



Safety Code of Practice

January 2018

Author	DBMAC Operations Manager	Intended target group	Principals, Business/Administration/Office Managers
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Portable Appliance Testing Policy



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1. POLICY STATEMENT AND INTRODUCTION

This policy outlines the Dominic Barberi Multi Academy Company's responsibility to provide adequate and appropriate equipment within the workplace/school/buildings and to ensure that all equipment used at any DBMAC facility/site is maintained in a safe condition for use. Faulty electrical equipment can be a major cause of fire or serious incidents. The need to reduce the risk of injury or fire and meet the needs of our legal and insurance obligations is essential. The DBMAC recognises the importance of fire safety and this policy outlines measures that are reasonably practicable, to prevent anyone being injured or property damage through poorly maintained portable electrical equipment.

This policy details the DBMAC's requirements for inspecting/testing portable electrical appliances (PAT Testing).

2. PORTABLE ELECTRICAL EQUIPMENT OVERVIEW

2.1 What is portable electrical equipment?

Portable equipment is generally equipment that has a power lead (cable) and plug and which is normally moved around or can be disconnected from an electrical supply and moved from place to place. It also includes larger equipment that can be moved but is normally stationary in a fixed location and which has a lead and plug e.g. photocopiers, larger items of scientific analytical equipment.

Portable and movable equipment includes the following:

- electrical equipment that can be easily moved around, such as kettles, vacuum cleaners, floor polishers, portable heaters, fans, desk lamps, some TVs, radios, some small electric cookers, PC projectors, small appliances such as kitchen equipment including food mixers, toasters etc;
- larger items that could be moved (but only rarely), eg water chillers, fridges, microwaves, photocopiers, vending machines, washing machines, electric cookers, fax machines, desktop computers etc are considered to be movable items;
- hand-held items that do not have a plug but have been wired in (or fixed) are still considered to be portable appliances, but large electrical items, such as water boilers that are wired in, are not portable appliances as they are not designed to be moved and would come under the scope of fixed installation maintenance;
- mobile phone and other battery-charging equipment that is plugged into the mains (but the phones themselves and any other battery-operated equipment would not be included); and
- extension leads, multi-way adaptors and connection leads

2.2 Categories of portable appliances

Portable electrical equipment is categorised into:

- Hand held
- Mobile

- Stationary
- Information Technology (IT) Equipment

These categories help to make decisions regarding the frequency of in-service inspection/test and the likelihood of damage occurring e.g. handheld equipment should be inspected more frequently than stationary equipment. Appendix 1(categories of portable electrical equipment) which gives definitions and examples of these categories.

2.3 Three phase and ‘hard wired’ equipment

Portable equipment does not include electrical equipment that is permanently connected to the building electrical supply - ‘hard wired’, or three phase equipment.

3. RESPONSIBILITIES

3.1 The responsibility of the employer is to:

Principals are responsible for ensuring compliance with this Policy. In addition, The Principal for the DBMAC facility/site is responsible for ensuring that arrangements are in place for the regular inspection and testing of portable electrical appliances within their areas of control. This will include electrical equipment in offices, laboratories, workshops, stores, equipment brought onto site as part of an event and equipment designed and engineered as part of research activities.

3.2 The responsibility of employees and students

Staff and students are themselves each responsible for the correct use of equipment.

All users are responsible for ensuring that there is no visible damage to the electrical equipment, leads and plugs, which they use. They should report any fault or damage to their supervisor, manager (including residential), or laboratory or workshop technician, as appropriate. Faulty or damaged electrical equipment should be labelled as such and should be immediately taken out of use by physical removal, removal of the plug, or equivalent means of ensuring that it cannot be used.

All staff and students must be encouraged to:

- visually inspect portable electrical equipment for any obvious faults before using the equipment;
- not use faulty electrical equipment and immediately report faults;
- not use equipment for work that has not been appropriately inspected or tested.

