

ELEGOO Saturn 4 Ultra 16K

Resin 3D Printer — Member Equipment Checkout Guide

Complete all sections in order. Do not skip sections.

HOW TO USE THIS GUIDE: Work through each section top to bottom with the member present. Check off items as you cover them. At the end, use the Verification Questions to confirm the member understood — they should be able to answer every question in their own words before the checkout is complete.

Section 1 — Safety & Personal Protective Equipment

⚠ SAFETY FIRST: Cover this section before touching the printer or resin. Resin is a skin/eye irritant and fume source. Improper handling can cause chemical burns or allergic sensitization over time.

1.1 Required PPE — Show the member where each item is kept

- Nitrile gloves (minimum) — must be worn whenever handling liquid resin, the build plate, or resin-wet parts. Latex gloves are NOT sufficient; resin can permeate latex.
- Safety glasses or face shield — required when pouring, filtering, or removing prints.
- Closed-toe shoes — required while working at the printer station.
- Avoid touching face, eyes, or mouth while gloves are on. Remove gloves before leaving the station.

1.2 Resin Hazards

- Uncured resin is a skin sensitizer — repeated unprotected contact can cause a lasting allergic reaction.
- Resin emits volatile organic compounds (VOCs). The air filter must be running whenever the printer cover is open or resin is exposed (see Section 4).
- UV light (405 nm) cures resin. Avoid looking directly at any UV light source without eye protection.
- Resin is flammable — keep away from open flame, sparks, and direct sunlight.
- Uncured liquid resin must NEVER be poured down the drain. It must be cured before disposal (see Section 7).

1.3 Emergency Procedures

- Skin contact: Immediately remove gloves, wash with soap and water for at least 15 minutes.
- Eye contact: Flush with water for 15+ minutes and seek medical attention.
- Spill: Absorb with paper towels, cure under UV, then dispose in the designated resin waste container. Inform a staff member.
- Emergency stop: Press and hold the power button on the printer, or unplug at the wall. Do not leave a running print completely unattended for long periods.

VOLUNTEER NOTE: Confirm the member can locate the PPE station, the resin waste container, and the nearest eye-wash station before proceeding.

Section 2 — Printer Orientation & Machine Overview

2.1 Machine Identification

- Machine: ELEGOO Saturn 4 Ultra 16K MSLA Resin 3D Printer
- Technology: Masked Stereolithography (MSLA) — a UV-light LCD printer, NOT an FDM (filament) printer. Resin is the build material; it is liquid and photocurable.
- Build volume: 218.88 mm (L) × 122.88 mm (W) × 220 mm (H)
- Resolution: 12K LCD, XY resolution 19 × 24 μm
- Manual location: H:\ELEGOO Saturn 4 Ultra 16K MSLA Photocuring 3D Printer User Manual Version.pdf

2.2 Physical Tour — Point to each item as you discuss it

Component	What to point out
Power switch & cord	Located on the rear. Show the member how to power on. On startup the printer runs a self-check — do not touch the machine during this process.
Touchscreen (4-inch)	Main controls: Print, Tools, Settings, Device Info. Swipe left to reveal additional menu items.
Build plate & handle	Attaches to the Z-axis arm. Press handle down to secure. The plate auto-levels — do not manually adjust screws.
Resin vat (tank)	Sits on the LCD screen. Contains the FEP/release film on the bottom. Handle with care — scratches damage the film.
FEP / release film	Consumable. Replace when cloudy, scratched, or when the machine prompts at ~60,000 layer uses.
LCD screen	Located under the vat. Protect from resin spills. ~2,000+ hour lifespan. Do NOT place anything directly on it.
Drip tray	Inserted between the vat and build plate after printing — catches resin drips during part removal.
USB port & WiFi	Files can be transferred via USB (FAT32 formatted) or WiFi/ChituManager. Show both locations.
AI camera	Built-in. Can monitor prints and detect warps in real time. Optional time-lapse feature.
Extension port (rear)	For accessories like the mini heater. Not for general member use without instruction.

