

A Pickering Public Library Guide for using the Bambu Lab P1S



1. How do 3D printers work?

3D printers use an additive process to help turn a digital file into a physical three-dimensional object. The 3D printer in partnership with its corresponding software will take a digital object and cut it into thousands of tiny slices. The 3D printer will then heat the filament and use it to lay down successive layers slice by slice from the bottom up until the object is complete.

2. Getting to know the Bambu Lab P1S

The Bambu Lab P1S is a 3D printer that's great for beginners and experienced users alike. The Bambu Lab P1S utilizes their own Bambu Studio Software to load up digital 3MF files or import STL and OBJ files that are then translated into slices and sent to the machine for printing.

Specifications:

Top Print Speed: 500mm/sec

Layer Thickness: From 0.08mm to 0.28mm (0.003in - 0.011 in).

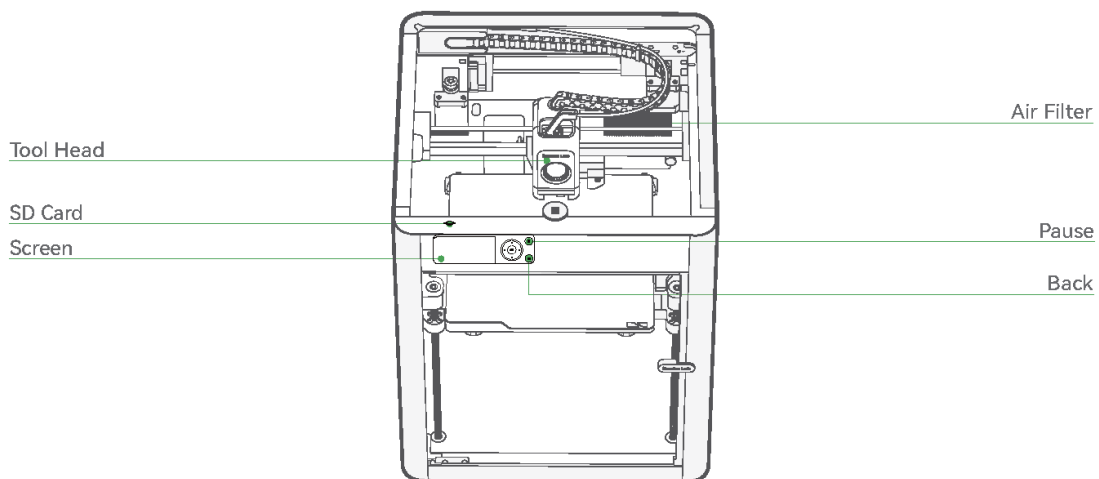
Filament Materials: PLA.

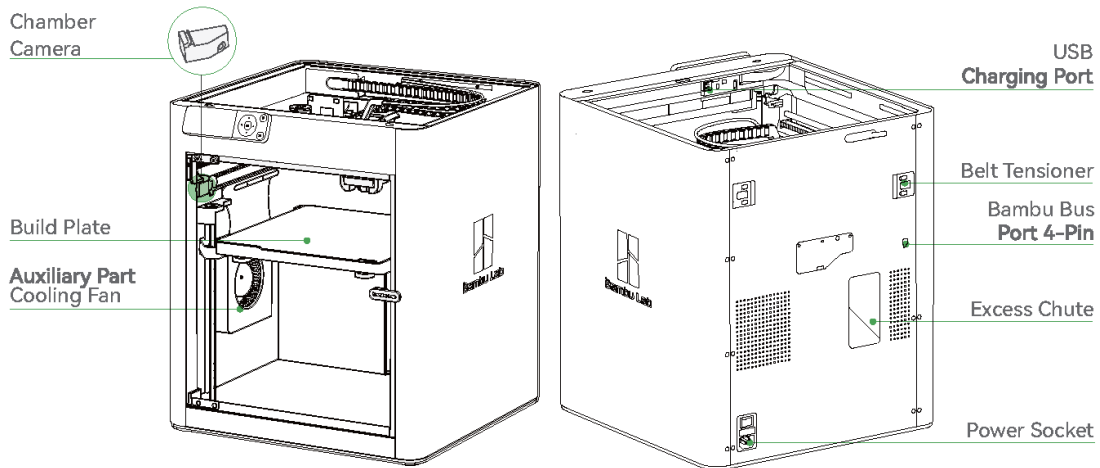
Compatible Software: Bambu Studio, Bambu Handy

