

ELEGOO MERCURY 3.0 PLUS

Washing & Curing Machine

Member Equipment Checkout Document

PURPOSE: This document guides a volunteer through a structured checkout process for the Elegoo Mercury 3.0 Plus Washing and Curing Machine. The volunteer must cover every section with the member before signing off. The verification questions at the end ensure the member has understood and retained the key information.

Section 1: Machine Overview & Components

Introduce the machine and confirm the member can identify all key parts before operating.

Machine Modes

- Washing Mode – uses isopropyl alcohol (IPA) or ethyl alcohol to clean uncured resin from a freshly printed model.
- Curing Mode – uses UV lamps to fully cure and harden the washed model.

Key Components – Point to Each on the Machine

- Anti-UV cover – must be closed for curing mode to function
- Control panel – touch buttons: WASH, CURE, TIME+, TIME-
- Display screen – shows the countdown timer
- Cleaning bucket – holds the washing solution; contains an impeller at the base
- Cleaning basket – holds the model during washing; never place models directly in the bucket
- Adjustable brackets – used to support models while still on their build plate
- Curing turntable – rotates the model under UV lamps for even curing
- UV lamp column – emits UV light during curing mode
- Sensor – detects whether the anti-UV cover is properly closed
- DC socket & power switch – rear of the unit

Section 2: Safety Requirements

⚠ SAFETY: Uncured resin is toxic. Always wear nitrile gloves and eye protection when handling models, the cleaning bucket, or washing solution. Do not touch uncured resin with bare skin.

⚠ SAFETY: Use only 95% or higher isopropyl alcohol (IPA) or ethyl alcohol, unless using water-washable resin. Lower concentrations reduce cleaning effectiveness and may leave residue.

⚠ SAFETY: The UV lamps emit UV-A light that can damage eyes and skin. Never look directly at the UV lamps. The anti-UV cover must be in place and fully closed during all curing operations.

⚠ SAFETY: Do NOT disassemble or modify the machine. Doing so voids the warranty and creates safety risks. If something appears wrong, contact a staff member.

General Safety Rules

- Keep the machine and all accessories out of reach of children.
- Do not allow alcohol to contact the machine's internal components – it can cause a short circuit.
- If cleaning solution splashes onto the machine surface, wipe it up immediately.
- The machine surface may become warm after extended use – this is normal.
- Always seal the cleaning bucket with its lid when not in use.
- Do not overfill the cleaning bucket – solution can overflow and damage the machine.
- Wash and fully air-dry the model before placing it in the curing turntable. Curing a wet model causes white residue and potential stickiness or cracking.
- Dispose of used resin and saturated IPA according to the makerspace's chemical disposal policy.

Section 3: Washing Mode – Step-by-Step Operation

NOTE: Washing must always be performed before curing. Do not skip this step.

Walk the member through each step below. Have them physically locate the relevant component as you describe it.

Setup

- ☐ Remove the curing turntable from the platform if it is present and set it aside.
- ☐ Place the cleaning bucket in the positioning groove on the machine platform.
- ☐ Open the sealed lid of the cleaning bucket and verify there is adequate cleaning solution (IPA 95%+).
- ☐ Do not overfill – the solution level must allow for model placement without overflow.

Loading the Model

There are two methods depending on whether the model is still on its build plate:

Option A – Model on Build Plate

- ❑ Fit the adjustable brackets into the corresponding protrusions on the sides of the cleaning basket.
- ❑ Place the cleaning basket into the cleaning bucket.
- ❑ Place the model and build plate on top of the adjustable brackets. Adjust bracket positions to fit (supports up to 10-inch build plates; maximum model height of 180mm on the plate).
- ❑ Cover the bucket with its lid.

Option B – Model Removed from Build Plate

- ❑ Remove the adjustable brackets from the cleaning basket.
- ❑ Carefully remove the model from the build plate.
- ❑ Place the model directly in the cleaning basket (maximum model size: 230mm L x 135mm W x 260mm H).
- ❑ Place the basket in the bucket and cover with the lid.

⚠ SAFETY: NEVER place a model directly into the cleaning solution without using the basket. The basket prevents the model from contacting the impeller and allows proper circulation.

Running the Wash Cycle

- ❑ Press the WASH button on the control panel to switch to washing mode.
- ❑ Set the desired wash time using the TIME+ and TIME- buttons (each tap adjusts by 30 seconds; maximum 30 minutes; hold for continuous adjustment).
- ❑ Press WASH again (or START) to begin the cycle.
- ❑ When the cycle ends, the machine will emit an audible alert.

After Washing

- ❑ Remove the model from the basket and allow it to fully air-dry before curing.
- ❑ Remove the cleaning basket and re-seal the cleaning bucket with its lid.
- ❑ If solution splashed on the machine, wipe it off immediately.
- ❑ The cleaning solution can be reused multiple times. Replace or filter when it becomes visibly saturated.

Section 4: Curing Mode – Step-by-Step Operation

⚠ SAFETY: Confirm the model is fully washed AND air-dried before proceeding. Curing a wet or insufficiently washed model will cause white residue, stickiness, or cracking.

