

Printrbot

Getting Started Guide

For models:
Printrbot Plus (v2)
Printrbot LC (v2)
Printrbot jr

Contents

4 Chapter 1: Welcome

- 4 Overview
- 4 Support

5 Chapter 2: Your Printrbot has arrived... now what?

- 5 Printrbot Kits
- 5 Pre-Assembled Printrbots

6 Chapter 3: Building your Printrbot

- 6 Required and optional tools
- 6 Assembly instructions
- 7 Help during assembly

8 Chapter 4: Install Software

9 Chapter 5: Connect your Printrbot

10 Chapter 6: Configure Software

- 10 Configure Repetier printer settings
- 10 Connection
- 11 Behavior
- 11 Dimension
- 12 Configure Slic3r settings
- 12 Layers and perimeters
- 13 Infill
- 13 Skirt and brim
- 14 Filament
- 14 Cooling
- 15 General
- 15 Extruder 1

16 Chapter 7: Functional Pre-Print Test

- 16 Connect to the printer
- 16 Test the Z axis
- 17 Test the X axis
- 17 Test the Y axis
- 18 Home your printer
- 18 Test the extruder with initial burn-in temperature
- 19 Troubleshooting

20 Chapter 8: Printing your First 3D Model

- 20 Download file
- 20 Add .STL file
- 21 Slice
- 21 Connect

22 Set temperatures
22 Temperature curve
23 Run
23 After the print completes
23 Congratulations

24 Chapter 9: Advanced Printing

24 Technical Forums
24 Community

25 Chapter 10: Common Issues and Troubleshooting

25 Filament is not extruding
25 Print not sticking to heat bed
25 Head is dragging across the print
26 No power
26 Other problems

Welcome

1

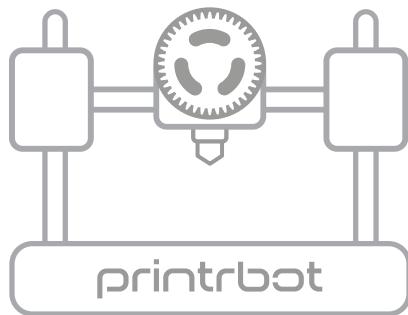
Read this guide to learn about your Printrbot, how to make your first 3D print, and more.

Overview

The purpose of this guide is to get you printing your 3D models as soon as possible! Whether you have a pre-assembled Printrbot or a build it yourself kit, this guide will walk you through the necessary steps to a successful first print. So let's get going!

Support

If at any time you need help or get stuck, please check our FAQ page and then open a support ticket if necessary. www.printrbot.com/support/



Your Printrbot has Arrived... now what?

2

The arrival of your bot can not only be exciting, but we realize it can be overwhelming at first. If you have received an assembled bot, your work is already nearly done. However, those with a kit have a little bit more work to do. But fear not, our support team is here to help and we will make sure you are printing in no time!

Printrbot Kits

If you have a Printrbot kit, proceed to **Chapter 3: Building your Printrbot**

Pre-Assembled Printrbots

If you have a pre-assembled Printrbot, please skip to **Chapter 4: Install Software**



Building your Printrbot

3

Required and optional tools

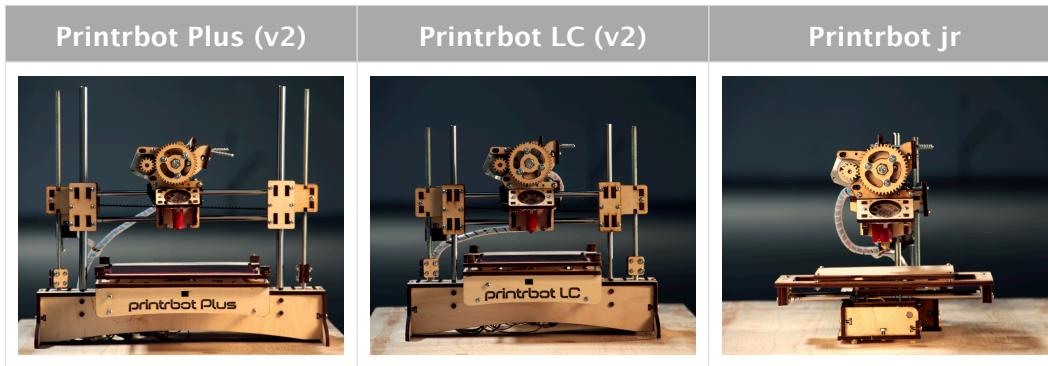
Before you begin to assemble your bot, please note that you are going to need several tools. Below is a listing of the typical tools used for assembling a Printrbot Plus. This list should cover you for both the LC and jr as well, however there may be a few other items you will need to purchase depending on which version Printrbot you have.

Required Tools	Optional Tools
phillips screwdriver 1/2" wrench 5/16" wrench 1/16" allen wrench 2.5 mm allen wrench 4.5 mm allen wrench hammer or rubber mallet wood glue or super glue	utility knife flat hand file cordless drill 7/64" drill bit 9/64" drill bit 4" C Clamp micro cutters slim needle nose pliers

Assembly Instructions

Locate your model below and download the appropriate instructions for your model from www.printrbot.com/support/. We recommend using a combination of both the Step by Step Installation Guides as well as the Build Videos. Our designs have changed slightly since the time these instructions were originally created. However, using these in tandem will help to clarify the process during assembly.

Note: During the build process, some sub assemblies (such as the extruder) are detailed in their own build instructions. Please refer to their corresponding links below if needed.



Help During Assembly

If you get stuck during assembly, we recommend browsing our technical forum at www.printrbottalk.com as we have several power users and moderators that can give you quick assistance and troubleshooting help. However, if you are unable to resolve your issues please open a support ticket at www.printrbot.com/support/.

Install Software

4

Now that your bot is fully assembled, the next step is to install the printing software on your computer so that you can actually print a 3D model. While there are various free printing software on the market, we currently use and recommend Repetier <http://www.repetier.com/> when first getting started. It's easy to use and supports Windows, Mac, and Linux. Once installed, the typical workflow is as follows:

1. Create a 3d model and export it in stl format or get it from the internet.
2. Arrange one or more models on a virtual print plate.
3. Slice the the models into thin slices and compute a path for printer head.
This is done by a slicing software, which converts the model into g-code, the language your printer speaks.
4. Check the created g-code for errors and printability.
5. Send the g-code to your printer or copy the code to a SD card, which you can insert into your printer.
6. Monitor your printer.

Select your platform and download Repetier from www.repetier.com/download/ and install the software using the default configurations.

Windows users only: Download the required USB driver from http://pjrc.com/teensy/serial_install.exe, right click on it and "Run as Administrator" to install the INF file. It should create a new COM port that you can then use in Repetier to connect to the printer. For more information please see <http://printrbot.com/wp-content/uploads/2012/04/Printrbot-Getting-Started-Guide2.pdf>

Windows 8 users: If you are having trouble installing the driver, please try the steps on <http://www.nextofwindows.com/how-to-install-an-un-signed-3rd-party-driver-in-windows-8/>

Connect your Printrbot

5

1. Find a secure table or flat surface on which to print.
2. Place your printer close to your computer and plug in the power source for your bot.
3. Plug in the mini USB cable to the back of your Printrbot and connect the other end to a USB port on your computer.
4. Turn on the switch on the power supply and the fan should turn on.
NOTE: The Printrbot Jr v1 does not have a switch on the power supply.
Simply plug the power supply into the port to power the printer on.
5. You should now have the Printrbot powered on and connected to your computer.

Configure Software

6

The following settings are recommendations for your first prints. Over time you can change and modify them as you get more familiar with your printer as different 3D models often require different settings for a more accurate and precise print. The reason for this is that your 3D printer is more like a tool than an appliance. Every 3D model is unique and often requires a different “tool” to get the job done. So you will find over time that certain settings work better than others. It’s also worthy to note that the printers themselves often have their own personalities and quirks as they have been assembled by hand. So expect to have small issues here and there as time goes on. With that said, let’s get your software configured!

