



# **VeriBuild**

LCD 3D Printer

## User Manual



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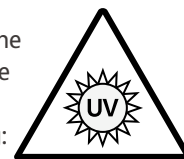
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<b>Document Number:</b>	TM3M2EP0522
<b>Document Version:</b>	2.1
<b>Product Version:</b>	VeriBuild, firmware version 1.1.8
<b>Release Date:</b>	October 2019

## UV Light Safety

This product uses a light engine that outputs ultraviolet light in the UV-A range, with possible trace amounts in the UV-B range. This product is compliant with the international standard ISO 3059:2012 in accordance with non-destructive penetration testing of UV irradiance. This product encloses the light engine in opaque and UV-filtered material to prevent UV light exposure. However, incidental UV light may extrude from the machine due to any of the following:



- Leaving the door open during usage
- Gaps or holes in the sides of the machine
- Transparent or translucent resins

During operation, do not stand near this product for prolonged periods of time, and do not look directly into the lighted area. Improper exposure to UV light can cause painful eye and skin injuries.

### ■ UV Protective Gear

<b>Eye Protection</b>	UV light exposure has the most potential for causing damage to the eyes. Wear UV-filtered glasses, goggles, or a face shield to protect your eyes from the damaging effects.
<b>Gloves</b>	Skin exposure is most often occurs on the hands, which are oftentimes closest to the product during operation. Wear thick cloth or rubber gloves to protect your hands from UV exposure.
<b>Thick Clothing</b>	Other areas of the skin may be exposed, especially if the product is used in cramped environments. Wear long-sleeved shirts with collars, long pants, and even cloth hats to protect your skin from incidental exposure.
<b>Skin Protective Substances</b>	Topical agents such as sunblock, sun cream, or similar substances can protect against the effects of UV light, but these are generally designed for outdoor use. Do not rely on such substances in lab environments, but use them as an extra layer of protection if necessary.

### ■ Prolonged Exposure

<b>Eye Exposure</b>	Direct UV-A light into the eye can lead to irritation, temporary blindness, and the forming of cataracts on the lens of the eye. UV-B light can compound the cataract-forming effect, and can also lead to photokeratitis and photoconjunctivitis.
<b>Skin Exposure</b>	Direct UV-A and UV-B light on the skin can cause localized tanning, burning of the skin, and can lead to skin cancer in extreme long-term situations.

## Resin Safety

Resins provided by Whip Mix are non-carcinogenic acrylic-based photopolymer liquids that give off a light odor. These resins may cause skin, eye and respiratory system irritation, and skin sensitivities or allergic reactions by skin contact. Inhalation of a high-vapour concentration may cause headaches and nausea. Whip Mix recommends the following protective gear when handling photopolymer resins, whether from Whip Mix or from another company.





#### ■ Resin Protective Gear

<b>Gloves</b>	The hands are the most likely affected area when handling resins. Wear rubber, nitrile, polyvinyl chloride, or other chemical-resistant gloves.
<b>Eye Protection</b>	While using air compressors or due to usage or handling, resin may splash into the eyes. Wear protective goggles, safety glasses with side shields, or a face shield.
<b>Face Mask or Respirator</b>	If the room does not have sufficient ventilation, wear a respirator or medical face mask to protect against inhalation or accidental exposure to the mouth.
<b>Thick Clothing</b>	Prolonged exposure to resin may cause irritation or may cause allergies to develop where they previously did not seem to occur. Wear long-sleeved shirts with collars, long pants, and even cloth hats to protect your skin from incidental exposure.

#### ■ Acute Exposure

<b>Skin Contact</b>	This product may cause skin irritation. Symptoms may include a slightly localized redness or rash and swelling. Repeated exposure may cause sensitization and an allergic skin reaction in some individuals resulting in contact dermatitis, severe irritation, dryness and cracking.
<b>Eye Contact</b>	This product may cause eye irritation. Symptoms may include excessive tearing, itching, irritation, blinking and redness.
<b>Inhalation</b>	This product may be a suspect slight respiratory tract irritation hazard, especially if used at an elevated temperature or processes which may generate aerosols or mists. Symptoms of irritation may include coughing, headaches and nausea, mucous production and shortness of breath.
<b>Ingestion</b>	This product may be harmful if swallowed. It may cause nausea, headaches, vomiting, diarrhoea, and/or central nervous system effects. Keep all food in a separate area away from storage and use locations. Prohibit eating, drinking and smoking in areas where there is the potential for significant exposure to this material. Thoroughly wash hands before eating.

#### ■ Chronic Exposure

<b>Skin Contact</b>	Prolonged contact may cause sensitivities and allergic reactions. People with pre-existing skin conditions may incur more significant irritation. Repeated exposure may cause sensitization and allergic skin reactions in some individuals resulting in contact dermatitis, severe irritation, dryness and cracking.
<b>Eye Contact</b>	Prolonged contact may cause redness of eye tissue.
<b>Inhalation</b>	Prolonged or repeated overexposure may cause irritation, headaches, and nausea.
<b>Ingestion</b>	Prolonged or repeated swallowing may be a slight ingestion hazard. Chronic ingestion of high doses has shown damage to testes in studies with animals.



## ■ Disposal

Resins provided by Ackuretta are not readily biodegradable. Releasing these resins into the environment may be illegal according to the regulations in the usage area.

**\* Properly dispose of resins in accordance with all applicable federal, state, and local regulations.**

For more information, please refer to the Material Safety Data Sheet for your particular resin.

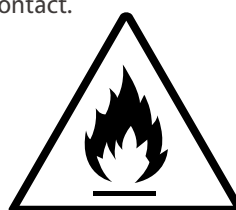
## Cleaning Alcohol Safety

To clean prints, Whip Mix recommends using solutions of 95% ethylalcohol or 95-99% isopropyl alcohol (IPA). Both compounds are colorless, transparent, and naturally give off strong odors. Both compounds have the following major safety concerns:

- **Highly flammable and potentially explosive.**
- Toxic and can cause adverse conditions from ingestion, inhalation, or direct contact.
- Evaporate quickly so they can become airborne toxins.

To avoid these potential issues, do the following:

- Store in cool, dry, and well-ventilated areas.
- Label containers with instructions regarding handling and storage.
- Keep away from any sources of heat, fire, and sparks.
- Keep away from strong oxidizers, acetaldehyde, chlorine, ethylene oxide, acids and isocyanates.
- Close containers tightly with a strong seal immediately after use.
- Dispose of in accordance with all applicable federal, state, and local regulations.



Adverse conditions may include:

## ■ Acute Exposure

<b>Skin Contact</b>	This product may cause skin irritation. Symptoms may include skin discoloration, dryness, and cracking.
<b>Eye Contact</b>	This product may cause eye irritation. Symptoms may include excessive tearing, itching, irritation, blinking and redness.
<b>Inhalation</b>	This product may be a slight respiratory tract irritation hazard. Symptoms may include nose, throat, and lung irritation, coughing, and/or shortness of breath.
<b>Ingestion</b>	This product may be harmful if swallowed. It may cause nausea, headaches, vomiting, and/or unconsciousness. It can also affect concentration and vision.

## ■ Chronic Exposure

<b>Skin Contact</b>	Prolonged contact may cause sensitivities and allergic reactions. Repeated exposure may cause sensitization and allergic skin reaction in some individuals, resulting in contact dermatitis, severe irritation, dryness and cracking. Alcohol can be absorbed through the skin and may result in symptoms similar to those listed under acute ingestion.
<b>Eye Contact</b>	Prolonged contact may cause redness of eye tissue.
<b>Inhalation</b>	Repeated high exposure may affect the liver and the nervous system.
<b>Ingestion</b>	Occupational exposure is unlikely to cause cancer, but direct and repeated ingestion may increase the risk of liver, esophagus, breast, prostate, and colorectal cancers. Pregnant women should not ingest alcohol, and repeated exposure may cause spontaneous abortions, birth defects, and other developmental problems. Repeated ingestion may also reduce fertility in males.



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## Chapter 1: About the VeriBuild

Resin-based 3D printing has advanced in several stages, starting from laser-based SLA machines to much faster DLP printers. Whip Mix brings its technical expertise into the next stage of printing with the VeriBuild, a desktop LCD printer that delivers high-resolution, smooth surface prints at a price point that is ideal for the entry-level market.

### ■ Specifications

3D Printing Technology	LCD
Machine Size	25 × 23 × 38 cm
Weight	9 kg
Printing Size	120 × 68 × 140 mm
XY Resolution	47 µm
Slice Thickness	30 - 200 µm
Resin Wavelength	405 nm
Power Supply	110-240VAC, 50-60Hz

### ■ Features



Complete Workflow  
Solutions



Open Material  
System



High Resolution  
47 µm



Smooth Surface  
Printing



Advanced  
Software



Wi-Fi  
Enabled



Auto  
Calibration

## ■ Package Contents



VeriBuild



Build Platform



Vat (x2)



Ethernet Cable



Wi-Fi Dongle



Vat Film Sheets (x2)



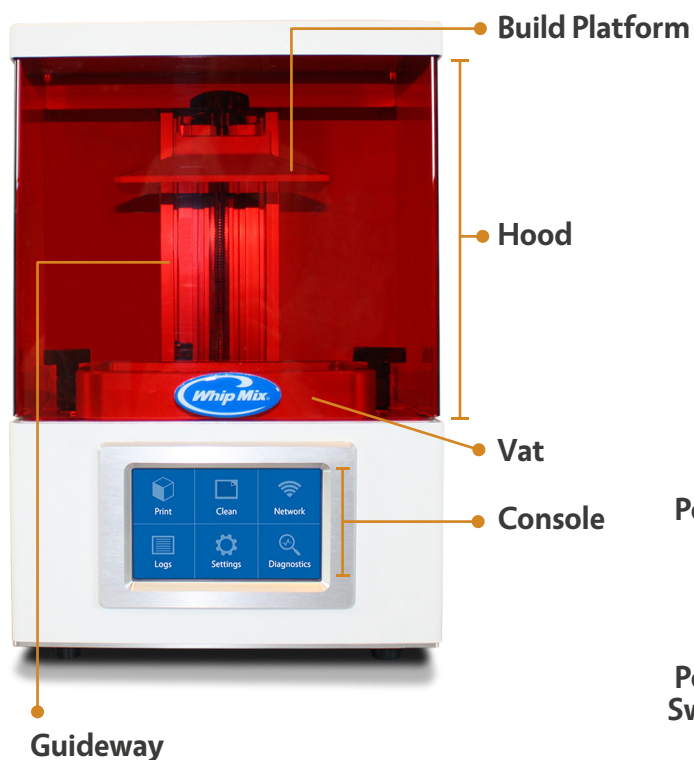
LCD Panels (x2)



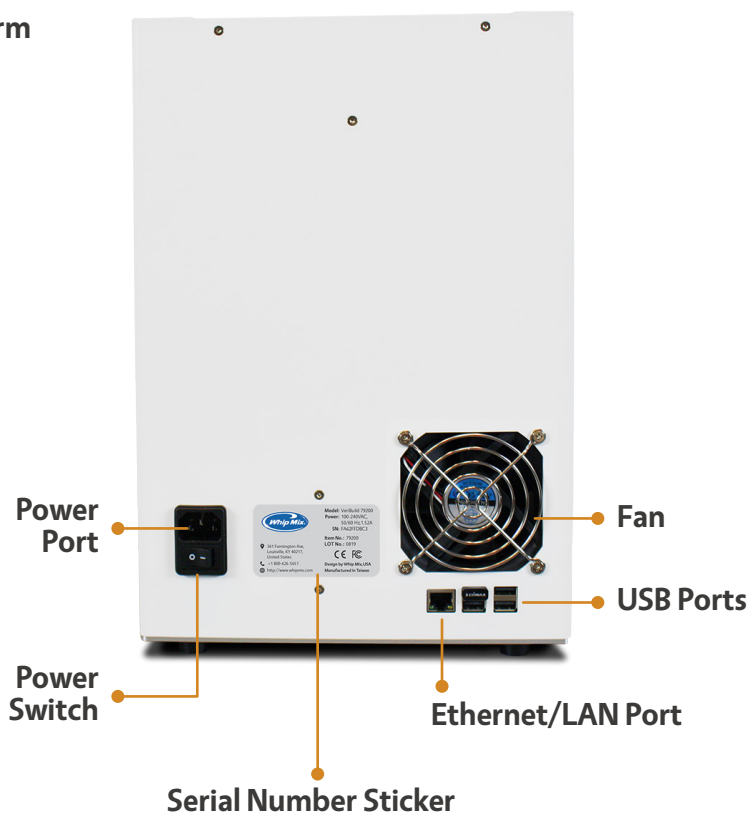
Hex Key

## ■ Machine Overview

Front Side

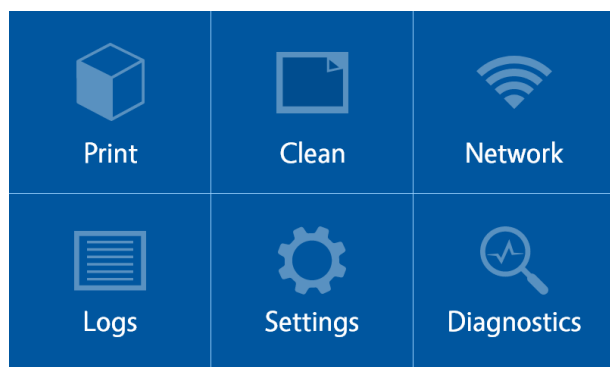


Back Side





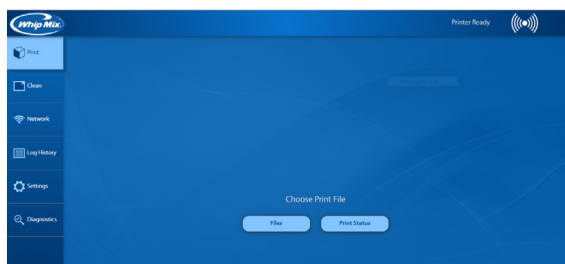
## ■ Machine Console Interface



When you turn on your VeriBuild, the machine will spend a few seconds loading, and will then show the Home screen. The Home screen has the following functions:

Print	The Print screen is the primary screen for uploading files and getting your printer started. For more information, see <a href="#">Printing</a> .
Clean	If your print fails, use the Clean function to remove pieces of prints that did not stick to the build platform during printing. The Clean function cures one layer of resin at the bottom of the vat, and then you can easily remove that cured layer and throw away any other debris with it. For more information, see <a href="#">Using the Clean Vat Function</a> .
Network	Connect to a Wi-Fi network or a static IP address. For instructions on how to set up a network connection, go to <a href="#">Connecting to a LAN or Wi-Fi Network</a> .
Log History	View the VeriBuild print, system, and error logs.
Settings	Configure your VeriBuild system settings, or update your printer firmware. For more information, see <a href="#">Configuring Your Printer</a> .
Diagnostics	If your printer encounters a problem, use the Diagnostics functions to determine the cause of the issue. For more information about VeriBuild diagnostics, please go to <a href="https://whipmix.com/support/">https://whipmix.com/support/</a> .

## ■ Web Console Interface



The web console is very similar to the machine console interface, with the functions arranged in a browser-friendly format. To access the web console, you will need to connect to a LAN or Wi-Fi network. For details, see [Connecting to Your Network](#).

## Chapter 2: Getting Started

When you first receive your VeriBuild printer, you must do a little bit of work to get your printer up-and-running. This section describes the setup procedure for your machine, so you can go from package to printing as soon as possible.

The topics covered in this section are as follows:

- **Unboxing Your Machine**
- **What You Need**
- **Setup Environment**
- **Connecting to Your Wi-Fi Network**
- **Attaching Your Vat**
- **Filling Your Vat with Resin**
- **Attaching Your Build Platform**

### Unboxing Your Machine

#### 1. Open the printer box.

The VeriBuild is visible with attached handles.  
There are three smaller boxes packed to the side.



#### 2. Lift the printer out of the box by the handles.

Put the printer on a sturdy table to make it easier to remove the other parts of the package.



#### 3. Remove the additional accessory boxes from the main box.

#### 4. Remove the machine from the rest of the packaging.

When moving the machine, hold the bottom and the build platform guideway. Be careful to not put your fingers on the vat when moving. Keep the machine vertical, without tilting it backwards, so as to not bend or displace critical components.





**5. Remove the vat film package from the hood, and put it in a safe place.**

The vat film package is taped to the front of the hood over the plastic wrapping. It is covered with paper on both sides. You can touch the paper by hand, but do not directly touch the vat film. Be careful to not bend the vat film while moving it.



**6. You can remove the plastic wrap or leave it on.**



**7. Remove and store the contents of the three accessory boxes.**

**CABLE:** 1 Ethernet Cable, 1 Hex Key (Allen wrench)

**PANEL:** 2 Print Screens wrapped in protective packaging

**VAT:** The other Vat is already installed



## What You Need

In addition to the printer, you must have several other items to make a complete print and use your printer effectively. This section outlines the items that you need to acquire in addition to the items shipped with the printer.



