

Variable Bench Transformers (Variacs)

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Electronics & Prototyping

A variable bench transformer, commonly known as a Variac, is an adjustable autotransformer that varies AC output voltage from zero up to mains level, letting students power circuits and appliances at reduced voltage for safe testing and demonstration.

Key Features

- Output typically 0-260 V AC variable
- Current ratings 2-10 A
- Isolated versions for safety
- Built-in meters on some models
- Thermal overload protection

Typical Uses in the Workshop

- Power projects at reduced voltage for safe testing
- Gradually power up repaired equipment
- Demonstrate transformer and voltage principles
- Test motors and heaters under control

Safe Operation

1. Set the dial to zero before connecting
2. Connect the load and check ratings
3. Raise the voltage slowly, watching current
4. Note readings of voltage and current
5. Return the dial to zero before disconnecting

SAFETY NOTES

- Reduce voltage does not mean safe - treat as mains equipment
- Only use with staff supervision in schools
- Check plugs, leads and insulation before each use
- Do not exceed the rated current
- Keep away from water and wet benches

Maintenance & Consumables

- Check the carbon brush and dial regularly
- Wipe the body and keep vents clear
- Check the insulation and earth continuity
- Calibrate the dial against a meter yearly
- Store in a dry, ventilated cabinet

Specification & Buying Notes

For school benches choose an isolated variable transformer with an earth pin, thermal cut-out and a clear dial. 0-260 V 5 A covers most needs. Pair with a digital multimeter for readings.