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# RGU Electrical Safety Procedure



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1		
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# RGU Electrical Safety Procedure

## 1. Introduction

The legal duties of manufacturers and suppliers of electrical systems/equipment are to ensure the initial safety of new electrical systems/equipment. The responsibility for managing the ongoing safety of electrical systems/equipment used in the workplace rests with the employer. This is explicit in Regulation 4(2) of the Electricity at Work Regulations 1989:

*'as may be necessary to prevent danger, all (electrical) systems shall be maintained so as to prevent, so far as is reasonably practicable, such danger'.*

In order to comply with this Regulation, guidance from the Health and Safety Executive advises an ongoing programme of inspection and safety testing.

Nearly a quarter of all electrical incidents reported to the Health and Safety Executive (HSE) involve portable electrical equipment, with maintenance failings being a major cause of these incidents. However, the HSE estimate that 95% of faults with electrical equipment can be found by just visually inspecting the equipment.

This procedure has been developed to outline the stages in the maintenance of electrical systems and equipment too ensure they are safe for use by staff, students and visitors.

## 2. Definitions

2.1 **Electrical Installation Condition Report (EICR)**, this is to be undertaken by a competent person(s) on the fixed electrical installation. The five main aims of an electrical installation condition report are to:

- Record the results of the inspection and testing to make sure the electrical installation is reasonably safe to be used until the next inspection (following any work needed to make it safe),
- Find any damage and wear and tear that might affect safety, and report it,
- Find any parts of the electrical installation that do not meet the IET Wiring Regulations,
- Help find anything that may cause electric shocks and high temperatures,
- Provide an important record of the installation at the time of the inspection, and for inspection testing in the future.

2.2 **Portable (or transportable) electrical equipment**, this includes any electrical item which may be moved from place to place between periods of use and is connected to a mains electrical supply via a flexible lead and plug and socket arrangement. As a result, this covers a wide range of electrical appliances from a printer or computer, to white domestic goods (including kettles), to sophisticated electronic instrumentation.

2.3 **User Check**, this is to be undertaken by the operator of the equipment on a regular basis. A visual inspection of the equipment and cabling should be checked for signs of damage that may affect the ability of the equipment to be used safely.

2.4 **Combined Inspection and Testing**, this is undertaken by a competent person within the School or Department, or where agreed, by the Estates Contractor and consists of:

- ensuring the correct polarity of the cables
- ensuring the correct rating of fuse
- ensuring effective termination of cable
- testing the earth integrity and insulation integrity
- removing the plug cover (where possible)
- checking the fuse is appropriate the cord grip is effective
- checking all cable terminations are secure and correct

### 3. Review

3.1 This procedure will be reviewed every three years or as required.

### 4. Responsibilities

#### 4.1 Estates and Property Services

The Estates and Property Services are responsible for the provision of the safe electrical supply to all buildings, and where appropriate external campus. To achieve this Estates and Property Services will ensure all RGU electrical systems are designed, installed, maintained and inspected in line with appropriate codes and guides by competent persons.

In the event of a failure of an electrical system, Estates and Property Services will be responsible for making the provision safe, defining and implementing a procedure to instruct/inform affected persons what they can expect and how to respond, and for implementing a safe resolution as soon as possible.

The Estates and Property Services is responsible with the provision of a Portable Appliance Testing service for the university.

#### 4.2 Occupational Health & Environmental Safety

The Occupational Health & Environmental Safety Department will provide advice on the application of this procedure upon request.

The Occupational Health & Environmental Safety Department will monitor the effectiveness of the procedure and the RGU programme of testing via the audit process defined by the [RGU Active Monitoring Procedure](#).

The Occupational Health & Environmental Safety Department will review this procedure as and when required.

#### 4.3 Heads of Schools/Departments

Heads of Schools/Departments are responsible for ensuring that all portable electrical equipment provided by the School/Department is inspected and tested on a regular basis to ensure that no person is put at risk from the use of such equipment.

