

Chart 21 — Bench Safety Card

PRINT, LAMINATE AND KEEP IT WHERE YOU CAN SEE IT FROM YOUR CHAIR **BEFORE YOU POWER ANYTHING ON** - Is the bulk capacitor discharged and **verified** with the meter? - Are all polarised components the right way round? - Are there any tools, offcuts or solder balls left on the board? - Is the correct fuse fitted — right rating, right type? - Are safety earth connections reconnected? - Are you using a dim-bulb tester for the first power-up? - Are you wearing eye protection and standing clear?

The five rules of mains work

1	Unplug before opening. Discharge and verify before touching.
2	One hand only. Keep the other in your pocket so current cannot cross your chest.
3	Never wear a grounded ESD strap while working on live mains equipment.
4	Use an isolation transformer for live-chassis work. A dim-bulb tester limits current but does not isolate.
5	The primary side of an SMPS is not at earth potential. Never clip a scope ground there.

Multimeter CAT ratings

Category	Minimum for...
CAT I / II	Low-voltage board-level work
CAT II 300 V	Anything plugged into a wall outlet (CAT II 600 V in 230 V regions)
CAT III 600 V	Anything at or behind the breaker panel
CAT IV	Service entrance — specialist work only

Emergency response

Situation	Action
Electric shock	Do not touch the person. Cut power at the breaker or unplug. If you cannot, push them clear with a dry non-conductive object. Call emergency services — every mains shock needs cardiac assessment.
Electrical fire	Cut power if safe. Use CO2 or dry powder. Never water on live equipment.
Lithium fire	Evacuate and ventilate — the smoke is toxic. Smother the surroundings with sand; let the cell burn out in a non-combustible container.
Burn	Cool under running water 10–20 minutes. Do not remove anything stuck to the skin.
Chemical in eye	Irrigate with clean water for at least 15 minutes, then seek medical attention.