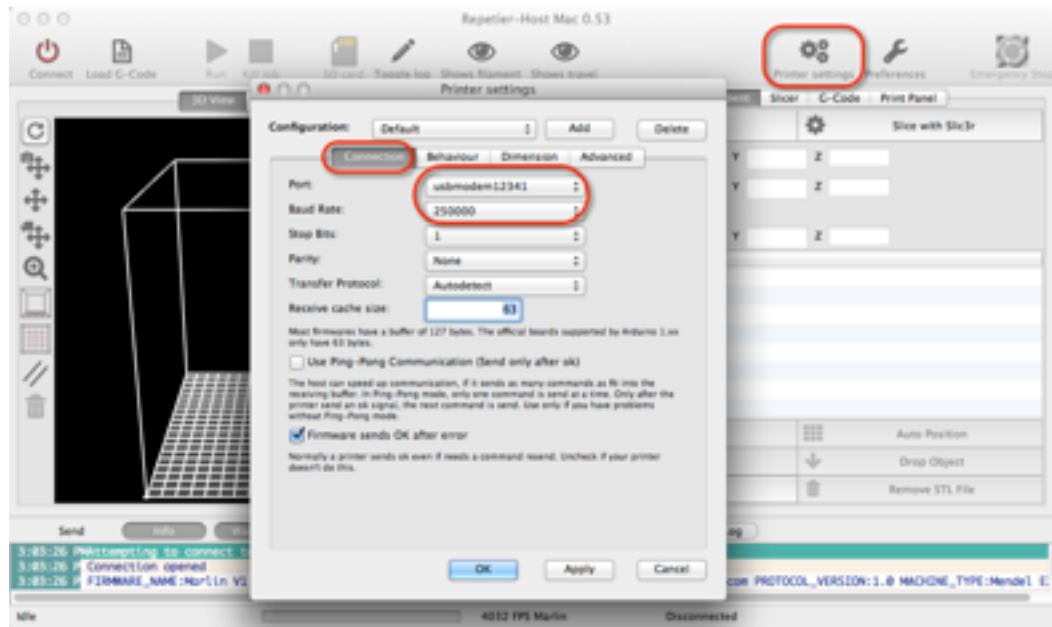
Note: The following screenshots and settings were taken from the Mac version. There may be slight variances when using the Windows and Linux versions.

Configure Repetier Printer Settings

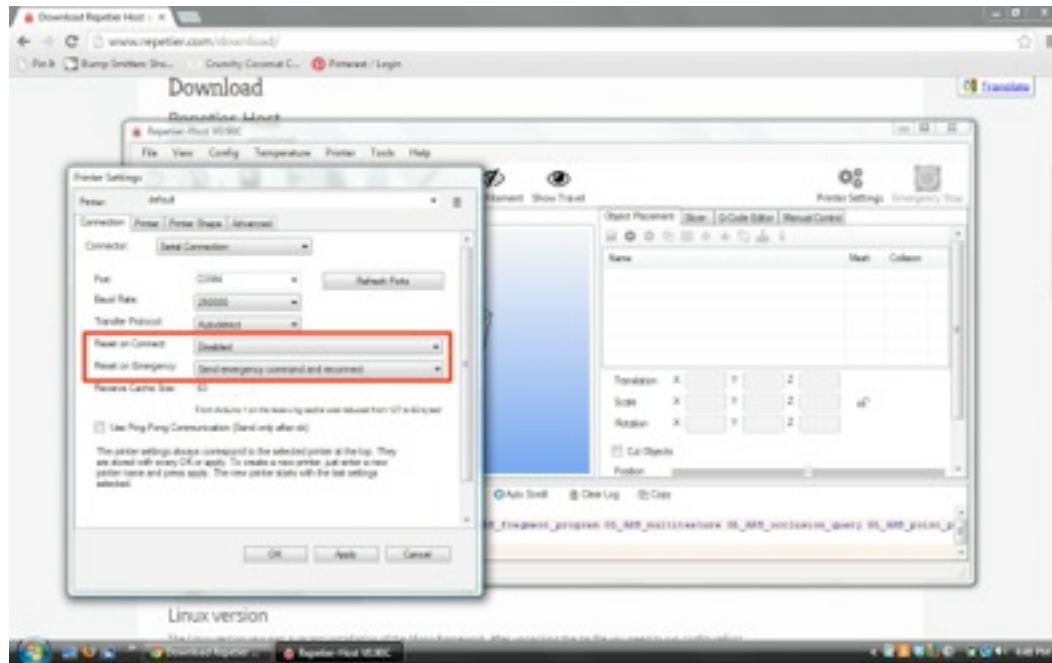
Open Repetier and click on **Printer Settings** at the top right.

Connection

Select the port that matches your USB connection and set the Baud Rate to 250000.



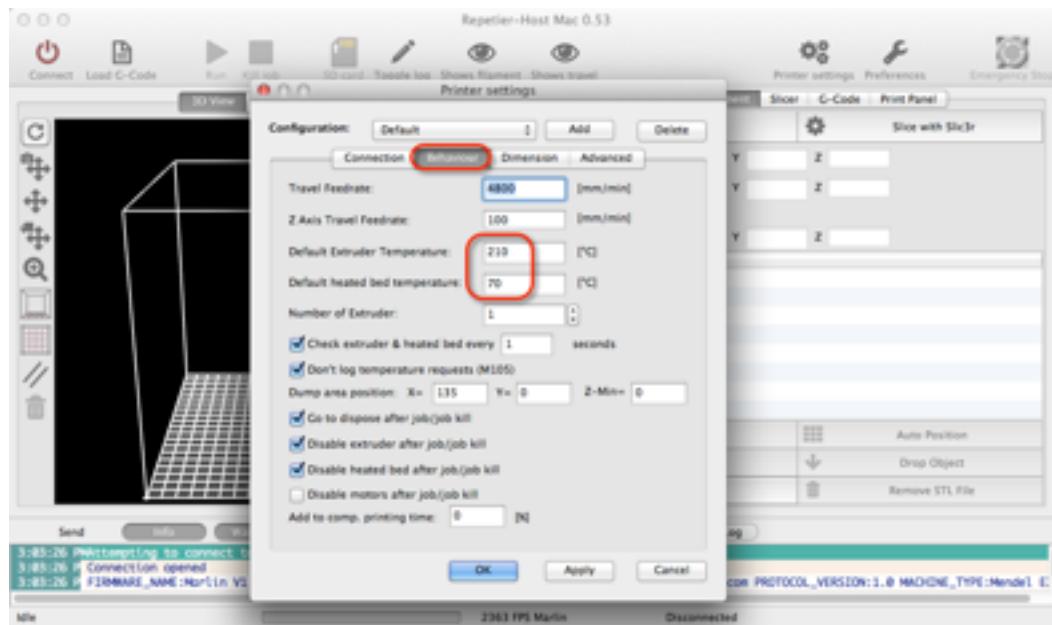
If you have downloaded Repetier Host V0.90C (Windows), be sure to select "Disabled" in the "Reset on Connect" field.



Behavior

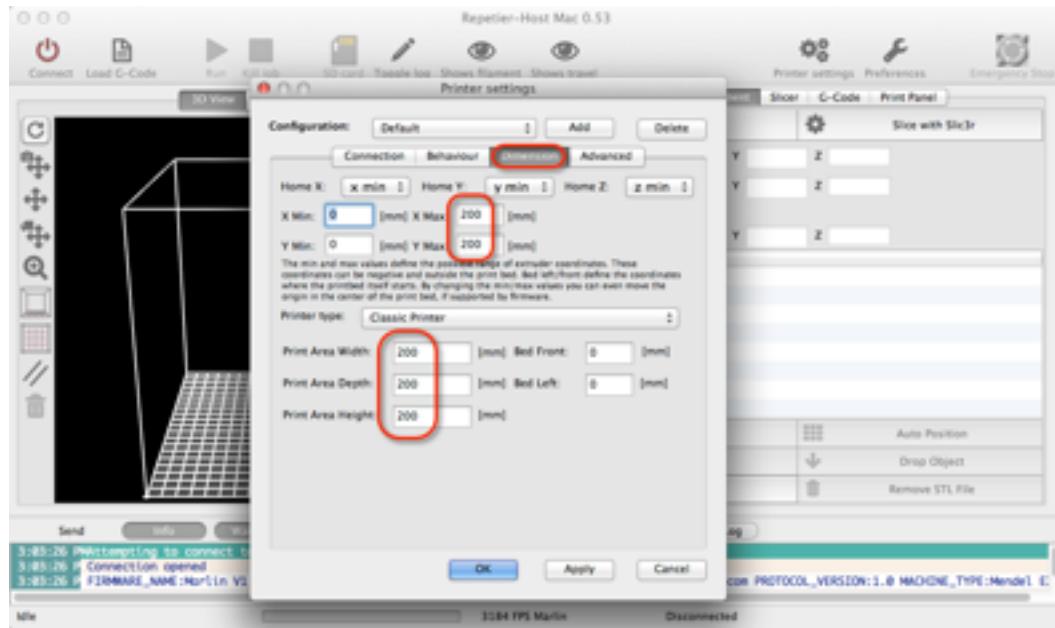
Set the extruder temperature to 210 (ABS) or 190 (PLA) and the heated bed to 70.

