



Application Note

Basic PAT testing mistakes you can easily make

1. Not doing the tests in the required order

If on a Class 1 appliance you do the insulation test first, you don't know if the conductive earth path is good. (In Class 1 appliances most PATs use the earth wire as the return signal path, which is why you don't need to use a probe for the insulation test). If the earth path isn't tested and proven good, you can't rely on the insulation test.

2. Forgetting to switch the appliance on

Think about the situation where the live wire is broken inside the appliance and touching the outer casing. When you do the insulation test, everything inside the appliance should be at 500V. The tester detects (via a probe or the earth wire) any voltage escaping to the appliance housing. But if you haven't switched it on the voltage can't get through the live wire, nothing will escape and you will have an incorrect pass of a dangerous appliance.

3. Not checking the fuse is conducting

(see 2 above). You don't have to do a separate fuse test – the operation test will prove that the appliance is both on and the fuse is okay.

4. Touching the appliance

The truth is most appliances pass the insulation test, so you get into the habit of holding drills etc to make it easier to hold the probe in contact. Then one day the appliance insulation fails and... you get a 500V shock.

5. Only doing 1 earth bond test

Many of the most experienced testers fall for this. (That's because some of the earliest downloading PATs had standard test sequences that only expected you to do 1 earth test). If an appliance has multiple, apparently isolated, outer parts with separate earthed paths, each one needs to be separately measured.

6. If you have multiple earth paths

Don't take the average reading – it's the worst case that matters.

7. Only doing one insulation test

For the reason in 5 above this is a common fault. At how many places on a power tool could the insulation break down? Obviously at the chuck, but what about the ventilation slots, the trigger, the assembly screws, the speed control... The best solution is to wrap the device in kitchen foil and test once on the foil (you can buy special conductive bags, but foil is cheaper).

8. Failing to do an operation test (powering it up)

Some entry level PATs don't have the ability to power up the appliance. Plug the appliance into the wall socket (after PAT testing) and make sure it works properly. Putting your initials on a PASS label for an appliance that doesn't work or is obviously faulty is a bit embarrassing.

9. Don't try to do an earth bond test on a Class II appliance

No, it's bound to fail! Class II appliances have no earth. This is the single most common problem found by our technical help line.

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