov.uk/pubns/indg236.pdf>
HSE Electricity "microsite"
<http://www.hse.gov.uk/electricity/index.htm>
Free Leaflets on Electrical Safety
<http://www.hse.gov.uk/pubns/elecindx.htm>

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