

envisionTEC

Technical Guide

Domeless Material Tray Best Practices

This technical guide covers the anatomy of the EnvisionTEC's domeless material tray, and includes maintenance procedures for each component.

Applicable Printers: Envision One cDLM and Vida Domeless cDLM series

Primary Supplies

- | | |
|---|-----------------------------------|
| Nitrile gloves | Micro fiber cloth |
| Plastic funnel | Paper towels |
| Replacement Domeless Material Tray - (optional) order from EnvisionTEC or authorized distributor. | Cone-shaped paint filters |
| SAP part # MIC-90-2052 | Rubber spatula (from Starter Kit) |
| | Ammonia-free glass cleaner |

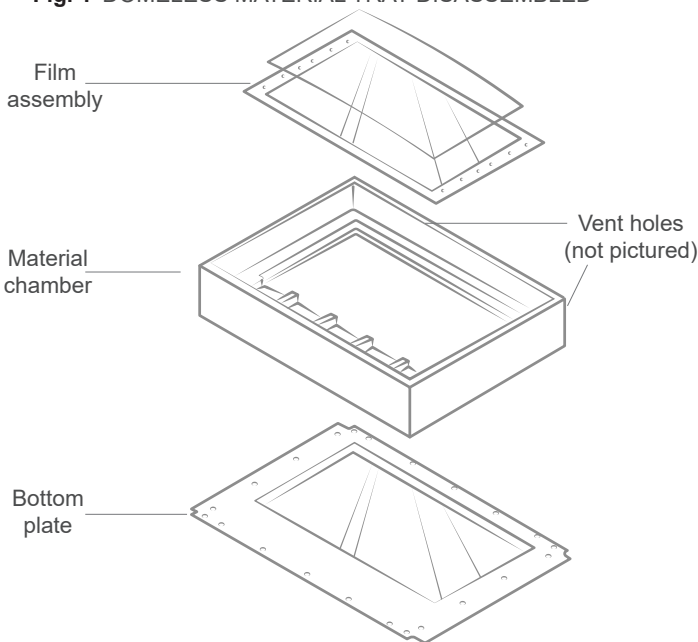
Getting Started

The Envision One cDLM has a domeless material tray assembly with a closed circuit of oxygen airflow. The material tray is comprised of four main parts, *Fig. 1* -

- 1 Film assembly
- 2 Material chamber
- 3 Bottom plate
- 4 Vent holes

Follow the instructions in this technical guide to keep the material tray in good condition for printing.

Fig. 1 DOMELESS MATERIAL TRAY DISASSEMBLED



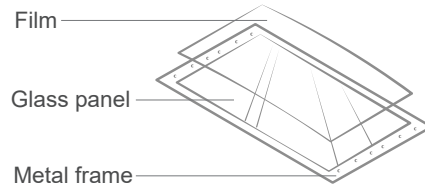
Anatomy

1 Film assembly

The film assembly is located inside the material chamber and is comprised of three parts, *Fig. 2* -

- 1 Film
- 2 Glass panel
- 3 Metal frame

Fig. 2 DOMELESS MATERIAL TRAY FILM ASSEMBLY



Maintenance

Always wear gloves when handling the film assembly to avoid damaging the film. The film can be wiped clean using a dry paper towel. Never use chemicals or alcohol to clean the film. Cloudiness of the film is expected and will not change the quality of prints.

Removing cured material from the surface of the film assembly-

Envision One - use **Manual Debris Removal** at the end of a print, or access it using the following sequence -

Home > Settings > Manual Debris Removal

Once the exposure time is set on the **Manual Debris Removal** page press **Expose** - the projector will expose the full printing area to light for the set exposure duration. Use the rubber spatula from the Starter Kit to gently remove the cured material from the surface of the film assembly.

Vida Domeless - use the following sequence to access the **Mask** - *Options > Job Settings > Load File > Vida Mask > Open*

Leave the mask on for **no longer than 10 seconds**. To remove the projection, select *Unload*. Use the rubber spatula from the Starter Kit to gently remove the cured material from the surface of the film assembly.

It is crucial to remove the cured material immediately after exposure. Beginning a new print with the exposed material still stuck to the material tray could damage the film assembly.

Replacement signs

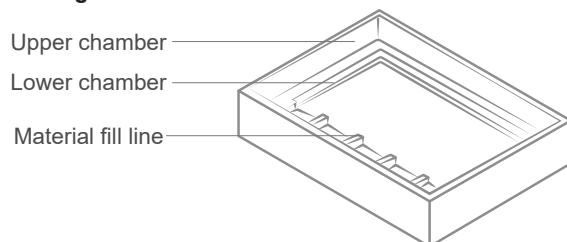
Pits, holes, separation, bubbling, tears, or chemical contamination will render the film ineffective and warrant replacement.

2 Material chamber

The material chamber is the vessel to hold material in the printer during operation. It is comprised of two sections, *Fig. 3* -

- 1 The upper chamber
- 2 The lower chamber

Fig. 3 DOMELESS MATERIAL TRAY MATERIAL CHAMBER



When adding material to the material tray, **do not pour past the material fill line**. Material should be added until it fills the lower chamber only.

Maintenance

Always wear nitrile gloves when handling the material chamber in order to avoid direct skin contact with material. Use a clean dry paper towel to clean the material chamber. Using chemicals or alcohol to clean anything that comes in contact with material may cause contamination, resulting in printing issues.