Nozzle size: 0.4mm

3. Parts of the Bambu Lab P1S

Component Introduction





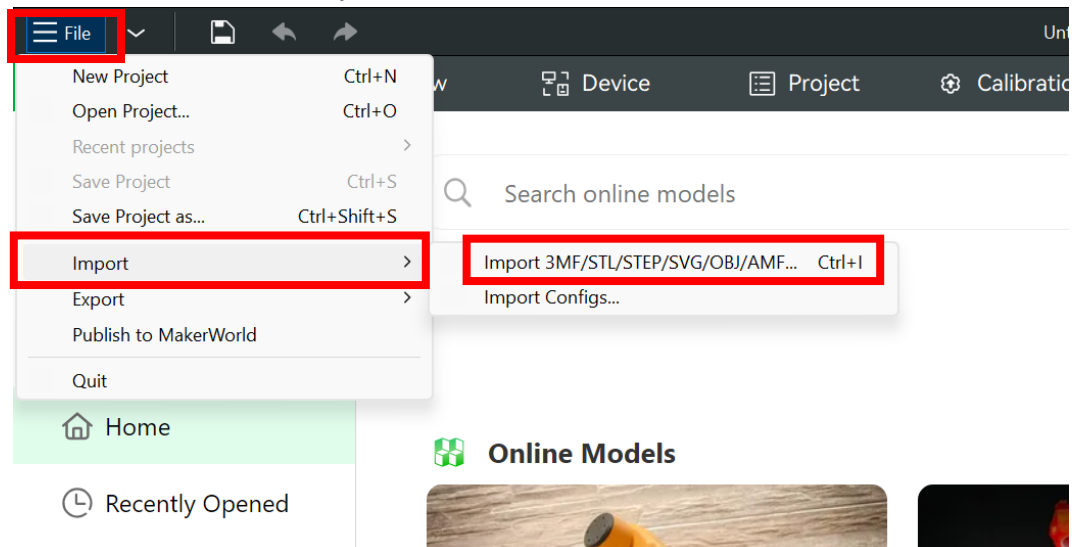
4. Using the Bambu Lab P1S safely

Under no circumstances should the extruder/nozzle head be touched when heated. The P1S build plate or bed is designed to be heated before, during and after a print. The bed can get very hot and is not to be touched during the heating or printing process. When the print is complete, a message will display on the LCD display to indicate the print is now safe to remove. Safety gloves and a scraper are provided to remove print jobs.

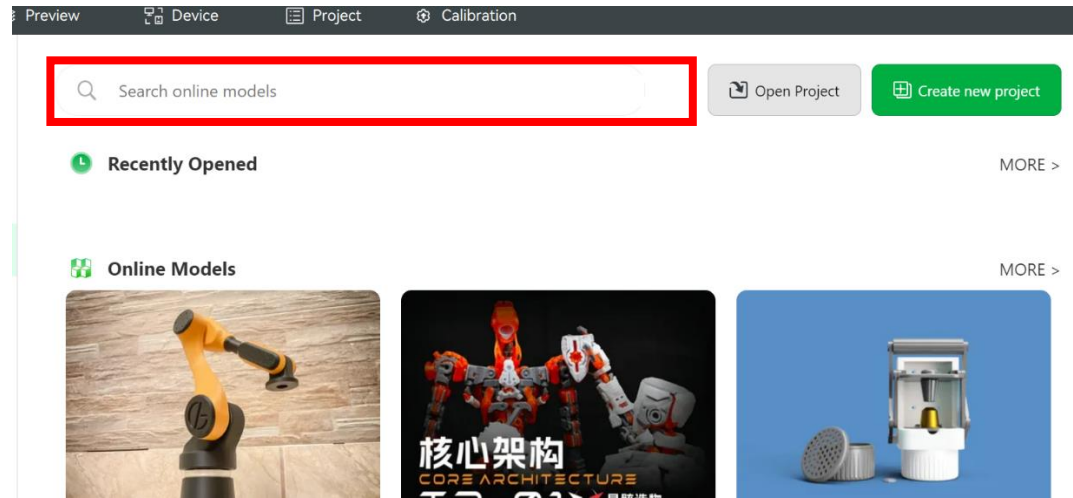
5. Bambu Studio

a. Opening your Model in Bambu Studio

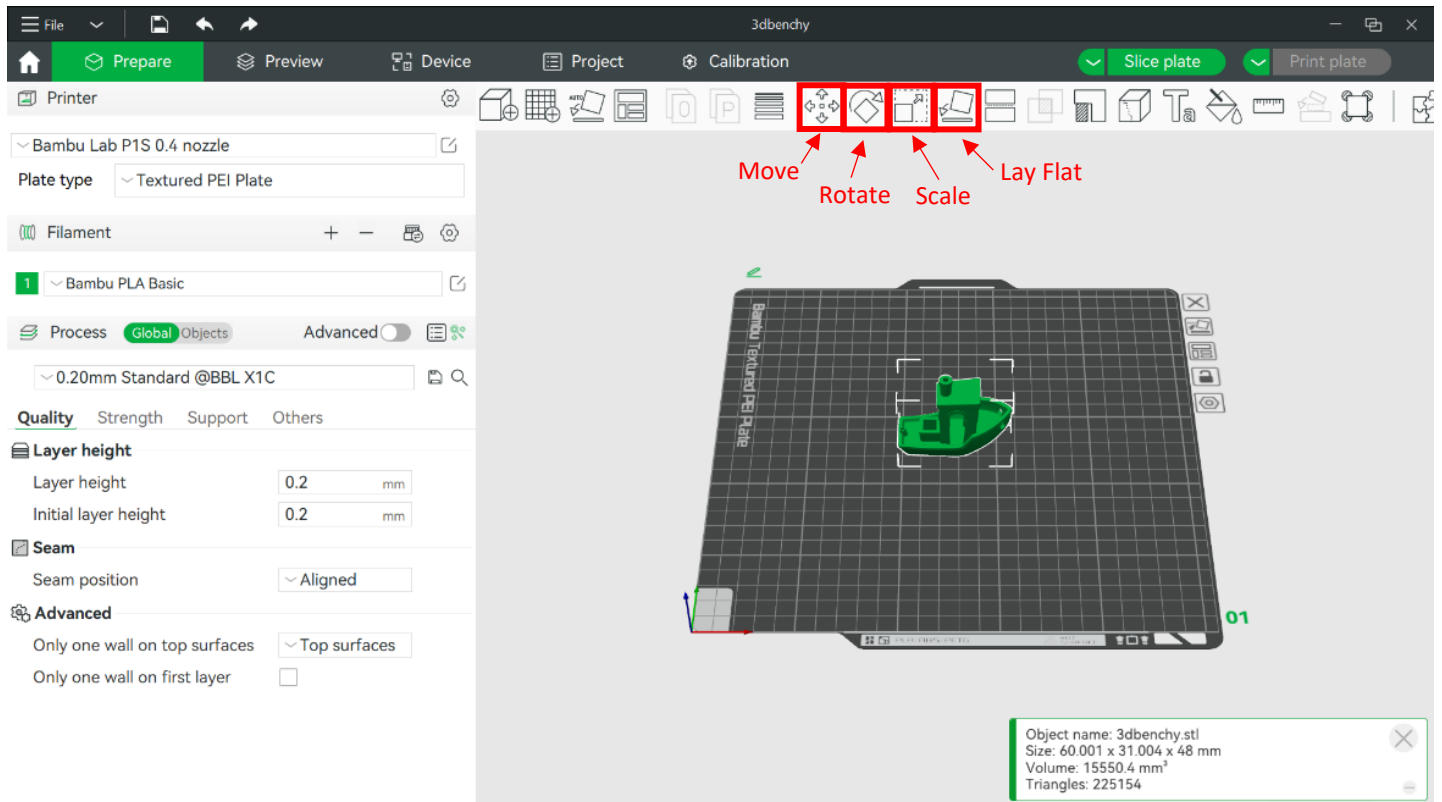
Load Model – with Bambu Studio open, select File > Open Project for 3MF files or select File>Import>Import 3MF/STL... to import an STL, OBJ or another 3D printer compatible file and navigate to the save location of the 3D file and select open.



