

envisionTEC

Technical Guide

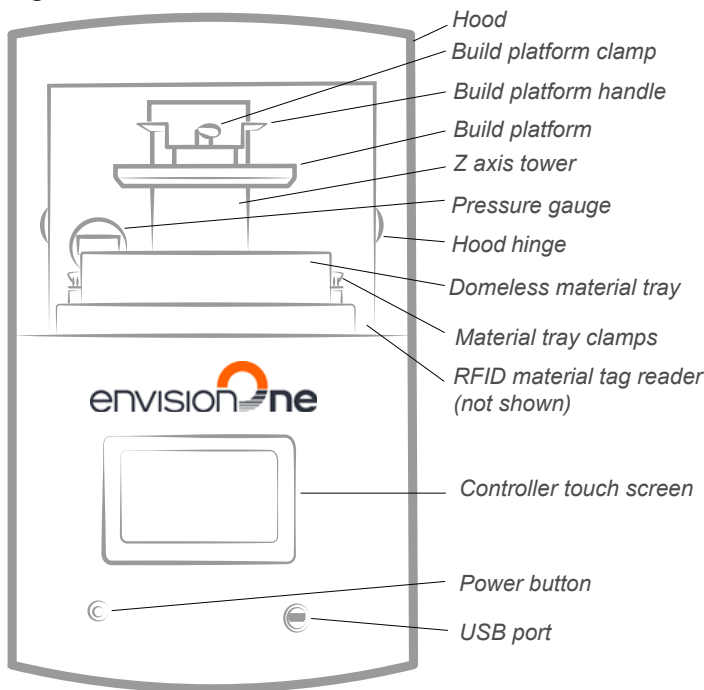
Envision One cDLM: Maintenance

This guide will walk through maintenance procedures for the Envision One cDLM. A maintenance journal is included. It is assumed the printer operator is familiar with their 3D printer and has already implemented the site preparation and shopping guides.

Primary Supplies

- Absorbent paper towels
- Nitrile gloves
- 99% isopropyl alcohol (IPA)
- Ammonia-free glass cleaner
- Material storage bottles
- PWA - 2000 OR Post-processing containers
- Plastic funnel
- Rubber spatula
- Cone-shaped paint filters
- Q-Tips
- White lithium grease
- Microfiber cloth
- Lens cleaner

Fig. 1 ENVISION ONE CDLM FRONT VIEW



Build Platform

Seeing the Signs

The build platform is an assembly that must stay clean. Performance issues can arise from build platforms that become sticky from lack of proper cleaning. Material can cure around the build platform clamp, making operation difficult. Cleaning the build platform thoroughly is especially important when switching between materials.

Process

The build platform is held in place via the build platform clamp. This clamp screws into position at the top of the build platform. The screw cavity can be cleaned using a Q-tip with 99% IPA. If too much material has cured in the set screw threading, the build platform may need to be replaced. The surface of the build platform can be cleaned using a clean paper towel. Check every surface for material,

buildup, or stickiness. Excessive buildup can be cleaned using a small amount of 99% IPA on a clean paper towel or Q-tip. Use 99% IPA away from the material tray and thoroughly wipe all IPA completely from the build platform before installing it back onto the printer.

Time needed: *Approximately five to fifteen minutes*

Maintenance frequency: *Print-by-Print*

Material

Seeing the Signs

Protect material in the material tray from ambient light by keeping the hood closed. Material in the material tray needs to be mixed before each print. Check the material for solids or debris. If found, than the material must be filtered. *For more specific information on handling a material, see the Safety Data Sheet.*

Process

Use the rubber spatula from the Starter Kit to **mix material**. Lightly skim the spatula back and fourth across the surface of the material in the tray. The film at the bottom of the domeless material tray should be avoided to prevent puncturing or tearing. Mix the material until it's a completely uniform color.

To filter material, remove the material tray from the printer. Set the funnel and cone-shaped paint filter on top of a separate, opaque storage bottle. Pour the material out by tipping a front corner of the tray, away from the vent holes. Use the rubber spatula to assist in guiding the material into the filter. When finished, dispose of the filter and clean the funnel with a dry paper towel.

Time needed: *Approximately five minutes to mix, depending on material. Approximately 15 minutes to filter material*

Maintenance frequency: *Print-by-Print*

Printer Casing

Seeing the Signs

The printer's metal casing protects the internal components from damage. To avoid spilling material on the casing, always hold a paper towel under the build platform and material tray while installing or removing. Once spilled material cures to the casing it is difficult to remove.

Process

Wipe spilled material as soon as it touches the printer, before it cures. Remove the majority of the spill with a dry paper towel first, then lightly spray a second paper towel with IPA and wipe away any residue. If rubbed with too much pressure or for too long, the casing may become discolored.