4. TYPES OF INSPECTION

4.1 User checks

Users must check equipment before use. The user check is a vital safety precaution, as many faults can be identified by a simple visual inspection. The user is the person most familiar with the equipment and in the best position to know if equipment is in a safe condition and working properly. The user check is limited to an external visual inspection without any dismantling of the equipment, such as removal of covers or plug tops.

These checks do not need to be recorded. However if faults are identified action must be taken to prevent further use until repair or disposal. The frequency of check will vary depending on the type of equipment and its location. A guide on what to look for during a user check is given in Appendix 2 (User checks).

4.2 Formal visual inspection

A formal visual inspection is a more detailed visual inspection by a competent person, and the equipment is labelled to state this inspection has been completed.

The formal visual inspection can be undertaken as the main test for double insulated equipment in low risk environments. The method for carrying out a formal visual inspection is set out in Appendix 3 (Formal visual checks).

The person carrying out the inspection must be trained and competent.

Where equipment fails a formal visual inspection, it must be immediately removed from use and labelled as failed/faulty. Repair or disposal should be arranged.

4.3 In-service inspection and test

An in-service inspection and test is a more detailed examination of the equipment, involving:

- a preliminary inspection (as for a formal visual inspection)
- an earth continuity test (Class I equipment only)
- an insulation resistance test if applicable, or protective conductor current /touch current test or substitute / alternative leakage test
- a functional test.

The in-service inspection and test must be carried out by a trained and competent person and normally carried out by an appointed contractor. Full details of how to conduct each test are given during training and in the IEE Code of Practice for In-Service Inspection and Testing of Electrical Equipment.

5. EQUIPMENT AND CHECKS

5.1 Frequency of inspection and testing

Inspection and testing of electrical equipment is a means of assessing if the appliance is safe or if maintenance or repair is required. The frequency of inspection and testing will depend upon the likelihood of faults developing and the consequences of lack of maintenance.

Factors which influence this include:

- the environment (e.g. wet or harsh conditions increase the risk);
- the users (e.g. use by multiple users or the public, or use limited to one person);
- the equipment construction (Class I or Class II);
- the type of equipment e.g. portable, hand held or stationary.

The DBMAC has set the standard that all items will be inspected annually unless documented differently within a DBMAC facility/site specific risk assessment. This should highlight or detail the reduced risk(s), requirements or recommendations for specific areas/items or changes to the frequency of inspection, if any changes are made to a DBMAC facility/site arrangements following a detailed risk assessments A guidance of frequency of testing is set out in Appendix 4 (recommended inspection and test frequency) to assist in any planning or changes.

Staff and contractors carrying out formal inspections and tests must be guided by any changes to these

frequencies.

Where there is a higher level of risk the frequency of inspection/test may need to be increased i.e. where equipment is regularly damaged, fails tests or is mistreated. If a DBMAC facility/site Administration Manager believes that less frequent inspection/test is required, this must be justified by a risk assessment, if possible, making reference to previous inspection/test results, and failure data. The changes or risk assessment must be signed by the Principal.

5.2 New equipment

Equipment manufacturers and suppliers are legally required to ensure that new or second hand equipment supplied by them is safe for use at work. No formal inspection or test is required before putting the equipment into first use. However new portable electrical equipment should be checked by the user before use for obvious signs of damage to the plug, cable or external casing.

New equipment should be inspected once it has been installed for 12 months (or sooner if convenient to do so). This may require labelling to ensure that the date it is brought into service is known.

The manufacturer's instructions should always be read and understood before an unfamiliar item of equipment is used for the first time.

5.3 Personal equipment brought into the facility

Staff should be discouraged from bringing personal items of electrical equipment to work (e.g. radios, kettles, and fridges). However there may be circumstances when this is approved by the team leaders/supervisors or senior leadership team, in which case this equipment must be inspected and tested before use and then at required intervals outlined within this policy or a DBMAC facility/site specific risk assessment.

5.4 Student owed Equipment

Equipment that is not safe must not be used on DBMAC premises or during School activities.

It is not DBMAC policy to inspect and/or test electrical items owned by students, and this is not required under the Electricity at Work Regulations, UNLESS such equipment is being used 'for work'. Students are responsible for their own personal electrical/electronic equipment but must follow the local health and safety policies of their facility.

