



ACKURETTA

# Diplo User Manual

2018/06

Document Version 1.1

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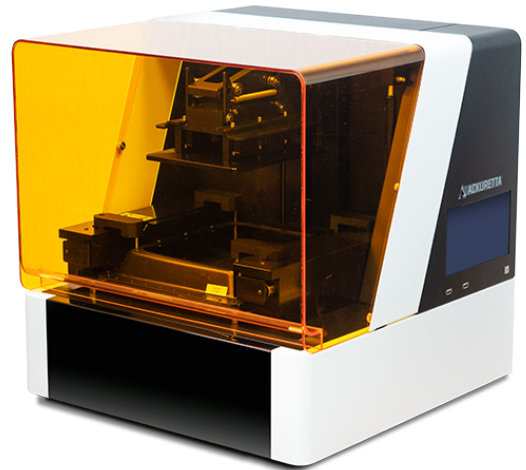
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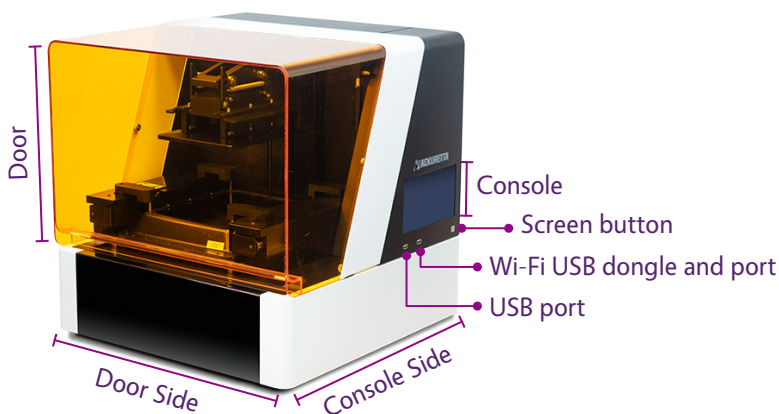
## ■ About the Diplo

The Diplo is an industrial-scale DLP 3D printer with a dual-area build platform to quickly and efficiently make two prints side-by-side. With Ackuretta's Intelligent Pressure Sensor Technology (IPST) system, the Diplo prints faster and more accurately than conventional DLP printers, and with Wi-Fi connectivity, you can start, pause, and monitor your prints anytime or anywhere.

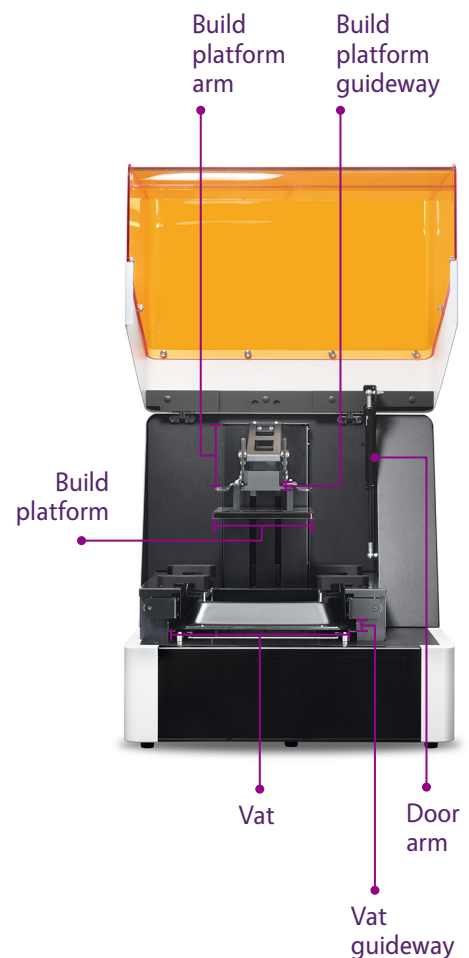


## Diplo Machine Overview

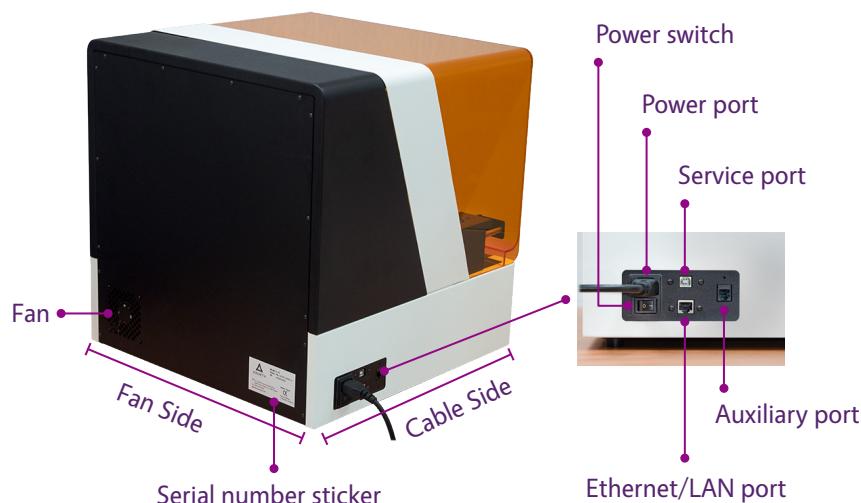
### ■ Diplo Front Sides



### ■ Diplo Interior



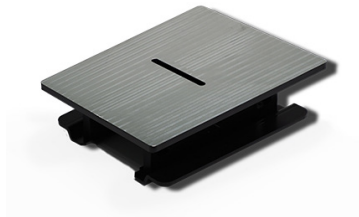
### ■ Diplo Back Sides



## ■ Diplo Package Items



Vat



Build platform



Wi-Fi dongle



Power cable



Bottles of resin \*



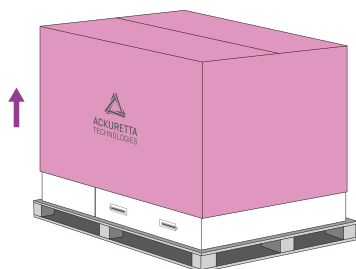
Finishing kit tools \*

The Diplo comes shipped with one build platform, one vat, and the Wi-Fi dongle attached. Depending on your purchase, one more build platform and vat may be boxed in the Diplo package.

\* Bottles of resin and finishing kit tools are only stored in the Diplo package if purchased.

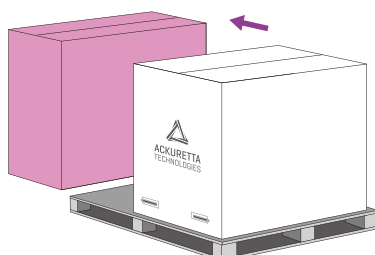
## Unboxing

1



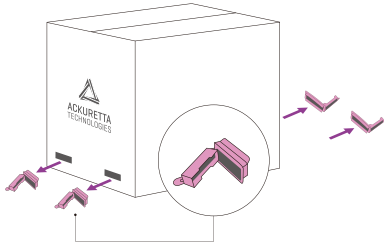
Lift the top box upward. This box is just a protective shell that envelops the other boxes.

2



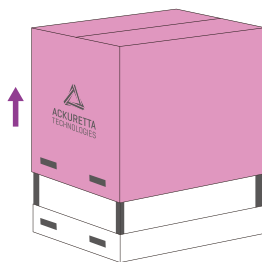
Remove the side box. Inside this box are any additional vats or build platforms that you purchased. If you did not purchase any additional vats or build platforms, this box is empty.

3



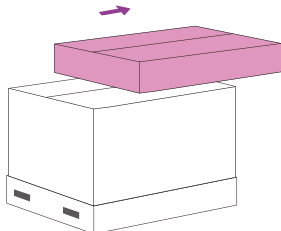
Remove the white handles from the bottom of the main box.

4



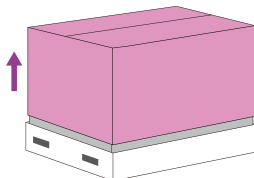
Lift the main box off of its carrying base. Two boxes are inside, one on top of the other.

5



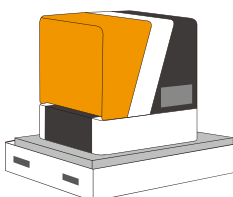
Remove the smaller box off of the larger box. Inside this box are tools from the finishing kit. If you did not purchase the finishing kit, this box is empty.

6



Remove final box off of the Diplo machine. Inside, the Diplo machine is protected by styrofoam and plastic. The power cable is placed on top of the Diplo.

