



Electrical Safety – Portable Equipment

*[Part 3 of Safety, Health and Welfare at Work (General Application) Regulations, 2007
S.I. 299 of 2007 and S.I. 732 of 2007]*

1 Hazard

As set out in the above regulations, the employer has a responsibility to ensure the provision and safe use of electrical equipment. Specifically portable equipment is defined in the regulations as “*equipment, including hand-held portable equipment, which—*

- (a) because of the manner in which it is to be used, requires to be moved while it is working,*
(b) is designed so that it can be moved while it is working, or
(c) is moved from time to time between the periods during which it is working;”

The University wishes to prevent injury to staff, students and others resulting from the use of unsafe portable electrical equipment and to ensure that the requirements of these regulations are met.

2. Legal Requirements

These regulations require that portable equipment must be maintained in a manner fit for safe use.

The Regulations state that portable equipment which is;

- (1)(c)(i) exposed to conditions causing **deterioration** liable to result in danger, and*
*(ii) supplied at a voltage exceeding **125 volts** alternating current, is;*

- **visually checked** by the user before use, and
- **periodically inspected** by a competent person, **appropriate to the nature, location and use of the equipment.**

- (2) where **appropriate**, that a competent person tests any portable equipment (as above) and certifies whether or not the portable equipment (including any cables and plugs) was, on the day of test, as far as could reasonably be ascertained, safe and without risk to persons coming into direct or indirect contact with any live part of the equipment.*

The Health and Safety Authority refers employers to the Electro-Technical Council of Ireland’s publication ‘Guide to the maintenance, inspection and testing of portable equipment (electrical appliances and tools) in the workplace ET 215: 2008’ for further guidance on the requirements particularly in relation to the appropriateness of testing. This ETCI guidance document (see Resources) defines the requirements for checking, inspection and testing.

Regulation 81 of the 2007 Regulations also sets out specific requirements in relation to circuits supplying portable equipment, portable headlamps, etc., and is summarised in the HSA’s Guide to Part 3 Electricity (see Resources).

3. Risk Assessment and Controls

To ensure that such equipment is maintained in a manner fit for use, on a risk assessment basis certain portable equipment will need to be visually checked, periodically inspected or tested.

The flowchart in App. 1 set out the criteria to be considered in determining if checks are required and what type is required.

Therefore the University requires that Units have an appropriate system in place to assess such equipment and to identify and manage any faulty equipment found. See ETCI Guide to the Maintenance, Inspection and Testing of Portable Equipment (Electrical Appliances and Tools) in the Workplace ET 215:2008, for specific details.

Table 1 sets out what type of checks must be carried out on portable electrical equipment. A more detailed description of what is involved in the three levels of assessment is given below.

Assessment Level 1. Visual checks – by users, not recorded.

All staff should visually check portable electrical operated equipment before they use it. The safe use of electrical equipment is everybody's responsibility.

This visual check should include checking for all of the following:

- obvious damage on the equipment enclosures, cover and insulation;
- any obvious damage to the cable or lead supplying the equipment or evidence of any temporary repairs such as taped connections or non-standard joints;
- ensure no loose connections or loose cabling including at connection to plug;
- damage to cable covering;
- damage to the plug tops or sockets being used;
- any evidence of scorch, overheating or burn marks on the equipment, leads or plug tops;
- any evidence that the equipment has been used in conditions where it is not suitable.

To be completed by staff with a general knowledge of electrical safety who have been provided with appropriate instruction. See Resources for the Electrical Safety – Visual Checklist.

Assessment Level 2. Formal visual inspection by a competent person – by staff, recorded.

- Class I * equipment check that it is earthed.
- Class II ** equipment, check the integrity of the casing.
- If it is to be used in damp or wet conditions or if there is potential for the ingress of dust or solids into its works, does it have an appropriate Ingress Protection (IP) rating?
- If it is to be used in potentially explosive atmospheres has it an appropriate Ex Rating?
- Check that the plug is secure and cores are correctly connected and no bare loose strands and that fusing is correct.

To be completed by staff who have been trained in basic electrical knowledge adequate to carry out this inspection.

Assessment Level 3. Periodic testing by competent person – staff trained in the use of a Portable Appliance Testing meter.

Testing of equipment used in extremely hazardous environments, using a portable appliance test meter includes the following;

- Polarity
- Earth continuity
- Insulation resistance

A record of the test must be kept stating that the equipment is fit for use.

The person carrying out the test must be competent in the safe use of the test equipment and be able to interpret the test results.

NOTE: Following any of these 3 levels of checks, inspections or tests, any equipment found to be faulty as a result of any of these assessments must be taken out of service and not returned to service until repaired, tested and certified fit for use.

* **Class I equipment** is described as '...equipment that relied on the metallic (exposed conducting) parts of the equipment being effectively earthed. If this earth connection is lost there is a possibility of the exterior of the equipment becoming live, with a potentially fatal result. Anyone touching live metal will be in contact with electricity.'