Time needed: *Approximately five minutes*

Maintenance frequency: *Print-by-Print*

Material Tray

Seeing the Signs

Check the film at the bottom of the material tray whenever material is removed, *Fig 2*. Look for pin holes, punctures, ripples, and other signs of stress. A slightly cloudy film is normal and will not affect print quality. Check the glass on the bottom of the tray for smears or finger prints, which can affect print quality.

Process

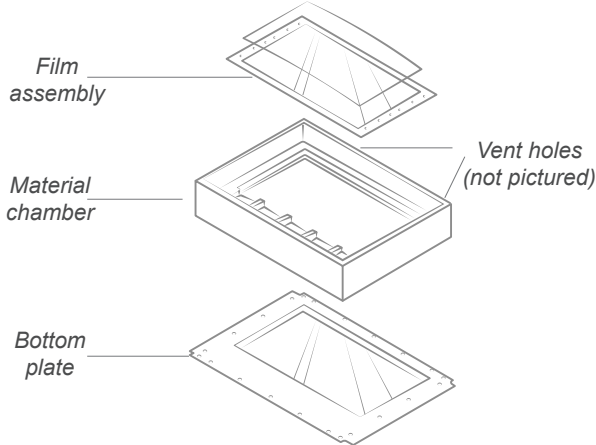
The material tray is a consumable with an approximate lifespan of up to 1000 hours of print time or 3 months of use, whichever comes first. Order a new material tray before the current tray

expires or becomes damaged. See the *Domeless Material Tray Best Practices guide* for more information.

Wipe the glass on the bottom of the material tray with ammonia-free glass cleaner when needed. When the tray is out of the printer, always set it on a clean paper towel to protect the glass.

Time needed: *Approximately five minutes*
Maintenance frequency: *Weekly*

Fig. 2 DOMELESS MATERIAL TRAY EXPLODED VIEW



Dust

Seeing the Signs

Dust may accumulate on, near, or inside of the Envision One. Dust can build up on fans and vent holes. High levels of dust accumulation can cause the printer to overheat. To protect the internal hardware, the printer automatically shuts down if it reaches the maximum internal temperature of 120 F / 49 C.

Process

Look around the vent holes on the left and right sides of the printer's casing for signs of buildup. Listen to the fan when the printer powered on for inconsistency, stress, or obstructions. To remove dust, power down the printer, disconnect the power cable, and then wipe the vents and fan with a micro fiber cloth. After the printer has been cleaned, look down through the safety glass under the material tray to make sure that there isn't any dust or debris on the lens. See the *Cleaning Projector Lens technical guide*.

Time needed: *Approximately five minutes*
Maintenance frequency: *Weekly*

Hard Drive Space

Seeing the Signs

The Envision One has an internal PC that is capable of storing a limited amount of data. It is a good practice to remove print job folders from the printer in order to free up space. When the majority of the hard drive space has been used, the printer may show error messages or respond slowly to touch screen commands.

Process

On the Envision One touch screen select -
Home > Job List > Select the print job folder name > Tap the Waste Bin icon
 The unwanted print job folder is now erased from the Envision

One. Repeat these steps until all unwanted print job folders have been removed.

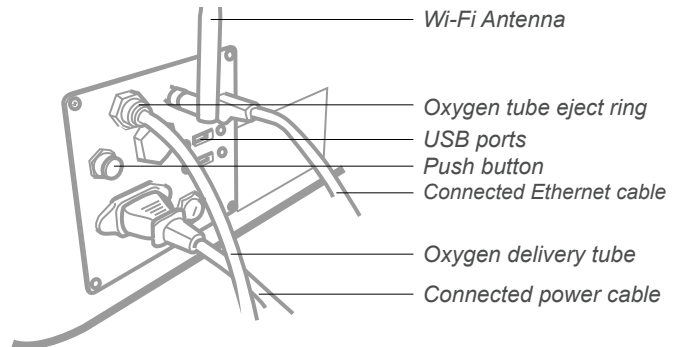
Time needed: *Approximately five minutes*
Maintenance frequency: *Weekly*

Power Cycle

Seeing the Signs

It is recommended to power cycle the printer under any of the following conditions - the printer is running slowly, the printer was recently updated, or the printer has not been powered down in a week.

Fig. 3 ENVISION ONE REAR VIEW



Process

Power off the printer using the touch screen:
Home > Settings > Power > Power Off
 Once the printer has completely turned off, gently remove the power cable from the back of the printer, *Fig 3*. Push and hold the power button on the front of the printer for 10 seconds to drain all power to the printer. Plug the power cable back in, and then power on the printer using the front power button.