However, if it is observed that student electrical equipment or practices involving this equipment appear hazardous, such as damaged wiring, exposed mains connections etc, the danger must be pointed out to the student and the health and safety lead for the DBMAC facility/Site.

Action must then be taken to reduce the risk to an acceptable level. This may involve banning use of the equipment on DBMAC property; confiscation; or insisting on in-service inspection and test at the student's expense.

5.5 Leased equipment

Equipment hire companies are legally required to ensure that equipment supplied by them is safe for use at work and is regularly inspected and tested before and after use. Therefore, equipment that is leased by the DBMAC facility/site should not normally need to be tested; appropriate routine safety testing should be an integral part of the service contract. If electrical testing is not part of the service contract (as may be the case for some photocopiers) then this equipment should be included in the in-house testing programme for the DBMAC facility/site.

5.6 Equipment brought on site for events

Equipment that is brought onto site for an event must be in a safe condition. It is the responsibility of the Event Safety Co-ordinator to ensure equipment has been suitably inspected and if necessary tested. If this cannot be proved then a competent person must carry out a suitable test (not at the expense of DBMAC). The DBMAC facility/site reserve the right to restrict any usage of portable equipment on the premises if PAT testing is not sufficient or up to the required standards outlined within this policy.

6. PAT TESTING EQUIPMENT

Equipment used to carry out inspections and test must have the following facilities:

- Measurement of earth continuity with one or more pre-set test currents up to a maximum value of the order of 26 A;
- Measure of insulation resistance normally using a test voltage of 500V d.c.;
- Measurement of earth continuity using a low value of current in the range of 20 mA to 200mA, typically 100mA known as the “soft test”;
- Fuse assessment.

7. LABELLING

Suitable labelling must be provided on equipment that has been formally visually inspected or tested, stating the following information:

- Date of inspection/test
- Name of tester
- Appliance number (if full records are being kept)
- Next inspection/test date due
- Pass or fail

Labels must be securely fixed so that they do not fall off easily. When re-testing equipment, the old label must be removed. When testing equipment that has a detachable power lead and both the equipment and the power leads are tested, both items must be labelled.

If the appliance has failed it must be labelled with the following information:

- Indication of danger e.g. ‘faulty, dangerous, do not use,’
- Detail of the fault e.g. ‘cable damaged’
- Name of inspector/tester
- Date of inspection/test

Failed equipment must be taken out of use immediately. It must be removed from the workplace and taken to a secure location, or disabled safely so that the equipment cannot be used.

8. RECORD KEEPING / ASSET REGISTER(S)

The DBMAC facility/Site should keep an inventory of appliances, showing the frequency and results of the formal inspections and tests.

Appliances should be labelled, tagged or marked to identify the competent person and to show the date of the last and next inspection / test.

It is not a legal requirement to keep records of portable appliance inspection and testing. However, the DBMAC has set standards to maintain all records for sites. Where inspection and testing is carried out by an appointed contractor, they will supply records of all items examined.

If a DBMAC facility/site undertakes any internal inspection and testing by allocating this work to a trained and competent employee, the minimum requirement is to maintain records of:

- Items that fail, including description of the item and appliance number (if there is one); details of the fault; name of the inspector/tester; and the date of inspection/test (also see section 8 re. labelling);
- The total number of items inspected/tested.
- A full list of items tested and results data which should be updated when changes are made or new tests carried out.

The keeping of any records must not be used as a substitute for labelling equipment.

Guidance:

HSE advise that "you may find it helpful if you have a lot of electrical equipment to keep track of and also to help you review your maintenance procedures. Experience of faults found will determine whether inspection intervals can be lengthened and whether and how often there should be a combined inspection and test".

The evidence of records would also help in any legal case following an accident involving electrical appliances.

Records can be paper-based or electronic. If kept, they should comprise:

- a. a record of formal and combined inspections and tests for each item of equipment
- b. a record of repairs made and all faulty equipment
- c. List of the numbers and types of equipment passed and those failed

If a PAT Tester that is designed to interface with a PC is used, the format of record storage and printouts will be determined by the PAT Tester and associated software.