Section 3 — Software: Elegoo SatelLite 3d Slicer

3.1 What the Software Does

- SatelLite is the slicer software used to prepare 3D model files for this printer. It converts .STL / .OBJ files into layered print files (.CTB format).
- Although the software is already installed on the Makerspaces Laptops, the software can also be installed from the USB Drive for the machine. It can also be downloaded from Elegoo's site here: <https://www.elegoo.com/pages/satellite-3d-slicer>

3.2 Recommended Tutorial Videos

Direct the member to watch these before their first solo print. Play relevant sections during the checkout if a workstation is available.

- **ELEGOO Official — Saturn 4 Ultra Getting Started:**
https://www.youtube.com/results?search_query=ELEGOO+Saturn+4+Ultra+getting+started+official — Search ELEGOO's YouTube channel for the latest official walkthrough
- **Satellite Official Tutorial Playlist:**
<https://www.youtube.com/watch?v=isaiLDU6TEg&list=PLkFeYZKRTZ8alw07KBD4dpX7hgMwDUkN6> — This covers many of the basic tasks and activities related to using this software. Note that they do not seem to be in an order that makes sense for a beginner.
- **Beginners that have no experience with a resin 3d slicer should start here:**

3.3 Basic Satilite Workflow — Demonstrate each step

1. Open Satilite. Select ELEGOO Saturn 4 Ultra as the default printer in Printer Settings.
2. Import a 3D model file: click Open and select an .STL or .OBJ file.
3. Orient and position the model on the virtual build plate. Discuss why orientation matters (supports, overhangs, drainage holes for hollow models).
4. Add supports if needed: use the Auto Support tool as a starting point, then review manually.
5. Configure slicing settings: Layer Height (recommended 0.05 mm), Bottom Layer Count (default 5), Exposure Time (default 2.5 s), Bottom Exposure Time. Note: do NOT change the default machine parameters unless directed by a knowledgeable volunteer.
6. Click Slice. Review the layer preview to check for missing sections or unsupported islands.
7. Transfer the file to the printer: Save to USB (FAT32) and insert the drive, OR use Network Sending via Satilite over WiFi.
8. On the printer touchscreen, go to Print, select the file, and start the print.

VOLUNTEER NOTE: Point out that you want to avoid Cavities in your model and the tools related to eliminating them. Also remind the member that resin type and color may require exposure time adjustments; always check the resin manufacturer's recommended settings.

Section 4 — Air Filtration

⚠ MANDATORY: The air filter MUST be powered on before opening the printer cover, pouring resin, or handling any resin-wet parts. This is not optional.

4.1 Air Filter Overview

- We do not currently have the filter or exhaust connected directly to the machine. It is important that you understand the risks of being exposed to the fumes related to the resin you are using.
- There will be a vent hood in the future that will allow for exhaust over the resin printers.

4.2 Turning on the Air Filter — Demonstrate

9. Locate the air filter unit under the counter near the printer station. Show the member its physical location.
10. Demo the power switch and speed knob. Confirm the fan is running (you should hear/feel airflow).
11. Position the intake near the printer directed by the station setup. Do not block the intake.
12. Leave the filter running for the duration of any work session involving open resin.
13. Turn the filter off only after the printer cover is closed and all resin containers are sealed.

Section 5 — Filling the Resin Vat

5.1 Before Filling

- Ensure PPE is on: nitrile gloves and safety glasses at minimum.
- Confirm the air filter is running (Section 4).
- Inspect the vat and FEP film for cracks, cloudiness, or cured resin debris. Do not use a damaged vat — notify staff.
- Shake or gently swirl the resin bottle for at least 30–60 seconds before opening. Resin settles over time; unmixed resin produces poor prints.
- Check that the resin type/color matches what the previous user was using, OR clean the vat first if switching types.

5.2 Filling — Demonstrate

14. Place the vat firmly in position on the printer with the build plate raised.
15. Slowly pour resin into the vat, tilting the bottle gradually to control flow and minimize air bubbles.
16. Fill to at least 1/3 of the vat volume, but do NOT exceed the MAX fill line marked on the vat.
17. Pour slowly over the center of the vat; do not pour directly onto the FEP film edges.
18. Replace the resin bottle cap immediately after pouring.