Note: If you are using a Jr. without a heated bed set the heated bed to 0 degrees.



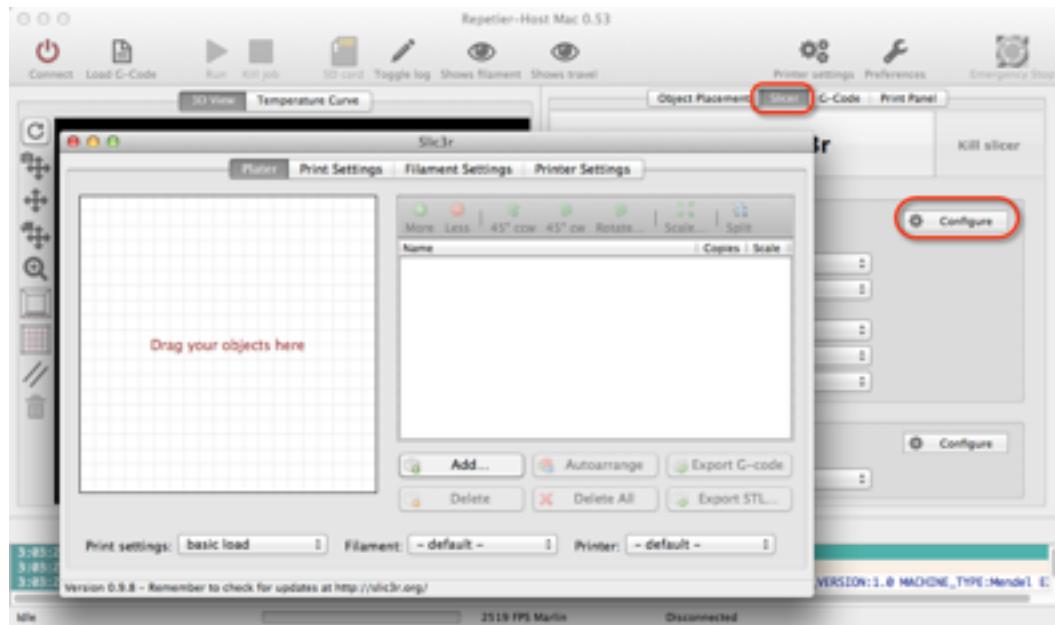
Dimension

Set your print area depending on which size print bed you have.
(Plus: 200mm = apx 8" and LC: 150mm = apx 6")