* **Class II equipment** is sometimes referred to as 'double insulated' equipment. This means that there is extra insulation within the construction of the equipment to prevent accidental contact with live parts, even if there is a fault. The symbol for class II equipment is a square within a square and is found on the rating plate or label.



Class II equipment does not need an earth connection to maintain safety. It will **not** need a portable appliance test, although you should ensure that user checks and visual inspections are carried out as the integrity of the equipment casing is a key safety feature

The frequency of checks will vary depending on the particular use of the equipment and the risks associated with the equipment. Please see table below. For further detail on the frequency of testing see authoritative guidance under Resources.

TABLE 1			
Type of check	Type of equipment	Examples of environment where used	Frequency
#1. Visual checking (No record)	Portable equipment which is moved while it is working or moved from time to time e.g. <ul style="list-style-type: none"> - Laptops - Fans. - Desk lamps. 	Offices	Before use
#2. Periodic inspection by a competent person (Record)	Portable equipment which is <u>exposed</u> to conditions likely to cause deterioration and to result in danger to the user. The Health and Safety Authority states that deterioration could be due to a range of factors including corrosion, chemical attack, erosion, friction, fatigue and impact damage.	Laboratories. Workshops	Max interval annually. More frequently as determined by the risk assessment. + Periodic Testing #3 below at appropriate intervals
#3. Periodic testing by a competent person (Record & certify)	Portable equipment <u>used</u> in an extremely hazardous environment e.g. <ul style="list-style-type: none"> - Used in damp conditions - Used in fume hoods Portable equipment where the manufacturer requires testing. Portable equipment that is second hand and the history is unknown. All repaired portable equipment. Hand tools Cables and plugs attached to the above.	Laboratories. Workshops	Max interval annually. More frequently as determined by the risk assessment.

NOTE: 110 volt electrical equipment while not defined as a portable appliance will still require safe management under the 2007 Work Equipment Regulations.

5.22.3 Training

For the 3 levels of assessment, staff must have been provided with the require information or completed the required training before carrying out the checks, inspections or PAT.

1. Visual Check: General knowledge of electrical safety as set out in the Electrical Safety – Visual Checklist (see Resources).
2. Formal Inspection: Basic electrical knowledge sufficient to carryout this formal inspection.
3. PAT: Complete PAT training so that staff member is competent to do the PATesting.

5.22.4 Records

In all cases a record of the equipment inspected, the type of inspections/tests completed, by whom, when, what steps are being taken and the results must be kept. A template for recording the Formal Inspection and PATest is available at App. 2.

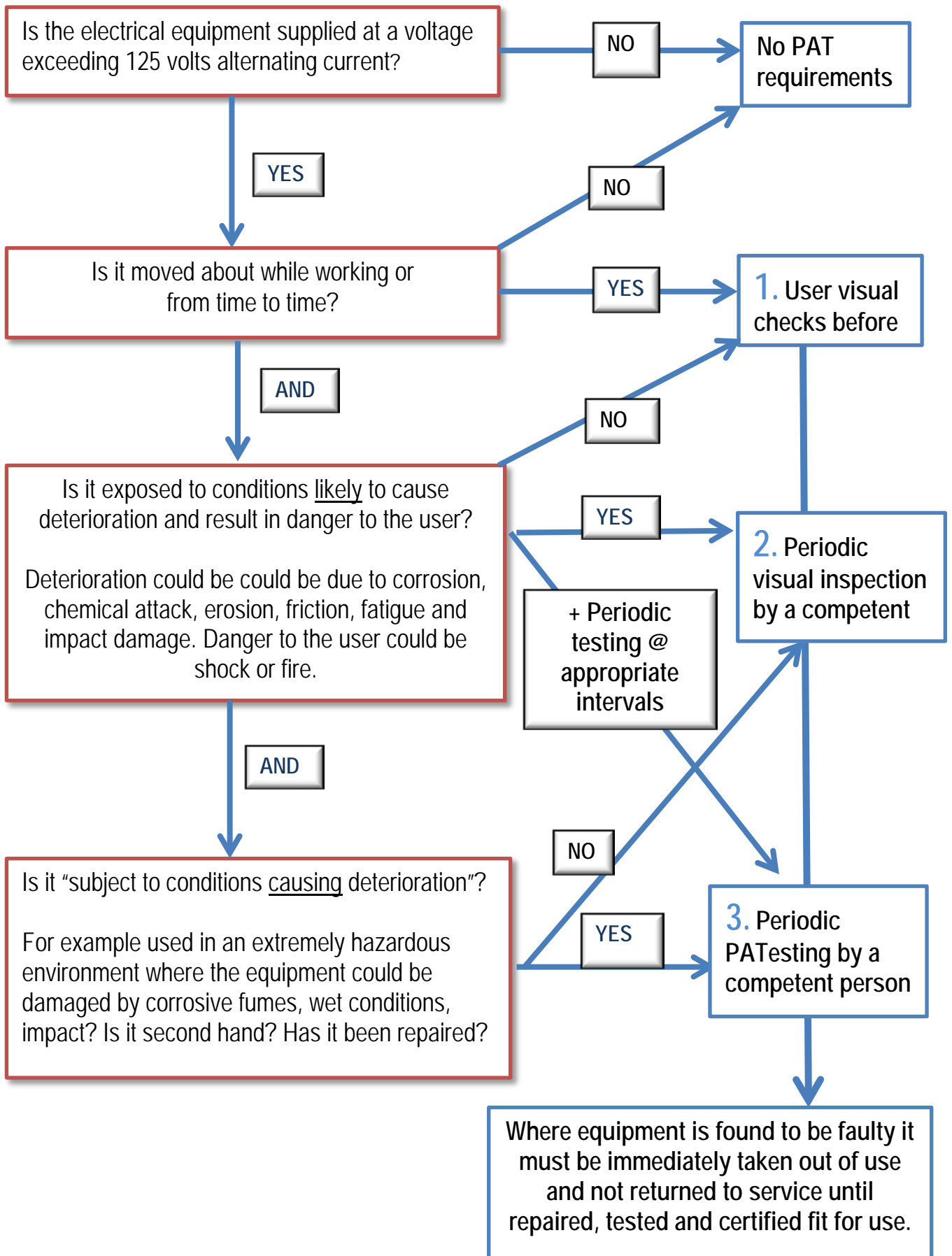
Persons Responsible:

- » » Heads of Units must ensure that the required safety measures for portable electrical equipment in their area are put in place. Trained personnel only may carry out formal inspections and PAT.
- » » Buildings & Estates are responsible for the electrical supply and their own electrical equipment. Individual Units need to manage their own electrical equipment.
- » » All users of equipment must visually inspect electrical equipment they are using for damage before use; if the equipment is suspected as damaged, the user must take the equipment out of use, report the fault to the relevant staff member within the Unit. Within each Unit it should be established who is the Unit contact to whom queries on portable electrical equipment should be referred to.

Resources:

- »» [HSA Guide to the Safety, Health and Welfare at Work \(General Application\) Regulations 2007](#)
Part 3 Electricity Reg. 81 Portable Equipment+
- »» [ETCI – Guide to the Maintenance, Inspection and Testing of Portable Equipment \(Electrical Appliances and Tools\) in the Workplace ET 215:2008](#);
- »» Portable Appliance Testing Presentation reproduced with the kind permission of PowerPoint Testing Ltd.
- »» IET – Code of Practice for In-Service Inspection and Testing of Electrical Equipment 4th Edition;
- »» HSE(UK) HSG 107 – Maintaining portable and transportable electrical equipment; HSE 2004;
- »» HSE (UK) EIS 35 – Safety in Electrical Testing: Servicing & Repair of Domestic Appliances;
- »» HSE (UK) EIS 36 – Safety in Electrical Testing: Servicing & Repair of audio, TV and computer equipment;
- »» University of Galway Electrical Safety – Visual Checklist.

App. 1 Portable appliance inspection and testing flow chart



App. 2		
Formal Visual Inspection Checklist - Portable Equipment		
Equipment Reference:		
Name:	Signature:	Date:
Inspection Issue		Comments/Action Required
1.	Mains Lead	
	<input type="checkbox"/> No damage to cable (cuts, cracks, kinks, taped repairs, impact damage)	
	<input type="checkbox"/> Cable is protected at point of entry to equipment	
	<input type="checkbox"/> Cable is secure and no significant movement at point of entry to equipment	
2	Mains Plug (removable)	
	<input type="checkbox"/> No damage to plug casing	
	<input type="checkbox"/> Pins are insulated	
	<input type="checkbox"/> It is fitted with correct fuse	
	<input type="checkbox"/> Wires are secure inside the plug	
	<input type="checkbox"/> Cable sheath is tight and secure	
	<input type="checkbox"/> Casing is attached securely	
3	Mains Plug (moulded)	
	<input type="checkbox"/> No damage to plug casing	
	<input type="checkbox"/> Pins are insulated	
	<input type="checkbox"/> Correct fuse is fitted	
	<input type="checkbox"/> Casing is secure	
	<input type="checkbox"/> No damage to fuse holder	
4	Mains Lead Equipment Connector (if lead is detachable) and sockets on extension leads	
	<input type="checkbox"/> No damage to body	
	<input type="checkbox"/> Cannot be opened without a tool	
	<input type="checkbox"/> Cable is gripped securely	
	<input type="checkbox"/> Pins are undamaged on male connector	
5	Mains on/off Switch	
	<input type="checkbox"/> No damage	
	<input type="checkbox"/> Operates correctly	
6	Casing	
	<input type="checkbox"/> No damage to case	
	<input type="checkbox"/> Vents are free from accumulation of dirt	