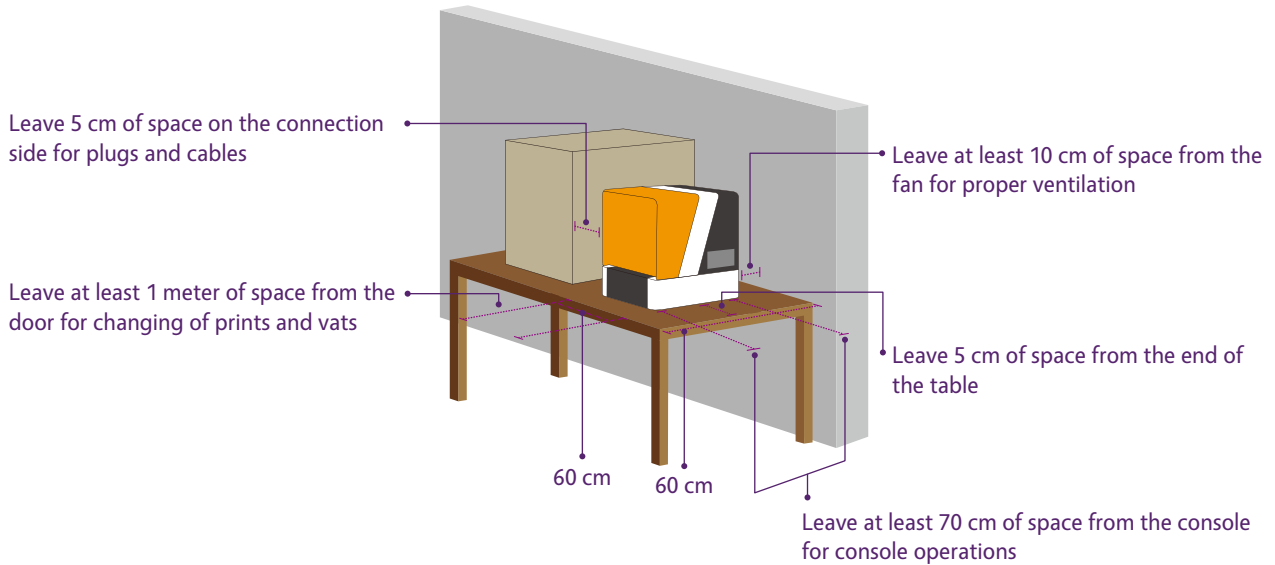
7



Place the power cable to the side. Remove the plastic and styrofoam protection from the Diplo. The Diplo is packaged with a vat and a build platform attached. The Wi-Fi dongle is connected to a USB port on the Diplo console side.

## Setup Environment

### ■ Placement: 60 x 60 cm table section



- Place the Diplo on a 60 x 60 cm (2 ft x 2 ft) section of table, leaving 5 cm (2 in) of space on every side of the machine. Ensure that the fan has at least 10 cm (4 in) of space so air can circulate properly to avoid overheating.
- The front sides – the console side and the door side – both need sufficient working area. Ackuretta recommends at least 70 cm (2.3 ft) of space to operate the console and at least 1 m (3.3 ft) of space from the door so you can change prints and vats without obstruction.

### ■ Temperature: 15° – 35°C

- Keep your Diplo in a dry, temperature-controlled room around 25° C (77° F).
- Resins become more viscous when they are too cold. If the environment is around 15° C (59° F), Ackuretta recommends increasing all curing times by 15%. Even colder temperatures may require increasing curing times further or 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 may melt during the print process.

#### **Warning:**

Do not operate the Diplo in temperatures above 40° C (104° F) or below 5° C (41° F).

### ■ UV-Filtered Lighting

The UV-protected door of the Diplo protects the resin from outside lighting while the door is closed. 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.

## ■ Work Space: 2 m<sup>2</sup>

Depending on the types of prints you regularly create, you will certainly need additional tools for the full printing process. Leave plenty of counter space available so that you can place prints and other machines nearby. Ackuretta recommends having a **2 × 1 m** (6 × 3 ft) section of table specifically for finishing purposes.

## ■ Storage Space: 70 × 35 × 35 cm cabinet stores up to 3 resins

- **Important:** Each vat must be stored in its accompanying plastic shell to prevent damage to the transparent vat bottom. Use a separate vat for each resin that you use. It is possible to clean vats, but cleaning a vat without proper training may cause cross-contamination of resins or damage to the vat.
- Store your vats with remaining resin inside of them in a dry cabinet with an opaque door. The plastic shells are approximately 32 × 32 × 8 cm (12.6 × 12.6 × 3.15 in) in size, and a little space is necessary for lifting and removing them. The shells are stackable, so 3 shells comfortably fit in a cubic space of 35 cm (14 in) on each side.
- Beyond vats, leave space for unused resin bottles, bottles for used resin, cleaning alcohol, and waste. Usually an additional 35 × 35 cm space (14 × 14 in) is sufficient for all of these items for 3 different resins, unless you purchase resin in bulk quantities.

## Software and Print File Types

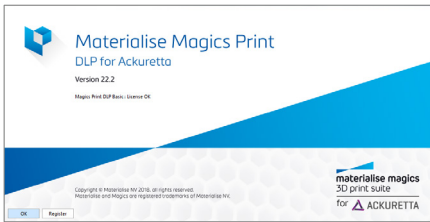
Ackuretta provides a variety of different software solutions to match your industry or application. Import your STL or other design file into your Ackuretta software, support your print, and use the built-in slicer to make your print file. The Diplo supports the following Ackuretta software:



- Alpha 3D offers ease-of-use for quick and simple print placement and processing. With automatic mesh repair, automatic supports, and automatic nesting, you can load your prints into your machine in minutes.
- Alpha 3D is suitable for the dental, prosthodontic, and hobbyist industries.
- **Supported file types:** .stl .tri  
**Alpha 3D file types:** .ibf .i3dp



- Omega 3D uses the most flexible supporting system available for 3D printers. Make every part of your supports exactly as strong as you want, or use the fast and accurate automatic supports to give you a head start.
- Omega 3D is suitable for the jewelry, dental, prosthodontic, hobbyist, and engineering industries.
- **Supported file types:** .stl .fbx .blend .obj .dfx (many more)  
**Omega 3D file types:** .sbf .pyr



- Materialise has been at the forefront of the 3D printing industry for over 20 years, and Ackuretta brings the power of Magics through Materialise Magics Print DLP for Ackuretta. In addition to all the expected features like tree supports and mesh repairing, this solution brings premium options like hollowing, perforating, and gap filling.
- Magics Print DLP for Ackuretta is suitable for all industries.
- **Supported file types:** .stl .slc  
**Magics file types:** .mbf .magics .mpart .mproject .mbx

Consult your Ackuretta sales representative to decide which software is right for you. When you receive your printer, Ackuretta will additionally send your software to you with special installation instructions. Ackuretta printers only operate using output files from Ackuretta software.

## Setting Up Your Printer

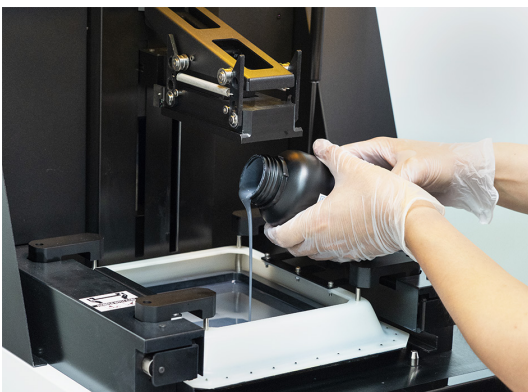
The Diplo was designed to be plug-and-play, so setup is minimal. The printer is packaged with a vat and build platform attached, so no assembly is required. Each printer is pre-calibrated, so no calibration or other setup is necessary either. To get your printer ready, do the following:

### Before You Begin:

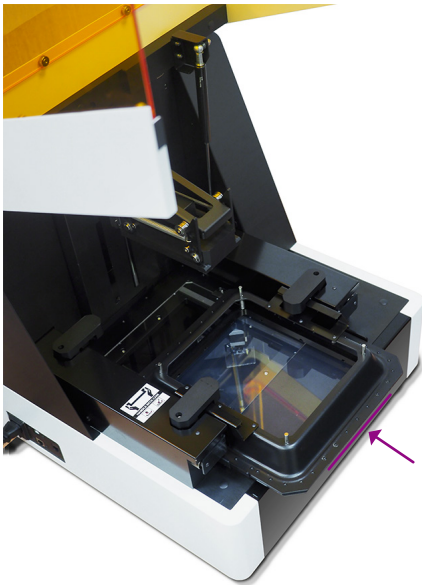
Place your printer in your proper setup environment. See [Setup Environment, page 4](#).



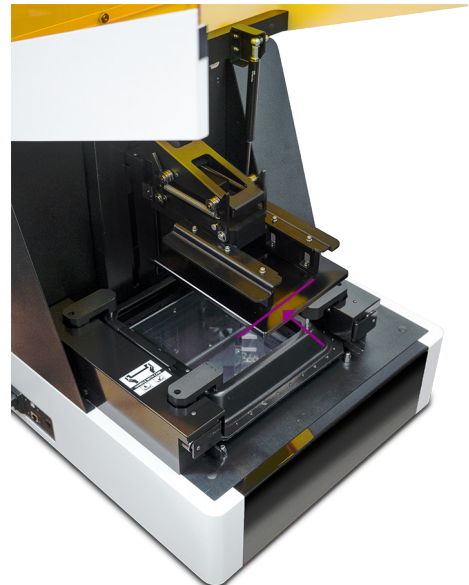
- 1 Attach the power cable to the power port.



- 2 Pour the resin you want to print with into your vat so at least 2 mm of resin covers the transparent vat area.



- 3 Place your vat on the vat guideway and push it all the way back.