**1. Computer** – In order to run the Alpha 3D or Omega 3D print software, you will need a computer that meets the following minimum requirements.

	Minimum	Recommended
<b>CPU</b>	Intel i3 2.0 GHz dual-core AMD Athalon 2.0 GHz dual-core	Intel i7 2.6 GHz quad-core AMD Phenom II X4/ X6 at 2.6 GHz quad-core
<b>GPU</b>	Dedicated GPU with 1 GB RAM	NVidia GeForce 830 AMD Radeon R7 M340
<b>Memory (RAM)</b>	4 GB	8 GB
<b>Disk Space</b>	1 GB	2 GB
<b>Operating system</b>	Windows 7 SP1, 8.1, or 10	Windows 7 SP1, 8.1, or 10
<b>Display</b>	1600 × 900	1920 × 1080

**2. Safety equipment** – You should always wear chemical-resistant gloves when dealing with photopolymer resins. Whip Mix also recommends wearing a respirator or face mask, and when dealing with the internal components of the machine, wear UV-protective glasses. When removing prints from a build platform, you may also want cut-resistant gloves for added safety in case your knife slips.

**3. Cleaning alcohol** – Most resins require isopropyl alcohol (99% solution) or ethylalcohol (95% solution) for cleaning. Consult your resin distributor regarding the proper cleaning alcohol to use. In addition, you may want an alcohol bath, such as an ultrasonic cleaner.

**4. Resin** – the VeriBuild is tested with all Whip Mix Qura- resins, but you may use any 405 nm resin.



5. **UV oven** – Whip Mix resins are all tested with the Whip Mix UV oven. Other resin suppliers may recommend other UV ovens.
6. **Knife or scraper** – Sharper tools are better for removing prints from the build platform. Dull scrapers may damage the build platform.
7. **Wire cutters or scissors** – These are standard tools for cutting supports off of prints. You may also want to use an ultrasonic cutter or a rotary tool for this purpose.
8. **Cleaning and drying tools** – Remove resin thoroughly with an air compressor or air blower. You can use tissues or small brushes to remove resin in hard-to-dry places. Keep a safe disposal space to discard any unused resin in a legally safe manner.

## Setup Environment

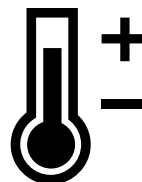
Consider the following when choosing where to set up your VeriBuild and printing work space.

### 1. Temperature: 18° - 25° C

Keep your printer and your resins in a dry, temperature-controlled room around 22° C (72° F).

Resins become more viscous when they are too cold. If the environment is around 15° C (59° F), Whip Mix recommends increasing all curing times by 15%. Even colder temperatures may require further increasing curing times or they may cause print failures.

Similarly, resins may become very thin in hot temperatures. If the environment is hotter than 35° C (95° F), resins may overcure or melt during the print process.



18°-25° C

### 2. UV-Filtered Lighting

The UV-protected hood of the VeriBuild protects the resin from outside light when the hood is on the printer. As you use the printer, the door will be opened many times, and the resin will be exposed to outside light.

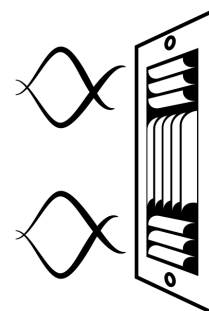
To protect the resin, set up the printer in a place where the lighting is controllable or covered by a UV filter. Similarly, use the same UV filtering in your finishing space and your resin storage location.



### 3. Ventilation

Resins and cleaning alcohol evaporate over time (like all liquids). These substances can be corrosive to other equipment and may be harmful if inhaled over a long time.

Keep your printer, resins, and your cleaning work space well ventilated at all times. Avoid lingering in the same room with uncovered resins for a long period of time.



## 4. Wi-Fi Connection

If you intend to use a Wi-Fi connection, consider the placement of the printer. Do not put the printer in an enclosed area such as a cabinet or garage where the signal may be obstructed. Instead, put the printer in a clean, open area. Avoid having any thick walls or barriers between the wireless access point and the VeriBuild printer.



### Connecting to Your Wi-Fi Network

Connect to a Wi-Fi network so that you can access the printer web console and start prints from your internet browser.

#### Note:

If your environment uses a wired LAN connection, see the [Connecting to Your LAN Network](#) section.

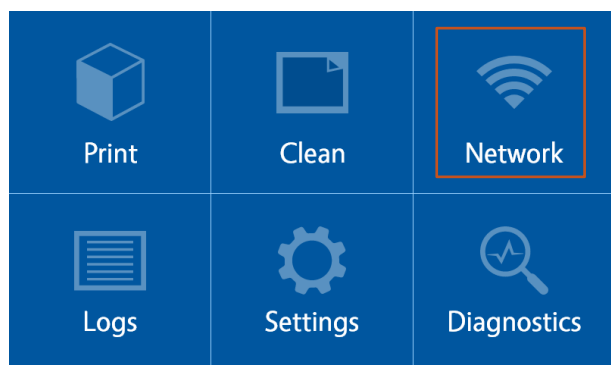
1. Ensure that your Wi-Fi dongle is connected to the printer.



#### Note:

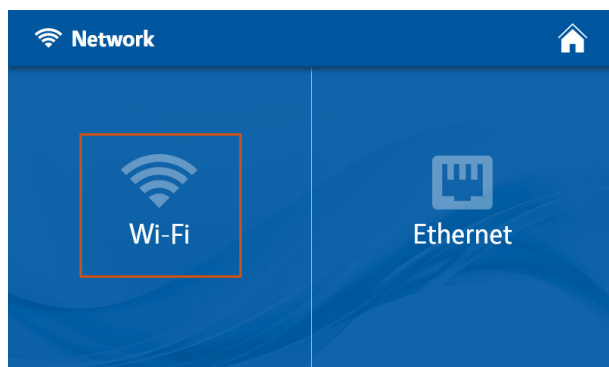
After you connect your laptop to the VeriBuild, your computer should be able to automatically obtain an IP address. If your computer does not, then you may need to modify your network settings. See [Configuring a Static IP Address](#).

2. Press **Network**.





3. Press **Wi-Fi**.



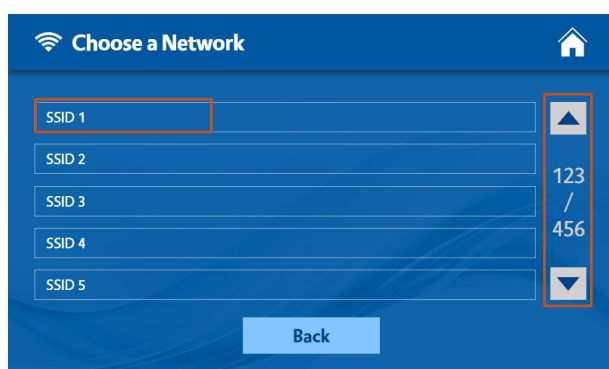
4. Ensure that **Connect to Wi-Fi** box is set to **On**.

5. Press the arrow next to **Choose a network**.

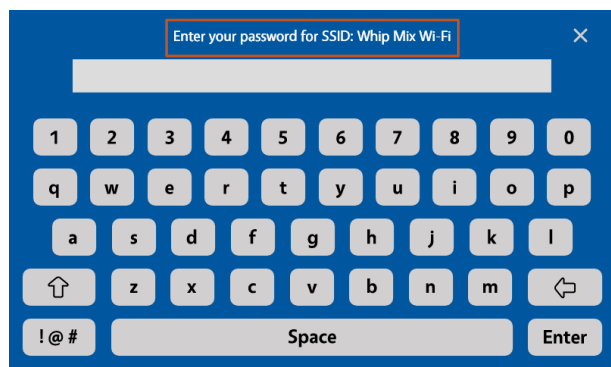


6. Select the network that you want the printer to use.

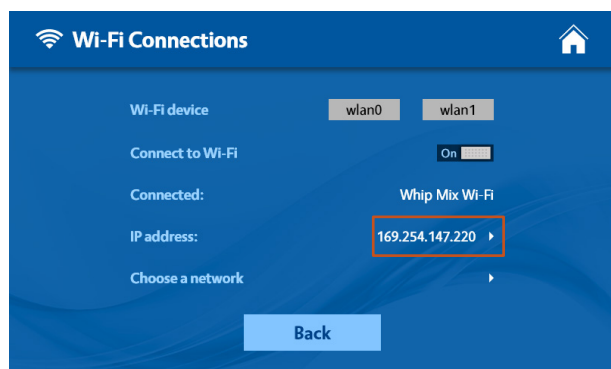
You can use the arrows on the right side to select different pages.



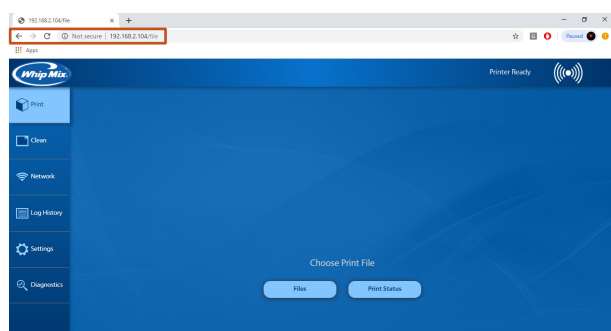
7. If your network is password-protected, a screen appears for you to key in the password.



8. When your printer connects to the network, an IP address appears on this screen.



9. Open an internet browser on a computer that is connect to the same network as the VeriBuild printer. Key in the printer IP address shown into the address bar. The browser shows the VeriBuild web console.





## Attaching Your Vat

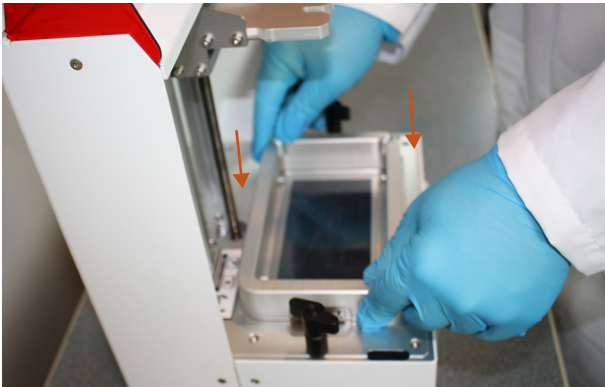
The VeriBuild comes with the vat attached during shipping. If you remove your vat and need to reattach it, do the following.

### Warning:

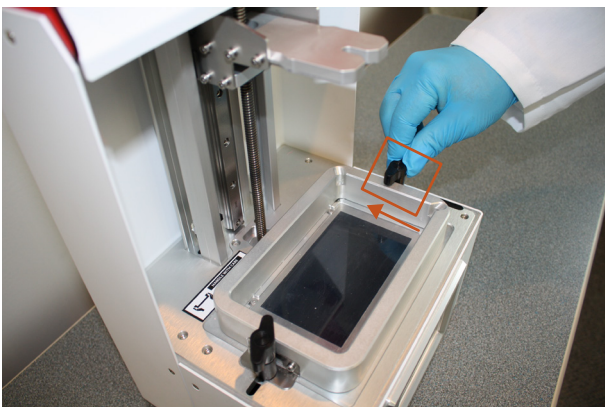
Always put the vat on the VeriBuild before putting the build platform in place. The vat protects the LCD, panel which may be easily damaged if resin or the build platform falls on it.

Do not touch the vat film and do not put the vat directly on tables with the film side down. If the vat is empty, put the vat upside-down on tables. If the vat has resin, put 2-3 tissues under the vat to protect the vat film from scratching or other damage.

1. Put the empty vat on the LCD panel so the metal grooves on the sides line up with the knob holes in the top of the print platform.



2. Lift the handles and slide them inward toward the vat.



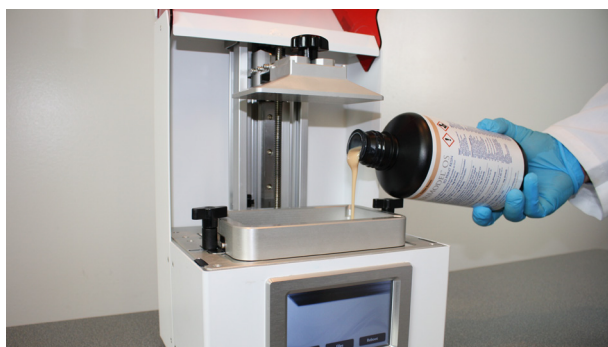
3. Turn the knobs backwards and down so the knobs touch the print platform.  
If you turn the knobs toward the front or to the sides, the handles may interfere with the hood.
4. The vat is attached to the printer and is ready to add resin.

## Filling Your Vat with Resin

1. Before pouring resin into the vat, you must shake the bottle for at least two minutes so the resin is thoroughly mixed.



2. After shaking the bottle, slowly pour resin into the vat. Start pouring in one corner, and slowly move across the surface of the vat, filling the vat evenly.



### Note:

If any resin is in the vat, mix the old resin with the new resin using a rubber spatula. Pull resin from the bottom of the vat so that if any of the resin particles are separated, they properly mix with the new resin.





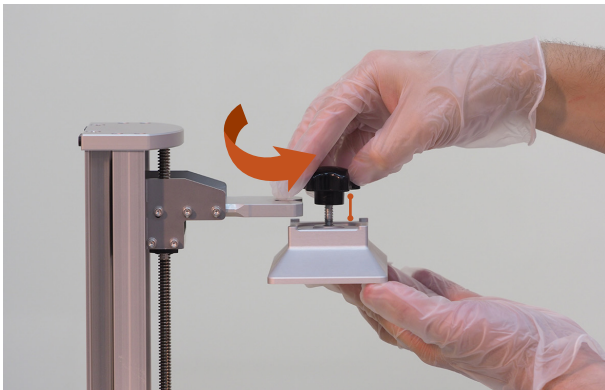
3. The minimum level of resin must be at least 2 mm over the complete vat surface. The maximum level of resin must be no higher than the resin level indicator in corner of the vat.



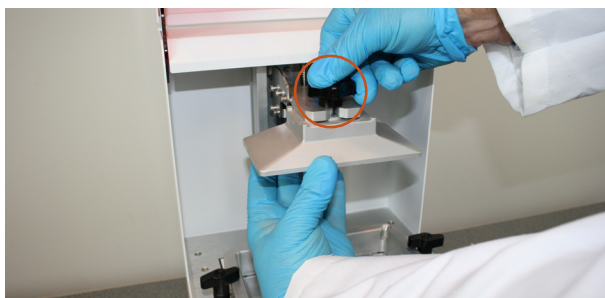
## Attaching Your Build Platform

The VeriBuild comes with a build platform attached during shipping. If you remove the build platform and need to reattach it, do the following:

1. Turn the build platform knob counterclockwise so there is more space between the handle and build platform.

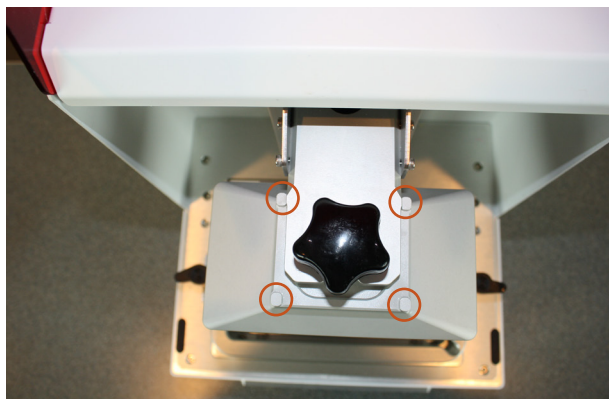


2. Slide the build platform into the gap on the guideway arm.





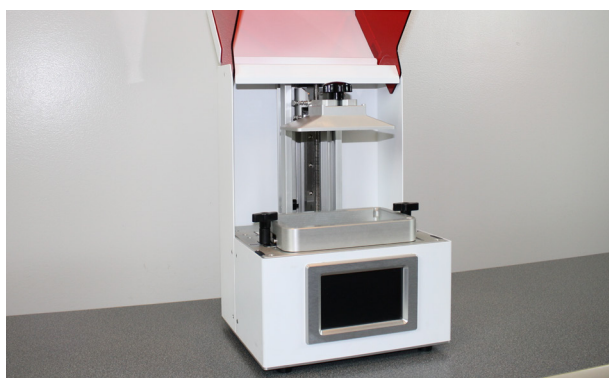
3. Align the build platform so that the 4 prongs are evenly spaced around the guideway arm.



4. Turn the handle clockwise to securely attach the build platform to the guideway arm.



5. Your VeriBuild printer is ready for use when the build platform is installed and securely attached.





## Chapter 3: Printing

After you set up your VeriBuild, the next step is to get your first print up and running. This section describes the basic process for getting your printer ready and starting a print.