Heads of Schools/Departments are responsible for ensuring that all RGU owned portable electrical equipment is inspected/tested on a frequency that takes into consideration the risks arising from the use of the electrical equipment and the environment in which it is operated.

Heads of Schools/Departments are responsible for ensuring that the electrical system installed in facilities under their control are inspected and recorded in line with the university's [Active Monitoring Procedure](#).

Heads of School/Department undertaking or contracting this inspection/testing are responsible for ensuring that appropriate records are maintained to allow users, auditors etc. to determine the inspection/test status of the equipment available when/where necessary.

#### 4.4 Students, Contractors or Third Parties (Events Facilitators etc)

Students and contractors are responsible for the safety of any portable electrical appliances they bring onto the RGU campus/accommodation.

All staff, students and contractors are responsible for ensuring that they comply with electrical safety procedures. Third Parties (event facilitators, students etc.) bringing equipment onto campus are responsible for ensuring it is safe for use.

## 5. Procedure

### 5.1 EICR

Estates and Property Services are responsible for the routine inspection, testing and ongoing maintenance of fixed wiring installations in all University buildings. This covers inspection and testing up to the final means of isolation and does not cover any equipment supplied from the plug socket. The frequency of this testing will be agreed with OHES, when defining the Facilities Management Framework Agreement.

### 5.2 Portable Appliance Testing

The University has in excess of 25,000 electrical appliances requiring regular user checks and combined inspection and tests. User checks do not require a significant level of competence to do. Therefore, anyone can do it prior to using the equipment, Appendix B below outlines the key things to check for when undertaking a user check.

To support Heads of Schools/Departments in meeting their responsibilities, Estates and Property Service offer a Combined Inspection and Test service provided through the Facilities Maintenance Contractor. The programme of testing is published on the Estates intranet pages. There is a likelihood this will not capture all items with Combined and Inspection Test requirements for several valid reasons. For example:

- Equipment being brought out of storage
- Equipment not being available for test

Therefore, Heads of School/Department need to ensure there is resource available for Combined Inspection and Test of additional items. This can be provided through two options:

- Request Estates and Property Services provide a competent person to
- do the Combined Inspection and Test.
- Provide a competent employee to do the Combined Inspection and Test.

Each School/Department should decide of which option is appropriate for their own needs. The costs associated with the programme of Combined Inspections and Test and these additional options are met by the School/Department.

### 5.3 Pre-use Check

With the timescales involved in the portable appliance testing there is a residual risk of a portable electrical appliance becoming unsafe and not being identified. To mitigate this residual risk, it is the responsibility of the user to undertake a pre-use check prior to plugging the device in. This pre-use check should include a check on:

- damage to the lead including fraying, cuts or heavy scuffing, e.g. from floor box covers
- damage to the plug, e.g. to the cover or bent pins
- tape applied to join leads together
- coloured wires visible where the lead joins the plug (the cable is not being gripped where it enters the plug)<sup>2</sup>
- damage to the outer cover of the equipment itself, including loose parts or screws
- signs of overheating, such as burn marks or staining on the plug, lead or piece of equipment;
- equipment that has been used or stored in unsuitable conditions, such as wet or dusty environments or where water spills are possible, and
- cables trapped under furniture, doors or in floor boxes

Appendix B can be used to help undertake a User Check.

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, and before each use for handheld equipment.

## 5.4 Regular Inspection

The electrical systems and equipment of the university are used by a variety of individuals and levels of competence. In addition to this, numerous different contractors work on the university's electrical systems, designing, installing and adjusting systems to meet the needs of the university. With these considerations it is critical that we continually inspect our electrical systems and equipment.

The inspection of electrical systems and equipment should be undertaken and recorded in line with the [university's Active Monitoring Procedure](#).

Any issues identified through inspection of the university's electrical systems should be raised to the [university's helpdesk](#) at the earliest opportunity.

## 6. Roles and Duties

### 6.1 Academic Schools

Prior to use and plugging-in, User Checks should be undertaken by the user/installer of the equipment.

