Glowforge Basic

40 W CO2 laser cutter / engraver

Version	2.0 DRAFT	Updated	2026-09-27
Owner	John Cassel	Est. time	60 min at the machine, plus ~30 min member pre-work
Prerequisites	Member has completed Section 1 pre-work before arriving	Machine name in app	Hyperion
Pass criteria	Every **DO** item performed by the member, and every Section 10 question answered correctly in their own words	Recorded in	Makerspace Wizard (MSW) checkout record

VOLUNTEER NOTE

How to use this guide. Work top to bottom with the member present. Every item has a tag that tells you what "covered" means:

Tag	Meaning
SHOW	You point it out on the machine or screen.
EXPLAIN	You explain it; the member can say it back in their own words.
DO	The member does it while you watch. Don't do it for them.

When the member passes, record the checkout in MSW. No paper sign-off is needed.

Section 1 — Before the Session (member pre-work)

Send these to the member when they book the checkout. None of it needs the machine.

☐	EXPLAIN	Member has read the **Glowforge Notes** page in MSW (capabilities, key rules, quick start).
☐	EXPLAIN	Member has read the safety section of the Glowforge manual (pages 3–10: fire, laser, materials, "stop using your Glowforge if…").
☐	DO	Member can log in at app.glowforge.com using your account(personal email) that was setup by the Volunteer.
☐	EXPLAIN	Optional: member brings a simple design (SVG or PDF) to run as their solo job in Section 6.

VOLUNTEER NOTE

If the pre-work isn't done, reschedule. The session assumes the member already knows the basics and is here to see and do them on the real machine.

Section 2 — Critical Safety & Zero-Tolerance Rules

⛔ ZERO TOLERANCE

1. **Never leave the machine while a job is running or while the button is glowing ready to start.** Stay within sight and look inside often. An unattended fire can destroy the machine and the building.
2. **Only laser-compatible materials go inside**, even if you aren't cutting them. If you can't identify it, it doesn't go in.
3. **Never run a job without the exhaust on and blast gates open where needed***.
4. **Never defeat, block, or tamper with the lid or door interlocks.** No magnets near the lid or door. Never open the case any other way, service, or modify the machine.
5. **Never cut stacked sheets.** Multiple layers are much more likely to catch fire.

☐	EXPLAIN	**Laser light.** The laser is invisible infrared, strong enough to cause instant skin and eye injury or start a fire. The case and glass lid block the harmful light, which is why the Basic is a Class 1 product with a Class 4 laser inside. Never use it if the lid glass or case is cracked, chipped, or damaged.
☐	EXPLAIN	**Glare.** The visible flash can be uncomfortable to watch. The lid only protects from the laser light. The visible flash is like watching someone weld. It will strain your eyes if you watch it directly. There is tinted glass but you should still use caution when monitoring your run.
☐	EXPLAIN	**Fire.** A small candle-like flame that moves with the laser is normal. A flame that stays lit after the laser moves past is not — go to Section 7.
☐	DO	Member walks to or points out: the exits and the fire extinguisher.
☐	EXPLAIN	**Heat & fumes.** Wait for the fans to stop before opening the lid. Some materials, especially plastics, stay hot after the job — let them cool.
☐	EXPLAIN	**Food is not an acceptable material. Do not place food in the machine.** Residue from other materials can contaminate food. Don't eat anything engraved in this shared machine.

Common mistakes to watch for

Walking away "for a second" during a job · opening the lid before the fans stop · unknown or mislabeled plastic · warped material rising above ½ in · forgetting the exhaust · leaving offcuts and debris in the bed · changing settings on the account or printer.

Section 3 — Machine Tour

Point to each item. Tick the row once the member can find it again without help.

	Component	What to point out
☐	**Power switch**	Back of the machine, Right side where the power cord comes in. At startup the head moves and calibrates; the button glows teal when ready.
☐	**The button (top)**	Glows when a job is ready — press to start. Press during a job to pause, press again to resume. Normal colors: white, yellow, teal. **Any other color: stop and report.**
☐	**Glass lid & lid camera**	The camera shows the bed in the app. **Opening the lid cancels the job.** Nothing gets stored on top of the machine.
☐	**Front door**	Has safety interlocks. Lowered only to remove the crumb tray.
☐	**Crumb tray**	Sits on four dimples in the floor. Remove by lifting slightly and sliding toward you — don't tilt it up into the head or rails.
☐	**Printer head & arm**	Holds the lens. Don't touch the head or arm while power is on. Members never remove the head.
☐	**Exhaust**	Hose on the back to space exhaust connection. Switch: in the wood shop this is located at the far wall Green is on. Red is off. It will turn off automatically after 2 hours [beeps 1 min before so you can reset it by pushing the green button]. If you are in the classroom, there is no extra exhaust system it relies on the Glowforge fan only.
☐	**Air intake (underneath)**	Keep loose paper and cloth away from the base.
☐	**Materials & scrap**	Test cardboard and scrap: under the tables. Material for sale: [not at this time].