The topics covered in this section are as follows:

- **Designing Your 3D Model**
- **Making Your Print File**
- **Printing Using a USB Device**
- **Printing Using the Web Console**
- **Printing Process**

### Designing Your 3D Model

The most important part when using a 3D printer is the 3D model from which you want to make a print. Whip Mix printers and software work best using 3D models in STL format.

The following are some examples of software that you can use to make your 3D model:

<b>Dental</b> <ul style="list-style-type: none"><li>• ExoCAD DentalCAD</li><li>• 3Shape Dental System</li></ul>	<b>exocad</b>	<b>3shape</b> 
<b>Jewelry</b> <ul style="list-style-type: none"><li>• Gemvision RhinoGold</li><li>• 3Design Software Solution</li></ul>	<b>RhinoGold</b> ®	 <b>3DESIGN</b> SOFTWARE SOLUTION
<b>Engineering</b> <ul style="list-style-type: none"><li>• Dassault Systèmes SolidWorks</li><li>• Autodesk Inventor</li></ul>	 <b>SOLIDWORKS</b>	 <b>AUTODESK</b> ®

### Making Your Print File

Whip Mix provides a variety of different software solutions to match your industry or application. Import your STL or other design file into your Whip Mix software, support your print, and use the built-in slicer to make your print file.

The VeriBuild supports the following Whip Mix software:

## Alpha 3D

Alpha 3D offers ease-of-use for quick and simple model placement and processing. With automatic mesh repair, automatic supports, and automatic nesting, you can load your prints into your machine in minutes.



- **Print file type:** .ibf
- **Project file type:** .i3dp
- **Supported input file types:** .stl, .tri

You can download Alpha 3D for free and see the user manual at:  
<https://www.whipmix.com>

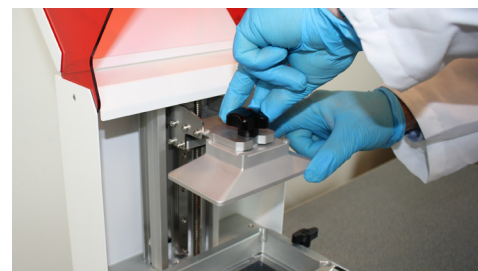
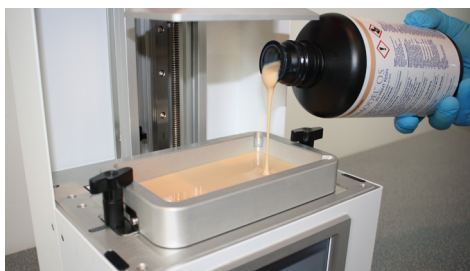
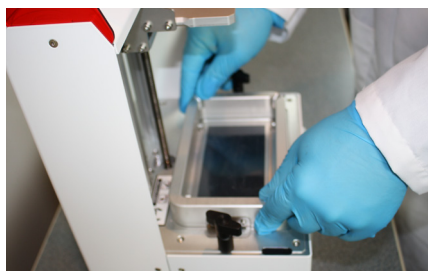
## Printing via a USB Device

There are two ways to start a print on the VeriBuild:

- Attach a USB device (with the print file) to the printer, and then use the printer console to start the print.
- Connect the printer to a LAN or Wi-Fi network and use the web console to print.

This section shows how to print via a USB device. To print over a network connection, see [Printing via a LAN or Wi-Fi Network](#).

1. Attach your vat and build platform, and fill your vat with resin. For more information, see the relevant sections in [Getting Started](#).



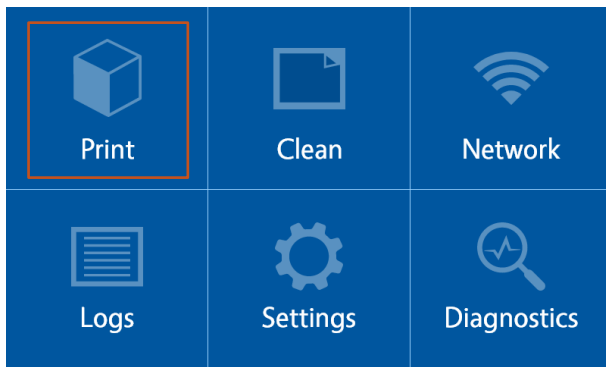


2. Copy the IBF or SBF file to the USB device. Connect your USB device to any of the USB ports on the back side of the FreeShape 120.

For more information about making a print file, see [Making Your Print File](#).



3. On the VeriBuild console, press **Print**.

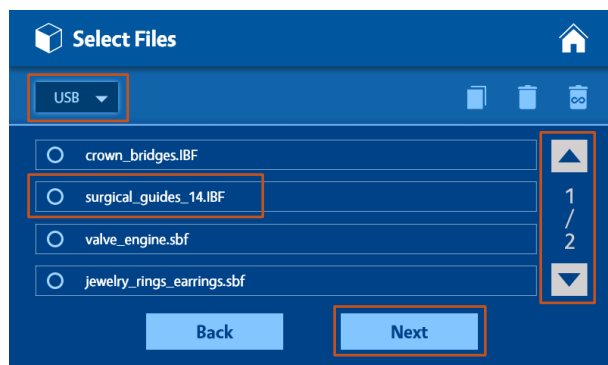


4. On the **Select Files** screen, press **USB**.

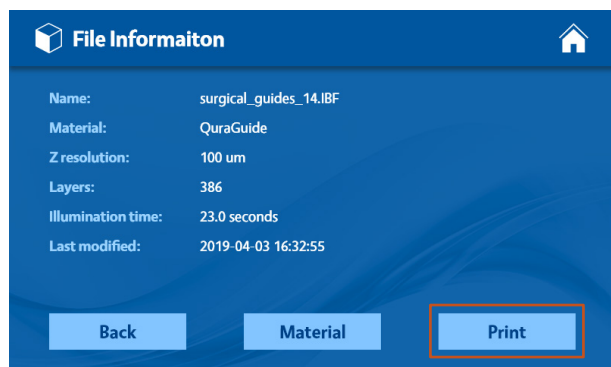
5. Find and press the file that you want to print.

You can use the arrows on the right side to select different pages.

6. Press **Next** when you have selected your print, .



7. Review and confirm your print details. Then, press **Print** to begin your print.



**Note:**

Press **Material** to change your resin settings if your resin profile is incorrect. If you are using a Whip Mix resin profile from Alpha 3D or Omega 3D, your resin profile will be automatically set by the software.

If you are using a third-party resin, you may need to adjust your resin settings. Whip Mix recommends using the web console to set your resin profiles if you are connected to a LAN or Wi-Fi network. See [Material Settings](#) for more information.

8. The build platform moves down and toward the vat and your print begins.



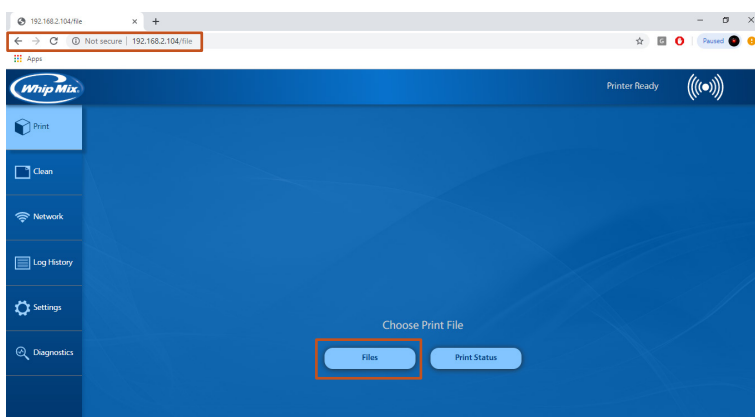


## Printing via the Web Console

If you have connected your printer to a LAN or Wi-Fi network, instead of printing by USB, you can print from an internet browser on your PC or your mobile device. For instructions on how to set up your VeriBuild for browser use, see the appropriate section:

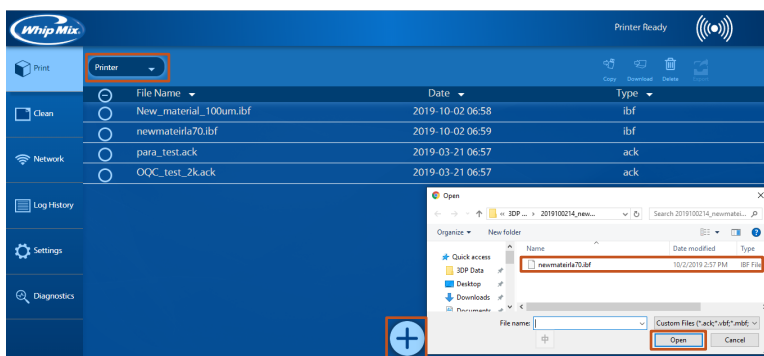
- [Connecting to Your Wi-Fi Network](#)
- [Connecting to Your LAN Network](#)

1. Open an internet browser while on a computer that is connected to the same network as the VeriBuild printer, and key in the printer IP address into the address bar. The browser shows the web console for the VeriBuild printer.
2. Click **Files** on the web console.



3. Click the + circle at the bottom of the screen to add prints to the printer.
4. Browse for your file and click **Open**.

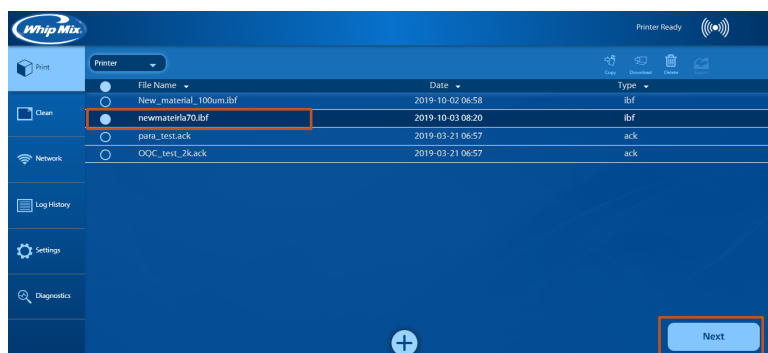
The VeriBuild only supports files in IBF or SBF format. For more information about software and file types, see [Making Your Print File](#).



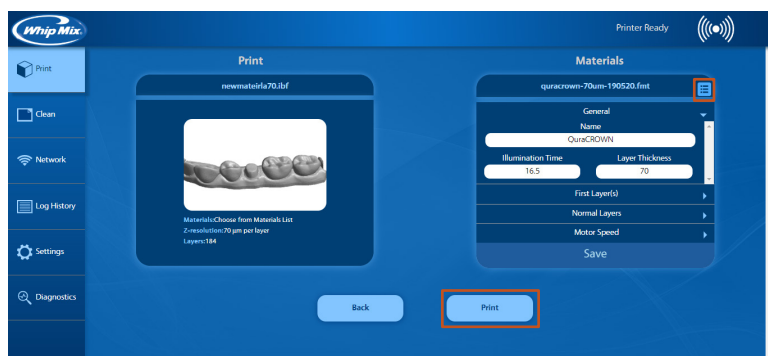
### Note:

The files stored on your printer are shown when the top-left selector is set to **Printer**. You can select prints stored on a USB device connected to your printer if you select **USB**. Additionally, you can see previous prints that you have printed if you choose **Print History**. The **Material** option is described in [Material Settings](#).

5. Select your print file and press **Next**.



6. Confirm your print details and press **Print** to start the print process.



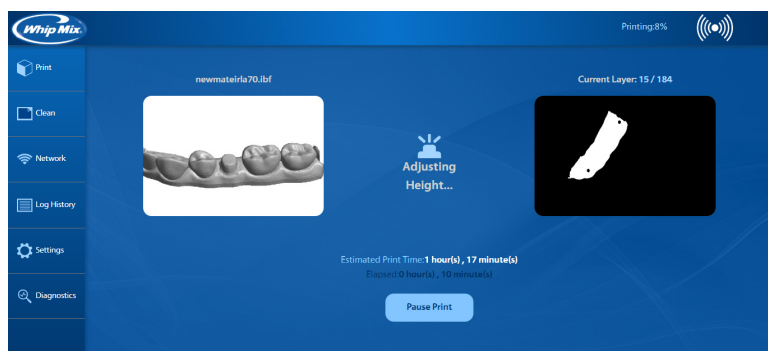
### Note:

If your resin profile is incorrect, press the **Material** icon to change your resin settings. If you are using an Whip Mix resin profile from Alpha 3D or Omega 3D, your resin profile is automatically set by the software.

If you are using a third-party resin, you may need to adjust your resin settings. See [Material Settings](#) for more information.

7. A dialog box appears. Confirm your settings and click **Print**.

Your print begins.



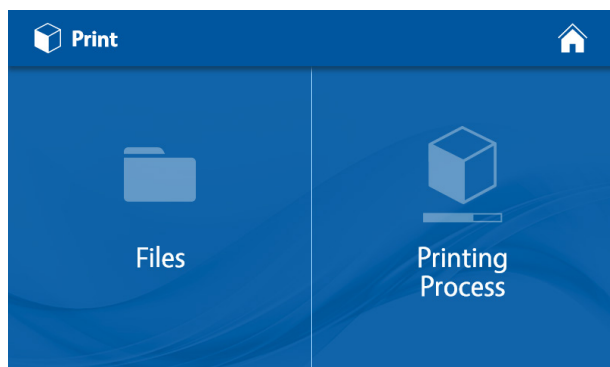


## Printing Process

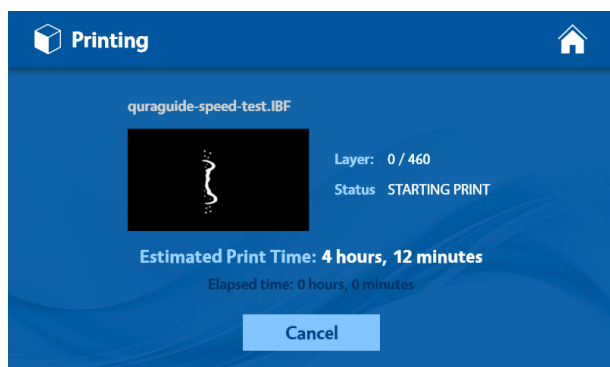
While the machine is printing, you can pause or stop the print at any time via the printer console or the web console. The options are the same, even if the appearance may be different.

After you start a print, the console automatically shows the **Printing Process** screen. From that screen, you can view print details, see how long the print will take, and activate the print options.

You can open the **Printing Process** screen any time by going to **Print > Printing Process**.

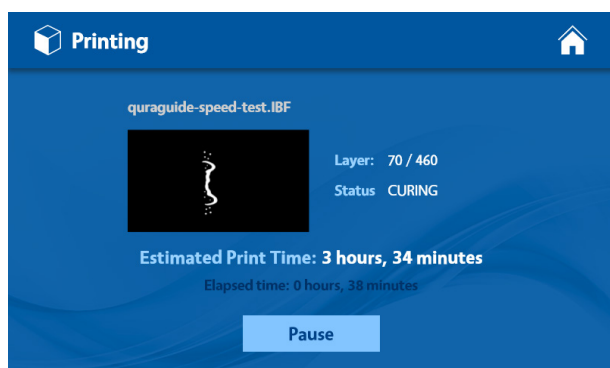


The **Cancel** button is made available when you start a print and the printer is moving into position. You can click the **Cancel** button to stop the print before any resin is cured. This option is made available for if you make a mistake with your printing setup or forget to attach your build platform.



When the VeriBuild starts curing resin, the **Cancel** button changes to a **Pause** button. This option temporarily stops the printer so that you can see if a print has failed, or if you want to add more resin.

When you press **Pause**, the printer finishes printing the current layer before making other options are available.





When your printer is paused, two new options become available:

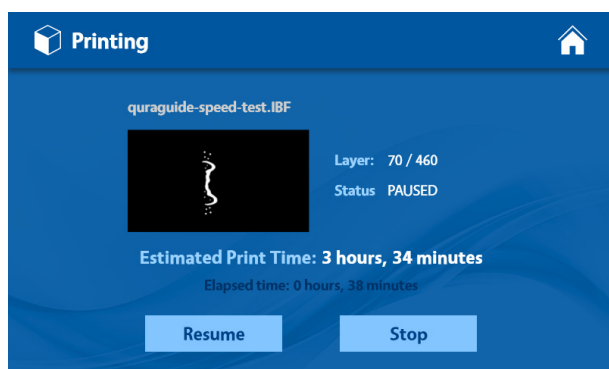
- **Resume**

If the print is paused, press the **Resume** button continue printing.

- **Stop**

Press the **Stop** button to end the print so you can clean the platform and begin printing a new print. **You cannot undo this action.**

When you stop, the printer finishes printing its current layer before returning to the home screen. When the layer is finished, the build platform moves back to the top position.