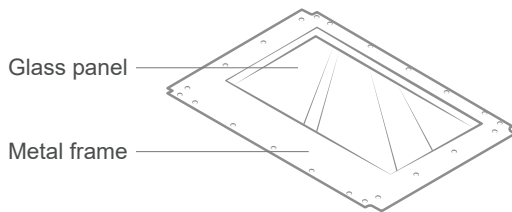
When switching to a new type of material, carefully clean corners with the paper towel or a Q-Tip to prevent contamination. Refer to the **Material Change Technical Guide** for more information. The guide is available to download by contacting EnvisionTEC support or an authorized distributor. Reinstall the material tray on the printer as soon as possible after cleaning. **Leaving the material tray exposed to light can cause small particles of material to cure.** This can prematurely age the material tray and contaminate new material when the tray is used again.

3 Bottom plate

Under the material chamber is the bottom plate, Fig. 1. The bottom plate is comprised of two parts, Fig. 4 -

- 1 Glass panel
- 2 Metal frame

Fig. 4 DOMELESS MATERIAL TRAY BOTTOM PLATE



The glass panel allows light from the projector to cure material in the material chamber. The glass panel must be kept clean as smudges, scratches, or finger prints can distort the light and cause printing issues.

Maintenance

Always wear nitrile gloves when handling the bottom plate to avoid leaving finger prints on the glass panel. Use a micro fiber cloth to clean the glass. Ammonia-free glass cleaner may be used. Always spray the glass cleaner directly onto the micro fiber cloth, away from the material tray, in order to avoid contaminating the material chamber and film assembly.

Replacement signs

If the glass panel cracks or is badly scratched then the material tray will need to be replaced.

4 Vent holes

There are two vent holes located on blocks at the back of the domeless material tray. When the material tray is installed, these vent hole blocks lineup with two corresponding holes on the printer, Fig. 5. When the printer is powered on, the oxygen flows to and from the material tray via the vent holes. The vent holes must remain clean in order to form a seal.

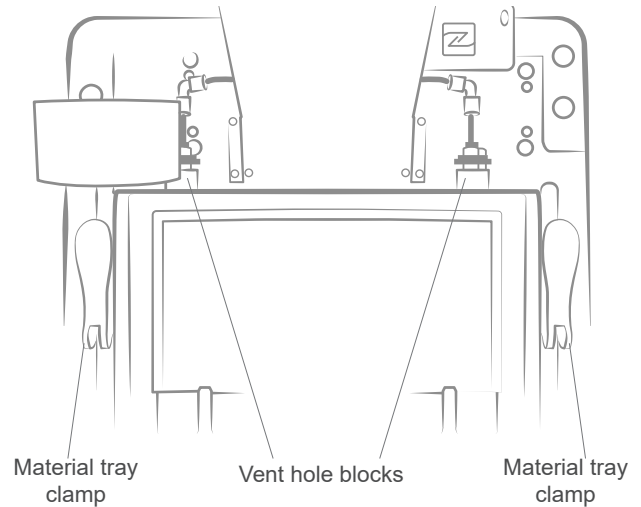
Maintenance

Use a dry paper towel to clean the vent hole blocks.

Replacement signs

If material leaks into the oxygen system via the vent holes, then the material tray will need to be replaced and the printer's internal oxygen tubing system will need to be checked for additional damage. Refer to the **Tubing Replacement Technical Guide** for more information. The guide is available to download by contacting EnvisionTEC support or an authorized distributor.

Fig. 5 DOMELESS MATERIAL TRAY VENT HOLES CONNECTION



Filtering material

The **Manual Debris Removal** tool removes cured material from the surface of the film assembly. However, small particles of cured material may still be floating in the material tray. Filtering out these impurities is an important procedure to incorporate into a printer maintenance routine, and may extend the life of the domeless material tray.

The material may need to be filtered in the following situations -

- 1 The printer was inactive for longer than a weekend
- 2 A print job failed
- 3 There are visible particles floating in the material tray

Procedure

- 1 Perform the **Manual Debris Removal** using instructions on the previous page
- 2 Remove the build platform from the printer and set aside on a paper towel - lined surface
- 3 Release the right and left material tray clamps, Fig. 5, and slide the material tray towards you. Set the material tray aside on a clean paper towel - lined work surface
- 4 Gather the storage container for the material to drain into. Use a clean opaque container with an airtight seal. To avoid contamination, never pour used material back into the original bottle
- 5 Remove the lid of the storage container and place the plastic funnel and cone-shaped paint filter over the opening
- 6 Take the material tray and hold it above the paint filter. Avoid touching the vent holes and the glass panel in the bottom plate. Tip the tray at the front corner, allowing the material to flow into the filter at a controlled speed
- 7 Wipe away any drips using a dry paper towel and set the material tray down on a clean paper towel - lined surface. Remove the cured rectangle formed by the **Manual Debris Removal** if it was not removed previously. Clean any remaining debris in the material chamber with a clean dry paper towel
- 8 Slide the clean material tray into the printer, vent holes first, until it is fully seated. Listen for click. Tighten the left and right material tray clamps. Wait to add material until ready to begin a new print. Close the hood to protect the material tray from light
- 9 Dispose of the paint filter and wipe the funnel clean using a paper towel. The funnel can be stored in a safe place until it is needed again