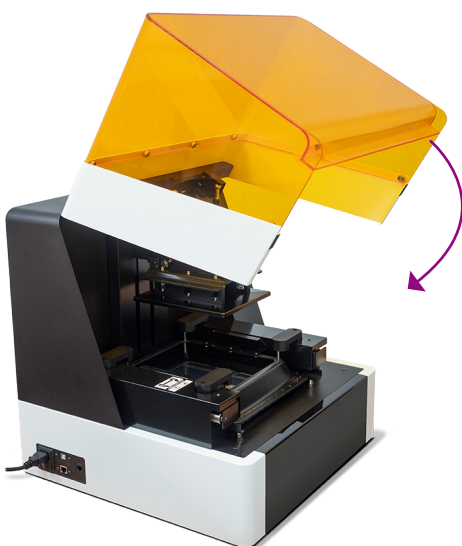
- 4 Place your build platform on the platform guideway and push it all the way back.

### Warning:

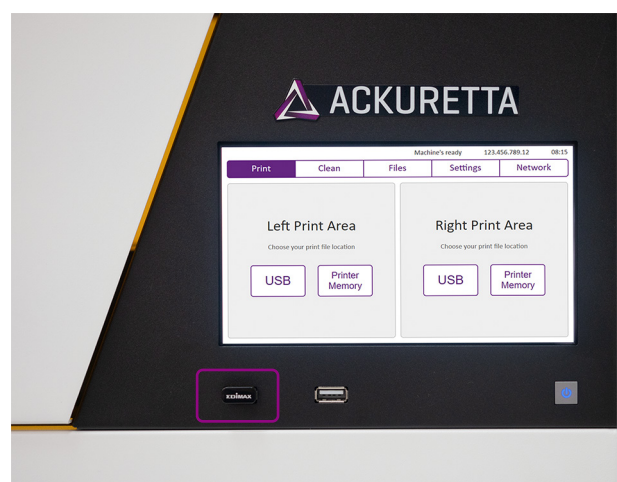
Always place the vat on the Diplo before placing the build platform. The vat protects the glass panels that are part of the optical system.

### Note:

The front and the back of the vat are symmetrical. You can push it in either way.



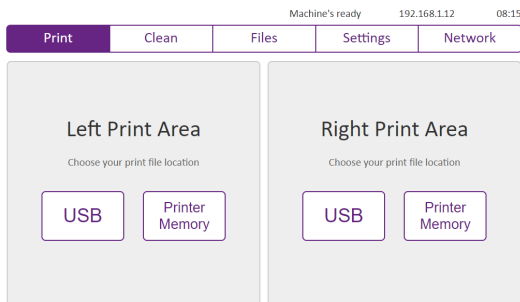
- 5 Close the door.



- 6 If your distributor gave you a firmware update, attach a USB device with the firmware package. See **Updating Your Firmware on page 23**.



7 Turn on the power switch to start your printer.



8 After starting and possibly updating your printer, select a print and begin printing. See **Print, page 8**.

## Print

When you start the Diplo, the **Print** tab is open by default. In this tab, you can select and start your prints.

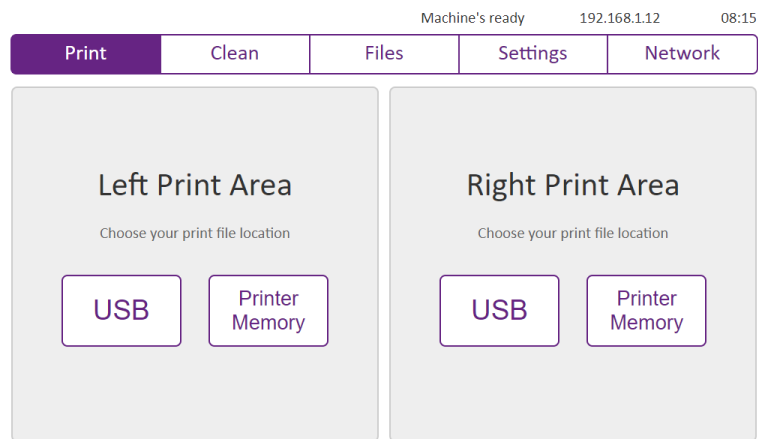
### Note:

When a print begins, you are unable to use the console for any other tasks, and the door will be locked. Check your settings, clean your vat, and do any other necessary operations before starting your print.

### Before You Begin:

- Make your print files in your software. See **Software and Print File Types on Page 5**.
- Clean your vat and build platform.
- Fill your vat with at least 2 mm of resin.
- Attach your vat by pushing it as far back as possible along the vat guideway.
- Attach your build platform by pushing it back along the build platform guideway.
- If your print is not in the printer memory, attach your USB device to the printer.

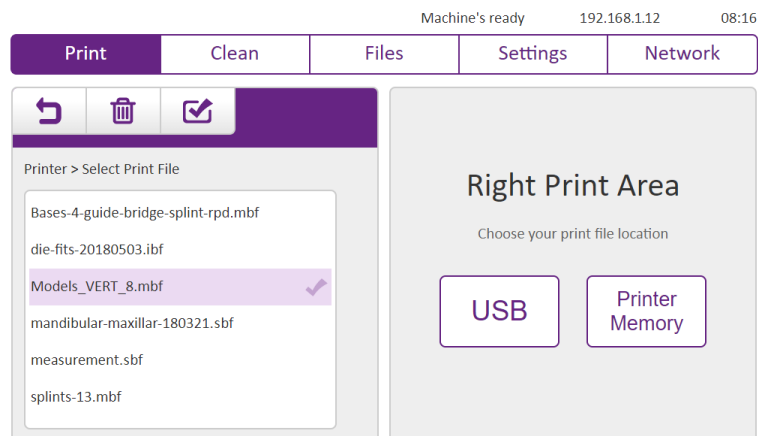
For detailed instructions about preparing your printer, see **Setting Up Your Printer on Page 6**.



- 1 Select your print source, and which side of the printer you will be printing from.


The Diplo console is positioned such that the build platform is aligned parallel to the console. In the **Print** tab, the **Left Print Area** and **Right Print Area** are from the perspective of the console. If you are looking at the door, the **Left Print Area** would be the area closest to you, and the **Right Print Area** would be toward the interior of the machine.

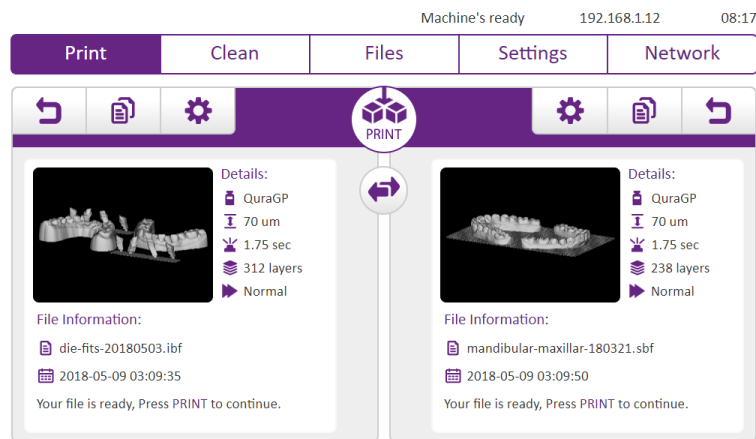
- **USB:** Select a print file from your USB device. You must have a USB device attached to the printer.
- **Printer Memory:** Select a print file that you loaded into the printer. For more information, see [Files on page 14](#).








- 2 Select your print file, and press the checkbox symbol (  ) to confirm your selection.

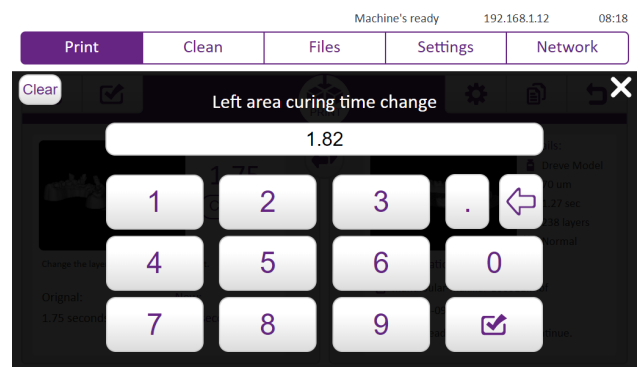
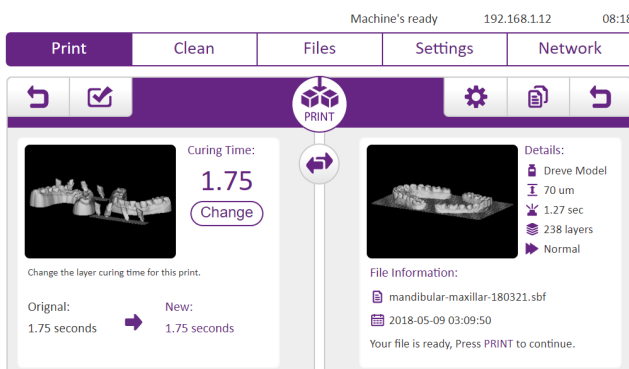
### Warning:



The trash can symbol (  ) deletes a file. Use this option with caution.