If a manual tester is used, separate records will be required. They should detail:

- a. appliance description
- b. the equipment identifier e.g. asset number
- c. class of appliance
- d. test date
- e. formal visual inspection or combined in-service inspection and test
- f. test type, results and status (pass/fail)

9 Organisation of PAT testing

The Principal should clearly define who is responsible for organising in-service inspection and testing, so that it is not overlooked.

Guidance:

Where external contractors are engaged, an efficient way of managing testing is to organise an annual tour of the area by the person(s) doing the inspection and test. They should check the inspection/test frequency of all appliances, and inspect/test those that are out of test, or about to become so.

Users should be informed in advance of the visit, and instructed to make all their appliances readily accessible, including those held in store (assuming these items are likely to be used in the following period).

Where DBMAC staff undertake inspection and testing, an alternative approach may be to have an ongoing inspection regime, on a room-by-room basis.

10 Monitoring

It is recommended that any work undertaken by an appointed contractor is monitored; spot checks are carried out alongside any audit checks throughout the year. Each DBMAC facility should record any instances these take place as a good practice measure.

School Governors or audit Committees reserve the right to request a report or details regarding any DBMAC facility/site PAT testing documents or records for monitoring purposes. A notice period of 2 weeks should be provided.

10.1 Raising staff awareness

Under the safety management of DBMAC facility/sites, it is important that all staff are made aware of awareness of PAT testing policy/arrangements .

Approved by

Signed DBMAC Board _____

Name _____ Date _____

Signed _____ Positon _____

Name _____ Date _____

Date for review:

Appendix 1: Categories of portable electrical equipment

Hand held equipment

A hand held appliance or equipment is portable equipment intended to be held in the hand during normal use e.g. power drill, hedge cutter, soldering iron, hair drier.

This is the most hazardous type of equipment as current can flow from hand to hand and will pass close to the heart. Appliances are also gripped so the operator will find it almost impossible to let go of an appliance under shock conditions. The situation could be worse where a person is working hard and sweating or working outdoors in wet conditions. Moisture will reduce the contact resistance and a large current could flow.

Mobile equipment

Mobile equipment is intended to be moved while in operation e.g. vacuum cleaner, floor polisher, or an appliance that can easily be moved from one place to another e.g. food processor, kettle, desk fan, bench top centrifuges, hot plates, small laboratory water baths.

Stationary equipment

Equipment that has a mass greater than 18kg and is not provided with a carrying handle e.g. refrigerator, freezer, dishwasher or washing machine, large centrifuge, photocopier.

IT equipment

IT equipment includes computer monitors, data terminal equipment, power packs, mobile phone charging units, printers and televisions. Plugs and leads to this equipment should be tested but the equipment itself may not be suitable for testing.

Appendix 2: User checks

Users of portable appliances should look for the following indicators of damage or faults, before using the equipment:

- a) Is the user aware of any problems, does the appliance work?
- b) Damage e.g. cuts, fraying, abrasion (apart from light scuffing) to the cable/lead;
- c) Damage to the plug, e.g. the casing is cracked, the pins are bent, the screw holding the plug together is loose, the plug rattles;
- d) Non-standard joints, including taped joints in the cable;
- e) The outer covering (sheath) of the cable not being gripped where it enters the plug or the equipment. Look to see if the coloured insulation of the internal wires is showing;
- f) Damage to the outer cover of the equipment or obvious loose parts or screws;
- g) Signs of overheating (burn marks or staining) on the equipment or plug;
- h) Equipment being used in conditions where it is not suitable, e.g. a wet or dusty workplace;
- i) Equipment with signs of cracks, chemical or corrosive damage to the case, switches not working properly, protective covers missing or loose;
- j) Extension leads or adapters overloaded (too many appliances for the fuse or current rating of the lead);
- k) Residual Current Devices (RCDs) failing to disconnect from the supply when the test button is pushed.

If any of the above are identified, do not use the equipment, remove it from service, and report it to your manager or Health and safety lead for the DBMAC facility/Site.

