

# The Glasgow School of Art

## GSA Guide to Safe Use of Electrical Extension Systems

January 2019

Policy Control

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Benchmarking	Glasgow University – Step by step guide to visual inspection of electrical appliances; University of Edinburgh – Safe Use of Electrical Equipment; Electrical Appliances Guidance Note; Warwick University – Electrical Safety Policy; Portable Electrical Appliance Inspection and Testing; University of Essex – Electrical Safety Electrical Safety First, Overloading Sockets

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## 1. Introduction

Glasgow School of Art endeavours to provide an environment where electrical systems and devices are regularly checked to ensure they remain in a fit and serviceable condition. If you find any fault or wear with any electrical apparatus you should not use it (switch it off safely if it is in use) and seek advice from your tutor or programme leader.

Any equipment must be used sensibly and appropriately in accordance with the manufacturer's advice.

This guidance note seeks to identify important aspects of electrical safety to be considered within GSA. It aims to protect the health and safety of all staff, students and members of the public, ensuring that all GSA practices are inclusive and accessible. Any student/member of staff requiring any support should speak to their Programme Leader/line manager in the first instance.

## 2. Electrical Extension Safety

### 2.1 – Using the correct extension

The use of 4 socket extension leads, individually switched whenever possible, remains the preferred option within GSA. Recent Degree Shows have highlighted the need for a '**by exception**' provision. On this basis, the use of 6 socket extension leads may be allowed where:

- a) There are no other aspects of the proposed work which could present significant risk in their own right or combined with the equipment to be used (NB – fire)
- b) The School's Degree Show Protocols are fully applied and signed off at all stages (NB – any further additions/amendments)
- c) The student is able to verify that the electrical equipment was purchased from a reputable source, when they were purchased and, if applicable, they comply with any relevant product safety standards
- d) The work will be covered by the individual School arrangements for verifying electrical supply to works and, where appropriate, PAT testing

Reel cable extension leads – usually used to provide power at longer ranges – should be fully unwound/unreeled if being used. Consideration should also be given to the routing of cables and cable protectors from this type of extension in order to prevent causing a trip hazard.

### 2.2 - Avoiding Overloading

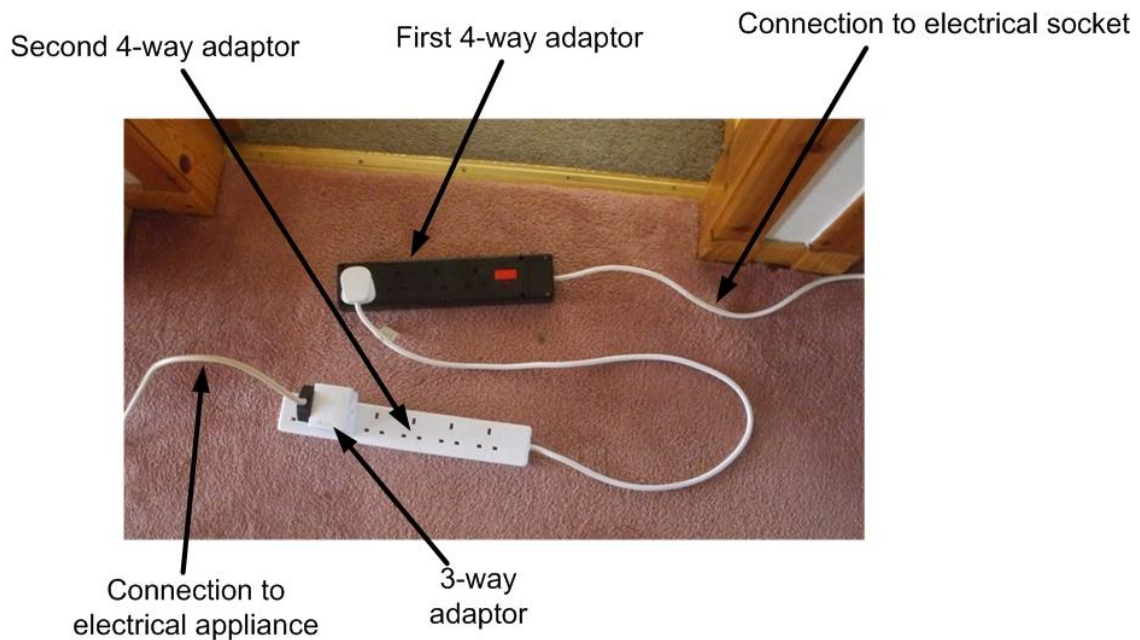
You can avoid overloading sockets and the risk of fire by adhering to the following simple advice:

- a) Check the current rating of the extension lead before plugging appliances into it. Most extensions are rated at 13A, but some are rated at only 10A or less. The rating should be clearly marked on the back or the underside of the extension lead. If the rating cannot be found here, refer to the manufacturer's instructions
- b) Never overload an extension lead by plugging in appliances that together will exceed the maximum current rating stated for the extension lead. This could cause the plug in the wall socket to overheat and possibly cause a fire



If one extension doesn't have enough sockets on it or is not long enough, you should consider alternative ways of providing power (e.g. using less appliances/6 socket extension).

Electrical systems are not designed to run numerous appliances off single sockets, so you should NEVER connect extension leads together in a 'daisy chain'. Daisy chaining is demonstrated in the following photograph:



### 2.3 – Safe Load Calculator Example

Voltage (volts, 240v) x Current (amps) = Watts (power)

Taking account of current and power, the following table shows that it is possible to safely connect six electrical items to a six socket extension lead.

Electrical Item		Voltage	Current (amps)	Power (watts)
Item 1	42" television	240	0.5	120
Item 2	LCD projector	240	2.02	485
Item 3	LCD projector	240	2.02	485
Item 4	Laptop	240	0.416	100
Item 5	Laptop	240	0.416	100
Item 6	DVD player	240	0.116	28
<b>Total</b>		<b>240</b>	<b>5.5</b>	<b>1318</b>

Below is a link to an online calculator which will assist in preventing overload of a multi socket extension lead:

<http://www.electricalsafetyfirst.org.uk/guides-and-advice/electrical-items/overloading-sockets/>

### **3. Portable Appliance Testing (P.A.T)**

Equipment connected to GSA electrical systems must be appropriately tested before being plugged into GSA sockets. New electrical equipment, purchased from a reputable UK source does not require to be tested for one year. Equipment purchased overseas – including adaptors, extension leads, lamps etc. – are required to be tested, as electrical specifications may vary.

The tests require a competent person to undertake them and to make suitable records, including displaying a P.A.T label. If an electrical item you intend to use does not have a P.A.T label, you must bring this to the attention of your tutor or programme leader.

If you require items to be tested, you should speak to your tutor/programme leader who can advise on the arrangements in relation to P.A.T testing.

### **4. Inspections of Appliances**

Electrical appliances and cabling should be routinely examined to ensure there is no obvious damage prior to use of any piece of equipment. Before you begin inspecting, you should ensure that the item is switched off and unplugged.

Check regularly for the following:

- A smell of hot plastic or burning near an appliance or socket
- Sparks or smoke coming from a plug or appliance
- Blackness or scorch marks around a socket or plug, or on an appliance
- Damaged or frayed leads
- Coloured wire inside leads showing at the plug or anywhere else
- Melted plastic on appliance casings or leads
- Fuses that blow or circuit

If you identify an electrical device that you suspect has been damaged, you should stop using it immediately. Students should then seek advice from your tutor/programme leader.

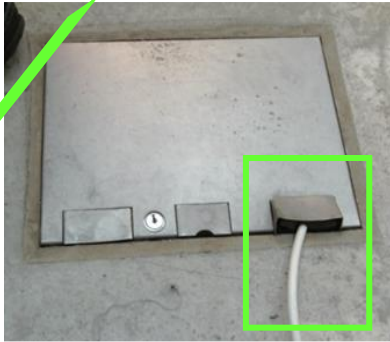
### **5. The Correct Use of Floor Boxes**

When using floor box sockets it is important to ensure that the cable is routed correctly using the cable slots provided. If the cables are placed incorrectly, both the cables and floor box can suffer damage, creating a potential risk of electric shock and/or fire.

Beware of trapping or damage to the cable as it goes through floor boxes or when it is walked on. This can lead to the internal wires becoming exposed and damaged, increasing the risk of electrical shock and fire.

Ensure the floor box is closed in the correct position when not in use, this will help minimise tripping hazards.

