
WORKING PROCEDURE

PAT Testing Checklist

The complete step-by-step sequence used in professional testing — usable as a working procedure for in-house testers, and as a verification reference for reviewing a contractor's work.

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Use as: field checklist · training reference · audit document

Print double-sided. Tick boxes are intended for use on a single test session.
For longer-term records, transfer outcomes to your asset register.

The high-level structure

A proper PAT test isn't just plugging an appliance into a tester and pressing a button. It's a structured sequence of visual checks and electrical tests, each with specific things to look for and specific pass/fail criteria. Skip steps and you miss faults. Do them in the wrong order and you risk damaging the appliance — or yourself.

Every PAT test follows the same broad sequence:

- 1 Pre-test preparation
 - 2 Formal visual inspection
 - 3 Electrical tests (sequence depends on class)
 - 4 Functional check
 - 5 Labelling and documentation
 - 6 Failure handling (only when relevant)
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| *Each section has its own sub-checklist. Skip any single step and the test isn't complete.*

1 Pre-test preparation

Before touching any appliance, confirm:

- Tester is calibrated — calibration certificate current (within 12 months for most testers)
 - Tester batteries are good — low battery causes inaccurate readings
 - Test leads intact — damaged leads invalidate the test
 - Workspace is clear — enough room to set down appliances safely
 - Power supply is reliable — avoid testing through extension leads where possible
 - Appropriate PPE — insulated gloves and safety glasses for industrial environments
 - Record sheet ready — never try to capture results from memory
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2 Formal visual inspection

Around 90% of PAT failures are spotted at this stage, not by the electrical tester. Take it seriously.

THE PLUG

- Plug body intact — no cracks or damage
- Pins straight — no bending or signs of overheating
- Pin sleeves on live and neutral (modern requirement)
- No exposed copper at the plug entry
- Correct fuse rating for the appliance
- Rewireable plugs: cord grip secure, no wires exposed beyond the strain relief
- Rewireable plugs: terminal screws tight, wires correctly terminated
- Rewireable plugs: no excess copper outside terminals
- Plug face clean — no scorch marks
- Pins not loose in the body when wiggled

THE CABLE

- No cuts, splits or abrasions along the full length
- No signs of crushing or compression damage
- No exposed conductors anywhere
- No taped joints (a major fail — repair, don't tape)
- No signs of overheating (browning, hardening, smell)
- Cable enters plug cleanly with intact strain relief
- Cable enters appliance cleanly with intact strain relief
- Sufficient length for intended use (no undue tension)
- Correct rating for the appliance load
- No twisted or kinked sections

THE APPLIANCE CASING

- No cracks in the body
- No missing screws or visible internal access
- No signs of impact damage
- Class 1 appliances — metal parts properly bonded

- Class 2 marking visible where applicable
- CE/UKCA marking and rating plate present and legible
- No signs of overheating (discolouration, damage)
- Air vents clear (where applicable — overheating risk)
- Switches and controls intact
- Indicator lamps where present working

THE ENVIRONMENT AND USE

- Appliance suitable for the location it's used in
- Not exposed to inappropriate moisture, heat or dust
- Not used outdoors if not rated for it
- Cable routing safe (not under chair wheels, doors, etc.)

If anything fails visual inspection — don't proceed to electrical testing. Mark as failed, remove from service, and document.

3 Electrical tests

The specific sequence depends on the appliance class.

Class 1 appliances (with earth)

EARTH CONTINUITY TEST

1. Connect tester earth probe to a clean exposed metal point on the casing
2. Run the test (typically 25 A on standard testers)
3. Pass: less than 0.1Ω + cable resistance — typically below 0.5Ω total
4. Record the actual reading on the test sheet
5. For appliances with detachable IEC leads, test both with and without the lead
6. If earth continuity fails — STOP. Do not proceed to insulation resistance.

INSULATION RESISTANCE TEST

1. Plug appliance into the tester socket
2. Switch the appliance ON (so all internal components are in the circuit)
3. Run the insulation resistance test (typically 500 V DC)
4. Pass: greater than $1.0 \text{ M}\Omega$ for Class 1 appliances
5. Record the reading
6. For sensitive electronics, use the substitute leakage method instead

POLARITY CHECK

1. Most testers run this automatically alongside insulation resistance
2. Confirms live and neutral are correctly wired through any switches
3. Pass: live correctly wired

EARTH LEAKAGE / FUNCTIONAL CHECK

1. Briefly power up the appliance
2. Confirms it actually works
3. Some testers measure earth leakage current at this stage
4. Pass: leakage less than 3.5 mA for typical appliances

Class 2 appliances (no earth — double insulated)