Alternatively, you can search within Bambu Studio for an online model through its MakerLab database.




Once the file has been loaded, you will see a 3D rendering of your object on the build platform. Select the model to see the various options in the toolbox above the model.

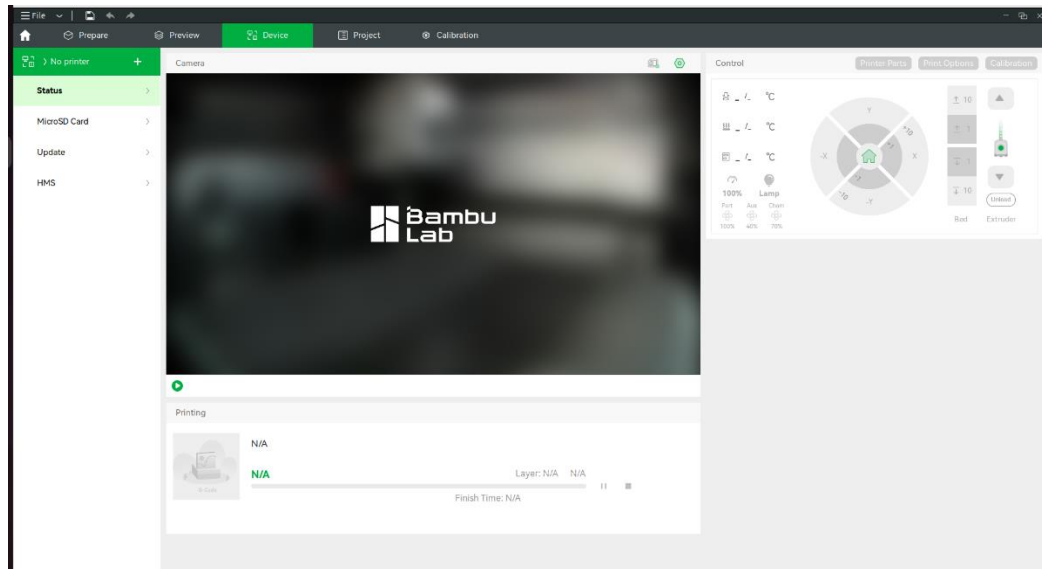


b. Connecting to the Printer

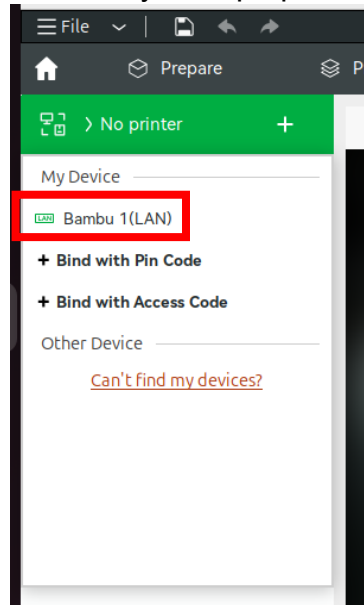
Turn on the printer by flipping the power switch into the on position, it should light up red and the display should turn on.



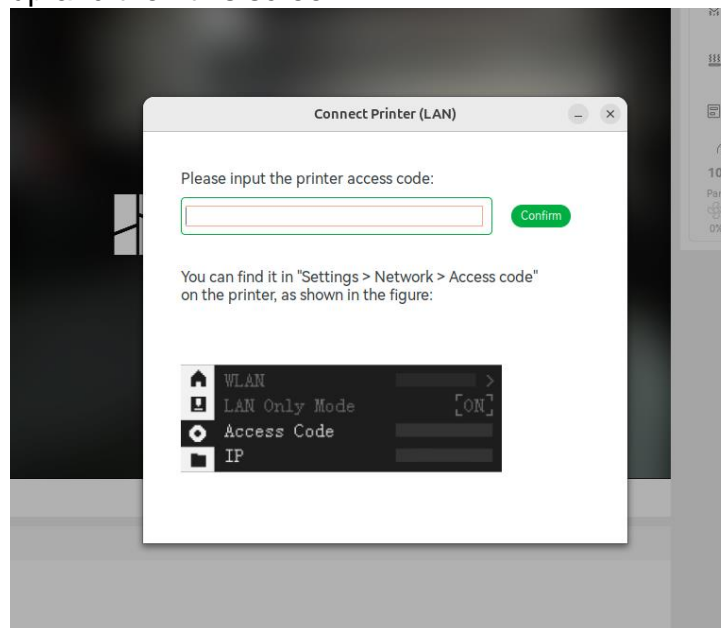
In Bambu Studio, click the  Device tab and you should see this screen:



Click the green “+” beside the No Printer and select the printer that matches your laptop.