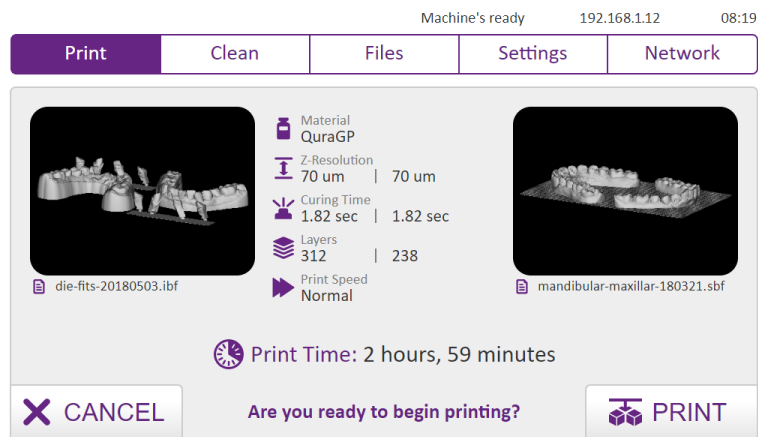
- 3 Select an additional print file and/or modify your prints to prepare them for printing. The following options are available:


-  Go back to the previous screen. This only affects the side you press this button on.
-  Copy the print from one side to the other side. All parameters are saved.
-  Change the curing time of the print. Both prints may have different curing times. See step 4.
-  Switch the sides of the prints.
-  Start the print. A confirmation screen will appear after you press this button. See step 5.

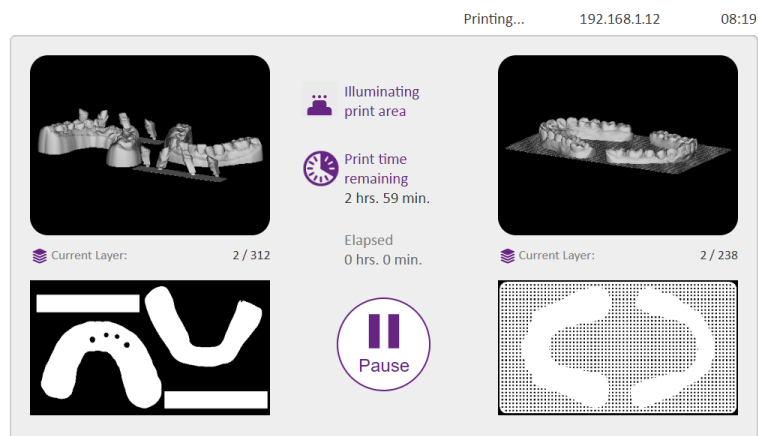


- 4 (Optional) If your curing time is incorrect, press the modify symbol (  ) to change the curing time. In the screen that appears, press Change to choose your curing time. Set a different value for the curing time, and press the checkbox symbol (  ) to confirm.


Press the checkbox symbol again in the Curing Time screen to confirm your change.





- 5 Press the Print button (  ) to start your print. In the confirmation screen, view the details of the print, and press **PRINT** and the print will begin.



- 6 The print will proceed. You do not need to perform any action at this point. The print will be displayed on the screen so you can check its status at any time. The following options are available:

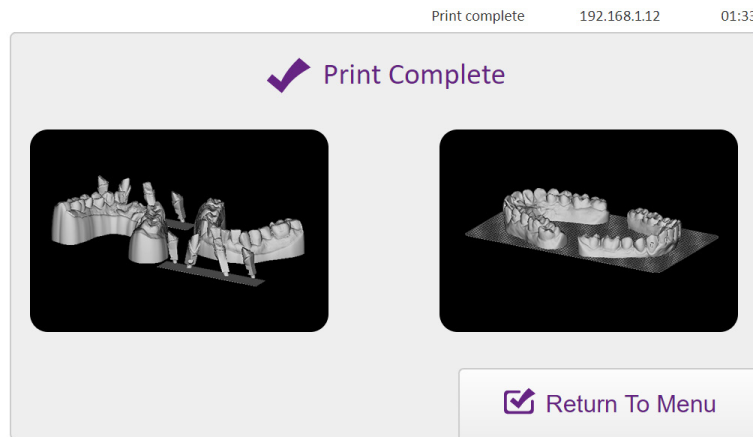
 **Pause** the print. After you press **Pause**, the printer will finish printing its current layer before other options are available. When the printer has completely paused, the options to **Resume**, **Cancel**, and **Raise Platform** become available.

 **Cancel** the print. This option is only available after the print has paused.

 **Turn off the printer screen.** This does not pause the print or shut down the printer. This may be used to conserve energy or keep the room dark. You may turn off the screen at any time, not only when the printer is printing.

### Note:

While the machine is printing, it has already saved the print file. You may safely remove your USB device and the print will continue.



- 7 When the print completes, the printer may make an alert sound depending on your settings. Remove your print and perform post-processing. Press **Return to Menu** to start another print or perform other console tasks.

## Clean

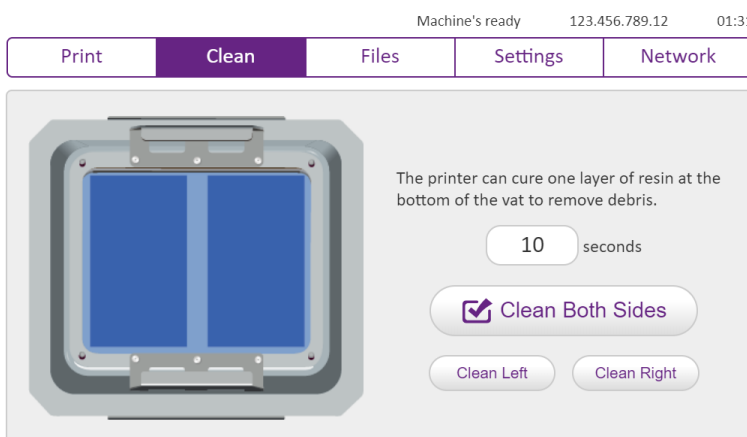
Whenever your print fails, use the **Clean** function to remove pieces of prints that did not stick to the build platform during printing. The **Clean** function cures one layer of resin at the bottom of the vat, and then you can easily remove that cured layer and throw away any lingering debris with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

### What You Need:

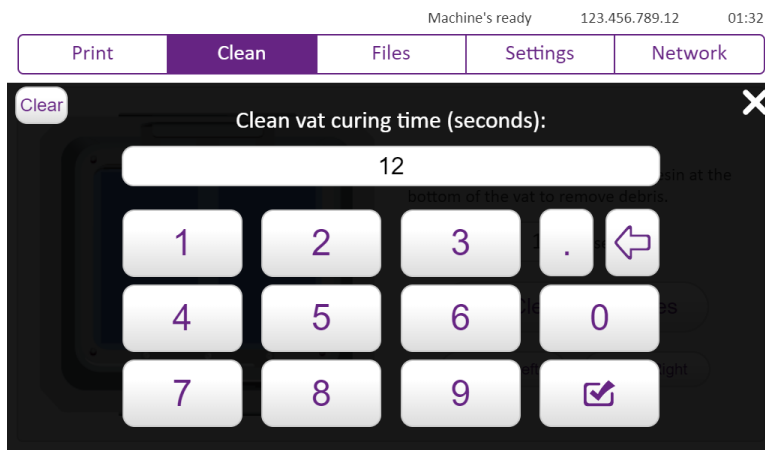
- Small pieces of paper — note cards, sticky notes, or business cards work well
- At least 0.5 mm of resin across the vat
- Tissues

### Warning:

**Do not** use any metal tools in the vat because metal tools may damage the vat surface. This includes knives, scrapers, and tweezers.



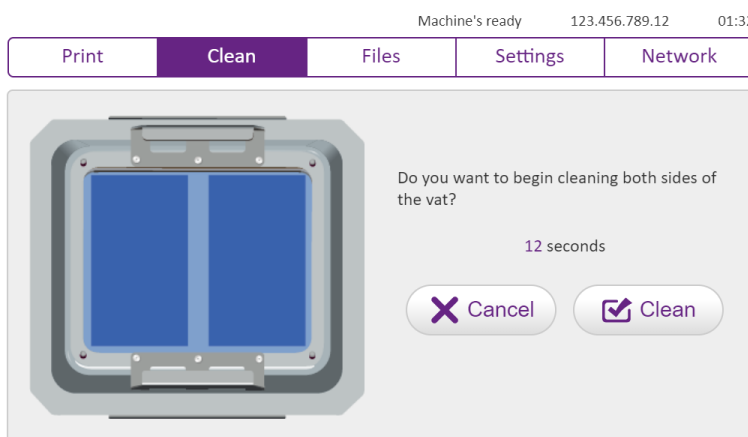
- 1 Press the **Clean** tab on the top of your Diplo console.



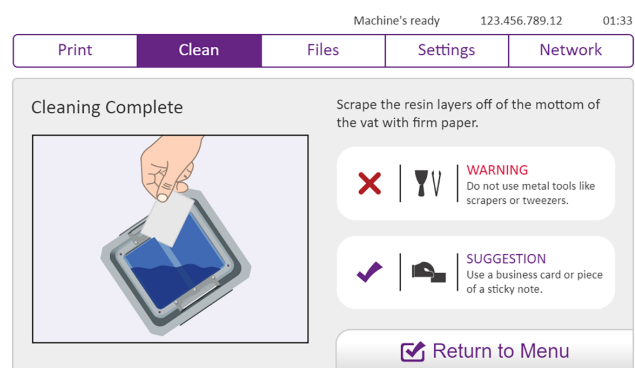
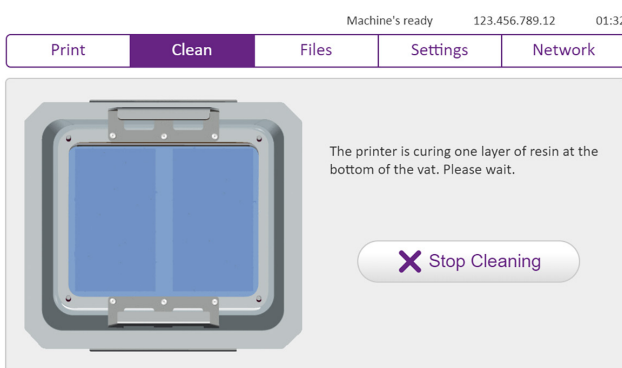
- 2 (Optional) Press the number of **seconds** to change the curing time. A dialog window prompts which requests you to set your curing time. After you have chosen a time, press the checkbox symbol (✓) to confirm.