Schools with technical support can elect to have Combined Inspection and Tests undertaken by their own competent staff or provided via Estates and Property Services. Schools without technical support staff should refer to guidance for support departments below.

Where Schools are performing their own Combined Inspections and Tests, this should be based on an assessment of the risk using Appendix A as a guideline schedule. The following should be considered:

- The type of the equipment being used
- The environment in which the equipment is being used; and
- The frequency with which the equipment is being used

When using the Estates Contractor to provide Combined Inspections and Tests, the School should facilitate this visit by making areas and equipment accessible. Persons who carry out portable appliance testing must have appropriate knowledge, training and information to enable them to undertake the inspection/testing competently and safely. The degree of competence required for undertaking a Combined Inspection and Test will be greater than that required for conducting a User Check. It should be noted it is the responsibility of the person organising the test to ensure a competent person is performing the test.

### 6.2 Support Departments

Prior to use and plugging-in, User Checks should be undertaken by the user and installer of the equipment, respectively. Departments without technical support should have the Combined Inspection and Testing of portable electrical equipment arranged through Estates and Property Services, who will either undertake the testing through the Facilities Maintenance Contractor or arrange for a contractor to do the test. When using the Estates Contractor to provide Combined Inspections and Tests, the Department should facilitate this visit by making areas and equipment accessible.

### 6.3 Estates and Property Services

Where Estates and Property Services contracts the services of an external party to perform Combined Inspections and Tests on behalf of Schools and Departments, the Maintenance Contracts and Energy Manager should:

- Define a testing frequency in the Facilities Management Framework Agreement, subject to OHES advice.
- Through the Agreement provide a competent, efficient contractor to meet the Schools/Departments' requirements. The duration required will be largely determined by the previous year's testing figures.
- Give adequate notification to each School/Department of the expected dates the contractor will be present, to enable the visit to be facilitated.
- Plan large-scale Combined Inspections and Tests in School environments during summer months.

- Facilitate Combined Inspections and Tests for additional items.

## 7. Testing and Test Records

7.1 Testing will determine if a piece of equipment is safe to use or not. Effective testing can be achieved by a combination of:

- Checks by users i.e. checking for damage to plug, cables & external casing of equipment, evidence of overheating
- Combined Inspection and Test i.e. checking the correct fusing, earth integrity and insulation integrity

**Any item which has failed should not be allowed back into service until it has been repaired by a suitably competent person. It should either be disposed of or clearly labelled as faulty and taken out of service. If the item is privately owned then it must be removed from RGU property.**

Note that any item that has been repaired must be re-inspected, and tested if appropriate, before being re-instated.

There is no requirement within the Electricity at Work Regulations 1989 to keep testing records for portable electrical equipment, however there are a number of benefits in doing so, including as a;

- Management tool for monitoring and reviewing the testing scheme;
- Means of enabling managers to demonstrate that testing does take place;
- Useful as an inventory of equipment and,
- Audit trail for auditors and incident investigators.

Therefore, records of Combined Inspection and Tests should be retained. Records do not have to be based on a paper system and can be stored electronically, however, the records should be in a system which allows external persons to view and confirm that appropriate regular testing is being undertaken.

## 8. Additional Considerations

Due to variety of types, sources, environments of electrical systems in use across the University some additional considerations need to be made. These are:

### 8.1 Use of Personal Equipment on Campus

Heads of Schools/Departments may authorise staff/students to bring electrical equipment onto Campus. It may not be feasible to extend Combined Inspections and Tests to staff/student phones, laptops, etc, however any items that are to remain on Campus for an extended period should be subject to a system of Combined Inspections and Tests wherever possible. User checks of portable electrical equipment should be contained within staff/student inductions to ensure an awareness of basic electrical hazards.

### 8.2 Guidance for equipment leased to Schools/Departments

Leased equipment is the responsibility of the School/Department which introduces the equipment. Therefore, the School/Department will need to establish and agree with the leaser as to who is responsible for undertaking the appropriate Combined Inspections and Tests.