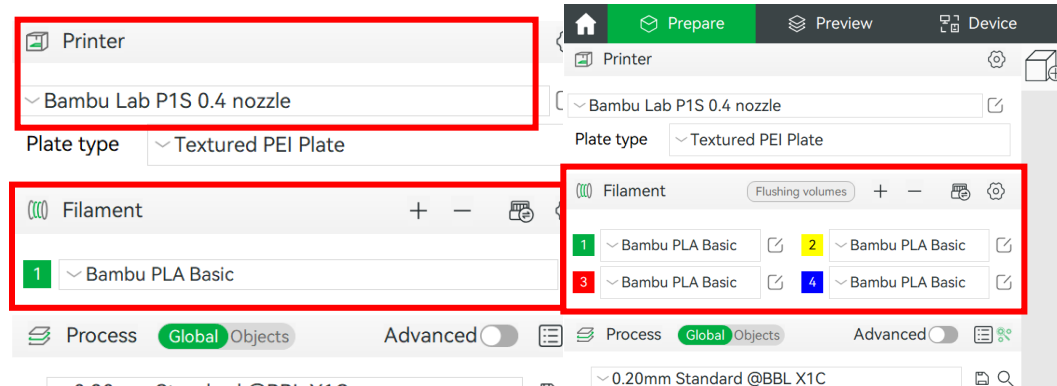
If the printer doesn't auto-connect, you may see an error message come up and then this screen



If you get this screen, the Access Code should be on your laptop. Enter it in and the printer should connect. It may periodically lose connection and ask you to put in the access code again but as once the printer starts it doesn't need to stay connected.

c. Setup Model to Print

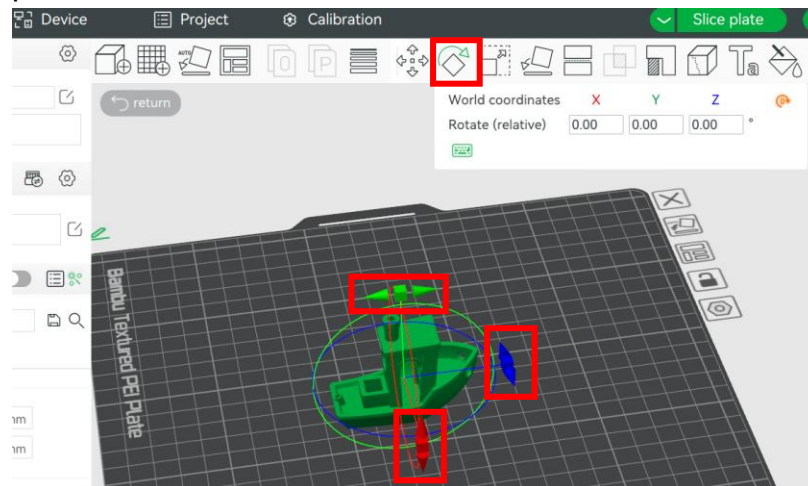
Printer and Filament – Make sure the **Printer** selected is “Bambu Labs P1S 0.4 Nozzle” and the **Filament** selected is “Generic PLA” or “Bambu PLA Basic”. If your object has multiple parts, you can set a different filament for each part, but this will increase print time.



Model Orientation - Move your model to change where it is printed on the build plate. Do this by **left clicking** and **holding** the model and dragging it to the desired location. You can also **left click** and **hold** anywhere else on the preview window to view your model from different angles.

Zoom – Use the scroll wheel on the mouse to zoom in and out.

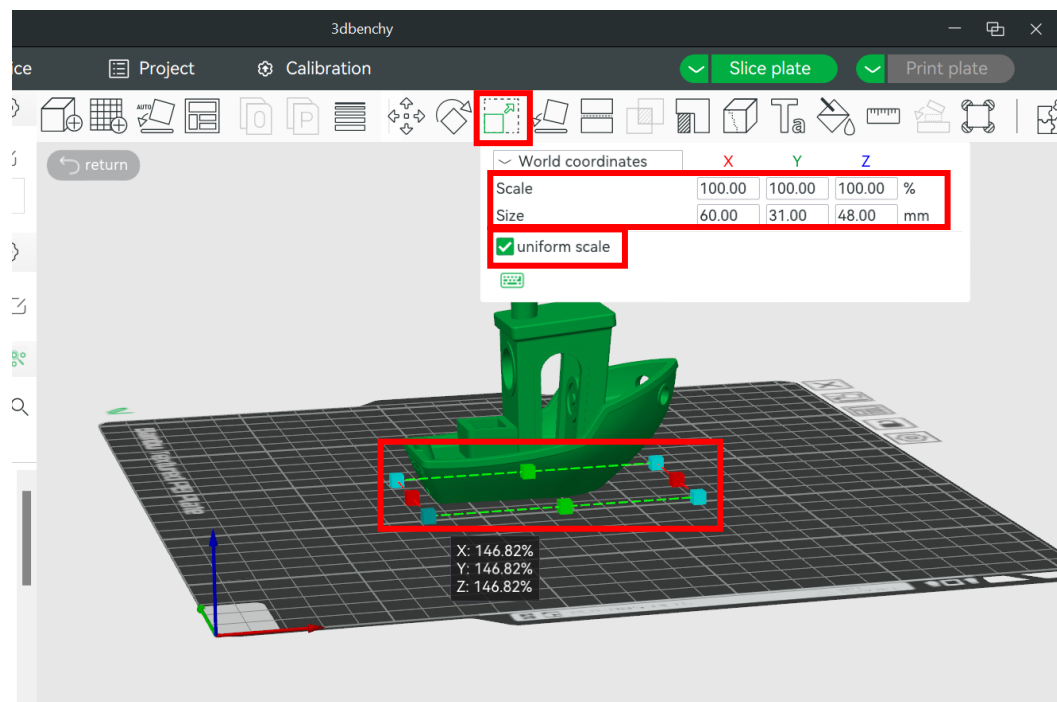
Rotate - The Rotate button will give you the ability to orient your model in along all three axes. Once you click the rotate button, three circles will surround your model. The red circle will allow you to rotate around the X axis. The Blue circle will rotate around the Z axis. The Green circle will rotate around the Y axis. You may need to rotate the model so the flattest part is on the bed.