### Note:

Ackuretta recommends choosing a curing time of at least 5 times the curing time of the resin at 0.100 mm per layer. For most resins, 10 seconds is enough time.



- 3 Press one of the three buttons to begin cleaning the appropriate side or sides: **Clean Both Sides**, **Clean Left**, or **Clean Right**. In the confirmation screen, press **Clean** to confirm.



- 4 The machine will begin curing one layer off the bottom of the vat. You do not need to perform any action until the **Cleaning Complete** screen appears.



- 5 Slide a small piece of paper under the layer of resin, and peel the layer off the vat. Let the resin drip off the layer to save resin. Dispose of the resin layer by your normal resin disposal method. Hold a tissue under the resin layer to prevent dripping while disposing of the layer.

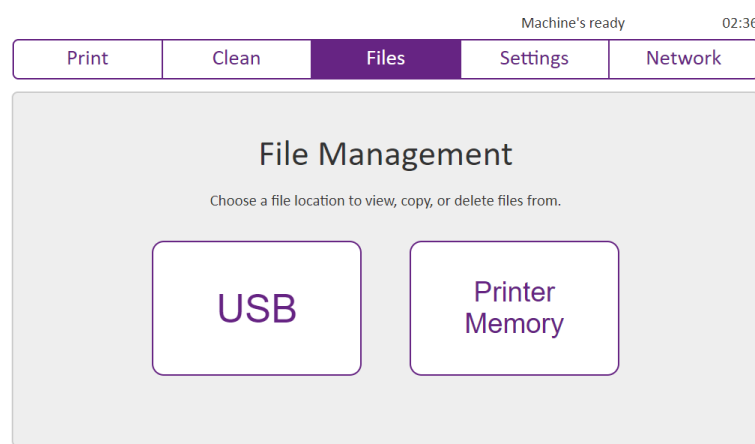
### Tip:

If the paper has too much resin on it, the paper will become soft and unable to slide under the resin layer. Replace the paper after two or three attempts.

If you are having particular trouble removing the layer, remove the vat from the machine and place the vat in its plastic shell. While in the plastic shell, tilt the vat so that one corner of the layer is visible. At an angle, it is easier to slide paper under the layer.

## Files

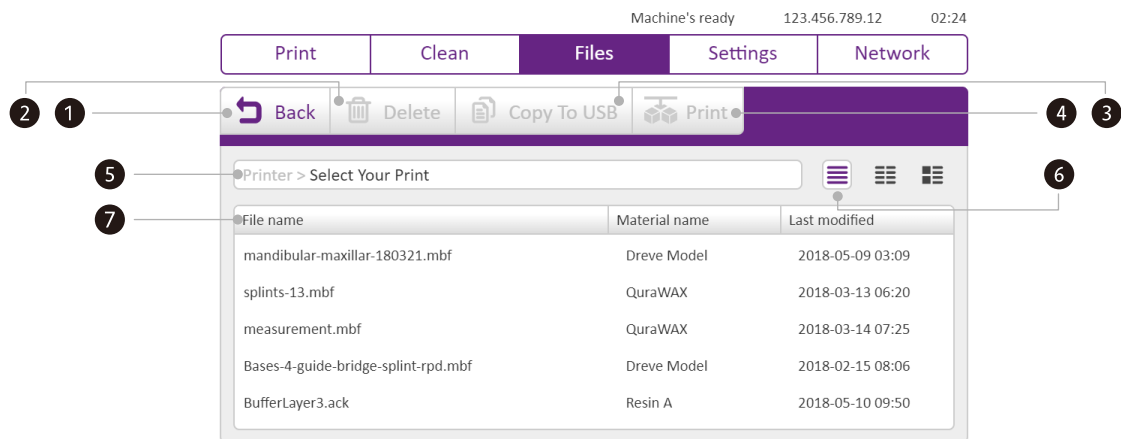
The **Files** tab is used for printer file and disk space management. In the **File Management** screens, you can preview your print files, copy files between your printer and your USB device, delete files, and choose a file to print.



### File Management

When you first open the File Management screen, select whether you want to manage your **USB**, or your **Printer Memory**.

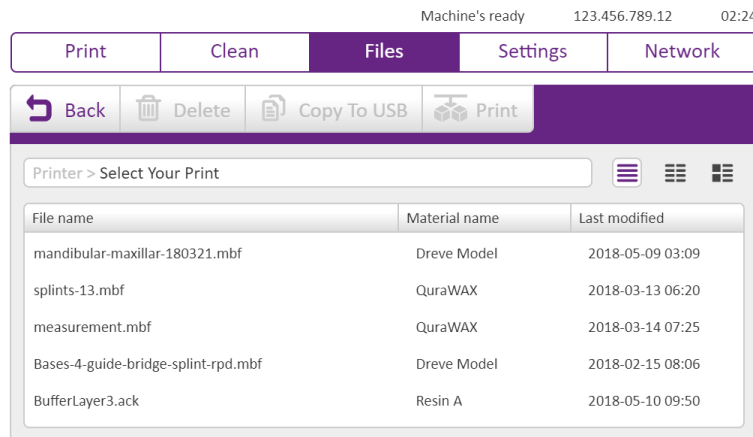
The USB and Printer Memory screens have similar functions to each other.



## File Management Items

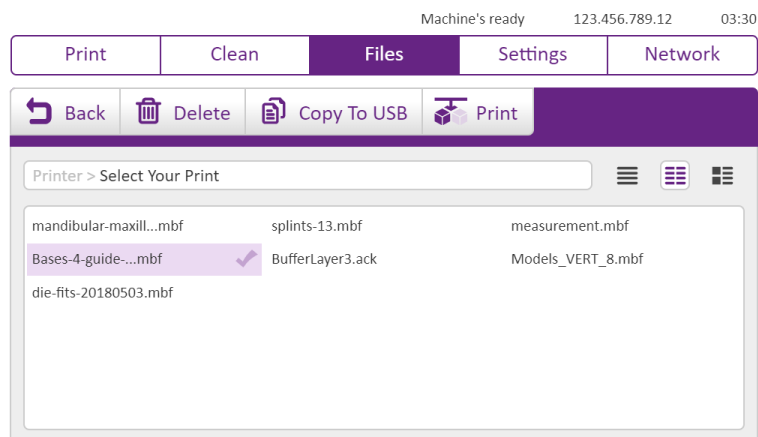
The File Management screens have the following options and information:

|  |   |
|--|---|
| <b>1 Back</b>                            | Go back one screen or folder.   |
| <b>2 Delete</b>                          | Delete selected file(s).  |
| <b>3 Copy to USB<br/>Copy to Printer</b> | Copy selected file(s) from their current location to the USB device or printer memory respectively.   |
| <b>4 Print</b>                           | If one or two files are selected, go to the <b>Print</b> tab with those files selected.   |
| <b>5 Path bar</b>                        | This area shows which folder you are currently viewing.   |
| <b>6 View modes</b>                      | Switch between <b>Details</b> , <b>Columns</b> , or <b>Preview</b> view modes.  |
| <b>7 File explorer</b>                   | View the files or folders available in the current location. Touch a file or folder to select it and perform actions on it. Touch and hold on a file or folder to enable multi-select mode. |



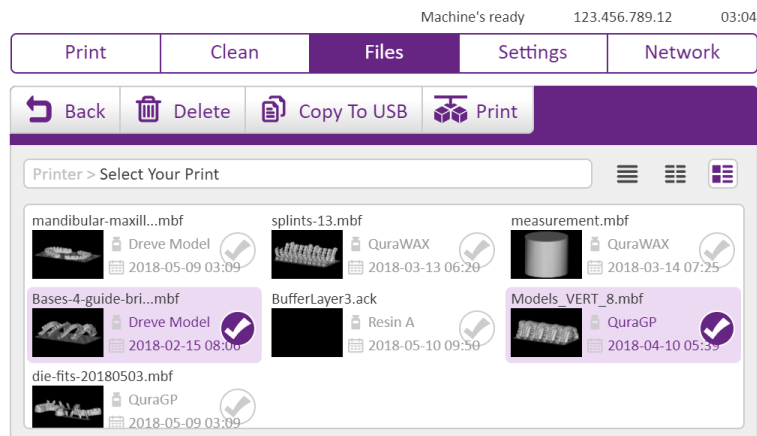
## Details View

In the **Details** view, you can see all file names in a single list, along with the print material inherited from the software, as well as the last time that the print was modified. Press the respective header row to sort by **File name**, **Material name**, or **Last modified** time.



