

RhinoLaserGRBL

SAFETY GUIDE

Operational safety guide

Version 1.0.1 | Rhino 8 for Windows

Design -> Prepare -> Preview -> Send -> Machine

Critical warning: Laser machines can cause fire, burns, eye injury, toxic fumes and property damage. RhinoLaserGRBL is control software and does not replace the safety systems required by the machine manufacturer.

1. Operator responsibility

- Operate only a machine you are trained and authorized to use.
- Follow the laser manufacturer instructions and local workplace rules.
- Use enclosure, interlocks, eye protection, extraction/ventilation and fire controls appropriate to the machine and material.
- Never rely on software alone to make an unsafe machine safe.

2. Before connecting

- Confirm the USB/COM port belongs to the laser controller.
- Keep the laser source in a safe/off state during connection and setup.
- Verify the emergency-stop hardware is accessible and functional.
- Remove flammable debris from the work area.

3. Before every job

- Confirm the active machine profile matches the physical machine.
- Confirm workspace width/height match the usable bed area.
- Confirm the work origin is valid.
- Check material suitability, thickness and fire/fume hazards.
- Run FRAME and visually verify the boundary.
- Confirm power, speed, passes and process assignment.
- Keep the machine supervised for the complete job.

4. Reference and recovery

Event	Required response
Power loss / reset	Assume position reference is invalid until re-established.
RELEASE MOTORS / sleep	Reference becomes invalid; reposition and SET ORIGIN or HOME MACHINE.
E-STOP	Controller resets, job is cleared and position becomes unknown.
Homing alarm	Diagnose switches/configuration; do not blindly unlock and continue.

Workspace/profile change	Re-establish reference before running a job.
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5. Manual-origin machines

- Manual-origin mode is intended for machines without working homing switches.
- Move the head physically to the chosen origin and use SET ORIGIN.
- HOME 0,0 returns to the known work origin; it does not perform \$H.
- Lost position cannot be recovered automatically after power loss or motor release.

6. Homing machines

- Use HOME MACHINE only when the machine is physically configured for homing and limit switches.
- RhinoLaserGRBL does not automatically rewrite \$20/\$21/\$22 or other persistent controller settings.
- A failed homing cycle should be investigated before machine motion resumes.

7. Emergency controls

- LASER OFF requests M5 / S0 without changing the work origin.
- STOP cancels the current job and requests laser off as part of recovery.
- E-STOP performs a software emergency stop/soft reset and invalidates position.
- Use the machine physical emergency stop whenever required; software controls are supplementary.

8. Material hazards

Do not process unknown materials. Some plastics, coatings and composites can release hazardous gases or ignite. The operator is responsible for verifying that a material is appropriate for laser processing and that the extraction system is suitable.

9. Safe operating principle

Rule: If the displayed machine state, physical head position or configured workspace does not match what you see on the real machine, do not press SEND. Re-establish the machine/profile/reference first.

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