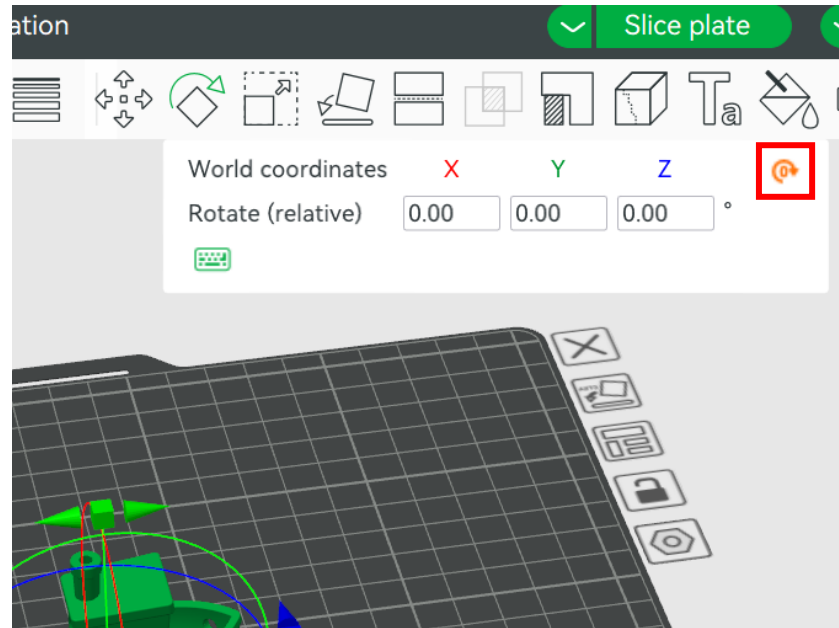
Lay Flat - The Lay Flat button will ensure that the flat portion of your print is securely attached to the bed. It is highly recommended to use this option after rotating your model in the Z direction, as it will help prevent adhesion issues during the print.

Duplicate – Right click on object to duplicate it or delete it.

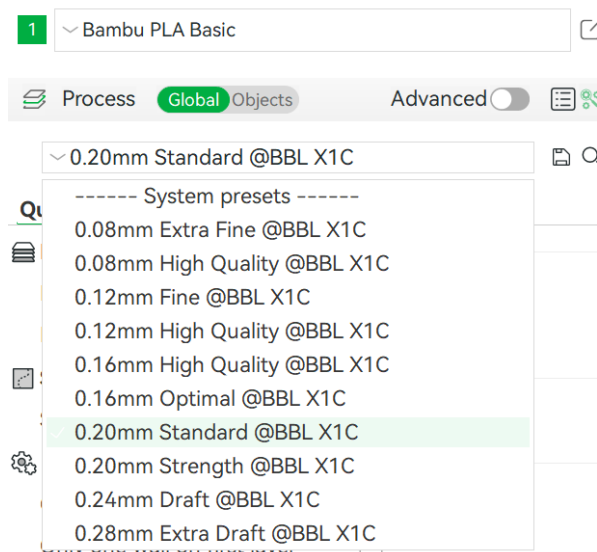
Resize - The Scale button displays the model's dimensions, along with the ability to scale along the X Y or Z axes. Anything below the number 100 will reduce the objects size, while anything above the number 100 will increase the objects size. As a default, it will be set to uniform scaling. This will cause the X Y and Z axes to be scaled by the same amount when you make a change to any of them. To disable this, select the **uniform scaling** box in the lower section of the scaling window.



Reset – Each of Move, Rotate and Scale have an orange reset button you can click to reset those values back to 0.



Quality - The print quality settings can be found on the left hand window below the Filament. You can either choose a preset process or manually adjust the layer height. The top of the list is the highest quality but will take the longest while the bottom of the list is the lowest quality but will print the fastest.

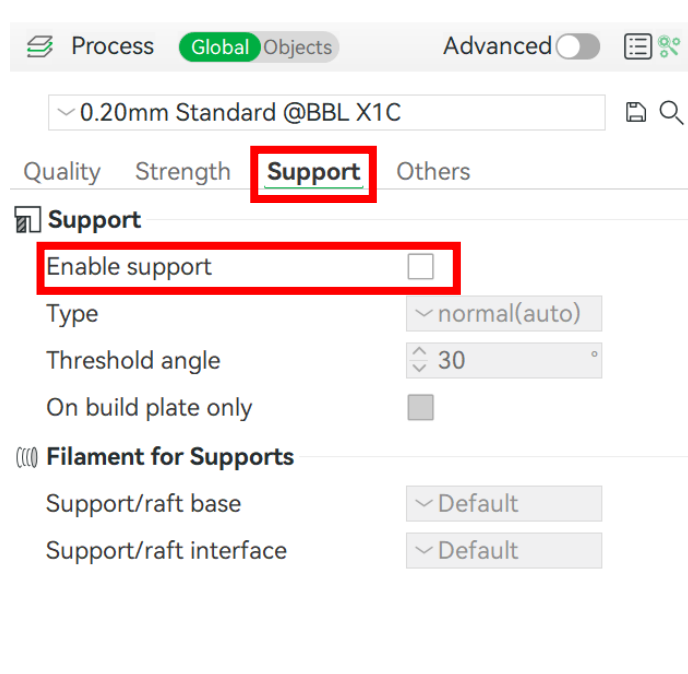


Extra Fine/High Quality - Designed to give greater detail and finer objects. This will have a smaller layer height, which will make each layer thinner, so that curves seem more natural and walls seem less noticeable. This setting will also require more layers to be laid down, increasing overall print time.