Section 4 — Quick Reference

Item	Glowforge Basic
Laser	40 W CO2, 10.6 µm (invisible infrared). Class 1 enclosure around an embedded Class 4 laser.
Max material width	21 in, and not so long that it touches the ends of the machine
Max height, crumb tray in	Under ½ in, including any warp or bulge

Item	Glowforge Basic
Max height, tray removed	Under 2 in.(with bed removed) under ½ in with Bed installed. Laser must strike only material — never the metal floor.
Typical cut thickness	About ¼ in or less in one pass. Up to ½ in may need multiple passes or flipping.
Room temperature to print	50–85 °F. Outside this range, jobs may pause or fail.
Normal button colors	White, yellow, teal
Pass-through slot	None — that's a Pro feature. Material must fit fully inside. The X-Tool P1 and Big Red have larger capacities and pass through capabilities.
Design files	SVG and PDF work best. Many image formats (JPG, PNG, etc.) can be engraved.

Section 5 — Materials

☐	EXPLAIN	**Proof-grade** material has a QR code; the app reads it and sets power and speed automatically. Keep the QR code whole and visible.
☐	EXPLAIN	**Other material:** pick the closest match from the material list, or use custom settings only if you understand power and speed. Test on scrap first.
☐	EXPLAIN	**Never put these in:** PVC or vinyl (easily mistaken for acrylic), ABS, polycarbonate, reflective metals like copper or chrome, anything with unknown coatings, glues, or paints, and material whose masking paper is peeling.
☐	EXPLAIN	Material must lie flat on the crumb tray and never curl back on itself. If it rises above ½ in during a job, turn the power off immediately.
☐	DO	Member picks a test piece from the scrap supply and says how they know it's safe to use.

> **⚠ SAFETY**
> Exhaust removes smoke; it does not make an unsafe material safe. Some plastics release toxic or corrosive gas that no exhaust handles. If you aren't 100% sure, it doesn't go in.

Section 6 — Operation Walkthrough

Run a short demo job while the member watches (a simple shape on cardboard, or the "Gift of Good Measure" keychain from the Glowforge catalog). Then the member runs their own job from the start with you watching.

6.1 Power up & connect

☐	DO	Turn on the Glowforge. Wait for the head to calibrate and the button to glow teal.
☐	SHOW	In the app, printer Hyperion shows **Online**. If not: the machine is off or can't reach Wi-Fi — power-cycle once, then report.
☐	DO	Turn on the exhaust if in Unit 4 (wood shop loft).

6.2 Load material

☐	SHOW	Crumb tray seated in its four dimples, and no debris under it.
☐	DO	Place the material flat, away from the edges, and close the lid.

6.3 Create or open a design

☐	SHOW	Dashboard → **Create**: New blank design, Upload from file (SVG/PDF best), or Capture from camera (trace a drawing placed in the bed).
☐	EXPLAIN	Designs can be made in any vector tool (e.g. Inkscape) and uploaded. Members can purchase a premium account from Glowforge to use those built in tools.

6.4 Set up the job

☐	DO	Confirm the material in the top-left: auto-detected from the QR code, or chosen from the list.
☐	DO	Drag the design onto the material image and size it. Leave a margin from the material's edge.

6.5 Print

☐	DO	Click **Print**. The head scans the material to focus, and the app shows the estimated time.
☐	DO	When the button glows, press it to start. Stay at the machine and watch.
☐	EXPLAIN	**Pause:** press the button; press again to resume. **Cancel:** Cancel in the app, or open the lid — either one ends the job.

6.6 Finish

☐	DO	Wait for the fans to stop, then open the lid. Remove the parts carefully — they may be hot.
☐	DO	Member runs their own job, start to finish, with no help from you.

> **SPACE POLICY**
> Pausing is for short interruptions. If you need to leave the machine mid run for a short period of time you may pause the machine. Leave and start it again. You may not leave the machine running a job. Doing so could me grounds for terminating your membership.