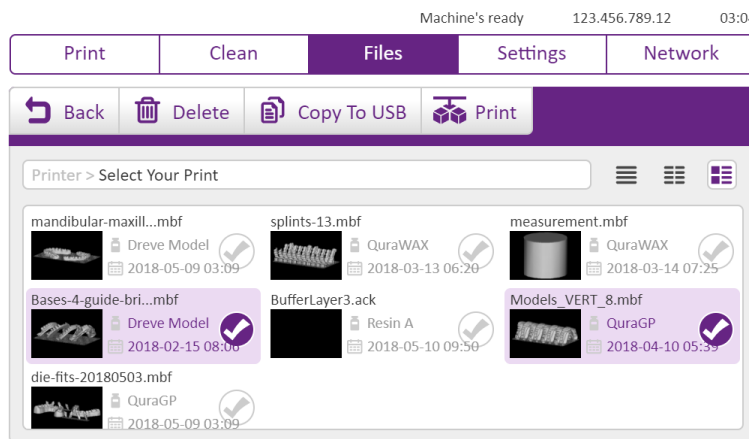
## Columns View

The **Columns** view shows many more files at one time than **Details** or **Preview** views. Use this view if you have many files.





## Preview View

Underneath each file name, the image for that file is shown in the **Preview** view. This allows you to scan through each of your files to find which file you want to manage visually.



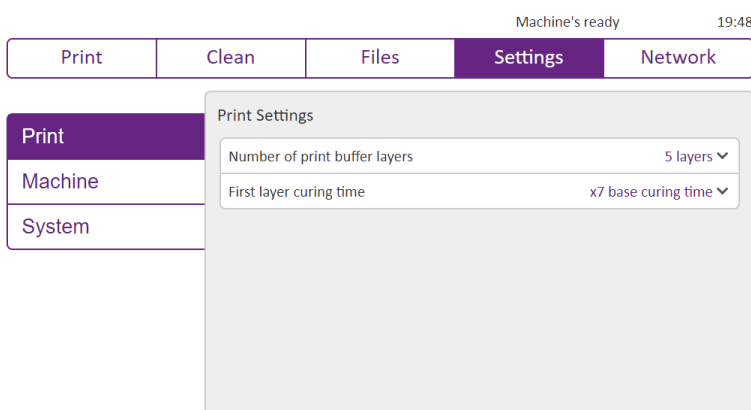
## Multi-Select Mode

Touch and hold any file or folder to enter multi-select mode. In this mode, you can select multiple items to act on at one time. Press an unfilled checkmark circle (  ) to select that item, or press a filled checkmark circle (  ) to deselect that item.

If you have 1 or 2 print files selected, the **Print** option is available. Otherwise, if you have 1 or more files or folders selected, you may **Delete** those items or **Copy** them to your USB device or printer memory respectively.

## Settings

Configure your printer from the **Settings** tab. Whenever you modify a setting in this tab, the printer applies the setting immediately, so be careful with which settings you adjust, and record the previous settings before modifying.



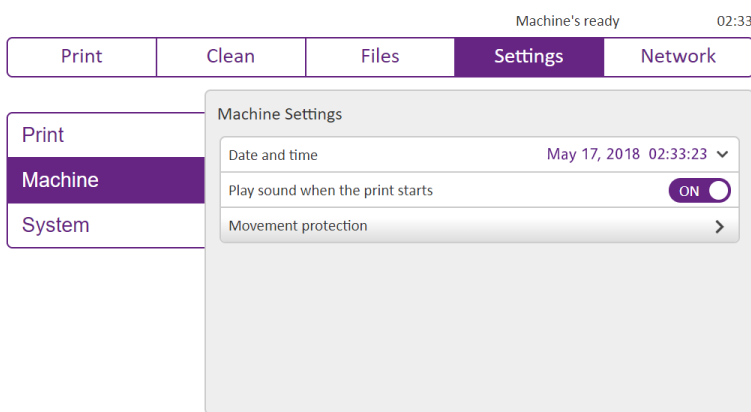
### Print Settings

This screen contains two related settings regarding "buffer layers". The Diplo cures the first several layers much longer than the rest of the print. This ensures that the print stays attached to the platform.

To change numbers in this screen, touch and slide to the left and right.

**Number of print buffer layers:** Set the number of layers that the machine will cure the resin an extra amount of time.  
**Recommended:** 5 - 7 layers

**First layer curing time:** The Diplo takes the curing time of the resin and multiplies it by this number for the first layer. Subsequent buffer layers use gradually reducing curing times between the first layer time and the normal curing time.  
**Recommended:** x7 - x10



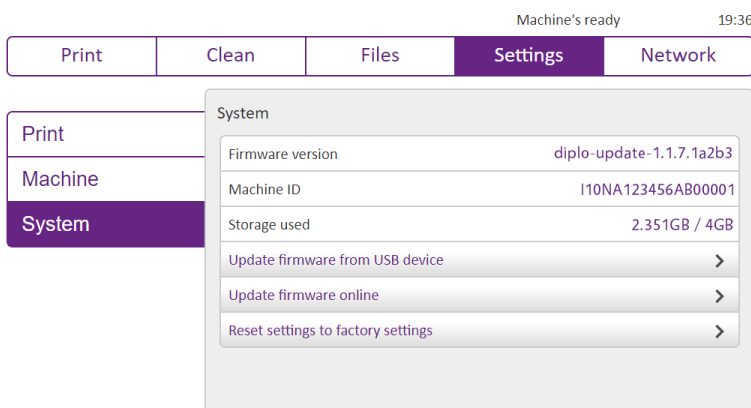
## Machine Settings

The settings in this screen are personal preferences in the display and usage of the machine.

- Date and time:** Tap any of the settings in this dialog up and down to change your month, day, year, and time.
- Play sound when the print starts:** If enabled, the printer plays a sound to alert you that the Diplo has started printing.
- Movement protection:** Movement protection mode locks the printer so that the build platform holds the vat tight. This way, you can move the printer without risk of damaging your vat or build platform. Press this button to start movement protection mode.

### Warning:

Always enable movement protection mode before moving the Diplo if the build platform and vat are attached.



## System

View your machine information, update your firmware, or reset your settings from this screen.

- Firmware version:** The currently installed version of the Diplo firmware.
- Machine ID:** The unique ID for this Diplo. This is not the same as the serial number, which is affixed to the back fan side of the Diplo.
- Storage used:** The Diplo has 4 GB of on-board storage. About 2 GB of that storage is dedicated to the Diplo firmware and logs. If your storage is nearly full, go to **Files** to remove some print files.

**Update firmware from USB device:** If you were sent a new firmware version from Ackuretta, load the firmware package to a USB device. Press this button to check your USB for firmware and begin installation.

**Update firmware online:** If your machine is connected to a Wi-Fi network with Internet, press this button to check for updates.

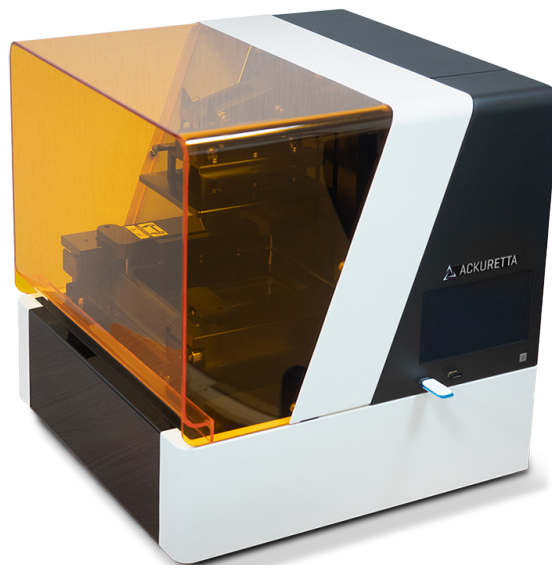
**Reset settings to factory settings:** Reset the Diplo firmware to its factory version. The Diplo will reset itself to its default settings.

### Warning:

All print files and logs will be deleted and printer performance may be affected. Perform this action with caution.

## Network

Connect to a Wi-Fi network or LAN from the **Network** tab. After connecting to a network, you can access the printer from your browser using the Web Console.

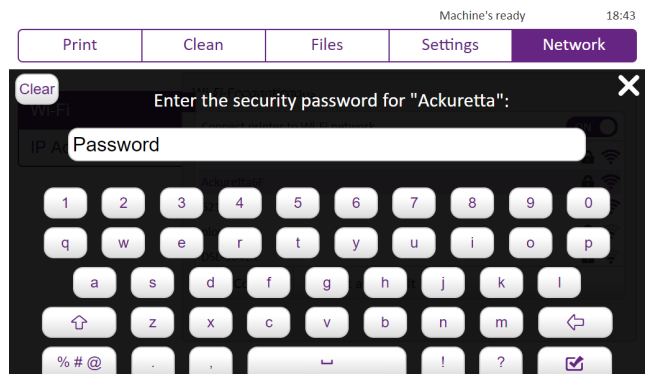
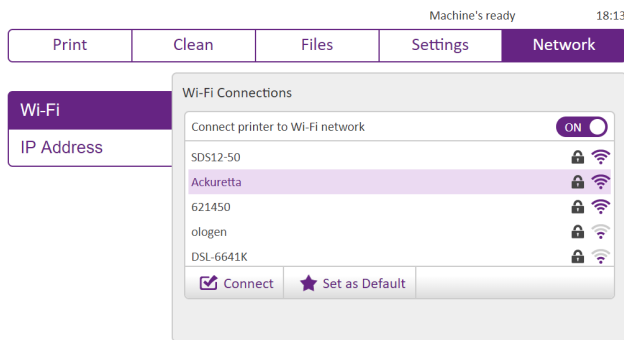


### Connect Your Wi-Fi Dongle

The Diplo arrives with a Wi-Fi dongle attached to one of the USB ports. Ensure that your Wi-Fi dongle is attached before going to the **Network** tab.


