

Trotec Laser Cutter

METHOD OF OPERATION

*Material is placed inside laser cutter for rapid cutting and engraving of parts.

MACHINE HAZARDS

*Fumes

-Controls: fume exhaust is turned ON and filter is changed out regularly. Machine cover is kept closed while in operation. Wait about 30 seconds after a job has completed before opening Machine Cover to allow for appropriate off-gassing of the material.

*Fire risk

-Controls-Operator supervision. Fire extinguisher, blanket, and gloves are available in event of a fire.

PPE/Safety Measures

*Closed Toed Shoes	
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Guards and Devices

*Machine Cover

Never open while a job is running.

*Fume Exhaust

*ALWAYS ensure that the fume exhaust is turned ON when the laser cutters are in use. Check that it is on by pulling on the access door to the fume exhaust unit. It should be under pressure and have suction. DO NOT ATTEMPT to run the laser cutters if the fume exhaust is not on.

*Machine Controls

*NEVER lean on the machine. The controls to operate the bezel can be triggered accidentally and crash the bed into the laser, causing irreparable damage.

Operational Notes

*Fire

This machine uses a **HIGH POWERED LASER** to cut and engrave materials. As such, there is a risk of fire.

* The operator should always assume that the material coming off the laser is **HOT**. Hot material can smolder and combust for up to half an hour after disposal. All unusable drop off the laser should be properly disposed of in the steel trash can, and the lid replaced, immediately after disposal. Usable scrap should remain on the bed for at least a minute after the job is complete to allow for proper off gassing. It should then be moved to a clear work surface and monitored for at least half an hour, to ensure there is no risk of combustion. **DO NOT MOVE USABLE SCRAP IMMEDIATELY TO THE FLAT FILE.**

***The laser is unavailable for use half an hour before the end of closing.**

NEVER leave the machine unattended while the laser is in use. Check on a job every 15-20 seconds while it is running.

In the event of a fire IMMEDIATELY:

*STOP the job, via the RUBY software or the control on the machine

*DON fire rated gloves, OPEN the machine cover and pull material OUT of machine and onto the floor.

*Once the material is out of the machine, use the Fire Extinguisher or Fire Blanket to douse/smother the fire. NEVER spray the fire extinguisher into the machine.

*Acceptable Materials

CO2 laser machines are capable of cutting and engraving a wide variety of materials, but there are many which it cannot process. This may be due to toxic gases, flammability, or it simply might not be able to cut said material type. The chart below is not exhaustive, but it is a helpful guide as to what the laser can and cannot process.

Depending on the power and other specifications of the machine you are using, the maximum material thickness that can be cut will vary. The power of laser cutters is measured in Watt. Typical power levels range between 30 Watt and 120 Watt. Lasers with higher power are mostly used in industrial applications only.

Material	Cut	Engrave	Comment
Wood	Yes	Yes	
Plywood	Yes	Yes	Lasers can struggle to cut plywood sheets with exterior glue. Use plywood with interior glue.
MDF	Yes	Yes	
Cork	Yes	Yes	

Cardboard	Yes	Yes	
Paper	Yes	Yes	
Leather	Yes	Yes	Only use Vegetable tanned leather.
Felt	Yes	Yes	
Cotton	Yes	Yes	
Acrylic	Yes	Yes	
Delrin	Yes	Yes	
ABSOLUTELY NO			
Metal (Steel, Aluminum, Copper, etc)			
Artificial Leather, Leather w/ Chromium			
Carbon Fibers (Carbon)			
PVC (Poly vinyl chloride)			
PVB (Polyvinyl butyrale)			
PTFE/Teflon (Polytetrafluoroethylenes)			
Beryllium Oxide			
Anything containing Halogens (fluorine,			

chlorine, bromine, iodine, astatine)			
Anything with Epoxy			
Anything with Phenolic resins			

Sequence of Operation

1. Ensure the switch for Fume Extraction (Located near door, labeled as such) is ON.
2. After a few seconds, check that it is on by gently pulling on the access door to the fume exhaust unit. If the exhaust is on, the door should offer some resistance as it is under pressure.
3. Log in to the operator computer and sign in to your TROTEC RUBY profile.
4. Import your design
5. Prepare your artwork: assign your cutting and engraving colors, apply dimensions, etc
6. Assign the appropriate material type, make sure to check the thickness. Use calipers if needed to confirm.
7. Ensure that your artwork is not placed in the ORIGIN POINT. This can cause the laser to etch into the ruler while processing the job, damaging it. OFFSET your artwork by about ½ an inch in both directions from the origin point.
8. When all of your settings are complete and you are ready to start the job, you need to prepare the machine.
TO PREPARE THE MACHINE
9. Turn the key to the right, like you are starting an ignition, and let go.
10. Give the machine a few seconds to complete its homing routines.
11. Place your material inside the machine, aligned with the corners of the rulers.
12. Using the directional control pad, bring the bed UP, and STOP it about 2 inches below the tip of the bezel
13. Open the machine cover, and PLACE the focusing widget on the extruded aluminum edge along the side of the Bezel (The brass nut of the focusing widget should be IN, resting on the shelf)
14. Now gently bring the bed UP until it causes the focusing widget to TIP over.
15. Your machine is now focused. REMOVE the focusing widget, and replace it in the caddy adjacent to the key.
16. You may now return to the RUBY software, and click “Push to laser”
17. When you are ready to begin your job, use the mouse to click the “Play” icon, to start the laser.
18. Monitor the laser THE ENTIRE TIME the job is running. Check on it to ensure that a fire does not break out.
19. Once the job is complete, wait about 30 seconds before opening the cover, to allow for off-gassing.

20. Open the cover and remove your parts from the machine
21. Close the cover and turn the machine OFF

Never

- *Use faulty equipment. Immediately report suspect equipment.
- *Leave the machine running unattended
- *Use the machine in the last half hour of operations.
- *Leave the lid off of the trash can.

Maintenance Notes/Service by Operator

- *Only workstation cleaning
- *Contact Shop Supervisor/qualified person:
- *Any additional help or support