## Chapter 4: Finishing Your Print

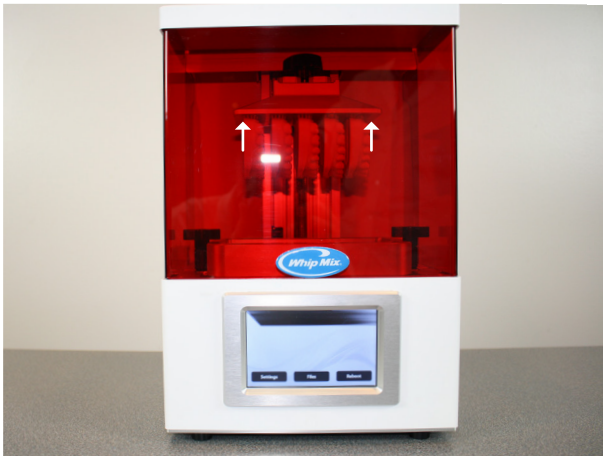
After the VeriBuild completes printing, the print still requires some preparation before it is ready for polishing, casting, or applying to a machine or a patient.

The order of the process is variable; Most steps can be done before or between others. Generally, the process is as follows:

- **Removing Your Print from the Printer**
- **Separating Your Print from the Build Platform**
- **Cleaning and Drying Your Print**
- **Cutting Supports**
- **Curing Your Print in a UV Oven**

### Removing Your Print from the Printer

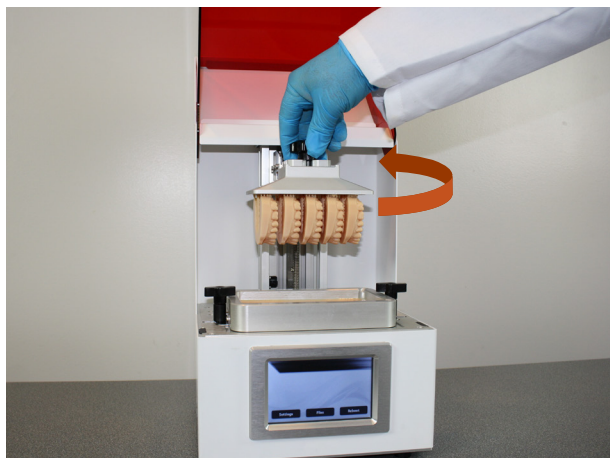
1. The build platform returns to the top when your print is finished.



2. Open the hood of the printer.



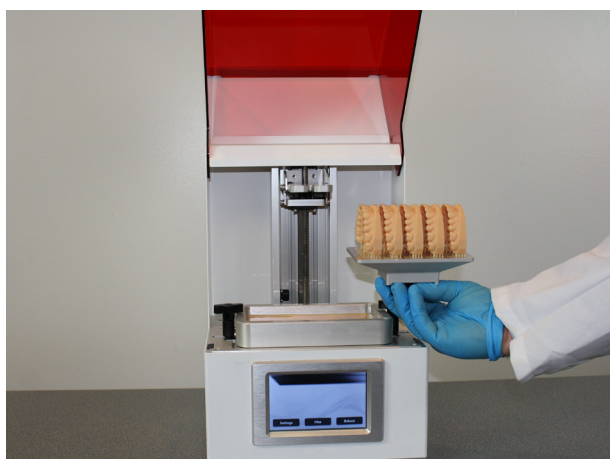
3. Turn the knob on the build platform in a counterclockwise direction. The build platform hangs loosely off the guideway arm.



4. Pull the build platform forward to remove it from the printer.



5. The print will have residual liquid on it from the vat. Turn the platform over quickly to avoid dripping resin and to keep your environment clean.



**Tip:**

Use a rubber spatula or air blower to save resin and push resin off of the build platform back into the vat.



6. Check your print for failures. If your prints are successful, move onto the next part.

You should perform a vat cleaning operation if any of your prints failed. See [Using the Clean Vat Function](#).



## Separating Your Print from the Build Platform

### ■ What You Need

- A. Safety equipment – gloves, UV-protective glasses, and a respirator or face mask
- B. Knife or scraper
- C. Tissues or a container for resin disposal

A



B



C



1. Hold the print at an angle.



**Tip:**

Put tissues or a soft cardboard box under the print to catch the print and excess resin. Wear tough, cut-resistant gloves to prevent injury when using sharp tools to remove your print if it is too firmly attached to the platform.

2. Slide a utility knife or scraper under one corner of the print. Pull the knife under the print to separate it from the build platform.



3. Continue sliding the knife through the other side of the print, if necessary.





4. Your print detaches from the build platform. Hold your print securely toward the end of the separation, or allow the print to fall onto a soft, safe surface.



## Cleaning and Drying Your Print

Most resins are somewhat shiny when they are uncured, and turn to a matte appearance when they are properly cured and dried. The goal when cleaning the print is to remove all uncured resin from the print so that the entire print not appear wet or glossy.

Typically, you perform the procedure in the following section multiple times.

### ■ What You Need

- A. Safety equipment – gloves, UV-protective glasses, and a respirator or face mask
- B. Cleaning alcohol – isopropyl alcohol (99% solution) or ethylalcohol (95% solution)
- C. Drying tools – an air compressor is preferred, but you can also use a handheld blower or tissues
- D. Ultrasonic cleaner or bath - Optional



1. Spray your print liberally with cleaning alcohol to rinse off any residual material.



2. Use a blower or air compressor to dry your print, pushing away the resin and dirty alcohol. Make sure you turn the print and focus on any small holes and places where liquid can get trapped.



If you have an ultrasonic cleaner or cleaning bath available, you can soak the print to make cleaning easier. Usually you should do this after separating the print from the build platform.

3. Submerge the print into a bath of cleaning alcohol or an ultrasonic cleaner. For most prints, Ackuretta recommends soaking for about 2 minutes.

After soaking the print, dry the print with your air blower or compressor, and then perform additional fine cleaning if necessary.





## Cutting Supports

For prints that have supports or a base attached, you can remove supports any number of ways. The following are just some tips or hints about how to remove supports. Use the steps that are most appropriate for your print.

If you printed a base with your part, you can remove the base with scissors or by hand. This part usually does not affect the print, so you can do this without concern about the print quality.



Most supports can be cut with a scissors. Whip Mix recommends cutting the supports farther from the print at first, and then cutting close to the print afterwards. This reduces damage to the print.



Thicker supports can be cut with wire cutters. As with scissors, Whip Mix recommends cutting the supports twice, first toward the middle of the support, and then close to the print.





When your supports have been cut, you can use a rotary tool or polishing kit to grind away the support marks.



Smooth the print with a soft wheel tool.



## Curing Your Print in a UV Oven

The 3D printer cures the resin to a certain level, but the print usually cannot be fully cured by the printer alone. After printing, cleaning, and drying, put the print into a UV oven for final curing.

See your resin supplier for details about which UV ovens they recommend that you use.





## Chapter 5: Configuring Your Printer

You can configure your printer via the **Settings** and **Network** tabs. Whenever you modify a setting on these tabs, the printer immediately applies the setting, so be careful with which settings you adjust, and make a record of the previous settings before modifying.

### Note:

The machine interface and the web console generally have the same functionality, but may look slightly different. Even if the appearance is not quite the same, you can follow the sections in this guide to do the same tasks on both interfaces.

This section covers the following screens and topics:

- **Printer Settings**
- **Update Settings**
- **Material Settings**
- **Connecting to Your LAN Network**
- **Configuring a Static IP Address**

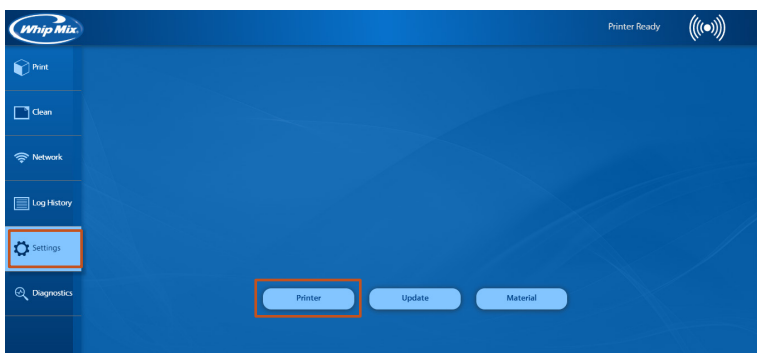
### Printer Settings

The Printer Settings screen shows system-wide settings and information.

This section shows the Printer Settings screen on the web console. All the same functionality exists on the printer console.

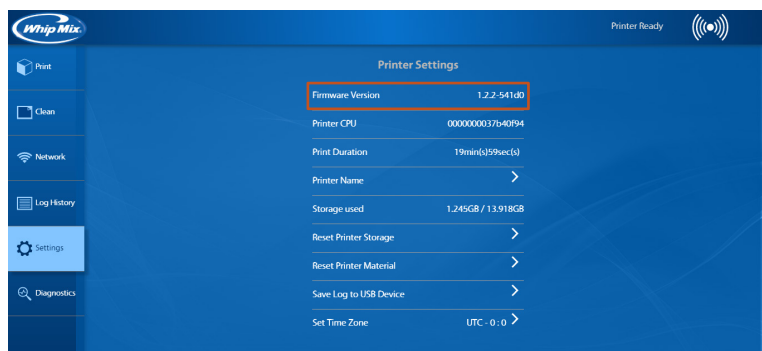
- Go to **Settings > Printer**.

The functions in the Printer Settings screen are shown below.



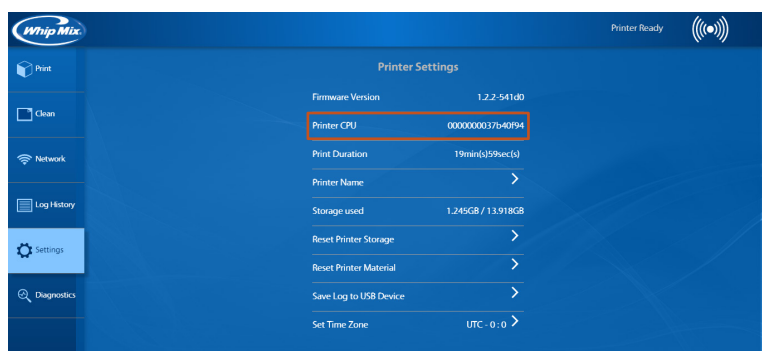
## ■ Firmware version

The currently installed version of the VeriBuild firmware.



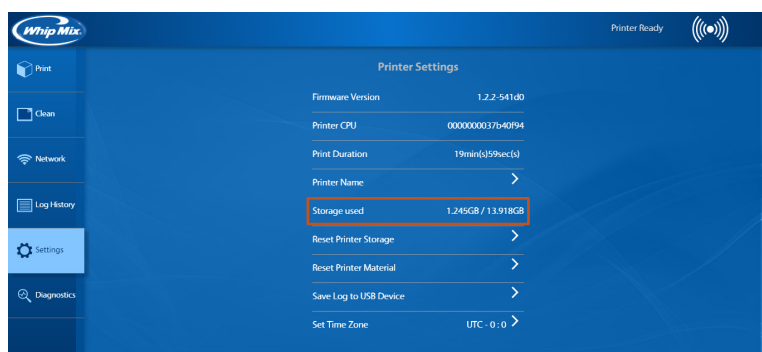
## ■ Printer CPU

The unique ID for this VeriBuild. This is not the same as the serial number, which is affixed to the back side of the printer.



## ■ Storage Used

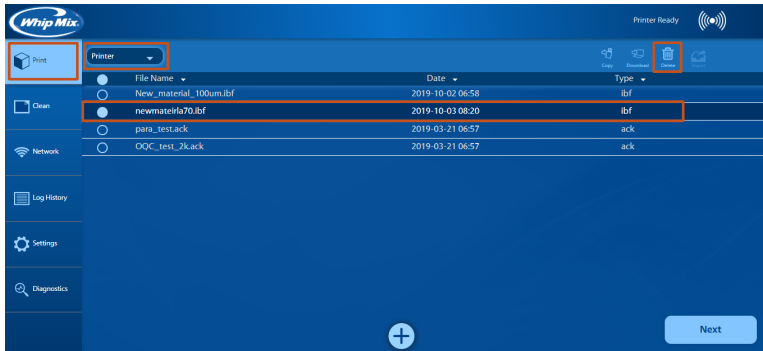
The VeriBuild has 16 GB of on-board storage. About 2 GB of that storage is dedicated to the VeriBuild firmware and is inaccessible.





### Tip:

If your storage is nearly full, you can go delete files via the **Print** screen. Go to **Print > Printers**, select the files you want to delete, and press the **Delete** button.

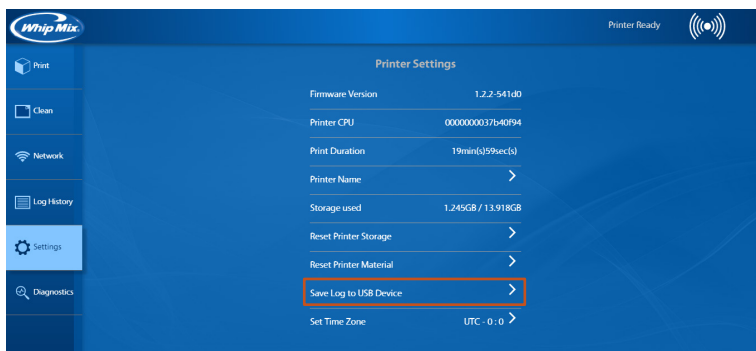


### ■ Saving the file log to a USB device

If you encounter a problem with your printer and contact Whip Mix Support, Whip Mix may request your log file to perform important system or print diagnostics.

To obtain your log file:

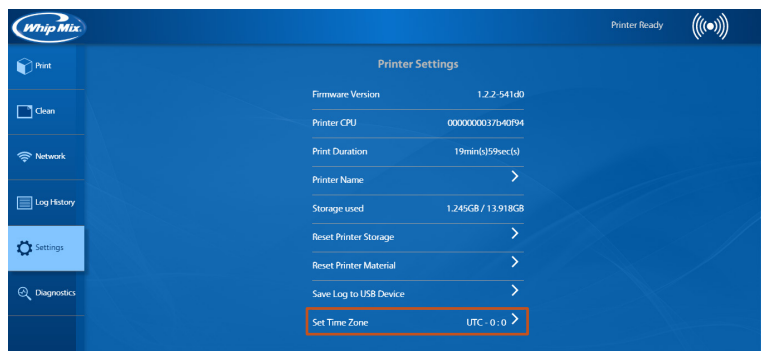
1. Attach a USB device to the USB port on the rear side of the VeriBuild.
2. Go to **Settings > Printer** on the VeriBuild and click **Save log to USB device**.
3. Click **Download** to confirm your selection, and click **OK** when the download is complete.
4. The log file is named **freeshape.log.zip**. Email the complete ZIP file to [whipmix.com/support/](mailto:whipmix.com/support/).



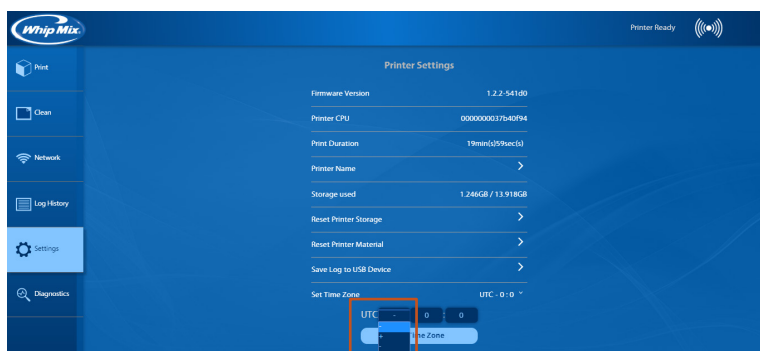
## ■ Setting the Time Zone

Set your time zone to show the actual time of your system in log files. The Time zone function does not affect print performance or any other function of your printer.

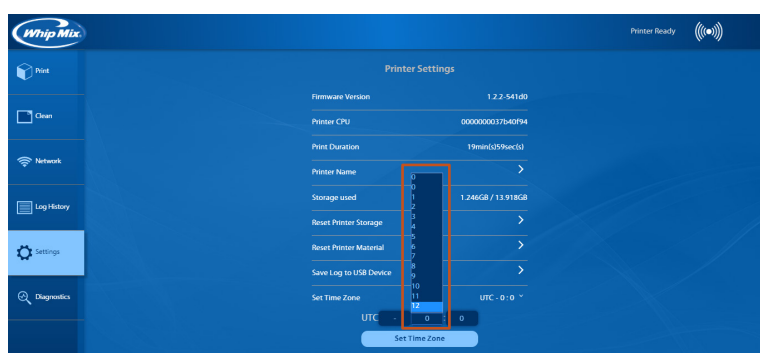
1. Click **Set Time Zone** on the **Settings** tab of the VeriBuild web console.