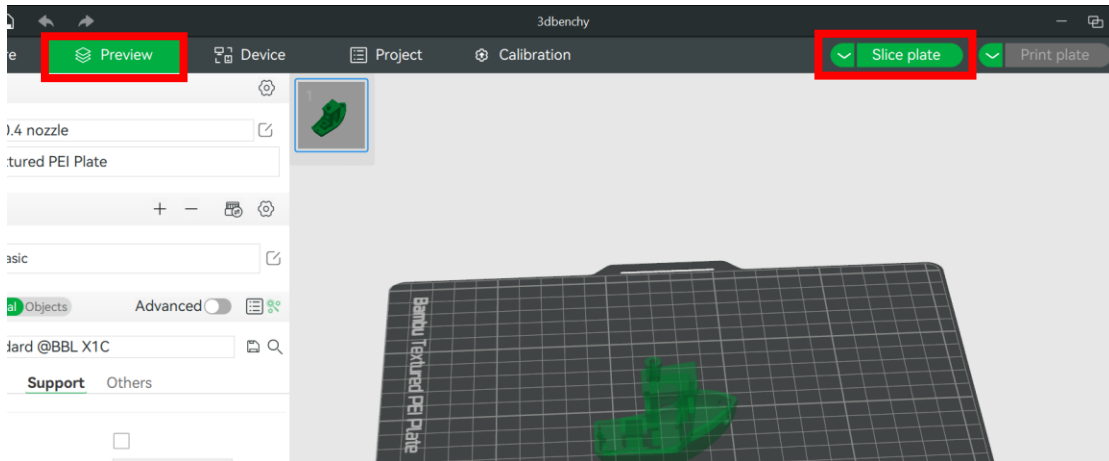
Standard - Designed to give a medium resolution, by increasing the layer height and print speeds. This will make the organic curves slightly more step-like than the fine setting but will reduce printing time.

Extra Draft (High Speed) - Designed for faster printing, where overall model finish is not of concern. Most commonly used for quick iteration of designs found in rapid prototyping.

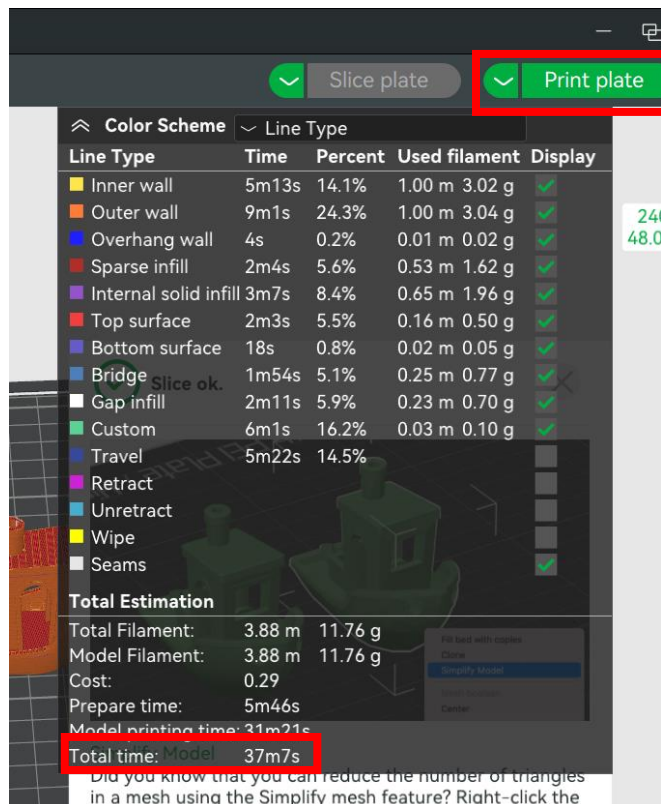
Supports - Some models will require support material to print properly. This will usually occur when an object has an angle in relation to the build plate between 0 to 45 degrees. It is highly recommended to orient your object so that it minimizes or eliminates the need for support. Support settings can be adjusted by using a **custom** profile.



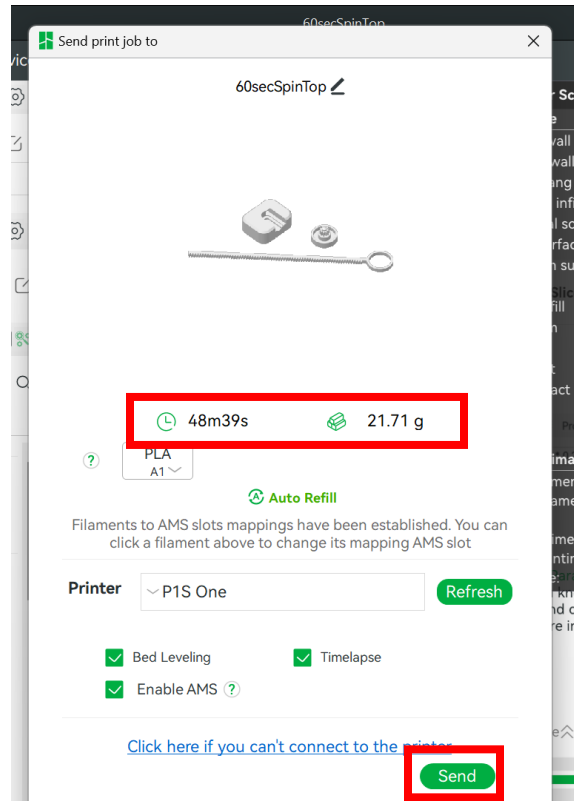
Printing - Select the **Preview** button (2nd option) to switch to the preview window. If it doesn't already start slicing your model, you can manually begin the slicing process by clicking "Slice plate".