### Note:


Alternatively, you can connect the Diplo to a LAN connection by attaching an Ethernet cable to the Ethernet port. If you do this, the printer will attempt to connect to your LAN automatically. You do not need to connect to a Wi-Fi network.

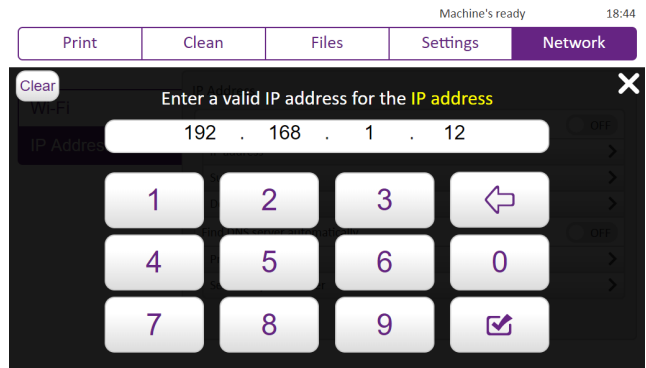
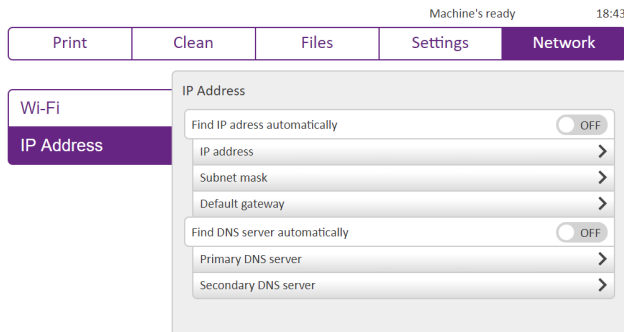


## Wi-Fi Connections

Enable the **Connect printer to Wi-Fi network** setting. The Diplo will automatically search for available Wi-Fi networks.

**Connect:** Select a network and press **Connect**. If the network has a lock symbol (  ), you will be prompted to input a network password. If the connection is successful, the network will display “Connected” next to its network name.

**Set as Default:** Choose a Wi-Fi network to automatically connect to when the Diplo starts. Your default network will display a star icon (  ).

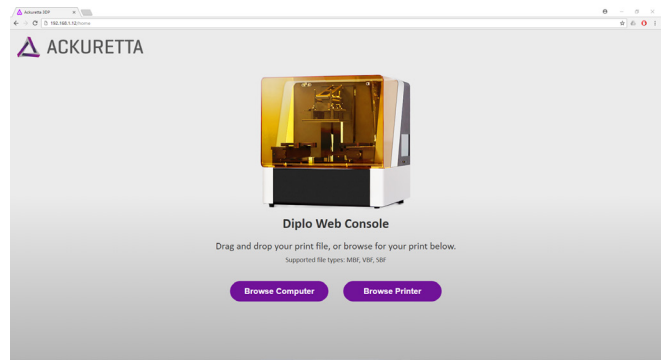
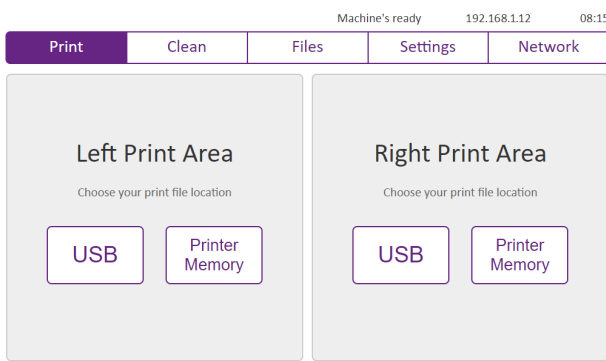


## IP Address

Most connections use dynamic **IP address** and DNS servers. Go to the IP Addresses tab if your office security systems require you to set a static IP address or DNS server.

**Find IP address automatically:** Disable this setting if you need to set a static IP address. In the options that appear below, you will need to set your **IP address**, **Subnet mask**, and **Default gateway**. A number pad will appear whenever you select a setting to change.

**Find IP address automatically:** Disable this setting if you need to set a static DNS server. If you set a static IP address, you also must set a static DNS server. Similar to the IP address settings, options appear for you set a **Primary DNS server** and a **Secondary DNS server**.



## Connect with an Internet Browser

The top right of the console displays the IP address of the Diplo. Open an Internet browser while on the same network as the Diplo and type the IP address shown into the address bar. The **Diplo Web Console** opens.

In the provided example, the IP address shown on the console is 192.168.1.12. To connect to the Web Console, the user typed "192.168.1.12" into the address bar.

## Printing from the Diplo Web Console

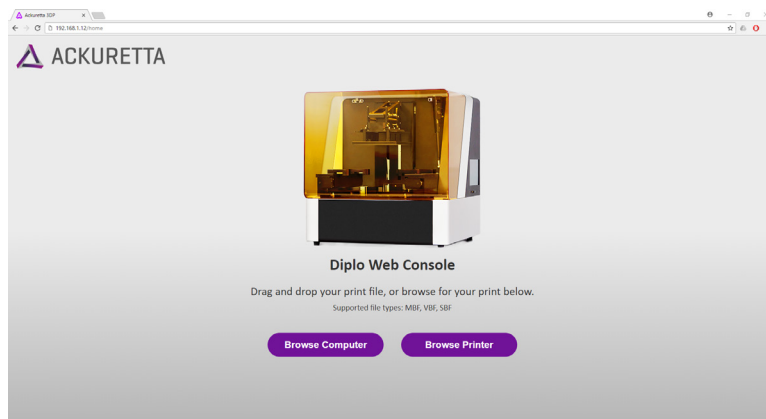
After you have set up a network connection, you can upload, start, and monitor prints directly from your computer through your Internet browser.

### Note:

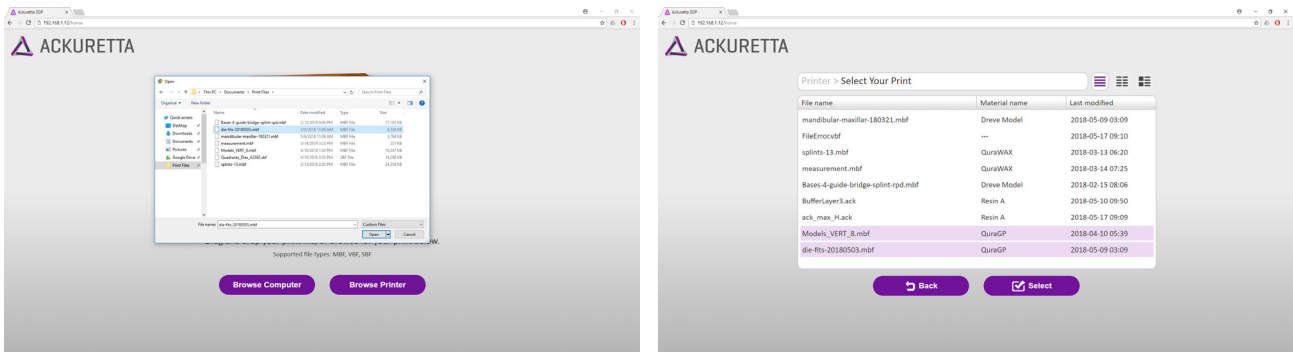
The Diplo Web Console is only able to upload, start, and monitor prints, as well as update firmware. To clean your vat, manage files, or monitor your settings, use the console directly on the Diplo machine.

## Before You Begin:

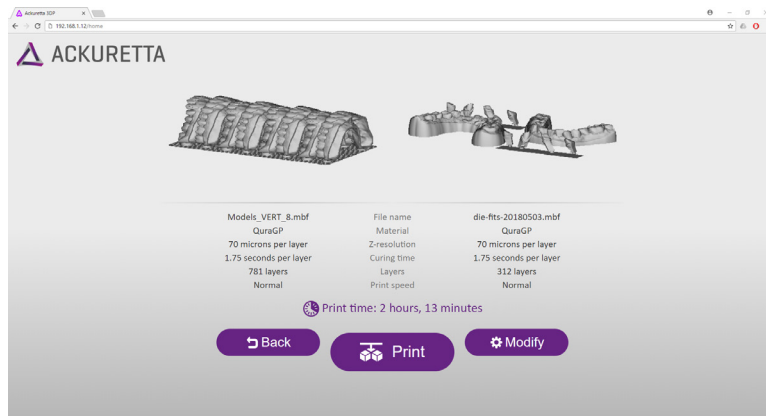
Prepare your print files in your print software. See **Software and Print File Types on page 5**.




- 1 Type your Diplo IP address in the address bar of your Internet browser. For more information about setting up your network connection, see **Network on page 19**.





- 2 Drag and drop your print file into the browser window, or select whether you would like to browse for your file from your computer or the printer memory.
  - **Computer:** Your Windows File Explorer or Apple Finder will open. Select 1 or 2 files to upload and print.
  - **Printer Memory:** You can see all prints that have previously been uploaded to the printer and saved. You may click and select up to 2 files. If you select more than 2 files, the first files will be deselected so you always have 2 selected.



