ELECTRICAL INSPECTION AND TESTING

Brian Butler, GCMA Health & Safety and Employment Adviser, writes about electrical inspection and testing in the golf club.

Secretary At Work: Reviewed January 2012

John Brian, we have a lot of electrical equipment in the Club. Are there set periods when it should be inspected and tested by a qualified electrician?

Brian The short answer is 'no'. Health and safety law is not prescriptive about set periods for the inspection and testing of any electrical equipment.

John Surely there must be set periods for electrical installations as opposed to portable electrical equipment?

Brian No, the law states that electrical installations should be tested 'often enough that there is little chance of deterioration leading to danger'. The reason why the law is not prescriptive is because the location of some electrical installations could be harsher than others. This is sometimes the case in the Green Area compared to the Clubhouse. Your insurance policy should be checked, it may specify annual testing. Because the cause of fires can often be traced to electrical wiring faults an annual inspection and test would be advisable.

John Can any electrician undertake this work?

Brian You should have your electrical installation inspected and tested by a person who has the competence to do so, such as a member of the Electrical Contractors Association (ECA) or the National Inspection Council for Electrical Installation Contracting (NICEIE). These associations can be found in the Yellow Pages. A competent electrician will work to the BS7671 IEE Wiring Regulations 17th Edition, published January 2008.

John Does the HSE provide guidance on electrical inspection and testing?

Brian Yes. I would advise you to visit the HSE web-site www.hse.gov.uk/electricity/faq.htm

John We have quite a lot of electrical equipment in the Club. What do I have to do to maintain it?

Brian For the most part visually inspect it. By concentrating on a simple inexpensive system of looking for visible signs of damage or faults, and putting them right, you will prevent most electrical accidents from occurring.

John What is portable electrical equipment?

Brian Generally, equipment that has a lead (cable) and plug and which is normally moved around or can easily be moved from place to place, eg vacuum cleaners, kettles, heaters, fans, televisions, desk lamps; and also equipment that could be moved, eg photocopiers, fax machines, and desktop computers.

John Are there risks from portable electrical equipment in offices?

Brian Yes, but they are low compared to most other workplaces. However, if you have never had an inspection system, or if maintenance has been neglected, there is a greater chance that some of the equipment has become dangerous and you will need to take some action.

John What can go wrong?

Brian The leads and plugs, or sometimes the equipment itself, can become damaged. This may result in an electric shock. Electric shocks can kill. Damaged equipment can also cause fires.

John How can I tell if it is damaged?

Brian By looking! This is the most important maintenance precaution. Around 95% of faults or damage can be found just by looking (visual inspection). First, identify your equipment and where and how it is used. The things you are looking for on the equipment, the cable and plug (after disconnecting it) are signs of:

- damage, eg cuts, abrasion (apart from light scuffing) to the cable covering;
- damage to the plug, eg the casing is cracked or the pins are bent;
- non-standard joints including taped joints in the cable;
- 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;
- equipment that has been used in conditions where it is not suitable, eg a wet or dusty workplace;
- damage to the outer cover of the equipment or obvious loose parts or screws; and
- overheating (burn marks or staining).
- In addition, formal inspection could include removal of the plug cover and checking that
- a fuse is being used (ie it is a proper fuse not a piece of wire, a nail etc);
- the cord grip is holding the outer part (sheath) of the cable tightly;
- the wires, including the earth where fitted, are attached to the correct terminals (see diagram on inside of front cover);
- no bare wire is visible other than at the terminals;
- the terminal screws are tight; and
- there is no sign of internal damage, overheating or entry of liquid, dust or dirt.

This does not apply to moulded plugs where only the fuse can be checked. Most of these checks also apply to extension leads and their plugs and sockets.

John It seems so easy, but I have been told that I have to have an electrician to do this.

Brian That is not necessary for the kind of equipment normally used in low-risk environments. Any sensible (competent) member of staff can do it if they have been given enough knowledge and training.

John What is enough knowledge and training?

Brian They need to know what to look at, what to look for and what to do, but more importantly they should be able to avoid danger to themselves or others. So, they should have basic

electrical knowledge together with common sense, eg switch off and unplug the equipment first! Simple training can cover all of this.

John How often should we look?

Brian That depends on the type of equipment and how it is used. For example, the cable to a kettle will probably be handled and moved several times each day, while the cable to a computer may only be moved when the office furniture is rearranged. The table at the end of this article suggests intervals that can be used to start with until you have enough experience to decide this for yourself.

John What can users do?