• Toggle either + or - to set whether your time zone is before or after UTC 0:00.

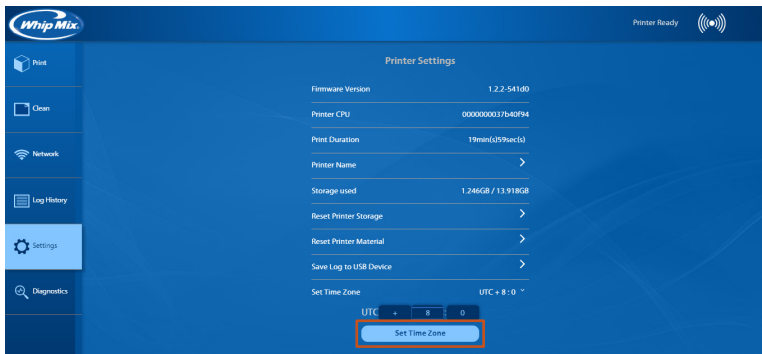


- Set the number of hours offset from UTC in the space before the colon (:).
- If your time zone has a minute offset, set that offset in the space after the colon (:)





2. Click the **Set Timezone** button when you complete setting the time zone.

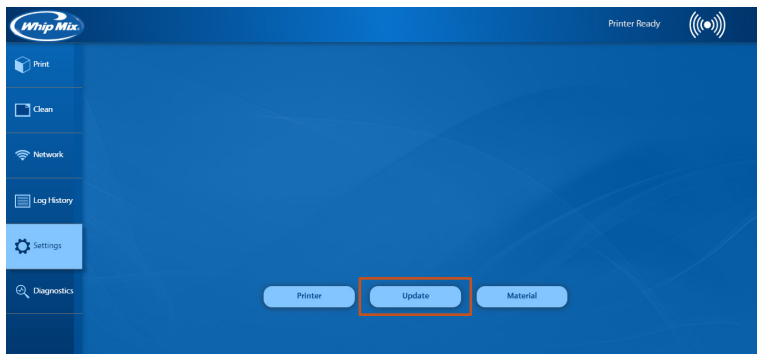


## Updating the Settings

You can check your version of your VeriBuild firmware and update the firmware via this screen.

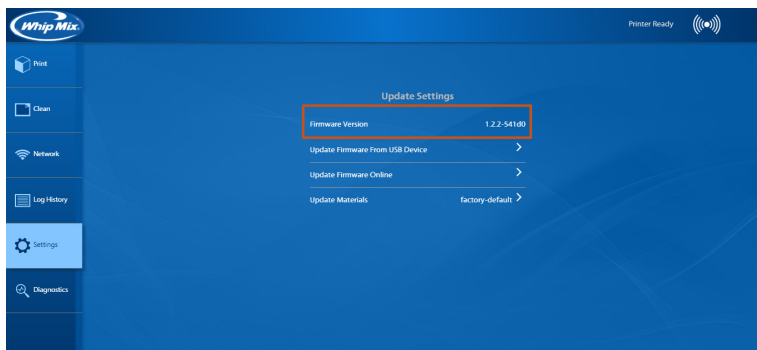
Go to **Settings > Update**.

The functions available via the **Update Settings** screen are shown below.



### ■ Firmware version

The currently installed version of the VeriBuild firmware.



## ■ Updating firmware from USB device

Click this button to check your USB device for a newer version of the firmware and start the installation process. Use this method of firmware installation only if your VeriBuild is not connected to the Internet via a LAN or Wi-Fi network.

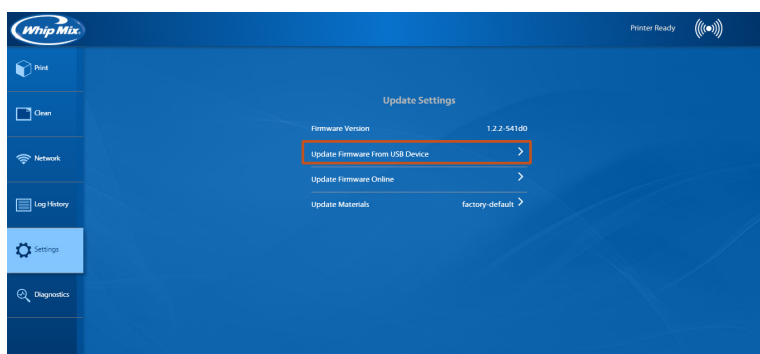
To update your firmware:

1. Download the latest firmware file from the Whip Mix website: <https://www.whipmix.com>

### Note:

The firmware update is in ZIP format. When you unzip the package you receive a file with no file extension, such as **VeriBuild\_update-0.7.4.5-fb112** . This is the firmware file.

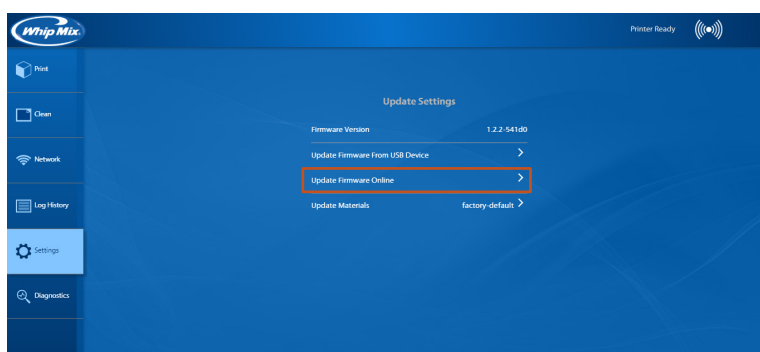
2. Copy your firmware file (**not** the ZIP file) to your USB device.
3. Attach your USB device to the USB port on the rear side of the printer.
4. On the VeriBuild, go to **Settings > Update**, and click **Update firmware from USB device**.
5. The machine looks for the newer firmware on your USB device, and if found, an update screen appears.
6. Click **Update** to confirm that you want to update the firmware.



## ■ Updating the firmware online

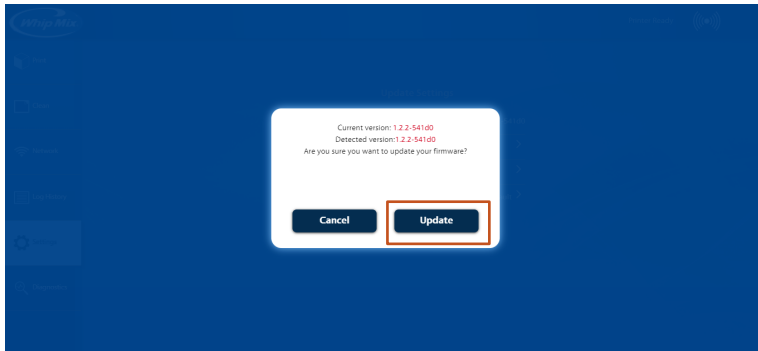
The VeriBuild automatically searches the Whip Mix web server for the latest version of the firmware.

1. Ensure that you are connected to an internet-enabled network. Turn off firewalls and antivirus if necessary.
2. On the VeriBuild, go to **Settings > Update**, and click **Update firmware online**.





3. Click **Update** to confirm you want to update the firmware.
4. The VeriBuild automatically reboots when the update process is complete.

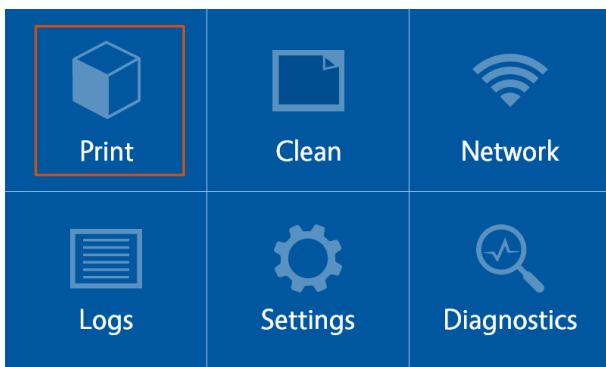


## Material Settings

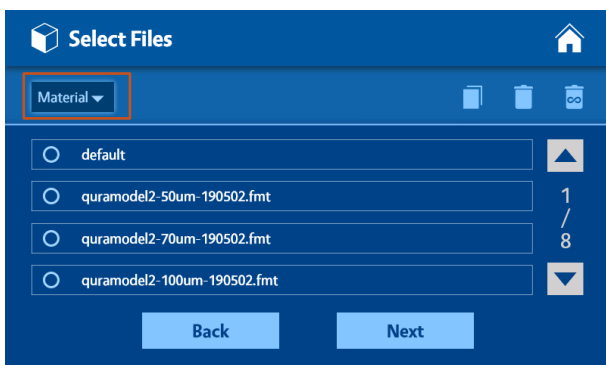
The VeriBuild printer stores settings for all Whip Mix materials. You can modify or add materials via the **Material Settings** screen.

If you upload a print file using an Whip Mix resin in Alpha 3D or Omega 3D, the VeriBuild automatically detects the resin profile and prints using the settings stored in the printer. If you use the "Resin Test" profile in Alpha 3D, or any non-Whip Mix resin in Omega 3D, you must also set a material setting on the VeriBuild.

The **Material Settings** screen is available via the **Print** menu.






Press **Print**, and select **Material** on the dropdown menu to see the Material Settings.

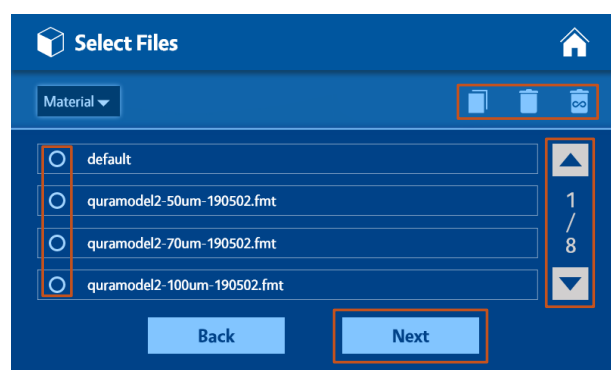




## ■ Material Settings Options

The Material Settings screen includes several options.

- Select one or more materials from the left side.
- Use the arrows on the right side to select different pages.
- **Next** - Select a material setting and then press Next to edit the parameters for that material.
-  - Copy one or more selected resin profiles to your USB device.
-  - Delete any selected resins.
-  - Delete all resin settings, and return your resins to the firmware defaults.



## ■ Editing Material Settings

When you select a setting to modify, you go to the **Edit Material** screen. The following settings are available on all **Edit Material** screens:

<b>Name</b>	The name of the material. This should be the same as the material name as shown in Alpha 3D or Omega 3D.
<b>Z resolution (Layer Thickness)</b>	<p>The Z-resolution of the print. This value should be the same as the value chosen in Alpha 3D or Omega 3D.</p> <p>The minimum Z-resolution for the VeriBuild is 10 µm, and the guideway only moves in multiples of 10 µm.</p> <p>Typical values include: 200 µm, 100 µm, 70 µm, 50 µm, and 30 µm.</p>
<b>Back</b>	Go back to the previous page. This does not save your settings.
<b>Save</b>	Save and exit this page. If the <b>Name</b> and <b>Z-resolution</b> are both the same as a different material, a popup window appears, asking you if you want to overwrite a previous setting or add a new resin.



**Edit Material**

Name: QuraMODEL 2.0 Z resolution: 100 um

**First Layers** Normal Layers Motor Speed

Number of layers: 4 Illumination time: 68 sec

Wait before print: 0.1 sec Wait after print: 0.1 sec Lift after print: 6500 um Wait after lift: 0.1 sec

Back Save

## ■ First Layer(s)

The printer adds additional curing to the first layers of the print. This ensures that the print is securely attached to the build platform.

### • Number of Layers

The number of additional layers that cured. Whip Mix recommends using a value between 4 and 10.

### • Illumination Time

The amount of time these layers will be cured. Whip Mix recommends using a value about 3 times that of the Normal Layers Illumination time.

### • Wait Before Print

The printer pauses before curing each layer for this period of time.

### • Wait After Print

The printer pauses after curing each layer for this period of time.

### • Lift After Print

The printer raises the build platform this height above the vat after each layer.

### • Wait After Lift

The printer suspends the print above the vat for this period of time after each layer.

**Edit Material**

Name: QuraMODEL 2.0 Z resolution: 100 um

**First Layers** Normal Layers Motor Speed

Number of layers: 4 Illumination time: 68 sec

Wait before print: 0.1 sec Wait after print: 0.1 sec Lift after print: 6500 um Wait after lift: 0.1 sec

Back Save

## ■ Normal Layers

After the first several layers, the printer uses the following parameters for all remaining layers.

### • Illumination Time

The period of time that each layer is cured. This is the most important parameter for a material.

### • Wait Before Print

The printer pauses for this period of time before curing each layer.

### • Wait After Print

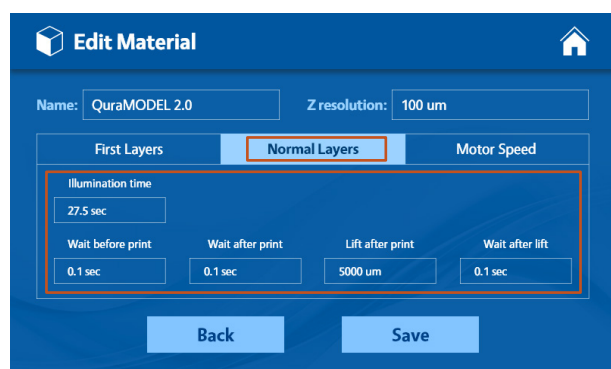
The printer pauses for this period of time after curing each layer.

### • Lift After Print

The printer raises the build platform this high off of the vat after each layer.

### • Wait After Lift

The printer suspends the print above the vat for this period of time after each layer.



## ■ Motor Speed

Some prints fail because they either get stuck to the platform or because there is not enough time for the resin to move into the vat after the build platform moves up. You can adjust the motor speed to prevent these issues.

### • Z-Axis Peel Speed

After printing a layer, the guideway moves at a maximum of this speed.

### • Return Speed

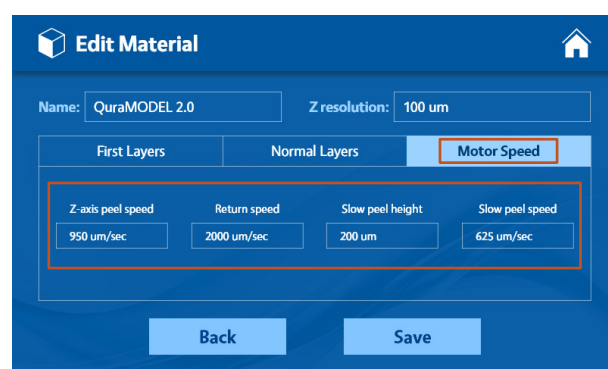
When the print is complete, the guideway moves up at this speed.

### • Slow Peel Height

After printing a layer, the guideway slowly raises this distance. Then it moves at an increased rate to the remaining distance as set for the Lift After Print setting.

### • Slow Peel Speed

Immediately after printing a layer, the guideway moves at this speed for a distance equal to the Slow Peel Height. After that, it increases speed based on the Z-Axis Peel Speed. Ackuretta recommends using a value of half of the Z-Axis Peel Speed.





## Connecting to Your LAN Network

Connect to a network that you can access the printer web console and start up prints from your internet browser. There are two major methods to connect your VeriBuild printers to your networks: LAN (Ethernet) connection and Wi-Fi connection.

If your environment uses a Wi-Fi connection, follow the instructions in [Connecting to Your Wi-Fi Network](#) instead.

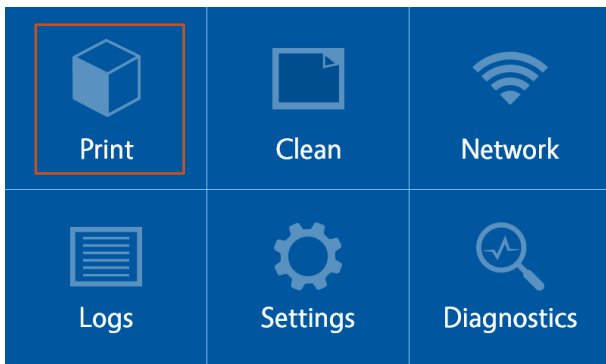
Connect your VeriBuild to either your router or directly to your computer using an Ethernet (LAN) cable.