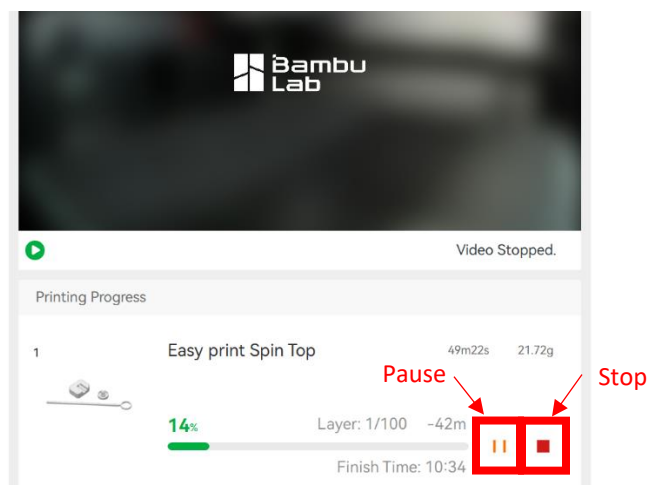
After slicing it will display a breakdown of the parts of the model and time/filament for each part. At the very bottom you will see the total time of the print. If everything looks okay, click the **Print plate** button.



A window will open up with the print time and estimation of the weight so you have an idea of the price (\$0.10/g). If everything looks okay, then click **Send** in the following window



Cancel or pause a print – In the device window click the **Square** button to stop the print job entirely or select the **Pause** button (two vertical lines) if you wish to resume the print job a later time.





6. How to change filament

Please refer to our filament changing video:

https://www.youtube.com/watch?v=4EiUvR_3hhQ&t=2s

7. When a Print is complete

When the P1S is finished printing, the tool head and print bed will automatically move into the cooling position. The tool head will move to the top left and the print bed will lower. Once it has finished cooling a “Print Complete” message will be displayed on the LCD screen. You can then open the door and remove the build plate from the bed. If the print isn’t easily removed, you can **slightly** curve the build plate to make it easier to remove. There is a scrapper tool available if necessary. Please use the safety glove on the hand opposite the scraper tool to prevent injury.

8. Paying for a print

When the print is complete **before** removing any supports from the print job, please let staff know and they will come over and write you a receipt based on the weight of your prints. The cost of printing is \$0.10/gram. An average print job is about 10-15 grams.

9. Painting a print job

- a. Before painting you may wish to clean up the print job of any supports, rafts or bumps with long nose pliers. You can also use sandpaper to smooth some sides.
- b. For best results use a primer and acrylic paint that are plastic compatible. A primer will help fill in the pores and tiny holes that occur naturally during the 3D printing process.

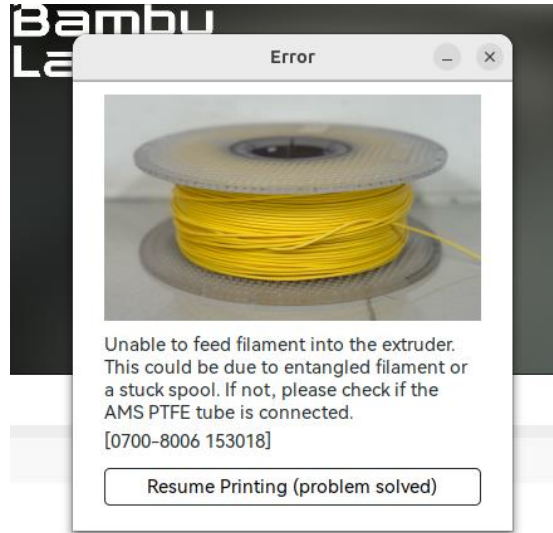
10. Note about intellectual property

The copyright law of Canada governs the making of reproductions of copyright material/ Certain copying may be an infringement of the copyright law. The Pickering Public Library is not responsible for infringing copies made by the users of the Pickering Public Libraries 3D printers.

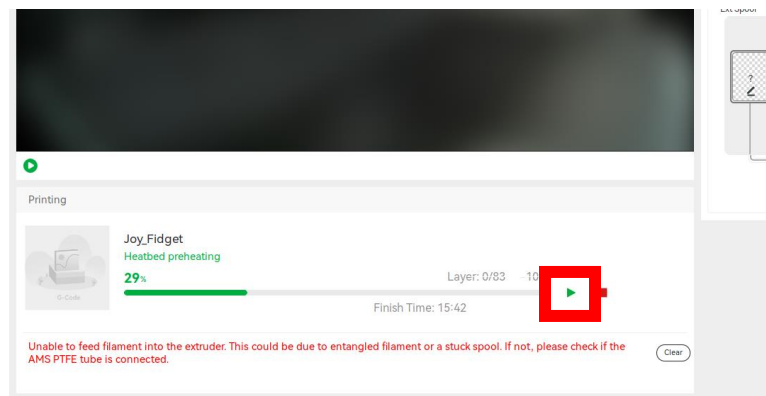
It is the patron’s obligation to determine and satisfy copyright or other use restrictions (including but limited privacy rights, licensing, trademarks, patents, economic torts and industrial designs) when using the equipment and software associated with the 3D printer.