Brian You should encourage them to look critically at the electrical equipment which they use, and look for damage to the outside of the equipment and its lead and plug before they use it, but they should not take the plug apart.

John What about testing, I had thought that was essential?

Brian Not for all equipment. However, some faults cannot be seen just by looking, particularly lack of continuous earths. For some equipment the earth is essential to safety. Therefore all earthed equipment, and most leads and plugs connected to equipment, should also have an occasional combined inspection and test to look for these and other faults. *(Suggested intervals are shown on page 5).*

Combined inspection and testing can be carried out at the start of a maintenance system to establish the initial condition of the equipment.

Combined inspection and testing should be carried out:

- where there is reason to suspect the equipment may be faulty, damaged or contaminated but this cannot be confirmed by visual inspection; and
- after any repair, modification or similar work to the equipment, when its integrity needs to be established.

John How do I know if equipment is earthed or not?

Brian Equipment which is not earthed is usually called ‘double insulated’ or ‘Class II’ and is marked with the ‘double square’ symbol. The cable has two wires. Equipment not marked with this symbol is usually earthed and is called ‘Class I’. The cable has three wires.

John What about testing other equipment?

Brian Some equipment does not need testing, eg battery-operated or extra low voltage. Other equipment itself should not need testing but occasionally its lead (cable) and plug will. Intervals of up to 5 years are suggested but your experience will determine what is best.

Some types of business equipment, eg computers, VDUs or printers, can be damaged by inappropriate tests. Guidance on testing this type of equipment is listed at the end of this article.

Detachable power leads for this type of equipment can be safely tested when not connected to it.

John Does the combined inspection and test have to carried out by an electrician?

Brian Not necessarily. A member of staff can do this if they have had suitable training. Greater knowledge and experience is needed than for inspection alone, and they need to have the right equipment to do the tests. They should know how to use the equipment correctly and how to interpret the results.

John Would it be better for an electrician to do this work?

Brian Generally yes, although some clubs have very capable handymen who could be trained to do combined inspection and test.

John Do I have to keep records?

Brian The law does not require this. But 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.

John What else do I need to do?

Brian Occasionally review your monitoring system once you have experience to work on. Check what is being found and that action is being taken and decide whether frequencies are correct.

John What would your final advice be?

Brian I would make an inventory of all portable electrical appliances and with the aid of the HSE Suggested Initial Intervals chart for offices and other low-risk environments only, work out which appliances need to have a formal visual inspection. I would appoint a person to undertake these inspections and record the results. I would identify the appliances that need to have combined inspection and testing and appoint a qualified electrician to undertake this work and record the results. Finally I would check with the Club's insurers that this approach is in line with the insurance policy,

John Thank you. I think I will be able to make a significant saving.

Brian It is also important to place more emphasis on user checks and visual inspections that are well within the competence of trained staff rather than rely solely on an electrician.

(HSE reference material used: Maintaining portable electrical equipment in offices and other low-risk environments see: http://www.hse.gov.uk/pubns/indg236.pdf)

Also see http://www.hse.gov.uk/electricity/maintenance/safety.htm

Brian Butler 2005

Brian can be contacted on the GCMA Helpline Tel: 01432 761 663.

HSE SUGGESTED INITIAL INTERVALS

Equipment/environment	User checks	Formal visual inspection	Combined inspection and testing
Battery-operated: (less than 20 volts)	No	No	No
Extra low voltage: (less than 50 volts AC) Eg telephone equipment, low voltage desk lights	No	No	No
Information technology: eg desktop computers,VDU screens	No	Yes, 2-4 years	No, if double insulated otherwise up to 5 years
Photocopiers, fax machines: NOT hand-held. Rarely moved	No	Yes, 2-4 years	No, if double insulated otherwise up to 5 years
Double insulated equipment: NOT hand-held. Moved occasionally, eg fans, table lamps, slide projectors	No	Yes, 2-4 years	No
Double insulated equipment: HAND-HELD eg some floor Cleaners	Yes	Yes, 6 months to 1 year	No
Earthed equipment (Class 1): eg electric kettles, some floor cleaners	Yes	Yes, 6 months to 1 year	Yes, 1-2 years
Cables (leads) and plugs connected to the above.	Yes}	Yes, 6 months to 4 years depending on the type of equipment it is connected to.	Yes, 1- 5 years depending on the type of equipment it is connected to.
Extension leads (mains voltage)	Yes}		

NB: Experience of operating the maintenance system over a period of time, together with information on faults found, should be used to review the frequency of inspection.

It should also be used to review whether and how often equipment and associated leads and plugs should receive a combined inspection and test.