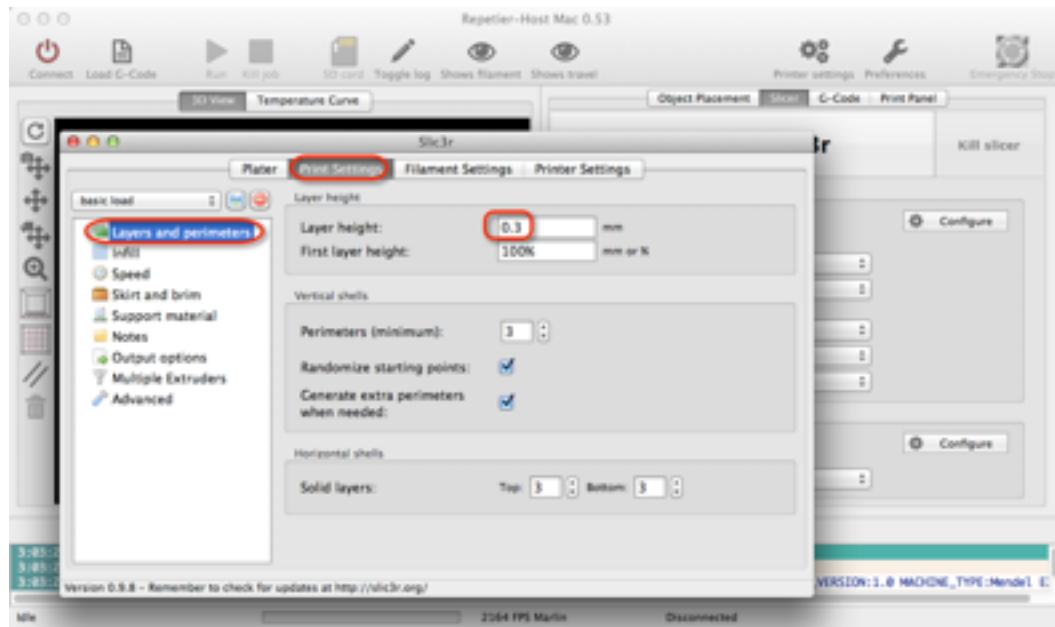
Configure Slic3r Settings

Select Slicer within Repetier and click on the Configure button



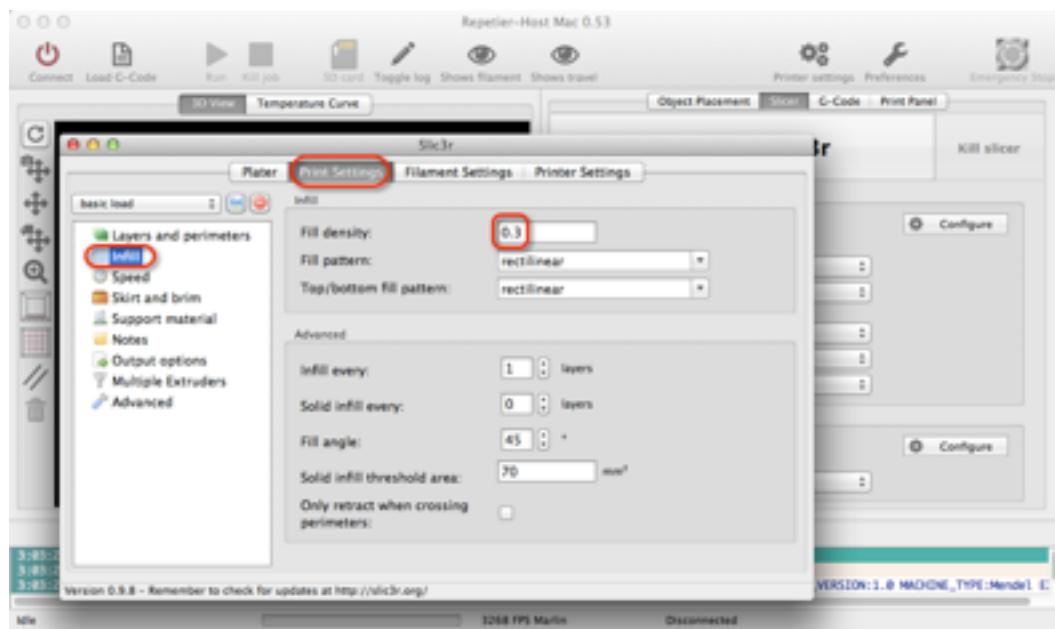
Layers and perimeters

0.3 mm is a good place to start for layer height



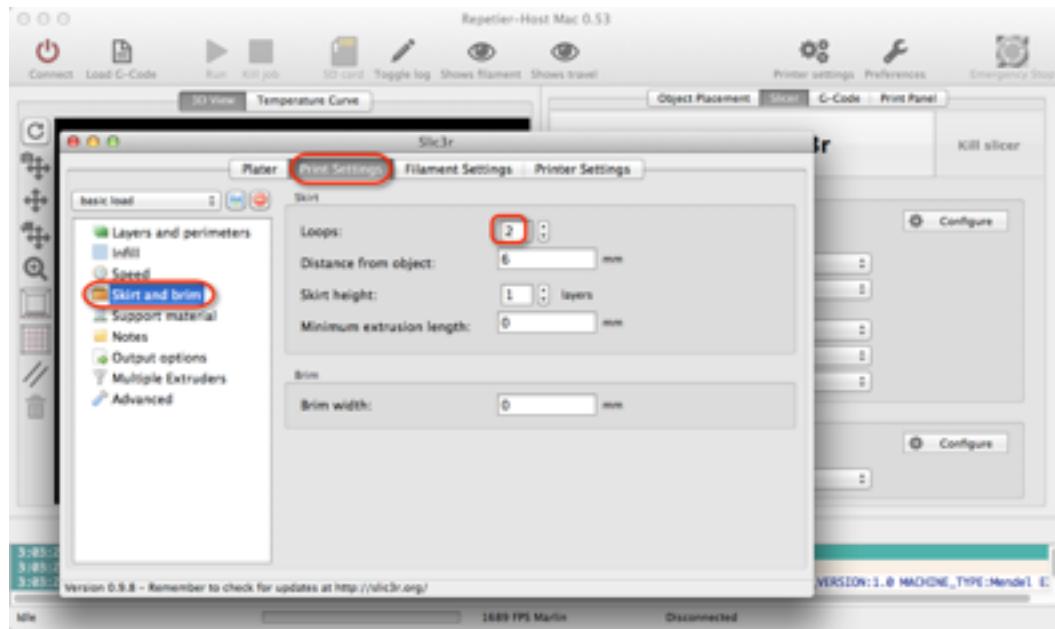
Infill

Rectilinear is a good place to start for fill patterns



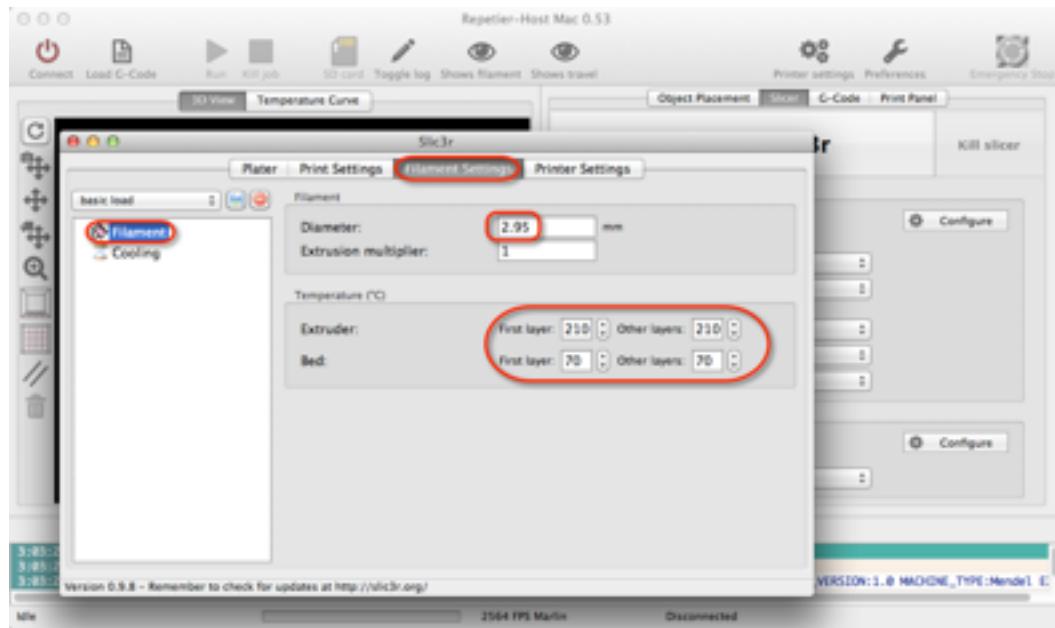
Skirt and brim

Set Loops to 2

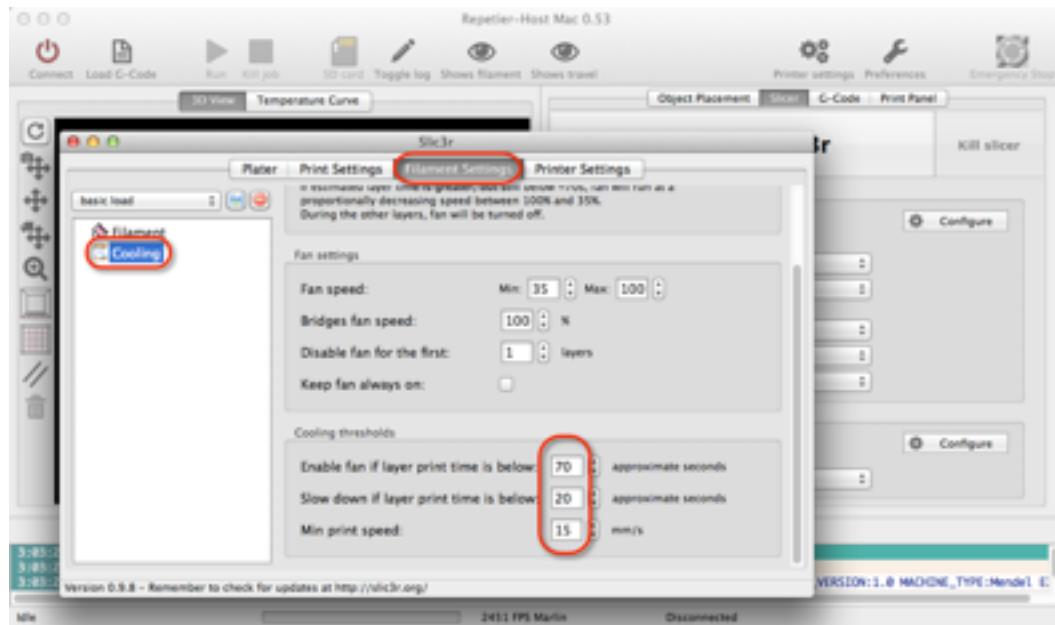


Filament

Set your diameter to 2.95 if you have 3mm filament and 1.70 if you have 1.75

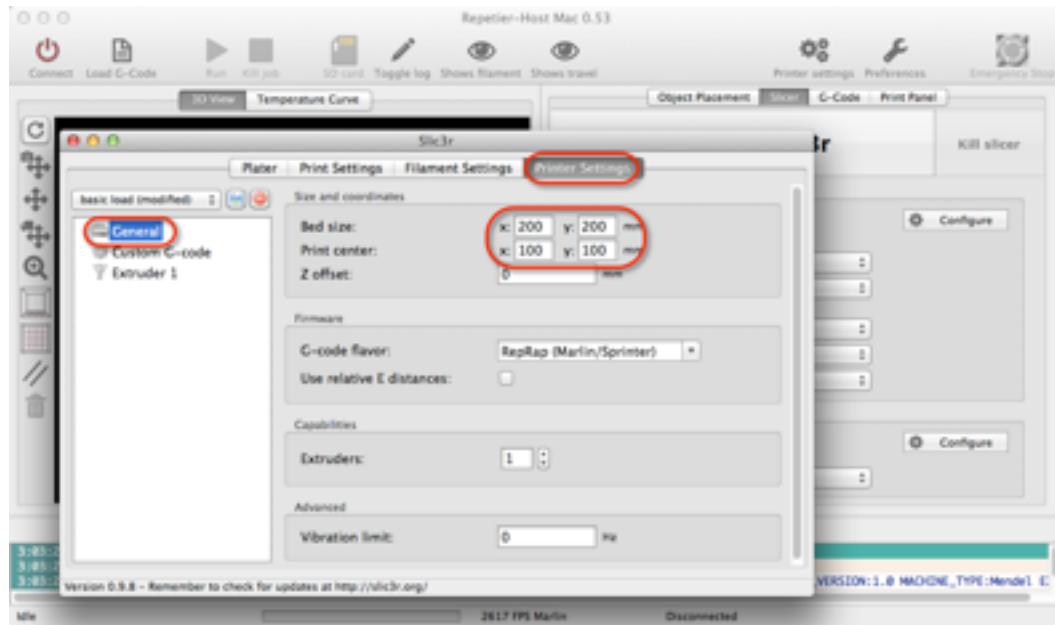


Cooling



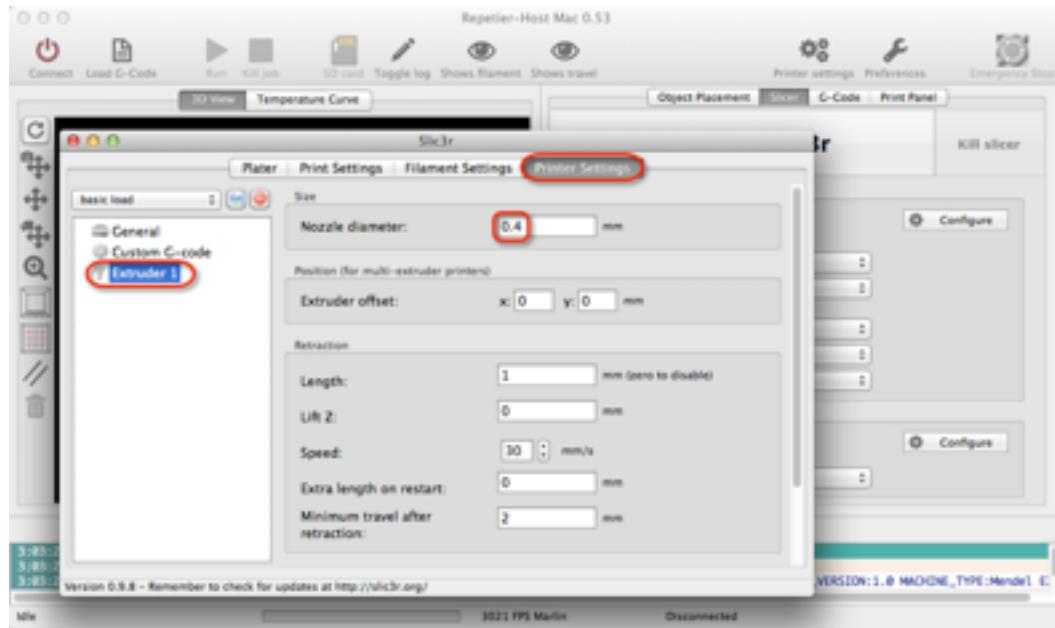
General

Make sure your bed size is set appropriately to match your Printrbot model (see Dimension setting as noted earlier)



Extruder 1