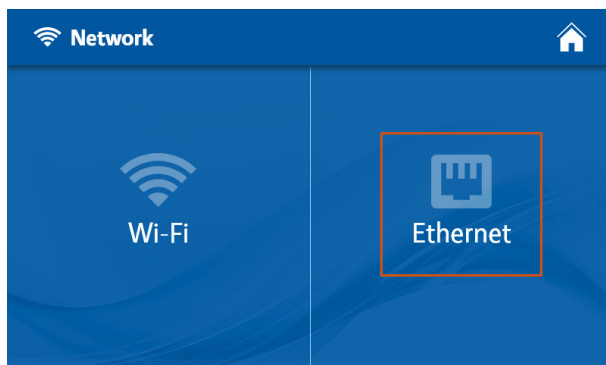
### Note:

After you connect your laptop to the VeriBuild, by default, your computer should be able to obtain an IP address automatically.

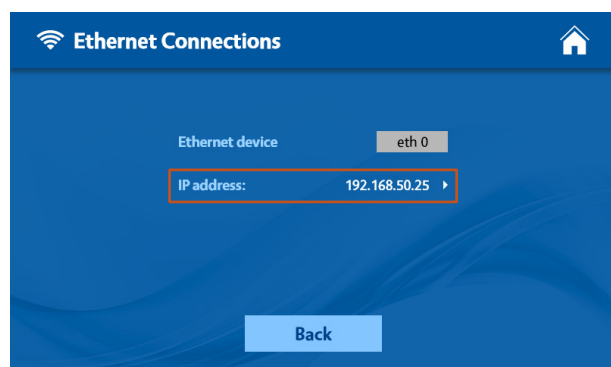
To see your LAN network IP address, first go to **Network**.



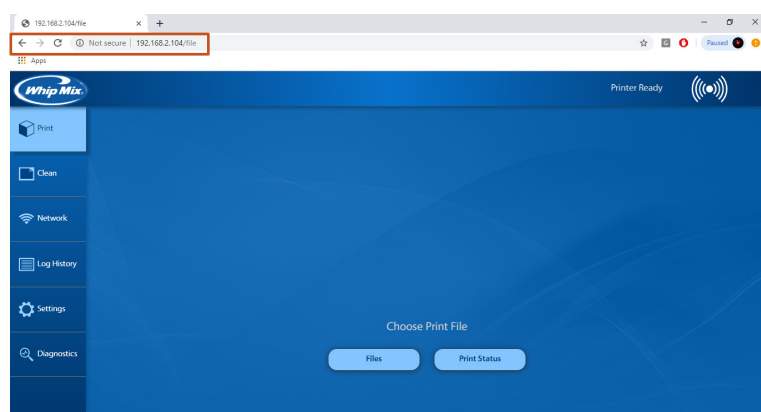
Then go to **Ethernet**.



The LAN **IP address** appears here.



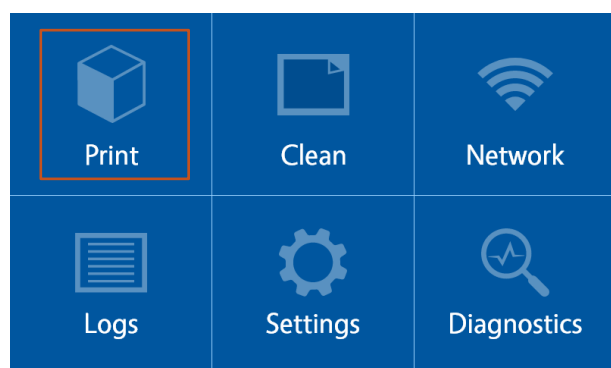
Open an internet browser while on the same network as the VeriBuild and type the IP address shown into the address bar. The VeriBuild web console opens.



## Configuring a Static IP Address

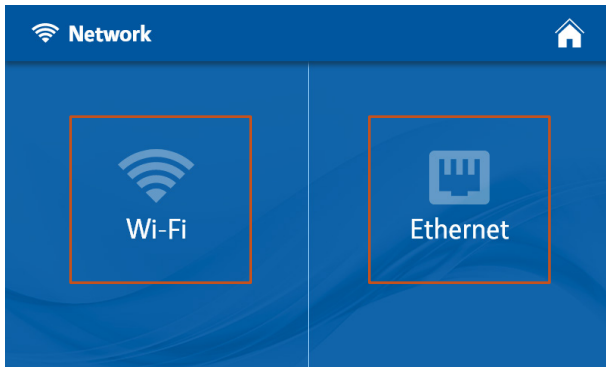
Most connection use dynamic IP address and DNS servers. Go to the IP address tab if your office security systems require you a set a Static IP address or DNS server, then you will need the IP configuration feature in your VeriBuild.

Press **Network** on your VeriBuild console.







Choose the network type that you want to set a Static IP address for, either Wi-Fi or Ethernet.



Press the **IP address**.

The IP address will be blank if your VeriBuild is not yet connected to any network. In that case, press the  arrow button.

### IP Address Configuration

Set up the relevant fields as needed in your environment. To set up each field, press the  arrow button next to the item.

- **Configure IP**

Change this to **Manual** to set up a static IP address.

- **IP address**

Choose your IP address for this printer.

- **Subnet mask**

Enter the subnet mask of your router. The most common subnet mask is **255.255.255.0**.

- **Default gateway**

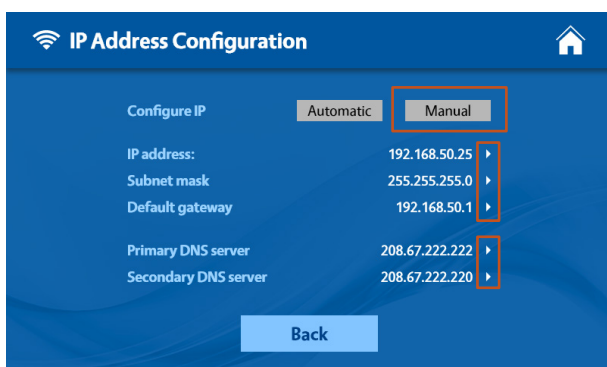
Enter the IP address of your router or your gateway.

- **Primary DNS server**

Enter the primary DNS server IP address assigned by your ISP.

- **Secondary DNS server**

Enter the alternate DNS server IP address assigned by your ISP.



## Chapter 6: Vat Maintenance

### Using the Clean Vat Function

Whenever your print fails, use the Clean function to remove pieces of prints that did not stick to the build platform during printing. The Clean function cures one layer of resin at the bottom of the vat. Then, you can easily remove that cured layer and throw away any lingering debris with it.

#### Note:

This process is only used to remove cured resin from the bottom of the vat so that you can continue using the same resin between prints. If you want to completely clean your vat, see [Cleaning Your Vat](#).

#### ■ What You Need

- A. Gloves
- B. Small pieces of paper - note cards, sticky notes, or business cards work well
- C. Vat
- D. Resin - at least 0.5 mm across the surface of the vat
- E. Tissues
- F. A container for resin disposal

A



B



C



D



E



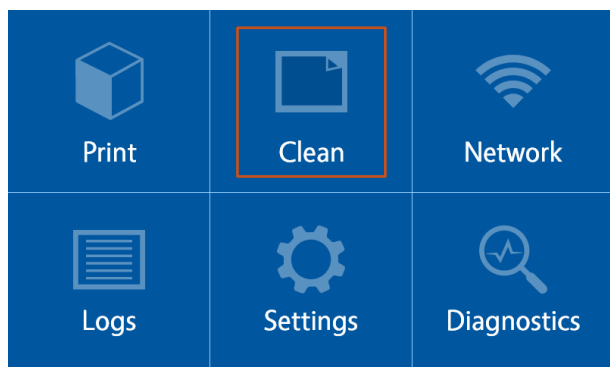
F







1. Click the **Clean** tab.



2. Click on the white box next to "seconds" to adjust the length of the Clean Vat curing time.

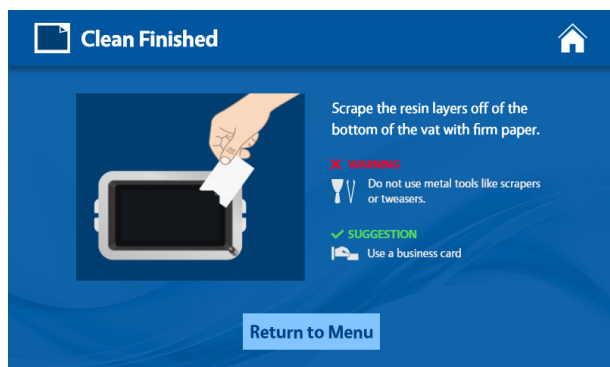
**Note:**

Whip Mix recommends three times the curing time of the resin being used. The default value of 100 is more than enough for most resins.

3. Click **Clean** after entering your preferred period of time for cleaning.



4. The VeriBuild cures one layer of resin at the bottom of the machine. When it is finished, the **Clean Finished** screen appears.



5. Push resin away from one side to the other so that a corner of the layer at the bottom is exposed. Slide your paper underneath a corner of the cured layer, and then peel the layer off of the vat. If your paper is saturated with resin during this process, dispose of it and gather a new piece.



6. Pull the layer of cured resin off of the vat. If you are wearing a chemical-resistant glove, you can use your fingers to remove the layer by hand. Allow any excess resin to drip off the layer before disposal.



7. Dispose of the resin thoughtfully.





## Cleaning Your Vat

If you want to change resins, or if you want to check your vat film for damage, you may need to completely clean your vat. Cleaning your vat takes about 10-20 minutes.

### Tip:

Instead of cleaning your vat every time you want to change resins, Whip Mix recommends keeping a number of vats available for every resin that you intend to use. Store the vats with resin in a dry, dark location, such as a closed cabinet.

### ■ What You Need

- A. Safety equipment - chemical resistant gloves and a respirator
- B. Bottle - dry, opaque, and unused for any other purpose
- C. Cleaning alcohol - 70% or higher ethanol or 90% or higher isopropyl alcohol
- D. Tissues
- E. Funnel - optional
- F. Mesh filter - optional
- G. Rubber spatula - optional
- H. Air compressor or blower - optional



1. Remove your vat from your printer.
2. (Optional) Put your funnel and mesh filter on the opening to your bottle.

**Note:**

A mesh filter should be fine enough to catch small particles so they do not get poured in with the good resin.

3. Pick up your vat by the metal holders, and then pour resin out using one of the grooves in a corner.

**Tip:**

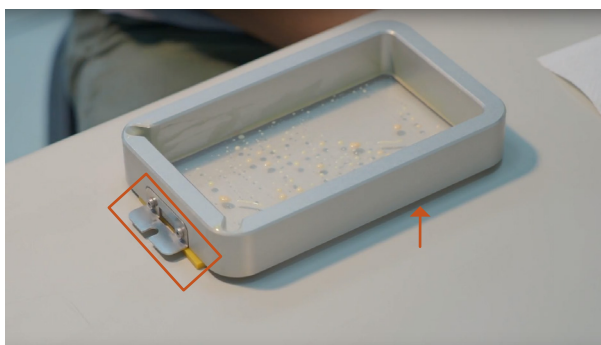
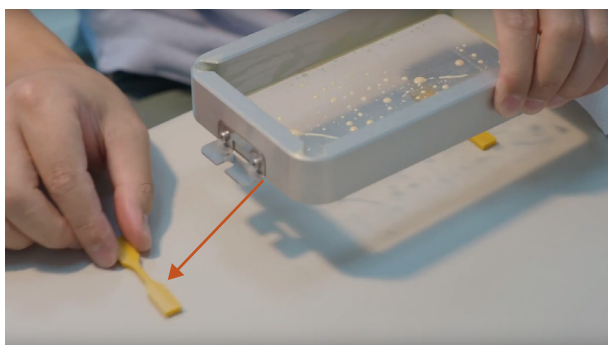
You can use your rubber spatula to push resin down to preserve more resin. Do not use any metal tools on the vat film.



**Note:**

If you have a plastic shell for your vat, put your vat into the shell to protect your vat film.

Otherwise, set two holders on your table, such as pencils, chopsticks, or square plastic parts. Set the metal parts of your vat down on those holders so that the vat film does not directly touch the table.

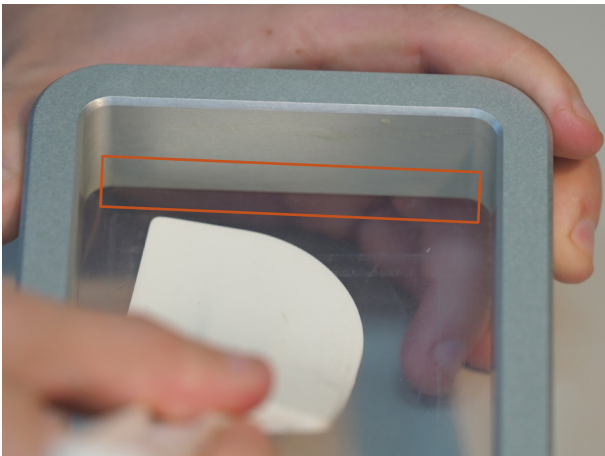




4. Pour some cleaning alcohol into the vat.
5. Mix the alcohol and the remaining resin with your spatula. Use tissues to absorb the resin.



6. Dump the alcohol and resin mixture into your waste area.
7. Push the film down near the frame so there is a slight gap between the film and the vat frame.  
Some resin gets trapped under the vat frame. This resin should be cleaned out before changing resins.



8. Spray alcohol into the gap between the vat frame and the vat film.
9. Using your spatula, push a tissue between the gap to absorb the resin and alcohol mixture.  
Repeat these steps as necessary until you clean all the resin out from under the frame.



10. Spray some more alcohol into the center of the vat.
11. Dry the remaining alcohol and resin with your tissues and air blower.



## Checking the Vat Film for Problems

A few of the frequently asked questions (FAQs) that users ask include “How long does my vat film last?” or “When should I change my vat film?”

### Note:

Under normal conditions, the vat film can last for a year or longer under normal use. You do not need to change your vat film regularly. Only change your vat film when you find a potential problem.

The following section describes the most common types of damage to your vat film and how to check for them. After checking your vat, you can determine whether or not you need to replace your vat film.

### ■ Vat Issue 1 - Cuts in Vat Film (Critical)

The first and most serious problem that your vat film could have is a cut or a hole. If you find any resin on the bottom of the vat, there is a chance that the vat is leaking.

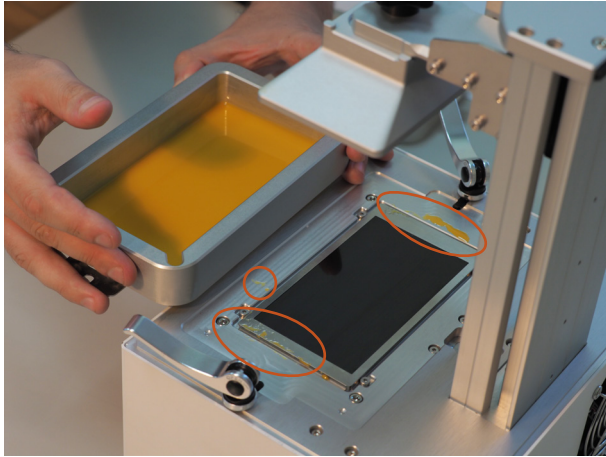
### Warning:

If you think there's any chance that your vat film could have a hole in it, immediately remove it from the printer. If resin is on the LCD, it will harden and that will make the LCD unusable. If resin leaks into the machine itself, that can damage the entire system.





Cuts or holes may result from using sharp tools (like knives or scrapers) directly on the vat surface, . Additionally, holes can be caused when attempting to print again when there are prints suspended on the build platform, pressing the print through the vat surface.



#### • Checking the Vat for Cuts or Holes

1. Clean your vat thoroughly.

For more information, see [Cleaning Your Vat](#).

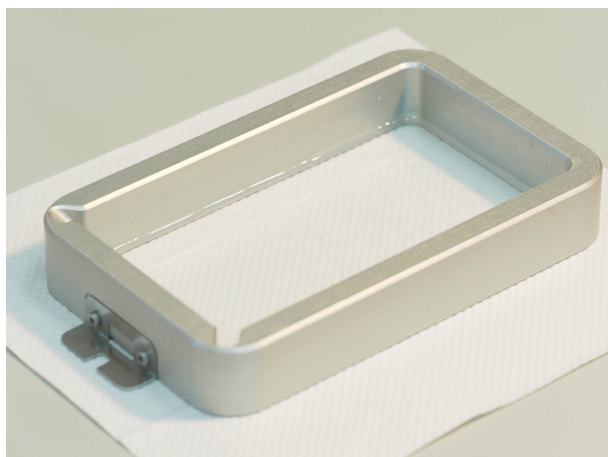
2. Inspect your vat for visible cuts or holes.

If you find any cuts or holes, the vat film is damaged. You can skip the rest of this procedure and go to Replacing the Vat Film.