Frequency of checks

Where equipment is stationary, or not moved frequently, and is not used in a hostile environment, user checks may not be required until the equipment is moved, at which point it would be convenient to do so.

Where equipment is handheld, moved frequently, or is used in a hostile environment e.g. catering kitchens, workshops, or laboratories, it may be more prone to damage. Therefore user checks are recommended weekly for all such equipment, or before each use for handheld equipment.

Appendix 3: Formal visual inspections

The following must be considered when carrying out a formal recorded inspection of equipment:

The environment

The inspector should consider if the equipment is suitable for the environment or the nature of the work. Particular care needs to be taken when selecting equipment for work in harsh or hazardous environments e.g. if the equipment is exposed to:

- mechanical damage
- the weather
- natural hazards
- high or low temperatures
- pressure
- wet, dirty or corrosive conditions
- flammable or explosive substances

These conditions will influence the frequency of inspection and testing required. Specialist advice may need to be taken and reference must be made to British Standards and HSE guidance, e.g. the guidance on Regulation 6 in the Memorandum of Guidance on the Electricity at Work Regulations 1989.

Where the inspector considers the equipment to be unsuitable for the environment, this must be recorded and brought to the attention of the person responsible for the equipment.

Good housekeeping

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

- a. cables are not located where they are likely to be damaged, e.g. trodden upon or snagged, or create trip hazards
- b. means of disconnection/isolation from the mains supply are readily accessible
- c. space around the equipment is adequate for ventilation and cooling
- d. ventilation openings are not blocked
- e. cups, plants and work material are not placed where their contents could spill into the equipment
- f. 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 for ventilation and cooling)
- g. the equipment is operated with protective covers in place and doors closed
- h. check that there is no indiscriminate use of multiway adaptors and trailing socket outlets or overloaded extension cables.
- i. there are no unprotected cables run under carpets.

Disconnection of equipment

The means of isolation from the electricity supply must be readily accessible to the user i.e. in normal

circumstances it must be possible to reach the plug and socket without difficulty. In general, the inspector will determine whether there is a means for switching off the electricity:

- a. for normal functional use
- b. in an emergency
- c. to carry out maintenance.

Where possible the equipment must be isolated from the supply. This will be simple to achieve when the equipment is connected via a plug and socket. However, some equipment may be connected to the supply by other means such as an isolator or connection unit, where isolation from the supply can be achieved only by switching OFF or by removing the fuse. Great care should be taken when carrying out a visual inspection of equipment which does not have a visible means of isolation.

The condition of the equipment

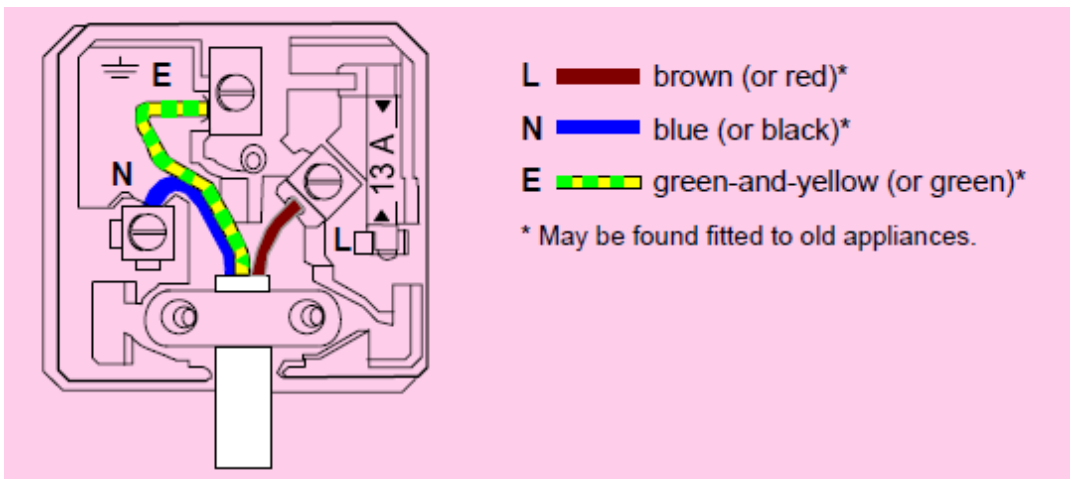
Before inspecting the equipment ask the users whether they are aware of any faults and whether it works properly, and proceed accordingly. The user is familiar with the equipment and may be aware of intermittent faults.