### 8.3 IT equipment

IT equipment is subject to the controls outlined within this Procedure and requires to be tested at appropriate intervals. The responsibility for testing IT equipment within Schools and Departments lies with the School/Department in question. Estates & Property Services are responsible for open access computer suites/laboratories.

#### 8.4 Student Residencies

The Student Accommodation Services will be responsible for ensuring that all electrical equipment supplied by the University for use by students within residencies is supplied new or tested for electrical safety at a suitable frequency. Residents are responsible for ensuring that electrical equipment owned by them and used within the residencies is safe and appropriate for that environment. The Student Accommodation Services reserve the right to remove any electrical equipment which is deemed to be unsafe or unsuitable.

#### 8.5 Contractors' Equipment

As per the Contractors' Guidance and Safety Booklet, Contractors will be responsible for the testing and compliance of all portable electrical appliances brought on to University property and used in the course of the works. RGU may at any time request to see current PAT certification for appliances used and may prohibit the use of any appliances that are deemed unsafe. All cable-supplied hand tools should be operated at or below 110V, supplied via a safety isolating transformer.



## Appendix A

Frequency of inspection and combined inspection and testing

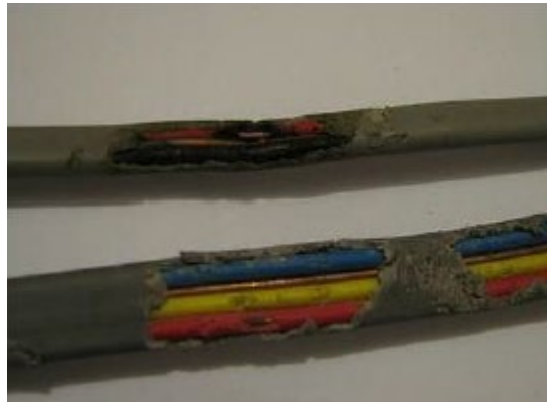
Suggested Initial Testing Intervals

Type of Equipment	User Checks for Obvious Damage	Combined Inspection and Test
Battery Operated (<20V)	No	No
Extra Low Voltage (<50V AC)	No	No
Equipment Hire	No	Before issue
Light Industrial Equipment	Yes, at regular intervals	6 months to 1 year
Heavy Industrial Equipment/high risk of damage	Daily	6 months to 1 year
Office IT Equipment (computers, printers, fax machines etc)	No	None if double insulated – Otherwise up to 5 years
Double Insulated Equipment, not Hand Held (fans, table lamps,	No	No
Hand Held Double Insulated Equipment (floor cleaners, kitchen equipment, irons, etc.)	No	No
Earthed (Class 1) equipment kettles, some floor cleaners)	Yes, at regular intervals	1 to 2 years
Cables & plugs, extension leads	Yes, at regular intervals	2 years

## Appendix B:

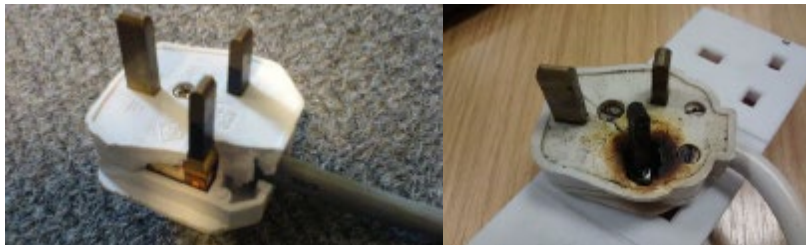
User Check Guidance:

1) Damage can be caused to the cable of an electrical appliance through use and environmental factors. Damage can range from scuffing of the cable to a straight cut through.



Any damage to the cable brings into question the safety of the device. Is copper exposed? If so, a live conductor can be touched and an electrical shock received. Don't accept it.

2) Plugs can become defective in numerous ways, ranging from damage to the outer case, to the pins being bent out of shape.