Standard tip size with all bots is currently 0.4 mm. Otherwise enter the appropriate diameter to match the tip you are using.



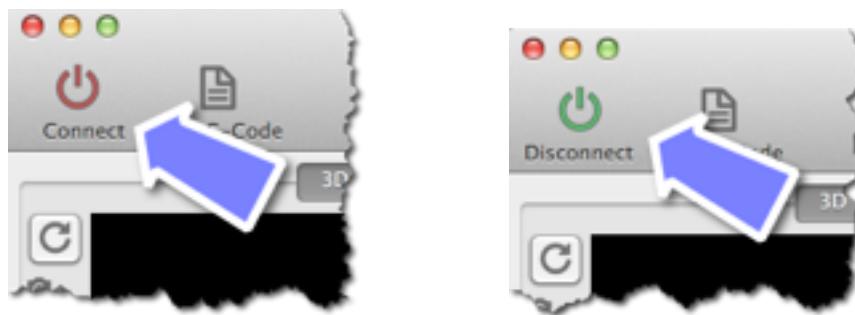
Functional Pre-Print Test

7

Before testing your first print, you need to make sure all of your axis are working as expected on your bot. Connect your printer to your computer and make sure both of them are powered on.

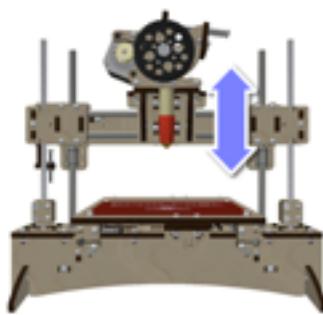
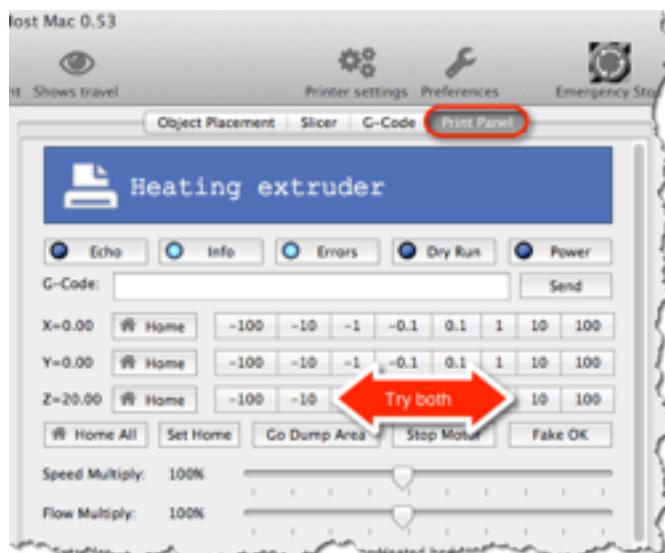
Connect to the printer

Click on the Connect button and it should turn green to indicate you are properly connected



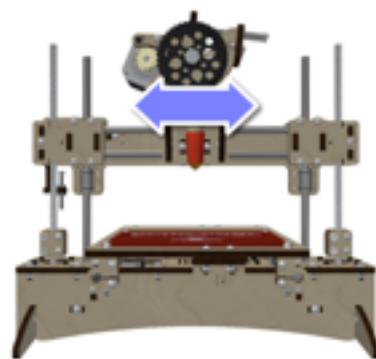
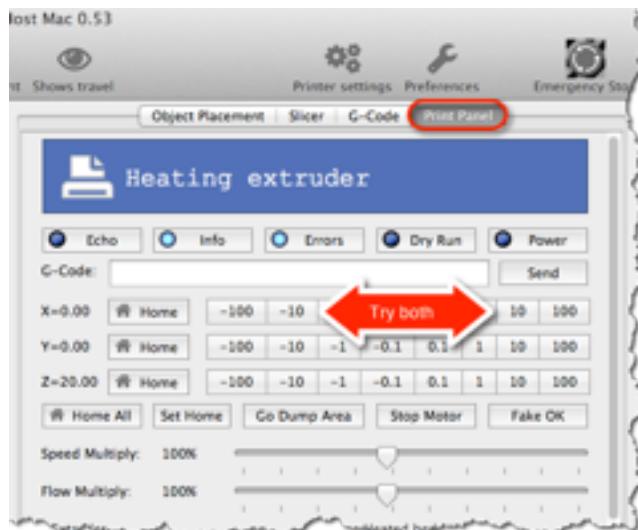
Test the Z axis

Click on both the 10 and -10 buttons for the Z axis. Your extruder should be able to move up and down freely.