Section 7 — Emergencies & "Stop Using the Machine If…"

If a flame stays lit after the laser has moved past:

1. Monitor closely. Most of the time it will go out. If it expands or does not go out on its own, Turn the machine off. Pull the plug on the back of the machine.
2. If it is safe, smother it with a damp towel.
3. For larger fires that are out of control, if it is safe, use the fire extinguisher. Fire extinguishers are located near entrances.
4. If it can't be put out, or it spreads outside the machine: pull the fire alarm, call 911, and leave the building.
5. If the machine is damage or not operating as expected report it in SLACK #prototyping channel. The machine is out of service until cleared. Use a tag to tell others that the machine is out of order. Tags are available on the resource table in the wood shop.

Turn the power off, unplug it, and report if:

the button shows any color other than white, yellow, or teal · the head stops moving but the laser stays on · you see cracks or chips in the lid or tube · you see moisture or damage inside · you notice unusual light.

☐	DO	Member explains the flame steps in order and points to where they'd pull the plug.
☐	EXPLAIN	How to report a problem: SLACK #prototyping channel and how to tag the machine out of service.

Section 8 — Cleanup & End of Session

☐	DO	Remove all parts and offcuts from the bed. Nothing stays inside the machine.
☐	SHOW	How to empty the crumb tray when debris builds up (lift slightly, slide out, don't tilt it into the head). Built-up bits are a fire hazard and can prop material off the tray.
☐	EXPLAIN	Lens, window, and mirror cleaning (every ~40 / ~120 hours) is done by Assigned Volunteers Only. Members please report a dirty lens or poor cuts instead. Cleaning the lens incorrectly could cause fatal damage to the machine or a member operating it.

☐	DO	Turn off the exhaust after you are done your session. If you forget, it should shut off automatically after a maximum of 2 hours.
☐	EXPLAIN	Leave it better than you found it.

Section 9 — Space Policies

☐	EXPLAIN	Reserve machine time in MSW. The Glowforge Notes page there is the refresher to read before each use.
☐	EXPLAIN	Don't change printer or account settings, don't accept firmware or software update prompts, and never remove the printer from the account. Report prompts in Slack #prototyping channel.
☐	EXPLAIN	Report any damage or problem right away. Slack #prototyping channel.
☐	EXPLAIN	Checkout doesn't expire, but a refresher may be required 5 months if you have not used the machine. A refresher may also be required if an incident or event where your negligence, poor understanding, misconduct or a major process / machine change prompts it.

SPACE POLICY
Breaking a zero-tolerance rule, or failing to report damage, can result in loss of machine or makerspace privileges.

Section 10 — Verification Questions

VOLUNTEER NOTE
Ask each question out loud. The member answers in their own words without prompting. If they miss one, go back to that section and review it, then ask again. Don't pass a member who can't answer every question.

When every DO item is done and every question is answered, record the checkout in MSW. That adds the member to the list of people who can reserve the Glowforge.

	Question	Expected answer
☐	**Q1.** Your job is loaded and the button is glowing, but you haven't pressed it. Can you step out to your car?	No. A ready machine counts as operating. Stay in sight until the job is done or cancelled.
☐	**Q2.** You see a small flame following the laser. Is that a problem?	No, if it moves with the laser and goes out behind it. Yes, if it stays lit after the laser moves on.
☐	**Q3.** A flame stays lit. What do you do?	Pull the plug; wet towel or extinguisher if safe (names its location); alarm, 911, and leave if it spreads; report.
☐	**Q4.** A friend gives you a sheet of "some kind of plastic." Can you cut it?	No. If it can't be identified as laser-compatible, it doesn't go in. Vinyl/PVC can look like acrylic.
☐	**Q5.** What's the tallest material you can use with the crumb tray in?	Under ½ in, including warp.
☐	**Q6.** When is it safe to open the lid after a job?	After the fans stop.
☐	**Q7.** What happens if you open the lid during a job?	The job is cancelled.
☐	**Q8.** The button turns red. What do you do?	Turn it off, unplug, report. Only white, yellow, and teal are normal.
☐	**Q9.** What has to be on before you press start?	The exhaust.
☐	**Q10.** The app offers a firmware or software update. What do you do?	Don't accept it. Report it in SLACK #prototyping channel.
☐	**Q11.** What do you do before you leave?	Remove all parts and offcuts, clear debris, exhaust off, machine per policy, report any issues.

Revision history

Version	Date	Change
1.1	2021-05-13	Original checkout sheet (Making Matters)
2.0	2026-09-27	Rewritten in the standard checkout format; aligned with Glowforge manual v3.5; paper sign-off replaced by MSW record