The following items need to be inspected:

- a. the flexible cable - is it in good condition? Is it free from cuts, fraying and damage?
- b. is it in a location where it could be damaged or cause a trip hazard? Is it too long, too short or in any other way unsatisfactory?
- c. the socket-outlet (if known) or flex outlet - is there any sign of overheating? Is it free from cracks and other damage?
- d. the appliance - does it work? Does it switch on and off properly? Is it free from cracks or damage to the case or damage which could result in access to live parts?
- e. can it be used safely?

NB Some of the following checks may not be possible for equipment fitted with a non-rewirable plug:

- f. check that detachable power supply cords to Class I equipment incorporate continuous protective conductor.
- g. look for signs of overheating - this may be caused by a fault in the plug (e.g. a loose connection) or by a faulty socket-outlet (or connection).
- h. remove the cover of the plug. Check that the flexible cable is properly secured in the cord anchorage - gripping the sheath so that there is no strain on the cable cores or the terminations.
- i. if the plug is of the non-rewirable type, the cable grip should be tested by firmly pulling and twisting the cable. No movement should be apparent.
- j. check that the cable core terminations are tight, the plug is correctly connected, there is no excessive removal of insulation, that there are no loose strands and the cable cores are not strained.
- k. the fuse should be securely gripped, and should not show any signs of overheating.
- l. Check that the fuse is to BS 1362 and is approved - an ASTA mark shows that it has been approved for safety. Check the rating of the fuse - most appliances up to about 700 W should have a 3 A fuse fitted (red). For appliances over about 700 W fit a 13 A fuse (brown). Non-rewirable plugs will have the appropriate fuse rating marked on them.
- m. when replacing the plug cover check that it fits properly and will not come loose during use.
- n. check the flexible cable connections and anchorage at the equipment, if practicable.



Appendix 4 – Recommended inspection and test frequency

A stringent test frequency cannot be set for all types of equipment and environments, however these test frequencies are given as a general guide for compliance. Test frequencies may be decreased if offset by formal visual inspections and backed up with evidence of limited failure rates and faults found. However any variation from the guidance in Table 1 must be agreed with The Principal for the DBMAC facility/site and recorded with the risk assessment. Where there is evidence of regular damage to equipment and higher failure rates are recorded, more frequent inspection and test will be necessary.

Area where equipment is used	Type of equipment	Frequency / type of inspection
Low risk Office	IT and general office equipment that is not moved frequently (e.g. photocopiers, fridges, desk top computers, shredders)	36 months formal visual inspection if double insulated (Class 2) 36 months in-service inspection and test if earthed (Class 1)
	Mobile equipment that is moved in use, or is likely to be moved frequently (e.g. kettles, fans, heaters and extension leads)	User Checks 12 months in-service inspection and test.
Medium risk Laboratories, workshops, kitchens and hotels / residential accommodation	IT and other equipment that is not moved frequently (e.g. microwaves, scientific analytical equipment)	User Checks 24 months in-service inspection and test#.
	All mobile and handheld equipment (e.g. kettles, fans, heaters, extension leads, food blenders, laboratory & scientific equipment, workshop equipment and power tools)	User Checks 12 months in-service inspection and test*.
High risk External environments, harsh environments e.g. exposure to chemicals, water, solvents, dust etc. farms, grounds equipment, construction sites, catering kitchens, or equipment moved in vehicles.	All portable equipment.	User Checks 12 months in-service inspection and test*.

Notes:

Where evidence indicates that the failure rate is low, this period may be extended to 36 months.

* Where necessary based on failure rate / evidence of damage this should be increased to 6 months.