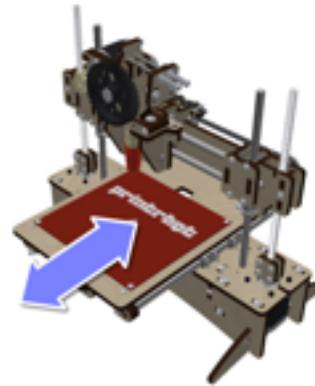
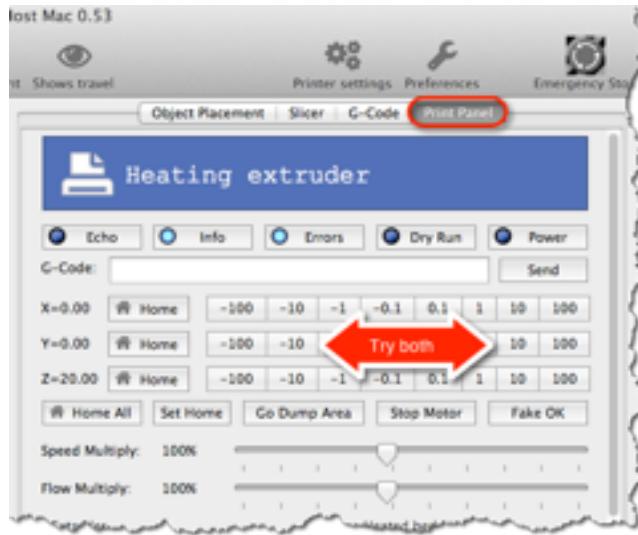
Test the X axis

Click on both the 10 and -10 buttons for the X axis. Your extruder should be able to move left and right freely.



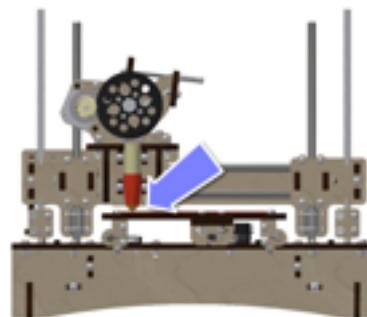
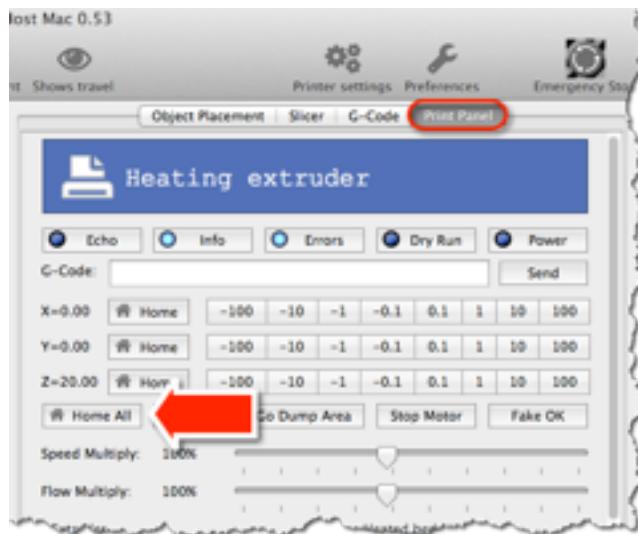
Test the Y axis

Click on both the 10 and -10 buttons for the z axis. Your printer's bed should be able to move forwards and backwards freely.



Home your printer

Click on the Home All button and your extruder should move to the front left corner of the heat bed. The tip of the hot end nozzle should be just above the surface of the heat bed (apx the thickness of a sheet of paper).

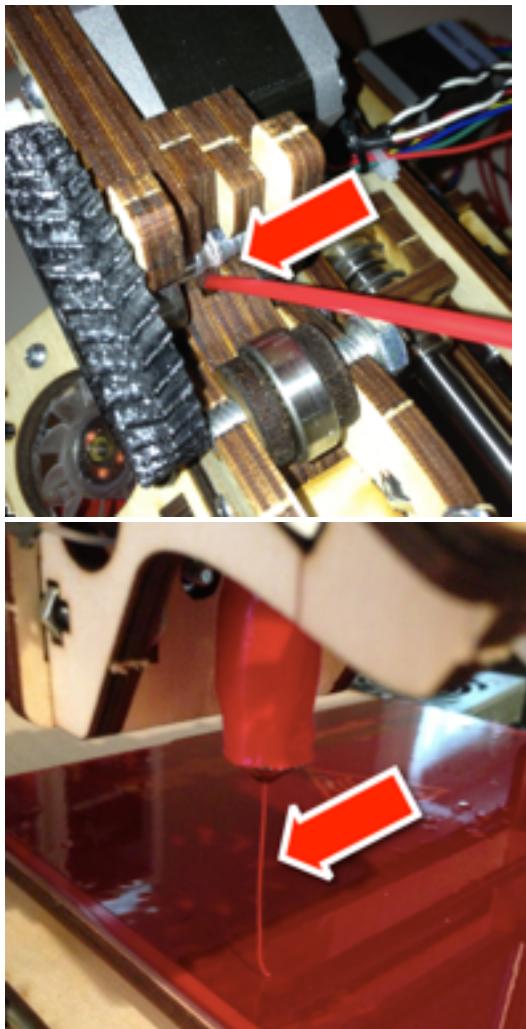


Test the extruder with initial burn-in temperature

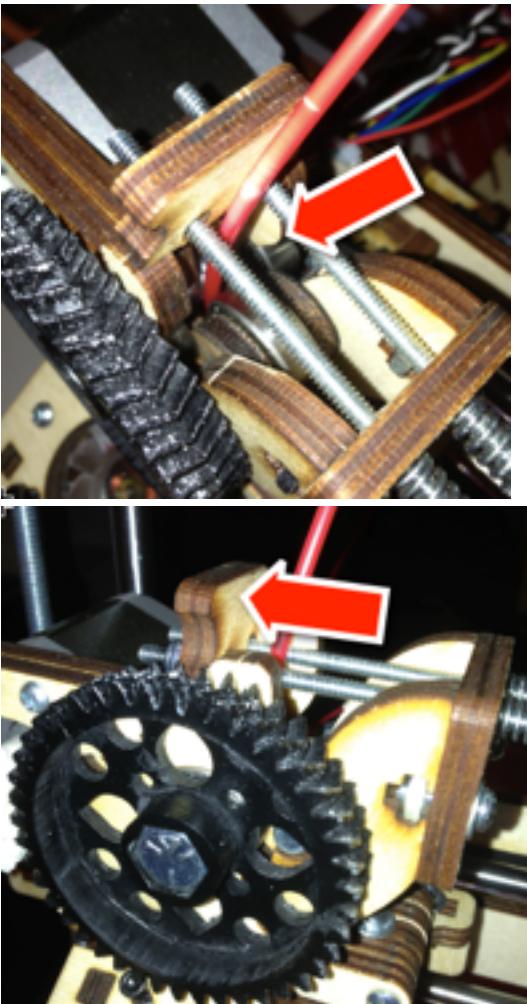
Set your Extruder temperature to 230 and click Set. View the Temperature Curve graph and wait for the temp to reach 230 on the purple line.



When the temp has reached 230, open the extruder latch and feed the filament down into the hot end opening at the hobbed bolt area. For easier access, we recommend trimming the filament at an angle. Lightly push down on the filament and you should see it slowly extrude out the tip of the hot end.



Pull out the filament, re-trim the tip, and then feed the filament between the latch bolts and down into the extruder opening near the hobbed bolt.



Troubleshooting

If you encounter any movement issues with your axis or extruder, double check the assembly instructions and check the technical forum at www.printrbottalk.com for possible quick fix solutions. If you are unable to resolve the problem quickly, please open a support ticket.

Printing your First 3D Model

8

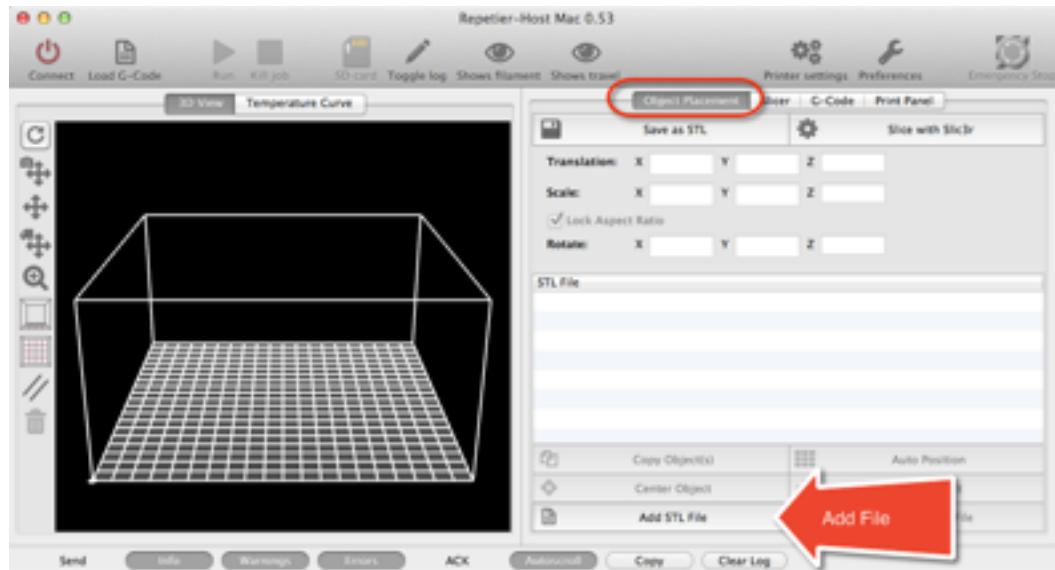
Now that your bot is assembled, connected to your computer, and the software installed – it's time to run your first test print!