IMPORTANT: Overfilling the vat beyond the MAX line can cause resin to overflow during the tilting print cycle, spilling onto the LCD screen and causing extensive damage.

Section 6 — Starting & Monitoring a Print

6.1 Pre-Print Checklist

- Air filter is on.
- PPE on.
- Vat filled (between 1/3 and MAX).
- Build plate installed and handle locked down.
- Print file transferred to printer (USB or WiFi).
- Printer has completed its startup self-check (do not touch during self-check).

6.2 Starting the Print

19. On the touchscreen, tap Print.
20. Select the file from the list (USB or device storage).
21. Review the print time estimate. Optionally enable the AI camera or time-lapse.
22. Tap Print / Confirm. The printer will run a mechanical sensor calibration and resin level check before the first layer begins.

23. Close and latch the printer cover once printing starts.

6.3 Monitoring

- The AI camera can alert to warped or failed prints — check in periodically or monitor via the software interface.
- Do not open the cover unnecessarily during printing; UV exposure from room light can affect layers near the top of the vat.
- If printing fails and cured resin ends up in the vat, the vat must be cleaned before the next print (see Section 9).

Section 7 — Recovering Leftover Resin After Printing

POLICY: If the printer will not be used again within 48 hours, ALL remaining resin must be returned to the bottle. Do not leave resin sitting in the vat uncovered.

7.1 Why Recover Resin?

- Resin left in the vat can partially cure from ambient UV or room light, creating debris that ruins subsequent prints and damages the FEP film.
- Resin is expensive — recovering and filtering it extends usability and reduces waste.

7.2 Recovery Process — Demonstrate

24. Install the drip tray: insert it parallel to the vat between the vat and build plate, fasten the screw knobs on both sides.
25. Lift the build plate handle and carefully remove the build plate from the printer. Hold it over the drip tray to catch drips.
26. Using the plastic scraper (not metal, to protect the FEP), gently remove the print from the build plate over the drip tray.
27. Place the recovered print directly into the wash station (see Section 8).
28. Using the provided funnel with filter mesh (or a paint strainer), pour the remaining vat resin back into the original resin bottle.
29. Make use of/demonstrate the Resin drip holder.
30. Reminder that you should not leave resin exposed to the air or light for any longer than strictly needed to recover the material.
31. Filter the resin as you pour — small cured particles can contaminate a bottle but can be caught by the filter. Use the metal filter or paper filters. Be sure to wipe down the metal filter and clean as needed. If the resin was water based, you can use the sink to do some cleaning. Otherwise use the alcohol as you would clean your model.
32. Seal the resin bottle tightly and store it in the designated dark storage area (resin degrades with UV exposure).
33. Wipe the inside of the empty vat with an IPA-dampened paper towel. Do NOT use metal tools on the FEP film.

DISPOSAL REMINDER: Paper towels, gloves, and materials with uncured resin must be cured under the UV station before disposal in the regular trash. Liquid uncured resin is hazardous waste — never pour it down the drain or into the trash uncured.

Section 8 — Cleaning & Curing Station

Covered by Separate Document

The wash and cure station has its own dedicated checkout document. Complete that checkout as part of this session if the member has not already been checked out on the wash/cure station.

Key points to verbally confirm here:

- The member must use the wash station to remove uncured resin from prints with IPA (or water if using water-washable resin) before curing.
- The member must use the UV cure station to fully cure prints before handling without gloves and before disposal of paper/resin waste.
- PPE is still required at the wash station — splashing IPA/resin is a hazard.
- Wash time and cure time vary by resin type and part thickness — refer to the wash/cure station document and the resin bottle instructions.
- Ask the member: Have you been checked out on the wash/cure station? If no, complete that checkout now or schedule it before their first solo print.