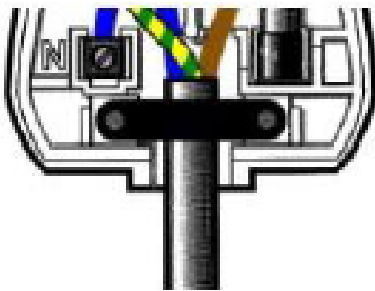
3) If you see tape on an electrical cable don't use it. This is not an effective means of insulation and the repair may not be safe:



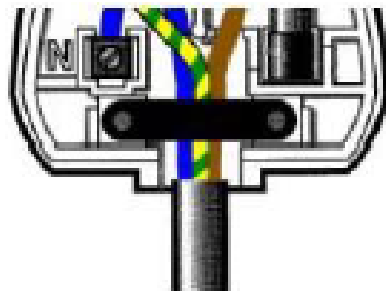
4) Tape applied to the lead to join leads together



5) Coloured wires visible where the lead joins the plug (the cable is not being gripped where it enters the plug)



Correct



NOT like this:



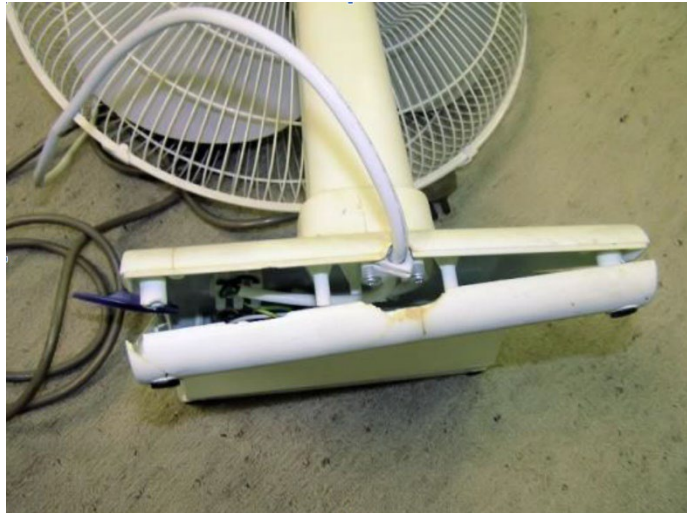
and Definitely not Like this

In reality this can look like this:



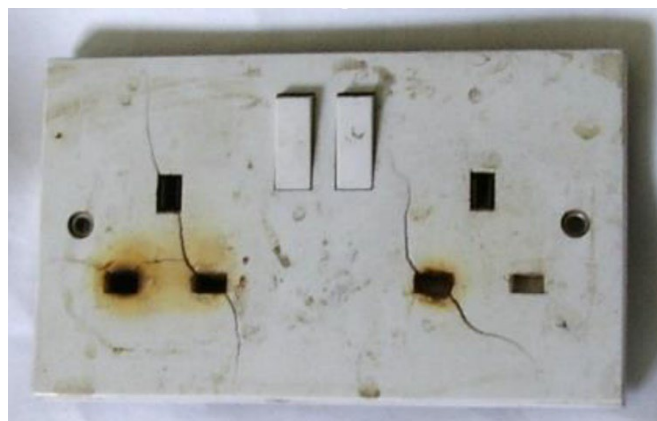
A properly installed plug should have no exposed colour wires. If it does it would suggest the cable has been stretched. If the copper within the cable has broken this appliance could pose an imminent fire risk.

6) Damage to the outer cover of the equipment body, including loose parts or screws



Appliances can suffer damage resulting in their outer casings breaking, like this table fan. If this happens the device is unsafe and should not be used because of the exposed electrical conductors.

7) Signs of overheating, such as burn marks or staining on the plug, lead or piece of equipment



8) Equipment that has been used or stored in unsuitable conditions, such as wet or dusty environments or where water spills are possible



9) Cables trapped under furniture, doors or in floor boxes.



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