

Enclosed CO2 Laser Cutters

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | 3D Printing, Laser & CNC

An enclosed CO2 laser cutter uses a sealed glass tube laser to cut and engrave wood, acrylic, cardboard, leather and other materials with a focused beam. The fully enclosed cabinet protects users from the beam and contains fumes, which are extracted through a ducting system.

Key Features

- Typical bed sizes from 300 x 200 mm to 1000 x 600 mm
- 40-100 W CO2 laser tubes for school models
- Air assist for cleaner cuts and less charring
- Honeycomb or slat cutting bed for support
- Camera or red-dot pointer for job alignment

Typical Uses in the Workshop

- Cut plywood, MDF, acrylic and card parts exactly
- Engrave names, logos and artwork into wood and acrylic
- Produce signage, models, jigs and mechanical parts
- Cut fabric, leather and paper for textiles projects

Safe Operation

1. Run the exhaust and air assist before every job
2. Set power, speed and focus for the material from the chart
3. Secure the material and test-focus at one corner
4. Use the correct lens for the material and check the bed is clear
5. Remove parts only after the machine finishes and vents

SAFETY NOTES

- Never defeat the lid interlock - the beam is invisible and burns
- Only trained and supervised users may start the machine
- Check the material is laser-safe; PVC and vinyl release chlorine gas
- Empty the fume filter and check ducting regularly
- Keep a fire extinguisher and watch the first few minutes of each job

Maintenance & Consumables

- Clean the lens and mirrors with approved lens cleaner
- Wipe the honeycomb bed and scrapes off residue
- Check and refill the water chiller level weekly
- Inspect exhaust hoses for kinks and leaks
- Replace the laser tube only by a qualified technician

Specification & Buying Notes

For schools, choose an enclosed unit with Class 1 certification, interlocked lid, air assist, extraction kit and a mature software workflow (LightBurn or RDWorks). Check spare lens and mirror availability before buying.