3. Put the vat on tissues to check for holes that may be too small to see.
4. Fill the vat with about 1-2 mm of water.

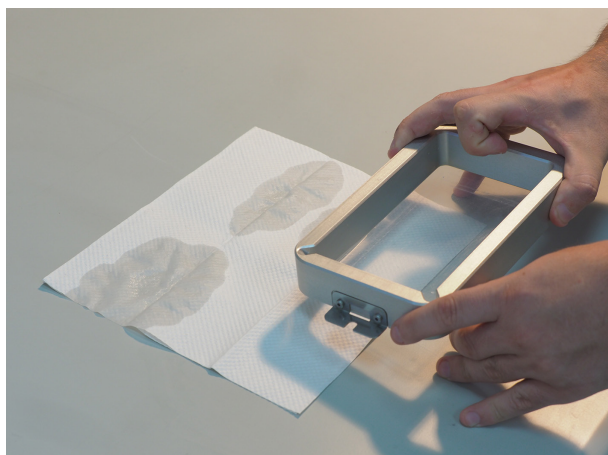


5. Hold a soft sponge or cloth, and press down on the vat from the top, pushing down on the water.



6. Check the tissues for wet spots.

If any of the water goes through the vat, then the vat film is damaged or the screw locations are not secure. In either case, replace the vat film.





## ■ Vat Issue 2 - Bumps on Print Area (Moderate)

A less severe problem that can occur on the vat is bumps on the surface of the film. It is normal that the vat has some bending, and not all bending is a problem.

If the vat film is bent beyond a certain point, however, the light will not penetrate it properly, and it can cause distortions in your prints.



### • Checking the Vat for Severe Bumps

1. Clean your vat and make sure that it is dry.
2. Wash and dry your hands thoroughly.

Do not wear gloves for this procedure.

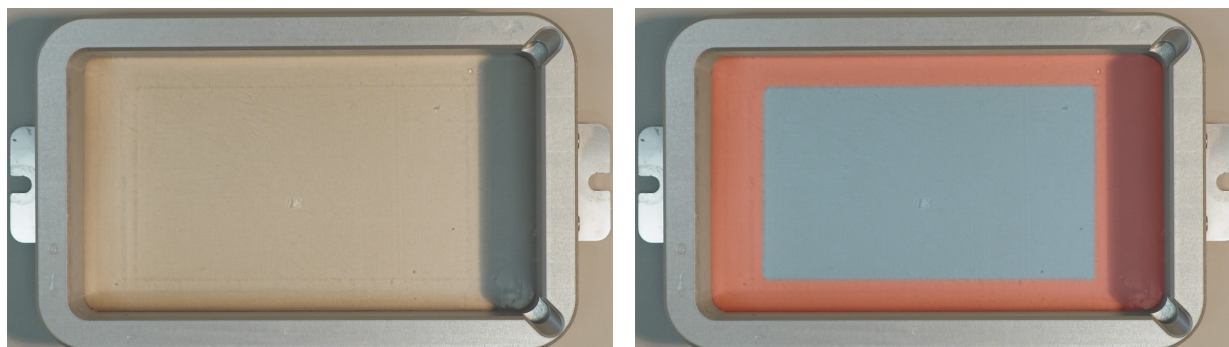
3. Touch the vat film directly with the tip of your finger, and run that finger along any bumps, scratches, or crevices on the surface of the vat.

If you feel any of the bumps with your fingertip, these bumps can cause problems with your print. Replace your vat film. If you can only see the bumps, but cannot feel them, then they will probably not affect your prints.



### Note:

The LCD panel only shines light through the middle space of the vat, which will show on the vat film as a rectangular imprint. There is some space around that imprint that you do not need to check, and will not cause any problems on your print.



### ■ Vat Issue 3 - Clouding or Scratches (Minor)

Other than cuts or vats, you may see other small marks on the vat surface. There is usually some minor scratching on the vat. Sometimes, some areas of the film will have some clouding from scratches, abrasions, or resin that soaked into the vat.

In general, these types of issues do not affect the quality of your print. You can continue to use your vat normally, even with these types of marks on your vat film.

If you see print failures in the same areas as these marks, then Whip Mix recommends replacing your vat film in those cases.





## Replacing the Vat Film

If the film on your vat becomes damaged, then you may need to replace it. Cloudiness or tears on the vat surface require replacement, but small bumps do not.

### ■ What You Need

- A. Vat on which to replace film
- B. Vat film (new)
- C. Hex key
- D. Utility knife
- E. Screwdriver (flat head, small) - (Optional)
- F. Microfiber tissues - (Optional)

A



B



C



D



E

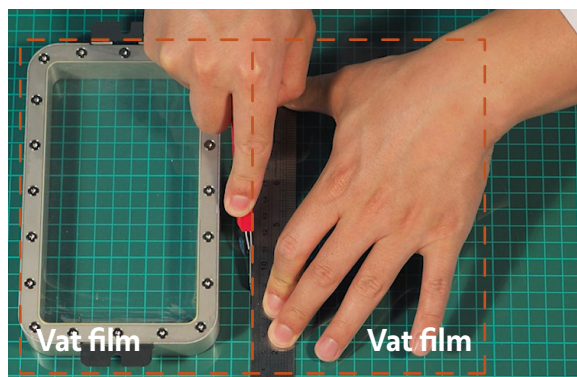
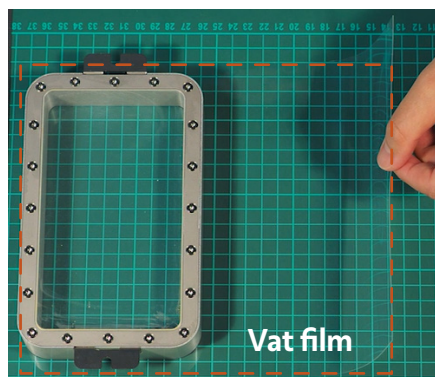


F



1. Cut a new vat film sheet in half so that it is about 2-4 cm larger than the vat frame on all sides.

1

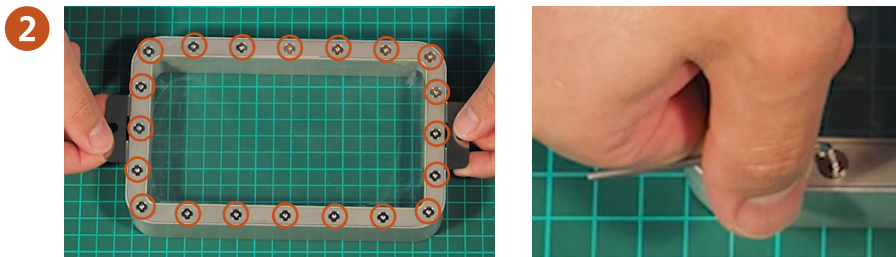


### Tip:

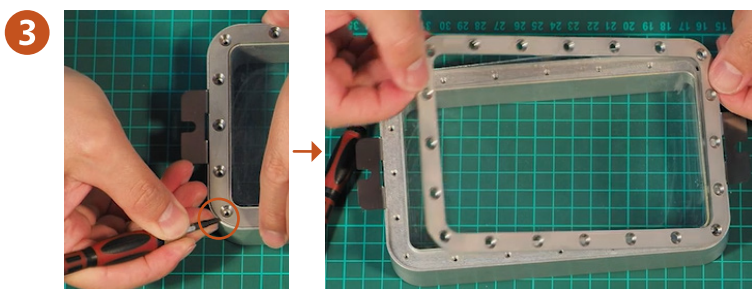
Store the other half in a dry, safe space to use in the future.



2. Put the vat upside-down on a table. Remove all screws from the underside of the vat.



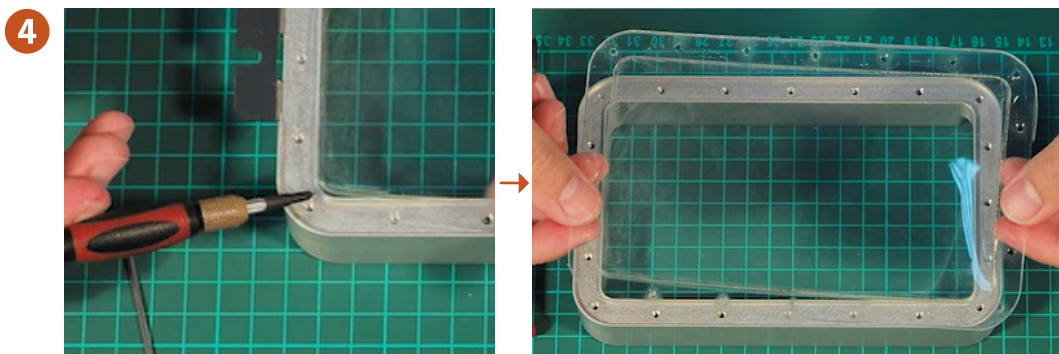
3. Pull the bottom plate off of the bottom of the vat.



**Tip:**

Use the screwdriver to assist in removing the bottom plate.

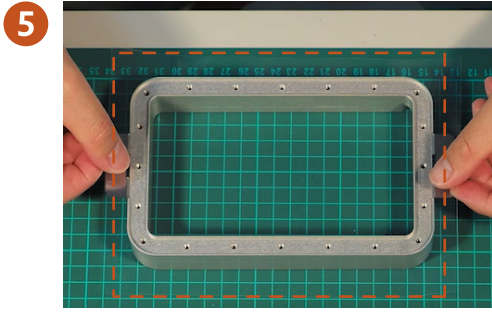
4. Remove the old vat film. The screwdriver may also be useful here.



**Note:**

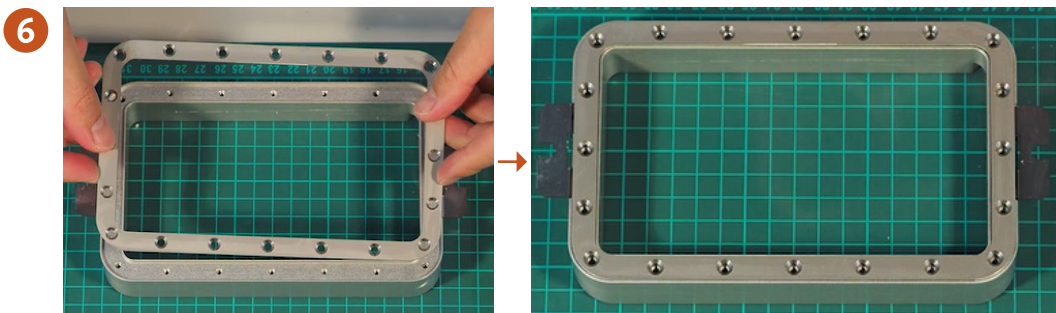
Clean any resin that may be between the vat film and the frame.

5. Put the piece of vat film over the vat frame.

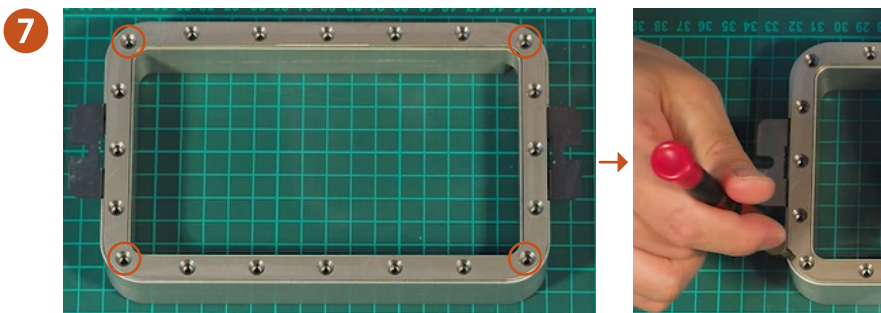


6. Put the bottom plate over the vat film. Press it down as far as possible.

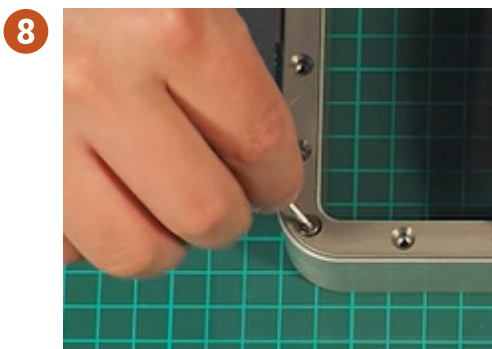
- Cover the bottom of the vat frame with the new vat.
- Put the bottom plate over the film.
- Poke 4 holes through the screw holes and vat film in the corners of the vat frame.
- Attach screws through those 4 holes to tighten the vat film to the vat frame.



7. Poke holes in the vat film at the screw holes on the 4 corners of the vat frame.

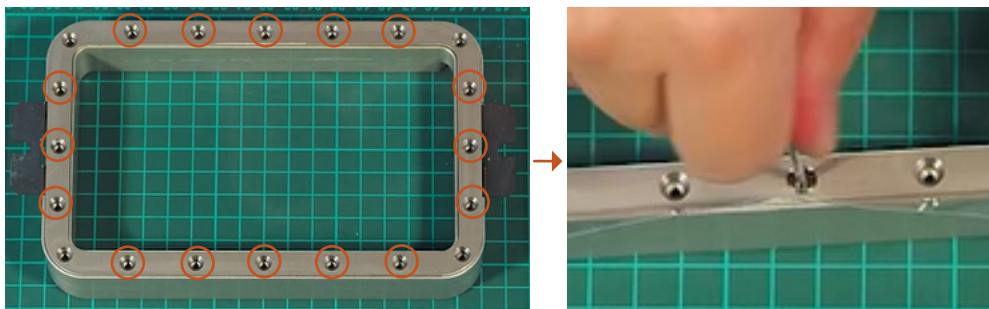


8. Put screws in those 4 holes.



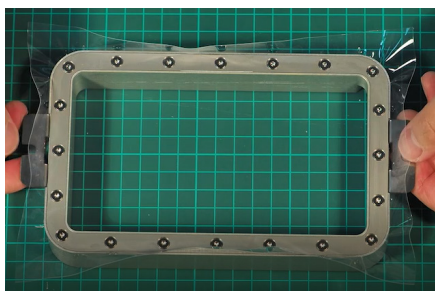
9. Put holes through the vat film and insert screws in the remaining holes.

9



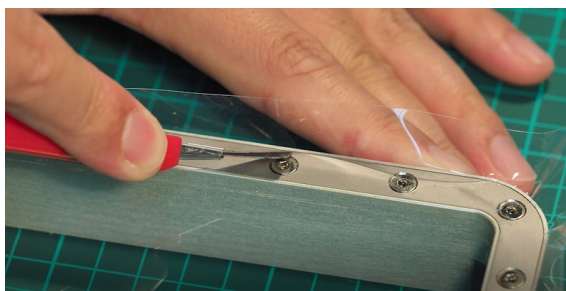
10. Tighten all screws so that the vat film is very tight.

10

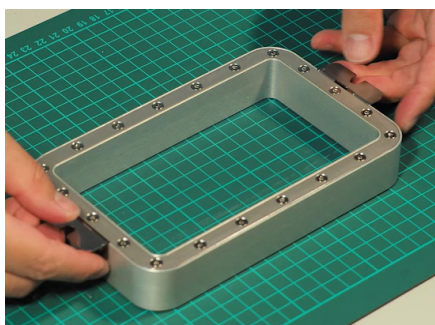


11. Cut off any excess film with a utility knife.

11



Your vat is now ready for printing.







## Chapter 7: Troubleshooting

### Checking the LCD Panel for Problems

Some of the frequently asked questions (FAQs) that users ask include “How long does my LCD panel last?” or “When should I change my LCD screen?”

#### Note:

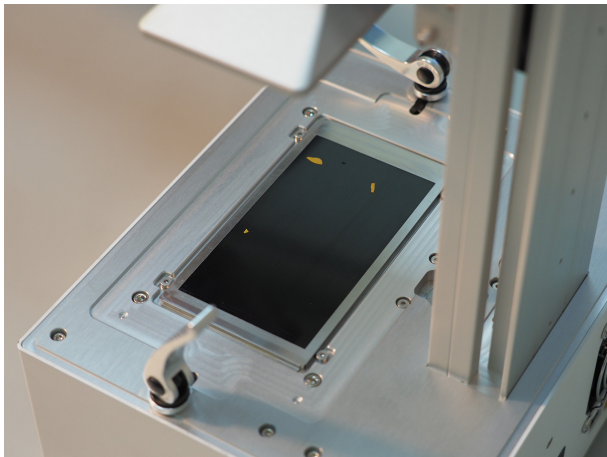
Under normal conditions, the LCD screen should be replaced every 3-6 months, but if you damage your LCD panel, you should immediately replace it. The VeriBuild comes with 2 free LCD screens in the box, along with one that is connected to the machine. In general, you can expect to use your VeriBuild for about 1 year before purchasing a set of new LCD panels.

The following section describes how to check your LCD panel for damage or deterioration so you know when to replace it.

#### ■ Vat Issue 1 - Resin on Screen (Critical)

The first and most serious problem that can occur with your LCD panel is if any resin gets on the LCD screen and hardens.

Cured resin on the screen is very difficult to remove without damaging the panel. Instead, Whip Mix recommends replacing the panel if any resin falls and cures on the screen.