Download File

Go to www.thingiverse.com and find something to print. For your first print, we recommend either the [5mm Calibration Cube](#) or [Mr. Jaws](#). Click on the big blue Download button and select either an individual file or the entire zip file.

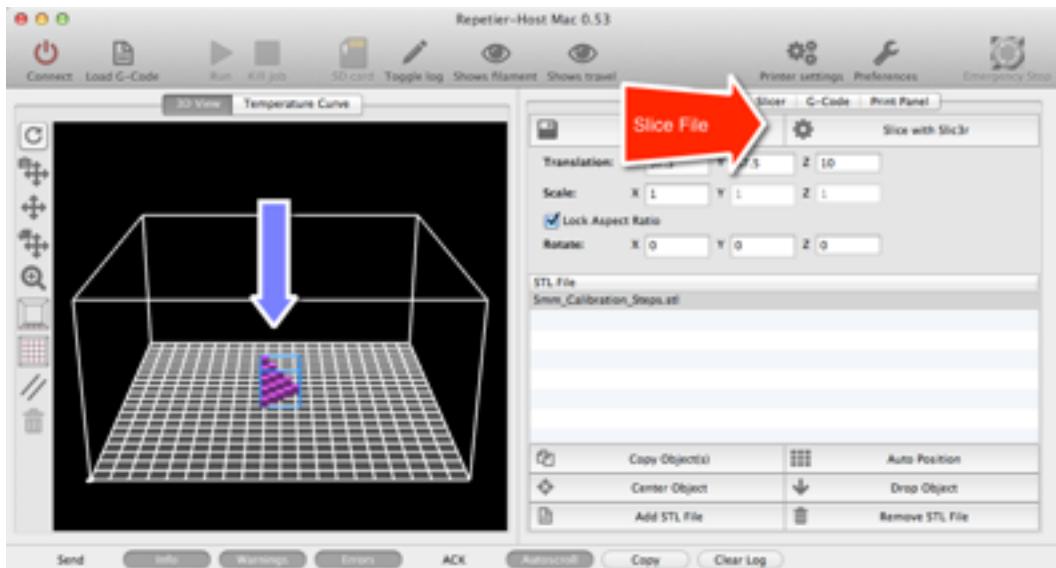
Add STL File

After you have downloaded a model, open Repetier and add the .STL file



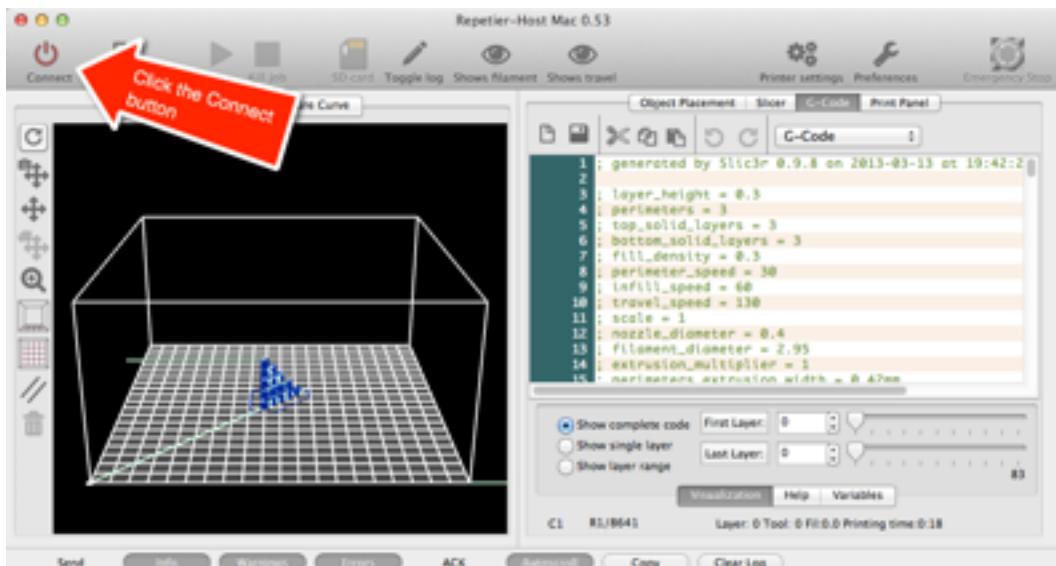
Slice

The file will drop into the print space, next click on Slice with Slic3r



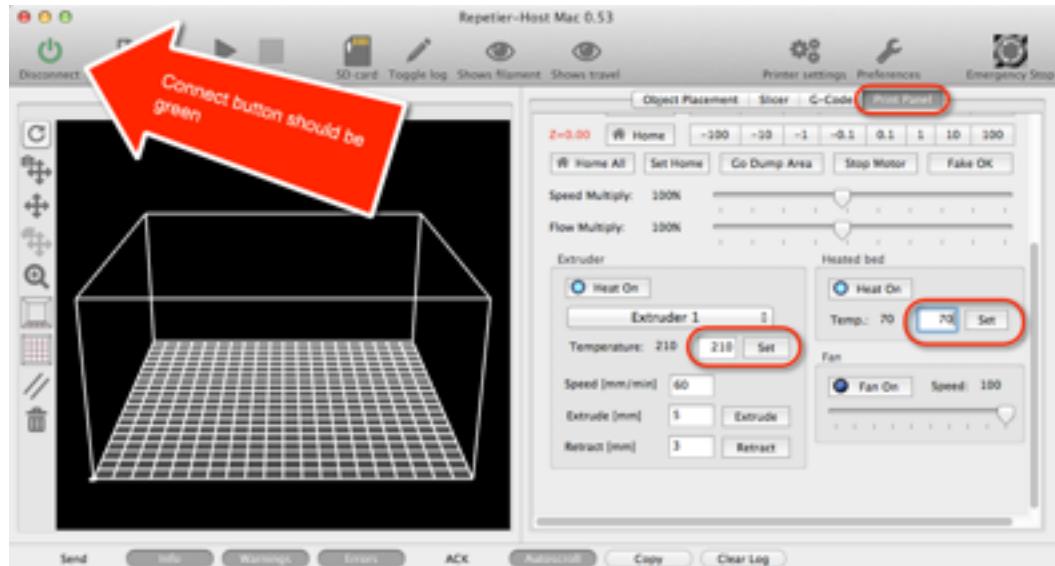
Connect

When the slice has completed, click on the Connect button.



Set Temperatures

Next up , you need to set the extruder and heated bed temps. Click on the Print Panel and scroll down to set the temperatures (Extruder **210** and Heated bed **70**) be sure to click the Set buttons. Also, please note that you should now have a green connect button to indicate that you are connected to your computer.