INSULATION RESISTANCE TEST

1. Plug appliance into the tester socket
2. Switch the appliance ON
3. Run insulation resistance test (typically 500 V DC)
4. Pass: greater than 2.0 M Ω for Class 2 appliances
5. Record the reading

SUBSTITUTE LEAKAGE TEST (SENSITIVE ELECTRONICS)

1. Used in place of full 500 V insulation test for electronic equipment
2. Lower test voltage avoids damaging internal components
3. Pass: leakage less than 0.25 mA at 230 V

POLARITY CHECK

1. Confirms correct wiring through switches
2. Pass: live correctly wired

FUNCTIONAL CHECK

1. Brief power-up to confirm operation
2. Pass: appliance works as expected

Extension leads (special procedure)

CONTINUITY TESTS

1. Earth continuity from plug earth pin to each socket earth contact (Class 1 leads)
2. Live continuity from plug live pin to each socket live contact
3. Neutral continuity from plug neutral pin to each socket neutral contact
4. Pass: same as standard earth continuity (less than 0.5 Ω total for earth)

POLARITY CHECK ON EACH SOCKET

1. Confirms each socket wired the right way round
2. Pass: all sockets correctly polarised

INSULATION RESISTANCE

1. Standard 500 V test
2. Pass: greater than 1.0 M Ω

IEC LEADS (KETTLE LEADS)

Treated similarly to extension leads but simpler — earth, live, and neutral continuity from each pin to its corresponding IEC contact, then polarity check and insulation resistance.

FIXED APPLIANCES (NO PLUG)

Different procedure — disconnect from supply, test at the appliance terminals. Outside the scope of this checklist.

4 Functional check

After electrical tests:

- Power up the appliance
- Confirm it operates as expected
- Check switches, controls and indicators function
- Listen for unusual sounds (humming, buzzing, intermittent contact)
- Smell for unusual odours (overheating, electrical insulation breakdown)
- Watch for visible signs of issues (sparks, smoke, flickering)
- Power down safely

5 Labelling and documentation

For each tested appliance:

- Apply pass/fail label (date, tester ID, next test date)
- Position label visibly but where it won't be damaged
- Remove old labels — avoid label buildup that could become illegible
- Record: Asset ID, description, test date
- Record: all test readings (not just pass/fail)
- Record: tester name and qualification
- Record: tester equipment used, with calibration date
- Record: result, next test date, any visual issues, action if failed

6 Failure handling

When an appliance fails:

- Remove from service immediately — don't leave it plugged in
- Apply red "FAIL" label
- Document failure reason in detail
- Notify the appliance owner / responsible person
- Decide: repair, replace, or scrap
- If repaired — full retest before returning to service
- If replaced — register new appliance with new asset ID
- Update record sheet with disposal/replacement details

Common mistakes to avoid

- Skipping visual inspection — most failures are visual, not electrical
- Testing damaged equipment — visual fail = stop, don't proceed
- Recording only pass/fail — actual readings matter for trend analysis

- X** Leaving old labels in place — causes confusion about which test is current

- X** Testing without calibration — results are technically invalid

- X** Insufficient documentation — a test without records is operationally useless

- X** Battery low on tester — inaccurate readings, false passes possible

- X** Testing through extension leads — introduces resistance that affects readings

Frequently asked questions

What's the correct order for PAT testing?

Visual inspection first — always — fail here means stop. Then earth continuity (Class 1 only), then insulation resistance, then polarity check, then functional test. Documentation throughout, labelling at the end.

How long does a single PAT test take?

For an experienced tester, a standard portable appliance test (visual + electrical + label + record) takes 1–3 minutes. A full working day yields 80–150 items typically.

What's the pass threshold for earth continuity?

Less than 0.1Ω + cable resistance — typically below 0.5Ω total for Class 1 appliances with normal cable lengths.

What's the pass threshold for insulation resistance?

Class 1: greater than $1.0 \text{ M}\Omega$. Class 2: greater than $2.0 \text{ M}\Omega$. For IT and electronic equipment using substitute leakage: less than 0.25 mA at 230 V .

Do I need to record actual readings or just pass/fail?

Best practice is actual readings. They let you track trends, spot appliances drifting toward failure before they fail, and provide stronger evidence in any compliance review.

What if a reading is just above the pass threshold?

Strictly, it's a pass — but flag it for closer attention at the next test. Marginal readings often get worse before they get better.

The takeaway

The full checklist above is what a competent PAT tester runs through for each appliance — typically internalised after experience but worth working from explicitly when starting out. **Visual inspection is the most important single section**; electrical tests confirm what visual checking can't; documentation is what turns the work into a defensible compliance record.

Print this checklist, work through it methodically until the sequence is automatic, and the testing itself becomes the routine part. The judgement around marginal cases is what separates competent testers from button-pressers — and that's where training pays for itself.