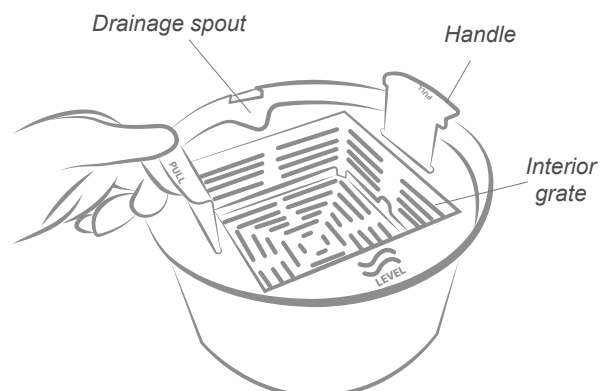
Time needed: *Approximately five minutes*
Maintenance frequency: *Weekly*

PWA - 2000 / Washing Containers

Seeing the Signs

The PWA-2000 needs to be emptied when the bottom of the container is no longer visible. The 99% IPA will collect particles of uncured material over time. If using plastic washing containers instead of the PWA-2000, the dirty bath will need to be emptied when the bottom of the container is no longer visible.

Fig. 4 PWA 2000 REMOVABLE WASHING COMPARTMENT



Process

Look into your local protocol for safe handling of 99% IPA. If using the PWA-2000, remove the washing compartment from the PWA-2000, *Fig 4*. Pour the IPA from the pour spout into an IPA recycling container. Wipe down the interior of the washing compartment with a clean paper towel. If using the plastic washing containers, remove the used IPA from the dirtier bath. Wipe the container clean using paper towel.

Time needed: *Approximately fifteen minutes*

Maintenance frequency: *Weekly*

Touch Screen**Seeing the Signs**

Sticky spots on the monitor can make it difficult to press buttons or navigate the interface effectively.

Process

Spray lens cleaner onto a clean paper towel and gently wipe the surface of the monitor. Always stand away from the printer when spraying to avoid contaminating the material and material tray.

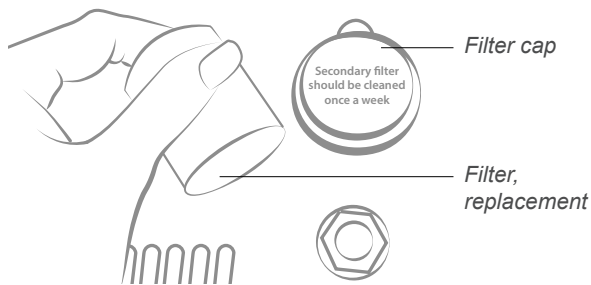
Time needed: *Approximately five minutes*

Maintenance frequency: *Monthly*

Oxygen Concentrator**Seeing the Signs**

The oxygen concentrator has a filter located on the base of the concentrator, *Fig 5*. This filter should be cleaned every two weeks, and replaced every six months. The oxygen concentrator ships with twelve replacement filters.

Fig. 5 OXYGEN CONCENTRATOR FILTER

**Process**

Do not attempt this process while the Envision One cDLM is printing. In between print jobs, turn off the oxygen concentrator via the power button on the top of the concentrator. Turn the concentrator on its side and locate the filter cap, *Fig 5*. Remove the cap from the concentrator, and then remove the filter, *Fig 5*. Take the filter to the post processing zone and spray with compressed air to remove dust and debris. Insert the filter back into the base of the concentrator, return the cap, and situate the oxygen concentrator back on its base. When ready, turn the oxygen concentrator back on. Allow the system to prime for 30 minutes before beginning the next print.

Every 6 months, the filter must be removed and replaced with a new filter. If needed, the cavity can be cleaned with a clean dry paper towel or micro fiber cloth.

Time needed: *Approximately five minutes*

Maintenance frequency: *Every two weeks, replace every six Months*

Grease the Z Slide**Seeing the Signs**

Inside the Z axis tower is a long, threaded metal rail called the Z slide. This rail is attached to a motor and moves inside of the printer. The Z slide needs to be greased annually using white lithium grease. This keeps the Z slide free of dust and debris, and allows it to operate smoothly.

Process

Add a small amount of lithium grease to the tip of a clean Q-Tip. Apply the grease starting near the top of the screw and move down slowly to the base of the screw.

Time needed: *Approximately one hour*

Maintenance frequency: *Annually*

Maintenance Journal

See the *Maintenance Journal* on page 4 on this document. Use this journal to verify the Envision One cDLM is correctly maintained. Print this journal and post it near the printer for easy access.

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