Common Errors

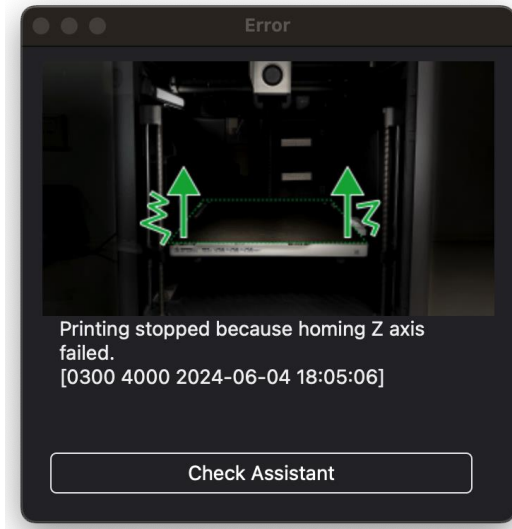
Filament Knot



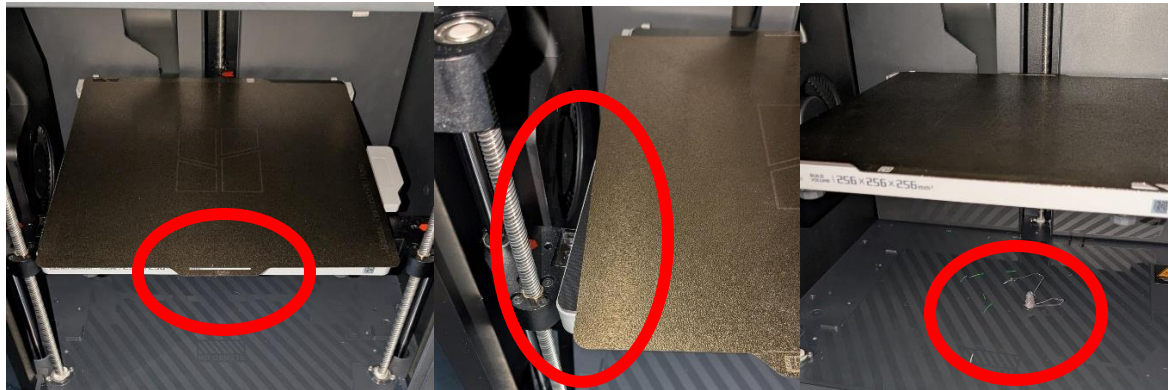
The filament can become entangled due to how the filament spool was rolled up during its manufacturing. To fix this, you can usually lift the filament out of the knot until it becomes loose again. If the knot is very tight you can remove the filament to undue the knot. Reload the filament and click the green triangle button to resume the print or click "Resume Printing"



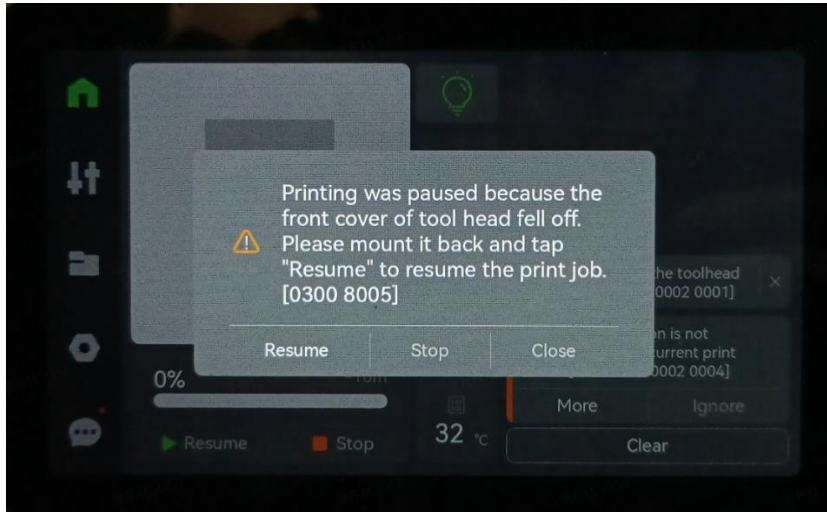
Z Axis Levelling Error



This error means the bed wasn't able to complete leveling. This usually means either a piece of filament is stuck on/under the bed or the build plate wasn't correctly put back on the bed. Make sure the build plate is flush with the edges of the bed and make sure the side with the long tab is at the front, closer to you.



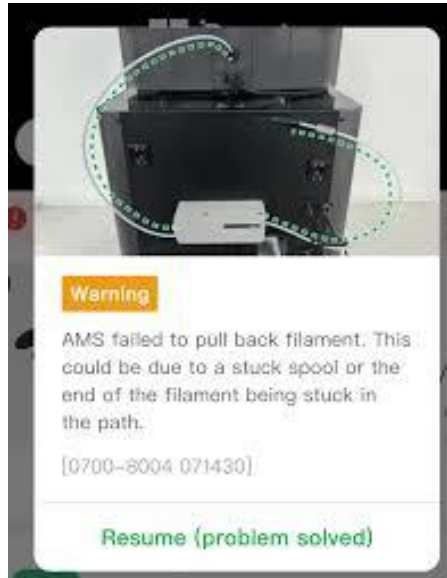
Toolhead Housing Loose



This error means the front of the toolhead's housing is loose, it is attached by magnet so it needs to be reattached by simply putting the front housing back in place and it should reattach. Make sure to only touch the housing, **DO NOT TOUCH THE HOT END.**

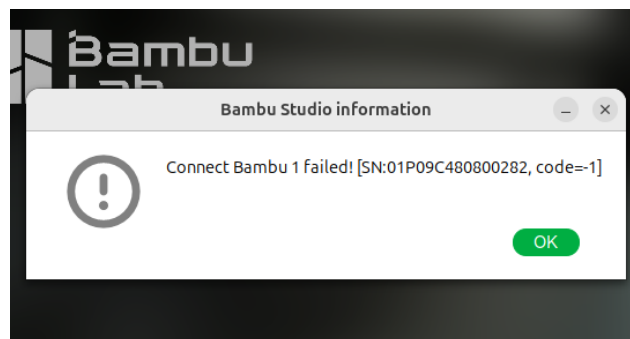


Filament Broken



This error will require repair staff intervention due to a piece of filament stuck in the machine. If the filament broke in the AMS system holding the filament, only the slot with the jammed filament will be unusable and you can still use the others. If the filament broken in one of the tubes connecting the AMS to the printer, then the printer will be out of service until repair staff can open the tube to remove the stuck filament. Please let staff know so that it can be placed out of service until it can be repaired.

Can't Connect



This error means the laptop is unable to connect to the printer. Try connecting again and enter the access code on the laptop. You may have to do this twice. If it still can't connect, turn off the printer for 10 seconds and turn it back on. Wait for Bambu Studio to find the printer and try again. You can restart the laptop and try again if it still doesn't connect.