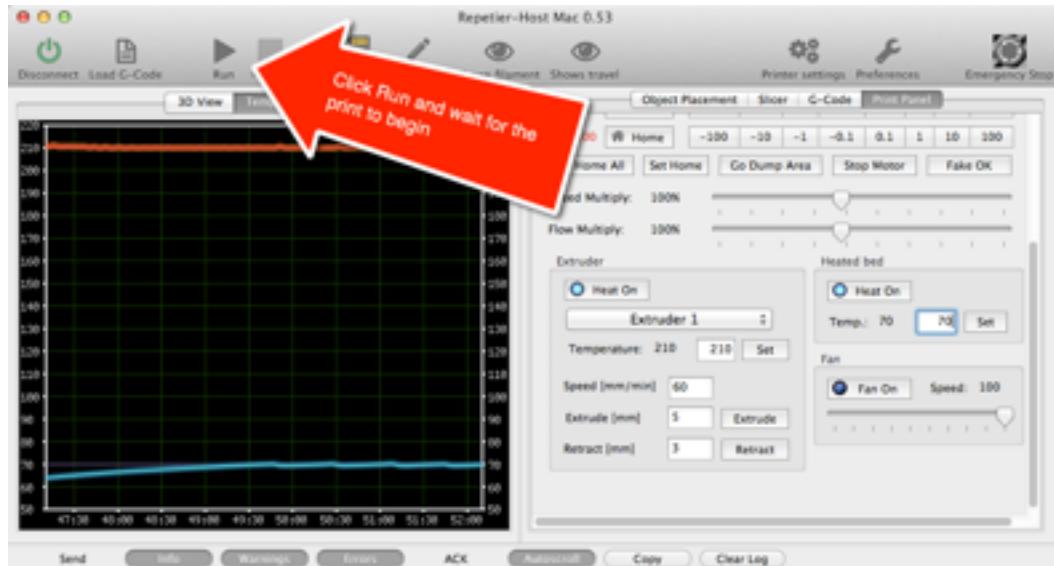
Temperature Curve

Now click on the Temperature Curve and watch the graph as the extruder and heat bed rise in temp. You need to make sure that both of them reach the purple lines before proceeding to the next step.



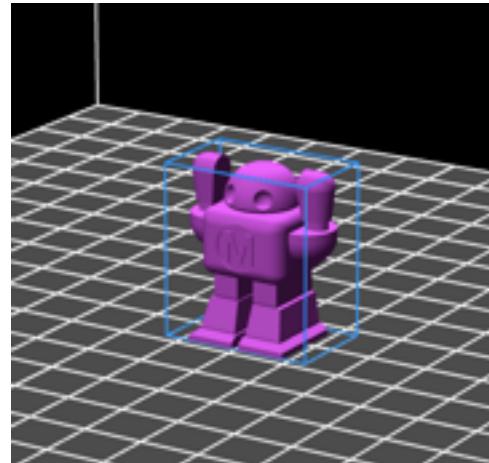
Run

Once the proper temperatures have been reached, you can then click on Run to start the print. Please note that it may take several seconds (or longer) before your print actually begins. Once it does start, the printer will move to home position (if it's not there already) and then begin to print. The first thing it will do is lay down a perimeter line around the area of your model and then it will start the final print.



After the print completes

The extruder and heat bed will turn off automatically. Allow several minutes to cool before you attempt to remove your print from the bed. Please note that the prints can often be firmly attached to the bed. To remove them, you can slightly twist the print when pulling up as this will help to break it free. You can also try to leverage a thin object underneath the print to pry it upward when lifting, but we recommend caution with this approach as you don't want to cut or damage the bed with a sharp object like an Exacto blade, etc.



Congratulations, you have completed your first 3D print!

Advanced Printing

9

Now that you have done some basic prints, where do you go from here? Well, your journey has just begun as there are lots of advanced techniques for printing highly precise and complex prints; such as micro sized prints and complex objects.

Technical Forums

Please visit our technical forum at www.printrbottalk.com as we have several power users that have pushed the limits on what is possible with a 3D printer. They will be able to give you suggestions and advice on how to successfully print even the most complex objects.

Community

We also suggest checking out www.reprap.org and interacting with the rest of the 3D community. Their [community portal](#) and [New Development](#) pages have more information on how to get involved.

Common Issues and Troubleshooting

10

Filament is not extruding

The possible issue may be that either the hot end temp wasn't set to 210 and/or the filament wasn't being pulled down into the extruder. If the filament is still in the hot end, heat up the hot end to 210 degrees and then open the top latch on the extruder and pull the filament out.

Check the small grooves in the hobbled bolt where the extruder goes into the hot end. The grooves may be clogged with filament as this happens when the temp isn't hot enough and then the filament just ends up grinding against that hobbled bolt. Use an Exacto knife to clean out all of the grooves completely. Then snip off the end of the filament at an angle and push it down into the hot end with medium pressure and you should see it extrude out the bottom. Just make sure that your hot end temp has reached 210 before doing this. You can click on the temp graph in Repetier to view the current temps.

If you see filament coming out the bottom when manually pushing, pull out the filament, re-trim the tip, and then feed the filament between the two long bolts on the top latch down into the extruder hole where the hobbled bolt is. Then close the top latch to lock it into place. Make sure your computer is connected to the printer and that you are connected in Repetier. Then click on the manual extrude button to make sure it comes out.

Print not sticking to heat bed

Make sure your heat bed is set to 70 degrees and that the bed is level. Adjust bed on all four corners so that the tip of the extruder is just above the surface of the heat bed. The height above should be approximately the thickness of a piece of paper. Make sure that the bed is clean of any fingerprints or other material. Use rubbing alcohol to clean it thoroughly. Make sure the head is not dragging the print. Make sure that your Z home height is approximately the thickness of a sheet of paper above the print surface.

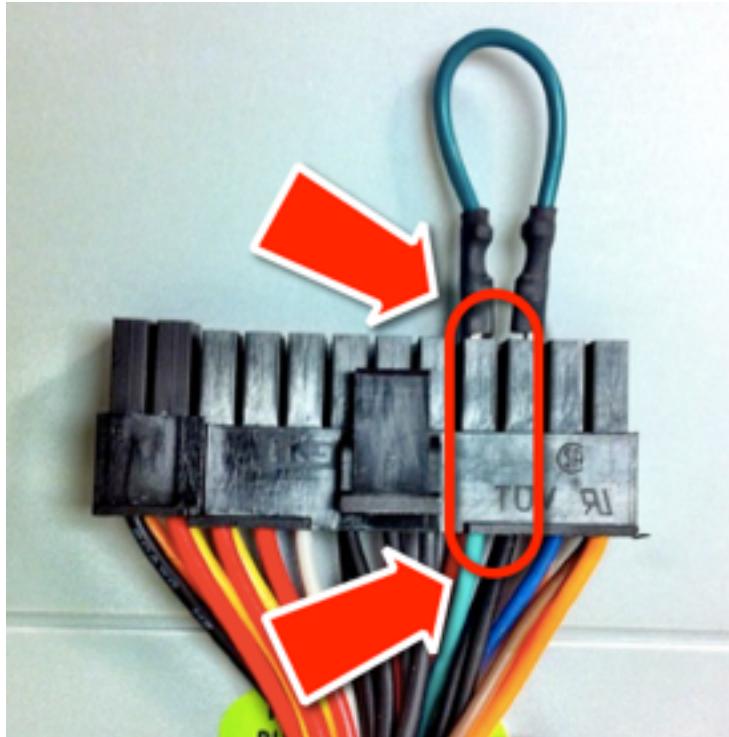
More Info: <http://help.printrbot.com/Guide/Installing---Printrbot+Kits+LC+v2/44/28>

Head is dragging across the print

If the nozzle seems to drag through the plastic of the previous layer as it is printing then first check to be sure that the thermal wrap on the print head is secure and is not hanging below the level of the nozzle. If it is then slide it up slightly so that it is clear of the print surface. Be careful, if your heater is turned on then it will be hot! Make sure there is no plastic debris on or around the nozzle that may have been left over from a prior print -- even a small piece of plastic stuck to the side of the nozzle can ruin a print.

No Power

Be sure you have the jumper cable securely plugged in to the correct wires on the power source. The jumper should be plugged into the two slots that are side by side directly above the green and black wires below, which should also be side by side.



Other Problems

For more in depth calibration troubleshooting, please review the Hardware Calibration and other settings in our original Getting Started Guide – Version 1 <http://bit.ly/YX8nct>

For all other issues, please visit our technical forum at www.printrbottalk.com for further assistance and troubleshooting. If needed, please open a support ticket for all broken and faulty parts at www.printrbot.com/support/