

Is your shack really safe?

I do wonder how much consideration radio amateurs give to electrical safety in their shack. I don't mean dealing with high voltage supplies in linear amplifiers etc, but the simple connection of equipment to the mains. New gear now comes with a moulded plug already fitted so there should be no problem with that, but what about the vintage gear we use?

Much gear made as recently as 1979, during which year new directives came in, doesn't comply with current safety standards, let alone gear made forty or fifty years ago. What are the problems? Well, the connectors used for the mains input often do not comply with current clearance and creepage requirements, and the arrangement for clamping the power cord is often inadequate too. Particularly poor in this respect is the ubiquitous "Bulgin" plug, used on both domestic and military equipment from the 40's until 1979, when it was replaced by the rectangular "IEC" connector. With some versions of the "Bulgin" plug, it is also possible for the earth connection to disconnect before the others; if the plug is removed whilst the supply is on, the equipment can become 'live' momentarily. I know, I've done it!

Also, there are the "fourline" blocks used to connect lots of gear to the supply mains. Are they damaged? Does the receiver crackle when you move them around? Many older ones were very poorly constructed and have been known to overheat when carrying a heavy load. And do you know how much load they are carrying anyway?

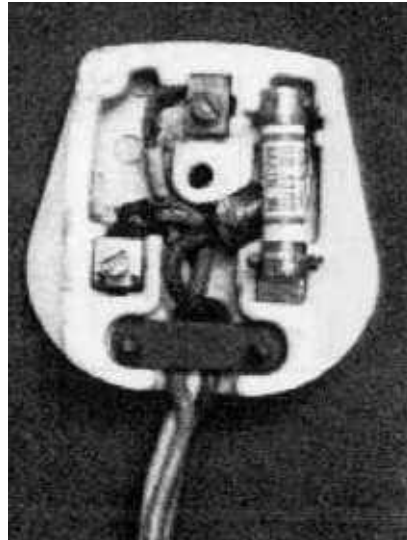
What of the gear itself? All modern equipment has to have two separate layers of insulation between mains connected parts and the user, but this didn't apply to older gear in some of which very thin insulated wires (or worse, rubber insulation) were loomed together with internal wiring which is connected to the user (ie the chassis). The RA117 is a fairly modern offender in this respect. Also, if the equipment has been stored in damp conditions for some time, leakage across the mains transformer or input filter capacitors can occur. Use of a portable appliance tester will reveal troubles of this sort, there is someone who has one in most radio clubs, or you could try to borrow one from your local electrician.

Does all this really matter? If the gear is properly earthed, and the house supply is compliant with the present regulations probably not, because any leakage to earth will trip off the supply, but relatively few properties have the benefit(?) of an RCD, and it is also common practice to disconnect the mains earth connection from amateur gear and use an independent earth for perfectly good RF reasons. Do you check that this earth is still connected before you switch on? A comparable situation used to occur in the music world, earths were disconnected to prevent hum loops in audio equipment, it is well known that a number of stage performers have suffered electrocution from live microphones and guitars in the past.

And the 13-amp plug itself. Have a look at some of yours. Are the coloured conductors visible outside the plug? Does the 'cord grip' actually grip the outer insulation of the cable? Is the plug cracked or damaged? Is the correct fuse fitted? I'd bet that there is at least one incorrectly fitted plug in everyone's shack.

Most radio amateurs are, I believe, sensible about all this, some time ago whilst researching something else I went through all of the obituaries in the RSGB bulletin/RadCom from the forties to the present day and I can only recall noting two instances of radio amateurs being killed by electrocution, one of those involved garden machinery, the other was "whilst adjusting the plate circuit of his final amplifier".

However 25 years in the TV trade has shown me just how many ways the public can abuse a 13 amp plug so its a good idea to think about this!



Here is an example of how not to do it!

Finally, here is a ten point safety code, written many years ago by my good friend and mentor, the late G4OO.

1. Switch off all power circuits completely before touching anything behind the panel or inside the chassis.
2. Never allow anyone else to switch power off or on while you are working on equipment.
3. Do not make repairs or carry out fault finding whilst you are tired or sleepy.
4. Never adjust internal components by hand. Use trimming tools, etc. and take special care when checking live circuits.
5. Avoid bodily contact with earthed equipment such as metal racks etc., or damp floors when working on a transmitter.
6. Never wear headphones when working on equipment.
7. Follow the rule of keeping one hand in your pocket.
8. Instruct members of your household how to cut off the power supply and how to apply artificial respiration. Have a Master Power Switch clearly marked and in an accessible position and ensure that all members of your household know its whereabouts. A fire extinguisher suitable for electrical fires is recommended.
9. When climbing towers, trees etc., for working on aerials use a safety harness (such as a Nylon web belt – not leather which can age and crack and prove useless at the wrong moment). Do not carry out such work alone.
10. Take time to be careful. Remember, death is permanent – you don't get a second chance.

Colin Guy, G4DDI