Section 9 — End-of-Session Cleanup

9.1 Printer & Station Cleanup Checklist

- Resin recovered from vat (if session is done or printer won't be used within 48 hrs) — Section 7.
- Build plate wiped clean with IPA on a paper towel. Inspect the surface for cured resin fragments; remove gently with a plastic scraper.
- Resin vat wiped with IPA paper towel (inside); inspect FEP film for damage or cured debris.
- Vat seated back on printer with the cover closed.
- Drip tray removed, wiped clean, and returned to its storage location.
- LCD screen area: if any resin contacted the screen or surrounding tape, wipe immediately with an IPA cloth. Report damage to staff.
- All tools (scrapers, funnels, tweezers) cleaned with IPA and returned to their designated location.
- Resin bottle sealed and stored in the dark storage area.
- All used paper towels, gloves, and resin-contaminated materials cured under UV before disposal in the resin waste bin.
- Work surface wiped down with IPA.
- Air filter left running for a few minutes after final cleanup, then powered off once all resin is sealed.
- Printer power: leave powered on if another member is queued; otherwise turn off per makerspace policy.

LEAVING THE STATION: The member should leave the station as clean or cleaner than they found it. If any issues are discovered (damaged FEP, LCD damage, malfunctioning machine), they **MUST** report to a volunteer or staff before leaving.

Section 10 — Makerspace Policies & Additional Resources

10.1 Policies to Cover

- Members may only use the printer after completing this checkout. Checkout does not expire, but re-checkout may be required after a significant absence or after major machine changes.

- Report all issues, spills, or damage to a volunteer or staff immediately — do not attempt to repair equipment without authorization.
- Do not modify printer settings (firmware, machine parameters) without volunteer guidance.
- Do not leave a print completely unattended. Check in periodically.
- Resin types: confirm which resin types are approved for use in this machine. Not all resins are suitable (e.g., some specialty resins require special FEP film or ventilation).
- Reserve time slots as required by makerspace booking policy.

10.2 Additional Resources

- Machine Manual: Can be found in the My Checkout Wizard application: <https://mycow.concordmakerspace.com>
- **ELEGOO Wiki (official support):** <https://wiki.elegoo.com> — Firmware updates, troubleshooting, FAQ
- **CHITUBOX Download & Docs:** <https://www.chitubox.com> — Latest slicer software download
- **ELEGOO Support Email:** <mailto:3dp@elegoo.com> — For hardware defects and warranty questions
Do not contact support unless you are directed to by a makerspace board member.

Section 11 — Checkout Verification Questions

INSTRUCTIONS FOR VOLUNTEER

Ask the member each question below verbally. They should be able to answer in their own words without prompting. If they cannot answer a question, return to that section and review it before proceeding. Do not pass a member who cannot answer a question — this protects both the member and the equipment.

Safety & PPE (Section 1)

☐	What PPE is required before you handle liquid resin, and where is it kept?
☐	What do you do if resin gets on your skin? What about in your eyes?
☐	Where does uncured liquid resin go when you're done — can it go down the drain? Why not?
☐	What do you do in an emergency (e.g., a large spill, or if you need to stop the printer immediately)?

Air Filter (Section 4)

☐	When must the air filter be turned on — and when can it be turned off?
☐	What should you do if the filter seems weak or you can still smell resin strongly with it running?

Software & Slicing (Section 3)

☐	What software do you use to prepare a file for this printer, and how do you get a file to the machine?
☐	What are the two key fill level limits for the resin vat?
☐	Name two slicing settings that commonly need to be adjusted for different resins.

Filling & Recovering Resin (Sections 5 & 7)

☐	Walk me through how you would fill the vat before a print.
☐	When must you recover the resin from the vat after printing? How do you do it safely?
☐	How do you filter the resin when pouring it back into the bottle, and why is that step important?

Wash & Cure Station (Section 8)

☐	What is the purpose of washing a print before curing it?
☐	What must you do with paper towels or gloves that have uncured resin on them before putting them in the trash?

Cleanup (Section 9)

☐	Describe how you leave the printer station at the end of your session.
☐	If you discover the FEP film is scratched or cloudy, what do you do?
☐	If something goes wrong with the machine during your print, who do you tell and when?

CHECKOUT SIGN-OFF

By adding the member to the machine in My Checkout wizard, both parties confirm that all sections of this document were reviewed, all verification questions were answered satisfactorily, and the member is approved to use the ELEGOO Saturn 4 Ultra 16K independently.

Volunteer be sure to log the checkout in My Checkout Wizard