

Health and Safety Office

Topic:	Portable Appliance Testing (PAT) Briefing Note
Date:	August 2010
Version:	3.2 (V2.0 Reviewed)
Legislation:	Health and Safety at Work etc Act 1974 Management of Health and Safety at Work Regulations 1999 Electricity at Work Regulations 1989
Status:	Briefing Note and Guidance
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1.0 Introduction

The Electricity at Work Regulations 1989 were made under the Health and Safety at Work etc Act 1974. They apply to all places of work and to all work involving the use of electricity. The Regulations are primarily concerned with the prevention of danger and injury from electric shock, electrical burns, fires of electrical origin, electrical arcing and explosions initiated or caused by electricity.

These Regulations place duties on the University as an employer to control risks arising from the use of electricity. The Regulations require that:

- All systems shall at all times be of such construction as to prevent danger (Regulation 4.1)
- As may be necessary to prevent danger, all systems shall be maintained so as to prevent, so far as is reasonably practicable, such danger (Regulation 4.2)
- In order to comply with the legislation, all electrical works including portable appliance testing (PAT), should be carried out by a competent person (see 3.3).

2.0 Responsibilities

2.1. Heads of Departments are responsible for statutory compliance in their Department. They may delegate the implementation of the departmental arrangements for Portable Electrical Appliance testing as appropriate although they retain the responsibility for ensuring that any inspection is carried out and that remedial action is taken where necessary.

2.2. The regular planned formal inspection and testing will include:

- (i) Formal visual inspection for signs of damage and deterioration and
- (ii) Electrical tests.

As a minimum these electrical tests take the form of an earth continuity and leakage test (where an earth is present), and an insulation test. These should all be recorded locally and the equipment labelled accordingly as "Passed" with an expiry or "Next test date" clearly visible.

2.3. Each department is responsible for making their own arrangements for testing and inspection. Some departments will have their own resources, those who do not are advised to contract the services of an approved reputable external contractor or train someone within the department. Whatever is decided as Departmental/ Faculty/ School etc. policy, it should be clearly documented in the form of Local Rules and distributed to all staff, students, and possibly even long-term visitors if applicable.

2.4. It must also be brought to the attention of every user of electrical equipment that they have a responsibility to ensure that each time they use that equipment it has an in-date PAT label (see 2.2) and is safe to use by doing a very brief user check (no loose wires, no obvious damage to equipment, cable, plug or socket).

3.0 Training and Competency

The H&SO runs several PAT training courses throughout the year, delivered by Andy Macquiban, Health and Safety Advisor:

3.1. The first course run by the H&SO is for local managers to understand the requirements of PAT within the University, and to explain the logistics to ensure it is carried out effectively and economically. It explores the types of testing equipment they may need to purchase, and the selection of contractors should they wish to outsource the service.

3.2. The second course is a practical and interactive course for those intending to perform the tests themselves for their department. They will not necessarily be trained to use particular makes of testing apparatus, but will be given guidance on the tests required and any practical issues that may arise within their own environments.

3.3. The delegates of the practical course can successfully achieve a deemed competency to perform such simple tests as are necessary for compliance in low-risk environments within the University. It is not an externally recognised or validated qualification.

To express an interest in either course please refer to the Staff Development course directory, or failing that, email Bristol-safety@bristol.ac.uk.

3.4. Formal training on which candidates work towards a nationally recognised qualification can also be provided externally by such organisations as:

- Datatrak: <http://www.datatrak.ltd.uk>
- PAT Training Services: <http://pat-training.co.uk>
- Midas Electronics: <http://www.midaselectronics.co.uk>
- Morris Services Ltd: <http://www.morriservices.co.uk>
- Clarkson Evans: <http://www.clarkson-evans.co.uk>

Appropriate qualifications to be obtained may be the City and Guilds (C&G)2377-11 for the management of, and 2377-12 for the testing of Portable Electrical Appliances.

4.0 Using an Approved Electrical Contractor

4.1. If you choose to use a contractor to carry out your portable appliance testing, you must use one who has been approved by the University Estates Department. Approved companies are listed below. If you have comments on any of these companies for any reason please contact Brian Jackson in the Estates Department, and the H&SO.

4.2. You should check the contracting companies' qualifications which should be C&G minimum, but they should preferably (also) be NICEIC members as fully qualified electricians.