## ■ Vat Issue 2 - LCD Deterioration (Moderate)

When you first start using your VeriBuild, the LCD panel should be clear and let all light through.

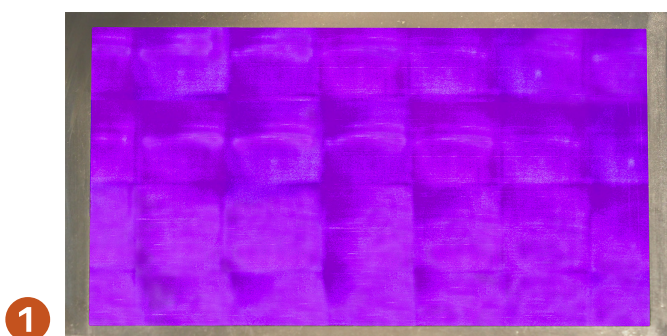
Over time, some pixels will die, which will reduce the light intensity at those points. A few dead pixels will not have a major effect on prints, because nearby pixels will still cure normally.

Eventually, as more and more pixels die, and as you use the same areas more often, some pixels will die together. That will make black spots on the panel. You can still print normally if these spots are small.

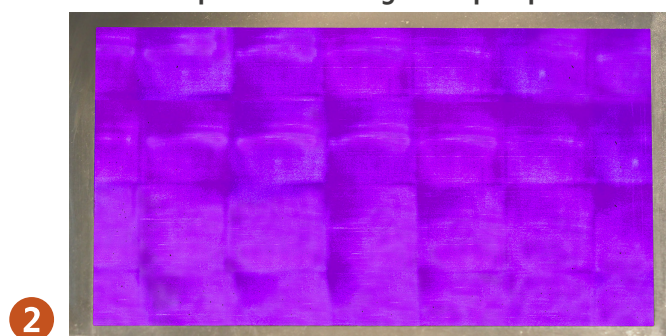
But as these spots grow larger, you may start to get failed prints or deformities.

When the black spots are large enough that you consistently get failures in the same spots, that is when your LCD panel has deteriorated, and you must replace it.

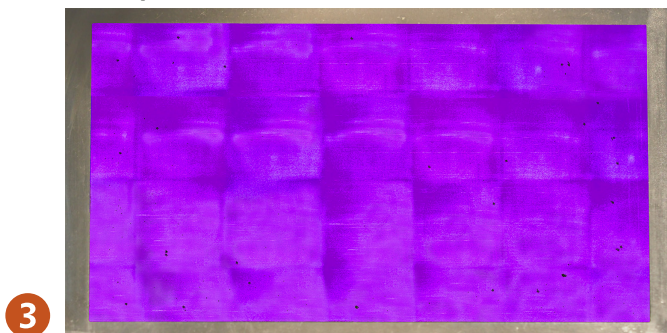
**New LCD Panel**



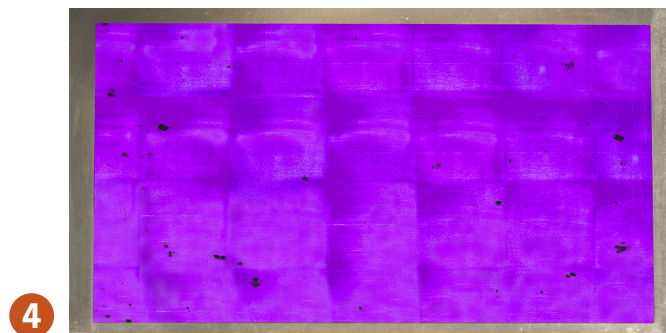
**Some dead pixels - not enough to impact prints**



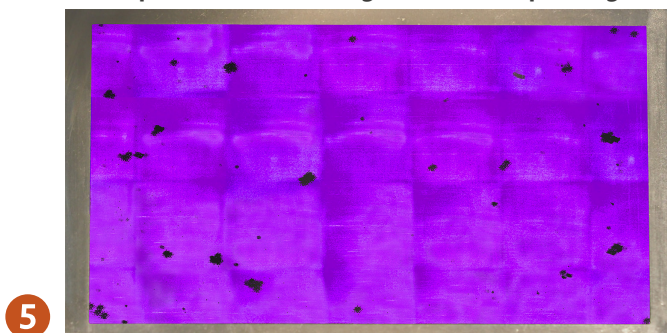
**More dead pixels - dead pixels near each other make black spots**



**Black spots grow and become large enough to cause failures**



**Black spots become too large to avoid for printing**

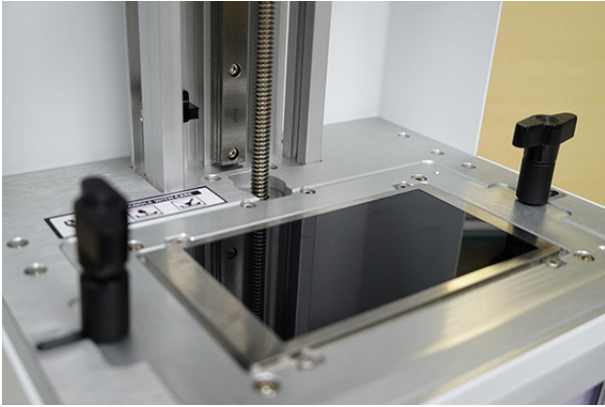




### • Checking for LCD Deterioration

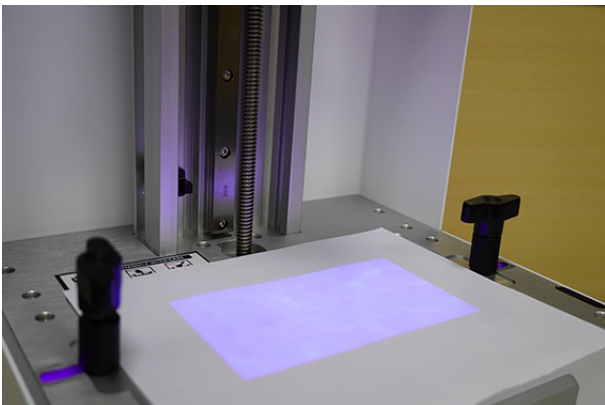
The easiest check for LCD deterioration is to just see if UV light shines through the LCD screen.

Remove the vat and use the Clean Vat function. If you see places on the screen that are still black, or where the light is shining inconsistently, they may be damaged areas.



It is easier to find holes or deteriorated areas if you cover the LCD screen with a piece of blank white paper. Areas that remain white are likely deteriorated spots in the panel.

If you find dark, unlit spots when using this method, replace the LCD panel.



### ■ Checking the LCD by Printing

If you do not find obvious spots of deterioration on your panel, but you are still concerned that the panel may be damaged, you can print a thin layer of resin to see if there are unprinted areas. This follows a modified form of the normal procedure shown in [Using the Clean Vat Function](#).

The first part of this procedure is to find the curing time of your resin.

1. Turn on your VeriBuild, go to Print, and then choose **Materials** from the drop-down list.
2. Select the 100 micron setting for the resin you will use for this printing test.
3. Go to the **Normal tab**, and record the **Illumination Time**.

For example, the illumination time of QuraMODEL 2.0 at 100 microns is 27.5 seconds.



4. Attach your vat with your chosen resin, if it is not yet attached.
5. Go to **Clean**, and set the curing time to double ( $\times 2$ ) the curing time of your resin at 100 microns.

For example, the curing time of QuraMODEL 2.0 is 27.5 seconds at 100 microns. So the Clean Vat curing time would be 55 seconds. Since the Clean Vat time is a multiples of 5, round down if your curing times do not match up accordingly.



6. Carefully remove the resin layer from the vat, as shown in the Clean Vat procedure.

#### Note:

Because of the reduced curing time, the layer is rather thin. As such, it may tear while removing. Even if part of it breaks, it is still useful for checking.





7. Clean the layer enough to see if there are any holes. If there are holes in the layer, then the LCD panel has deteriorated in that spot and you must replace your LCD panel.



## Replacing the LCD Panel

The VeriBuild LCD panel encounters some wear over time. Eventually, pixels on the LCD panel will go dark, and some areas of the panel will not cure as thoroughly as other areas.

Whip Mix provides 2 free LCD panels with the VeriBuild that can be used for replacement purposes.

### ■ What You Need

- A. Hex key
- B. LCD panel (new)

A



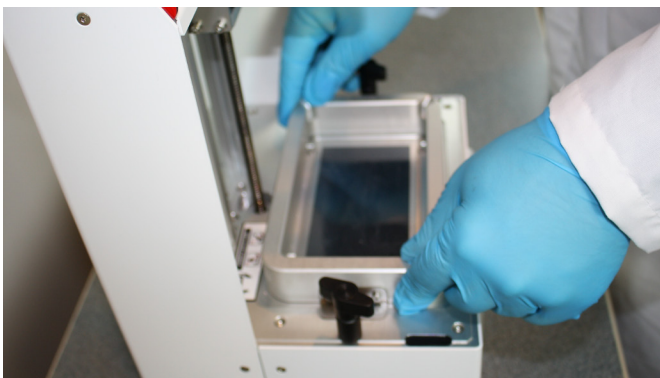
B



1. Turn off the power and disconnect the power cable from the VeriBuild.



2. Remove the build platform, and vat.



3. Use the Hex key to remove the 4 screws from both sides of the front casing.

**Note:**

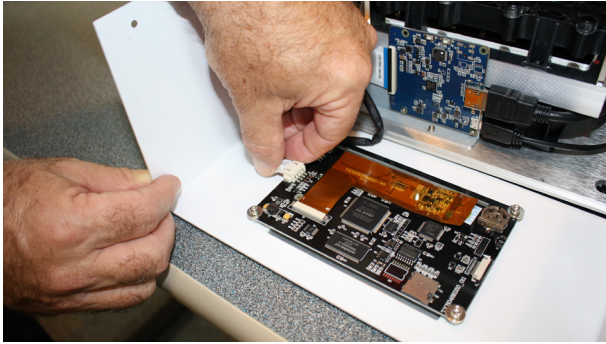
Do not remove the screws holding the back panel. It is not necessary for this operation.



4. Pull the front cowling forward from the machine and put it face-down on the table.



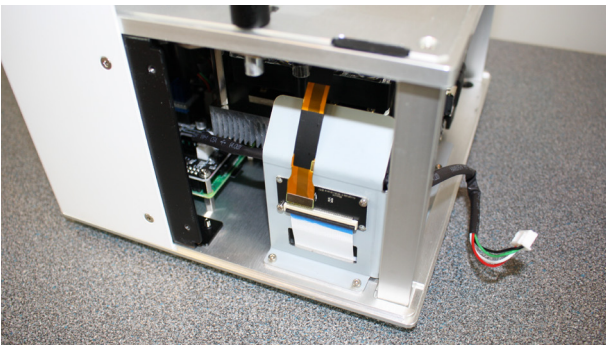
5. Before completely removing the front casing, disconnect the UI console cable by moving the connector from side to side.



**Tip:**

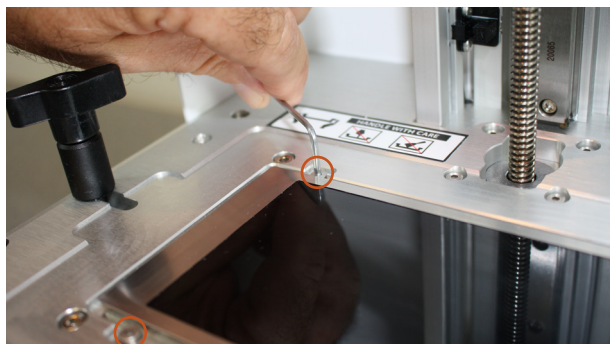
If the console cable is too tight to pull out, you can push the prongs outward with a pen or screwdriver.

6. Disconnect the LCD cable from the circuit board.

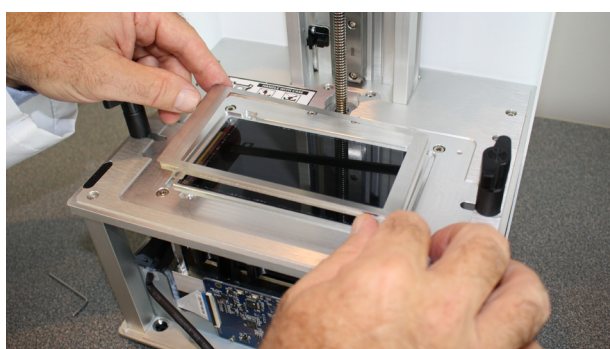




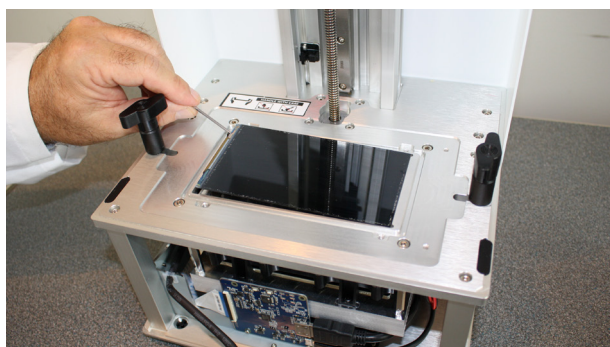
7. Use the Hex key to remove the 4 screws holding the LCD panel frame.



8. Remove the LCD panel frame from the machine and set it aside.

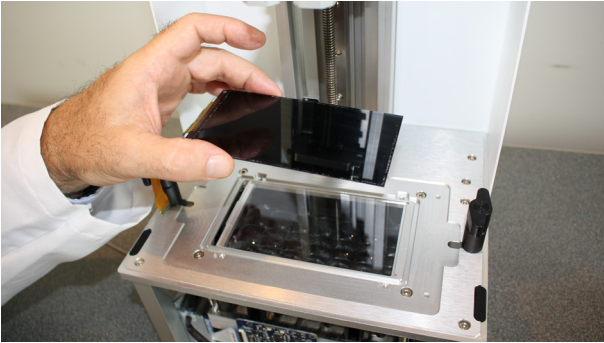


9. Lift the LCD panel from the gap on the cable side. You can carefully use the hex key or a screwdriver to lift it.

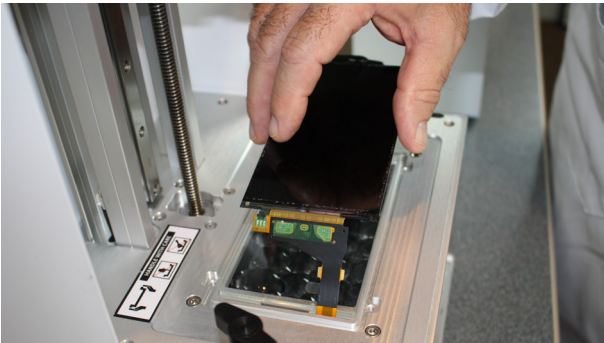




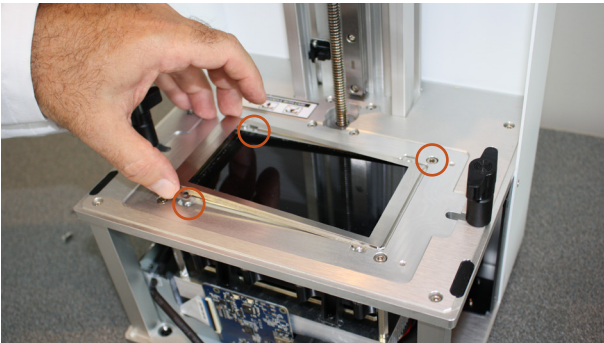
**10.** Remove the LCD panel from the machine.



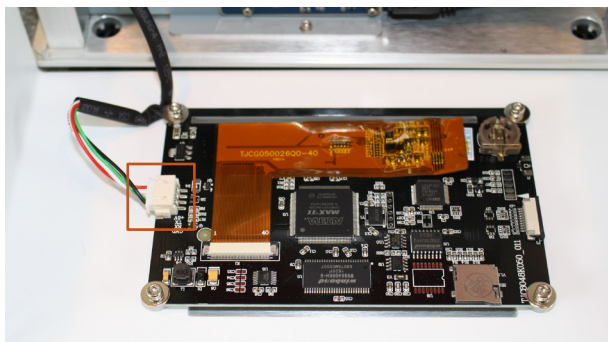
**11.** Gather your new LCD panel. Put the new LCD panel into the machine by first sliding the panel wire through the gap in the side.



**12.** Put the LCD panel frame back in place and reattach the 4 Hex screws to secure the LCD panel.



**13.** Put the front cover on the machine so you can connect the cable to the UI board.



**14.** Reattach the front cowling by inserting the 4 Hex screws on the sides of the front cover.



**15.** Reassemble your machine. To prepare for printing, make sure to complete the following:


- Put the vat back on and fill it with resin.
- Attach the build platform.
- Close the hood.
- Connect the power cable.
- Turn on the machine.





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