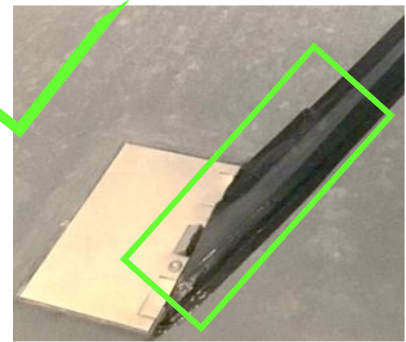
See below for examples:



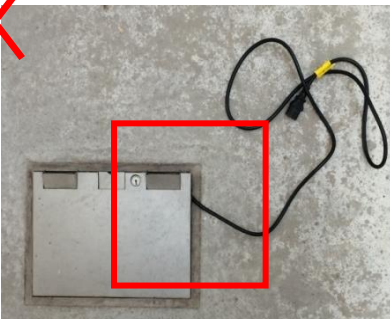
The cable is fed through the cable slot correctly. This ensures the cable is not damaged and the edges of the lid are even with the floor.



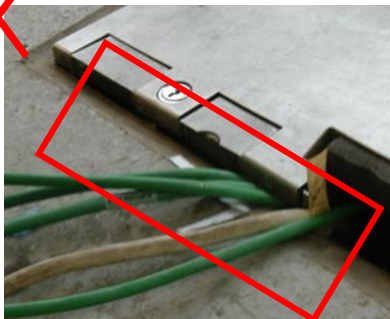
The cable has been fed into the inside of the floor box minimizing the amount of cable exposed.



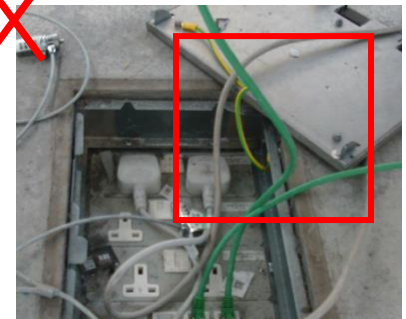
A cable protector has been used to prevent any trips over the uncovered cable.



Unused items should be unplugged and removed as soon as possible. The cable is caught between the edge of the floor box and the floor, causing damage to the cable.



The cable is caught between the edge of the floor box and the floor. This can cause damage to the cable and causes a tripping hazard.



The lid is not placed on the floor box causing a hole in the floor. This creates a tripping hazard.

## 6. Slips, Trips and Falls

Where an extension lead is required, you should position it so that it minimises any trip hazard as possible – avoid routing it across a walkway or cover it.

Cables should be positioned in such a way that people don't have to walk over them – you could locate your electrical items close to a power socket on the wall so the cable can be secured along the wall instead of across the floor. Where the layout of the work is such that the cable must run along the floor it must be protected by a 'cable protector' and not simply taped down.

You should avoid covering extension leads under any materials, particularly flammables such as paper, cloth, etc.

## 7. Using a Residual Current Device (RCD)



An RCD – residual current device, as shown above – is a safety device which constantly monitors the electric current flowing through one of more circuits it is being used to protect. If the RCD detects a fault – e.g. if a wire is cut or damaged or if a person has touched a live part – the RCD will switch the circuit off very quickly, significantly reducing the risk of death or serious injury. It is advisable to use an RCD wherever possible, in particular in wet or damp locations (such as outdoors) or during regular events (such as Degree Show) or during everyday studio working.

Residual Current Device (RCD) can reduce the likelihood of an electrical injury but a shock can still cause very serious or fatal injuries, so an RCD should only be used as a secondary means of reducing the risk of people being injured by electricity. RCD's are not designed to prevent the ignition of an explosive atmosphere and should not be used for this purpose.

The best place for an RCD is built into the main switchboard, as this means that the electrical supply is permanently protected. If this is not possible, an electrical socket outlet incorporating an RCD, or a plug in RCD adaptor, can also provide additional safety. Some GSA buildings have built in RCD protection – your programme leader/course tutor will be able to advise on this.

To reduce the likelihood of injury, the RCD must have a tripping current of not more than 30 milliamps (mA). RCDs with a higher tripping current are used to protect against fire. RCDs must be regularly tested by pressing the 'test' button, and by making sure that the RCD operates. Faulty RCDs must be removed from use.

***An RCD is a valuable safety device which should never be bypassed. If the RCD trips, it is a sign there is a fault. The electrical system should be checked before using the RCD again. If the RCD trips frequently and no fault can be found in the system, consult the manufacturer of the RCD. The RCD has a test button to check that it's mechanism is functioning correctly – ensure that this is used regularly.***

## 8. Further Information

Additional information relating to electrical safety can be found using the following link:

- <https://www.electricalsafetyfirst.org.uk/guidance/safety-around-the-home/extensions-and-leads/>