Langston Jones Contact: Dawn Price 01203 668592
Station Street West
Coventry CV6 5BP

AMP Electrical Contact: Mark Palmer 0117 9711491
121 Winchester Road
Brislington
Bristol BS4 3NH

21st Century Contact: Anthony Zammit 0117 373 8696
Bartley House
Unit 15-21 Bartley Street
Bedminster
Bristol BS3 4DY

SafetyTest UK Contact: Marcus Newland: m.newland@safetytestuk.co.uk

Manor House
4 Ryecroft Court
Frampton Cotterell
Bristol
BS36 2HW 0117 3270030 or FREEPHONE: 0800 093 6714

5.0 Frequency of testing

The Regulations require that all portable appliances are tested on a programme that is determined by the risk presented by each unit. This takes account of the type, power rating, and class of electrical equipment, who is potentially using it and how (often), and in what environment.

HSE guidance can be found in the following document

<http://www.hse.gov.uk/pubns/indg236.pdf> (page 5)

This is thoroughly explained on the training courses (see 3.1). There are however some important points that can be highlighted at this stage.

- Computers are unlikely to need to be electrically tested in their deemed lifetime of 4-5 years. This is based not only on the risk of faults occurring, but also on the vulnerability of the equipment being damaged by the PAT test itself. During this period, it will be prudent to carry out formal visual checks every 2-3 years (depending on the positioning of the cables and frequency of being unplugged). If feasible, the IEC (kettle type) lead can be tested separately from the computer to assure earth continuity to the equipment, and the integrity of the insulation of the lead.
- Laptops fall within the same guidelines, but there is more precedence put on the lead being tested, so this should be seen as essential on at least an annual basis if it is regularly used as a portable unit. Remember that there may be more than one lead per laptop (on desk and in bag).

- Class I equipment (Earthed) is seen as being of the highest risk; HSE advise that >90% of problems are identified during the visual inspections. All extension leads must be earthed and tested as Class I equipment.
- Class II equipment (Double Insulated) is seen as being very safe if the plug and lead are rarely disturbed and used in a low-risk (eg office) environment. If so, then it will only require a formal visual test every 2-4 years depending on its usage. It should not need any electrical test.
 - Equipment that may be used by students or the public needs at least annual combined inspection and testing, dependent on the risk of damage.
 - If used outside, or in an aggressive environment (eg laboratory or workshop), then it will need more frequent visual inspection and insulation testing.
- New equipment does not need to be PAT tested, although if it is feasible, this does provide a formal way of adding items to a departmental inventory.
- Departments should organise their own local arrangements for staff and students bringing personal electrical items into work. These must be within a current PAT period whilst at work, although there are no requirements out of the workplace.

6.0 Test equipment

There is a full range of PAT testing equipment readily available from many sources locally and on the internet. To help in choosing, the following should be considered:

6.1 The functions are very limited on the simplest, cheapest testers, but so long as they are traceably calibrated they are an option. It must be considered however, that although they adequately perform (only) the essential tests, they will not provide any peripheral functions such as an electronic memory of results, an inventory scanner (bar-code reader), or a PAT label printer.

6.2 Scanner, printer, and downloadable memory can come as part of an integrated package with the more complex and expensive machines, and make the management of PAT very much easier and infallible. These top-end testers are more effective for testing in complex environments such as laboratories.

6.3 In the mid-range are testers that can provide enhanced testing facilities but without integrated memory. One handy aspect that may be considered is that these might be powered by rechargeable battery, and so can be readily carried around the workplace for testing in-situ.

6.4 All equipment used to perform PAT testing must be fully calibrated at the time of use. This calibration can be carried out only by UKAS certified bodies such as (locally) <http://www.avon-dynamic.co.uk/>
Or http://rswww.com/uk/html/service_point.html or this may be arranged by the local store as a contact point.

- Instruments must be calibrated at least annually, or in accordance with the manufacturer's instructions.
- If used on a very regular basis, the instruments can be checked against known standards in between calibrations. Some manufacturers supply these as "checkboxes".

7.0 Further guidance can be found at

- **HSE: Maintaining Portable and transportable electrical equipment HSG 107** <http://www.hse.gov.uk/pubns/priced/hsg107.pdf>
- **HSE: Maintaining portable electrical equipment in offices and other low-risk environments INDG 236**
<http://www.hse.gov.uk/pubns/indg236.pdf>
- **Institution of Engineering and Technology: Code of Practice for Inspection and Testing of Electrical Equipment (IEE) 3rd Edition.**
- **Portable Appliance Testing: In-Service Inspection and Testing of Electrical Equipment.** Brian Scaddan IEng; MIIE (elec)