

# Portable Appliance Testing (PAT Testing)

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This briefing is UK legislation specific.

## Did you know that...

The UK Provision and Use of Work Equipment Regulations 1998 (PUWER) states at Regulation 4(1): *“Every employer shall ensure that work equipment is so constructed or adopted as to be suitable for the purpose for which it is used or provided.”*

The Electricity at Work Regulations 1989 states at Regulation 4(2): *“As may be necessary to prevent danger, all systems shall be maintained so as to prevent so far as reasonably practicable, such danger.”*

This means that employers (and the self-employed) must ensure that all electrical work equipment is safe, suitable for the purpose and properly maintained in good order.

The scope of the legislation covers everything from small portable equipment e.g. hand drills to fixed 400 kV distribution systems. The requirements apply to fixed and “hard-wired” electrical appliances (or equipment), such as hand driers in washrooms or ovens in commercial kitchens, in addition to portable and hand-held appliances which plug-in, such as drills or vacuum cleaners, both single and three phase. Different inspection and maintenance regimes are recommended for fixed electrical installations and portable electrical equipment.

Note that the term “portable equipment” encompasses the following categories of appliance: -

- S** Stationary equipment e.g. refrigerator or washing machine.
- IT** Information technology equipment e.g. computer, printer, monitor or telecommunications equipment.
- M** Movable equipment 18 kg or less in mass and not fixed e.g. electric fire or small welding set.
- P** Portable equipment 18 kg or less intended to be moved while in operation e.g. toaster, food mixer, kettle.
- H** Hand-held equipment intended to be held in the hand during normal use e.g. hairdryer or power drill.

## Testing of portable electrical equipment

The routine inspection and testing of portable<sup>1</sup>, and fixed<sup>2</sup>, electrical appliances (or equipment), especially those used in severe environments such as building sites, is an important safety requirement.

<sup>1</sup> ‘Portable’: Any item of electrical current using equipment that is plugged into a socket outlet.

<sup>2</sup> ‘Fixed’: Any item of electrical current using equipment that is “hard-wired” into a fused connection unit or isolation device.

The HSE strategy suggests user checks, backed up by formal visual inspection and combined inspection and test.

### User check

The user of the equipment should be encouraged to check the condition of the equipment prior to use. It is relatively easy for people to spot and report signs of damage, overheating and misuse.

### Formal visual inspection

The most important monitoring of portable appliances is through a regular formal visual inspection. This should be carried out by someone who has been properly trained to perform a more thorough check of the equipment. This may include examining plugs, fuses, flexible cables, and cable clamping arrangements etc.

### Combined Inspection and Testing

Faults may arise in electrical equipment that may not be readily apparent. For example, internal damage may result from misuse or internal electrical connections may deteriorate over time. One way to identify such defects is through an electrical testing which is commonly done by using a portable appliance test instrument (a “PAT” tester). In low risk environments, a properly trained, competent member of staff can perform these tests using a suitable “off the shelf” PAT tester on appliances disconnected from the electrical supply. In higher risk areas a more highly trained specialist may be needed to disconnect the equipment from the electrical supply, perform complex tests and to interpret the results.

### PAT Testing Frequency

There are no set statutory periods for formal visual inspection and test. The maintenance regime should be appropriate to the environment and duty for which the equipment is used. Electrical testing in a low-risk area e.g. in an office would be less frequent than in, say, a harsh industrial environment. Guidance on inspection intervals can be found in the IET and HSE documents identified below. Simply, at all times the equipment must be safe.

## Records

Although there is no mandatory requirement to produce and keep records on the condition of electrical equipment the HSE 'Memorandum of guidance on the Electricity at Work Regulations' (HS(R)25) advises that records of maintenance, including test results, will enable the condition of equipment and the effectiveness of maintenance policies to be monitored.

The IET 'Code of Practice for In-Service Inspection and Testing of Electrical Equipment' recommends that a log be kept of the condition of equipment, together with records that may be held on paper or in 'electronic' form.

In the event of a prosecution arising from an injury relating to a portable appliance, it would assist the employer's case if they can produce up to date, accurate records to indicate that they had taken reasonable actions to comply with the Electricity at Work Regulations 1989.

## Further information

The IET, with the support of the UK Government's Health and Safety Executive (HSE) and other co-operating organisations has prepared the Code of Practice for In-Service Inspection and Testing of Electrical Equipment (3rd Edition).

It includes information and guidance on the legal requirements, the inspection and testing of electrical equipment to establish whether equipment is safe for continued use, or repair/replacement is necessary, and where to go for further information:

- <http://www.theiet.org/publishing/books/wir-reg/cop.cfm>

The IET also publishes guidance on the maintenance of fixed electrical installations in Guidance Note 3 - Inspection and Testing:

- <http://www.theiet.org/publishing/books/wir-reg/inspection-testing-5th-edition.cfm>

The IET offers short courses to train staff in the use of portable appliance testing equipment, see:

- <http://www.theiet.org/events/calendar/>

The HSE has published a free leaflet on electrical safety in the workplace which includes hotels and tourist accommodation:

- Maintaining portable appliances in offices and other low-risk environments (INDG236):  
<http://www.hse.gov.uk/pubns/indg236.pdf>

This includes answers to common questions and practical advice on visual inspection and inspection intervals and is available on the HSE website, see: <http://www.hse.gov.uk/pubns/elecindx.htm>

The HSE also publishes several guidance books including:

- Maintaining Portable and Transportable Electrical Equipment (HSG107, ISBN 9780717628056)
- Memorandum of guidance on the Electricity at Work Regulations 1989 (HSR25, ISBN 9780717662289)

Additional information is available on the HSE's Electrical Safety at Work website, see: [www.hse.gov.uk/electricity](http://www.hse.gov.uk/electricity).

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