Setup

- ❑ Remove the cleaning bucket from the platform if present.
- ❑ Remove the protective film from the reflective mirrors on both sides of the platform (new machine only – confirm if already removed).
- ❑ Place the curing turntable in the central positioning groove on the platform.
- ❑ Place the model in the center of the turntable.
- ❑ Lower and fully close the anti-UV cover.

Running the Cure Cycle

- ❑ Press the CURE button on the control panel to switch to curing mode.
- ❑ Set the curing time using TIME+ and TIME-.

NOTE: Recommended starting curing time: 2 minutes for models under 30mm diameter. Increase time for larger or more complex models. Excessive curing causes yellowing.

- ❑ Press CURE again (or START) to begin the cycle.
- ❑ Slight turntable vibration during operation is normal.
- ❑ When the cycle ends, the machine will emit an audible alert.
- ❑ Wait a moment, then open the anti-UV cover and remove the model.

Section 5: Cleanup & Routine Maintenance

After Every Session – Member Responsibilities

- ❑ Seal the cleaning bucket with its lid immediately after use.
- ❑ Return the curing turntable and cleaning basket to their designated storage positions.
- ❑ Wipe any resin or IPA from the machine surface and surrounding area.
- ❑ Dispose of paper towels and gloves in the designated resin waste container.
- ❑ Leave the machine in the same state or better than you found it.

Cleaning Solution Recycling (When Solution Is Degraded)

- Let the used solution sit undisturbed for approximately 10 hours to allow solid resin particles to settle to the bottom.
- Carefully pour the clear upper layer into a clean storage container for reuse.
- Remove and dispose of the settled sediment – when exposed to sunlight, it cures into ordinary solid waste.
- Clean the bucket interior before refilling.

Impeller Cleaning (As Needed)

- If the impeller makes abnormal sounds or fails to rotate, remove it for cleaning.
- Sediment buildup around the impeller is the most common cause of malfunction.
- Tighten the impeller's fixing screws if unusual rattling noises occur.

NOTE: If any machine malfunction cannot be resolved with basic troubleshooting, report it to makerspace staff immediately. Do not attempt to disassemble the machine.

Section 6: Common Troubleshooting

Review these common issues with the member so they know what to try before calling for help.

Problem	Action
Machine won't run in curing mode	Check that the anti-UV cover is fully and properly closed. Also check the power connection.
Model turns white after cleaning or curing	Model was not air-dried before curing, OR cleaning solution is too diluted / depleted. Replace IPA or allow model to fully dry.
Impeller does not rotate during wash	Remove and clean the impeller. Check for obstructing debris or excessive sediment in the cleaning solution.
Unusual noises from cleaning bucket	Check and tighten the impeller's fixing screws using the appropriate tool.

Section 7: Member Verification Questions

INSTRUCTIONS FOR VOLUNTEER: Ask the member each question below. Do not prompt or hint. The member should answer from memory. If a question is answered incorrectly or incompletely, return to that section and review it again before proceeding. All questions must be answered satisfactorily before signing off.

Q1: What type of cleaning solution should be used in this machine, and what concentration is required?

Expected Answer: 95% or higher isopropyl alcohol (IPA) or ethyl alcohol, unless using water-washable resin.

Volunteer notes: _____

Q2: Why must you use the cleaning basket and never place a model directly into the cleaning bucket?

Expected Answer: To prevent the model from contacting the impeller, to allow proper cleaning circulation, and to be able to safely remove the model.

Volunteer notes: _____

Q3: What must you do with the model between washing and curing, and why?

Expected Answer: *Allow it to fully air-dry. Curing a wet model causes white residue, stickiness, or cracking.*

Volunteer notes: _____

Q4: What is the recommended starting curing time for a small model, and what happens if you over-cure?

Expected Answer: *2 minutes for models under 30mm diameter. Over-curing causes the model to turn yellow.*

Volunteer notes: _____

Q5: What safety equipment must be worn when handling models, the cleaning basket, or the washing solution?

Expected Answer: *Nitrile gloves and eye protection at minimum.*

Volunteer notes: _____

Q6: What should you do immediately if washing solution splashes onto the machine surface?

Expected Answer: *Wipe it up immediately to prevent it from entering internal components and causing a short circuit.*

Volunteer notes: _____

Q7: If the machine will not start in curing mode, what is the first thing you should check?

Expected Answer: *That the anti-UV cover is fully and properly closed.*

Volunteer notes: _____

Q8: What are your cleanup responsibilities after using the machine?

Expected Answer: *Seal the cleaning bucket lid, return all components to storage, wipe down the machine and area, and dispose of resin waste properly.*

Volunteer notes: _____

Q9: What should you do if you encounter a problem with the machine that you cannot resolve with basic troubleshooting?

Expected Answer: *Report it to makerspace staff. Do not attempt to disassemble or modify the machine.*

Volunteer notes: _____

Section 8: Checkout Sign-Off