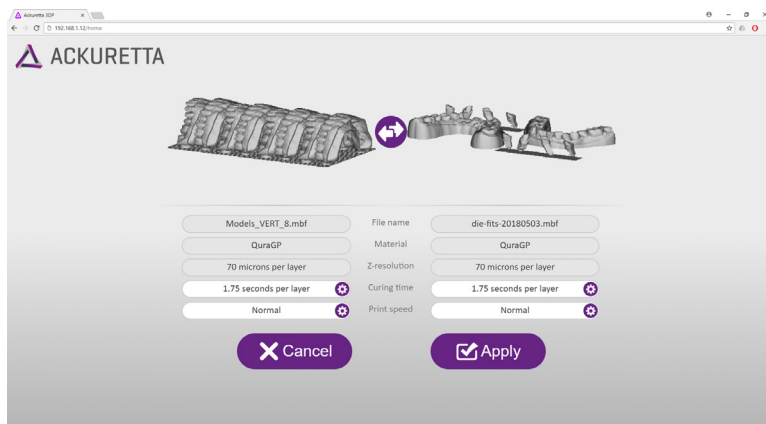
- 3 The prints you chose are shown, along with their print parameters and the estimated print time. Click one of the following buttons to continue:

 **Back:** Go back to the previous screen and select different prints. See Step 2.

 **Modify:** Change the curing time or positioning of the prints. Both prints may have different curing times. See step 4.

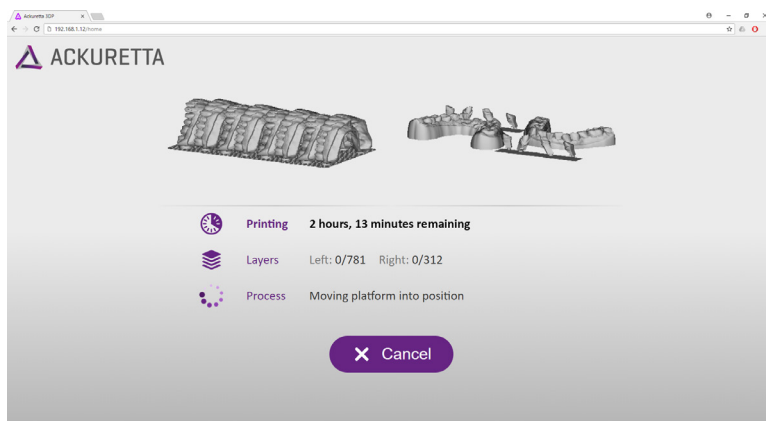
 **Print:** Start the print. A confirmation screen will appear after you press this button. See step 5.

The Diplo is positioned such that the build platform is aligned parallel to the console. As in the **Print** tab of the console, the **Left Print Area** and **Right Print Area** are from the perspective of the console. If you are looking at the door, the **Left Print Area** would be the area closest to you, and the **Right Print Area** would be toward the interior of the machine.



- 4 (Optional) If your curing time or print position is incorrect, press **Modify**.

Click the gear button (⚙️) next to the setting that you want to modify, or click the swap button (↺️) to switch the print sides. When you are finished, click **Apply** (✅) to confirm.



- 5 Click **Print** to start your print. The print will begin, and you can monitor the print by keeping your browser window open. If you want to check your print at any time from another browser, type your Diplo IP address in the address bar of your Internet browser.

While the print is in progress, you can **Pause** the print at any time from the browser. When the printer has completely paused, the options to **Resume**, **Cancel**, and **Raise Platform** become available.

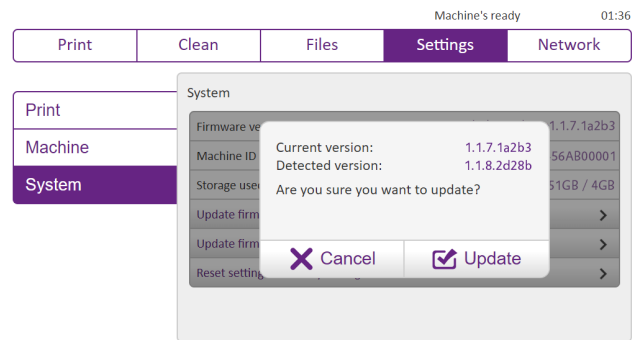
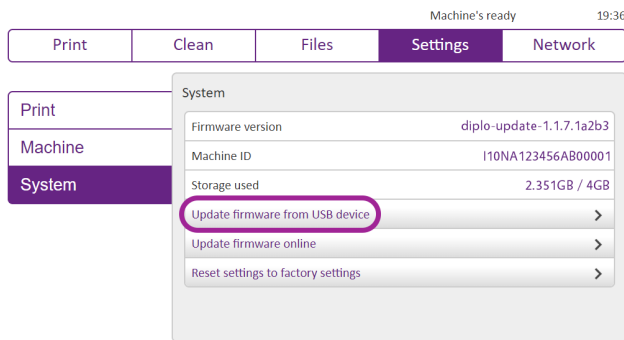
## Updating Your Printer Firmware

Installing firmware on the Diplo is mostly an automated process. You can install the firmware either by loading a firmware package to your USB device, or automatically over the Internet. The following guide helps you to update your firmware by a few methods.

### Note:

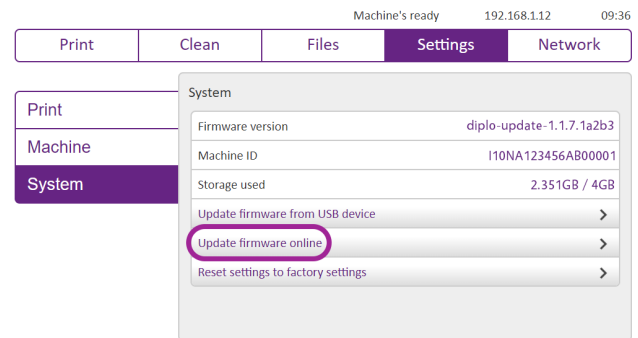
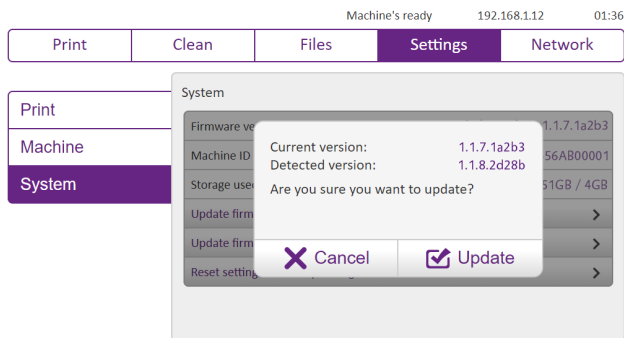
Ackuretta recommends updating to the latest version of the Diplo whenever possible, but it is not required. If your printer is working fine, you do not need to update unless specifically directed to do so by Ackuretta support.

If an update comes later, you do not need to update all interim updates first. For example, if your current version is 1.0.1, you can update directly to 1.2.2, without updating to 1.1.0 or any other in-between versions.



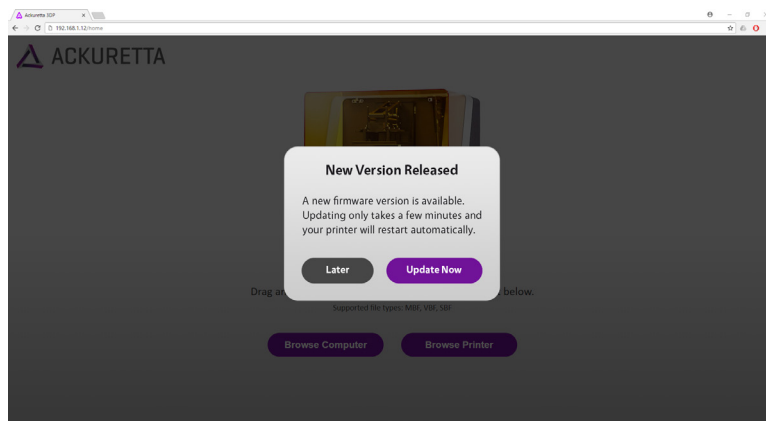
## Method 1: Update by USB Device

1. Receive the update file directly from Ackuretta.
2. Save the update file to a USB device.
3. Connect the USB device to your Diplo printer.
4. Go to **Settings > System**.
5. Press **Update firmware from USB device**.
6. The machine will check your USB for an update, and if one is found, an update screen will appear.
7. Press **Update**.
8. The printer will restart after updating.



## Method 2: Update over the Internet from the Console

1. Connect to a Wi-Fi network with internet access. See **Network on page 19**.
2. Go to **Settings > System**.
3. Press **Update firmware online**.
4. The machine will check for an update from the Ackuretta server, and if one is found, an update screen will appear.
5. Press **Update**.
6. The printer will restart after updating.



### Method 3: Update over the Internet from the Browser

1. Connect to a Wi-Fi network with internet access. See **Network on page 19**.
2. Open an Internet browser while on the same network as the Diplo and type the IP address shown on the Diplo console into the address bar.
3. The browser will search for an update from the Ackuretta server automatically.
4. If an update is found, a **New Version Released** screen appears.
5. Click **Update Now**.
6. The printer will restart after updating.
7. Reload your browser.





# ACKURETTA

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